



IBM Software Group

# Applying SOA to OSS *for Telecommunications*

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**ON DEMAND BUSINESS™**

# The Details of SOA depends on your role...

## “SOA in context ...”

Business

- ▶ a set of services that a business wants to expose to their customers and partners, or other portions of the organization

Architecture

- ▶ an architectural style which requires a service provider, requestor and a service description
- ▶ a set of architectural principles, patterns and criteria which address characteristics such as *modularity, encapsulation, loose coupling, separation of concerns, reuse, composability and single implementation*

- ▶ a programming model complete with standards, tools and technologies such as Web Services

Implementation



# What Operators are Saying about SOA and OSS...

## Business POV

*“I want to decrease the complexity, risk, and cost of integration”, a.k.a integration tax*

**Maximize the return on your integration investment** using service oriented integration techniques, i.e. leverage reuse

- Lower cost to add new interfaces and modify existing interfaces
- Easily and incrementally expand integration services, growing capabilities over time
- Work with single or multi-vendor integration environments
- Support both synchronous and asynchronous interfaces
- Start with the software we already own alongside our existing integration architecture



# SOA – Optional and Mandatory Principles

We need a architectural method to help ensure...

## Mandatory (Consensus)

- **Loose coupling** (in terms of interface contract, not time), implying the existence of a formal, well-defined interface contract
- **Location transparency** – a service user (consumer) should not hardcode any endpoint information
- **Protocol transparency** – a service can be reached via several transport protocols without having to be recode/recompile the service invocation logic

## Optional (Emerging Consensus)

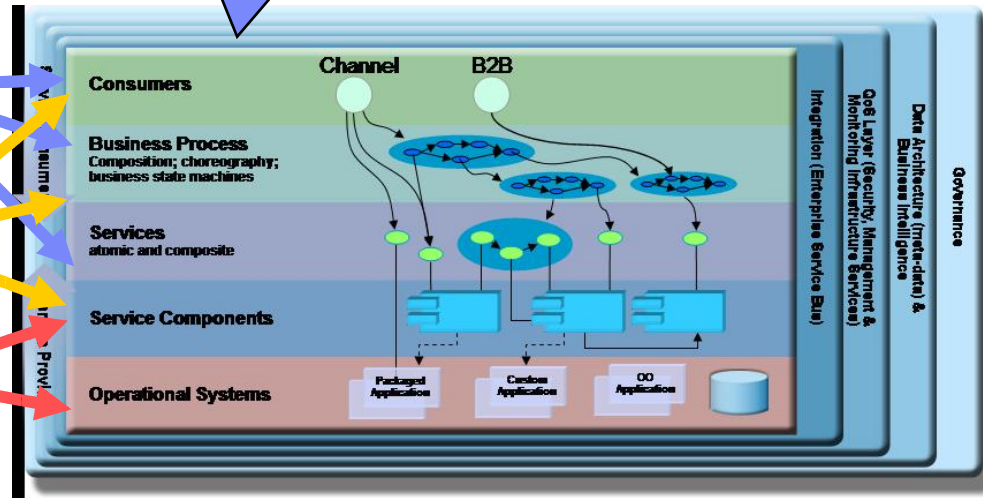
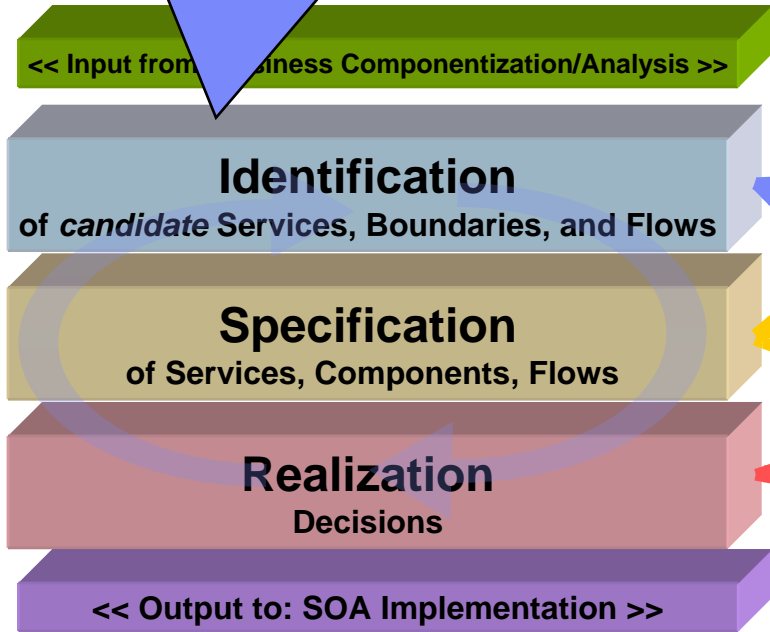
- **Mediation**, e.g. through an Enterprise Service Bus (ESB)
- **Common data model** and transformations (or even semantic brokering)
- **Single-instance** (a.k.a. singleton pattern)
- **Manageable** (security, deployment, logging, dynamic rerouting, maintenance)
- **Find-bind-execute** paradigm (role triangle) from Sun 'SOA and Web services'
  - “Services are **self-contained** and **modular**...
  - Services have a **network-accessible interface**...
  - Service-oriented architectures support **self-healing**.”
- “**Technology neutral, standardized, consumable, reusable, abstracted, published, formal, and relevant.**” CBDl



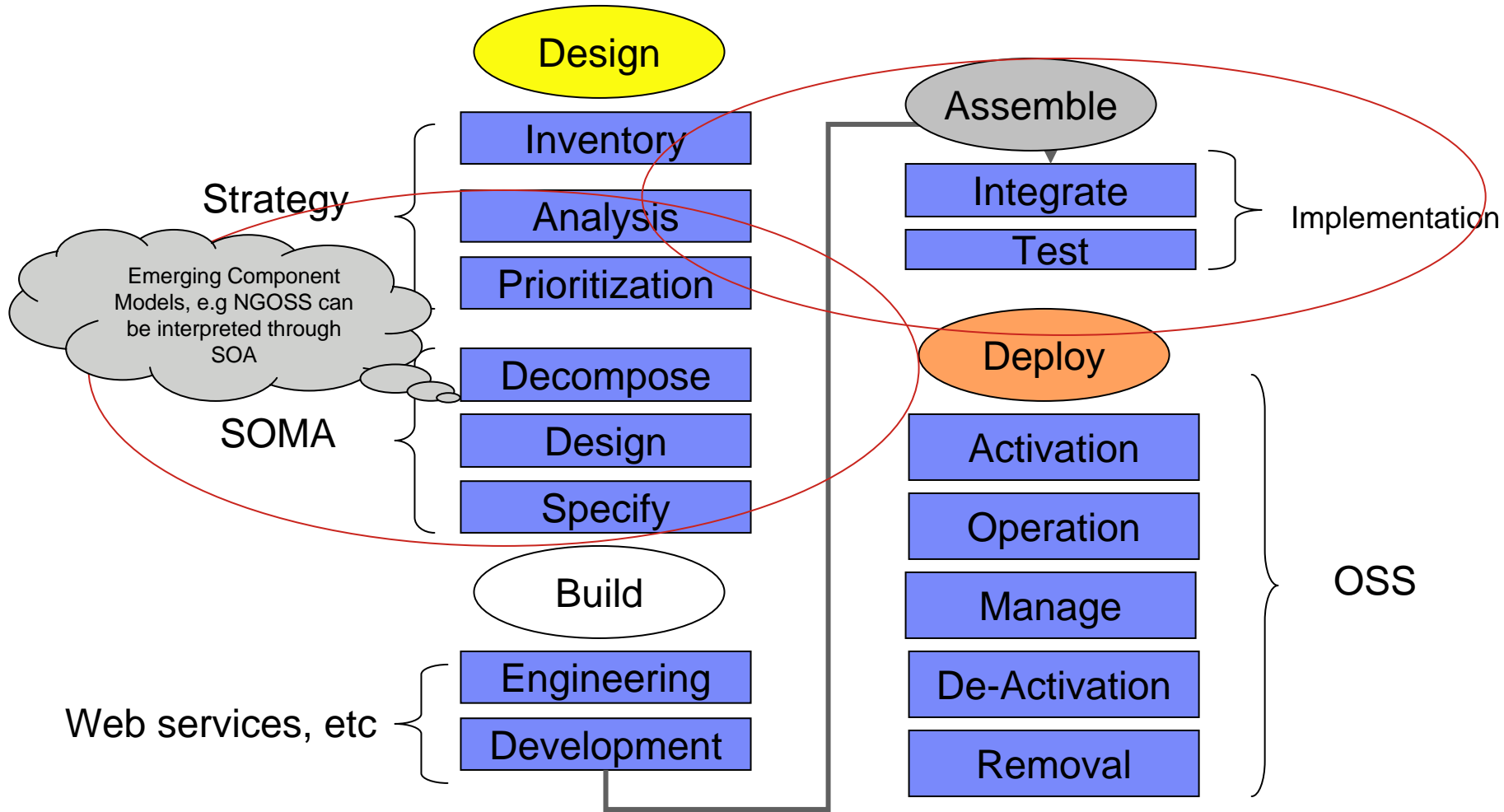
# SOMA, a specialized method to support our desire to arrive at reusable assets

e.g. SOMA Method:  
Service-Oriented Modeling and Architecture

SOA reference model :  
Layered solution view

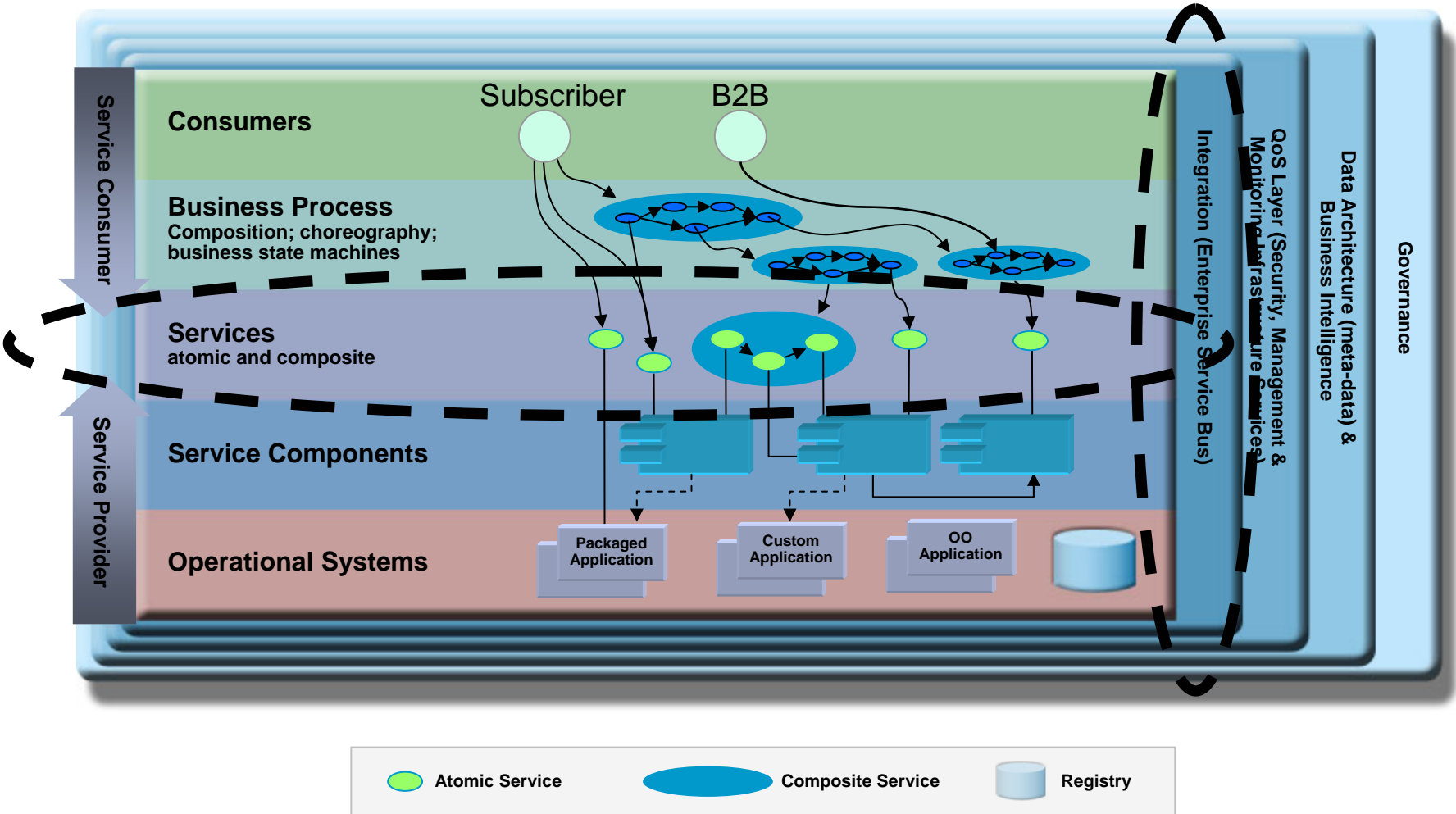


# Applying the method in the OSS context



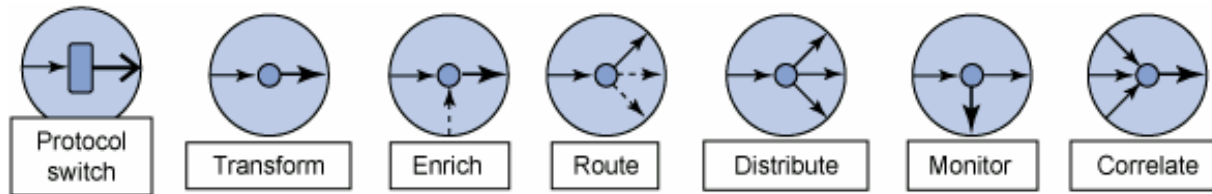
# SOA through SOMA Framework

## Solution View



# Integration Services

- Integration services implement common mediation patterns



- The above group, from a recent developerWorks® article\*, are potential integration services
  - There are parallels to NGOSS DTFS
- Integration services implement the same canonical message model and share the common message semantics
- Integration services will not make design time assumptions about sequencing
- Integration services should be stateless
  - some services may persist data

\*<http://www-128.ibm.com/developerworks/webservices/library/ws-soa-progmodel4/index.html>



# Leveraging Off the Shelf Technology to Deploy New Component Model, e.g. Web services

## Recent NGOSS Catalyst Projects

### BUSINESS AGILITY

Sponsored by: Covad  
Automation of Order and Inventory Management using the SID  
Participants: IBM, Pantero, Ceon

### NGOSS SERVICE ENABLEMENT

Sponsored by: BT, KT, Qinetiq  
Implementation of Distribution Transparency Framework Services (DTFS) emphasis on deploying NGOSS contracts using a shared repository/directory  
Participants: IBM, Microsoft, Pantero, Amdocs

### ARCHITECTURE RATIONALIZATION TOOLING

Sponsored by:– at&t, Sprint, Qinetiq  
Tooling methods and best practices from an architecture perspective for the management of the lifecycle for services over IP  
Participants: IBM, Amdocs, Pantero, Tigerstripe, Nakina



# The Need for Incremental Transformation to SOA

- In order to arrive at an appropriate SOA solution, we must rethink Architecture
- You are building an **ecosystem**
- Does NOT happen “overnight”...an important factor is the right entry point

