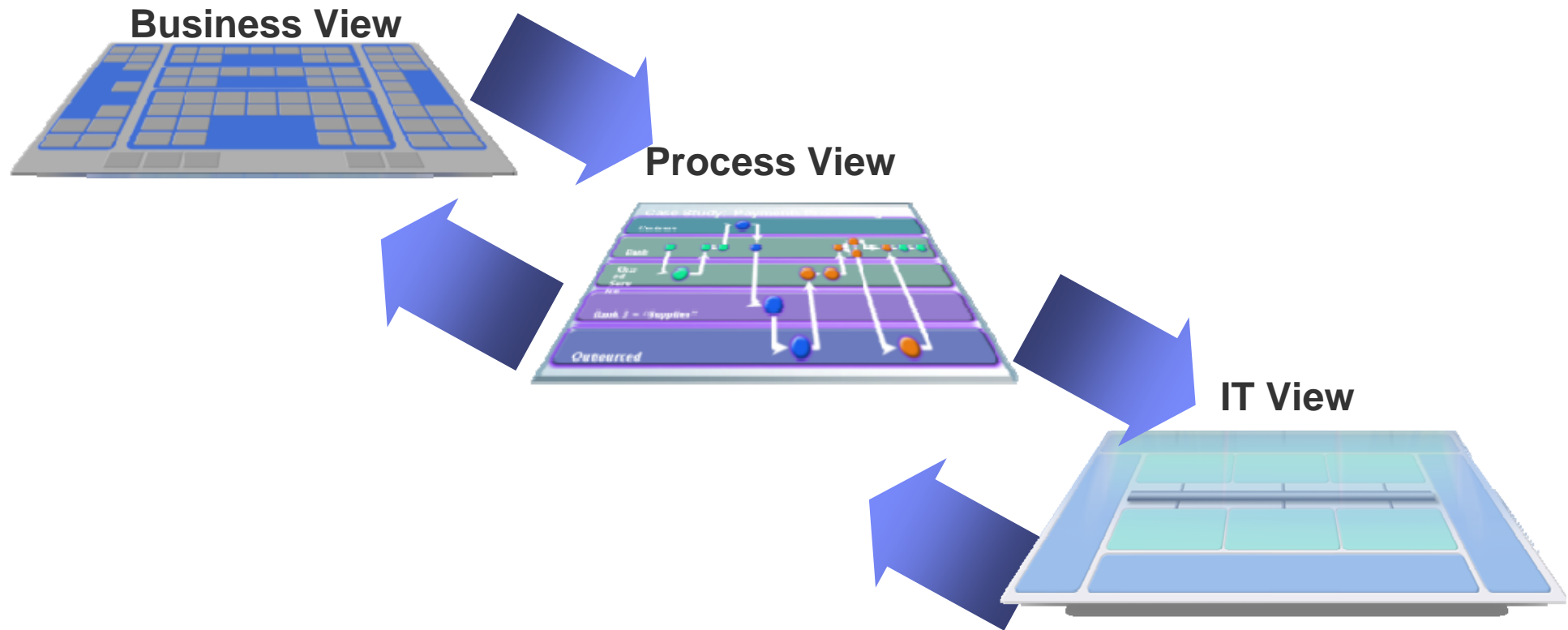**IBM**

Enterprise IT Architectures
SOA Part 3

Hans-Peter Hoidn

hans-peter.hoidn@ch.ibm.com

December 1, 2008

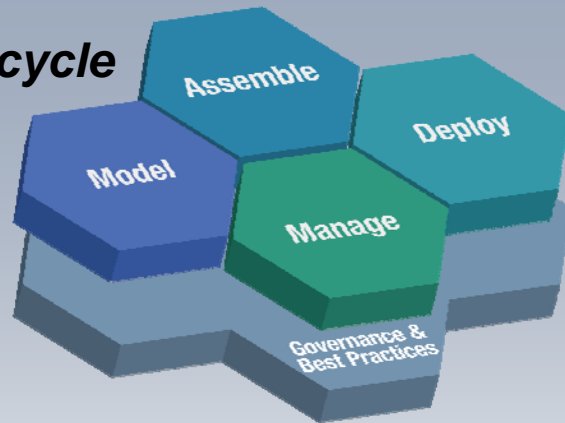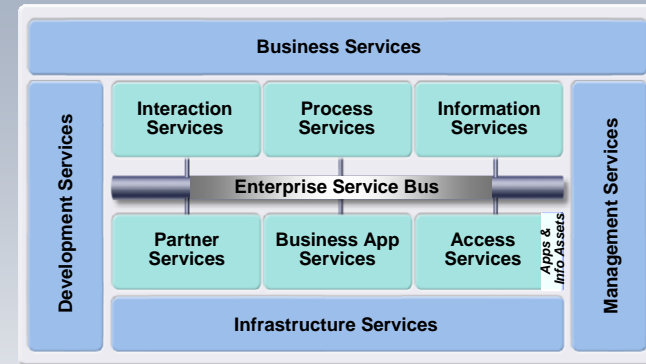# SOA drives Greater Alignment Between Business and IT creating an Enduring Impact on Industry

Business View

Process View

IT View

Key Models for SOA

SOA Lifecycle

SOA Reference Architecture

Business Services			

Development Services	Interaction Services	Process Services	Information Services	Management Services
	Enterprise Service Bus			
	Partner Services	Business App Services	Access Services	

Infrastructure Services			

SOA Solution Layering

Reference Architecture and "Open Account" Process

Open Account

Approved

Business Dashboard

Business Innovation & Optimization Services

Facilitates better decision-making with real-time business information

Development Services

Integrated environment and creation

Interaction Services

Enables collaboration between people, processes & information

Portal

Process Services

Orchestrate and automate the processes

Information Services

Manages diverse data

Federated Query

IT Service Management

Manage and secure services, applications &

Partner Services

Community Manager

Business App Services

Build on a robust, scaleable and secure services environment

EJBs

Access Services

Facilitates interactions with assets

CICS Access

Siebel Adapter

DB Access

DB Access

Infrastructure Services

Optimizes throughput, availability and performance

IT Management Console
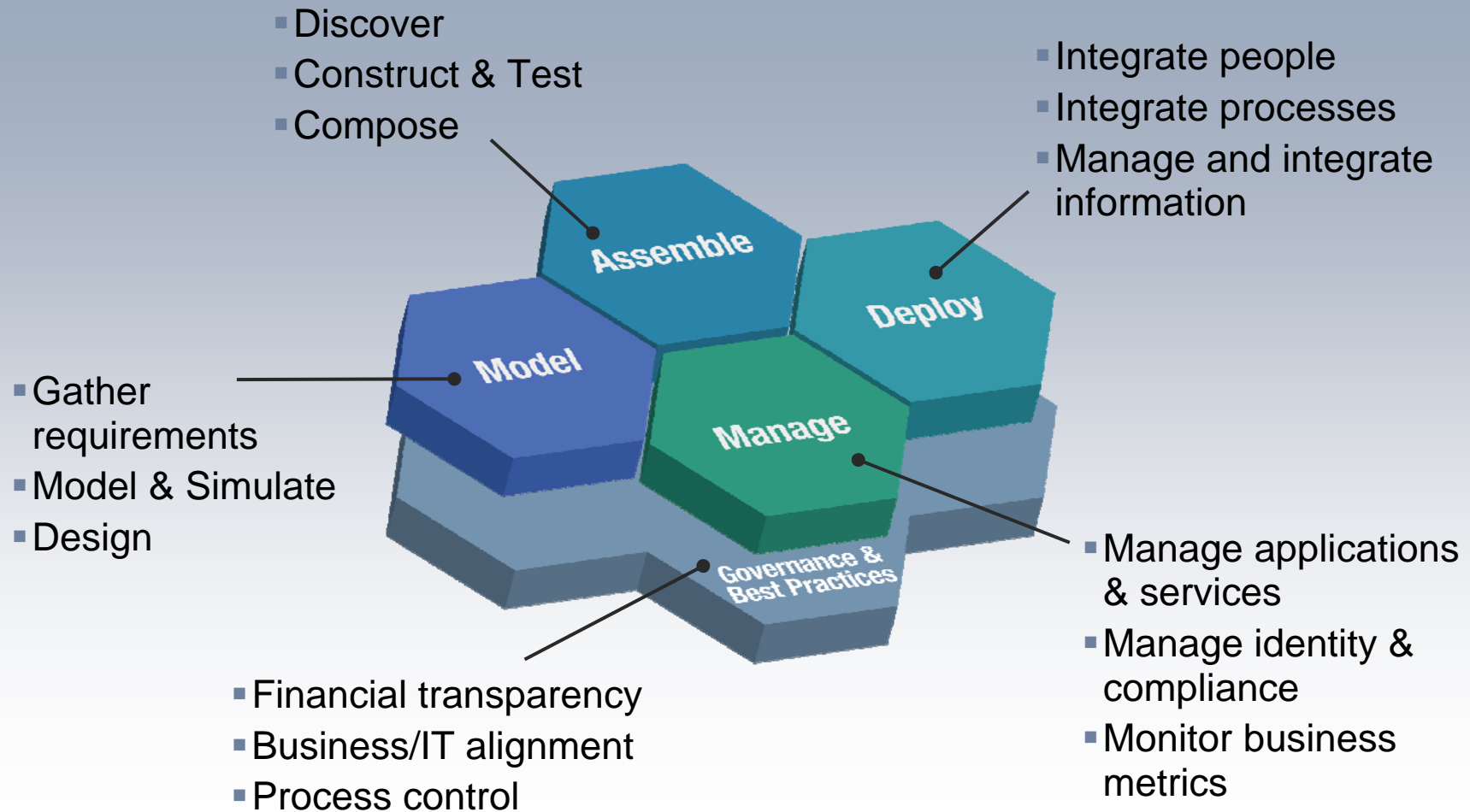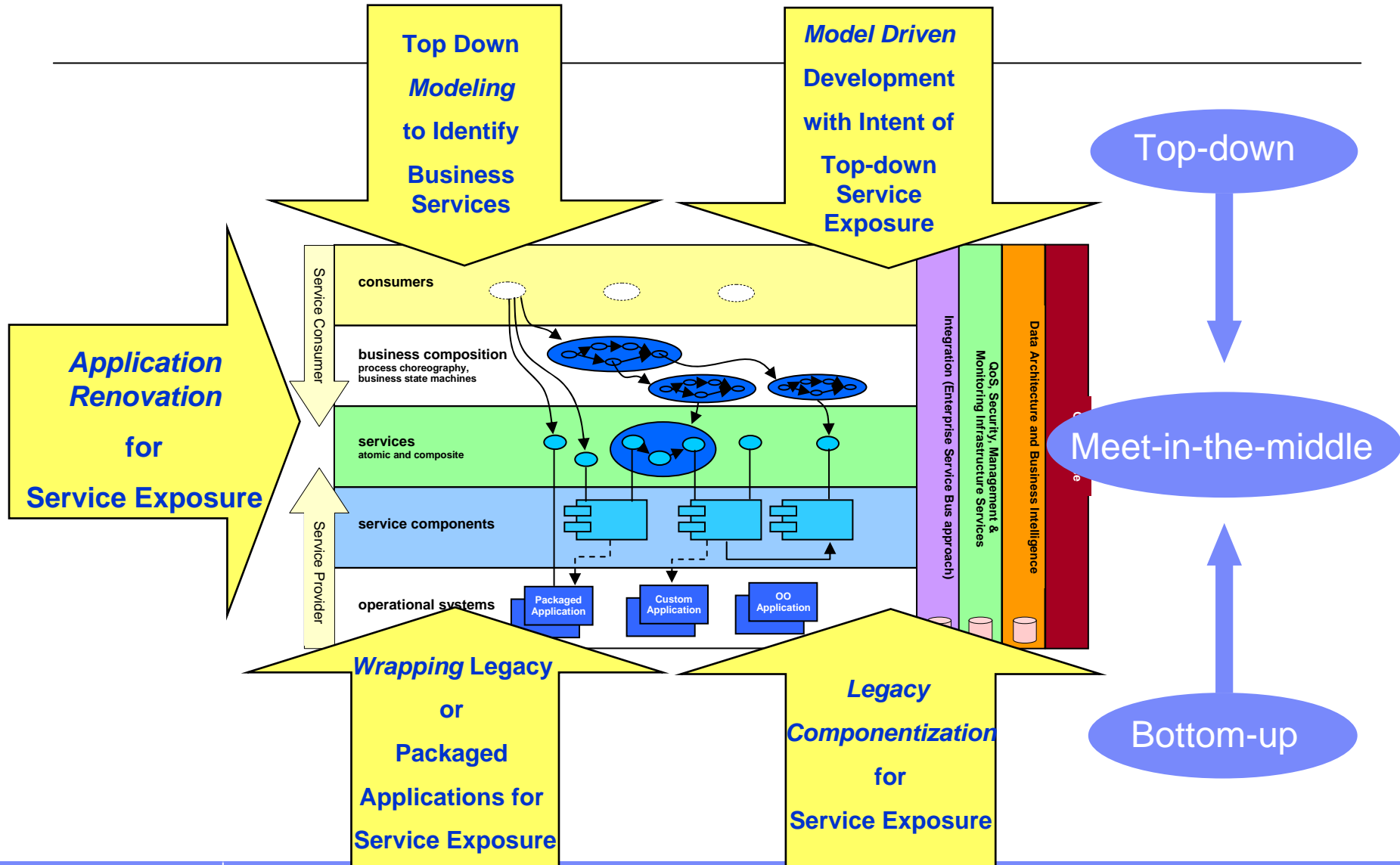
SOA Part 3 | Hans-Peter Hoidn

Agenda

I. Identification and Specification of Services

II. Business Architecture through CBM
   (Component Business Modeling)

III. Governance

IV. More about Case FACT
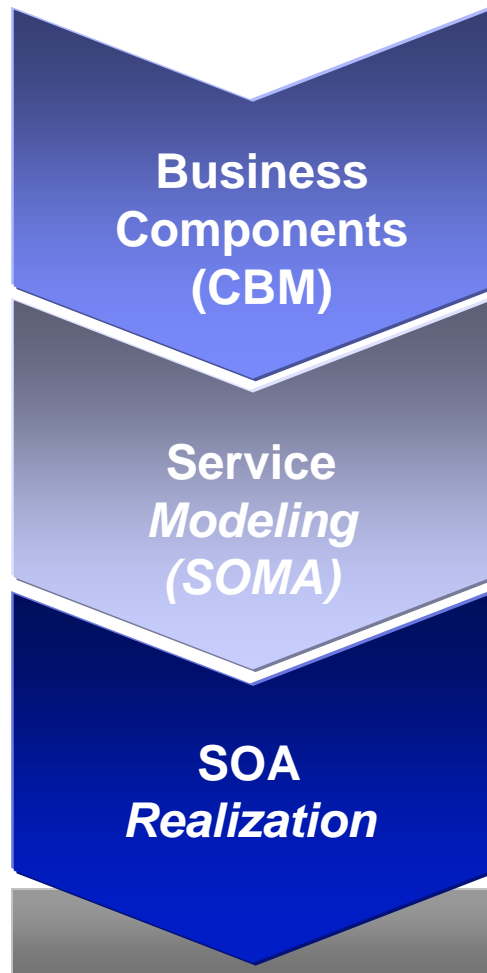
I. Identification and Specification of Services

Method Background: The SOA Lifecycle

- Discover
- Construct & Test
- Compose

- Integrate people
- Integrate processes
- Manage and integrate information

Assemble

Deploy

- Gather requirements
- Model & Simulate
- Design

Model

Manage

Governance & Best Practices

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

- Financial transparency
- Business/IT alignment
- Process control

How: Approaches to SOA Solutions

Top Down *Modeling* **to Identify Business Services**

Model Driven **Development with Intent of Top-down Service Exposure**

Top-down

Application Renovation **for Service Exposure**

Service Consumer

consumers

Service Provider

business composition
process choreography,
business state machines

services
atomic and composite

service components

operational systems

Packaged Application

Custom Application

OO Application

Integration (Enterprise Service Bus approach)

QoS, Security, Management & Monitoring Infrastructure Services

Data Architecture and Business Intelligence

Meet-in-the-middle

Wrapping **Legacy or Packaged Applications for Service Exposure**

Legacy Componentization **for Service Exposure**

Bottom-up

Best implementations start with business design or a master plan

Business Components (CBM)

Service *Modeling* (SOMA)

SOA *Realization*

Business-Aligned IT Architecture

Step 1: Break down your business into components
- Decide what is strategically important, and what is just operations in the value chain domains
- Analyze the different KPIs attached to these components
- Prioritize and scope your transformation projects

Step 2: Define a Service Model
- Identify your services based on your business components
- Specify the services and components accordingly
- *Make SOA realization decisions based on architectural decisions*

Step 3: Implement a Service Model
- Develop a service-oriented architecture to support the Componentized Business
- Implement service based scoping policy for projects
- Implement appropriate governance mechanism

SOMA (Service-Oriented Modeling and Architecture) identifies services through three complementary techniques

- **Domain Decomposition (Top Down Analysis)**
- **Existing Asset Analysis (Bottom-up Analysis)**
- **Goal-Service Modeling**

Identification

Specification

Realization

Top Down Analysis

Align Services with Business Goals

Domain Decomposition

Goal-Service Modeling

Existing Asset Analysis

Helps Scope Service Identification Process

Process/ Business Use Case

Sub-Process

Service Specification

API's for potential service realization

Bottom-up Analysis

SOMA Specification uses multiple techniques to select services for exposure, to specify flows, services and services components that realize them
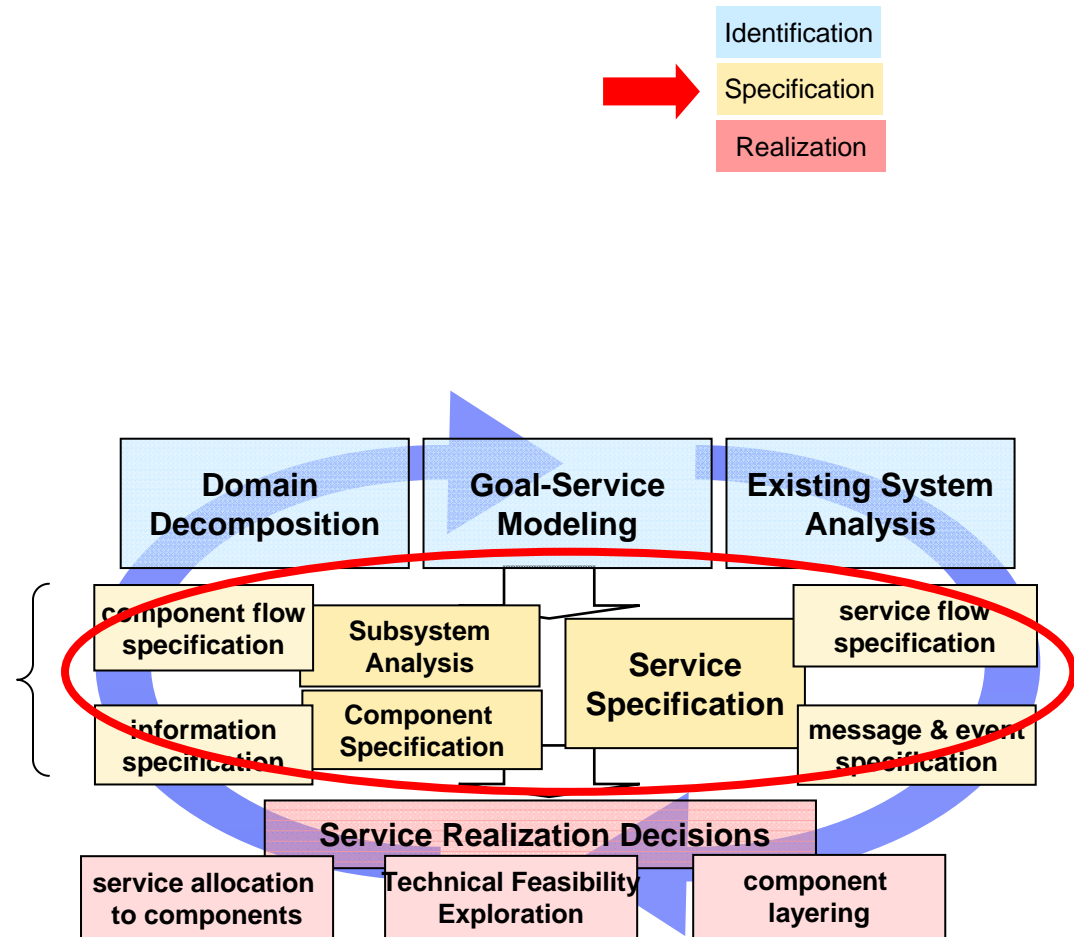
- Service Specification
  - Elaborates the *Service Model*, Includes **Service Litmus Test** that "gate" service exposure decisions

- Subsystem Analysis
  - Partitioning into service components that will be responsible for service realization
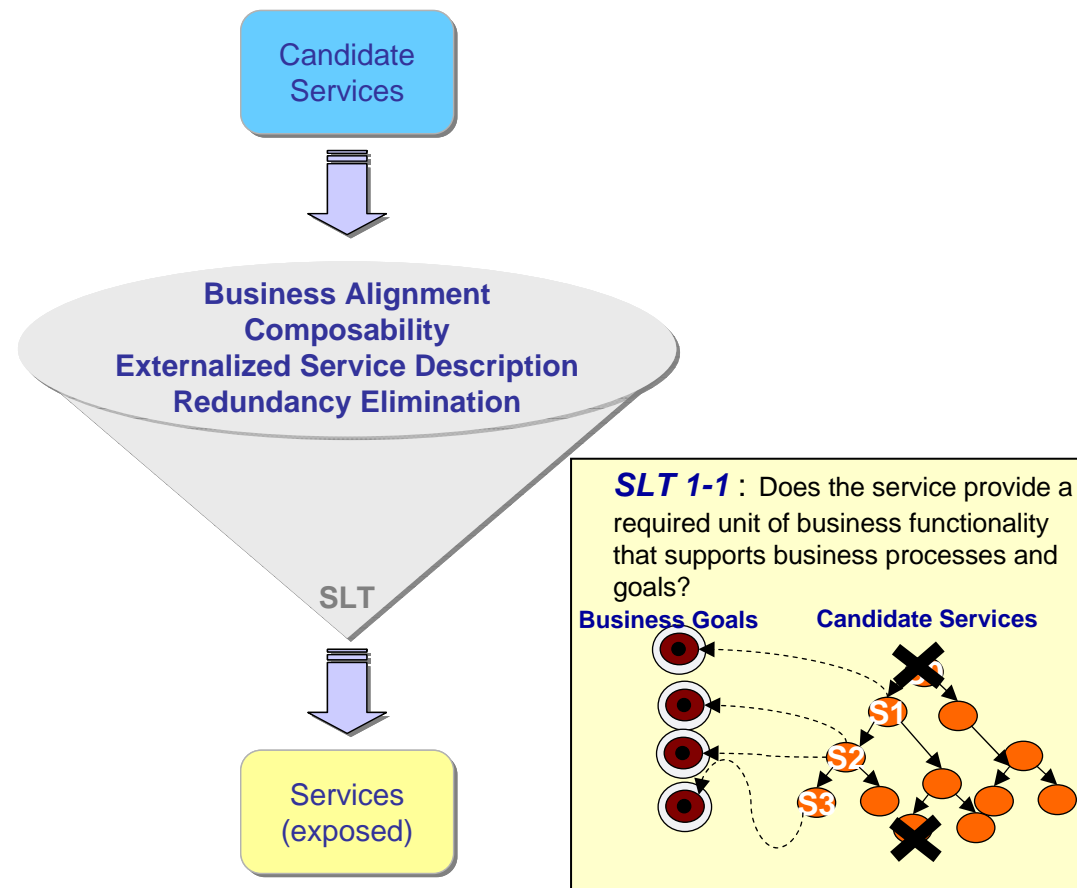
- Component Specification
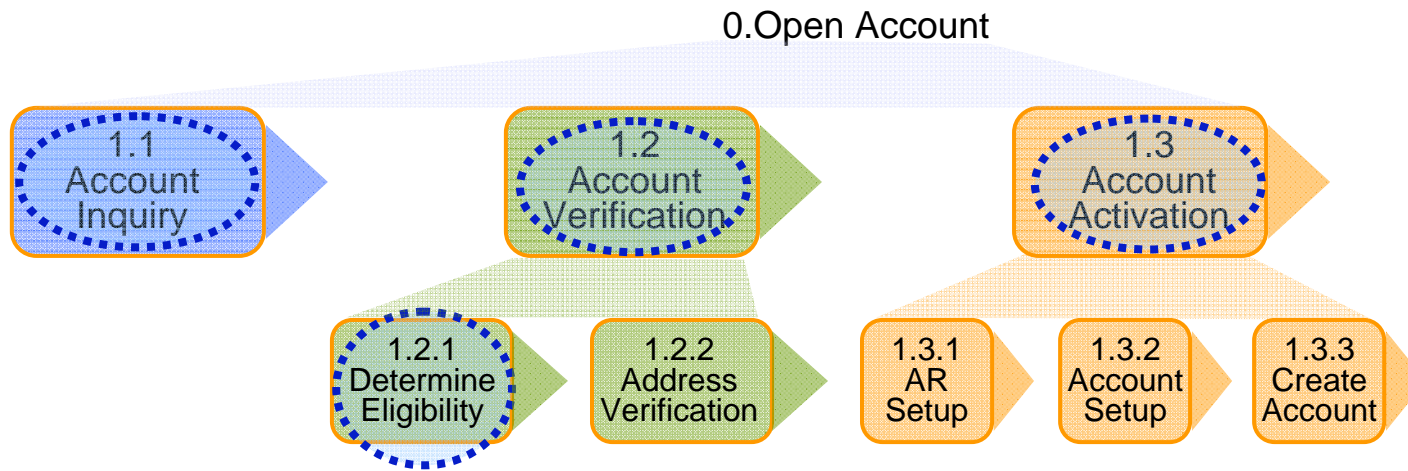 - Detailed component modeling, flow, information architecture, messages

Identification

Specification

Realization

Domain Decomposition | Goal-Service Modeling | Existing System Analysis

component flow specification

Subsystem Analysis

Service Specification

service flow specification

information specification

Component Specification

message & event specification

Service Realization Decisions

service allocation to components | Technical Feasibility Exploration | component layering

Service Litmus Test: During the Service Specification we make service exposure decisions

- "From all the candidate services, which ones should we expose?"
- Not all candidate services should be exposed
- Every implemented service has costs and risks
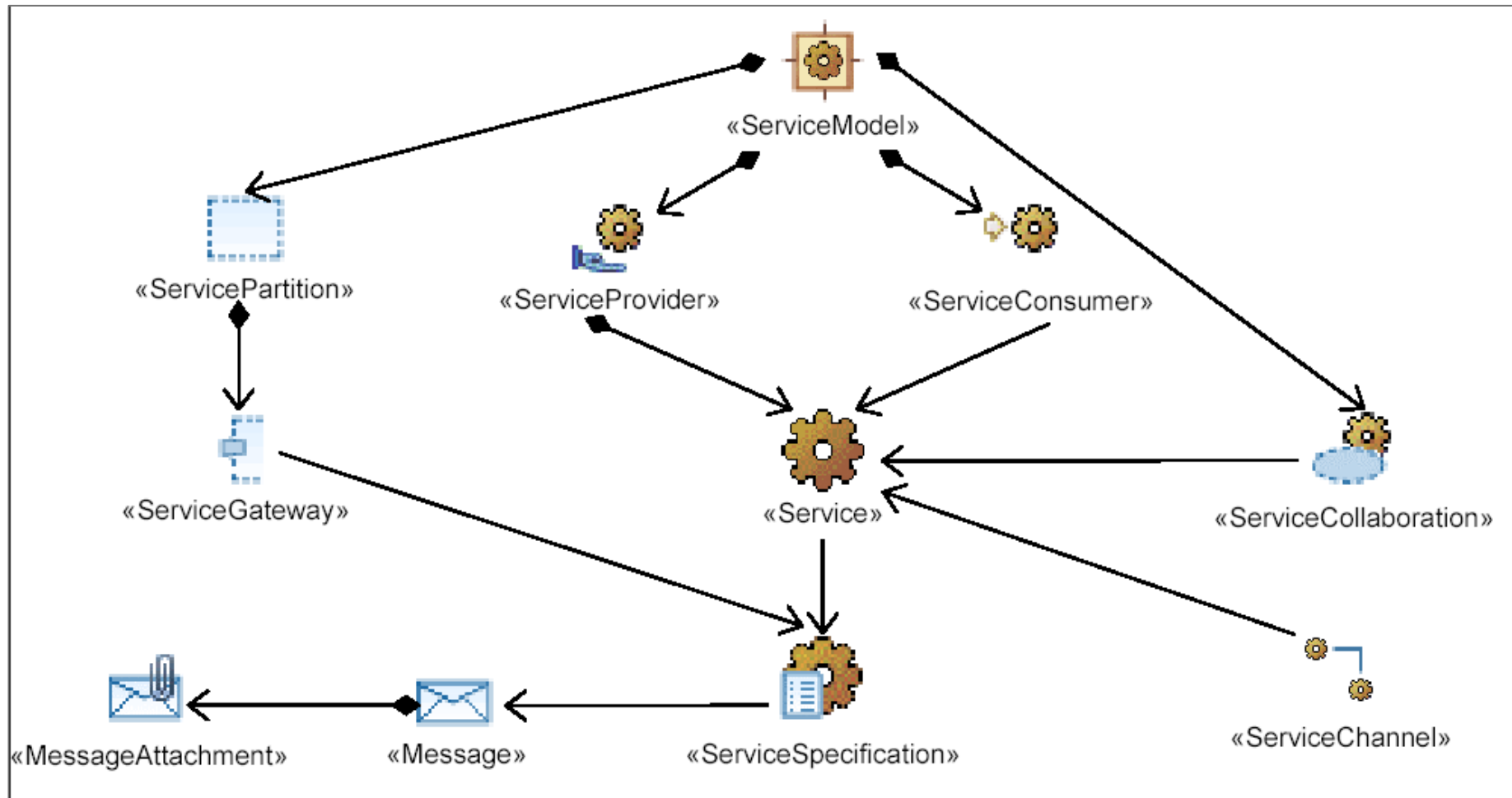- "**Service Litmus Test**" helps make exposure decisions

Candidate Services

Business Alignment
Composability
Externalized Service Description
Redundancy Elimination

SLT

Services (exposed)

SLT 1-1 : Does the service provide a required unit of business functionality that supports business processes and goals?

Business Goals   Candidate Services

JK Enterprises Service Exposure Decisions

0.Open Account

1.1
Account
Inquiry

1.2
Account
Verification

1.3
Account
Activation

1.2.1
Determine
Eligibility

1.2.2
Address
Verification

1.3.1
AR
Setup

1.3.2
Account
Setup

1.3.3
Create
Account
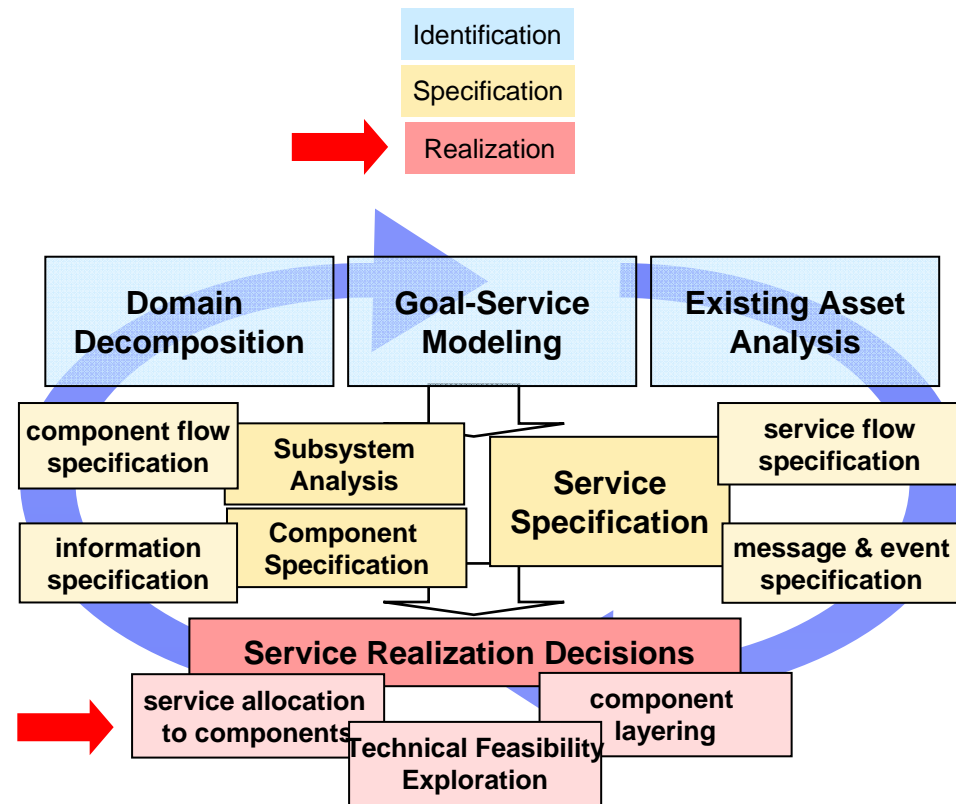
E X A M P L E
For illustration only

Legend
= Service to be exposed

UML 2 Profile for Software Services Elements

SOMA Service Realization Step

- **Component Layering**
  - **Allocation of component to the application architecture layers**
- **Allocation of services to service components**
- **Technical Feasibility Exploration**
- **Realization Decisions with Justifications**

Identification

Specification

Realization

Domain Decomposition | Goal-Service Modeling | Existing Asset Analysis

component flow specification

Subsystem Analysis

information specification

Component Specification

Service Specification

service flow specification

message & event specification

Service Realization Decisions

service allocation to components

Technical Feasibility Exploration

component layering

Legacy Migration Example

Positioning of Portal as general User Interface

user perspective

IT perspective

Personalization

Customization

Navigation

Single Sign On
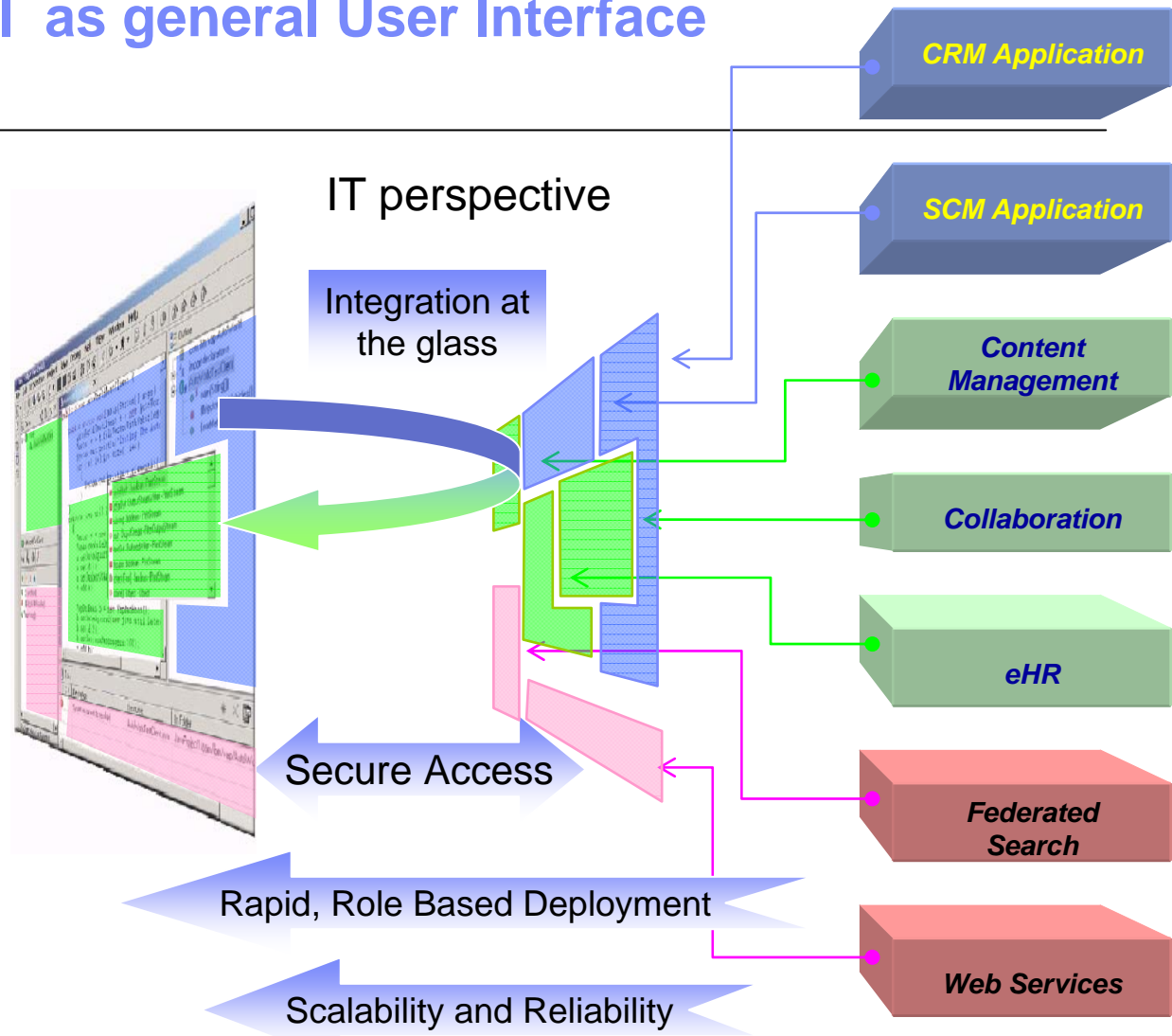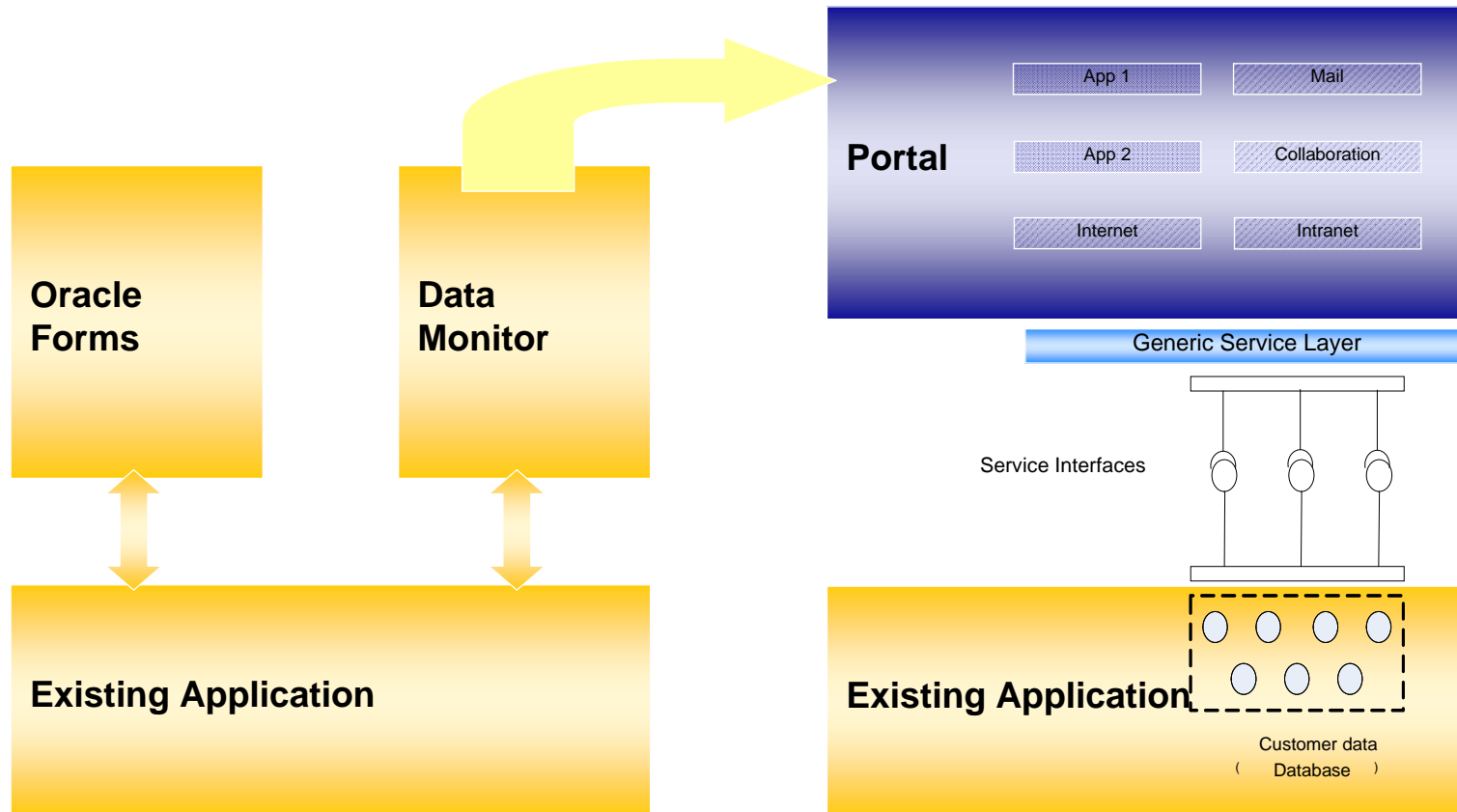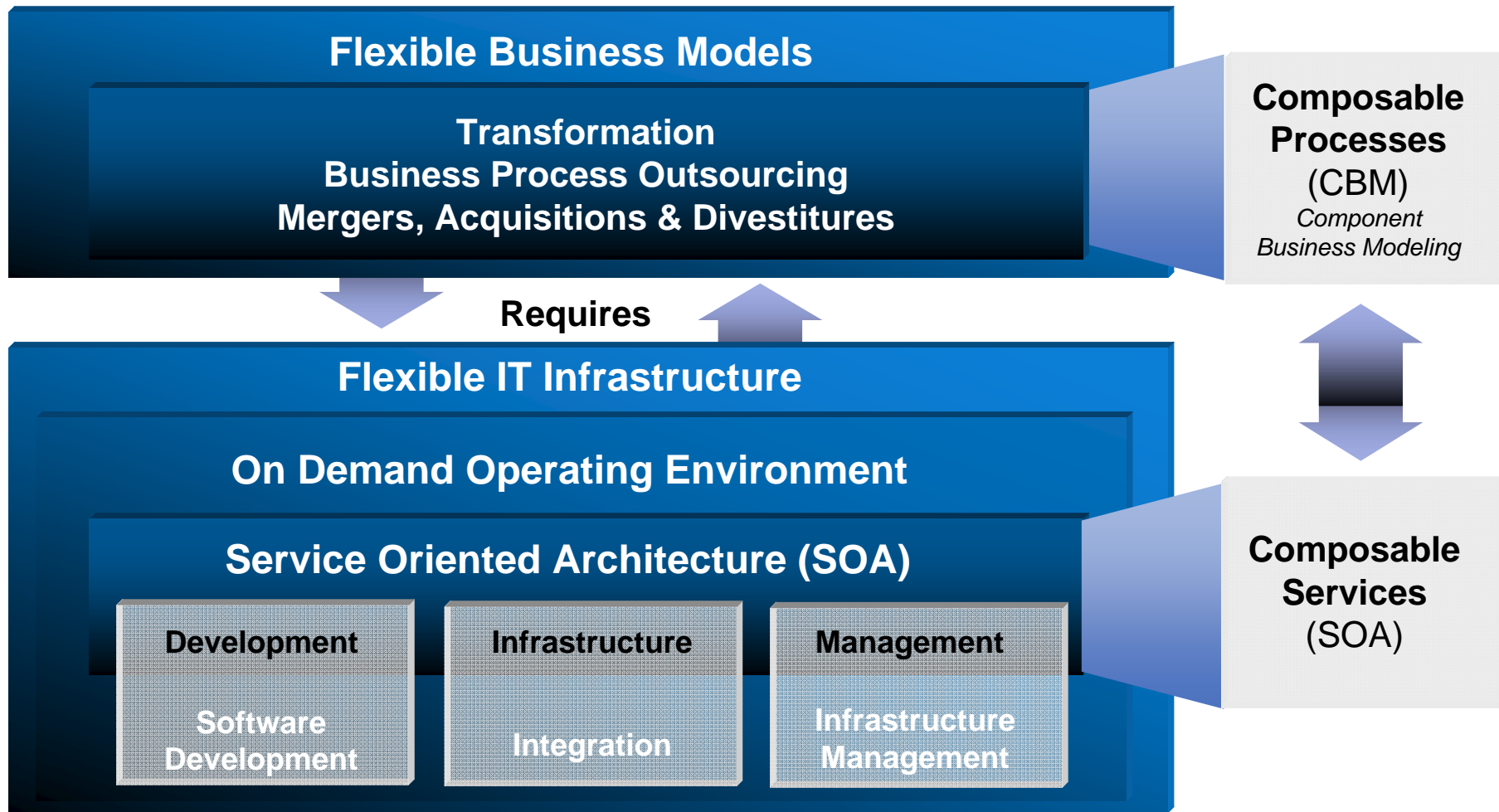
People Awareness

Integration at the glass

Secure Access

Rapid, Role Based Deployment

Scalability and Reliability

CRM Application

SCM Application

Content Management

Collaboration

eHR

Federated Search

Web Services

Illustration of an Portal Implementation

Oracle Forms

Data Monitor

Portal

App 1	Mail
App 2	Collaboration
Internet	Intranet

Generic Service Layer

Service Interfaces

Existing Application

Existing Application
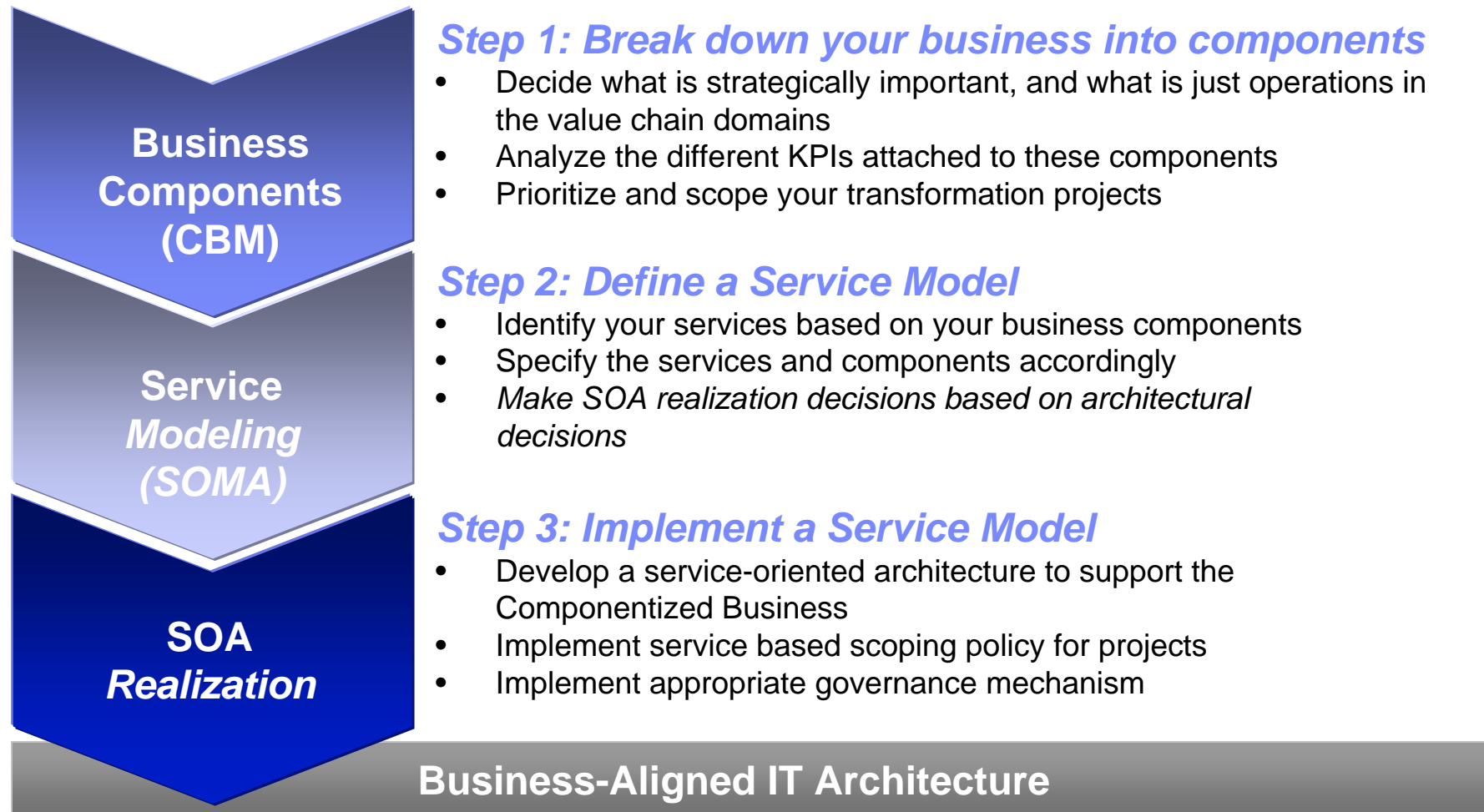
Customer data

(Database)

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II. Business Architecture through CBM (Component Business Modeling)

Greater Flexibility Is Required
From Business Models and the Supporting IT Architecture

Flexible Business Models

Transformation
Business Process Outsourcing
Mergers, Acquisitions & Divestitures

Composable Processes
(CBM)
Component Business Modeling

Requires

Flexible IT Infrastructure

On Demand Operating Environment

Service Oriented Architecture (SOA)

Development	Infrastructure	Management
Software Development	Integration	Infrastructure Management

Composable Services
(SOA)

Best implementations start with business design or a master plan – approach for SOA

Business Components (CBM)

Service *Modeling* (SOMA)

SOA *Realization*

Business-Aligned IT Architecture

Step 1: Break down your business into components

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- Implement appropriate governance mechanism

Component Business Model (CBM)

A **Business Component** is a part of an enterprise that has the potential to operate autonomously, for example, as a separate company, or as part of another company.

Columns are Business Competencies, defined as large business areas with characteristic skills and capabilities, for example, product development or supply chain.

An **Operational Level** characterizes the scope of decision making. The three levels used in CBM are direct, control and execute.

- Direct is about strategy, overall direction and policy.
- Control is about monitoring, managing exceptions and tactical decision making
- Execute is about doing the work

	Business Administration	New Business Development	Relationship Management	Servicing & Sales	Product Fulfillment	Financial Control and Accounting
Direct	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfillment Planning	Portfolio Planning
Control	Business Unit Tracking	Sector Management	Relationship Management	Sales Management	Fulfillment Planning	Compliance
Control	Staff Appraisals	Product Management	Credit Assessment	Sales Management	Fulfillment Planning	Reconciliation
Execute	Staff Administration	Product Directory	Credit Administration	Sales	Product Fulfillment	Customer Accounts
Execute	Staff Administration	Marketing Campaigns	Credit Administration	Customer Dialogue	Document Management	Customer Accounts
Execute	Production Administration	Marketing Campaigns	Credit Administration	Contact Routing	Document Management	General Ledger

The building block of a component business model is a 'business component'

A component is a business in microcosm. It has activities, resources, applications, infrastructure. It has a governance model. It provides goods and services (business services)

Business Component Elements

Business Component

Business Purpose

Activities

Resources

Applications

Infrastructure

Component Governance

Business Services

Each business component has differentiated capabilities

Each business component defines and decides on the use of all resources needed to perform the defined activities

Each business component has a governance structure within which it manages its activities

Each business component has business services which form the interfaces to other business components

Deconstruct & Conquer: *The Component Business Model*

1 2 3 4   First, break down your business into its components

Example: Consumer Packaged Goods

	Product Management	Customer Relationship	Manufacturing	Supply Chain & Distribution	Business Administration
Strategy	Category/Brand Strategy Category/Brand Planning	Customer Relationship Strategy Customer Relationship Planning	Manufacturing Strategy Supplier Relationship Management Production and Materials Planning	Supply Chain Strategy Supply Chain Planning	Corporate Strategy Corporate Planning Alliance Management Line of Business Planning
Tactics	Brand P&L Management Matching Supply and Demand Marketing Development & Effectiveness Product Ideation	Assessing Customer Satisfaction Customer Insights Account Management	Manufacturing Oversight Supplier Control	Distribution Oversight Inbound Logistics / Outbound Logistics Distribution Center Operations	Business Performance Management External Market Analysis Organization and Process Design Legal and Regulatory Compliance
Execution	Concept/Product Testing Product Development Product Management Marketing Execution Consumer Service Product Directory	Value-Added Services Customer Account Servicing Retail Marketing Execution In-store Inventory Mgmt Customer Directory	Make Products Assemble/Pkg. Products Plant Inventory Management Manufacturing Procurement	Transportation Resources En Route Inventory Management	Treasury and Risk Management Accounting and GL Indirect Procurement Facilities and Equipment Management HR Administration IT Systems and Operations

Deconstruct & Conquer: *The Component Business Model*

1 2 3 4 Next, decide what's differentiating and what is simply operating

Example: Consumer Packaged Goods

Strategic View

- ■ **Strategic differentiation**
- ■ **Competitive parity**
- ■ **Basic**

	Product Management	Customer Relationship	Manufacturing	Supply Chain & Distribution	Business Administration
Strategy	Category/Brand Strategy	Customer Relationship Strategy	Manufacturing Strategy	Supply Chain Strategy	Corporate Strategy
					Corporate Planning
	Category/Brand Planning	Customer Relationship Planning	Supplier Relationship Management	Supply Chain Planning	Alliance Management
					Line of Business Planning
Tactics	Brand P&L Management	Assessing Customer Satisfaction	Production and Materials Planning	Distribution Oversight	Business Performance Management
	Matching Supply and Demand	Customer Insights	Manufacturing Oversight		External Market Analysis
	Marketing Development & Effectiveness			Inbound Logistics / Outbound Logistics	Organization and Process Design
	Product Ideation	Account Management	Supplier Control		Legal and Regulatory Compliance
Execution	Concept/Product Testing	Value-Added Services	Make Products	Distribution Center Operations	Treasury and Risk Management
	Product Development	Customer Account Servicing	Assemble/Pkg. Products		Accounting and GL
	Product Management	Retail Marketing Execution	Plant Inventory Management	Transportation Resources	Indirect Procurement
	Marketing Execution	In-store Inventory Mgmt			Facilities and Equipment Management
	Consumer Service		Manufacturing Procurement	En Route Inventory Management	HR Administration
	Product Directory	Customer Directory			IT Systems and Operations

Deconstruct & Conquer: *The Component Business Model*

1 2 **3** 4 Then, analyze costs

Example: Consumer Packaged Goods

Financial View

- 🟧 **High capital area**
- 🟩 **High cost area**
- 🟥 **High cost & capital area**

	Product Management	Customer Relationship	Manufacturing	Supply Chain & Distribution	Business Administration
Strategy	Category/Brand Strategy	Customer Relationship Strategy	Manufacturing Strategy	Supply Chain Strategy	Corporate Strategy
					Corporate Planning
	Category/Brand Planning	Customer Relationship Planning	Supplier Relationship Management	Supply Chain Planning	Alliance Management
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	Marketing Development & Effectiveness	Account Management			Organization and Process Design
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Execution	Concept/Product Testing	Value-Added Services	Make Products	Distribution Center Operations	Treasury and Risk Management
	Product Development	Customer Account Servicing	Assemble/Pkg. Products		Accounting and GL
	Product Management	Retail Marketing Execution	Plant Inventory Management	Transportation Resources	Indirect Procurement
	Marketing Execution				Facilities and Equipment Management
	Consumer Service	In-store Inventory Mgmt	Manufacturing Procurement	En Route Inventory Management	HR Administration
	Product Directory	Customer Directory			IT Systems and Operations

Deconstruct & Conquer: *The Component Business Model*

1 2 3 **4** Finally, prioritize your transformation initiatives

Example: Consumer Packaged Goods

Transformational View

- 🟧 **Seek external provider / external utility**
- 🟩 **Consolidate and/or create internal utility**
- 🟧 **Integrate and redesign**
- ⬜ **No action**

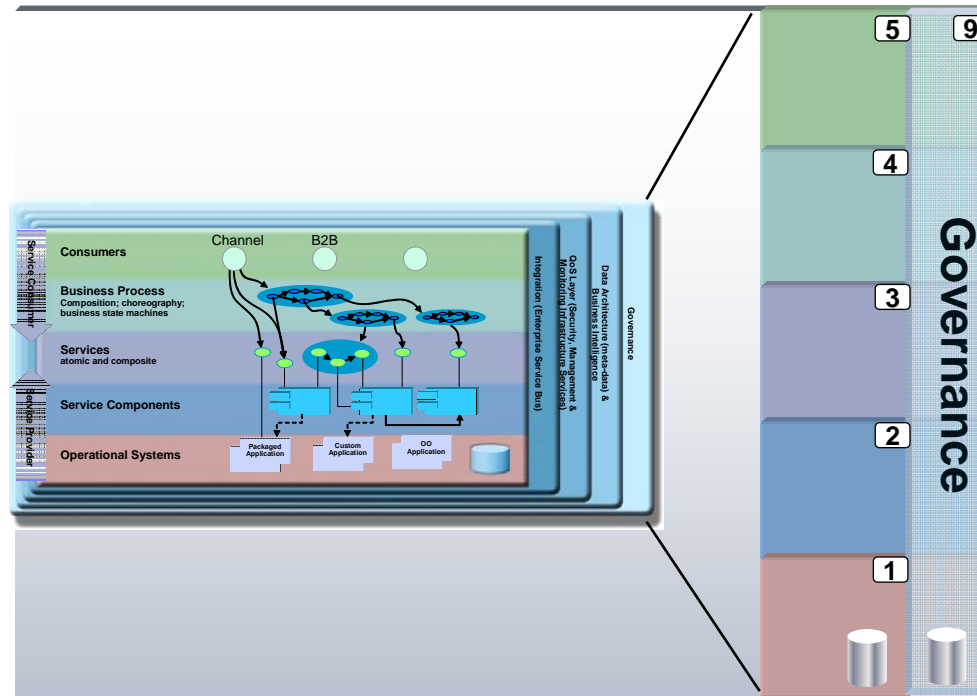|	Product Management	Customer Relationship	Manufacturing	Supply Chain & Distribution	Business Administration
Strategy	Category/Brand Strategy; Category/Brand Planning	Customer Relationship Strategy; Customer Relationship Planning	Manufacturing Strategy; Supplier Relationship Management; Production and Materials Planning	Supply Chain Strategy; Supply Chain Planning	Corporate Strategy; Corporate Planning; Alliance Management; Line of Business Planning
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Execution	Concept/Product Testing; Product Development; Product Management; Marketing Execution; Consumer Service; Product Directory	Value-Added Services; Customer Account Servicing; Retail Marketing Execution; In-store Inventory Mgmt; Customer Directory	Make Products; Assemble/Pkg. Products; Plant Inventory Management; Manufacturing Procurement	En Route Inventory Management	Treasury and Risk Management; Accounting and GL; Indirect Procurement; Facilities and Equipment Management; HR Administration; IT Systems and Operations

III. Governance

What is 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

- Corporate Governance
- IT Governance
- EA Governance
- SOA Governance

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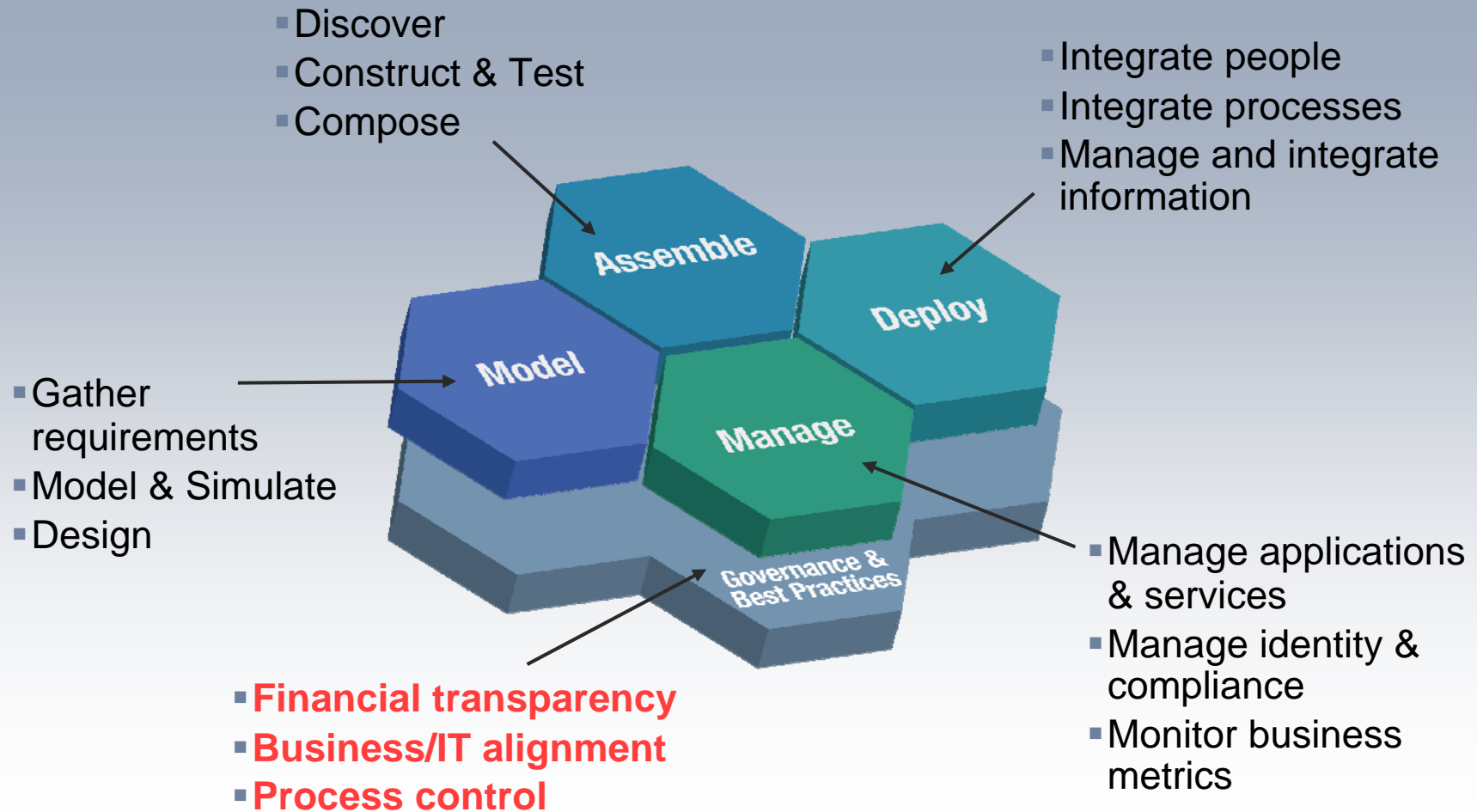
What is SOA Governance?

SOA Governance?

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

SOA Governance is a catalyst for improving overall IT Governance

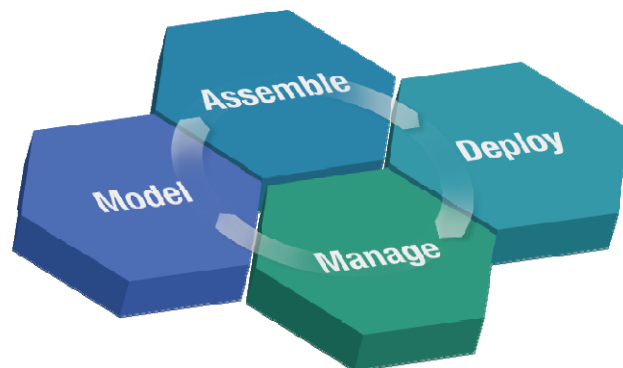# Governance within the SOA Lifecycle – Managing the Service Portfolio

- Discover
- Construct & Test
- Compose

- Integrate people
- Integrate processes
- Manage and integrate information

Assemble

Deploy

Model

Manage

Governance & Best Practices

- Gather requirements
- Model & Simulate
- Design

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

- **Financial transparency**
- **Business/IT alignment**
- **Process control**

SOA Governance Definition and Enforcement
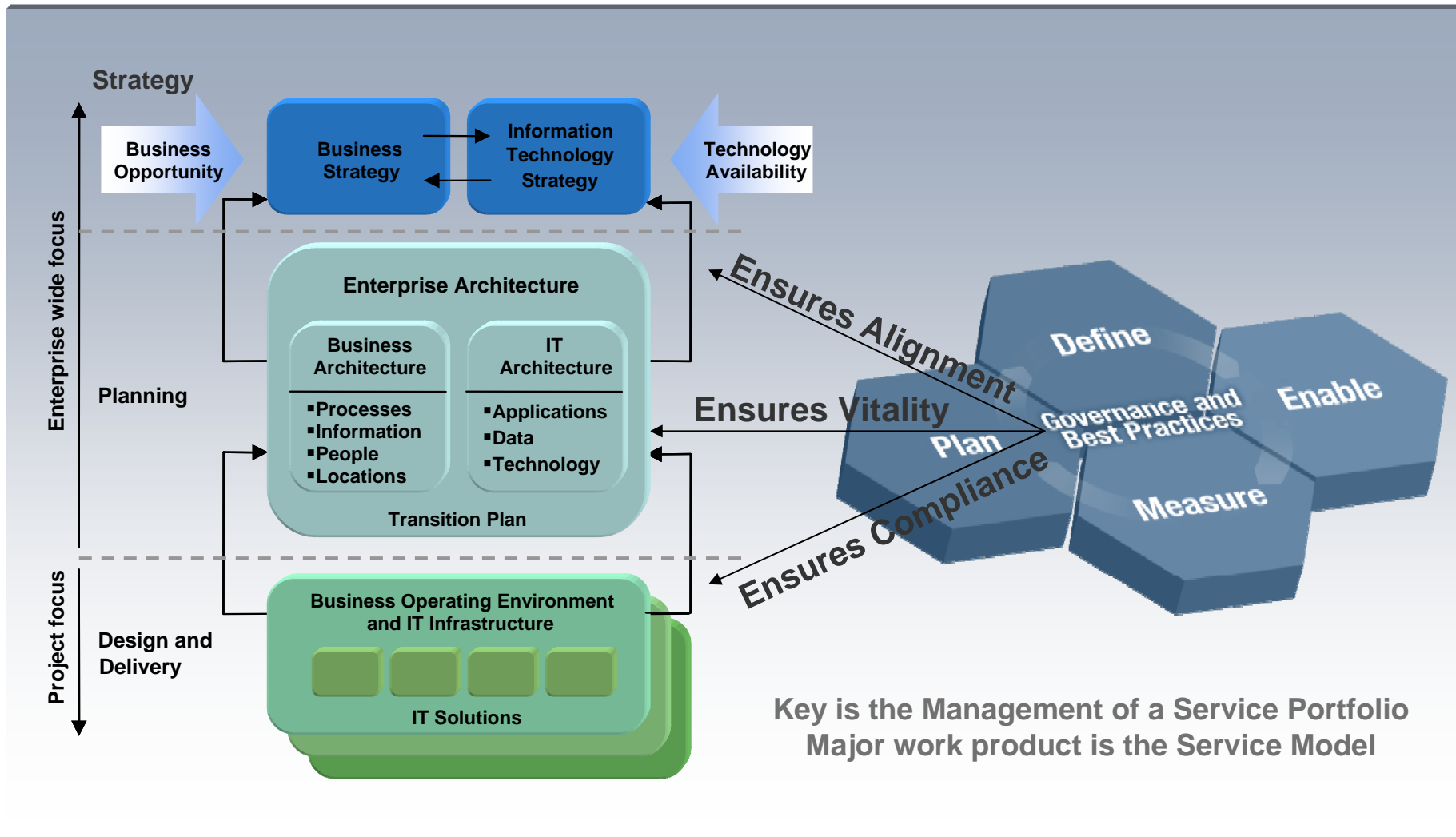
SOA Governance Lifecycle

- the process in which
  SOA Governance is <u>defined</u>

SOA Service Lifecycle
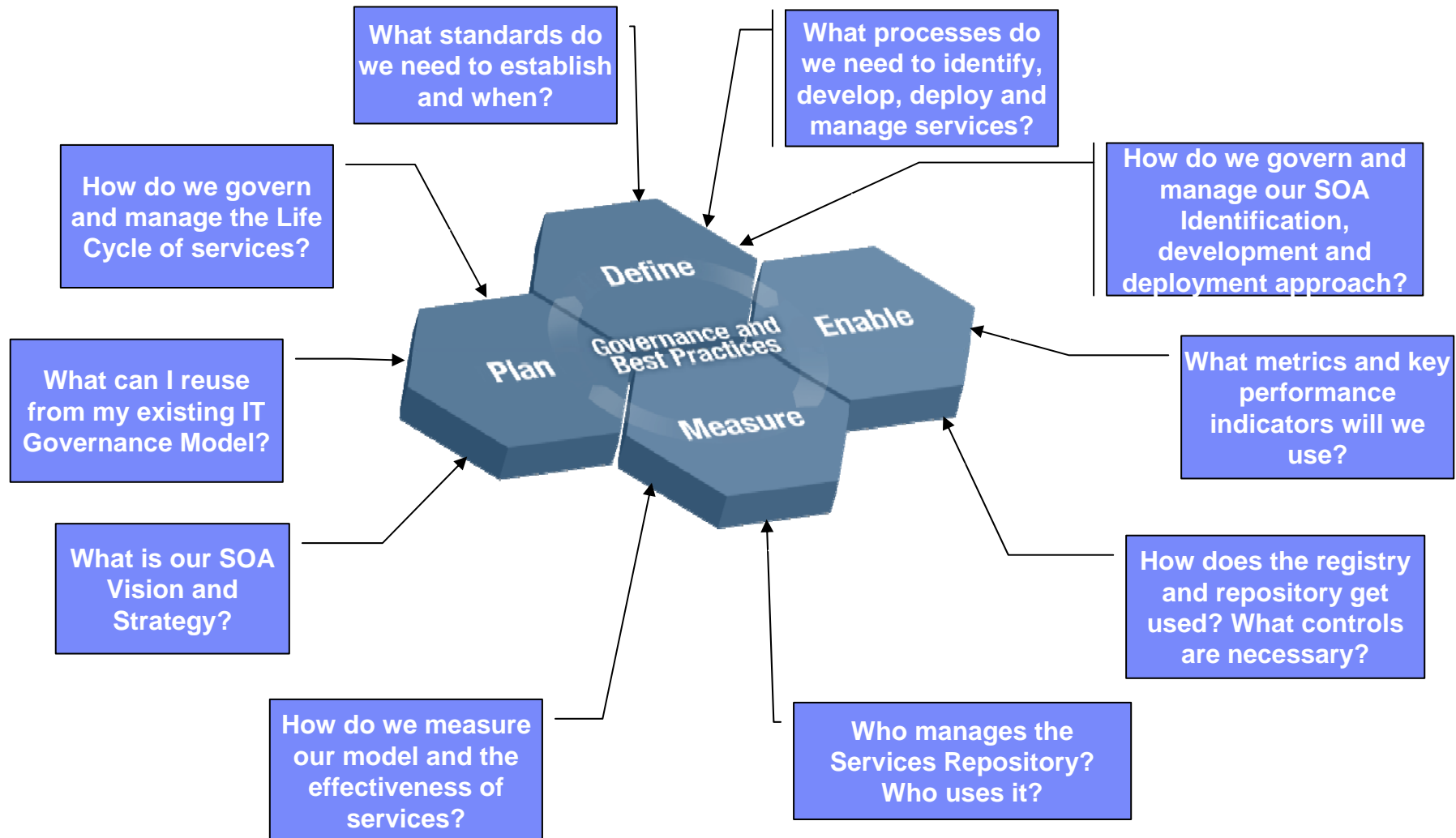
- the processes being governed
- the processes in which
  SOA Governance is <u>enforced</u>

Enterprise wide SOA Governance (Enterprise Architecture)

Key is the Management of a Service Portfolio
Major work product is the Service Model

SOA Governance Life Cycle Addresses Key Questions

What standards do we need to establish and when?

What processes do we need to identify, develop, deploy and manage services?

How do we govern and manage the Life Cycle of services?

How do we govern and manage our SOA Identification, development and deployment approach?

Define

Plan

Governance and Best Practices

Enable

Measure

What can I reuse from my existing IT Governance Model?

What metrics and key performance indicators will we use?

What is our SOA Vision and Strategy?

How does the registry and repository get used? What controls are necessary?

How do we measure our model and the effectiveness of services?

Who manages the Services Repository? Who uses it?

SOA Governance Lifecycle – How to establish?

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

Plan

Enable

Governance and Best Practices
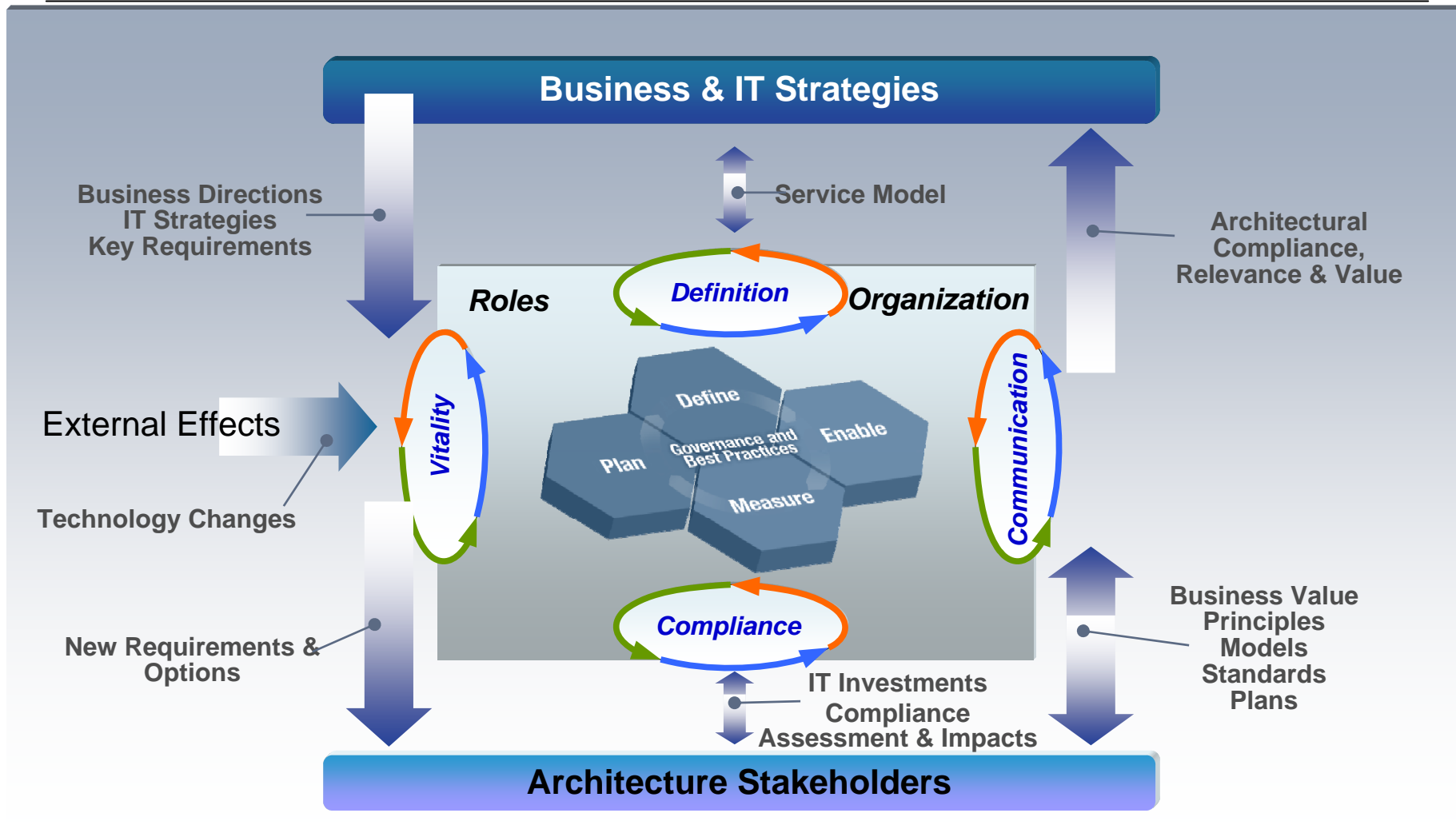
Measure

Monitor and Manage the Governance Processes

- Monitor compliance with policies
- Monitor compliance with governance arrangements
- Monitor IT effectiveness metrics

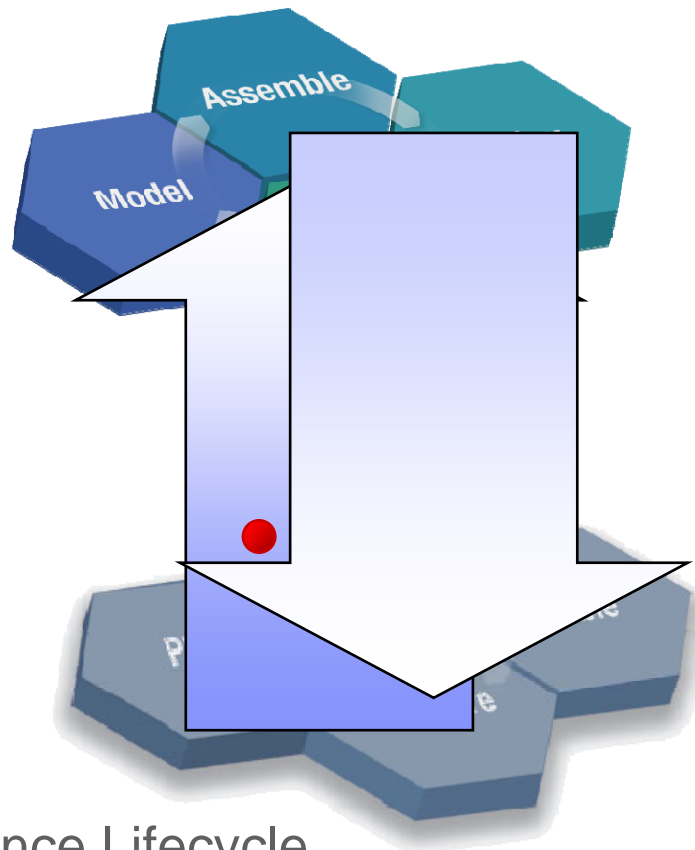## Enable the Governance Model Incrementally

- Deploy governance mechanisms
- Deploy governance IT infrastructure
- Educate and deploy on expected behaviors and practices
- Deploy policies

SOA Governance Considerations – What is required ? Processes, Roles and Organization

Business & IT Strategies

Business Directions
IT Strategies
Key Requirements

Service Model

Architectural
Compliance,
Relevance & Value

Roles

Definition

Organization

Vitality

Communication

Define

Enable

Plan

Governance and
Best Practices

Measure

External Effects

Technology Changes

Compliance

New Requirements &
Options

IT Investments
Compliance
Assessment & Impacts

Business Value
Principles
Models
Standards
Plans

Architecture Stakeholders

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Interaction Between the Lifecycles
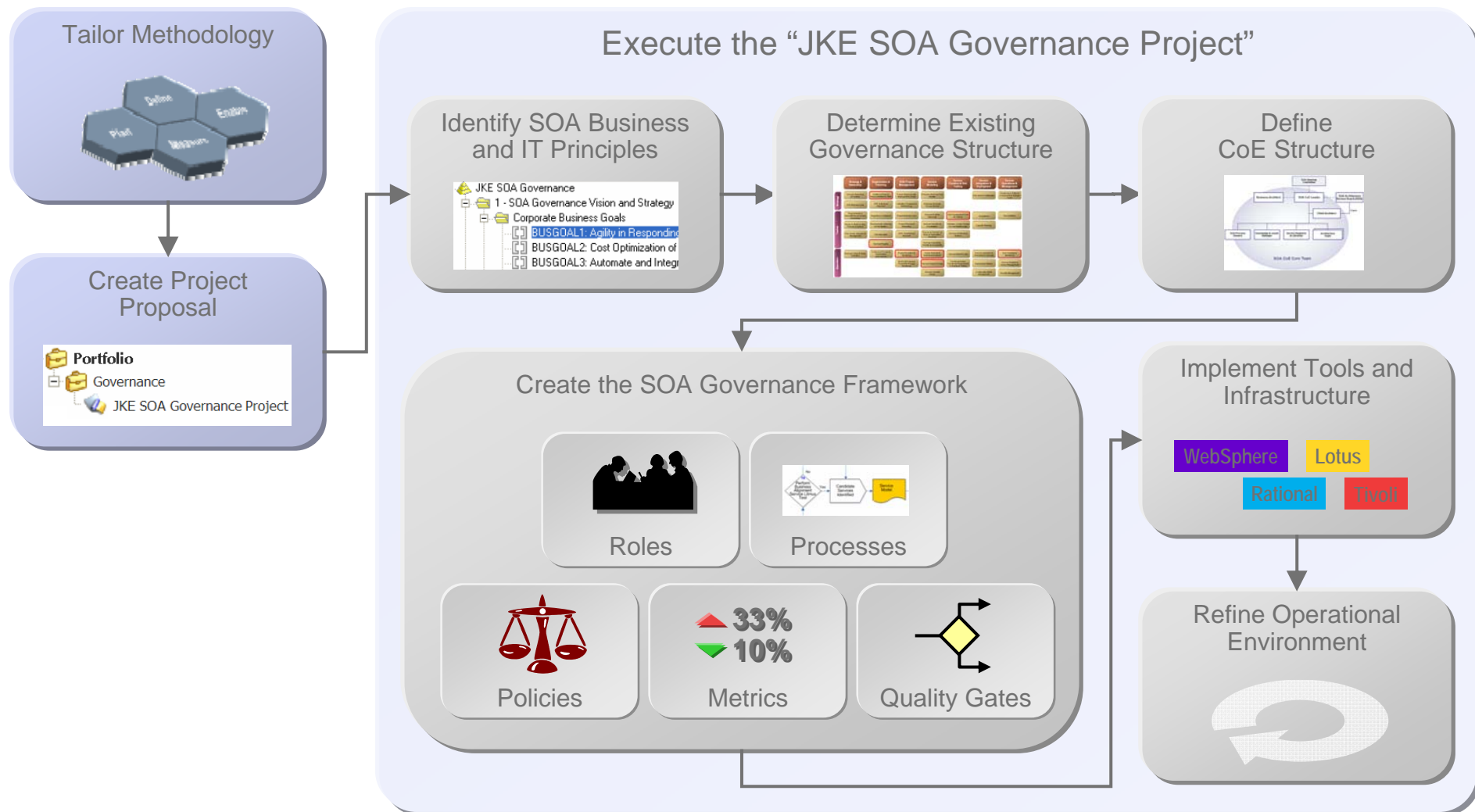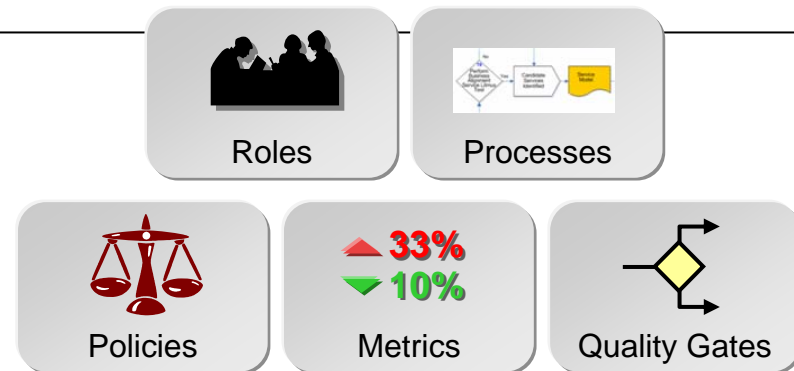
Service Lifecycle

Governance Lifecycle

- **Policies**
  - quality gates
  - controls
  - metrics
  - standards

- are **defined** in the Governance lifecycle (for different aspects of Governance)…

- …and they are **enforced** in the service lifecycle

- metrics are captured to improve governance process
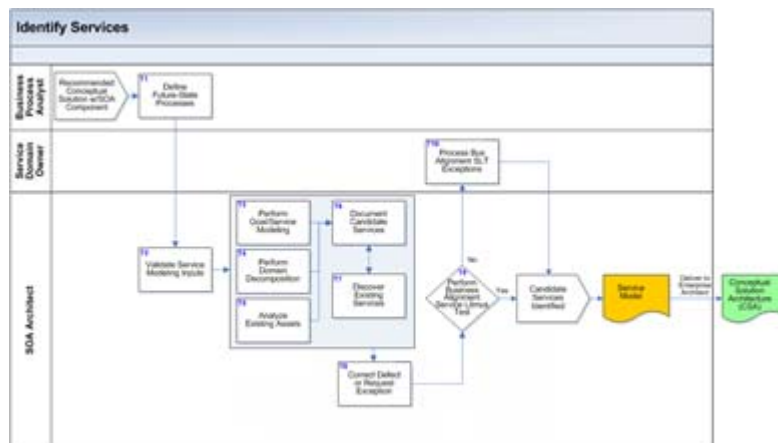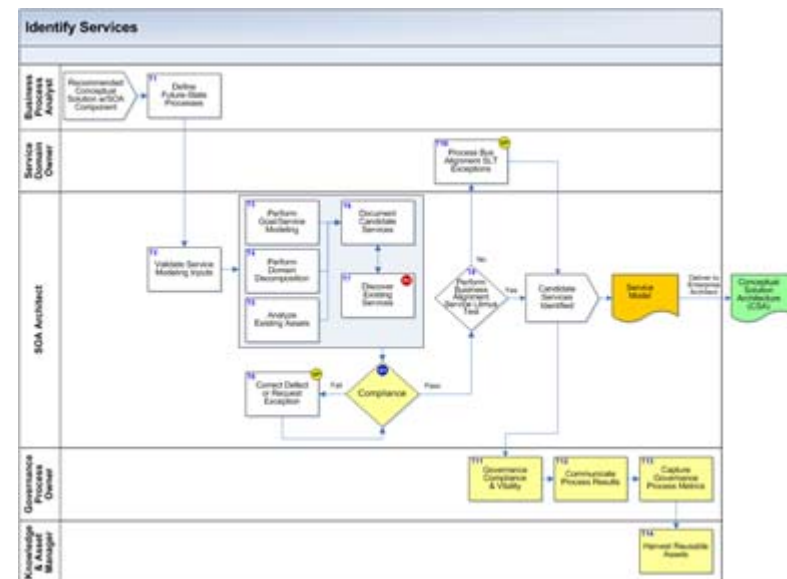
Defining the Governance Solution (Example)

Tailor Methodology

Create Project Proposal

Portfolio
Governance
JKE SOA Governance Project

Execute the "JKE SOA Governance Project"

Identify SOA Business and IT Principles

JKE SOA Governance
1 - SOA Governance Vision and Strategy
Corporate Business Goals
BUSGOAL1: Agility in Responding
BUSGOAL2: Cost Optimization of
BUSGOAL3: Automate and Integr

Determine Existing Governance Structure

Define CoE Structure

Create the SOA Governance Framework

Roles

Processes

Policies

▲ 33%
▼ 10%
Metrics

Quality Gates

Implement Tools and Infrastructure

WebSphere   Lotus
Rational   Tivoli

Refine Operational Environment

The Governance Framework

- All the "elements" that we need to add to make a process well-governed

Roles

Processes

Policies

▲33%
▼10%

Metrics

Quality Gates

non-governed process

well-governed process

JKE Example: Enforcement at Development Time

exception procedure

Implement Service that failed Litmus test

human decision

policy

Services should be reused instead of created whenever possible

registry lookup

quality gate

Services must be compliant with the existing reference architecture

review

new roles

new activities

Example – Enforcing Service Reuse Policy

- During the "Identify Services" activities, the SOA Architect implements the Service Reuse policy searching for existing services

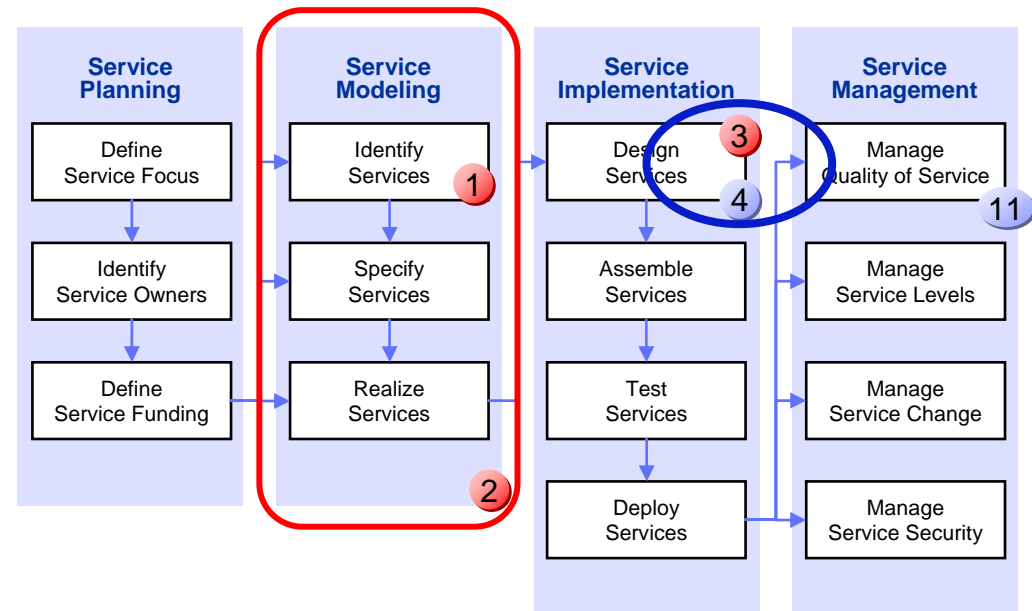- At the Validate Service Design quality gate the policy is enforced

Service Planning	Service Modeling	Service Implementation	Service Management
Define Service Focus	Identify Services ①	Design Services ③ ④	Manage Quality of Service ⑪
Identify Service Owners	Specify Services	Assemble Services	Manage Service Levels
Define Service Funding	Realize Services ②	Test Services	Manage Service Change
		Deploy Services	Manage Service Security

Policy ① Services should be reused instead of created whenever possible

Quality Gate ④ Validate Service Design, semi-automatic enforcement during development

Example – Enforcing Architecture Compliance Policy

- The SOA Architect implements the Compliance with the Reference Architecture policy during all the activities in the Service Modeling phase

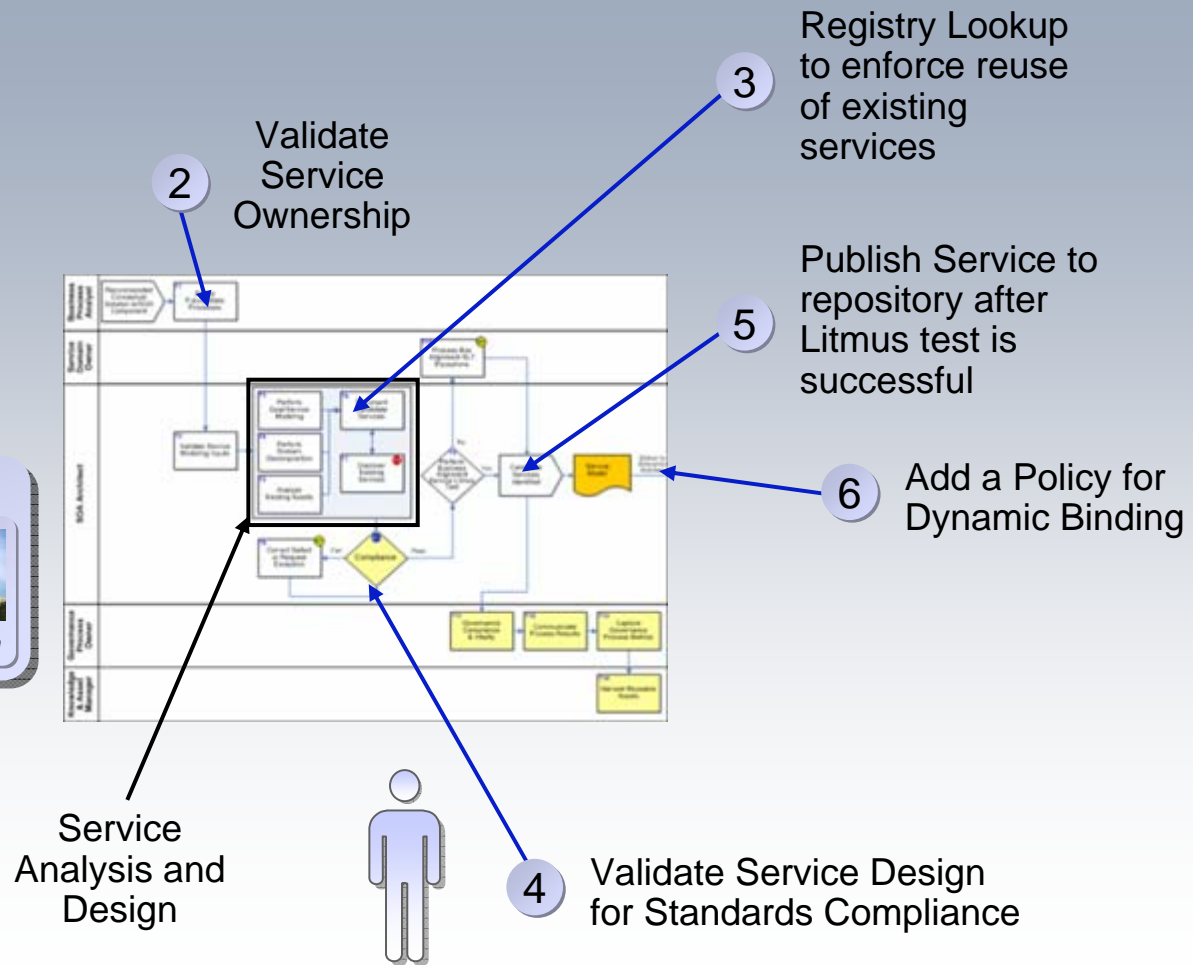- At the Validate Service Design quality gate the policy is enforced with a manual review of the service model

Service Planning	Service Modeling	Service Implementation	Service Management
Define Service Focus	Identify Services (1)	Design Services (3)	Manage Quality of Service (11)
Identify Service Owners	Specify Services	Assemble Services (4)	Manage Service Levels
Define Service Funding	Realize Services	Test Services	Manage Service Change
	(2)	Deploy Services	Manage Service Security

Policy (2) Services must be compliant with the existing reference architecture

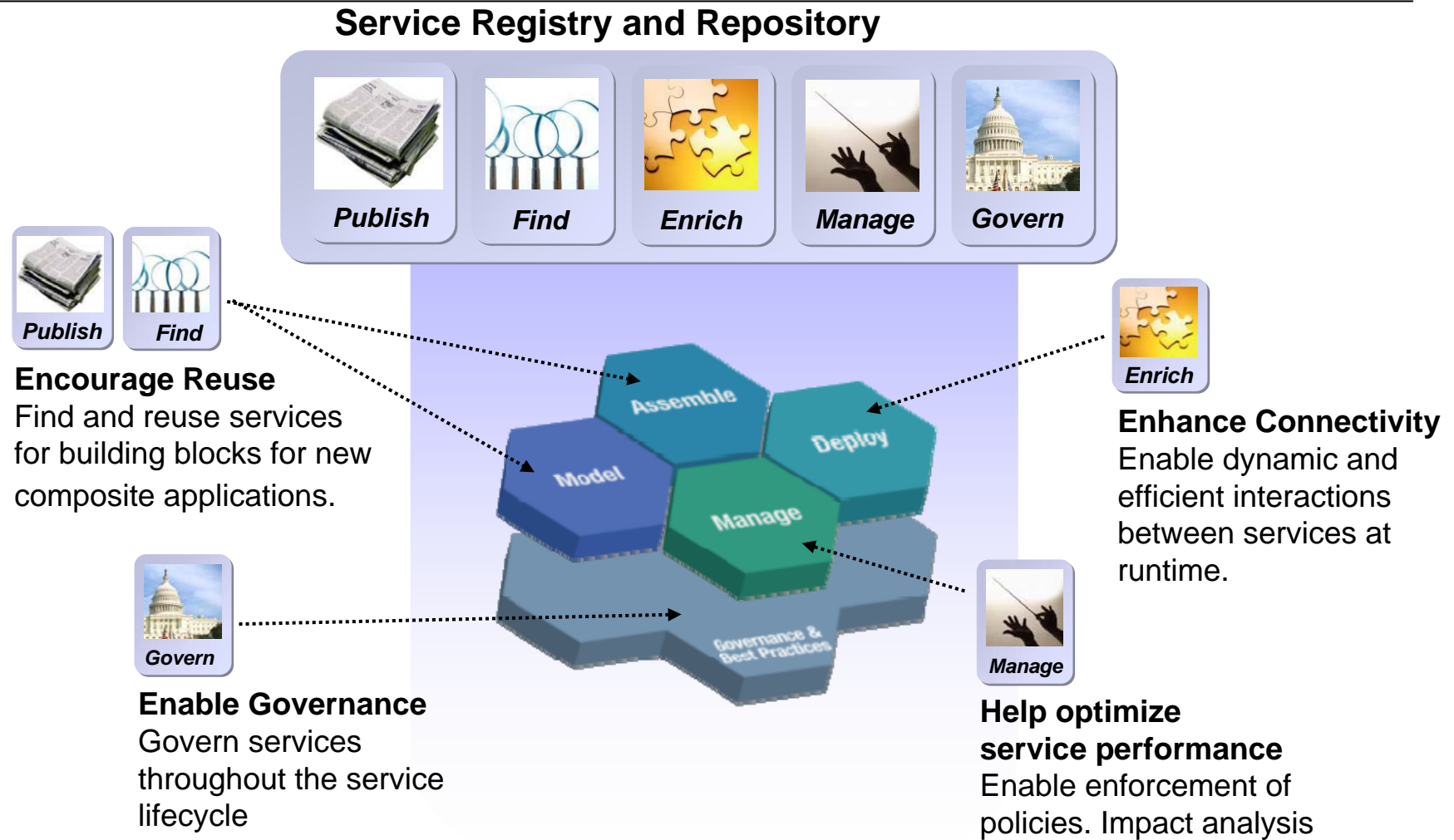**Quality Gate** (4) Validate Service Design, manual enforcement during development

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Governance at Development Time – Enforcing Policies of Services Life Cycle

Ensure Compliance and Define Policies

3 Registry Lookup to enforce reuse of existing services

2 Validate Service Ownership

1 Service state transitions are defined based on governance solution

5 Publish Service to repository after Litmus test is successful

WebSphere Service Registry and Repository

Publish   *Find*   *Enrich*   *Manage*   *Govern*

6 Add a Policy for Dynamic Binding

Service Analysis and Design

4 Validate Service Design for Standards Compliance

Main Capabilities of Service Registry and Repository

Service Registry and Repository

| Publish | Find | Enrich | Manage | Govern |

Encourage Reuse
Find and reuse services for building blocks for new composite applications.

Enhance Connectivity
Enable dynamic and efficient interactions between services at runtime.

Enable Governance
Govern services throughout the service lifecycle

Help optimize service performance
Enable enforcement of policies. Impact analysis

IV. More about Case FACT

Process Model / IDD / Class Models for Data Structures

Process Model

Process Step

Input SOL

IDD

Class Models for Data

Legacy

Intermediate

FACT

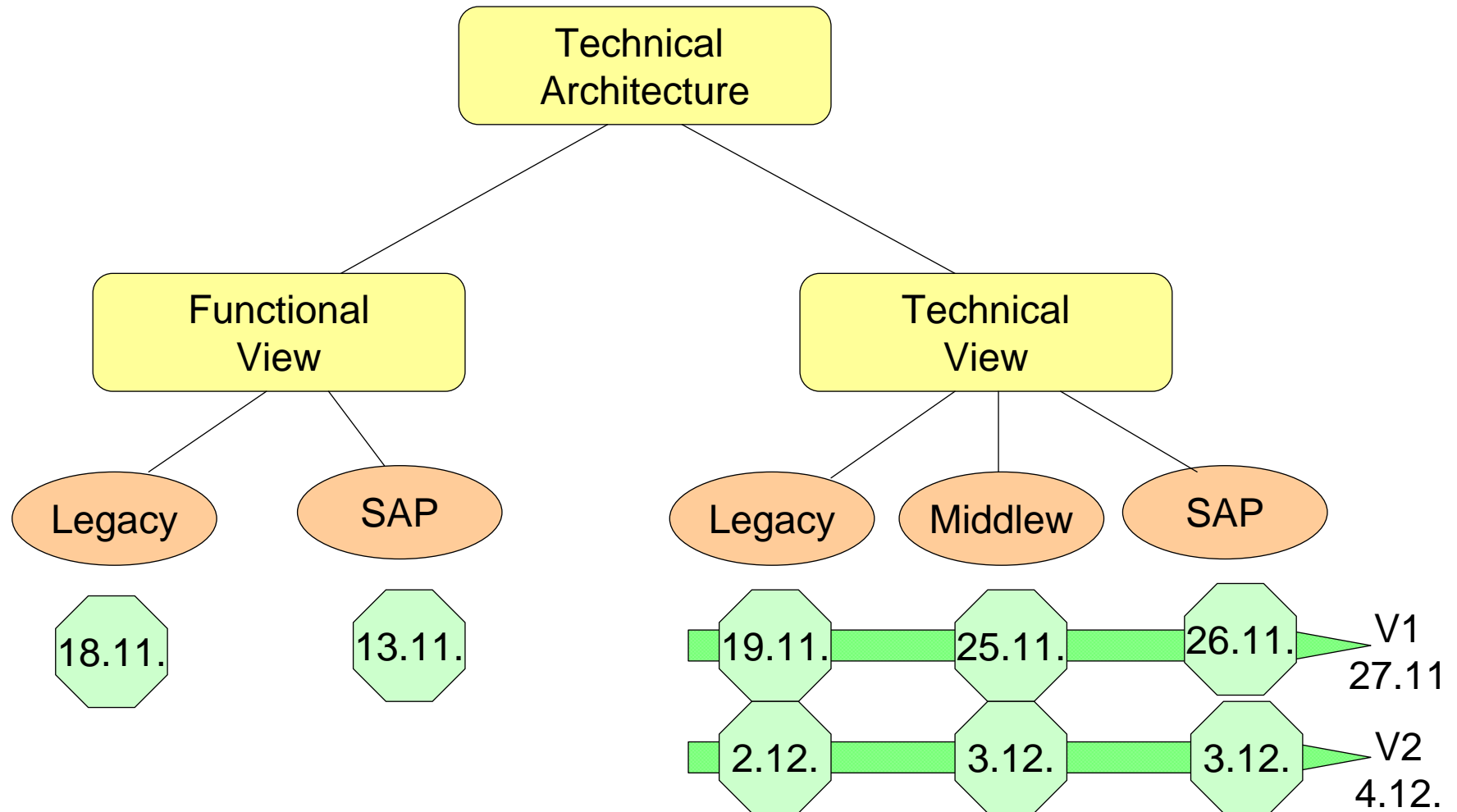# Integration Architecture is about breaking "Interfaces" into smaller chunks
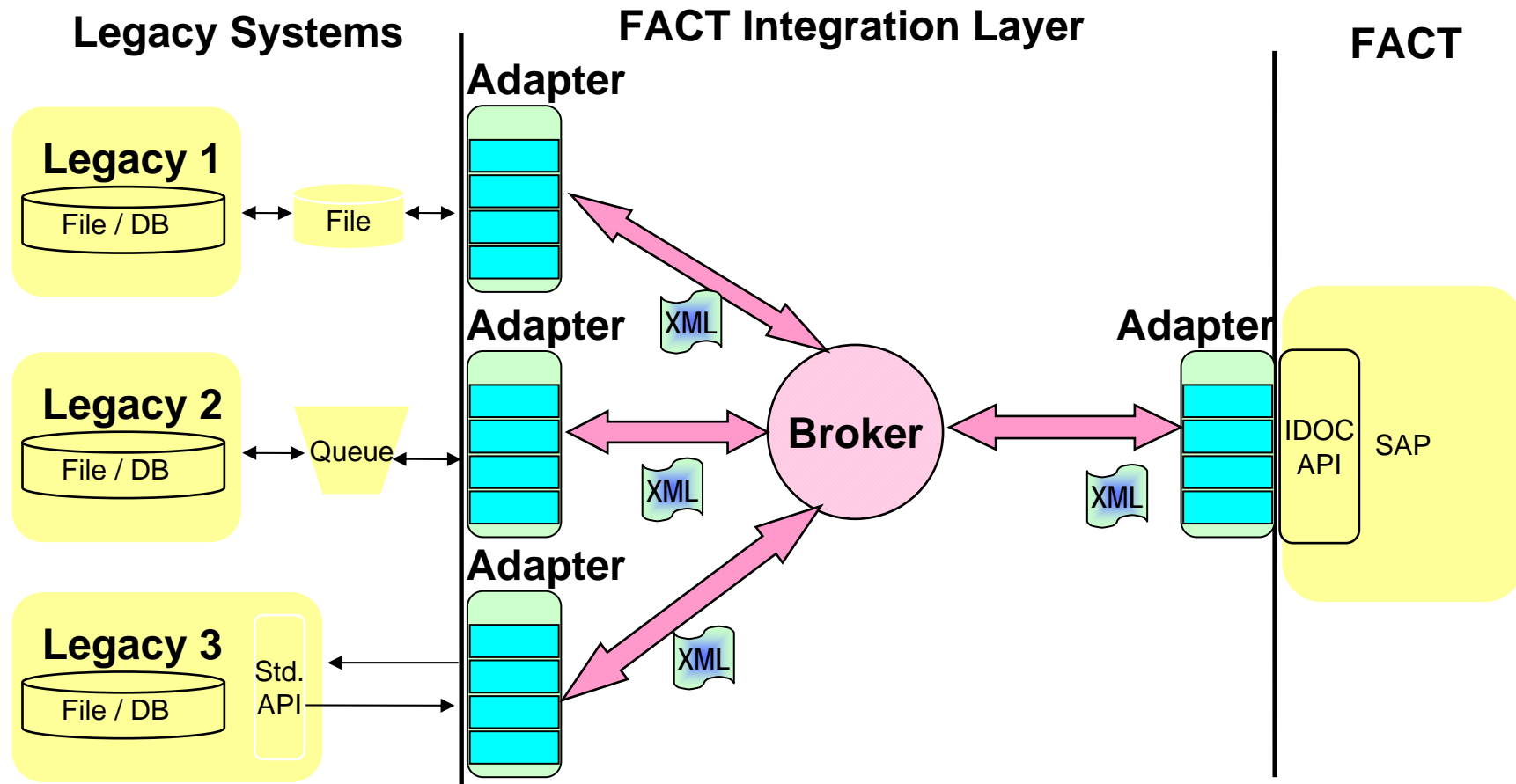
Legacy Systems

Interface

FACT

Legacy 1

File / DB

A miracle occurs

SAP

Integration Architecture

Legacy Data

Legacy Adapter

Broker

SAP Adapter

SAP IDOC

Technical Architecture – Planning End of 2003

Technical Architecture

Functional View

Technical View

Legacy

SAP

Legacy

Middlew

SAP

18.11.

13.11.

19.11. 25.11. 26.11. V1
27.11

2.12. 3.12. 3.12. V2
4.12.

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FACT Integration Layer – Technical View

Legacy Systems

FACT Integration Layer

FACT

Adapter

Legacy 1
File / DB — File

Adapter

XML

Legacy 2
File / DB — Queue

Broker

XML

Adapter

IDOC API — SAP

XML

Adapter

Legacy 3
File / DB — Std. API

XML

Example use of Pattern: one-to-many with different messages (Feed and R/R – Request/Reply)

To Legacy

Broker Scope

To SAP

1

2

3

Broker

4b

nonXML:

4a

XML

nonXML:
Or XML

**Different messages to
Multiple destinations**

Patterns for Information Flow "Feed" – 1: Legacy

Legacy Scope

Adapter Scope

Broker Scope

Program Start

File / DB

2

**Program terminates
OR File is created**

4

XML

5

Broker

6

3

1

File / DB

Patterns for Information Flow "Feed" – 2: Broker Flow

In

Validate

Filter

Lookup

(Transform)

Out

Patterns for Information Flow "Feed" – 3: SAP

SAP Scope

Adapter Scope

Broker Scope

SAP-DB

1

2

3

Broker

XML

4

6

ALE

IDoc

5

Technical Architecture Specifics:
Switching supported by Country Dependent Routing

Legacy Scope

Integration Layer

FACT

File / DB

Legacy+ FACT Data

Broker

Countries in roll-out cluster to SAP

IDOC API SAP

Old Financial systems

Legacy Data

Technical Architecture Specifics:
Translation of codes

Legacy Patterns

FACT Integration Layer

FACT

Adapter

Legacy 1
File / DB   File

Adapter

Legacy 2
File / DB   Queue

Adapter

Legacy 3   Std. API
File / DB

Broker

Adapter

IDOC API   SAP
X-ref part of SAP Bus. Doc.

Deploy Lookup Tables

Lookup   Update

Lookup Tables Runtime Environment

Lookup Tables Maintenance Environment

Manual Update of Lookup Tables

Deliverables of Data Structures for an IDD
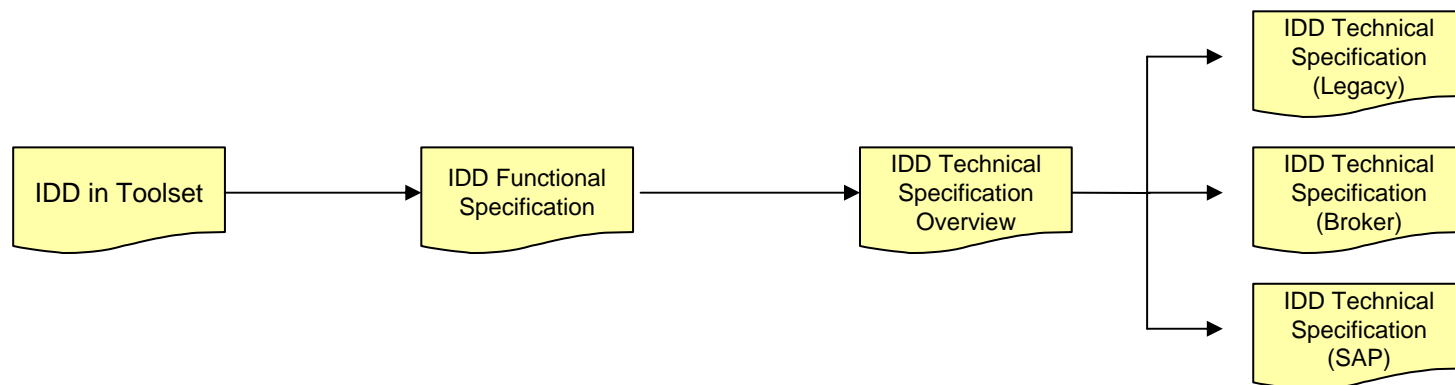
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Overview

- **IDD (Interface Detailed Definition) related to a step in the Business Process – may include multiple information flows**
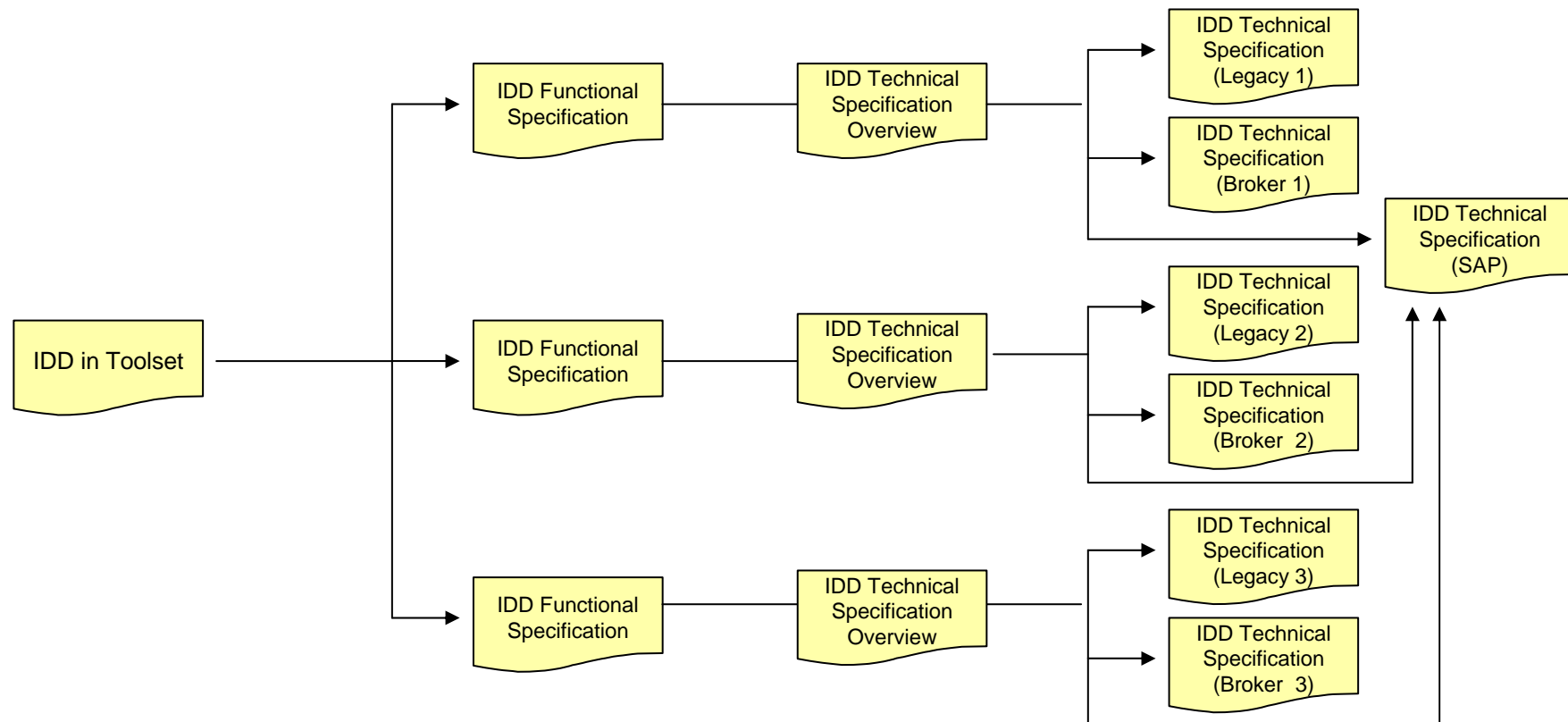
- **FS (Functional Specification)**
  - *Functional Specification* (FS) defines data (SAP and Legacy) from Business Perspective, including some transformations
  - Data Structure include IDoc / BAPI as well as Legacy interface data structure to be used and or customized

- **TS (Technical Specification)**
  - *Technical Specifications* (TS) (Overview, SAP, Legacy, Broker) include AND *data models* and XSD (XML Schema Definition) for XML of SAP IDocs, XML of Legacy Application Interfaces, Transformations

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Functional and Technical Specification:
IDD and Regular Information Flow

IDD in Toolset → IDD Functional Specification → IDD Technical Specification Overview → IDD Technical Specification (Legacy)

IDD Technical Specification (Broker)

IDD Technical Specification (SAP)

Functional and Technical Specification: IDD and Multiple Information Flows

Overview

Field Mapping in Functional Specification

Mapping LEG Busterms To Data Model

Mapping SAP Busterms To Data Model

DevToolRepository

	Legacy Class Models

	Transforms Lookup IDoc Control

	SAP Class Models

Requirements To LEG

Requirements To SAP

Metadata Deliverables

XSD of LEG

Relationship Specification Report

XSD of SAP

Closing Remark