Microsoft HealthVault Service Specification

1. Abstract

This paper describes the behavior of the HealthVault Service interactions for storing health data. The semantic behavior of the protocol is identified, and referenced with the schemas that define the communication.

2. Contents

3. Introduction

Microsoft HealthVault is a personalized and consumer-centric health platform with which to catalyze an application ecosystem that lets individuals collect, store, read, and share health information online in a private and secure manner.

HealthVault provides an open, online environment that gives individuals revolutionary ownership and choice around their health-related information and activities.

When people sign up for HealthVault accounts, they become the custodians of the health information that they choose to make available, and can let others be custodians of their records as well.

At its core, the HealthVault Platform is a web-based API layer that provides data and infrastructure services upon which all HealthVault applications are built. The HealthVault web application presents an explorer type UI into the platform as well as acting as the key middleman for web based authentication.

The HealthVault platform enables innovative health and wellness devices and applications to provide additional value and use cases. The environment enables loosely-coupled partners to refine their domain expertise and create a comprehensive suite of functionality far beyond what any single company could ever hope to provide.

The HealthVault privacy-enhanced and security-enhanced foundation can be used to store and transfer information to and from of HealthVault partners who offer HealthVault users a rich variety of health services including personal health records, care management, fitness programs, and healthcare monitoring devices. The access management infrastructure is flexible with granularity for sharing across users and between users and applications, enabling support for user privacy preferences.

Community Promise Restrictions on the Field of Use for the HealthVault Service Specification
HealthVault Service Specification is intended to support personalized healthcare. This technology is designed to be used by individuals to manage their health information, and is not intended to be provider-centric or health enterprise-centric.

3.1 High Level Application Interactions

HealthVault Applications are defined as applications that interact with the HealthVault service. There are two models for Applications to interact with the HealthVault Service. The first model is described as **online** and includes user authentication through the Client Browser via HealthVault Shell. The second model, described as **offline**, does not require any Client Browser or HealthVault Shell interactions and instead communicates directly to the HealthVault Platform.

In the online application model, a web browser is employed to navigate to the application and the user must authenticate with the HealthVault Service, and this authentication is shared with the HealthVault Application. Data can then be requested from the Service and shared with the HealthVault application. In Figure 1, the interaction model is illustrated:

27 March 2009 - Version 1

Client Browser	HealthVault Shell	Application	HealthVault Service

Request Authentication

Authenticate Application

Return Authentication

Request Authentication

Authenticate User

Return Authentication

Request Application Page

Process Request

Request HealthVault Data

Process Request

Return Data

Process Data

Return Page
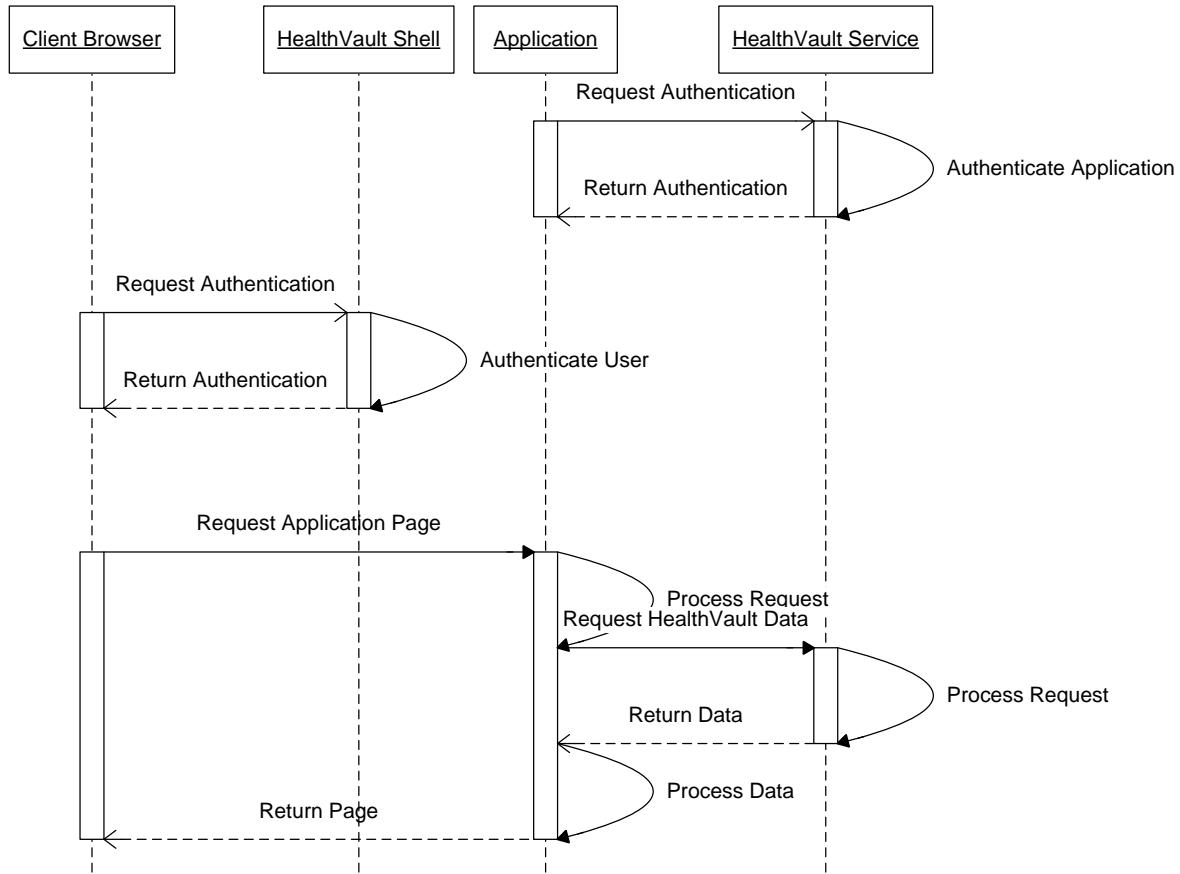
In the offline HealthVault application model, a native application communicates with the HealthVault Service without the benefit of a web browser. Authentication is handled through the native (offline) application. The offline HealthVault application model illustrated in Figure 2 and is further described in the HealthVault Redirect Service section:
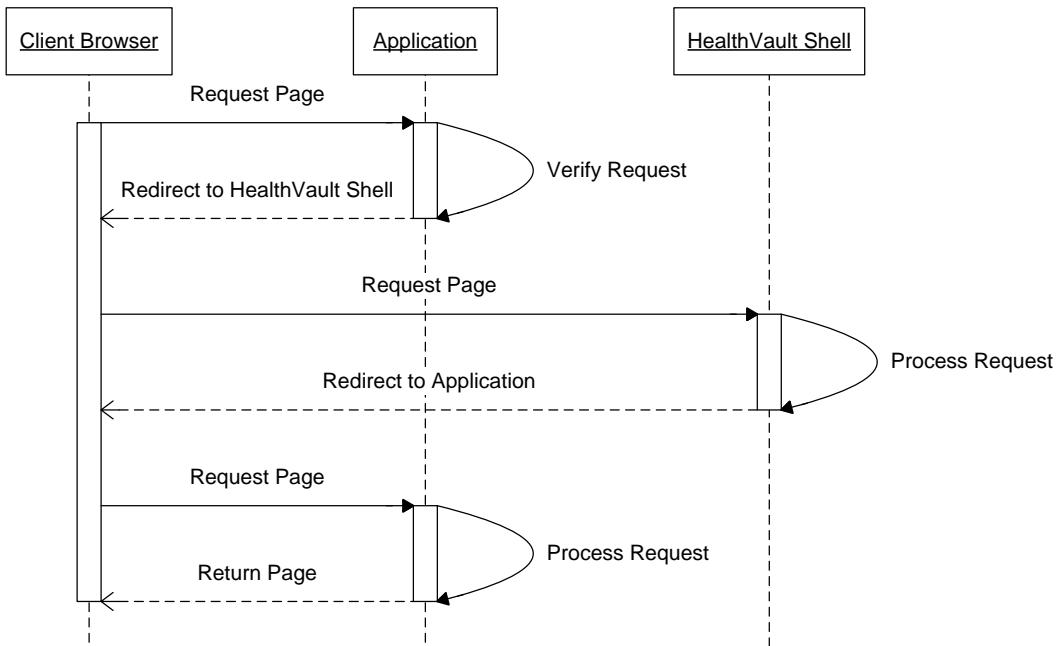
This process is further defined in the HealthVault Redirect Service section.

4. Terminology and Notation

4.1 XML Namespaces

The namespace identifier for elements defined by this specification is a URN [RFC2141]. For details on the defined prefixes, their corresponding namespace and the source schema defining them are outlined in HealthVault Service Schemas section.

4.2 Notational Conventions

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

This specification uses the following syntax to describe outlines for `messages and XML fragments that exist in with grey background and consolas font`

- The syntax appears as an XML instance, but values in italics indicate data types instead of values.
- Characters are appended to elements and attributes to indicate cardinality:
    - "?" (0 or 1)
    - "*" (0 or more)
    - "+" (1 or more)
- The character "|" is used to indicate a choice between alternatives.

- The characters "(" and ")" are used to indicate that contained items are to be treated as a group with respect to cardinality or choice.
- An ellipsis used to abbreviate content that offers no significance in its entirety.

XPath notation [W3CXPATH] is used to abbreviate xml nodes within standard text and begin with a "/" which indicates a root element location within the XML Document. E.g. The *methodname* element in the *wc-request*:*request* element would be referenced as /*request*/header/*methodname*/

4.3   HealthVault Terms

HealthVault Service Definitions
HealthVault Service

An online environment that provides consumers with ownership and choice around their own health-related information and activities. The environment enables external applications to add/modify items within individuals' records, creating a comprehensive suite of functionality. The HealthVault Service consists of the HealthVault Platform and HealthVault Shell.

HealthVault Shell

An application that provides a consumer experience for the HealthVault Platform allowing for account management and record manipulation. Additionally, the HealthVault Shell is the key middleman for web based authentication and authorization.

HealthVault Platform

A web-based API layer that provides health data and infrastructure services upon which all HealthVault applications are built.

HealthVault Applications
Application

A Solution Provider application that is consuming the interfaces of the HealthVault Service.

Online Application

An application that includes user authentication through the Client Browser via HealthVault Shell.

Offline Application

An application that does not require any Client Browser or HealthVault Shell interactions and instead communicates directly to the HealthVault Platform after receiving a one-time authorization.

HeathVault Service Items

Record

A collection of health information pertaining to a specific person. A record is administered by record custodians and has data entered into it by authorized applications and users. Access to the information in the record is only permitted after the custodian authorizes the access. A health item can only belong to one record but a record many contain many health items (one-to-many).

Thing Type

A "thing type" or "HealthRecordItem type" is a specific kind of data stored in HealthVault, such as a blood pressure or weight measurement.

Vocabulary

A collection of terms, called vocabulary items, that are used to identify standard conventions between applications, such as a list of blood types or medications.

HealthVault Roles

Person

An individual who interacts with the information in a health record. A person can be designated as a custodian of a record. Person, Consumer and User are used interchangeably.

Custodian

A person-record relationship granting the person the right to perform administrative and sharing tasks on the record. Custodial duties include authorizing other people to access the record. There can be multiple custodians to one record and a person may be a custodian to multiple records (many-to-may relationship). Other than the owner of the record, custodianship is usually granted to a person that is involved in making medical decisions on behalf of the person. For example, a parent would likely be a custodian of a child's record.

Solution Provider

A solution provider is a person or organization who creates an application that uses the HealthVault platform.

5. Messaging

5.1 XML over HTTPS

HealthVault Service communications occur via schematized XML in the body of an HTTP request over a TLS Connection [RFC2818]. The HTTP requests MUST be submitted using the POST HTTP verb. All HTTP responses MUST be returned with a 200 (OK). In case of service errors, the response body SHOULD contain an error code. Details of the error codes are in the Response Codes section.

The schemas for the XML body conform to W3C's XML Schema 1.0 Standard [W3CXSD]. Every message inbound to the HealthVault Service MUST be valid against the service's schemas.   The HealthVault Service MUST generate XML that conforms to the latest version of the schemas.

5.2 Request Format

The HealthVault Service request format is defined by the *wc-request:request* element in request.xsd.

```
<request>
    (<auth>
        <hmac-data algName/>
    </auth>)?
    <header>
        <method/>
        <method-version/>
        <target-person-id/>?
        <record-id/>?
        <app-id/> |
        <auth-session>
            <auth-token/>
            (<user-auth-token/> |
            <offline-person-info>
                <offline-person-id/>
            </offline-person-info>)?
        </auth-session>
        <language/>?
        <country/>?
        <final-xsl/>?
        <msg-time/>
        <msg-ttl/>
        <version/>
        (<info-hash>
            <hash-data algName/>
        </info-hash>)?
    </header>
    <info/>
</request>
```

The *auth* element MUST be present in all method requests except for the *createauthenticatedsessiontoken* method request. *Auth* contains authentication data that is passed from the application to validate the request. *Hmac-data* contains a Base64 Encoding [RFC4648] of a Hash Message Authentication Code (HMAC) [RFC2104] computed with the following information:

- Secret Key is the established shared secret. See Application Authentication for details on generating and exchanging the shared secret.
- Hash Method is the method defined in the *algname* attribute.
- Content is the *header* element including the *info* element tags with their parentheses.

The integrity and authenticity of the */request/header/* element is verified by generating the HMAC using the same input as above and comparing it against the message digest which is the content of the */request/auth/hmac-data/* element formatted in Base64 encoding. The message digest should be computed on raw xml without any normalization.

Header contains the *method* element which identifies the functionality that is being requested. *Method-version* is used to identify the precise version of the method the application wishes to execute. The first version of a method is 1 and is incremented by 1 for every subsequent version. The combination of *method* and *methodversion* MUST determine the behavior of the method and the content in the */request/info/* element. For a list of available methods and their corresponding */request/info/* element schemas, see Method Schemas.

A *target-person-id* MAY be specified if the method is relevant for a person context. See Method Context for information on determining the target person-id for the method.

A *record-id* MAY be specified if the method is relevant for a record context. See Method Context for information on determining the target record-id for the method.

The application's *auth-token* and if necessary the *user-auth-token* MUST both be authorized to conduct activities for the target person and/or record. If the application is authorized and is conducting activities on behalf of a user without them being logged in then the */request/header/auth-session/offline-person-info/offline-person-id/* element contains the person-id of the user.

In order to process the request, the *auth-token* and *user-auth-token* MUST be used by the HealthVault Service as they contain stateful information regarding the request. If either token is required and not found, is empty, or is malformed then response code 8 (Invalid Token) SHOULD be returned. If the token was decrypted and found to be expired then response code 7 (Credential Token Expired) SHOULD be returned. If the token is well formed but could not be decrypted then response code 65 (Authenticated Session Token Expired) SHOULD be returned. In all cases, the application and user will have to re-authenticate to acquire valid authentication tokens.

Language and *country* elements are used by methods that return locale-specific information. Default values of English and US are assumed. Language element should comply to ISO639-1 and country element should comply to ISO3166. *Final-xsl* is reserved for future use.

Msg-time is the UTC timestamp at which the message was generated. *Msg-ttl* is the duration in seconds for which the message is considered valid. If the current UTC time is greater than or equal to *msg-time* plus *msg-ttl* then the request is considered to be expired and a response of 3 (Invalid XML) SHOULD be returned. The implementation can add some variance owing to the skew in server timestamps.

Version is the version of the client SDK that is being used by the application, this may or may not be utilized by the service.

If an *info* section is required by the request method type then *info-hash* and its child element *hash-data* MUST be present and contain a Base64 Encoded [RFC4648] hash digest [SHA] with the following information:

- Hash Method is the method defined in the *algname* attribute
- Content is the *info* element including the *info* element tags with their parentheses.

This ensures the integrity of the *info* element content by comparing the computed value Base64 Encoded [RFC4648] with the content of the *hash-data* element. The computation should be done on raw XML without any normalization.

The *info* element is defined as *xs:#any* element [W3CXSD]. The content of *info* MUST validate against the schema whose target namespace is casted on the *info* element. The namespace is determined by the *method* and *methodversion* elements of the */request/header* element. See [Method Schemas](#) for the */request/header/methodname/* element content and corresponding */request/info/* element schema.

If a request exceeds the platform's configured maximum size, then a response of 39 (Request Too Long) MUST be returned. The configured maximum request size MUST be communicated as a configuration in a */response/info/platform/configuration/* element of the *getservicedefinition* method.

Example

```
<request xmlns:wc-request="urn:com.microsoft.wc.request">
    <auth>
        <hmac-data algName="HMACSHA1">NOZVtB…KXALEfecXU=</hmac-data>
    </auth>
    <header>
        <method>GetThings</method>
        <method-version>1</method-version>
        <record-id>11111111-1111-1111-1111-222222222222</record-id>
        <auth-session>
            <auth-token>ASAAADNt1Jwbx…+wsXjPFs00soe9w==</auth-token>
            <user-auth-token>ASAAAPMKdX…BEYTXT1VQ==</user-auth-token>
        </auth-session>
        <language>en</language>
        <country>US</country>
        <msg-time>2008-03-12T01:55:23.718Z</msg-time>
        <msg-ttl>1800</msg-ttl>
        <version>0.9.1730.2528</version>
        <info-hash>
            <hash-data algName="SHA1">BZcTW6eex…ewCaka4=</hash-data>
        </info-hash> test@microsoft.com
    </header>
    <info>
        <group>
            <key version-stamp="47ea…1275e">8f1d7…aa8084</key>
            <key version-stamp="551b…46673">de531…8758b5</key>
```

```
        <key version-stamp="3eb1…e3516">42898…97d9df</key>
        <key version-stamp="cd10…c9e42">7bacf…c7a084</key>
        <format>
            <section>audits</section>
            <section>core</section>
            <section>effectivepermissions</section>
            <section>otherdata</section>
            <section>tags</section>
            <section>digitalsignatures</section>
            <xml />
        </format>
    </group>
    </info>
<request>
```

5.2.1 Method Context

A method requires that it operate with specific input criteria – an application, a person, a record – and so it must derive this information from request context. The Method Summary outlines what context a method operates in. The way to determine the information for the specific context is as follows:

Application – For *createauthenticatedsessiontoken* method request, the application id MUST be acquired from the */request/header/app-id/* element. For all other requests, the application id MUST be acquired from the auth-token present in the */request/header/auth-session/auth-token/* element. The *auth-token* is the opaque token returned from the HealthVault Service after it has successfully authenticated an application and contains an application id. See Application Authentication section for details on the *auth-token*.

Person – If the method request requires a person context then a */request/header/target-person-id/* element MAY be specified. If it is not specified then the person id MUST be acquired from either the user-auth-token present in the */request/header/auth-session/user-auth-token/* element or the */request/header/auth-session/offline-person-info/offline-person-id/* element content. The *user-auth-token* is the opaque token returned from the HealthVault Service after it has successfully authenticated a user. See User Authentication section for details on the *user-auth-token*.

Record – If the method request requires a record context then a */request/header/record-id/* element MAY be specified. If it is not specified then the default record of the person identified in the person context (see above) MUST be used to determine the record id.

5.3   HealthVault Response Format

The HealthVault Response Format is defined by the *wc-response*:*response* element in response.xsd.

```
<response>
    <status>
        <code/>
        (<error>
            <message/>
            (<context>
                <server-name/>
                <server-ip/>*
```

```
                <exception/>
            </context>)?
        </error>)?
    </status>
    <info/>?
</response>
```

The */response/status/code/* contains the numeric code associated with the result of the request. See the Response Code section for details. If there are multiple errors with the request that require different response codes to be returned, the HealthVault Service SHOULD return the first error encountered when parsing the document using a depth first algorithm. XML document syntax errors SHOULD take precedence over service logic errors.

The *error* element contains information regarding the error response if 0 (Success) was not returned. The *message* element contains a free form text *description* of the *code*. Its *context* element SHOULD NOT be returned in a production environment. It is only intended for serialization of debugging information. It contains contextual information around the error. *Server-name* and *server-ip* indicate the source of the error and *exception* contains the exception stack of the HealthVault Service.

As with the request schema, the */request/info* element is defined as an *xs:#any* element [XSD]. The content of *info* MUST validate against the schema whose target namespace is casted on it. See Method Schemas for the */response/info/* element schema.

A response SHOULD have a maximum size. If the response exceeds this pre-determined maximum size, then in place of the expected response info MUST be a response code of 71 (Response Too Long). The pre-determined maximum request size SHOULD be communicated as a configuration in a */response/info/platform/configuration/* element of the *getservicedefinition* method. The data returned may exceed the size to notify the unprocessed elements.

Example

```
<response>
    <status>
        <code>0</code>
    </status>
    <info xmlns:wc="urn:com.microsoft.wc.methods.response.GetThings">
        <group>
            <thing>
                <thing-id version-stamp="473…1275e">8fd7b…a884</thing-id>
                <type-id name="File">bd0…78e4528</type-id>
                <thing-state>Active</thing-state>
                <eff-date>2007-06-28T05:02:47</eff-date>
                <updated>
                    <timestamp>2008-03-12T01:54:45.187Z</timestamp>
                    <app-id name="MaxEmail Fax">ca142…bd2c54af</app-id>
                    <person-id name="External Source">8248…d35a</person-id>
                    <access-avenue>Offline</access-avenue>
                    <audit-action>Created</audit-action>
                </updated>
                <data-xml>
```

```
                <file>
                    <name>fax-vqpfwgqq.tif</name>
                    <size>628</size>
                    <content-type>
                        <text>image/tiff</text>
                    </content-type>
                </file>
                <common>
                    <note>Fax From: 180022334893, 1 pages</note>
                </common>
            </data-xml>
            <data-other content-type="image/tiff" content-
encoding="base64">R0lGODlhIAAgANUAACEgIS…hj8VqJAQUoGEyYdax3pCAAOw==</dat
a-other>
            <eff-permissions immutable="false">
                <permission>Read</permission>
                <permission>Update</permission>
                <permission>Create</permission>
                <permission>Delete</permission>
            </eff-permissions>
        </thing>
        <unprocessed-thing-key-info>
            <thing-id version-stamp="551b…46673">de53…58b5</thing-id>
            <type-id name="File">bd04…4528</type-id>
            <eff-date>2007-06-28T05:02:47</eff-date>
        </unprocessed-thing-key-info>
        <unprocessed-thing-key-info>
            <thing-id version-stamp="3eb…516">4289…7d9df</thing-id>
            <type-id name="File">bd04…8e4528</type-id>
            <eff-date>2007-06-28T05:02:47</eff-date>
        </unprocessed-thing-key-info>
        <unprocessed-thing-key-info>
            <thing-id version-stamp="cd10…9e42">7bac…7a084</thing-id>
            <type-id name="File">bd0…78e4528</type-id>
            <eff-date>2007-06-28T05:02:47</eff-date>
        </unprocessed-thing-key-info>
    </group>
  </info>
</response>
```

6. HealthVault Session Management

A HealthVault Service Application Session is established by having an application authenticate itself with the HealthVault Service. The session is maintained for a pre-determined interval after which the session MUST be reestablished in order to resume communications.

A HealthVault Service User Session is established by having the user authenticate with the HealthVault Shell. The session is maintained for a pre-determined interval after which the session MUST be reestablished in order to resume communications. The HealthVault Shell MAY persist the user token between user-terminated sessions through the use of browser cookies.

If at any time, the response code in the */response*/*status*/*code*/ element is 8 (Invalid Token) then the application and/or user MUST submit a request to the HealthVault Service for an valid authentication token.

6.1 Application Authentication

An application is required to establish its identity and a shared secret that will be used to secure future calls to the HealthVault Service. This is done using the *createauthenticatedsessiontoken* method.

```
<info>
    <auth-info>
        <app-id />
        <credential>
            <cardspaceauthsession/> |
            <appserver>
                <sig digestMethod sigMethod thumbprint/>
                <content>
                    <app-id/>
                    <shared-secret>
                        <hmac-alg algName/>
                    </shared-secret>
                </content>
            </appserver>
        </credential>
    </auth-info>
</info>
```

Auth-info contains all parameters pertaining to the request. *App-id* is the unique identifier provisioned in the HealthVault Service to identify the requesting application.

The *credential* element contains the necessary data to authenticate the calling application. *Cardspaceauthsession* is reserved for future use. *Appserver* contains the credentials for the calling application server to authenticate with the HealthVault Service.

The *sig* element contains a Base64 Encoded [RFC4648] RSA Digital Signature Digest [RFC3447] that is computed with the following input:

- Signing Key is the private key of the x509 Certificate identified by the *thumbprint* attribute. See Applications for information about application certificates.
- Hash Method is the method defined in *digestMethod* attribute.
- Content is the entire content of the *content* element, including the *content* element tags with their parentheses.

The HealthVault Service MUST authenticate the application by verifying the signature of the request. This is done by applying RSA Digital Signature Verification [RFC3447] with the following input:

- Signature Digest is the Base64 decoded [RFC4648] content of the *sig* element.
- Public Key is the public key of the x509 Certificate identified by the *thumbprint* attribute.
- Hash Method is the method defined in *digestMethod* attribute.

27 March 2009 - Version 1
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- Content is the entire content of the *content* element, including the *content* element tags with their angle brackets.

Performing the verification will confirm that it was the application that generated the signature and the signature and *content* element are intact. *SigMethod* is reserved for future use.

Within the *content* element, the *app-id* element contains the provisioned application id used to uniquely identify the application in the HealthVault Service. It MUST match the */request/header/ app-id/* element and MUST match the */request/info/auth-info/app-id/* element value.

A shared secret is transmitted for use as the key for the HMAC digest in the */request/auth/hmac-data/* element. The shared secret SHOULD be randomly generated with a minimum length of 128-bits and SHOULD be unique for each call to *createauthenticatedsessiontoken*. The */request/info/auth-info/credential/appserver/content/shared-secret/hmac-alg/* element is a Base64 Encoded [RFC4648] shared secret key. This is the secret key that is used to generate the HMAC mentioned above. If the element does not exist or is empty, the HealthVault Service SHOULD return a response code of 17 (Missing Shared Secret).

Example Request

```
<request>
    <header>
        <method>CreateAuthenticatedSessionToken</method>
        <method-version>1</method-version>
        <app-id>0a8aaef5-18df-44ab-b18a-b3637c52444d</app-id>
        <language>en</language>
        <country>US</country>
        <msg-time>2007-10-20T00:00:43.479Z</msg-time>
        <msg-ttl>1800</msg-ttl>
        <version>0.6.1508.2211</version>
    </header>
    <info>
        <auth-info>
            <app-id>0a8aaef5-18df-44ab-b18a-b3637c52444d</app-id>
            <credential>
                <appserver>
                    <sig digestMethod="SHA1" sigMethod="RSA-SHA1"
thumbprint="B7A86A756…F14B2E">bwO5wV…MkOVZ9M2TrupA==</sig>
                    <content>
                        <app-id>0a8aae…2444d</app-id>
                        <shared-secret>
                            <hmac-alg algName="HMACSHA1">wJ0…vvQ==</hmac-alg>
                        </shared-secret>
                    </content>
                </appserver>
            </credential>
        </auth-info>
    </info>
</request>
```

The shared secret and application id along with any other pertinent information for maintaining state is collected into an encrypted token that is opaque to the Application. This authenticated session token is returned in the response to the request.

The following is the corresponding i*nfo* element of the response defined in response-createauthenticatedsessiontoken.xsd:

```
<info>
    (<token app-id app-record-auth-action/>|
    <token-absence-reason app-id/>)+
</info>
```

Token contains the resulting opaque token that is issued to the application identified by the *app-id* attribute. This *token* MUST be included in the */request/header/auth-session/auth-token/*element of each subsequent request. *App-record-auth-action* is not used in this context and will always return *NoActionRequired*. Token-absence-reason is not used in this context and MUST never be returned.

Example Response

```
<response>
    <status>
        <code>0</code>
    </status>
    <info
xmlns:wc="urn:com.microsoft.wc.methods.response.CreateAuthenticatedSessi
onToken">
        <token app-id="0a8a…c52444d" app-record-auth-
action="NoActionRequired">ASAAAIdt…aeiLbea8DA0g==</token>
    </info>
</response>
```

The token beginning with "ASAA..” is to be used as the *auth-token*. This token is issued specifically for the application whose identity begins with "0a8a…”.

6.2   User Authentication

User Authentication is conducted by the HealthVault Service outside of application method interfaces. All online applications redirect the client to the HealthVault Service which conducts the user authentication and returns a token for use by the application for the user session. Any means can be chosen by the HealthVault Service to authenticate the user, but the authentication process requires specific interfaces for being instantiated by the requesting application and returning the results back to the application.
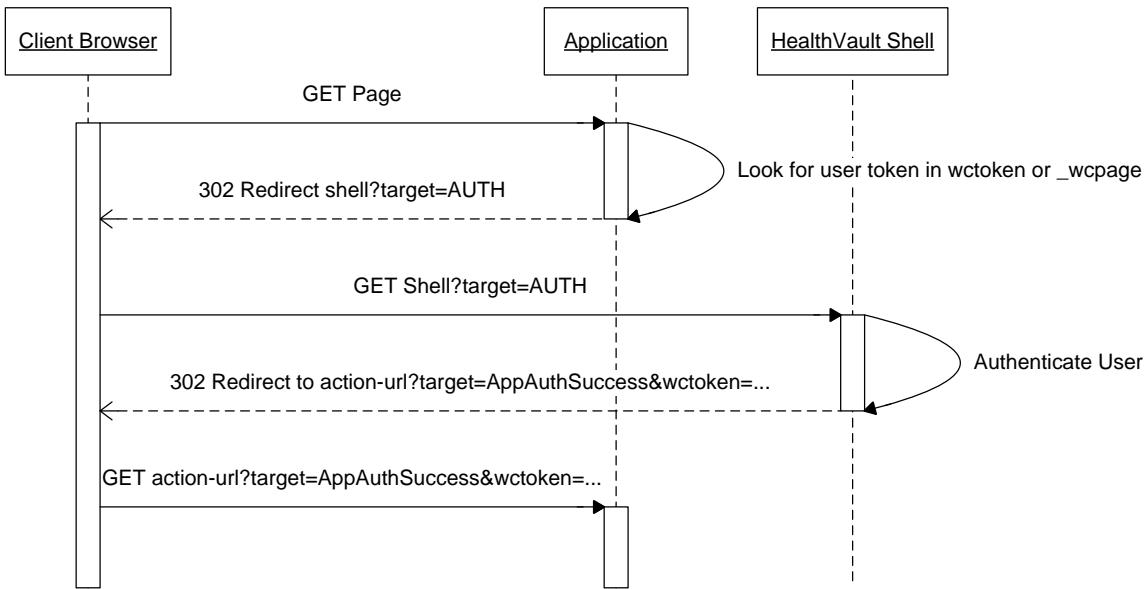
Instantiating the request requires that an application redirect the client browser to the HealthVault Shell Redirect Service URL with the AUTH target:

```
GET https://<shellredirecturl>?target=AUTH&targetqs=...
```

See [Shell Redirect Service Targets](#) for details of AUTH redirect target and parameters.

Example HTTP Request

```
GET
https://account.healthvault.com/redirect.aspx?target=AUTH&targetqs=?appi
d=9ca84d74-1473-471d-940f-
2699cb7198df%26actionqs%3d%252fshell%252fdefault.aspx  HTTP/1.1
```

After authenticating the user, the HealthVault Service MUST generate an opaque user token (*wctoken* in query string references and *user-auth-token* in xml references) which captures stateful information about the user including the application id of this session and person id that is provisioned for this user. The client browser is then redirected to the application's provisioned *action-url*. The query string parameters include a *target* value of APPAUTHSUCCESS, the passed *targetqs* parameter now being the *actionqs* parameter and the generated user token as the *wctoken* parameter:

```
GET https://<action-url>?target=APPAUTHSUCCESS&actionqs=...&wctoken=...
```

See [Application Redirect Targets](#) for details of the APPAUTHSUCCESS redirect target and parameters.

Example HTTP Request

```
GET /Redirect.aspx?target=
APPAUTHSUCCESS&actionqs=%2fdefault.aspx&wctoken=ASAAAHIO…TA%3d%3d
HTTP/1.1
```

See [Applications](#) for details about the *action-url* configuration element.

The HealthVault Application SHOULD have a mechanism for remembering the *wctoken* between calls to the HealthVault Service.

7. Things

A Thing is the fundamental data entity that is exchanged between HealthVault Applications and the HealthVault Service. Things can be thought of as the individual items which make up a HealthRecord, such as blood pressure measurements or lab test results. There are various types of things defined in HealthVault for Health, Lifestyle and Medical information. See [Thing Types](#) for details.

An application's activities MUST be constrained to the authorization of thing types as outlined in [Thing Type Authorization](#).

The thing type is defined by the *thing* element in thing.xsd

```
<thing>
    <thing-id version-stamp />?
    <type-id name? />?
    <thing-state />
    <flags />?
    <eff-date />?
    (<updated>
        <timestamp />
        <app-id name/>
        <person-id name/>
        <impersonator-id name/>?
        <access-avenue />?
        <audit-action />
    </updated>)?
    (<data-xml transform? >
        <#any />
        (<common>
            <source />?
            <note />?
            <tags />?
            (<extension source ver? logo? xsl?>
                <#any />*
            </extension>)*
            (<related-thing>
                <thing-id />
                <version-stamp />?
                <relationship-type />?
            </related-thing>)*
        </common>)?
    </data-xml>)*
    <data-other content-type? content-encoding? />?
    (<eff-permissions immutable? >
        <permission />+
    </eff-permissions>)?
    <tags />
```

```
    (<signature>
       …
    </signature>)?
</thing>
```

Thing-id is the globally unique identifier of the particular instance. Its *version-stamp* attribute is also a globally unique identifier. The combination of *thing-id* and *version-stamp* determine the unique instance of the thing. For more information, see Thing Versioning. *Type-id* is the GUID that corresponds to the Identifier of the thing type that is present in the */thing/data-xml/#any* element. *Thing-state* indicates the state of the thing type in the HealthVault Service. *Thing-state* can be Active or Deleted. If the thing is no longer to be present in the HealthVault Service, then *thing-state* MUST be *Deleted*. A *thing-state* is updated to *Deleted* when *removethings* method is called for the *thing-id*. *Flags* is a bitmask whose entries mark bitwise attributes of the thing. The lowest order bit indicates the visibility of the thing to non-custodians of the record to which the thing belongs. If the bit is set to 1, then only custodians of the record to which the thing belongs to are able to Read, Update, and Delete the thing. Other bits are reserved for future use. Effective-date is a UTC date time that indicates when this thing type version was considered to be effective.

The *updated* element contains the latest audit entry regarding the last update made to the thing. It is a *wc-thing:Audit* element type as defined in the Thing Audit Information.

Data-xml contains an *xs:any* element type that contains the Thing Type information. The GUID of the Thing Type contained in the */thing/data-xml/#any* element MUST correspond to the GUID specified in the *thing*/*type-id* element. The data present in the */thing/data-xml/#any* section MUST conform to the thing schemas used in the HealthVault Service. See HealthVault Thing Type Schemas for the current list of schemas used. The *common* element contains *source* which contains a non-normative text representation of how the data was captured. *Note* is a free-form text element used to capture arbitrary information about the thing. The *tags* element is a comma separated list of text used to append metadata information to the thing. *Extension* is a defined element that can be used by Applications to store additional information regarding the thing that was not captured in the thing and thing type specific schemas.

Related-thing contains the thing-id and version-stamp of zero or more things related to this thing. *Relationship-type* is a free-form description of the relationship. The HealthVault Service MAY validate the existence of the related thing. A related thing may not exist.

The thing identified by the thing-id and version stamp may not be present in the HealthVault Service.

Data-other is an *xs:string* type element that is used to store non-xml data of the thing. *Content-type* is the MIME type descriptor [RFC2045] of the *data-other* content. *Content-encoding* contains the hint of how the *data-other* information is encoded.

Permissions on the thing type are described in the *eff-permissions* element. The *immutable* attribute indicates whether the thing-type of this thing instance is immutable. If not present, a value of false is

27 March 2009 - Version 1

assumed. Each *permission* element indicates the permissible actions the person has on this thing instance. Possible values are *Create*, *Read*, *Update* or *Delete*.

Tags contains comma separated strings of meta-data that is appended to the thing that can be updated without affecting the integrity of the *data-xml* element. *Signature* is an XML Signature [W3CDSIG] element. The elements that SHOULD be signed are the *data-xml* and *data-other* elements.

The size, in bytes, of a thing is considered to be the sum of all bytes occupied by the content of the *thing* element, excluding the *thing* element tags.

Example Thing

```
<thing>
    <type-id>407…b500b</type-id>
    <thing-state>Active</thing-state>
    <data-xml>
        <height>
            <when>
                <date>
                    <y>2008</y>
                    <m>9</m>
                    <d>5</d>
                </date>
            </when>
            <value>
                <m>2.54</m>
                <display units="inches" units-code="in">120</display>
            </value>
        </height>
        <common>
            <source>Manual Entry</source>
            <note>Sample Note</note>
            <related-thing>
                <thing-id>4dd57a…8e3</thing-id>
                <version-stamp>27bdc3f…f88c3</version-stamp>
                <relationship-type>WeightMeasure</relationship-type>
            </related-thing>
        </common>
    </data-xml>
</thing>
```

7.1 Creating and Updating Things

Creating and updating things is performed using the *putthings* method. The *info* element is defined in request-putthings.xsd.

```
<info>
    <thing />+
</info>
```

The *thing* element is defined at the beginning of this section.

If a *thing-id* and *version-stamp* are specified and any of them do not exist then 3 (Invalid XML) MUST be returned. When a *thing-id* is not specified, the HealthVault Service MUST create a new instance of the thing and return the newly generated *thing-id* and *version-stamp* in the response. If the *thing-id* and *version-stamp* exist and the *version-stamp* is designated as the current version, then the thing is stored as a new version of the thing with a new *version-stamp* generated and returned in the response. If the *version-stamp* is not submitted when updating a thing, then 60 (Version Stamp Missing) SHOULD be returned. If the *version-stamp* was specified but is not designated as the current version of the thing then 61 (Version Stamp Mismatch) SHOULD be returned.

Every thing instance in the request MUST be unique. If two things are found in the request that contain the same *thing-id*, regardless of *version-stamp*, then 3 (Invalid XML) SHOULD be returned.

If the *thing-type* specified does not exist then 19 (Invalid Thing Type) SHOULD be returned. The *thing-type* must remain constant between versions of a thing. If a *thing-type* is specified that does not match the *thing-type* of the previous version of the thing then 19 (Invalid Thing Type) SHOULD be returned. If the *thing-type* is designated as uncreatable then 21 (Thing Type Uncreatable) SHOULD be returned. If a previous version of the thing exists and the *thing-type* is designated as immutable then 20 (Thing Type Immutable) SHOULD be returned.

Thing-state is ignored by this method. Deleted thing ids should not be used in future allocations.

The first child element of the *data-xml* element (the *xs:any* element) MUST be validated against the schema of the thing type identified by the identifier in the *thing-type* element. If schema validation fails then 3 (Invalid XML) SHOULD be returned.

The XML signature SHOULD be validated [W3CXMLSIG] in order to persist the thing with the HealthVault Service. If the certificate used to validate the signature was not present or not valid, then 70 (Bad Certificate) SHOULD be returned. If the signature is not valid then 4 (Bad Signature) SHOULD be returned.

If the size of the thing, as defined at the beginning of this section, when added to the record would make the record exceed its allocated quota, then 68 (Record Quota Exceeded) SHOULD be returned.

7.2   Retrieving Things

An application can retrieve Thing information by calling the *getthings* method. Its */request/info/ section* is defined by *info* element in method-getthings.xsd

```
<info>
    <group name? max? max-full?>
        <id />*
        <key version-stamp />*
        <filter>
            <type-id />*
            <thing-state />*
            <eff-date-min />?
            <eff-date-max />?
```

```
                    <created-app-id />?
                    <created-person-id />?
                    <updated-app-id />?
                    <updated-person-id />?
                    <created-date-min />?
                    <created-date-max />?
                    <updated-date-min />?
                    <updated-date-max />?
                    <xpath />?
              </filter>*
              <format>
                    <section />*
                    <xml />*
              </format>
              <current-version-only />?
        </group>+
</info>
```

Group is a logical grouping of the type of information to be returned and filters to be applied for the request. Each *group* can have an optional *name* attribute, and *max* is the maximum number of things to return in descending order of the date the thing was last modified. *Max-full* is the maximum number of elements to return. *Max-full* MUST be less than or equal to *max*. If *max-full* is less than *max*, then the remaining number of results MUST be returned in summary format in the group's *unprocessed-thing-key-info* response elements.

The *id* element is the identity of the thing to return.

The *filter* element contains a list of filters that define the characteristics of the things that are to be returned based on this *group*. The filters MUST be compounded (AND) between each distinct element type; within a specific element type the filters MUST NOT be compounded (OR). The elements in *filter* correspond to data contained within a Thing. See [Things](#) for details on the corresponding elements.

Filter Element (*/info/group/filter/*)	Thing Element (*/thing/*)
type-id	type-id
thing-state	thing-state
eff-date-min	eff-date
eff-date-max	eff-date
created-app-id	updated/app-id where updated/audit-action is created
created-person-id	updated/person-id where updated/audit-action is created
updated-app-id	updated/app-id where updated/audit-action is updated
updated-person-id	updated/person-id where updated/audit-action is updated
created-date-min	updated/timestamp where updated/audit-action is created
created-date-max	updated/timestamp where updated/audit-action is created
updated-date-min	updated/timestamp where updated/audit-action is updated
updated-date-max	updated/timestamp where updated/audit-action is updated
Xpath	data-xml after applying transform

Xpath is the existence of the specified xpath location [W3CXPATH] in the *data-xml* section before applying its *transform* and before applying *format* element operations. Getthings MUST only return those things for which the xpath expression is successful.

The *format* element defines the presentation of the thing content that is to be returned. *Section* defines which portion of the thing to return. The *section* value and the corresponding *thing* elements are as follows:

Section Value	Thing Elements (*/thing/*)
core	thing-id version-stamp type-id eff-date thing-state flags
audits	Updated
otherdata	data-other
effectivepermissions	eff-permissions
digitalsignatures	Signature
tags	Tags

The */info/format/xml/* element defines the name of the XML Transformation [W3CXSLT] that is to be applied to the result set. Each xml transform MUST be applied in sequence of the *xml* elements after having applied the previous *xml* element transform.

Current-version-only is a boolean indicating whether only the current version of a thing is to be returned (true) or all versions are to be returned (false). A default value of true SHOULD be assumed. The platform MUST restrict access to older versions of things to record custodians and configured applications.

The HealthVault Service SHOULD accept a pre-determined maximum number of *group* elements. If the request exceeds this pre-determined maximum number, then a response of 53 (Too Many Groups in Query) MUST be returned. The pre-determined maximum number of groups SHOULD be communicated as a configuration in a */response/info/platform/configuration/* element of the *getservicedefinition* method.

Example Request

```
<info>
    <group>
        <id>11112222-3333-4444-5555-666677778888</id>
        <filter>
            <thing-state>Active</thing-state>
            <thing-state>Deleted</thing-state>
        </filter>
        <format>
            <section>core</section>
        </format>
```

```
        <current-version-only>false</current-version-only>
    </group>
</info>
```

The associated response is defined by the *info* element in response-getthings.xsd

```
<info>
    <group name?>
        <thing>
            …
        </thing>*
        <unprocessed-thing-key-info>
            <thing-id versionstamp />
            <typeid name? />
            <eff-date />
        </unprocessed-thing-key-info>*
    </group>+
</info>
```

The sequence of 1 or more *group* elements is the result of the /*request*/*info*/*group*/ elements in the request. Thing is a thing structure (see [Things](#)) that is formatted according to the group's format request. *Unprocessed-thing-key-info* contains summary information on matched things that could not be returned in their entirety because *max-full* number of things were returned in their entirety.

Example Response

```
<info xmlns:wc="urn:com.microsoft.wc.methods.response.GetThings">
    <group>
        <thing>
            <thing-id version-stamp="1111…8888">1111…8888</thing-id>
            …
            <thing-state>Active</thing-state>
            <eff-date>2008-03-12T01:39:04.403</eff-date>
        </thing>
        <thing>
            <thing-id version-stamp="1111…8803">1111…8888</thing-id>
            …
            <thing-state>Active</thing-state>
            <eff-date>2008-03-12T01:39:04.403</eff-date>
        </thing>
        <thing>
            <thing-id version-stamp="1111…8801">1111…8888</thing-id>
            <thing-state>Deleted</thing-state>
            <eff-date>2008-03-12T01:39:04.403</eff-date>
        </thing>
    </group>
</info>
```

7.3 Removing Things

An application can request to remove a thing from the HealthVault Service. This is done by the *removethings* method whose info element is defined by *info* in method-removethings.xsd.

```
<info>
```

```
    <thing-id versionstamp />+
</info>
```

Thing-id contains the id of the thing that is to be removed. The version of the thing MUST also be provided in the *versionstamp* attribute.

When an application submits a request to remove things, the thing's state MUST be marked as Deleted by updating the *thing-state* and SHOULD no longer be updated via the *putthings* method or read via the *getthings* method. The only exception is if *getthings* contains a */request/info/group/filter/thing-state/* element value of *Deleted*, this also implies that things marked deleted should not be purged from the system.

The HealthVault Service SHOULD scan all entries to ensure their existence and the user and application are permitted to remove the things. 0 (Success) is only to be returned when all things were successfully removed from the HealthVault Service. If any thing instance does not exist then 13 (Invalid Thing) MUST be returned. If any thing instance is of a thing type that is designated as immutable then 59 (Thing Type Undeletable) MUST be returned.

Example Request

```
<info>
    <thing-id version-stamp="1111…8000">1111…8000</thing-id>
    <thing-id version-stamp="3333…9000">3333…0000</thing-id>
</info>
```

There is no *info* element in the response to the *removethings* method.

7.4   Versioning

A thing is uniquely resolved by its ID and versionstamp. Only one version MUST be marked as an active instance of the thing. When a thing is updated via the *putthings* or *removethings* method, all previous data MUST be available after the update and the new information MUST have its own unique versionstamp.

7.5   Audit Information

Thing creation, update and deletion MUST be logged by the HealthVault Service. The audit-action, along with *Access-avenue* can be logged. The audit-action can be Created, Updated or Deleted. The access-avenue could be online, offline etc.

8. Thing Types

A Thing type in the HealthVault Service MUST contain the following information:

- A Globally Unique Identifier (GUID)
- An XML schema [W3CXSD] to validate against

Additionally, it MAY contain one or more XML Transforms [W3CXSLT] that are to be applied when retrieving an instance of the thing.

The XML transforms MUST be assigned labels, called tags, for ease of reference. Every tag MUST be unique within a given thing type but MAY be similar across thing types; this allows the XML transformation to be applied across several thing types in one request.

8.1 Authorization

Access to data types MUST be limited to the set of data types that the application has specifically been authorized to use. The operations are divided into Creation, Read, Update, and Delete.

An application can call the *querypermissions* method to determine its authorized access to thing types. The *info* element is defined by the *info* element in method-querypermissions.xsd.

```
<info>
    <thing-type-id />+
</info>
```

Thing-type-id is the unique identifier of the thing type that the application wishes to discover permissions on. The corresponding response is defined the *info* element in response-querypermissions.xsd

```
<info>
    <thing-type-permission>
        <thing-type-id />
        <online-acess-permissions>
            <permission />+
        </online-acess-permissions>?
        <offline-acess-permissions>
            <permission />+
        </offline-acess-permissions>?
    </thing-type-permission>*
</info>
```

Thing-type-permission is an element that corresponds to a */request/info/thing-type-id/* element value. The *thing-type-id* child element MUST match the requested *thing-type-id*. *Online-access-permissions* indicates the *permission* the application has for the thing type when operating with a user logged-in and using the application. *Offline-access-permissions* indicates the *permission* the application has for the thing type when operating on behalf of a user without him/her logged in and using the application. Values for *permission* are as follows:

Value	Meaning
All	The application has Create, Read, Update and Delete Permissions.
Create	The application can create instances of this thing type through the *putthings* method.
Read	The application can read instances of this thing type through the *getthings* method.
Update	The application can update instances of this thing type through the *putthings* method.
Delete	The application can delete instances of this thing type through the *removethings* method.

8.2 Retrieve Type Information

An application can retrieve information on the unique structure of a particular thing type using the *getthingtype* method. The info element schema is *info* defined in method-getthingtype.xsd

```
<info>
    <id />*
    <section />*
    <image-type />*
    <last-client-refresh />?
</info>
```

Id is the Globally Unique Identifier (GUID) that is assigned to the thing type in the HealthVault Service. This *id* corresponds to the entry in the */thing/thing-type/* element of the *wc-thing*:*thing* structure. Each *section* element can contain one of the following section names and the HealthVault Service MUST return only the corresponding elements in the *getthingtypes* response.

Section Name	Included Elements
Core	uncreatable, immutable, singleton
Xsd	Xsd
columns	Columns
transforms	Transforms
transformsource	Transformsource

Image element is always returned.

Image-type contains the MIME type [RFC2045] of the image to be returned. All images corresponding to the specific MIME type MUST be returned. The wildcard character '*' SHOULD be used to denote the retrieval of all image types.

Last-client-refresh is the UTC date time indicating the previous time this method was called. The HealthVault Service MUST return the thing types and their information that have been updated since *last-client-refresh*. It may be possible that a */request/info/id/* element is valid but the thing type definition has not been updated since *last-client-refresh* thus no corresponding information will be returned.

Example Request

```
<info>
    <id>ca3c57f4-f4c1-4e15-be67-0a3caf5414ed</id>
    <section>core</section>
    <section>xsd</section>
    <image-type>image/jpeg</image-type>
</info>
```

The associated response is defined by *info* element in response-getthingtype.xsd

```
<info>
    (<thing-type>
        <id />
        <name />
```

```
        <uncreatable />?
        <immutable />?
        <singleton />?
        <xsd />?
        (<columns>
            <column tag label type width visible />*
        </columns>)?
        (<transforms>
            <tag />*
        </transforms>)?
        <transform-source tag />*
        <image mime-type />*
    </thing-type>)*
</info>
```

Thing-type is resulting element of a */request/info/id/* element. *Id* contains the unique identifier for the thing type and *name* is a user friendly name for the thing type. *Uncreatable* is a flag that indicates whether the thing type is not in service and applications cannot create instances of things based on this type; a default value of false is assumed. *Immutable* is a flag that indicates whether an instance of a thing can be created but cannot be updated; a default value of false is assumed. *Singleton* is a flag indicating whether there can be only one instance of this thing type within a single record; a default value of false is assumed.

Xsd contains the schema for the thing type. HealthVault Service MUST validate any instances of the */request/info/thing/* element of the *putthings* method against this corresponding schema.

Columns contains information regarding the presentation of the thing type. The *tag* attribute is a short name and *label* is the displayed name. The *type* element describes the type of data in the column and *width* is the column width.

Transforms contains zero or more *tag* elements used to identify XML Transformations [W3CXSLT] that can be applied to this thing type. See Provisioning Thing Types for details about thing type transforms and their tags.

Transform-source contains the XML Transformation [W3CXSLT] source that will be applied to the thing instance when required. The *tag* attribute is the unique tag used to identify the transform source for the specific thing type.

Example Request

```
<info>
    <id>3d817dbe-af42-4a9d-a553-d1298b4d08fc</id>
    <section>core</section>
    <section>xsd</section>
    <section>columns</section>
    <section>transforms</section>
    <section>transformsource</section>
</info>
```

Example Response

```
<info xmlns:wc="urn:com.microsoft.wc.methods.response.GetThingType">
    <thing-type>
        <id>3d817dbe-af42-4a9d-a553-d1298b4d08fc</id>
        <name>Immunization</name>
        <uncreatable>false</uncreatable>
        <immutable>false</immutable>
        <singleton>false</singleton>
        <xsd>&lt;schema xmlns:immunization=&quot;urn…
&gt;&lt;/schema&gt;</xsd>
        <columns>
            <column tag="what" label="Immunization" type="String"
width="100" visible="true"/>
            <column tag="when" label="Date Administered" type="String"
width="50" visible="true"/>
            …
        </columns>
        <transforms>
            <tag>form</tag>
            <tag>mtt</tag>
            <tag>stt</tag>
        </transforms>
        <transform-source tag="form">&lt;xsl:stylesheet
xmlns:xsl=&quot;http…stylesheet&gt;
        </transform-source>
    </thing-type>
</info>
```

8.3   Codable Values

Codable values are found throughout HealthVault Service Thing Types. It is a structure that permits a value to associate well-known vocabulary code items as well as free form text. The codable value structure is defined in types.xsd

```
<codable-value>
    <text />
    <code>
        <value />
        <family />?
        <type />?
        <version />?
    </code>*
</codable-value>
```

The *text* element contains a free form text for the code value. Zero or more *code* entries are possible which contain vocabulary code item information. The *value*, *family*, *type* and *version* are attributes of the code value as outlined in Vocabularies.

8.4   Common Types

Within many of the thing types there are several common complex types that are used.

8.4.1 Person

Person is defined by the Person complex type in types.xsd

```
<person>
    <name>
        <full />
        <title />?
        <first />?
        <middle />?
        <last />?
        <suffix />?
    </name>
    <organization />?
    <professional-training />?
    <id />?
    <contact>
        <address>
            <description />?
            <is-primary />?
            <street />+
            <city />
            <state />?
            <postcode />
            <country />
        </address>*
        <phone>
            <description />?
            <is-primary />?
            <number />
        </phone>*
        <email>
            <description />?
            <is-primary />?
            <address />
        </email>*
        <type />?
    </contact>?
</person>
```

Name contains naming information for the individual. *Full* contains free form text of the person's name. It SHOULD be the combination of *title first middle last* and *suffix*. *Title* is a codable value from a Name Title vocabulary that indicates the person's title. *First*, *middle*, and *last* are the person's first, middle and last name respectively. *Suffix* is a codable value from a Name Suffix vocabulary that indicates the person's suffix.

Organization is a string identifying the person's organizational affiliation in the context of this instance. *Professional-training* is a string identifying the person's professional accreditations in the context of this instance. *Id* is an optional string further identifying the person as pertaining to their organization or professional licensure.

Contact contains information on contacting this person. There can be zero or more *address* elements. In the *address* element is a free-form *description* of the address and a Boolean value *is-primary*

27 March 2009 - Version 1
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indicating whether this address is their primary address location. If *is-primary* is not present, a default value of false is assumed. One or more *street* elements identify the street information. *City*, *state* and *country* identify the city, state and country the address belongs to, respectively. *Postcode* is the code used by the country's postal system to locate the address.

In each of the zero or more *phone* elements is a free-form description of the address and a Boolean value is-primary. If is-primary is not present, a default value of false is assumed. The number element contains a free form text of the person's phone number.

In each of the zero or more *phone* elements is a free-form description of the address and a Boolean value *is-primary*. If *is-primary* is not present, a default value of false is assumed. The *address* element contains a free form text of the person's email address.

Type is a codable value from a Peron Type vocabulary indicating what type of contact this person is.

8.4.2 DateTime

DateTime is defined by the date-time complex type in dates.xsd

```
<date-time>
    <date>
        <y />
        <m />
        <d />
    </date>
    <time>
        <h />
        <m />
        <s />?
        <f />?
    </time>?
    <tz />?
</date-time>
```

Date contains *y*, *m*, *d* which are the 1-index based Gregorian calendar year, month and day respectively. *Time* contains *h*, *m*, *s*, *f* which are the hour, minute, seconds and milliseconds respectively. *Tz* contains the codable value from a Time Zone vocabulary source indicating the time zone this date belongs in. If not present, a default of UTC (GMT) SHOULD be assumed.

8.4.3 Approximate DateTime

Approximate DateTime is used when the specific point in time is not well known or forgotten. It is defined by the approx-date-time complex type in dates.xsd

```
<approx-date-time>
    <structured>
        <date>
            <y />
            <m />?
            <d />?
        </date>
        <time>
```

```
        <h />
        <m />
        <s />?
        <f />?
    </time>?
    <tz />?
<structured />|
<descriptive />
</approx-date-time>
```

The *structured* element contains a *date*, *time*, and *tz* elements that behave the same as the DateTime Structure. The variation here is that *month* and *day* are OPTIONAL. The *descriptive* element contains a text description that helps to better identify the approximate date time.

8.4.4 Structured Measurement

Structured Measurement is used to describe a value and unit pair and is defined by the structured-measurement complex type in base.xsd

```
<structured-measurement>
    <value />
    <units />
</structured-measurement>
```

Value stores the value of the measurement as double. The *units* element stores the units for the measurement as a codable-value with a preferred vocabulary of measurement-unit-sets.

8.4.5 General Measurement

General Measurement is used to store structured-measurements along with a display representation of those measurements. This is defined by the general-measurement complex type in base.xsd

```
<general-measurement>
    <display />
    <structured />*
</general-measurement>
```

Display stores a user-readable string that applications would typically display to the user. The *structured* element stores 0 or more coded values of the measurement and is typically used by applications for calculations, charting or graphing.

8.5   Thing Type Schemas

The following outlines the significant thing types used in the HealthVault Service. Additional thing type schemas are available in the HealthVault Thing Type Schemas Section.

8.5.1 Allergy

The allergy thing type is defined by the allergy element in allergy.xsd.

```
<allergy>
    <name />
    <reaction />?
    <first-observed />?
```

```
        <allergen-type />?
        <allergen-code />?
        <treatment-provider />?
        <treatment />?
        <is-negated />?
</allergy>
```

Name is a user-friendly description of the allergy. *Reaction* is a codable value from an Ailment Vocabulary identifying the reaction to the allergen. *First-observed* is an approximate date time of when the allergy was first observed. *Allergen-type* is a codable value from an Allergens Family Vocabulary identifying the type of allergen that invokes this allergic response. *Allergen-code* is a codable value from an Ailment Vocabulary that identifies the particular allergen of this allergy.

Treatment-provider is a person that is/was issuing treatments for this allergy. *Treatment* is a codable value from a Treatments Vocabulary that identifies the treatments of this allergy. *Is-negated* is a Boolean value indicating whether the treatment is able to negate this allergy (true) or not (false).

8.5.2 Basic Demographic Information

Basic Demographic Information defines a set of data about the health record that is considered not to be personally-identifiable. Unlike the personal demographic information, this data is considered to be less sensitive in nature. Basic Demographic Information is defined by the basic element in basic.xsd.

```
<basic>
    <gender />?
    <birthyear />?
    <country />?
    <postcode />?
    <city />?
    <state />?
    <firstdow />?
    <language />*
        <language />?
        <is-primary />?
</basic>
```

Gender stores the person's gender as either [m]ale or [f]emale as a string where "m" is the value indicating a male and "f" is the value indicating a female. *Birthyear* is an integer between 1000 and 3000 describing the year the person was born. *Country* is a string representation of the country of residence as an ISO-3166 two character code. *Postcode* is a string describing the country specific postal code. *City* is the city of residence stored as a string. The state or province of the residence is stored as a string in *state*. The *firstdow* element stores the user preference for the first day of the week. The user can define which day of the week they want calendars and weekly computations to start with and is stored with 1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, 5 = Thursday, 6 = Friday, and 7 = Saturday. *Language* stores the list languages a person speaks as a codable-value with a preferred vocabulary of iso:iso639-1 as well as the *is-primary* boolean element describing if that language is the primary language of the person. If true, the language is the preferred spoken language of the person.

Example

```
<basic>
    <gender>m</gender>
    <birthyear>1949</birthyear>
    <country>US</country>
    <postcode>20010</postcode>
    <city>Washington D.C.</city>
    <state>DC</state>
    <firstdow>1</firstdow>
    <language>
        <language>
            <text>English</text>
            <code>
                <value>en</value>
                <family></family>
                <type>iso639-1</type>
                <version></version>
            </code>
        </language>
        <is-primary>true</is-primary>
    </language>
</basic>
```

8.5.3 Blood Glucose Measurement

Blood Glucose Measurement describes a single blood glucose reading and a is defined by the blood-glucose element in blood-glucose.xsd.

```
<blood-glucose>
    <when />
    <value >
        <mmolPerL />
        <display />?
    </value >
    <glucose-measurement-type />
    <outside-operating-temp />?
    <is-control-test />?
    <normalcy />?
    <measurement-context />?
</blood-glucose>
```

When stores the date-time value of when the reading was taken.

Value is the blood glucose measurement. A blood glucose measurement consists of the value in millimoles per liter (mmol/L), which is the base unit of measurement for blood glucose – stored as *mmolPerL*, and an optional *display* value. The display value is used to store the blood glucose measurement in the user's preference of measurement units. This avoids rounding errors when converting to and back from mmol/L.

Glucose-measurement-type is an enumeration of the possible blood glucose measurement types, whole blood or plasma (serum) and is stored as a codable-value with the glucose-measurement-type as the preferred vocabulary. *Outside-operating-temp* indicates whether the reading is outside the operating

27 March 2009 - Version 1

temperature range of the device that made the reading and is stored as a boolean. *Is-control-test* stores whether the reading was the result of a control test and is stored as a boolean. *Normalcy* describes how the reading compares to normal blood glucose concentrations (usually the same as the measurement range of the device that made the reading). The value ranges from one to five with 1 being much lower than a normal reading, 2 being lower than a normal reading, 3 being equivalent to a normal reading, 4 being higher than a normal reading and 5 being much higher than a normal reading. *Measurement-context* is a codable-value that indicates contextual information about the reading and has a preferred vocabulary of glucose-measurement-context.

Example

```
<blood-glucose>
    <when>
        <date>
            <y>2009</y>
            <m>1</m>
            <d>12</d>
        </date>
        <time>
            <h>8</h>
            <m>06</m>
            <s>0</s>
            <f>0</f>
        </time>
    </when>
    <value>
        <mmolPerL>3.774423</mmolPerL>
        <display units="mg/dL">68</display>
    </value>
    <glucose-measurement-type>
        <text>Plasma</text>
    </glucose-measurement-type>
    <outside-operating-temp>true</outside-operating-temp>
    <is-control-test>true</is-control-test>
    <normalcy>1</normalcy>
    <measurement-context>
        <text>after meal</text>
        <code>
            <value>after meal</value>
            <family>wc</family>
            <type>glucose-measurement-context</type>
            <version>1</version>
        </code>
    </measurement-context>
</blood-glucose>
```

8.5.4 Blood Pressure
Blood Pressure describes a single blood pressure reading and is defined by the blood-pressure element in bp.xsd.

```
<blood-pressure>
    <when />
    <systolic />
    <diastolic />
    <pulse />?
    <irregular-heartbeat />?
</blood-pressure>
```

When stores the date-time value of when the reading was taken. *Systolic* stores the systolic pressure at the time of the reading as a non-negative integer. The systolic pressure is the peak pressure in the arteries during a cardiac cycle. It is measured in millimeters of mercury (mmHg). *Diastolic* stores the diastolic pressure at the time of the reading as a non-negative integer. The diastolic pressure is the lowest pressure in the arteries during a cardiac cycle. It is measured in millimeters of mercury (mmHg). *Pulse* stores the person's pulse rate at the time of the reading. The pulse is measured in beats per minute and stored as a non-negative integer. *Irregular-heartbeat* indicates whether an irregular heartbeat (arrhythmia) was detected when the measurement was taken. The irregular heartbeat is a boolean indicator.

Example

```
<blood-pressure>
    <when>
        <date>
            <y>2009</y>
            <m>1</m>
            <d>12</d>
        </date>
        <time>
            <h>8</h>
            <m>06</m>
            <s>0</s>
            <f>0</f>
        </time>
    </when>
    <systolic>120</systolic>
    <diastolic>80</diastolic>
    <pulse>78</pulse>
    <irregular-heartbeat>false</irregular-heartbeat>
</blood-pressure>
```

8.5.5 Cholesterol Profile (Lipid Profile)

Cholesterol Profile stores cholesterol test results, also referred to as lipid profile and covers primary cholesterol/lipid profile test readings. It is defined by the cholesterol-profile element in cholesterol-profile.xsd.

```
<cholesterol-profile>
    <when />
    <ldl />?
    <hdl />?
```

```
    <total-cholesterol />?
    <triglyceride />?
</cholesterol-profile>
```

When stores the date value of when the reading was taken. *Ldl* stores the low density lipoprotein cholesterol as a positive integer. The LDL test measures how much low-density lipoprotein (LDL) cholesterol in the blood. Increased levels of LDL cholesterol are associated with atherosclerosis. LDL cholesterol is measured in mg/dL. *Hdl* stores the high density lipoprotein cholesterol as a positive integer. HDL stands for high density lipoprotein cholesterol, a form of "good" cholesterol. Proteins in the blood that move cholesterol, triglycerides, and other lipids to various tissues are lipoproteins. HDL cholesterol is measured in mg/dL. *Total-cholesterol* is a rough measure of all the cholesterol and triglycerides in your blood. Total cholesterol is measured in mg/dL and stored as a positive integer. Triglycerides are a type of fat. Your body makes some triglycerides. Triglycerides also come from the food you eat. *Triglyceride* stores this value as a positive integer and is measured in mg/dL.

Example

```
<cholesterol-profile>
    <when>
        <y>2009</y>
        <m>1</m>
        <d>12</d>
    </when>
    <ldl>125</ldl>
    <hdl>42</hdl>
    <total-cholesterol>185</total-cholesterol>
    <triglyceride>146</triglyceride>
</cholesterol-profile>
```

8.5.6 Emotional State

Emotional State is a subjective record of an emotional state and is defined by the emotion element in emotion.xsd.

```
<emotion>
    <when />
    <mood />?
    <stress />?
    <wellbeing />?
</emotion>
```

When stores the date-time value of when the emotional state occurred. *Mood* is a subjective ranking of the emotional state stored as an integer. The value ranges from one to five, with one being sad and five being very happy. *Stress* is a subjective ranking of the person's stress level stored as an integer. The value ranges from one to five, with one being relaxed to five being stressed. *Wellbeing* is a subjective ranking of the person's health stored as an integer. The value ranges from one to five, with one being sick to five being healthy.

Example

```
<emotion>
    <when>
        <date>
            <y>2009</y>
            <m>1</m>
            <d>12</d>
        </date>
        <time>
            <h>8</h>
            <m>06</m>
            <s>0</s>
            <f>0</f>
        </time>
    </when>
    <mood>2</mood>
    <stress>3</stress>
    <wellbeing>2</wellbeing>
</emotion>
```

8.5.7 Exercise

Exercise records the completion of an exercise and is defined by the exercise element in exercise.xsd.

```
<exercise>
    <when />
    <activity />
    <title />?
    <distance />?
    <duration />?
    <detail >
        <name />
        <value >
            <value />
            <units />
        </value >
    </detail >*
    <segment >
        <activity />
        <title />?
        <distance />?
        <duration />?
        <offset />?
        <detail />*
    </segment >*
</exercise>
```

When stores the approximate date and time value of when the exercise occurred. *Activity* is stored as a codable-value with preferred vocabularies of exercise-activities and aerobic-activities that describe the overall activity for the exercise period such as running, hiking, walking, golfing and dancing. *Title* is a descriptive title for the exercise and is stored as a string. *Distance* stores a length-value describing the

distance in meters covered in the exercise as well as a display value stored in the users's preference of units. *Duration* is a positive double that stores the length of time in minutes of the exercise.

Detail describes additional information about the exercise. The detail information typically stores information that is specific to the type of exercise activity and any device used to measure it. Examples include Average heart rate, total distance, average temperature, intensity. *Name* is a coded-value with a preferred vocabulary of exercise-detail-name which describes the name and units of the detail. *Value* is a structured measurement which describes the *value* as a double and *units* as a codable-value with a preferred vocabulary of exercise-units.

Segment describes information pertaining to a portion of the overall exercise. This is typically used to store information about separate laps in a race or individual events within a triathlon. All elements within a segment are identical in structure to those at the higher exercise level.

Example

```
<exercise>
    <when>
        <structured>
            <date>
                <y>2009</y>
             <m>1</m>
             <d>12</d>
            </date>
        </structured>
    </when>
    <activity>
        <text>Triathlon</text>
        <code>
            <value>Triathlon</value>
            <family>wc</family>
            <type>exercise-activities</type>
            <version>1</version>
        </code>
    </activity>
    <title>Lake Sammamish Triathlon</title>
    <duration>86.57</duration>
    <detail>
        <name>
            <value>AverageHeartrate_BPM</value>
            <family>wc</family>
            <type>exercise-detail-names</type>
            <version>1</version>
        </name>
        <value>
            <value>135</value>
            <units>
                <text>BPM</text>
                <code>
                    <value>BPM</value>
                    <family>wc</family>
                    <type>exercise-units</type>
```

```
                    <version>1</version>
                </code>
            </units>
        </value>
    </detail>
    <detail>
        <name>
            <value>MaxHeartrate_BPM</value>
            <family>wc</family>
            <type>exercise-detail-names</type>
            <version>1</version>
        </name>
        <value>
            <value>188</value>
            <units>
                <text>BPM</text>
                <code>
                    <value>BPM</value>
                    <family>wc</family>
                    <type>exercise-units</type>
                    <version>1</version>
                </code>
            </units>
        </value>
    </detail>
    <segment>
        <activity>
            <text>Swimming</text>
            <code>
                <value>Swimming</value>
                <family>wc</family>
                <type>exercise-activities</type>
                <version>1</version>
            </code>
        </activity>
        <title>Swim leg</title>
        <distance>
            <m>400</m>
            <display units="meters">400</display>
        </distance>
        <duration>7.03</duration>
        <offset>0</offset>
    </segment>
    <segment>
        <activity>
            <text>T1</text>
        </activity>
        <title>T1</title>
        <duration>3.19</duration>
        <offset>7.03</offset>
    </segment>
    <segment>
        <activity>
            <text>Bicycling</text>
            <code>
```

```
                    <value>Bicyling</value>
                    <family>wc</family>
                    <type>exercise-activities</type>
                    <version>1</version>
                </code>
            </activity>
            <title>Bike leg</title>
            <distance>
                <m>22691.7504</m>
                <display units="miles">14.1</display>
            </distance>
            <duration>45.80</duration>
            <offset>10.22</offset>
        <segment>
            <activity>
                <text>T2</text>
            </activity>
            <title>T2</title>
            <duration>2.09</duration>
            <offset>56.02</offset>
        </segment>
        <segment>
            <activity>
                <text>Running</text>
                <code>
                    <value>Running</value>
                    <family>wc</family>
                    <type>exercise-activities</type>
                    <version>1</version>
                </code>
            </activity>
            <title>Run leg</title>
            <distance>
                <m>5000</m>
                <display units="miles">3.107</display>
            </distance>
            <duration>28.46</duration>
            <offset>58.11</offset>
        </segment>
</exercise>
```

8.5.8 HbA1C Measurement

HbA1C Measurement describes a test that measures the amount of glycosylated hemoglobin in your blood. This stores a single HbA1C reading and is defined by the HbA1C element in HbA1C.xsd.

```
<HbA1C>
    <when />
    <value />
    <HbA1C-assay-method />?
    <device-id />?
</HbA1C>
```

When stores the date-time value of when the reading was taken. *Value* is the HbA1C measurement as a percentage. *HbA1C-assay-method* is the HbA1C reference method used for this measurement. The measurement of HbA1c in human blood is most important for the long term control of the glycaemic state in diabetic patients. There is no internationally agreed assay measurement method. This value is stored as a codable-value with a preferred vocabulary of HbA1C-assay-method. *Device-id* is the unique id or serial number for the measurement device stored as a string. If available, this value can be used to correlate results.

Example

```
<HbA1C>
    <when>
        <date>
            <y>2009</y>
            <m>1</m>
            <d>12</d>
        </date>
        <time>
            <h>8</h>
            <m>06</m>
            <s>0</s>
            <f>0</f>
        </time>
    </when>
    <value>.08</value>
    <HbA1C-assay-method>
        <text>International Federation of Clinical Chemistry and
Laboratory Medicine (IFCC)</text>
        <code>
            <value>IFCC</value>
            <family>wc</family>
            <type>HbA1C-assay-method</type>
            <version>1</version>
        </code>
    </HbA1C-assay-method>
    <device-id>Fabrikam123456</device-id>
</HbA1C>
```

8.5.9 Medication

Medication describes information related to a medication and is defined by the medication element in medication.xsd.

```
<medication>
    <name />
    <generic-name />?
    <dose />?
    <strength />?
    <frequency />?
    <route />?
    <indication />?
    <date-started />?
    <date-discontinued />?
```

```
    <prescribed />?
    <prescription >
        <prescribed-by />
        <date-prescribed />?
        <amount-prescribed />?
        <substitution />?
        <refills />?
        <days-supply />?
        <prescription-expiration />?
        <instructions />?
    </prescription >?
</medication>
```

Name is the name and clinical code for the medication stored as a codable-value with preferred vocabularies of Rxnorm and NDC. The name should be understandable to the person taking the medication, such as the brand name. The *generic-name* is identical to the *name* element except that it stores the generic name of the medication rather than the brand name. *Dose*, *strength*, and *frequency* are general-measurements that store the dose of medication, strength of the medication, and how often the medication is taken (respectively). Route describes the route of the medication and is stored as a codable-value with a preferred vocabulary of medication-routes. The indication for medication is stored in the *indication* element as a codable-value. The *Date-started* and *date-discontinued* elements store the approximate date and time when the medication was started and discontinued. The *prescribed* element is a codable-value that describes the source of the prescription and has a preferred vocabulary of medication-prescribed. A medication that is prescribed by a physician should code "prescribed" into this element.

Prescription describes the detail of a prescribed medication. Self-prescribed medications generally would not include this information. *Prescribed-by* is the person who prescribed this medication. *Date-prescribed* is an approximate date and time when the medication was prescribed. *Amount-prescribed* is the amount of medication prescribed and is stored as a general-measurement. *Substitution* is a codable-value describing whether or not a substitution is permitted and has a preferred vocabulary of medication-substitution. The *refills* element is a non-negative integer that stores the number of medication refills. *Days-supply* is a positive integer that stores the total number of days supply for this medication. *Prescription-expiration* is stored as a date and is when the prescription expires. The *instructions* element stores any medication instructions as a codable-value.

Example

```
<medication>
    <name>
        <text>Motrin</text>
    </name>
    <generic-name>
        <text>Ibuprofen</text>
    </generic-name>
    <dose>
        <display>1 tablet</display>
    </dose>
```

```xml
<strength>
    <display>100mg</display>
    <structured>
        <value>100</value>
        <units>
            <text>mg</text>
        </units>
    </structured>
</strength>
<frequency>
    <display>Twice a day</display>
    <structured>
        <value>2</value>
        <units>
            <text>per day</text>
        </units>
    </structured>
</frequency>
<route>
    <text>oral</text>
</route>
<indication><text>Malaise</text></indication>
<date-started>
    <structured>
        <date>
            <y>2001</y>
            <m>1</m>
            <d>1</d>
        </date>
    </structured>
</date-started>
<date-discontinued>
    <structured>
        <date>
            <y>2002</y>
            <m>1</m>
            <d>1</d>
        </date>
    </structured>
</date-discontinued>
<prescribed>
    <text>Prescribed - OTC</text>
</prescribed>
<prescription>
    <prescribed-by>
        <name>
            <full>Dr. Smith</full>
        </name>
    </prescribed-by>
    <date-prescribed>
        <structured>
            <date>
                <y>1999</y>
                <m>12</m>
                <d>31</d>
```

```
                </date>
            </structured>
        </date-prescribed>
        <amount-prescribed>
            <display>1000 tablets</display>
            <structured>
                <value>1000</value>
                <units>
                    <text>tablets</text>
                </units>
            </structured>
        </amount-prescribed>
        <substitution>
            <text>Dispense as written</text>
        </substitution>
        <refills>1</refills>
        <days-supply>100</days-supply>
        <prescription-expiration>
            <y>2100</y>
            <m>1</m>
            <d>1</d>
        </prescription-expiration>
        <instructions><text>Take as needed with
water</text></instructions>
    </prescription>
</medication>
```

8.5.10   Peak Flow Measurement

Peak Flow Measurement describes the measurements that are typically collected on a daily basis by patients to track their lung function. This is defined by the peak-flow element in peak-flow.xsd.

```
<peak-flow>
    <when />
    <pef />?
    <fev1 />?
    <fev6 />?
    <measurement-flags />*
</peak-flow>
```

When stores the approximate date and time value of when the measurement was taken. *Pef* is the peak expiratory flow, measured in liters/second. *Fev1* is the forced expiratory volume in one second, measured in liters. Fev6 is the forced expiratory volume in six seconds, measured in liters. *Measurement-flags* describe additional information about the measurement such as an incomplete measurement and are stored as a codable-value.

Example

```
<peak-flow>
    <when>
        <structured>
            <date>
```

```
            <y>2009</y>
            <m>1</m>
            <d>12</d>
        </date>
        <time>
            <h>8</h>
            <m>06</m>
            <s>0</s>
            <f>0</f>
        </time>
          </structured>
    </when>
    <pef>
        <liters-per-second>8.33</liters-per-second>
        <display units="liters/minute">500</display>
    </pef>
    <fev1>
        <liters>1.58</liters>
        <display units="liters">1.58</display>
    </fev1>
    <fev6>
        <liters>1.72</liters>
    </fev6>
    <measurement-flags>
        <text>Successful measurement</text>
    </measurement-flags>
    <measurement-flags>
        <text>Very successful measurement</text>
    </measurement-flags>
</peak-flow>
```

8.5.11   Weight Measurement

Weight Measurement describes a single weight measurement and is defined by the weight element in weight.xsd.

```
<weight>
    <when />
    <value >
        <kg />
        <display units units-code />>?
    </value >
</weight>
```

When stores the date-time value of when the reading was taken. *Value* describes the value of the weight measurement. This measurement is stored kilograms within the *kg* element and has an associated *display* value which contains the weight measurement value stored in the user's preference of units.

Example

```
<weight>
```

```
    <when>
        <date>
            <y>2009</y>
            <m>1</m>
            <d>12</d>
        </date>
        <time>
            <h>8</h>
            <m>06</m>
            <s>0</s>
            <f>0</f>
        </time>
    </when>
    <value>
        <kg>80.059053305</kg>
        <display units="lb">176.5</display>
    </value>
</weight>
```

9. Vocabularies

Vocabularies are a collection of terms, called vocabulary items, that are used to identify standard conventions between applications, such as a list of blood types or medications. Vocabularies in the HealthVault Service MUST have the following information:

- ID – a unique identifier (GUID) used when referring to the vocabulary.
- Family – The grouping of vocabularies that have similar information or similar sources. E.g. iso
- Name – The name of the vocabulary. E.g. iso3166
- Version – The version of the vocabulary. E.g. 1.0
- Description – A user friendly description of the vocabulary
- Culture Code – A code indicating the vocabulary culture. E.g. en-US
- Flag indicating it's active status

The combination of Name and Version MUST resolve to a unique vocabulary instance. Only one version of a vocabulary MUST be considered active.

Within a vocabulary, each item MUST contain the following information

- Code Value - The unique value for the item within the vocabulary
- Display Text – A user friendly description of the code value

Each Code Value MUST be unique within the vocabulary instance.

9.1 Retrieve Vocabulary

An application can retrieve content of a vocabulary using the *getvocabulary* method. The info element is defined by *info* in method-getvocabulary.xsd.

```
<info>
    (<vocabulary-parameters>
```

```
        (<vocabulary-key>
            <name />
            <family />?
            <version />?
            <code-value />?
        </vocabulary-key>)+
        <fixed-culture />
    </vocabulary-parameters>)?
</info>
```

If *vocabulary-parameters* is present the HealthVault Service MUST use its parameters to return specific vocabulary code values. If it is not present, then the result set is the list of all the vocabularies present in the HealthVault Service excluding their code values.

The one or more *vocabulary-key* elements contain the identifiable information on the vocabularies to retrieve code-values from. *Name*, *family* and *version* correspond to the attributes of the vocabulary as outlined in [Vocabularies](#). If *family* is not specified, a default *wc* family SHOULD be assumed. If *version* is not specified, the vocabulary version considered active SHOULD be assumed.

If *code-value* is specified then the HealthVault Service MUST return a pre-determined maximum number of vocabulary code values after *value*, sorted alphabetically ascending. This provides a paging mechanism for code values. The pre-determined maximum number of code values to return SHOULD be communicated as a configuration in a */response/info/platform/configuration/* element of the *getservicedefinition* method.

Example

```
<info>
    <vocabulary-parameters>
        <vocabulary-key>
            <name>distance-units</name>
        </vocabulary-key>
        <fixed-culture>true</fixed-culture>
    </vocabulary-parameters>
</info>
```

The corresponding response is defined by the *info* element in response-getvocabulary.xsd

```
<info>
    (<vocabulary>
        <name />
        <family />
        <version />
        <code-item>
            <code-value />
            <display-text />?
            <info-xml />?
        </code-item>*
        <is-vocab-truncated />?
    </vocabulary>)+ |
    (<vocabulary-key>
```

```
        <name />
        <family />?
        <version />?
        <value />?
        <description />?
    </vocabulary-key>)+
</info>
```

If the */request*/*info*/*vocabulary-parameters*/ element is not present, then a sequence of one or more /response/info/*vocabulary-key*/elements are returned that contain information on the vocabulary. Its *name*, *family*, *version* and *description* elements correspond to the attributes of the vocabulary as outlined in [Provisioning Vocabularies](). The *value* element is not used in this context.

If the */request*/*info*/*vocabulary-parameters*/ element was present in the request, then the one or more vocabulary elements that match the *vocabulary-key* child elements are returned along with their code values in accordance with the request's *code-value* element behavior.

Example

```
<info xmlns:wc="urn:com.microsoft.wc.methods.response.GetVocabulary">
    <vocabulary>
        <name>distance-units</name>
        <family>wc</family>
        <version>1</version>
        <code-item>
            <code-value>cm</code-value>
            <display-text>centimeters</display-text>
            <abbreviation-text>cm</abbreviation-text>
            <info-xml>
                <conversion-to-standard>0.01</conversion-to-standard>
            </info-xml>
        </code-item>
        <code-item>
            <code-value>ft</code-value>
            <display-text>feet</display-text>
            …
        </code-item>
    </vocabulary>
</info>
```

In the above example, the *conversion-to-standard* element is the free-form xml document that is appended to this code item.

If *fixed-culture* is set to false, the platform MUST look for the vocabulary items for the culture info specified in the request header. If items are not found for the specified culture, items for the default fallback culture are returned. If *fixed-culture* is set to true, fallback will not occur and if items are not found for the specified culture empty strings will be returned.

9.2 Search for Vocabulary Terms

An application may wish to normalize a term to well known HealthVault Service vocabulary terms. In such case, they would request the *searchvocabulary* method whose *info* element is defined by info in method-searchvocabulary.xsd.

```
<info>
    <vocabulary-key>
        <name />
        <family />?
        <version />?
        <code-value />?
    </vocabulary-key>?
    <text-search-parameters>
        <search-string search-mode? />
        <max-results />?
    </text-search-parameters>
</info>
```

Vocabulary-key contains information regarding the vocabulary to be searched.   If *vocabulary-key* is present then the search is performed on the code values of the specified vocabulary. If *family* is not specified, a default *wc* family MUST be assumed. If *version* is not specified, the vocabulary version considered active MUST be assumed.

If *code-value* is specified then the HealthVault Service MUST return *max-results* number of vocabulary code values after *value*, sorted alphabetically ascending, are returned. This provides a paging mechanism for code values.

If *vocabulary-key* is not present, then the search MUST be conducted over the vocabulary attributes of family, name, and version, where the results will match to vocabularies instead of their code values.

Text-search-parameters contains the parameters of the textual search. *Search-string* contains the string that is to be compared against the values being searched. If it a vocabulary attribute search (*vocabulary-key* was not specified) then the *search-string* is compared against the family, version, and name attributes of all vocabularies. If it is a term search (*vocabulary-key* was specified) then the *search-string* is compared against the code value and its display text.

Search-mode is used to denote the type of search to perform; allowable values are *Prefix* which performs a prefix matching on the code value, and *Contains* which performs substring matching on the code value.

The *text-search-parameters* apply to the culture specified in the request header by language and country. If the country is absent, items for the language are searched. If language is absent, items for the default culture of the system are searched.

Searches MUST be case insensitive.

Max-results indicates the maximum number of results that the HealthVault Service MUST return to the calling application to prevent saturation of results and potential processing issues. If *max-results* is not

27 March 2009 - Version 1

specified, a pre-determined maximum number of total code values SHOULD be returned. This maximum SHOULD be communicated as a configuration in a */response/info/platform/configuration/* element of the *getservicedefinition* method response.

Example

```
<info>
    <vocabulary-key>
        <name>iso3166</name>
        <family>iso</family>
        <version>1.0</version>
    </vocabulary-key>
    <text-search-parameters>
        <search-string search-mode="Prefix">an</search-string>
    </text-search-parameters>
</info>
```

The expected search results are code values because a *vocabulary-key* was specified in this request.

The corresponding response is defined by the *info* element in response-searchvocabulary.xsd.

```
<info>
    (<vocabulary-key>
        <name />
        <family />?
        <version />?
        <code-value />?
    </vocabulary-key>)* |
    <code-set-result>
        <name />
        <family />
        <version />
        (<code-item>
            <code-value />
            <display-text />
        </code-item>)*
        <is-vocab-truncated />?
    </code-set-result>
</info>
```

If */request/info/vocabulary-key/* element was not specified, then the search is performed over the attributes of the vocabulary. The result is zero or more *vocabulary-key* elements contain the vocabularies that matched the search criteria. *Name*, *family*, and *version* correspond to the attributes of the vocabulary. *Code-value* is not used in this context.

 If */request/info/vocabulary-key/* element was specified, then the search is performed over the code values of the vocabulary that matched the criteria in the vocabulary-key. *Code-set-result* contains the vocabulary that was searched and corresponds to */request/info/vocabulary-key/* child elements with the default values for *name*, *family* and *version* explicitly identified. *Code-item* contains the *code-value* and *display-text* of the item that matched the search criteria.

Is-vocab-truncated is a boolean value indicating whether the retuned results were a subset of the vocabulary code values (true) or the complete set (false). In order to retrieve the remainder of the values, an application SHOULD submit another request to *searchvocabulary* with the last code value returned as the */request/info/vocabulary-key/code-value/* element.

Example

```xml
<info xmlns:wc="urn:com.microsoft.wc.methods.response.SearchVocabulary">
    <code-set-result>
        <name>iso3166</name>
        <family>iso</family>
        <version>1.0</version>
        <code-item>
            <code-value>AI</code-value>
            <display-text>Anguilla</display-text>
        </code-item>
        <code-item>
            <code-value>AQ</code-value>
            <display-text>Antarctica</display-text>
        </code-item>
        <code-item>
            <code-value>AG</code-value>
            <display-text>Antigua and Barbuda</display-text>
        </code-item>
    </code-set-result>
</info>
```

9.3   Preferred Vocabularies

The following are the preferred vocabularies used in thing types. Some vocabularies have definitive sources while others are left to the HealthVault Service implementer to provide the necessary code values and display text as described.

9.3.1 Allergen Type

The Allergen Type vocabulary is listed as a preferred vocabulary in the Allergy thing type.

Code Value	Display Text
animal	animal
env	environmental
food	food
med	medication
plant	plant
animal	animal

env	environmental

9.3.2 Blood Types

The Blood Types vocabulary is listed as a preferred vocabulary in the Personal Demographic Information thing type.

Code Value	Display Text
A-	A-
A+	A+
AB-	AB-
AB+	AB+
B-	B-
B+	B+
O-	O-
O+	O+

9.3.3 Coverage Types

The Coverage Types vocabulary is listed as a preferred vocabulary in the Insurance Plan thing type.

Code Value	Display Text
1	Medical
2	Dental
3	Vision
4	Life
5	Other

9.3.4 Dose Purpose

The Dose Purpose vocabulary is listed as a preferred vocabulary in the Daily Medication Usage thing type.

Code Value	Display Text
ctrl	control
other	other
prev	prevention
rel	relief
undef	undefined

9.3.5 Education Level

The Education Level vocabulary is listed as a preferred vocabulary in the Personal Demographic Information thing type.

Code Value	Display Text
Col	Some College or Trade/Vocational School
ColG	College Graduate
Grad	Graduate or Professional School Beyond College
HS	Some High School, no diploma or GED
HSG	High School Graduate or GED
Pri	Primary schooling, eighth grade or less

9.3.6 Ethnicity Types

The Ethnicity Types vocabulary is listed as a preferred vocabulary in the Personal Demographic Information thing type and is based on OMB directive 15. See http://www.whitehouse.gov/omb/fedreg/1997standards.html for more information.

Code Value	Display Text
1	American Indian or Alaska Native
2	Asian
3	Black or African American
4	Hispanic or Latino

5	Native Hawaiian or Other Pacific Islander
6	White
7	Mixed Race
8	Other Race

9.3.7 ICD9CM

The [International Classification of Diseases, Clinical Modification](#) (ICD-9-CM) vocabulary is listed as a preferred vocabulary in the [Allergy](#) and [Medical Problem](#) thing types and is produced by the [Center for Disease Control](#).

9.3.8 Immunizations

The Immunizations vocabulary is listed as a preferred vocabulary in the [Immunization](#) thing type.

Code Value	Display Text
adenovirus, NOS	adenovirus vaccine, NOS
adenovirus, type 4	adenovirus vaccine, type 4, live, oral
adenovirus, type 7	adenovirus vaccine, type 7, live, oral
anthrax	anthrax vaccine
BCG	Bacillus Calmette-Guerin vaccine
botulinum antitoxin	botulinum antitoxin
chk	Chickenpox vaccine
cholera	cholera vaccine
CMVIG	cytomegalovirus immune globulin, intravenous
dengue fever	dengue fever vaccine
diphtheria antitoxin	diphtheria antitoxin
DT (pediatric)	diphtheria and tetanus toxoids, adsorbed for pediatric use
DTaP	diphtheria, tetanus toxoids and acellular pertussis

27 March 2009 - Version 1

	vaccine
DTaP, 5 pertussis antigens	diphtheria, tetanus toxoids and acellular pertussis vaccine, 5 pertussis antigens
DTaP, NOS	diphtheria, tetanus toxoids and acellular pertussis vaccine, NOS
DTaP-Hep B-IPV	DTaP-hepatitis B and poliovirus vaccine
DTaP-Hib	DTaP-Haemophilus influenzae type b conjugate vaccine
DTP	diphtheria, tetanus toxoids and pertussis vaccine
DTP-Hib	DTP-Haemophilus influenzae type b conjugate vaccine
DTP-Hib-Hep B	DTP-Haemophilus influenzae type b conjugate and hepatitis b vaccine
hantavirus	hantavirus vaccine
HBIG	hepatitis B immune globulin
Hep A, adult	hepatitis A vaccine, adult dosage
Hep A, NOS	hepatitis A vaccine, NOS
Hep A, ped/adol, 2 dose	hepatitis A vaccine, pediatric/adolescent dosage, 2 dose schedule
Hep A, ped/adol, 3 dose	hepatitis A vaccine, pediatric/adolescent dosage, 3 dose schedule
Hep A, pediatric, NOS	hepatitis A vaccine, pediatric dosage, NOS
Hep A-Hep B	hepatitis A and hepatitis B vaccine
Hep B, adolescent or pediatric	hepatitis B vaccine, pediatric or pediatric/adolescent dosage
Hep B, adolescent/high risk infant	hepatitis B, adolescent/high risk infant dosage
Hep B, adult	hepatitis B vaccine, adult dosage
Hep B, dialysis	hepatitis B vaccine, dialysis patient dosage
Hep B, NOS	hepatitis B vaccine, NOS

Hep C	hepatitis C vaccine
Hep E	hepatitis E vaccine
herpes simplex 2	herpes simplex virus, type 2 vaccine
Hib (HbOC)	Haemophilus influenzae type b vaccine, HbOC conjugate
Hib (PRP-D)	Haemophilus influenzae type b vaccine, PRP-D conjugate
Hib (PRP-OMP)	Haemophilus influenzae type b vaccine, PRP-OMP conjugate
Hib (PRP-T)	Haemophilus influenzae type b vaccine, PRP-T conjugate
Hib, NOS	Haemophilus influenzae type b vaccine, conjugate NOS
Hib-Hep B	Haemophilus influenzae type b conjugate and Hepatitis B vaccine
HIV	human immunodeficiency virus vaccine
HPV	human papilloma virus vaccine
IG	immune globuline, intramuscular
IG, NOS	immune globulin, NOS
IGIV	immune globuline, intravenous
influenza, live, intranasal	influenza virus vaccine, live, attenuated, for intranasal use
influenza, NOS	influenza virus vaccine, NOS
influenza, split	influenza virus vaccine, split virus
influenza, whole	influenza virus vaccine, whole virus
IPV	poliovirus vaccine, inactivated
Japanese encephalitis	Japanese encephalitis vaccine
Junin virus	Junin virus vaccine

Leishmaniasis	Leishmaniasis vaccine
Leprosy	Leprosy vaccine
Lyme disease	Lyme disease vaccine
M/R	measles and rubella virus vaccine
malaria	malaria vaccine
measles	measles virus vaccine
melanoma	melanoma vaccine
meningococcal	meningococcal polysaccharide(meningitis) vaccine
MMR	measles, mumps and rubella virus vaccine
MMRV	measles, mumps, rubella, and varicella virus vaccine
mumps	mumps virus vaccine
OPV	poliovirus, live, oral
parainfluenza-3	parainfluenza-3 virus vaccine
pertussis	pertussis vaccine
plague	plague vaccine
pneumococcal	pneumococcal polysaccharide vaccine
pneumococcal conjugate	pneumococcal conjugate vaccine, polyvalent
pneumococcal vaccine	pneumococcal (pneumonia) vaccine, NOS
polio, NOS	poliovirus vaccine, NOS
Q fever	Q fever vaccine
rabies, intradermal injection	rabies vaccine, for intradermal injection
rabies, intramuscular injection	rabies vaccine, for intramuscular injection
rabies, NOS	rabies vaccione, NOS
rheumatic fever	rheumatic fever vaccine

Rift Valley fever	Rift Valley fever vaccine
RIG	rabies immune globulin
rotavirus	rotavirus vaccine, tetravalent, live, oral
RSV-IGIV	respiratory syncytial virus immune globulin, intravenous
RSV-MAb	respiratory syncytial virus monoclonal antibody (palivizumab), intramuscular
rubella	rubella virus vaccine
rubella/mumps	rubella and mumps virus vaccine
Staphylococcus bacterio lysate	Staphylococcus bacteriophage lysate
Td (adult)	tetanus and diphtheria toxoids, adsorbed for adult use
tetanus toxoid	tetanus toxoid, adsorbed
tetanus toxoid, NOS	tetanus toxoid, NOS
tick-borne encephalitis	tick-borne encephalitis vaccine
TIG	tetanus immune globulin
TST, NOS	tuberculin skin test, NOS
TST-OT tine test	tuberculin skin test, old tuberculin, multipuncture device
TST-PPD intradermal	tuberculin skin test, purified protein derivative, intradermal
TST-PPD tine test	tuberculin skin test, purified protein derivative, multipuncture device
tularemia vaccine	tularemia vaccine
typhoid, NOS	typhoid vaccine, NOS
typhoid, oral	typhoid vaccine, live, oral
typhoid, parenteral, AKD (U.S. Military)	typhoid vaccine, parenteral, acetone-killed, dried (U.S. Military)

27 March 2009 - Version 1

typhoid, ViCPs	typhoid Vi capsular polysaccharide vaccine
vaccinia (smallpox)	vaccinia (smallpox) vaccine
vaccinia (smallpox) diluted	vaccinia (smallpox) vaccine, diluted
vaccinia immune globulin	vaccinia immune globulin
varicella	varicella virus vaccine
VEE, inactivated	Venezuelan equine encephalitis, inactivated
VEE, live	Venezuelan equine encephalitis, live, attenuated
VEE, NOS	Venezuelan equine encephalitis, NOS
VZIG	varicella zoster immune globulin
yellow fever	yellow fever vaccine

9.3.9 Inhaler Does Purpose

The Inhaler Does Purpose vocabulary is listed as a preferred vocabulary in the <u>Asthma Inhaler Usage</u> thing type.

Code Value	Display Text
c	control
p	prevention
r	relief
u	undefined
c	control
p	prevention

9.3.10 Marital Status

The Marital Status vocabulary is listed as a preferred vocabulary in the <u>Personal Demographic Information</u> thing type.

Code Value	Display Text

Div	Divorced
DP	Domestic Partnership
Mar	Married
NM	Never Married
Sep	Separated
Wid	Widowed

9.3.11 Medication Routes

The Medication Routes vocabulary is listed as a preferred vocabulary in the Immunization thing type.

Code Value	Display Text
ad	right ear
as	left ear
cpd	compounding
ib	intrabiliary
il	intralymphatic
im	intramuscular
imp	implant
inart	intra-articular
inh	by inhaler
inj	injectable
inpl	intrapleural
into	intraocular
intp	intraperitoneal
intr	intrathecal
intt	intratracheal

27 March 2009 - Version 1

intu	intrauteral
invs	intravesical
ir	irrigation
iv	intravenous
mm	mucous membrane
nas	nasal
neb	nebulizer
od	right eye
om	oral transmucosal
oph	ophthalmic
os	left eye
otic	otic
ou	both eyes
pg	by g-tube
pj	by j-tube
po	by mouth
poinj	oral and injectable
porec	oral and rectal
pr	by rectum
sc	subcutaneous
sl	sublingual
td	transdermal
top	topical
tranu	transurethral
vag	vaginal

9.3.12 Personal Relationship

The Personal Relationship vocabulary is listed as a preferred vocabulary in the Family History thing type.

Code Value	Display Text
Ant	Aunt
AntM	Aunt (maternal)
AntP	Aunt (paternal)
Bro	Brother
Csn	Cousin
Csn1	Cousin (first)
Csn2	Cousin (second)
Dau	Daughter
Fnd	Friend
Fth	Father
Gar	Guardian
GDa	Granddaughter
GFt	Grandfather
GFtM	Grandfather (maternal)
GFtP	Grandfather (paternal)
GMt	Grandmother
GMtM	Grandmother (maternal)
GMtP	Grandmother (paternal)
GSn	Grandson
Mth	Mother
Nep	Nephew
Nic	Niece

Code Value	Display Text
OthRel	Other relative
Sis	Sister
Son	Son
Spo	Spouse
Unc	Uncle
UncM	Uncle (maternal)
UncP	Uncle (paternal)

9.3.13   Prescription Type

The Prescription Type vocabulary is listed as a preferred vocabulary in the Daily Medication Usage thing type.

Code Value	Display Text
M	Medically Prescribed
S	Self chosen
U	Unknown

9.3.14   Religions

The Religions vocabulary is listed as a preferred vocabulary in the Personal Demographic Information thing type.

Code Value	Display Text
Agn	**Agnostic**
Ath	**Atheist**
Bap	**Baptist**
Bud	**Buddhist**
Cat	**Catholic**
Chr	**Christian (Non-Protestant)**

EPi	**Episcopalian**
Him	**Hindu**
Jew	**Jewish**
LDS	**Mormon/Latter Day Saints**
Lut	**Lutheran**
Met	**Methodist**
Mus	**Muslim**
ONC	**Other Non-Christian**
Pen	**Pentecostal**
Pre	**Presbyterian**
Pro	**Protestant**
Shi	**Shinto**
Sik	**Sikh**
Uni	**Unitarian**

9.3.15   X12-de-355

The x12-de-355 vocabulary is listed as a preferred vocabulary in the <u>Daily Medication Usage</u> thing type and is produced by the <u>Accredited Standards Committee</u>.

9.3.16   X12-de-1330

The x12-de-1330 vocabulary is listed as a preferred vocabulary in the <u>Daily Medication Usage</u> thing type and is produced by the <u>Accredited Standards Committee</u>.

10. Persons

A person entry in the HealthVault service MUST contain the following information:

- A unique identifier for the person (person-id)
- A display name for the person

- An email address

The HealthVault service MUST perform the following steps to create a new Person:

1. Create the Person
2. Associate credentials with the Person

The HealthVault Service MUST attempt to validate the email used to create the person by sending an email to the provided address. A person MAY be permitted to have multiple credentials associated with it. If a person is permitted to have multiple credentials associated with it, a credential MUST resolve uniquely to a person.

10.1 Retrieving Person Information

An application can query the HealthVault Platform for person information using the *getpersoninfo* method. The *info* element is defined by the *info* element in method-getpersoninfo.xsd

```
<info>
    <group-membership>?
</info>
```

Group-membership is reserved for future use.

The corresponding *info* response element is defined by the *info* element in response-getpersoninfo.xsd.

```
<info>
    <person-info>
        <person-id />
        <name />
        <app-settings />>?
        <selected-record-id />>?
        <more-records />>?
        <record id record-custodian? rel-type rel-name? auth-expries?
auth-expired? display-name? state? date-created? max-size-bytes? size-
bytes? />*
        (<groups>
            (<group>
                <name />
                <id />
                <contact-email />
            </group>)+
        </groups>)?
        <preferred-culture />>?
        <preferred-uiculture />>?
    </person-info>
</info>
```

Person-info contains child elements describing the results of the person returned. *Person-id* contains the person's HealthVault Service unique identifier, and *name* contains the user-friendly display name. If the person has settings saved for this specific application by having used the *setapplicationsettings* method, those settings MUST be returned in the *app-settings* element. *Selected-record-id* is the unique

identity of the record designated by the person to be the default record for the application. *More-records* MUST be true if there are additional records present but have not been returned. The maximum number of records to return SHOULD be communicated as a configuration in a */response/info/platform/configuration/* element of the *getservicedefinition* method response.

The information for the *record* element is described in the [Records](#) section.

The *groups* element is reserved for future use.

Preferred-culture and *preferred-uiculture* return the user's culture preferences for information and user interface presentation. If not present, a default value of en-US SHOULD be assumed for both elements.

10.2 Application Settings

HealthVault Service MUST enable applications to save person-specific settings for that application. The *setapplicationsettings* method is used to set the person's settings and is defined by the *info* element in method-setapplicationsettings.xsd.

```
<info>
    (<app-settings>
        <#any />*
    </app-settings>)?
</info>
```

The *app-settings* contains a sequence of zero or more *xs:#any* elements.

Example Request

```
<info>
    <app-settings>
        <test>settings1</test>
        <test>
            <test2>settings2</test2>
        </test>
    </app-settings>
</info>
```

The *app-settings* element contains a sequence of zero or more *xs:#any* elements. Calling this method with no *app-settings* element specified MUST clear the person's application settings. There is no info element returned for this request. An application can retrieve a person's settings by calling the *getapplicationsettings* method. No *info* element is required for this method call. The returned *info* element is defined by the *info* element defined in response-getapplicationsettings.xsd.

```
<info>
    (<app-settings>
        <#any />*
    </app-settings>)?
    <selected-record-id />?
</info>
```

The *app-settings* element is the same structure as in the request to *setapplicationsettings*. The *selected-record-id* is the unique identity of the record designated by the person to be the default for the application.

Example Response

```
<info
xmlns:wc="urn:com.microsoft.wc.methods.response.GetApplicationSettings">
    <app-settings>
        <test>settings1</test>
        <test>
            <test2>settings2</test2>
        </test>
    </app-settings>
</info>
```

11. Records

A record in HealthVault MUST have the following information:

- A unique identifier for the record (record-id)
- A display name for the record.
- A quota for the size of the record

HealthVault Service MUST provision a record:

- When a person requests to create a new record

HealthVault Service SHOULD provision a record:

- When a new person is created (the self record)

The person who creates a record MUST be designated as the initial custodian of the record.

Before an application is allowed to access a record, the platform MUST obtain authorization from a person with access to the record. The request to ask the person for authorization is submitted to the HealthVault Shell through the Redirect Service URL.

An application can retrieve information on the records for which it has been authorized for the specific person. This is done by calling the *getauthorizedrecords* method whose *wc-getauthorizedrecords*:*info* element is defined in method-gethauthorizedrecords.xsd.

```
<info>
    <id />+
</info
```

The *id* element is the Globally Unique Identifier (GUID) provisioned for the record to retrieve information on. This set of identities is constrained to the list of records for which to Person and Application are authorized for. The HealthVault Service MUST only return record information for those

27 March 2009 - Version 1
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records it has been authorized to access. The *info* element in the response is defined as *info* element in response-getauthorizedrecords.xsd:

```
<info>
    <record id record-custodian? rel-type rel-name? auth-expries? auth-
expired? display-name? state? date-created? max-size-bytes? size-bytes?
/>*
</info>
```

Record is an element that holds record attribute information.

Id is a unique identifier of the record for this application in the HealthVault Service.

Record-custodian is a boolean value that MUST return true if the person is designated a custodian of the record. If not returned, *record-custodian* SHOULD assume default value of false. If true, the authenticated person has rights to perform special operations on the record like sharing it with other people or modifying the permissions.

Rel-type is the integer and *rel-name* is the localized string value identifying the relationship the person has to this record. *rel-name* is localized using the language and country specified in the request.

Auth-expires is the UTC date the authenticated person's authorization to the record expires. If not present, HealthVault Service MUST assume that the person's authorization never expires. *Auth-expired* is a boolean value stating whether the authorization has already expired. If *auth-expired* is not present, the application MUST assume that the person's authorization to this record has not expired. Once authorization expires to the record, a record custodian must extend the expiration period for the person to be able to access data in the record. *Display-name* is a text string to help identify this record. It is possible for a person to provide an alternate name for a record rather than the person's name. For instance, a child authorized to a parent's health record may change the display name to "Mom" rather than the parent's name. *State* is the current authorization state of the record for the person. The permitted values are:

State	Definition
Active	The authorization is active and the authenticated person can access the record with as much rights as was granted to the person.
ReadOnly	The authenticated person can read data in the record, but cannot write to the record.
Suspended	The authorization was used in a fraudulent manner and cannot currently be used.
Deleted	The record authorization has been deleted and can no longer be used to access the record.

Date-created is the UTC date the record was created. *max-size-bytes* and *size-bytes* MAY be used to enforce quota restrictions on a record.

Example Response

```
<info
xmlns:wc="urn:com.microsoft.wc.methods.response.GetAuthorizedRecords">
    <record id="7bff74…df78cac" record-custodian="true" rel-type="1"
rel-name="Self" auth-expires="9999-12-31T23:59:59.999Z" display-
name="Bob" state="Active" date-created="2008-03-12T01:43:08.78Z" max-
size-bytes="104857600" size-bytes="0">Bob</record>
</info>
```

11.1 Multiple Record Applications

An application may wish to work with multiple records for which the person is authorized to for. The application MUST be permitted to provide a record id in the /*request*/*header*/*recordid*/ element without requiring re-authentication of the authorized person.

11.2 Sharing

The HealthVault Service MUST permit users to authorize others to access records on which the user is a custodian. The authorization SHALL allow for any combination of Read, Update Create and Delete of record items. The source user MUST be able to specify whether the target sharing user is to be marked as a custodian of the record.

11.3 Auditing Access

The HealthVault Service MUST audit all activities performed on a record and its health data. It SHOULD provide an interface to enable authorized users to view activities on their record. This information is required by the Thing schema which returns the last auditable action in its *updated* element. See Things for details on the structure and content of the *updated* element.

12. Applications

A HealthVault application MUST be registered with the HealthVault Service prior to runtime with the following information:

- Application name
- Application description
- Application logo
- Authorization rules
- Method authorization
- Globally Unique Identifier (GUID) - (also known as the "application id" or "appid")
- Redirect URL known as the *action-url*
- x509 certificate that MUST NOT contain the private key

Action-url is the application URL that the HealthVault Service MUST use to redirect the client browser after conducting activities in the HealthVault Shell. For details on client browser redirect behavior, see the Redirect Service URL section.

The x509 certificate is used to verify the signature presented in the *createauthenticatedsessiontoken* method request. See Application Authentication for its usage.

27 March 2009 - Version 1

13. Application Activities

13.1 Get Service Definition

The HealthVault Service MUST permit applications to anonymously query the service to retrieve information using the getservicedefinition method. The request has no parameters therefore there is no /*request*/*info*/ element.

The corresponding response is defined by the *info* element in response-getservicedefinition.xsd

```
<info>
    <platform>
        <url />
        <version />
        <configuration key />*
    </platform>
    <shell>
        <url />
        <redirect-url />
        (<redirect-token>
            <token />
            <description />
            <querystring-parameters />
        </redirect-token>)*
    </shell>
    <sdk-assembly>
        <url />
        <version />
        <doc-url />
    (</sdk-assembly>)+
    (<xml-method>
        <name />
        (<version number>
            <request-schema-url />?
            <response-schema-url />?
        </version>)*
    </xml-method>)+
    <common-schema />*
</info>
```

The *platform* element MUST contain the HealthVault Service platform *url* [RFC1738]that will be used by calling applications. The *version* of the platform server is also returned and is for descriptive and debugging purposes. A list of 0 or more *configuration* elements MAY be returned which contain a configuration *key* and corresponding value. These enable the application to understand the behavior of the HealthVault Service and make necessary call adjustments.

The *shell* element contains the HealthVault Service user shell *url* that will be used by calling applications. It also includes the *redirect-url* and corresponding *redirect-tokens* to be used. For each *redirect-token* the action *token* is returned as well as a textual *description* of the HealthVault Service behavior for this action. The *querysting-parameters* is the comma separated list of parameters the HealthVault Service

shell MUST look for when the requested action *token* is executed. For details on the usage of these elements, see [Redirect Service](#).

The *sdk*-assembly element contains information regarding the current version of the HealthVault SDK that the version of the HealthVault Service is using in its platform. The element MUST contain the *url* from which to download the corresponding sdk-assembly and the *version.*

Common-schema MUST contain a url that an application can use to obtain the XSD Schema [W3CXSD] for HealthVault Service schematized communications such as method requests, responses, and health record items.

Example Response

```
<info
xmlns:wc="urn:com.microsoft.wc.methods.response.GetServiceDefinition">
    <platform>
        <url>http://healthvault/requesthandler.ashx</url>
        <version>0.9.1234.2468</version>
        <configuration key="maxGetThingsQueryGroups">60</configuration>
        <configuration key="maxInitialRecords">25</configuration>
        ...
    </platform>
    <shell>
        <url>http://healthvaultshell/</url>
        <redirect-url>http:// healthvaultshell/redirect.aspx</redirect-
url>
        <redirect-token>
            <token>APPAUTH</token>
            <description>Redirects to the Shell applicatio...
</description>
            <querystring-parameters>appid,actionqs</querystring-
parameters>
        </redirect-token>
        ...
    </shell>
    <sdk-assembly>
        <url>http://healthvault/dll/Microsoft.Health.dll</url>
        <version>0.9.1730.2528</version>
        <doc-url>http://healthvault/chm/Microsoft.Health.chm</doc-url>
    </sdk-assembly>
    ...
    <xml-method>
          <name>AddApplication</name>
          <version number="1">
              <request-schema-url>http://healthvault/xsd/method-
addapplication.xsd</request-schema-url>
              <response-schema-url>http://healthvault/xsd/response-
addapplication.xsd</response-schema-url>
          </version>
       </xml-method>
    ...
    <common-schema>http://healthvault/xsd/types.xsd</common-schema>
    ...
```

```
</info>
```

13.2 Sending Messages

The HealthVault Service SHOULD provide a way for applications to send an email message to a list of recipients. The application does this by calling *sendinsecuremessage*. The HealthVault platform uses Internet Message Format [RFC2822] over SMTP [RFC2821] to transmit electronic mail. The "insecure" label is used to reinforce that standard SMTP email can be easily spoofed, so sensitive personal health information should not be sent through this channel.

The info element is defined by *info* element in method-sendinsecuremessage.xsd

```
<info>
    <rcpt-address>
        <address />
        <name />
    </rcpt-address>*
    <rcpt-person validated />*
    <rcpt-record validated />*
    <subject />
    <text-body>?
    <html-body>?
</info>
```

Every electronic mail address contained in the request MUST be added to the *to* header of the Internet message [RFC2822].

The *from* header of the Internet message is a *name-addr mailbox address* [RFC2822] derived from the information of the authorized person in the *target-person-id*, *offline-person-id*, or *person-id* encrypted in the *user-auth-token* of the request. See [Determining Person Context](#) for details on determining the person context. The person's provisioned name and email address correspond to the *display-name* and *addr-spec* entities of a *name-addr mailbox address* [RFC2822].

The rcpt-address elements contain the email addresses and names to send the email message to. The *name* and *address* elements correspond to the *display-name* and *addr-spec* entities of a *name-addr mailbox address* [RFC2822].   If the address does not conform to the addr-spec then a 45 (MAIL_ADDRESS_MALFORMED) response code MUST be returned.

The rcpt-person element contains the unique identifier of the person provisioned in the HealthVault Service. It is the person to send the email message to. The person's provisioned name and email address correspond to the *display-name* and *addr-spec* entities of a *name-addr mailbox address* [RFC2822]. *Validated* is a boolean value indicating whether the sender wishes to submit the email if the recipient has not validated the address. If the person's email address is not flagged as validated and *validated* is true then a 41 (EMAIL_NOT_VALIDATED) response code MUST be returned.

A rcpt-record element contains the unique identifier of the record provisioned in the HealthVault Service. The email message is sent to the health record custodians' accounts. The custodians' provisioned name and email address correspond to the *display-name* and *addr-spec* entities of a *name-*

addr mailbox address[RFC2822]. The record's provisioned name and email address correspond to the *display-name* and *addr-spec* entities of a *name-addr mailbox address* [RFC2822]. *Validated* is a boolean value indicating whether the sender wishes to submit the email if the recipient has not validated the address. If the person's email address is not flagged as validated and *validated* is true then a 41 (EMAIL_NOT_VALIDATED) response code MUST be returned.

The content of the email message is defined in the *text-body* and *html-body* elements. At least one of the two MUST be present. The *text-body* element contains the plain text format of the message that is part of the boundary for *Content-Type: text/plain*. The html-body contains the html format of the message that is part of the boundary for *Content-Type: text/html*. If both are present then the Internet message MUST be constructed using the *Content-Type: multipart/alternative* method and include both messages. Plain text format supports email programs that don't support rich views or those where rich viewing has been disabled.

Example Request

```
<info>
    <rcpt-record validated="false" />
    <subject>subject</subject>
    <text-body>body</text-body>
    <html-body>&lt;html&gt;&lt;body&gt;body&lt;/body&gt;
&lt;/html&gt;</html-body>
</info>
```

There is no info element in the response.

If the message is to appear to be sent by the application and not a person, then the *sendinsecuremessagefromapplication* method is used. The info element is defined by *info* in method-sendinsecuremessagefromapplication.xsd.

```
<info>
    <from-mailbox>
        <mailbox-name />
        <name />
    </from-mailbox>
    <rcpt-address>
        <address />
        <name />
    </rcpt-address>*
    <rcpt-person validated />*
    <rcpt-record validated />*
    <subject />
    <text-body>?
    <html-body>?
</info>
```

The format is similar to that outlined for the *info* element of the *sendinsecuremessage* method. The variation is the addition of the *from-mailbox* element. The *from* header of the Internet message is a *name-addr mailbox address* [RFC2822] where the mailbox's *addr-spec* is the combination of the

submitted *mailbox-name* for the *local-part* and the Application's provisioned domain for the *domain* part. See Provisioning Applications for information on the domain. The *display-name* of the *name-addr* is the content of the */info/from-mailbox/name/* element.

Example Request

```
<info>
    <from-mailbox>
        <mailbox-name>hvapp</mailbox-name>
        <name>HealthVault Application</name>
    </from-mailbox>
    <rcpt-record validated="false" />
    <subject>subject</subject>
    <text-body>body</text-body>
    <html-body>&lt;html&gt;&lt;body&gt;body&lt;/body&gt;
&lt;/html&gt;</html-body>
</info>
```

There is no info element in the response.

14. OpenQuery

An open query is used to provide a means to access record data from applications that will not prompt the user for authentication.

The HealthVault Service Open Query URL can be any well-formed HTTPS URL. The Open Query URL MUST be hosted over a TLS connection [RFC2818].   The Open Query request is an HTTP GET Requests [RFC2616] with the following request line format

```
GET /<openqueryhandler>?id&pin HTTP/1.1
```

Id is the unique identifier of the Open Query that was assigned at the time of its creation using the *saveopenquery* method. *Pin* is an OPTIONAL query string parameter that is designated at the time of creating the query in the *saveopenquery* method.

The response to the open query MUST be an HTTP 200 (OK) and the body content MUST contain the */response/info/* element related to the query method executed. For example, if the */request/info/method/* element of the *saveopenquery* method were *getthings*, then the body of the open query response would be formatted according to the *info* element defined in response-getthings.xsd.

If a request was made to an open query that has expired, a response code of 62 (Expired Open Query) MUST be returned.

Only custodians are permitted to create, update and delete open queries.

Example Request

```
GET /openquery.ashx?id=11111111-1111-1111-1111-222222222222&pin=1234
HTTP/1.1
```

If the open query identified with the id of 11111111-1111-1111-1111-222222222222 were to execute a
getthings method for a specific record, the response would look like this:

```
200 Ok
(Headers)

<info xmlns:wc="urn:com.microsoft.wc.methods.response.GetThings">
    <group>
        <thing>
            <thing-id version-stamp="1111…8888">1111…8888</thing-id>
            …
            <thing-state>Active</thing-state>
            <eff-date>2008-03-12T01:39:04.403</eff-date>
        </thing>
        <thing>
            <thing-id version-stamp="1111…8803">1111…8888</thing-id>
            …
            <thing-state>Active</thing-state>
            <eff-date>2008-03-12T01:39:04.403</eff-date>
        </thing>
        <thing>
            <thing-id version-stamp="1111…8801">1111…8888</thing-id>
            <thing-state>Deleted</thing-state>
            <eff-date>2008-03-12T01:39:04.403</eff-date>
        </thing>
    </group>
</info>
```

14.1 Saving an Open Query

To create an open query, an application MUST call the *saveopenquery* method with the *info* element
defined by *info* element in method-saveopenquery.xsd.

```
<info>
    <expires />?
    <pin-code />?
    <note />?
    <method />
    <method-version />
    <record-id />?
    <language />?
    <country />?
    <final-xsl />?
    <info>
        <#any />*
    </info>
</info>
```

For the *info* element, *expires* is an integer that represents the time in minutes from creation of the open
query until the open query expires. If not specified then the open query SHOULD never expire. *Pin-code*
is an OPTIONAL string of characters that is passed in the open query URL to secure access to the results.

If no *pin-code* is specified then the query MUST NOT require one when visited. *Note* is an OPTIONAL free-form element to annotate the query. This is returned in the *getopenqueryinfo* method response. *Method* and *method-version* identify the unique instance of the method to execute. This will dictate the format of the response's *info* section. If the method being called requires a record-id context, the id is specified in the *record-id* element.

If the method requires it, *Language* and *country* are OPTIONAL elements that indicate which locale-specific information to return when the method requires it. Default values of English and US are assumed. *Final-xsl* contains an XSLT transform [W3CXSLT] that is applied to the results of the Open Query. The *info* element corresponds to the *info* element of the standard HealthVault Service */request*/*info*/ element as dictated by the *method* and *method-version* elements. For details on the method and info element parameters, see [Method Schemas](#).

Example Request

```
<info>
    <expires>2147483647</expires>
    <pin-code>5bb7bbc4-39eb-40da-9bf7-5036e1159ef8</pin-code>
    <note>Sample Note</note>
    <method>GetThings</method>
    <method-version>1</method-version>
    <record-id>11111111-1111-1111-1111-222222222222</record-id>
    <info>
        <group max="5">
            <filter>
                <type-id>5bfc898d-7671-41fa-b753-557862b6d2a3</type-id>
                <thing-state>Active</thing-state>
            </filter>
            <format>
                <section>core</section>
                <xml />
            </format>
        </group>
    </info>
</info>
```

The corresponding *info* response element is defined by the *info* element in response-saveopenquery.xsd.

```
<info>
    <query-id />
    <app-name />
    <date-created />
    <expires-date />
    <pin-required />
    <note />?
</info>
```

For the *info* element, *query-id* is the unique identifier of the query assigned at time of creation. *App-name* is the name of the application that created the query. *Date-created* is the UTC date the query was

created. *Expires-date* is the result of applying the value, in minutes, of the */request/info/expires/* element to the *date-created* element content. *Pin-required* is a hint indicating that a pin has been assigned to this query. An OPTIONAL free-form *note* is used to help identify the query.

Example Response

```
<info xmlns:wc="urn:com.microsoft.wc.methods.response.SaveOpenQuery">
    <query-id>e4979749-1a4c-423f-aad0-9374d4c11f80</query-id>
    <app-name>Test Application</app-name>
    <date-created>2008-05-01T00:54:11.187Z</date-created>
    <expires-date>6091-05-24T03:01:11.187Z</expires-date>
    <pin-required>false</pin-required>
    <note>Sample Note</note>
</info>
```

14.2 Retrieving Open Query Information

An application can retrieve information regarding a created open query by calling the *getopenqueryinfo* method with the info element defined by the *info* element defined in request-getopenqueryinfo.xsd

```
<info>
    <query-id />
</info>
```

The *query-id* element contains the unique identifier of the open query to retrieve information on.

Example Request

```
<info>
    <query-id> d46bd232-24d5-47fb-8316-404bd68e3f1c</query-id>
</info>
```

If the query-id was not present or does not exist then a 33 (Invalid OpenQuery) response code SHOULD be returned. The corresponding *info* response element is defined by the *info* element in response-getopenqueryinfo.xsd. It is the same structure as the */response/info/* element of the *saveopenquery* response.

14.3 Deleting an Open Query

An application that wishes to remove an open query MUST call the *deleteopenquery* method whose *info* element is defined by the *info* element in method-deleteopenquery.xsd.

```
<info>
    <query-id />
</info>
```

The *query-id* element contains the unique identifier for the open query to remove from the HealthVault Service.

Example Request

```
<info>
```

```
    <query-id>d46bd232-24d5-47fb-8316-404bd68e3f1c</query-id>
</info>
```

If the query-id was not present or does not exist then a 33 (Invalid OpenQuery) response code SHOULD be returned. The corresponding *info* response element is defined by the *info* element in response-deleteopenquery.xsd. It is the same structure as the request *info* element:

```
<info>
    <query-id />
</info>
```

The *query-id* is the id of the query that was requested to be deleted.

Example Response

```
<info xmlns:wc="urn:com.microsoft.wc.methods.response.DeleteOpenQuery">
    <query-id>d46bd232-24d5-47fb-8316-404bd68e3f1c</query-id>
</info>
```

15. Redirect Service

The HealthVault Service Shell provides an interface that allows an application to redirect a client browser to the Shell and provide context for the visit. It also communicates back to the application using similar techniques

15.1 HealthVault Shell Targets

The HealthVault Service MUST provide the Redirect Service URL using HTTP over a TLS connection [RFC2818]. All requests to the target are HTTP GET Request [RFC2616], and MUST be in the form:

```
GET /redirect.aspx?target&targetqs HTTP/1.1
```

Target indicates the desired HealthVault Shell Target functionality. The possible values and their behavior are as follows:

target Value	HealthVault Shell Action	*targetqs* parameters	Possible Application Target Values
ADDITEM	Prompts the user to add a Thing of a specified type to a record.	typeid extrecordid	None
AUTH	Conduct User authentication activity. See User Authentication for details. After authentication, the HealthVault Service may continue with APPAUTH target functionality if the application is required to be authorized for accessing the record	appid ismra (OPTIONAL) persistwctoken (OPTIONAL) forceappauth	APPAUTHSUCCESS APPAUTHREJECT

APPAUTH	Prompts the user to authorize and select a record (in the case of a Single Record Applicaiton) or records (for a Multiple Record Application) for use by the application.	appid ismra (OPTIONAL) onopt# (OPTIONAL) offopt# (OPTIONAL)	SELECTEDRECORDCHANGED APPAUTHREJECT
APPSIGNOUT	Discards the HealthVault Shell login cookie.	appid	SIGNOUT
CREATERECORD	Prompts the user to create a new record.	appid	CREATERECORDSUCCESS CREATERECORDFAILURE CREATERECORDCANCELED
HELP	Presents the user with a help page identified by the topicid	topicid (OPTIONAL)	None
MANAGEACCOUNT	Presents the user with their account profile enabling them to make changes.	None	None
RECONCILE	Prompts the user to review the individual data elements within a standards file (such as CCR or CCD) and indicate how they want to integrate the data elements into their record.	appid extrecordid thingid	RECONCILECOMPLETE RECONCILEFAILURE RECONCILECANCELED
RECORDSHARED	Prompts the user to accept or reject a sharing invitation.	sharinginfo	None
SHAREDAPPDETAILS	Presents the user with an application's authorization details enabling them to make changes.	appid	None
SHARERECORD	Prompts the user to share a record identified by extrecordid.	appid extrecordid	SHARERECORDSUCCESS SHARERECORDFAILED APPAUTHINVALIDRECORD
VIEWITEMS	Presents the user with a view of all Things of a specified type in a record.	typeid extrecordid	None

Targetqs is a query string parameter whose content is a recursively url-encoded query string [RFC1738] that is used by the HealthVault Shell page to process target-specific information. This query string can include the following parameters

targetqs parameter	Value (Default)	Notes
redirect	URL	For non-production use only. This value overrides the application's provisioned *action-url*. . See Provisioning-Applications

actionqs	URL encoded query string	Value that MUST be returned as-is to the calling application. The HealthVault Service does not process this parameter.
extrecordid	Record Identifier	Only for targets that act on a particular record (e.g., SHARERECORD). If present, it SHOULD be the record identifier that the application wants the HealthVault Shell to work in the context of.
appid	Application identifier	Unique identifier provisioned in the HealthVault Service. See Provisioning-Applications
ismra	True or False (false)	If this value is true, it is an indication that this application knows how to work with multiple records. The user will be allowed to authorize multiple records and select the record to work with.
persistwctoken	True or False (false)	Indicator by the application to tell the authentication service to persist user login information. For details see the User Authentication section.
onopt#	Names of online optional authorization rules	Numbered sequence of online optional authorization rule names, beginning with 1, identifying which rules to present to the user. (e.g. onopt1=name1&onopt2=name2)
offopt#	Names of offline optional authorization rules	Numbered sequence of offline optional authorization rule names, beginning with 1, identifying which rules to present to the user. (e.g. offopt1=name1&onopt2=name2)
sharinginfo	Token referencing a sharing request	Token that is used to refer to a specific sharing request.
thingid	Thing identifier	Only for targets that act on a particular thing (e.g. RECONCILE). If present, it SHOULD be the Thing identifier that the application wants the HealthVault Shell to work in the context of.
typeid	Thing type identifier	Only for targets that act on a particular thing type (e.g. VIEWITEMS). If present, it SHOULD be the Thing type identifier that the application wants the HealthVault Shell to work in the context of.
forceappauth	True or False (false)	Only for the AUTH target. Instructs the HealthVault Shell to always prompt for application authorization after performing authentication.

Example Request

```
https://healthvaultservice/redirect.aspx?target=AUTH&targetqs=?appid=ea1
af...97d92d%26redirect%3dhttp%253a%252f%252fmysite.com%252fRedirect.aspx
%26actionqs%3d%252fdefault.aspx
```

Recursively URL Decoding *targetqs* yields

```
appid=ea1af...97d92d&redirect=http://mysite.com/Redirect.aspx&actionqs=/
default.aspx
```

15.2 Application Targets

An application's *action-url* MUST support application target requests from the client browser that are the product of a redirection from the HealthVault Service Shell.   For details on the *action-url*, see Provisioning Applications. The request to *action-url* is a HTTP GET Request [RFC2616], and MUST be in the form:

```
GET /<action-url>?target&actionqs&wctoken HTTP/1.1
```

Target indicates the purpose of the redirection. Possible values are as follows:

target value	Definition
HOME	Request by HealthVault Shell to present user with the application's homepage.
PRIVACY	Request by HealthVault Shell to present user with the application's privacy policy.
SERVICEAGREEMENT	Request by HealthVault Shell to present user with the application's terms of use or service agreement.
SIGNOUT	Sent after HealthVault Shell has successfully signed out the user by expiring the *_wcpage* cookie.
APPAUTHSUCCESS	Sent when the user has successfully logged in and/or granted application authorization. See Record Authorization for details.
APPAUTHREJECT	Sent when the user denied or cancelled an application authorization request. See Record Authorization for details.
APPAUTHINVALIDRECORD	Sent when the Shell finds an invalid record id in the extrecordid parameter.
SELECTEDRECORDCHANGED	Sent when the user has selected a new record for use in an SRA application. It is important that the application refresh any cached record-related information when this target is received.
SHARERECORDSUCCESS	Sent when a record sharing invitation was sent successfully.
SHARERECORDFAILED	Sent when a record sharing invitation was not able to be sent.
RECONCILECOMPLETE	Sent when the user has completed the reconcile process.
RECONCILEFAILURE	Sent when a failure occured during the reconcile process.
RECONCILECANCELED	Sent when the user canceled the reconcile process.
CREATERECORDSUCCESS	Sent when the user successfully created a record.
CREATERECORDFAILURE	Send when a failure occurred during the record creation process.
CREATERECORDCANCELED	Sent when the user canceled the record creation process.

Actionqs is a value originally provided by the application in the *targetqs* query string parameter to the HealthVault Shell Target.

Wctoken is returned when the *target* value is APPAUTHSUCCESS. This is the opaque user token used for subsequent HealthVault Service method calls that require a user context. See the Request Format section where this can be used as the *user-auth-token*.

16. Response Codes

0 Success

The request was processed successfully. This SHOULD only be returned when all activities have completed successfully. For example, if there are multiple things to be removed in a removethings call, return 0 Success only if all things were valid IDs, had sufficient authorization to remove them and they all were successfully removed from the service.

1 Failed

A generic failure due to unknown causes or an internal error. This response code SHOULD never be returned in a correctly functional HealthVault Service.

2 Bad HTTP

HTTP protocol issue. This is returned when there is a request line syntax error or HTTP header values are malformed or invalid.

3 Invalid XML

The XML in the request cannot be parsed or does not validate against its schema.

4 Bad Signature

The signature failed validation.

5 Bad Method

The *methodname* was not specified or does not exist in the HealthVault Service. It is also returned when the *methodname* is valid but the *methodversion* element contains a version for the method that does not exist.

6 Invalid Application

Indicates an issue with the *app-id* element.

7 Credential Token Expired

The auth-token or user-auth-token provided has passed its expired time. If an application wishes to continue it MUST re-authenticate and if necessary have the user re-authenticate.

8 Invalid Token

The auth-token or user-auth-token was not provided and are mandatory, or they were provided and are malformed such that they could not be verified.

9 Invalid Person

Indicates an issue with the *person-id* sent in the request.

10 Invalid Record

Indicates an issue with the *record-id* sent in the request.

11 Access Denied

The person and/or application do not have sufficient rights to perform the requested action. This response MAY be sent in place of other responses in order to reduce the possibility of information discovery. See Information Discovery security consideration for details.13 Invalid Thing

There is no Thing that corresponds to the *thing-id* identifier and/or *versionstamp* submitted.

15 Invalid Filter

The *gethings* method request filter is missing or invalid.

17 Missing Shared Secret

The */request/info/auth-info/credential/appserver/content/shared-secret/hmac-alg/* element of the *createauthenticatedsessiontoken* method was not present or is empty.

18 Invalid Application Authorization

The application was not authorized to operate with or on the behalf of the user.

19 Invalid Thing Type

The thing type id submitted in the request could not be resolved to a thing type in the HealthVault Service.

20 Thing Type Immutable

An attempt was made to update an instance of a thing whose type is designated to not be updated (immutable).

21 Thing Type Uncreatable

An attempt was made to create an instance of a thing whose type is designated to not be created (uncreatable).

33 Invalid Open Query

The open query id submitted in the request could not be resolved to an open query in the HealthVault Service.

34 Invalid Transform

For any issues related to transforms, 34 (Invalid Transform) SHOULD be returned. This includes:

- The tag specified does not have a transform associated with it for the specified thing type
- The transform was determined to be invalid at time of provisioning or execution.
- The transform is correct but when applied to the data it failed to generate a result.

39 Request Too Long

The request provided has exceeded maximum allowed request length.

41 Email Not Validated

The email address of the sender or one recipient of an email exchange has not been validated and must be in order to execute the action requested.

45 Mail Address Malformed

If a recipient address is specified and the email address is not a properly formatted email address. The email address MUST conform to the *addr-spec* of the Internet Message Format [RFC2822].

48 Invalid Email Address

The email address is null or same as 45 (Mail Address Malformed) for the senders address.

53 Too Many Groups In Query

The *getthings* method request has more */request*/*info*/*group*/ elements than the pre-determined maximum permits.

55 Invalid Vocabulary

Requested vocabulary was not found.

59 Thing Type Undeletable

Can't delete things of this type. This error applies to thing types marked as singleton.

60 Version Stamp Missing

Versionstamp is missing or empty when a request to update a thing is made by a *puthings* method call.

61 Version Stamp Mismatch

Versionstamp did not match the latest version when a request to update a thing is made by a *puthings* method call. An application SHOULD make another call to the *getthings* method to retrieve the latest version of the thing to be updated.

62 Expired Open Query

The requested open query has expired.

65 Authenticated Session Token Expired

The authenticated session token *auth-token* or *user-auth-token* is no longer valid.

68 Record Quota Exceeded

The size occupied by the things in the *putthings* method request will cause the record to exceed the size quota allotted to it.

69 Invalid DateTime

The DateTime supplied in the method request was not valid.

70 Bad Certificate

The certificate that accompanied the Digital Signature of the thing in a *putthings* method request was empty, invalid or could not be used to verify the signature.

71 Response Too Long

The response generated has exceeded maximum allowed response length.

76 Culture Not Supported

The culture passed in the request header is not supported.

77 Invalid File Extension

The file extension of an uploaded file is not supported.

78 Invalid Vocabulary Item

The vocabulary item does not exist.

17. Schema, Namespaces, URNs, Data Model, and Valid Examples

17.1 Methods

The method is specified in the *methodname* element and the schemas are applied to the *info* element of the corresponding Request and Response. For further information on the request and response formats, see the Messaging Section.

AddApplication
UpdateApplication
GetApplicationInfo
GetPeopleForRecord
OverwriteThings

Method (/*request*/*methodname*/)	Context (See Method Context)	Request Schema and Namespace (/*request*/*info*/)	Response Schema and Namespace (/*response*/*info*/)
CreateAuthenticatedSessionToken	Application	method-createauthenticatedsessiontoken.xsd urn:com.microsoft.wc.methods.CreateAuthenticatedSessionToken	response-createauthenticatedsessiontoken.xsd urn:com.microsoft.wc.methods.response.CreateAuthenticatedSessionToken
CreateConnectPackage	Application	method-createconnectpackage.xsd urn:com.microsoft.wc.methods.CreateConnectPackage	response-createconnectpackage.xsd urn:com.microsoft.wc.methods.response.CreateConnectPackage
CreateConnectRequest	Application	urn:com.microsoft.wc.methods.CreateConnectRequest	urn:com.microsoft.wc.methods.response.CreateConnectRequest
DeleteOpenQuery	Application Person	method-deleteopenquery.xsd urn:com.microsoft.wc.methods.DeleteOpenQuery	response-deleteopenquery.xsd urn:com.microsoft.wc.methods.response.DeleteOpenQuery
DeletePendingConnectPackage	Application	method-deletependingconnectpackage.xsd urn:com.microsoft.wc.methods.DeletePendingConnectPackage	No Response Info Element
DeletePendingConnectRequest	Application	method-deletependingconnectrequest.xsd urn:com.microsoft.wc.methods.DeletePendingConnectRequest	No Response Info Element
GetApplicaitonSettings	Application Person	No Request Info Element	response-getapplicationsettings.xsd urn:com.microsoft.wc.methods.response.GetApplicationSettings
GetAuthorizedConnectRequests	Application	method-getauthorizedconnectrequests urn:com.microsoft.wc.methods.GetAuthorizedConnectRequests	response-getauthorizedconnectrequests urn:com.microsoft.wc.methods.response.GetAuthorizedConnectRequests
GetAuthorizedRecords	Application Person	method-getauthorizedrecords.xsd urn:com.microsoft.wc.methods.GetAuthorizedRecords	response-getauthorizedrecords.xsd urn:com.microsoft.wc.methods.response.GetAuthorizedRecords
GetOpenQueryInfo	Application Person Record	method-getopenqueryinfo.xsd urn:com.microsoft.wc.methods.GetOpenQueryInfo	response-getopenqueryinfo.xsd urn:com.microsoft.wc.methods.response.GetOpenQueryInfo
GetPersonInfo	Application Person Record	method-getpersoninfo.xsd urn:com.microsoft.wc.methods.GetPersonInfo	response-getpersoninfo.xsd urn:com.microsoft.wc.methods.response.GetPersonInfo
GetServiceDefinition	Application	No Request Info Element	response-getservicedefinition.xsd urn:com.microsoft.wc.methods.response.GetServiceDefinition

GetThings	Application Person Record	method-getthings.xsd urn:com.microsoft.wc.methods.GetThings	response-getthings.xsd urn:com.microsoft.wc.methods.response.GetThings
GetThingType	none	method-getthingtype.xsd urn:com.microsoft.wc.methods.GetThingType	response-getthingtype.xsd urn:com.microsoft.wc.methods.response.GetThingType
GetVocabulary	none	method-getvocabulary.xsd urn:com.microsoft.wc.methods.GetVocabulary	response-getvocabulary.xsd urn:com.microsoft.wc.methods.response.GetVocabulary
PutThings	Application Person Record	method-putthings.xsd urn:com.microsoft.wc.methods.PutThings	response-putthings.xsd urn:com.microsoft.wc.methods.response.PutThings
QueryPermissions	Application Record	method-querypermissions.xsd urn:com.microsoft.wc.methods.QueryPermissions	response-querypermissions.xsd urn:com.microsoft.wc.methods.response.QueryPermissions
RemoveThings	Application Person Record	method-removethings.xsd urn:com.microsoft.wc.methods.RemoveThings	No Response Info Element
SaveOpenQuery	Application Person Record	method-saveopenquery.xsd urn:com.microsoft.wc.methods.SaveOpenQuery	response-saveopenquery.xsd urn:com.microsoft.wc.methods.response.SaveOpenQuery
SearchVocabulary	Application	method-searchvocabulary.xsd urn:com.microsoft.wc.methods.SearchVocabulary	response-searchvocabulary.xsd urn:com.microsoft.wc.methods.response.SearchVocabulary
SendInsecureMessage	Application Person	method-sendinsecuremessage.xsd urn:com.microsoft.wc.methods.SendInsecureMessage	No Response Info Element
SendInsecureMessageFrom Application	Application	method-sendinsecuremessagefromapplication.xsd urn:com.microsoft.wc.methods.SendInsecureMessageFrom Application	No Response Info Element
SetApplicationSettings	Application Person	method-setapplicationsettings.xsd urn:com.microsoft.wc.methods.SetApplicationSettings	No Response Info Element
UpdateExternalId	Application	method-updateexternalid.xsd urn:com.microsoft.wc.methods.UpdateExternalId	No Response Info Element

17.2 Additional HealthVault Service Schemas

Schema	Namespace
application.xsd	urn:com.microsoft.wc.application
auth.xsd	urn:com.microsoft.wc.auth
auth-method.xsd	urn:com.microsoft.wc.authMethod
dates.xsd	urn:com.microsoft.wc.dates
person.xsd	urn:com.microsoft.wc.person
record.xsd	urn:com.microsoft.wc.record
request.xsd	urn:com.microsoft.wc.request
response.xsd	urn:com.microsoft.wc.response
response-any.xsd	urn:com.microsoft.wc.methods.response.any
thing.xsd	urn:com.microsoft.wc.thing
types.xsd	urn:com.microsoft.wc.types
vocab.xsd	urn:com.microsoft.wc.vocab

17.3 Additional HealthVault Thing Type Schemas

17.3.1   Aerobic Profile

A person's aerobic profile is made up of a set of measurements that indicate the aerobic capabilities of the person and is defined by the aerobic-profile element in aerobic-profile.xsd.

```
<aerobic-profile>
    <when />                                {date-time}
    <max-heartrate />?                      {positiveInteger}
    <resting-heartrate />?                  {positiveInteger}
    <anaerobic-threshold />?                {positiveInteger}
    <VO2-max >?
        <absolute />?                       {positiveDouble}
        <relative />?                       {positiveDouble}
    </VO2-max>
    <heartrate-zone-group />?
        <name />?                           {string}
        <heartrate-zone />*
            <name />?                        {string}
            <lower-bound>
                <absolute-heartrate />|     {positiveInteger}
                <percent-max-heartrate />   {percentage}
            </lower-bound>
            <upper-bound>
                <absolute-heartrate />|     {positiveInteger}
                <percent-max-heartrate />   {percentage}
            </upper-bound>
        </heartrate-zone>
    </heartrate-zone-group>
</aerobic-profile>
```

17.3.2   Allergy

The allergy thing type describes an allergy a person has and is defined by the allergy element in allergy.xsd.

```
<allergy>
    <name />                              {codable-value}
    <reaction />?                         {codable-value}
    <first-observed />?                   {approx-date-time}
    <allergen-type />?                    {codable-value}
    <allergen-code />?                    {codable-value}
    <treatment-provider />?               {person}
    <treatment />?                        {codable-value}
    <is-negated />?                       {boolean}
</allergy>
```

17.3.3   Asthma Inhaler Usage

Asthma Inhaler Usage describes a single use of an inhaler and is defined by the asthma-inhaler-use element in asthma-inhaler-use.xsd.

```
<asthma-inhaler-use>
    <when />                              {date-time}
    <drug />                              {codable-value}
    <strength />?                         {codable-value}
    <dose-count />?                       {int}
    <device-id />?                        {string}
    <dose-purpose />?                     {codable-value}
</asthma-inhaler-use>
```

17.3.4   Condition

Condition defines a single health or medical issue/problem and is defined by the condition element in condition.xsd.

```
<name>
    <name />                              {codable-value}
    <onset-date />?                       {approx-date-time}
    <status />                            {codable-value}
    <stop-date />?                        {approx-date-time}
    <stop-reason />?                      {string}
</name>
```

17.3.5   Daily Medication Usage

Daily Medication Usage describes regular medication and dietary supplement usage and is defined by the daily-medication-usage element in daily-medication-usage.xsd.

```
<daily-medication-usage>
    <when />                              {date}
```

```
    <drug-name />                              {codable-value}
    <number-doses-consumed-in-day />           {int}
    <purpose-of-use />?                        {codable-value}
    <number-doses-intended-in-day />?          {int}
    <medication-usage-schedule />?             {codable-value}
    <drug-form />?                             {codable-value}
    <prescription-type />?                     {codable-value}
    <single-dose-description />?               {codable-value}
</daily-medication-usage>
```

17.3.6   Diabetic Profile

Diabetic Profile is a summary of a person's diabetic condition and is defined by the diabetic-profile element in diabetic-profile.xsd.

```
<diabetic-profile>
    <when />                                   {date-time}
    <max-HbA1C />?                             {percentage}
    <target-glucose-zone-group >
       <name />?                               {string}
       <target-glucose-zone >
          <name />?                            {string}
          <lower-bound >
             <absolute-glucose>
                <mmolPerL />                   {positiveDouble}
                <display />?                   {display-value}
             </absolute-glucose >|
             <percent-max-glucose />           {percentage}
          </lower-bound >
          <upper-bound >
             <absolute-glucose />
                <mmolPerL />                   {positiveDouble}
                <display />?                   {display-value}
             </absolute-glucose >|
             <percent-max-glucose />           {percentage}
          </upper-bound >
       </target-glucose-zone >*
    </target-glucose-zone-group >*
<diabetic-profile />
```

17.3.7   Family History

Family History stores a condition of a relative and is defined by the family-history element in family-history.xsd.

```
<family-history>
    <condition >
       <name />                                {codable-value}
       <onset-date />?                         {approx-date}
       <resolution-date />?                    {approx-date}
       <resolution />?                         {string}
       <occurrence />?                         {codable-value}
       <severity />?                           {codable-value}
```

```
    </condition>
    <relative >
      <relative-name />?                    {person}
      <relationship />?                      {codable-value}
      <date-of-birth />?                     {approx-date}
      <date-of-death />?                     {approx-date}
    </relative>?
</family-history>
```

17.3.8   File

File defines the supporting information for a file stored in the "other data" section as encoded data defined by the file element in file.xsd.

```
<file>
   <name />                                {string}
   <size />                                {positiveInteger}
   <content-type />?                       {codable-value}
</file>
```

17.3.9   Height Measurement

Height Measurement stores information about a height measurement and is defined by the height element in height.xsd.

```
<height>
   <when />                                {date-time}
   <value>
      <m />                                {positiveDouble}
      <display />?                         {display-value}
   </value>
</height>
```

17.3.10 Immunization

Immunization stores information related to an immunization and is defined by the immunization element in immunization.xsd.

```
<immunization>
   <name />                                {codable-value}
   <administration-date />                 {approx-date-time}
   <administrator />?                      {person}
   <manufacturer />?                       {string}
   <lot />?                                {string}
   <route />?                              {codable-value}
   <expiration-date />?                    {approx-date}
   <sequence />?                           {string}
   <anatomic-surface />?                   {codable-value}
   <adverse-event />?                      {string}
   <consent />?                            {string}
</immunization>
```

17.3.11 Insurance Plan

Insurance Plan stores information about the person or organization that pays for health and medical related bills and is defined by the payer element in payer.xsd.

```
<payer>
  <plan-name />                          {string}
  <coverage-type />?                     {codable-value}
  <carrier-id />?                        {string}
  <group-num />?                         {string}
  <plan-code />?                         {string}
  <subscriber-id />?                     {string}
  <person-code />?                       {string}
  <subscriber-name />?                   {string}
  <subscriber-dob />?                    {date-time}
  <is-primary />?                        {boolean}
  <expiration-date />?                   {date-time}
  <contact />?                           {contact}
</payer>
```

17.3.12 Lab Test Result

Lab Test Result stores a series of lab test results and is defined by the lab-test-results element in lab-test-results.xsd.

```
<lab-test-results />
  <when />?                              {approx-date-time}
  <lab-group >
    <group-name />                       {codable-value}
    <laboratory-name/>?                  {organization}
    <status />?                          {codable-value}
    <sub-groups />*                      {lab-test-results-group-type}
    <results />*
      <when />?                          {approx-date-time}
      <name />?                          {string}
      <substance />?                     {codable-value}
      <collection-method />?             {codable-value}
      <clinical-code />?                 {codable-value}
      <value >
        <measurement />                  {general-measurement}
        <ranges >
          <type />                       {codable-value}
          <range />                      {double-range}
        </ranges>*
        <flag />*                        {codable-value}
      </value>?
      <status />?                        {codable-value}
      <note />?                          {string}
    </results>
  </lab-group>+
  <ordered-by />
    <name />                            {string}
    <contact />?                         {contact}
    <type />?                            {codable-value}
```

```
      <website />?                              {string}
   </ordered-by>?
</lab-test-results>
```

17.3.13 Life Goal

Life Goal stores a "checklist" goal of the type you might stick up on the fridge as a New Year's resolution and is defined by the life-goal element in life-goal.xsd.

```
<life-goal>
   <description />                           {string}
   <goal-info >
      <target-date >?                        {approx-date-time}
      <completion-date >?                    {approx-date-time}
      <status >?                             {string}
   </goal-info>?
</life-goal>
```

17.3.14 Medical Problem

Medical Problem stores information related to a medical problem and is defined by the problem element in problem.xsd.

```
<problem>
   <when />                                  {date-time}
   <diagnosis />*                            {codable-value}
   <duration >
      <start-date />                         {approx-date-time}
      <end-date />?                          {approx-date-time}
   </duration >*
   <importance />?                           {positiveInteger}
</problem>
```

17.3.15 Microbiology Lab Test Result

Microbiology Lab Test Result stores information related to a microbiology lab test and is defined by the microbiology-lab-results element in microbiology-lab-results.xsd.

```
<microbiology-lab-results>
   <when />                                  {date-time}
   <lab-tests >
      <when >                                {date-time}
      <name >?                               {string}
      <substance >?                          {codable-value}
      <collection-method >?                  {codable-value}
      <abbreviation >?                       {string}
      <description >?                        {string}
      <code >*                               {codable-value}
      <result >
         <value >?                           {double}
         <unit >?                            {codable-value}
         <reference-range >?                 {double-range}
```

```
        <toxic-range >?                              {double-range}
        <text-value >?                               {string}
        <flag >*                                     {codable-value}
    </result>?
    <status >?                                        {codable-value}
  </lab-tests>*
  <sensitivity-agent />?                             {codable-value}
  <sensitivity-value />?                             {codable-value}
  <sensitivity-interpretation />?                    {string}
  <specimen-type />?                                 {codable-value}
  <organism-name />?                                 {codable-value}
  <organism-comment />?                              {string}
</microbiology-lab-results>
```

17.3.16 Personal Demographic Information

Personal Demographic Information stores information that is more sensitive than the "basic" thing type
data and may not be disclosed as freely as the "basic" thing type and is defined by the personal element
in personal.xsd.

```
<personal>
  <name />?                                          {name}
  <birthdate />?                                     {date-time}
  <blood-type />?                                    {codable-value}
  <ethnicity />?                                     {codable-value}
  <ssn />?                                           {string}
  <marital-status />?                                {codable-value}
  <employment-status />?                             {string}
  <is-deceased />?                                   {boolean}
  <date-of-death />?                                 {approx-date-time}
  <religion />?                                      {codable-value}
  <is-veteran />?                                    {boolean}
  <highest-education-level />?                        {codable-value}
  <is-disabled />?                                   {boolean}
  <organ-donor />?                                   {string}
</personal>
```

17.3.17 Procedure

Procedure stores information related to a procedure and is defined by the procedure element in
procedure.xsd.

```
<procedure>
  <when />                                           {date-time}
  <title />?                                         {codable-value}
  <primary-provider />?                              {person}
  <anatomic-location />?                             {codable-value}
  <secondary-provider />?                            {person}
</procedure>
```

17.3.18 Radiology Lab Result

Radiology Lab Result stores information related to radiology lab results and is defined by the radiology-lab-results element in radiology-lab-results.xsd.

```
<radiology-lab-results>
   <when />                            {date-time}
   <title />?                          {string}
   <anatomic-site />?                  {string}
   <result-text />?                    {string}
</radiology-lab-results>
```

17.3.19 Sleep Related Activity

Sleep Session stores information that you would find in an evening sleep journal and is defined by the sleep-pm element in sleep-pm.xsd.

```
<sleep-pm>
   <when />                            {date-time}
   <caffeine />*                       {time}
   <alcohol />*                        {time}
   <nap >
     <when />                          {time}
     <minutes />                       {nonNegativeInteger}
   </nap >*
   <exercise />
     <when />                          {time}
     <minutes />                       {nonNegativeInteger}
   </exercise >*
   <sleepiness />                      {int}
</sleep-pm>
```

17.3.20 Sleep Session

Sleep Session stores information that you would find in a morning sleep journal and is defined by the sleep-am element in sleep-am.xsd.

```
<sleep-am>
   <when />                            {date-time}
   <bed-time />                        {time}
   <wake-time />                       {time}
   <sleep-minutes />                   {nonNegativeInteger}
   <settling-minutes />               {nonNegativeInteger}
   <awakening >
     <when />                          {time}
     <minutes />                       {nonNegativeInteger}
   </awakening >*
   <medications />?                    {codable-value}
   <wake-state />                      {int}
</sleep-am>
```

17.3.21 Weight Goal

Weight Goal stores a target weight range with an associated target date and is defined by the weight-goal element in weight-goal.xsd.

```
<weight-goal>
  <initial >
    <kg />                              {positiveDouble}
    <display />?                        {display-value}
  </initial >?
  <minimum >
    <kg />                              {positiveDouble}
    <display />?                        {display-value}
  </minimum >?
  <maximum />
    <kg />                              {positiveDouble}
    <display />?                        {display-value}
  </maximum >?
  <goal-info >
    <target-date />?                    {approx-date-time}
    <completion-date />?                {approx-date-time}
    <status />?                         {string}
  </goal-info >?
</weight-goal>
```

18. Security Considerations

18.1 Personal Information

18.1.1 Pseudo-Record ID and Pseudo-Person ID

In order to prevent collusion between applications, the service MUST assign unique, per-application identifiers to each logical record and person in the system. All communication between the application and the service MUST use these unique identifiers, which the platform can resolve to a common record or person identifier on the backend. This is required for all activities including record interactions, audit information and record information.

For example, Application A may have access to illness diagnosis information for Person 1 but not identity information. Application B may have access to identity information but not illness diagnosis for Person 1. From the two applications one can deduce the individual and the illness they are diagnosed with, even though the person believed to have this information undiscoverable.

18.2 Information Discovery

There are several techniques used to discover the existence of information. Response codes 6 (Invalid Application), 9 (Invalid Person), and 10 (Invalid Record) are useful for providing contextual information to feed back to the end user, but they inadvertently reveal information about the HealthVault Service and health record information. An implementation may replace these return codes with 11 (Access Denied) to prevent information discovery.

27 March 2009 - Version 1

18.3 Shared Secrets

Shared secrets are used in several forms by the HealthVault Service: Open Query uses a PIN to protect the execution of the query and Connect Requests and Packages use a question and secret answer to protect their contents. It is important to keep these shared secrets secure so that the functionality cannot be utilized by a malicious user.

19. References

19.1 Normative References

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Appendix A – Data Type Schema Examples

aerobic-profile.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:a="urn:com.microsoft.wc.thing.aerobic-profile"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.aerobic-profile">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>7b2ea78c-4b78-4f75-a6a7-5396fe38b09a</type-id>
            <type-name>Aerobic Profile</type-name>
            <effective-date-element>when</effective-date-element>
            <summary>
                A summary of a person's aerobic condition.
            </summary>
            <remarks>
                A person's aerobic profile is made up of a set of
                measurements that indicate the aerobic capabilities of
the person.
            </remarks>
            <seealso>urn:com.microsoft.wc.thing.aerobic</seealso>
            <seealso>urn:com.microsoft.wc.thing.aerobic-weekly</seealso>
        </documentation>
```

```
        </annotation>
    <element name="aerobic-profile">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A summary of a person's aerobic condition.
                    </summary>
                    <remarks>
                            A person's aerobic profile is made up of a set
of
                            measurements that indicate the aerobic
capabilities of the person.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date/time when the aerobic profile
                                    measurements were taken.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="max-heartrate" type="positiveInteger"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The maximum heart rate of the person.
                            </summary>
                            <remarks>
                                    The maximum heart rate is measured in
beats per
                                    minute (BPM).
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="resting-heartrate" type="positiveInteger"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The heart rate of the person when at
rest.
                            </summary>
                            <remarks>
                                    The resting heart rate is measured in
beats per
                                    minute (BPM).
                            </remarks>
```

```
                    </documentation>
                </annotation>
            </element>
            <element name="anaerobic-threshold" type="positiveInteger"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The anaerobic threshold (AT) is the
exercise
                                intensity at which lactate starts to
accumulate
                                in the blood stream.
                        </summary>
                        <remarks>
                                The anaerobic threshold is measured in
beats
                                per minute (BPM).
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="VO2-max" type="a:MaxVO2" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                VO2 max is the maximum rate at which
oxygen
                                is absorbed into the blood stream by the
body.
                        </summary>
                        <remarks>
                                VO2 max can be measured as either and
absolute rate
                                in liters of oxygen per minute, or as a
relative rate in
                                milliters of oxygen per kilogram of
bodyweight per minute.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="heartrate-zone-group"
type="a:HeartrateZoneGroup" minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                A grouping of heart rate zones.
                        </summary>
                        <remarks>
                                This allows for customized groupings of
heart
                                rate zones based on different
values.Heart
                                rate zones are often used to optimize
```

```
                                        exercise for different purposes. By
grouping
                                        heart rate zones into named groups it is
easier
                                        to identify the zones to use for a
particular
                                        workout.
                                </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
    <complexType name="HeartrateZoneGroup">
        <annotation>
            <documentation>
                <summary>
                    A grouping of heart rate zones.
                </summary>
                <remarks>
                    This allows for customized groupings of heart
                    rate zones based on different values.Heart
                    rate zones are often used to optimize
                    exercise for different purposes. By grouping
                    heart rate zones into named groups it is easier
                    to identify the zones to use for a particular
                    workout.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="heartrate-zone" type="a:HeartrateZone"
minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                            The heart rate zone definitions that make up
the
                            zone group.
                        </summary>
                        <remarks>
                            Each heart rate zone definition defines a
zone
                            for the zone group. In most cases the zone
                            definitions should not overlap.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
        <attribute name="name" type="string" use="optional">
            <annotation>
                <documentation>
                    <summary>
```

```
                                The name of the heart rate zone group.
                        </summary>
                    <remarks>
                            The name is usually arbitrary. It is used by the
                            person to easily identify a set of heart rate
zones
                            for use. In some cases, the group name may refer
to
                            common heart rate zones that have been
popularized
                            by sports trainers.
                        </remarks>
                </documentation>
            </annotation>
        </attribute>
    </complexType>
    <complexType name="HeartrateZone">
        <annotation>
            <documentation>
                <summary>
                        A heart rate range.
                    </summary>
                <remarks>
                        A heart rate zone defines a range of heart rate
measurements
                        in beats per minute (BPM). A heart rate zone can be
used to
                        categorize the intensity of aerobic exercise or to
guide
                        an aerobic session.
                        <br/>
                    <br/>
                        A zone is defined by a lower and upper limit
measured in
                        BPM or as a percentage of a person's maximum heart
rate.
                    </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="lower-bound" type="a:ZoneBoundary">
                <annotation>
                    <documentation>
                        <summary>
                                The lower boundary of the heart rate zone.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="upper-bound" type="a:ZoneBoundary">
                <annotation>
                    <documentation>
                        <summary>
                                The upper boundary of the heart rate zone.
                            </summary>
```

```
                    </documentation>
                </annotation>
            </element>
        </sequence>
        <attribute name="name" type="string" use="optional">
            <annotation>
                <documentation>
                    <summary>
                        The name of the heart rate zone.
                    </summary>
                    <remarks>
                        The name is usually arbitrary. It is used by the
                        person to easily identify the zone without
having
                        to remember the boundaries. The name is often
                        represented by the intensity or the benefits
gained
                        by exercising in that zone. <br/>
                        For example: <br/>
                        "fat burning zone" or "cardio zone".
                    </remarks>
                </documentation>
            </annotation>
        </attribute>
    </complexType>
    <complexType name="ZoneBoundary">
        <annotation>
            <documentation>
                <summary>
                    A heart rate zone boundary.
                </summary>
                <remarks>
                    The boundary of a heart rate zone may be set as
either an
                    absolute heart rate (measured in BPM) or as a
percentage
                    of a person's maximum heart rate.
                </remarks>
            </documentation>
        </annotation>
        <choice>
            <annotation>
                <documentation>
                    <summary>
                        Choice of absolute or relative boundary unites.
                    </summary>
                    <remarks>
                        The boundary of a heart rate zone may be set as
either an
                        absolute heart rate (measured in BPM) or as a
percentage
                        of a person's maximum heart rate.
                    </remarks>
                </documentation>
            </annotation>
```

```
            <element name="absolute-heartrate" type="positiveInteger">
                <annotation>
                    <documentation>
                        <summary>
                                A zone boundary defined by an absolute heart
                                rate.
                        </summary>
                        <remarks>
                                The zone boundary is expressed as an
absolute

                                heart rate in beats per minute (BPM).
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="percent-max-heartrate" type="t:percentage">
                <annotation>
                    <documentation>
                        <summary>
                                A zone boundary defined by a relative heart
                                rate.
                        </summary>
                        <remarks>
                                The zone boundary is expressed as a
percentage

                                of the person's maximum heart rate.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </choice>
    </complexType>
    <complexType name="MaxVO2">
        <annotation>
            <documentation>
                <summary>
                        The maximum capacity of person to transport and
                        utilize oxygen during incremental exercise.
                </summary>
                <remarks>
                        VO2 max can be measured as either an absolute
                        amount of oxygen utilized, or as an amount
                        that is relative to the person's body weight.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="absolute" type="t:positiveDouble"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The amount of oxygen utilized per minute
                                of exercise.
                        </summary>
```

```
                <remarks>
                        Absolute VO2 max is measured in
                        liters per minute (l/min).
                </remarks>
            </documentation>
        </annotation>
    </element>
    <element name="relative" type="t:positiveDouble"
minOccurs="0">
        <annotation>
            <documentation>
                <summary>
                        The amount of oxygen utilized per
                        kilogram body weight per minute.
                </summary>
                <remarks>
                        Relative VO2 max is measured in
                        milliters per kilogram per minute
                        (ml/kg/min). This measurement is the
                        more common measurement used to compare
                        aerobic performance.
                </remarks>
            </documentation>
        </annotation>
    </element>
 </sequence>
    </complexType>
</schema>
```

allergy.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns:allergy="urn:com.microsoft.wc.thing.allergy"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.allergy">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>52bf9104-2c5e-4f1f-a66d-552ebcc53df7</type-id>
            <type-name>Allergy</type-name>
            <summary>
                    Information related to an allergy.
            </summary>
            <remarks>
                    This thing type describes an allergy a person has. The
                    allergic-episode type defines an occurrence of that
                    episode resulting in symptoms.
            </remarks>
```

```
            <effective-date-element>first-observed</effective-date-
element>
        </documentation>
    </annotation>
    <element name="allergy">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Information related to an allergy.
                        </summary>
                    <remarks>
                            This thing type describes an allergy a person
has. The
                            allergic-episode type defines an occurrence of
that
                            episode resulting in symptoms.
                        </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="name" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                    The name of the allergy.
                                </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="reaction" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    A description of a typical reaction to
the
                                    allergen.
                                </summary>
                            <preferred-vocabulary>icd9cm</preferred-
vocabulary>
                        </documentation>
                    </annotation>
                </element>
                <element name="first-observed" type="d:approx-date-time"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The approximate date and time when the
allergy
                                    was first observed.
                                </summary>
                        </documentation>
                    </annotation>
```

```
            </element>
            <element name="allergen-type" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The allergen type provides a general
category of
                                the source of the allergic reaction.
                        </summary>
                        <remarks>
                                Examples include medication (penicillin,
                                sulfonamides, etc.), food (peanuts,
shell fish,
                                wheat, etc.), animal (bee stings,
canine,
                                feline, etc.), plants (ragweed, birch,
etc.),
                                environmental (smoke, smog, dust, etc.).
                        </remarks>
                        <preferred-vocabulary>allergen-type</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="allergen-code" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The clinical allergen code.
                        </summary>
                        <preferred-vocabulary>icd9cm</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="treatment-provider" type="t:person"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Information about the treatment provider
for
                                this allergy.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="treatment" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
```

```
                                        The possible treatment description for
this allergy.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="is-negated" type="boolean" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                    True if the allergic reation is negated
with treatment.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    </element>
</schema>
```

asthma-inhaler-use.xsd

```
<?xml version="1.0"?>
<schema xmlns:iu="urn:com.microsoft.wc.thing.inhaler-use"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.inhaler-use">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>03efe378-976a-42f8-ae1e-507c497a8c6d</type-id>
            <type-name>Asthma Inhaler Usage</type-name>
            <summary>
                    A single use of an inhaler.
            </summary>
            <remarks>
                    Note, this may wrap more than one "dose" if multiple
                    puffs per use are prescribed.
            </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="asthma-inhaler-use">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A single use of an inhaler.
                    </summary>
                    <remarks>
```

```
                                Note, this may wrap more than one "dose" if
multiple
                            puffs per use are prescribed.
                        </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time when the inhaler was
used.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="drug" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                    The name of the drug in the canister.
                            </summary>
                            <remarks>
                                    For example, 'ventolin' or 'albuterol'.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="strength" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The textual description of the drug
strength.
                            </summary>
                            <remarks>
                                    For example, '44 mcg / puff'.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="dose-count" type="int" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The number of doses used.
                            </summary>
                            <remarks>
                                    A dose is one puff.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
```

```
            <element name="device-id" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The unique id or serial number for the
                                canister.
                        </summary>
                        <remarks>
                                The id can be used to correlate uses.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="dose-purpose" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                An enumeration of the possible purposes
the
                                inhaler usage is targeting.
                        </summary>
                        <remarks>
                                Examples include; relief (the dose
purpose is
                                intended to relieve immediate asthma
symptoms),
                                prevention (the dose purpose is intended
to
                                prevent asthma symptoms), control (the
dose
                                purpose is intended to control the
impact of
                                current asthma symptoms), other (the
dose
                                purpose is known, but other than to
relieve,
                                prevent or control asthma symptoms), and
                                undefined (there is not enough
information
                                about the inhaler usage to discern
purpose).
                        </remarks>
                        <preferred-vocabulary>inhaler-dose-
purpose</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
  </element>
</schema>
```

base.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns:wct="urn:com.microsoft.wc.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.types">
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <import namespace="urn:com.microsoft.wc.types"
schemaLocation="types.xsd"/>
    <!-- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
-
     Shared Types

     For use across multiple thing types. Think hard before putting
     something into this file, because it increases our dependency
     management signficantly
     - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - --
>
    <annotation>
        <documentation>
            <summary>
                Types that are used across multiple thing types.
            </summary>
            <remarks>
                For instance, a weight-value type is used for the weight
                thing type as well as the dietary-intake-daily thing
type.
            </remarks>
        </documentation>
    </annotation>
    <simpleType name="positiveDouble">
        <annotation>
            <documentation>
                <summary>
                    A number, including a decimal point, greater than
                    zero.
                </summary>
                <remarks>
                    This type derives from double and ensures that all
                    values are greater than zero.
                </remarks>
            </documentation>
        </annotation>
        <restriction base="double">
            <minExclusive value="0"/>
        </restriction>
    </simpleType>
    <simpleType name="nonNegativeDouble">
        <annotation>
            <documentation>
                <summary>
```

```
                        A number, including a decimal point, greater than or
equal
                        to zero.
                    </summary>
                <remarks>
                        This type derives from double and ensures that all
                        values are greater than or equal to zero.
                    </remarks>
            </documentation>
        </annotation>
        <restriction base="double">
            <minInclusive value="0"/>
        </restriction>
    </simpleType>
    <simpleType name="percentage">
        <annotation>
            <documentation>
                <summary>
                        A decimal number between zero and one.
                    </summary>
                <remarks>
                        This type derives from double and ensures that all
                        values are between zero and one inclusive.
                    </remarks>
            </documentation>
        </annotation>
        <restriction base="double">
            <minInclusive value="0"/>
            <maxInclusive value="1"/>
        </restriction>
    </simpleType>
    <complexType name="duration-value">
        <annotation>
            <documentation>
                <summary>
                        A pair of approximate date-times used to create a
                        range.
                    </summary>
                <remarks>
                        This type derives uses two approximate date-times to
                        provide a duration range.
                    </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="start-date" type="d:approx-date-time">
                <annotation>
                    <documentation>
                        <summary>
                                The approximate start date and time for the
duration range.
                            </summary>
                    </documentation>
                </annotation>
            </element>
```

```
            <element name="end-date" type="d:approx-date-time"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The approximate end date and time for the
duration range.
                        </summary>
                        <remarks>
                                The end-date is optional in order to support
indefinite durations.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="double-range">
        <annotation>
            <documentation>
                <summary>
                        A pair of doubles used to create a
                        range.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="minimum-range" type="double">
                <annotation>
                    <documentation>
                        <summary>
                                The minimum value for the range.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="maximum-range" type="double">
                <annotation>
                    <documentation>
                        <summary>
                                The maximum value for the range.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="display-value">
        <annotation>
            <documentation>
                <summary>
                        A numeric value used for display purposes
                        and tagged with arbitrary units.
                </summary>
                <remarks>
```

```
                        The Microsoft Health Service standardizes its
storage
                        of data like length, weight, and temperature so that
                        applications can process the data more easily. So,
                        in order to support the user's preference of units
                        the display value type is used to maintain the user
                        entered value such that any application can display
                        the value back to the user in the same form they
                        entered it even though the data is stored in a base
                        unit value. This prevents rounding errors on the
                        data when converting to and from the base unit of
                        measure.<br/>
                    <br/>
                        The display value should be set whenever data is
taken
                        directly from the user through UI and it should be
                        used to show data to the user when available.
                    </remarks>
            </documentation>
        </annotation>
        <simpleContent>
            <extension base="double">
                <attribute name="units" type="string" use="required">
                    <annotation>
                        <documentation>
                            <summary>
                                An arbitrary string representing the
units
                                of measure for the value.
                            </summary>
                            <remarks>
                                For example, the base unit of measure
for
                                length is meters, this display value may
                                contain a length in feet. The units
attribute
                                would contain "feet" or an appropriate
                                abbreviation.
                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
                <attribute name="units-code" type="string" use="optional">
                    <annotation>
                        <documentation>
                            <summary>
                                The Microsoft Health Lexicon code for
the unit
                                of measure.
                            </summary>
                            <remarks>
                                If the unit of measure is available from
one of
                                the Microsoft Health Lexicon
vocabularies, this
```

```
                                        attribute is the code in the lexicon for
that
                                        unit.<br/>
                            <br/>
                                        The advantage of using the units-code is
that
                                        the unit can be easily translated for
use by
                                        any application for the supported
languages.
                                </remarks>
                        </documentation>
                    </annotation>
                </attribute>
            </extension>
        </simpleContent>
    </complexType>
    <complexType name="weight-value">
        <annotation>
            <documentation>
                <summary>
                    A weight measurement.
                </summary>
                <remarks>
                    A weight measurement consists of the value in
kilograms,
                    which is the base unit of measurement for weight,
and
                    an optional display value. The display value is used
to
                    store the weight measurement in the user's
preference of
                    weight units. This avoids rounding errors when
                    converting to and back from kilograms.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="kg" type="t:positiveDouble">
                <annotation>
                    <documentation>
                        <summary>
                            The weight measurement in kilograms.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="display" type="t:display-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The display value for the weight
measurement.
                        </summary>
                        <remarks>
```

```
                                        The display value contains the weight
measurement
                                        value stored in the user's preference of
units.
                                </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="length-value">
            <annotation>
                <documentation>
                    <summary>
                            A length measurement.
                    </summary>
                    <remarks>
                            A length measurement consists of the value in
meters,
                            which is the base unit of measurement for length,
and
                            an optional display value. The display value is used
to
                            store the length measurement in the user's
preference of
                            length units. This avoids rounding errors when
                            converting to and back from meters.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="m" type="t:positiveDouble">
                    <annotation>
                        <documentation>
                            <summary>
                                    The length measurement in meters.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="display" type="t:display-value" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The display value for the length
measurement.
                            </summary>
                            <remarks>
                                    The display value contains the length
measurement
                                    value stored in the user's preference of
units.
                            </remarks>
                        </documentation>
                    </annotation>
```

```
                    </element>
            </sequence>
        </complexType>
        <complexType name="flow-value">
            <annotation>
                <documentation>
                    <summary>
                            A flow measurement.
                    </summary>
                    <remarks>
                            A flow measurement consists of the value in liters
per
                            second (L/s), which is the base unit of measurement
for
                            flow, and an optional display value. The display
value is
                            used to store the flow measurement in the user'
                            s preference of flow units. This avoids rounding
errors
                            when converting to and back from L/s.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="liters-per-second" type="t:positiveDouble">
                    <annotation>
                        <documentation>
                            <summary>
                                    The flow measurement in liters per second
(L/s).
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="display" type="t:display-value" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The display value for the flow measurement.
                            </summary>
                            <remarks>
                                    The display value contains the flow
measurement
                                    value stored in the user's preference of
units.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="altitude-value">
            <annotation>
                <documentation>
                    <summary>
```

```
                                An altitude measurement.
                        </summary>
                    <remarks>
                            An altitude measurement consists of the value in
meters
                            above sea level,
                            which is the base unit of measurement for altitude,
and
                            an optional display value. The display value is used
to
                            store the altitude measurement in the user's
preference of
                            altitude units. This avoids rounding errors when
                            converting to and back from meters.
                    </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="m" type="double">
                <annotation>
                    <documentation>
                        <summary>
                                The altitude measurement in meters.
                            </summary>
                        <remarks>
                                A negative value indicates the measurement
was
                                take below sea level.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="display" type="t:display-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The display value for the altitude
measurement.
                            </summary>
                        <remarks>
                                The display value contains the altitude
measurement
                                value stored in the user's preference of
units.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="temperature-value">
        <annotation>
            <documentation>
                <summary>
                        A temperature measurement.
```

```
                        </summary>
                    <remarks>
                            A temperature measurement consists of the value in
Celsuis
                            (C), which is the base unit of measurement for
temperature,
                            and an optional display value. The display value is
used to
                            store the temperature in the user's preference of
                            units. This avoids rounding errors when
                            converting to and back from Celsius.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="celsius" type="double">
                    <annotation>
                        <documentation>
                            <summary>
                                    The temperature measurement in Celsius(C).
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="display" type="t:display-value" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The display value for the temperature
measurement.
                            </summary>
                            <remarks>
                                    The display value contains the temperature
measurement
                                    value stored in the user's preference of
units.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="pace-value">
            <annotation>
                <documentation>
                    <summary>
                            A pace measurement.
                    </summary>
                    <remarks>
                            A pace measurement consists of the value in seconds
per
                            100 meters, which is the base unit of measurement
for
                            pace, and an optional display value. The display
value is
```

```
                            used to store the pace in the user's preference of
                            units. This avoids rounding errors when
                            converting to and back from seconds per 100 meters.
                    </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="seconds-per-hundred-meters"
type="t:positiveDouble">
                <annotation>
                    <documentation>
                        <summary>
                                The pace measurement in seconds per 100
meters.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="display" type="t:display-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The display value for the pace measurement.
                        </summary>
                        <remarks>
                                The display value contains the pace
measurement
                                value stored in the user's preference of
units.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="power-value">
        <annotation>
            <documentation>
                <summary>
                        A power measurement.
                </summary>
                <remarks>
                        A power measurement consists of the value in watts,
                        which is the base unit of measurement for
                        power, and an optional display value. The display
value is
                        used to store the power in the user's preference of
                        units. This avoids rounding errors when
                        converting to and back from watts.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="watts" type="t:positiveDouble">
                <annotation>
```

```
                        <documentation>
                            <summary>
                                    The power measurement in watts.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="display" type="t:display-value" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The display value for the power measurement.
                            </summary>
                            <remarks>
                                    The display value contains the power
measurement
                                    value stored in the user's preference of
units.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="torque-value">
            <annotation>
                <documentation>
                    <summary>
                            A torque measurement.
                    </summary>
                    <remarks>
                            A torque measurement consists of the value in newton
meters,
                            which is the base unit of measurement for
                            torque, and an optional display value. The display
value is
                            used to store the torque in the user's preference of
                            units. This avoids rounding errors when
                            converting to and back from newton meters.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="newton-meters" type="t:positiveDouble">
                    <annotation>
                        <documentation>
                            <summary>
                                    The torque measurement in newton meters.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="display" type="t:display-value" minOccurs="0">
                    <annotation>
                        <documentation>
```

```
                        <summary>
                                The display value for the torque
measurement.
                        </summary>
                        <remarks>
                                The display value contains the torque
measurement
                                value stored in the user's preference of
units.
                        </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="speed-value">
    <annotation>
        <documentation>
            <summary>
                    A speed measurement.
            </summary>
            <remarks>
                    A speed measurement consists of the value in meters
per
                    second (m/s), which is the base unit of measurement
for
                    speed, and an optional display value. The display
value
                    is used to store the speed in the user's preference
of
                    units. This avoids rounding errors when
                    converting to and back from m/s.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="meters-per-second" type="t:positiveDouble">
            <annotation>
                <documentation>
                    <summary>
                            The speed measurement in meters per second
(m/s).
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="display" type="t:display-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The display value for the speed measurement.
                    </summary>
                    <remarks>
                            The display value contains the speed
measurement
```

```
                                     value stored in the user's preference of
units.
                              </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="blood-glucose-value">
        <annotation>
            <documentation>
                <summary>
                        A blood glucose measurement.
                </summary>
                <remarks>
                        A blood glucose measurement consists of the value in
millimoles per liter (mmol/L),
                        which is the base unit of measurement for blood
glucose, and
                        an optional display value. The display value is used
to
                        store the blood glucose measurement in the user's
preference of
                        measurement units. This avoids rounding errors when
                        converting to and back from mmol/L.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="mmolPerL" type="t:positiveDouble">
                <annotation>
                    <documentation>
                        <summary>
                                The blood glucose measurement in millimoles
per liter.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="display" type="t:display-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The display value for the blood glucose
measurement.
                        </summary>
                        <remarks>
                                The display value contains the blood glucose
measurement
                                value stored in the user's preference of
units.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
```

```
            </sequence>
        </complexType>
    <complexType name="insulin-injection-value">
        <annotation>
            <documentation>
                <summary>
                        A insulin injection measurement.
                </summary>
                <remarks>
                        A insulin injection consists of the value in IE
units (1/100ml),
                        which is the base unit of insulin injections, and
                        an optional display value. The display value is used
to
                        store the insulin injection amount the user's
preference of
                         units. This avoids rounding errors when
                        converting to and back from IE units
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="IE" type="t:positiveDouble">
                <annotation>
                    <documentation>
                        <summary>
                                The insulin injeciton amount in IE units
(1/100ml).
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="display" type="t:display-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The display value for the insulin injection
amount.
                        </summary>
                        <remarks>
                                The display value contains the insulin
injection amount
                                value stored in the user's preference of
units.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <simpleType name="dow">
        <annotation>
            <documentation>
                <summary>
                        The day of the week.
```

```
                </summary>
            <remarks>
                    1 = Sunday
                    2 = Monday
                    3 = Tuesday
                    4 = Wednesday
                    5 = Thursday
                    6 = Friday
                    7 = Saturday
                </remarks>
        </documentation>
    </annotation>
    <restriction base="int">
        <minInclusive value="1"/>
        <maxInclusive value="7"/>
    </restriction>
</simpleType>
<simpleType name="goal-status">
    <annotation>
        <documentation>
            <summary>
                    An enumeration of the possible goal states.
            </summary>
        </documentation>
    </annotation>
    <restriction base="string">
        <enumeration value="Active">
            <annotation>
                <documentation>
                    <summary>
                            The goal is actively being worked toward.
                    </summary>
                </documentation>
            </annotation>
        </enumeration>
        <enumeration value="Achieved">
            <annotation>
                <documentation>
                    <summary>
                            The goal has been achieved.
                    </summary>
                </documentation>
            </annotation>
        </enumeration>
        <enumeration value="Abandoned">
            <annotation>
                <documentation>
                    <summary>
                            The goal has been abandoned.
                    </summary>
                </documentation>
            </annotation>
        </enumeration>
    </restriction>
</simpleType>
```

```
<complexType name="goal">
    <annotation>
        <documentation>
            <summary>
                    Defines a health or fitness goal.
            </summary>
            <remarks>
                    A goal may be a short-term achievement like losing
                    weight or a long-term goal like competing in a
marathon.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="target-date" type="d:approx-date-time"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The date upon which the person wants to
complete
                            the goal.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="completion-date" type="d:approx-date-time"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The date on which the goal was completed.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="status" type="t:goal-status" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The current status of the goal.
                    </summary>
                    <remarks>
                            The status is not automatically updated.
"Active"
                            goals may need to be evaluated to determine
if they
                            have been "achieved".
                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<simpleType name="one-to-five">
```

```
        <annotation>
            <documentation>
                <summary>
                        An integer value from one to five.
                </summary>
                <remarks>
                        This type is used in rating something. For instance,
                        an aerobic session intensity may be rated from one
                        to five where five is the most intense and one is
the
                        least intense.
                </remarks>
            </documentation>
        </annotation>
        <restriction base="int">
            <minInclusive value="1"/>
            <maxInclusive value="5"/>
        </restriction>
    </simpleType>
    <complexType name="sample">
        <annotation>
            <documentation>
                <summary>
                        Defines a single sample.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="time-offset" type="t:nonNegativeDouble">
                <annotation>
                    <documentation>
                        <summary>
                                Offset is seconds from sample set base time.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="note" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Description of sample.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="value" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Value of sample.
                        </summary>
                        <remarks>
                                The value of the sample can be any string.
The
```

```
                                    value depends on the type of sample. Some
sample
                                    types will have a simple int or double as
the
                                    value. Others will have a comma separated
list.
                                    For example, a "position" sample may have
                                    "25E,66N" (longitude,latitude) as the value.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="sample-set">
        <annotation>
            <documentation>
                <summary>
                        Defines a sample set.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="base-time" type="d:date-time">
                <annotation>
                    <documentation>
                        <summary>
                                Sample set base time from which samples are
offset.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="sample-unit" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                The unit that the value is stored in.
                        </summary>
                        <remarks>
                                Each sample contains a value. All samples in
a
                                sample set should be stored using the same
units.
                                This value is a text description of the
units the
                                sample value is stored in. Use the
                                "sample-unit-code" to describe the units as
a
                                dictionary code.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="sample-unit-code" type="t:codable-value">
```

```
            <annotation>
                <documentation>
                    <summary>
                            The dictionary code for the unit that the
value
                            is stored in.
                    </summary>
                    <remarks>
                            Each sample contains a value. All samples in
a
                            sample set should be stored using the same
units.
                    </remarks>
                    <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                </documentation>
            </annotation>
        </element>
        <element name="sample" type="t:sample" minOccurs="0"
maxOccurs="unbounded">
            <annotation>
                <documentation>
                    <summary>
                            Sample set samples.
                    </summary>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="aerobic-session">
    <annotation>
        <documentation>
            <summary>
                    Defines a lap within a single aerobic session.
            </summary>
        </documentation>
    </annotation>
    <sequence>
        <element name="mode" type="t:codable-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The type of activity for the session.
                    </summary>
                    <remarks>
                            The mode is the type of activity for the
session,
                            like biking, running, etc. The most common
                            activities are part the of the Microsoft
Health
                            Lexicon and should be referenced using the
code
                            retrieved by calling GetVocabulary with
```

```
                                "aerobic-activities" as the vocabulary
name.<br/>
                            <br/>
                                For activities that are not in the Microsoft
                                Health Lexicon you can add the value to the
                                text element of the codable value.
                            </remarks>
                        <preferred-vocabulary>aerobic-activities</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="distance" type="t:length-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The distance covered in the session.
                        </summary>
                        <remarks>
                            Distances are stored in meters. The
application
                            must convert the distance entered by the
user
                            into meters and should also store the
distance
                            and units entered by the user in the
display-value
                            so that it can be displayed to the user in
their
                            preferred unit of measure when viewing the
data.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="minutes" type="t:positiveDouble" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The duration of the session in minutes.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="intensity" type="t:one-to-five" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The subjective average intensity of the
session.
                        </summary>
                        <remarks>
                            Intensity is measured on a scale from one to
five
```

```
                                     where one is easy and five is the most
intense.
                            </remarks>
                    </documentation>
            </annotation>
        </element>
        <element name="peak-heartrate" type="positiveInteger"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The highest heart rate reached during the
session.
                    </summary>
                    <remarks>
                            The peak heart rate for a session differs
from the
                            person's maximum heart rate in that a person
most
                            likely will not reach their maximum heart
rate
                            during an aerobic session. This measurement
defines
                            the highest heart rate recorded during the
session.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="avg-heartrate" type="positiveInteger"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The average heart rate reached during the
session.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="min-heartrate" type="positiveInteger"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The minimum heart rate reached during the
session.
                    </summary>
                    <remarks>
                            This is measured in beats per minute.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="energy" type="t:positiveDouble" minOccurs="0">
```

```
            <annotation>
                <documentation>
                    <summary>
                            The food energy expended during the session.
                    </summary>
                    <remarks>
                            This is measured in kilojoules .
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="energy-from-fat" type="t:positiveDouble"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The food energy burned from fat during the
session.
                    </summary>
                    <remarks>
                            This is measured in kilojoules.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="peak-speed" type="t:speed-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The maximum speed achieved during the
session.
                    </summary>
                    <remarks>
                            This is measured in meters per second.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="avg-speed" type="t:speed-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The average speed achieved during the
session.
                    </summary>
                    <remarks>
                            This is measured in meters per second.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="min-speed" type="t:speed-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
```

```
                                  The minimum speed achieved during the
session.
                        </summary>
                    <remarks>
                            This is measured in meters per second.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="peak-pace" type="t:pace-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The maximum pace achieved during the
session.
                        </summary>
                    <remarks>
                            This is measured in seconds per 100 meters.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="avg-pace" type="t:pace-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The average pace achieved during the
session.
                        </summary>
                    <remarks>
                            This is measured in seconds per 100 meters.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="min-pace" type="t:pace-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The minimum pace achieved during the
session.
                        </summary>
                    <remarks>
                            This is measured in seconds per 100 meters.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="peak-power" type="t:power-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The maximum power achieved during the
session.
                        </summary>
```

```
                    <remarks>
                        This is measured in watts.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="avg-power" type="t:power-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                        The average power achieved during the
session.
                    </summary>
                    <remarks>
                        This is measured in watts.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="min-power" type="t:power-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                        The minimum power achieved during the
session.
                    </summary>
                    <remarks>
                        This is measured in watts.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="peak-torque" type="t:torque-value"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                        The maximum torque achieved during the
session.
                    </summary>
                    <remarks>
                        This is measured in newton meters.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="avg-torque" type="t:torque-value"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                        The average torque achieved during the
session.
                    </summary>
                    <remarks>
```

```
                                    This is measured in newton meters.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="min-torque" type="t:torque-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The minimum torque achieved during the
session.
                        </summary>
                        <remarks>
                                This is measured in newton meters.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="left-right-balance" type="t:percentage"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The power output balance between left and
right strokes.
                        </summary>
                        <remarks>
                                This is measured as  a percentage (%)
relating to the left.
                                For example, a value of 30 indicates that
30% of the power
                                came from the left, while 70% came from the
right.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="peak-cadence" type="t:positiveDouble"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The maximum cadence achieved during the
session. T
                        </summary>
                        <remarks>
                                his is measured in revolutions per minute
(rpm).
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="avg-cadence" type="t:positiveDouble"
minOccurs="0">
```

```
            <annotation>
                <documentation>
                    <summary>
                            The average cadence achieved during the
session.
                    </summary>
                    <remarks>
                            This is measured in revolutions per minute
(rpm).
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="min-cadence" type="t:positiveDouble"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The minimum cadence achieved during the
session.
                    </summary>
                    <remarks>
                            This is measured in revolutions per minute
(rpm).
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="peak-temperature" type="t:temperature-value"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The maximum temperature achieved during the
session.
                    </summary>
                    <remarks>
                            This is measured in degrees Celsius (C).
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="avg-temperature" type="t:temperature-value"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The average temperature achieved during the
session.
                    </summary>
                    <remarks>
                            This is measured in degrees Celsius (C).
                    </remarks>
                </documentation>
            </annotation>
```

```
            </element>
            <element name="min-temperature" type="t:temperature-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The minimum temperature achieved during the
session.
                        </summary>
                        <remarks>
                                This is measured in degrees Celsius (C).
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="peak-altitude" type="t:altitude-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The maximum altitude achieved during the
session.
                        </summary>
                        <remarks>
                                This is measured in meters above mean sea
level.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="avg-altitude" type="t:altitude-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The average altitude achieved during the
session.
                        </summary>
                        <remarks>
                                This is measured in meters above mean sea
level.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="min-altitude" type="t:altitude-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The minimum altitude achieved during the
session.
                        </summary>
                        <remarks>
```

```
                                      This is measured in meters above mean sea
level.
                            </remarks>
                      </documentation>
                  </annotation>
            </element>
            <element name="elevation-gain" type="t:length-value"
minOccurs="0">
                  <annotation>
                      <documentation>
                          <summary>
                                  The gain in elevation achieved during the
session.
                          </summary>
                          <remarks>
                                  This is measured in meters.
                          </remarks>
                      </documentation>
                  </annotation>
            </element>
            <element name="elevation-loss" type="t:length-value"
minOccurs="0">
                  <annotation>
                      <documentation>
                          <summary>
                                  The loss in elevation achieved during the
session.
                          </summary>
                          <remarks>
                                  This is measured in meters.
                          </remarks>
                      </documentation>
                  </annotation>
            </element>
            <element name="number-of-steps" type="nonNegativeInteger"
minOccurs="0">
                  <annotation>
                      <documentation>
                          <summary>
                          Number of steps taken in this session.
                      </summary>
                      </documentation>
                  </annotation>
            </element>
            <element name="number-of-aerobic-steps"
type="nonNegativeInteger" minOccurs="0">
                  <annotation>
                      <documentation>
                          <summary>
                          Total steps taken in the aerobic activity range.
                      </summary>
                          <remarks>
                          Total steps taken in the aerobic activity range. This
will be less than or
```

```
                        equal to the total steps taken given that the
participant may not remain
                        in the aerobic activity range for the entire session.
                  </remarks>
                  </documentation>
               </annotation>
           </element>
           <element name="aerobic-step-minutes"
type="t:nonNegativeDouble" minOccurs="0">
               <annotation>
                  <documentation>
                     <summary>
                     Total duration spent in the aerobic activity range.
                  </summary>
                        <remarks>
                     This item will be recorded in units of minutes.
                  </remarks>
                  </documentation>
               </annotation>
           </element>
        </sequence>
    </complexType>
    <complexType name="aerobic-session-samples">
        <annotation>
            <documentation>
                <summary>
                        Defines sample sets for an aerobic session.
                </summary>
            </documentation>
        </annotation>
        <sequence>
           <element name="heartrate-samples" type="t:sample-set"
minOccurs="0">
               <annotation>
                  <documentation>
                     <summary>
                            Heart rate sample set for aerobic session.
                        </summary>
                     <preferred-sample-value>
urn:com.microsoft.wc.thing.types.nonNegativeDouble
                        </preferred-sample-value>
                  </documentation>
               </annotation>
           </element>
           <element name="distance-samples" type="t:sample-set"
minOccurs="0">
               <annotation>
                  <documentation>
                     <summary>
                            Distance sample set for aerobic session.
                        </summary>
                     <preferred-sample-value>

urn:com.microsoft.wc.thing.types.nonNegativeDouble
```

```
                                </preferred-sample-value>
                        </documentation>
                    </annotation>
                </element>
                <element name="position-samples" type="t:sample-set"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Position sample set for aerobic session.
                            </summary>
                            <remarks>
                                    Positions are expected to be in either
                                    longitude/latitude or UTM coordinates.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="speed-samples" type="t:sample-set"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Speed sample set for aerobic session.
                            </summary>
                            <preferred-sample-value>

urn:com.microsoft.wc.thing.types.nonNegativeDouble
                            </preferred-sample-value>
                        </documentation>
                    </annotation>
                </element>
                <element name="pace-samples" type="t:sample-set"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Pace sample set for aerobic session.
                            </summary>
                            <preferred-sample-value>

urn:com.microsoft.wc.thing.types.nonNegativeDouble
                            </preferred-sample-value>
                        </documentation>
                    </annotation>
                </element>
                <element name="power-samples" type="t:sample-set"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Power sample set for aerobic session.
                            </summary>
                            <preferred-sample-value>
```

```
urn:com.microsoft.wc.thing.types.nonNegativeDouble
                        </preferred-sample-value>
                </documentation>
            </annotation>
        </element>
        <element name="torque-samples" type="t:sample-set"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Torque sample set for aerobic session.
                        </summary>
                    <preferred-sample-value>

urn:com.microsoft.wc.thing.types.nonNegativeDouble
                        </preferred-sample-value>
                </documentation>
            </annotation>
        </element>
        <element name="cadence-samples" type="t:sample-set"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Cadence sample set for aerobic session.
                        </summary>
                    <preferred-sample-value>

urn:com.microsoft.wc.thing.types.nonNegativeDouble
                        </preferred-sample-value>
                </documentation>
            </annotation>
        </element>
        <element name="temperature-samples" type="t:sample-set"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Temperature sample set for aerobic session.
                        </summary>
                    <preferred-sample-value>
                            double
                        </preferred-sample-value>
                </documentation>
            </annotation>
        </element>
        <element name="altitude-samples" type="t:sample-set"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Altitude sample set for aerobic session.
                        </summary>
                    <preferred-sample-value>
```

```
                            double
                        </preferred-sample-value>
                </documentation>
            </annotation>
        </element>
        <element name="air-pressure-samples" type="t:sample-set"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Air pressure sample set for aerobic session.
                        </summary>
                    <preferred-sample-value>

urn:com.microsoft.wc.thing.types.nonNegativeDouble
                        </preferred-sample-value>
                </documentation>
            </annotation>
        </element>
        <element name="number-of-steps-samples" type="t:sample-set"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                  Number of steps taken during this sample.
                </summary>
                    <preferred-sample-value>
                  urn:com.microsoft.wc.thing.types.nonNegativeInteger
                </preferred-sample-value>
                 </documentation>
            </annotation>
        </element>
        <element name="number-of-aerobic-steps-samples"
type="t:sample-set" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                  Total steps taken in the aerobic activity range.
                </summary>
                    <preferred-sample-value>
                  urn:com.microsoft.wc.thing.types.nonNegativeInteger
                </preferred-sample-value>
                    <remarks>
                  Total steps taken in the aerobic activity range for
the relevant sample.
                  This value will be less than or equal to the total
steps taken given
                  that the participant may not remain in the aerobic
activity range for
                  the entire sample.
                </remarks>
                 </documentation>
            </annotation>
        </element>
```

```
            <element name="aerobic-step-minutes-samples" type="t:sample-
set" minOccurs="0">
                <annotation>
                   <documentation>
                       <summary>
                     Total duration spent in the aerobic activity range.
                   </summary>
                       <preferred-sample-value>
                     urn:com.microsoft.wc.thing.types.nonNegativeDouble
                   </preferred-sample-value>
                       <remarks>
                     This item will be recorded in units of minutes.
                   </remarks>
                   </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="aerobic-lap-session">
        <annotation>
            <documentation>
                <summary>
                        One stage of the aerobic session.
                </summary>
                <remarks>
                        For example, one circuit of a running track or one
length of a swimming pool.
                        Usually indicated by the person pressing the
stopwatch during exercise.
                        This may occur multiple times in a session.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="name" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Optional description for this lap, such as
"lap 1".
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="seconds-into-session"
type="t:nonNegativeDouble" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The start time of the lap relative to the
entire session.
                        </summary>
                        <remarks>
                                This is measured in seconds.
                        </remarks>
```

```
                </documentation>
            </annotation>
        </element>
        <element name="lap-session" type="t:aerobic-session"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The lap session aerobic measurements.
                    </summary>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<!-- Address -->
<complexType name="address">
    <annotation>
        <documentation>
            <summary>
                    Defines a physical or mailing address.
            </summary>
            <remarks>
                    An address may be used for either a mailing address
or
                    physical location.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="description" type="string" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            A description of the address.
                    </summary>
                    <remarks>
                            For example, a person may label the address
as
                            "My home address" or "My mailing address".
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="is-primary" type="boolean" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            States if the addresses is the primary
address
                            for contacting the person.
                    </summary>
                    <remarks>
                            If true, the address is the preferred
address
```

```
                                for contacting the person.
                            </remarks>
                    </documentation>
                </annotation>
        </element>
        <element name="street" type="string" maxOccurs="unbounded">
            <annotation>
                <documentation>
                    <summary>
                                The street portion of the address.
                            </summary>
                    <remarks>
                                The street address may be made up of one or
more
                                lines and should adhere to the standard for
the
                                locale in which the address resides.
                            </remarks>
                    </documentation>
                </annotation>
        </element>
        <element name="city" type="string">
            <annotation>
                <documentation>
                    <summary>
                                The city portion of the address.
                            </summary>
                    </documentation>
                </annotation>
        </element>
        <element name="state" type="string" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                                The state or province portion of the
address.
                            </summary>
                    </documentation>
                </annotation>
        </element>
        <!-- or province, etc. -->
        <element name="postcode" type="string">
            <annotation>
                <documentation>
                    <summary>
                                The postal code portion of the address.
                            </summary>
                    <remarks>
                                The postal code should adhere to the
standard
                                for the locale in which the address resides.
                            </remarks>
                    </documentation>
                </annotation>
        </element>
```

```
            <element name="country" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                The country portion of the address.
                        </summary>
                        <remarks>
                                This should be a string representation of
the
                                country as defined by the user. It is not
used
                                for processing so it doesn't have to be an
                                ISO-3166 code. For example, a person could
                                refer to the United States of America as
"US",
                                "USA", "United States", or "United States of
                                America".
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <!-- phone -->
    <complexType name="phone">
        <annotation>
            <documentation>
                <summary>
                        A phone number.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="description" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A person's description of the phone number.
                        </summary>
                        <remarks>
                                This is used to describe the phone number.
For
                                example, "home", "mobile", "work", etc.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="is-primary" type="boolean" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                States if the phone number is the primary
number
                                for contacting the person.
                        </summary>
```

```
                        <remarks>
                                If true, the phone number is the preferred
number
                                for contacting the person.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="number" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                The phone number.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <!-- Email -->
    <complexType name="email">
        <annotation>
            <documentation>
                <summary>
                        An email address.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="description" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A person's description of the email address.
                        </summary>
                        <remarks>
                                This is used to describe the email address.
For
                                example, "personal", "work", etc.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="is-primary" type="boolean" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                States if the email address is the primary
address
                                for contacting the person.
                        </summary>
                        <remarks>
                                If true, the email address is the preferred
address
                                for contacting the person.
```

```
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="address" type="string">
                <annotation>
                    <documentation>
                        <summary>
                            The email address.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="communication-type">
        <annotation>
            <documentation>
                <summary>
                    Defines what type of communication is used.
                </summary>
                <remarks>
                    This type is used to specify the communication
medium
                    (i.e. phone, email, pager, etc.), the priority of
which
                    medium is preferred and the class (i.e. home,
office,
                    mobile, etc.) of medium.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <!--phone, email, pager, etc-->
            <element name="communication-medium" type="t:codable-value">
                <annotation>
                    <documentation>
                        <summary>
                            Defines medium of communication used.
                        </summary>
                        <preferred-vocabulary>communication-
medium</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="priority" type="positiveInteger" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            Defines priority of communication medium.
                        </summary>
                        <remarks>
                            Preferred medium is lower value, such as
phone-1, phone-2, etc.
                        </remarks>
```

```
                    </documentation>
                </annotation>
            </element>
            <!--home, mobile, office, etc-->
            <element name="class" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Defines class of communication used.
                        </summary>
                        <preferred-vocabulary>communication-
class</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="value" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                Detailed value of communication type.
                        </summary>
                        <summary>
                                Examples are phone number, fax number, etc.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="language">
        <annotation>
            <documentation>
                <summary>
                        Defines a spoken language.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="language" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The language.
                        </summary>
                        <remarks>
                                The Microsoft Health Lexicon defines codes
for
                                many of the common spoken languages. In most
                                cases the language should be specified by
using
                                the code retrieved from the Microsoft Health
                                Lexicon by calling GetVocabulary with
"languages"
                                as the vocabulary name. If the language
doesn't
```

```
                                    exist the Microsoft Health Lexicon the
"text"
                                    element of the codable value can be used to
specify
                                    the language.
                            </remarks>
                    <preferred-vocabulary>iso:iso639-1</preferred-
vocabulary>
                </documentation>
            </annotation>
        </element>
        <element name="is-primary" type="boolean" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            States if the language is the primary
language
                            of the person.
                    </summary>
                    <remarks>
                            If true, the language is the preferred
spoken
                            language of the person.
                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="name">
    <annotation>
        <documentation>
            <summary>
                Defines a person's name.
            </summary>
        </documentation>
    </annotation>
    <sequence>
        <element name="full" type="string">
            <annotation>
                <documentation>
                    <summary>
                            The person's full name.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="title" type="t:codable-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The person's title.
                    </summary>
                    <remarks>
                            For example, "Mr.", "Ms.", "Mrs.", etc.
```

```
                        </remarks>
                    <preferred-vocabulary>name-prefixes</preferred-
vocabulary>
                </documentation>
            </annotation>
        </element>
        <element name="first" type="string" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The person's given name.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="middle" type="string" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The person's middle name.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="last" type="string" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The person's family/sur name.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="suffix" type="t:codable-value" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The person's name suffix.
                    </summary>
                    <remarks>
                            For example, "Jr.", "Sr.", etc.
                    </remarks>
                    <preferred-vocabulary>name-suffixes</preferred-
vocabulary>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="person">
    <annotation>
        <documentation>
            <summary>
                Information related to a contact.
            </summary>
```

```
            <remarks>
                    A contact may be an emergency contact, contact
information
                    for a doctor, lawyer, etc.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="name" type="t:name">
                <annotation>
                    <documentation>
                        <summary>
                                The name of the contact person.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="organization" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The name of the organization the contact
                                belongs to.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="professional-training" type="string"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The person's professional training.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="id" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The identification number for the person
                                in the organization.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="contact" type="t:contact" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Information on how to contact the person.
                            </summary>
                    </documentation>
                </annotation>
```

```
                </element>
            <element name="type" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The type of the contact person.
                        </summary>
                        <remarks>
                                A person may be an emergency contact,
                                a health care provider, etc. The values
                                should be taken from the Microsoft Health
                                Lexicon vocabulary 'person-types'.
                        </remarks>
                        <preferred-vocabulary>person-types</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="contact">
        <annotation>
            <documentation>
                <summary>
                        Defines a set of contact information.
                </summary>
                <remarks>
                        The contact information can consist of any number of
                        physical/mailing addresses, phone numbers, or email
                        addresses.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="address" type="t:address" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Physical or mailing addresses.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="phone" type="t:phone" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Telephone numbers such as home, work, or
mobile.
                        </summary>
                    </documentation>
                </annotation>
            </element>
```

```
            <element name="email" type="t:email" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Email addresses.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="coded-value">
        <annotation>
            <documentation>
                <summary>
                        Defines a value which has been coded in a Microsoft
Health
                        Vocabulary.
                </summary>
                <remarks>
                        The Microsoft Health Service provides a set of
vocabularies
                        containing common health and fitness terms and
codes.
                        Vocabularies are identified by their family, type,
and
                        version and contain values which identify an entry
in that
                        vocabulary by code.<br/>
                    <br/>
                        For example, a prescription
                        vocabulary may be identified by the family 'NCPDP',
type
                        'SCRIPT', and version '1.0' and contain a code of 10
which
                        identifies a 'tablet' form of medication.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="value" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                The code value which identifies the item in
the
                                vocabulary.
                        </summary>
                        <remarks>
                                Codes are unique to the vocabulary they
reside in.
                                The codes for a particular vocabulary can be
                                enumerated using GetVocabulary.
                        </remarks>
```

```
                    </documentation>
                </annotation>
            </element>
            <element name="family" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The family of the vocabulary.
                        </summary>
                        <remarks>
                            The family of a vocabulary partially
identifies the
                            vocabulary instance along with type and
version. If
                            the value is missing the family is assumed
to be
                            'wc' which is the Microsoft Health Lexicon.
                            <br/>
                            For example, 'NCPDP' is the vocabulary
family for
                            codes in the National Council for
Prescription Drug
                            Programs.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="type" type="string">
                <annotation>
                    <documentation>
                        <summary>
                            The type of the vocabulary.
                        </summary>
                        <remarks>
                            This is the name that identifies the
vocabulary in
                            the family of vocabularies.<br/>
                        <br/>
                            For example, 'SCRIPT' is the vocabulary name
for
                            medical prescriptions in the 'NCPDP' family
of
                            vocabularies.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="version" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The version of the vocabulary.
                        </summary>
                        <remarks>
```

```
                                  The version identifies which version of a
vocabulary
                                  identified by the 'type' element the code is
in if
                                  more than one version is present.
                          </remarks>
                    </documentation>
              </annotation>
          </element>
      </sequence>
   </complexType>
   <complexType name="codable-value">
      <annotation>
          <documentation>
              <summary>
                    A value that may have codes from one or more
Microsoft
                    Health vocabularies associated with it.
              </summary>
              <remarks>
                    A codable value represents a value that may
reference a
                    coded value in one or more of the Microsoft Health
                    vocabularies. Though it does not require the value
to
                    be in a vocabulary.<br/>
                  <br/>
                    For example, aerobic session data has a mode element
                    of type codable-value. Although many common forms of
                    aerobic session mode can be found in the Microsoft
                    Health Lexicon using the 'aerobic-activities'
vocabulary,
                    not all possible activities can be found there. If
the
                    activity does exist in the vocabulary it is
recommended
                    that applications add the coded-value for that code
as
                    a 'code' element and set the 'text' element to the
                    display value for that code. If the activity does
not
                    exist in the vocabulary the 'code' element should
not
                    be specified and the 'text' element should contain
the
                    data the user entered.<br/>
                  <br/>
                    By using the coded-value when available the data can
                    be easily localized by the Microsoft Health Service
and
                    can also be utilized by applications that are mining
the
                    data based on certain code values.
              </remarks>
          </documentation>
```

```xml
            </annotation>
            <sequence>
                <element name="text" type="string">
                    <annotation>
                        <documentation>
                            <summary>
                                The textual representation of the value.
                            </summary>
                            <remarks>
                                This may be the display value from one of
the
                                coded-values or it may be the user entered
                                value.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="code" type="t:coded-value" minOccurs="0"
maxOccurs="unbounded">
                    <annotation>
                        <documentation>
                            <summary>
                                The codes representing the value from a
                                Microsoft Health vocabulary.
                            </summary>
                            <remarks>
                                Some values can be represented by codes in
more
                                that one vocabulary. If appropriate add
coded-values
                                from as many vocabularies as are relevant.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="lab-result-type">
            <annotation>
                <documentation>
                    <summary>
                        A clinical value within a laboratory result.
                    </summary>
                    <remarks>
                        This type is define a clinical value within a
laboratory result,
                        including value, unit, reference and toxic ranges.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="value" type="double" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
```

```
                                        The value of the laboratory result.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="unit" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Units used to define laboratory result.
                        </summary>
                        <preferred-vocabulary>lab-results-units</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="reference-range" type="t:double-range"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The reference range for the laboratory
result.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="toxic-range" type="t:double-range"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The toxic range for the laboratory result.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="text-value" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Free form text for laboratory results.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="flag" type="t:codable-value" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Flag for laboratory results.
                        </summary>
                        <remarks>
```

```
                                    Example values are normal, critical, high
and low.
                            </remarks>
                    <preferred-vocabulary>lab-results-flag</preferred-
vocabulary>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="lab-test-type">
    <annotation>
        <documentation>
            <summary>
                    A laboratory test component, including the lab
result value details.
            </summary>
            <remarks>
                    This type is used to define components without a
larger clinical laboratory report.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="when" type="d:date-time">
            <annotation>
                <documentation>
                    <summary>
                            The date of the laboratory test.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="name" type="string" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The name of the laboratory test.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="substance" type="t:codable-value"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            The substance tested.
                    </summary>
                    <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                </documentation>
            </annotation>
        </element>
```

```
            <element name="collection-method" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The collection method for the laboratory
test.
                        </summary>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="abbreviation" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The abbreviation for the laboratory test.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="description" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Free form description of the laboratory
test.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="code" type="t:codable-value" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                The clinical code for the laboratory test.
                        </summary>
                        <preferred-vocabulary>LOINC</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="result" type="t:lab-result-type" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A clinical value within a laboratory result.
                        </summary>
                        <remarks>
                                This type is define a clinical value within
a laboratory result,
                                including value, unit, reference and toxic
ranges.
                        </remarks>
```

```
                    </documentation>
                </annotation>
            </element>
            <element name="status" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The status of the laboratory result.
                        </summary>
                        <remarks>
                            Examples of status include complete and
pending.
                        </remarks>
                        <preferred-vocabulary>lab-results-status</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="lab-test-result-value-type">
        <annotation>
            <documentation>
                <summary>
                    A clinical value within a laboratory result.
                </summary>
                <remarks>
                    This type is define a clinical value within a
laboratory result,
                    including value, unit, reference and toxic ranges.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="measurement" type="t:general-measurement">
                <annotation>
                    <documentation>
                        <summary>
                            The value of the laboratory result.
                        </summary>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="ranges" type="t:test-result-range"
minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                            Ranges that are associated with this result.
                        </summary>
                        <remarks>
                            Each test result can contain multiple ranges
that are useful to interpret the result value.
```

```
                              <br/>
                              Examples include reference range and
therapeutic range.
                          </remarks>
                  </documentation>
              </annotation>
          </element>
          <element name="flag" type="t:codable-value" minOccurs="0"
maxOccurs="unbounded">
              <annotation>
                  <documentation>
                      <summary>
                              Flag for laboratory results.
                          </summary>
                      <remarks>
                              Example values are normal, critical, high
and low.
                          </remarks>
                      <preferred-vocabulary>lab-results-flag</preferred-
vocabulary>
                  </documentation>
              </annotation>
          </element>
      </sequence>
   </complexType>
   <complexType name="lab-test-result-type">
       <annotation>
           <documentation>
               <summary>
                       A single laboratory test.
               </summary>
           </documentation>
       </annotation>
       <sequence>
           <element name="when" type="d:approx-date-time" minOccurs="0">
               <annotation>
                   <documentation>
                       <summary>
                               The date of the laboratory test.
                           </summary>
                   </documentation>
               </annotation>
           </element>
           <element name="name" type="string" minOccurs="0">
               <annotation>
                   <documentation>
                       <summary>
                               The name of the laboratory test.
                           </summary>
                   </documentation>
               </annotation>
           </element>
           <element name="substance" type="t:codable-value"
minOccurs="0">
               <annotation>
```

```
                    <documentation>
                        <summary>
                            The substance tested.
                        </summary>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="collection-method" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The collection method for the laboratory
test.
                        </summary>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="clinical-code" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The clinical code for the laboratory test.
                        </summary>
                        <preferred-vocabulary>LOINC</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="value" type="t:lab-test-result-value-type"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            A clinical value within a laboratory result.
                        </summary>
                        <remarks>
                            This type is define a clinical value within
a laboratory result,
                            including value, unit, reference and toxic
ranges.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="status" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The status of the laboratory result.
                        </summary>
```

```
                            <remarks>
                                    Examples of status include complete and
pending.
                            </remarks>
                        <preferred-vocabulary>lab-status</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="lab-test-results-group-type">
        <sequence>
            <element name="group-name" type="t:codable-value">
                <annotation>
                    <documentation>
                        <summary>
                                The name for this set of lab test results.
                        </summary>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="laboratory-name" type="t:Organization"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                    Name of the laboratory that performed
the tests.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="status" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The overall status of this group and any
sub-groups.
                        </summary>
                        <remarks>
                                Examples of status include complete and
pending.
                        </remarks>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="sub-groups" type="t:lab-test-results-group-
type" minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
```

```
                        <summary>
                                Lab test results sub-groups.
                        </summary>
                        <remarks>
                                If there is more than one group of results,
they should be stored in the sub-groups.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="results" type="t:lab-test-result-type"
minOccurs="0" maxOccurs="unbounded">
            <annotation>
                <documentation>
                        <summary>
                                A set of results for this group.
                        </summary>
                        <remarks>
                                If there is a single set of results, they
should be stored in results. If there are multiple ones, results
                                should be omitted and the test results
should be stored in sub-groups.
                        </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="document-reference-type">
    <annotation>
        <documentation>
            <summary>
                    Defines a document reference.
            </summary>
            <remarks>
                    This type is used to define a specific document
reference, including
                    classification, index and version.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="title" type="string">
            <annotation>
                <documentation>
                    <summary>
                            The title of the document reference.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="url" type="string">
            <annotation>
                <documentation>
                    <summary>
```

```
                                    The URL for the document reference.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="document-index" type="string">
                <annotation>
                    <documentation>
                        <summary>
                            The index for the document reference.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="version" type="string">
                <annotation>
                    <documentation>
                        <summary>
                            The version of the document reference.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="Organization">
        <annotation>
            <documentation>
                <summary>An organization entity.</summary>
                <remarks>
                        An entity such as a hospital, a pharmacy, or a
doctor's office.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="name" type="string">
                <annotation>
                    <documentation>
                        <summary>The name of the organization.</summary>
                    </documentation>
                </annotation>
            </element>
            <element name="contact" type="t:contact" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The contact information for the
organization.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="type" type="t:codable-value" minOccurs="0">
                <annotation>
```

```
                        <documentation>
                            <summary>
                                    The type of the organization.
                            </summary>
                            <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                        </documentation>
                    </annotation>
                </element>
                <element name="website" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The url for the organization's website.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="condition">
            <annotation>
                <documentation>
                    <summary>
                        Defines a single health or medical issue/problem.
                    </summary>
                    <remarks>
                        CCR qualifiers and other notes should go in the
                        common/note section of the thing.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="name" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                    The name or description of the condition.
                            </summary>
                            <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                        </documentation>
                    </annotation>
                </element>
                <element name="onset-date" type="d:approx-date" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date of onset or the first diagnosis.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="resolution-date" type="d:approx-date"
minOccurs="0">
```

```
                <annotation>
                    <documentation>
                        <summary>
                                The date the condition resolved (or for
                                multiple acute episodes, the last date the
                                condition resolved).
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="resolution" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A statement of how the condition was
resolved.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <!-- CCR qualifiers or other notes go into common/note -->
            <element name="occurrence" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                How often the condition occurs.
                        </summary>
                        <remarks>
                                Examples: acute, chronic.
                        </remarks>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="severity" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The severity for the condition
                        </summary>
                        <preferred-vocabulary>condition-severity</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="structured-measurement">
        <annotation>
            <documentation>
                <summary>
                        A measurement using specific units.
                </summary>
```

```
                        <remarks>
                            Examples include 30 cc, 500 mg, 15 liters, 30
inches, etc.
                        </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="value" type="double">
                    <annotation>
                        <documentation>
                            <summary>
                                    The value of the measurement.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="units" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                    The units for the measurement.
                            </summary>
                            <remarks>
                                    A list of vocabularies may be found in the
preferred vocabulary.
                            </remarks>
                            <preferred-vocabulary>measurement-unit-
sets</preferred-vocabulary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="general-measurement">
            <annotation>
                <documentation>
                    <summary>
                            A coded measurement and a display representation.
                    </summary>
                    <remarks>
                            Examples include 30 cc, 500 mg, 15 liters, 30
inches, etc.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="display" type="string">
                    <annotation>
                        <documentation>
                            <summary>
                                    A user-readable string.
                            </summary>
                            <remarks>
                                    Applications typically display this string.
                            </remarks>
```

```
                    </documentation>
                </annotation>
            </element>
            <element name="structured" type="t:structured-measurement"
minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                The coded value of the measurement
                        </summary>
                        <remarks>
                                Applications typically use this for
calculations, charting, or graphing.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="test-result-range">
        <annotation>
            <documentation>
                <summary>
                        A range related to a specific test result
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="type" type="t:codable-value">
                <annotation>
                    <documentation>
                        <summary>
                                The type of the range.
                        </summary>
                        <preferred-vocabulary>Contact the HealthVault team
to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="range" type="t:double-range">
                <annotation>
                    <documentation>
                        <summary>
                                The minimum and maximum of the range.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="group-membership-type">
        <annotation>
            <documentation>
                <summary>
```

```
                            A membership of the record owner in a specific
group.
                    </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="name" type="t:codable-value">
                <annotation>
                    <documentation>
                        <summary>
                                The name of the group type.
                            </summary>
                        <remarks>
                                Examples: Organization, SpecialProgram,
BargainingUnit.
                            </remarks>
                        <preferred-vocabulary>group-membership-type-
name</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="value" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                The value the member has for the group type.
                            </summary>
                        <remarks>
                                For example, a name of BargainingUnit might
have a value of HourlyWorkers.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="volume-value">
        <annotation>
            <documentation>
                <summary>
                        A volume measurement.
                    </summary>
                <remarks>
                        A volume measurement consists of the value in liters
(L),
                        and an
                        optional display value. The display value is used to
store
                        the volume measurement in the user's preference of
volume
                        units. This avoids rounding errors when converting
between units.
                    </remarks>
            </documentation>
        </annotation>
```

```
        <sequence>
            <element name="liters" type="t:nonNegativeDouble">
                <annotation>
                    <documentation>
                        <summary>
                                The volume measurement in liters (L).
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="display" type="t:display-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The display value for the volume
measurement.
                        </summary>
                        <remarks>
                                The display value contains the volume
measurement
                                value stored in the user's preference of
units.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
</schema>
```

basic.xsd

```
<?xml version="1.0"?>
<schema xmlns:basic="urn:com.microsoft.wc.thing.basic"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.basic">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <annotation>
        <documentation>
            <type-id>bf516a61-5252-4c28-a979-27f45f62f78d</type-id>
            <type-name>Basic Demographic Information</type-name>
            <summary>
                Defines a set of data about the health record that is
                considered not to be personally-identifiable.
            </summary>
            <remarks>
                Unlike the personal demographic information, this data
                is consider to be less sensitive in nature.
            </remarks>
            <singleton/>
        </documentation>
```

```
    </annotation>
    <element name="basic">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Defines a set of data about the health record
that is
                            considered not to be personally-identifiable.
                    </summary>
                    <remarks>
                            Unlike the personal demographic information,
this data
                            is consider to be less sensitive in nature.
                    </remarks>
                    <singleton/>
                </documentation>
            </annotation>
            <sequence>
                <element name="gender" minOccurs="0">
                    <simpleType>
                        <annotation>
                            <documentation>
                                <summary>
                                        The person's gender.
                                </summary>
                                <remarks>
                                        [m]ale or [f]emale
                                </remarks>
                            </documentation>
                        </annotation>
                        <restriction base="string">
                            <enumeration value="m">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                Value indicating a male.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </enumeration>
                            <enumeration value="f">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                Value indicating a female.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </enumeration>
                        </restriction>
                    </simpleType>
                </element>
                <element name="birthyear" minOccurs="0">
                    <simpleType>
```

```
            <annotation>
                <documentation>
                    <summary>
                                The year the person was born.
                    </summary>
                    <remarks>
                                A year between 1000 and 3000.
                    </remarks>
                </documentation>
            </annotation>
            <restriction base="int">
                <minInclusive value="1000"/>
                <maxInclusive value="3000"/>
            </restriction>
        </simpleType>
</element>
<element name="country" minOccurs="0">
    <simpleType>
        <annotation>
            <documentation>
                <summary>
                            The country of residence as an ISO-
3166
                            two character code.
                </summary>
            </documentation>
        </annotation>
        <restriction base="string">
            <pattern value="[a-zA-Z][a-zA-Z]"/>
        </restriction>
    </simpleType>
</element>
<element name="postcode" type="string" minOccurs="0">
    <annotation>
        <documentation>
            <summary>
                        The country specific postal code.
            </summary>
        </documentation>
    </annotation>
</element>
<element name="city" type="string" minOccurs="0">
    <annotation>
        <documentation>
            <summary>
                        The city of residence.
            </summary>
        </documentation>
    </annotation>
</element>
<element name="state" type="string" minOccurs="0">
    <annotation>
        <documentation>
            <summary>
                        The state or province of residence.
```

```
                                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="firstdow" minOccurs="0">
                <simpleType>
                    <annotation>
                        <documentation>
                            <summary>
                                        The users preferred first day of the
week.
                            </summary>
                            <remarks>
                                        The user can define which day of the
week
                                        they want calendars and weekly
computations
                                        to start with.
                                        1 = Sunday
                                        2 = Monday
                                        3 = Tuesday
                                        4 = Wednesday
                                        5 = Thursday
                                        6 = Friday
                                        7 = Saturday
                            </remarks>
                        </documentation>
                    </annotation>
                    <restriction base="int">
                        <minInclusive value="1"/>
                        <maxInclusive value="7"/>
                    </restriction>
                </simpleType>
            </element>
            <element name="language" type="t:language" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                The language(s) a person speaks.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
  </element>
</schema>
```

Blood-Glucose.xsd

```
<?xml version="1.0"?>
```

```
<schema xmlns:BloodGlucose="urn:com.microsoft.wc.thing.BloodGlucose"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.BloodGlucose">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>879e7c04-4e8a-4707-9ad3-b054df467ce4</type-id>
            <type-name>Blood Glucose Measurement</type-name>
            <summary>
                    Defines a single blood glucose reading.
              </summary>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="blood-glucose">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Defines a single blood glucose reading.
                    </summary>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time the reading was taken.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="value" type="t:blood-glucose-value">
                    <annotation>
                        <documentation>
                            <summary>
                                    The value of the blood glucose
measurement.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="glucose-measurement-type" type="t:codable-
value">
                    <annotation>
                        <documentation>
                            <summary>
                                    An enumeration of the possible blood
glucose measurement types, whole blood or plasma (serum).
```

```
                                </summary>
                        <preferred-vocabulary>glucose-measurement-
type</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="outside-operating-temp" type="boolean"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Indicates whether the reading is outside
the operating temperature range of the device that made the reading.
                        </summary>
                        <remarks>
                                Indicates whether the reading is outside
the operating temperature range of the device that made the reading.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="is-control-test" type="boolean"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Indicates whether the reading was the
result of a control test.
                        </summary>
                        <remarks>
                                Indicates whether the reading was the
result of a control test.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="normalcy" type="t:one-to-five"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A that indicates how the reading
compares to normal blood glucose concentrations
                                (usually the same as the measurement
range of the device that made the reading).
                        </summary>
                        <remarks>
                                The value ranges from one to five with 1
being much lower than a normal reading,
                                2 being lower than a normal reading, 3
being equivalent to a normal reading,
                                4 being higher than a normal reading and
5 being much higher than a normal reading.
                        </remarks>
                    </documentation>
```

```
                </annotation>
            </element>
            <element name="measurement-context" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                An optional enumeration string that
indicates contextual information about the reading.
                        </summary>
                        <preferred-vocabulary>glucose-measurement-
context</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    </element>
</schema>
```

bp.xsd

```
<?xml version="1.0"?>
<schema xmlns:BloodPressure="urn:com.microsoft.wc.thing.BloodPressure"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.BloodPressure">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="..\..\..\platform\web\xsd\dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>ca3c57f4-f4c1-4e15-be67-0a3caf5414ed</type-id>
            <type-name>Blood Pressure Measurement</type-name>
            <summary>
                Defines a single blood pressure reading.
            </summary>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="blood-pressure">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                        Defines a single blood pressure reading.
                    </summary>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
```

```
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time the reading was taken.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="systolic" type="nonNegativeInteger">
                    <annotation>
                        <documentation>
                            <summary>
                                    The systolic pressure at the time of the
                                    reading.
                            </summary>
                            <remarks>
                                    The systolic pressure is the peak
pressure
                                    in the arteries during a cardiac cycle.
It
                                    is measured in millimeters of mercury
(mmHg).
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="diastolic" type="nonNegativeInteger">
                    <annotation>
                        <documentation>
                            <summary>
                                    The diastolic pressure at the time of
the
                                    reading.
                            </summary>
                            <remarks>
                                    The diastolic pressure is the lowest
pressure
                                    in the arteries during a cardiac cycle.
It
                                    is measured in millimeters of mercury
(mmHg).
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="pulse" type="nonNegativeInteger"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The person's pulse rate at the time of
the
                                    reading.
                            </summary>
                            <remarks>
```

```
                                     The pulse is measured in beats per
minute.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="irregular-heartbeat" type="boolean"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                Indicates whether an irregular heartbeat
(arrhythmia) was detected when the measurement was taken.
                            </summary>
                            <remarks>
                                The irregular heartbeat is a boolean
indicator.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

cholesterol-profile.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:a="urn:com.microsoft.wc.thing.cholesterol-profile"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.cholesterol-profile">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>796C186F-B874-471c-8468-3EEFF73BF66E</type-id>
            <type-name>Cholesterol Profile (Lipid Profile)</type-name>
            <effective-date-element>when</effective-date-element>
            <summary>
                Cholesterol test results. Also referred to as lipid
profile.
            </summary>
            <remarks>
                Covers primary cholesterol/lipid profile test readings.
            </remarks>
        </documentation>
    </annotation>
    <element name="cholesterol-profile">
```

```
<complexType>
    <annotation>
        <documentation>
            <summary>
                    Cholesterol test results. Also referred to as
lipid profile.
            </summary>
            <remarks>
                    Cholesterol profile is typically comprised of
LDL (low-density
                    lipoprotein) cholesterol, HDL (high density
lipoprotein) cholesterol and total cholesterol.
                    This data type also in corporates currently-
requested secondary tests
                    that may be applicable for cholesterol.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="when" type="d:date">
            <annotation>
                <documentation>
                    <summary>
                            The date when the samples that led to
this test result were taken.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="ldl" type="positiveInteger" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Low density lipoprotein cholesterol.
                    </summary>
                    <remarks>
                            The LDL test measures how much low-
density lipoprotein
                            (LDL) cholesterol in the blood.
Increased levels of
                            LDL cholesterol is associated with
atherosclerosis.
                            LDL cholesterol is measured in mg/dL.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="hdl" type="positiveInteger" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            High density lipoprotein cholesterol.
                    </summary>
                    <remarks>
```

```
                                    HDL stands for high density lipoprotein
cholesterol,
                                    a form of "good" cholesterol. Proteins
in the blood
                                    that move cholesterol, triglycerides,
and other
                                    lipids to various tissues are
lipoproteins. HDL cholesterol is measured in mg/dL.
                              </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="total-cholesterol" type="positiveInteger"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Total cholesterol.
                            </summary>
                            <remarks>
                                    A total cholesterol test is a rough
measure of all the cholesterol
                                    and triglycerides in your blood. Total
cholesterol is measured in mg/dL.
                              </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="triglyceride" type="positiveInteger"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Triglyceride level.
                            </summary>
                            <remarks>
                                    Triglycerides are a type of fat. Your
body makes some
                                    triglycerides. Triglycerides also come
from the food you eat.
                                    Triglycerides are measured in mg/dL.
                              </remarks>
                        </documentation>
                    </annotation>
                </element>
          </sequence>
      </complexType>
   </element>
</schema>
```

condition.xsd

```
<?xml version="1.0"?>
```

```xml
<schema xmlns:c="urn:com.microsoft.wc.thing.condition"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.condition">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>7ea7a1f9-880b-4bd4-b593-f5660f20eda8</type-id>
            <type-name>Condition</type-name>
            <summary>
                Defines a single health or medical issue/problem.
            </summary>
            <remarks>
                CCR qualifiers and other notes should go in the
                common/note section of the thing.
            </remarks>
        </documentation>
    </annotation>
    <element name="condition">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                        Defines a single health or medical
issue/problem.
                    </summary>
                    <remarks>
                        CCR qualifiers and other notes should go in the
                        common/note section of the thing.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="name" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                The name or description of the
condition.
                            </summary>
                            <remarks>
                                Codes for the condition may be found in
zero or
                                more of the Microsoft Health
vocabularies.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="onset-date" type="d:approx-date-time"
minOccurs="0">
```

27 March 2009 - Version 1

```
                    <annotation>
                        <documentation>
                            <summary>
                                    The date of onset or the first
diagnosis.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="status" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The description of the status.
                            </summary>
                            <remarks>
                                    For example, 'acute' or 'chronic'.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="stop-date" type="d:approx-date-time"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date the condition resolved (or for
                                    multiple acute episodes, the last date
the
                                    condition resolved).
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="stop-reason" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    A statement of how the condition was
resolved.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <!-- CCR qualifiers or other notes go into common/note -->
            </sequence>
        </complexType>
    </element>
</schema>
```

daily-medication-usage.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:iu="urn:com.microsoft.wc.thing.daily-medication-usage"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.daily-medication-usage">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>A9A76456-0357-493e-B840-598BBB9483FD</type-id>
            <type-name>Daily Medication Usage</type-name>
            <summary>
                Record regular medication and dietary supplement usage.
            </summary>
            <remarks>
                This health record item type enables a user to keep a
record of the actual doses taken for prescription medications, over-the-
counter drugs and regular dietary supplements.
            </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="daily-medication-usage">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                        Recording the act taking a medication.
                    </summary>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date">
                    <annotation>
                        <documentation>
                            <summary>
                                Date on which the medication was taken.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="drug-name" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                Name of the medication, drug or
supplement taken.
                            </summary>
                            <remarks>
```

```
                                        For example, 'ventolin' or 'albuterol.'
This element allows for completely free-text input of names.
                                    </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="number-doses-consumed-in-day" type="int">
                        <annotation>
                            <documentation>
                                <summary>
                                        Number of units of the medication taken.
                                    </summary>
                                <remarks>
                                        Ties to the 'single-dose-description'
element to determine actual dosage taken.
                                    </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="purpose-of-use" type="t:codable-value"
minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>
                                        Textual description of the purpose of
use for this drug.
                                    </summary>
                                <preferred-vocabulary>dose-purpose</preferred-
vocabulary>
                                <remarks>
                                        Examples include 'high blood pressure'
or 'diabetes.' Users may select from the existing vocabulary or use
their own descriptions.
                                    </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="number-doses-intended-in-day" type="int"
minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>
                                        Number of units called for by
prescription or intent for the drug.
                                    </summary>
                                <remarks>
                                        Intend for this to be used to ensure
that patient is keeping track of their usage in comparison to the
prescribed usage. Will enable an application to easily alert the user in
instances where the patient has come short or is taking too much.
                                    </remarks>
                            </documentation>
                        </annotation>
                    </element>
```

```
            <element name="medication-usage-schedule" type="t:codable-
value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            General schedule for the usage of the
medication in quesiton.
                        </summary>
                        <preferred-vocabulary>usage-schedule</preferred-
vocabulary>
                        <remarks>
                            This will be used to distinguish between
drugs that are taken daily vs. those that are taken 'as needed.' User
may select from the existing values or use their own.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="drug-form" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            Form in which the drug is administered.
                        </summary>
                        <preferred-vocabulary>x12-de-1330</preferred-
vocabulary>
                        <remarks>
                            For example, pill, powder, capsule, etc.
User may select from the existing values or use their own.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="prescription-type" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            Means through which the drug was
determined to be needed.
                        </summary>
                        <preferred-vocabulary>prescription-
type</preferred-vocabulary>
                        <remarks>
                            For example, Unknown, MedicallyPrescribed,
or SelfChosen.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="single-dose-description" type="t:codable-
value" minOccurs="0">
                <annotation>
                    <documentation>
```

```
                        <summary>
                                Description that defines what a 'single
dose' of the medication constitutes.
                        </summary>
                        <preferred-vocabulary>x12-d3-355</preferred-
vocabulary>
                        <remarks>
                                This element qualifies the 'number-units-
consumed' element. It allows control over the definition of a dosage.
The intent is to allow for free-form text to enable the user or provider
to have complete control over the definition of a 'unit' for a specific
drug. Examples include '3 200mg tablets,' '1 Tablespoon full' or '2.5
tablets.' User may select from the existing values or use their own.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    </element>
</schema>
```

dates.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:wc-dates="urn:com.microsoft.wc.dates"
xmlns:t="urn:com.microsoft.wc.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.dates">
    <!--

        DATES.XSD
        Microsoft Wildcat
        Copyright (c) Microsoft Corporation. All rights reserved.

        Platform API: Common types for dates and times

    -->
    <import namespace="urn:com.microsoft.wc.types"
schemaLocation="types.xsd"/>
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
        </documentation>
    </annotation>
    <simpleType name="year">
        <annotation>
```

```
                <documentation>
                    <summary>

                    </summary>
                <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="int">
                <minInclusive value="1000"/>
                <maxInclusive value="9999"/>
            </restriction>
        </simpleType>
        <simpleType name="month">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="int">
                <minInclusive value="1"/>
                <maxInclusive value="12"/>
            </restriction>
        </simpleType>
        <simpleType name="day">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="int">
                <minInclusive value="1"/>
                <maxInclusive value="31"/>
            </restriction>
        </simpleType>
        <simpleType name="hour">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                <remarks>

                    </remarks>
```

```
            </documentation>
        </annotation>
        <restriction base="int">
            <minInclusive value="0"/>
            <maxInclusive value="23"/>
        </restriction>
    </simpleType>
    <simpleType name="minute">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="int">
            <minInclusive value="0"/>
            <maxInclusive value="59"/>
        </restriction>
    </simpleType>
    <simpleType name="second">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="int">
            <minInclusive value="0"/>
            <maxInclusive value="59"/>
        </restriction>
    </simpleType>
    <simpleType name="millisecond">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="int">
            <minInclusive value="0"/>
            <maxInclusive value="999"/>
        </restriction>
    </simpleType>
```

```
<complexType name="date">
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="y" type="wc-dates:year">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="m" type="wc-dates:month">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="d" type="wc-dates:day">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="approx-date">
    <annotation>
        <documentation>
            <summary>
```

```
                </summary>
            <remarks>

            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="y" type="wc-dates:year">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="m" type="wc-dates:month" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="d" type="wc-dates:day" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="time">
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
        </documentation>
```

```
                </annotation>
                <sequence>
                    <element name="h" type="wc-dates:hour">
                        <annotation>
                            <documentation>
                                <summary>

                                </summary>
                                <remarks>

                                </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="m" type="wc-dates:minute">
                        <annotation>
                            <documentation>
                                <summary>

                                </summary>
                                <remarks>

                                </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="s" type="wc-dates:second" minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>

                                </summary>
                                <remarks>

                                </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="f" type="wc-dates:millisecond" minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>

                                </summary>
                                <remarks>

                                </remarks>
                            </documentation>
                        </annotation>
                    </element>
                </sequence>
            </complexType>
            <complexType name="date-time">
                <annotation>
                    <documentation>
```

```
                date + time value, requires at least date
         </documentation>
      </annotation>
      <sequence>
          <element name="date" type="wc-dates:date">
              <annotation>
                  <documentation>
                      <summary>

                      </summary>
                      <remarks>

                      </remarks>
                  </documentation>
              </annotation>
          </element>
          <element name="time" type="wc-dates:time" minOccurs="0">
              <annotation>
                  <documentation>
                      <summary>

                      </summary>
                      <remarks>

                      </remarks>
                  </documentation>
              </annotation>
          </element>
          <element name="tz" type="t:codable-value" minOccurs="0">
              <annotation>
                  <documentation>
                      <summary>

                      </summary>
                      <remarks>

                      </remarks>
                  </documentation>
              </annotation>
          </element>
      </sequence>
  </complexType>
  <complexType name="StructuredApproxDate">
      <annotation>
          <documentation>
              <summary>

              </summary>
              <remarks>

              </remarks>
          </documentation>
      </annotation>
      <sequence>
          <element name="date" type="wc-dates:approx-date">
```

```
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="time" type="wc-dates:time" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="tz" type="t:codable-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="approx-date-time">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <choice>
            <element name="structured" type="wc-
dates:StructuredApproxDate"/>
            <element name="descriptive" type="string">
                <annotation>
                    <documentation>
                        <summary>
```

```
                        </summary>
                    <remarks>

                        </remarks>
                </documentation>
            </annotation>
        </element>
    </choice>
  </complexType>
</schema>
```

diabetic-profile.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:g="urn:com.microsoft.wc.thing.diabetic-profile"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.diabetic-profile">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>80CF4080-AD3F-4BB5-A0B5-907C22F73017</type-id>
            <type-name>Diabetic Profile</type-name>
            <effective-date-element>when</effective-date-element>
            <summary>
                    A summary of a person's diabetic condition.
              </summary>
            <remarks>
                    A person's diabetic profile is made up of a set of
                    measurements that indicate the diabetic capabilities of
the person.
              </remarks>
            <seealso>urn:com.microsoft.wc.thing.diabetic</seealso>
            <seealso>urn:com.microsoft.wc.thing.diabetic-weekly</seealso>
        </documentation>
    </annotation>
    <element name="diabetic-profile">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A summary of a person's diabetic condition.
                      </summary>
                    <remarks>
                            A person's diabetic profile is made up of a set
of
                            measurements that indicate the diabetic
capabilities of the person.
```

```
                        </remarks>
                    </documentation>
                </annotation>
                <sequence>
                    <element name="when" type="d:date-time">
                        <annotation>
                            <documentation>
                                <summary>
                                    The date/time when the diabetic profile
                                    measurements were taken.
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="max-HbA1C" type="t:percentage"
minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>
                                    The maximum HbA1C reading (as a %) .
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="target-glucose-zone-group"
type="g:TargetGlucoseZoneGroup" minOccurs="0" maxOccurs="unbounded">
                        <annotation>
                            <documentation>
                                <summary>
                                    A grouping of glucose zones.
                                </summary>
                                <remarks>
                                    This allows for customized groupings of
glucose
                                    zones based on different values. Glucose
                                    zones are often used to optimize
                                    management events for different
purposes. By grouping
                                    glucose zones into named groups it is
easier
                                    to identify the zones to use for a
particular
                                    management event.
                                </remarks>
                            </documentation>
                        </annotation>
                    </element>
                </sequence>
            </complexType>
        </element>
        <complexType name="TargetGlucoseZoneGroup">
            <annotation>
                <documentation>
                    <summary>
                        A grouping of glucose zones.
```

```
                </summary>
            <remarks>
                    This allows for customized groupings of glucose
                    zones based on different values. Glucose
                    zones are often used to optimize
                    management events for different purposes. By
grouping
                    glucose zones into named groups it is easier
                    to identify the zones to use for a particular
                    management event.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="target-glucose-zone" type="g:TargetGlucoseZone"
minOccurs="0" maxOccurs="unbounded">
            <annotation>
                <documentation>
                    <summary>
                            The heart rate zone definitions that make up
the
                            zone group.
                    </summary>
                    <remarks>
                            Each heart rate zone definition defines a
zone
                            for the zone group. In most cases the zone
                            definitions should not overlap.
                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
    <attribute name="name" type="string" use="optional">
        <annotation>
            <documentation>
                <summary>
                        The name of the glucose zone group.
                </summary>
                <remarks>
                        The name is usually arbitrary. It is used by the
                        person to easily identify a set of glucose zones
                        for use.
                </remarks>
            </documentation>
        </annotation>
    </attribute>
</complexType>
<complexType name="TargetGlucoseZone">
    <annotation>
        <documentation>
            <summary>
                    A glucose zone.
            </summary>
        <remarks>
```

```
                            A glucose zone defines a range of glucose
measurements
                        <br/>
                <br/>
                        A zone is defined by a lower and upper limit
measured in
                        glucose percentage or as a percentage of a person's
maximum glucose value.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="lower-bound" type="g:ZoneBoundary">
                <annotation>
                    <documentation>
                        <summary>
                                The lower boundary of the glucose zone.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="upper-bound" type="g:ZoneBoundary">
                <annotation>
                    <documentation>
                        <summary>
                                The upper boundary of the glucose zone.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
        <attribute name="name" type="string" use="optional">
            <annotation>
                <documentation>
                    <summary>
                        The name of the glucose zone.
                    </summary>
                    <remarks>
                        The name is usually arbitrary. It is used by the
                        person to easily identify the zone without
having
                        to remember the boundaries. The name is often
                        represented relative to means. <br/>
                        For example: <br/>
                        "two hours before meals" or "two hours after
meals".
                    </remarks>
                </documentation>
            </annotation>
        </attribute>
    </complexType>
    <complexType name="ZoneBoundary">
        <annotation>
            <documentation>
                <summary>
```

```
                            A glucose zone boundary.
                    </summary>
                <remarks>
                        The boundary of a glucose zone may be set as either
an
                        absolute glucose measurement or as a percentage
                        of a person's maximum glucose measurement.
                </remarks>
            </documentation>
        </annotation>
        <choice>
            <annotation>
                <documentation>
                    <summary>
                            Choice of absolute or relative boundary units.
                    </summary>
                    <remarks>
                            The boundary of a glucose zone may be set as
either an
                            absolute glucose measurement or as a percentage
                            of a person's maximum glucose measurement.
                    </remarks>
                </documentation>
            </annotation>
            <element name="absolute-glucose" type="t:blood-glucose-value">
                <annotation>
                    <documentation>
                        <summary>
                                A zone boundary defined by an absolute
glucose
                                value.
                        </summary>
                        <remarks>
                                The zone boundary is expressed as an
absolute
                                blood glucose value.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="percent-max-glucose" type="t:percentage">
                <annotation>
                    <documentation>
                        <summary>
                                A zone boundary defined by a relative blood
glucose value.
                        </summary>
                        <remarks>
                                The zone boundary is expressed as a
percentage
                                of the person's maximum blood glucose value.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
```

```
        </choice>
    </complexType>
</schema>
```

emotion.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:e="urn:com.microsoft.wc.thing.emotion"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.emotion">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>4b7971d6-e427-427d-bf2c-2fbcf76606b3</type-id>
            <type-name>Emotional State</type-name>
            <summary>
                A subjective record of an emotional state.
            </summary>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="emotion">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                        A subjective record of an emotional state.
                    </summary>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                The date and time when the emotional
state
                                occurred.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="mood" type="t:one-to-five" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                A subjective ranking of the emotional
state.
```

```
                                    </summary>
                        <remarks>
                                The value ranges from one to five, with
one
                                being sad and five being very happy.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="stress" type="t:one-to-five" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A subjective ranking of the person's
stress
                                level.
                        </summary>
                        <remarks>
                                The value ranges from one to five, with
one
                                being relaxed to five being stressed.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="wellbeing" type="t:one-to-five"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A subjective ranking of the person's
health.
                        </summary>
                        <remarks>
                                The value ranges from one to five, with
one
                                being sick to five being healthy.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    </element>
</schema>
```

Exercise.xsd

```
<schema xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns:this="urn:com.microsoft.wc.thing.exercise"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.exercise">
```

```
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>85a21ddb-db20-4c65-8d30-33c899ccf612</type-id>
            <type-name>Exercise</type-name>
            <wrapper-class-name>Exercise</wrapper-class-name>
            <wrapper-class-fwlink>136119</wrapper-class-fwlink>
            <sample-xml-fwlink>136120</sample-xml-fwlink>
            <data-type-guide-fwlink>136118</data-type-guide-fwlink>
            <summary>
                    Records the completion of an exercise.
              </summary>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <complexType name="StructuredNameValue">
        <sequence>
            <element name="name" type="t:coded-value">
                <annotation>
                    <documentation>
                        <summary>
                                The name of the information stored in this
detail.
                          </summary>
                        <remarks>
                                The units of the information are defined in
the vocabulary key.
                                <br/>
                                Example: Average heartrate uses the key
AverageHeartrate_BPM.
                                Example: Calories burned uses the key
CaloriesBurned_calories.
                          </remarks>
                        <preferred-vocabulary>exercise-detail-
names</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="value" type="t:structured-measurement">
                <annotation>
                    <documentation>
                        <summary>
                                The value of the detail.
                          </summary>
                        <remarks>
                                For example, to store an average heartrate
of 125, place 125 in the value element and
                                set the unit to "BPM".
                                <br/>
                                Units should be coded using the exercise-
units vocabulary.
                          </remarks>
```

```
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    <complexType name="ExerciseSegment">
        <annotation>
            <documentation>
                <summary>
                        Information pertaining to a portion of the overall
exercise.
                </summary>
                <remarks>
                        This is typically used to store information about
separate laps in a race or individual events within
                        a triathlon.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="activity" type="t:codable-value">
                <annotation>
                    <documentation>
                        <summary>
                                The type of activity for this segment.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="title" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A descriptive title for this segment.
                        </summary>
                        <remarks>
                                Examples: Lap 1, bicycle leg, first half.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="distance" type="t:length-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The distance covered in the segment.
                        </summary>
                        <remarks>
                                Distances are stored in meters. The
application
                                must convert the distance entered by the
user
                                into meters and should also store the
distance
```

```
                                    and units entered by the user in the
display-value
                                    so that it can be displayed to the user in
their
                                    preferred unit of measure when viewing the
data.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="duration" type="t:positiveDouble"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The duration of this segment in minutes.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="offset" type="t:nonNegativeDouble"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The offset of this segment from the start of
the exercise, measured in minutes.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="detail" type="this:StructuredNameValue"
minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Additional information about the segment.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <element name="exercise">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Records the completion of an exercise.
                    </summary>
                    <remarks>
                            Sample data - such as heartrate values collected
at intervals during the exercise - are
                            stored using the exercise sample type. All
samples for an exercise should be added to the related
```

```
                              items collection for the exercise.
                              <br/>
                              The exercise type is an update to the aerobic
exercise session type, and there are certain
                              complexities to supporting existing data. See
"Using the Exercise Type"
                              for more information.
                      </remarks>
              </documentation>
          </annotation>
          <sequence>
              <element name="when" type="d:approx-date-time">
                  <annotation>
                      <documentation>
                          <summary>
                                  The date and time when the exercise
occurred.
                          </summary>
                      </documentation>
                  </annotation>
              </element>
              <element name="activity" type="t:codable-value">
                  <annotation>
                      <documentation>
                          <summary>
                                  The type of activity.
                          </summary>
                          <remarks>
                                  Stores the overall activity for the
exercise period.
                                  <br/>
                                  Examples: Running, hiking, walking,
golfing, dancing.
                          </remarks>
                      <preferred-vocabulary>exercise-
activities</preferred-vocabulary>
                      <preferred-vocabulary>aerobic-
activities</preferred-vocabulary>
                      </documentation>
                  </annotation>
              </element>
              <element name="title" type="string" minOccurs="0">
                  <annotation>
                      <documentation>
                          <summary>
                                  A descriptive title for the exercise.
                          </summary>
                          <remarks>
                                  Examples: Hiking up Mt. Baker, 3-day
walk, Memorial day triathlon.
                          </remarks>
                      </documentation>
                  </annotation>
              </element>
```

```
                <element name="distance" type="t:length-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The distance covered in the exercise.
                            </summary>
                            <remarks>
                                    Distances are stored in meters. The
application
                                    must convert the distance entered by the
user
                                    into meters and should also store the
distance
                                    and units entered by the user in the
display-value
                                    so that it can be displayed to the user
in their
                                    preferred unit of measure when viewing
the data.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="duration" type="t:positiveDouble"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The duration of the exercise in minutes.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="detail" type="this:StructuredNameValue"
minOccurs="0" maxOccurs="unbounded">
                    <annotation>
                        <documentation>
                            <summary>
                                    Additional information about the
exercise.
                            </summary>
                            <remarks>
                                    The detail information typically stores
information that is specific to the type of exercise activity
                                    and any device used to measure it.
                                    <br/>
                                    Examples: Average heart rate, total
distance, average temperature, intensity.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="segment" type="this:ExerciseSegment"
minOccurs="0" maxOccurs="unbounded">
```

```
                    <annotation>
                        <documentation>
                            <summary>
                                    Information pertaining to a portion of
the overall exercise.
                            </summary>
                            <remarks>
                                    This is typically used to store
information about separate laps in a race or individual events within
                                a triathlon.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

family-history.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:this="urn:com.microsoft.wc.thing.family-history"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.family-history">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>22826e13-41e1-4ba3-8447-37dadd208fd8</type-id>
            <type-name>Family History</type-name>
            <summary>
                    A condition of a relative.
              </summary>
            <remarks>
                    Stores a condition that a relative of the record-owner
has.
              </remarks>
        </documentation>
    </annotation>
    <complexType name="FamilyHistoryRelative">
        <annotation>
            <documentation>
                <summary>
                        Information describing a relative.
                </summary>
            </documentation>
        </annotation>
        <sequence>
```

```
            <element name="relative-name" type="t:person" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The name and other information about the
relative.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="relationship" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The relationship of this person to the
record owner.
                        </summary>
                        <preferred-vocabulary>personal-
relationship</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="date-of-birth" type="d:approx-date"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The date of birth for the relative.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="date-of-death" type="d:approx-date"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The date of death for the relative.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <element name="family-history">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A condition of a relative.
                    </summary>
                    <remarks>
                            Stores a condition that a relative of the
record-owner has.
```

```
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="condition" type="t:condition">
                <annotation>
                    <documentation>
                        <summary>
                                The condition for the relative.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="relative" type="this:FamilyHistoryRelative"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Information about the relative with this
condition.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    </element>
</schema>
```

file.xsd

```
<?xml version="1.0"?>
<schema xmlns:f="urn:com.microsoft.wc.thing.file"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:wct="urn:com.microsoft.wc.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.file">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.types"
schemaLocation="../../../platform/web/xsd/types.xsd"/>
    <annotation>
        <documentation>
            <type-id>bd0403c5-4ae2-4b0e-a8db-1888678e4528</type-id>
            <type-name>File</type-name>
            <uses-blob-store>true</uses-blob-store>
            <summary>
                Defines the schema for a file which can be uploaded to
the
                Microsoft Health Service.
            </summary>
            <remarks>
```

```
                    Files are stored as encoded data in the "other data"
                    section of things. Most files are stored as base64
encoded
                    binary with the appropriate content-type set for the
                    type of the file.
                </remarks>
            </documentation>
        </annotation>
        <element name="file">
            <annotation>
                <documentation>
                    <summary>
                        Defines the schema for a file which can be uploaded
to the
                        Microsoft Health Service.
                    </summary>
                    <remarks>
                        Files are stored as encoded data in the "other data"
                        section of things. Most files are stored as base64
encoded
                        binary with the appropriate content-type set for the
                        type of the file.
                    </remarks>
                </documentation>
            </annotation>
            <complexType>
                <sequence>
                    <element name="name" type="wct:string255">
                        <annotation>
                            <documentation>
                                <summary>
                                    The original name of the file, with
extension
                                    if available.
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="size" type="positiveInteger">
                        <annotation>
                            <documentation>
                                <summary>
                                    The size of the file in bytes.
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="content-type" type="t:codable-value"
minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>
                                    The content type of the file.
                                </summary>
                                <remarks>
```

```
                                    If empty, the Microsoft Health Service
will
                                    assume a content type of
                                    application/octet-stream.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
  </element>
</schema>
```

HbA1C.xsd

```xml
<?xml version="1.0"?>
<schema xmlns:HbA1C="urn:com.microsoft.wc.thing.HbA1C"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.HbA1C">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>227F55FB-1001-4D4E-9F6A-8D893E07B451</type-id>
            <type-name>HbA1C Measurement</type-name>
            <summary>
                    Defines a single HbA1C reading.
              </summary>
            <remarks>
                    HbA1c is a test that measures the amount of glycosylated
hemoglobin in your blood.
              </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="HbA1C">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Defines a single HbA1C reading.
                      </summary>
                    <remarks>
                            HbA1c is a test that measures the amount of
glycosylated hemoglobin in your blood.
                      </remarks>
                </documentation>
            </annotation>
            <sequence>
```

```
            <element name="when" type="d:date-time">
                <annotation>
                    <documentation>
                        <summary>
                            The date and time the reading was taken.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="value" type="t:percentage">
                <annotation>
                    <documentation>
                        <summary>
                            The HbA1C measurement as a percentage.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="HbA1C-assay-method" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The HbA1C reference method used for this
measurement.
                        </summary>
                        <remarks>
                            The measurement of HbA1c in human blood
is most important for the longterm
                            control of the glycaemic state in
diabetic patients. There is no internationally agreed
                            assay measurement method.
                        </remarks>
                        <preferred-vocabulary>HbA1C-assay-
method</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="device-id" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The unique id or serial number for the
measurment device.
                        </summary>
                        <remarks>
                            If available, this value can be used to
correlate results.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
</element>
```

```
</schema>
```

height.xsd

```
<?xml version="1.0" encoding="us-ascii"?>
<schema xmlns:height="urn:com.microsoft.wc.thing.height"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.height">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <element name="height">
        <complexType>
            <annotation>
                <documentation>
                    <type-id>40750a6a-89b2-455c-bd8d-b420a4cb500b</type-id>
                    <type-name>Height Measurement</type-name>
                    <summary>
                            Information about a height measurement.
                    </summary>
                    <effective-date-element>when</effective-date-element>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time the height measurement
was
                                    taken.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="value" type="t:length-value">
                    <annotation>
                        <documentation>
                            <summary>
                                    The value of the height reading.
                            </summary>
                            <remarks>
                                    Length values are measured in meters but
data
                                    entered by users using other units
should be
                                    stored in the display-value and used
when
                                    displaying the data to the user.
                            </remarks>
```

```
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

immunization.xsd

```xml
<?xml version="1.0" encoding="us-ascii"?>
<schema xmlns:immunization="urn:com.microsoft.wc.thing.immunization"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.immunization">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>3d817dbe-af42-4a9d-a553-d1298b4d08fc</type-id>
            <type-name>Immunization</type-name>
            <summary>
                    Information related to an immunization.
              </summary>
            <effective-date-element>administration-date</effective-date-
element>
        </documentation>
    </annotation>
    <element name="immunization">
        <annotation>
            <documentation>
                <summary>
                        Information related to an immunization.
                </summary>
            </documentation>
        </annotation>
        <complexType>
            <sequence>
                <element name="name" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                    The name of the immunization.
                            </summary>
                            <remarks>
                                    Codes for immunizations can be found in
the
                                    Microsoft Health Lexicon vocabulary
                                    'immunizations' by calling
                                    GetVocabulary.
```

```
                                </remarks>
                        <preferred-vocabulary>immunizations</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="administration-date" type="d:approx-date-
time">
                <annotation>
                    <documentation>
                        <summary>
                                The date and time the immunization.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="administrator" type="t:person"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The name of the administrator of the
immunizatoin.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="manufacturer" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The manufacturer of the immunization
medication.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="lot" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The manufacturing lot of the
immunization medication.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="route" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Route of medication.
                            </summary>
```

```
                              <preferred-vocabulary>medication-
routes</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="expiration-date" type="d:approx-date"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The expiration date of the immunization
medication.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="sequence" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The sequence the immunization was
administerred.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="anatomic-surface" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The anatomic surface to which
immunization was administerred.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="adverse-event" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            A description of any adverse event to
the immunization.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="consent" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                            The consent description for the
immunization.
                        </summary>
                    </documentation>
```

```
                </annotation>
            </element>
        </sequence>
    </complexType>
  </element>
</schema>
```

lab-test-results.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns:lab="urn:com.microsoft.wc.thing.lab-test-results"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.lab-test-results">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>F57746AF-9631-49DC-944E-2C92BEE0D1E9</type-id>
            <type-name>Lab Test Result</type-name>
            <wrapper-class-name>LabTestResults</wrapper-class-name>
            <wrapper-class-fwlink>136176</wrapper-class-fwlink>
            <sample-xml-fwlink>136177</sample-xml-fwlink>
            <data-type-guide-fwlink>136175</data-type-guide-fwlink>
            <summary>
                    A series of lab test results.
              </summary>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="lab-test-results">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A series of lab test results.
                      </summary>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:approx-date-time"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time of the results.
                              </summary>
                        </documentation>
                    </annotation>
                </element>
```

```
                    <element name="lab-group" type="t:lab-test-results-group-
type" maxOccurs="unbounded">
                    <annotation>
                        <documentation>
                            <summary>
                                    A set of lab results.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="ordered-by" type="t:Organization"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The person or organization that
ordered the lab tests.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

life-goal.xsd

```
<?xml version="1.0"?>
<schema xmlns:lg="urn:com.microsoft.wc.thing.life-goal"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.life-goal">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <annotation>
        <documentation>
            <type-id>609319bf-35cc-40a4-b9d7-1b329679baaa</type-id>
            <type-name>Life Goal</type-name>
            <summary>
                An unmeasurable "checklist" goal of the type you might
                stick up on the fridge as a New Year's resolution.
            </summary>
            <remarks>
                The effective-date implies the date on which this goal
                was initiated.
            </remarks>
        </documentation>
    </annotation>
    <element name="life-goal">
        <complexType>
            <annotation>
                <documentation>
```

```
                <summary>
                        An unmeasurable "checklist" goal of the type you
might
                        stick up on the fridge as a New Year's
resolution.
                </summary>
                <remarks>
                        The effective-date implies the date on which
this goal
                        was initiated.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="description" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                Free-form description of the goal.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="goal-info" type="t:goal" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                General information about the goal such
as
                                the start date, completion date, and
current
                                status.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
  </element>
</schema>
```

medication.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns:med="urn:com.microsoft.wc.thing.medication"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.medication">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
```

```
    <annotation>
        <documentation>
            <type-id>30cafccc-047d-4288-94ef-643571f7919d</type-id>
            <type-name>Medication</type-name>
            <summary>
                    Information related to a medication.
              </summary>
            <remarks>
                    This type contains information describing a medication,
and is related to the medication fill type.
                    Instances of the medication fill type are linked to
instances of this type using related items.
                    For example, if the medication is prescribed, the
medication fill describes typical information that a
                    pharmacy would add.
              </remarks>
        </documentation>
    </annotation>
    <complexType name="Prescription">
        <annotation>
            <documentation>
                <summary>
                            Information related to a medication
prescription.
                    </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="prescribed-by" type="t:person">
                <annotation>
                    <documentation>
                        <summary>
                                    The person who prescribed this
medication.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="date-prescribed" type="d:approx-date-time"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                    Date medication was prescribed.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="amount-prescribed" type="t:general-measurement"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                    Amount of medication prescribed
                            </summary>
```

```
                </documentation>
            </annotation>
        </element>
        <element name="substitution" type="t:codable-value"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Whether a substitution is permitted.
                        </summary>
                    <remarks>
                            Example: Dispense as written,
substitution allowed
                        </remarks>
                    <preferred-vocabulary>medication-
substitution</preferred-vocabulary>
                </documentation>
            </annotation>
        </element>
        <element name="refills" type="nonNegativeInteger"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Number of medication refills.
                        </summary>
                </documentation>
            </annotation>
        </element>
        <element name="days-supply" type="positiveInteger"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Number of days supply of medication.
                        </summary>
                </documentation>
            </annotation>
        </element>
        <element name="prescription-expiration" type="d:date"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                        Date the prescription expires.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="instructions" type="t:codable-value"
minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Medication instructions.
```

```
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <element name="medication">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                        Information related to a medication.
                    </summary>
                    <remarks>
                        This type contains information describing a
medication, and is related to the medication fill type.
                        Instances of the medication fill type are linked
to instances of this type using related items.
                        For example, if the medication is prescribed,
the medication fill describes typical information that a
                        pharmacy would add.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="name" type="t:codable-value">
                    <annotation>
                        <documentation>
                            <summary>
                                Name and clinical code for the
medication.
                            </summary>
                            <remarks>
                                This name should be understandable to
the person taking
                                the medication, such as the brand name.
                            </remarks>
                            <preferred-vocabulary>Rxnorm</preferred-
vocabulary>
                            <preferred-vocabulary>NDC</preferred-vocabulary>
                        </documentation>
                    </annotation>
                </element>
                <element name="generic-name" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                Generic name and clinical code for the
medication.
                            </summary>
                            <remarks>
                                The generic name is often the drug name
rather than the brand name.
                            </remarks>
```

```
                        <preferred-vocabulary>Rxnorm</preferred-
vocabulary>
                        <preferred-vocabulary>NDC</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="dose" type="t:general-measurement"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Dose of the medication
                        </summary>
                        <remarks>
                                Examples: 1 tablet, 50 ml.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="strength" type="t:general-measurement"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Strength of medication.
                        </summary>
                        <remarks>
                                Example: 500mg, 10 mg/ml
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="frequency" type="t:general-measurement"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                How often the medication is taken.
                        </summary>
                        <remarks>
                                Example: 1 tablet per day, 2 every 6
hours, as needed.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="route" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Route of medication.
                        </summary>
                        <preferred-vocabulary>medication-
routes</preferred-vocabulary>
```

```
                    </documentation>
                </annotation>
            </element>
            <element name="indication" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Indication for medication.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="date-started" type="d:approx-date-time"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Date medication was started.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="date-discontinued" type="d:approx-date-
time" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Date medication was discontinued.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="prescribed" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The source of the prescription
                        </summary>
                        <remarks>
                                A medication that is prescribed by a
physician should code "prescribed"
                                into this element.
                        </remarks>
                    <preferred-vocabulary>medication-
prescribed</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="prescription" type="med:Prescription"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
```

```
                                    Details of a prescribed medication.
                            </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    </element>
</schema>
```

microbiology-lab-results.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns:mic="urn:com.microsoft.wc.thing.microbiology"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.microbiology">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>B8FCB138-F8E6-436A-A15D-E3A2D6916094</type-id>
            <type-name>Microbiology Lab Test Result</type-name>
            <summary>
                    Information related to a microbiology lab test.
              </summary>
            <remarks>
                    This thing type describes the microbiology lab test
results of a person.
              </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="microbiology-lab-results">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Information related to a microbiology lab test.
                    </summary>
                    <remarks>
                            This thing type describes the microbiology lab
test results of a person.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
```

```
                        <summary>
                                The date and time of the report.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="lab-tests" type="t:lab-test-type"
minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Type of microbiology lab test.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="sensitivity-agent" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Free form description of agent for a
sensitivity type.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="sensitivity-value" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Free form description of value for a
sensitivity type.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="sensitivity-interpretation" type="string"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Free form description of interpretation
for a sensitivity type.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="specimen-type" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
```

```
                                    Free form description of specimen type
for a microbiology lab test.
                                </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="organism-name" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Free form description of organism name
for a microbiology lab test.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="organism-comment" type="string"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Free form organism comment for a
microbiology lab test.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

payer.xsd

```
<?xml version="1.0" encoding="us-ascii"?>
<schema xmlns:payer="urn:com.microsoft.wc.thing.payer"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.payer">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>9366440c-ec81-4b89-b231-308a4c4d70ed</type-id>
            <type-name>Insurance Plan</type-name>
            <summary>
                    Information about the person or organization that pays
                    for health and medical related bills.
            </summary>
```

```
                </documentation>
            </annotation>
        <element name="payer">
            <complexType>
                <annotation>
                    <documentation>
                        <summary>
                            Information about the person or organization
that pays
                            for health and medical related bills.
                        </summary>
                    </documentation>
                </annotation>
                <sequence>
                    <element name="plan-name" type="string">
                        <annotation>
                            <documentation>
                                <summary>
                                    The display name for the plan.
                                </summary>
                                <remarks>
                                    For example, 'Premera Blue Cross'.
                                </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="coverage-type" type="t:codable-value"
minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>
                                    The type of coverage the plan provides.
                                </summary>
                                <remarks>
                                    For example, 'medical', 'dental', etc.
                                </remarks>
                                <preferred-vocabulary>coverage-types</preferred-
vocabulary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="carrier-id" type="string" minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>
                                    The carrier identifier.
                                </summary>
                                <remarks>
                                    For example, 'BCBS430'.
                                </remarks>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="group-num" type="string" minOccurs="0">
                        <annotation>
```

```
                                    <documentation>
                                        <summary>
                                                The group number in the plan.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="plan-code" type="string" minOccurs="0">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The plan code or prefix.
                                        </summary>
                                        <remarks>
                                                For example, 'MSJ'.
                                        </remarks>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="subscriber-id" type="string" minOccurs="0">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The identifier for the insurance
subscriber.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="person-code" type="string" minOccurs="0">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The person's code in the plan or suffix.
                                        </summary>
                                        <remarks>
                                                For example, 01 = subscriber, etc.
                                        </remarks>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="subscriber-name" type="string"
minOccurs="0">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The name of the subscriber.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="subscriber-dob" type="d:date-time"
minOccurs="0">
                                <annotation>
                                    <documentation>
```

```
                        <summary>
                                The subscriber's date of birth.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="is-primary" type="boolean" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                States whether this is the primary
coverage
                                for the person.
                        </summary>
                        <remarks>
                                If true, this is the primary coverage
for the
                                person. If false, the person may have
other
                                coverage.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="expiration-date" type="d:date-time"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The date the coverage expires.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="contact" type="t:contact" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                Contact information for the plan.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
  </element>
</schema>
```

peakflow.xsd

```
<schema xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns:this="urn:com.microsoft.wc.thing.peak-flow"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.peak-flow">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>5d8419af-90f0-4875-a370-0f881c18f6b3</type-id>
            <type-name>Peak Flow Measurement</type-name>
            <wrapper-class-name>PeakFlow</wrapper-class-name>
            <wrapper-class-fwlink>136203</wrapper-class-fwlink>
            <sample-xml-fwlink>136204</sample-xml-fwlink>
            <data-type-guide-fwlink>136202</data-type-guide-fwlink>
            <summary>
                    A peak flow measurement.
              </summary>
            <remarks>
                    Peak flow measures are typically collected on a daily
basis by patients to track their
                    lung function.
              </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="peak-flow">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A peak flow measurement.
                      </summary>
                    <remarks>
                            Peak flow measures are typically collected on a
daily basis by patients to track their
                            lung function.
                      </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:approx-date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time of the measurement.
                              </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="pef" type="t:flow-value" minOccurs="0">
```

```
                <annotation>
                    <documentation>
                        <summary>
                                The peak expiratory flow, measured in
liters/second.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="fev1" type="t:volume-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The forced expiratory volume in one
second, measured in liters.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="fev6" type="t:volume-value" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The forced expiratory volume in six
seconds, measured in liters.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="measurement-flags" type="t:codable-value"
minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Additional information about the
measurement.
                        </summary>
                        <remarks>
                                Examples: Incomplete measurement.
                        </remarks>
                        <preferred-vocabulary>Contact the HealthVault
team to help define this vocabulary.</preferred-vocabulary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
      </complexType>
    </element>
</schema>
```

person.xsd

```
<?xml version="1.0" encoding="us-ascii"?>
```

```
<schema xmlns:person="urn:com.microsoft.wc.thing.person"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.person">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <annotation>
        <documentation>
            <type-id>25c94a9f-9d3d-4576-96dc-6791178a8143</type-id>
            <type-name>Emergency or Provider Contact</type-name>
            <summary>
                Information related to a contact.
              </summary>
            <remarks>
                A contact may be an emergency contact, contact
information
                for a doctor, lawyer, etc.
            </remarks>
        </documentation>
    </annotation>
    <element name="person" type="t:person">
        <annotation>
            <documentation>
                <summary>
                    Information related to a contact.
                </summary>
                <remarks>
                    A contact may be an emergency contact, contact
information
                    for a doctor, lawyer, etc.
                </remarks>
            </documentation>
        </annotation>
    </element>
</schema>
```

personal-image.xsd

```
<?xml version="1.0"?>
<schema xmlns:pi="urn:com.microsoft.wc.thing.personal-image"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.personal-image">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <annotation>
        <documentation>
            <type-id>a5294488-f865-4ce3-92fa-187cd3b58930</type-id>
            <type-name>Personal Image</type-name>
            <uses-blob-store>true</uses-blob-store>
            <summary>
                An image that represents the person.
              </summary>
```

```
            <remarks>
                    This type has no XML data associated with it. All data
                    is stored as base64 encoded binary data in the "other
                    data" section of the thing.
                </remarks>
            <singleton/>
        </documentation>
    </annotation>
    <element name="personal-image">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            An image that represents the person.
                        </summary>
                    <remarks>
                            This type has no XML data associated with it.
All data

                        is stored as base64 encoded binary data in the
"other

                        data" section of the thing.
                        </remarks>
                </documentation>
            </annotation>
            <sequence/>
        </complexType>
    </element>
</schema>
```

personal.xsd

```
<?xml version="1.0"?>
<schema xmlns:personal="urn:com.microsoft.wc.thing.personal"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.personal">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>92ba621e-66b3-4a01-bd73-74844aed4f5b</type-id>
            <type-name>Personal Demographic Information</type-name>
            <summary>
                    Personal demographic information this is more sensitve
in
                    nature.
                </summary>
            <remarks>
                    This data is more sensitive than the "basic" thing type
                    data and may not be disclosed as freely as the "basic"
```

```
                      thing type.
                  </remarks>
              <singleton/>
          </documentation>
    </annotation>
    <element name="personal">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Personal demographic information this is more
sensitve in
                            nature.
                    </summary>
                    <remarks>
                            This data is more sensitive than the "basic"
thing type
                            data and may not be disclosed as freely as the
"basic"
                            thing type.
                    </remarks>
                    <singleton/>
                </documentation>
            </annotation>
            <sequence>
                <element name="name" type="t:name" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    A more complete representation of the
person's
                                    name.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="birthdate" type="d:date-time"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time of the person's birth,
or
                                    as close as possible.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="blood-type" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    ABO and Rhesus +/- blood type.
                            </summary>
```

```
                            <remarks>
                                    Or as much as is known about the blood
type.
                            </remarks>
                        <preferred-vocabulary>blood-types</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="ethnicity" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The person's ethnicity.
                            </summary>
                        <remarks>
                                This value should come from the
Microsoft
                                Health Lexicon vocabulary 'ethnicity-
types'.
                            </remarks>
                        <preferred-vocabulary>ethnicity</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="ssn" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The United States Social Security Number
if
                                available.
                            </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="marital-status" type="t:codable-value"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                A person's marital status.
                            </summary>
                        <remarks>
                                This value should come from the
Microsoft
                                Health Lexicon vocabulary 'marital-
status'.
                            </remarks>
                        <preferred-vocabulary>marital-status</preferred-
vocabulary>
                    </documentation>
                </annotation>
```

```
                </element>
                <element name="employment-status" type="string"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                A free-form representation of the
person's
                                employment status.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="is-deceased" type="boolean" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                True if person is deceased.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="date-of-death" type="d:approx-date-time"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                A date and time of death, if deceased.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="religion" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                A person's religion.
                            </summary>
                            <remarks>
                                This value should come from the
Microsoft
                                Health Lexicon vocabulary 'religion'.
                            </remarks>
                        <preferred-vocabulary>religion</preferred-
vocabulary>
                        </documentation>
                    </annotation>
                </element>
                <element name="is-veteran" type="boolean" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                True if person is veteran.
                            </summary>
```

```
                        </documentation>
                    </annotation>
                </element>
                <element name="highest-education-level" type="t:codable-
value" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                A free-form representation of the
person's
                                highest level of education.
                            </summary>
                            <remarks>
                                This value should come from the
Microsoft
                                Health Lexicon vocabulary 'education-
level'.
                            </remarks>
                            <preferred-vocabulary>education-level</preferred-
vocabulary>
                        </documentation>
                    </annotation>
                </element>
                <element name="is-disabled" type="boolean" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                True if person has a disability.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="organ-donor" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                A free-form representation of the
person's
                                organ donor status.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

problem.xsd

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<schema xmlns:prob="urn:com.microsoft.wc.thing.problem"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.problem">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>5E2C027E-3417-4CFC-BD10-5A6F2E91AD23</type-id>
            <type-name>Medical Problem</type-name>
            <summary>
                    Information related to a medical problem.
            </summary>
            <remarks>
                    This thing type describes the medical problem of a
person.
            </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="problem">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Information related to a medical problem.
                    </summary>
                    <remarks>
                            This thing type describes the medical problem of
a person.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time of the medical
problem.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="diagnosis" type="t:codable-value"
minOccurs="0" maxOccurs="unbounded">
                    <annotation>
                        <documentation>
                            <summary>
                                    Medical diagnosis.
                            </summary>
```

```
                        <preferred-vocabulary>icd9cm</preferred-
vocabulary>
                    </documentation>
                </annotation>
            </element>
            <element name="duration" type="t:duration-value"
minOccurs="0" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Duration for a medical problem.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="importance" minOccurs="0">
                <simpleType>
                    <restriction base="positiveInteger">
                        <maxInclusive value="5"/>
                    </restriction>
                </simpleType>
            </element>
        </sequence>
    </complexType>
</element>
</schema>
```

procedure.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns:proc="urn:com.microsoft.wc.thing.procedure"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.procedure">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>0A5F9A43-DC88-4E9F-890F-1F9159B76E7B</type-id>
            <type-name>procedure</type-name>
            <summary>
                Information related to a procedure.
            </summary>
            <remarks>
                This thing type describes the procedure results of a
person.
            </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
```

```
    <element name="procedure">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Information related to a procedure.
                    </summary>
                    <remarks>
                            This thing type describes the procedure results
of a person.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time the procedure.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="title" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Title of medical procedure.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="primary-provider" type="t:person"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Primary provider for a medical
procedure.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="anatomic-location" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Anatomic location of the medical
procedure.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
```

```
                <element name="secondary-provider" type="t:person"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                        Secondary provider for a medical
procedure.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

radiology-lab-results.xsd

```
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns:lab="urn:com.microsoft.wc.thing.radiology-lab-results"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.radiology-lab-results">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>E4911BD3-61BF-4E10-AE78-9C574B888B8F</type-id>
            <type-name>Radiology Lab Result</type-name>
            <summary>
                    Information related to a radiology lab results.
              </summary>
            <remarks>
                    This thing type describes the radiology lab results a
person
                    has.
              </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="radiology-lab-results">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Information related to a radiology lab-results.
                      </summary>
                    <remarks>
                            This thing type describes the radiology lab
results a
```

```
                                person has.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time the lab results.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="title" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    Free form title for radiology lab
results.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="anatomic-site" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The anatomic site description in a
radiology lab results.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="result-text" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The textual content for radiology lab
results.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

sleepjournal-am.xsd

```
<?xml version="1.0"?>
```

```
<schema xmlns:sjam="urn:com.microsoft.wc.thing.sjam"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.sjam">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>668bf643-7da8-4735-ad6f-8fd5bb5a63e2</type-id>
            <type-name>Sleep Session</type-name>
            <effective-date-element>when</effective-date-element>
            <summary>
                    Schema for a morning sleep journal.
              </summary>
            <remarks>
                    A morning sleep journal reflects back on the previous
nights
                    sleep. The data items were adapted from the NIH
publication #06-5271,
                    November 2005, "Your Guide to Healthy Sleep", ISBN 1-
933236-05-1.
              </remarks>
        </documentation>
    </annotation>
    <complexType name="Awakening">
        <annotation>
            <documentation>
                <summary>
                        A time and duration of an awakening during a period
of
                        sleep.
                </summary>
                <remarks>
                        An awakening covers those times during a sleep
session
                        in which the person awoke and then went back to
sleep.
                        For example, if a person wakes up during a night's
                        sleep to use the restroom and then returns to sleep.
It
                        does not include awakenings that result in the
person
                        remaining awake for active periods.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="when" type="d:time">
                <annotation>
                    <documentation>
                        <summary>
                                The time when the person awoke.
```

```
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="minutes" type="nonNegativeInteger">
                    <annotation>
                        <documentation>
                            <summary>
                                The duration the person stayed awake in
minutes.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <element name="sleep-am">
            <complexType>
                <annotation>
                    <documentation>
                        <summary>
                            Schema for a morning sleep journal.
                        </summary>
                        <remarks>
                            A morning sleep journal reflects back on the
previous nights
                            sleep. The data items were adapted from the NIH
publication #06-5271,
                            November 2005, "Your Guide to Healthy Sleep",
ISBN 1-933236-05-1.
                        </remarks>
                    </documentation>
                </annotation>
                <sequence>
                    <element name="when" type="d:date-time">
                        <annotation>
                            <documentation>
                                <summary>
                                    The date and time that the journal entry
refers to.
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="bed-time" type="d:time">
                        <annotation>
                            <documentation>
                                <summary>
                                    The time the person went to bed.
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="wake-time" type="d:time">
                        <annotation>
```

```
                        <documentation>
                            <summary>
                                    The time the person woke up for a period
of
                                    activity.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="sleep-minutes" type="nonNegativeInteger">
                    <annotation>
                        <documentation>
                            <summary>
                                    The number of minutes slept.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="settling-minutes"
type="nonNegativeInteger">
                    <annotation>
                        <documentation>
                            <summary>
                                    The number of minutes it took to fall
asleep.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="awakening" type="sjam:Awakening"
minOccurs="0" maxOccurs="unbounded">
                    <annotation>
                        <documentation>
                            <summary>
                                    The time and duration of each the person
awoke
                                    during the night.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="medications" type="t:codable-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    A description of the medications taken
before
                                    going to bed.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="wake-state">
                    <simpleType>
```

```
                    <annotation>
                        <documentation>
                            <summary>
                                    An evaluation of how the person felt
when
                                    they got up in the morning.
                            </summary>
                            <remarks>
                                    1 = Wide awake,
                                    2 = Awake but a little tired,
                                    3 = Sleepy
                            </remarks>
                        </documentation>
                    </annotation>
                    <restriction base="int">
                        <minInclusive value="1"/>
                        <maxInclusive value="3"/>
                    </restriction>
                </simpleType>
            </element>
        </sequence>
    </complexType>
</element>
</schema>
```

sleepjournal-pm.xsd

```
<?xml version="1.0"?>
<schema xmlns:sjpm="urn:com.microsoft.wc.thing.sjpm"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.sjpm">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>bcb7157b-9e8a-4f13-aab6-4eed246d0902</type-id>
            <type-name>Sleep Related Activity</type-name>
            <summary>
                    Defines an evening sleep journal.
            </summary>
            <remarks>
                    The data items in this schema are adapted from NIH
                    publication #06-5271, November 2005, "Your Guide to
                    Healthy Sleep", ISBN 1-933236-05-1.
            </remarks>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <complexType name="Activity">
```

```
        <annotation>
            <documentation>
                <summary>
                        Defines an activity taken by the person before
laying down
                        for the night.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="when" type="d:time">
                <annotation>
                    <documentation>
                        <summary>
                                The time when the activity occurred.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="minutes" type="nonNegativeInteger">
                <annotation>
                    <documentation>
                        <summary>
                                The duration of the activity in minutes.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <element name="sleep-pm">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            Defines an evening sleep journal.
                    </summary>
                    <remarks>
                            The data items in this schema are adapted from
NIH
                            publication #06-5271, November 2005, "Your Guide
to
                            Healthy Sleep", ISBN 1-933236-05-1.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                    The date and time that the journal entry
refers
                                    to.
                            </summary>
```

```
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="caffeine" type="d:time" minOccurs="0"
maxOccurs="unbounded">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The time of each caffeine consumed for
the day.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="alcohol" type="d:time" minOccurs="0"
maxOccurs="unbounded">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The time of each alcohol consumed for
the day.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="nap" type="sjpm:Activity" minOccurs="0"
maxOccurs="unbounded">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The time and duration of each nap taken
in the
                                                day.
                                        </summary>
                                    </documentation>
                                </annotation>
                            </element>
                            <element name="exercise" type="sjpm:Activity"
minOccurs="0" maxOccurs="unbounded">
                                <annotation>
                                    <documentation>
                                        <summary>
                                                The time and duration of each exercise
session
                                                in the day.
                                        </summary>
                                        <remarks>
                                                Note, an application should (but is not
required)
                                                to query the aerobic sessions in the
person's
                                                health record to fill in this
information.
                                        </remarks>
                                    </documentation>
```

```
                    </annotation>
                </element>
                <element name="sleepiness">
                    <simpleType>
                        <annotation>
                            <documentation>
                                <summary>
                                        How sleepy the person felt during
the day.
                                </summary>
                                <remarks>
                                        1 = So sleepy had to struggle to
stay away
                                        during much of the day,
                                        2 = Somewhat tired
                                        3 = Fairly alert
                                        4 = Wide awake
                                </remarks>
                            </documentation>
                        </annotation>
                        <restriction base="int">
                            <minInclusive value="1"/>
                            <maxInclusive value="4"/>
                        </restriction>
                    </simpleType>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

types.xsd

```
<?xml version="1.0"?>
<schema xmlns:wc-types="urn:com.microsoft.wc.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.types">
    <!--

        TYPES.XSD
        Microsoft Wildcat

        Platform API: Shared types

    -->
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
```

```
            </documentation>
        </annotation>
        <!-- vocabulary -->
        <complexType name="VocabularyKey">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="name" type="string">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                            <remarks>

                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <!--
                    If the family is not specified the system looks for a
                    vocabulary with the specified name in the Wildcat
Vocabularies
                    family.
                -->
                <element name="family" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                            <remarks>

                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <!--
                    If the version is not specified the system returns the
most
                    current version of the vocabulary.
                -->
                <element name="version" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
```

```
                    </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
    </element>
</sequence>
</complexType>
<!-- phone -->
<complexType name="Phone">
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="description" type="string" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="is-primary" type="boolean" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="number" type="string">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
```

```
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <!-- Email -->
    <complexType name="Email">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="description" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="is-primary" type="boolean" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="address" type="wc-types:EmailAddress">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
```

```
        </complexType>
    <!-- Email Address -->
    <simpleType name="EmailAddress">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="6"/>
            <maxLength value="128"/>
        </restriction>
    </simpleType>
    <complexType name="RcptAddress">
        <annotation>
            <documentation>
                <summary>
                    Identifies an message recipient by email and  name.
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <element name="address" type="string">
                <annotation>
                    <documentation>
                        <summary>
                            The email address to which the message will
be
                            sent.
                        </summary>
                        <remarks>
                            The email address must conform to standard
email
                            address rules.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="name" type="string">
                <annotation>
                    <documentation>
                        <summary>
                            The display name to be shown in the To field
of
                            the message being sent.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
```

```
    </complexType>
    <complexType name="RcptPerson">
        <annotation>
            <documentation>
                <summary>
                        Represents a message recipient who is identified by
a
                        a unique Microsoft Health account identifier.
                </summary>
                <remarks>
                        The validated attribute determines whether the email
                        address must first be validated by the account
owner. If
                        the validated attribute is true and the email
address
                        hasn't been validated then an error will be
returned.
                </remarks>
            </documentation>
        </annotation>
        <simpleContent>
            <extension base="wc-types:guid">
                <attribute name="validated" type="boolean" use="required">
                    <annotation>
                        <documentation>
                            <summary>
                                    States whether the email address must
have
                                    been validated by the account owner for
the
                                    message to be sent.
                            </summary>
                            <remarks>
                                    If true, the Microsoft Health Service
will
                                    ensure that the specified account's
email
                                    address has been validated by the
account
                                    owner before sending the message. If
true,
                                    and the address hasn't been validated,
an
                                    error will be returned.
                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
            </extension>
        </simpleContent>
    </complexType>
    <complexType name="RcptRecord">
        <annotation>
            <documentation>
                <summary>
```

```
                            Specifies that this message should be sent to
custodians
                            of the health record specified in the request
envelope.
                    </summary>
                <remarks>
                            The message will be sent to the email addresses of
all
                            the record custodians. The validated attribute
determines
                            whether the email addresses of the custodians must
be
                            validated. Any custodians not validated will be
skipped.
                            If the validated attribute is true and no custodians
                            with validated email address are found, an error
will
                            be returned.
                    </remarks>
            </documentation>
        </annotation>
        <sequence/>
        <attribute name="validated" type="boolean" use="required">
            <annotation>
                <documentation>
                    <summary>
                            States whether the email addresses of custodians
                            must have been validated for the message to be
sent.
                    </summary>
                    <remarks>
                            If true, the Microsoft Health Service will
                            ensure that only custodians with validated
                            email addresses will be sent the message.
                            Custodians with non-validated email addresses
                            will be skipped. If no validated custodians are
                            found, then an error will be returned.
                    </remarks>
                </documentation>
            </annotation>
        </attribute>
    </complexType>
    <!-- LoginName -->
    <simpleType name="LoginName">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
```

```
                <minLength value="6"/>
                <maxLength value="128"/>
            </restriction>
        </simpleType>
        <!-- Version -->
        <simpleType name="Version">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="7"/>
                <maxLength value="19"/>
            </restriction>
        </simpleType>
        <!-- Address -->
        <complexType name="Address">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="description" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                            <remarks>

                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="is-primary" type="boolean" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                            <remarks>

                            </remarks>
```

```
                    </documentation>
                </annotation>
            </element>
            <element name="street" type="string" maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="city" type="string">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="state" type="string">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <!-- or province, etc. -->
            <element name="postcode" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="country" type="wc-types:iso3166">
                <annotation>
                    <documentation>
```

```
                        <summary>

                        </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<!-- Sig -->
<complexType name="Sig">
    <annotation>
        <documentation>
            <summary>
                    A digital signature produced by an application to
prove
                    possession of a private key.
            </summary>
            <remarks>
                    Each application server has at least one public key
                    associated to its application identifier.  The
Microsoft
                    Health Service verifies the signature using the
public key
                    specified via the thumbprint.
            </remarks>
        </documentation>
    </annotation>
    <simpleContent>
        <extension base="wc-types:string512">
            <attribute name="digestMethod" type="wc-types:string16"
use="required">
                <annotation>
                    <documentation>
                        <summary>
                                The hash method used to generate the
signed
                                digest.
                        </summary>
                        <remarks>
                                An example hash algorithm name is SHA1.
                        </remarks>
                    </documentation>
                </annotation>
            </attribute>
            <attribute name="sigMethod" type="wc-types:string16"
use="required">
                <annotation>
                    <documentation>
                        <summary>
                                This is the method used to generate the
                                signature.
                        </summary>
```

```
                                <remarks>
                                        For example, RSA-SHA1, which implies
using
                                        SHA1 to do the hash and RSA for signing.
                                </remarks>
                        </documentation>
                    </annotation>
                </attribute>
                <attribute name="thumbprint" type="string" use="required">
                    <annotation>
                        <documentation>
                            <summary>
                                    The thumbprint associated with the
public key
                                    certifiate that is registered with the
Microsoft
                                    Health Service.
                            </summary>
                            <remarks>
                                    An application may have multiple public
keys
                                    associated with its application id.  A
thumbprint
                                    is used to identify which certificate to
use
                                    when verifying a signature.
                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
            </extension>
        </simpleContent>
    </complexType>
    <!-- Hash -->
    <complexType name="HashFinalizedData">
        <annotation>
            <documentation>
                <summary>
                        The resulting hash digest.
                </summary>
                <remarks>
                        The Microsoft Health Service will compute the hash
over
                        the same data that was used to compute this digest
and
                        compare them.
                </remarks>
            </documentation>
        </annotation>
        <simpleContent>
            <extension base="wc-types:string512">
                <attribute name="algName" type="wc-types:stringnz"
use="required">
                    <annotation>
                        <documentation>
```

```
                        <summary>
                                This is the Base64 encoded hash digest.
                        </summary>
                        <remarks>
                                The size of the digest varies by the
choice
                                of algorithm.  The Microsoft Health
Service will
                                compute the hash over the same data that
was
                                used to compute this digest and compare
them.
                                If the digests are not equal, the
request will
                                fail.
                        </remarks>
                    </documentation>
                </annotation>
            </attribute>
        </extension>
    </simpleContent>
</complexType>
<complexType name="HashFinalized">
    <annotation>
        <documentation>
            <summary>
                Digest from a hash operation that is used to provide
data
                integrity verification for requests.
            </summary>
            <remarks>
                This is the result of a hash operation, which is
used
                to ensure the hashed data has not changed.  The
Microsoft
                Health Service will compute the corresponding hash
over
                the same data and compare the resulting digests. If
the
                digests are not equal, the request will fail.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="hash-data" type="wc-types:HashFinalizedData">
            <annotation>
                <documentation>
                    <summary>
                            The resulting hash digest.
                        </summary>
                    <remarks>
                            The Microsoft Health Service will compute
the hash
                            over the same data that was used to compute
this
```

```
                                        digest and compare them.  If the digests are
not
                                        equal, the request will fail.
                                </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <!-- HMAC -->
        <complexType name="HMACAlgorithmData">
            <annotation>
                <documentation>
                    <summary>
                            The shared secret used in HMAC operations.
                    </summary>
                    <remarks>
                            The shared secret is used in HMAC operations to
authenticate
                            all requests which includes an authenticated session
token.
                            In order for a client to establish an authenticated
session
                            with the Microsoft Health Service, it must provide a
shared
                            secret. The client uses the secret as the secret key
when
                            HMAC'ing over the header section of the request. The
                            resulting HMAC digest forms the content of the
                            request auth section.  The same algorithm specified
in
                            the initial token request must be used for all
subsequent
                            HMAC operations applied when using the same
authenticated
                            session token.
                    </remarks>
                </documentation>
            </annotation>
            <simpleContent>
                <extension base="wc-types:string512">
                    <attribute name="algName" type="wc-types:stringnz"
use="required">
                        <annotation>
                            <documentation>
                                <summary>
                                        The base64 encoded shared secret key
material
                                        used for keying the HMAC operation.
                                </summary>
                                <remarks>
                                        The shared secret key is recommended to
be 256
                                        bits, or 32 bytes, of random data.
                                </remarks>
```

```
                    </documentation>
                </annotation>
            </attribute>
        </extension>
        <!-- element value is KeyMaterial for HMAC -->
    </simpleContent>
</complexType>
<complexType name="HMACAlgorithm">
    <annotation>
        <documentation>
            <summary>
                A description of an HMAC that is used to establish
the
                authentication and integrity checks for requests to
the
                Microsoft Health Service.
            </summary>
            <remarks>
                This describes the shared secret that the is created
on
                the client side.
            </remarks>
        </documentation>
    </annotation>
    <sequence>
        <element name="hmac-alg" type="wc-types:HMACAlgorithmData">
            <annotation>
                <documentation>
                    <summary>
                        The specification of the HMAC algorithm.
                    </summary>
                    <remarks>
                        The same algorithm must be used for all
subsequent
                        HMAC operations applied when using the same
                        authenticated session token.
                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="HMACFinalizedData">
    <annotation>
        <documentation>
            <summary>
                The resulting HMAC digest.
            </summary>
            <remarks>
                The digest is computed by the Microsoft
                Health Service and is then compared to this result.
            </remarks>
        </documentation>
    </annotation>
    <simpleContent>
```

```
            <extension base="wc-types:string512">
                <attribute name="algName" type="wc-types:stringnz"
use="required">
                    <annotation>
                        <documentation>
                            <summary>
                                    Base64 encoded digest and the algorithm
used
                                    to compute the digest.
                            </summary>
                            <remarks>
                                    The algorithm should match the agreed
algorithm
                                    that was established via HMACAlgorithm
when the
                                    authenticated session was created.
                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
            </extension>
        </simpleContent>
    </complexType>
    <complexType name="HMACFinalized">
        <annotation>
            <documentation>
                <summary>
                        Digest from a HMAC operation that is used to provide
both
                        authentication and integrity verification for
requests.
                </summary>
                <remarks>
                        This is the result of an HMAC operation, as opposed
to
                        HMAC algorithm which specifies the properties of the
                        operation.  The HMAC key is the shared secret
provided in
                        the original application request to create an
authenticated
                        session token.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="hmac-data" type="wc-types:HMACFinalizedData">
                <annotation>
                    <documentation>
                        <summary>
                                The resulting HMAC digest.
                        </summary>
                        <remarks>
                                The digest is computed again in the
Microsoft
```

```
                                        Health Service and then is compared to this
result.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <!-- Credentials -->
    <complexType name="CardSpaceCred">
        <annotation>
            <documentation>
                <summary>
                        A SAML-based credential provided by the CardSpace
service.
                </summary>
                <remarks>
                        CardSpace produces a SAML token that is encrypted
using
                        the SSL public key used when associating a CardSpace
                        credential with a primary credential.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <any namespace="##any" processContents="skip"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                The SAML token.
                        </summary>
                        <remarks>
                                The SAML token consists of raw XML that is
embedded
                                in the request.
                        </remarks>
                    </documentation>
                </annotation>
            </any>
        </sequence>
    </complexType>
    <complexType name="AppInfo">
        <annotation>
            <documentation>
                <summary>
                        The applications to create credential tokens for.
                </summary>
                <remarks>
                        Each application will be issued a unique token that
has a
                        limited lifetime.
                </remarks>
            </documentation>
        </annotation>
```

```
        <simpleContent>
            <extension base="wc-types:guid">
                <attribute name="is-multi-record-app" type="boolean"
use="optional">
                    <annotation>
                        <documentation>
                            <summary>
                                    The application to create credential
tokens for.
                            </summary>
                            <remarks>
                                    If the application is a multi-record-
application,
                                    then it must specify the attribute here.
Upon
                                    successful authentication, a unique
token will
                                    be issued for use with subsequent calls
to the
                                    Microsoft Health Service.
                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
            </extension>
        </simpleContent>
    </complexType>
    <complexType name="AppServerCredInfo">
        <annotation>
            <documentation>
                <summary>
                        Application server credential information.
                </summary>
                <remarks>
                        Information provided by the requesting application
that will
                        be used by the Microsoft Health Service to determine
if an
                        authenticated session token will be issued to the
caller.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="app-id" type="wc-types:guid">
                <annotation>
                    <documentation>
                        <summary>
                                The id of the application that is providing
the
                                credential.
                        </summary>
                        <remarks>
                                The public key that is used to verify the
signature
```

```
                                        is associated to this application id.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="shared-secret" type="wc-types:HMACAlgorithm">
                <annotation>
                    <documentation>
                        <summary>
                                This is the shared secret that is used for
subsequent
                                HMACed request envelopes when the
application
                                makes a request to the Microsoft Health
Service.
                        </summary>
                        <remarks>
                                This section describes the algorithm that
will be
                                used on the client side during subequenct
requests.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="AppServerCred">
        <annotation>
            <documentation>
                <summary>
                        Application server credential that is used when an
application
                        is identifying itself for subsequent calls to the
Microsoft
                        Health Service.
                </summary>
                <remarks>
                        This credential type requires that the content
element
                        be signed using the application's private key.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <!-- signature computed over cred parameters using app key -->
            <element name="sig" type="wc-types:Sig">
                <annotation>
                    <documentation>
                        <summary>
                                The signature of the content section.
                        </summary>
                        <remarks>
                                This signature is generated using the
application's
```

```
                                    private key.  The corresponding public key
is
                                    associated with the application id by the
Microsoft
                                    Health Service.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <!-- app server cred parameters -->
        <element name="content" type="wc-types:AppServerCredInfo">
            <annotation>
                <documentation>
                    <summary>
                            The application's credential information.
                    </summary>
                    <remarks>
                            This section is signed by the application's
private
                            key.
                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<!-- UTILITY TYPES -->
<simpleType name="Gender">
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
        </documentation>
    </annotation>
    <restriction base="string">
        <enumeration value="m">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                </documentation>
            </annotation>
        </enumeration>
        <enumeration value="f">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                </documentation>
```

```
                </annotation>
            </enumeration>
        </restriction>
    </simpleType>
    <simpleType name="Url">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="1"/>
            <maxLength value="1024"/>
        </restriction>
        <!-- could do this better -->
    </simpleType>
    <simpleType name="positiveLong">
        <annotation>
            <documentation>
                <summary>
                        Represents a positive 64 bit integer.
                </summary>
            </documentation>
        </annotation>
        <restriction base="long">
            <minInclusive value="0"/>
        </restriction>
    </simpleType>
    <simpleType name="guid">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <pattern value="[a-fA-F0-9]{8}-[a-fA-F0-9]{4}-[a-fA-F0-9]{4}-
[a-fA-F0-9]{4}-[a-fA-F0-9]{12}"/>
        </restriction>
    </simpleType>
    <simpleType name="puid">
        <restriction base="string">
            <pattern value="[a-fA-F0-9]{16}"/>
        </restriction>
    </simpleType>
    <complexType name="DateRange">
```

```
<annotation>
    <documentation>
        <summary>

        </summary>
        <remarks>

        </remarks>
    </documentation>
</annotation>
<sequence>
    <element name="date-min" type="dateTime" minOccurs="0">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
    </element>
    <element name="date-max" type="dateTime" minOccurs="0">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
    </element>
</sequence>
</complexType>
<simpleType name="Permission">
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
        </documentation>
    </annotation>
    <restriction base="string">
        <enumeration value="All">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
```

```
                        </documentation>
                    </annotation>
                </enumeration>
                <enumeration value="Read">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                        </documentation>
                    </annotation>
                </enumeration>
                <enumeration value="Update">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                        </documentation>
                    </annotation>
                </enumeration>
                <enumeration value="Create">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                        </documentation>
                    </annotation>
                </enumeration>
                <enumeration value="Delete">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                        </documentation>
                    </annotation>
                </enumeration>
            </restriction>
        </simpleType>
        <simpleType name="NameMatchType">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <enumeration value="exact">
                    <annotation>
```

```
                    <documentation>
                        <summary>

                        </summary>
                    </documentation>
                </annotation>
            </enumeration>
            <enumeration value="prefix">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                    </documentation>
                </annotation>
            </enumeration>
            <enumeration value="contains">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                    </documentation>
                </annotation>
            </enumeration>
        </restriction>
    </simpleType>
    <!-- for base64 encoding of 160-bit SHA1 hash
         160 / 6 = 26.6667. Rounded up to higher multiple of 4 is 28. -->
    <simpleType name="base64Sha1">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="28"/>
            <maxLength value="28"/>
        </restriction>
    </simpleType>
    <simpleType name="string1024">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
```

```
            </annotation>
            <restriction base="string">
                <minLength value="1"/>
                <maxLength value="1024"/>
            </restriction>
        </simpleType>
        <simpleType name="string512">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="1"/>
                <maxLength value="512"/>
            </restriction>
        </simpleType>
        <simpleType name="string255">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="1"/>
                <maxLength value="255"/>
            </restriction>
        </simpleType>
        <simpleType name="string128">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="1"/>
                <maxLength value="128"/>
            </restriction>
        </simpleType>
        <simpleType name="string64">
```

```
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="1"/>
            <maxLength value="64"/>
        </restriction>
    </simpleType>
    <simpleType name="string32">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="1"/>
            <maxLength value="32"/>
        </restriction>
    </simpleType>
    <simpleType name="string16">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="1"/>
            <maxLength value="16"/>
        </restriction>
    </simpleType>
    <simpleType name="stringz1024">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>
```

```
                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="0"/>
                <maxLength value="1024"/>
            </restriction>
        </simpleType>
        <simpleType name="stringz512">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="0"/>
                <maxLength value="512"/>
            </restriction>
        </simpleType>
        <simpleType name="stringz255">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="0"/>
                <maxLength value="255"/>
            </restriction>
        </simpleType>
        <simpleType name="stringz128">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="0"/>
                <maxLength value="128"/>
            </restriction>
```

```
        </simpleType>
        <simpleType name="stringz64">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="0"/>
                <maxLength value="64"/>
            </restriction>
        </simpleType>
        <simpleType name="stringz32">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="0"/>
                <maxLength value="32"/>
            </restriction>
        </simpleType>
        <simpleType name="stringz16">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>

                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <minLength value="0"/>
                <maxLength value="16"/>
            </restriction>
        </simpleType>
        <!-- non-zero length string -->
        <simpleType name="stringnz">
            <annotation>
                <documentation>
                    <summary>
```

```
                    </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="1"/>
        </restriction>
    </simpleType>
    <simpleType name="char2">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <minLength value="2"/>
            <maxLength value="2"/>
        </restriction>
    </simpleType>
    <!-- ethnicity (US Office of Management & Budget Directive 15) -->
    <simpleType name="OmbEthnicity">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <enumeration value="American Indian or Alaska Native"/>
            <enumeration value="Asian"/>
            <enumeration value="Black or African American"/>
            <enumeration value="Hispanic or Latino"/>
            <enumeration value="Native Hawaiian or Other Pacific
Islander"/>
            <enumeration value="White"/>
        </restriction>
    </simpleType>
    <complexType name="Culture">
        <annotation>
            <documentation>
                <summary>
                    Represents a specific culture by combining a
language and
                    country/region.
```

```xml
                </summary>
            </documentation>
        </annotation>
        <sequence>
            <!-- optional culture info -->
            <element name="language" type="wc-types:iso639-1"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The language of the culture.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="country" type="wc-types:iso3166" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The country or region of the culture.
                        </summary>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <!-- languages -->
    <simpleType name="iso639-1">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <enumeration value="aa"/>
            <enumeration value="ab"/>
            <enumeration value="af"/>
            <enumeration value="am"/>
            <enumeration value="ar"/>
            <enumeration value="as"/>
            <enumeration value="ay"/>
            <enumeration value="az"/>
            <enumeration value="ba"/>
            <enumeration value="be"/>
            <enumeration value="bg"/>
            <enumeration value="bh"/>
            <enumeration value="bi"/>
            <enumeration value="bn"/>
            <enumeration value="bo"/>
            <enumeration value="br"/>
```

```
<enumeration value="ca"/>
<enumeration value="co"/>
<enumeration value="cs"/>
<enumeration value="cy"/>
<enumeration value="da"/>
<enumeration value="de"/>
<enumeration value="dz"/>
<enumeration value="el"/>
<enumeration value="en"/>
<enumeration value="eo"/>
<enumeration value="es"/>
<enumeration value="et"/>
<enumeration value="eu"/>
<enumeration value="fa"/>
<enumeration value="fi"/>
<enumeration value="fj"/>
<enumeration value="fo"/>
<enumeration value="fr"/>
<enumeration value="fy"/>
<enumeration value="ga"/>
<enumeration value="gd"/>
<enumeration value="gl"/>
<enumeration value="gn"/>
<enumeration value="gu"/>
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<enumeration value="hi"/>
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<enumeration value="is"/>
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<enumeration value="la"/>
<enumeration value="ln"/>
<enumeration value="lo"/>
<enumeration value="lt"/>
<enumeration value="lv"/>
<enumeration value="mg"/>
<enumeration value="mi"/>
```

```
<enumeration value="mk"/>
<enumeration value="ml"/>
<enumeration value="mn"/>
<enumeration value="mo"/>
<enumeration value="mr"/>
<enumeration value="ms"/>
<enumeration value="mt"/>
<enumeration value="my"/>
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<enumeration value="tn"/>
<enumeration value="to"/>
<enumeration value="tr"/>
<enumeration value="ts"/>
<enumeration value="tt"/>
<enumeration value="tw"/>
```

```
                <enumeration value="uk"/>
                <enumeration value="ur"/>
                <enumeration value="uz"/>
                <enumeration value="vi"/>
                <enumeration value="vo"/>
                <enumeration value="wo"/>
                <enumeration value="xh"/>
                <enumeration value="yo"/>
                <enumeration value="zh"/>
                <enumeration value="zu"/>
        </restriction>
    </simpleType>
    <!-- countries -->
    <simpleType name="iso3166">
        <annotation>
            <documentation>
                <summary>

                </summary>
                <remarks>

                </remarks>
            </documentation>
        </annotation>
        <restriction base="string">
            <enumeration value="AF"/>
            <enumeration value="AX"/>
            <enumeration value="AL"/>
            <enumeration value="DZ"/>
            <enumeration value="AS"/>
            <enumeration value="AD"/>
            <enumeration value="AO"/>
            <enumeration value="AI"/>
            <enumeration value="AQ"/>
            <enumeration value="AG"/>
            <enumeration value="AR"/>
            <enumeration value="AM"/>
            <enumeration value="AW"/>
            <enumeration value="AU"/>
            <enumeration value="AT"/>
            <enumeration value="AZ"/>
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            <enumeration value="BH"/>
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            <enumeration value="BB"/>
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            <enumeration value="BE"/>
            <enumeration value="BZ"/>
            <enumeration value="BJ"/>
            <enumeration value="BM"/>
            <enumeration value="BT"/>
            <enumeration value="BO"/>
            <enumeration value="BA"/>
            <enumeration value="BW"/>
            <enumeration value="BV"/>
```

```
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<enumeration value="IO"/>
<enumeration value="BN"/>
<enumeration value="BG"/>
<enumeration value="BF"/>
<enumeration value="BI"/>
<enumeration value="KH"/>
<enumeration value="CM"/>
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<enumeration value="DE"/>
<enumeration value="GH"/>
<enumeration value="GI"/>
<enumeration value="GR"/>
<enumeration value="GL"/>
```

```
<enumeration value="GD"/>
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<enumeration value="GW"/>
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<enumeration value="HT"/>
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<enumeration value="LY"/>
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<enumeration value="ML"/>
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<enumeration value="MQ"/>
<enumeration value="MR"/>
<enumeration value="MU"/>
<enumeration value="YT"/>
<enumeration value="MX"/>
<enumeration value="FM"/>
```

```
<enumeration value="MD"/>
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<enumeration value="MN"/>
<enumeration value="MS"/>
<enumeration value="MA"/>
<enumeration value="MZ"/>
<enumeration value="MM"/>
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<enumeration value="CS"/>
<enumeration value="SC"/>
<enumeration value="SL"/>
<enumeration value="SG"/>
<enumeration value="SK"/>
<enumeration value="SI"/>
```

```
                <enumeration value="SB"/>
                <enumeration value="SO"/>
                <enumeration value="ZA"/>
                <enumeration value="GS"/>
                <enumeration value="ES"/>
                <enumeration value="LK"/>
                <enumeration value="SD"/>
                <enumeration value="SR"/>
                <enumeration value="SJ"/>
                <enumeration value="SZ"/>
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                <enumeration value="CH"/>
                <enumeration value="SY"/>
                <enumeration value="TW"/>
                <enumeration value="TJ"/>
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                <enumeration value="UG"/>
                <enumeration value="UA"/>
                <enumeration value="AE"/>
                <enumeration value="GB"/>
                <enumeration value="US"/>
                <enumeration value="UM"/>
                <enumeration value="UY"/>
                <enumeration value="UZ"/>
                <enumeration value="VU"/>
                <enumeration value="VE"/>
                <enumeration value="VN"/>
                <enumeration value="VG"/>
                <enumeration value="VI"/>
                <enumeration value="WF"/>
                <enumeration value="EH"/>
                <enumeration value="YE"/>
                <enumeration value="ZM"/>
                <enumeration value="ZW"/>
            </restriction>
        </simpleType>
        <!-- currencies -->
        <simpleType name="iso4217">
            <annotation>
                <documentation>
                    <summary>

                    </summary>
                    <remarks>
```

```
            </remarks>
        </documentation>
    </annotation>
    <restriction base="string">
        <enumeration value="aed"/>
        <enumeration value="afa"/>
        <enumeration value="all"/>
        <enumeration value="amd"/>
        <enumeration value="ang"/>
        <enumeration value="aoa"/>
        <enumeration value="ars"/>
        <enumeration value="aud"/>
        <enumeration value="awg"/>
        <enumeration value="azm"/>
        <enumeration value="bam"/>
        <enumeration value="bbd"/>
        <enumeration value="bdt"/>
        <enumeration value="bgn"/>
        <enumeration value="bhd"/>
        <enumeration value="bif"/>
        <enumeration value="bmd"/>
        <enumeration value="bnd"/>
        <enumeration value="bob"/>
        <enumeration value="brl"/>
        <enumeration value="bsd"/>
        <enumeration value="btn"/>
        <enumeration value="bwp"/>
        <enumeration value="byr"/>
        <enumeration value="bzd"/>
        <enumeration value="cad"/>
        <enumeration value="cdf"/>
        <enumeration value="chf"/>
        <enumeration value="clp"/>
        <enumeration value="cny"/>
        <enumeration value="cop"/>
        <enumeration value="crc"/>
        <enumeration value="csd"/>
        <enumeration value="cup"/>
        <enumeration value="cve"/>
        <enumeration value="cyp"/>
        <enumeration value="czk"/>
        <enumeration value="djf"/>
        <enumeration value="dkk"/>
        <enumeration value="dop"/>
        <enumeration value="dzd"/>
        <enumeration value="eek"/>
        <enumeration value="egp"/>
        <enumeration value="ern"/>
        <enumeration value="etb"/>
        <enumeration value="eur"/>
        <enumeration value="fjd"/>
        <enumeration value="fkp"/>
        <enumeration value="gbp"/>
        <enumeration value="gel"/>
```

```
<enumeration value="ggp"/>
<enumeration value="ghc"/>
<enumeration value="gip"/>
<enumeration value="gmd"/>
<enumeration value="gnf"/>
<enumeration value="gtq"/>
<enumeration value="gyd"/>
<enumeration value="hkd"/>
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<enumeration value="htg"/>
<enumeration value="huf"/>
<enumeration value="idr"/>
<enumeration value="ils"/>
<enumeration value="imp"/>
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<enumeration value="jep"/>
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<enumeration value="jod"/>
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<enumeration value="khr"/>
<enumeration value="kmf"/>
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<enumeration value="lsl"/>
<enumeration value="ltl"/>
<enumeration value="lvl"/>
<enumeration value="lyd"/>
<enumeration value="mad"/>
<enumeration value="mdl"/>
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<enumeration value="mur"/>
<enumeration value="mvr"/>
<enumeration value="mwk"/>
<enumeration value="mxn"/>
<enumeration value="myr"/>
<enumeration value="mzm"/>
```

```
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<enumeration value="ngn"/>
<enumeration value="nio"/>
<enumeration value="nok"/>
<enumeration value="npr"/>
<enumeration value="nzd"/>
<enumeration value="omr"/>
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<enumeration value="pln"/>
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<enumeration value="rol"/>
<enumeration value="rub"/>
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<enumeration value="scr"/>
<enumeration value="sdd"/>
<enumeration value="sek"/>
<enumeration value="sgd"/>
<enumeration value="shp"/>
<enumeration value="sit"/>
<enumeration value="skk"/>
<enumeration value="sll"/>
<enumeration value="sos"/>
<enumeration value="spl"/>
<enumeration value="srd"/>
<enumeration value="std"/>
<enumeration value="svc"/>
<enumeration value="syp"/>
<enumeration value="szl"/>
<enumeration value="thb"/>
<enumeration value="tjs"/>
<enumeration value="tmm"/>
<enumeration value="tnd"/>
<enumeration value="top"/>
<enumeration value="trl"/>
<enumeration value="try"/>
<enumeration value="ttd"/>
<enumeration value="tvd"/>
<enumeration value="twd"/>
<enumeration value="tzs"/>
<enumeration value="uah"/>
<enumeration value="ugx"/>
<enumeration value="usd"/>
<enumeration value="uyu"/>
<enumeration value="uzs"/>
<enumeration value="veb"/>
<enumeration value="vnd"/>
<enumeration value="vuv"/>
<enumeration value="wst"/>
```

```
            <enumeration value="xaf"/>
            <enumeration value="xag"/>
            <enumeration value="xau"/>
            <enumeration value="xcd"/>
            <enumeration value="xdr"/>
            <enumeration value="xof"/>
            <enumeration value="xpd"/>
            <enumeration value="xpf"/>
            <enumeration value="xpt"/>
            <enumeration value="yer"/>
            <enumeration value="zar"/>
            <enumeration value="zmk"/>
            <enumeration value="zwd"/>
        </restriction>
    </simpleType>
    <!-- internal identifiers -->
    <complexType name="Group">
        <annotation>
            <documentation>
                <summary>
                        Defines a group to which on or more people may be a
member.
                </summary>
                <remarks>
                        Groups are used for security purposes. They make
                        it easier to grant access rights to a Microsoft
                        Health Service method, authorize people to a
                        record, or grant access rights to particular data
                        in a health record. They are not meant to be used
                        as distribution lists for email or other forms of
                        communication.<br/>
                    <br/>
                        For example, all the doctors at a particular clinic
                        may belong to a group to which an individual may
                        grant permission to see medications in their health
                        record.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="name" type="wc-types:string255">
                <annotation>
                    <documentation>
                        <summary>
                                The name of the group.
                        </summary>
                    </documentation>
                </annotation>
            </element>
            <element name="id" type="wc-types:guid">
                <annotation>
                    <documentation>
                        <summary>
                                A unique identifier for the group.
                        </summary>
```

```
                        <remarks>
                            Each group in the Microsoft Health Service
                            is assigned a unique identifier which is a
                            128-bit integer (16 bytes) and is used to
                            identify the group when calling methods on
                            the service.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="contact-email" type="wc-types:EmailAddress">
            <annotation>
                <documentation>
                    <summary>
                        The email address at which to contact the
"owner"
                        of the group.
                    </summary>
                    <remarks>
                        The email address for the group should refer
to
                        a person or set of people that can manage
the group
                        membership. It should not be used to define
a
                        mailing list for the entire group.
                    </remarks>
                </documentation>
            </annotation>
        </element>
    </sequence>
</complexType>
<complexType name="Groups">
    <annotation>
        <documentation>
            <summary>
                Contains a list of the groups a person is a member
of.
            </summary>
        </documentation>
    </annotation>
    <sequence>
        <element name="group" type="wc-types:Group"
maxOccurs="unbounded">
            <annotation>
                <documentation>
                    <summary>
                        A group that a person is a member of.
                    </summary>
                    <remarks>
                        Groups are used for security purposes. They
make
                        it easier to grant access rights to a
Microsoft
                        Health Service method, authorize people to a
```

```
                                    record, or grant access rights to particular
data
                                    in a health record. They are not meant to be
used
                                    as distribution lists for email or other
forms of
                                    communication.<br/>
                            <br/>
                                    For example, all the doctors at a particular
clinic
                                    may belong to a group to which an individual
may
                                    grant permission to see medications in their
health
                                    record.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="PersonInfo">
        <annotation>
            <documentation>
                <summary>
                        Basic information about a person.
                </summary>
                <remarks>
                        Basic information about a person including their
                        name, login name, email address, application
                        specific settings, record selected for use by the
                        application, and other records that are the person
                        authorized the application to use.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="person-id" type="wc-types:guid">
                <annotation>
                    <documentation>
                        <summary>
                                The unique identifier for a person.
                        </summary>
                        <remarks>
                                Each account in the Microsoft Health Service
                                is assigned a unique identifier which is a
                                128-bit integer (16 bytes) and is used to
                                identify the account when calling methods on
                                the service.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="name" type="wc-types:string255">
                <annotation>
```

```
                    <documentation>
                        <summary>
                                The name of the person.
                        </summary>
                        <remarks>
                                This is the full name of the person. Note,
                                it may be different than the name associated
with
                                the record the person has authorized the
                                application to use.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="app-settings" type="wc-types:AppSettings"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The application specific settings for the
person.
                        </summary>
                        <remarks>
                                An application can store person preferences
and other
                                settings for the person in the Microsoft
Health
                                Service. These settings are automatically
returned
                                when GetPersonInfo is called.<br/>
                            <br/>
                                If you are familiar with Windows
development, this
                                would be analogus to HKEY_CURRENT_USER
settings in
                                the Windows Registry.<br/>
                            <br/>
                                The Microsoft Health Service does not
interpret this
                                data at all and only acts as storage for it
on
                                behalf of the application.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="selected-record-id" type="wc-types:guid"
minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                The health record the person selected to be
used
                                by default for the application.
                        </summary>
```

```
                    <remarks>
                            When a person uses an application for the
first time
                            they are required to select a health record
to use
                            with the application. The application is
then
                            authorized to use the application and the
Microsoft
                            Health Service remembers the selection and
returns
                            the health record unique identifier to the
application.
                            A person may chose to have multiple records
                            authorized for one application but the
application
                            should use the selected record by default.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="more-records" type="boolean" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                            Tells the caller whether more records exist
for
                            the user that weren't returned.
                    </summary>
                    <remarks>
                            HealthVault will return a maximum number of
                            records for a person during a GetPersonInfo
call
                            based on configuration (default is 25 but
subject
                            to change).
                            This element will be true if more than the
maximum
                            number of records exist for the user and
some were
                            not returned.
                    </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="record" type="wc-types:Record" minOccurs="0"
maxOccurs="unbounded">
            <annotation>
                <documentation>
                    <summary>
                            All the records that a person has authorized
                            an application to use.
                    </summary>
                    <remarks>
```

```
                                      A person may authorize an application to use
any
                                      number of health records that the person has
rights
                                      to. These are returned as a list of
information
                                      about each of the records. Most applications
should
                                      use the selected-record-id, but some
applications
                                      that can work with many health records at
one time
                                      can retrieve them using this element.
                                </remarks>
                        </documentation>
                  </annotation>
            </element>
            <element name="groups" type="wc-types:Groups" minOccurs="0">
                  <annotation>
                        <documentation>
                              <summary>
                                      The set of groups the person is a member of.
                              </summary>
                              <remarks>
                                      This element contains group elements
containing the
                                      name, unique identifier, and contact email
for the
                                      group.
                              </remarks>
                        </documentation>
                  </annotation>
            </element>
            <element name="preferred-culture" type="wc-types:Culture"
minOccurs="0">
                  <annotation>
                        <documentation>
                              <summary>
                                      The user's preferred culture for use with
                                      comparisons, collation, currency, dates,
etc.
                              </summary>
                              <remarks>
                                      If not present, the application should use
the
                                      operating system or browser settings as
appropriate.
                              </remarks>
                        </documentation>
                  </annotation>
            </element>
            <element name="preferred-uiculture" type="wc-types:Culture"
minOccurs="0">
                  <annotation>
                        <documentation>
```

```
                            <summary>
                                    The user's preferred UI culture for use with
                                    selecting the language that the application
should
                                    use when showing text and images to the
user.
                            </summary>
                        <remarks>
                                    If not present, the application should use
the
                                    operating system or browser settings as
appropriate.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
    <complexType name="AppSettings">
        <annotation>
            <documentation>
                <summary>
                        Application specific settings for a person.
                    </summary>
                <remarks>
                        An application can store person preferences and
other
                        settings for the person in the Microsoft Health
                        Service. These settings are automatically returned
                        when GetPersonInfo is called.<br/>
                    <br/>
                        If you are familiar Windows development, this would
                        be analogus to HKEY_CURRENT_USER settings in the
                        Windows Registry.<br/>
                    <br/>
                        The Microsoft Health Service does not interpret this
                        data at all and only acts as storage for it on
                        behalf of the application.
                    </remarks>
            </documentation>
        </annotation>
        <sequence>
            <any namespace="##any" processContents="skip" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                Application specific XML.
                            </summary>
                        <remarks>
                                An application can provide any XML which
defines
                                settings for the application for a
particular
                                person.
```

```
                                </remarks>
                        </documentation>
                    </annotation>
                </any>
            </sequence>
        </complexType>
        <simpleType name="RecordState">
            <annotation>
                <documentation>
                    <summary>
                            The state of a person's authorization to a record.
                    </summary>
                    <remarks>
                            Authorization to a record may be suspended or
                            revoked if there is suspicion of fraud. In most
                            cases the state will be Active.
                    </remarks>
                </documentation>
            </annotation>
            <restriction base="string">
                <enumeration value="Active">
                    <annotation>
                        <documentation>
                            <summary>
                                    The authorization is active and the
authenticated
                                    person can access the record with as much
rights
                                    as was granted to the person.
                            </summary>
                        </documentation>
                    </annotation>
                </enumeration>
                <enumeration value="ReadOnly">
                    <annotation>
                        <documentation>
                            <summary>
                                    The authorization is in question and the
                                    authenticated person can read data in the
record
                                    but cannot write to the record even if they
                                    were previously granted write privileges.
                            </summary>
                        </documentation>
                    </annotation>
                </enumeration>
                <enumeration value="Suspended">
                    <annotation>
                        <documentation>
                            <summary>
                                    The authorization was used in a fraudulent
manor
                                    and can no longer be used.
                            </summary>
                            <remarks>
```

```
                                    In most cases attempts to use a suspended
record
                                    will result in INVALID_RECORD_STATE being
returned
                                    from the method.
                            </remarks>
                    </documentation>
                </annotation>
            </enumeration>
            <enumeration value="Deleted">
                <annotation>
                    <documentation>
                        <summary>
                                The record authorization has been deleted
and can
                                no longer be used to access the record.
                        </summary>
                        <remarks>
                                In most cases attempts to use a deleted
record
                                will result in INVALID_RECORD_STATE being
returned
                                from the method.
                        </remarks>
                    </documentation>
                </annotation>
            </enumeration>
        </restriction>
    </simpleType>
    <complexType name="Record">
        <annotation>
            <documentation>
                <summary>
                        Basic information about the authenticated person's
view
                        of a health record.
                </summary>
                <remarks>
                        Health records are a place to store health and
fitness
                        related data. Each person may be authorized to zero
to
                        many health records. This type represents the
metadata
                        about the authenticated person's view of the record,
                        including it's unique identifier, the relationship
the
                        authorized person has with the owner of the record,
the
                        name of the record, whether the authorized person is
a
                        custodian of the record, and more.
                </remarks>
            </documentation>
        </annotation>
```

```
<simpleContent>
    <extension base="wc-types:string255">
        <attribute name="id" type="wc-types:guid" use="required">
            <annotation>
                <documentation>
                    <summary>
                        The unique identifier of the health
record.
                    </summary>
                </documentation>
            </annotation>
        </attribute>
        <attribute name="record-custodian" type="boolean"
use="optional">
            <annotation>
                <documentation>
                    <summary>
                        States whether the authenticated person
is
                        a record custodian.
                    </summary>
                    <remarks>
                        If true, the authenticated person has
rights
                        to perform special operations on the
record
                        like sharing it with other people or
modifying
                        the permissions someone has on the
record.
                        Other than the owner of the record,
                        custodianship is usually granted to a
person
                        that has the legal right to make medical
                        decisions on behalf of the person. For
example,
                        a parent would likely be a custodian of
a
                        child's record until that child reaches
a
                        legally mature age, or if someone has
power
                        of attorney over the individual.
                    </remarks>
                </documentation>
            </annotation>
        </attribute>
        <attribute name="rel-type" type="int" use="required">
            <annotation>
                <documentation>
                    <summary>
                        The relationship the authorized person
has to
                        the owner of the record.
                    </summary>
```

```
                        </documentation>
                    </annotation>
                </attribute>
                <attribute name="rel-name" type="wc-types:string255"
use="optional">
                    <annotation>
                        <documentation>
                            <summary>
                                A string representation of the
relationship.
                            </summary>
                            <remarks>
                                This value is localized using the
language and
                                country specified in the request.
                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
                <attribute name="auth-expires" type="dateTime"
use="optional">
                    <annotation>
                        <documentation>
                            <summary>
                                The date the authenticated person's
                                authorization to the record expires.
                            </summary>
                            <remarks>
                                Once authorization expires to the
record, a
                                record custodian must extend the
expiration
                                period for the person to be able to
access
                                data in the record.
                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
                <attribute name="auth-expired" type="boolean"
use="optional">
                    <annotation>
                        <documentation>
                            <summary>
                                States whether authorization has already
                                expired.
                            </summary>
                        </documentation>
                    </annotation>
                </attribute>
                <attribute name="display-name" type="wc-types:string255"
use="optional">
                    <annotation>
                        <documentation>
                            <summary>
```

```
                                        The display name for the record.
                                    </summary>
                              <remarks>
                                        It may be possible for a person to
provide
                                        an alternate name for a record rather
than
                                        the person's name. For instance, a child
                                        authorized to a parent's health record
may
                                        change the display name to "Mom" rather
than
                                        the parent's name.
                              </remarks>
                         </documentation>
                    </annotation>
               </attribute>
               <attribute name="state" type="wc-types:RecordState">
                    <annotation>
                         <documentation>
                              <summary>
                                        The state of the person's authorization
to the
                                        record.
                              </summary>
                              <remarks>
                                        Authorization to a record may be
suspended or
                                        revoked if there is suspicion of fraud.
In most
                                        cases the state will be Active.
                              </remarks>
                         </documentation>
                    </annotation>
               </attribute>
               <attribute name="date-created" type="dateTime"
use="optional">
                    <annotation>
                         <documentation>
                              <summary>
                                        The date the health record was created.
                              </summary>
                         </documentation>
                    </annotation>
               </attribute>
               <attribute name="max-size-bytes" type="wc-
types:positiveLong" use="optional">
                    <annotation>
                         <documentation>
                              <summary>
                                        The maximum total size in bytes that all
the things in the record
                                        can occupy together.
                              </summary>
                         </documentation>
```

```
                </annotation>
            </attribute>
            <attribute name="size-bytes" type="wc-types:positiveLong"
use="optional">
                <annotation>
                    <documentation>
                        <summary>
                                    The total size in bytes that all the
things in the record
                                    currently occupy together.
                        </summary>
                    </documentation>
                </annotation>
            </attribute>
        </extension>
    </simpleContent>
</complexType>
<!-- localization stuff -->
<complexType name="LanguageCompetency">
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>

            </remarks>
        </documentation>
    </annotation>
    <simpleContent>
        <extension base="wc-types:iso639-1">
            <attribute name="is-primary" type="boolean"
use="optional">
                <annotation>
                    <documentation>
                        <summary>

                        </summary>
                        <remarks>

                        </remarks>
                    </documentation>
                </annotation>
            </attribute>
        </extension>
    </simpleContent>
</complexType>
<complexType name="LocalizedString">
    <annotation>
        <documentation>
            <summary>

            </summary>
            <remarks>
```

```
                </remarks>
            </documentation>
        </annotation>
        <simpleContent>
            <extension base="string">
                <attribute name="language" type="wc-types:iso639-1"
use="optional">
                    <annotation>
                        <documentation>
                            <summary>

                            </summary>
                            <remarks>

                            </remarks>
                        </documentation>
                    </annotation>
                </attribute>
            </extension>
        </simpleContent>
    </complexType>
    <complexType name="OpenQueryInfo">
        <annotation>
            <documentation>
                <summary>
                    Information describing a saved OpenQuery.
                </summary>
                <remarks>
                    This information is used to invoke an OpenQuery
                    after it is saved.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="query-id" type="wc-types:guid">
                <annotation>
                    <documentation>
                        <summary>
                                Identifier of the saved query.
                            </summary>
                        <remarks>
                                This identifier may be used to invoke the
                                corresponding saved query by using the
                                openquery.ashx HTTP handler. The handler
takes
                                one HTTP query parameter, id, the text
                                string representation of this
identifier.<br/>
                            <br/>
                                Example 1:<br/>

https://&lt;server&gt;/wildcat/openquery.ashx?id=9C4C77CF-1DF0-4c41-
BD3D-EC9232B5BC8A
                                will invoke a saved request that corresponds
                                to the specified identifier.<br/>
```

```
                        <br/>
                        Example 2:<br/>

https://&lt;server&gt;/wildcat/openquery.ashx?id=9C4C77CF-1DF0-4c41-
BD3D-EC9232B5BC8A?pin=91640108-453e-4882-ba4f-d9cda629d81d
                        will invoke a saved query that corresponds
                        to the specified identifier that is
protected
                        with the specified pin.
                        <br/>
                        Currently the only supported request method
                        of a saved query is GetThings. Attempting to
                        save queries for other methods will result
                        in the INVALID_OPENQUERY error.<br/>
                    <br/>
                        Security warning: Invocation of the saved
                        queries does not require authentication.
                        Authorization is applied as the person who
saved
                        the query.  The query may be protected with
a pin.
                        </remarks>
                </documentation>
            </annotation>
        </element>
        <element name="app-name" type="wc-types:string255">
            <annotation>
                <documentation>
                    <summary>
                        The name of the application that created the
                        open query.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="date-created" type="dateTime">
            <annotation>
                <documentation>
                    <summary>
                        Date the open query was created.
                    </summary>
                </documentation>
            </annotation>
        </element>
        <element name="expires-date" type="dateTime" minOccurs="0">
            <annotation>
                <documentation>
                    <summary>
                        Expiration date of the open query.
                    </summary>
                    <remarks>
                        </remarks>
                </documentation>
            </annotation>
        </element>
```

```
                    <element name="pin-required" type="boolean">
                        <annotation>
                            <documentation>
                                <summary>
                                        Specifies whether a PIN is required.
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                    <element name="note" type="wc-types:string128" minOccurs="0">
                        <annotation>
                            <documentation>
                                <summary>
                                        A note attached to the open query during its
                                        creation.
                                </summary>
                            </documentation>
                        </annotation>
                    </element>
                </sequence>
            </complexType>
            <complexType name="coded-value">
                <annotation>
                    <documentation>
                        <summary>
                                Defines a value which has been coded in a Microsoft
Health
                                Vocabulary.
                        </summary>
                        <remarks>
                                The Microsoft Health Service provides a set of
vocabularies
                                containing common health and fitness terms and
codes.
                                Vocabularies are identified by their family, type,
and
                                version and contain values which identify an entry
in that
                                vocabulary by code.<br/>
                            <br/>
                                For example, a prescription
                                vocabulary may be identified by the family 'NCPDP',
type
                                'SCRIPT', and version '1.0' and contain a code of 10
which
                                identifies a 'tablet' form of medication.
                        </remarks>
                    </documentation>
                </annotation>
                <sequence>
                    <element name="value" type="string">
                        <annotation>
                            <documentation>
                                <summary>
```

```
                                    The code value which identifies the item in
the
                                    vocabulary.
                            </summary>
                        <remarks>
                                    Codes are unique to the vocabulary they
reside in.
                                    The codes for a particular vocabulary can be
                                    enumerated using GetVocabulary.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="family" type="string" minOccurs="0">
                <annotation>
                    <documentation>
                        <summary>
                                    The family of the vocabulary.
                            </summary>
                        <remarks>
                                    The family of a vocabulary partially
identifies the
                                    vocabulary instance along with type and
version. If
                                    the value is missing the family is assumed
to be
                                    'wc' which is the Microsoft Health Lexicon.
                                    <br/>
                                    For example, 'NCPDP' is the vocabulary
family for
                                    codes in the National Council for
Prescription Drug
                                    Programs.
                            </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="type" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                    The type of the vocabulary.
                            </summary>
                        <remarks>
                                    This is the name that identifies the
vocabulary in
                                    the family of vocabularies.<br/>
                            <br/>
                                    For example, 'SCRIPT' is the vocabulary name
for
                                    medical prescriptions in the 'NCPDP' family
of
                                    vocabularies.
                            </remarks>
                    </documentation>
```

```
                    </annotation>
                </element>
                <element name="version" type="string" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The version of the vocabulary.
                            </summary>
                            <remarks>
                                    The version identifies which version of a
vocabulary
                                    identified by the 'type' element the code is
in if
                                    more than one version is present.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
        <complexType name="codable-value">
            <annotation>
                <documentation>
                    <summary>
                            A value that may have codes from one or more
Microsoft
                            Health vocabularies associated with it.
                    </summary>
                    <remarks>
                            A codable value represents a value that may
reference a
                            coded value in one or more of the Microsoft Health
                            vocabularies. Though it does not require the value
to
                            be in a vocabulary.<br/>
                        <br/>
                            For example, aerobic session data has a mode element
                            of type codable-value. Although many common forms of
                            aerobic session mode can be found in the Microsoft
                            Health Lexicon using the 'wildcat-activies'
vocabulary,
                            not all possible activies can be found there. If the
                            activity does exist in the vocabulary it is
recommended
                            that applications add the coded-value for that code
as
                            a 'code' element and set the 'text' element to the
                            display value for that code. If the activity does
not
                            exist in the vocabulary the 'code' element should
not
                            be specified and the 'text' element should contain
the
                            data the user entered.<br/>
                        <br/>
```

```
                        By using the coded-value when available the data can
                        be easily localized by the Microsoft Health Service
and
                        can also be utilized by applications that are mining
the
                        data based on certain code values.
                </remarks>
            </documentation>
        </annotation>
        <sequence>
            <element name="text" type="string">
                <annotation>
                    <documentation>
                        <summary>
                                The textual representation of the value.
                        </summary>
                        <remarks>
                                This may be the display value from one of
the
                                coded-values or it may be the user entered
                                value.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
            <element name="code" type="wc-types:coded-value" minOccurs="0"
maxOccurs="unbounded">
                <annotation>
                    <documentation>
                        <summary>
                                The codes representing the value from a
                                Microsoft Health vocabulary.
                        </summary>
                        <remarks>
                                Some values can be represented by codes in
more
                                that one vocabulary. If appropriate add
coded-values
                                from as many vocabularies as are relevant.
                        </remarks>
                    </documentation>
                </annotation>
            </element>
        </sequence>
    </complexType>
</schema>
```

weight-goal.xsd

```
<?xml version="1.0"?>
```

```
<schema xmlns:wg="urn:com.microsoft.wc.thing.weight-goal"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.weight-goal">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <annotation>
        <documentation>
            <type-id>b7925180-d69e-48fa-ae1d-cb3748ca170e</type-id>
            <type-name>Weight Goal</type-name>
            <summary>
                    A target weight range with an associated target date.
            </summary>
            <remarks>
                    More than one weight goal may exist in a record. It is
                    up to the application to determine which is the active
                    goal.<br/>
              <br/>
                    The thing's effective-date implies the date on which
                    the goal was initiated, for purposes of graphing, etc.
            </remarks>
        </documentation>
    </annotation>
    <element name="weight-goal">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A target weight range with an associated target
date.
                    </summary>
                    <remarks>
                            More than one weight goal may exist in a record.
It is
                            up to the application to determine which is the
active
                            goal.<br/>
                        <br/>
                            The thing's effective-date implies the date on
which
                            the goal was initiated, for purposes of
graphing, etc.
                    </remarks>
                </documentation>
            </annotation>
            <sequence>
                <element name="initial" type="t:weight-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The person's starting weight when
starting
                                    work toward the goal.
                                </summary>
```

```
                            <remarks>
                                    If not present, the initial weight can
be
                                    inferred from the "weight" thing with
the
                                    closest match to effective-date.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
                <element name="minimum" type="t:weight-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The lowest desired weight.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="maximum" type="t:weight-value"
minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    The highest desired weight.
                            </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="goal-info" type="t:goal" minOccurs="0">
                    <annotation>
                        <documentation>
                            <summary>
                                    General information about the goal.
                            </summary>
                            <remarks>
                                    A goal contains information like the
starting
                                    date, completion date, and current
status.
                            </remarks>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

weight.xsd

```
<?xml version="1.0"?>
```

```
<schema xmlns:weight="urn:com.microsoft.wc.thing.weight"
xmlns:t="urn:com.microsoft.wc.thing.types"
xmlns:d="urn:com.microsoft.wc.dates"
xmlns="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:com.microsoft.wc.thing.weight">
    <import namespace="urn:com.microsoft.wc.thing.types"
schemaLocation="base.xsd"/>
    <import namespace="urn:com.microsoft.wc.dates"
schemaLocation="dates.xsd"/>
    <annotation>
        <documentation>
            <type-id>3d34d87e-7fc1-4153-800f-f56592cb0d17</type-id>
            <type-name>Weight Measurement</type-name>
            <summary>
                    A single weight measurement.
              </summary>
            <effective-date-element>when</effective-date-element>
        </documentation>
    </annotation>
    <element name="weight">
        <complexType>
            <annotation>
                <documentation>
                    <summary>
                            A single weight measurement.
                      </summary>
                </documentation>
            </annotation>
            <sequence>
                <element name="when" type="d:date-time">
                    <annotation>
                        <documentation>
                            <summary>
                                        The date and time the weight measurement
                                        occurred.
                              </summary>
                        </documentation>
                    </annotation>
                </element>
                <element name="value" type="t:weight-value">
                    <annotation>
                        <documentation>
                            <summary>
                                        The value of the weight measurement.
                              </summary>
                        </documentation>
                    </annotation>
                </element>
            </sequence>
        </complexType>
    </element>
</schema>
```

Appendix B – Vocabulary Schema Examples

wc.allergen-type.1.xml

```
<vocab>
  <annotation>
    <documentation>
      <summary />
      <remarks />
    </documentation>
  </annotation>
  <id>e8243650-d084-4944-a93c-a826c16c944a</id>
  <family>wc</family>
  <name>allergen-type</name>
  <version>1</version>
  <lang>en-US</lang>
  <official>HealthVault Allergen Types</official>
  <desc>Allergen Types</desc>
  <is-current-version>true</is-current-version>
  <is-queryable>true</is-queryable>
  <is-active>true</is-active>
  <items>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>a44fe0ae-ca7f-46a6-a60d-ef513e08f29d</sc-id>
      <code-val>med</code-val>
      <disp-text-id>eb83ae64-2f89-45b5-80c0-ffd4e2daf6cd</disp-text-id>
      <disp-text>
        <en-US>medication</en-US>
      </disp-text>
      <abbr-text-id>09da3bd7-7d92-4799-8e7e-a31515f4698e</abbr-text-id>
      <abbr-text>
        <en-US>med</en-US>
      </abbr-text>
    </vi>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>82fb685c-1ec2-40c6-8a71-db337230f306</sc-id>
      <code-val>food</code-val>
      <disp-text-id>ca96904d-82e6-499f-b3ee-5fe046a5c9d0</disp-text-id>
      <disp-text>
        <en-US>food</en-US>
      </disp-text>
      <abbr-text-id>72cc7ab8-0c9f-4d1d-bf21-e6294827c71e</abbr-text-id>
      <abbr-text>
```

```
        <en-US>food</en-US>
      </abbr-text>
  </vi>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>9f67866c-f873-419d-90ab-a591d3939952</sc-id>
    <code-val>animal</code-val>
    <disp-text-id>7bb6b538-2f54-4f92-bbbd-6d38c3f139e6</disp-text-id>
    <disp-text>
      <en-US>animal</en-US>
    </disp-text>
    <abbr-text-id>0bf2a531-3b8e-43be-8e9b-c7dc2e7b2d32</abbr-text-id>
    <abbr-text>
      <en-US>animal</en-US>
    </abbr-text>
  </vi>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>74dd04dd-dd20-42d0-948a-dc3c1145bc30</sc-id>
    <code-val>plant</code-val>
    <disp-text-id>d3c90564-089a-45eb-9a4a-e5ccc26c25ed</disp-text-id>
    <disp-text>
      <en-US>plant</en-US>
    </disp-text>
    <abbr-text-id>8cd0ba33-f25a-4584-9498-d366b5fbdd7a</abbr-text-id>
    <abbr-text>
      <en-US>plant</en-US>
    </abbr-text>
  </vi>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>a550398b-d67d-4fa1-97ae-3a32d3785676</sc-id>
    <code-val>env</code-val>
    <disp-text-id>f964925c-22c2-4cfa-852e-84b49a08acdf</disp-text-id>
    <disp-text>
      <en-US>environmental</en-US>
    </disp-text>
    <abbr-text-id>d22e03dd-e996-473b-afac-51995b1d3e20</abbr-text-id>
    <abbr-text>
      <en-US>env</en-US>
```

```
        </abbr-text>
    </vi>
  </items>
</vocab>
```

wc.blood-types.1.xml

```
<vocab>
    <annotation>
        <documentation>
            <summary />
            <remarks />
        </documentation>
    </annotation>
    <id>b365d7f9-88a3-4506-9062-cfe5e9f7f3a3</id>
    <family>wc</family>
    <name>blood-types</name>
    <version>1</version>
    <lang>en-US</lang>
    <official>Blood types</official>
    <desc />
    <is-current-version>true</is-current-version>
    <is-queryable>true</is-queryable>
    <is-active>true</is-active>
    <items>
        <vi>
            <annotation>
                <documentation>
                    <summary />
                    <remarks />
                </documentation>
            </annotation>
            <sc-id>605f6440-c11a-4d79-920d-505f75f92b36</sc-id>
            <code-val>A-</code-val>
            <disp-text-id>16c36498-e4b2-494a-899a-568978e4cc93</disp-
text-id>
            <disp-text>
                <en-US>A-</en-US>
            </disp-text>
            <abbr-text-id>0fbb79cc-7f7a-4b65-8dd5-ca6e209edbad</abbr-
text-id>
            <abbr-text>
                <en-US>A-</en-US>
            </abbr-text>
        </vi>
        <vi>
            <annotation>
                <documentation>
                    <summary />
                    <remarks />
                </documentation>
            </annotation>
            <sc-id>b730edab-5727-48b5-ba41-f7d1b2987a53</sc-id>
```

```
            <code-val>A+</code-val>
            <disp-text-id>da5b574c-c046-40bb-b5a1-8549d5ba3227</disp-
text-id>
            <disp-text>
                <en-US>A+</en-US>
            </disp-text>
            <abbr-text-id>80a7e52f-5870-4c2b-9bba-842b15288f5a</abbr-
text-id>
            <abbr-text>
                <en-US>A+</en-US>
            </abbr-text>
        </vi>
        <vi>
            <annotation>
                <documentation>
                    <summary />
                    <remarks />
                </documentation>
            </annotation>
            <sc-id>7aef0125-4ca8-46a7-b33e-7cbb2222e9db</sc-id>
            <code-val>B-</code-val>
            <disp-text-id>4613215c-7c18-44aa-beee-dec5102cfae3</disp-
text-id>
            <disp-text>
                <en-US>B-</en-US>
            </disp-text>
            <abbr-text-id>8f7f7f22-b4cb-4699-b794-f1a6fb919b2b</abbr-
text-id>
            <abbr-text>
                <en-US>B-</en-US>
            </abbr-text>
        </vi>
        <vi>
            <annotation>
                <documentation>
                    <summary />
                    <remarks />
                </documentation>
            </annotation>
            <sc-id>231af9cd-2462-46f2-849a-438c0f2d17d6</sc-id>
            <code-val>B+</code-val>
            <disp-text-id>74d182fa-9b42-49e9-a7c7-c1fa04f3d19e</disp-
text-id>
            <disp-text>
                <en-US>B+</en-US>
            </disp-text>
            <abbr-text-id>a2958558-eead-48d1-8037-be20e591cfc4</abbr-
text-id>
            <abbr-text>
                <en-US>B+</en-US>
            </abbr-text>
        </vi>
        <vi>
            <annotation>
                <documentation>
```

```
                        <summary />
                        <remarks />
                    </documentation>
                </annotation>
                <sc-id>ef93110d-012a-4f9c-818b-d0725893411f</sc-id>
                <code-val>O-</code-val>
                <disp-text-id>e483963c-d084-468e-97ab-59d7eaa69f44</disp-
text-id>
                <disp-text>
                    <en-US>O-</en-US>
                </disp-text>
                <abbr-text-id>3e4e25f5-38dc-4f9e-b18d-486b10c9a63b</abbr-
text-id>
                <abbr-text>
                    <en-US>O-</en-US>
                </abbr-text>
        </vi>
        <vi>
                <annotation>
                    <documentation>
                        <summary />
                        <remarks />
                    </documentation>
                </annotation>
                <sc-id>4ebe9588-d650-4249-8845-ff0c170fde04</sc-id>
                <code-val>O+</code-val>
                <disp-text-id>1195583e-955d-40bf-898b-1bae874f073a</disp-
text-id>
                <disp-text>
                    <en-US>O+</en-US>
                </disp-text>
                <abbr-text-id>7ecac6a6-214c-421f-b5a0-294d020a373a</abbr-
text-id>
                <abbr-text>
                    <en-US>O+</en-US>
                </abbr-text>
        </vi>
        <vi>
                <annotation>
                    <documentation>
                        <summary />
                        <remarks />
                    </documentation>
                </annotation>
                <sc-id>3c847bee-1b27-476d-8925-5e169e08c1b0</sc-id>
                <code-val>AB-</code-val>
                <disp-text-id>b49eef6f-fba0-4fcf-9ec2-fdf0294da52c</disp-
text-id>
                <disp-text>
                    <en-US>AB-</en-US>
                </disp-text>
                <abbr-text-id>97511f8c-29fe-4b0f-baf4-e285a19dadcc</abbr-
text-id>
                <abbr-text>
                    <en-US>AB-</en-US>
```

```
                    </abbr-text>
            </vi>
            <vi>
                <annotation>
                    <documentation>
                        <summary />
                        <remarks />
                    </documentation>
                </annotation>
                <sc-id>76236a72-1728-4658-88ab-b35488cdc400</sc-id>
                <code-val>AB+</code-val>
                <disp-text-id>59644e12-e3d7-4781-858f-191ee1494b58</disp-
text-id>
                <disp-text>
                    <en-US>AB+</en-US>
                </disp-text>
                <abbr-text-id>09734819-d095-4a5e-8330-9e542dcf94e2</abbr-
text-id>
                <abbr-text>
                    <en-US>AB+</en-US>
                </abbr-text>
            </vi>
        </items>
</vocab>
```

wc.coverage-types.1.xml

```
<vocab>
  <annotation>
    <documentation>
      <summary />
      <remarks />
    </documentation>
  </annotation>
  <id>6972a05c-0703-4617-a82f-d0dd2fcfd89c</id>
  <family>wc</family>
  <name>coverage-types</name>
  <version>1</version>
  <lang>en-US</lang>
  <official>Wildcat Coverage Types</official>
  <desc>enumeration for Coverage Type in the Payer thing type</desc>
  <is-current-version>true</is-current-version>
  <is-queryable>true</is-queryable>
  <is-active>true</is-active>
  <items>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>24f90b7f-16fb-46fd-84bf-81cfac6818d1</sc-id>
```

```
      <code-val>1</code-val>
      <disp-text-id>186c0ce5-59be-4dcf-bd29-82fbd7fbfaf0</disp-text-id>
      <disp-text>
        <en-US>Medical</en-US>
      </disp-text>
      <abbr-text-id>0b9fd9fb-aee2-49a8-9a04-027e27c60dc1</abbr-text-id>
      <abbr-text>
        <en-US>Medical</en-US>
      </abbr-text>
    </vi>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>154f9a3b-b5a3-4bdc-b74a-d6e7bc1f955f</sc-id>
      <code-val>2</code-val>
      <disp-text-id>6c0499e7-11d9-48bf-9b46-51d650ab3969</disp-text-id>
      <disp-text>
        <en-US>Dental</en-US>
      </disp-text>
      <abbr-text-id>612d4ec0-2649-4a03-b2e4-ae4bf3ba385d</abbr-text-id>
      <abbr-text>
        <en-US>Dental</en-US>
      </abbr-text>
    </vi>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>5e4732ff-94c3-418d-9938-25020c060cdc</sc-id>
      <code-val>3</code-val>
      <disp-text-id>56c7e881-68ec-41da-8d28-3a16e3323c85</disp-text-id>
      <disp-text>
        <en-US>Vision</en-US>
      </disp-text>
      <abbr-text-id>1e9e707e-2f78-46c7-9868-f4425f9ca207</abbr-text-id>
      <abbr-text>
        <en-US>Vision</en-US>
      </abbr-text>
    </vi>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>50639d38-9b0f-44b7-b6fd-1896b11383eb</sc-id>
      <code-val>4</code-val>
```

```
        <disp-text-id>d4de84ae-09ec-49e4-bc0a-c0245c0f6c6f</disp-text-id>
        <disp-text>
          <en-US>Life</en-US>
        </disp-text>
        <abbr-text-id>7435a2b5-d4b2-4e57-91d2-fb188866a67b</abbr-text-id>
        <abbr-text>
          <en-US>Life</en-US>
        </abbr-text>
      </vi>
      <vi>
        <annotation>
          <documentation>
            <summary />
            <remarks />
          </documentation>
        </annotation>
        <sc-id>13de8c43-337f-4cef-b1a4-54e0beba0f23</sc-id>
        <code-val>5</code-val>
        <disp-text-id>1c600f30-d8ba-4ccb-9e52-dc61c0fa567c</disp-text-id>
        <disp-text>
          <en-US>Other</en-US>
        </disp-text>
        <abbr-text-id>2e359953-487f-4974-b200-3a81b0a3e9f6</abbr-text-id>
        <abbr-text>
          <en-US>Other</en-US>
        </abbr-text>
      </vi>
    </items>
</vocab>
```

wc.dose-purpose.1.xml

```
<vocab>
  <annotation>
    <documentation>
      <summary />
      <remarks />
    </documentation>
  </annotation>
  <id>85fb2674-17e6-4270-85ab-7a94c2e42600</id>
  <family>wc</family>
  <name>dose-purpose</name>
  <version>1</version>
  <lang>en-US</lang>
  <official>HealthVault Dose Purpose Types</official>
  <desc>Dose Purpose Types</desc>
  <is-current-version>true</is-current-version>
  <is-queryable>true</is-queryable>
  <is-active>true</is-active>
  <items>
    <vi>
      <annotation>
        <documentation>
```

```
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>f3aeca55-e22d-4cd8-8898-debb5085480c</sc-id>
      <code-val>rel</code-val>
      <disp-text-id>a94de893-6b3b-4697-bcea-bb97c3aaf749</disp-text-id>
      <disp-text>
        <en-US>relief</en-US>
      </disp-text>
      <abbr-text-id>08f72f7d-748c-405f-b236-1fadaf3d9cac</abbr-text-id>
      <abbr-text>
        <en-US>rel</en-US>
      </abbr-text>
    </vi>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>eac80371-0c24-4945-bae5-a5845a6e43c3</sc-id>
      <code-val>prev</code-val>
      <disp-text-id>29b6c65e-1644-477f-9525-218eb9727362</disp-text-id>
      <disp-text>
        <en-US>prevention</en-US>
      </disp-text>
      <abbr-text-id>2d5cd78f-2072-4450-bedc-3b922ab7ca84</abbr-text-id>
      <abbr-text>
        <en-US>prev</en-US>
      </abbr-text>
    </vi>
    <vi>
      <annotation>
        <documentation>
          <summary />
          <remarks />
        </documentation>
      </annotation>
      <sc-id>7f1773c1-7a4c-498d-945f-bfeae6ccf3dd</sc-id>
      <code-val>ctrl</code-val>
      <disp-text-id>bd2b4a57-4b87-4c81-9808-52b077722e4a</disp-text-id>
      <disp-text>
        <en-US>control</en-US>
      </disp-text>
      <abbr-text-id>25b0195b-f20f-4656-a1b5-1370b53e940c</abbr-text-id>
      <abbr-text>
        <en-US>ctrl</en-US>
      </abbr-text>
    </vi>
    <vi>
      <annotation>
        <documentation>
          <summary />
```

```
        <remarks />
      </documentation>
    </annotation>
    <sc-id>08d2e663-b61f-4c4d-9d31-4d19dd0ac428</sc-id>
    <code-val>other</code-val>
    <disp-text-id>729d1c95-589b-4972-8e9f-fd22c646c4be</disp-text-id>
    <disp-text>
      <en-US>other</en-US>
    </disp-text>
    <abbr-text-id>75307aae-108b-4a5d-8957-558eb7d5ed45</abbr-text-id>
    <abbr-text>
      <en-US>other</en-US>
    </abbr-text>
  </vi>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>c9e49482-706d-4b6f-b727-1d8a45d7a21e</sc-id>
    <code-val>undef</code-val>
    <disp-text-id>004e5766-ebda-4a1a-89fe-f1e6669c8801</disp-text-id>
    <disp-text>
      <en-US>undefined</en-US>
    </disp-text>
    <abbr-text-id>62934616-4f49-4979-a761-e79759c6c8e9</abbr-text-id>
    <abbr-text>
      <en-US>undef</en-US>
    </abbr-text>
  </vi>
  </items>
</vocab>
```

wc.Education-level.1.xml

```
<vocab>
  <annotation>
    <documentation>
      <summary />
      <remarks />
    </documentation>
  </annotation>
  <id>28868b97-e476-47a0-8fc0-7d4565605e31</id>
  <family>wc</family>
  <name>Education-level</name>
  <version>1</version>
  <lang>en</lang>
  <official>Wildcat Education Level</official>
  <desc>education Level</desc>
  <is-current-version>true</is-current-version>
  <is-queryable>true</is-queryable>
```

```xml
<is-active>true</is-active>
<items>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>a41f0961-ed1a-4c2f-9360-6c099af030f6</sc-id>
    <code-val>Pri</code-val>
    <disp-text-id>031f37b4-c616-4672-84b5-b94682b3eee0</disp-text-id>
    <disp-text>
      <en>Primary schooling, eighth grade or less</en>
    </disp-text>
  </vi>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>0e3cd49e-f498-4957-8139-4575b6201377</sc-id>
    <code-val>HS</code-val>
    <disp-text-id>5d00cf3b-3f98-4d3f-be2b-76184c59bd6f</disp-text-id>
    <disp-text>
      <en>Some High School, no diploma or GED</en>
    </disp-text>
  </vi>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>97ad5b44-f960-4763-9da3-98f7b6ca895a</sc-id>
    <code-val>HSG</code-val>
    <disp-text-id>b29e0c17-2d99-4651-b5bf-3e98f2e7b1eb</disp-text-id>
    <disp-text>
      <en>High School Graduate or GED</en>
    </disp-text>
  </vi>
  <vi>
    <annotation>
      <documentation>
        <summary />
        <remarks />
      </documentation>
    </annotation>
    <sc-id>d22573bd-8d64-485e-849e-a800ad17a314</sc-id>
    <code-val>Col</code-val>
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wc.ethnicity-types.1.xml

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http://www.whitehouse.gov/omb/fedreg/1997standards.html for more
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wc.immunizations.1.xml

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  <name>immunizations</name>
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use</en>
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NOS</en>
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schedule</en>
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      <code-val>rabies, intramuscular injection</code-val>
      <disp-text-id>b97b2463-8664-4362-8b42-7c84d3c3c985</disp-text-id>
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      <disp-text-id>690e7505-63be-4491-84c1-f912709389a2</disp-text-id>
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      <code-val>rabies, NOS</code-val>
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intravenous</en>
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(palivizumab), intramuscular</en>
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  <code-val>tetanus toxoid</code-val>
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device</en>
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intradermal</en>
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multipuncture device</en>
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      <code-val>typhoid, parenteral, AKD (U.S. Military)</code-val>
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Military)</en>
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      <code-val>typhoid, ViCPs</code-val>
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wc.inhaler-dose-purpose.1.xml

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  <desc>Inhaler Does Purpose</desc>
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  <is-active>true</is-active>
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wc.marital-status.1.xml

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<desc>Marital Status</desc>
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wc.medication-routes.1.xml

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wc.personal-relationship.1.xml

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wc.prescription-type.1.xml

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  <name>prescription-type</name>
  <version>1</version>
  <lang>en</lang>
```

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wc.religion.1.xml

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  <name>religion</name>
  <version>1</version>
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