IBM SOA Architect Summit
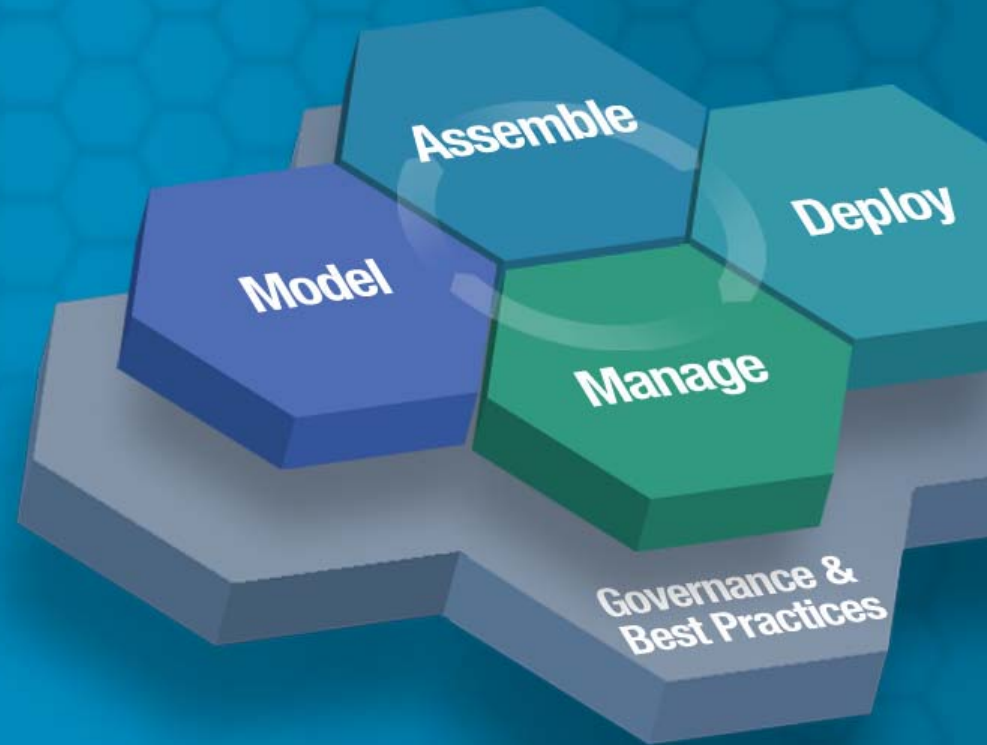
Assemble

Deploy

Model

Manage

Governance &
Best Practices

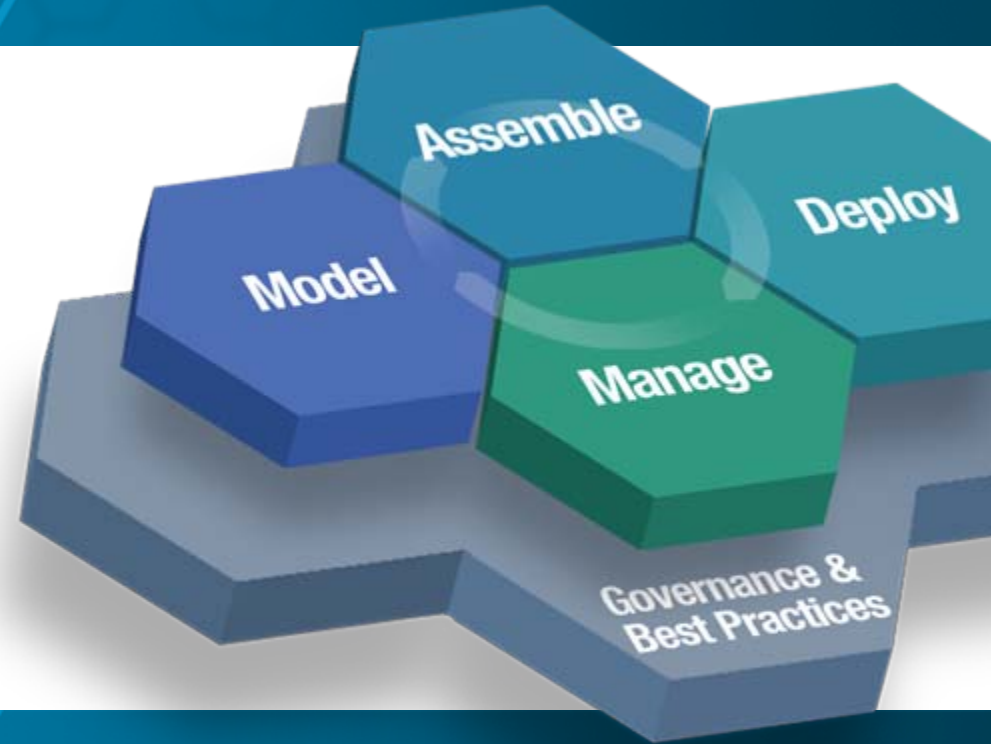SOA on your terms and our expertise

1

IBM SOA Architect Summit

IBM

Aligning IT with Business Goals Through SOA

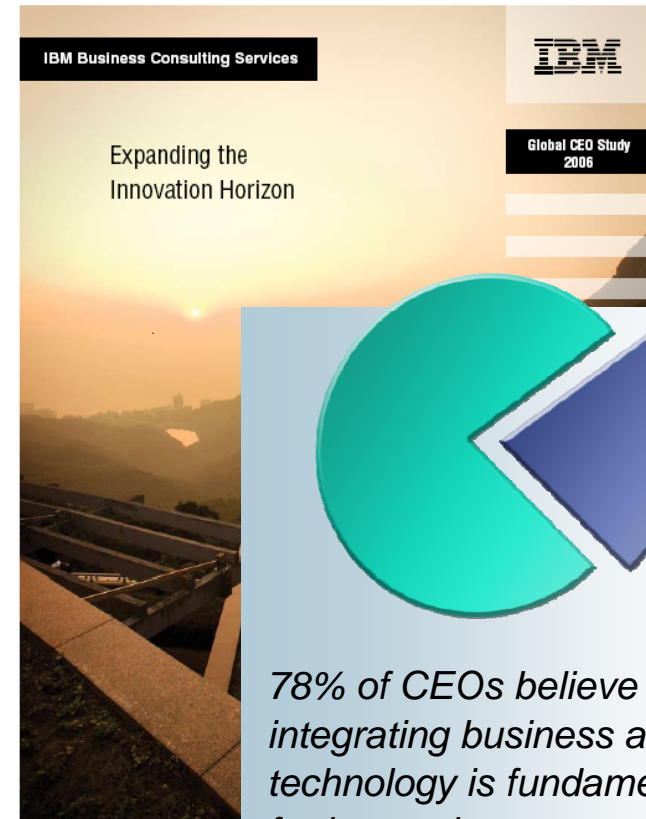# SOA in an Enterprise Architecture

An Overview for the Enterprise Architect

Model

Assemble

Deploy

Manage

Governance & Best Practices

ON DEMAND BUSINESS™

Innovation that Matters To CEOs

- Due to competitive and market forces, CEOs plan to radically change their companies in the next 2 years.

- Top Innovation Priorities
  - Extend the ability to collaborate inside and outside

  - Innovate business models and processes

  - Leverage information for business optimization

IBM Business Consulting Services

Expanding the Innovation Horizon

Global CEO Study 2006

78% of CEOs believe integrating business and technology is fundamental for innovation

Source: IBM Global CEO Survey, March 2006

The Goal: Strategic Flexibility Through Innovation

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CIOs and CTOs Recognize Innovation as the Most Important Capability for Growth

Ability to innovate

Ability to allocate the best talent

Ability to manage a global organization

Ability to allocate capital

Ability to manage increasing regulation costs

0   30   60

Source: March 2005 McKinsey Quarterly survey of 9,345 global executives

Yet: Only 1 in 10 CEOs believe their organization has the ability to be very responsive to changing market conditions

Cold, hard realities …

IT Budgets as a Percentage of Revenue
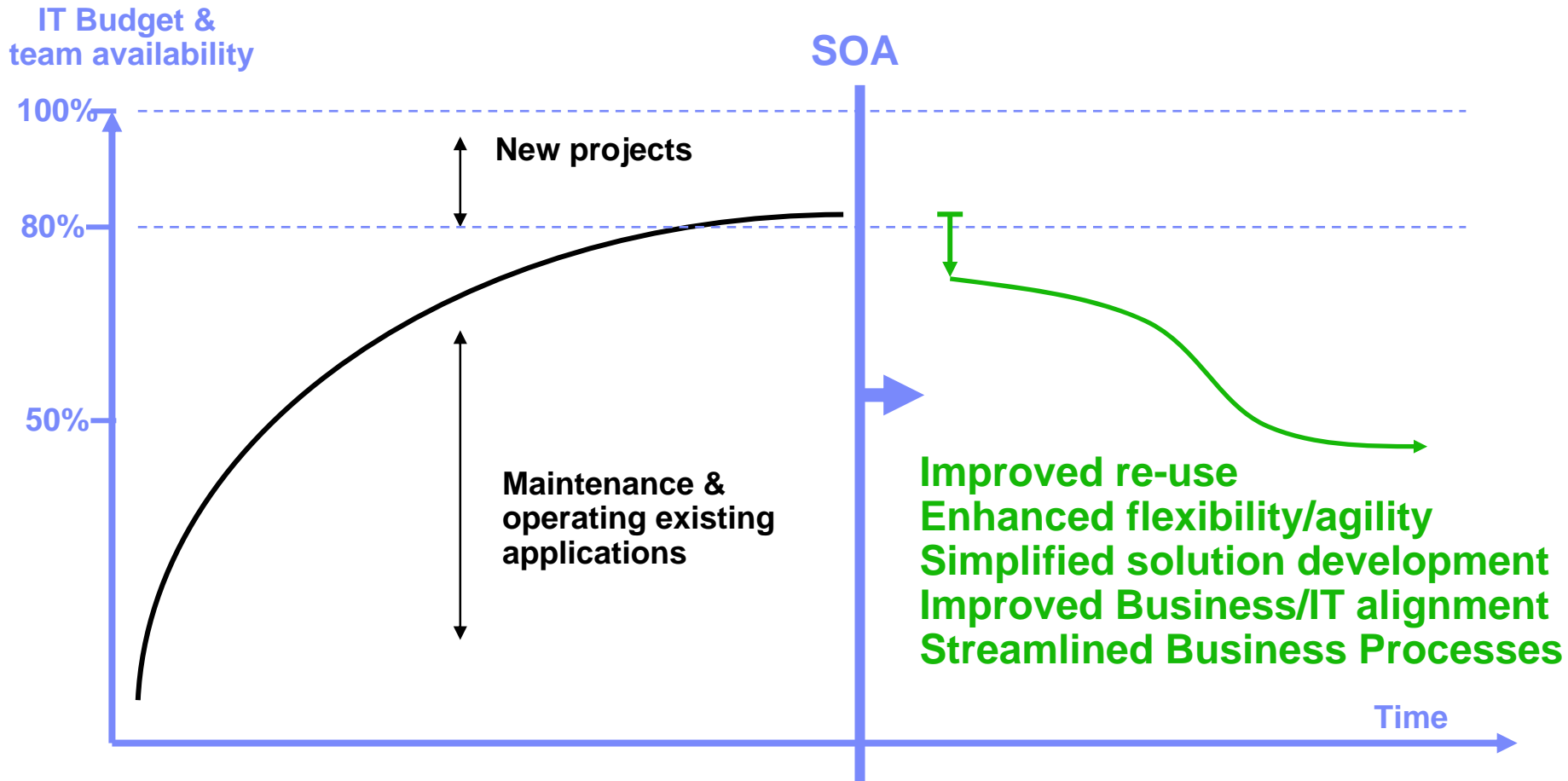
% of Revenue
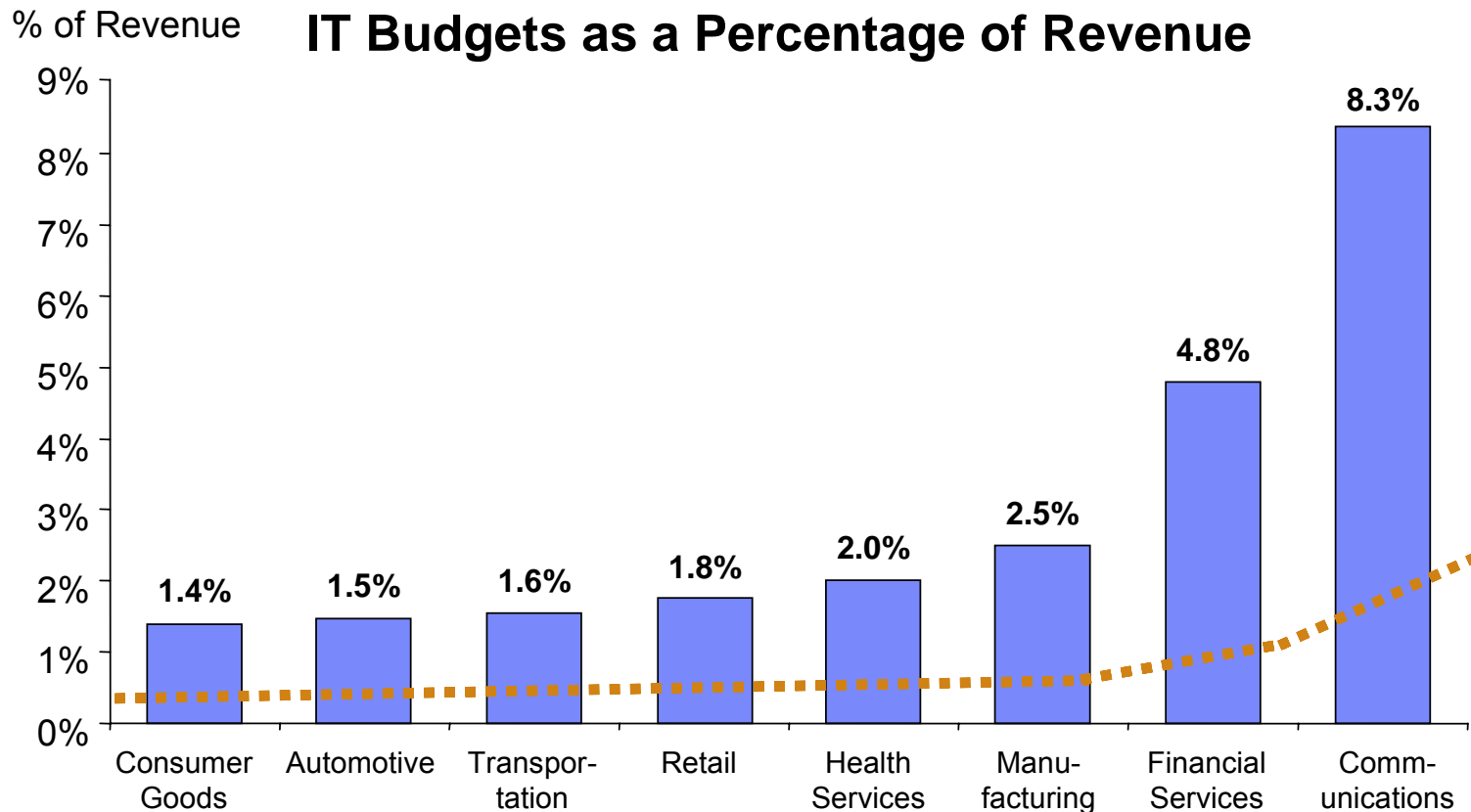
CIOs and CTOs must deal with tight budgets, with an average of only 20% - 30% of the budget available for new capability development.

SOA enables IT to innovate for the business

SOA enables innovation through a shift in IT

From: **To:**

Function-oriented	→	Process-oriented
Build for permanence	→	Build to change
One long development cycle	→	Incremental development cycles
Tightly coupled	→	Loosely coupled
Application silos	→	Orchestrated solutions that work together
Structure applications using components and objects	→	Structure applications using services
Known implementation	→	Implementation abstraction

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Companies are using SOA today for real business value

A recent IBM Institute for Business Value study of SOA engagements found:

• 97% justified SOA projects based on cost savings & impact to profitability

• 100% realized improved flexibility

• 71% reduced risk

• 51% experienced increased revenue

Source: IBM Global Services analysis of 35 SOA implementations - 2006

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Why SOA Now?

"SOA is the next-wave architecture to drive the evolution of IT."
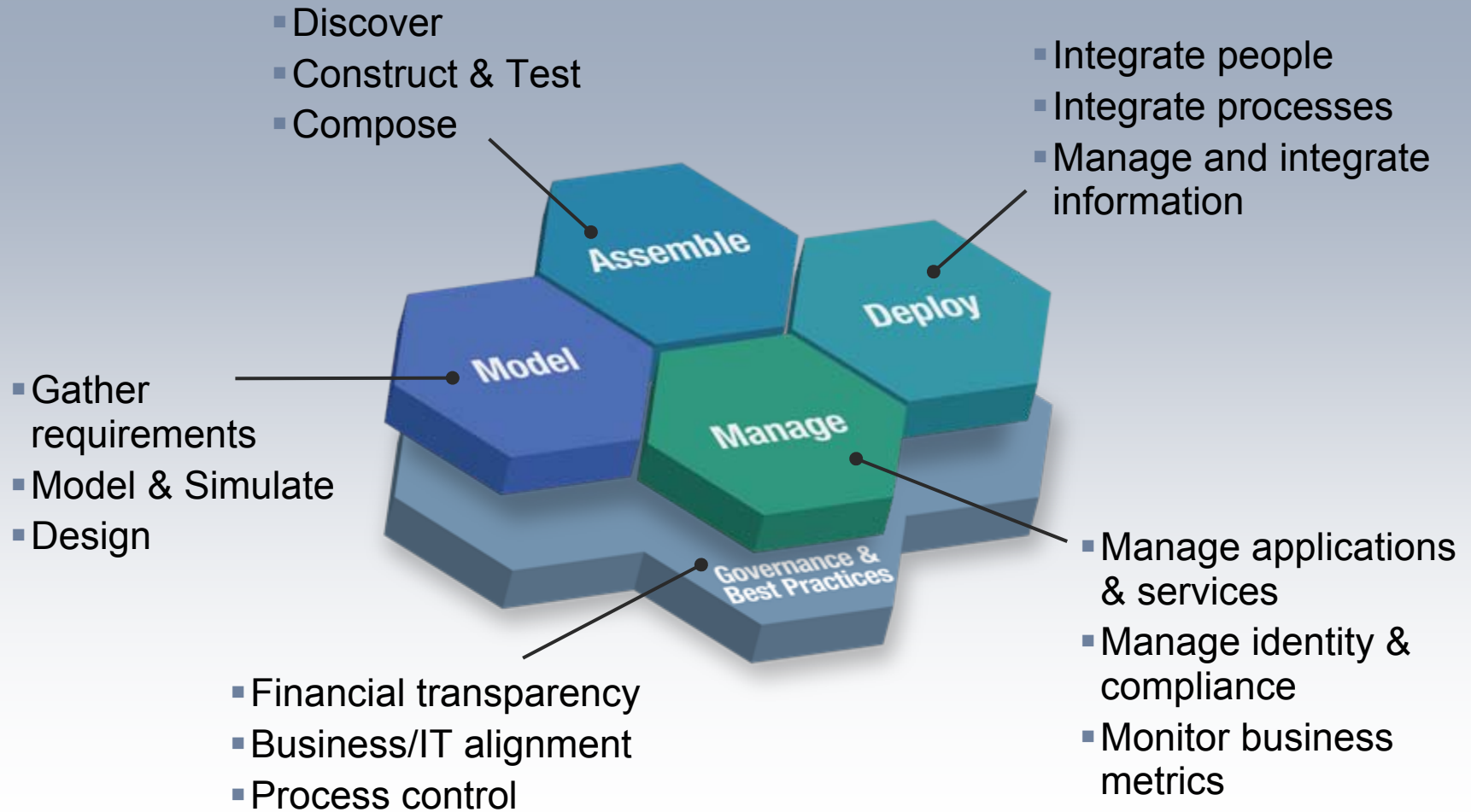
Alex Cullen

Principal Analyst for IT Management, Forrester Research

- Standards have been widely adopted

- Software is mature and available

- Governance is well-defined

- Best practices are in place

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The SOA Lifecycle

- Discover
- Construct & Test
- Compose

- Integrate people
- Integrate processes
- Manage and integrate information

Assemble

Deploy

Model

Manage

- Gather requirements
- Model & Simulate
- Design

Governance & Best Practices

- Financial transparency
- Business/IT alignment
- Process control

- Manage applications & services
- Manage identity & compliance
- Monitor business metrics

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Service Oriented Architecture
Different Things to Different People

Roles

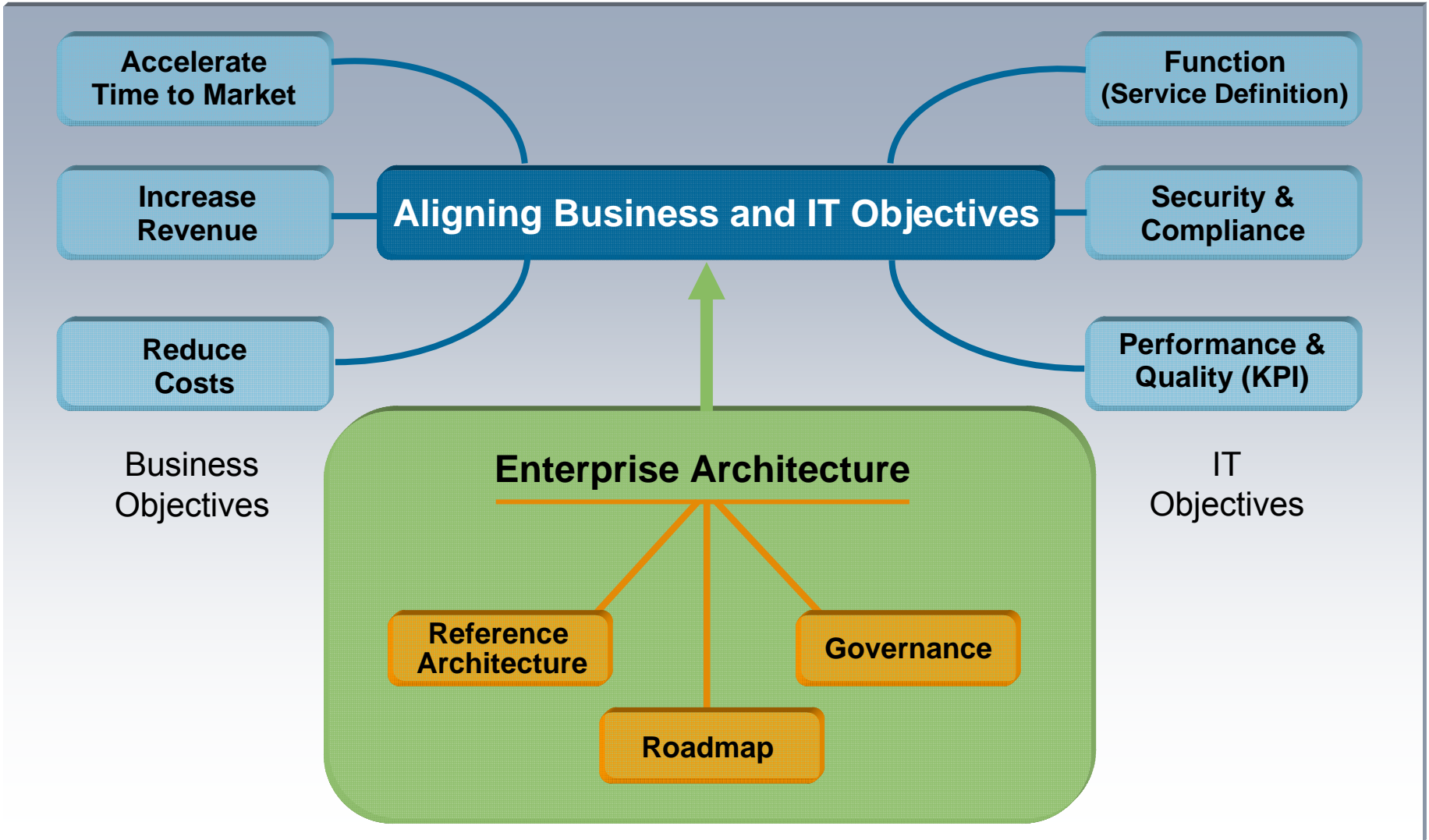|	
Capabilities that a business wants to expose as a *set of services* to clients and partner organizations	**Business**
An *architectural style* that requires a service provider, requestor and a service description. It addresses characteristics such as loose coupling, reuse and simple and composite implementations	**Architecture**
A *programming model* complete with standards, tools, methods and technologies such as Web services	**Implementation**
A *set of agreements* among service requestors and service providers that specify the quality of service and identify key business and IT metrics	**Operations**

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SOA and Enterprise Architecture: A Common Goal

Accelerate Time to Market

Increase Revenue

Reduce Costs

Aligning Business and IT Objectives

Function (Service Definition)

Security & Compliance

Performance & Quality (KPI)

Business Objectives

IT Objectives

Enterprise Architecture

Reference Architecture

Governance

Roadmap

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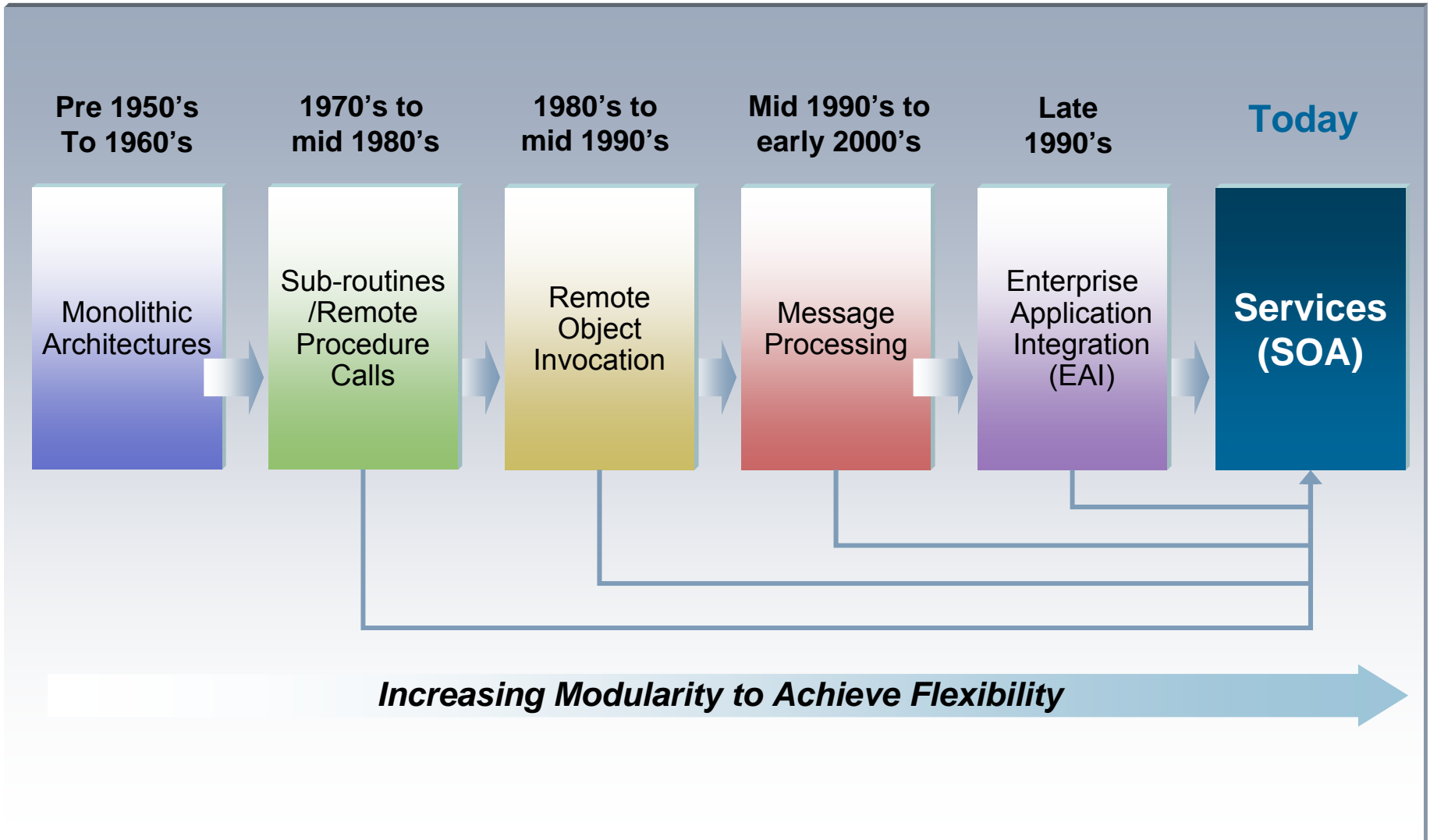# SOA: The Focus of the Enterprise Architect

Deliverable	Description	Overview
SOA Reference Architecture	The SOA Reference Architecture defines a reference framework and corresponding IT principles for SOA implementation projects	
SOA Roadmap	The Roadmap is used to create a tailored transition plan for moving toward the SOA Reference Architecture	
SOA Governance Model	The SOA Governance Model defines the decision rights along with the associated measurements and controls	

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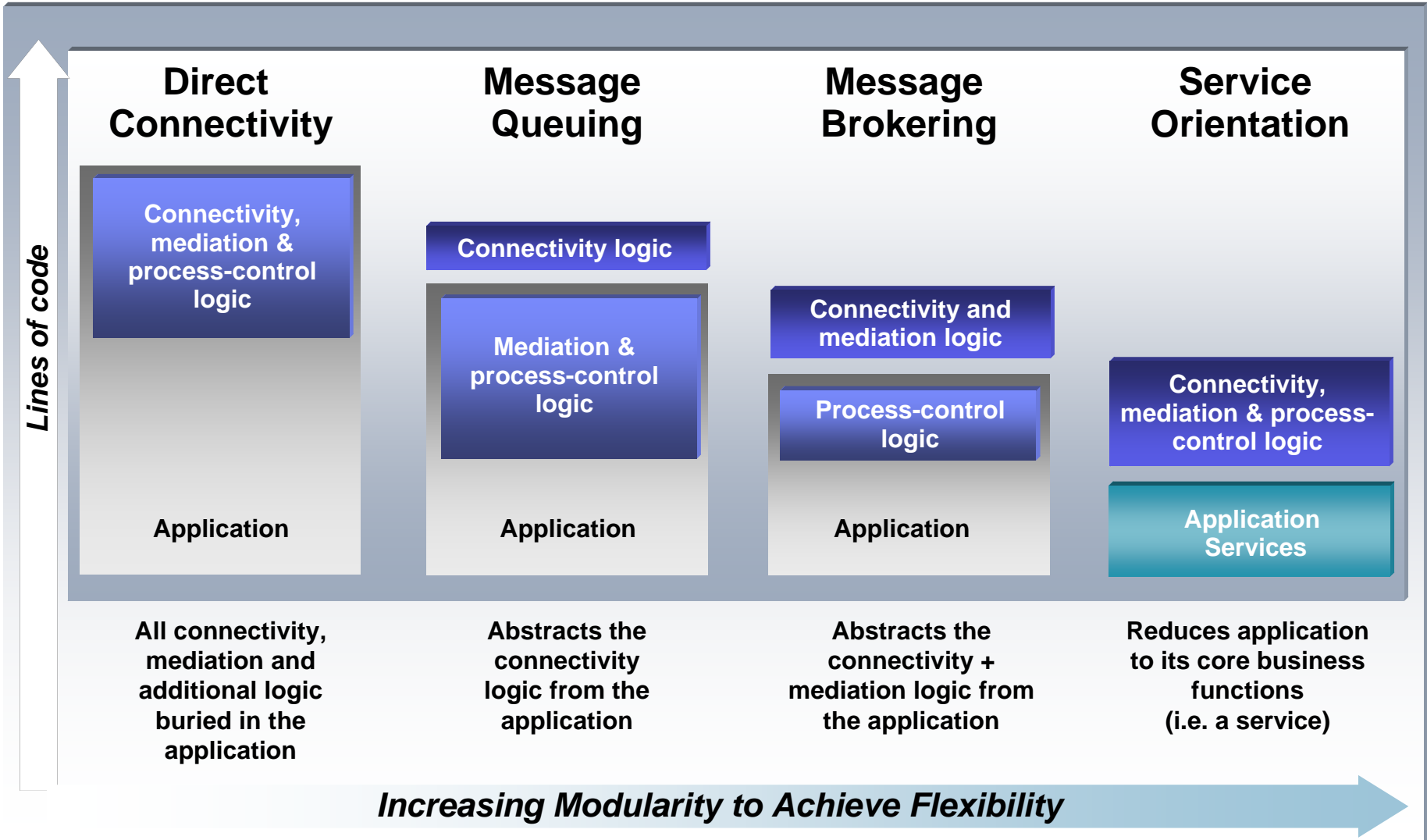
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Agenda

- ## SOA Reference Architecture
  - Providing a comprehensive model

- SOA Roadmap

- SOA Governance

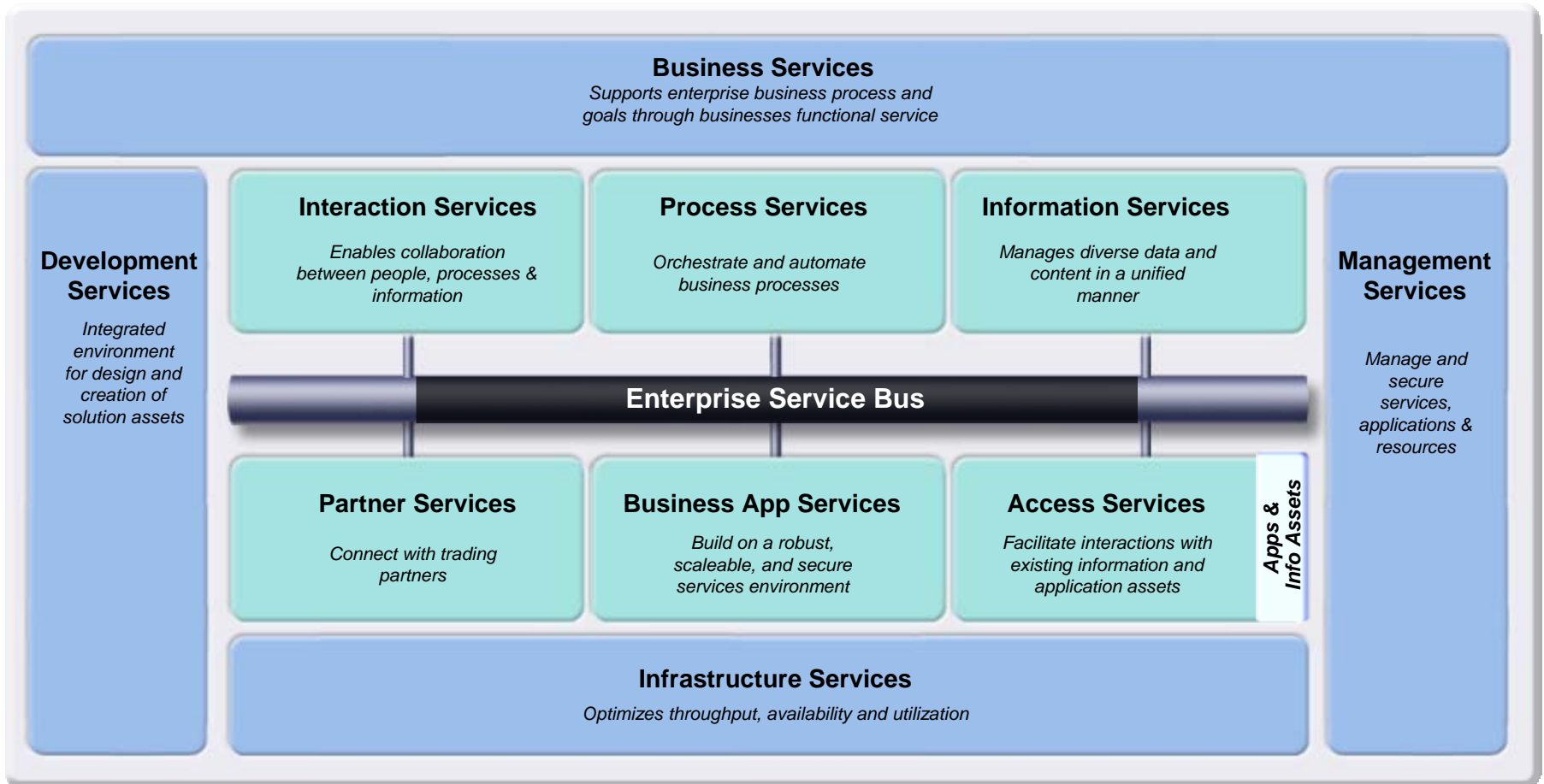# IT's Architectural Evolution: Making IT More Responsive

Pre 1950's To 1960's	1970's to mid 1980's	1980's to mid 1990's	Mid 1990's to early 2000's	Late 1990's	Today
Monolithic Architectures	Sub-routines /Remote Procedure Calls	Remote Object Invocation	Message Processing	Enterprise Application Integration (EAI)	Services (SOA)

Increasing Modularity to Achieve Flexibility

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SOA: The Next Step on the Connectivity Evolution

Lines of code (vertical axis)

Direct Connectivity	Message Queuing	Message Brokering	Service Orientation
Connectivity, mediation & process-control logic	Connectivity logic	Connectivity and mediation logic	Connectivity, mediation & process-control logic
	Mediation & process-control logic	Process-control logic	
Application	Application	Application	Application Services
All connectivity, mediation and additional logic buried in the application	Abstracts the connectivity logic from the application	Abstracts the connectivity + mediation logic from the application	Reduces application to its core business functions (i.e. a service)

Increasing Modularity to Achieve Flexibility

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SOA Reference Architecture
Supporting the SOA Lifecycle

Business Services
Supports enterprise business process and goals through businesses functional service

Interaction Services
Enables collaboration between people, processes & information

Process Services
Orchestrate and automate business processes

Information Services
Manages diverse data and content in a unified manner

Development Services
Integrated environment for design and creation of solution assets

Management Services
Manage and secure services, applications & resources

Enterprise Service Bus

Partner Services
Connect with trading partners

Business App Services
Build on a robust, scaleable, and secure services environment

Access Services
Facilitate interactions with existing information and application assets

Apps & Info Assets

Infrastructure Services
Optimizes throughput, availability and utilization

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SOA Solution Layering
Leveraging the SOA Reference Architecture

🟢	Atomic Service	
🔵	Composite Service	
⬛	Registry	

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A New Programming Model
Supporting the SOA Abstraction Layering

Traditional Software Development

Business Expertise

Users
Define/refine
business
processes

Limited Overlap

Developers
Program
applications
using core
technologies

Technical Expertise

Service-Oriented Development

Business Expertise

Users
Define/refine
business
processes

Extensive Overlap

Application Developers
Translate business
processes into
applications by
assembling and
configuring
building blocks

Service Developers
Create application
building blocks –
patterns,
templates, and
components using
core technologies

Technical Expertise

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SOA Programming Model Aspects

- **Design**
  - Focus on business design modeling, simplification, and role-based collaboration
  - Use of declarative policy to control execution behavior and relationships

- **Invocation**
  - Loosely-coupled call-style and event-driven interconnection of services with built-in support for topology transparency, mediation, and brokering featuring standards-based interoperability

- **User Interaction**
  - Dynamic support for people integration into the business design

- **Composition of Business-level Applications**
  - Wired assembly of services to form business-level applications, workflows, and business orchestration

- **Information**
  - Built-in access to service state, disconnected service-data exchange, information composition and transformation

- **Business Components**
  - Composable and reusable services

Design
(Models, Patterns, Templates, Policy)

Composition

User Interaction

Invocation

Information

Business Components

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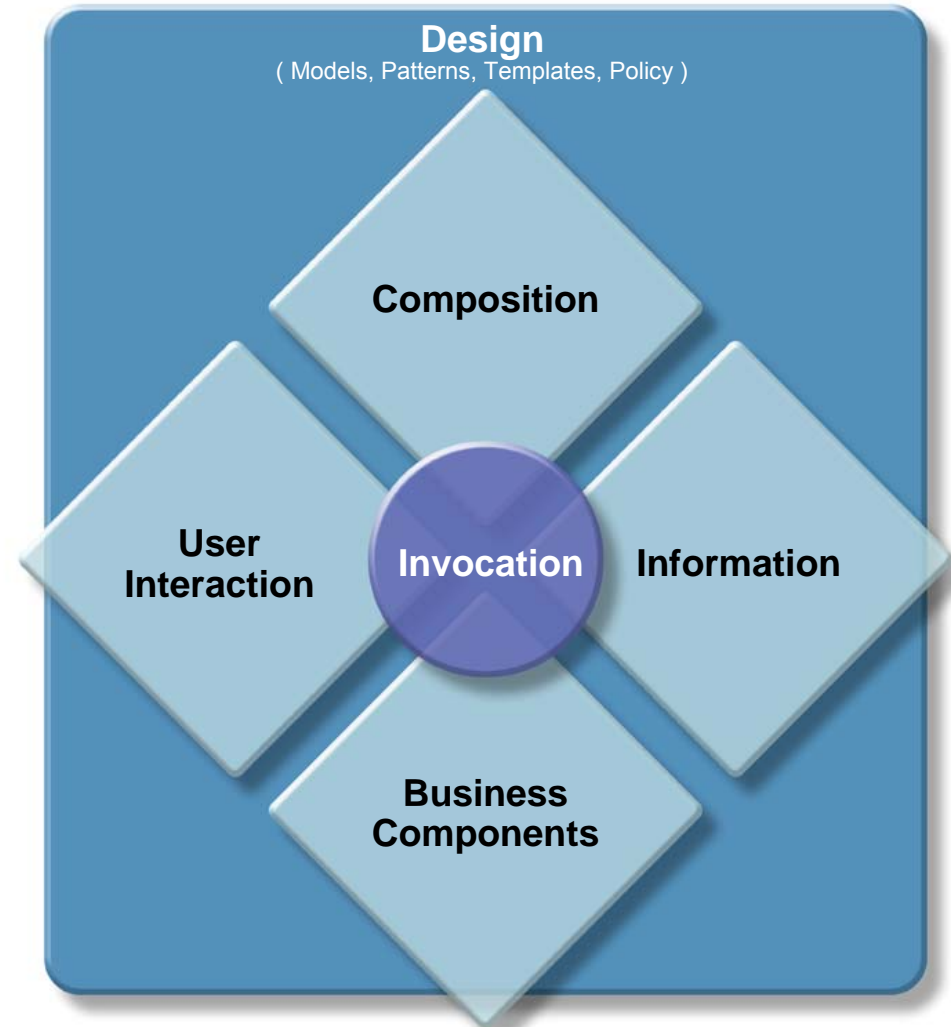
Business Driven Development
An Iterative, Business-focused Development Process

Model

- Business Analysts
- Software and Data Architects

Requirements

Model Business Requirements

Unified Modeling Language

Model Software Architecture

Run-time Statistics

Continual Process Improvement

Observation Model (KPIs)

Manage

- Monitor Business Results
- Manage IT Performance
- Create Business and IT Dashboards

- Business Operations Analysts
- IT Operations Managers

Business Process Execution Language

Assemble

- Development Team
- Integration Developers
- Testers

- Choreograph Services
- Develop New Services
- Configure Human Task Manager
- Develop User Interface
- Test

WSDL

EAR, DDL

Events

Deploy

- Manage Quality of Service
- Manage Runtime Platforms

- Deployment Team
- Platform-specific Runtime Specialists

Team Unifying Platform

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Separation of Concerns
The SOA Reference Architecture in Action
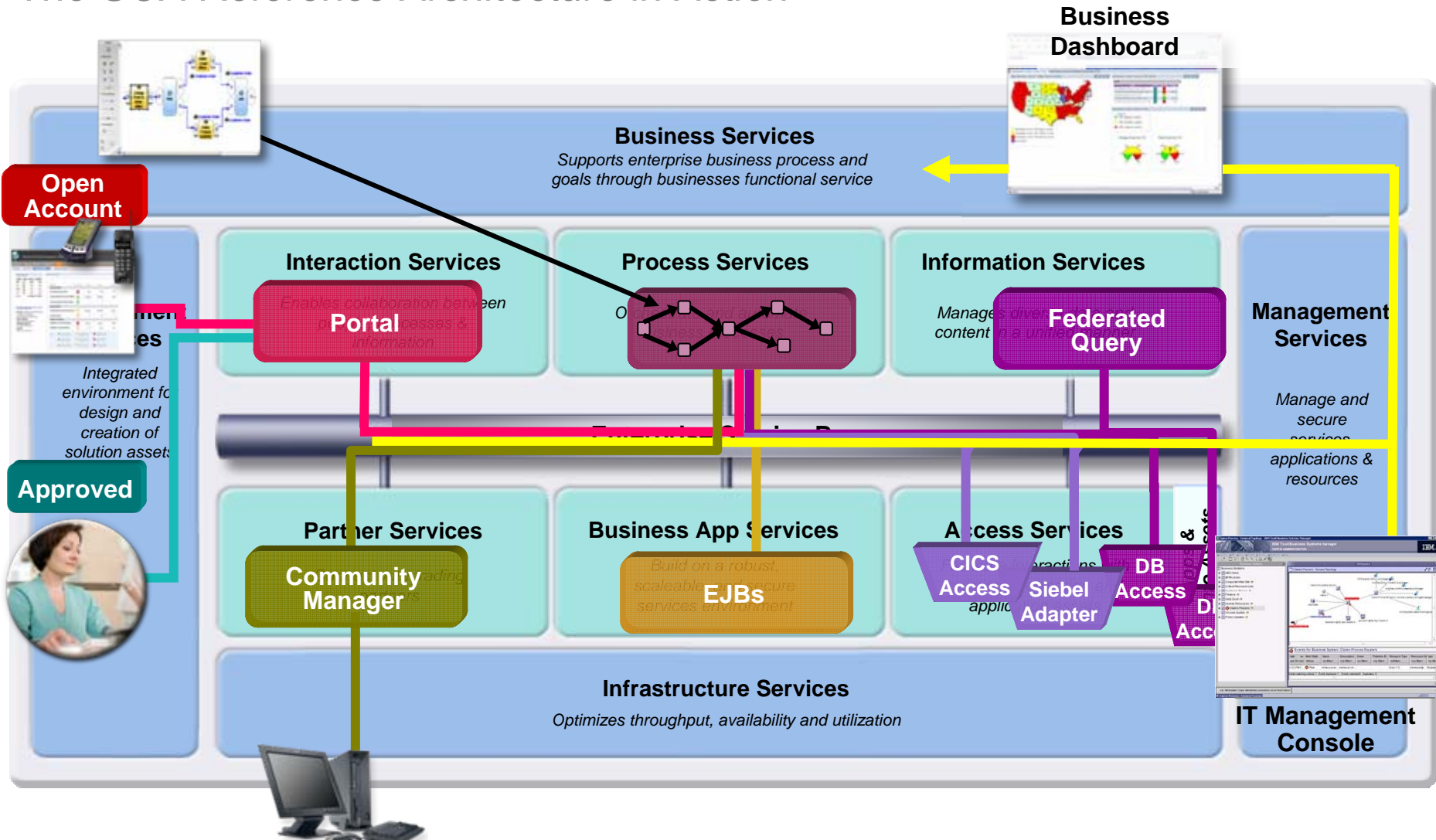
SOA is Based on an Open Platform and Open Standards

Open Development Integration Platform	**Eclipse**	IBM donated $40M of initial technology
Open Application Integration	**Web Services**	IBM led or co-led the creation of SOAP, WSDL, UDDI, WS-Security, BPEL4WS …
Open Application Server	**J2EE and Apache**	IBM contributed technology to J2EE & helped form the Apache Software Foundation
Open Operating System	**Choice Includes Linux**	IBM is the #1 commercial supporter

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The SOA Reference Architecture and its Key Principles
Providing IT Flexibility to Meet the Demands of Business

- Linkage between business and IT through support of the entire SOA Lifecycle

- Connectivity and Service Isolation through the Enterprise Service Bus

- Separation of Concerns/Modularity for incremental adoption

- Component-based Programming and Solution Development

- Business and IT Monitoring and Management

- Open Standards

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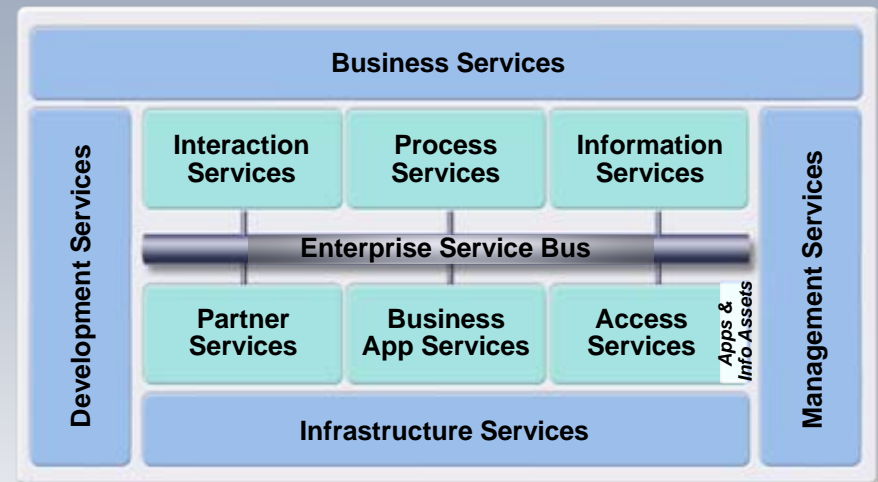
Agenda

- SOA Reference Architecture

- **SOA Roadmap**
  - Relating business and IT objectives

- SOA Governance

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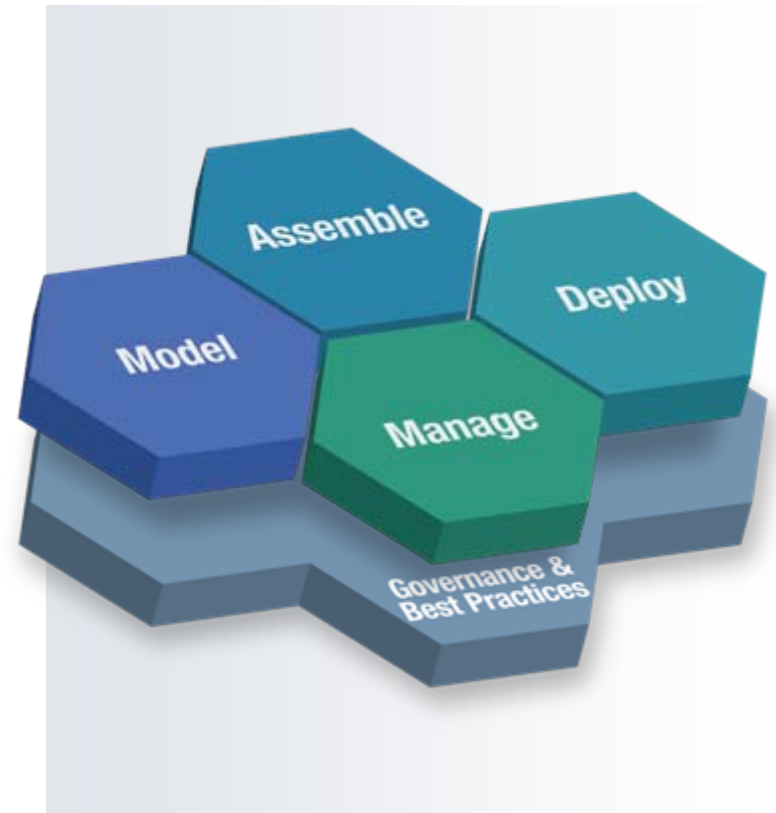
SOA Roadmap: A Plan for Adopting SOA

SOA Goal

- Market return through transformation: quicker time to production, lower costs, competitive differentiation
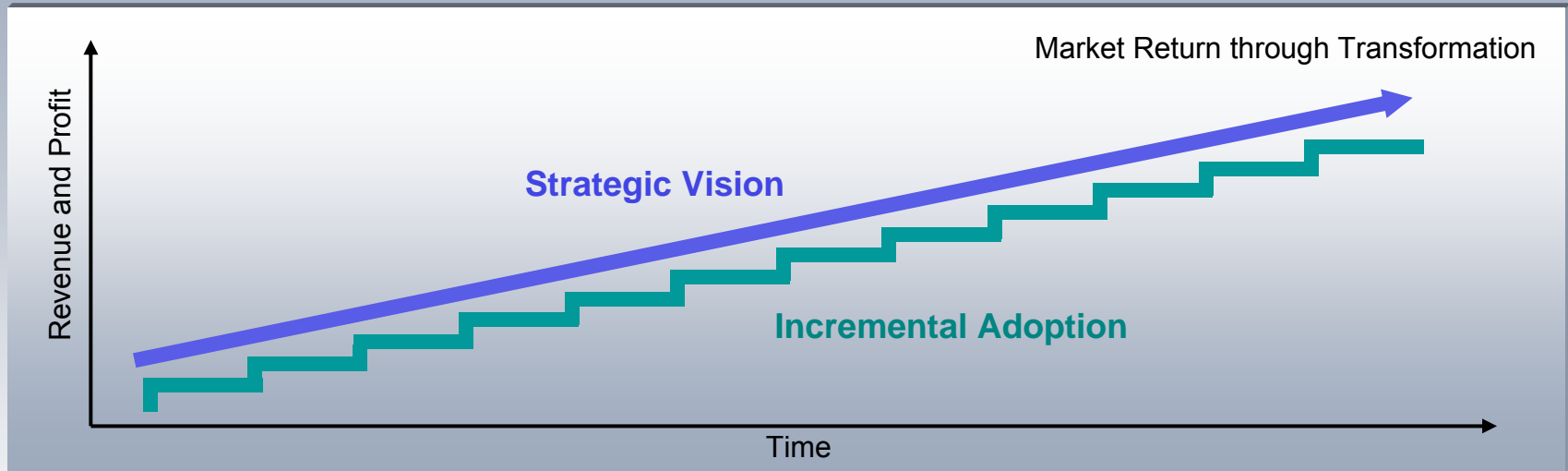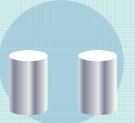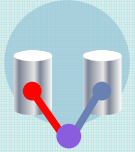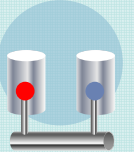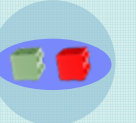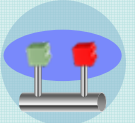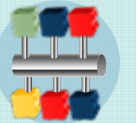

Two Primary Roadmap Perspectives

- **Strategic Vision**
  Business and IT statement of direction which can be used as a guideline for decision making, organizational buy-in, standards adoption

- **Project Plans**
 Implementation projects to meet immediate needs of the current business drivers

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Roadmaps: Building Plans In Context

Business Goals and Imperatives

Domain of Capability

- Business Function Services
- Information Services
- Common IT Services
- Infrastructure Services

Scope of Services

- Discrete
- Partial Integration
- Enterprise Integration
- Partner Collaboration
- Dynamic Partner Collaboration

Legend:
- Assess current state
- Determine future state
- Identify required capabilities and initiatives
- Develop Roadmaps

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Service Integration Maturity Model (SIMM)

	Silo	Integrated	Componentized	Services	Composite Services	Virtualized Services	Dynamically Re-Configurable Services
Business View	Function Oriented	Function Oriented	Function Oriented	Service Oriented	Service Oriented	Service Oriented	Service Oriented
Organization	Ad hoc IT Governance	Ad hoc IT Governance	Ad hoc IT Governance	Emerging SOA Governance	SOA and IT Governance Alignment	SOA and IT Governance Alignment	SOA and IT Governance Alignment
Methods	Structured Analysis & Design	Object Oriented Modeling	Component Based Development	Service Oriented Modeling	Service Oriented Modeling	Service Oriented Modeling	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 Re-Configurable Architecture
Infrastructure	Platform Specific	Platform Specific	Platform Specific	Platform Specific	Platform Specific	Platform Neutral	Dynamic Sense & Respond
	Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**	**Level 7**

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SOA Adoption Considerations

- **Business Drivers**
  - Time to market
  - Reduce costs
  - Increase revenue
  - Reduce risk and exposure

- **Organizational readiness**
  - Executive support and sponsorship
  - Skills

- **Current architecture and environments**
  - Build and Runtime
  - Degree of heterogeneity

- **Operational readiness**
  - Ability to monitor and manage current operations
  - Integration of monitoring functions into production environments
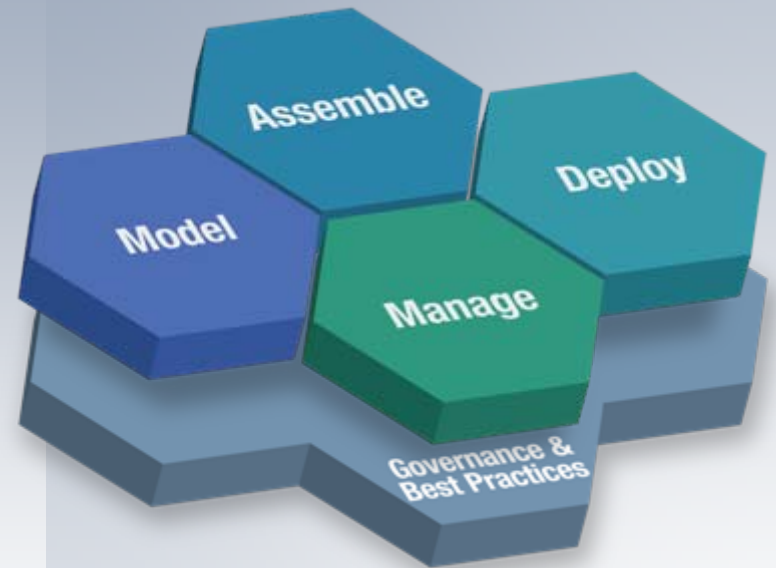
Agenda

- SOA Reference Architecture

- SOA Roadmap

- **SOA Governance**
  - Executing for success

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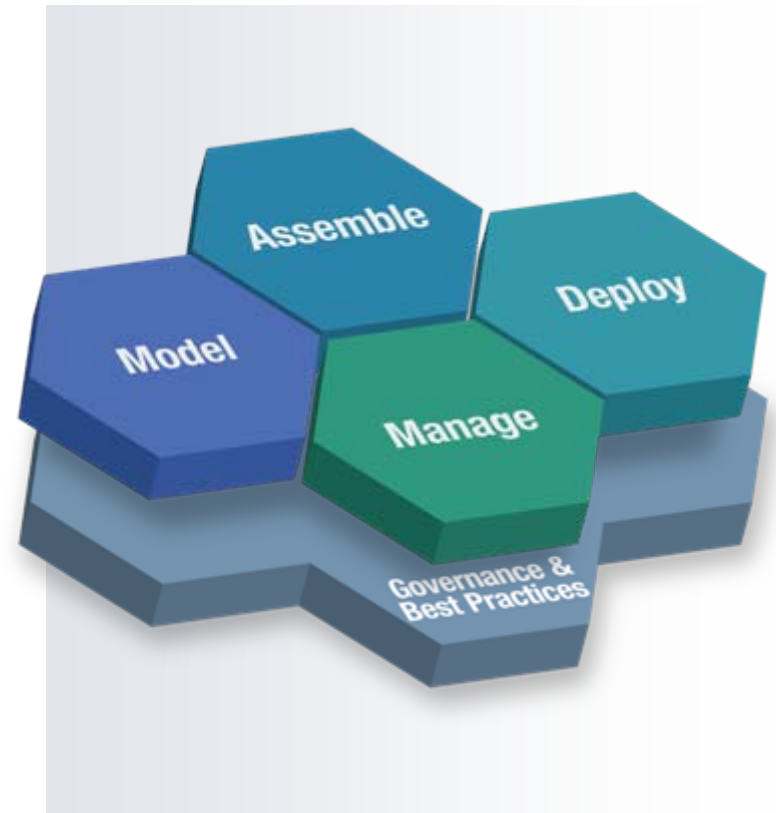
What is Governance?

SOA Governance is a catalyst for improving overall IT Governance

IT Governance

Establishing decision making rights associated with IT

Establishing mechanisms and policies used to measure and control the way IT decisions are made and carried out

SOA Governance

Extension of IT governance focused on the **lifecycle of services** to ensure the business value of SOA
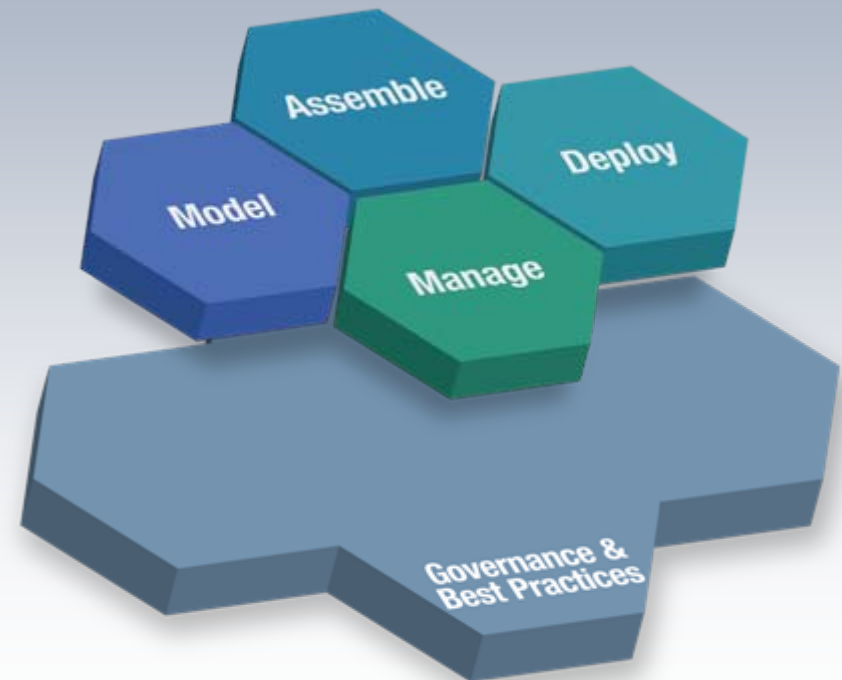
Why SOA Governance Matters

SOA Governance empowers teams to innovate

- **Realize business benefits of SOA**
  - Business process flexibility
  - Improved time to market

- **Mitigate business risk and regain control**
  - Maintaining quality of service
  - Ensuring consistency of service

- **Improved team effectiveness**
  - Measuring the right things
 - Communicating clearly between business and IT

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SOA Governance Lifecycle

Plan the Governance Need
- Document and validate business strategy for SOA and IT
- Assess current IT and SOA capabilities
- Define/Refine SOA vision and strategy
- Review current Governance capabilities and arrangements
- Layout governance plan

Define the Governance Approach
- Define/modify governance processes
- Design policies and enforcement mechanisms
- Identify success factors, metrics
- Identify owners and funding model
- Charter/refine SOA Center of Excellence
- Design governance IT infrastructure

Define

Governance and Best Practices

Plan

Enable

Measure
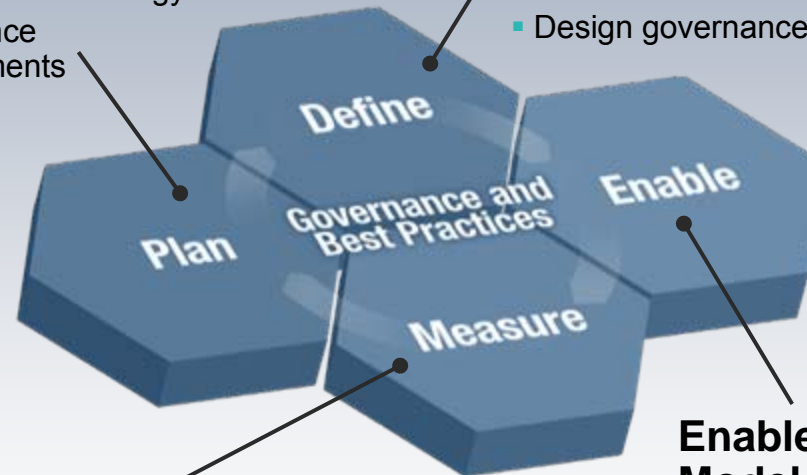
Monitor and Manage the Governance Processes
- Monitor compliance with policies
- Monitor compliance with governance arrangements
- Monitor IT effectiveness metrics

Enable the Governance Model Incrementally
- Deploy governance mechanisms
- Deploy governance IT infrastructure
- Educate and deploy on expected behaviors and practices
- Deploy policies

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SOA Governance can be tailored to the scope of the SOA initiatives in the organization

SOA Implementation Approaches

	Organization	Process	Funding
Enterprise Level SOA a strategic initiative for application development and integration at an Enterprise Level	Enterprise Control - Virtual or dedicated roles	IT Industry Architecture governance maturity	Shared costs of Charge-back structure
Line of business (LoB) level or across a set of related projects	LoB/IT coordination	Business driven services scope	IT budget allocated and funded by LoB
Single project implementation at IT group level.. "Testing the waters" … Gradual adoption approach	IT Centric	Leverage existing IT development processes	Embedded in project budget

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# Agenda

- Summary

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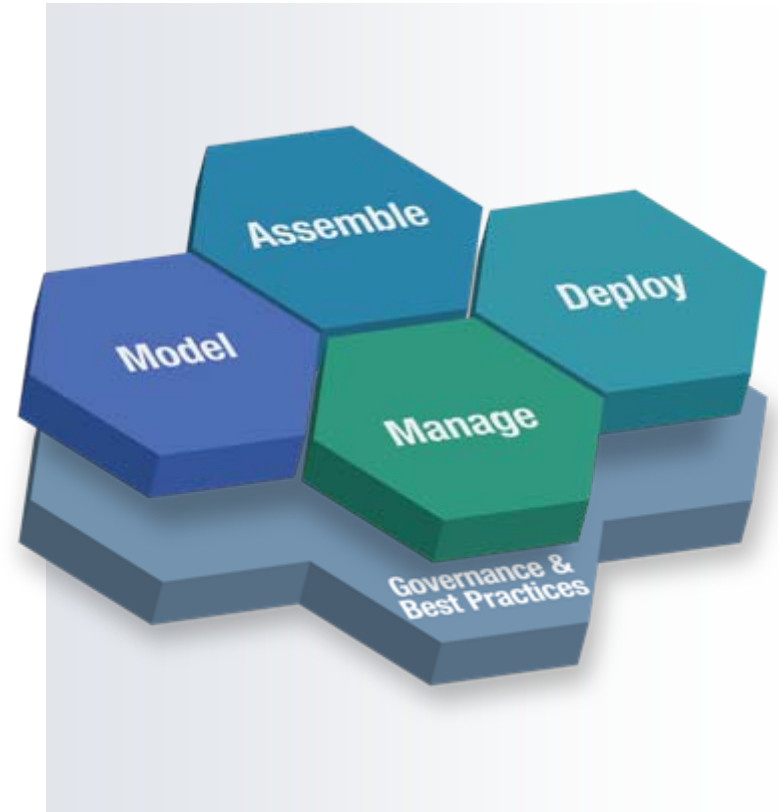
Analysts Position IBM in the Lead

"...IBM is the leader in the development of SOA intellectual property.... with firm-wide SOA investment of $1 billion, IBM will leverage cutting-edge R&D, leading to quicker SOA value and reusable SOA assets for clients."

The Forrester Wave™:
North American SOA Integration, Q3 2006, September 2006

2005 SOA Market Share

webMethods 3%
Other 5%
Sun 4%
Oracle 5%
SAP 6%
Tibco 8%
Microsoft 10%
BEA 13%
IBM 46%
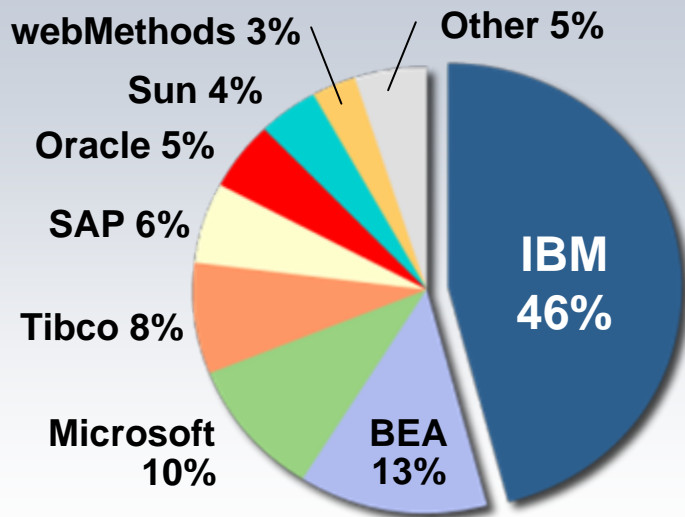
Source: WinterGreen Research, 2006

IBM in the Leader Quadrant in Seven SOA-focused Gartner Magic Quadrants

"Business Process Analysis Tools 2006" by Michael J. Blechar, Jim Sinur (27 February 2006)

"Data Quality Tools, 2006" by Ted Friedman, Andreas Bitterer (21 April 2006)

"Horizontal Portal Products 2006" by D.Gootzit ,G.Phifer, R. Valdes (16 May 2006)

"Customer Data Integration Hubs, 2Q06" by John Radcliffe (26 May 2006)

"OOA&D Tools, 2H06 to 1H07" by Michael Blechar (30 May 2006)

"Security Information and Event Management, 1H06" by Mark Nicolett, Amrit T. Williams, Paul E. Proctor (12 May 2006)

"User Provisioning" by Roberta J. Witty, Ant Allan, Ray Wagner (1H 2006)

IBM owns 37 percent of the $8.5B application and middleware market, well ahead of its next closest competitor.*

* Source: "Market Share: AIM and Portal Software, Worldwide, 2005" by Joanne Correia (June 2006)

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Lessons Learned
Based on Customers' Experiences

- **SOA is a team sport**
  - Business Team and IT Team work hand-in-hand

- **SOA Foundation is critical**
  - Establish an enterprise architecture & infrastructure, based upon SOA principles

- **Roadmap planning and project-based execution enable evolutionary change**
  - Avoid the "Big Bang" approach

- **Governance is a must for success**

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धन्यवाद
Hindi

多謝
Traditional Chinese

Teşekkür ederim
Turkish

Спасибо
Russian

Gracias
Spanish

شكراً
Arabic

Thank You

Mange tak
Danish

Grazie
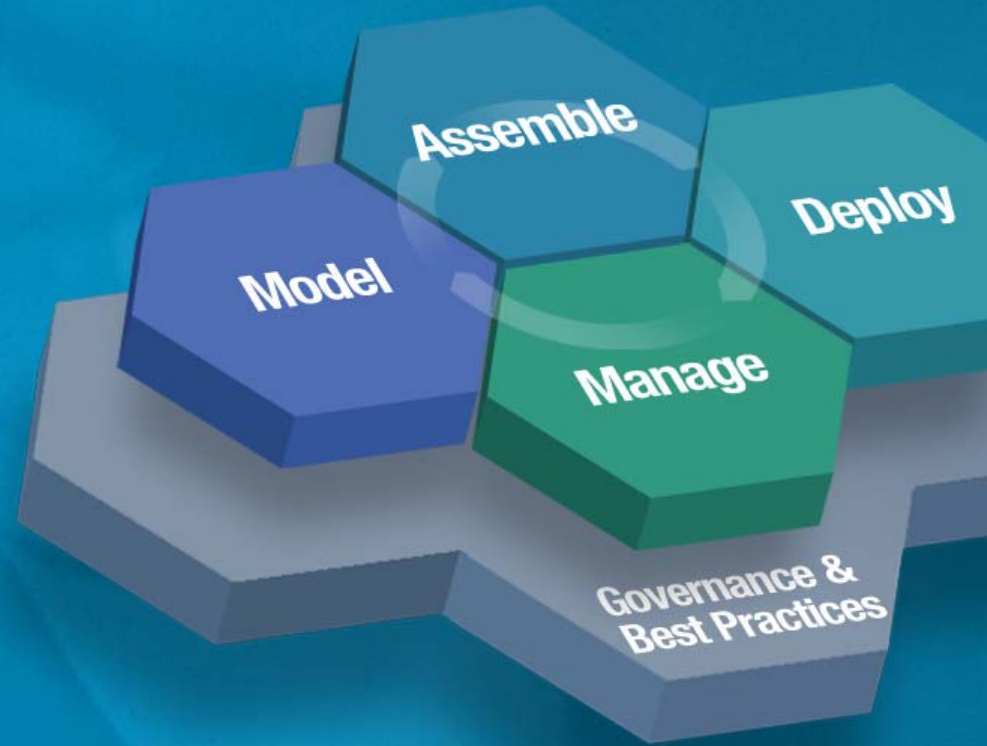Italian

Danke
German

Merci
French

多谢
Simplified Chinese

நன்றி
Tamil

감사합니다
Korean

ありがとうございました
Japanese

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