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组合型智能客户端应用 With Composite UI Application Block

曹严明
.NET架构顾问
微软(中国)

日程

- 组合型应用的应用场景
- Composite UI App Block 体系架构概述
- Composite UI App Block 主要概念
- CAB 中使用的设计模式

JPMC – 网上银行

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投资信息

The screenshot shows the Chase Online Investing interface. At the top, there's a navigation bar with links like 'My Accounts', 'Payments & Transfers', 'Investing', 'Advice & Planning', 'Products & Services', and 'Client Center'. A 'Log Off' button is in the top right. Below the navigation bar, the 'PERSONAL FINANCIAL SERVICES Investing' section is active. It includes a 'Get Quote' button, a 'Symbol Lookup' field with a 'GO' button, and contact information for a financial advisor, Isabella Griffin. A dropdown menu 'I want to...' is also present. On the left, 'Related Topics' include 'Make a Transfer', 'Financial Planning Center', and 'Financial Glossary'. Below this is a line chart for DOW, NASDAQ, and S&P 500 indices, followed by a table of their last prices and changes. A 'Watchlist' section on the right shows a table of stocks like JPM, INTC, MSFT, and GE. Annotations with green lines point to various features: '集成分析工具' points to the indices chart; '集成新闻及提醒' points to the 'News Center' section; '集成股票数据' points to the 'Watchlist' table; and '集成投资信息' points to the top navigation and quote section.

CHASE CHASE ONLINESM Log Off

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My Accounts Payments & Transfers **Investing** Advice & Planning Products & Services Client Center

PERSONAL FINANCIAL SERVICES Investing

I want to... Help ?

Get Quote Symbol Lookup 20 minute delay GO

Your Personal Financial Advisor: Isabella Griffin
Personal Line: 800-216-2700
E-mail My Financial Team

Related Topics

- > Make a Transfer
- > Financial Planning Center
- > Financial Glossary

Trade Stocks/Funds
Already know what you would like to buy or sell?
Go straight to [Trade](#).

Research Stocks
Find a Stock based on your criteria with this tool:
[Stock Screener](#)

If you have a particular stock in mind, you can access a number of resources to help make your research much easier.

Using the drop-down menu, select the item you are interested in viewing. You will then be prompted for a ticker symbol and have access to all the resources available for that symbol.

View: Go [Symbol Lookup](#)

Track Stock/Funds
Use one of the functions below to monitor your selected stocks or funds.

[Price Alerts](#) [Stock Ticker](#) [Watchlist](#) [Major Indices](#)

News Center
Access current news reports and market information.
[News](#)

Watchlist

Symbol	Price	% Chg	Vol
JPM	29.17	1.71%	9.84M
INTC	19.16	0.85%	44.26M
MSFT	25.65	-0.35%	39.67M
GE	29.20	0.72%	14.87M

2:36:15 PM List 1
[Detach](#) [Edit](#)

Additional Indices

Name	Last	Chg	%Chg
DOW	8,50k	15.27	0.18
NASDAQ	1,46k	9.67	0.67
S&P 500	0,92k	5.13	0.56

LOOKING FOR GUIDANCE WITH YOUR FINANCIAL PLAN?
> LEARN MORE

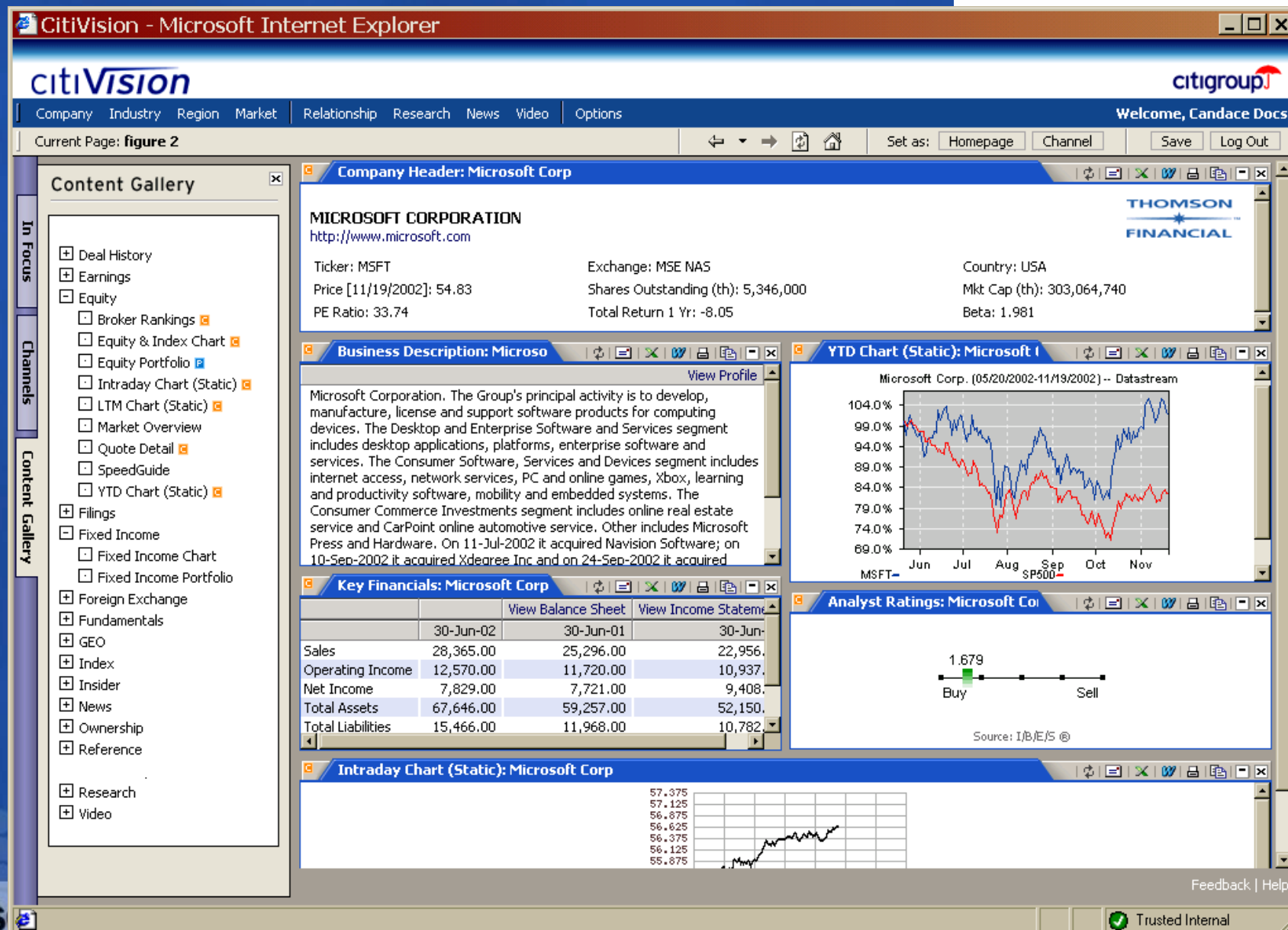
BANKING AND INVESTING PRODUCTS THAT ARE RIGHT FOR YOU
> SHOW ME

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分析工具

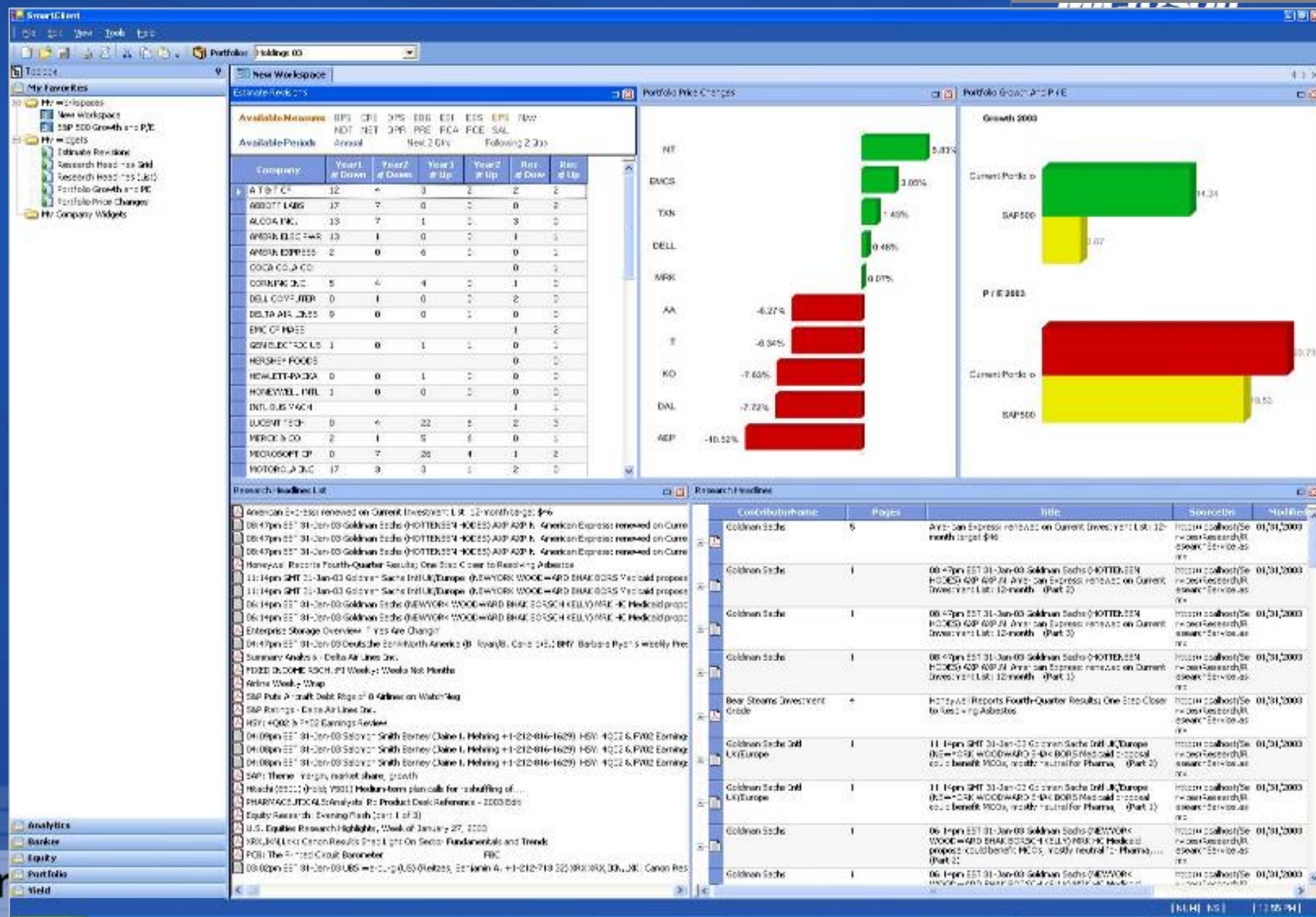
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新闻及提醒

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股票数据

Citibank - 信息发布门户



Thomson — 金融数据门户



Dell – 客服集成桌面

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Contact Center Agent Desktop

Assistance Phone Look Up Applications Help Status: On Call - Active

Session Explorer - 2 Session(s)

Sort By: Session - Customer Name

- John Smith - (425) 533-3335
 - Billing
 - CRM
 - Current Promotions
 - Customer Alerts
- Maeve Elizabeth - (425) 221-0456
 - Billing
 - CRM
 - Current Promotions

Current Workflow (Non-Forced)

Workflows: Billing Query Done

Workflow Steps:

- ✓ Customer's Alerts
- ✓ Latest Promotions
- ✓ Billing Information
- Update Customer Information

Previous Next Cancel

Update Customer Profile

Note: * Indicates required field.

Personal Details

First Name: John Middle Initial: R

Last Name: Smith Gender: ☒ Male ☐ Female

Contact Details

Address: North Avenue City: Seattle

Zip Code: 98007 State: PENNSYLVANIA

Email: JohnSmith@hotmail.com Date of Birth: 01/11/1968

Contact Number1: 4255333335 Contact Number2: 4545454545

Billing Information

Billing Address: North Avenue Billing State: PENNSYLVANIA

Billing City: Seattle Billing Zip Code: 98101

Bank/SSN Information

On call with John Smith (425) 533-3335 [Connected] Calls Waiting: 6 Avg Wait: 53 Longest Wait: 107 11:03 AM

msn

MSDN Webcasts

Commonwealth Bank of Australia – 柜员系统

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CommSee PoC



REDMOND\brentonw

User Details

Staff Number: 125473833

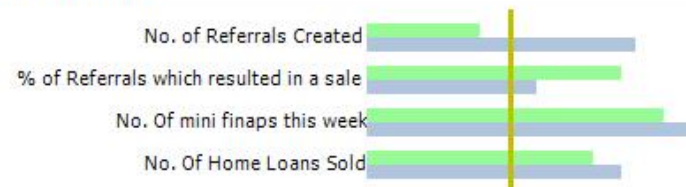
Mr Edward Gallimore
PFS; PBIS; Bondi Premium Centre
Bus. Phone: (02) 9867 7632
Email: John.Scott@Hotmail.com

Unread Emails

[more emails...](#)

Subject	From	Received
RE: John Bennet's Home Loan Acct	Michael Peterson	Today 10:
Movies at the weekend?	Mary23@hotmail.com	Today 9:0
RE: Client followup	Joanne Gunthor	Yesterday

My Performance



CMore News Articles

[more...](#)

Home loan interest rates set to rise Today
John Peters from the Reserve bank of australia has predicted that the home lo rates will rise between 0.25% and 0.75% between now and the end of the year exist regarding the ability of many overstretched families being able to make t

New Wealth Product available from CommSec Monda
Once upon a time these were three bears, momma bear, baby bear, and papa of a sudden a nighty girl named goldielocks came by the house and...

Favourite Links

- Search For Clients
Using Name, Account Number etc.
- View Emails
Review Emails, Create new emails
- Search For Tasks
By Type, Status, Owner etc.
- Home Loan Applications
Create and Review Applications

User Tasks

[Completed tasks...](#)

Work Item	Status	Waiting Time
Term Deposit Matured	Pending Followup	1 Hour Old
Fixed Interest Referral	Pending Followup	3 Hours Old
General Insurance Referral	Pending Followup	6 Hours Old
Home Loan Application 25678828	Assessed	10 Hours Old
Lending Products Referral	Pending Followup	3 Days Old
Home Loan Application 7389828	Home Loan Processing	5 Days Old
Client Followup	Pending	5 Days Old
In-person Appointment	Pending	2 Weeks Old
Client Followup	Pending	2 Weeks Old
Home Loan Application 6536789	In Credit Cell	3 Weeks Old
Funds AdviceApplication	SOA Delivered	1 Month Old
Term Deposit Matured	Pending Followup	2 Months Old

Clients Most Recently Serviced

[search..](#)

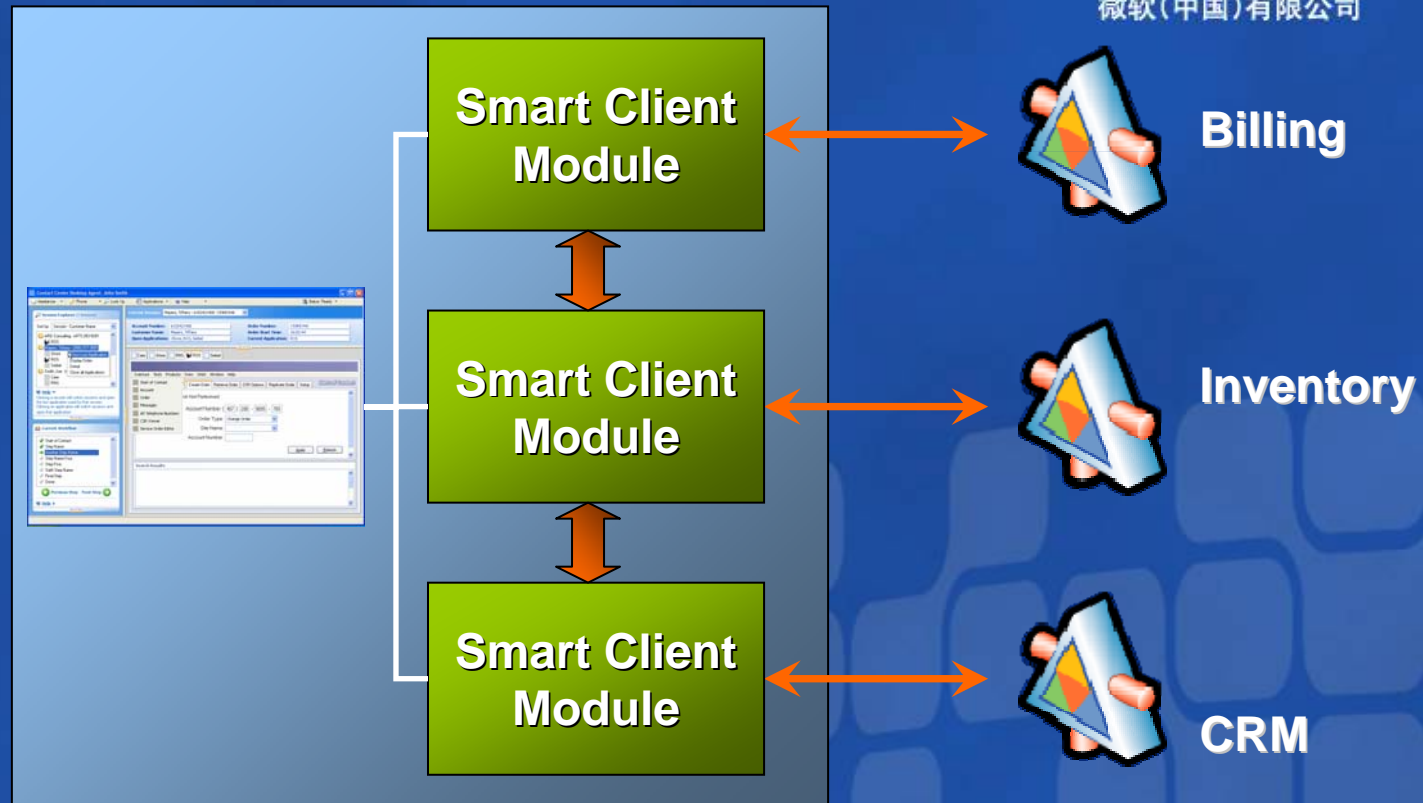
- Mr John Smith
Mrs Mary Anne Smith
Mr Harry Michaelson
Mr Clement Webster
- Mr Gary Matthew Peterson
Miss Joan Kline
Mr Bradley Thompson
Mrs Martine Jane Thompson

日程

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什么是组合型智能客户端应用？

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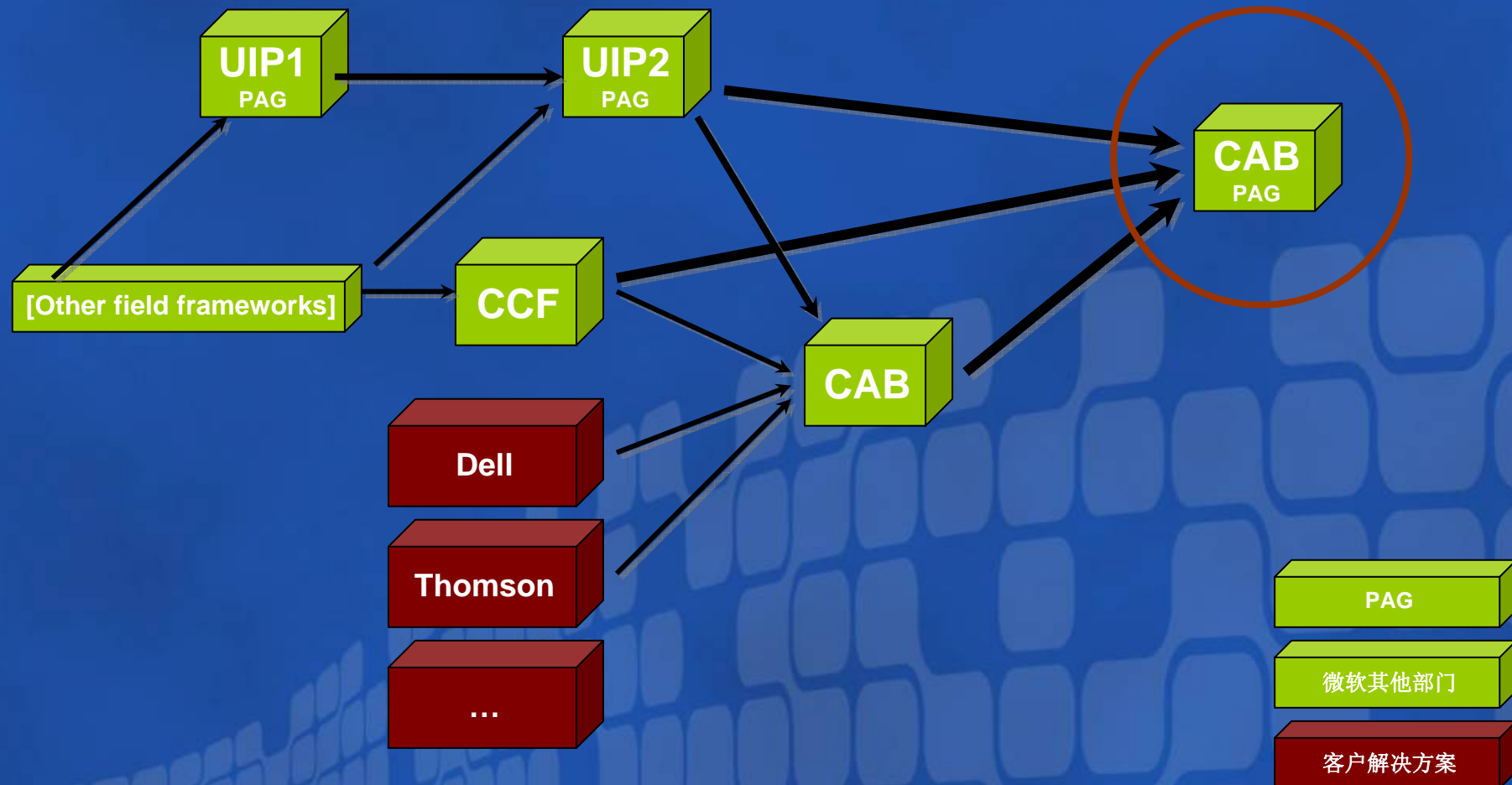


- 将不同的功能模块组合成解决方案
- 运行环境提供基础服务
- 降低开发成本
- 灵活方便

Composite UI App Block 的来由

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Composite UI Application Block

创建企业级智能客户端

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- 对系统设计团队的价值：质量与一致性
 - 提供一个针对企业级智能客户端应用的公共开发体系结构
 - 提供一个一致的和可预测的方法来开发、包装、发布基础组件，以便强制企业应用的体系结构标准
- 对开发团队的价值：生产力
 - 提供一个开发环境能很好的隐藏复杂度和提高生产力
 - 通过高度抽象和关注点的分离，开发人员能够关注于业务逻辑
 - 提高基础框架代码的复用
- 商务目标：提高最终用户的生产力和业务工作的敏捷性
 - 公司可以以更敏捷的方式推出新的和升级的功能
 - 界面使最终用户更快的、更准确的完成工作任务，避免通过 **Alt-Tab**, **Copy-Paste** 的方式作应用间的数据交换
 - 一致的界面降低了培训费用

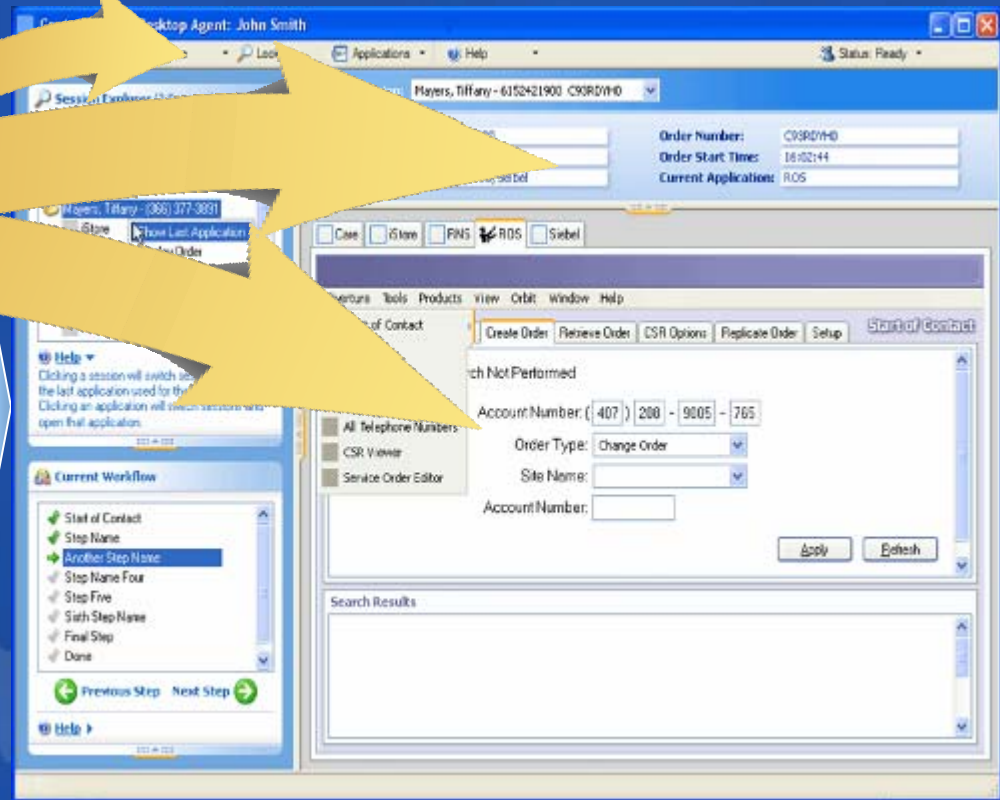
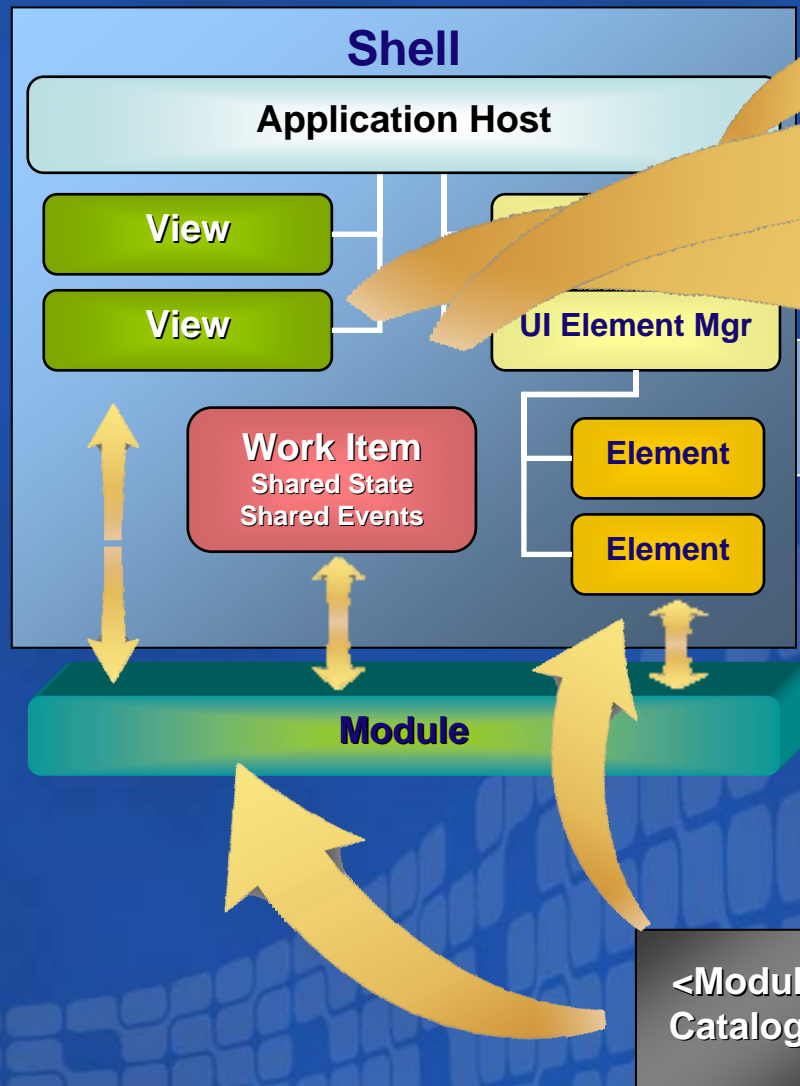
主要困难

- 将完全不同的组件组合成一个完整的应用
- 将Shell部分与应用逻辑部分分离开来
- 可扩展性使您能使用自己的设计模式和开发方法

Composite App Block 概述

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CAB 体系结构

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Shell

SmartPart Managers & Base Classes

Hosted Control

Layout

MDI

Main Form

User Interface Elements

StatusStrip UI Element

MenuStrip UI Element

ToolStrip UI Element

Shell 开发

Host

Services

CatalogReader

Authentication

Loader

[Logging?]

Initializer

[Authorization?]

Infrastructure
开发

Module 1

Shared State

SmartPart 1

Controller 1

Module 2

Shared S...

SmartPart X

Controller X

SmartPart Y

Controller Y

Biz Logic 开发

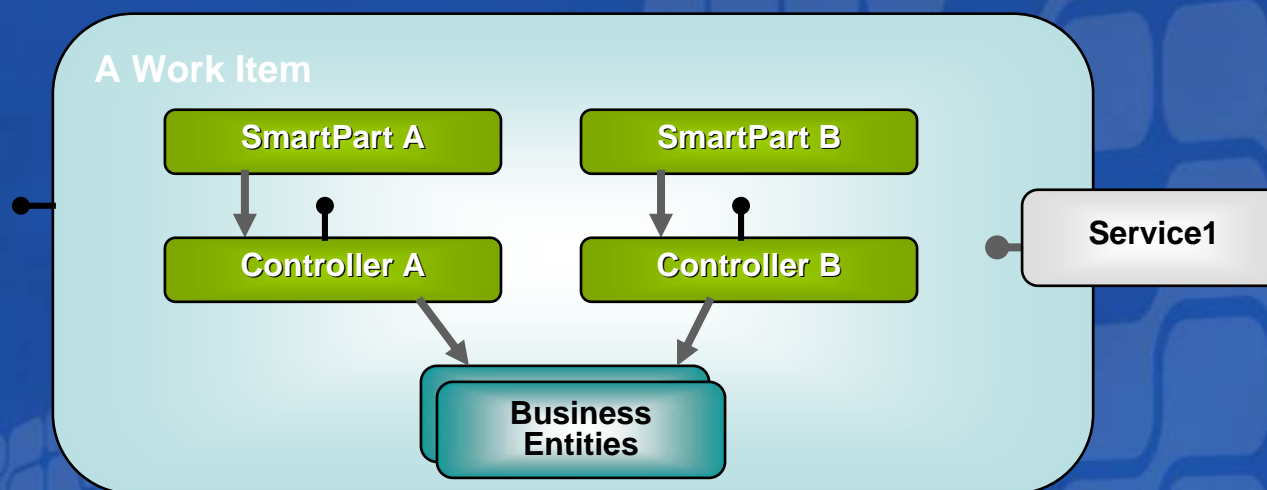
Microsoft Webcasts

设计组合型应用 – 应用逻辑

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- 将 views (SmartPart) 设计为独立于 controllers 的单元
- 共享模块状态
- 共享基础服务
- 封装用例 – 重用
- 降低模块间的依赖性
 - 尽量使用 events, services, and interfaces

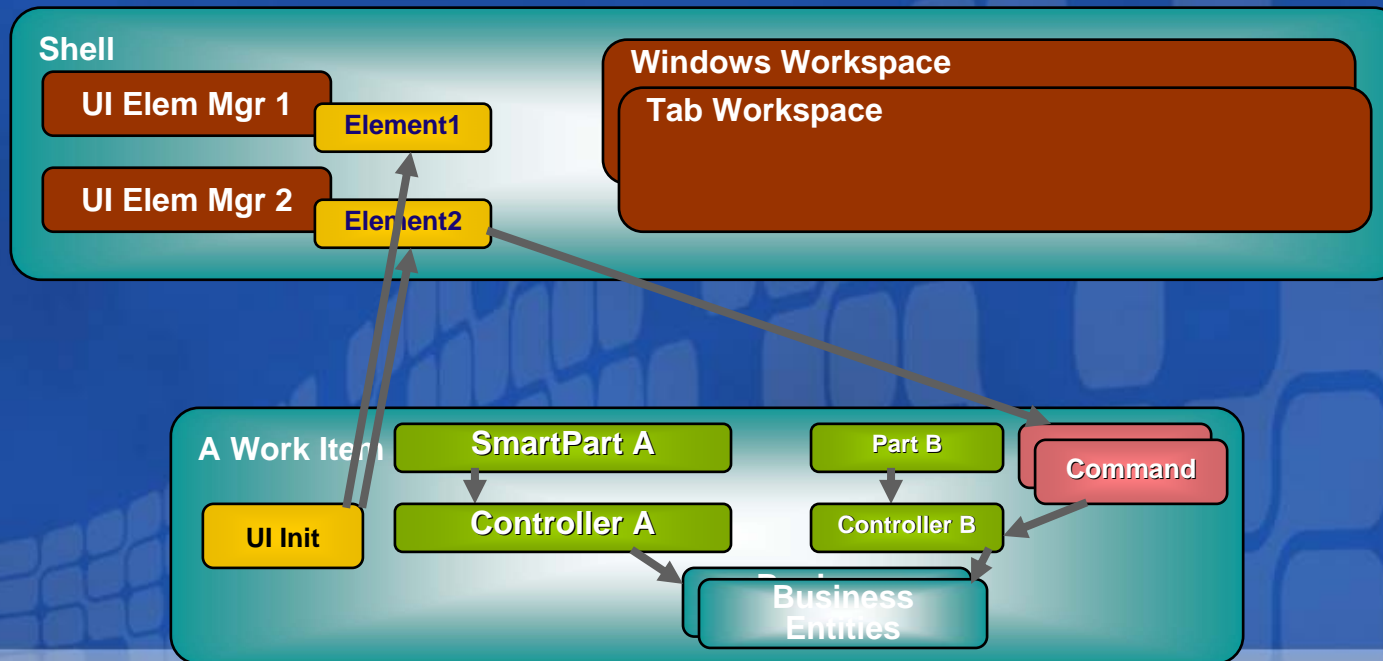


设计组合型应用 – 界面逻辑

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- SmartParts 是控件 – Workspaces 在一个可视框架中显示它们
 - Shell 开发人员开发 Workspaces. 控件跟 Workspaces 无关
- 界面元素可以用共同的方法添加
 - 以免业务逻辑开发人员把业务逻辑跟特定的界面风格紧耦合
 - 可以集中控制用例改变界面的方式和时间
- Commands 连接了可操作界面元素集和一个业务逻辑callback

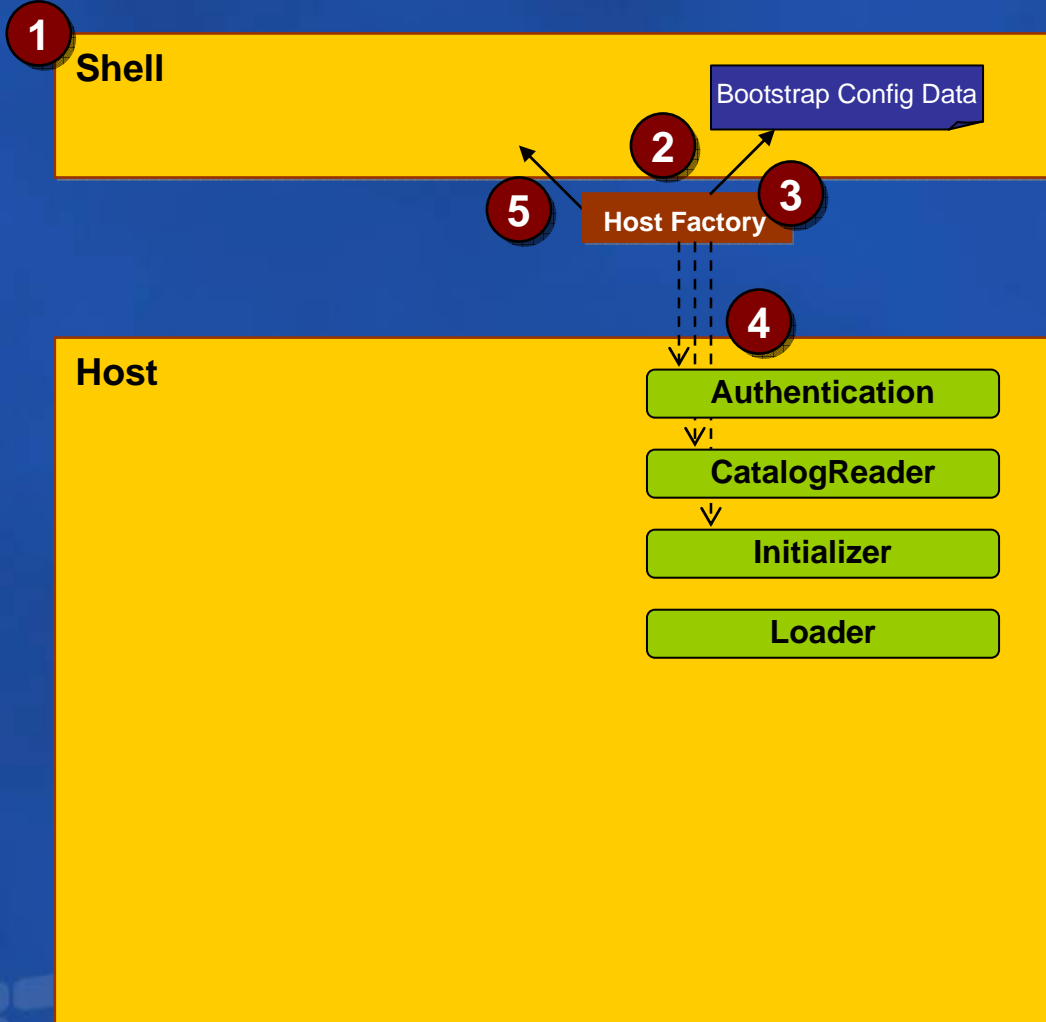


应用启动次序: 1 of 2

初始化 Shell, Host, 和初始服务

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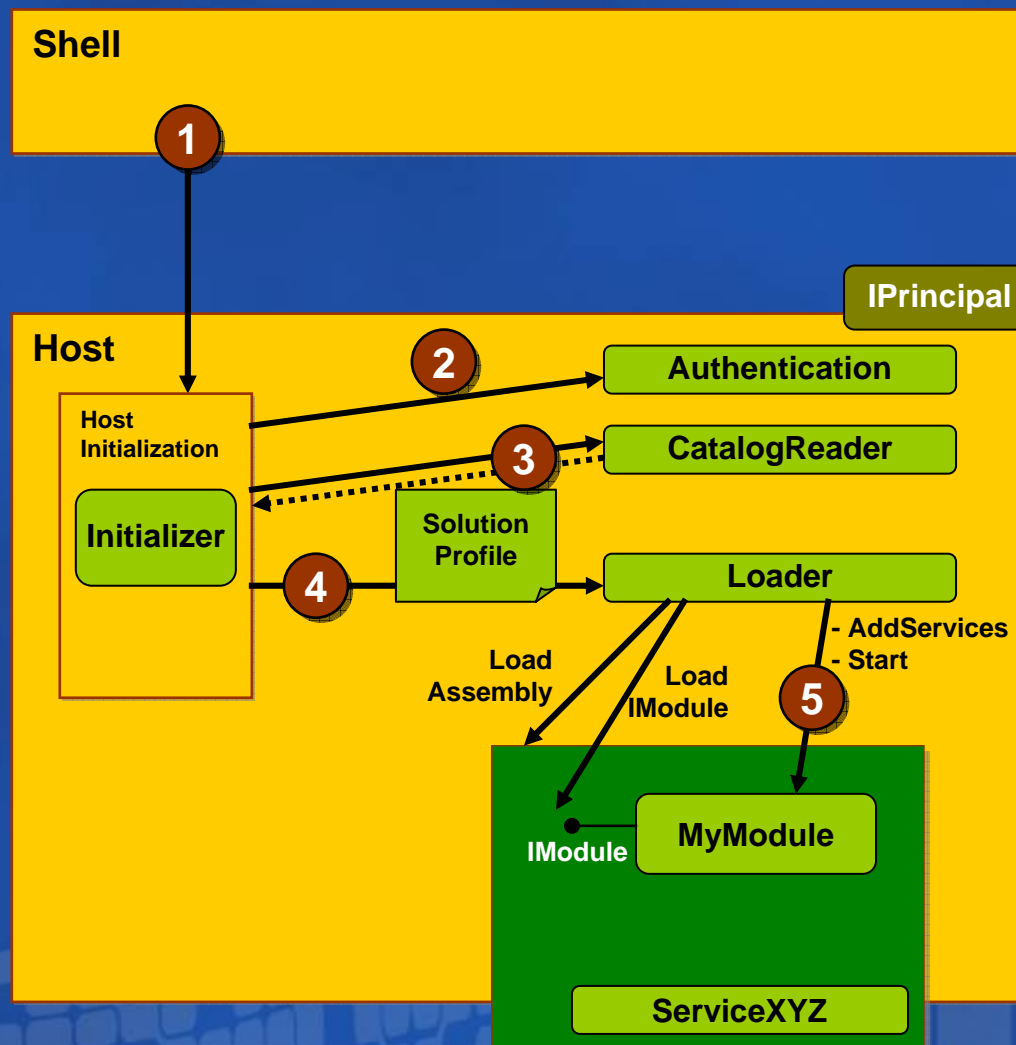
1. Shell 启动
2. Shell 给 HostFactory 提供基本的启动设置
3. HostFactory 根据这些设置创建 Authentication, CatalogReader, Initializer 和 Loader 服务的实例
4. HostFactory 创建 Host 并把这些服务添加给 Host

应用启动次序: 2 of 2

初始化 Host 并加载 Modules

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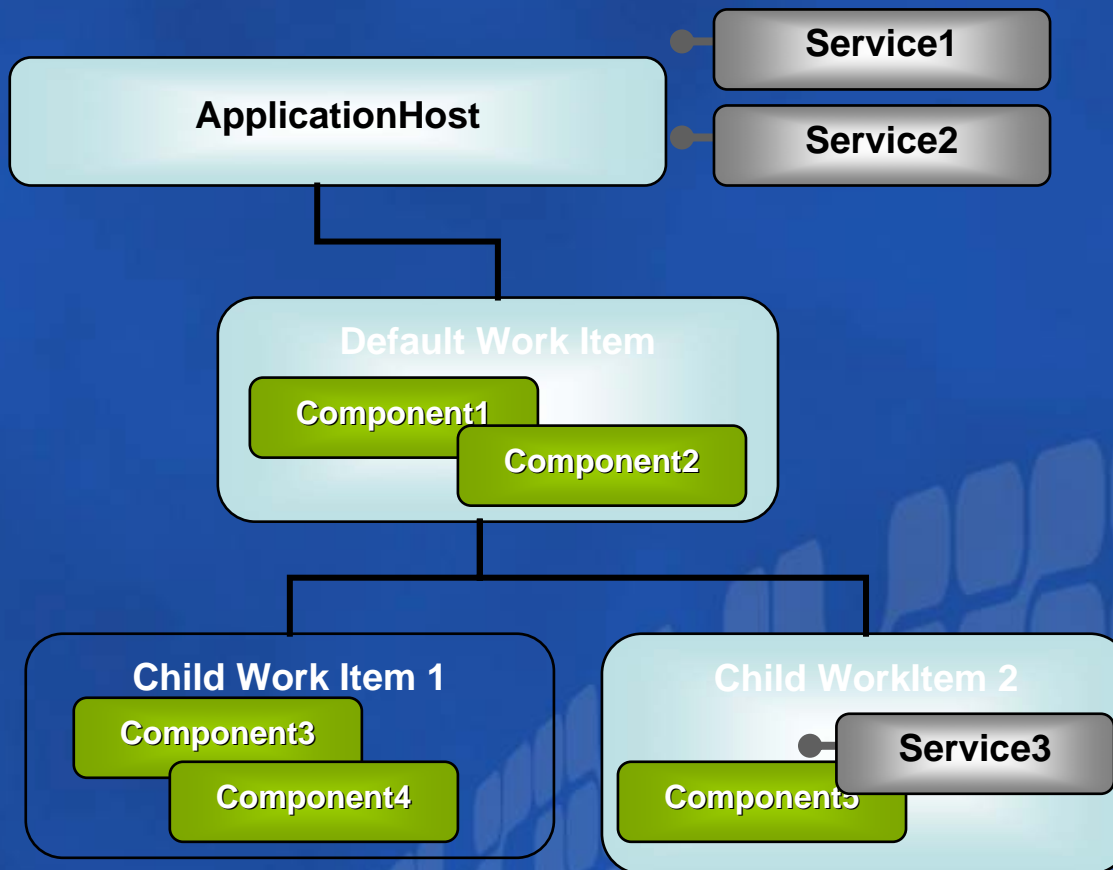
1. Shell 调用 Host.Initialize(), 这个由 Initializer 服务实现
2. Host 调用 Authentication 服务, 该服务负责在当前应用程序域中建立 principal
3. CatalogReader 服务以 Solution Profile 返回基本模块设置。CatalogReader 服务封装了如何选择正确的 Solution Profile 以加载正确的 SmartParts
4. Loader 被调用并赋予 Solution Profile, 开始以正确的次序加载 modules (带有依赖性的属性)
5. Loader 调用 module 的入口类的 AddServices() 方法, 让 module 注册自己的服务然后调用 Start() 方法

Components, Services & Containers

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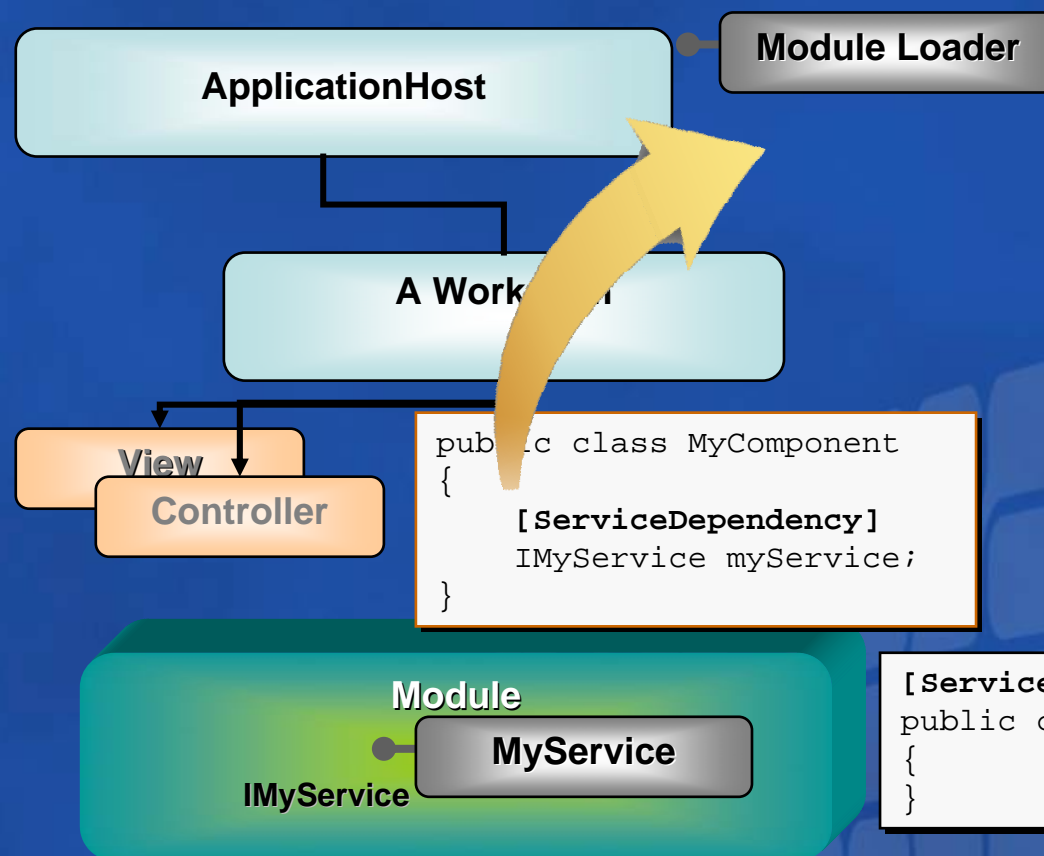
- CAB所有的部分都是围绕着 *containers, components and services* 这三个概念构建的
- 采用这个体系结构, 你可以对 CAB 的功能进行任意的扩展
- **Components** 是包含一些逻辑的对象。比如, Windows Controls, controllers 带有业务逻辑和服务代理
- **Services** 是被应用中许多 components 调用的对象。比如 security services, tracing services, eventing services
- **Containers** 是 components 和 services 的集合。Container 管理其中的 components 的生命周期。Component 可以向 container 请求一个 service。Containers 可以包含其他的 containers。

添加和定位服务

使用 Service Locator 和 Injection 模式

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Adding Services

- CAB Foundation Services
- Module-added services
 - Programmatically
 - Declaratively

Acquiring Services

- Find in upstream containers
 - Programmatically
 - Declaratively

```
[Service(typeof(IMyService))]  
public class MyService : IMyService  
{  
}
```


日程

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Shell

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- **UI Elements:** 你可以改变的 shell 中的共享元素
 - 菜单条, 状态条, splash screens, etc
- **Workspaces:** 能够显示和隐藏控件的对象
 - Tabbed, Zoned / “Portal”, MDI, Windows, Deckerd...
- **Commands:** 可以映射到多个界面元素的“行动”
 - 比如 “显示客户明细” 命令有工具条项和菜单项 UI Elements

Shell 开发人员

- 创建 Shell 应用程序
- 添加 UI Element Managers
- 注册 Workspaces

Part 开发人员

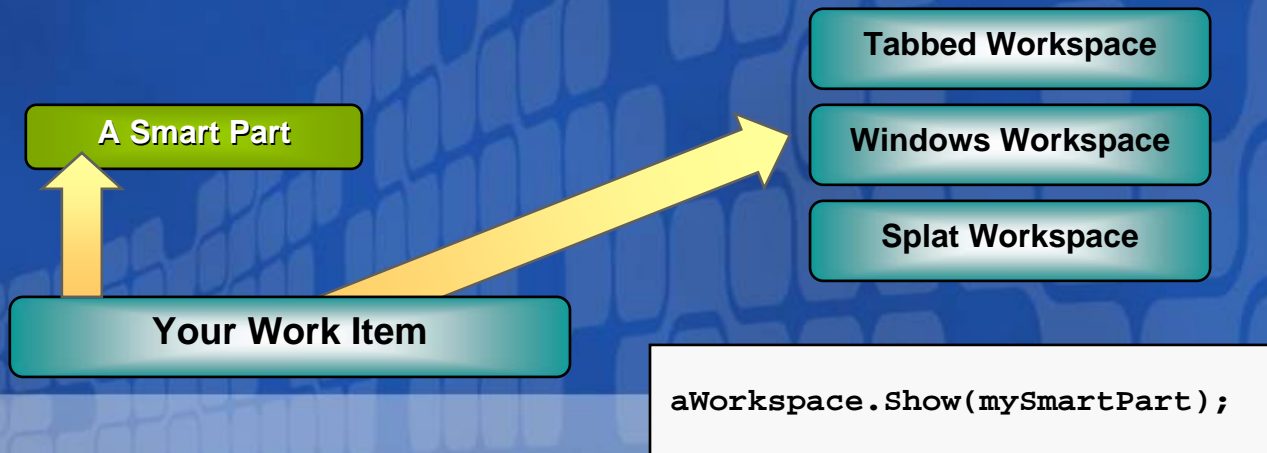
- 创建控件 (SmartParts)
- 定义 Commands
- 映射 UI Elements 到 Commands
- 显示 Controls 在 Workspaces 里

Workspaces

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- Workspaces 可以一致的显示多个控件
- Shell 开发人员创建定制的 workspaces 以提供:
 - 控件周围相似的框架和修饰
 - 共享的布局 and 定位
 - 眩目的切换
 - Activation UIs (tabs, Alt-Tab keystrokes, etc)
- 提供:
 - Tabbed Workspace
 - Windows Workspace
 - Decker Workspace
- SmartPart 开发人员可以创建独立于 Workspace 的 Parts

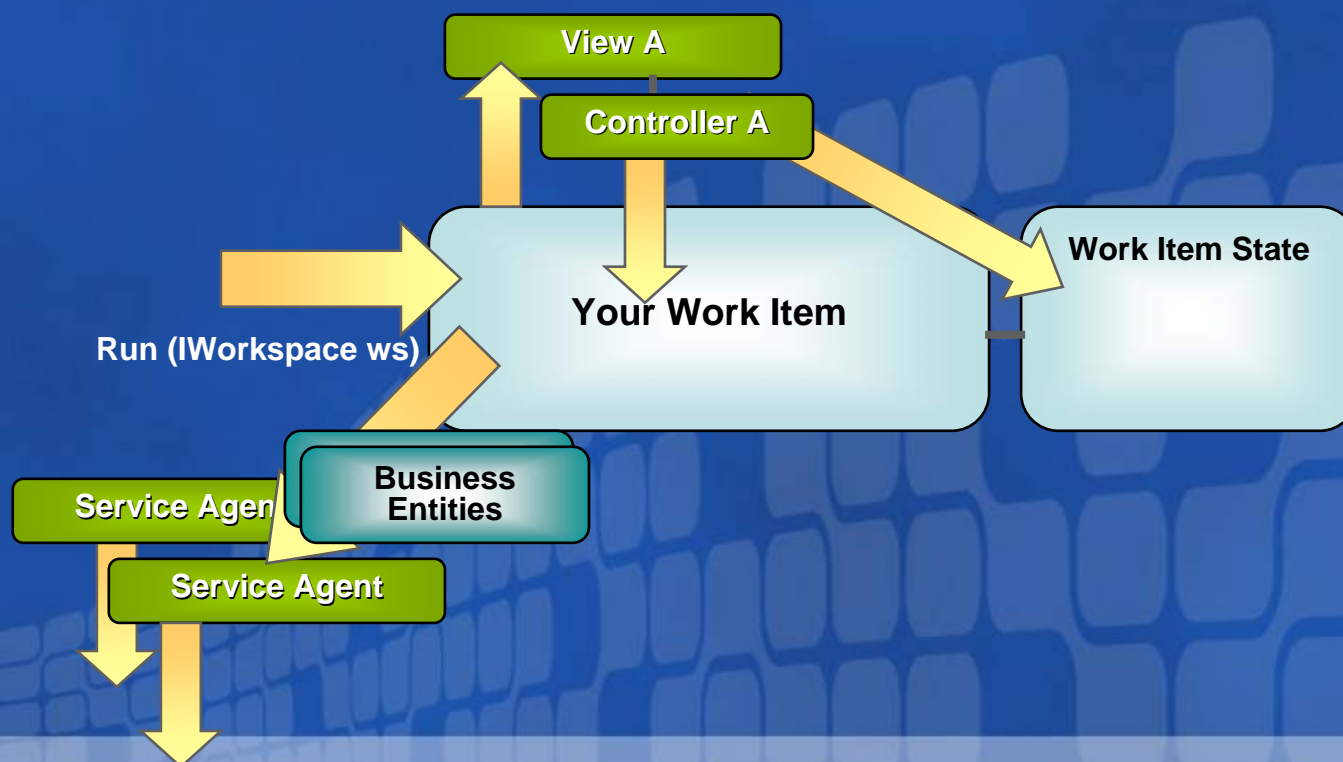


WorkItems

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- WorkItem 代表一个用例
 - 包含在 Workspace 之中
 - 访问 Service Agents 并加载状态（同步或异步）
 - 创建其他组件 (比如 Views)。CAB 创建 Controllers。
 - 组件共享 WorkItem State 并可以通过它控制用例的生命周期



共享 WorkItem State

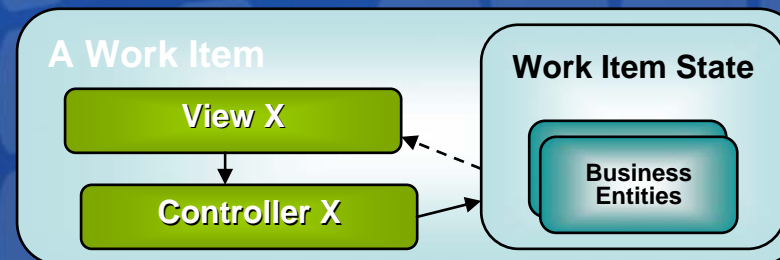
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- 弱类型的 (use as a dictionary) 或是强类型的 (wrap an item with get/set)
 - 取决于您希望的耦合度要多少
- 调用 State:
 - 动态编程访问, 或者通过 IoC attributes

```
public void SomeMethod()  
{  
    Customer currentCust = (Customer)Context.State["Customer"];  
}
```

```
public class ControllerX : Component  
{  
    private Customer cust;  
  
    [State("Customer")]  
    public Customer { set { cust = value; } }  
}
```



状态保持 (State Persistence)

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- 提供一个简单的服务的方式来存储和加载 WorkItem state
 - 本质上是对 WorkItem (是一个 *application controller*) 使用了 *memento* 模式, 采用一个 **State** 对象, 并提供一个 *service*, 这个 *service* 作为这个 **State** 对象的 *repository*。
- 提供的实现包括:
 - SQL
 - Isolated File
 - File
 - Optional DPAPI 加密

```
public interface IStatePersistenceService
{
    void Save(State state);
    State Load(Guid id);
    void Remove(Guid id);
}
```

```
//your WorkItem

[ServiceDependency]
public IStatePersistenceService persistence;

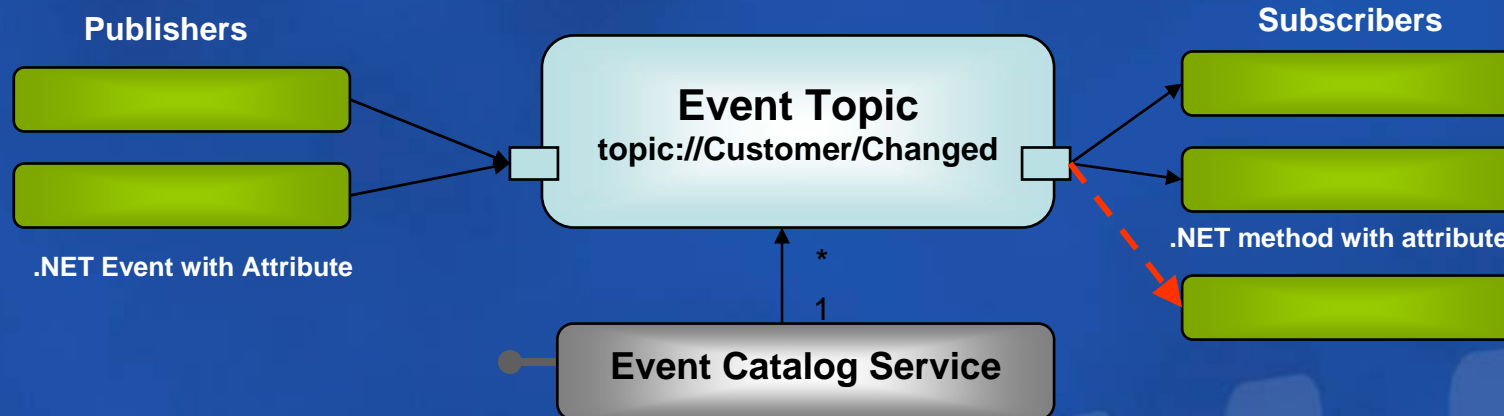
public void SomeMethod()
{
    persistence.Save(this.State);
}
```

Event Broker – Publisher-Subscriber

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```

[EventPublication("topic://Customer/Changed")]
event EventHandler<CustArgs> CustomerIdChanged;

//fire like a normal .NET event
CustomerIdChanged(this, new CustArgs(...));
    
```

- Publishers 和 Subscribers 对以下达成一致:
 - `[EventPublication("topic://Customer/Changed")]`
 - `ThreadOption.Background`
 - `CustArgs args` 需要一个特定的 EventArgs
 - `Long-running`

```

[EventSubscription("topic://Customer/Changed")]
Public void CustomerChanged(object sender, CustArgs args){
    // MessageBox.Show(args.CustomerId, "new customer!");
}
    
```

- Subscribers 被调用时有选项
 - Background (For long-running work)
 - UI Thread (to update UI controls on appropriate thread)
 - Publisher (on same thread as publisher)

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CAB 设计中所采用的几种模式

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Implement pattern...	By...
Model View Controller	<ul style="list-style-type: none">- Using the controller attribute on the view to get injection- Using the controller base class on your controllers- Saving model objects in WorkItem state
Application Controller	<ul style="list-style-type: none">- Encapsulate into the WorkItem the logic to open, traverse, and close views, executing logic in between,- Keep views independent of each other
Blackboard	<ul style="list-style-type: none">- Using the WorkItem state as the blackboard- Components in the WorkItem can access it and collaborate on it independently
Memento	<ul style="list-style-type: none">- Have controllers place the state that might need to be managed externally or persisted into WorkItem state- WorkItem state can be saved & loaded independently
Service Locator	<ul style="list-style-type: none">- Use the Component Model GetService() functionality to add and get services in the Application Host or upstream WorkItems.- Optionally, use attributes to get <i>setter injection</i>

资源


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- 加入 CAB 社区并下载代码:
 - <http://practices.gotdotnet.com/projects/cab>
 - 动手实验
- MSDN CAB Whitepaper
 - <http://msdn.microsoft.com/practices/default.aspx?pull=/library/en-us/dnpag2/html/cabctp.asp>
- MSDN CAB Webcast
 - <http://msevents.microsoft.com/cui/WebCastEventDetails.aspx?EventID=1032273098&EventCategory=5&Culture=en-US&CountryCode=US>



Question & Answer

如需提出问题，请单击“提问”按钮并在随后显示的浮动面板中输入问题内容。一旦完成问题输入后，请单击“提问”按钮。

 **问题和解答 (无问题)** ▲ ×

在此会议中尚未解答任何问题。

要向演示者提问，请在此处键入问

提问(A)

删除(D)

问题管理器(Q)

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