

IBM SOA Architect Summit



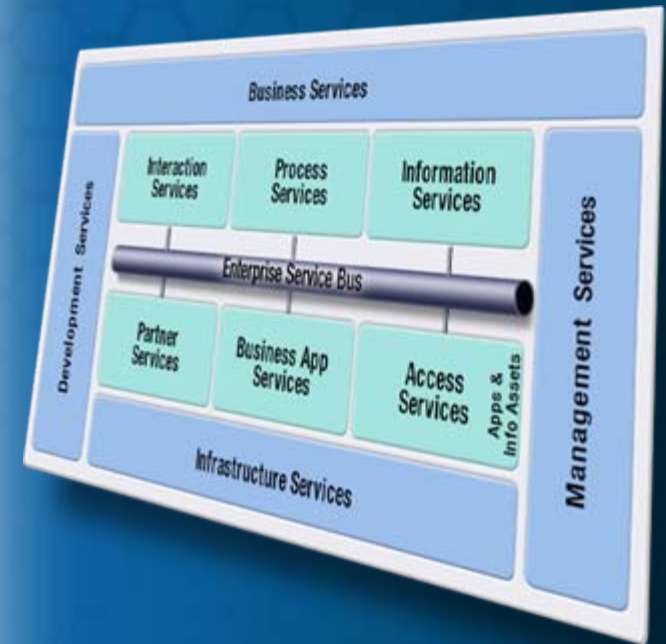
SOA on your terms and our expertise



IBM SOA Architect Summit

Keynote Presentation: Driving the Value of SOA in an Enterprise Architecture

Rob High
IBM Distinguished Engineer
SOA Foundation Chief Architect



Agenda

- **SOA and Enterprise Architecture**
- SOA Enterprise Architecture Best Practices
 - *SOA Reference Architecture*
 - *SOA Best Practices*
- What's Next for SOA
- Summary

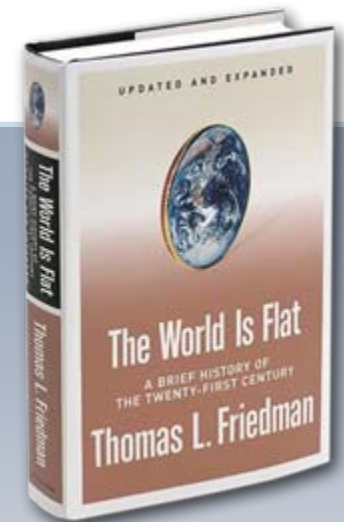


Innovation Impacts Business Models

Is Your Architecture Ready?

“ On a flat earth, the most important attribute is creative imagination – the ability to be the first to figure out how all **these enabling tools can be put together in new and exciting ways to create products, communities, opportunities, and profits.**”

Thomas Friedman, The World is Flat



“ Service orientation does not begin with technology; **it begins with the mind-set of thinking about your business and the world around you** in terms of functional components.”

Steve Mills, SVP and Group Executive, IBM Software Group
The Future of Business June 2007



“SOA Has Dramatically Grown in Popularity”

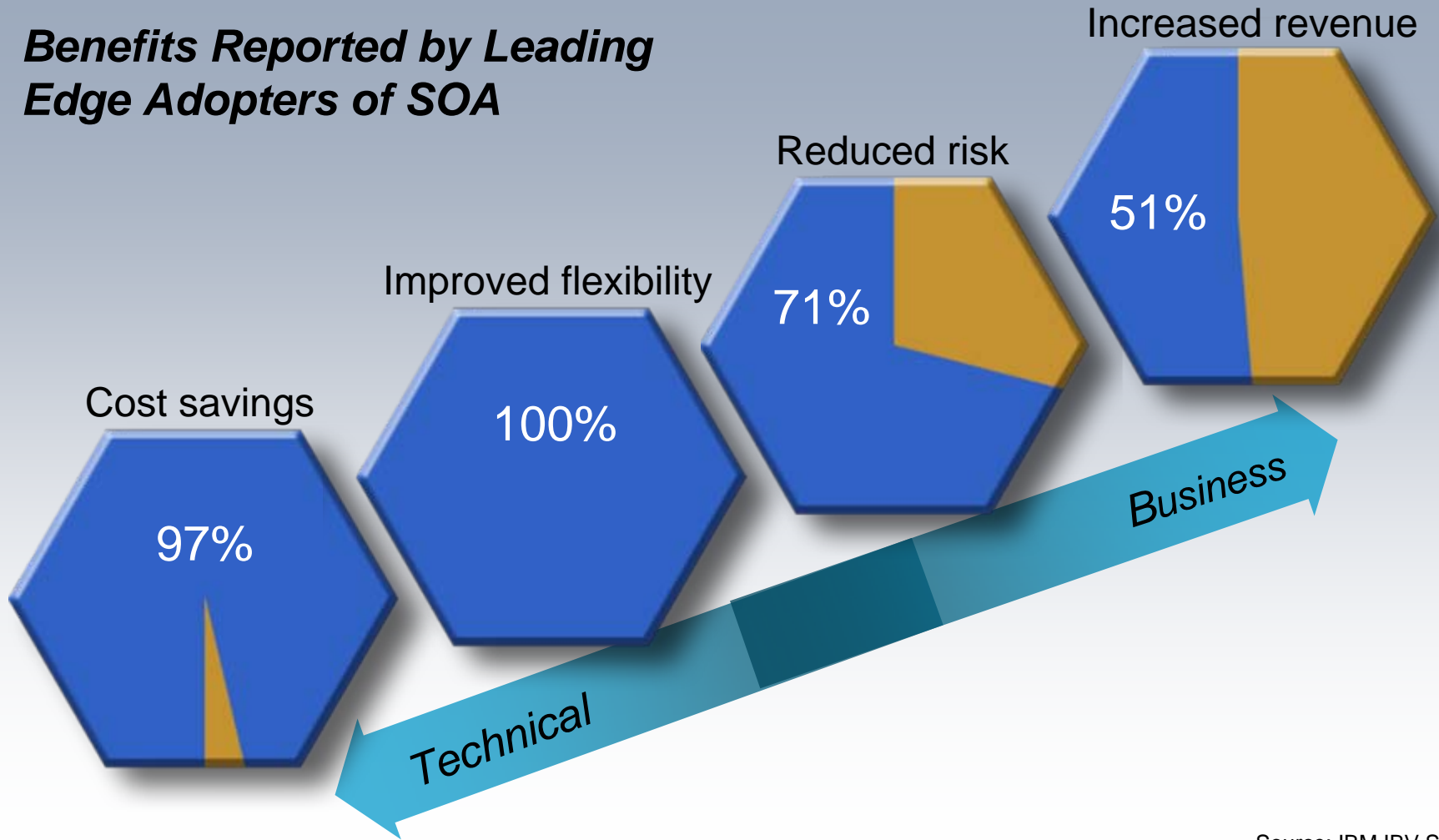
According to Gartner, Inc.

- SOA will be used in more than 50 percent of new mission-critical operational applications and business processes designed in 2007 and in more than 80 percent by 2010.
- SOA ... will rapidly become the architectural foundation for virtually every new business-critical application.
- SOA has dramatically grown in popularity, and adoption has expanded across vertical industries, geographies and organization sizes.
- The practical benefits of a well-implemented SOA are greater adaptability, faster time to deployment and lower costs for application development and integration.

Gartner Press Release: “Gartner Says SOA Will Be Used in More Than 50 Percent of New Mission-Critical Operational Applications and Business Processes Designed in 2007” April 25, 2007

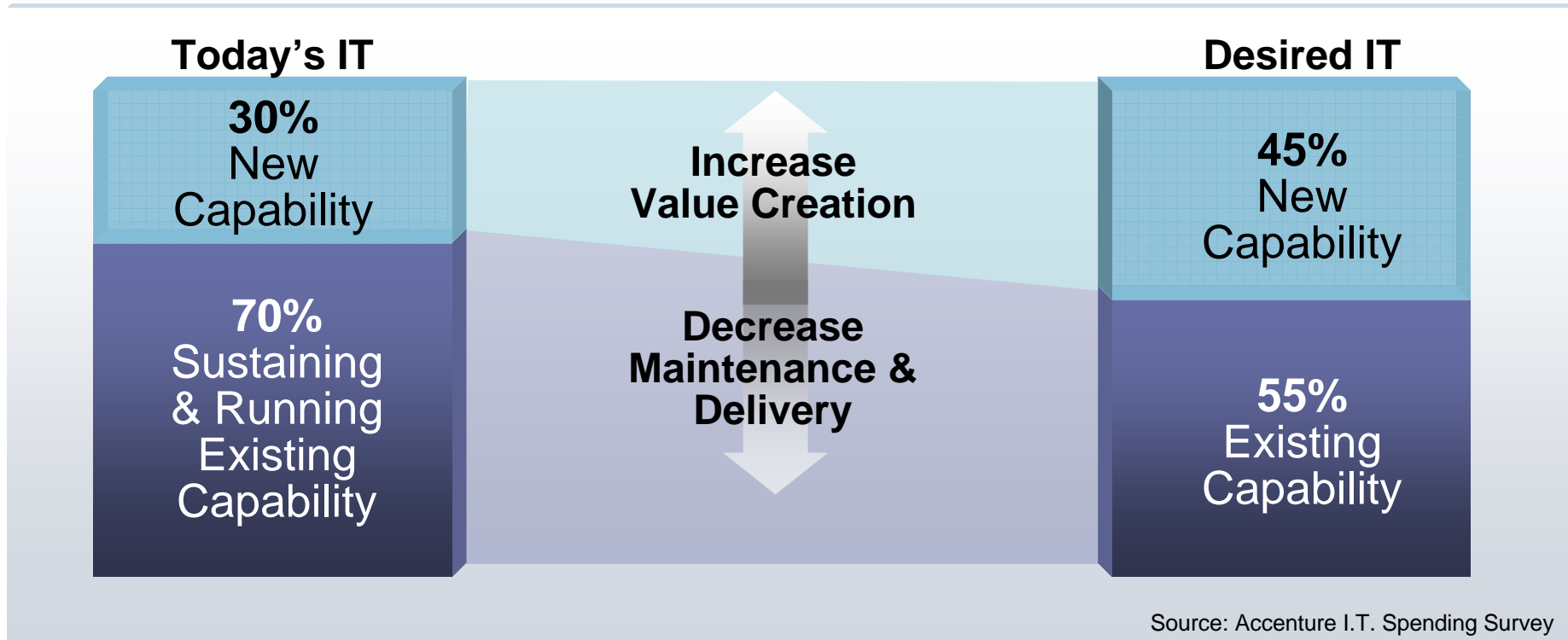
What Benefits Are Organizations Seeing With SOA?

Benefits Reported by Leading Edge Adopters of SOA



Source: IBM IBV Study

SOA Frees Up Resources to Enable New Value Creation



“The maintenance of central services costs less than maintaining an old application infrastructure. The code behind a business process is easier to isolate, understand, and revise when it’s contained in a set of services than when it’s buried in large, monolithic applications.”

How to Build an SOA, Charles Babcock, Information Week, June 2006

SOA and Austin Energy

austinenergy.com

SOA App Quickly Boosts Storm Response

First app in Austin Energy SOA project processes 20,000 customer calls a day

Heather Havenstein [Today's Top Stories](#) » or [Other Development Stories](#) »

June 26, 2006 (Computerworld) was needed to test the first, new (SOA).

At 9 p.m. the next day, Carvallo 52,000 customers without elec production.

AECall, which links the Austin-

Web Services News:

SOA project gets mother of all stress tests

By Rich Seeley, News Writer

“The end goal is to have an integrated enterprise with SOA in the middle of it,” Carvallo said. “We have been mapping out since last summer the key processes – 70-plus processes – that we want to bring into the SOA (environment) and help rationalize the infrastructure behind it.”

“This one is business-driven,” Carvallo said. “This time around, when the business process is at the heart of the integration, **change management happens much easier** because the business user wants it to happen.”

SOA and Austin Energy: Results

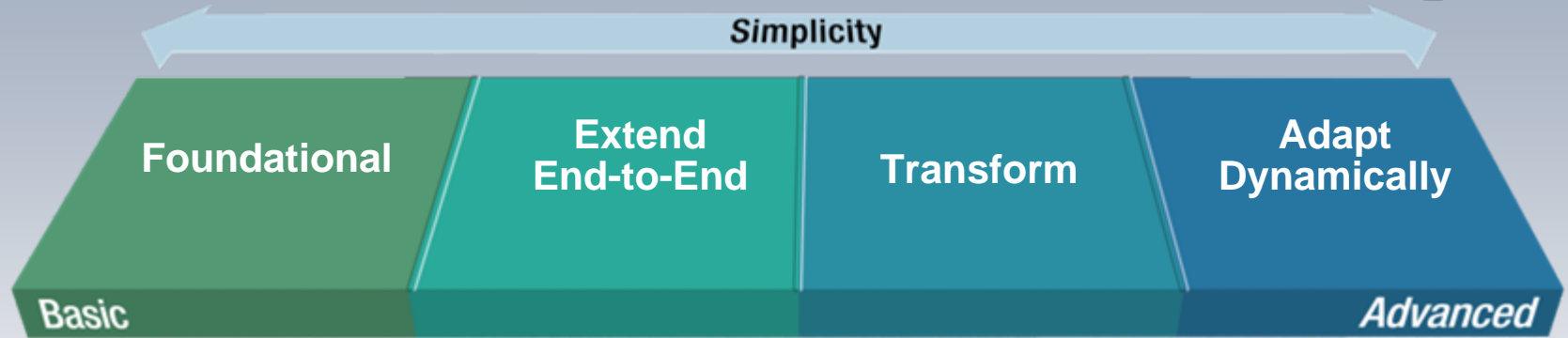
austinenergy.com

The customer service implementation is a composite application with five Web services that verifies the customer location and generates a work order to repair the outage

- The old system had a limitation of being able to process 4,000 work orders a day. The new SOA-based system **processed more than 20,000 calls per day for three days** during the storm, and has been tested for **up to 50,000 work orders per day**
- Average customer call time processing outage reports **dropped from 3-5 minutes down to 1.5 minutes**
- One of the keys to success was that **30 percent** of the project was focused on **planning and the architecture**

SOA Spans a Continuum From Basic to Advanced

Aligning Service Oriented Approaches



SOA Entry Points



Process Integrity

Distinct Value with Every Style

Regardless of Where You Choose to Engage

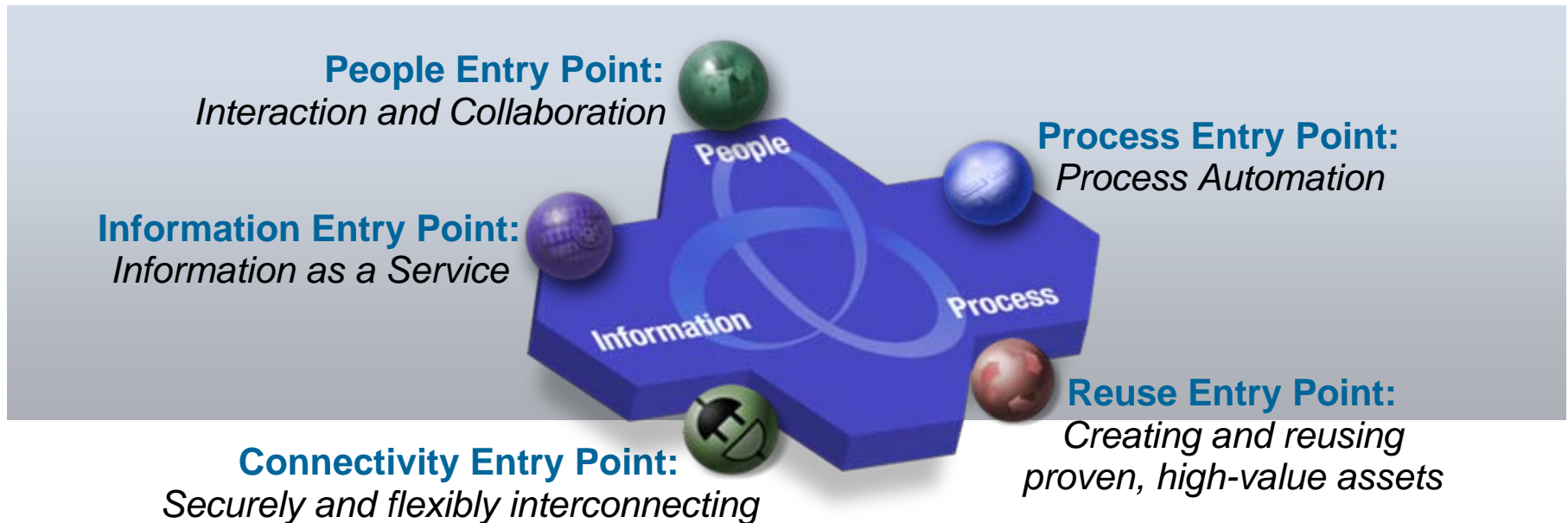
<u>Value to Business</u>	Greater agility in specific, departmental business areas	Optimization and innovation across end-to-end business processes	Business model innovation to support the Globally Integrated Enterprise	Predictive business automatically responding to market forces
	Collaboration within a line of business	Coordination across lines of business	Enterprise-wide organizational cooperation	Enact significant shifts without direct IT involvement
Scope				
	Foundational	Extend End-to-End	Transform	Adapt Dynamically
	<i>Basic</i>			<i>Advanced</i>
<u>Value to IT</u>	Focused, proven, high-ROI projects	End-to-end business process management to innovate and optimize	IT for strategic advantage and business model innovation	Technology becomes invisible
% functions expressed as services	<10%	<40%	<80%	>80%
% of services reused	<5%	<20%	<50%	>50%

Based on **5700** customers using our SOA offerings

Leverage SOA Experience and Best Practices

The SOA Entry Points

- *When selecting SOA projects, focus on solving **specific business problems** as part of an evolving enterprise architecture*
- *IBM has a variety of assets and best practices around the SOA entry points, based on our **extensive experience with customers***

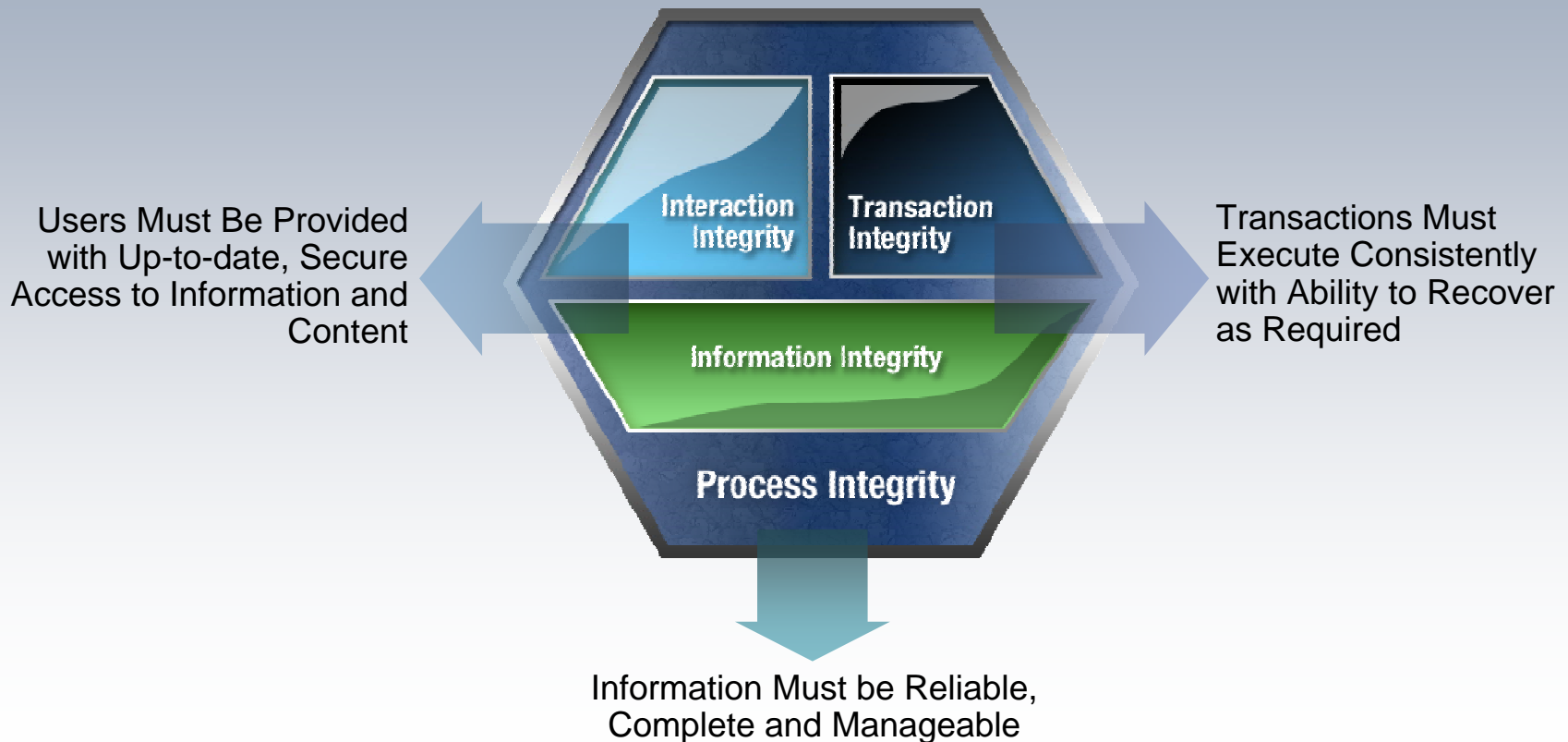


Process Integrity Takes SOA to the Next Level

Enabling Integrity of Transactions, Interactions and Information

Process Integrity is the ability to conduct reliable business activity in a secure, scalable SOA environment with seamless synchronization between:

Services ■ Human Tasks ■ Information ■ Domains ■ Users

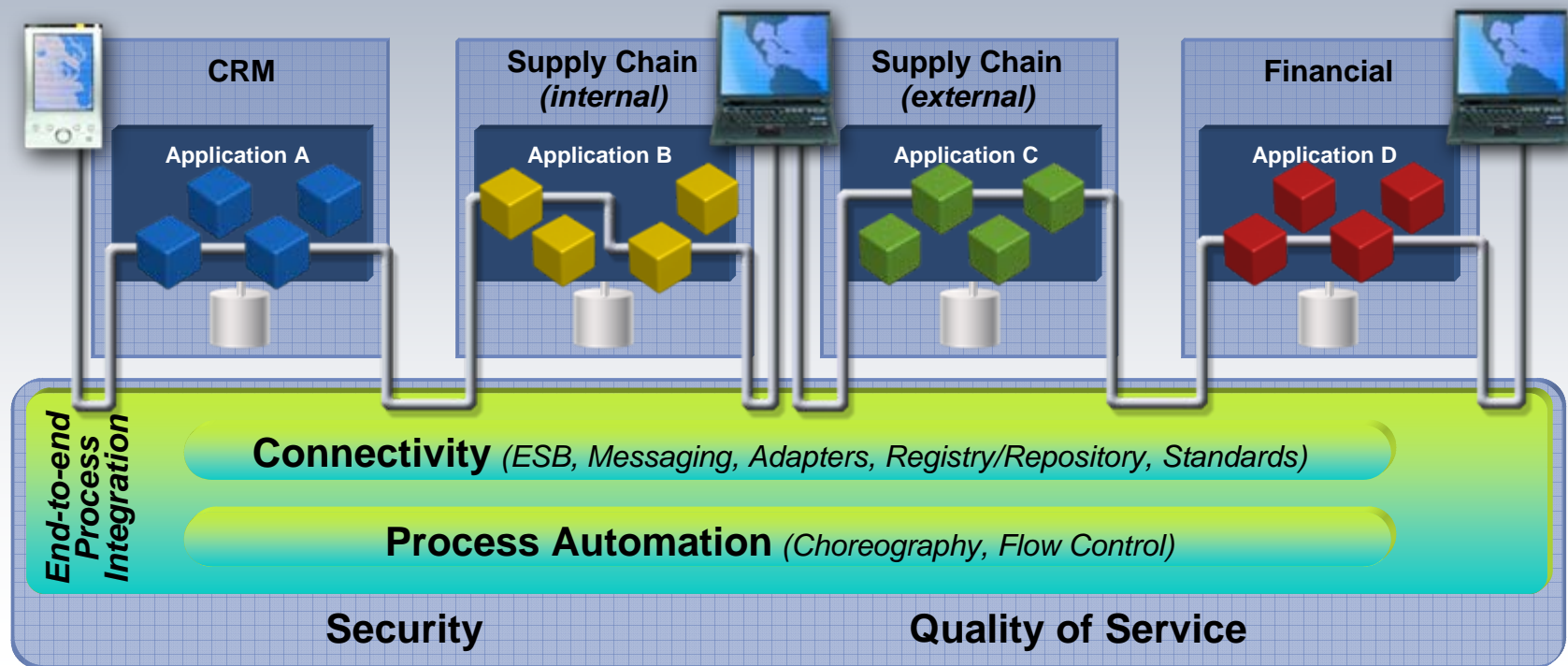


Process Integrity is Critical to Advanced SOA Projects

To Achieve Business Agility without Sacrificing Integrity

Critical end-to-end processes require an SOA environment that can provide:

- *Full transactional support across distributed systems*
- *Automated compensation and resynchronization*
- *Recovery at all levels (service bus, application, database, server...)*
- *Enterprise-class scalability to handle 1000's service calls per minute*

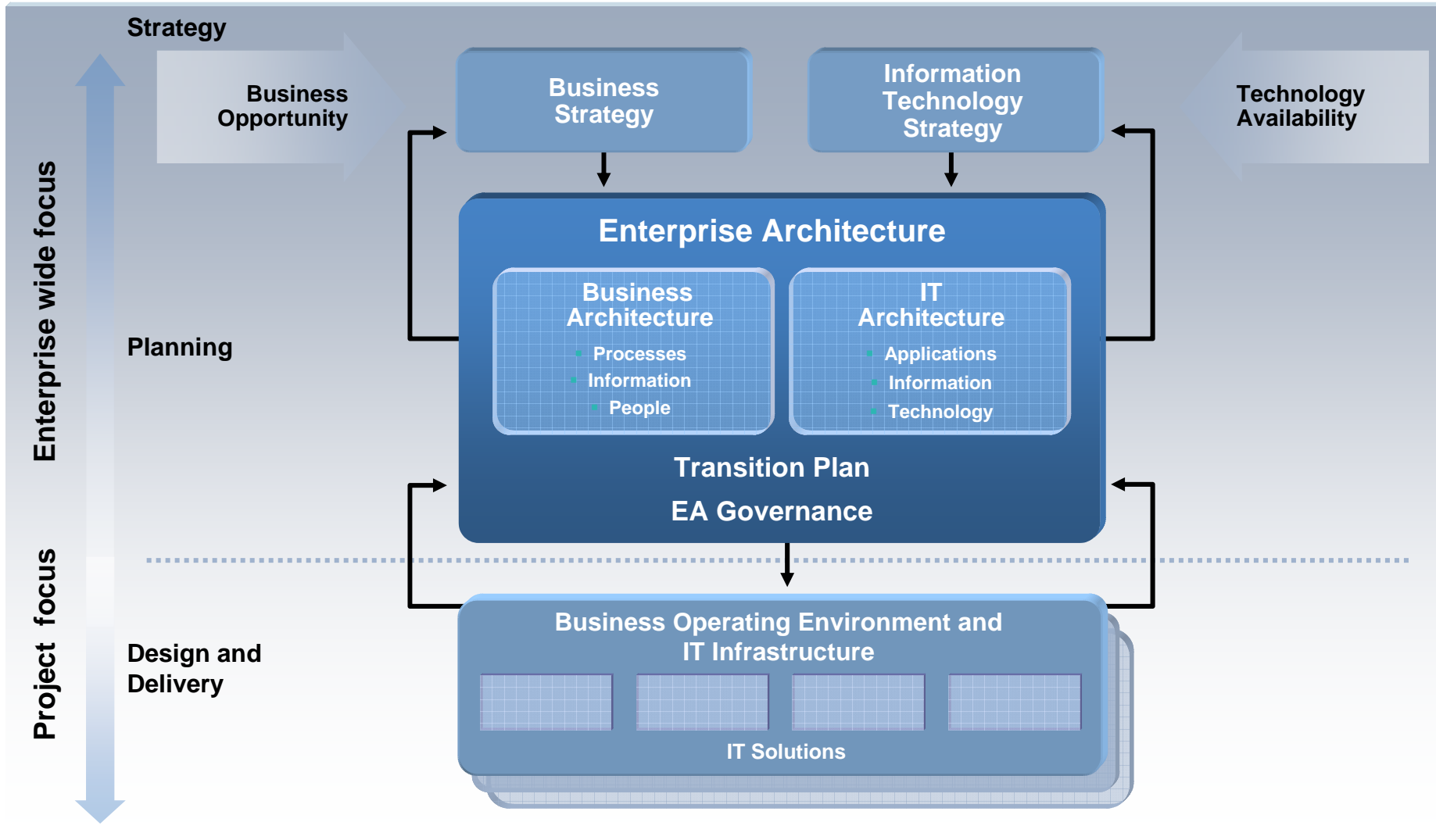


Agenda

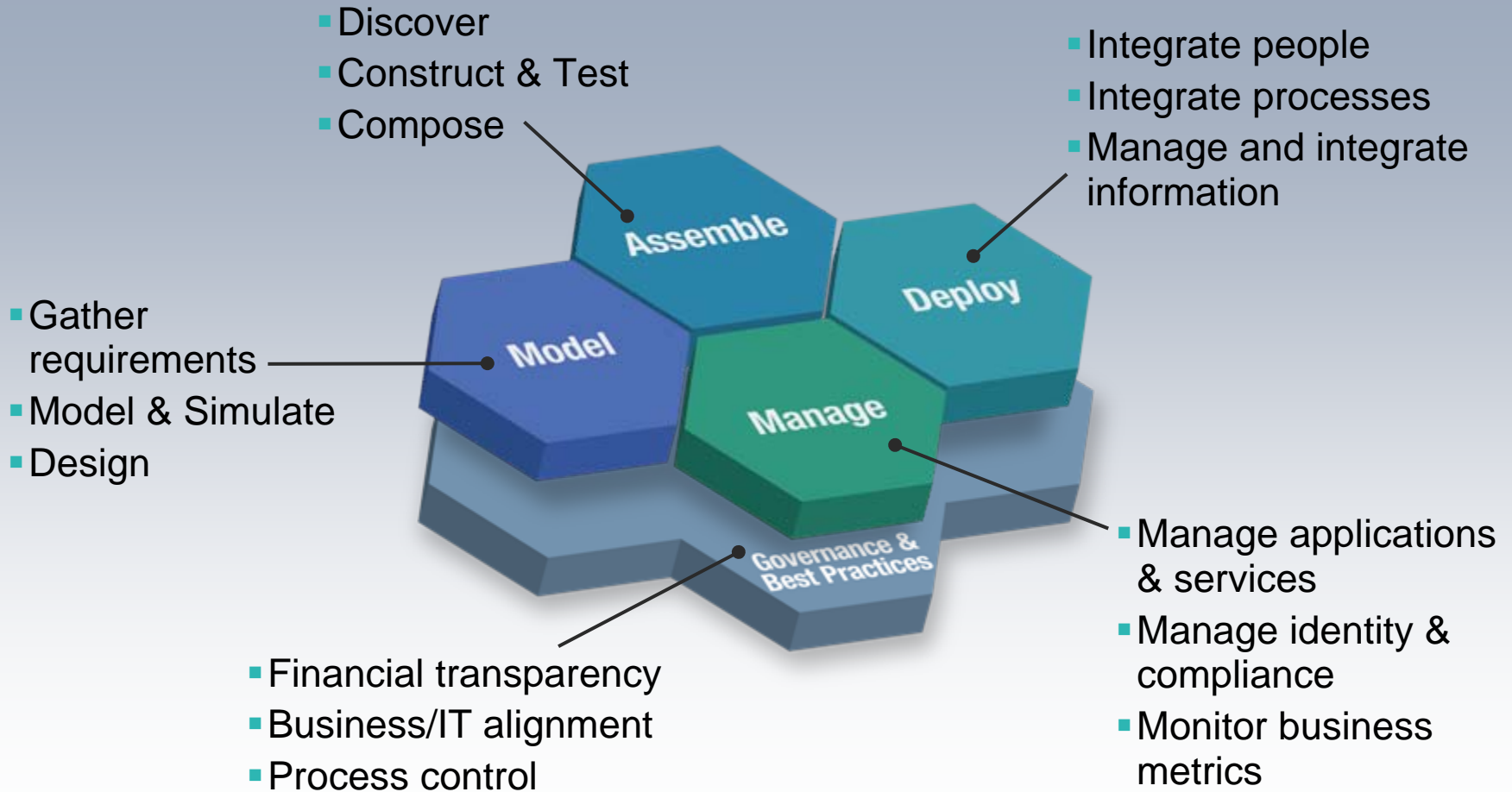
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SOA and Enterprise Architecture

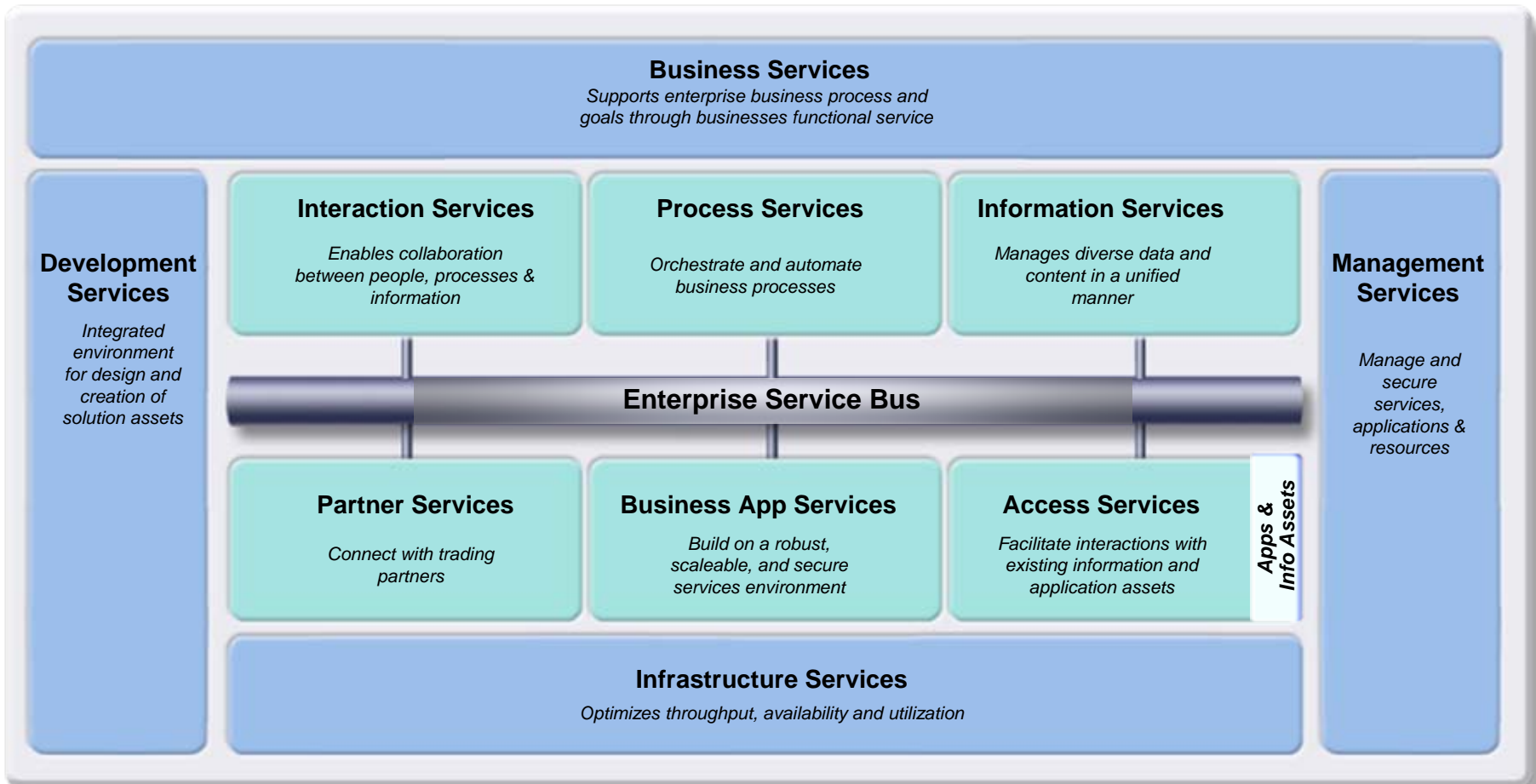


The SOA Lifecycle



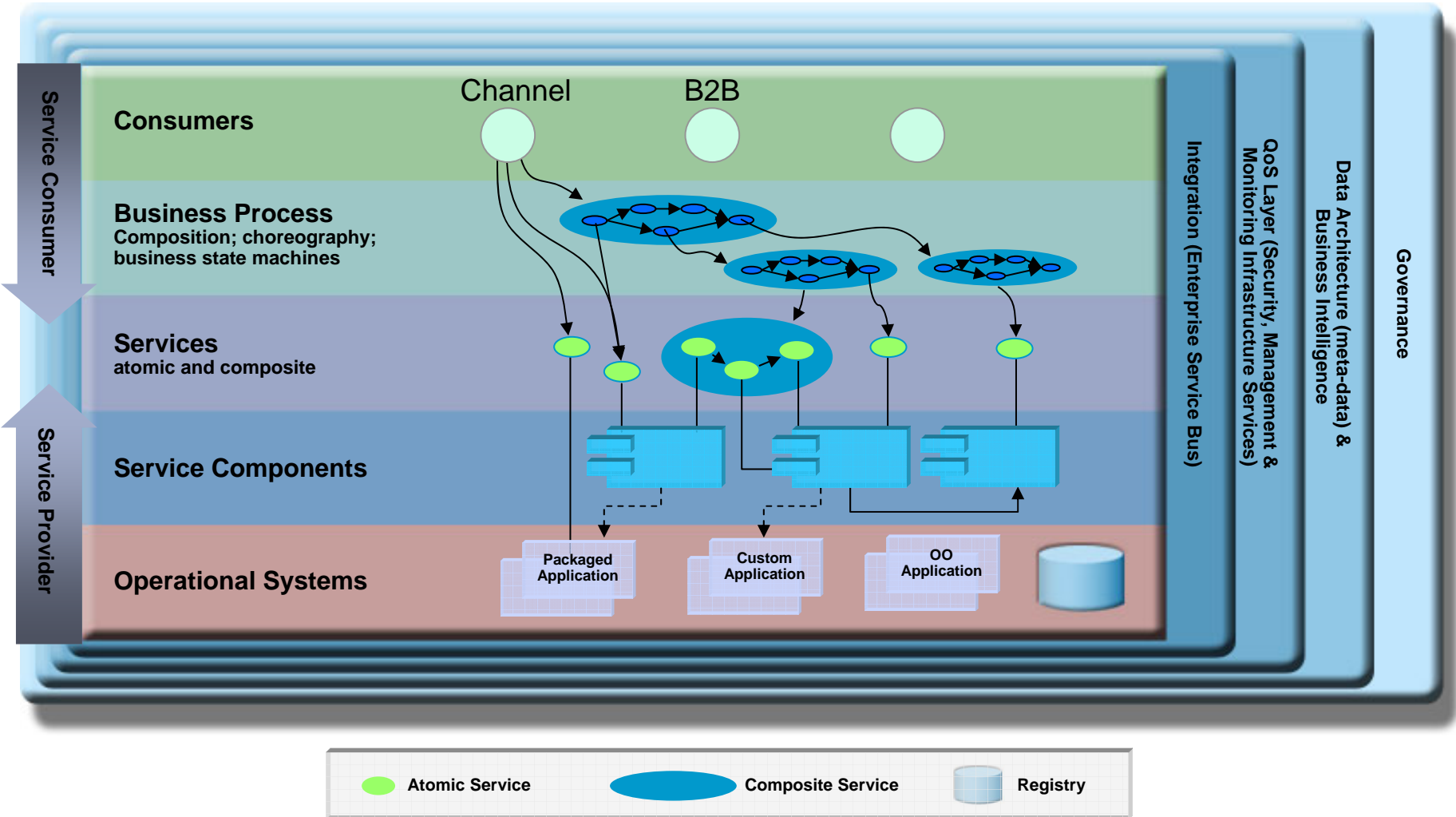
SOA Reference Architecture

Supporting the SOA Lifecycle

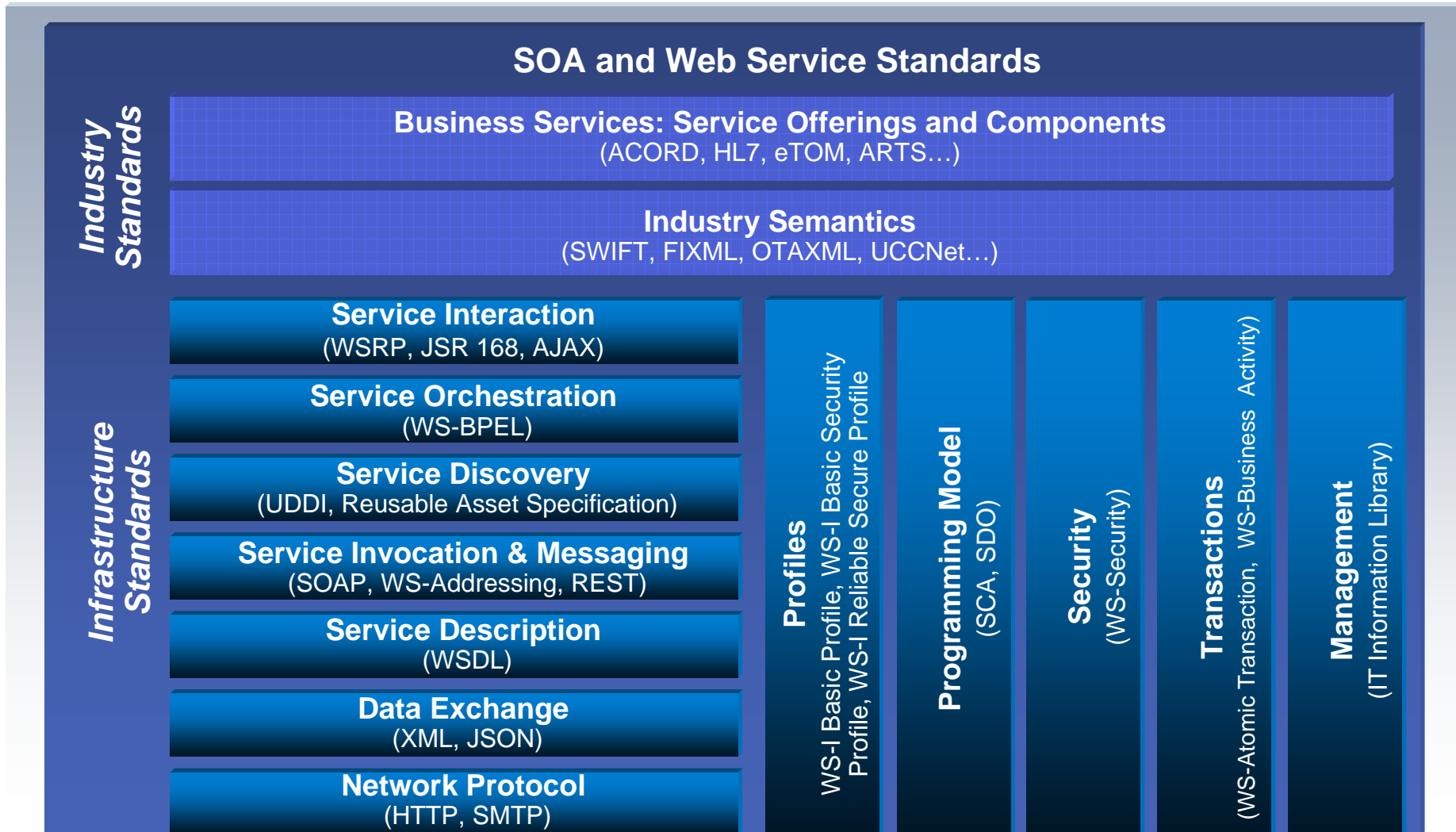


SOA Solution Layering

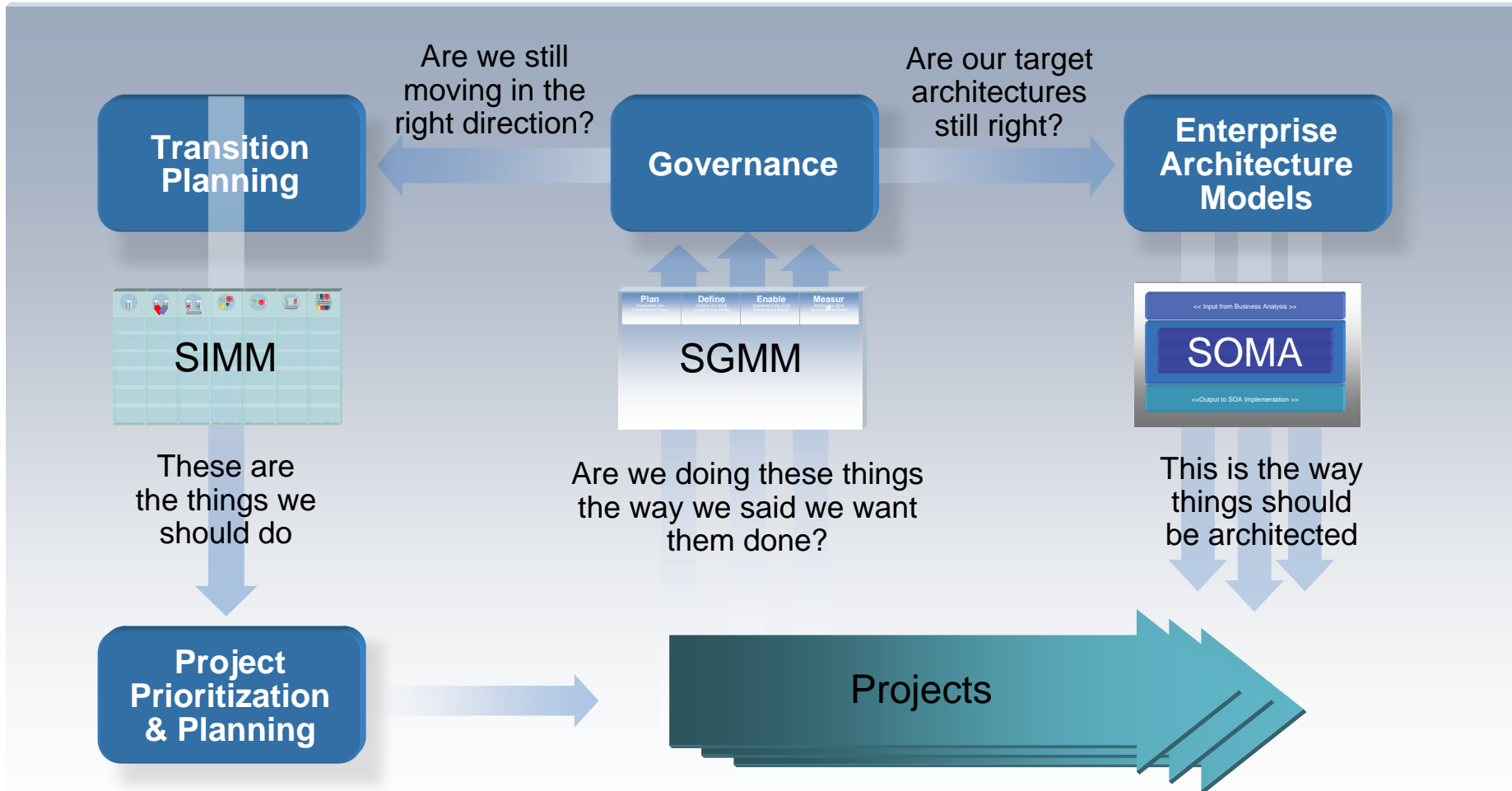
Leveraging the SOA Reference Architecture



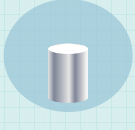
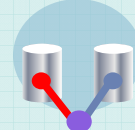
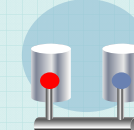


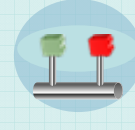

Key Standards for SOA



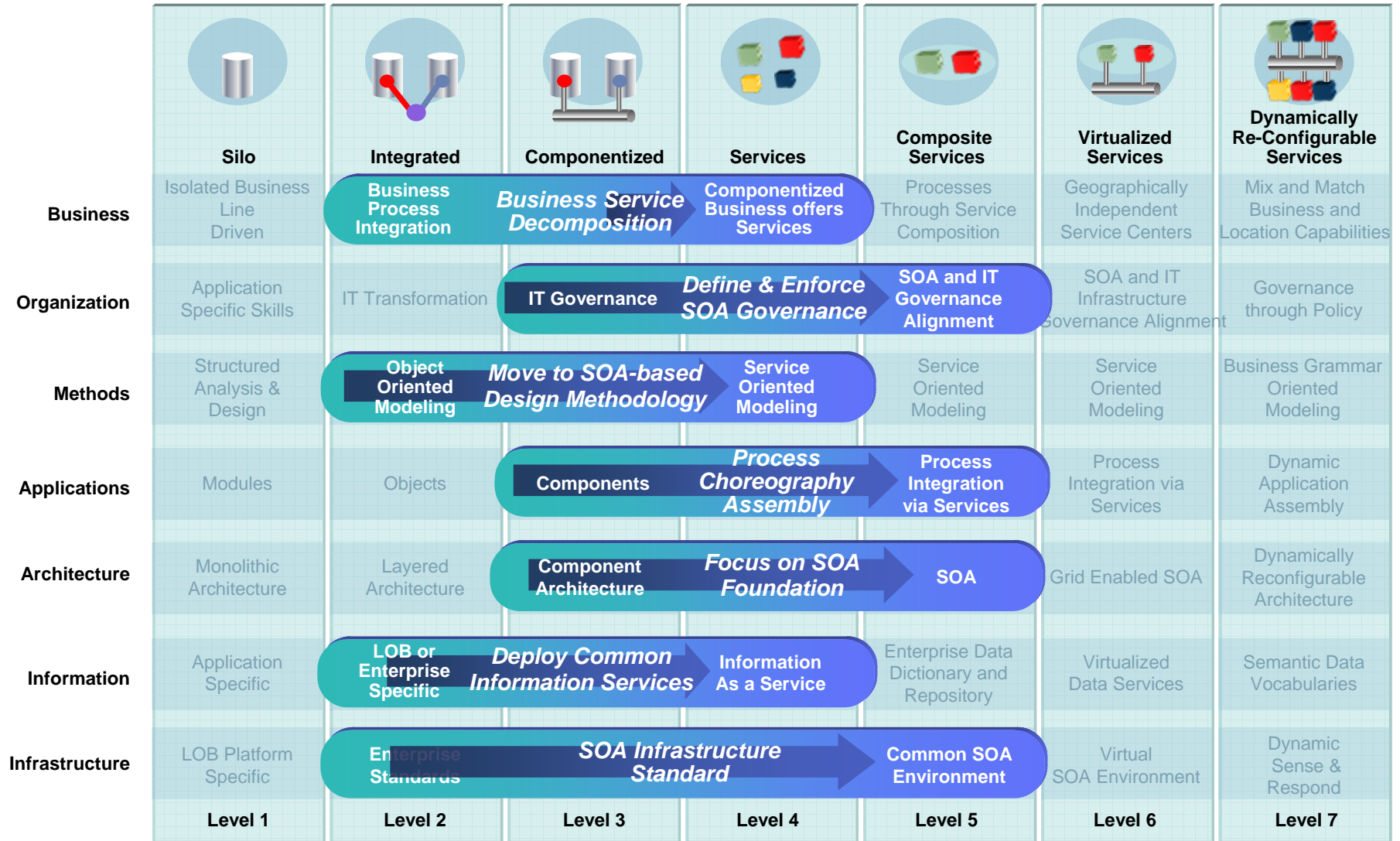
SOA and Enterprise Architecture: Best Practices



Service Integration Maturity Model (SIMM)

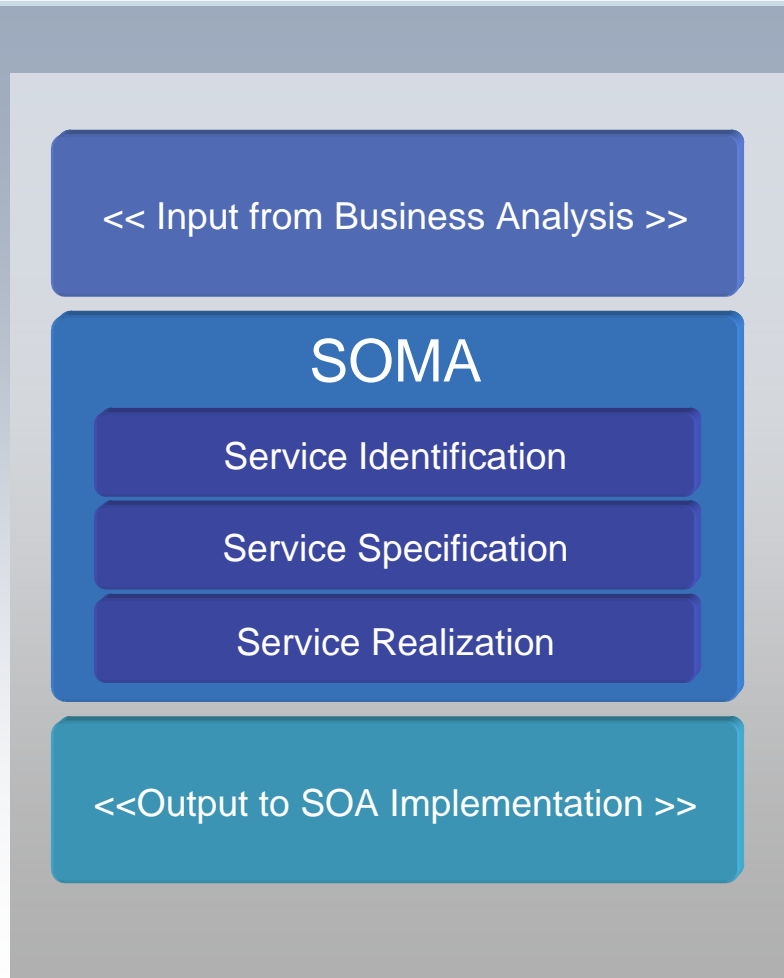
	 Silo	 Integrated	 Componentized	 Services	 Composite Services	 Virtualized Services	 Dynamically Re-Configurable Services
Business	Isolated Business Line Driven	Business Process Integration	Componentized Business	Componentized Business offers Services	Processes Through Service Composition	Geographically Independent Service Centers	Mix and Match Business and Location Capabilities
Organization	Application Specific Skills	IT Transformation	IT Governance	Emerging SOA Governance	SOA and IT Governance Alignment	SOA and IT Infrastructure Governance Alignment	Governance through Policy
Methods	Structured Analysis & Design	Object Oriented Modeling	Component Based Development	Service Oriented Modeling	Service Oriented Modeling	Service Oriented Modeling	Business Grammar Oriented Modeling
Applications	Modules	Objects	Components	Services	Process Integration via Services	Process Integration via Services	Dynamic Application Assembly
Architecture	Monolithic Architecture	Layered Architecture	Component Architecture	Emerging SOA	SOA	Grid Enabled SOA	Dynamically Reconfigurable Architecture
Information	Application Specific	LOB or Enterprise Specific	Canonical Models	Information As a Service	Enterprise Data Dictionary and Repository	Virtualized Data Services	Semantic Data Vocabularies
Infrastructure	LOB Platform Specific	Enterprise Standards	Common Reusable Infrastructure	Project-based SOA Environment	Common SOA Environment	Virtual SOA Environment	Dynamic Sense & Respond
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7

Service Integration Maturity Model (SIMM)



Service Oriented Modeling and Architecture (SOMA)

Links Business Intent with IT Implementation



- SOMA gets inputs from business analysis activities, and produces outputs necessary for SOA implementation
- The analysis and modeling performed during SOMA is **technology and product agnostic**, but establishes a context for making technology and product specific **decisions** in later phases of the lifecycle

SOA Governance & Management Method (SGMM)

IBM's Comprehensive Approach to SOA Governance

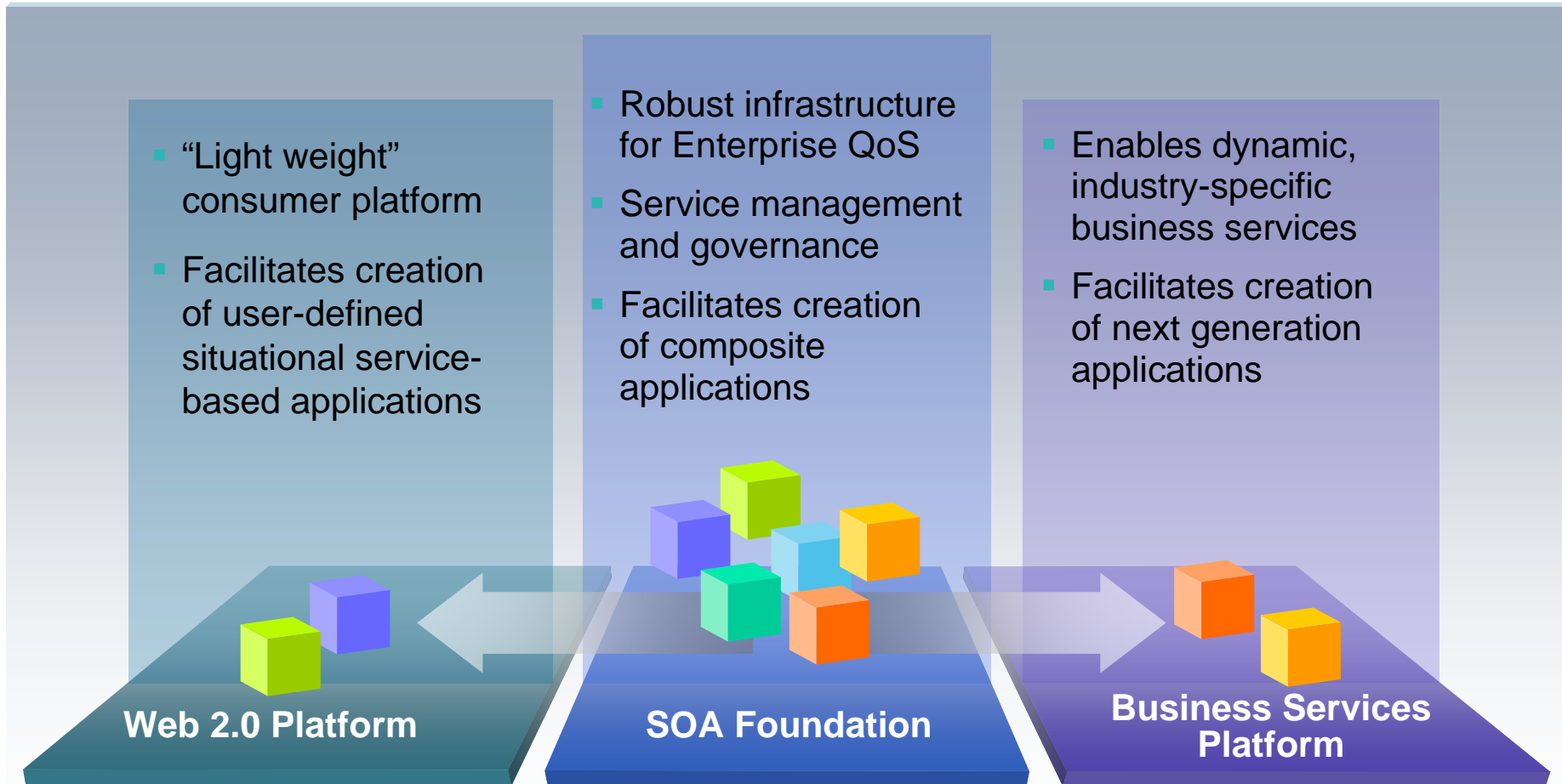
Plan <i>Determine the Governance Focus</i> Tailor method for goals/environment	Define <i>Define the SOA Governance Model</i> Define and refine governance processes	Enable <i>Implement the SOA Governance Model</i> Implement the transition plan	Measure <i>Refine the SOA Governance Model</i> Measure effectiveness governance processes
Understand current Governance structures Define scope of governance Conduct change readiness survey	Define organizational change Define IT changes in SOA development	Initiate SOA Org Changes Launch the SOA Center of Excellence Implement infrastructure for SOA	Measure effectiveness of organization change Review and refine operational environment
Continuous SOA Governance Process Measurement & Improvement			
<i>Define the scope of governance: business, development governance or service management or all of the above</i>	<i>Define new governance processes for services and define SOA governance mechanisms such as the SOA Center of Excellence</i>	<i>Begin implementation of the SOA Center of Excellence, Skills Enablement, Organizational Change, Infrastructure Change, etc.</i>	<i>Monitor composite application performance and adjust; Monitor effectiveness of governance changes</i>

Agenda

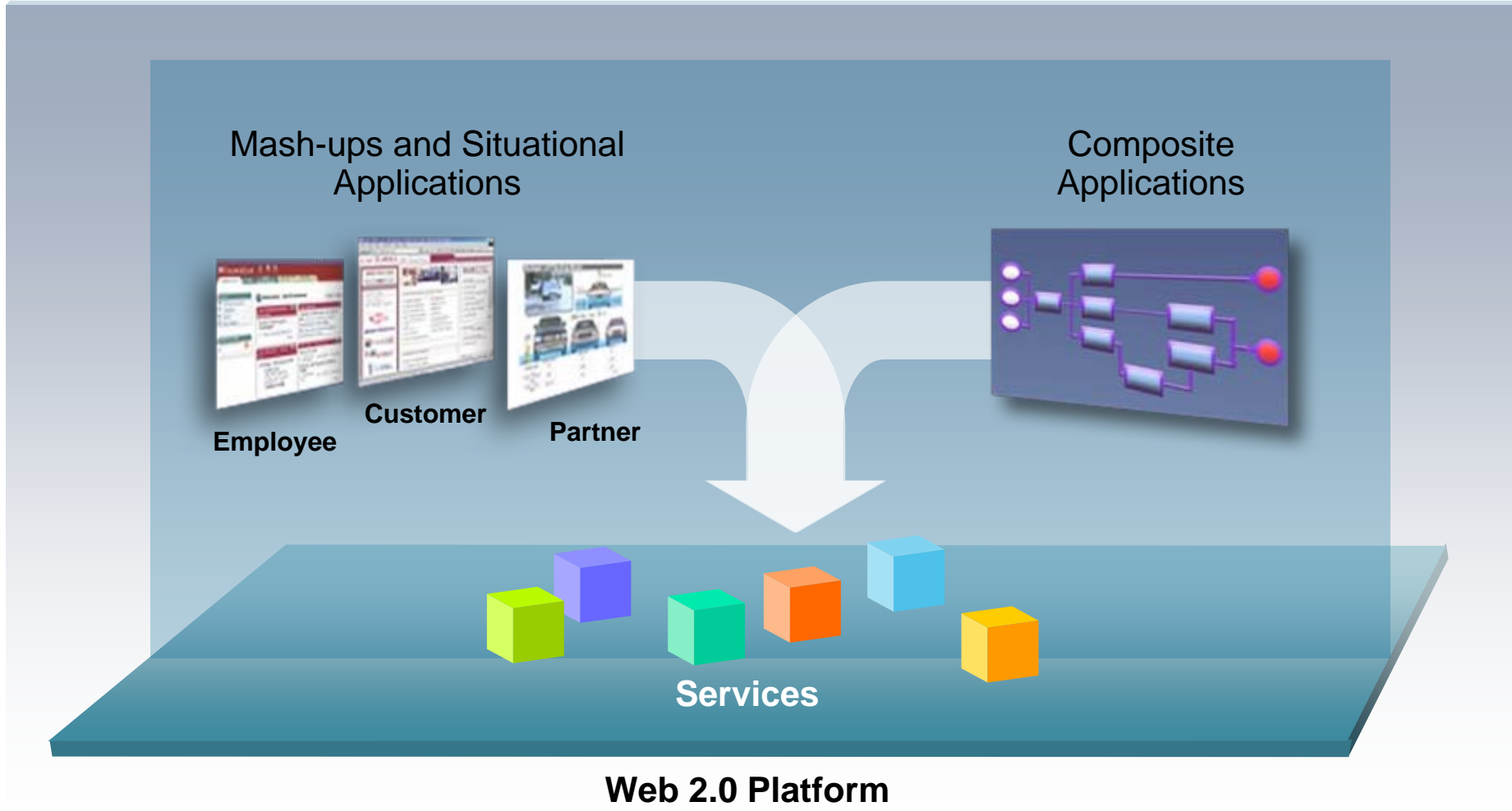
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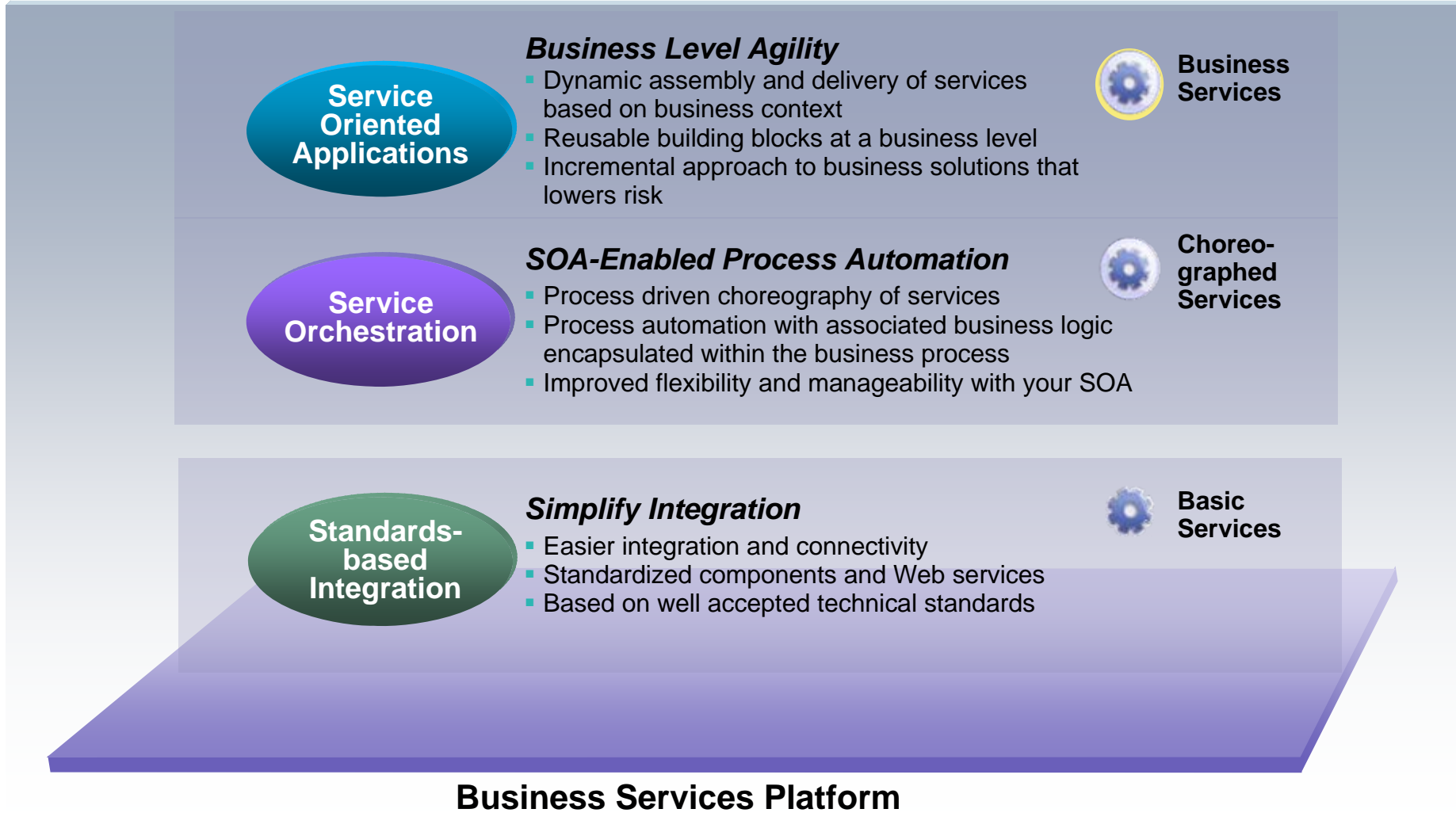
Extending the SOA Platform



Extending the SOA Consumer Platform: Web 2.0



Extending The SOA Provider Platform: Business Services



Agenda

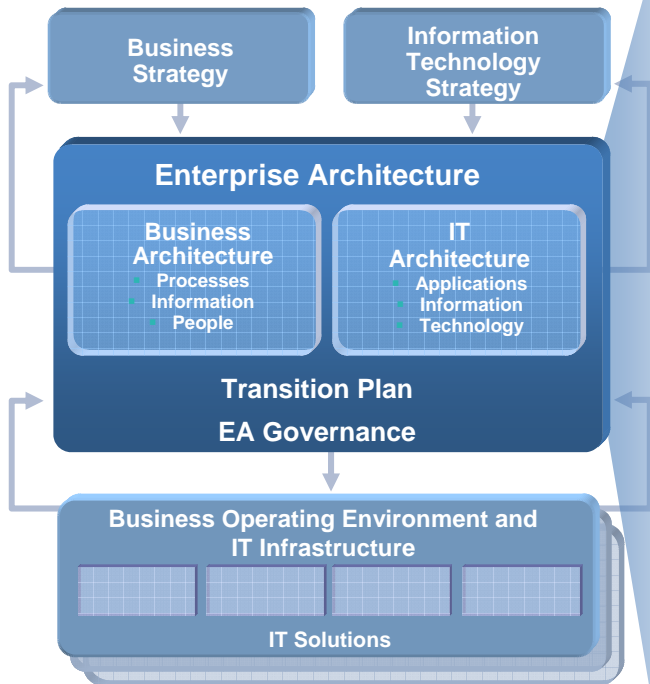
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Summary

- SOA establishes an enterprise architecture that enables business flexibility and agility
- SOA is an important foundation of enterprise architecture
 - Companies are using SOA today to drive tangible business value
 - Investments in SOA will continue to drive competitive differentiation
- SOA is not one-size fits all
 - Implementation of SOA varies according to the company's business / IT environment and goals
 - Companies should leverage well defined best practices derived from SOA experiences to make the SOA journey effective
 - Start small, grow fast, and drive successful implementation through effective governance

SOA Architect Summit Roadmap



What is the impact of SOA on current Enterprise Architectures?

- Alignment of Business and IT Architectures
- SOA Reference Models
- SOA Governance

How do you develop SOA with a business focus?

- Business Components
- SOA Design
- Business Process Management

How do you reuse applications in the context of SOA?

- Asset Discovery
- Application Reuse

How do you leverage information in an SOA?

- Information as a Service
- Master Data Management

How does my infrastructure support SOA?

- Service Management / QoS
- Security

धन्यवाद

Hindi

多謝

Traditional Chinese

ขอบพระคุณ

Thai

Спасибо

Russian

Gracias

Spanish

شكراً

Arabic

Thank You

Hvala

Slovenian

Grazie

Italian

Danke

German

Merci

French

Köszönöm

Hungarian

多谢

Simplified Chinese

감사합니다

Korean

ありがとうございました

Japanese

IBM SOA Architect Summit



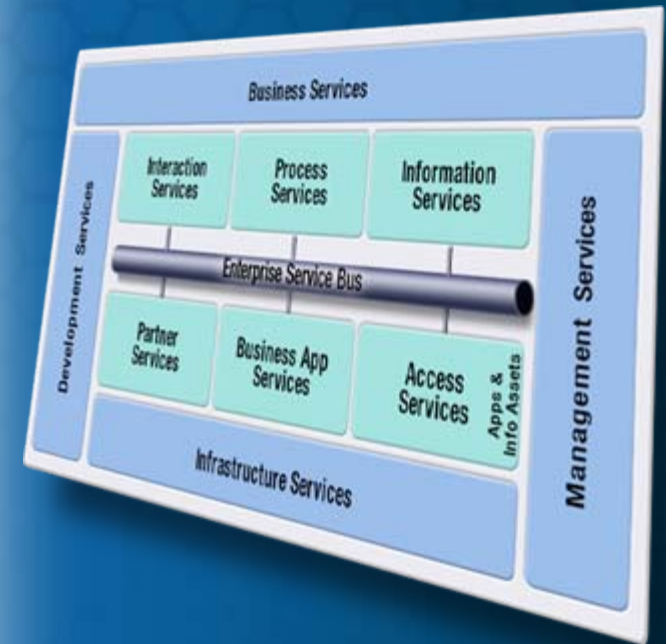
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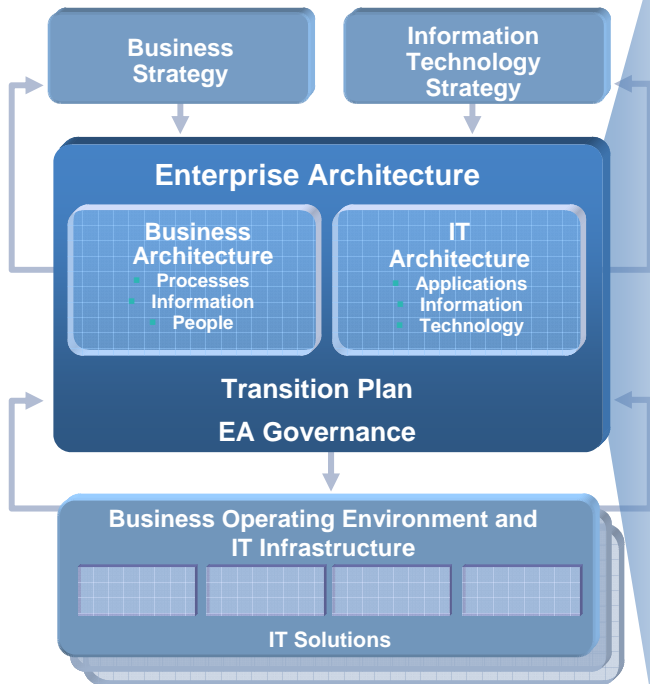
IBM SOA Architect Summit

Business Architecture:
**Architecting SOA
With A Business Focus**

Jeroen Reizevoort
SOA Business Process Management
Architect, IBM Software Group



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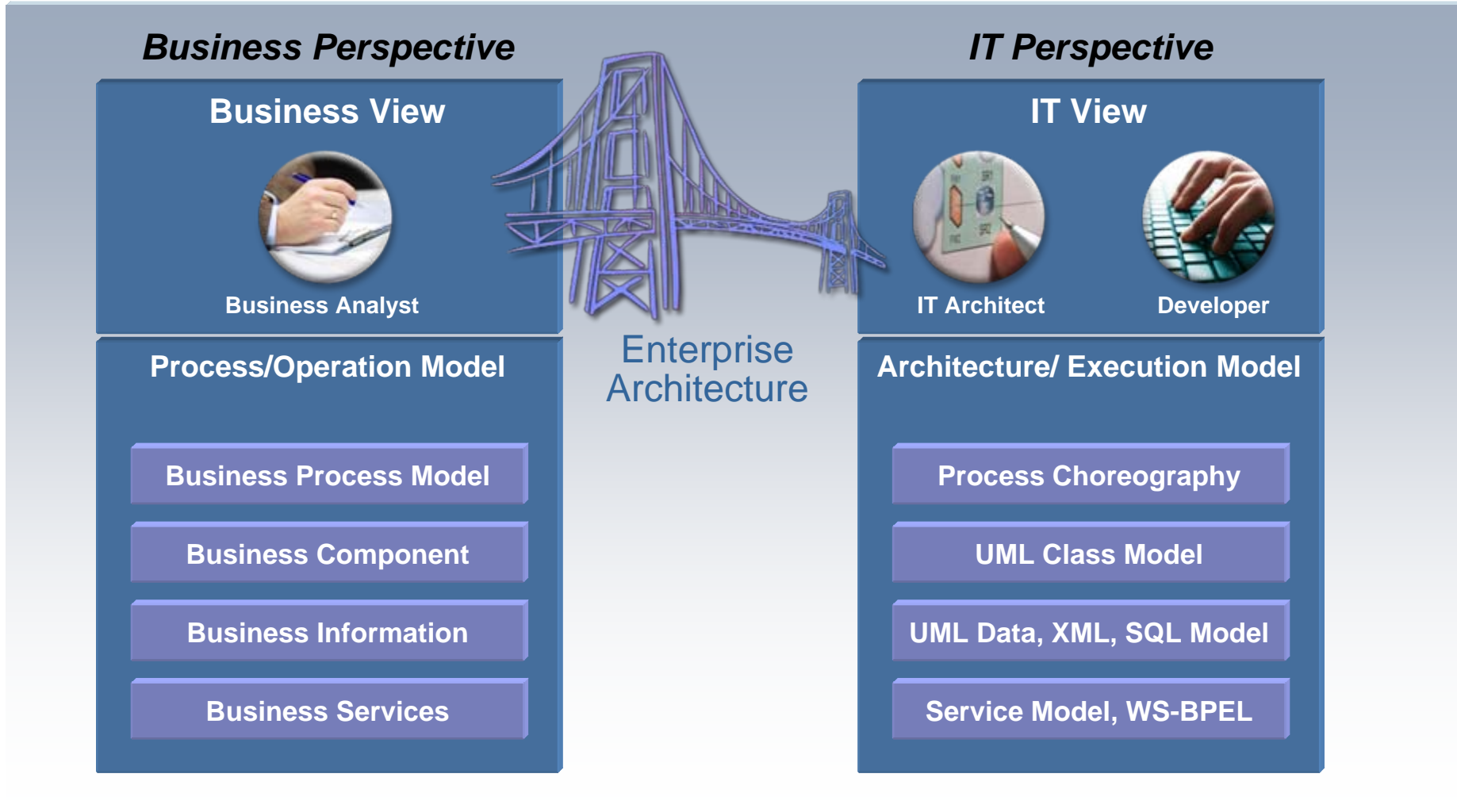
Agenda

- SOA Business Architecture Considerations
 - Business Strategy
 - SOA Design
 - Business Process Management
- SOA Business Architecture Best Practices
- IBM Capabilities to Support SOA Business Architecture
- Summary



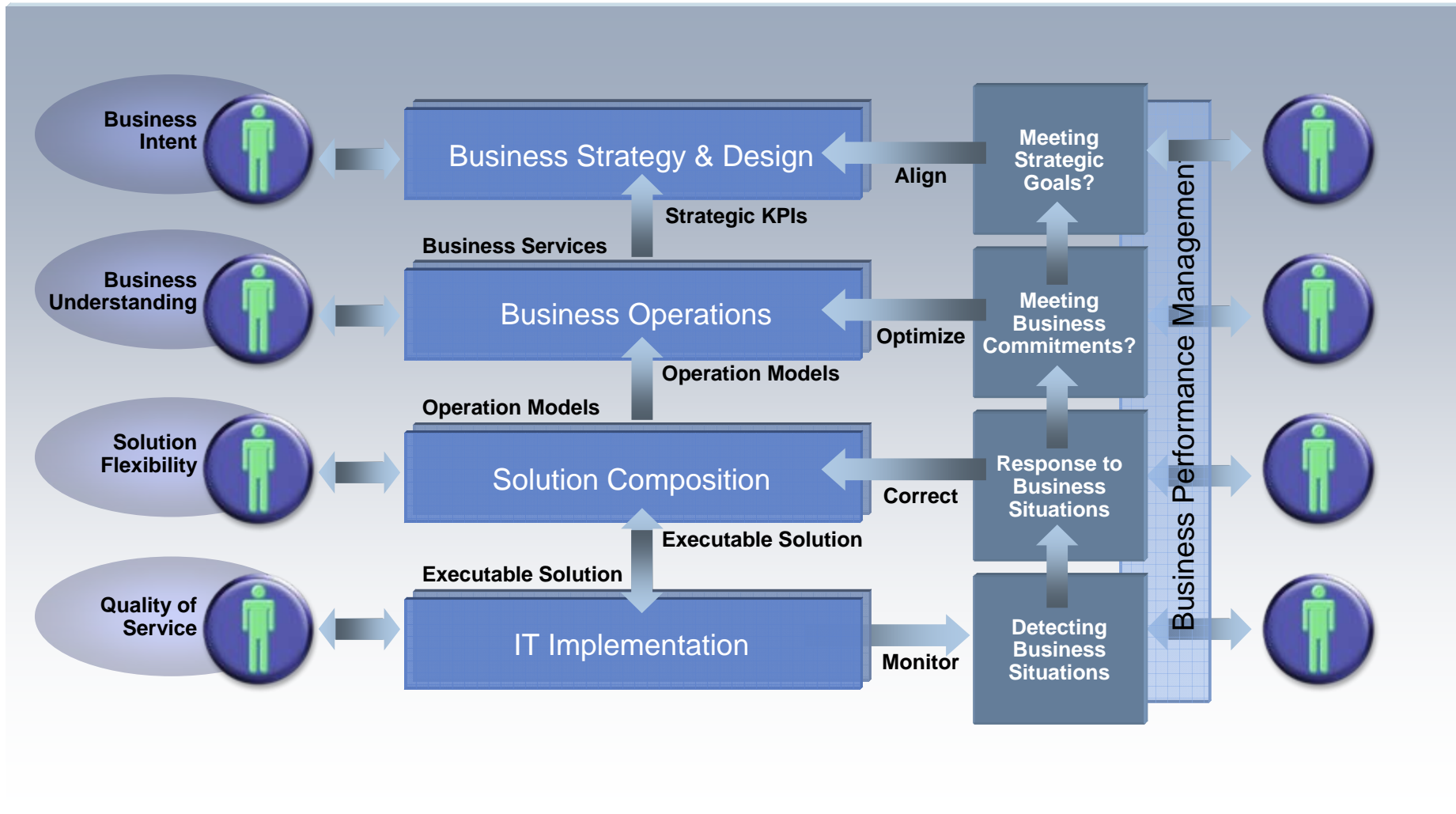
Enterprise Architecture Links Business and IT

Reconciling Business Requirements and IT Capabilities

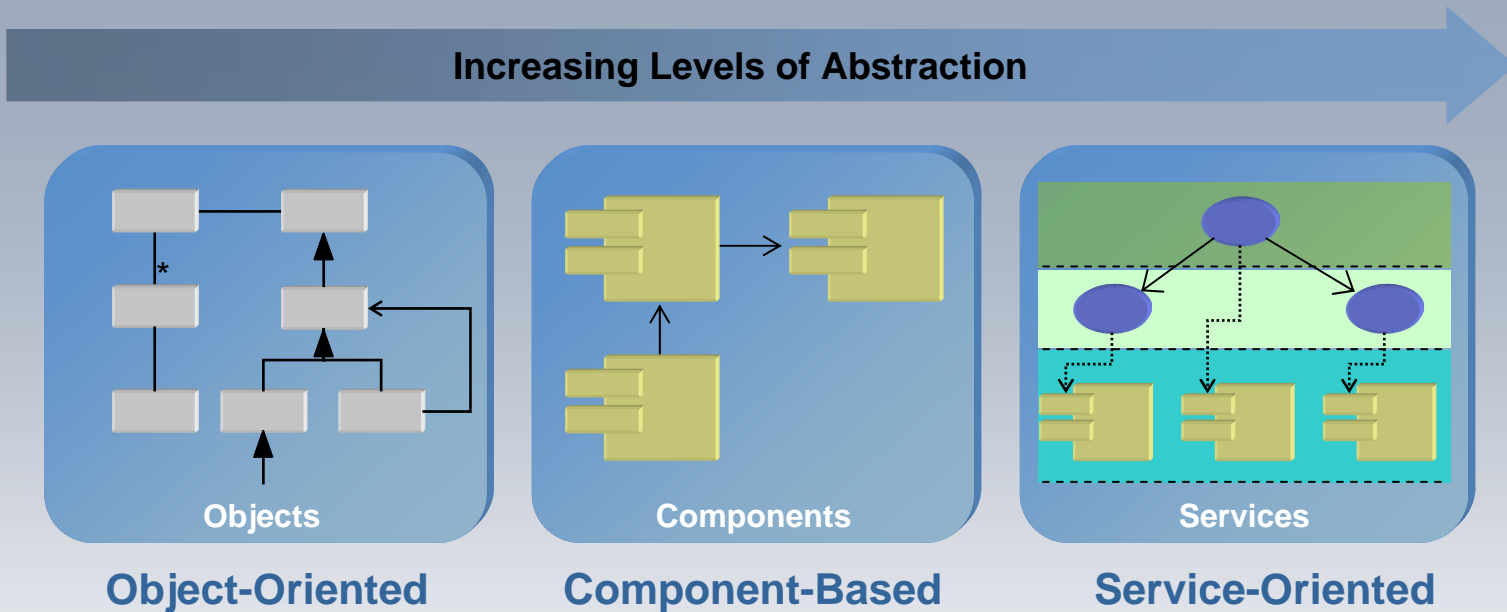


Business Strategy Drives IT Decisions

IT's Goal is to Flexibly Support Business Requirements

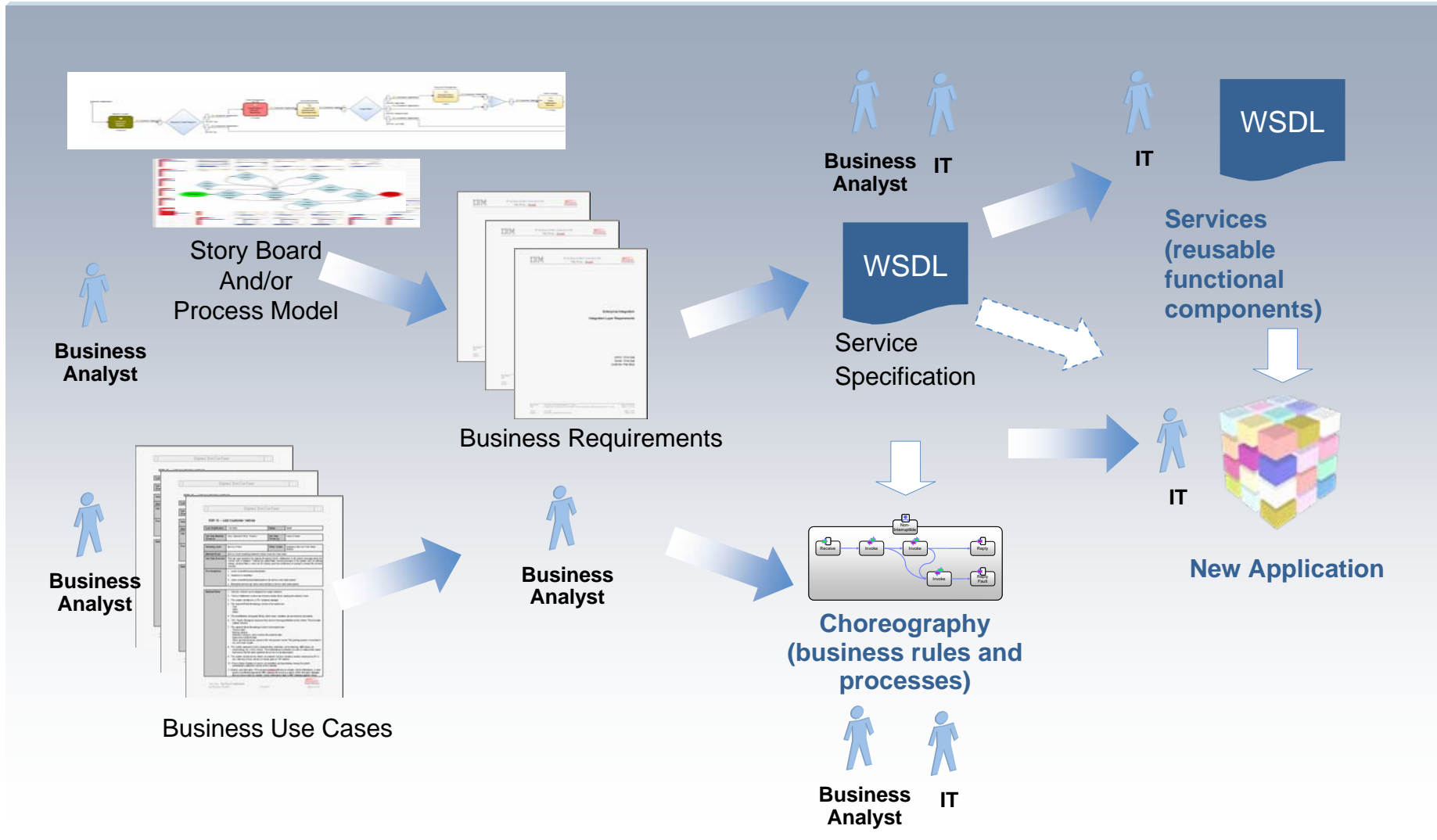


Service-Oriented Design Is An Evolutionary Approach

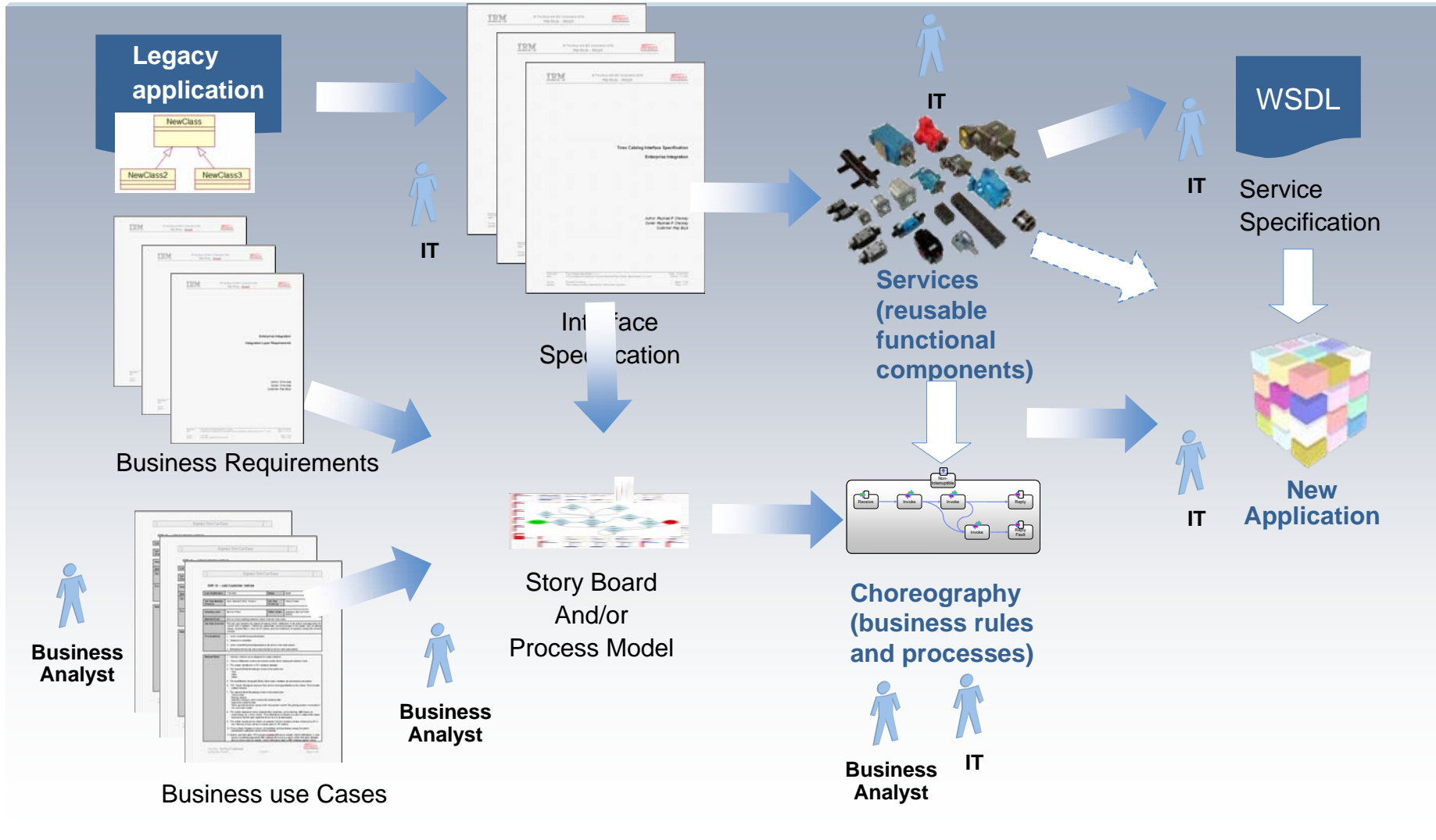


- SOA **builds on** well-established software architecture principles (*such as information hiding, modularization and separation of concerns*)
- SOA **adds** additional aspects (*including SOA interaction patterns, service registries, reuse considerations*)
- Service-oriented modeling **needs** techniques to support these aspects (*service identification, specification, realization and implementation techniques*)

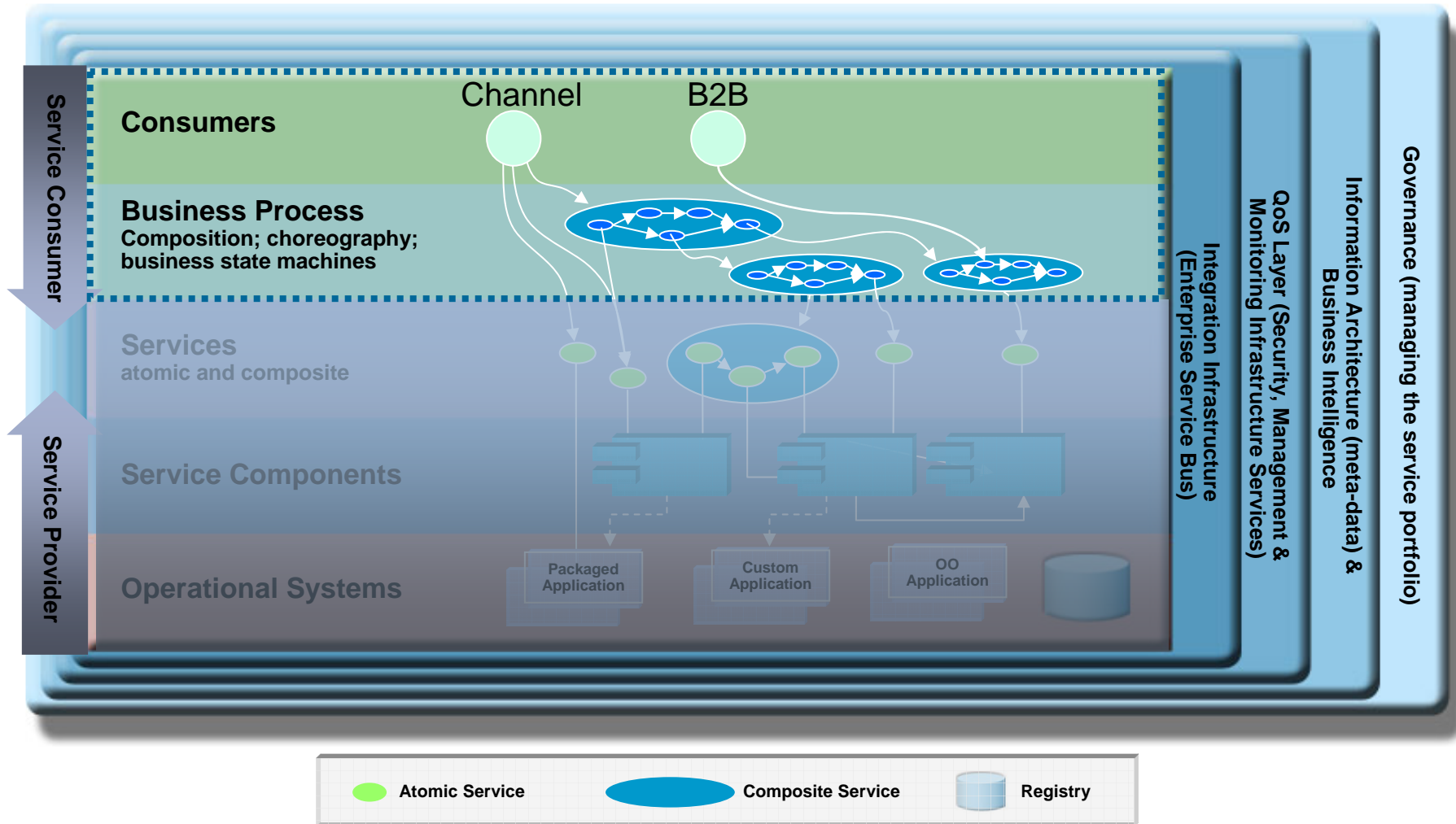
Top Down SOA Approach



Bottom Up SOA Approach



Developing Business Process and Consumer Layers



Enabling Business Process Management Through SOA

■ Business process design

- Alignment of designed functionality with business requirements and performance objectives
- Quality of the design (complete, correct, and consistent with best practice process design principles, standards and guidelines)
- Integration across processes based on common business items or services

■ Business process implementation

- Alignment of operational organization with the process
- Alignment of application services with process functionality
- Integration with other applications and data via ESB
- Use of application services components that support dynamic reuse and reconfiguration

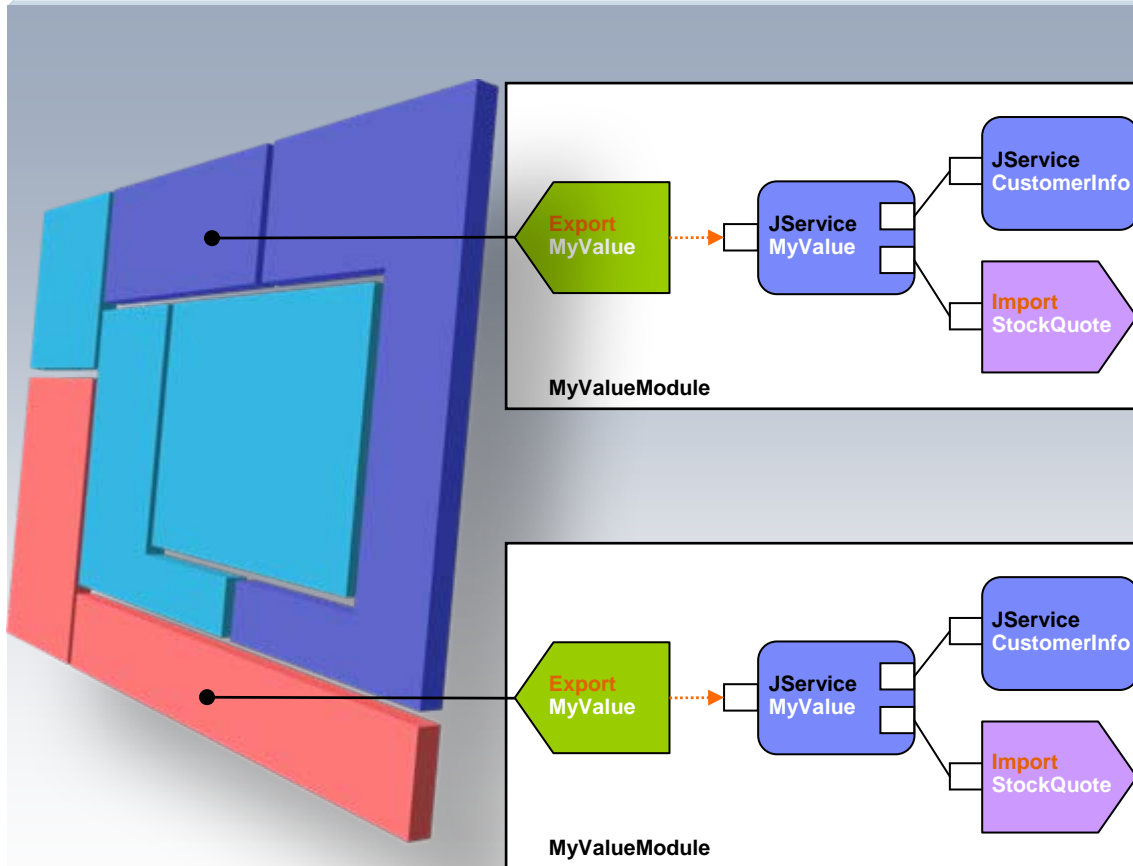
■ Business process execution

- Monitoring of real-time process performance and trends against performance targets
- Response to execution problems with effective interventions to restore performance



Developing the User Interaction Layer

Portlet-based User Interface Components Provide Access to Services



- Execute business functions through process and service layers
- Personalize interactions based on user identity and role
- Support workflow within portal execution space

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- SOA Business Architecture Considerations
- SOA Business Architecture Best Practices
 - Business Component Analysis
 - Service-Oriented Modeling and Architecture (SOMA)
 - Business Process Management
- IBM Capabilities to Support SOA Business Architecture
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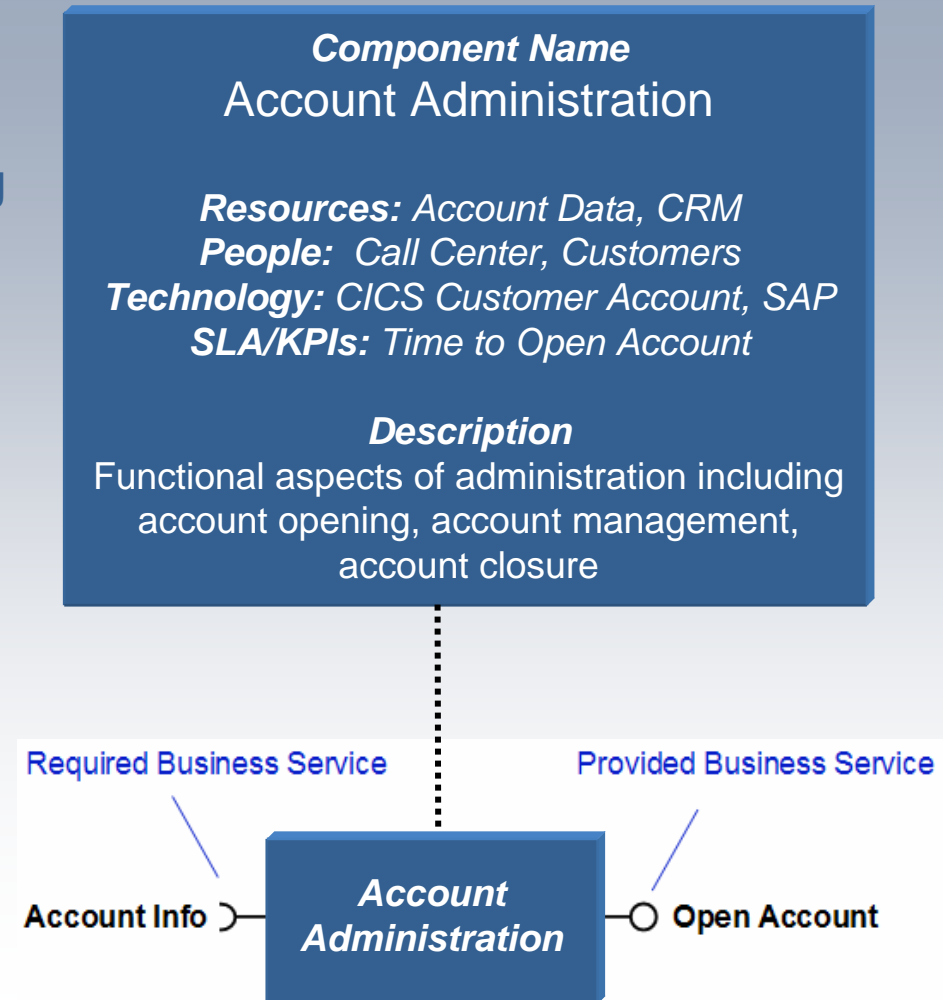
Business Component Analysis

- The enterprise is mapped out as a set of categorized business components
- Heat map highlights components for analysis based on criteria such as gaps and efficiency
- Enables approaches to understanding how the business can be improved

	Business Administration	New Business Development	Relationship Management	Servicing & Sales	Product Fulfillment	Financial Control and Accounting
Directing	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfillment Planning	Portfolio Planning
Controlling	Business Unit Tracking	Sector Management	Relationship Management	Sales Management	Fulfillment Monitoring	Compliance
	Staff Appraisals	Product Management	Credit Assessment			Reconciliation
Executing	Account Administration	Product Directory	Credit Administration	Sales	Product Fulfillment	Customer Accounts
	Product Administration	Marketing Campaigns		Customer Service	Document Management	
	Purchasing			Collections		
	Branch/Store Operations			General Ledger		

Business Components Define The Key Business Functions

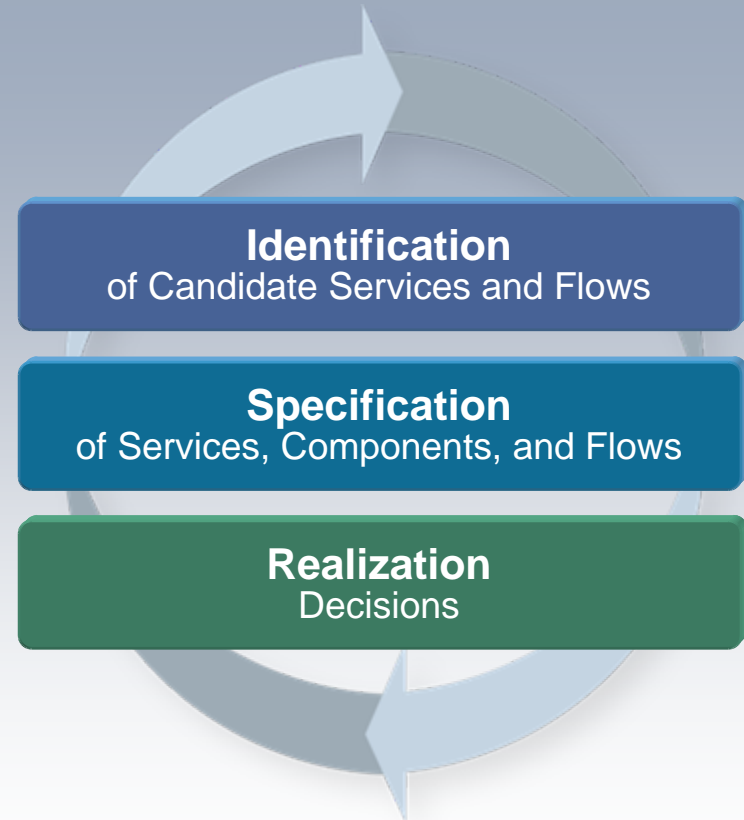
- A **business component** is “a grouping of the people, technology, & resources delivering specific business value”
- Components have well-defined interfaces, allowing them to interact smoothly with each other and to be 'snapped' in and out at will, like building blocks”
- The Interfaces of the Business Components Enable Identification of Candidate Business Services



SOMA (Service Oriented Modeling and Architecture)

Identification, Specification, Realization and Implementation of Services, Components and Flows

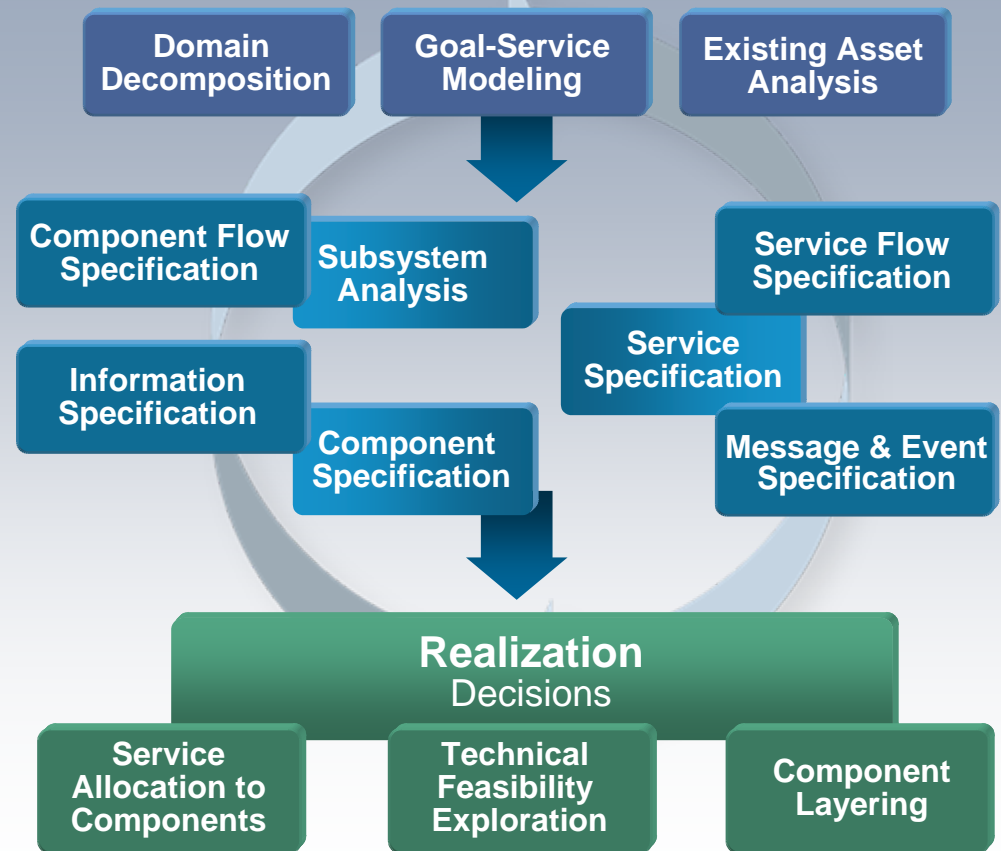
- SOMA is IBM's end to end SOA Solution development method
- SOMA is an integral part of the Rational Unified Process
 - UML Profile for Software Services
 - RUP SOMA
- SOMA has the following phases:
 - Service Identification
 - Service Specification
 - Service Realization



SOMA (Service Oriented Modeling and Architecture)

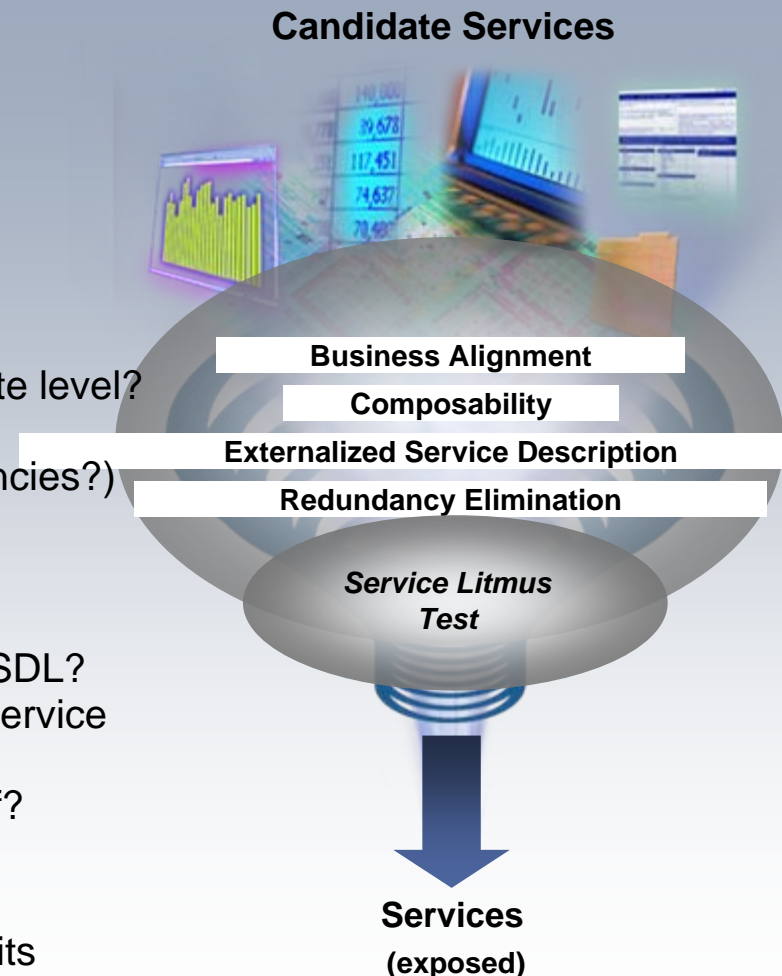
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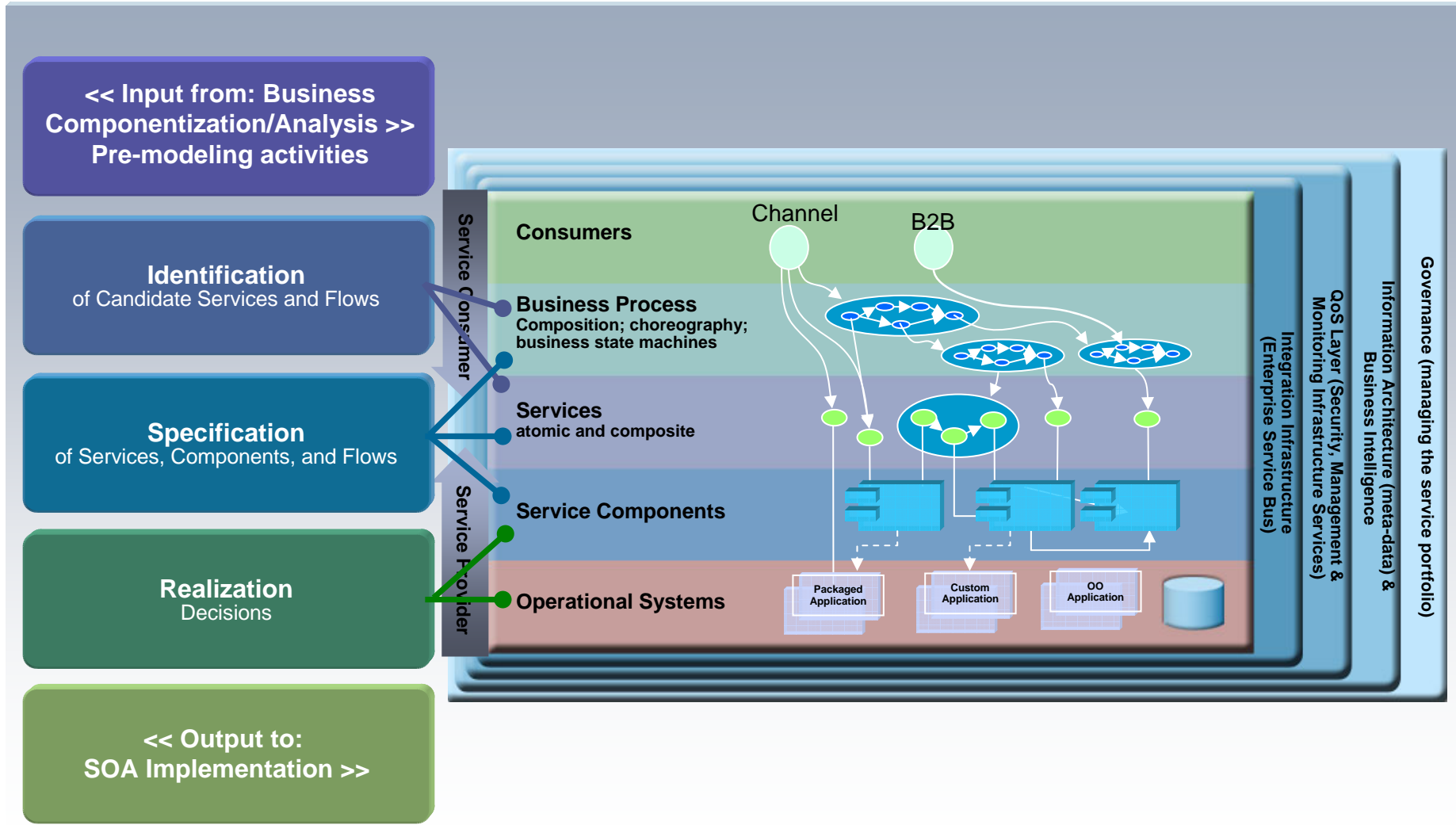


Service Exposure Decisions Within Service Specification

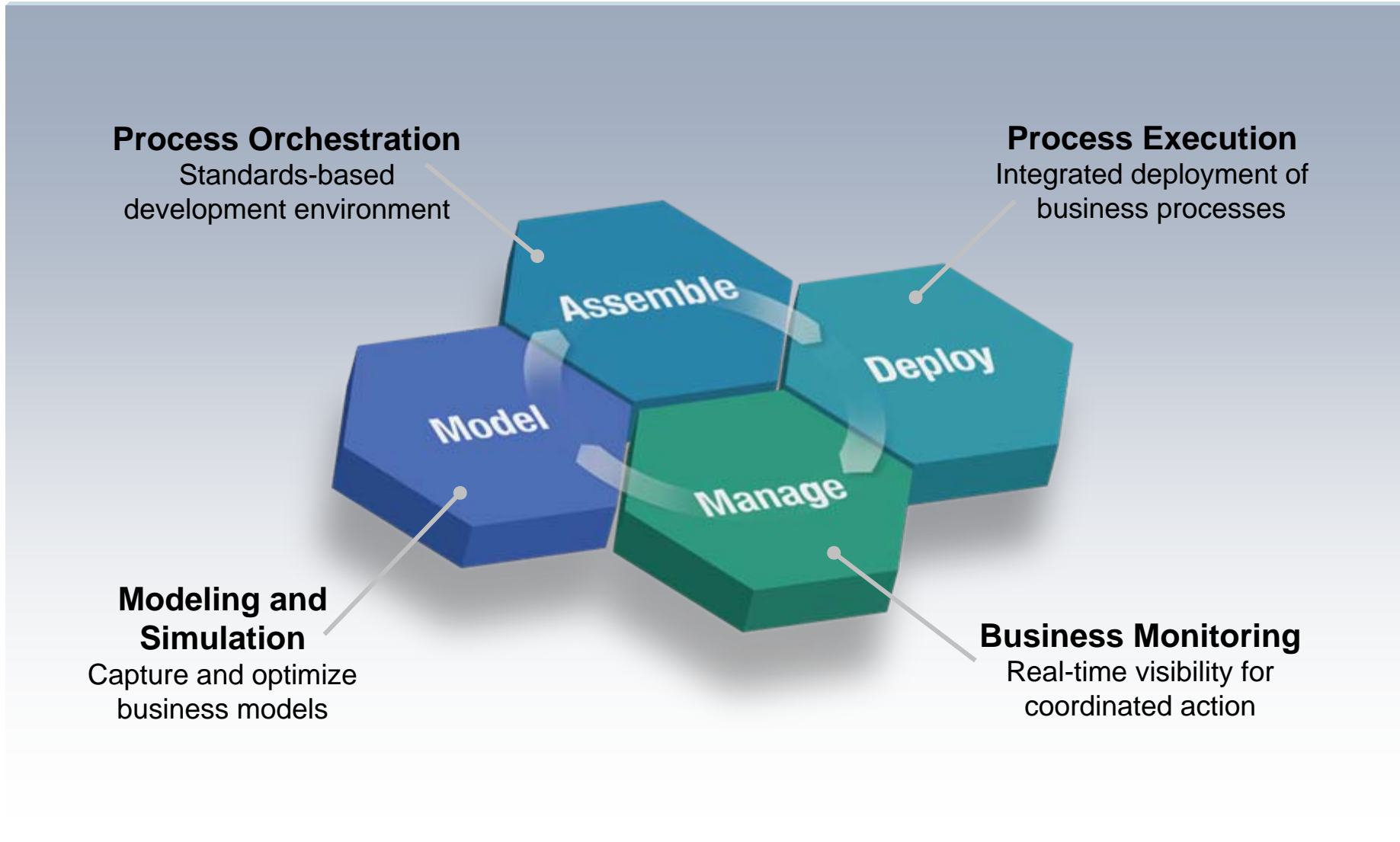
- **Business Alignment:**
 - Is the service business relevant?
 - Is funding available for service development and management?
 - Is the service sharable?
- **Composability**
 - Is the service consistent with NFRs at the composite level?
 - Is service stateless?
 - Is the service self-contained? (Are there dependencies?)
 - Is the service technology neutral?
- **Externalized Service Description**
 - Is there an externalized service description e.g. WSDL?
 - Can the service be discovered and bound via the service description?
 - Does the description contain meta-data about itself?
- **Redundancy Elimination**
 - Can the service be applied to all processes where its function is required?



Designing the SOA Service Model

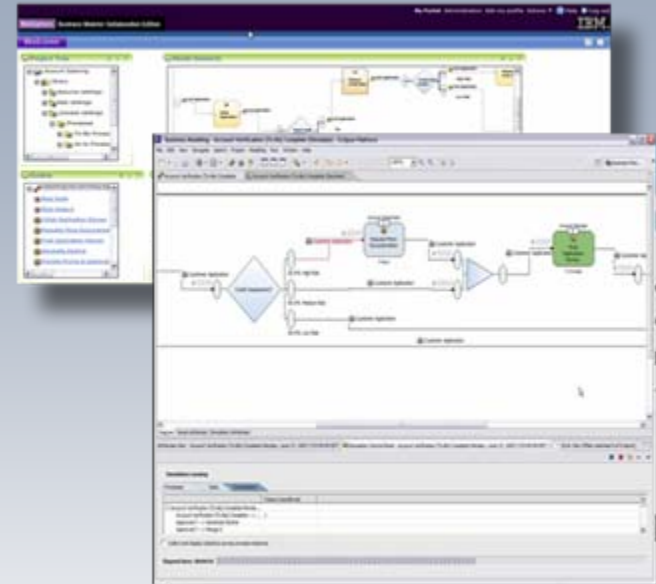


Business Process Management Within The SOA Lifecycle



Developing Business Process Models

- Enable business users to graphically model processes
- Support documentation and training for the organization and external parties
- Support simulation and analysis to substantiate process design decisions
- Generate code artifacts to support IT implementation of processes

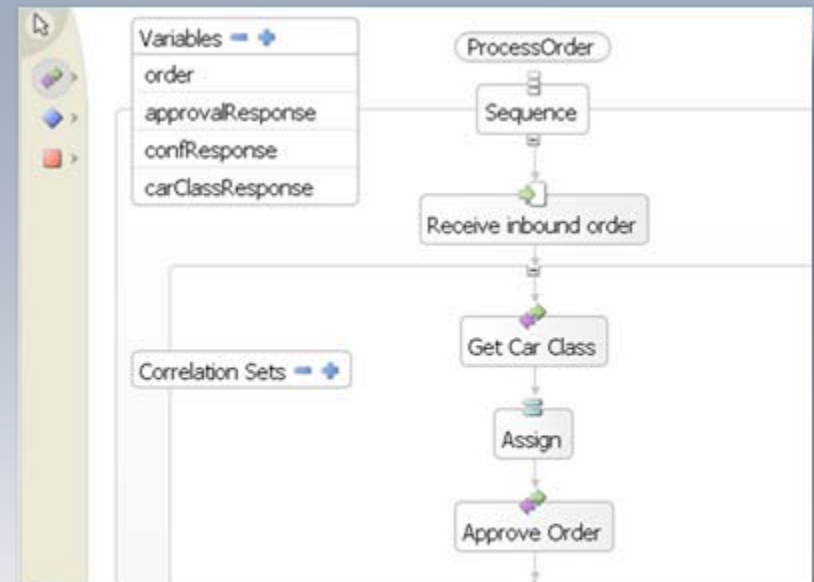


Architectural Benefit:

- Support top-down approach to service and process design
- Coordination of process development across business stakeholders as well as interaction with IT organization to articulate process design
- Creation of artifacts to support process development and implementation

Building Process Solutions

- Business Process Choreography orchestrates services as *deployable* processes
- Integrate information and user interaction into process development and deployment
- Mediations to transform/route service requests and responses
- Enable inter and intra-enterprise (B2B) service integration



Architectural Benefit:

- Simplified, standards-based business process development
- Support for industry process and data models
- Invoke mediations for routing/transforming requests between services

Monitoring Business Process Solutions

- Assemble dashboards on process behavior for different views/user perspectives
- Generate business event triggers and notifications via email, pager, SMS messages based on process events
- Generate preprogrammed responses based on process behavior
- Analyze process metrics over time to identify process trends



Architectural Benefit:

- Monitoring links to KPIs and Metrics defined by business analysts
- Integrates processes as part of an event-driven infrastructure
- Analyze trends in the business to enable ongoing optimization of solutions

Composite Business Services

Business Services Provide the “Building Blocks”

Composite Business Services definition:

A collection of integrated and related business services that provide a specific business solution and support business processes built on SOA

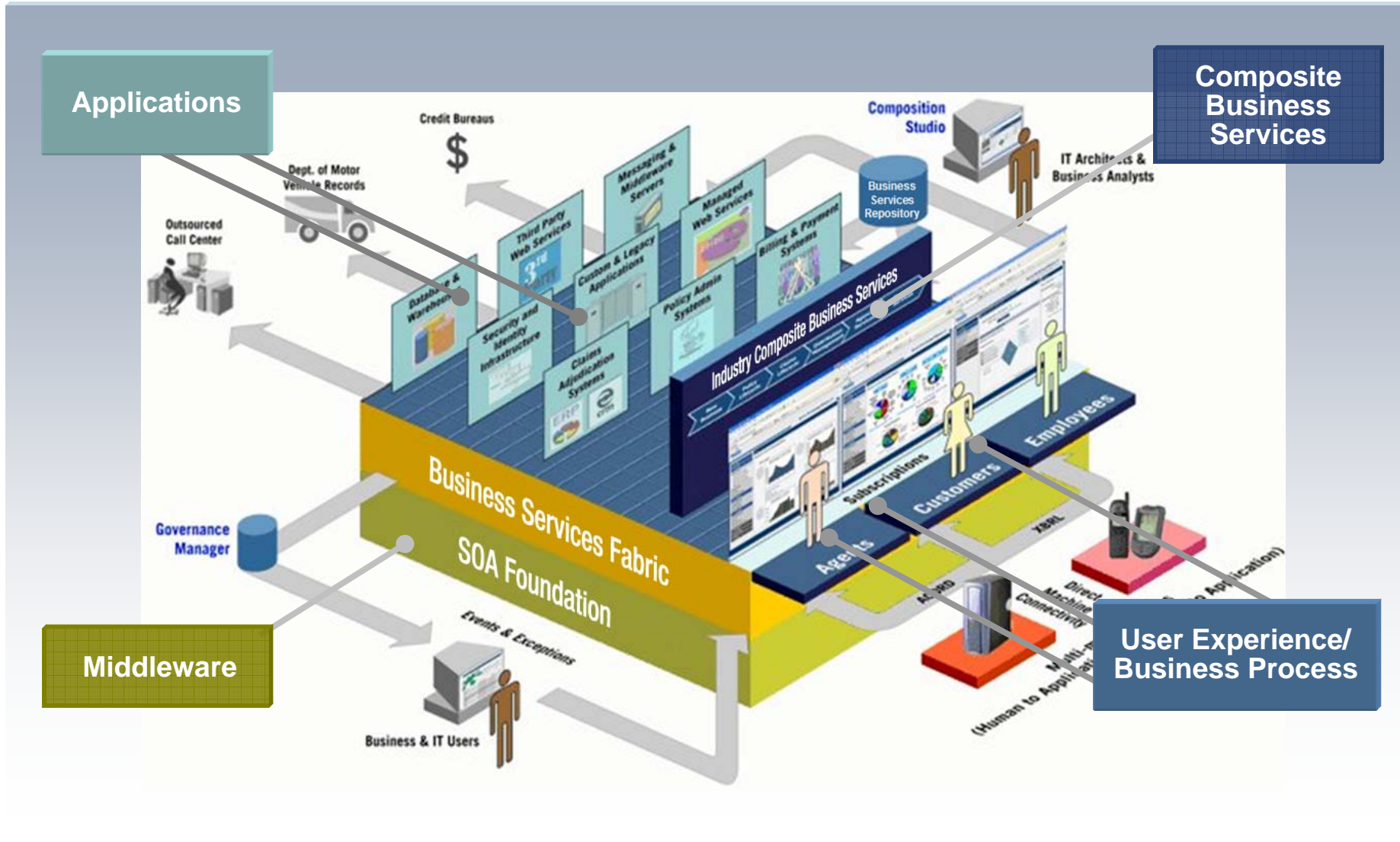
Business Services definition:

A business function whose execution can be adapted at runtime based on business policy and user context

- Designed at business level to represent a discrete business function (e.g. check credit, open account)
- Can provide flexible, adaptable behavior based on business policy and user context
- Provisioned through multiple communication channels



Composite Business Services

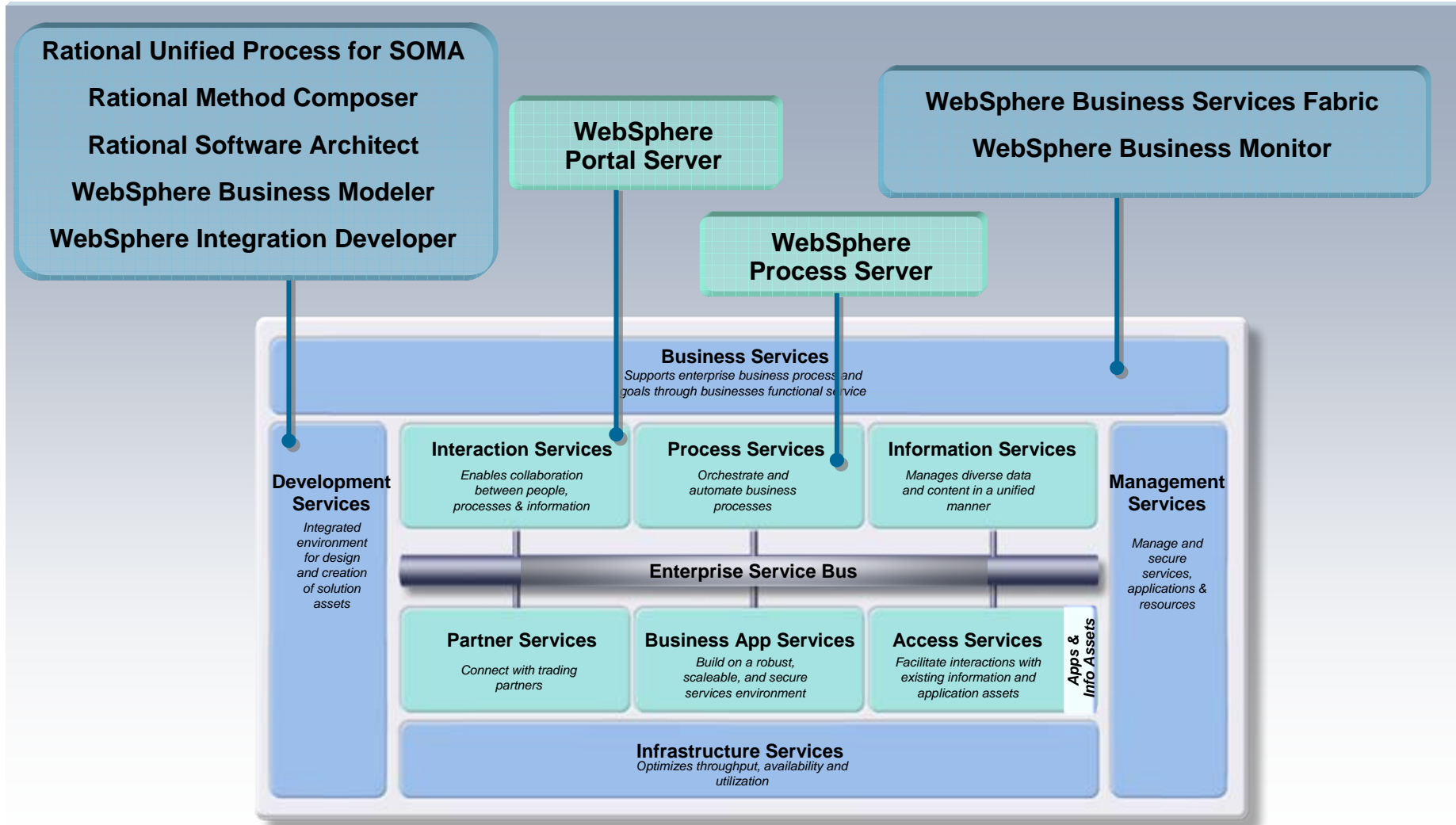


Agenda

- SOA Business Architecture Considerations
- SOA Business Architecture Best Practices
- **IBM Capabilities to Support SOA Business Architecture**
- **Summary**



IBM Products to Support SOA Business Architecture



IBM SOA Service Offerings

Focused on SOA Business Architecture

SOA Strategy

How do I get started in SOA?

SOA Diagnostic

I've started with SOA, how am I doing? What can I do better?

SOA Implementation Planning

There is a specific Business Area I want to improve using SOA – how should I approach it?

Business Process Management (BPM) Enabled by SOA

How can I leverage SOA to implement and improve business processes that meet my performance objectives, make better use of IT resources and give me a competitive edge?

SOA Design, Development and Integration Services

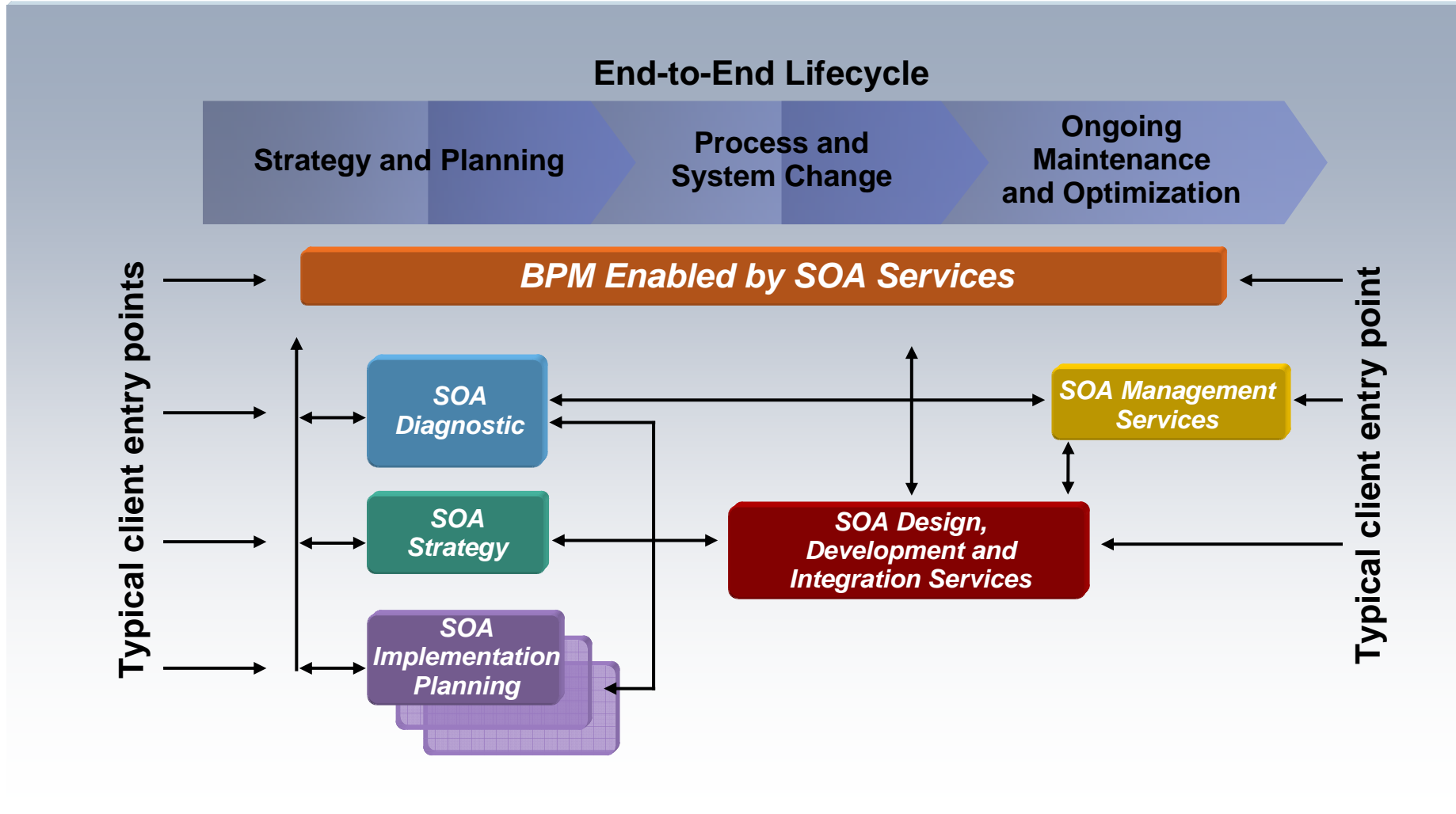
I've done the preliminary planning work, now I'm ready to develop and sustain SOA solutions

SOA Management

I've implemented SOA-based solutions, how can I manage them effectively to ensure ongoing benefit realization?

The Service Offering Lifecycle

Spanning the Full SOA Continuum



Summary

- Designing SOA with a Business Focus requires:
 - Linking Business and IT – normally through an Enterprise Architecture
 - Applying discipline and rigor to SOA Design
 - Business Process Management to design and implement business relevant services

- Best practices for designing SOA based on a business focus implies:
 - Decomposing the Enterprise into Business Components to design business-relevant service architectures
 - Use of SOMA to ensure an optimized service design for the enterprise
 - Application of tools and techniques to support business process modeling, assembly and deployment, and business process monitoring
 - Development and refinement of SOA Governance to enable a service lifecycle development approach and ensure business/IT linkage for SOA

धन्यवाद

Hindi

多謝

Traditional Chinese

ขอบพระคุณ

Thai

Спасибо

Russian

Gracias

Spanish

شكراً

Arabic

Thank You

Hvala

Slovenian

Grazie

Italian

Danke

German

Merci

French

Köszönöm

Hungarian

多谢

Simplified Chinese

감사합니다

Korean

ありがとうございました

Japanese

IBM SOA Architect Summit



SOA on your terms and our expertise