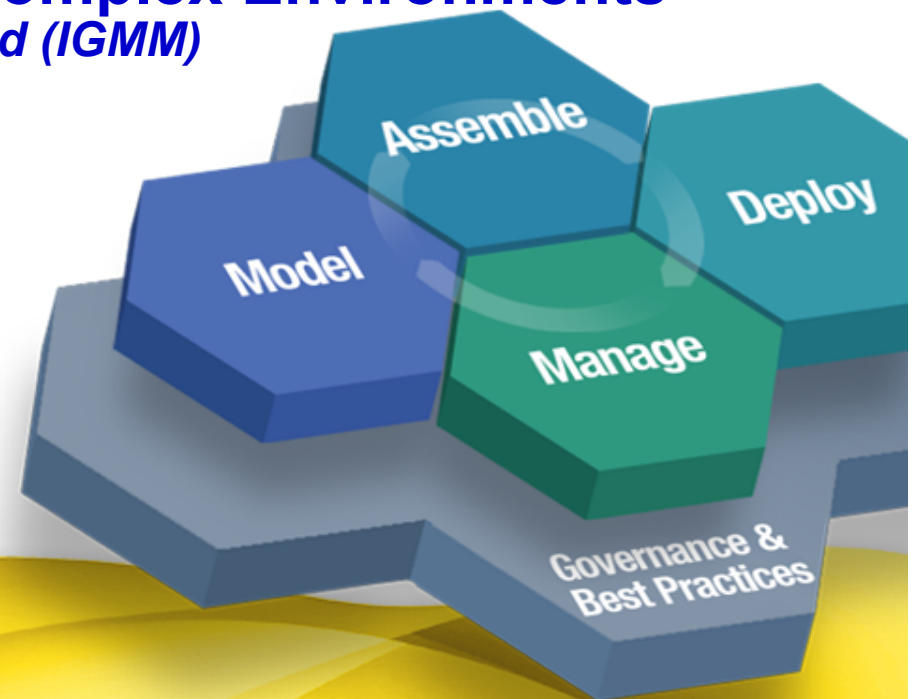




## Governance and Consulting in Complex Environments *IBM's Governance and Management Method (IGMM)*

**William A Brown**  
[brownaw@us.ibm.com](mailto:brownaw@us.ibm.com)  
Distinguished Engineer  
CTO Governance  
CTO STG Eastern and Central Europe



# Governance and Consulting in Complex Environments



William A Brown "Bill"

▪ [brownaw@us.ibm.com](mailto:brownaw@us.ibm.com)



- IBM Distinguished Engineer
- Open Group Distinguished Chief IT Architect
- Holder of 87+ Patents or Patent Pending
- Master Inventor
- A Lead Architect - IBM's Technical Patent Board
- DE, Sr, IT Certification Mentor
- 29 years of IT Experience
- CTO STG Eastern & Central Europe
- CTO – Governance
- Lead Author of IBM's SOA Governance and Management Method
- World WideEAm BPO & SOA Center of Excellence



William A. Brown  
Robert G. Laird  
Clive Gee  
Tilak Mitra

## SOA Governance

Achieving and Sustaining Business and IT Agility

MAKING SOA WORK: IMPLEMENTING EFFECTIVE, BUSINESS-DRIVEN GOVERNANCE IN SERVICE-FOCUSED IT ENVIRONMENTS

- The first book to help enterprises overcome the root cause of SOA failure: inadequate governance
- Hard-won best practices from a team of IBM's leading SOA governance experts
- Covers every facet of implementing and managing SOA governance, from assessment and planning through execution
- An indispensable resource for every executive and stakeholder in SOA environments

As enterprises move to implement Service Oriented Architecture (SOA), they increasingly recognize that SOA will only meet its potential if it can be governed well. *SOA Governance* responds to this crucial realization. In this book, a team of IBM's leading SOA governance experts share hard-won best practices for effectively governing IT in any service-oriented environment. The authors begin by reviewing SOA's promised benefits, and identifying inadequate governance as a root cause when SOA fails. Next, they introduce a comprehensive SOA governance model that works. They define what must be governed, identify key stakeholders, and review the relationship of SOA governance to existing governance bodies, and to processes like COBIT and ITIL. In Part II, they walk through SOA governance assessment and planning, helping readers identify and fix gaps, set goals and objectives, and establish workable roadmaps. Finally, they turn to the details of "building out" an SOA governance model: establishing authority chains, roles, responsibilities, policies, standards, mechanisms, procedures, and metrics. Along the way, the authors illuminate the unique issues associated applying IT governance to a services model — including the challenges of compliance auditing where service behavior can be unpredictable. They also show why services governance requires a more organizational, business-centric focus than "conventional" IT governance — and how to successfully achieve that focus.

### About the Author

WILLIAM A. BROWN (Raleigh, NC) is a Master Certified Executive Architect with IBM Global Business Services Enterprise Architecture and Technology Center of Excellence and the SOA Center of Excellence. CLIVE GEE (UK), Senior Solution Architect at IBM Enterprise Integration Services group, has designed and deployed solutions involving technologies such as XML, XSLT, SMS, Web Services, and SOA. BOB LAIRD (UK) is responsible for supporting and leading SOA governance and architecture engagements for worldwide IBM customers. TILAK MITRA (Coconut Creek, FL) is a Senior IT Architect Certified Executive I/T Architect with IBM Global Business Services in the Enterprise Application Development group.

Visit [www.ibmpressbooks.com/title/9780137147465](http://www.ibmpressbooks.com/title/9780137147465) to learn more.

AVAILABLE AT BOOKSTORES AND ONLINE BOOKSELLERS.



©2009 ISBN: 9780137147465

### Table of Contents

Preface

CHAPTER 1  
A services approach, why bother?

CHAPTER 2  
SOA Governance Overview

DIAGNOSTIC

CHAPTER 3  
SOA Governance Assessment and Planning

TREATMENT PLAN  
Building the SOA Governance Model

CHAPTER 4  
Defining your SOA Governance Model

CHAPTER 5  
Focusing on the Service Lifecycle

CHAPTER 6  
Shaping the Organization

SEEING IT WORK -  
The SOA Governance Model in Action

CHAPTER 7  
SOA Governance Case Study

Author Bio - Extended

IBM  
Press





The World is Changing:

- West to East
- North to South
- Adversarial to Collaborative
- Closed to Open
- Small to Big
- Slow to Fast
- Fragmented to Connected
- Short to Long

The **World** is Changing

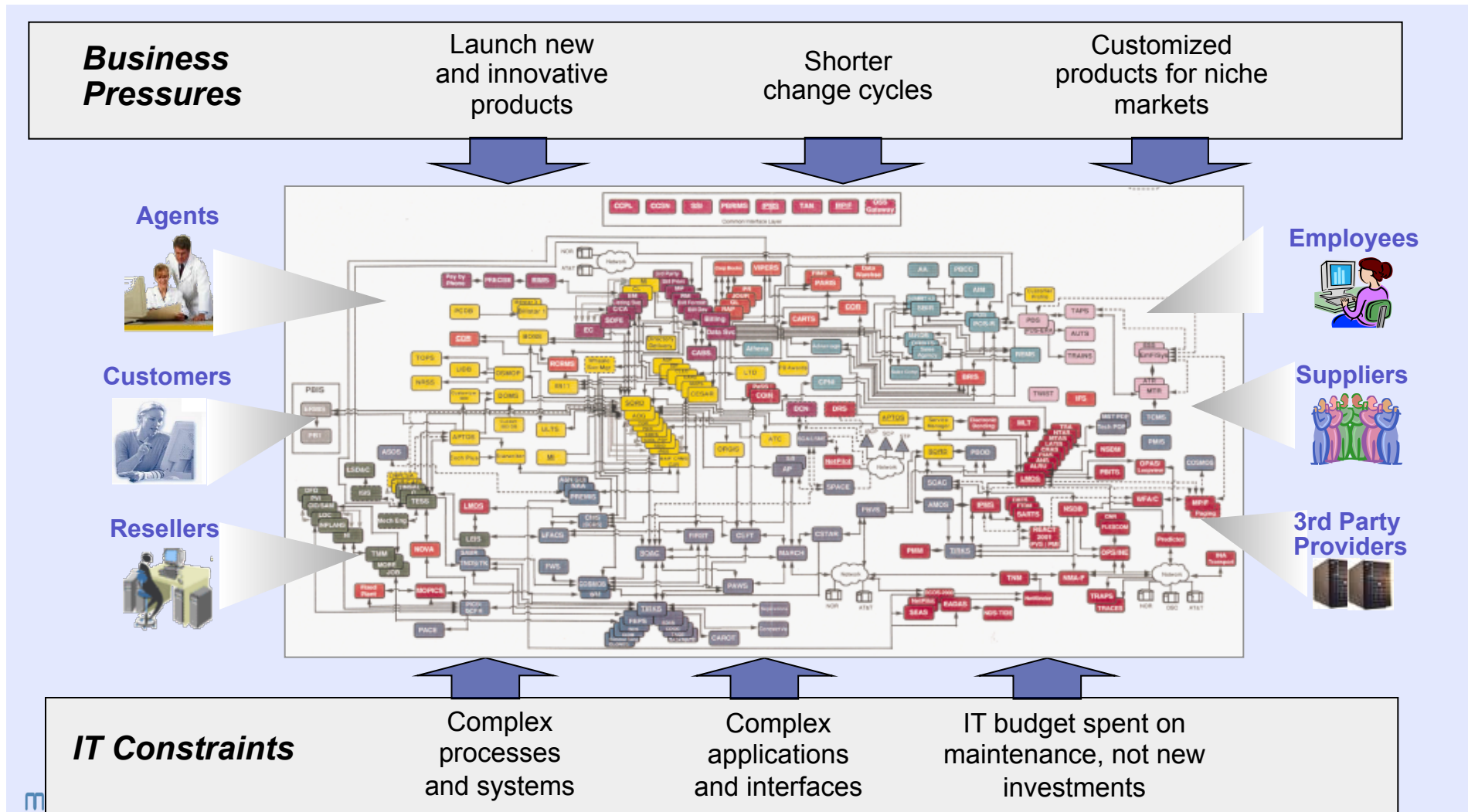
## Business Models are changing as well. C Level Execs are dealing with new Problems

- I can't get the resources I need when I need them. (**speed / availability**)
- I have to make a **long term investment** when my **need is short term** or intermittent
- My IT staff is **overwhelmed**
- My technology investments don't directly map to **business value**
- I have services but the **business** does not seem to be adopting them
- New products do not **get to market fast enough**, we respond too slowly
- My **Customers** are **Global**
- My Customers expect **more Value at Lower Cost**
- I don't have complete **Control and Visibility** of my new **Environment**





## Rising Gap between Business Challenges and IT Capability



## Enterprises are facing the challenge of **IT Sprawl** and **Complexity** in their operational environments .....



**32.6 million** servers worldwide

- **85% idle** computer capacity
- **15%** of servers run 24/7 without being actively used on a daily basis



**1.2 Zettabytes (1.2 trillion gigabytes)** exist in the “digital universe”

- **50%** YTY growth
- **25%** of data is unique; **75%** is a copy



Between 2000 and 2010

- servers grew **6x** (‘00-’ 10)
- storage grew **69x** (‘00-’ 10)
- virtual machines grew **51% CAGR** (‘04-’ 10)



Data centers have **doubled** their energy use in the past five years

- **18%** increase in data center energy costs projected



Internet connected devices **growing 42% per year**



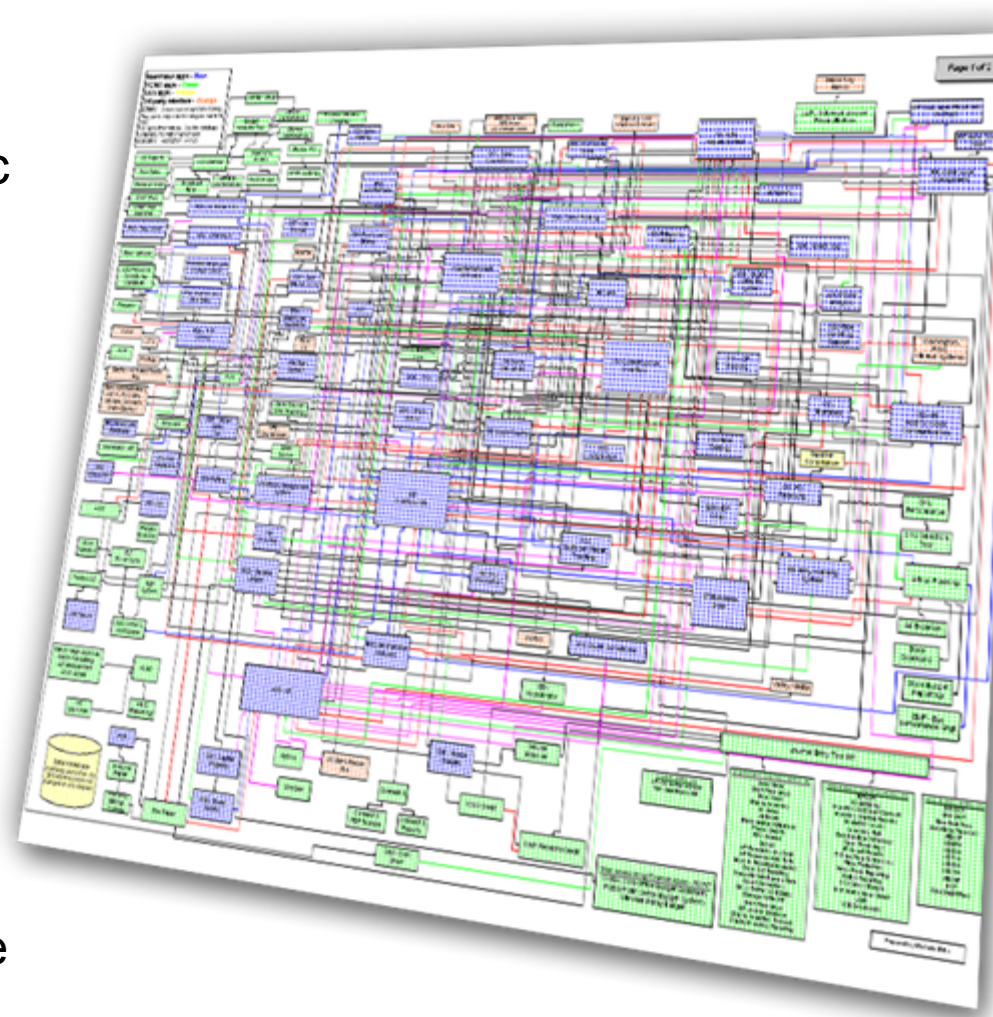
Since 2000 security vulnerabilities grew **eightfold**

...while IT budgets are growing less than 1% per year.



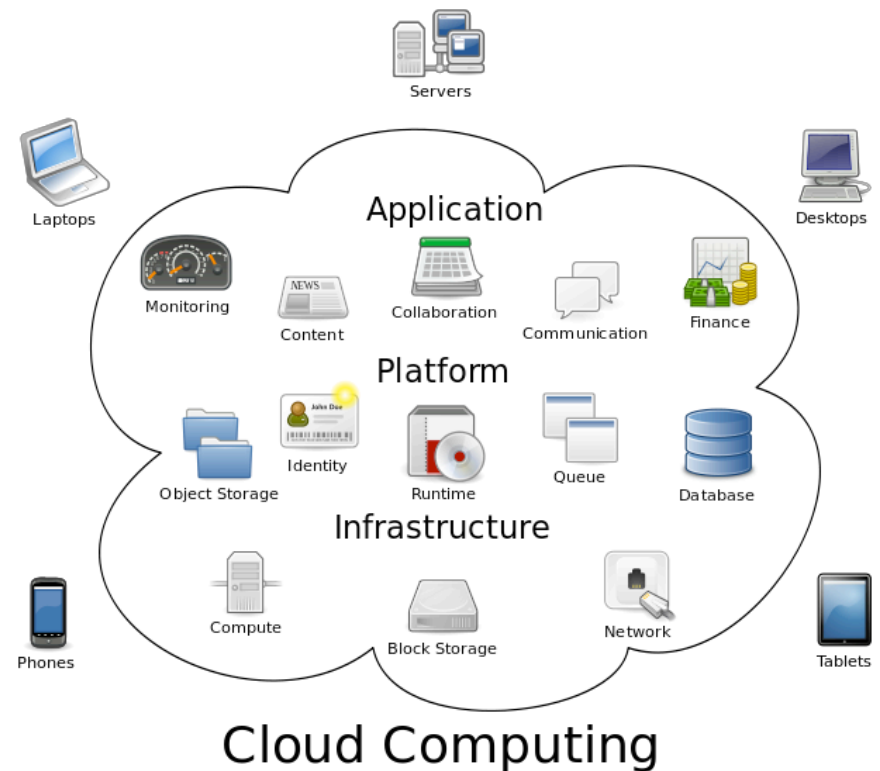
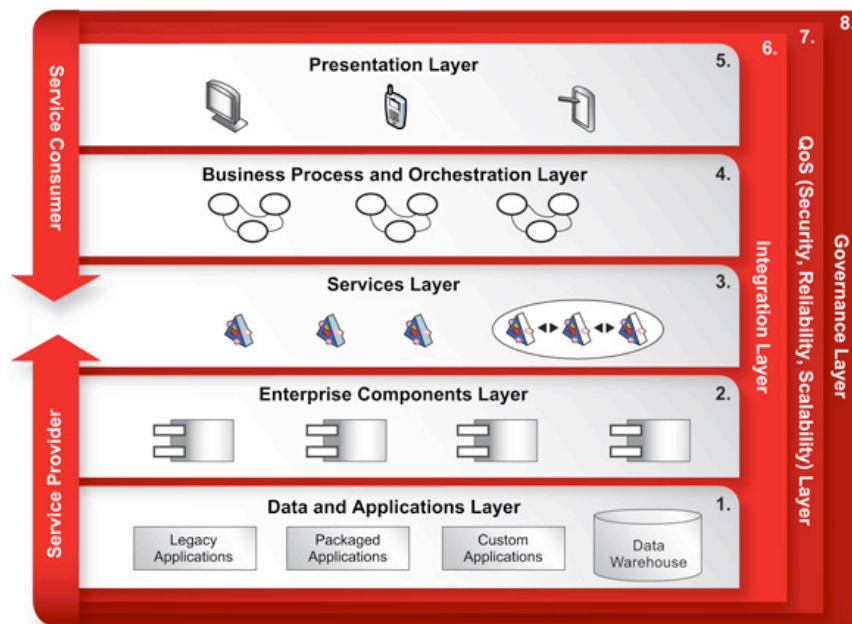
## Complexity is a barrier to business flexibility and reuse

- Lack of business process and engineering standards
- Lack of Enterprise or strategic focus.
- Typically it's a tactical solution focus
- Lacks Traceability to Policies Standards or Best Practices
- Point to Point Connections
- Inflexible systems and infrastructure.
  - built over time, built AdHoc, lack of enterprise perspective



## Environment Complexity and IT Sprawl is addressed with SOA and Cloud Computing – A symbiotic relationship and the new norm for EA

- Convergence of two synergistic and complementary architecture styles
- Cloud is enabled by SOA
- SOA Deployment is maximized in a Cloud



## Cloud Computing



## Service-Oriented Architecture (SOA) is Mainstream In Software Engineering in the Industry

- A **Service-Oriented Architecture** is an *enterprise-scale IT architecture* for invoking and linking resources as needed (on demand).
  - These resources are represented as **business(-aligned) services** which can participate and be composed into applications participating in many levels of scope: a value-net, enterprise, or line of business to fulfill business needs.
  - The primary structuring element for SOA-based applications is the ***service; a business capability accessible through a specific architectural style***, as opposed to subsystems, systems, or components.

**The Industry has Moved to an Increased Adoption of SOA and SOA Aspects in Traditional Projects**

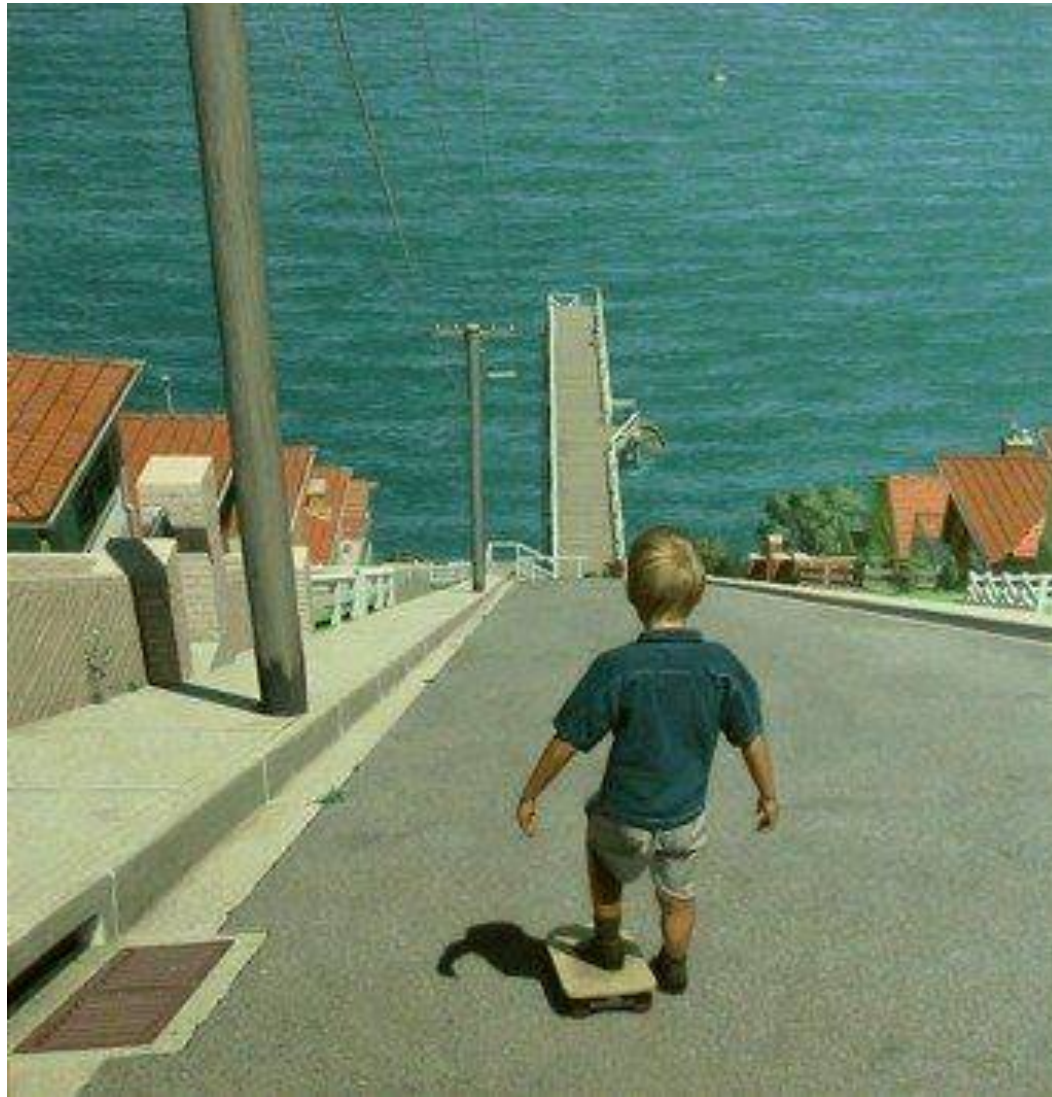
## Cloud Computing - NIST\* Definition

(\*National Institute of Standards and Technology)

**Cloud computing** is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.



## Risks are involved in this endeavor



## What's Governance? Extensions IT Governance

### Governance:

**Establishing** chains of responsibility, authority and communication to **empower** people (decision rights)  
**Establishing** measurement, policy and control mechanisms to **enable** people to carry out their roles and responsibilities

### IT Governance:

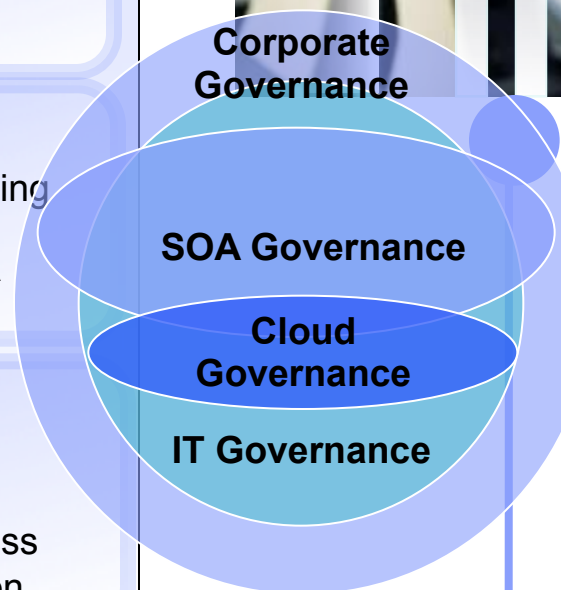
**Establishing** decision making rights associated with IT **Establishing** mechanisms and policies used to measure and control the way IT decisions are made and carried out

### SOA Governance:

**Extension** of IT governance focused on governing and managing the **lifecycle of services** thru processes to ensure the business value of SOA

### Cloud Governance:

**Establishes** a framework for the creation, provisioning and management of a elastic infrastructure the is strategic aligned with business need through business processes and application components.



*Governance is a catalyst for improving overall IT outcomes and results*



## What Constitutes a Governance Model

- Principles
- Policies
- Guidelines
- Standards
- Method
  - What & How do I tailor the model for individual projects
- **Governance Processes**
  - Exception and Appeals Process
  - Compliance
  - Vitality
  - Communication
- Governance Organizational Structure
- Governance Roles and Responsibilities



**Governance  
Foundational  
Building Blocks**

## A Bird's Eye View of IT Governance and Its Contexts

- **Governance:** Establishes chains of responsibility, authority and communication to empower people (decision rights) Establishing measurement, policy and control mechanisms to enable people to carry out their roles and responsibilities.
- **IT Governance:** Establishes decision making rights associated with IT. Establishing mechanisms and policies used to measure and control the way IT decisions are made and carried out.
- **EA Governance:** Establishes principles and policies for the selection and deployment of the Enterprise Architecture building blocks and IT solutions. Establishing processes for the compliance and vitality of Enterprise Architecture Blueprint.
- **SOA Governance:** Extension of IT governance focused on governing and managing the lifecycle of services through processes to ensure the business value of SOA.
- **Operations Governance:** Governs the release-to-production process and life cycle by establishing sub processes and their associated decision points .
- **Data Governance:** The exercise of decision rights to optimize, secure and leverage data as an enterprise asset
- **Governance of Financing and Prioritization:** Addresses issues related to Capital Budget (e.g., How much to spend, What to spend it on, and how to reconcile the needs of different constituencies)
- **Development Governance:** Establishes a Software Development Lifecycle (SDLC) that incorporates compliance, checkpoints, metrics, and appropriate assets at various stages of development to increase quality and meet delivery and budget goals.
- **Application Portfolio Governance:** Focuses on improving the value derived from the deployed portfolio of applications
- **Example of Other Governance Contexts:**
  - **BPM Governance:** Establishes a framework for the strategic alignment of business processes that drive breakthroughs in operating performance and enables the execution of the business strategy through aligned business processes

## Key Governance Questions ?

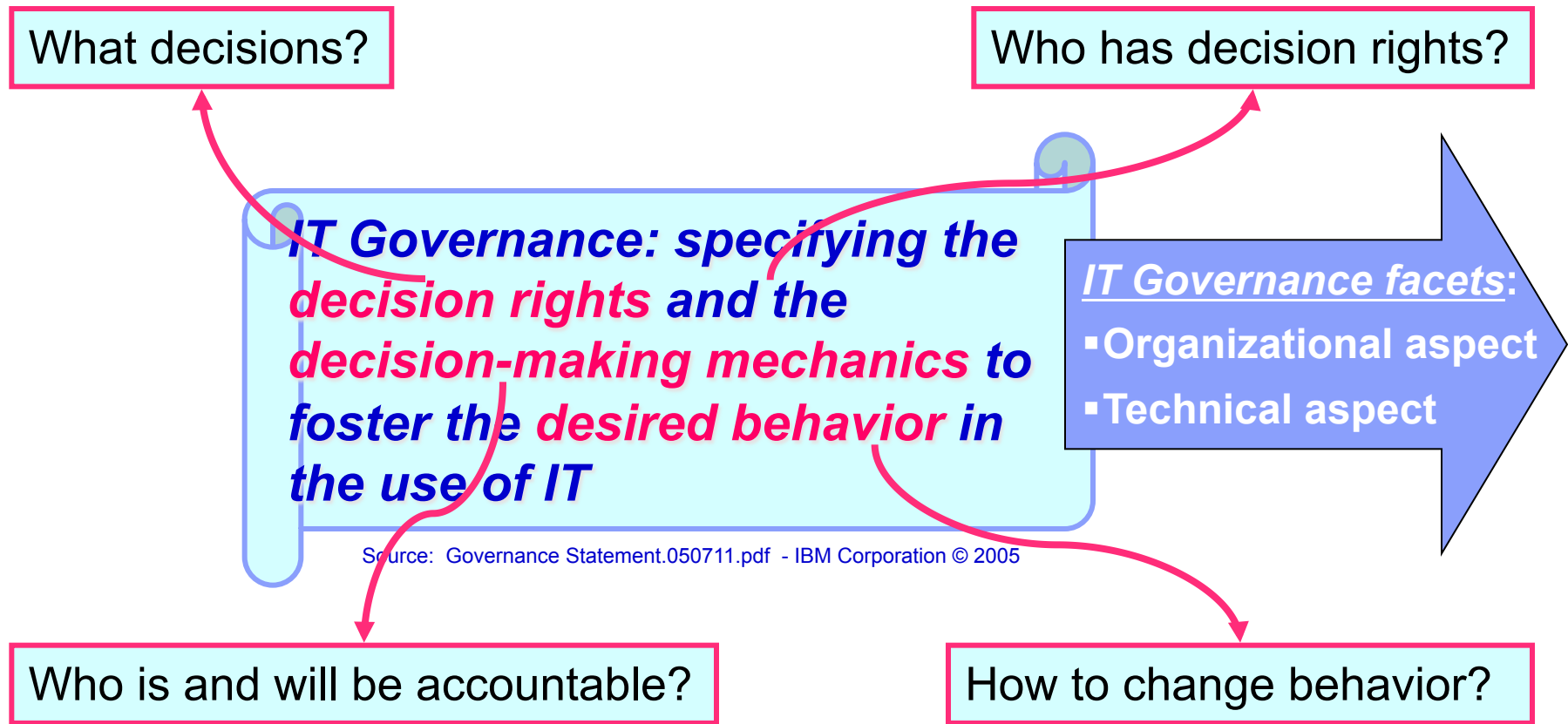
- Are we doing the right things?
- Are we doing them the right way?
- Are we getting them done well?
- Are we getting the benefits?

## Governance Drivers

- Technology driven innovation is changing business models, processes and structures**
  - Technology is defining the art of the possible in business
- Amount of Technical information is doubling every two years**
  - Will double in 72 hours by 2030*
- Next 100 years of technology change will feel more like 200,000 years at today's rate of change**
- We are truly living in exponential times***
- Historically Business and IT view as separate silos**
- The Business defines Business requirements and hands off to IT**
- Business and Technology must work together to drive innovation, flexibility and speed**
- CIOs must learn to shape the destiny of their enterprises...**
  - To create new value and long-term growth for their companies, emerge as an innovation leader of their business
  - This will require a fundamental change for how Business and Technology work together



IT Governance is about people and changing people's behavior, but with a technical aspect



- ❖ The ultimate goal of IT governance is to **change behavior**
- ❖ IT governance is not management & control on steroids – but it can certainly foster management & control policies

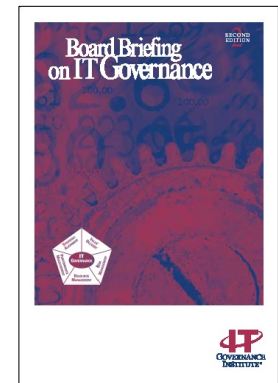
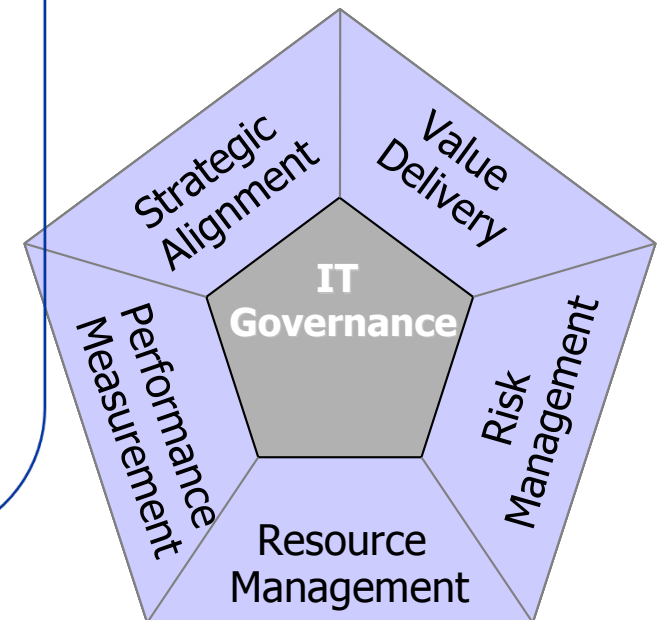
## What is IT Governance?

### What is IT Governance?

Leadership, process and structure to ensure the enterprise's IT enables and supports the enterprise's strategies and objectives by defining:

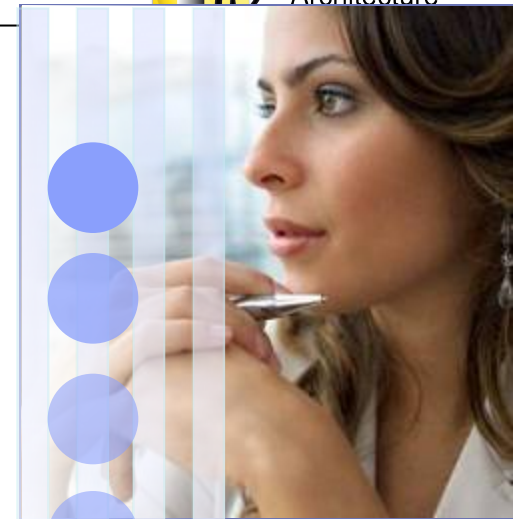
- ❑ what key decisions need to be made;
- ❑ who is responsible for making them;
- ❑ how they are made; and
- ❑ the process and supporting structures for making them, including monitoring adherence to the process and the effectiveness of decisions

Supporting these five areas



## EA Governance

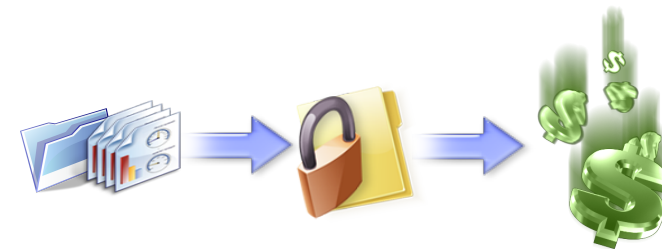
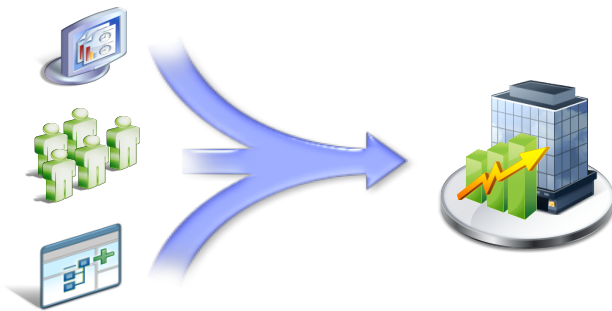
- Provides a framework for ensuring an orderly evolution towards the target Enterprise Architecture
- Ensures adherence to the Principles on which the architecture is based
- Defines the Enterprise Architecture Vision, Guiding Principles, Policies, and Standards
- Defines EA Management processes, including
  - Communications
  - Exception
  - Compliance
  - Vitality
- Defines Governance Organization Structure and roles and responsibilities of participants including
  - Steering Committee
  - Architecture Review Board
  - Technical Compliance Team
- Defines Metrics to measure the progress of EA





Data Governance is the exercise of decision rights to optimize, secure and leverage data as an enterprise asset

- **Orchestrate people, process and technology toward a common goal**
  - Promotes data consistency and collaboration
  - Manages access to data
  - Derive maximum value from information
- **Leverage information as an enterprise asset to drive opportunities**
  - Safeguards information
  - Ensure highest quality
  - Manage it throughout lifecycle



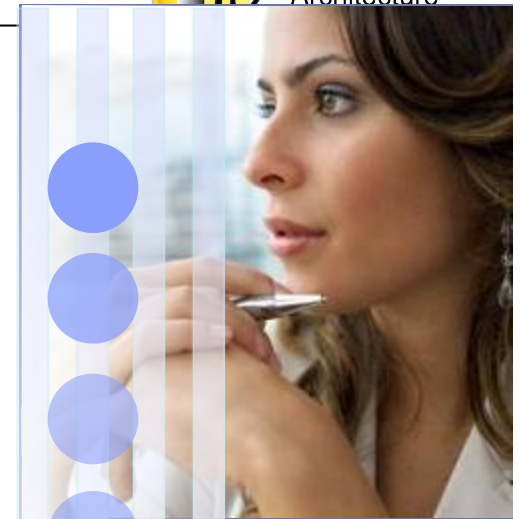
**Governing the creation, management and usage of enterprise data is not an option any longer. It is:**

- ◆ **Expected by your customers**
- ◆ **Demanded by the executives**
- ◆ **Enforced by regulators/auditors**

## Operations Governance

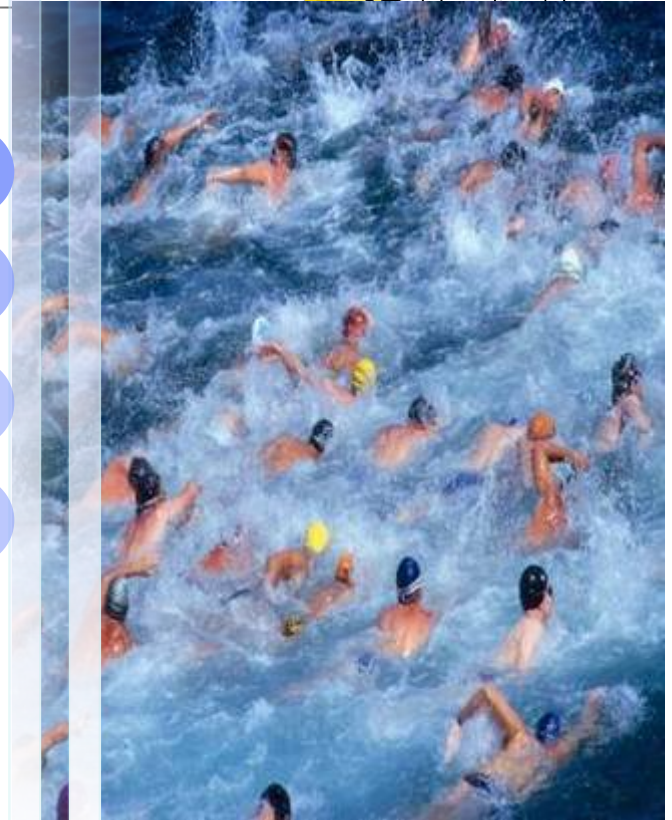
The *operations governance* discipline governs the release-to-production process with the use of the following sub processes;

- Configuration Management:
  - Focuses on establishing and maintaining consistency of a system's environment to meet functional and non functional requirements.
- Event Management:
  - Focuses on the identification and capture of system events and the processes in which these events will be handled
- Change Management:
  - Focuses on the processes needed to manage change within a system for applications, infrastructure or operational environments
- Security Management:
  - Focuses on establishing the processes to manage a system's security profile which should include access, physical accessibility and exposure



## Why is SOA Governance Needed?

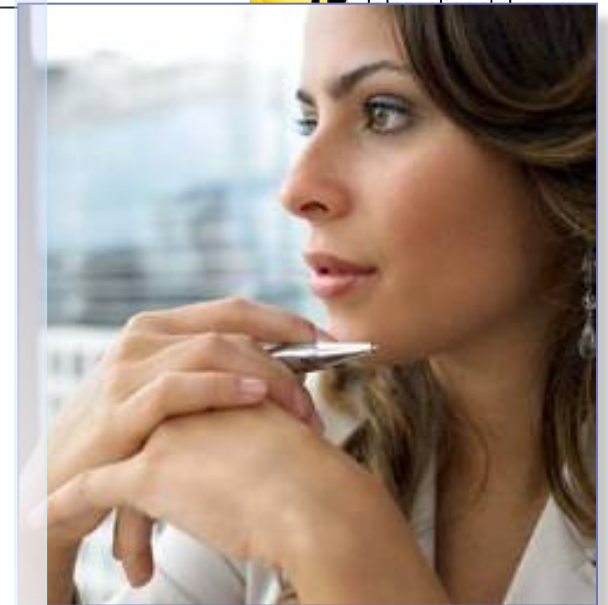
- Essential for the realization of business benefits thru SOA
  - Business Process Flexibility
  - Business Agility
  - Understanding of
    - The Cost of SOA vs Benefits
    - The Risk to Business and how to Mitigation
    - How to Maintain the Quality of Services
    - How to Ensuring Consistency of Services
    - Effectiveness of your SOA Model
  - Ability to Measure the right things at the right time
  - A Clear Communication and Decision Making Process between Business and IT
- SOA Implementation Failure is certain without SOA Governance
- SOA Chaos is the result





## Why is Cloud Governance Needed?

- Essential for the realization of business benefits thru Cloud
  - Environmental Flexibility
  - Business Alignment
  - Understanding of
    - Infrastructure Elements in Use
    - Who and What are using Infrastructure
    - When to Expand or contract the environment
    - The Cost of the use of the environment
    - The Risk to Business and how to Mitigation
    - How to Maintain the Quality & Consistency of Services
  - Ability to Measure the right things at the right time
  - A Clear Communication and Decision Making Process between Business and IT
- Enables the “*Elastic*” Cloud environment.
- Enable the “*Agile*” Cloud environment.

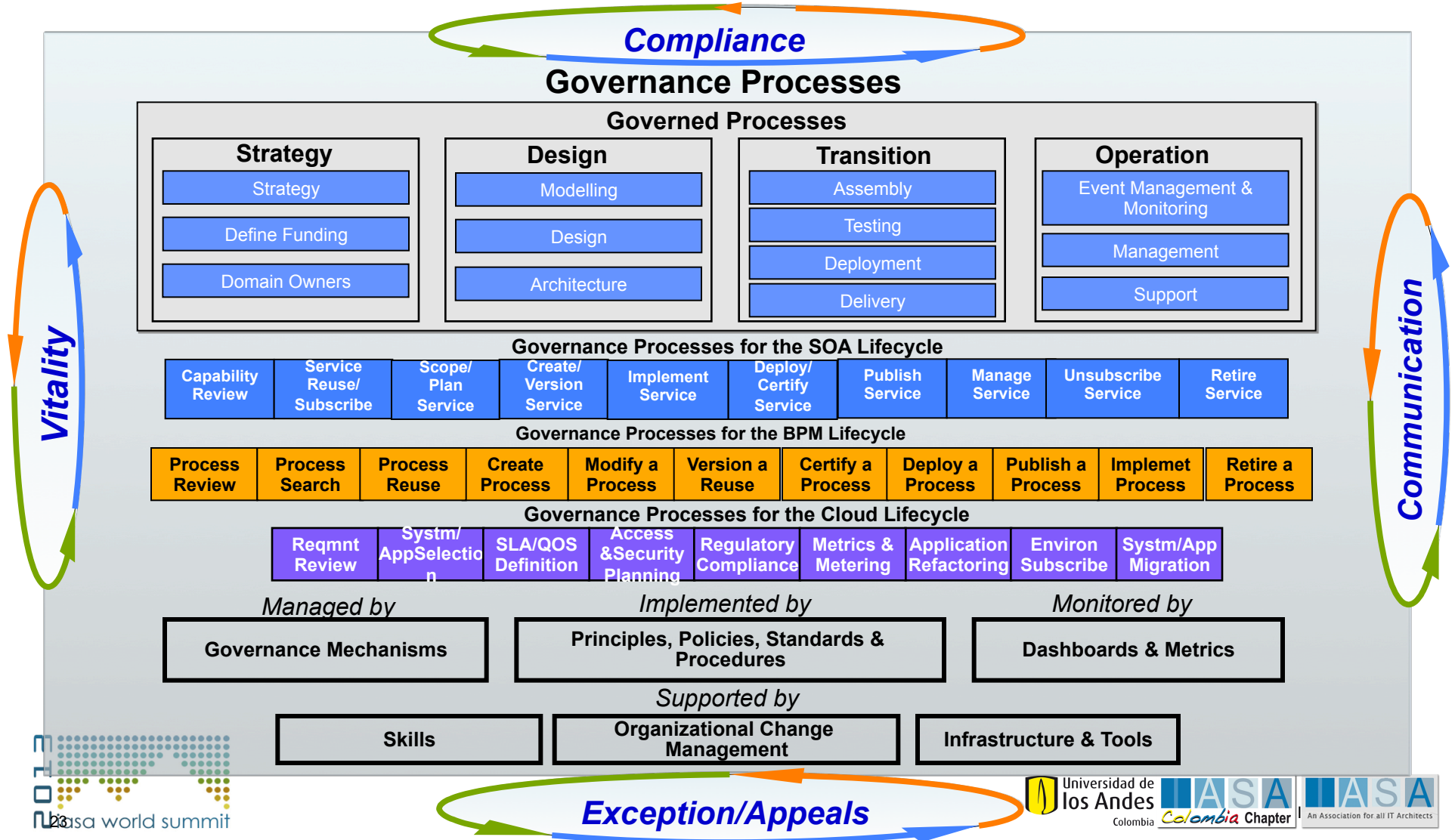


## IBM's Governance and Management Model

Proven method. Applied Cross Industry & Cross IBM LOB's



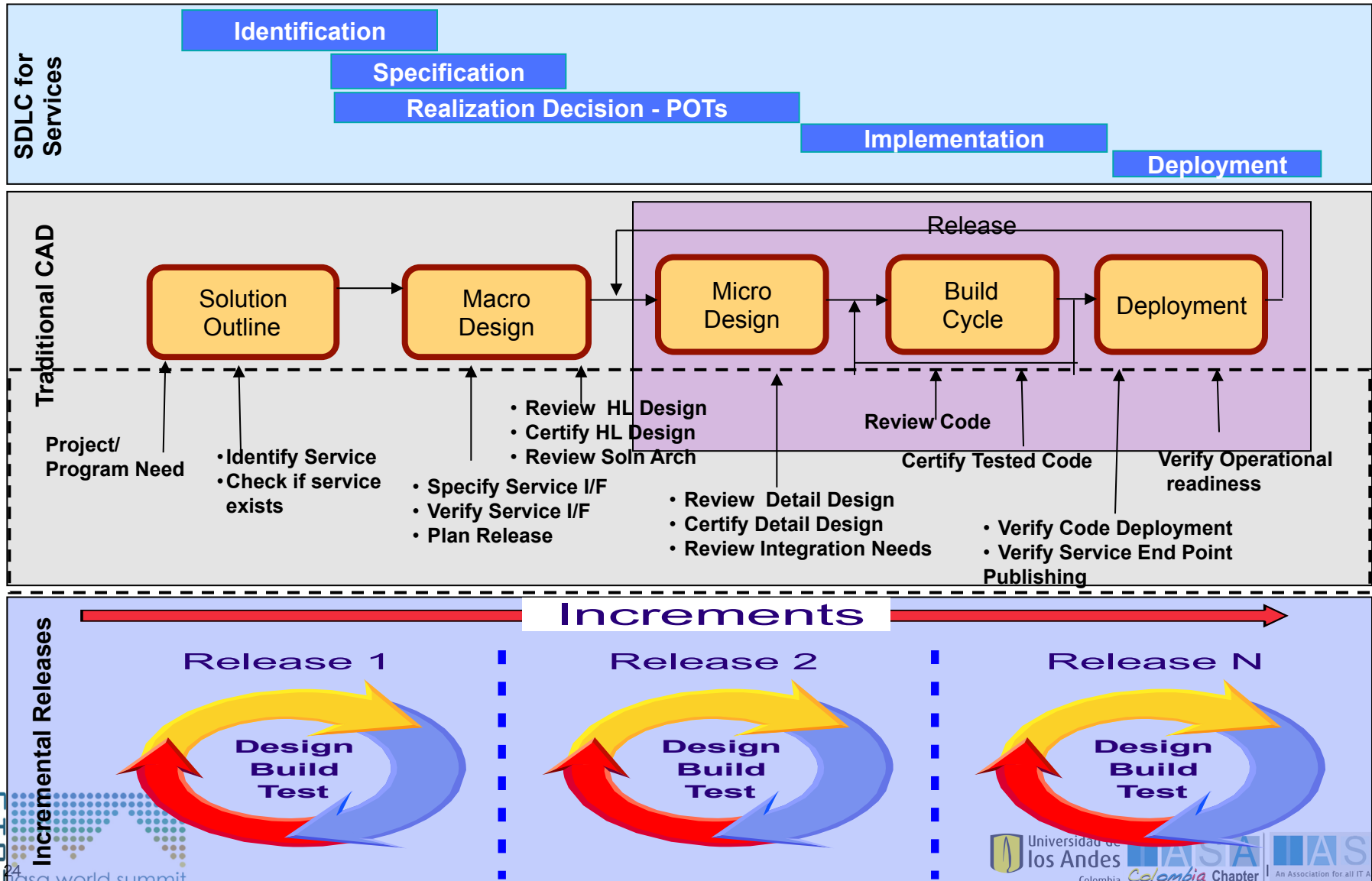
Aligned with ITIL & COBIT  
For multiple domains, EA, SOA, BPM, Cloud



# Governance and Consulting in Complex Environments



A SDLC mapped to a governance model incorporates compliance, checkpoints, metrics, & assets at various stages of development. Increases quality, meets delivery & budget goals.

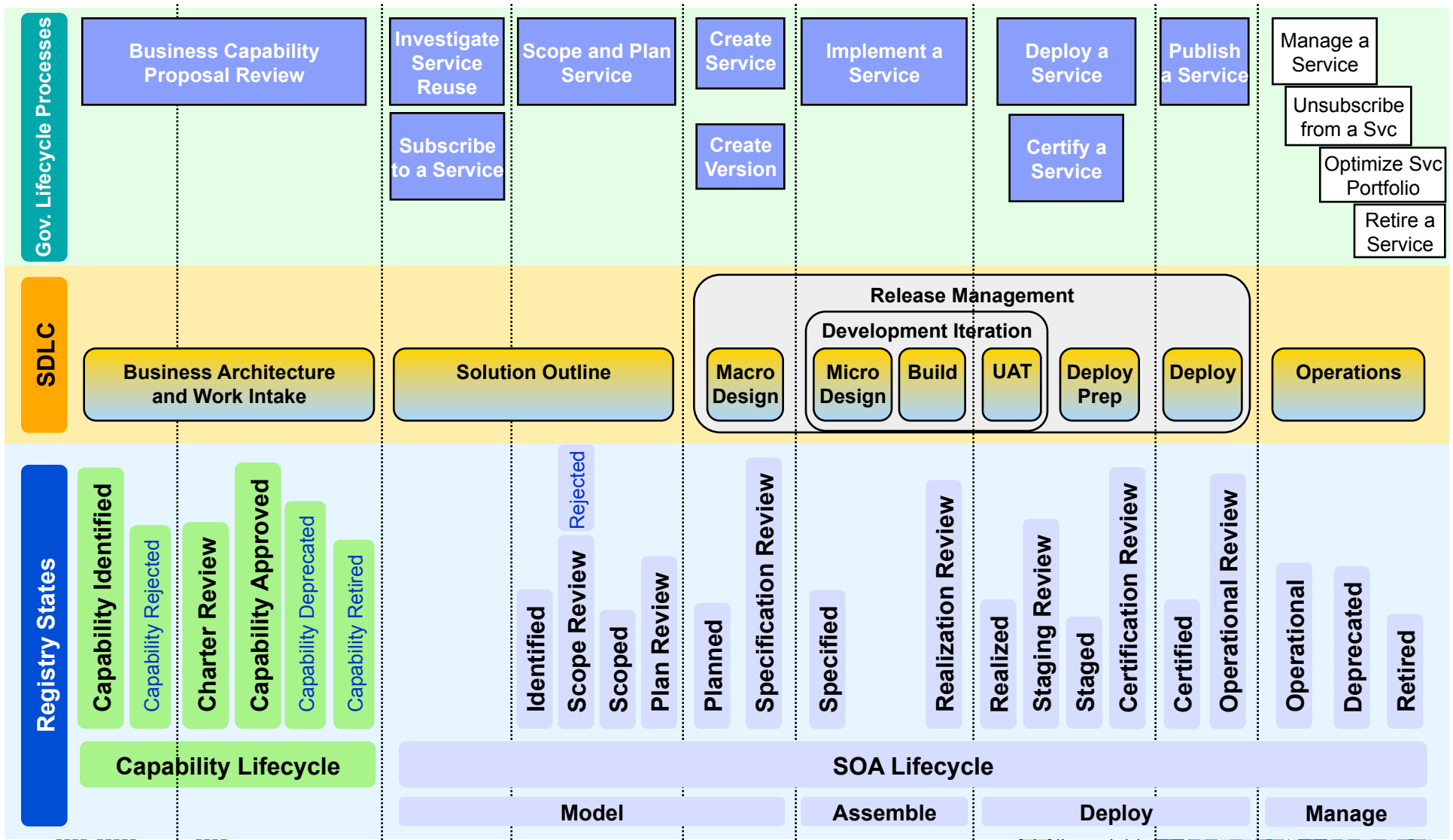




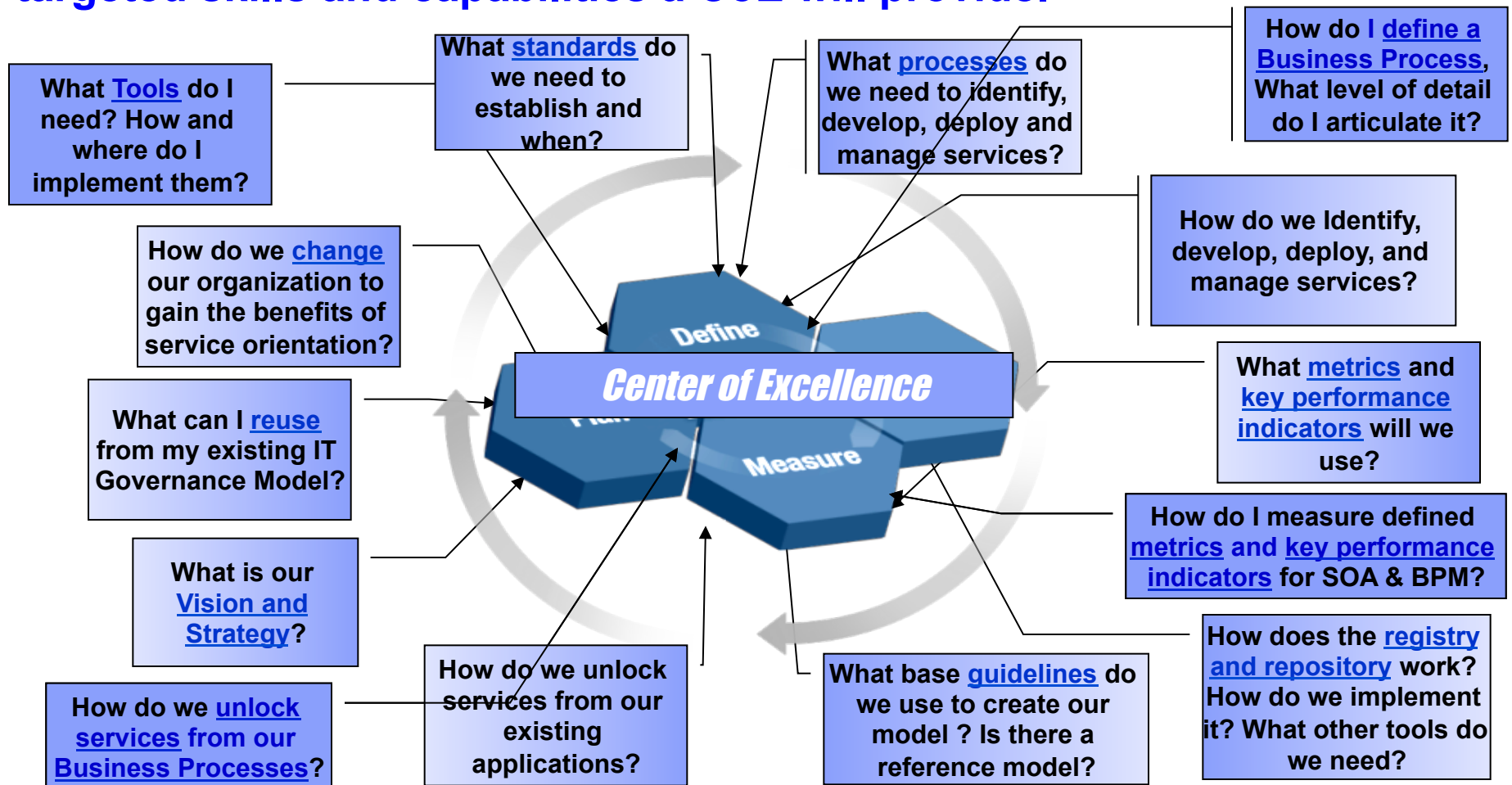
# Governance and Consulting in Complex Environments



## Alignment of Governance Lifecycle Processes, SDLC and Registry States



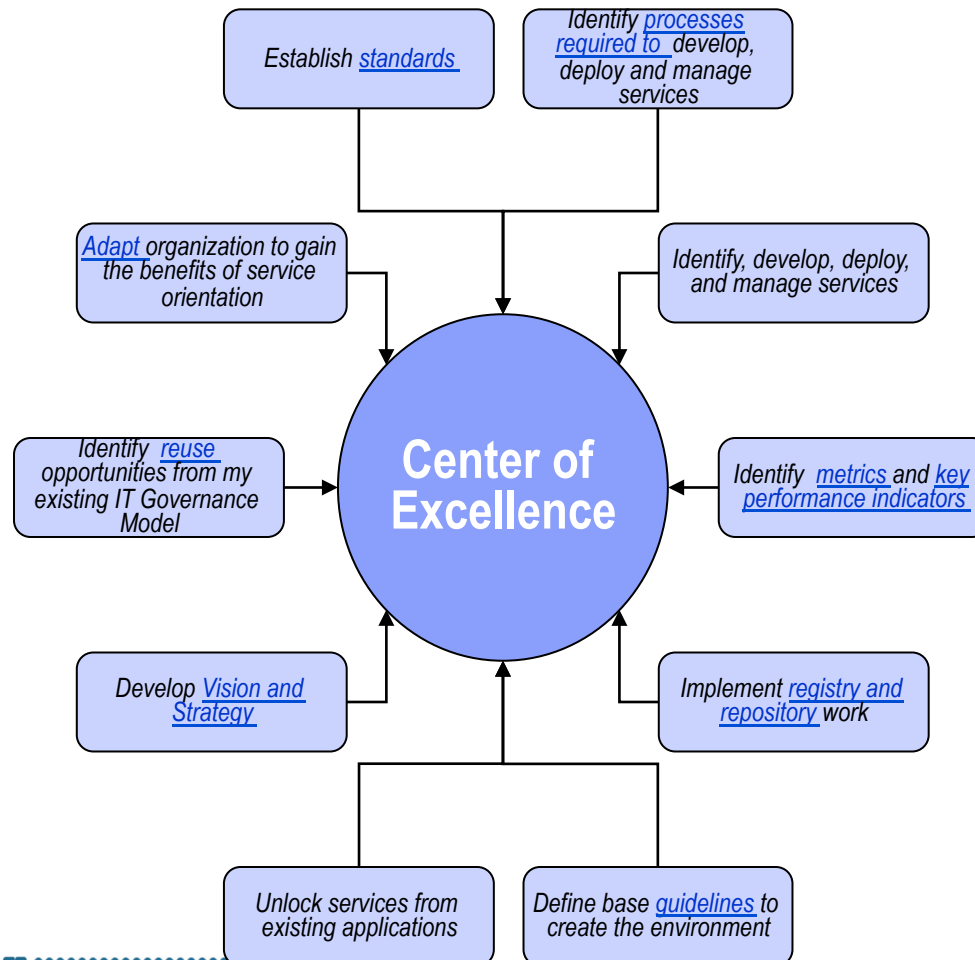
SOA & Cloud introduces a number of unique *challenges* requiring the targeted skills and capabilities a CoE will provide.



## The CoE Makes Success **Someone's** Responsibility

A CoE provides the dedicated subject matter team to address these challenges and affect the change necessary for a successful Implementation.

## Recommendation Center of Excellence Capabilities and Responsibilities



### CoE Core Capabilities

- Architecture Design and Customization
- Architecture Review
- Development Leadership
- Tool installation, configuration and support
- Education and Skills Transfer

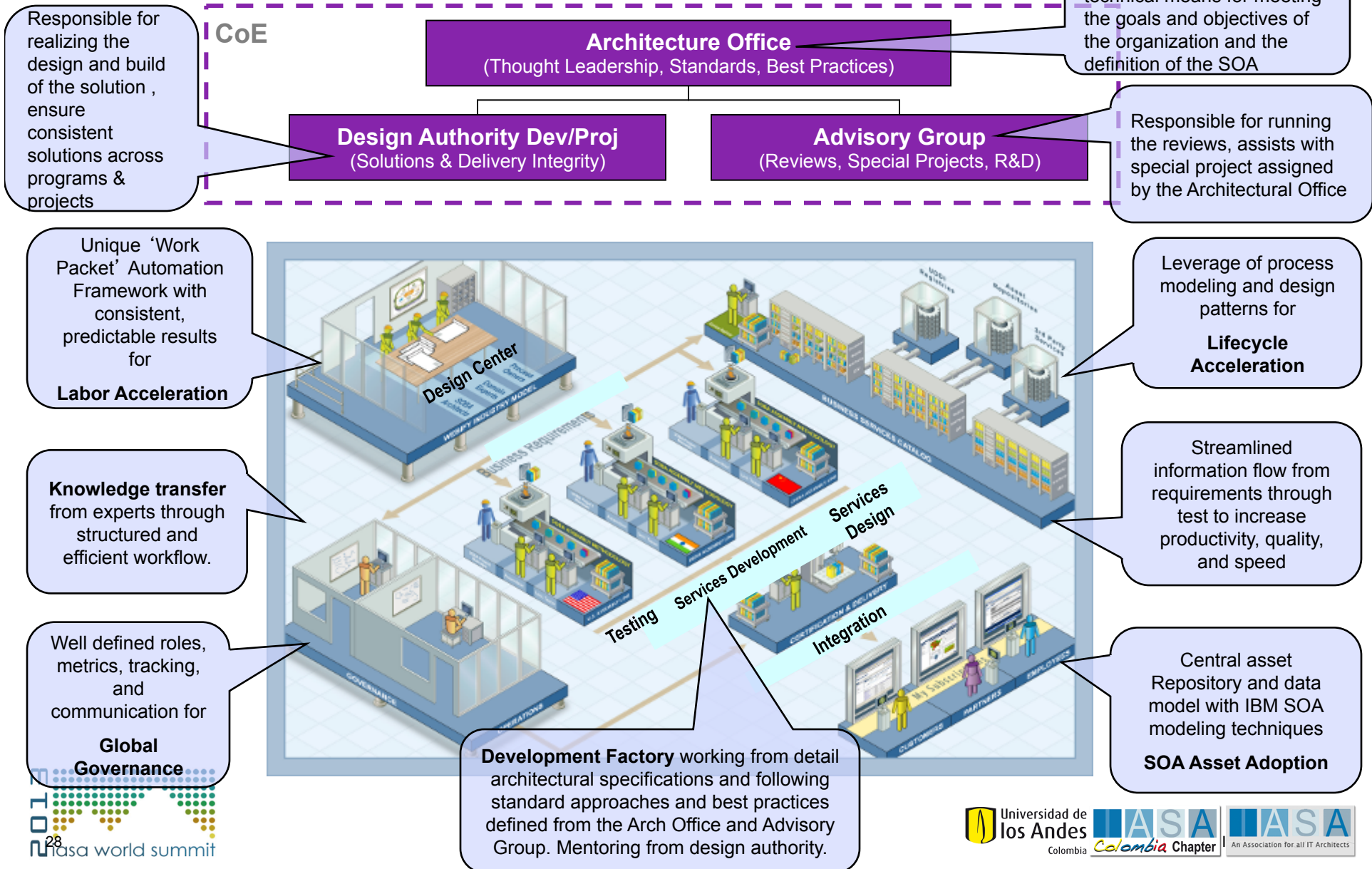
### Potential Range of CoE Responsibilities

- Governance
- Service Modeling and Design (SOMA)
- Reference Architecture
- Tooling support and expertise
- Integration (SOI)
- Service Development
- Environment Infrastructure Decisions
- Education
- Legacy Application Transformation to Services
- Organizational Change

# Governance and Consulting in Complex Environments



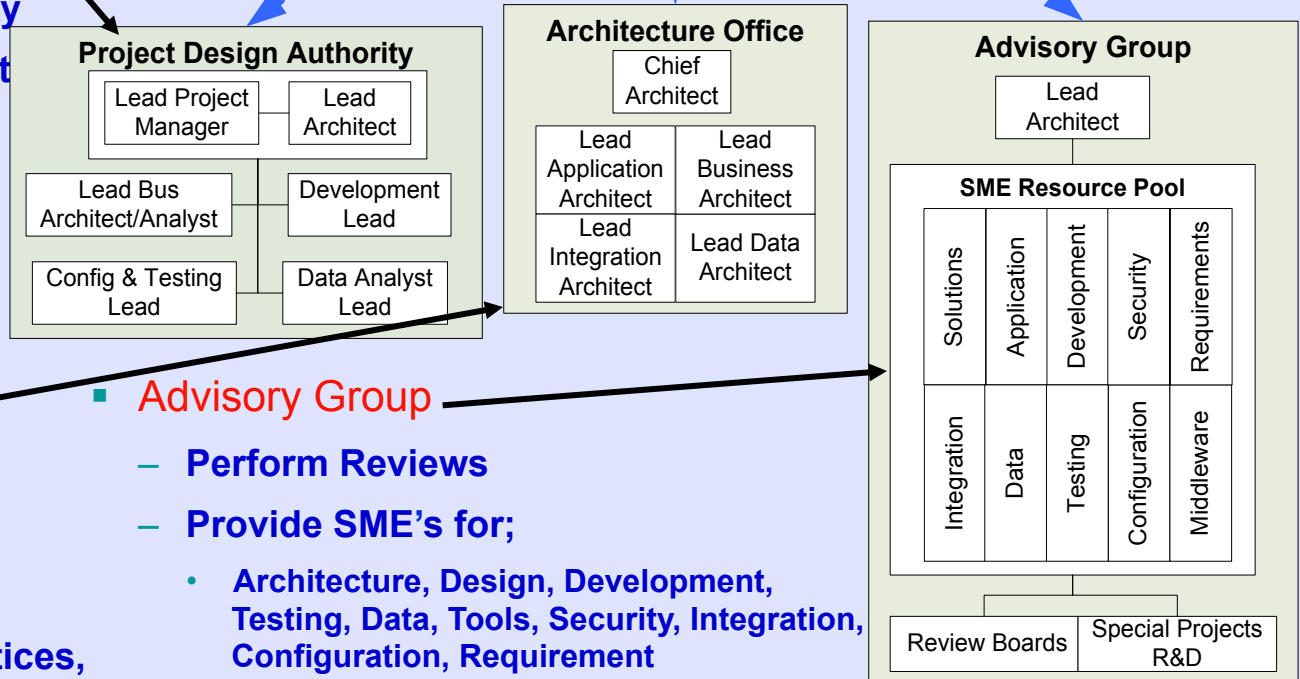
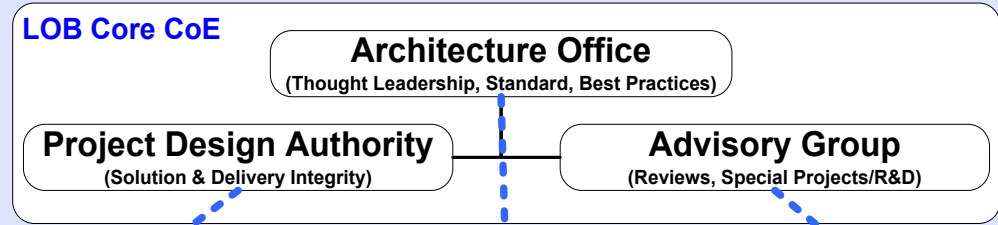
## Example Center of Excellence and Development Factory





## Sample LoB/Sector CoE Mechanism & Responsibilities

- **Project Design Authority**
  - Project Prioritization & Definition
  - Team & Resource Coordination
  - Solution and Delivery Integrity
  - Define Business Requirement
  - Project Metrics
  - Project Mentoring

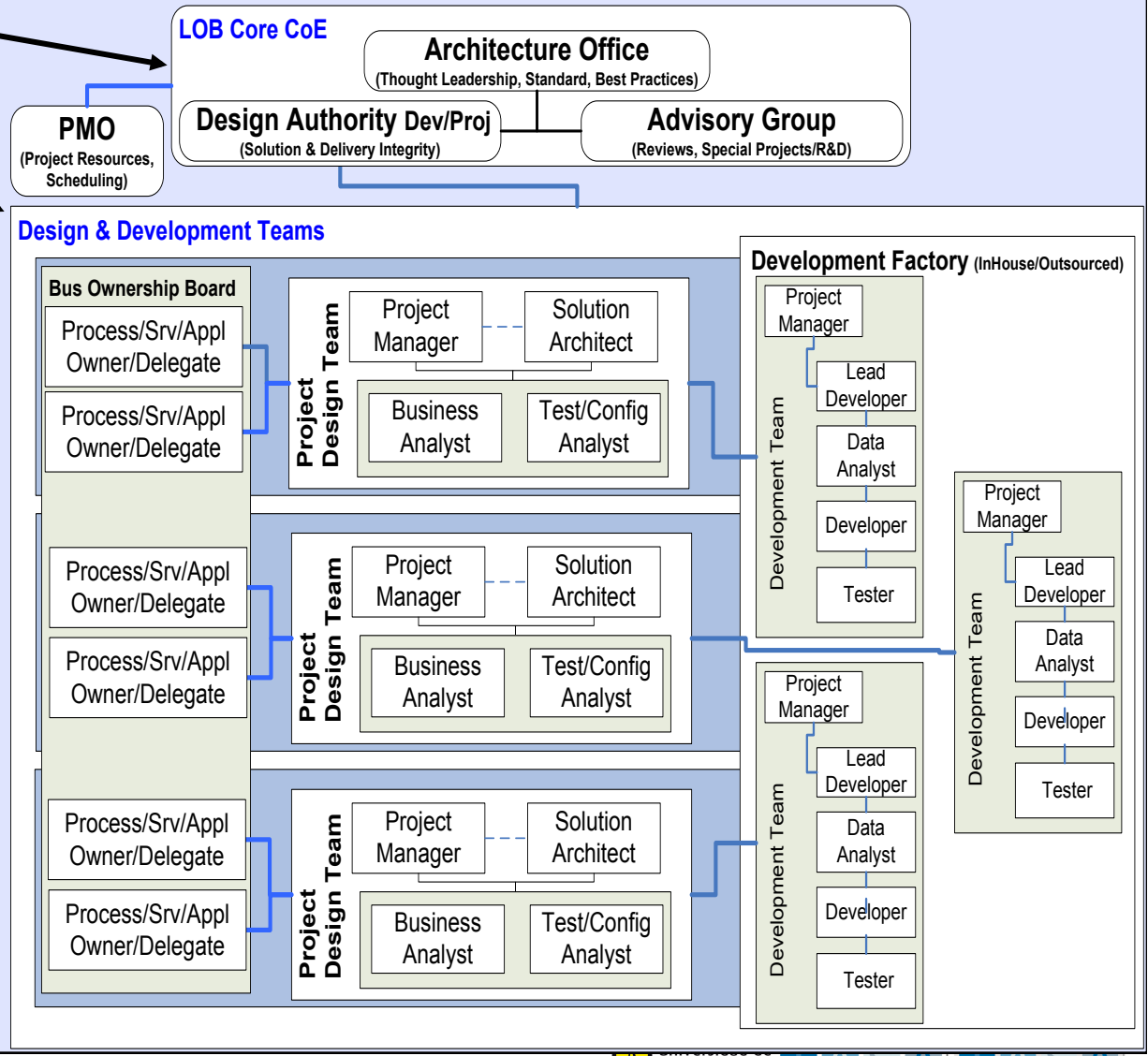


- **Architecture Office** (with in Corp Framework)
  - Thought Leadership
  - Identification of;
    - Architecture, Best Practices, Standards, Governance
  - Architectural Direction to Teams

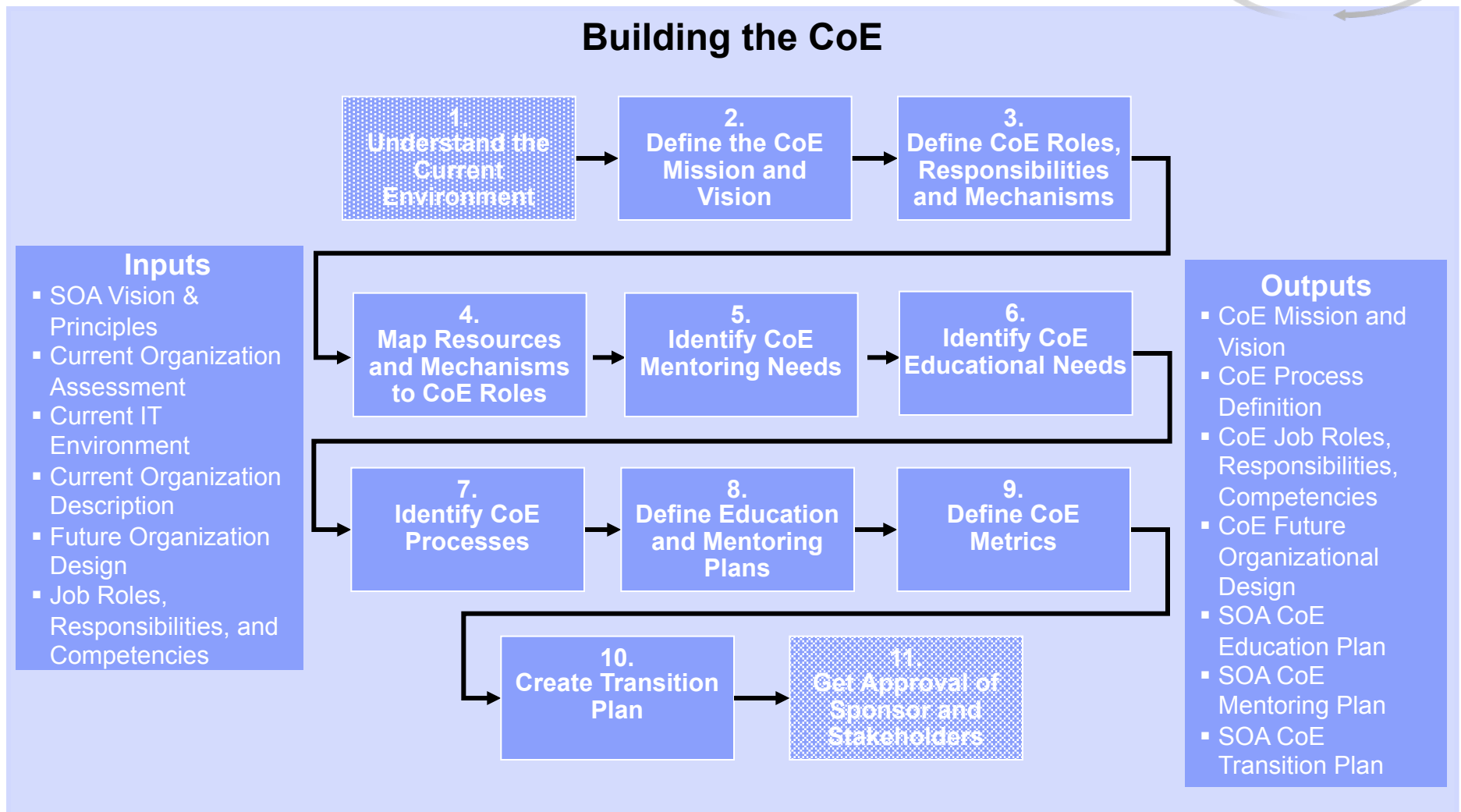
- **Advisory Group**
  - Perform Reviews
  - Provide SME's for;
    - Architecture, Design, Development, Testing, Data, Tools, Security, Integration, Configuration, Requirement
  - Additional Capacity Pool of Resources
  - Education and Mentoring
  - R&D as directed by Architecture Office

## Sample LoB/Sector CoE Mechanism & Responsibilities

- **Project Design Authority**
  - Project Direction and Control through placement of Key Resources
- **Bus Ownership, Design & Development Teams (Factory)**
  - **Bus Responsibility and Ownership**
    - Business Needs Identification, Prioritization
  - **Design Team**
    - Reqs Definition (Bus & Technical)
    - Technical Solution Design
    - Project Management & Metrics
    - Test Plans, Testing, Config Mgmt, Deploymt Plans, Deploymt
    - Provides Direction to Dev Factory
  - **Development Factory Team**
    - Solution Realization
    - Development
    - Participate in Testing, Config Mgmt, Deploymt
    - Take Direction from Design Team
    - Provide Metrics
  - **Multiple Factory Teams**
  - **Project and Initiative Focused**
  - **Seeded with SME's from the CoE Advisory Group**
  - **Aligned with Bus Ownership Teams**
  - **Aligned with CoE Core Team**

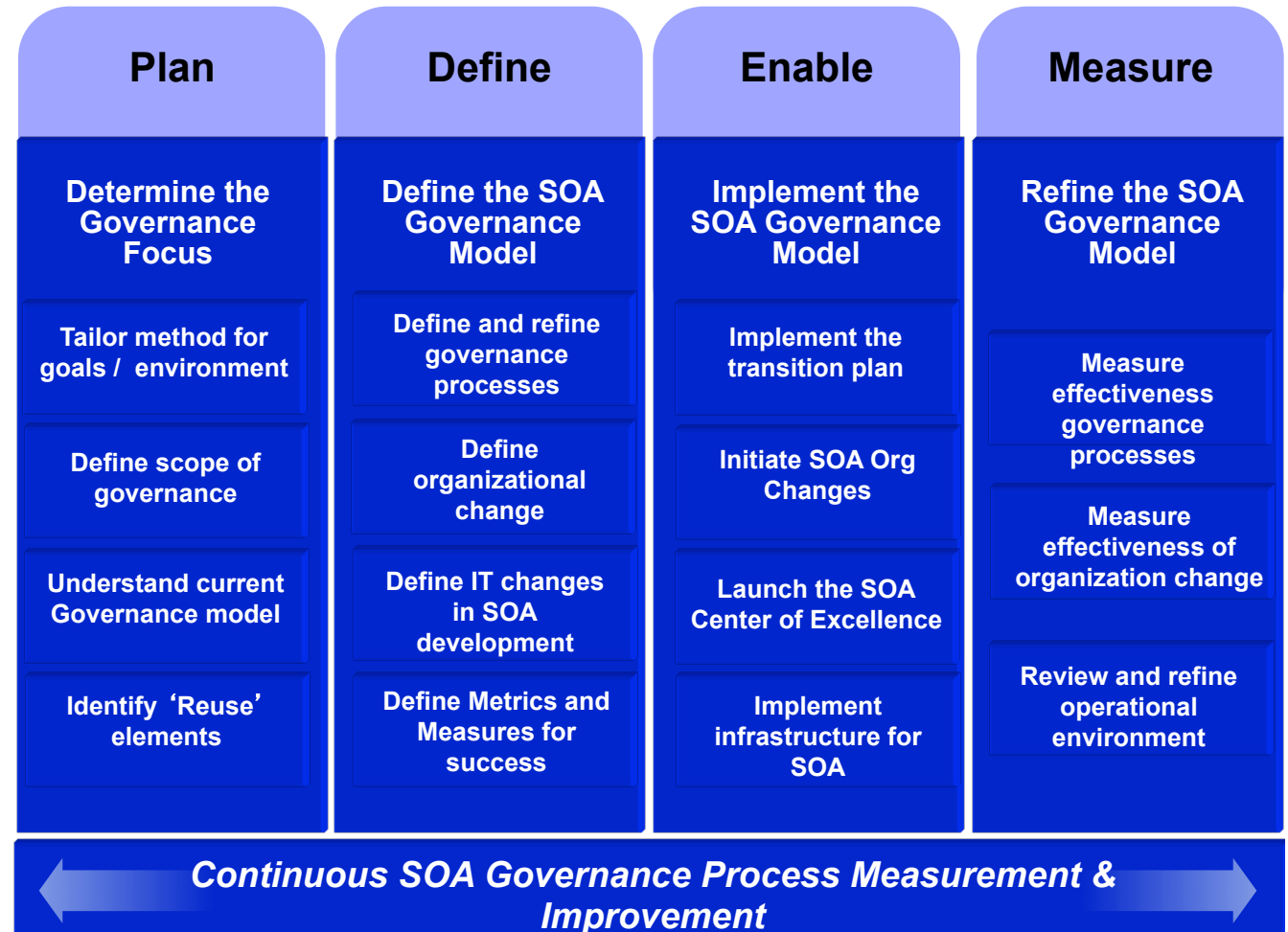


## How to Build the CoE



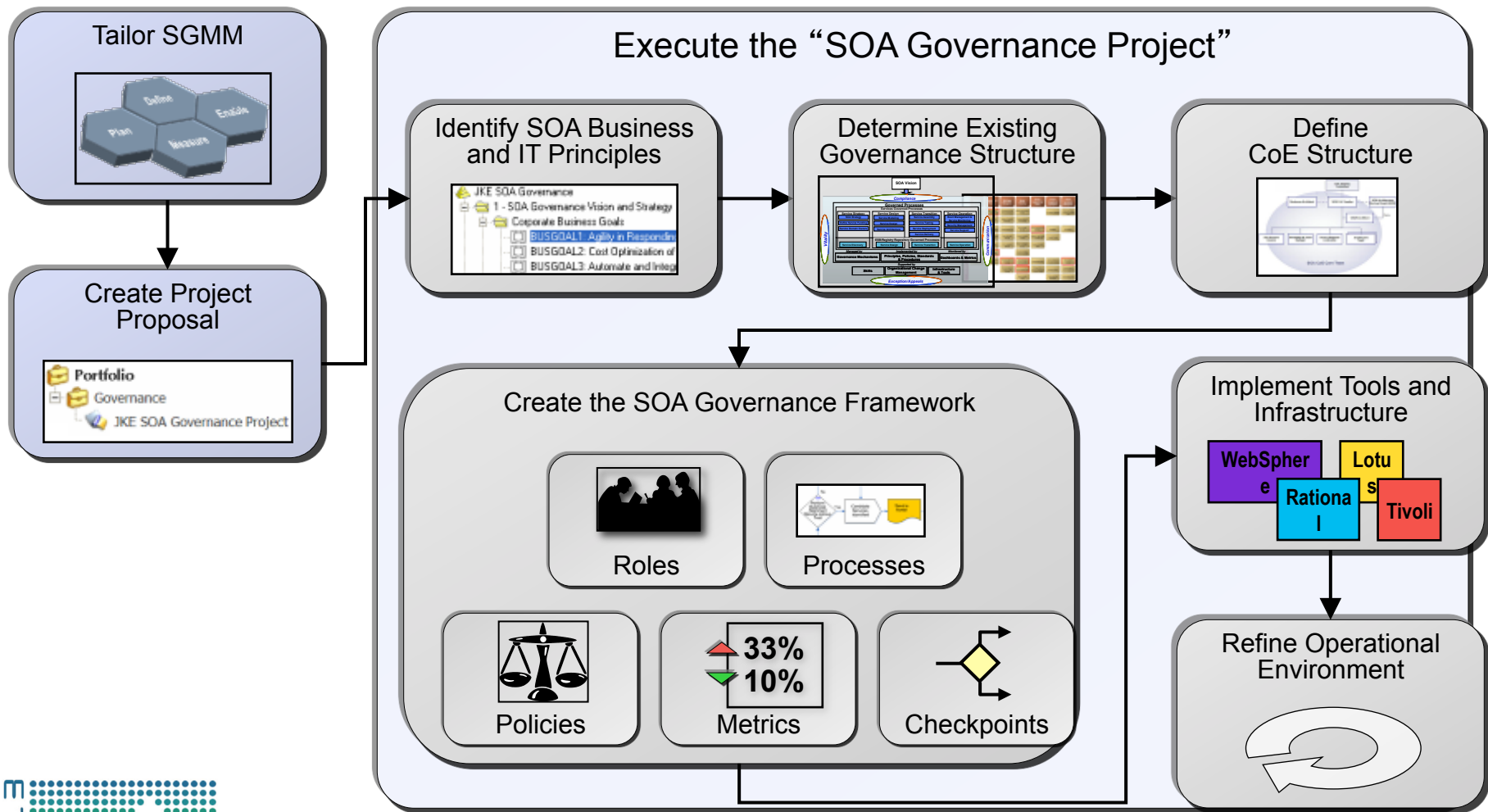
## SOA Governance and Management Method Life Cycle

- Customer tested SOA Governance Method
- Leverages existing governance model
- Detailed governance process guidance
- Comprehensive framework and processes span lifecycle of SOA governance
- Methodology to help clients establish SOA Centers of Excellence





## SGMM provides a prescriptive approach, method and best practices to Plan, Define, Enable and Measure the implementation and operation of an SOA Governance and Management Model



## Governance and Center of Excellence Lessons Learned

- **Lesson #1 – “C-level” Backing Across the Board**
  - SOA Governance absolutely requires buy-in and active support from the CxO level.
  - Lack of real “C-level” understanding, commitment, and active support for SOA leaves governance efforts impotent
  - CxOs can ensure that SOA stays center stage
  - Leadership absolutely must participate in the early stages of governance
- **Lesson #2 – Establish SOA Funding Model for the Long Term**
  - there will need to be resources dedicated to SOA.
  - Understaffing SOA Governance or the COE as a token nod to their importance is an SOA killer.
  - Funding for projects must be linked to the governance processes
  - A creative model that rewards the LOB for serving the enterprise at large is essential.
- **Lesson #3 – Commitment to Roles, Responsibilities, and Resources**
  - some dedicated SOA resources will be necessary
  - enable enough key resources to make governance effective.
- **Lesson #4 – Get the Message Out**
  - Involve some folks (S&C) skilled in formal communication and education campaigns.
  - Do some SOA evangelist work
  - The COE’s role(s) must be understood, documented, and propagated
  - Collect and Publish Metrics
- **Lesson #5 – Be Ready for SOA**
  - Take the time to make an impartial evaluation of readiness and start at the right level.
  - significant project oversight and a deep commitment to SOA aspects is required.

Involve some Change experts from the beginning



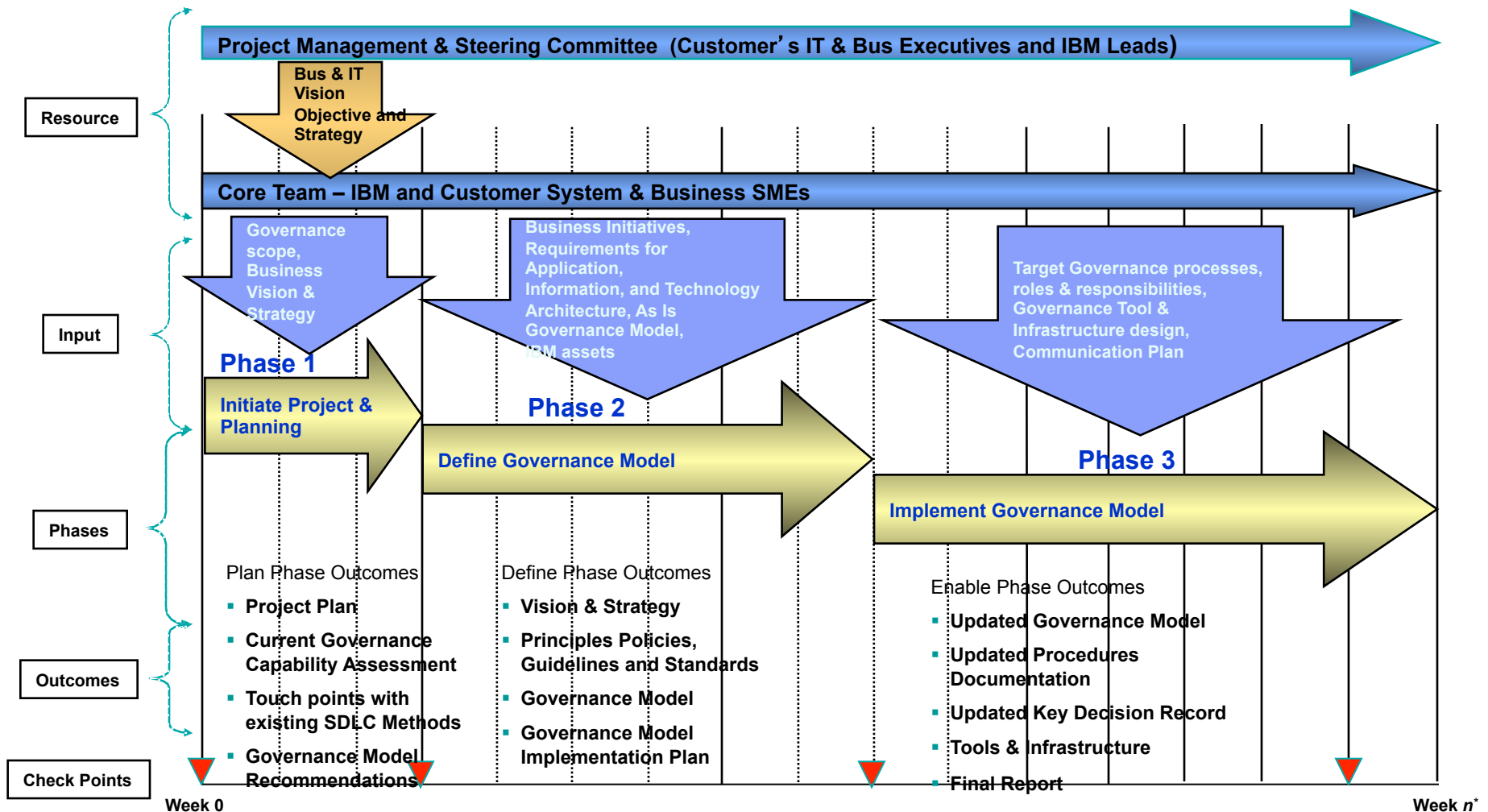
## Recommended Approach

- Identify and agree on the Governance context (s) to be addressed in the first wave – our recommendation is to start with:
  - Enterprise Architecture Governance
  - SOA Governance
- Given the resource and time limitation and for all practical purposes, both EA and SOA Governance should be addressed together
  - Leverage Governance boards and Committees
  - Leverage participation of the same stakeholders (focusing on EA or SOA as needed)
  - Leverage common processes that can be shared between EA and SOA
- Data Governance and Infrastructure Governance will need to be addressed in harmony with EA/SOA Governance
  - SOA Infrastructure needs to be integrated with the rest of the Enterprise Infrastructure
  - Data Governance must be well integrated as part of the EA/SOA Governance
- The Compliance Process will need to be linked to the SDLC which is adopted as part of the Development Governance
- Application Portfolio Governance can be addressed incrementally driven by need to achieve the enterprise new capabilities and optimizing existing capabilities
- Incrementally, and as the needs arise and the resources become available, add Governance in other contexts (e.g., BPM Governance, etc.) For each apply the IBM Governance Development Method
- For effective IT implementation the concept of Center Of Excellence should be adopted

# Governance and Consulting in Complex Environments



IBM's typical project approach will be tailored to meet a customer's specific needs in delivering a Governance framework



Check Points will include management presentation, and/or deliverable handoff

\* duration ranges between 6 to 8 weeks based on the size of the enterprise and the required level of details for the recommended framework



# Questions ????



धन्यवाद

Hindi

多謝

Traditional Chinese

ขอบคุน

Thai

Спасибо

Russian

Gracias

Spanish

شكراً

Arabic

Thank You

Obrigado

Brazilian Portuguese

Grazie

Italian

Danke

German

Merci

French

நன்றி

Tamil

多谢

Simplified Chinese

감사합니다

Korean

ありがとうございました

Japanese

## Governed Processes

Update the service lifecycle processes adding new activities, roles, policies and checkpoints based on the selected Governance aspects

Do Not Implement Service that failed Litmus test (human decision)

exception procedure

Services should be reused instead of created whenever possible

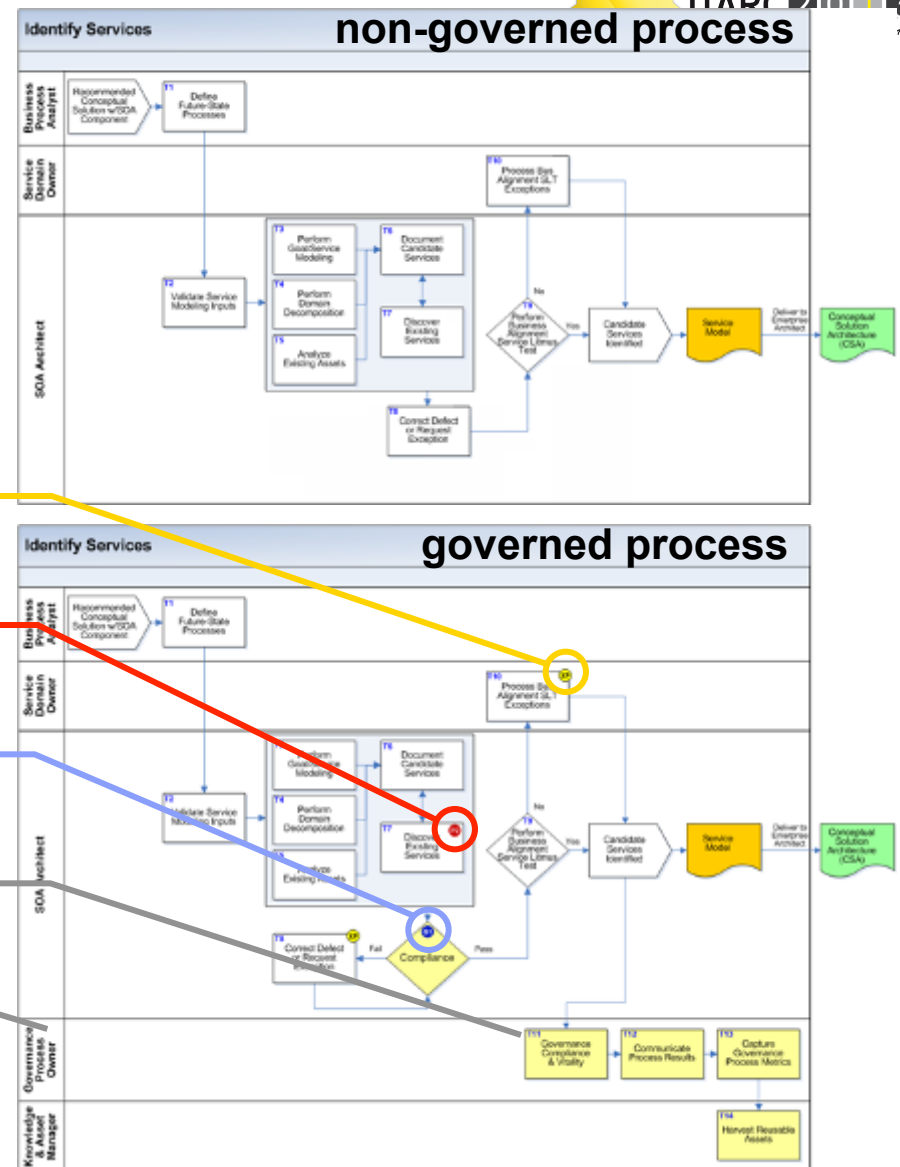
policy

Peer review to guarantee compliance with the existing reference architecture

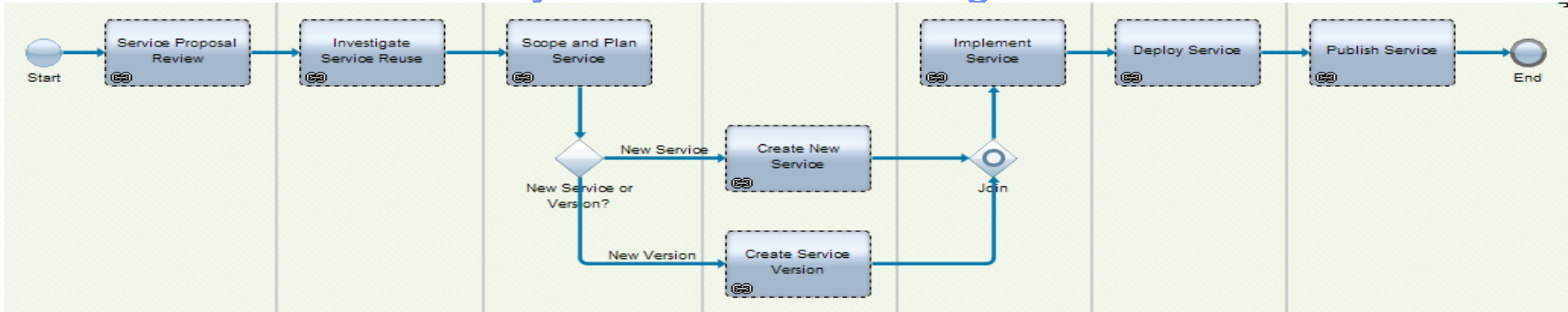
checkpoint

new activities

new roles



## SOA Governance Lifecycle Processes – High-Level Process Flow



The SOA Governance lifecycle processes provide governance of activities starting from identification of business capabilities to translation of these business capabilities into deployed, operational services

- Service Proposal Review
  - Govern the initial business capability requirement definition needed to initiate detailed SDLC activities that could lead to service reuse or service creation.
- Investigate Service Reuse
  - Govern the reuse of existing services (subscribing to existing services), as well as initial findings that new services or versions may be required.
- Scope and Plan Service
  - Govern service identification outcomes, including Service Litmus Test decisions.
- Create New Service
  - Govern service specification for entirely new services once service reuse has been investigated and SLT exposure decisions have been reached.
- Create Service Version
  - Govern service specification for a new version of an existing service, once service reuse has been investigated and SLT decisions have been reached.
- Implement Service
  - Govern service realization decisions and build cycle.

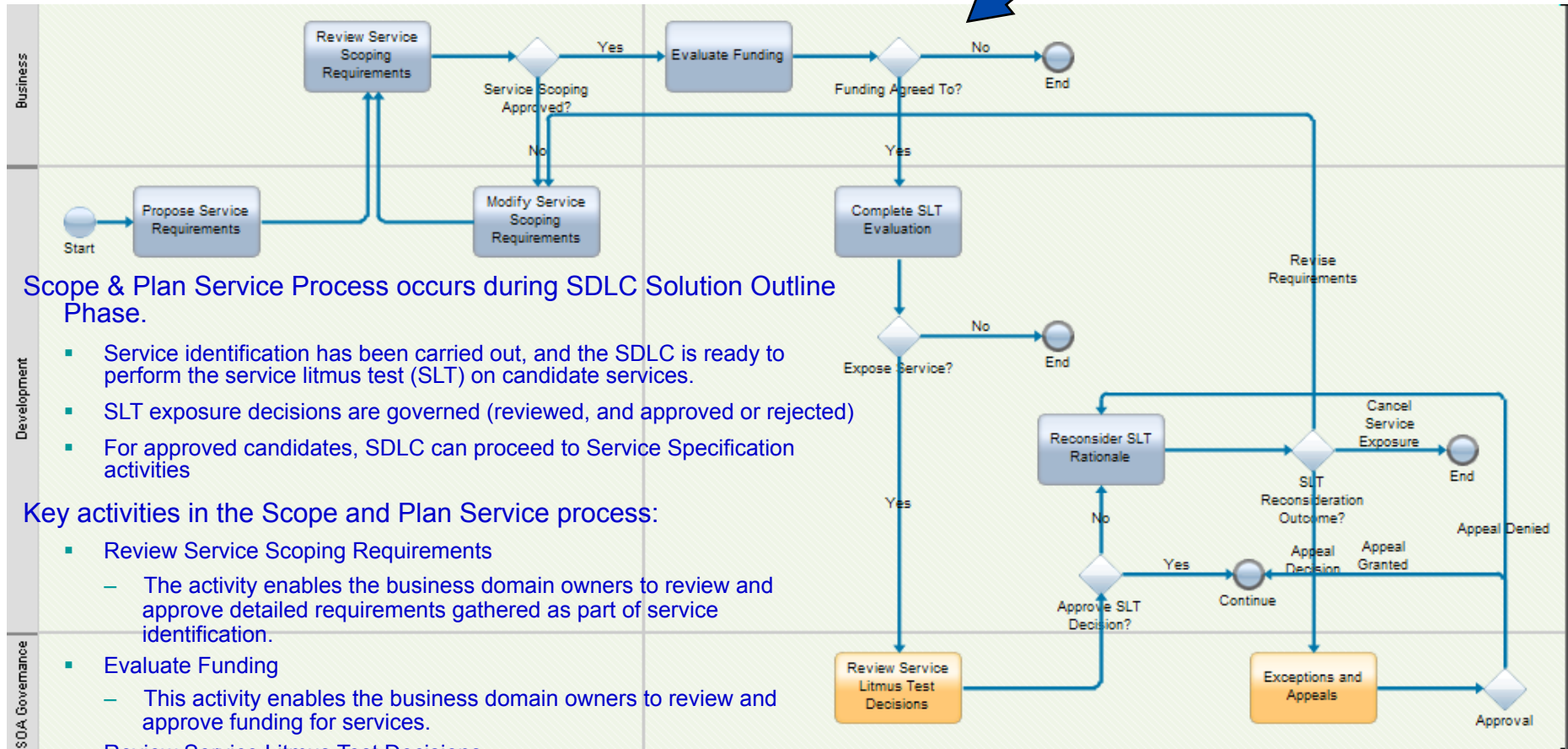
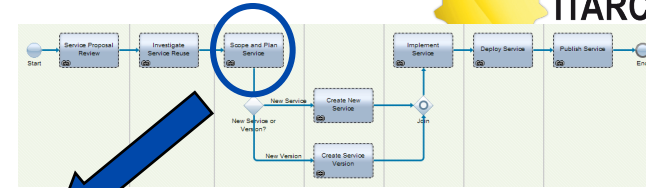


# Governance and Consulting in Complex Environments



## Scope and Plan Service Process

The Scope and Plan Service process governs service identification outcomes including review of Service Litmus Test decisions.



Scope & Plan Service Process occurs during SDLC Solution Outline Phase.

- Service identification has been carried out, and the SDLC is ready to perform the service litmus test (SLT) on candidate services.
- SLT exposure decisions are governed (reviewed, and approved or rejected)
- For approved candidates, SDLC can proceed to Service Specification activities

Key activities in the Scope and Plan Service process:

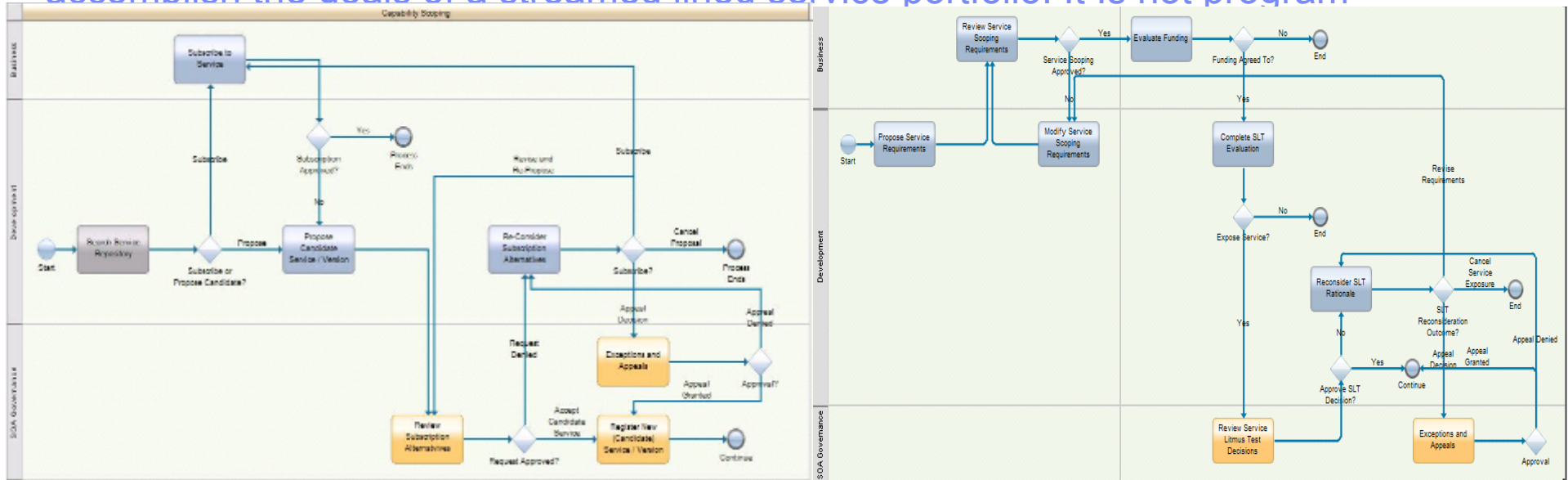
- Review Service Scoping Requirements
  - The activity enables the business domain owners to review and approve detailed requirements gathered as part of service identification.
- Evaluate Funding
  - This activity enables the business domain owners to review and approve funding for services.
- Review Service Litmus Test Decisions
  - This activity enables the SOA Governance team to ensure that the Service Litmus Test decisions are compliant with the standards and guidelines specified by the SOA Center of Excellence.



# Governance and Consulting in Complex Environments



The Portfolio Optimization Process – This process stand on it's own to accomplish the goals of a streamed lined service portfolio. It Is not program



Leverages the “Investigate Service Reuse”, “Scope and Plan” and “Retire a Service” Processes

- Finds Existing Services
- Determines their use status
  - under used or obsolete services
- Rationalization of existing services helps reduce overhead and cost incurred by services that are
  - redundant, under used, obsolete or not addressing business need.

After the discovery of services that meet these characteristics a decision can be made to subsume them or retire them all together.

