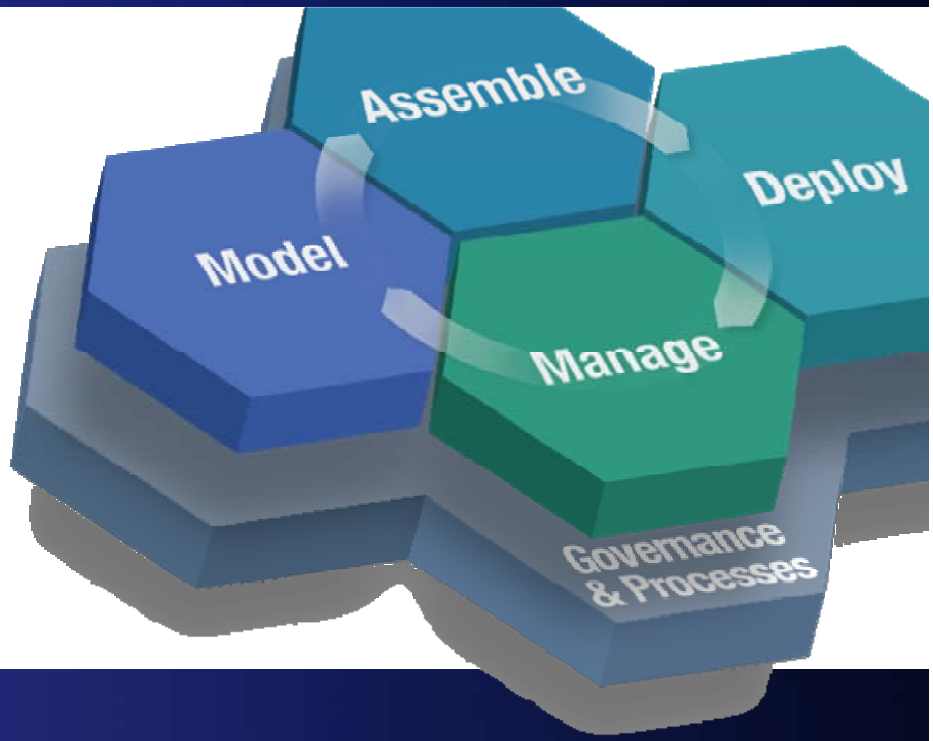
IBM SOA Architect Summit

SOA on your terms and our expertise

IBM SOA Architect Summit

Managing and Monitoring your SOA Environment

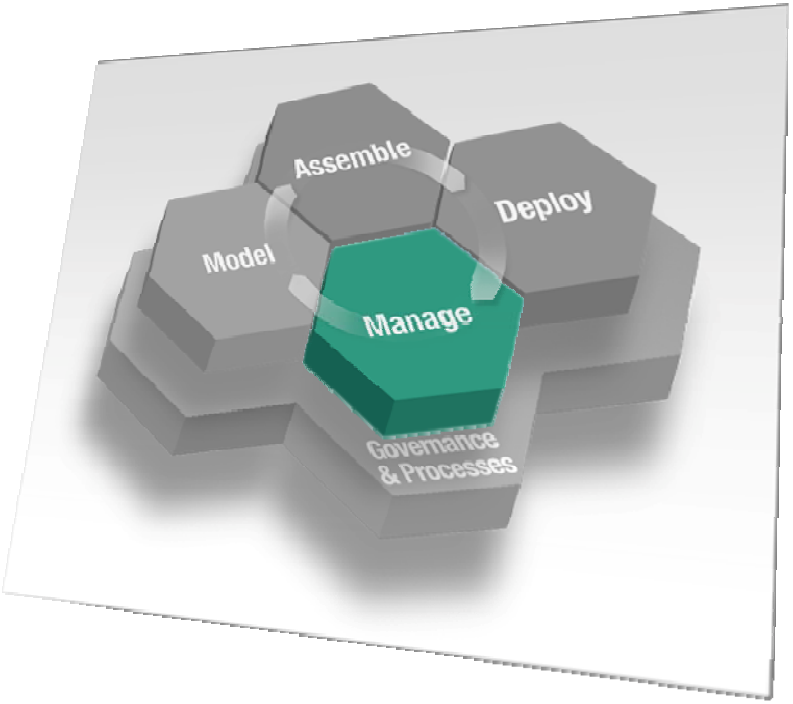


- A Presentation for the Enterprise Architect

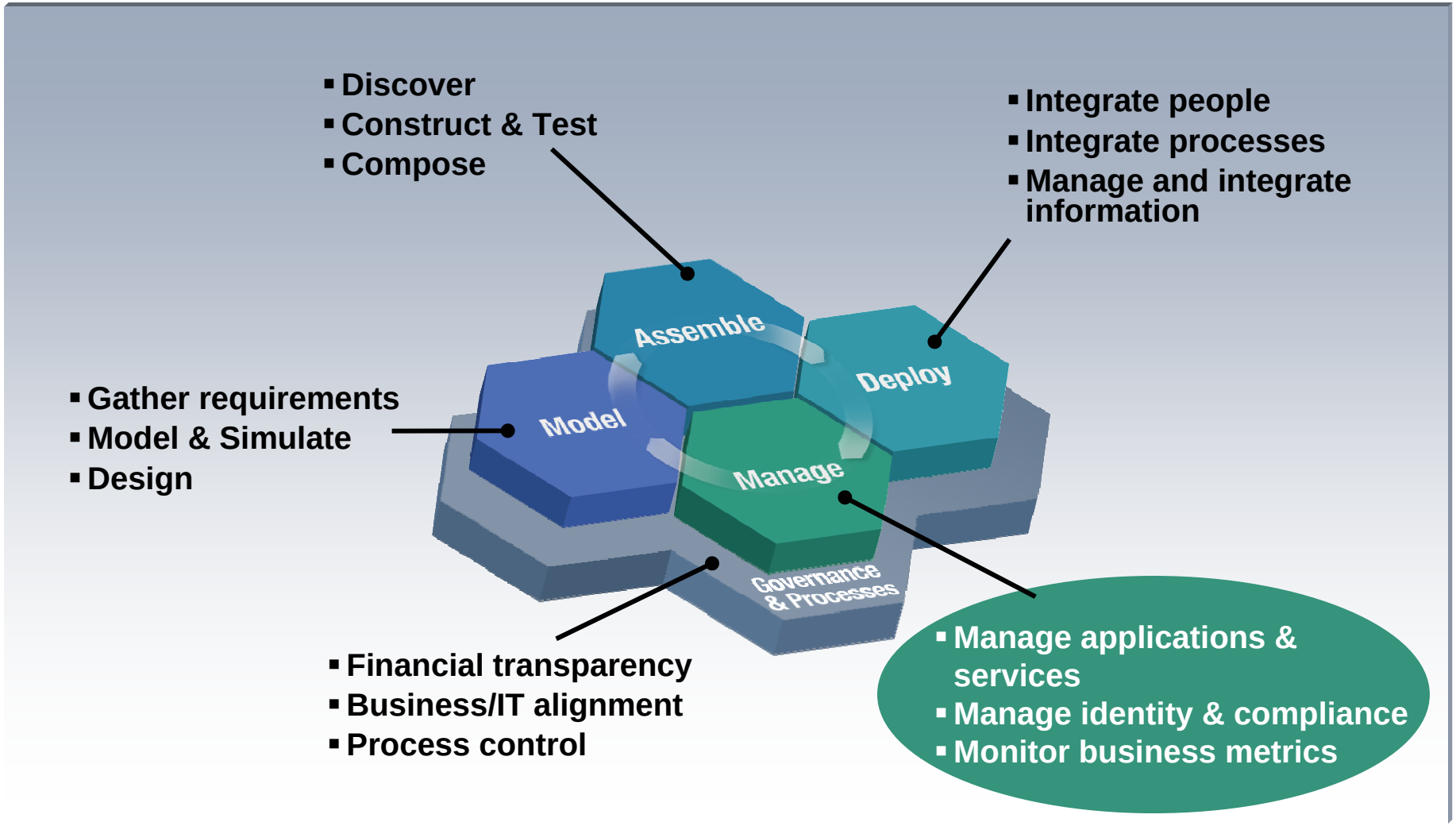
ON DEMAND BUSINESS™

Agenda

- SOA Management Pains and Requirements
- Management Touch Points in an SOA Reference Architecture
- Managing SOA by Managing the Layers of Abstraction in an SOA IT Architecture
- Mapping to the IBM Products



SOA Operating Environment for Composite Applications



SOA Exposes New Management Pains in Application Lifecycle

Model | **Assemble** | **Deploy** | **Manage**

"I need a service, does it exist?"

"How can I debug my production application without reproducing the problem?"

"Before I deploy it in production, how can I be sure that the service flow matches the design?"

"Some of our services are used by our partners? How can I be sure they are meeting their SLAs?"

"Which part of the SOA infrastructure is causing this service problem? The app server or the messaging connections?"

"I now have to write a service – how do I make sure it works securely with other services I'm dependent on?"

"Does my new SOA application meet it performance goals?"

"What's the root-cause of this service problem – the BPEL service flow or the application?"

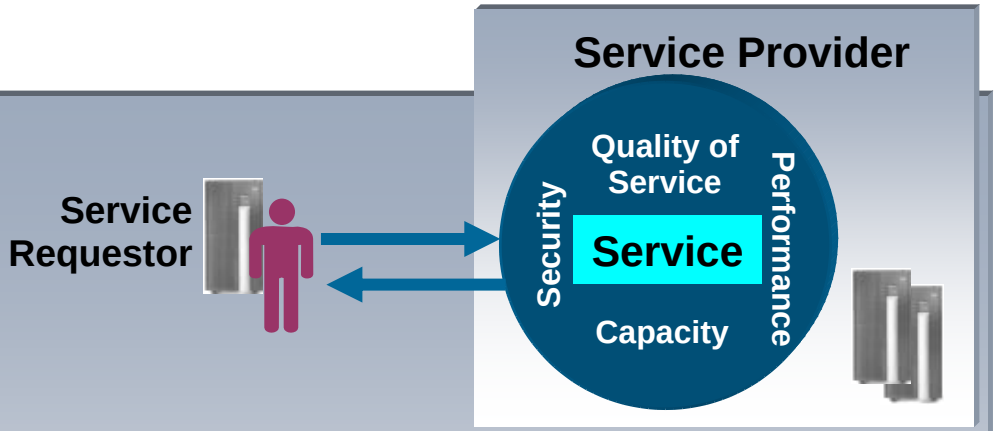
The SOA Management Challenge:

Treat Services as Managed Resources

- A Service Oriented Architecture (SOA) is an architectural style of building applications based on Services
- Treat each Service endpoint (instance) as a manageable resource
  - It has a status and has performance characteristics (KPIs)
  - It has a Service Level associated with it
  - It can be deployed and configured
  - It can be versioned and deprecated
  - It can be monitored and managed
  - It can be secured
- Recognize “service” as a higher-level of abstraction than typical system resources
  - Demonstrate the relationships services have to the business process AND to the underlying IT infrastructure
- Need to manage the messages and their flow, as well as the IT infrastructure that is supporting the flow
  - Create, deploy and manage mediations based on policy (Operations, Business, Compliance)

Why Is SOA Different?

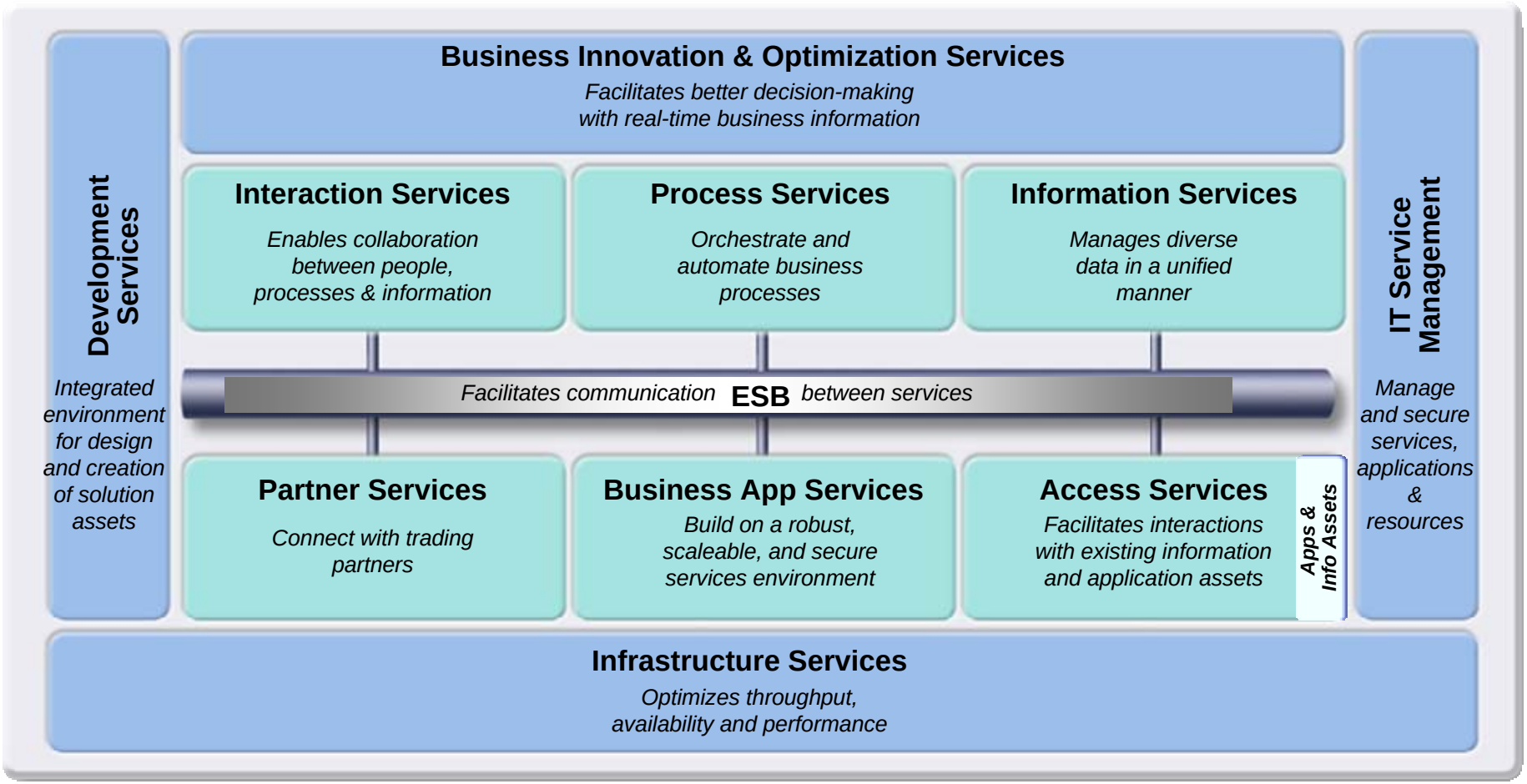
- What differentiates a service-oriented approach are the *service characteristics*



- A service not only has a set of calls and responses, it has many other characteristics: *performance, availability, capacity, quality of service and security*
- SOA is not only about exposing *how* you can call a service but also defining a set of characteristics for how these calls *will be serviced*:
  - how fast they should respond
  - when will they be available
  - who may make various calls
  - how many calls you can make in a certain period of time
  - what calls need to be logged
  - how should calls be routed

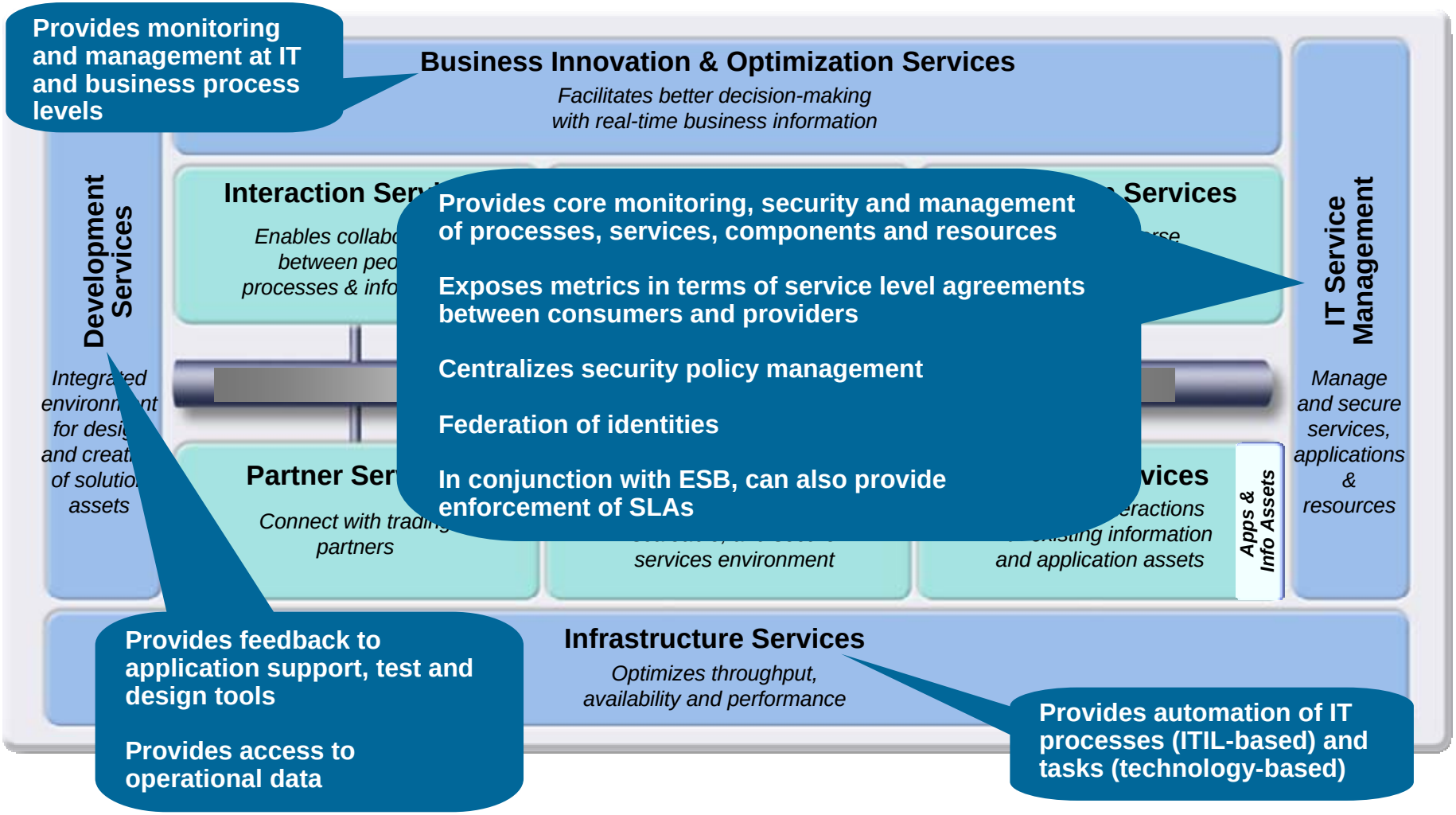
SOA Reference Architecture

Supporting your SOA Lifecycle



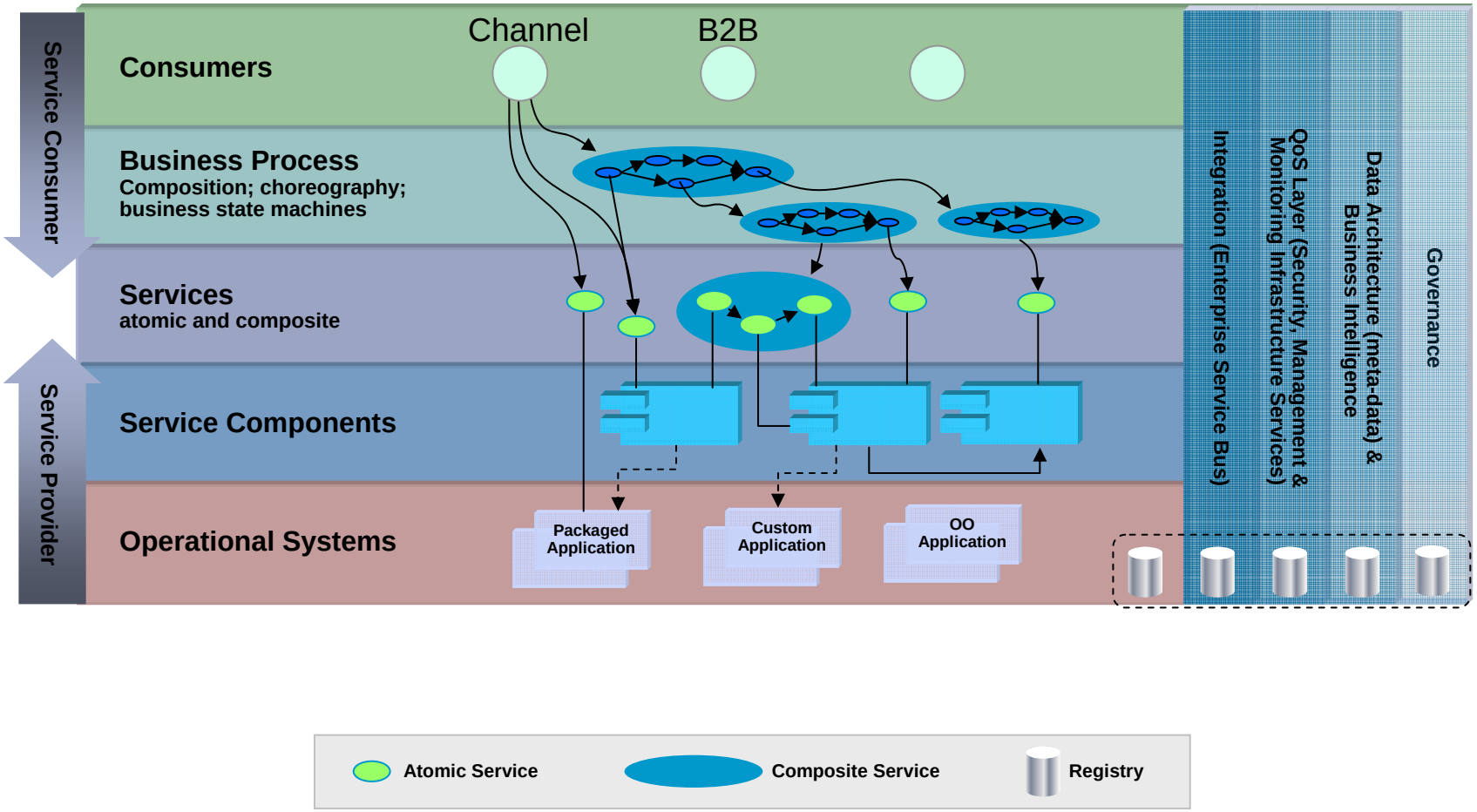
SOA Reference Architecture

Supporting your SOA Lifecycle

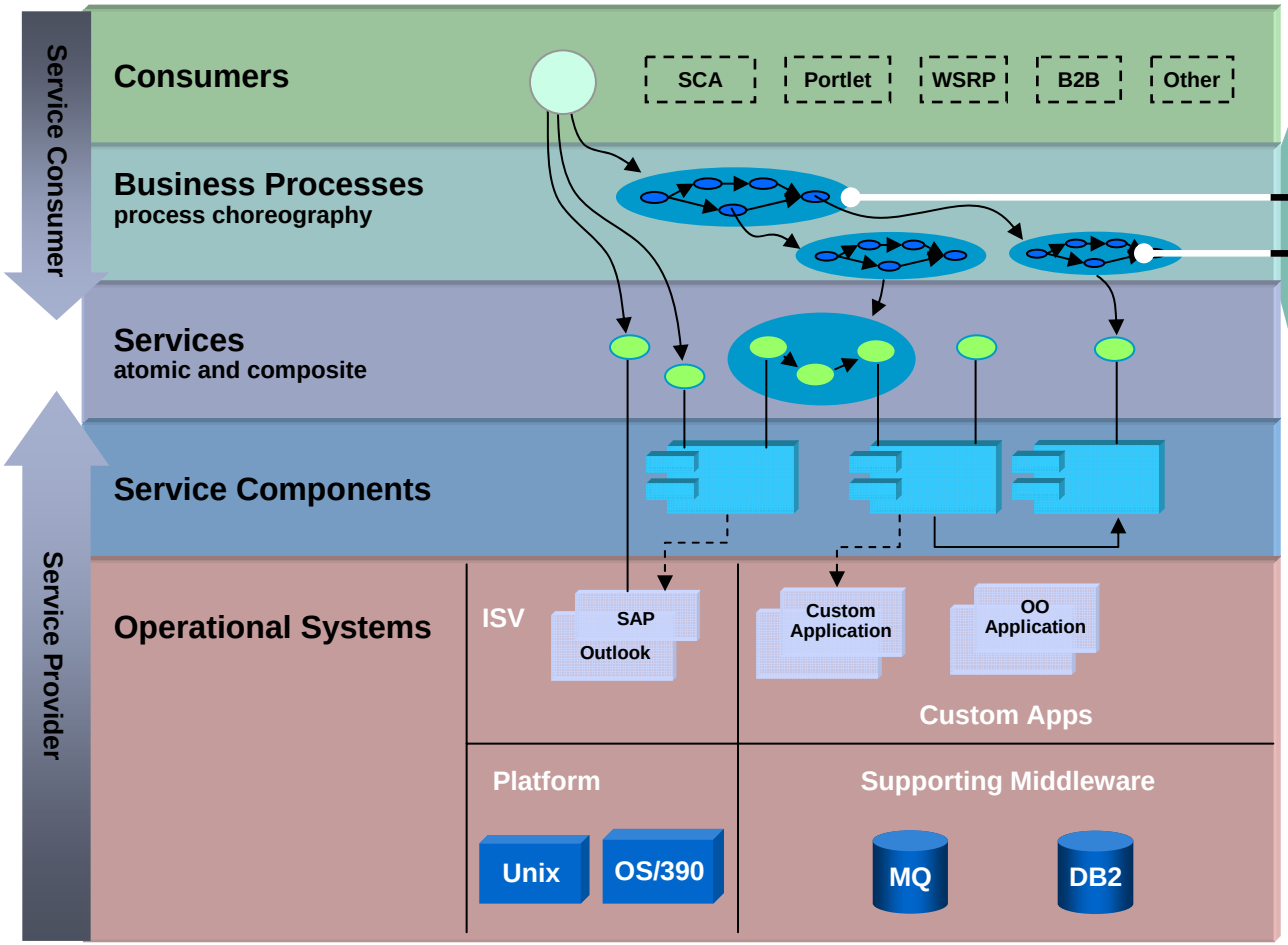


SOA Solution Abstraction Layering

Leveraging the SOA Reference Architecture



Manage the Business Process



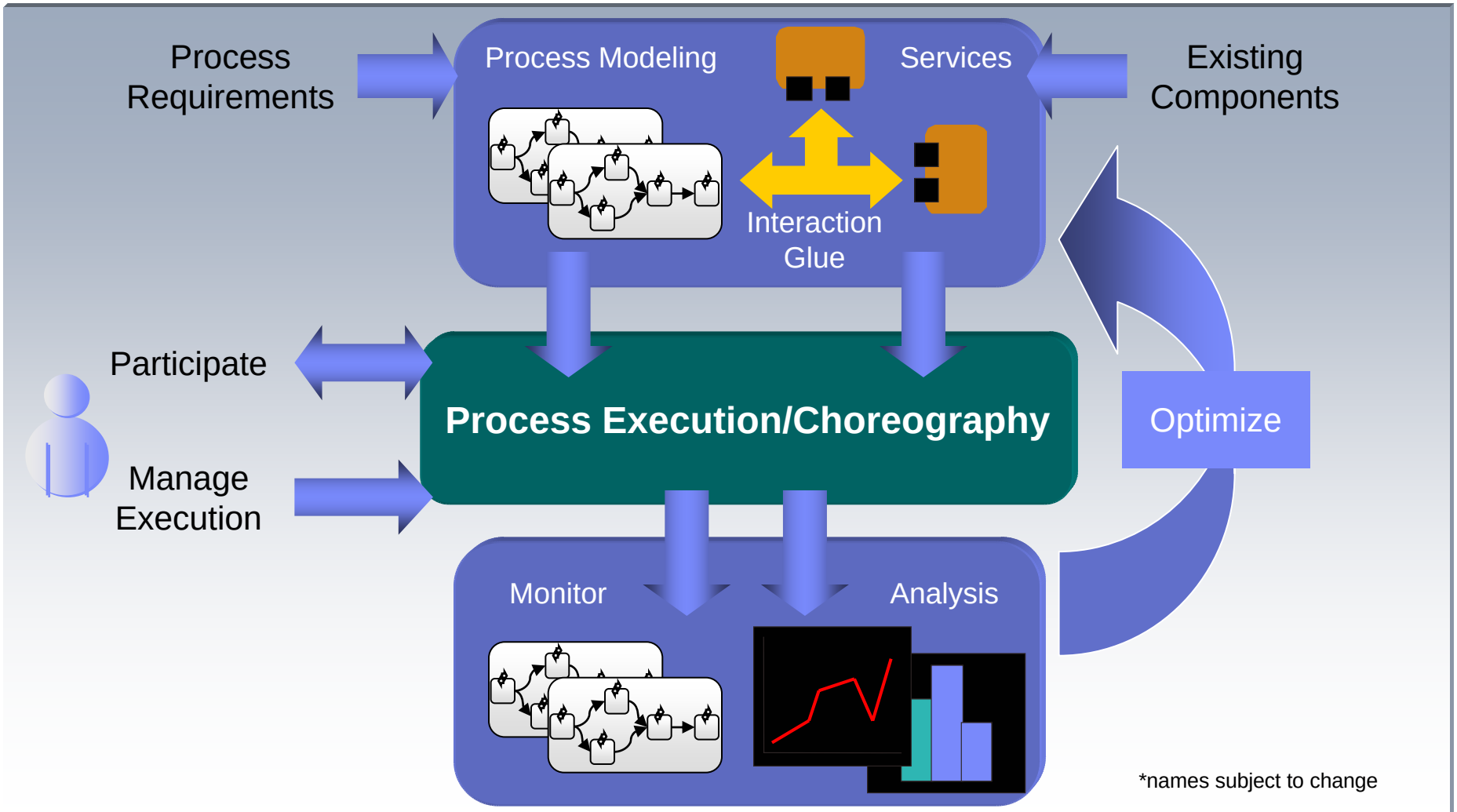
Manage: Business Process

- Monitor business Key Performance Indicators (KPIs) against targets
- Track process flows

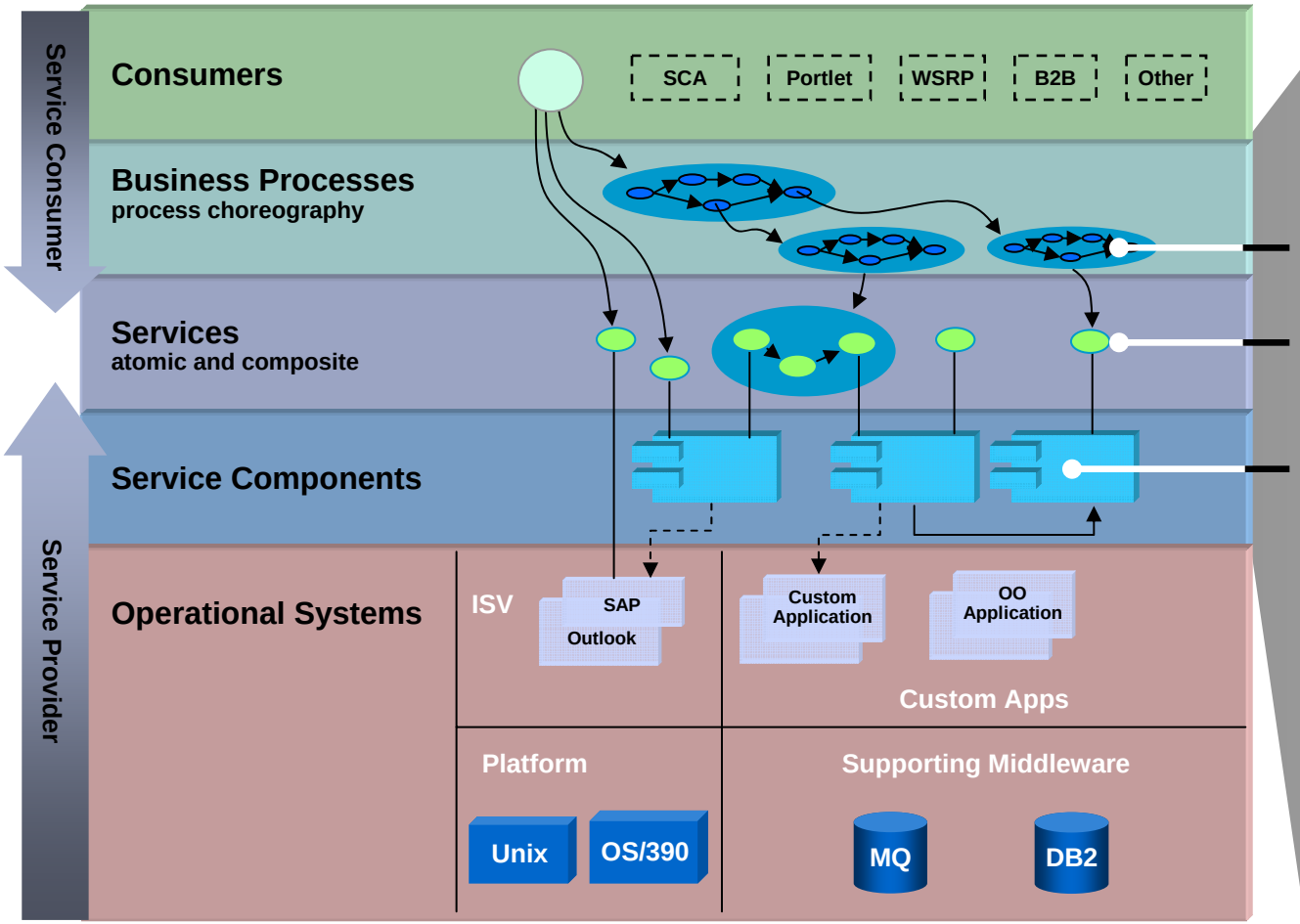
Manage: Business Process

- Report on business performance measured against targets (scorecard)
  - Share growth and new product revenue
- Track business process flow
  - Status of particular insurance claim
  - Bottlenecks due to human tasks
- Monitor business process metrics
  - Duration, cost, branch ratios
- Business Analysis through aggregation and multidimensional reporting
  - Total monthly revenue by customer

Continuous Business Process Optimization - Round Trip



Manage the Service Layer



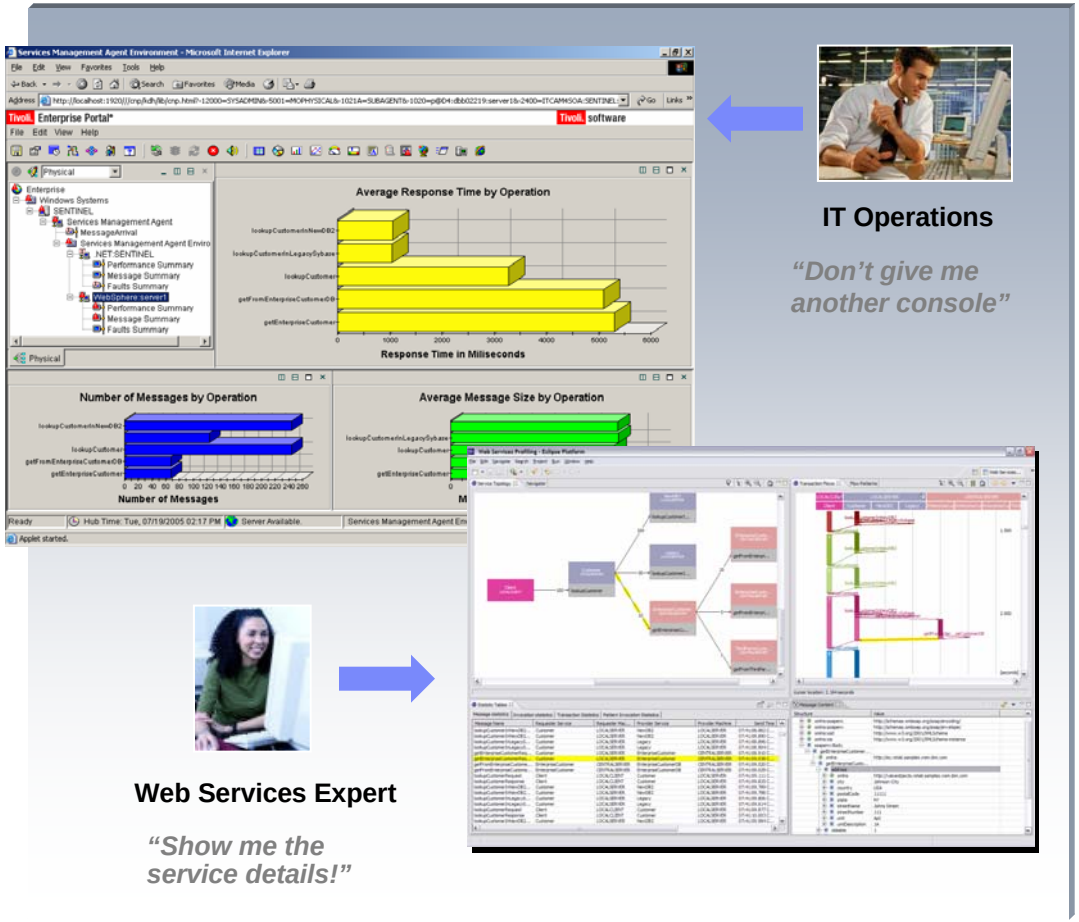
Manage: Service Relationships

- Understand how services relate to each other and to the IT infrastructure and business process layers
- Control the message flow in the services environment through management mediations like log, filter, and route
- Centralize services management policies
- Set business-related IT goals

Manage: Service Relationships

Lifecycle Support for Services

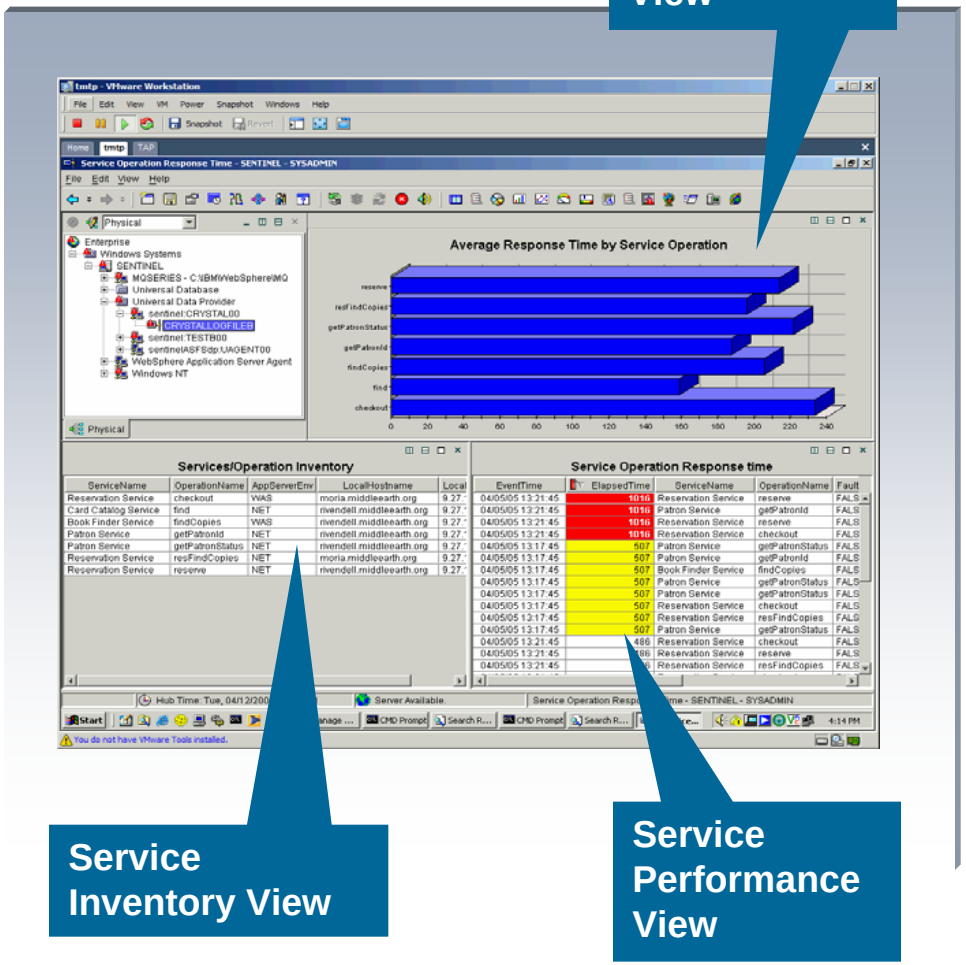
- To ensure service levels conform to agreed upon specifications, you need:
  - Views and analysis of web service interactions for IT Operations to quickly identify source of errors, and take corrective action through situations, workflow and mediation
  - Detailed views of operational SOAP/XML message content, flow patterns and topology for Web services experts and support teams



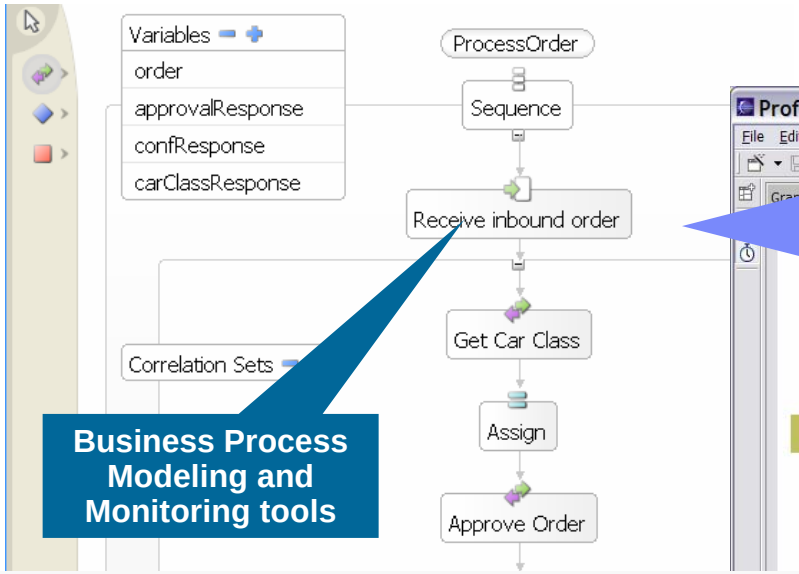
Manage: Service Relationships

Enable IT Operations Manager to Easily View Services

- Integrated views of web services data through a centralized portal
- Aggregate web services data with other IT infrastructure monitoring
- Customize workspaces to tailor views to specific roles
- Use Situations to create thresholds, alerts and take actions
- Provide message logging as well as message rejection

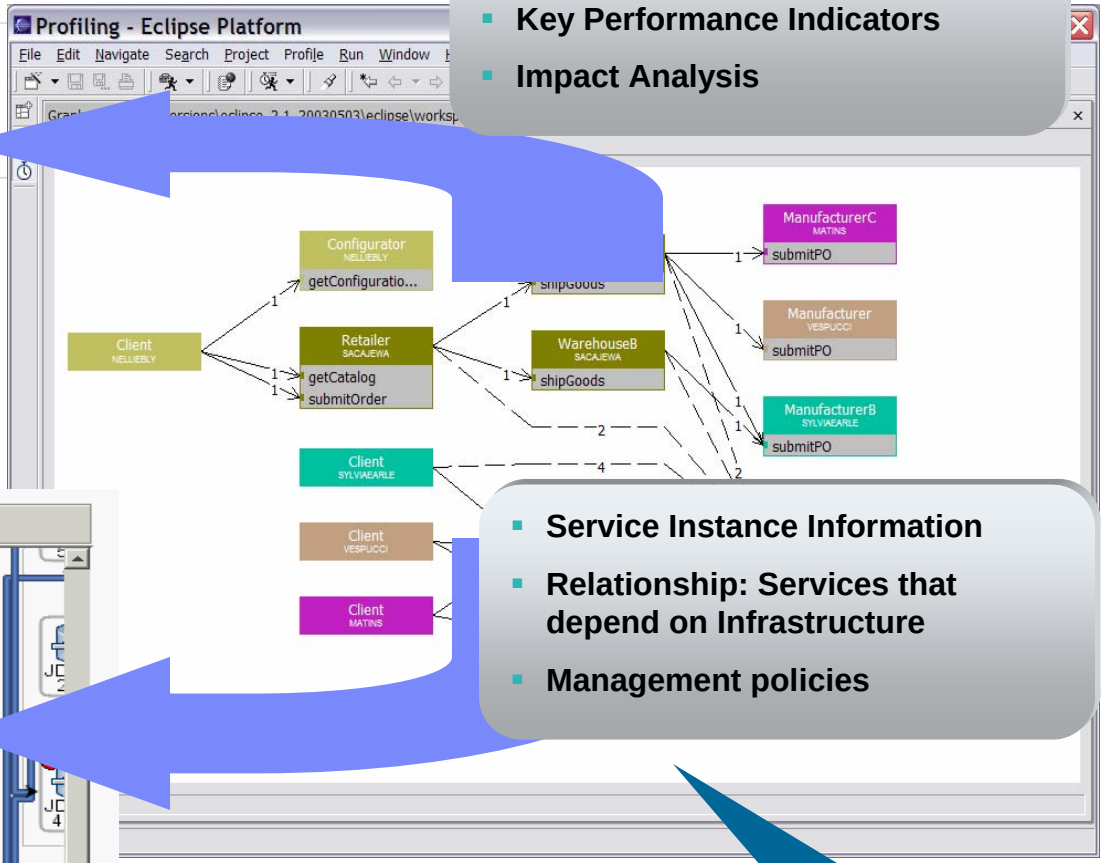


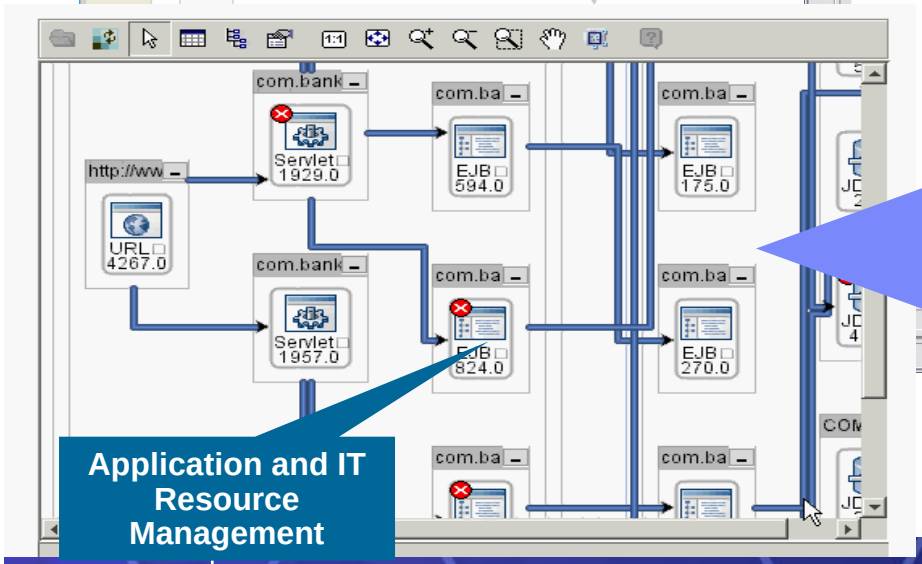
Manage: Service Relationships



Business Process Modeling and Monitoring tools

- **Relationship: Services that support Business Process**
- **Key Performance Indicators**
- **Impact Analysis**



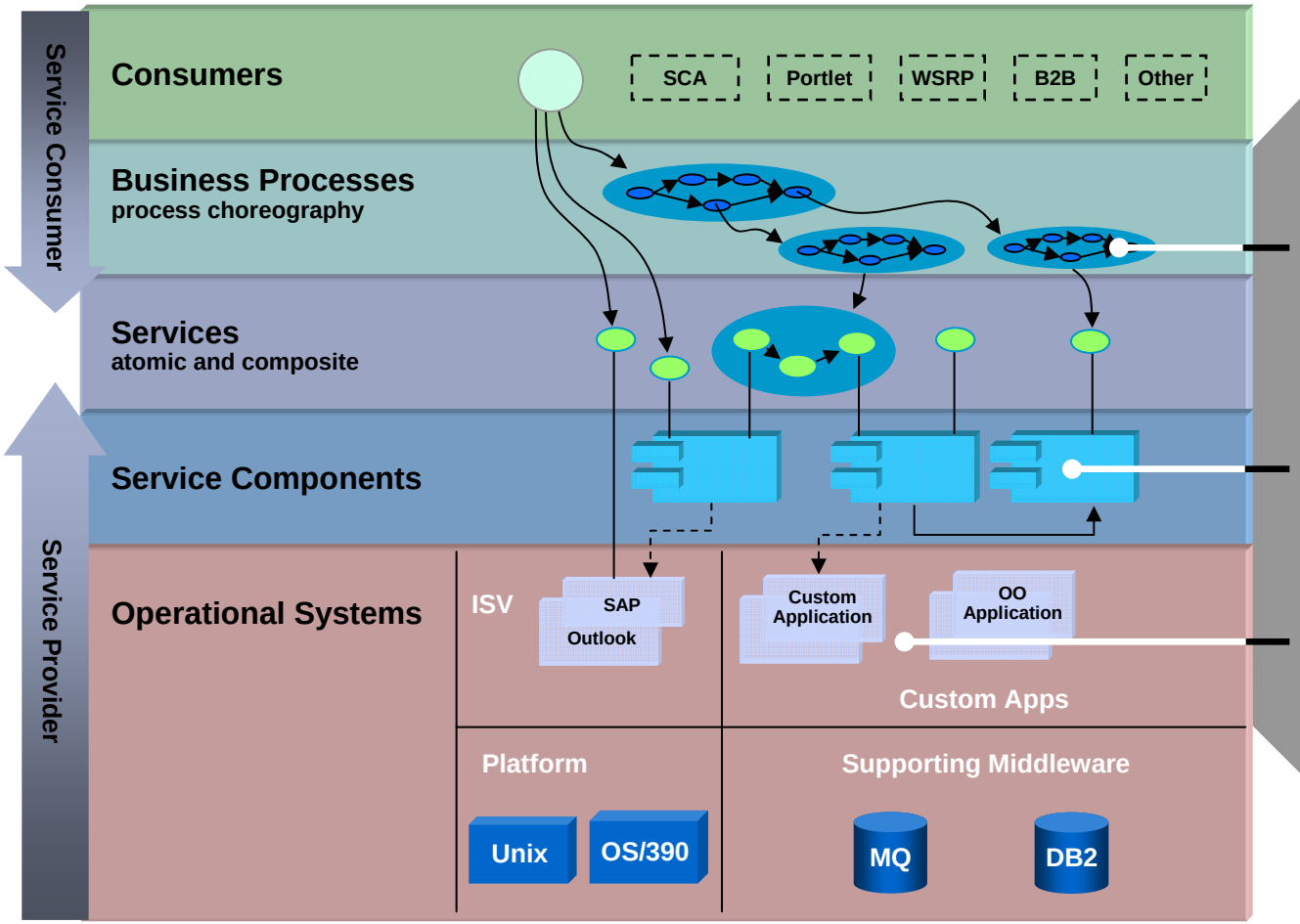


Application and IT Resource Management

- **Service Instance Information**
- **Relationship: Services that depend on Infrastructure**
- **Management policies**

SOA Management Tools

Manage Transaction Performance



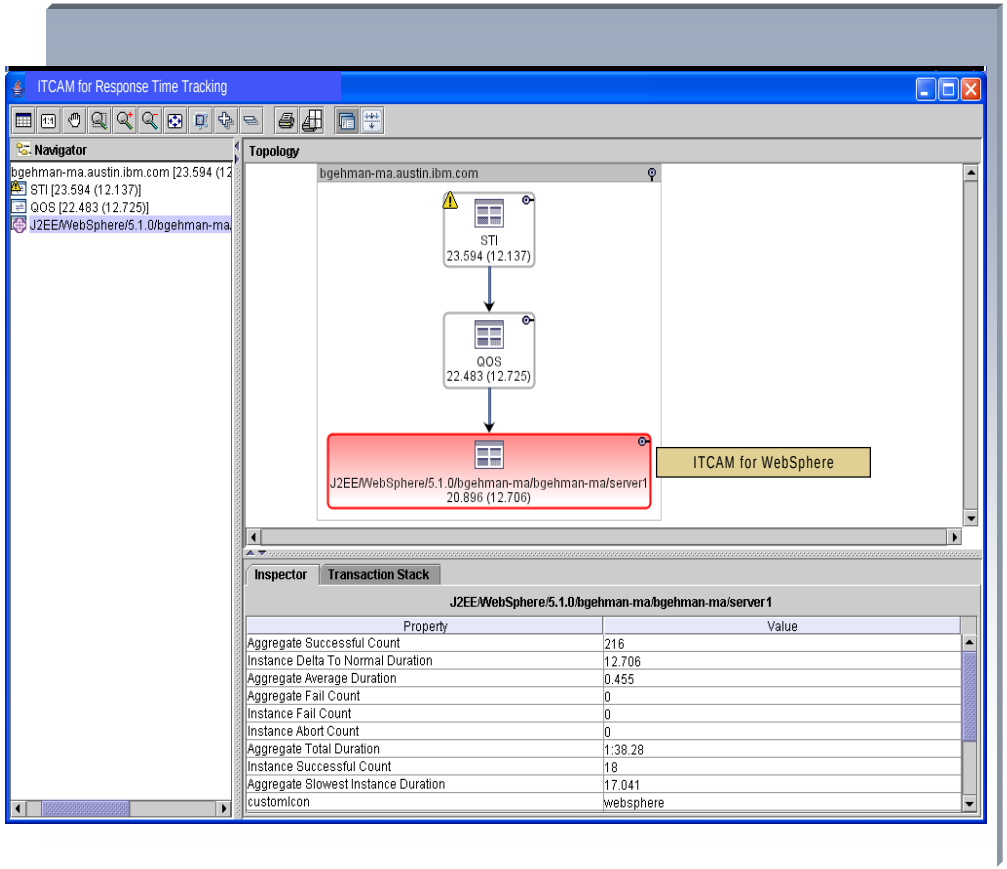
Manage: Transaction Performance

- Understand the performance of a service and the decomposition of transactions into times for individual requests
- Provide the relationship between service requests and the implementation artifacts such as J2EE beans and JDBC requests

Manage: Transaction Performance

Provide Key Response Time Metrics Across Platforms

- Customers find it very difficult to identify and isolate performance bottlenecks in composite applications that span technology and platform boundaries
- Need to provide performance instrumentation that is lightweight and can be dynamically configured to identify problems before customers call
- ARM-based instrumentation is the industry standard that can be leveraged to isolate the problem

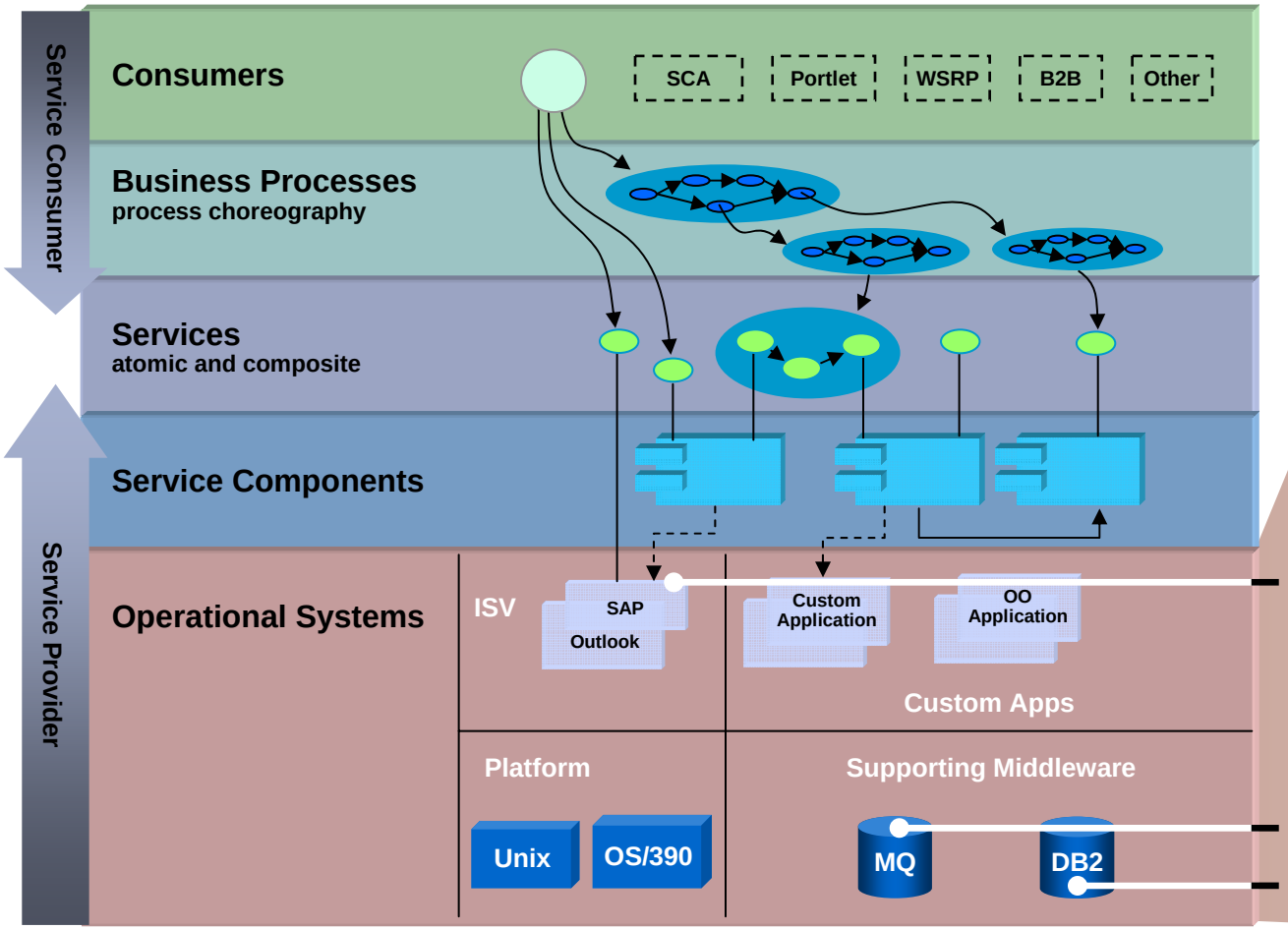


Manage: Transaction Performance

Quickly Identify and Isolate Response Time Problems

- Awareness of customers' response time experience
  - Alert triggered when performance at the end user is degraded
  - Continuous verification that transactions are available and performing by comparing them against a response time threshold
- Ability to see transaction paths to speed problem isolation
  - Visualize the transaction as it crosses the enterprise
  - Automatically pinpoint source of bottlenecks
- Time to value improvement through automated learning
  - Auto discovery of transaction flows
  - Auto base-lining by learning production response times
- Validation of end user service level delivery
  - Consistently test services and measure their response
  - Report results against committed service levels

Manage the Supporting Middleware



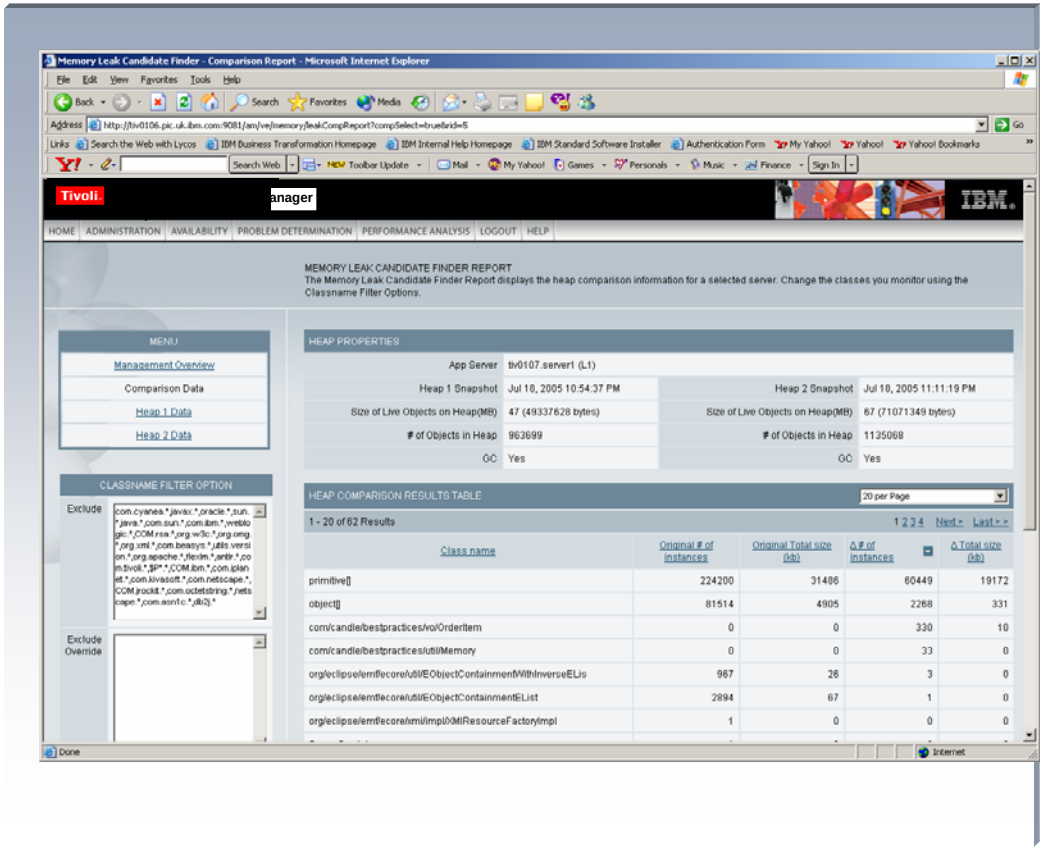
Manage: Supporting Middleware

- Understand the health of the infrastructure that supports the services
- Correlate problems in the services to infrastructure issues such as a queue filling up or an exhausted thread pool

Manage: Supporting Middleware

Comprehensive Deep-dive Monitoring

- Customers find it difficult to identify and quickly correct applications that are down or performing slowly
- Need to provide comprehensive in-flight transaction display that includes the name of the hung class/method
- This can significantly improve the performance and availability of J2EE applications by reducing problem identification and resolution time



Manage: Supporting Middleware

Maximize Application Performance

Root cause analysis to reduce application downtime / slow down

- Implement Performance Quality Control processes throughout the application lifecycle to proactively eliminate poor performing code
- Provide comprehensive performance metrics and diagnostics across applications, enabling quick resolution to the performance problems

Automate IT processes such as alerting, reporting, and capacity planning

- Provide First Failure Data Capture (e.g. trace, dump, log) using traps based upon correlating multiple metrics across resources
- Automated reporting functions that trend, decompose, compare and correlate transaction data

Improve IT Operation Efficiency via scalability and extensive integration

- Manage hundreds of JVM on a single management server
- Contextually integrate with transactional tracking solution for quick analysis of the poor performing resource in question.
- Deliver run-time performance data to development tools to diagnose application code problems

Security in the SOA Lifecycle

Model **Assemble** **Deploy** **Manage**

"Do I have permission to use a service?"

"My Business Partner wants 24x7 Availability. How do I ensure the infrastructure meets that requirement?"

"How do I ensure Integrity and Confidentiality in my Business transactions?"

"Now that I have created a service interface, how do I test to make sure it works with my Business Partner?

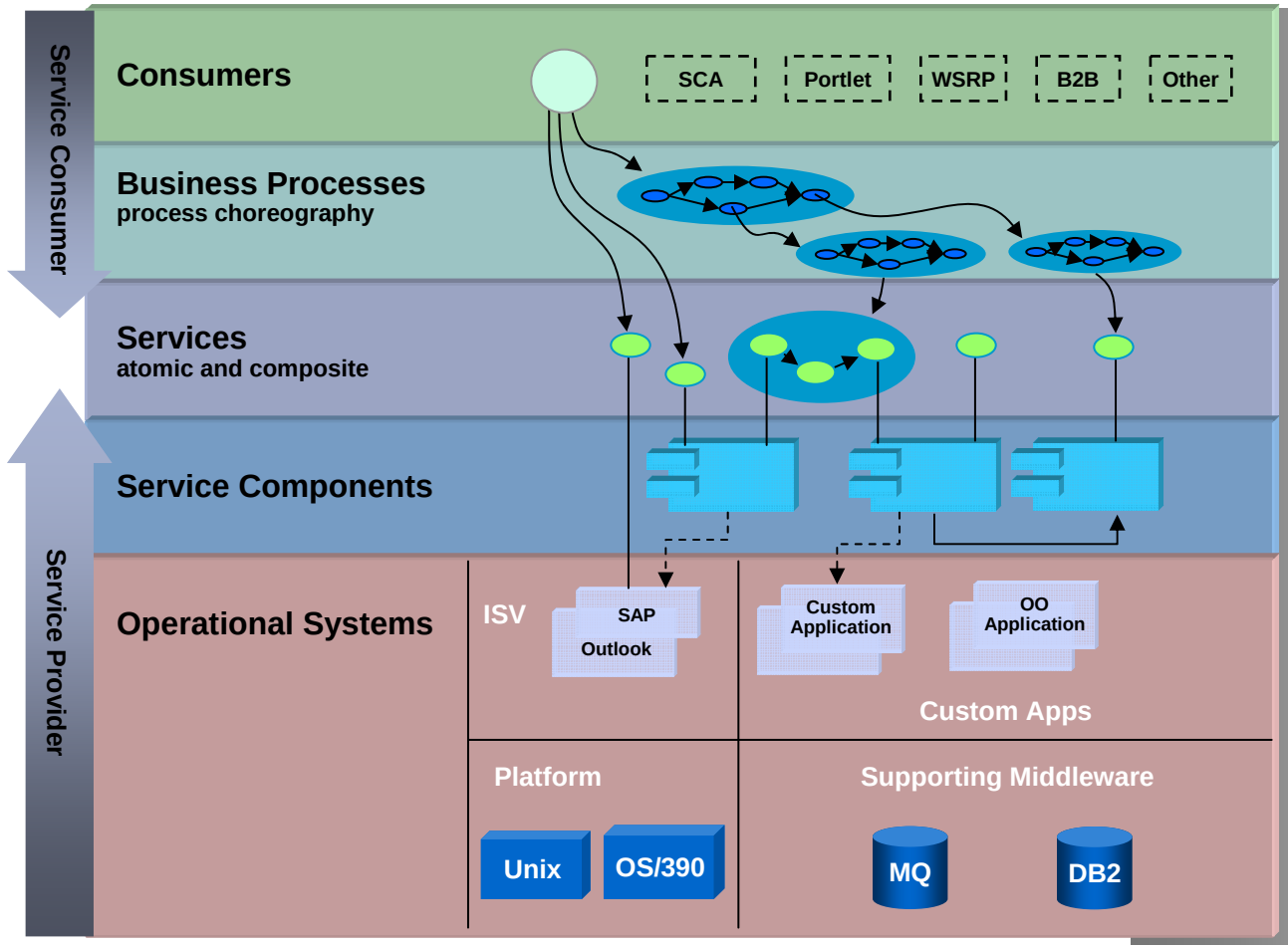
"Which part of the SOA infrastructure is causing this service problem? The app server or the messaging connections?"

"How do I develop a secure service and make sure it works securely with other services I'm dependent on?"

"Does my new SOA application meet my company's Corporate Policy?"

"Who are the people involved in deploying and managing a service in my enterprise?

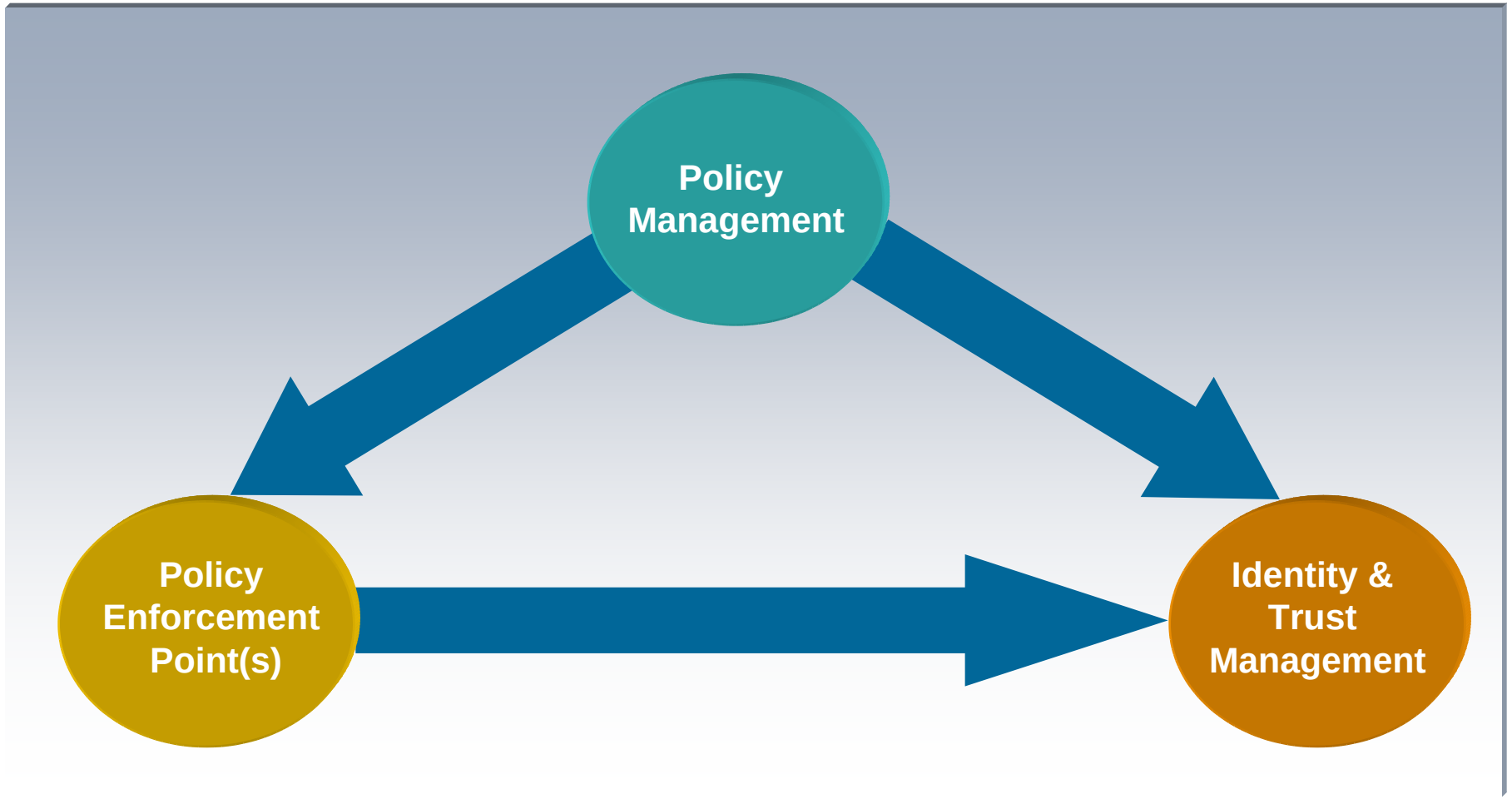
Manage SOA Security



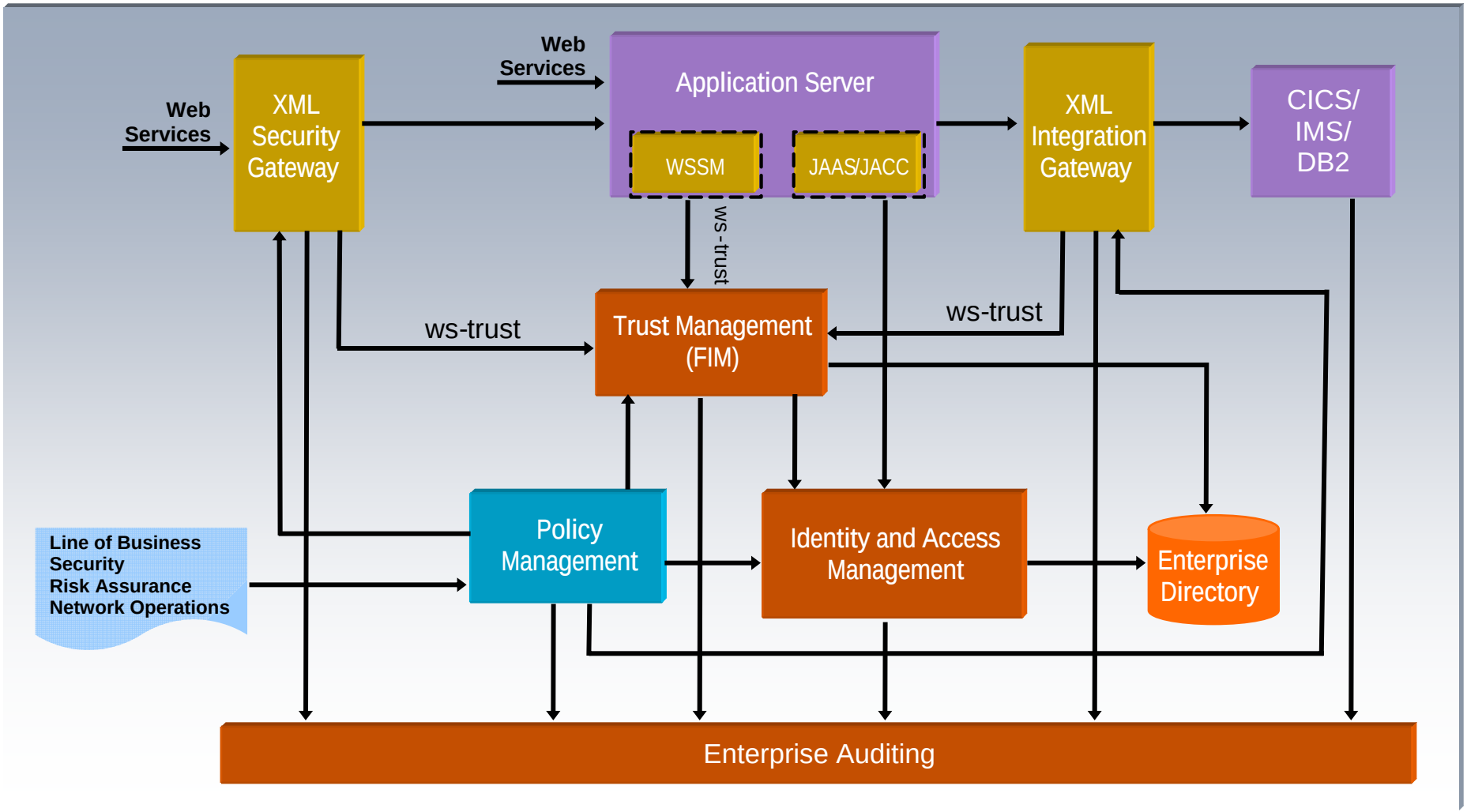
Manage: SOA Security

- Authentication Services
- Trust/Map identities between various security sub-systems
- Confidentiality, Integrity and Availability
- Auditing & Compliance to security policy
- Administration and Policy Management

Major Components of a SOA Security Solution



Logical Elements of SOA Security



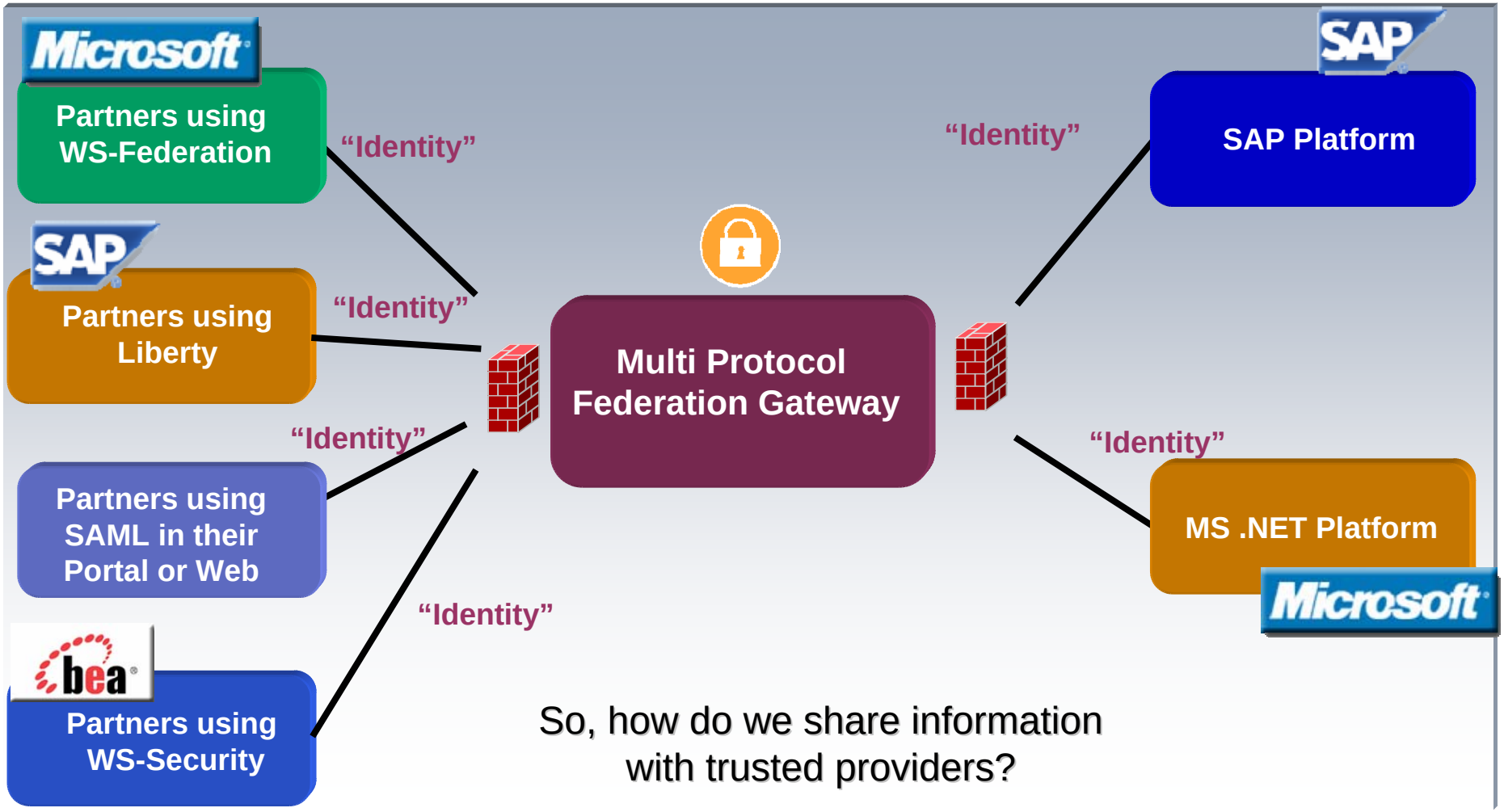
Manage: SOA Security

What is "Federated Identity Management"?

- Definition
  - An "identity federation" is a federation in which identity management (authentication, access control, auditing, and provisioning) is distributed between the partners based on their role within the federation
  - An Identity Federation can allow users from one federation partner to ***seamlessly*** access resources from another partner in a secure and ***trustworthy*** manner
- Roles
  - End user
  - Identity Provider (IdP)
  - Service Provider (SP)
- Functions
  - Single Sign-On/Sign-Off (including "global" sign-off)
  - Provisioning/De-provisioning
  - Account Linking/De-linking

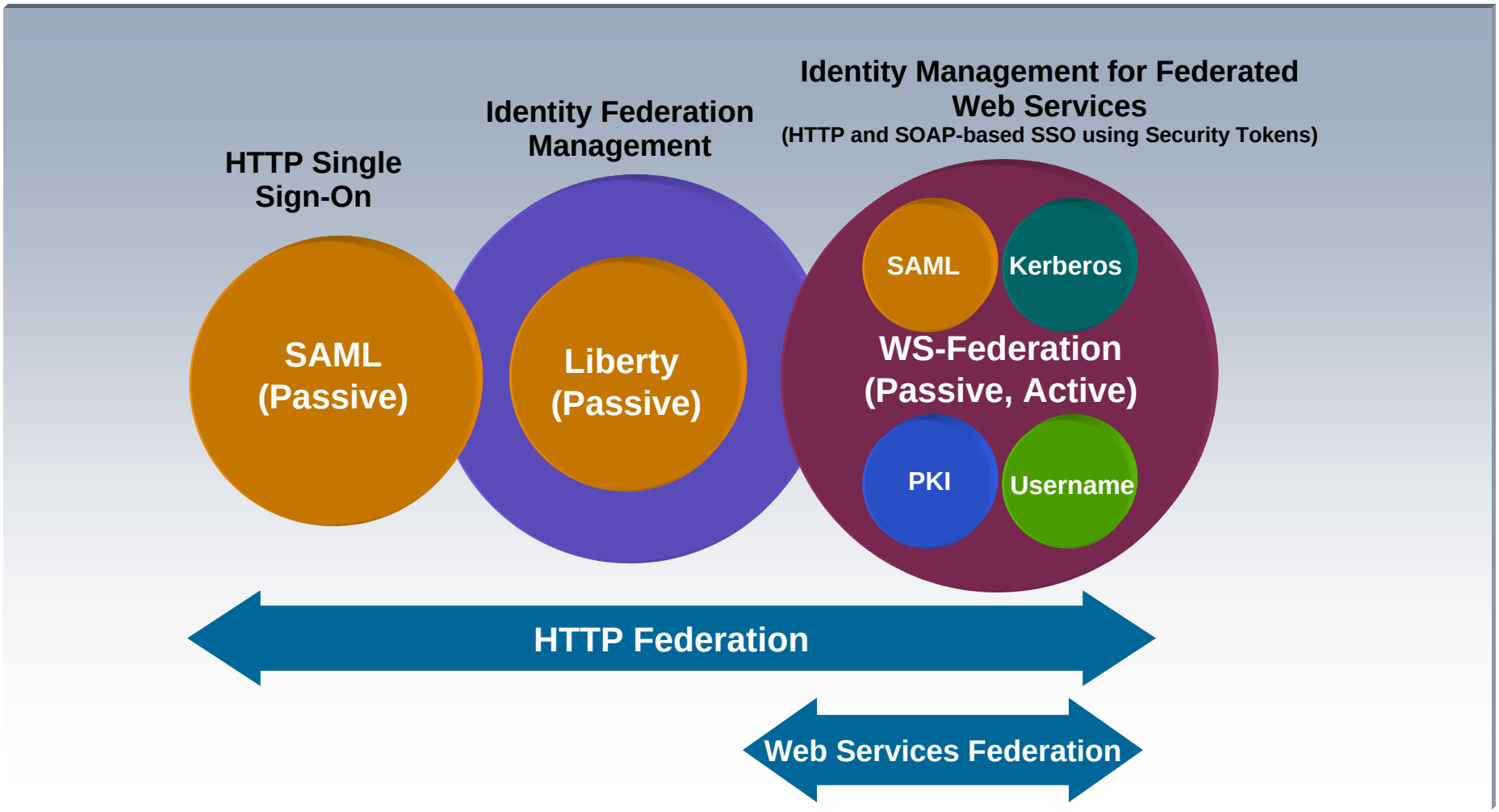
Manage: SOA Security

Identity Integration Issue



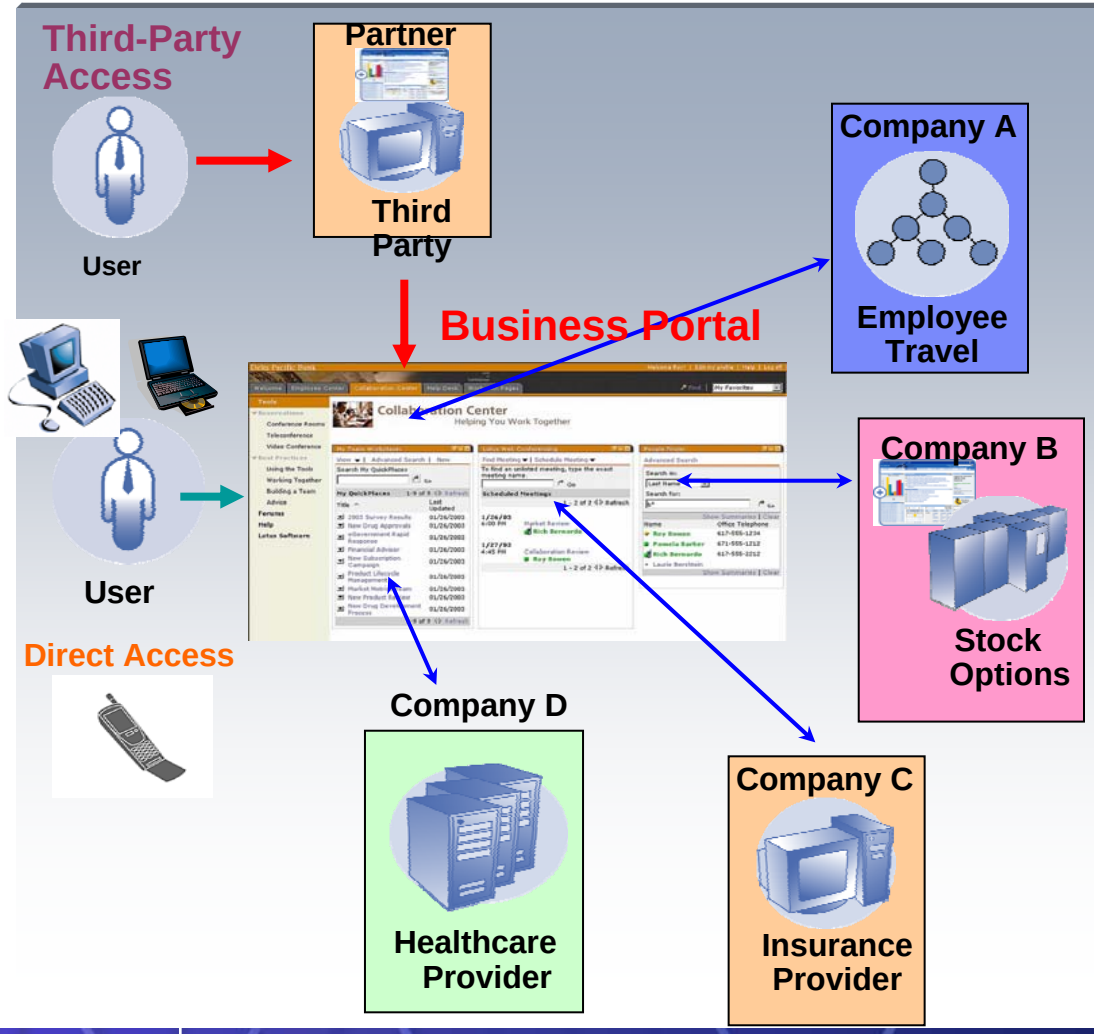
Manage: SOA Security

Federated Identity Management Technologies and Standards



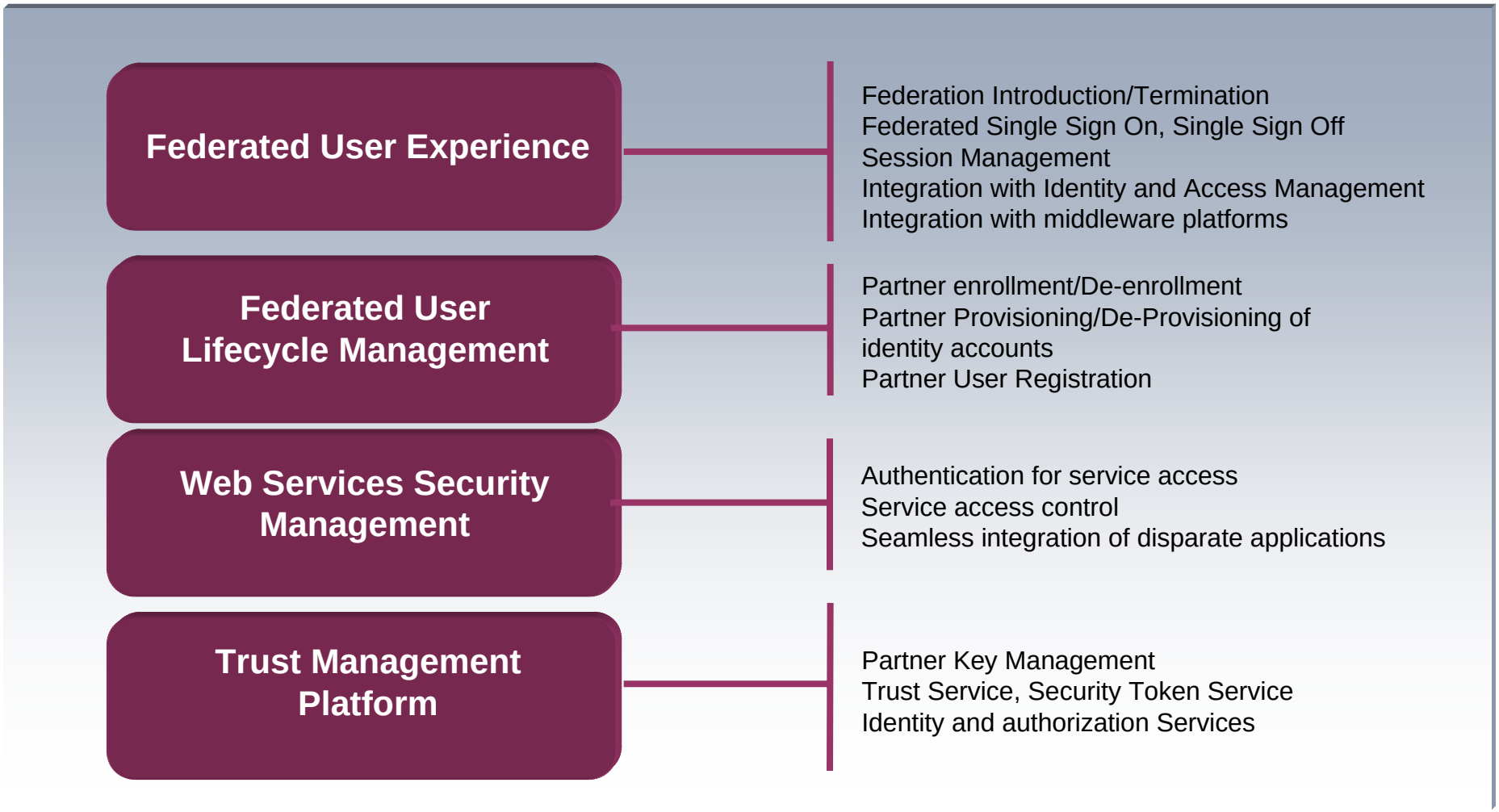
Manage: SOA Security

Managing Identities and Access to Cross-company Resources

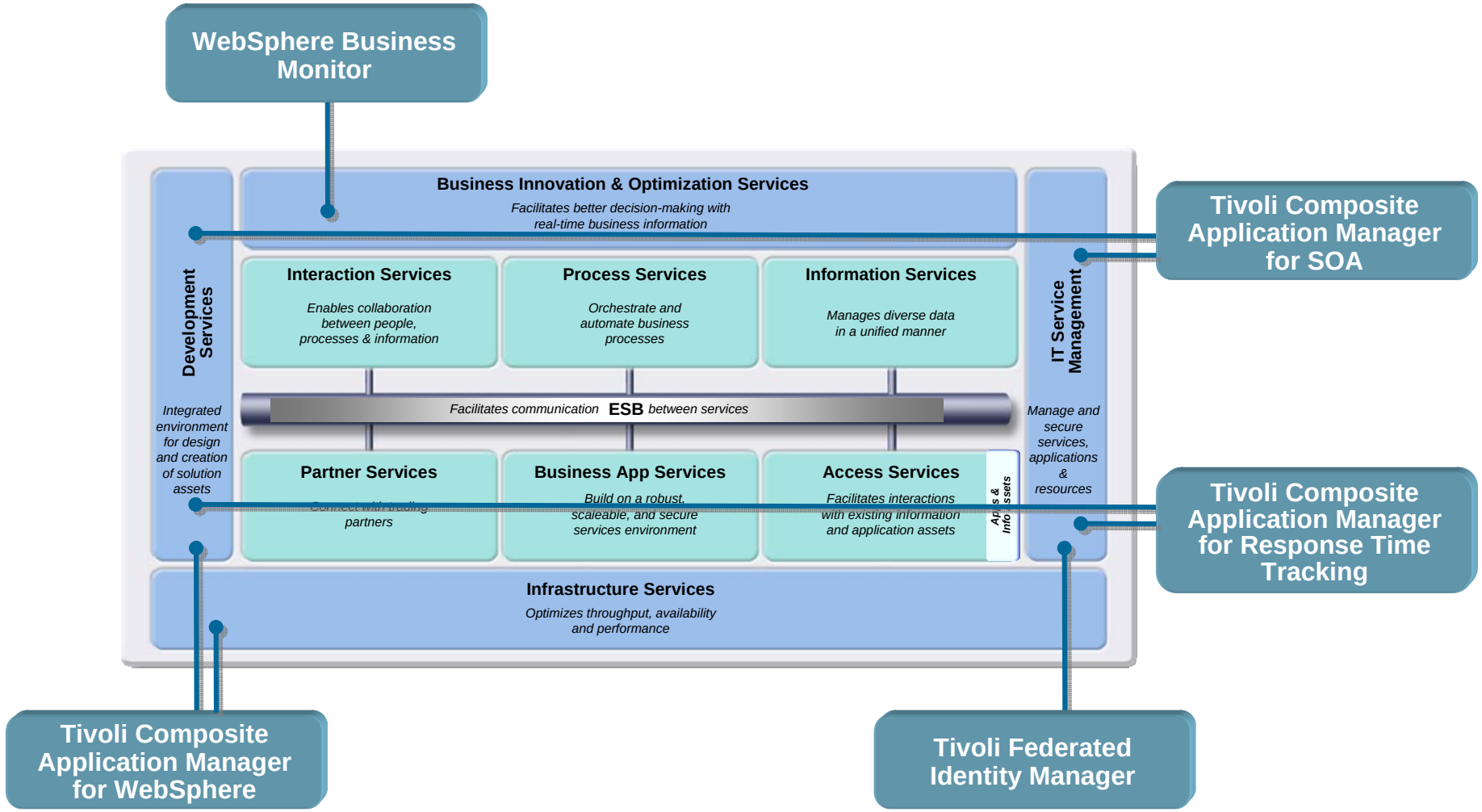


- Enable companies to manage “users” or “identities” that are now under their control, reducing high identity management costs
- Enable users to easily navigate between Web sites while maintaining a single login identity, improving user experience
- Provide companies with a common way to network identities between different companies or between applications, simplifying service integration

Manage: SOA Security *Addressing the Identity Integration Issue: Capabilities of a Complete Federated Identity Solution*



Mapping to the IBM Products



धन्यवाद
Hindi

多謝
Traditional Chinese

ขอบคุณ
Thai

Спасибо
Russian

Gracias
Spanish

Thank You

شكرا
Arabic

Obrigado
Brazilian Portuguese

Danke
German

Grazie
Italian

多谢
Simplified Chinese

Merci
French

நன்றி
Tamil

감사합니다
Korean

ありがとうございました
Japanese

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