SOA : fundamentals and reference architecture

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Three Key Concepts to SOA

- **Business Innovation and Optimization -- For Responsiveness & Flexibility**

  A monitoring and management approach that leverages integrated resources to achieve aligned, accountable, and action-oriented business operations

- **Service Oriented Architecture -- For Flexibility and Reuse**

  An approach for designing and implementing distributed systems that allows a tight correlation between the business model and the IT implementation

- **Composite Application Development -- For Efficiency and Quality**

  A business driven development approach to creating solutions that uses automated tools to build models and transform them into efficient software implementations

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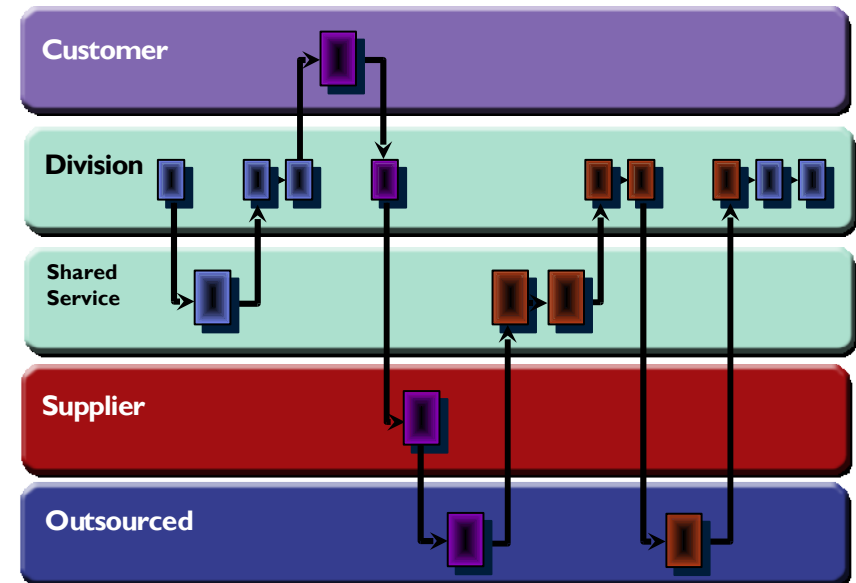
A decomposition of a Service-Based Business Design
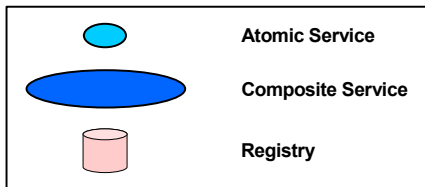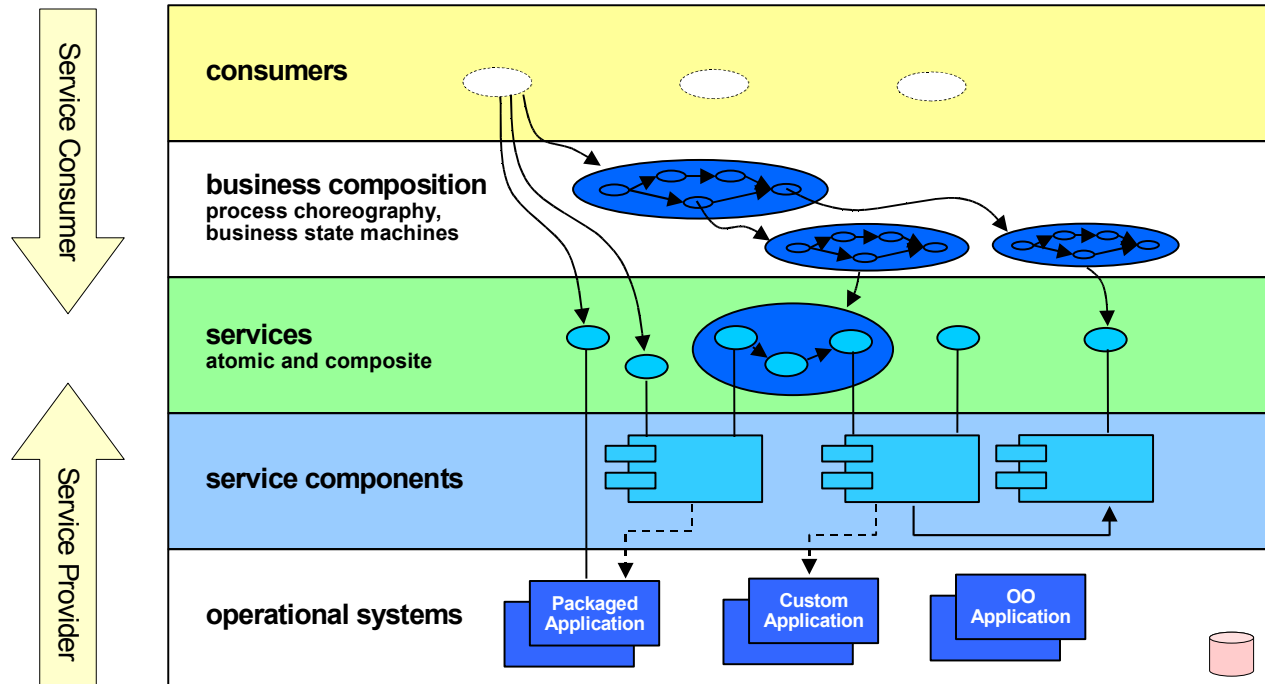
Methods & Techniques address end-to-end service life cycle activities today's focus in from modeling to realization

Business Strategy
Component Business Modeling

Service Modeling
Service Oriented Modeling & Architecture

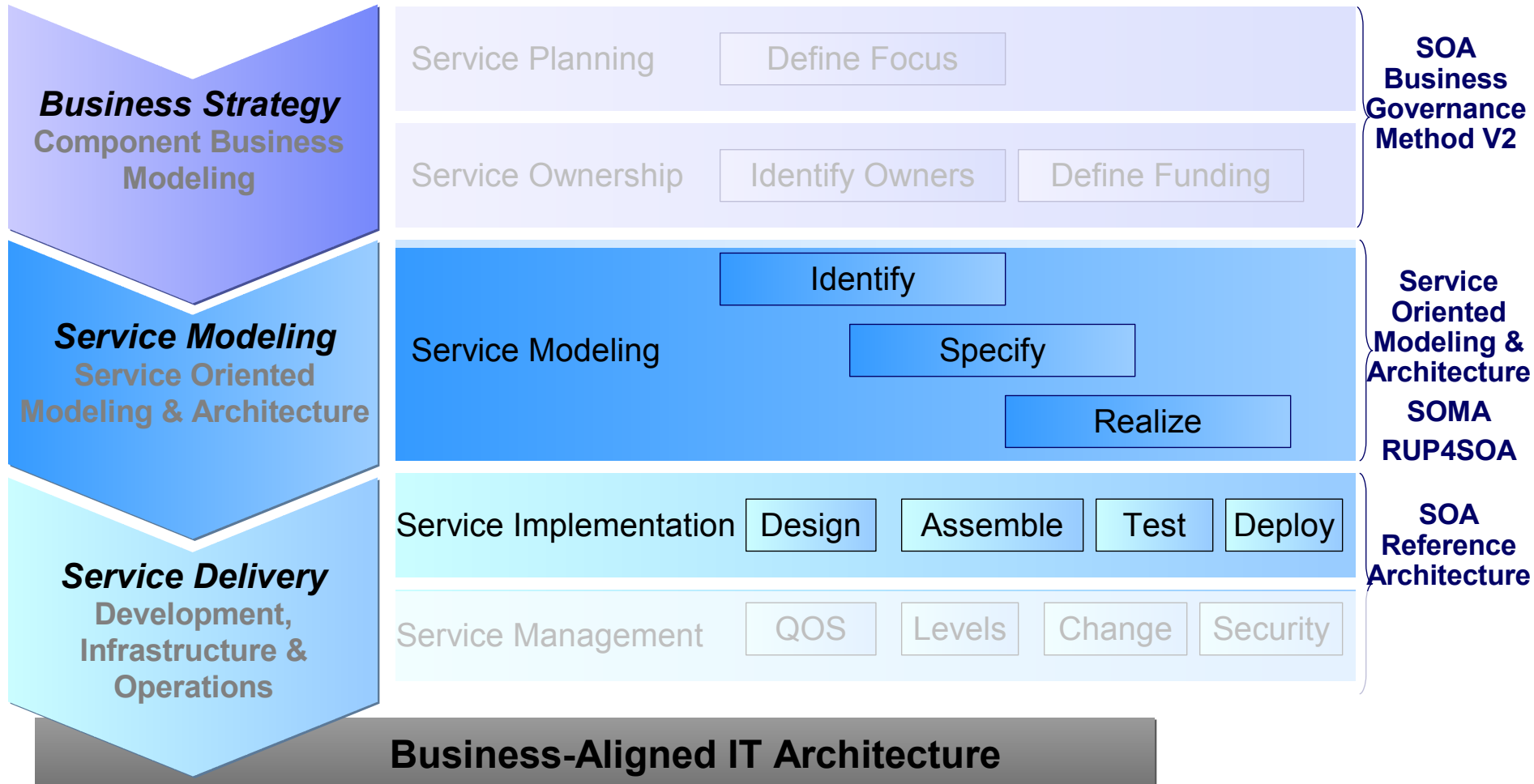**Service Delivery**
Development, Infrastructure & Operations

Service Planning	Define Focus	
Service Ownership	Identify Owners	Define Funding

SOA Business Governance Method V2

Service Modeling	Identify
	Specify
	Realize

Service Oriented Modeling & Architecture

SOMA

RUP4SOA

Service Implementation	Design	Assemble	Test	Deploy
Service Management	QOS	Levels	Change	Security

SOA Reference Architecture

Business-Aligned IT Architecture

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The role of SOMA in SOA development is to provide a prescriptive technique for modeling (analysis and design) necessary to create a Service-Oriented Architecture with composable services

At the heart of SOMA is the identification and specification of services, components and flows

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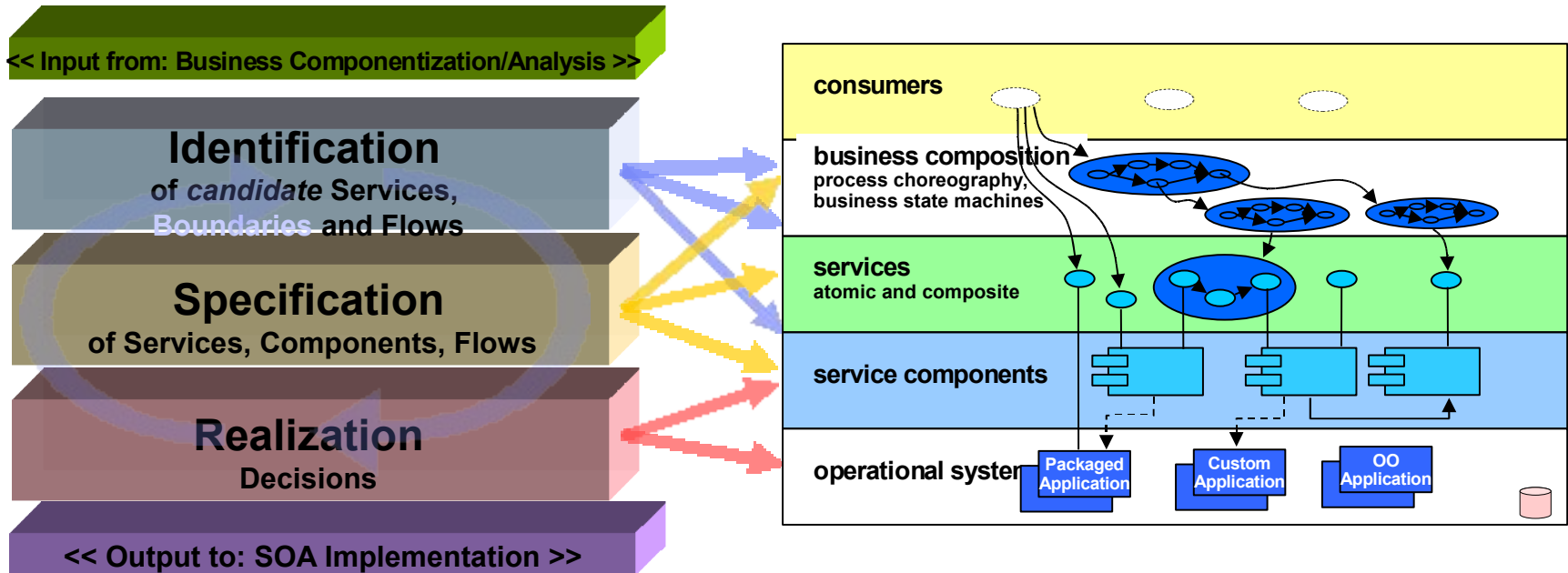
Flexibility and Responsiveness need a simplified programming model

EJB Stateless Session Bean Composition
Java Bean Composition
WebSphere InterChange Server Collaborations
Flow Definition Language (FDL)
BPEL4WS

Process

WS-BPEL

Process Engine capabilities

Simplify by Convergence

EJB Stateless
Session Bean
JAX-RPC, JDBC
JCA, JMS

Service

Service Components (SCA)

Wiring

Simplify by Encapsulation

JDBC Row Set
Java Bean, JAXB Object
JMS Message, JCA Data
EJB Transfer Bean
JAX-RPC POJO, EMF Data, XML DOM

Data

Service Data Objects (SDO)

Standard implementation

Simplify by Abstraction

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Applying the standards to the programming model

Design
(Models, Patterns, Templates, Policy)

BPMN / BPEL

Composition

WSRP
JSF
Ajax
Eclipse-based
Rich Client Platform

ESB
User Interaction   Invocation   Information

SDO
Web Services

Business Components

SCA
Web Services

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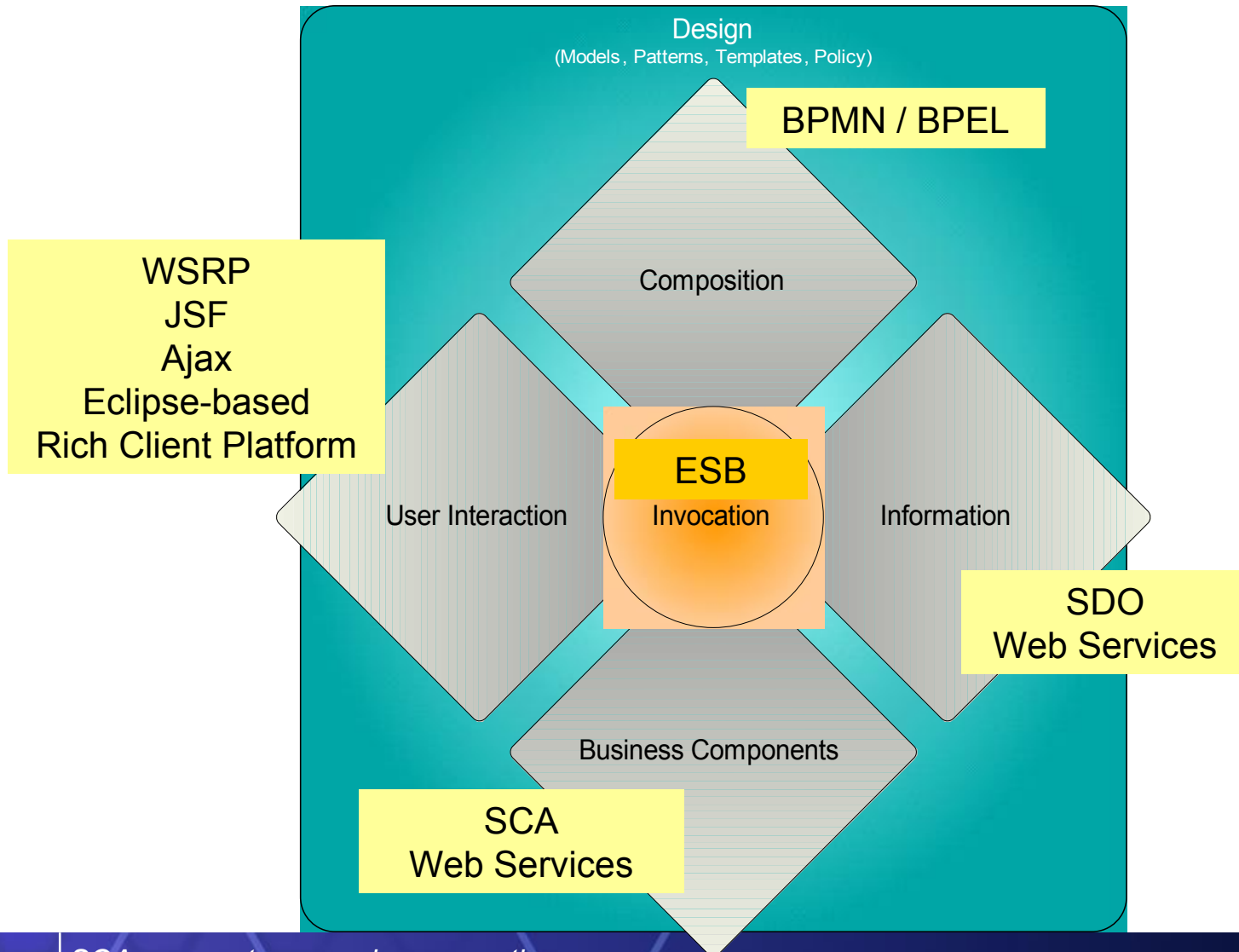
The solution needs infrastructure layers and governance

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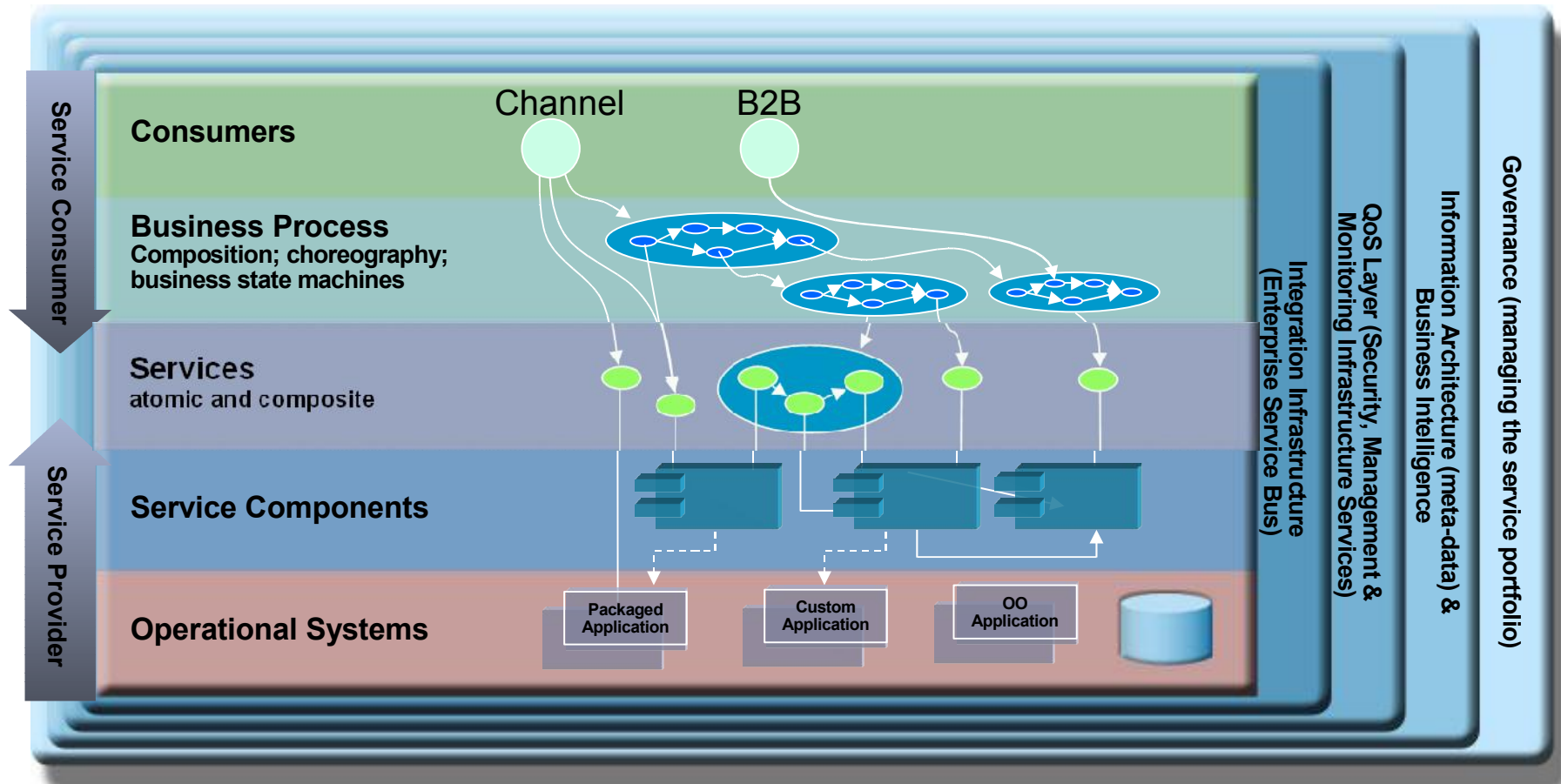
Deploying in a SOA Reference Architecture

Business Innovation & Optimization Services

Provide for better decision-making with real-time business information

Development Services

Integrated environment for design and creation of solution assets

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

ESB — *Enable inter-connectivity between services*

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

IT Service Management

Manage and secure services, applications & resources

Infrastructure Services
Optimizes throughput, availability and performance

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Consuming the SOA Foundation

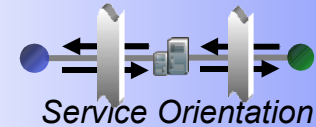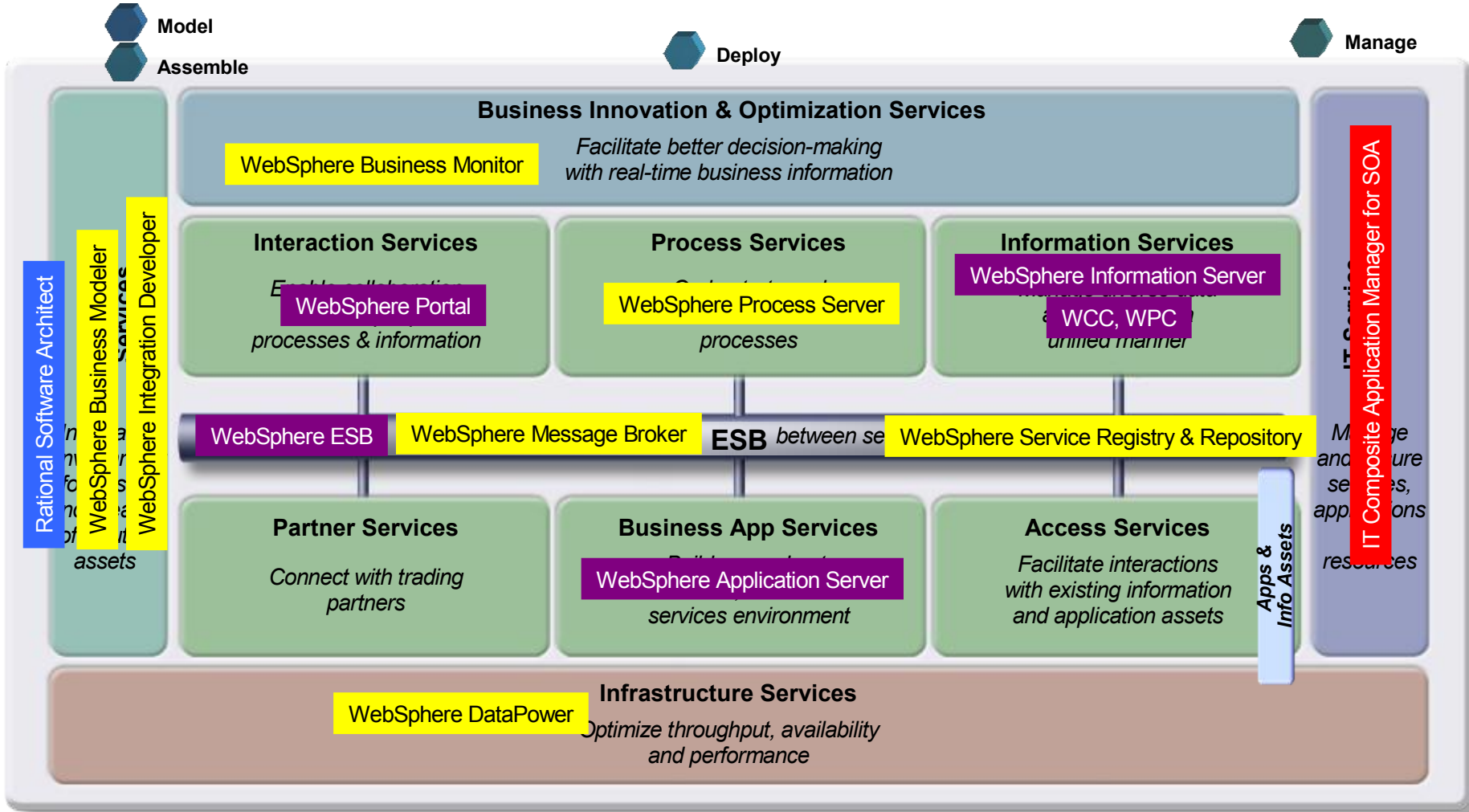| Scenario	Architectural Pattern
1. Capitalize on new business opportunities *Take advantage of existing services and make new ones ubiquitously accessible*	*Service Orientation*
2. Enhance responsiveness and customer service *Reduce transaction time and strengthen partner interactions*	Service Oriented Integration
3. Extend collaboration efforts and information accessibility *Provide roll-based access to information for employees, customers, & partners*	Aggregating User Interactions
4. Increase productivity *Automate process execution and easier change management*	Business Process Management
5. Improve business agility and compliance *Create a single source of information for customers, partners & internal users*	Managing & Connecting Information Services

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Some of the products that will be discussed today

Model

Assemble

Deploy

Manage

Rational Software Architect

WebSphere Business Modeler

WebSphere Integration Developer

Business Innovation & Optimization Services

Facilitate better decision-making with real-time business information

WebSphere Business Monitor

Interaction Services

processes & information

WebSphere Portal

Process Services

processes

WebSphere Process Server

Information Services

unified manner

WebSphere Information Server

WCC, WPC

WebSphere ESB

WebSphere Message Broker

ESB *between se*

WebSphere Service Registry & Repository

Partner Services

Connect with trading partners

Business App Services

services environment

WebSphere Application Server

Access Services

Facilitate interactions with existing information and application assets

Apps & Info Assets

IT Composite Application Manager for SOA

Manage and assure services, applications resources

Infrastructure Services

Optimize throughput, availability and performance

WebSphere DataPower

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