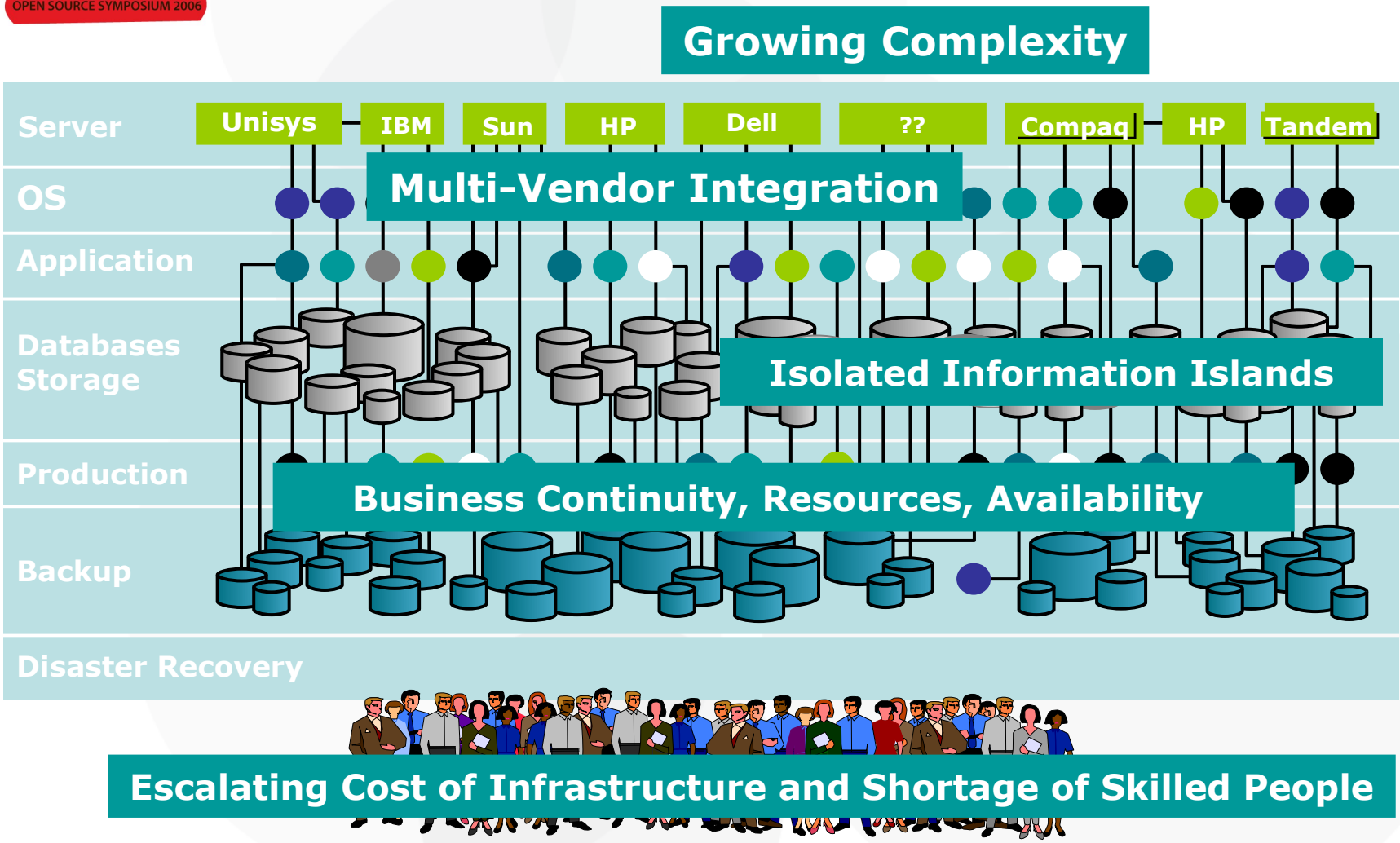
Enterprise SOA with JEMS

Harish Pillay
hpillay@redhat.com
Manager, Partner Development
Red Hat Asia Pacific

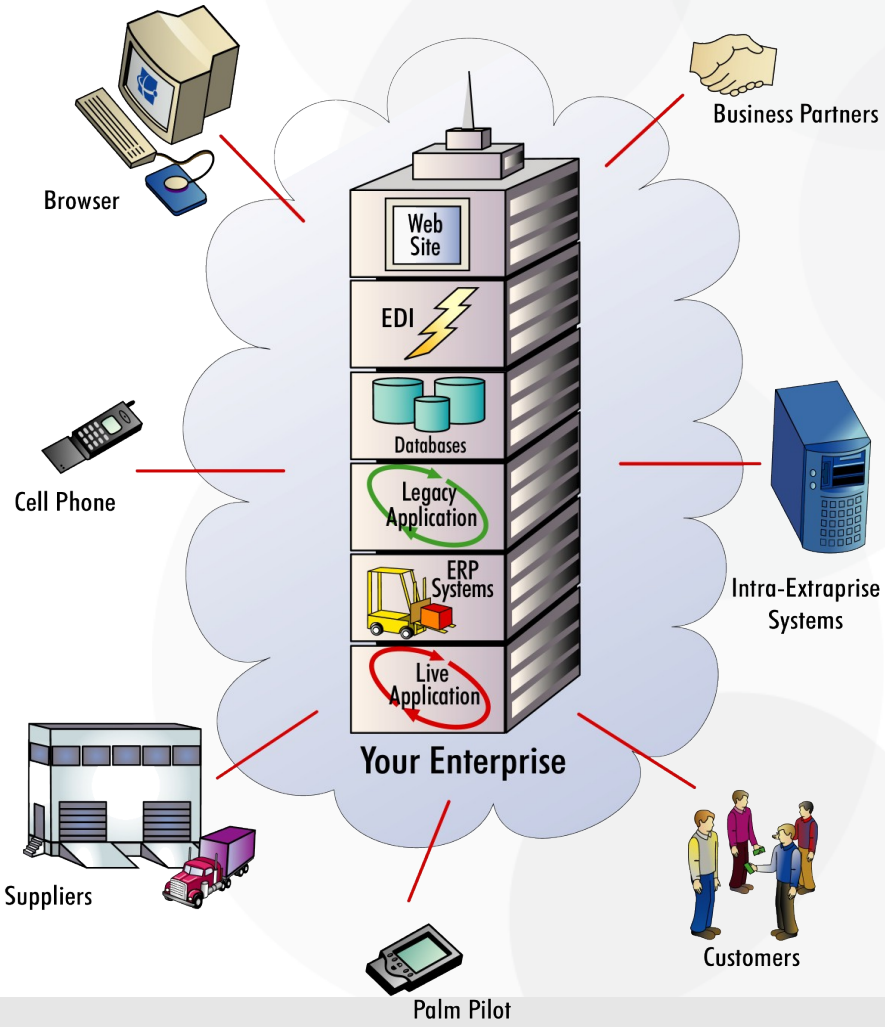
Overview

- What constitutes as a SOA?
- Today's World
  - JEMS and the Management Platform
- JEMS Components
- What services will we support?
- JBoss SOA customers
- JBoss ESB
  - Standards

Problem: Controlling the Costly Infrastructure Mess



Enterprise Nirvana



Maximize the utilization of components in the IT infrastructure, including:

- hardware
- storage
- bandwidth
- applications
- digital assets
- people

What is SOA?

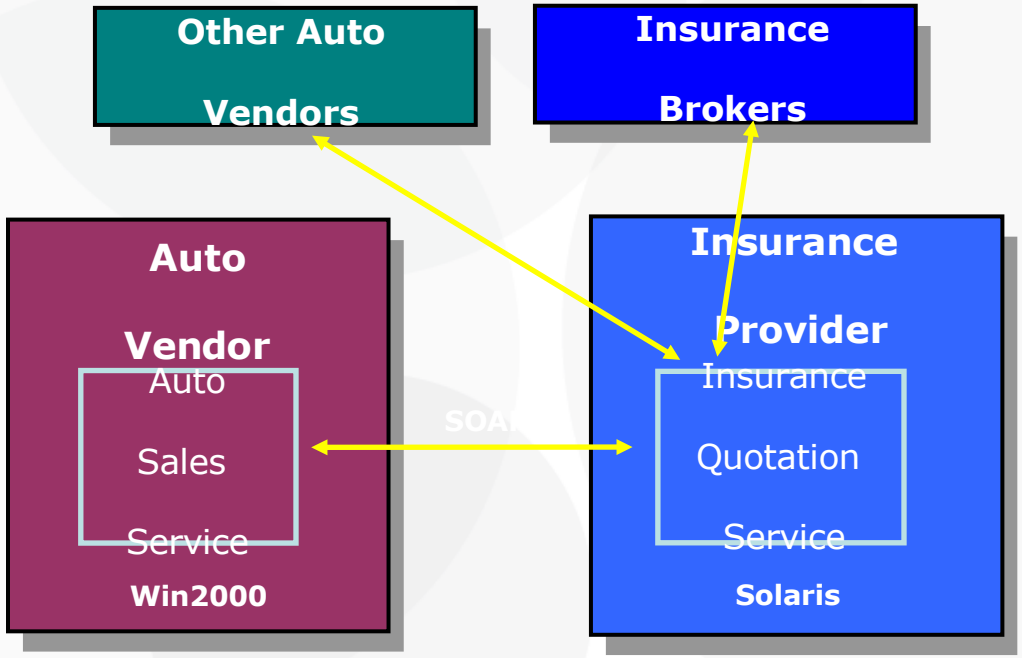
- Service Oriented Architecture (SOA) is an approach for building distributed systems that deliver application functionality as loosely-coupled services

- SOA:
  - Provides standard way to represent and interact with application functionality
  - Leverages open standards
  - Enables reuse of services
  - Creates new applications from existing components
  - Integrates applications outside the enterprise
  - Focuses on application assembly

- Services are Reusable, Discoverable, Autonomous, Stateless, Loosely Coupled, and share a Formal Contract that Abstracts underlying logic

What is a Service?

- A self-contained business function that accepts one or more requests and returns one or more responses through a well-defined, standard interface. Services can also perform discrete units of work such as processing a transaction.
- Example: An insurance provider can increase its reach to new markets by exposing its existing insurance quotation application as a service



Customer SOA Drivers

- IT Complexity and Rising Costs
  - High cost associated with maintenance of complex IT infrastructures
  - Duplication of IT expenses and efforts: need reusable components
- Lack of Agility
  - IT infrastructure impedes responsiveness and competitive advantage
  - High risk and high cost to change
- Improve Business Performance
  - Customer satisfaction
  - Competitive differentiation
  - Value chain execution (e.g. upsell)

The Problem with Proprietary Platforms

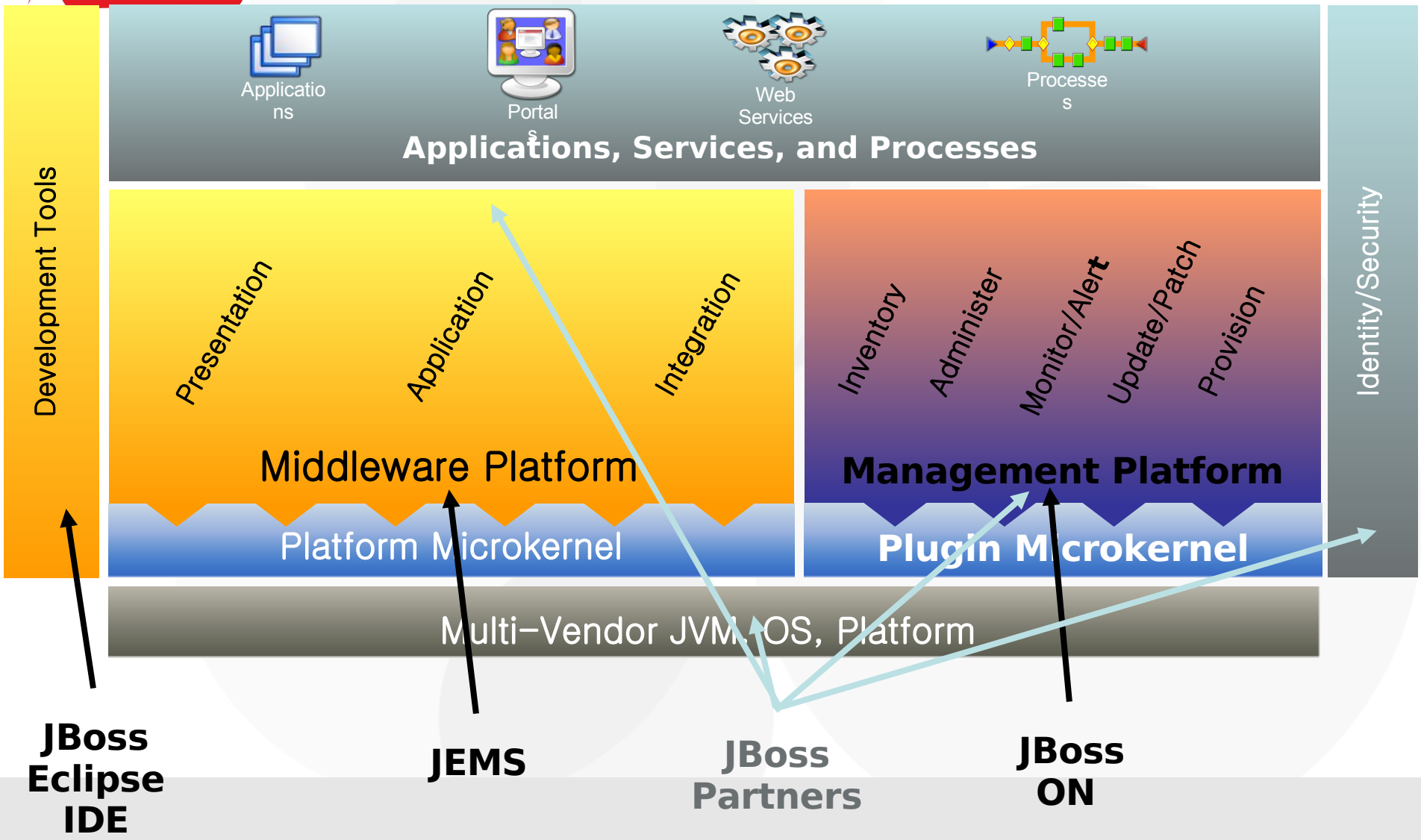
- High cost of entry
  - Harder to prove initial ROI and gain executive support
  - Often are forced to purchase middleware infrastructure in addition to SOA tools
- High cost of exit
  - Monolithic "super-platforms" contradict nature of SOA (vendor lock-in)
  - Drive brand strategies with lock-in and control points
  - Not focused on best-of-breed nor customer satisfaction
- Friction-filled Partner Networks
  - SOA platform vendors are also ISV's, conflict of interest translates to weaker integration

JBoss/Red Hat: Simply a Better Software Model

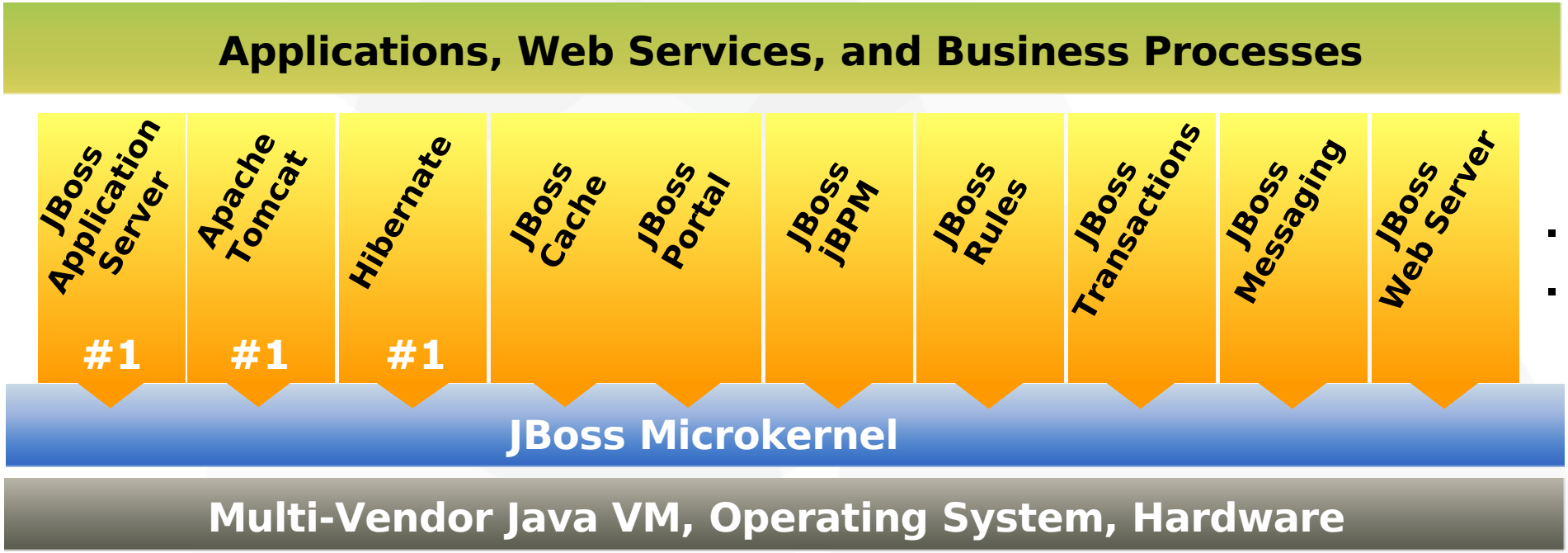
- Building software
  - Massive community involvement
  - Lead developers & committers are paid to develop world-class software
  - Leader in innovation and driving new industry standards
- Distributing software
  - Massive ISV and end-user community adoption
  - Zero-cost open source licenses
- Supporting software
  - Experts from the very first call
  - Backed up by core developers
  - Extensive partner community offering certified support, consulting, and training

Today's World:

Where JEMS comes in

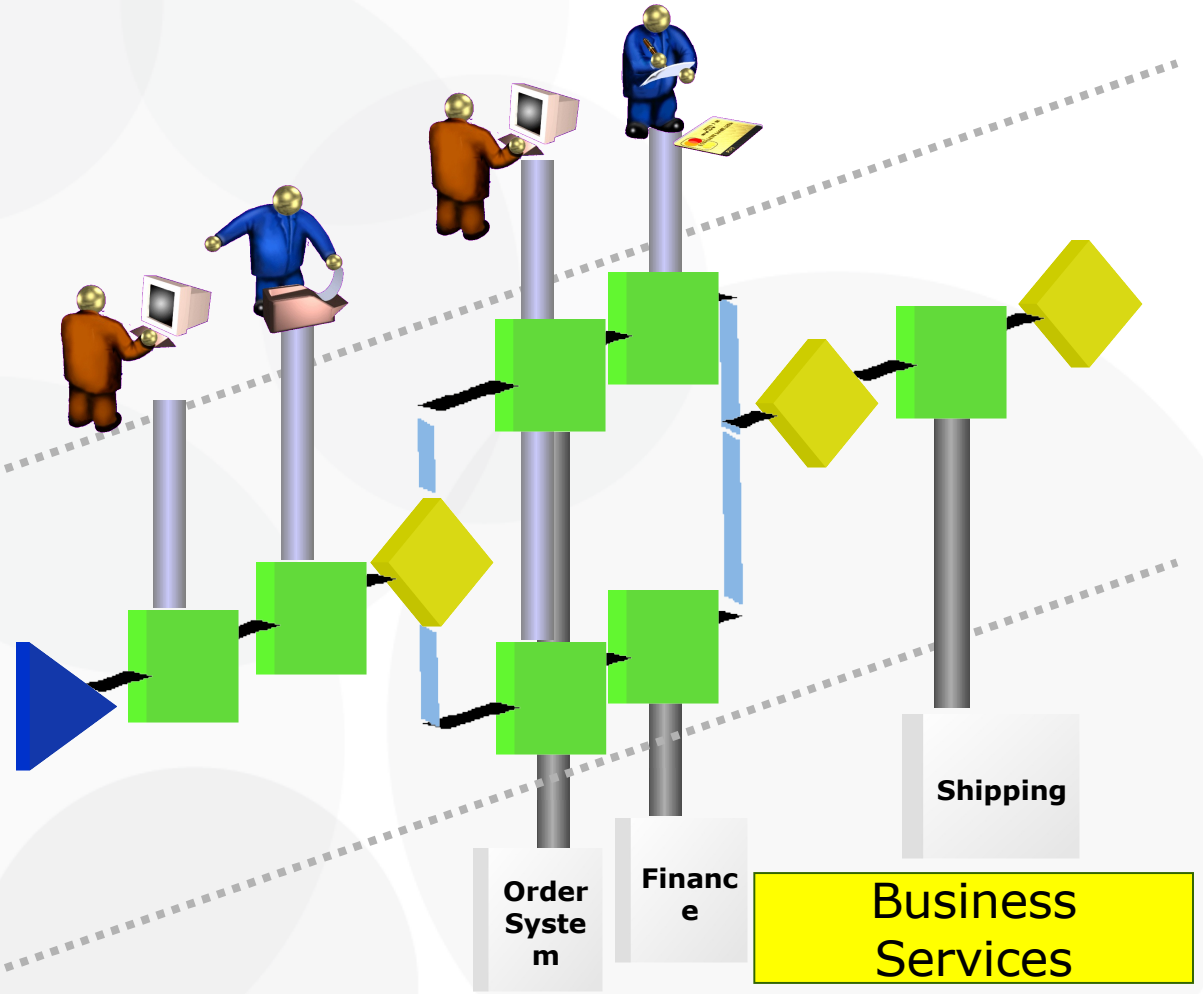

Power of Open Source Architecture
OPEN SOURCE SYMPOSIUM 2006
Applicatio ns
Portal s
Web Services
Processe s
Applications, Services, and Processes
Development Tools
Presentation
Application
Integration
Middleware Platform
Platform Microkernel
Inventory
Administer
Monitor/Alert
Update/Patch
Provision
Management Platform
Plugin Microkernel
Identity/Security
Multi-Vendor JVM, OS, Platform
JBoss Eclipse IDE
JEMS
JBoss Partners
JBoss ON

JBoss Enterprise Middleware Suite



- JEMS is “The Open-Source Platform for SOA”
- Market-leading products for enhancing business agility
- Modularity enables standardizing on JEMS at your own pace
- Simplicity decreases time to develop and deploy new business solutions

Components In Action



Presentation

JBoss Portal
JBoss AS, Cache
Apache Tomcat

Business Process

JBoss jBPM
JBoss Rules

Business Services

JBoss AS, Hibernate, Cache,
JBoss Transactions, JBoss ESB,
JBoss Messaging

What Technology Is Required for SOA?

Client	Presentation	Business	Intermediary	Resource
Web Apps	JBoss Portal	EJB, POJO, or Servlet	*JBoss Messaging*	Heritage Systems
Java Apps	JBoss Application Server (JavaServer Faces, EJB3, JBoss Seam)		JBoss Cache,	RDBMS
Mobile Device	Apache Tomcat, *JBoss Web*		Hibernate	Other Apps
B2B Gateway			*JBoss Transactions*	
		JBoss jBPM		
			JBoss Rules	
		JBoss ESB		

JBoss Application Server

- Market-leading Java EE (J2EE) application server
- Key Values
  - Easy to acquire & install
  - Embeddable & customizable
  - Simplifies development
    JBoss Seam and EJB3
  - Reliable & scalable
    Clustering and caching
  - High-end transactions with JBoss Transactions
  - Advanced management with JBoss Operations Network
  - Multiplatform: 100% pure Java
- Example Customers
  - Ameritrade
  - Goldman Sachs
  - Best Western
  - ADP
  - RLPTechnologies

Hibernate

- Ubiquitous object-relational mapping & persistence framework
  - Moves data between databases and business objects
- Key Values
  - Developer productivity
  - Database independence
  - Performance & scalability
  - Defacto standard -> Java Standard
    Drove simplicity into EJB3 spec
  - Multiplatform: 100% pure Java

- Example Customers
  - MetLife
  - Bank of America
  - McKesson
  - Geico
  - Mutual of Omaha
  - RouteOne
  - Coventry Health Care

JBoss Cache

Distributed Transactional Caching for POJOs

- Reduce Database & Network Traffic
  - **By caching frequently used objects**
  - **Less Database calls = Less Network Traffic = Faster Applications**
- State Replication
  - **Synchronous/Asynchronous replication**
  - **Transactional changes across the cluster**
- PojoCache only replicates changes & not the whole object again!
- Persistence
  - **Preload from file, SleepyCat or JDBC**
- Reliability
  - **Built on JGroups technology**

- Example Customers
  - Goldman Sachs
  - Siemens
  - Ameritrade
  - Bodog

JBoss Portal

- Standards-based platform for Portal applications

- Key Values
  - Focused on being a scalable platform, NOT a monolithic enterprise portal solution
  - Create and manage web content
  - Single sign-on across applications
  - Supports multiple databases via Hibernate
  - Reliable & scalable

    Runs on JBoss AS

    Clustering and caching
  - Web-based administration
  - Multiplatform: 100% pure Java

- Example Customers
  - ADP
  - Orbitz
  - Hartford Hospital
  - Intuit
  - US Navy

JBoss jBPM

- Embeddable business process and workflow engine

- Key Values
  - Easy to acquire & install
  - Embeddable & customizable
  - Declarative business process definition

    No more hard-coded business processes
  - Integrates business processes that span systems and people
  - Flexibility to support composite application orchestration, workflow, and web app page flow in one product
  - Multiplatform: 100% pure Java

- Example Customers
  - Goldman Sachs
  - Unisys
  - Primavera Systems
  - Jackson National
  - Boeing
  - FBI

JBoss Transactions

- **PROVEN Product technology has been actively developed and deployed for 20 years!**
  - Only CICS and Tuxedo can claim that

- **Key Features**
  - High performance and reliability
  - Manageability and configurability
  - Standards compliance (JTA, JTS, OTS, WS-Tx, etc.)
  - Modular architecture to optimize footprint (versus monolithic TPMs)
  - Pure Java implementation improves deployment and manageability
  - Industry-recognized technology leadership

Application server agnostic and ORB neutral

Deployable in or outside a J2EE application server

JBoss SOA Customer: Financial Services

- Cost benefits and agility are drivers
- JBoss JEMS is app. and integration fabric
  - Using JBoss Cache and clustering capabilities for performance and scalability
- Refactor old applications
  - Create pools of dynamic coarse grain services
  - Using stateless session beans for endpoints
  - Focused units of functionality
  - Using interceptors for cross-cutting concerns such as application mgmt and security
- Some web services for third party interaction (SOAP/WSDL/UDDI)
- Looking at JBoss jBPM for process management

JBoss SOA Customer: Insurance Company

- Complexity and cost of traditional EAI drove a different approach
  - Increasing number of applications including new Oracle 11i installations need integration
  - Dozens of interface points to define as SOA
- Used JBoss JEMS as SOA framework
  - Built enterprise service bus decoupling apps
  - Services are stateless session EJBs
  - Some web services (two)
- Adapter framework plugged into ESB for data transfer and transformation
  - Mainframe data to JBoss SOA fabric to Oracle 11i

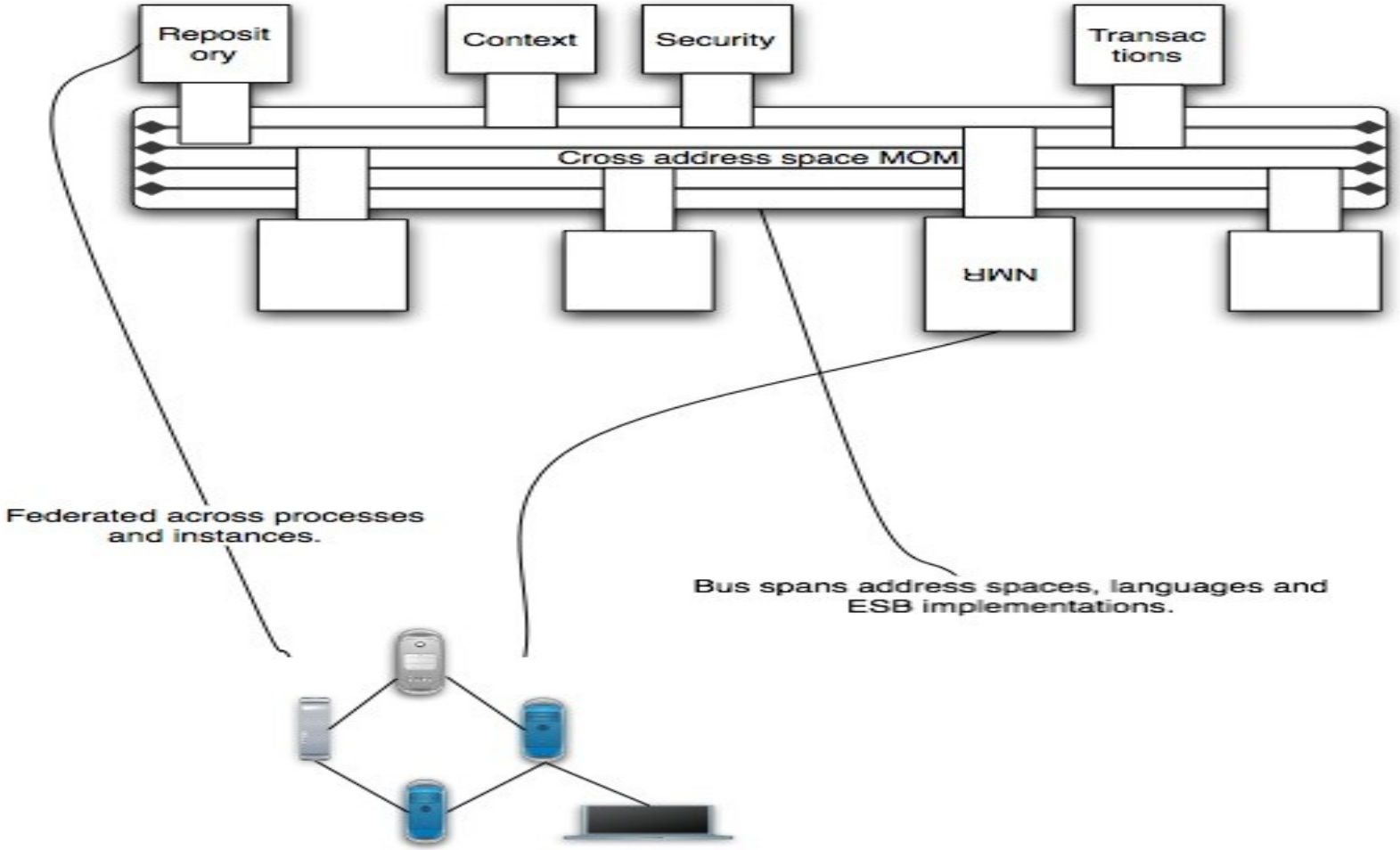
JBoss ESB

The Enterprise Bus for the Masses!

JBoss ESB - Goals

- To provide the standard OSS infrastructure for SOA
  - SOA principles first and foremost
- Use SOA principles *internally* as well as *externally*
  - Everything will be considered as a service
  - Everything will be replaceable
- Standards compliant
  - Though requirements live longer

Architecture overview



Services and messages

Everything is a service, including the bus

All services are interacted with via messages.

Including lifecycles

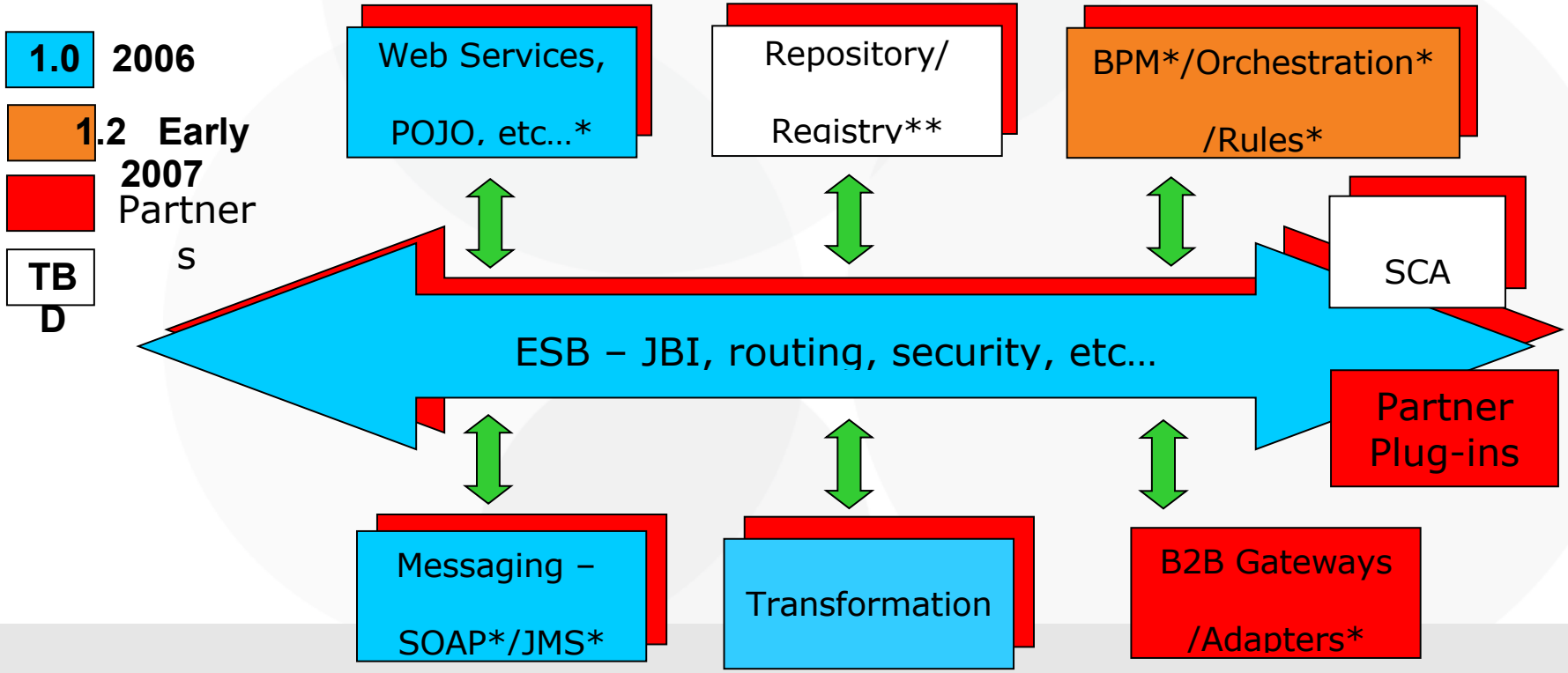
Containers abstracted within architecture

- Services plugged directly into a lifecycle bus

– Services can be plugged into multiple bases concurrently

JBoss ESB

- JBI-based platform. SCA can be supported. Plug and replace any component architecture.
- Maximum flexibility for partners, ISVs and community adopters.



* - Supported today in JEMS ; ** UDDI-based Registry in 1.0

Current status

Making good progress

Check ou t the forum

Get involved!

We have many components

We are collaborating with partners

SOA-within-and-without should help

Best-of-breed approached to deployments

Talking to partners, customers and vendors

JBossESB as the unifying infrastructure

JBoss ESB 4.0 Beta 1 Released!!!

The SOA Journey: More than Technology

- What are the right steps to guarantee overall success?
  - Implementing a Service-Oriented Architecture is a journey: start small, build library of services, prove ROI at each step
- How can you improve ROI while reducing risk?
  - Requires that proprietary interfaces become standards-based
  - Requires enterprise-wide governance
- How can you realize the benefits of SOA?
  - SOA requires a combination of security, management, integration, process, and architecture tools

JBoss JEMS and Red Hat Can Get You There

Questions? Harish Pillay, hpillay@redhat.com