SOA, BPM, and Microsoft: A Pragmatic View

David Chappell
Chappell & Associates
www.davidchappell.com

Vision and Pragmatism

- Vision is essential
  - But rubber must eventually meet road

- Three pragmatic goals:

  #1: *Standardize on service-oriented communication*

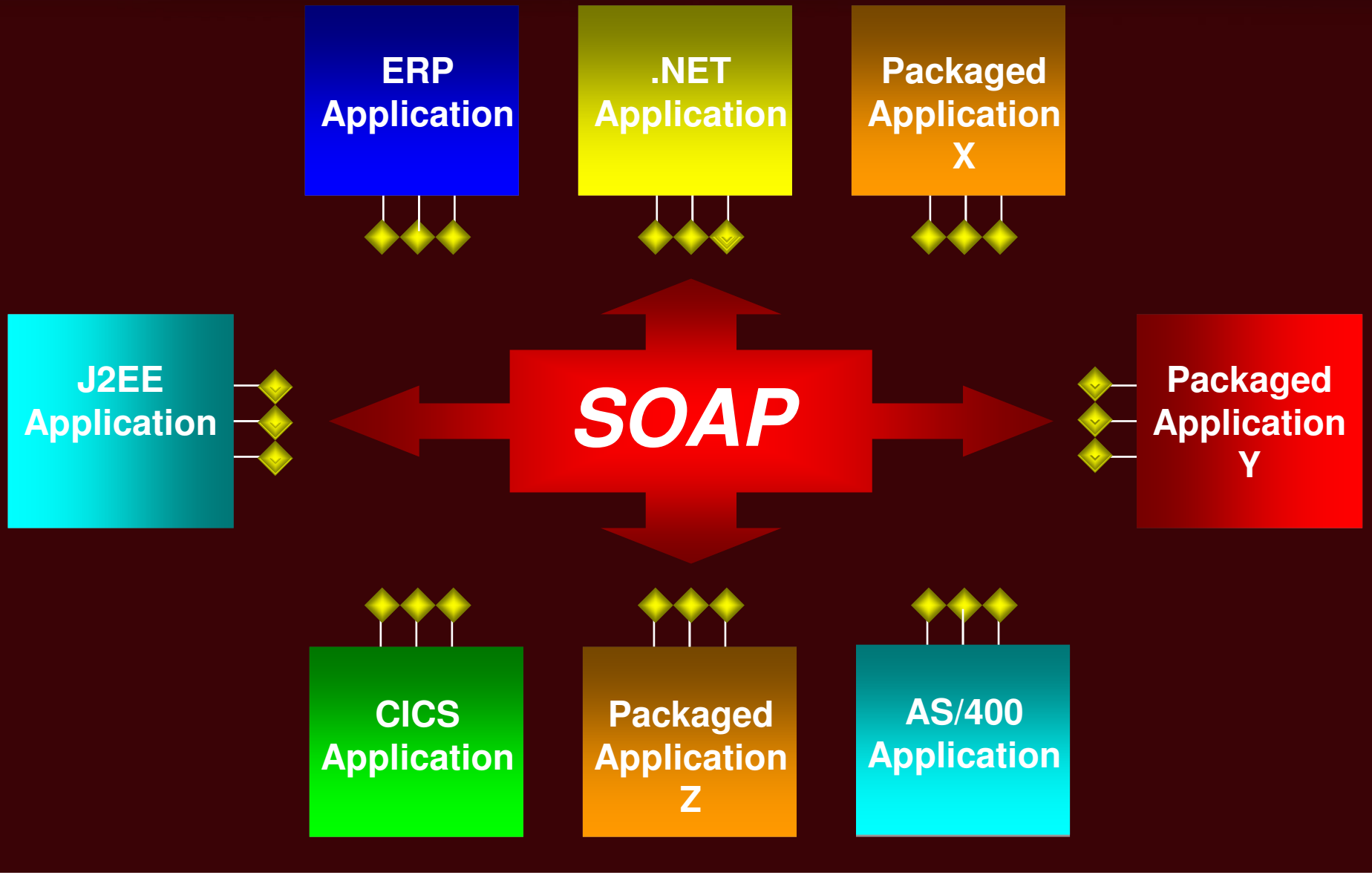
  #2: *Create the necessary service-oriented infrastructure*

  #3: *Use business process management (BPM) technologies effectively*

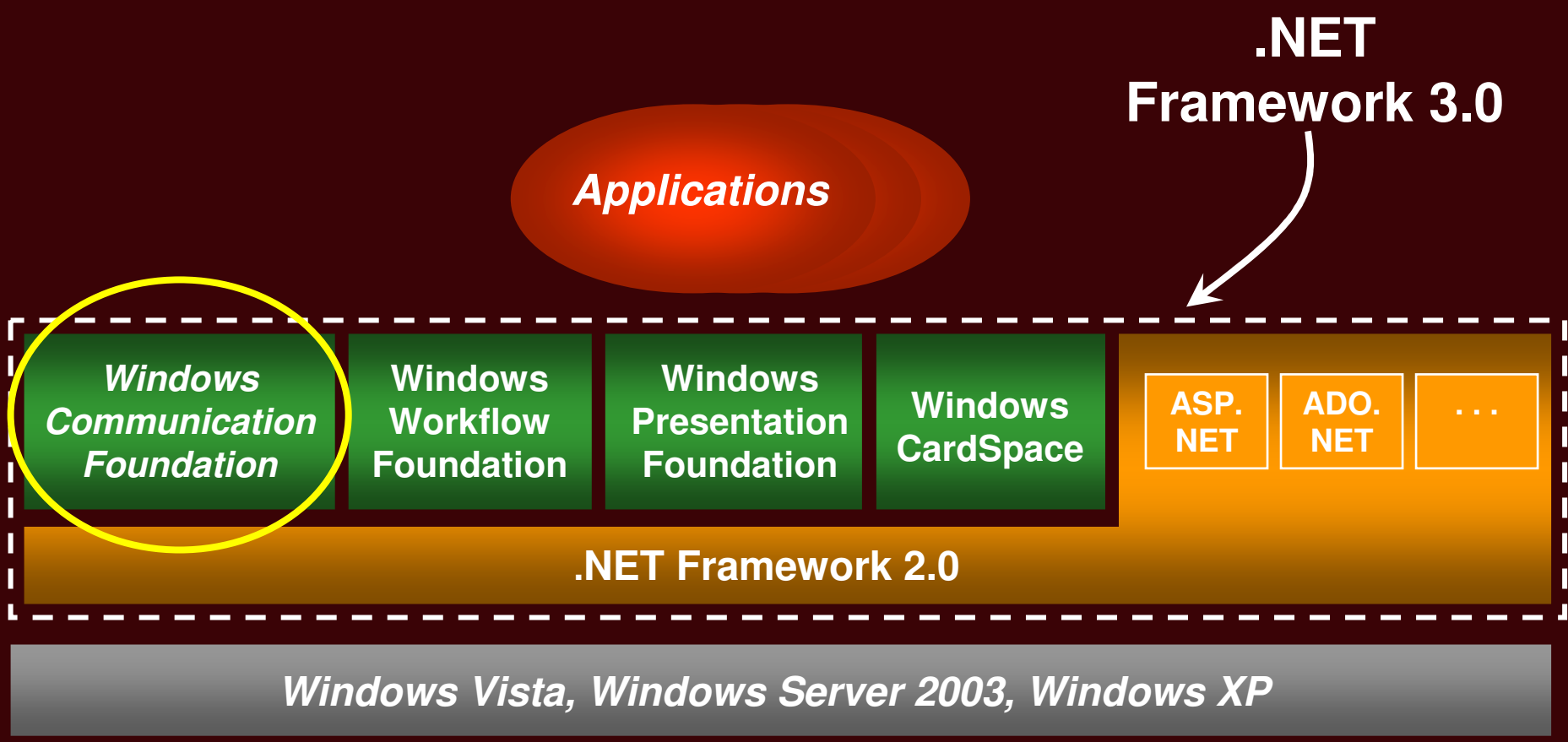
Goal #1: Standardize on Service-Oriented Communication

- Service-oriented architecture (SOA) is a loosely defined vision
  - One with many diverse aspects
- Two fundamental aspects of a service-oriented (SO) world are:
  - A *common protocol* for communication between SO applications
  - A *common foundation* for creating SO applications

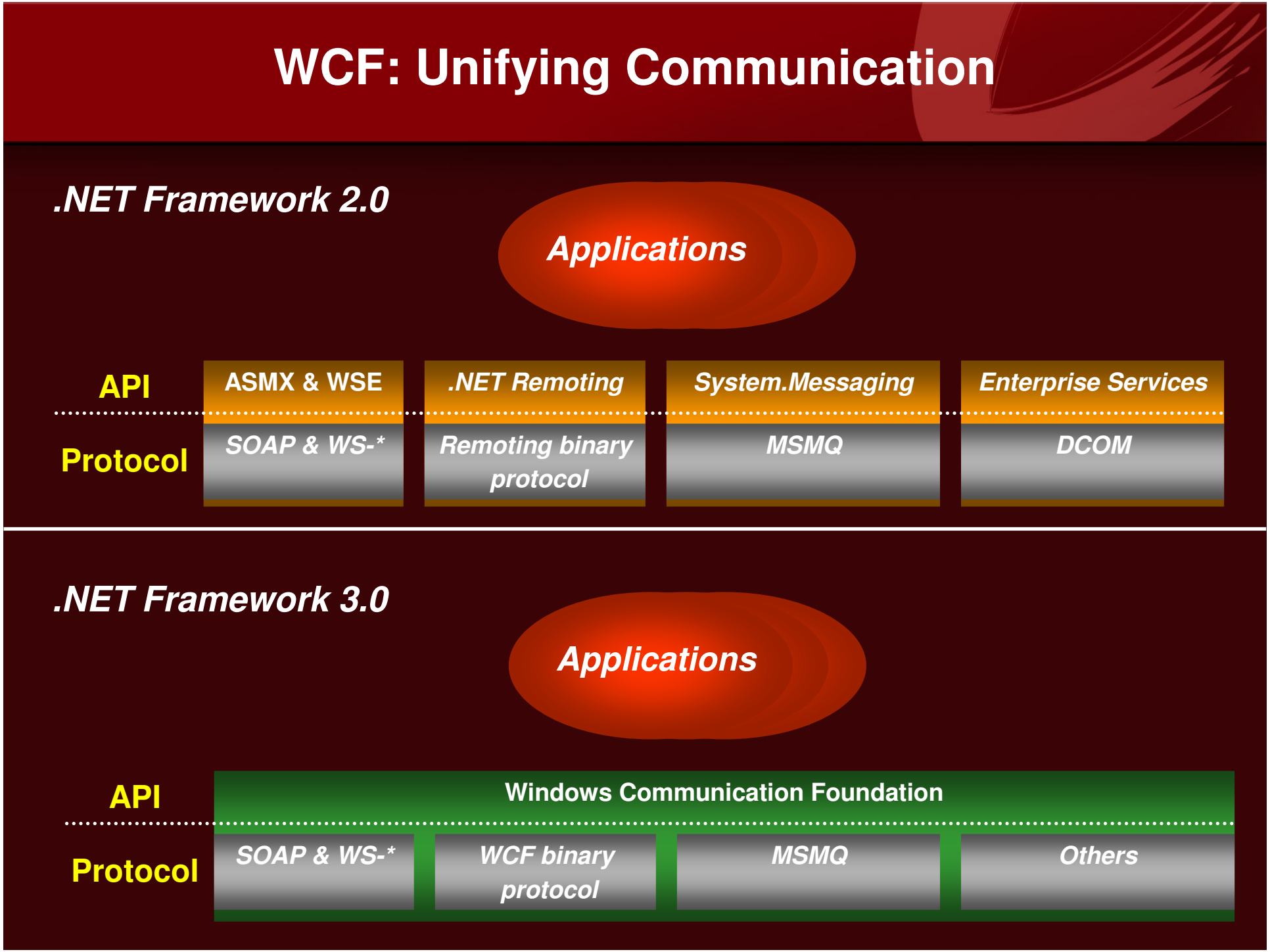
A Common Protocol: SOAP



A Common Foundation: Windows Communication Foundation (WCF)



WCF: Unifying Communication



Standardize on Service-Oriented Communication: Summary

Problem	*Solution*
Defining a common protocol	- RPC: SOAP/HTTP with WS-* - Message queuing: None
Defining a common foundation	- Windows-based applications: WCF - Other applications: Most likely Service Component Architecture (SCA)
Defining data	- Syntax: XML and WSDL - Document definitions: Various formats in use
Getting widespread adoption	- New applications: SOAP - Existing applications: Diverse protocols
Providing business value	- Increased agility: Through easier application interconnection - Extensive reuse of business services: Maybe

Goal #2: Create the Necessary Service-Oriented Infrastructure

- SOAP is not enough:
  - No agreement on a queued messaging protocol
  - Need to translate among different data formats
  - Must connect with existing applications that don't speak SOAP
- The dominant term for technology that addresses problems like these is *Enterprise Service Bus (ESB)*
  - But what's an ESB?

Defining an ESB: Gartner (1)

- A Web-services-capable middleware infrastructure that supports communication and mediates application interactions
- To be an ESB, a middleware subsystem must:
  - Implement program-to-program communication
    - Always supporting SOAP/HTTP
    - Almost always supporting other protocols, such as SOAP/MOM, XML/HTTP and plain MOM
  - Support other core Web services standards
    - Always including XML and WSDL; usually including others such as WS-Addressing and WS-Security

Gartner

Defining an ESB: Gartner (2)

- To be an ESB, a middleware subsystem must also:
  - Be capable of:
    - Service discovery, binding and virtualization (transparently switching to alternative service components)
    - Intelligent (header-based) routing
  - Have an extensible, intermediary-based architecture so that additional features can be plugged in
  - Be aware of message schemas
    - Through the use of metadata

Gartner

Defining an ESB: Forrester (1)

- Infrastructure software that makes reusable business services widely available to users, applications, business processes, and other services
- Common ESB components include:
  - Multi-protocol communication infrastructure
  - Routing
  - Transformation and mapping
  - Service orchestration, aggregation, and process management
  - Transaction management

FORRESTER®

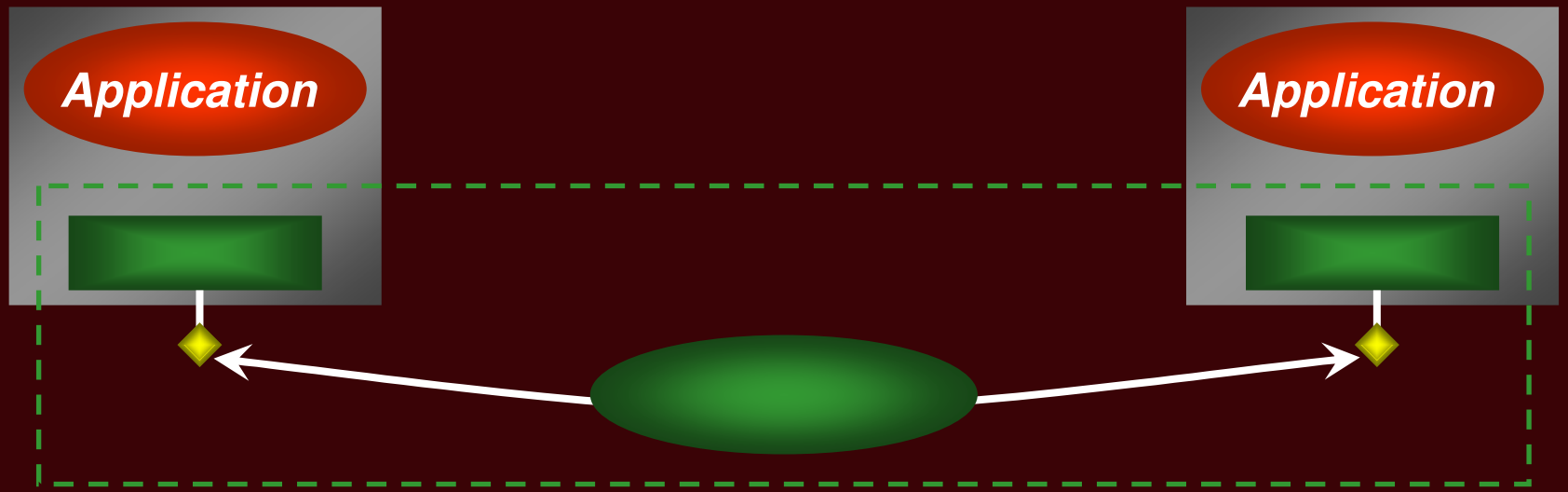
Defining an ESB: Forrester (2)

- More common ESB components:
  - Security
  - Quality of service
  - Service registry and metadata management
  - Extensibility for message enrichment
  - Monitoring and management
  - Support for the service lifecycle

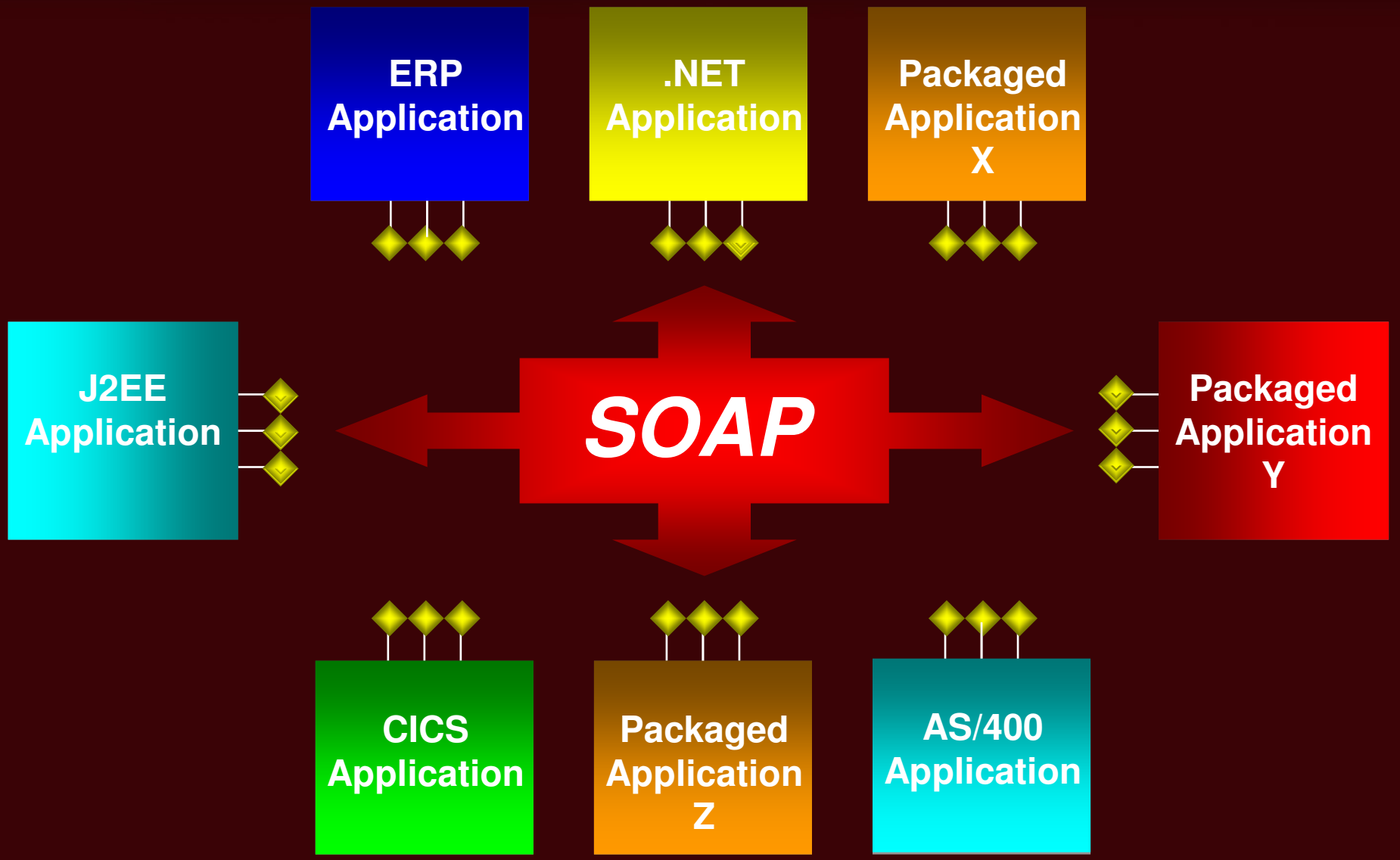
FORRESTER®

Service-Oriented Infrastructure: A Pragmatic View

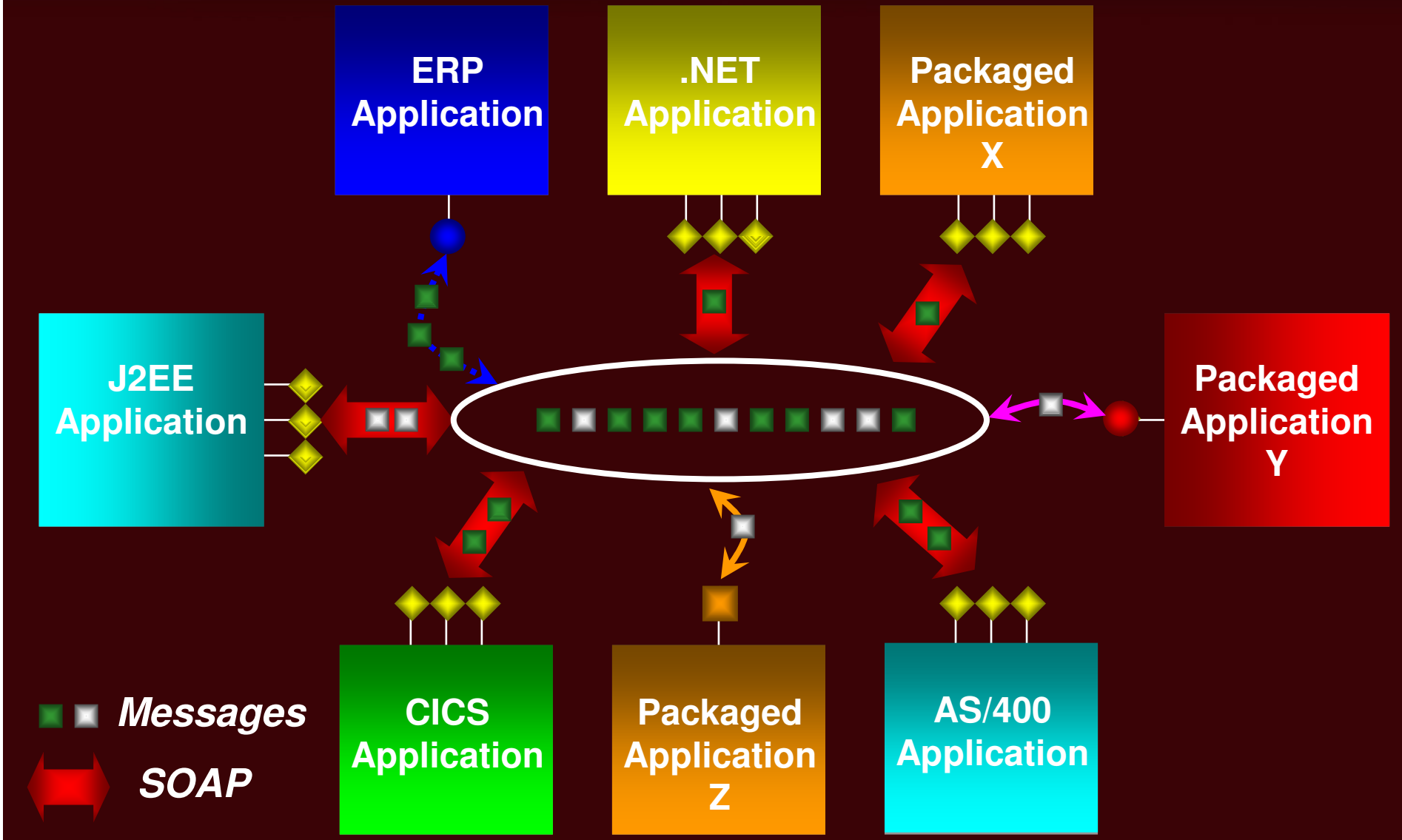
- The goal is to create the right infrastructure for effective communication



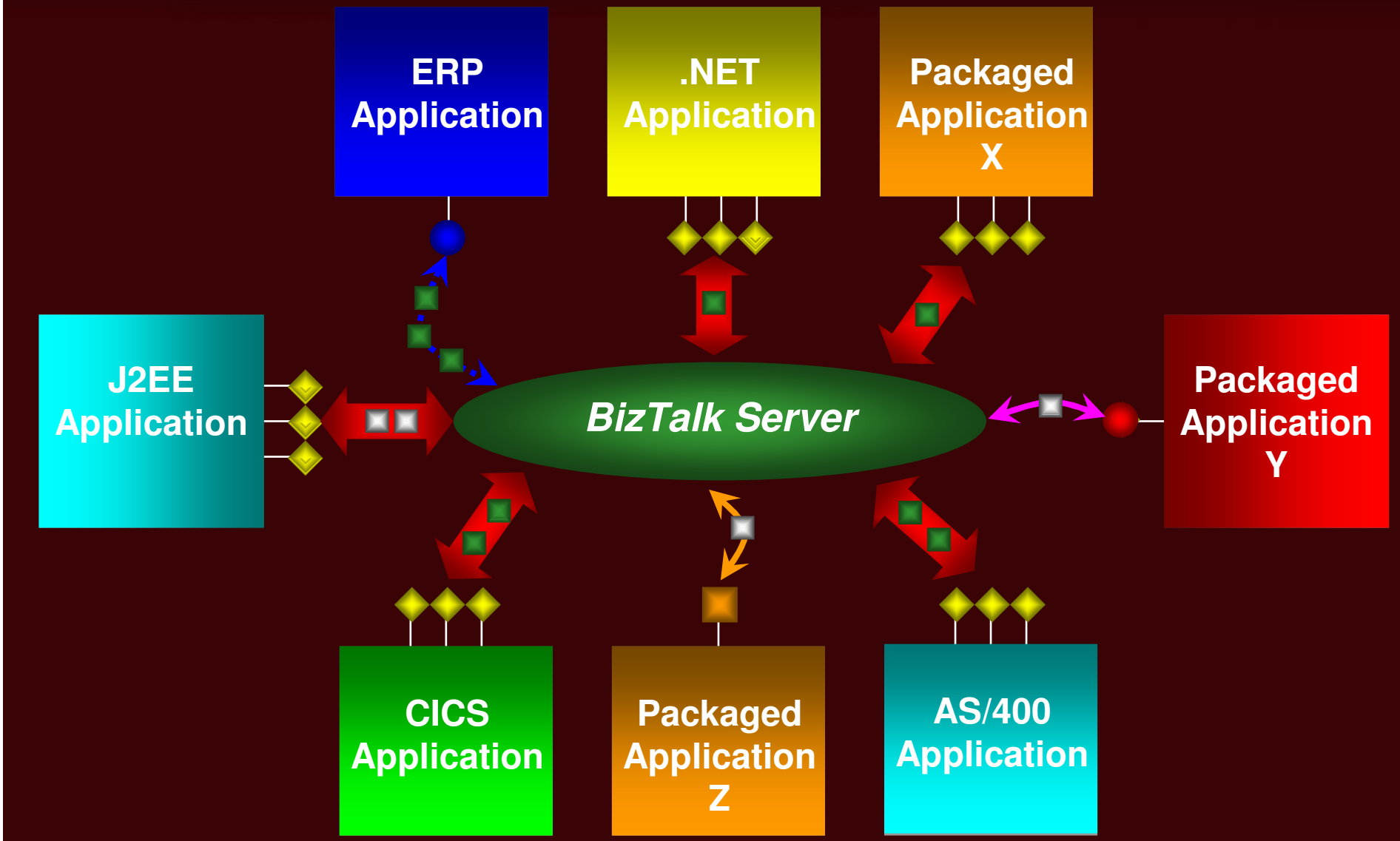
Service-Oriented Enterprises: An Idealized, SOAP-Based View



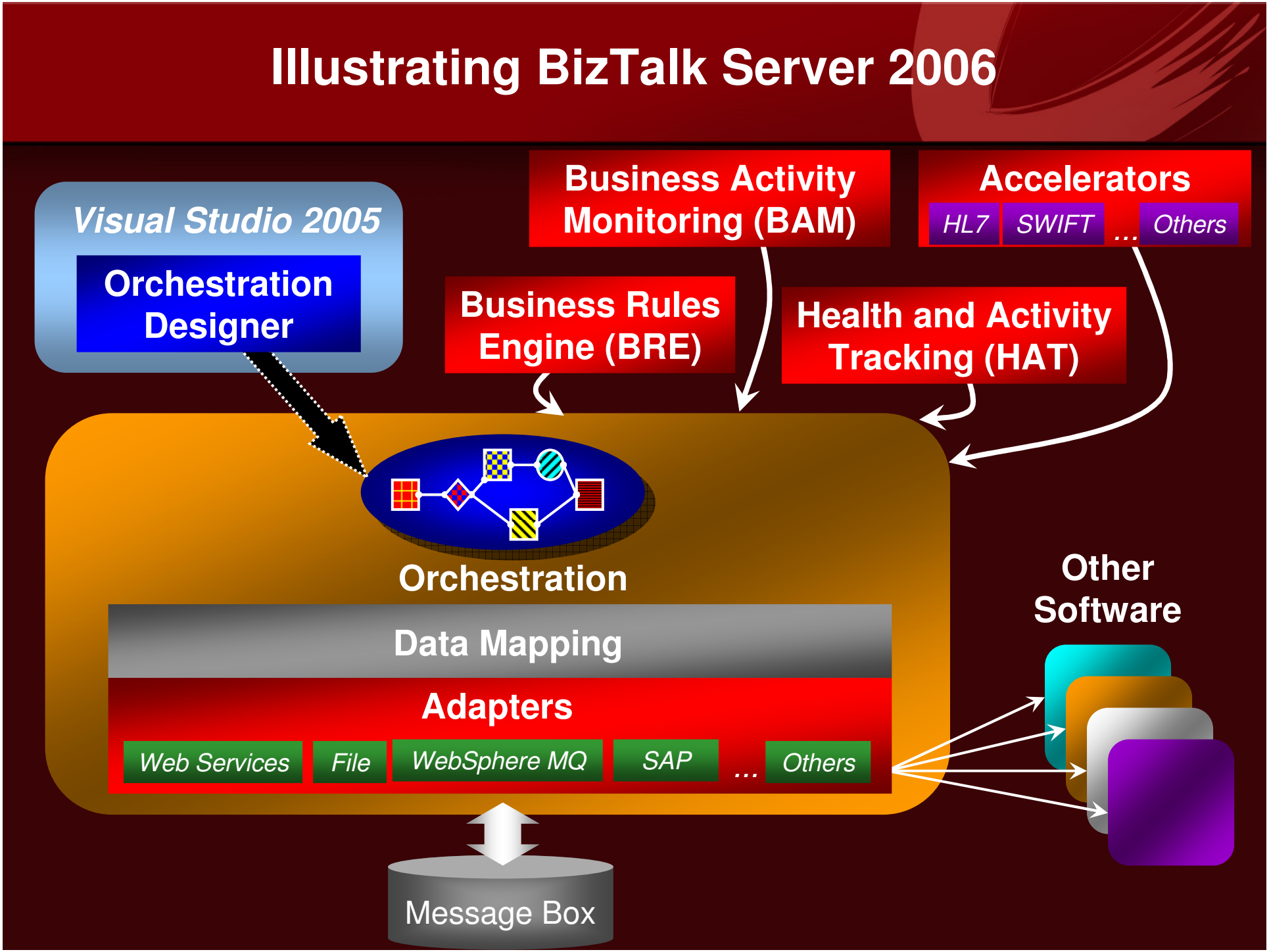
Service-Oriented Enterprises: A Realistic View



BizTalk Server 2006



Illustrating BizTalk Server 2006



Create the Necessary Service-Oriented Infrastructure: Summary

Problem	*Windows-Based Solution*
Providing a foundation for service-oriented applications	- WCF
Providing interoperable queued messaging	- BizTalk Server message box - Adapters for MSMQ, WebSphere MQ, and others
Data transformation	- BizTalk data mapping
Connecting to existing applications via diverse protocols	- Various adapters for BizTalk Server
Others, e.g., services registry, management, etc.	- Various, such as Enterprise UDDI Services and System Center Operations Manager 2007

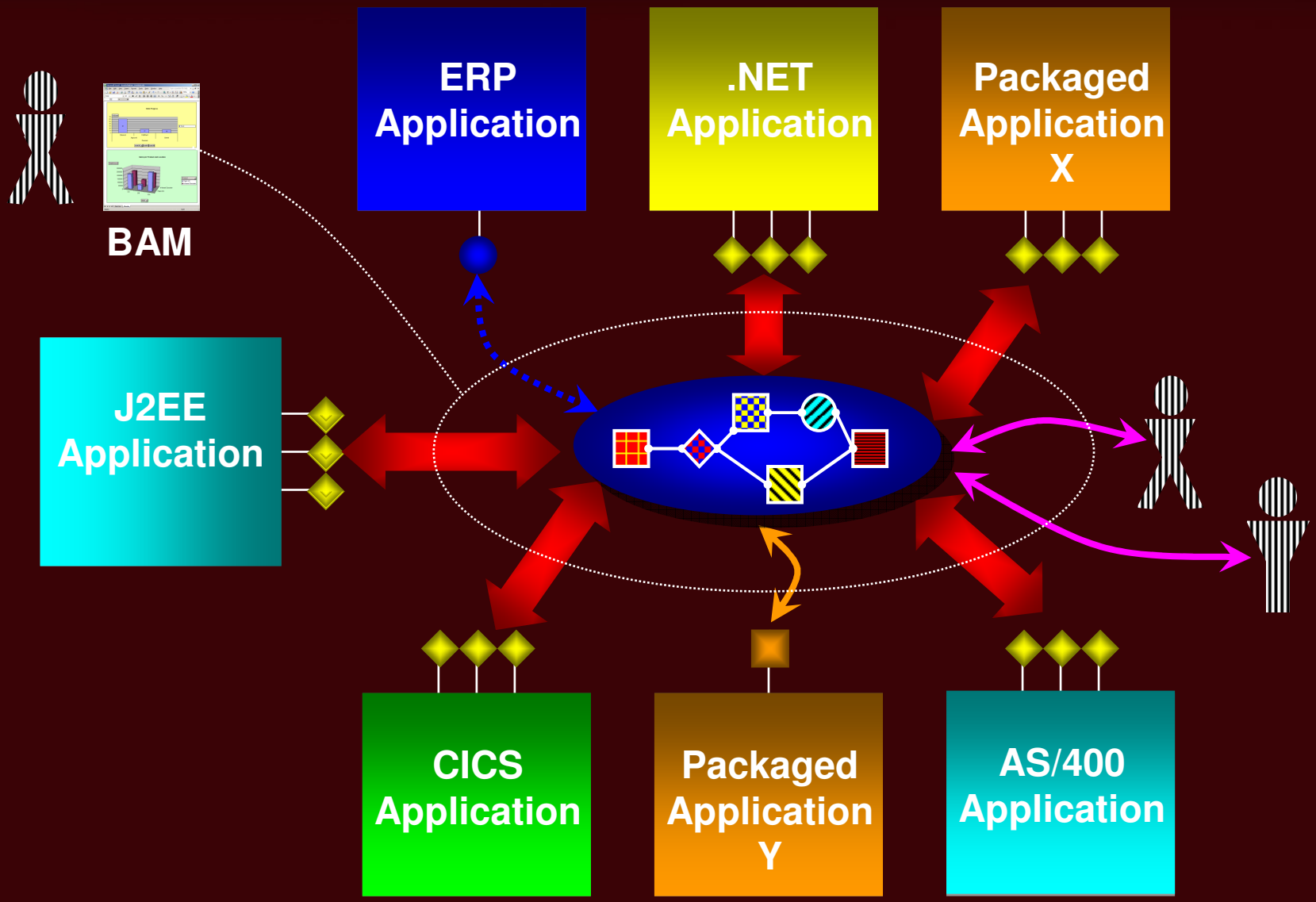
Goal #3: Use BPM Technologies Effectively

- A business view of BPM:
  - Viewing a business as a set of processes that can be explicitly defined, optimized, and managed
- A technical view of BPM:
  - Development using software designed for creating, executing, and monitoring process logic

Core BPM Technologies

- Workflow
  - System and human
- Graphical tools
  - For defining processes
- Integration technologies
  - Such as adapters and message transformation
- Business rules engines (BREs)
- Business activity monitoring (BAM)

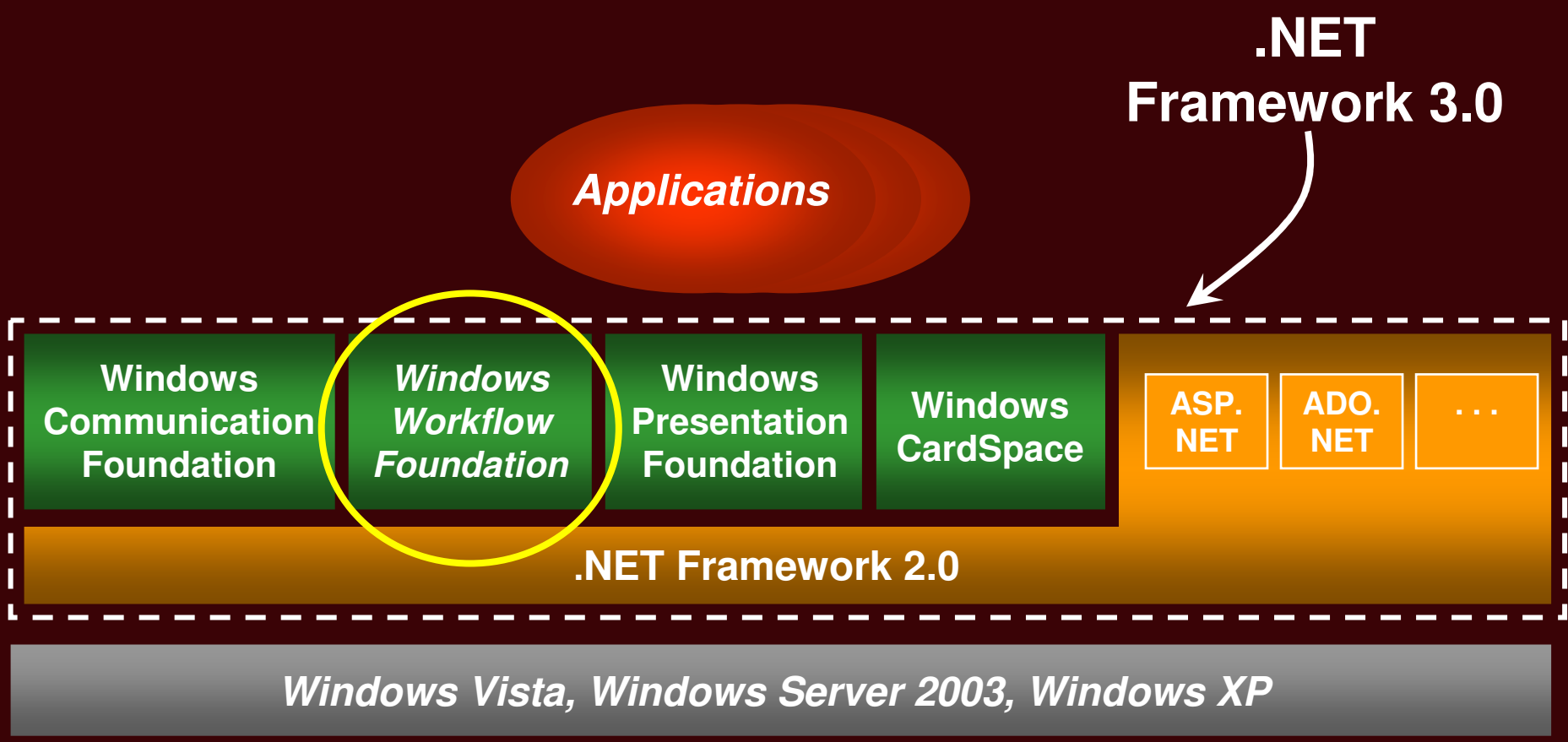
BPM Technologies and SOA



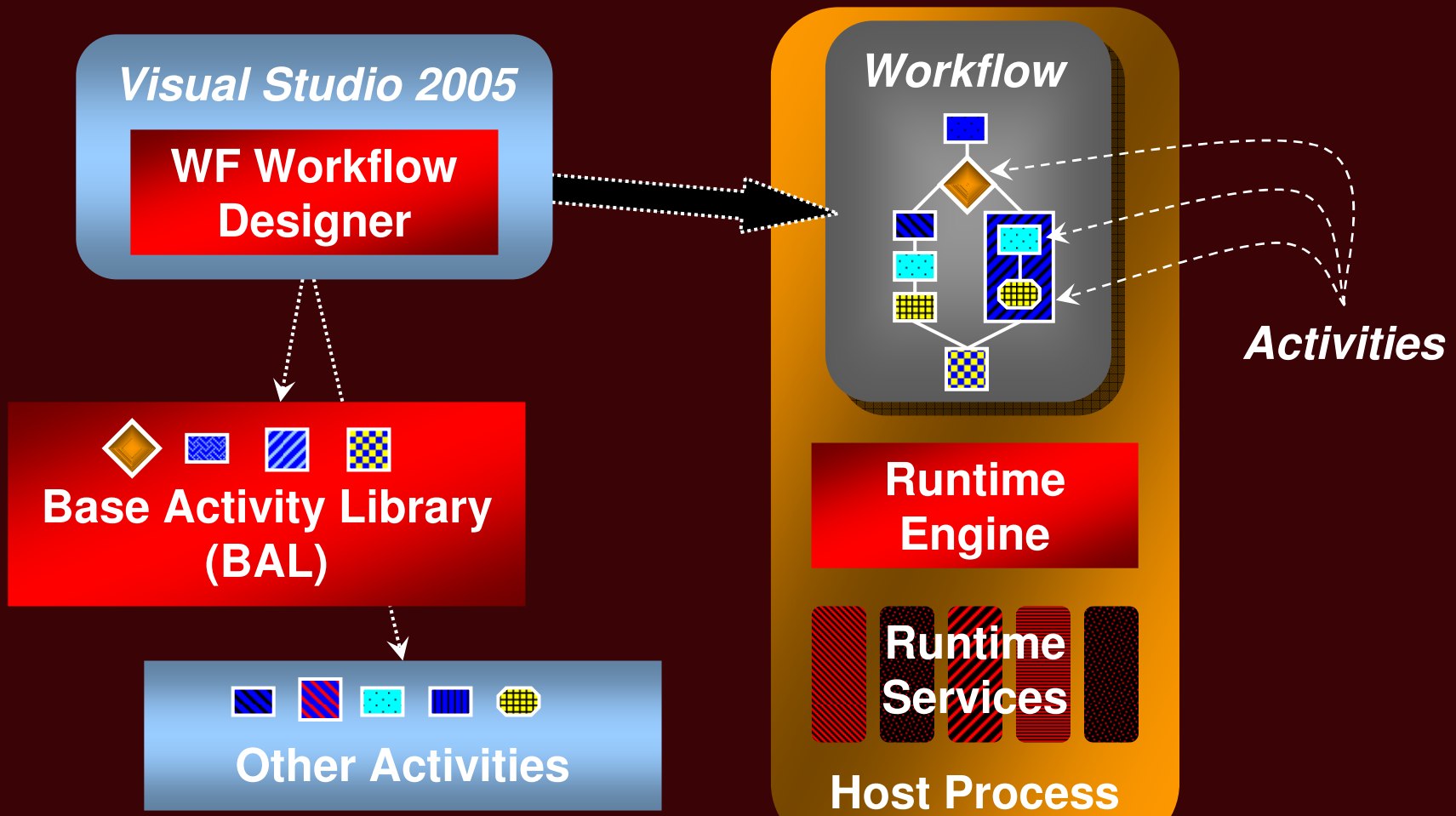
Microsoft's Primary BPM Offerings

- BizTalk Server 2006
- Windows Workflow Foundation
- Windows SharePoint Services 3.0
  - And Office SharePoint Server 2007

Windows Workflow Foundation (WF)



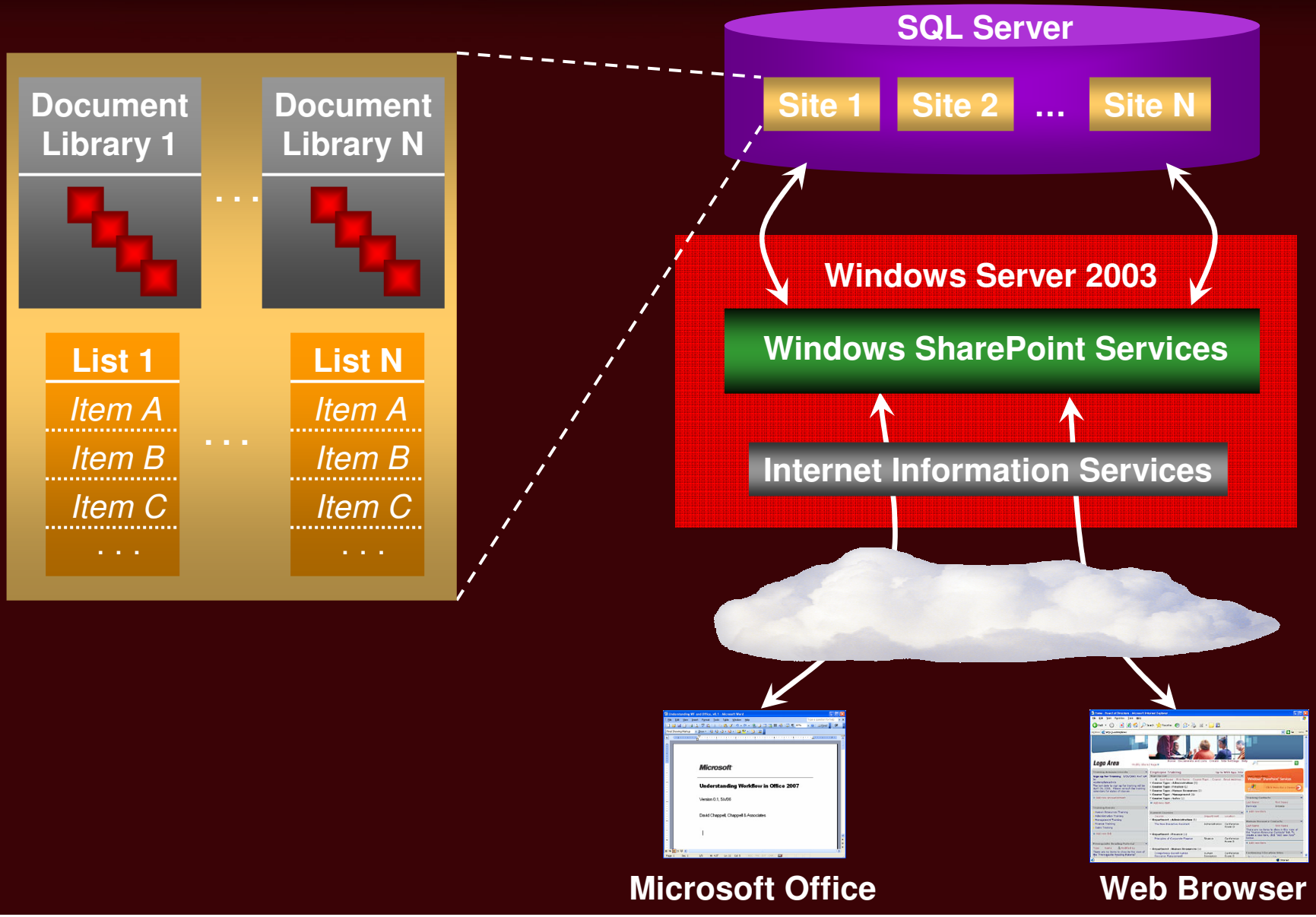
Illustrating WF



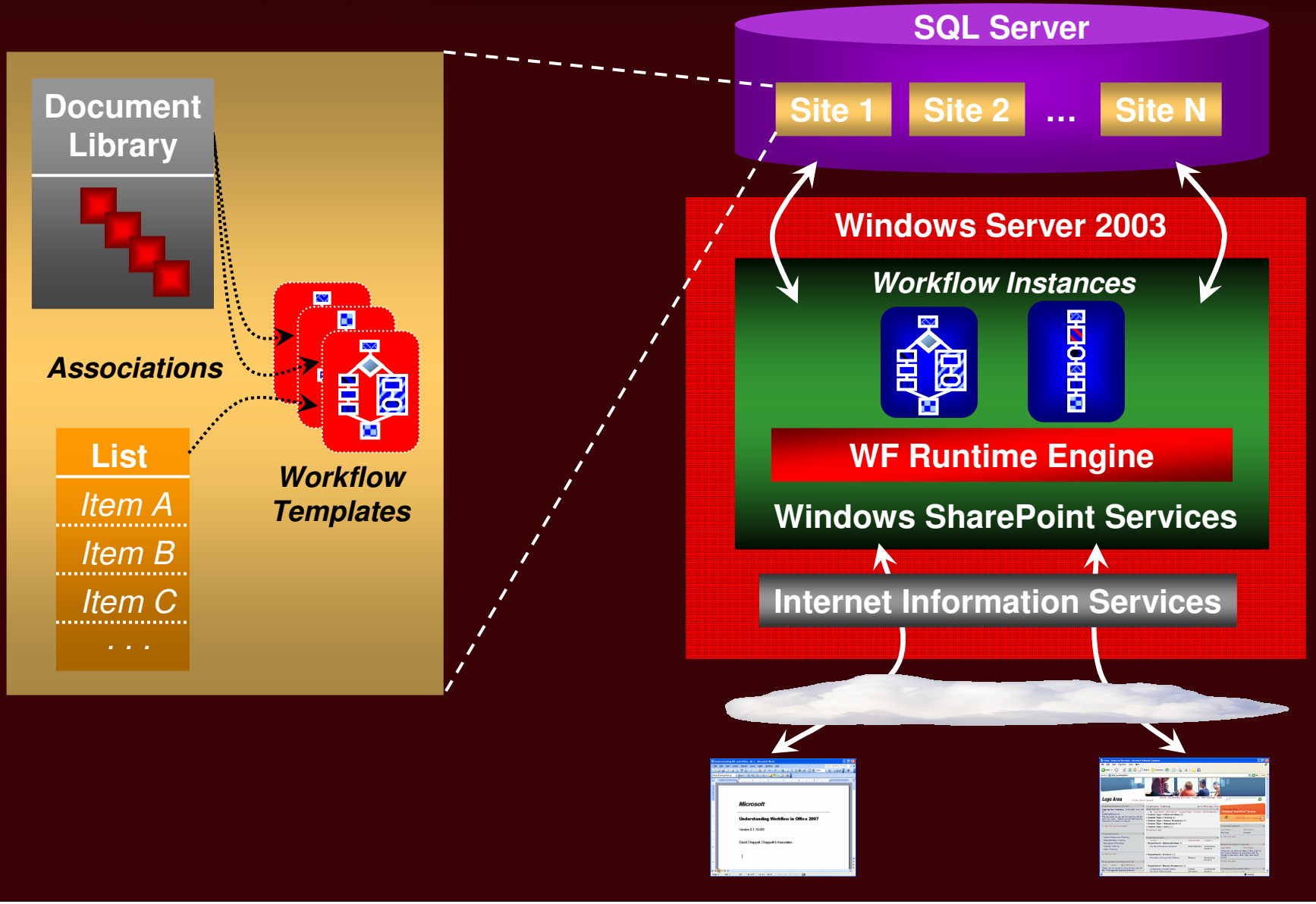
Windows SharePoint Services

- Windows SharePoint Services (WSS) is a standard part of Windows Server 2003
  - WSS 3.0 hosts the WF runtime engine
- Office SharePoint Server, part of the 2007 Microsoft Office system, adds more workflow capabilities
  - All of which are built on WF and WSS 3.0

Illustrating Windows SharePoint Services



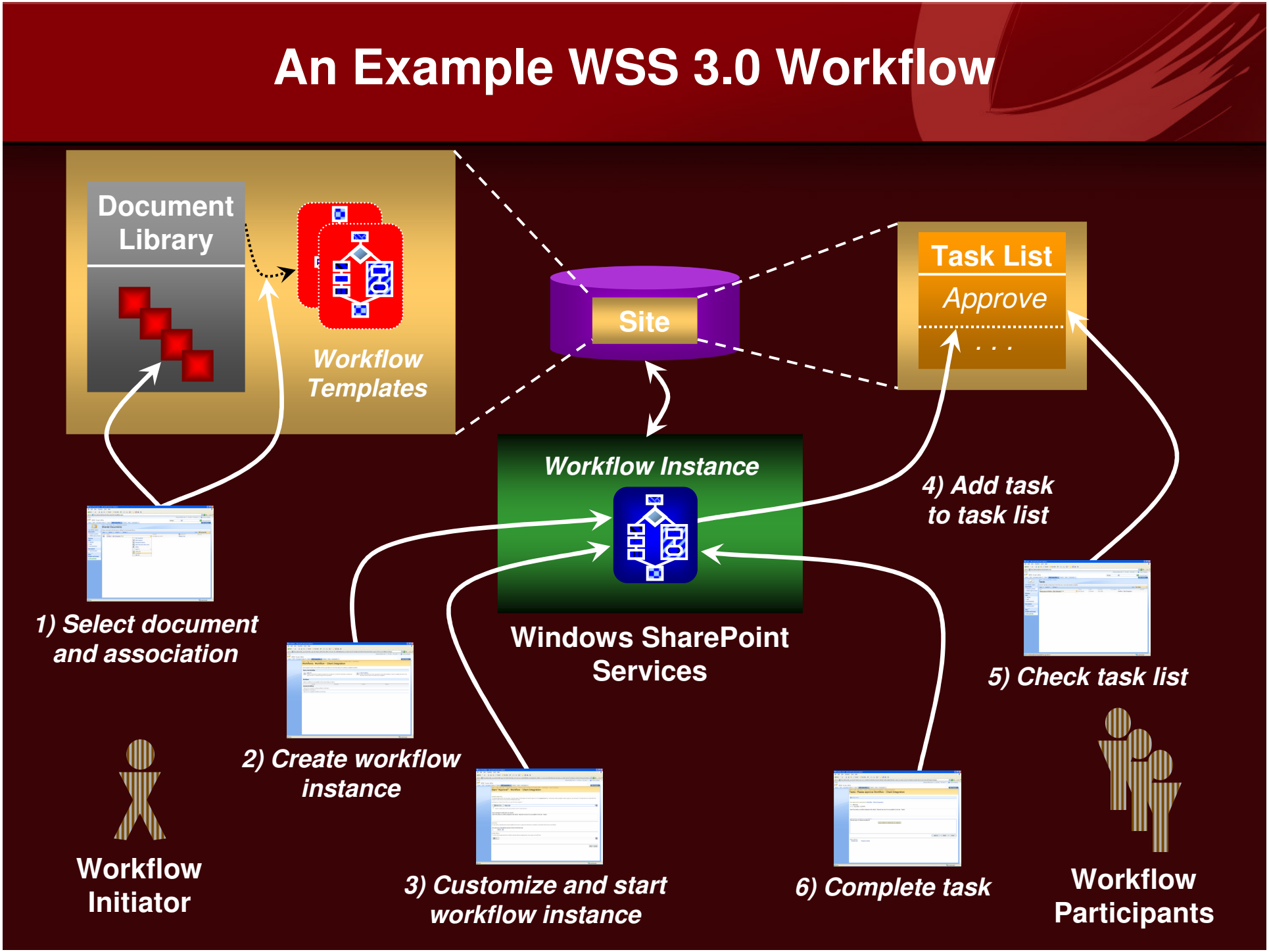
Illustrating WSS 3.0 Workflows



Interacting with WSS 3.0 Workflows

- A WSS-hosted workflow places *tasks* on a user's *task list*
  - A user can access this list via a web browser or Outlook 2007
- WSS defines several WF activities, including:
  - **`CreateTask`**: adds a task to a task list
  - **`OnTaskChanged`**: informs the workflow that a task has been modified

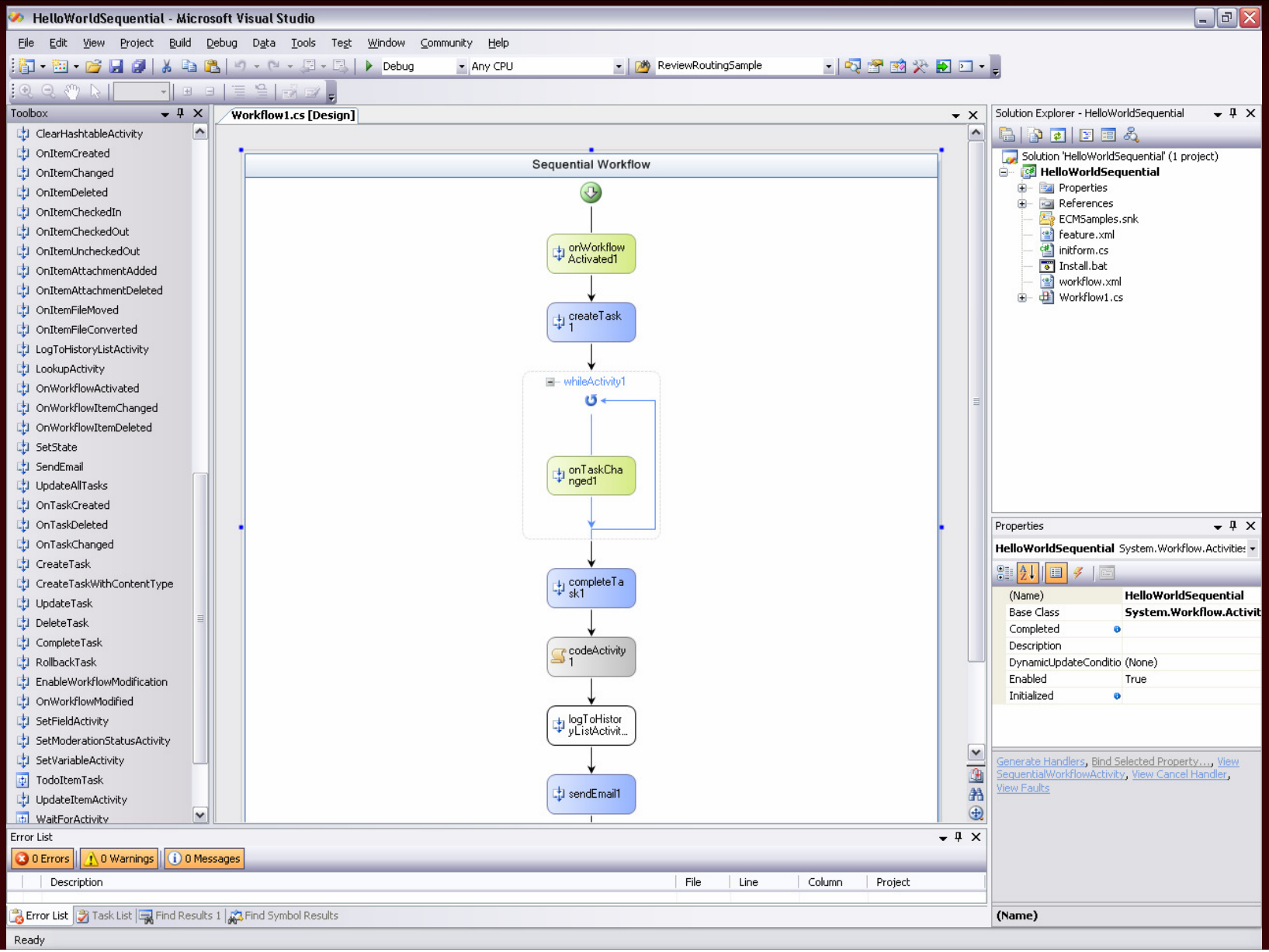
An Example WSS 3.0 Workflow



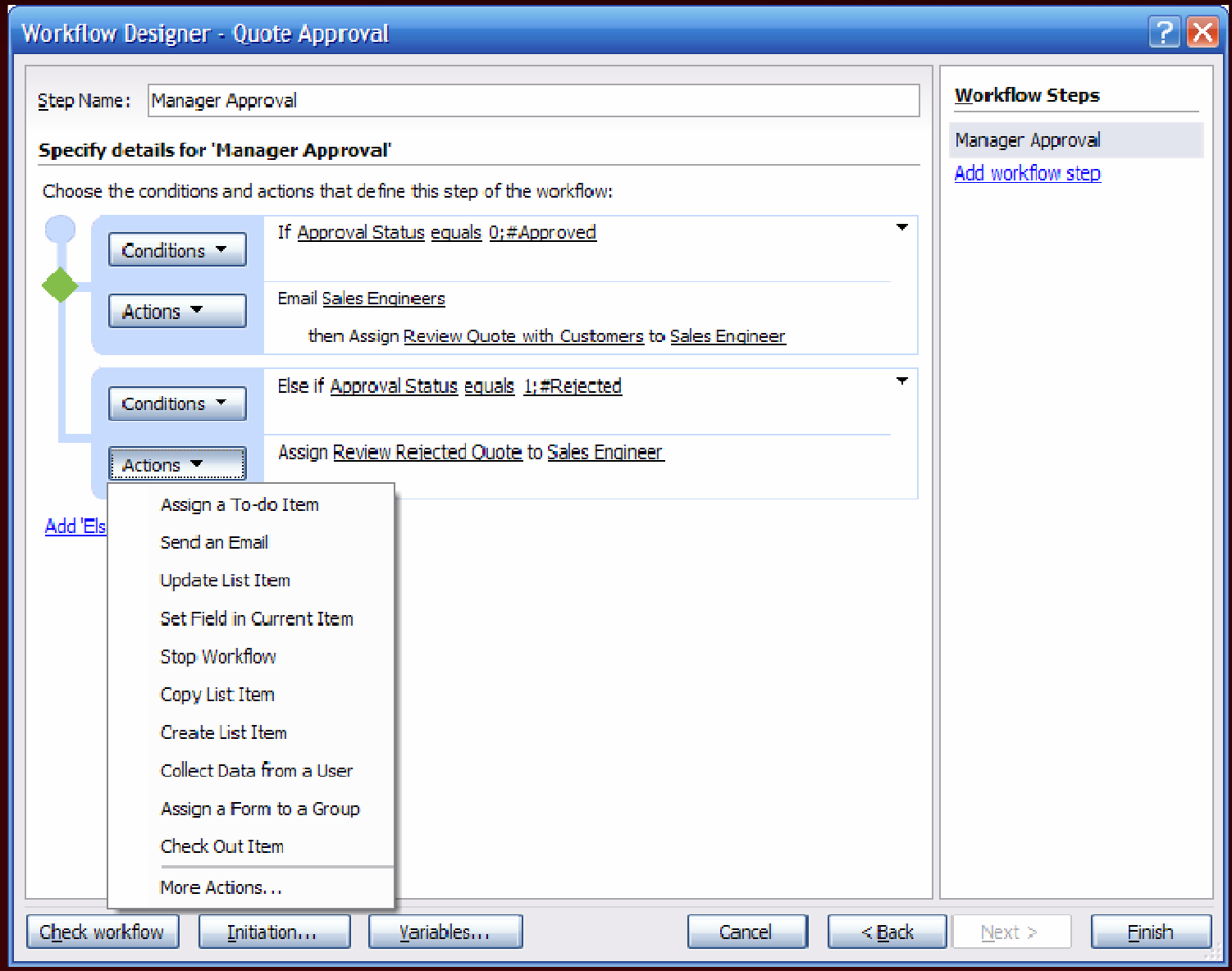
Creating WSS 3.0 Workflows

- Developers: WF Workflow Designer
  - With extra WSS 3.0-supplied activities
- Information workers: Office SharePoint Designer
  - Allows defining workflows by specifying conditions and actions for each step
  - Users can now add application logic to WSS 3.0 sites

Illustrating the WF Workflow Designer



Illustrating Office SharePoint Designer



What Office SharePoint Server 2007 Adds

- A group of customizable pre-defined workflows
  - Approval, Collect Feedback, etc.
- The ability to interact with workflows directly from Office applications using InfoPath workflow forms
  - WSS alone mostly supports interacting with workflows through a browser
- A range of content-management capabilities
  - Such as document templates and broad search capabilities

Use BPM Technologies Effectively: Summary

Problem	*Windows-Based Solution*
Supporting system workflow	- BizTalk Server orchestrations
Supporting human workflow	- WF-based workflows in Windows SharePoint Services 3.0 and Office SharePoint Server 2007
Graphical tools for defining processes	- System workflow: BizTalk Server Orchestration Designer - Human workflow: WF Workflow Designer and Office SharePoint Designer 2007
Integration technologies	- BizTalk Server data mapping, adapters, etc.
Business rules engine	- BizTalk Server BRE - WF rules
Business activity monitoring	- BizTalk Server BAM

Conclusion

- Vision is essential, but so is pragmatism
  - Every organization's SOA path is unique
- Three pragmatic goals:

  #1: *Standardize on service-oriented communication*

  #2: *Create the necessary service-oriented infrastructure*

  #3: *Use BPM technologies effectively*
- Working toward these will benefit every organization

For Further Reading

- Introducing Windows Communication Foundation
  http://www.davidchappell.com/IntroducingWCFv1.2.1.pdf
- Understanding BizTalk Server 2006
  http://download.microsoft.com/documents/australia/windowsserversystem/biztalk2006/Understanding_BTS06.pdf
- Understanding Workflow in Windows SharePoint Services and the 2007 Microsoft Office System
  http://download.microsoft.com/download/1/A/B/1AB1AC93-13A4-4001-A757-A340A211A06F/Understanding%20WF%20in%20WSS%20and%20Office%202007%20v1.doc

About the Speaker

David Chappell is Principal of Chappell & Associates in San Francisco, California. Through his speaking, writing, and consulting, he helps IT professionals around the world understand, use, and make better decisions about enterprise software.

David has been the keynote speaker for dozens of conferences and events in the U.S., Europe, Asia, and Latin America. His popular seminars have been attended by tens of thousands of developers, architects, and decision makers in forty countries.

David's books have been published in ten languages and used in courses at MIT, ETH Zurich, and other educational institutions. He is Series Editor for Addison-Wesley's award-winning *Independent Technology Guides*, and he has been a regular columnist for several publications. In his consulting practice, David has helped clients such as Hewlett-Packard, IBM, Microsoft, Stanford University, and Target Corporation adopt new technologies, market new products, train their sales staffs, and create business plans.

David's comments have appeared in The New York Times, CNN.com, and many other publications. Earlier in his career, he wrote software for supercomputers, chaired a U.S. national standardization working group, and played keyboards with the Peabody-award-winning Children's Radio Theater. David holds a B.S. in Economics and an M.S. in Computer Science, both from the University of Wisconsin-Madison.