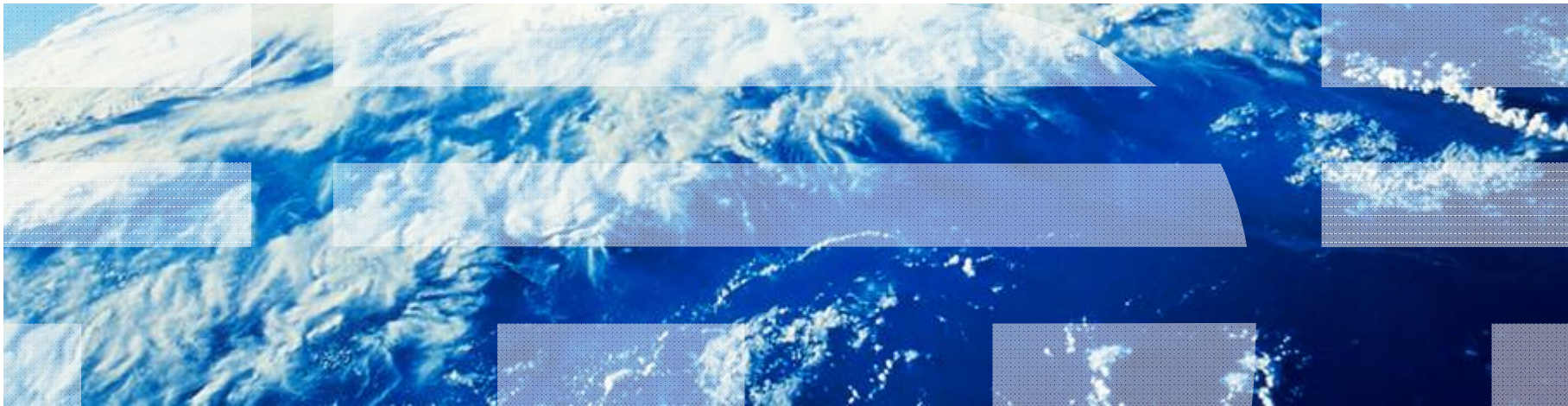


Dr. Hans-Peter Hoidn
*Worldwide SOA Team Member for CEEMEA
(Central Eastern Europe, Middle East & Africa)*



Enterprise IT Architectures

SOA Part 2





December 4, 2009 – Presentations of the Groups

- **Every group has 15 minutes**
 - Prepare with time keeping

- **Sequence**
 - E
 - A
 - B
 - C
 - D
 - F



Groups

▪ A

- Hofer Dominik
- Hämmerli Simon
- Abdülmecit Üstün
- Bay Lea
- Kobler Adrian

▪ B

- Minke Jonas
- Kuzan André
- àPorta Gian Reto
- Nicolas Cepeda
- Engeler David

▪ C

- Schöni Pascal
- Habr Jaro
- Odermatt Mark
- Schurgast Stefan
- Maurer Thomas

▪ D

- Körsgen Marc
- Wilding Clemens
- Signer Dorian
- Bourquin Thierry
- Dabkowski Krzysztof

▪ E

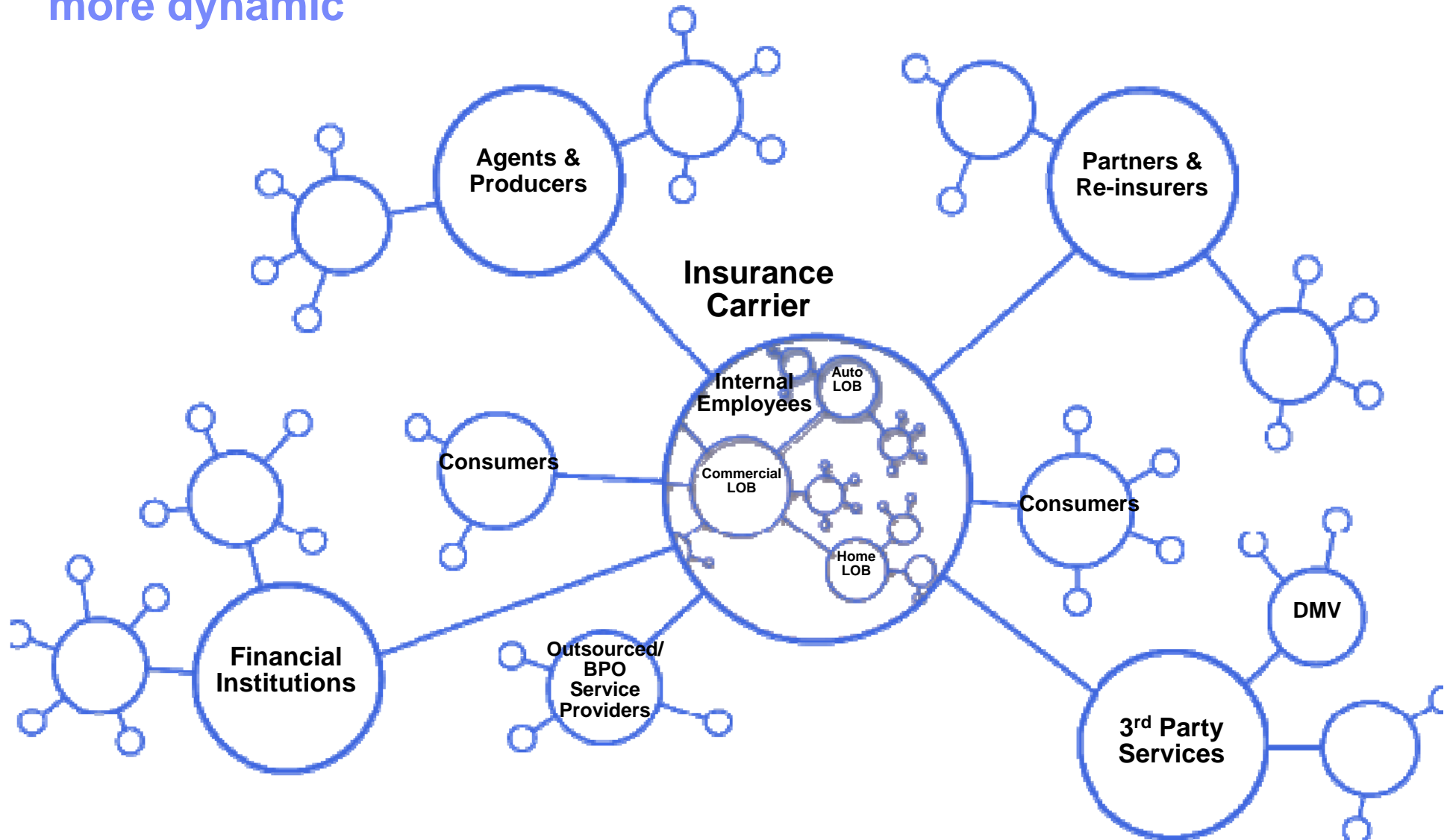
- Gegenbauer Silke
- Nakic Dario
- De Freitas Francisco
- Holm Stefan

▪ F

- Kuchler Michael
- Zenger Reto
- Z`Brun Matthias
- Keller Lukas

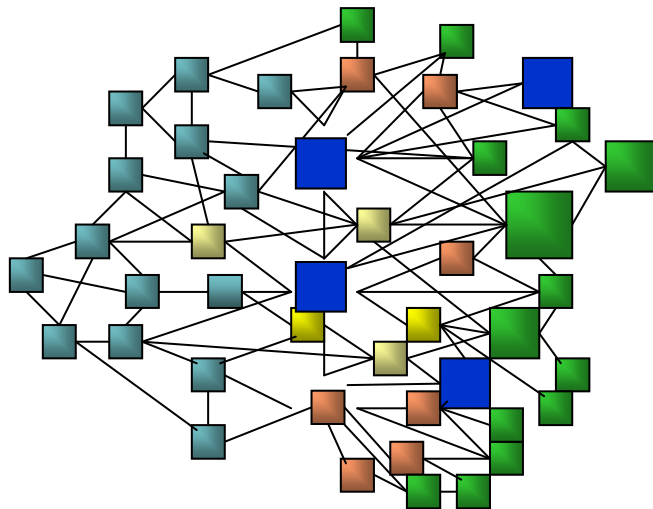


Our business networks...are becoming broader...and much more dynamic





SOA Approach Illustrated



Without SOA:

Integration is done with **“hardwiring”**

Applications have to be **“ripped and replaced”**



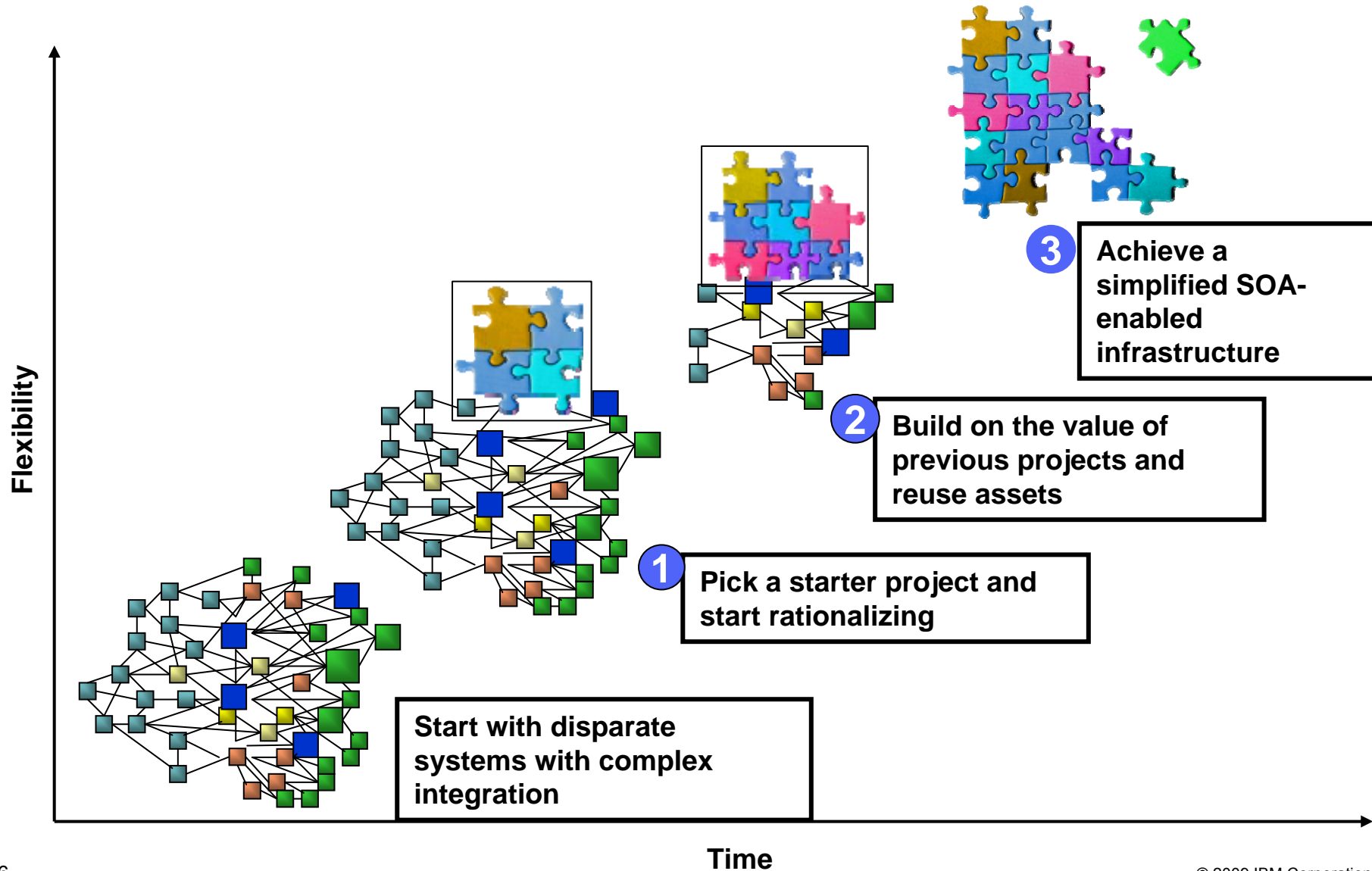
With SOA:

Integration is done **“loosely”** with modular “services”

New services can be built flexibly by **reusing assets**

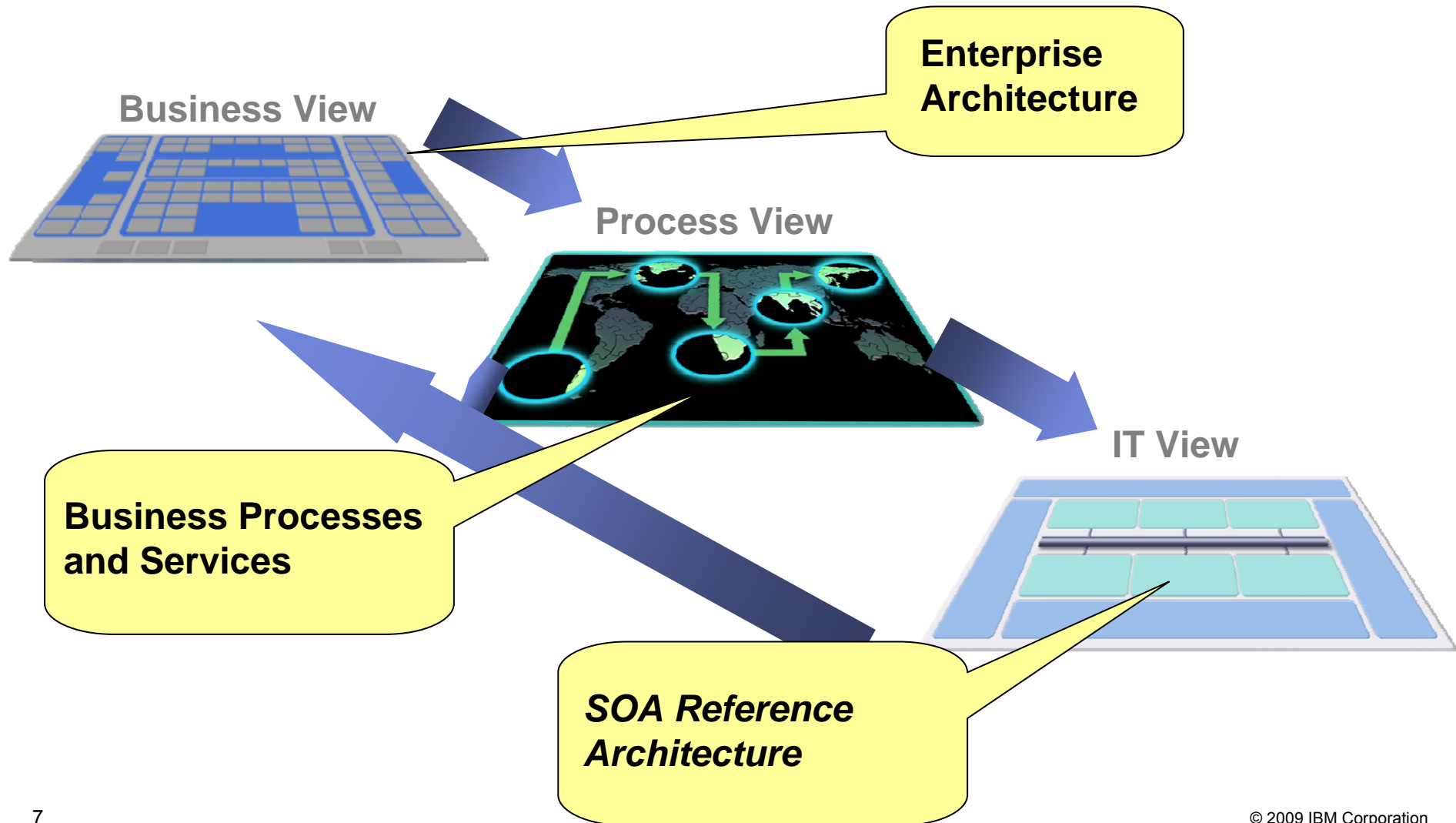


SOA Roadmap Illustrated over Time





Recap: Business View (Part EA) – Process View (Business View of SOA) – SOA Reference Architecture (IT View of SOA)

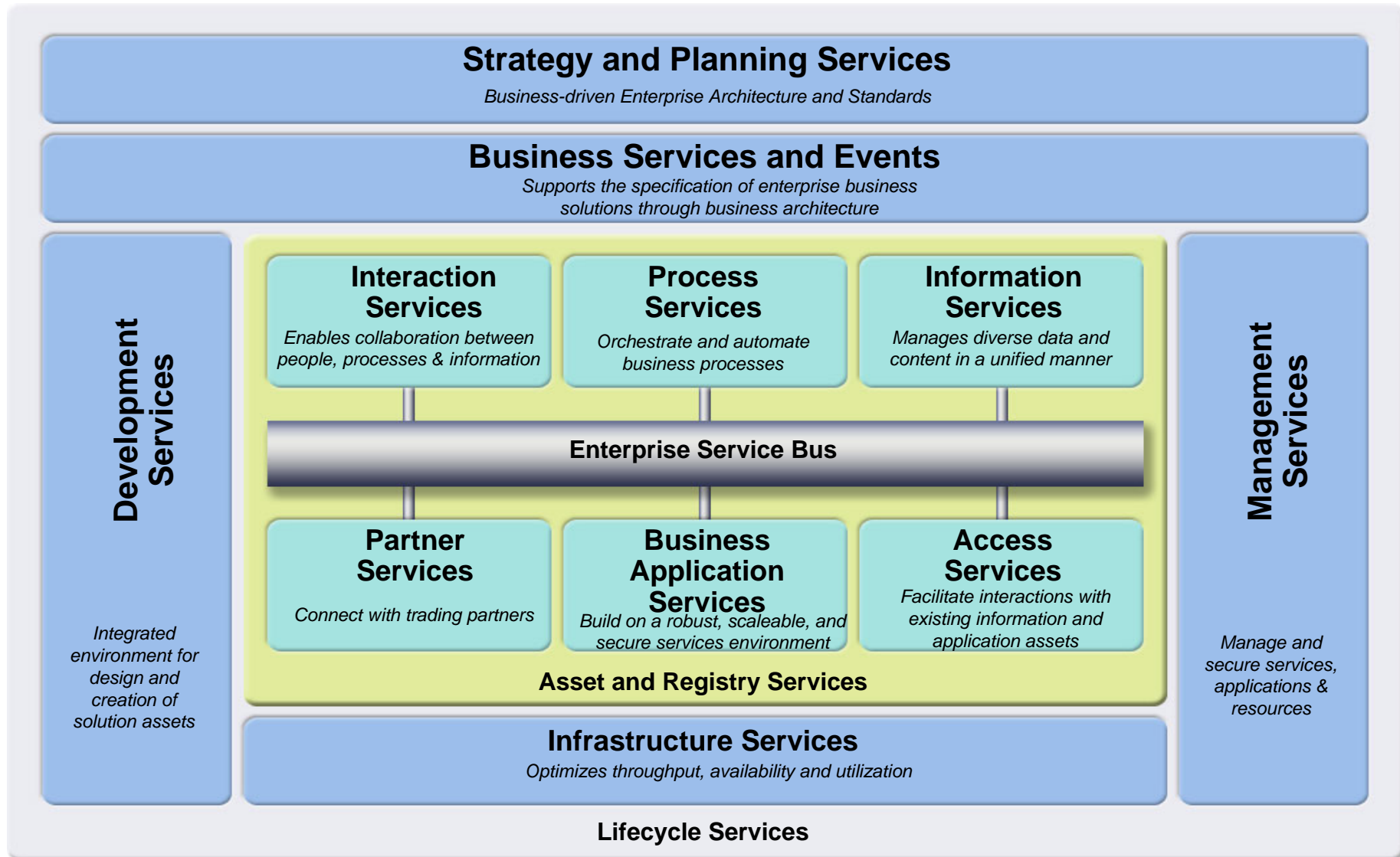




SOA Reference Architecture



SOA Reference Model





Interaction Services

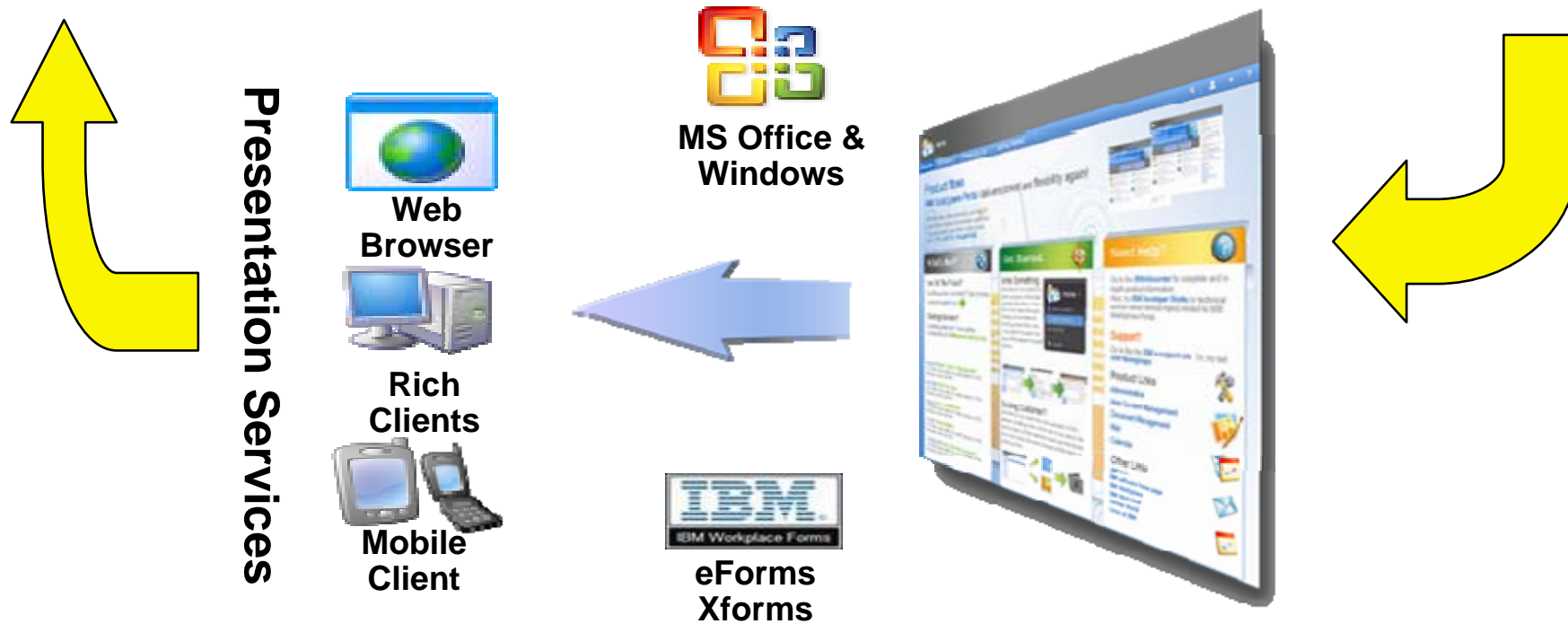


Interaction Services in SOA Reference Architecture

- **People are the drivers of the business – they interact with reusable business services using the right information at the right time!**
- **Starting point for SOA - enabling people to interact with *application and information “services”* supporting *business processes*.**
- **Provided by Portals using *Portlets or Widgets*, relying on security for the managing user access**
- **Based on Web Servers, eventually using *AJAX***
- ***Web 2.0***

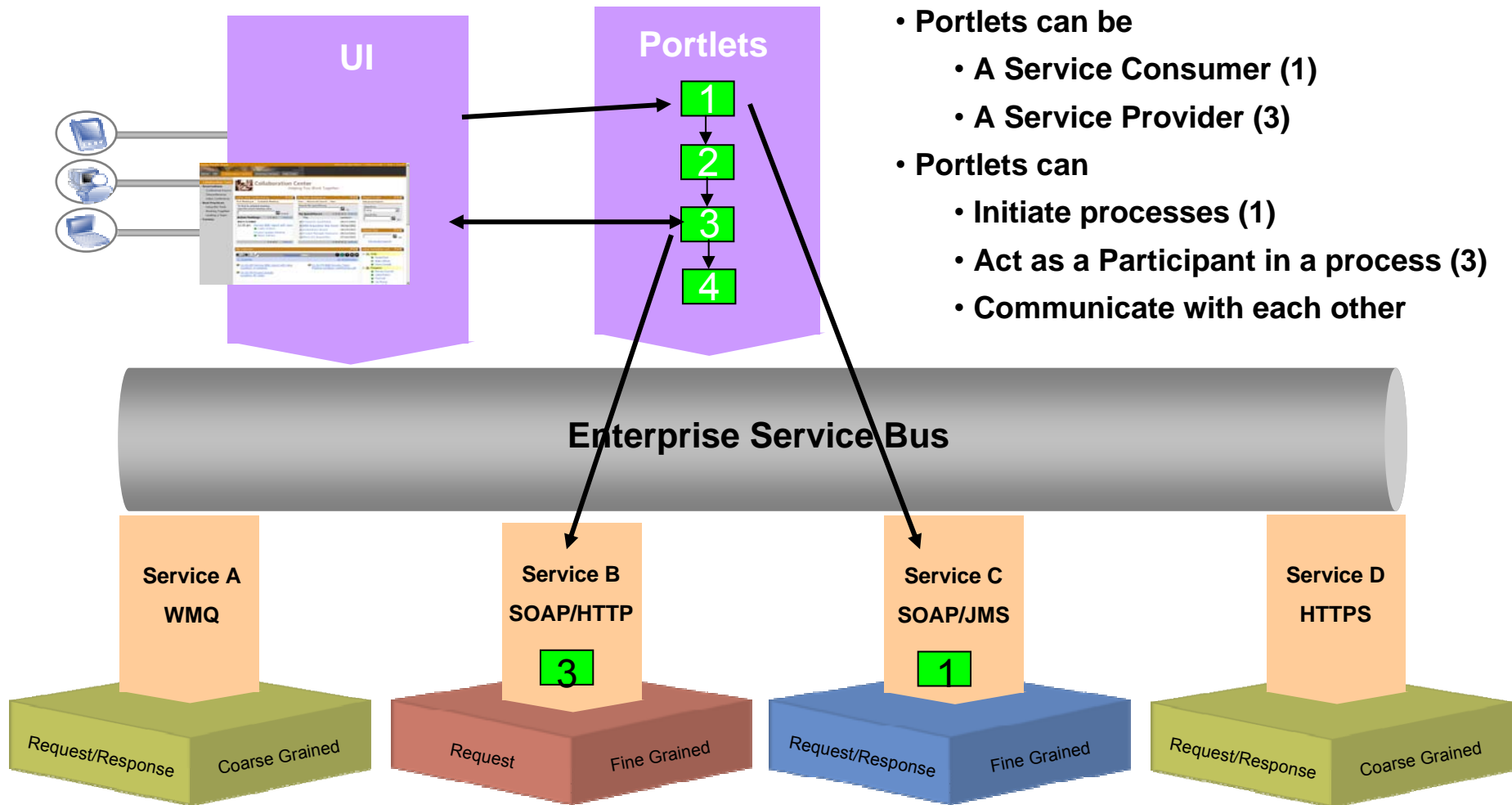


Interaction Services: Exposing SOA End-Users Using Portal As the “Front End” of SOA





What is an *Interaction Service*?

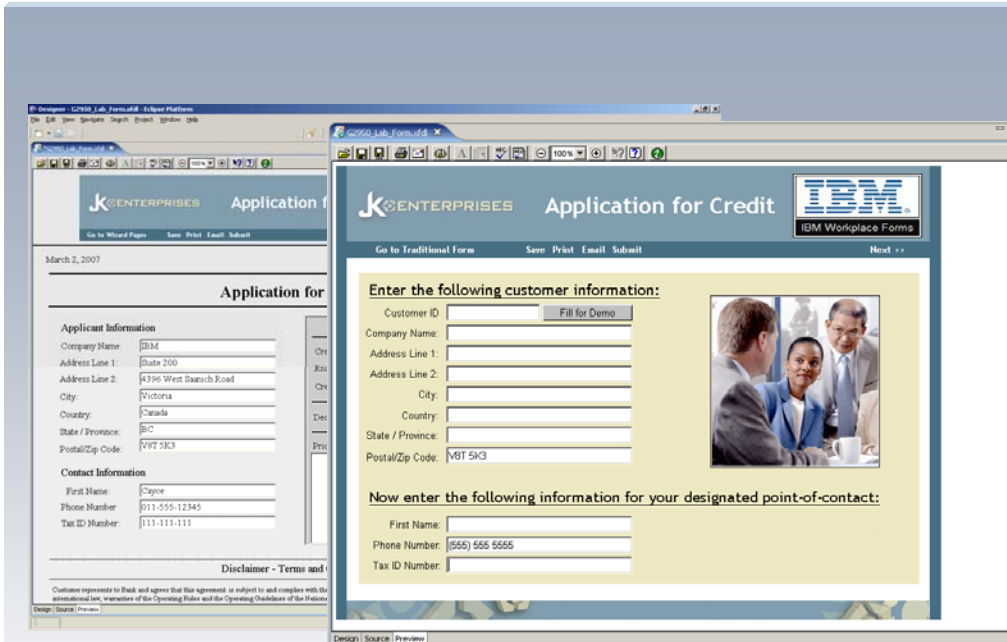


- Portlets can be
 - A Service Consumer (1)
 - A Service Provider (3)
- Portlets can
 - Initiate processes (1)
 - Act as a Participant in a process (3)
 - Communicate with each other

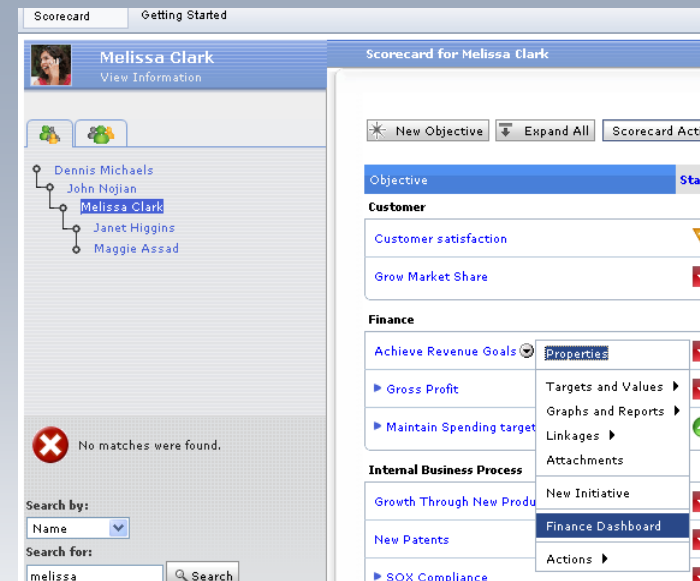
The Portal Framework Provides Service Aggregation



Interaction Services: Building User Interaction Services



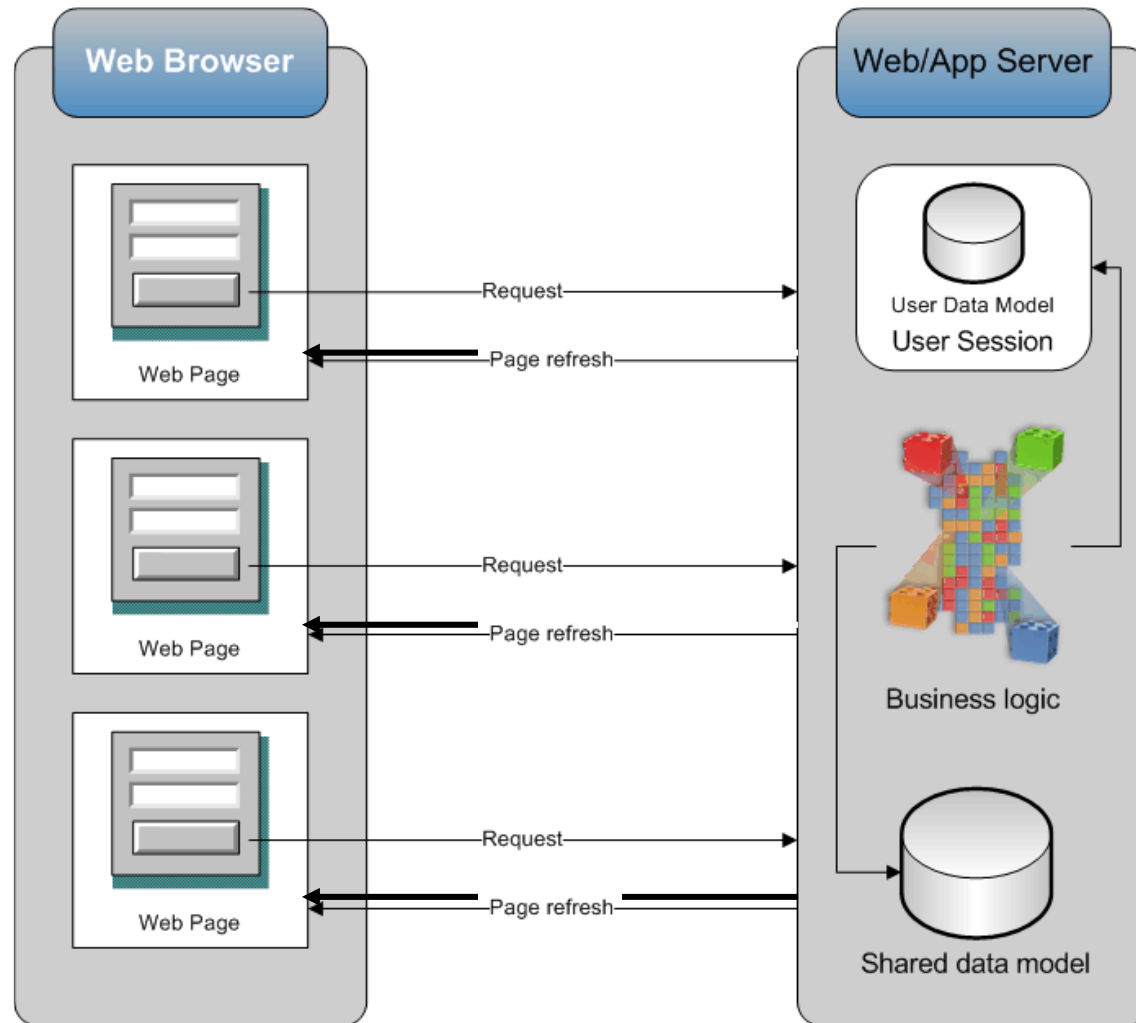
Developing and Deploying the “New Account” Application



Building Role-Specific Portlets and Dashboards

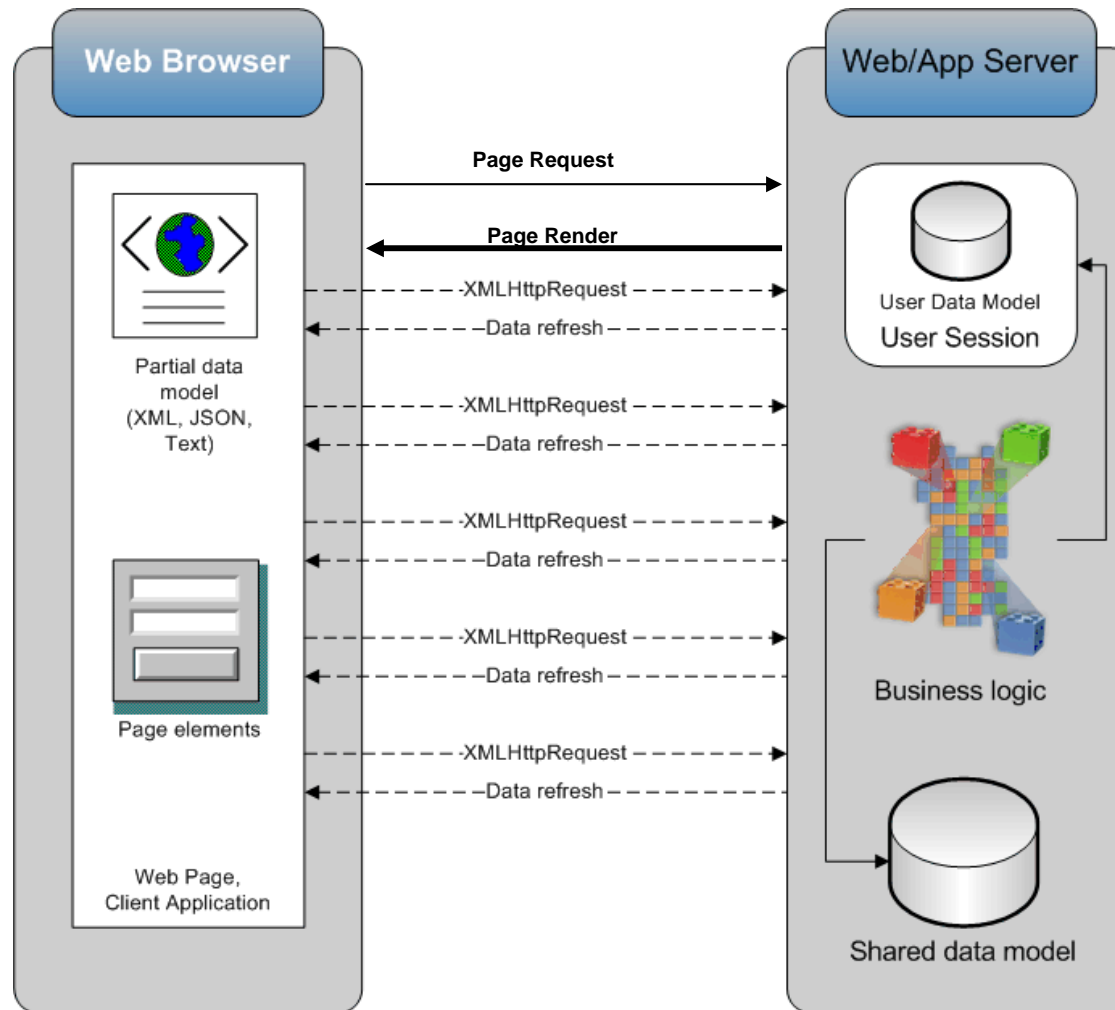


Traditional *Interaction*: Interrupted interaction with request driven processing with static page refresh





AJAX Web Interaction: Continuous user interaction with event driven processing and dynamic content refresh





Information Services

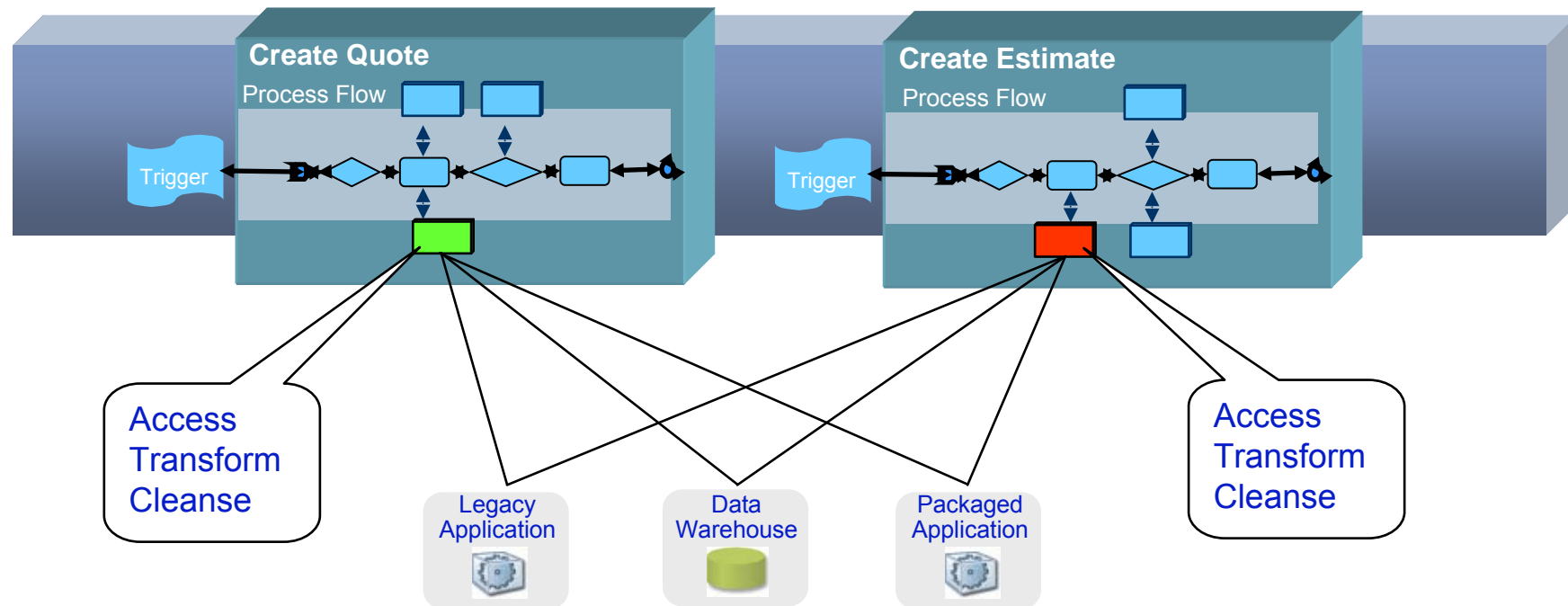


Information Services in SOA Reference Architecture

- **Delivering actionable information to people and processes**
- **Connect, enhance and deliver in-context information across diverse operating systems, applications and legacy systems through reusable services**
- **The Information Services enables consistent views and maintenance of data and content, providing a “single view of the truth” to people and processes**



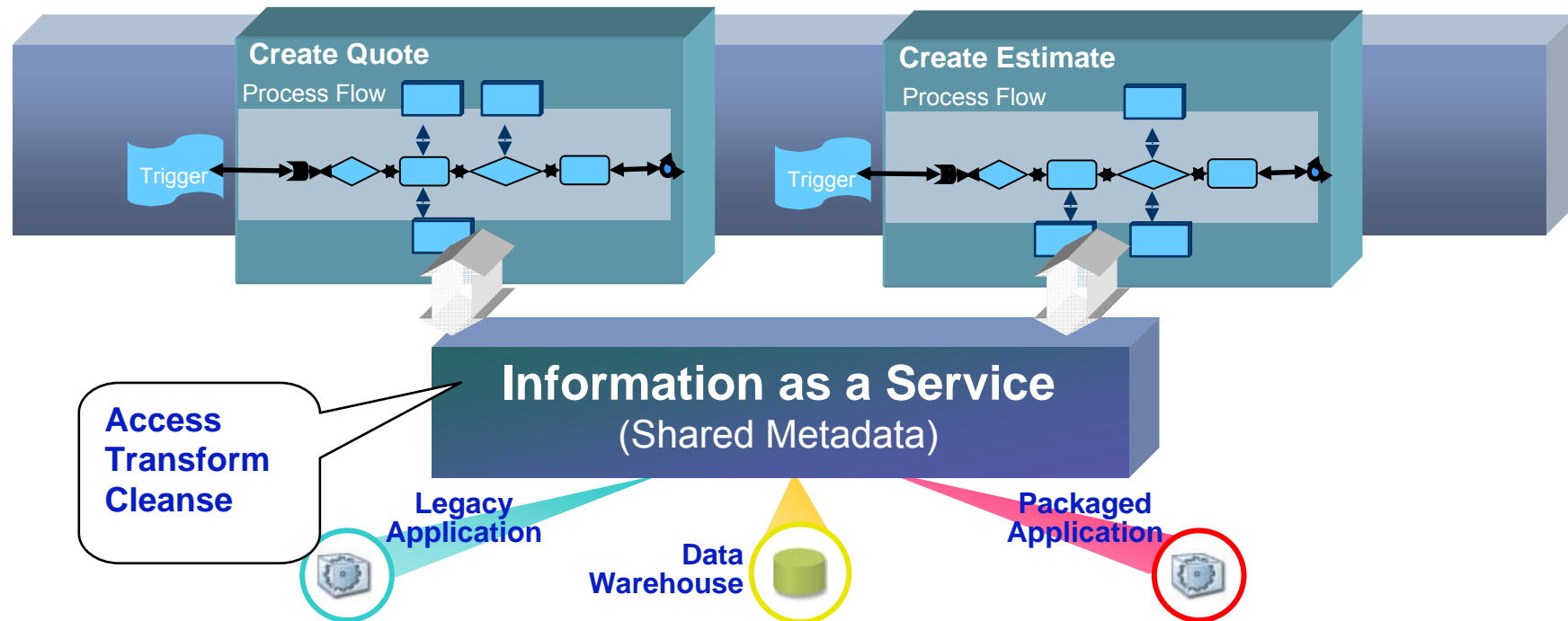
Information Services: Tight coupling causes inconsistent results



- Inconsistent “view” of the data
- Inconsistency in sources and how data is derived
- Inconsistent rules applied to data
- Multiple points of maintenance
- No flexibility to change information sources and formats



Information Services as Solution

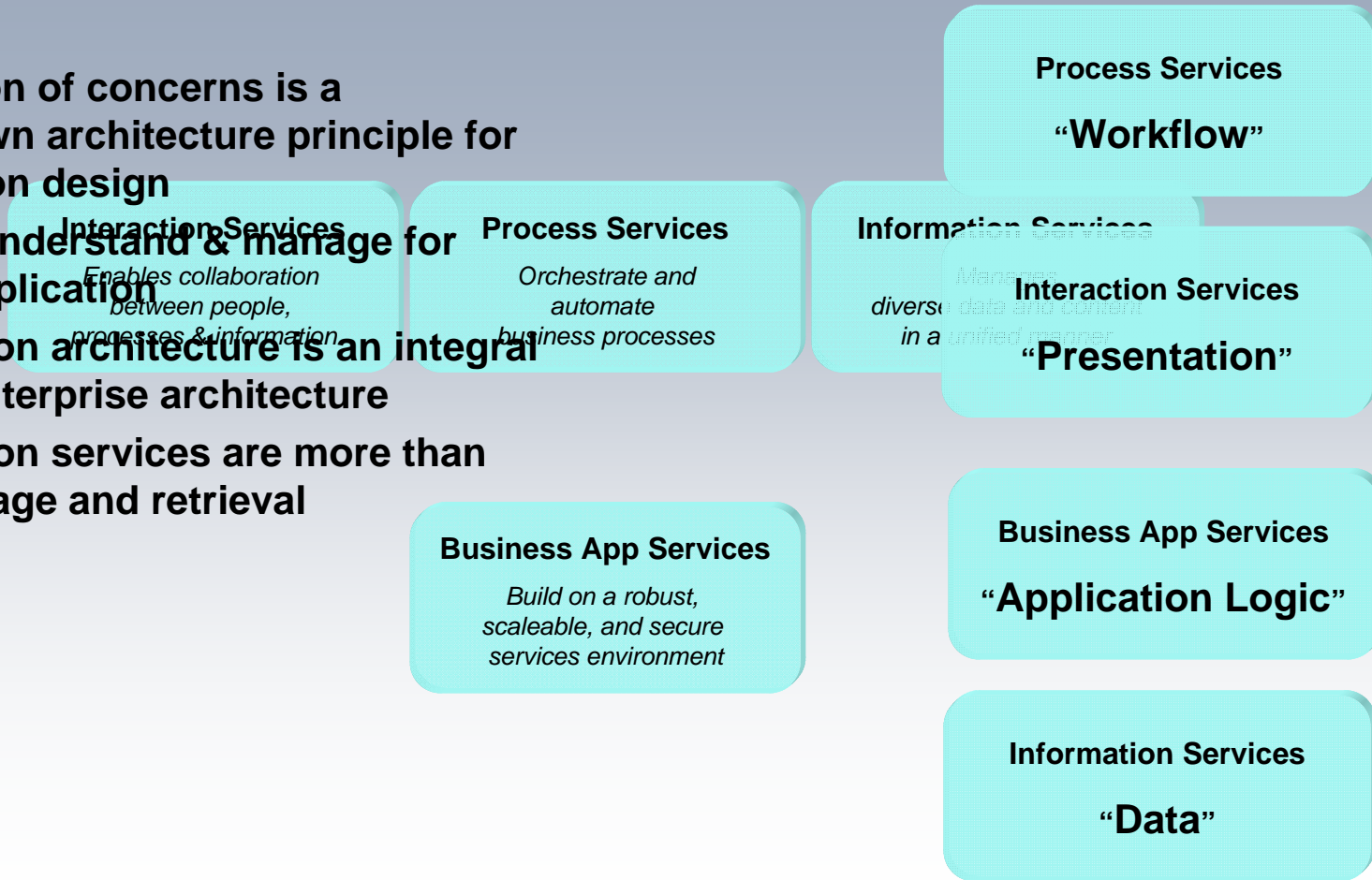


- Consistent packaging of data
- Leverages understanding of metadata relationships
- Applies consistent rules to data
- Centralized control and maintenance
- Flexibility to add and change information sources and formats



Separation of Concerns exists Even Before SOA...

- Separation of concerns is a well-known architecture principle for application design
- Easy to understand & manage for single application
- Information architecture is an integral part of enterprise architecture
- Information services are more than data storage and retrieval

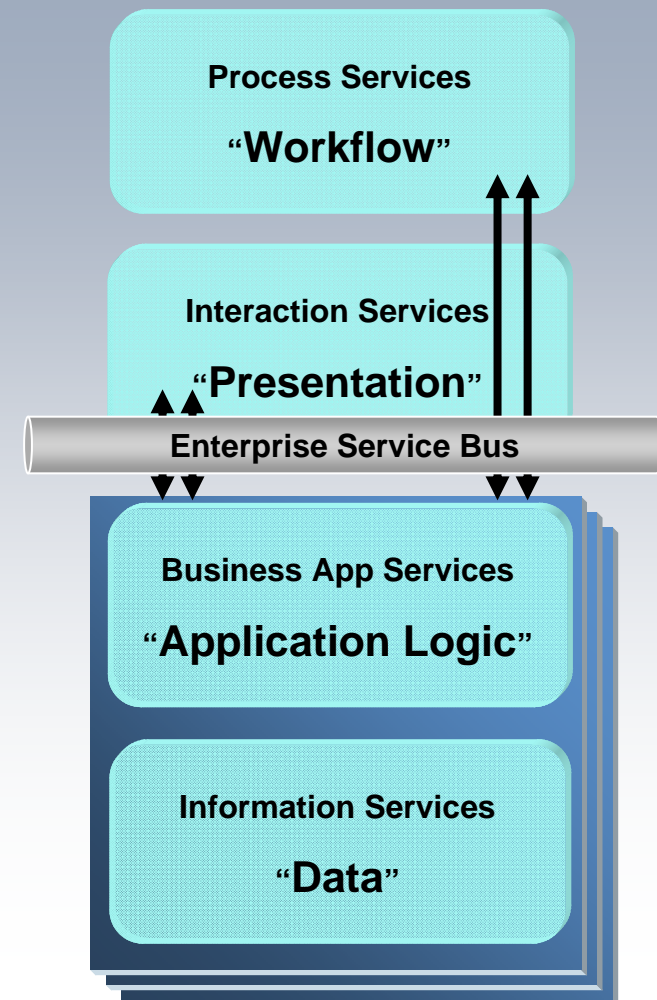




Separations of Concerns Focusing on Exposing Application Services

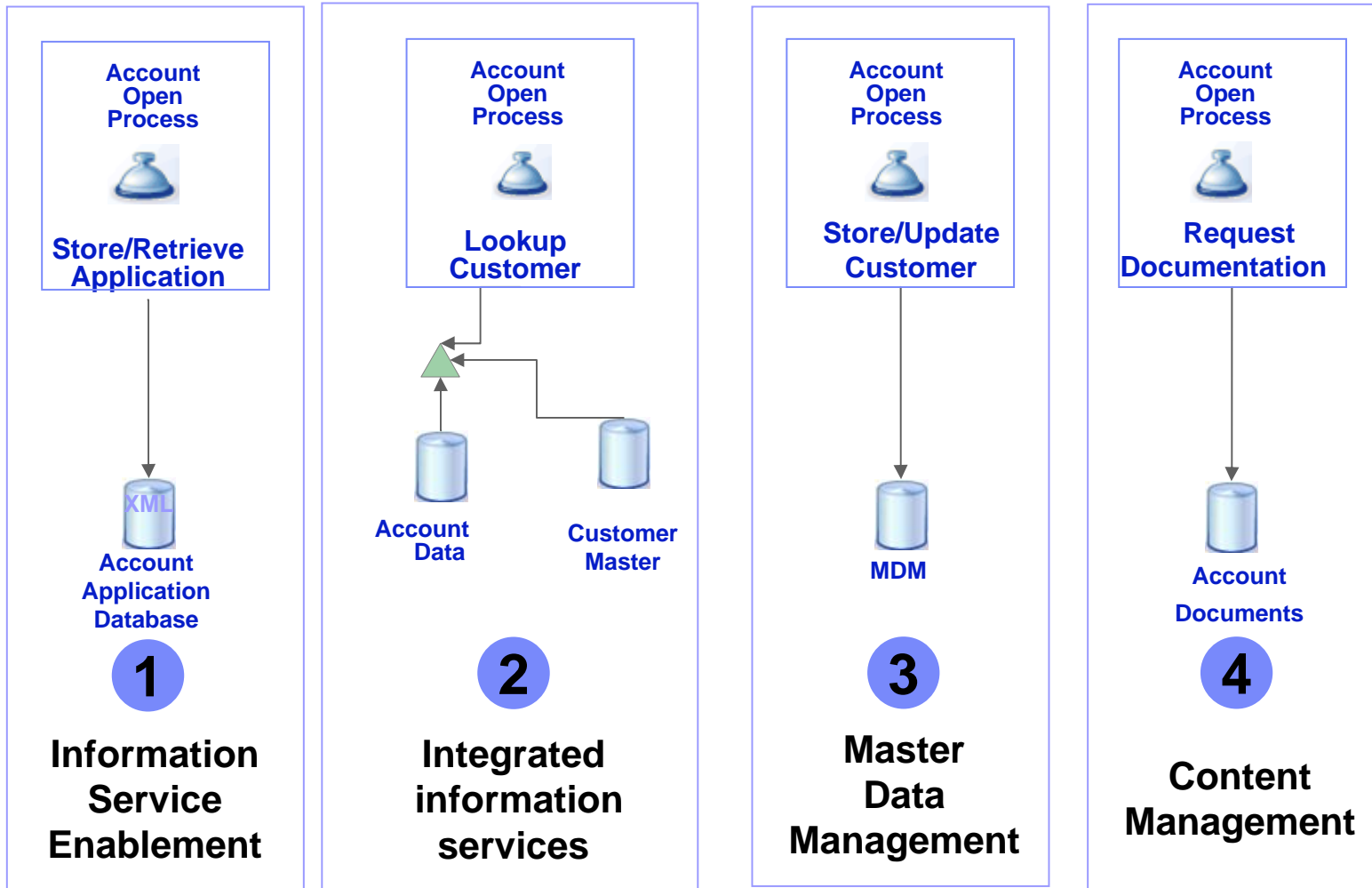
- Exposing application logic as services is straight-forward and enabled by tooling
- The integration of services focuses on mediation (brokering) and orchestration (workflow) of application logic

- As a result, data is tightly coupled with the corresponding application logic





Information Services: Several Patterns





Information Services: Pattern – Transform Your Data Create Trusted Information from Disparate Sources

■ As-Is Environment

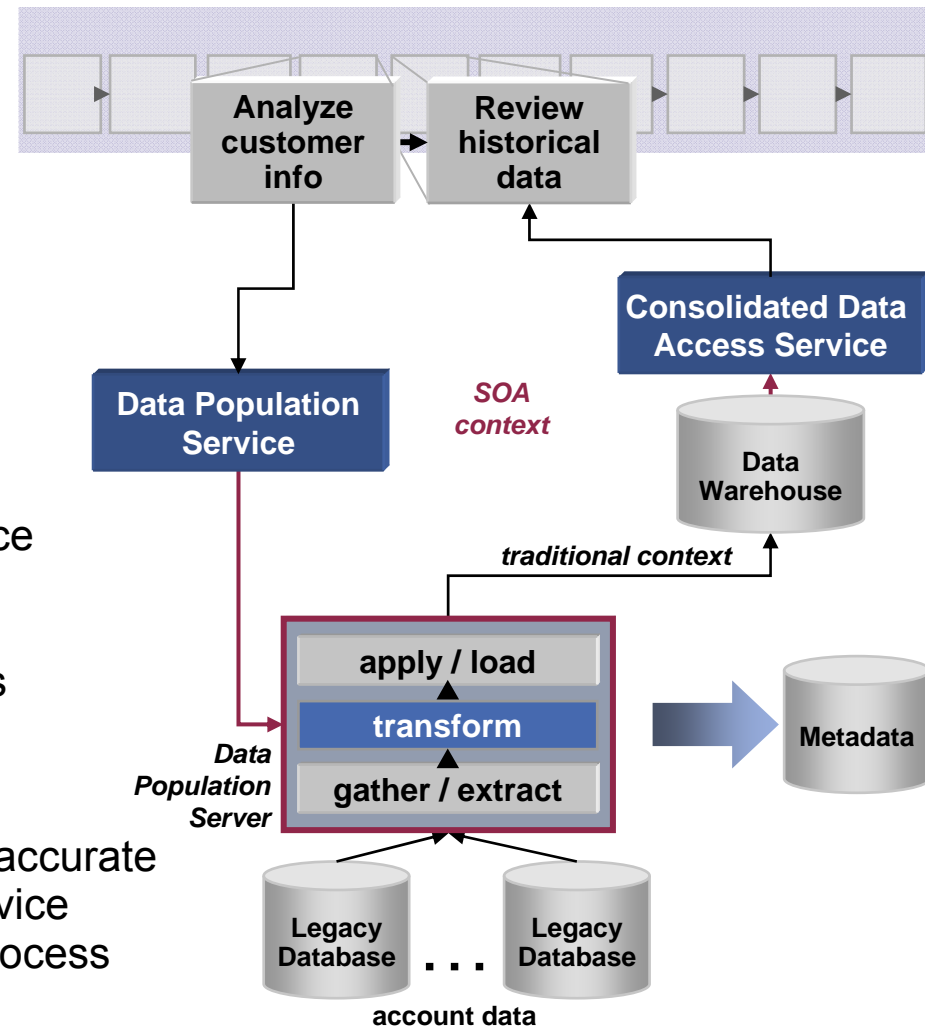
- Data resides in disparate sources
- Manual & redundant integration of data by multiple consumers results in high costs and inconsistent/inaccurate data
- Slow response time due to large data volume and complex transformations

■ Solution Characteristics

- Apply transformations on extracted source data; copy into consolidated target and expose consolidated data as services
- Invoke population from business process

■ Results

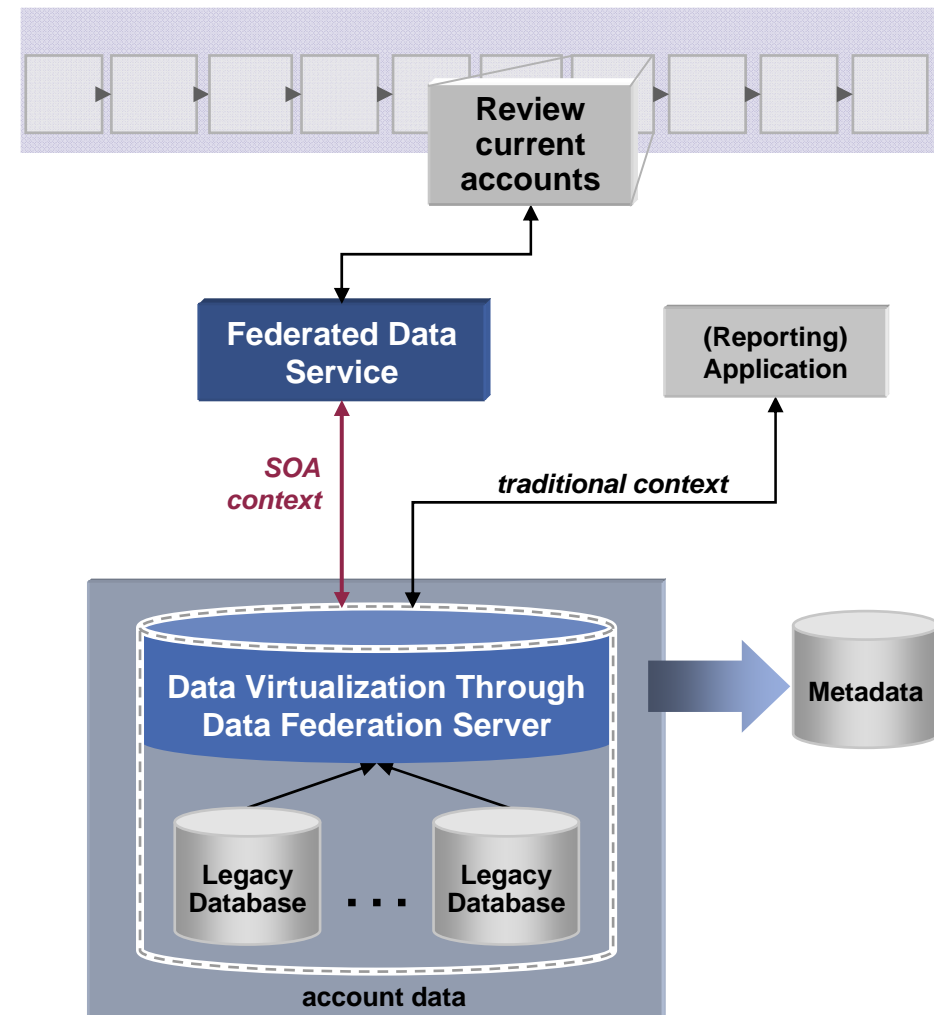
- Multiple consumers can access trusted, accurate and integrated information through a service
- Data availability aligned with business process





Information Services: Pattern – Deliver Your Data Virtualized Through Services

- **As-Is Environment**
 - Data resides in disparate sources
 - Manual & redundant integration of data by multiple consumers results in high costs and inconsistent/inaccurate data
 - Slow response time due to inefficient real-time access
- **Solution Characteristics**
 - On demand integration instead of redundant data
 - Transparent & optimized access to distributed, heterogeneous sources
- **Results**
 - Real-time access to distributed information, fast response time
 - Scalable approach for adding more data sources





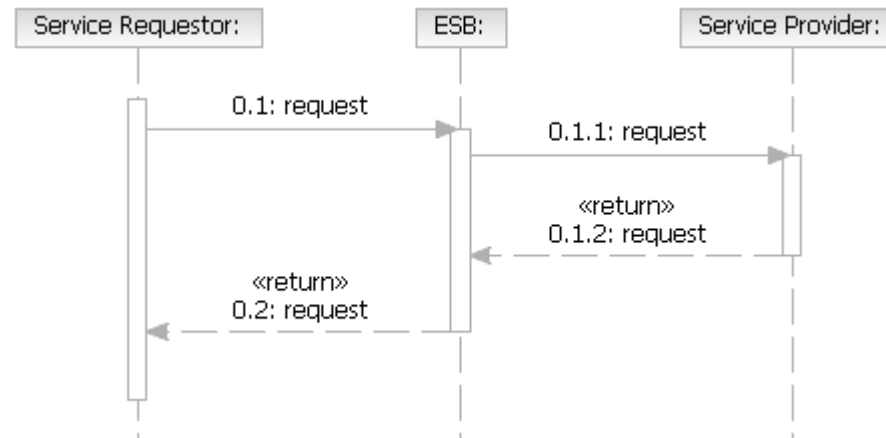
ESB (Enterprise Service Bus)



Connectivity

ESB (Enterprise Service Bus) – Service Virtualization

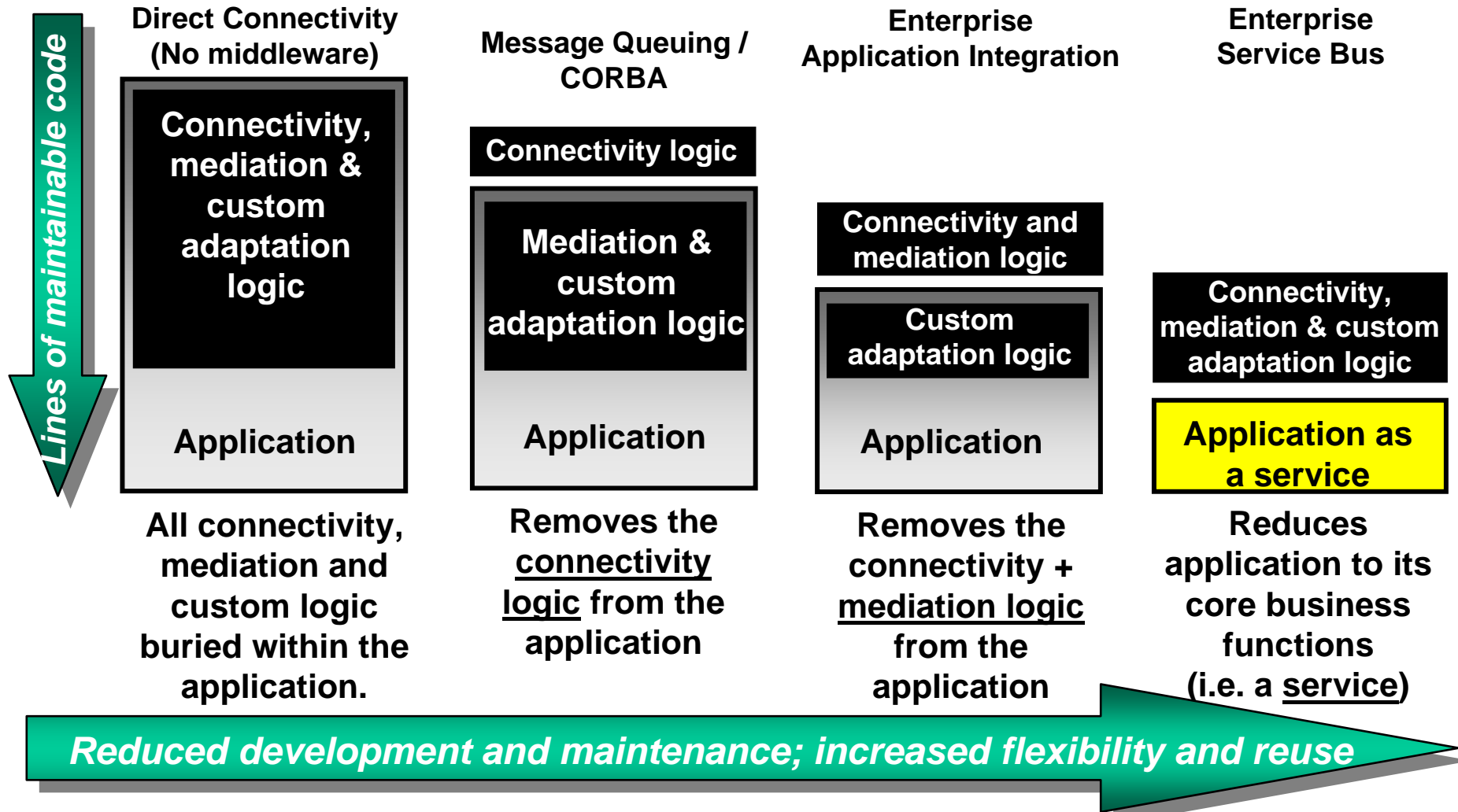
- ESB acts as an intermediary (proxy) between requestor and provider



- ESB provides *service virtualization* of
 - *Location and identity*
 - *Interaction protocol*
 - *Interface*
- Interactions are *decoupled*, supporting *separation of concerns*



Connectivity: ESB is today's technology





ESB (Enterprise Service Bus)

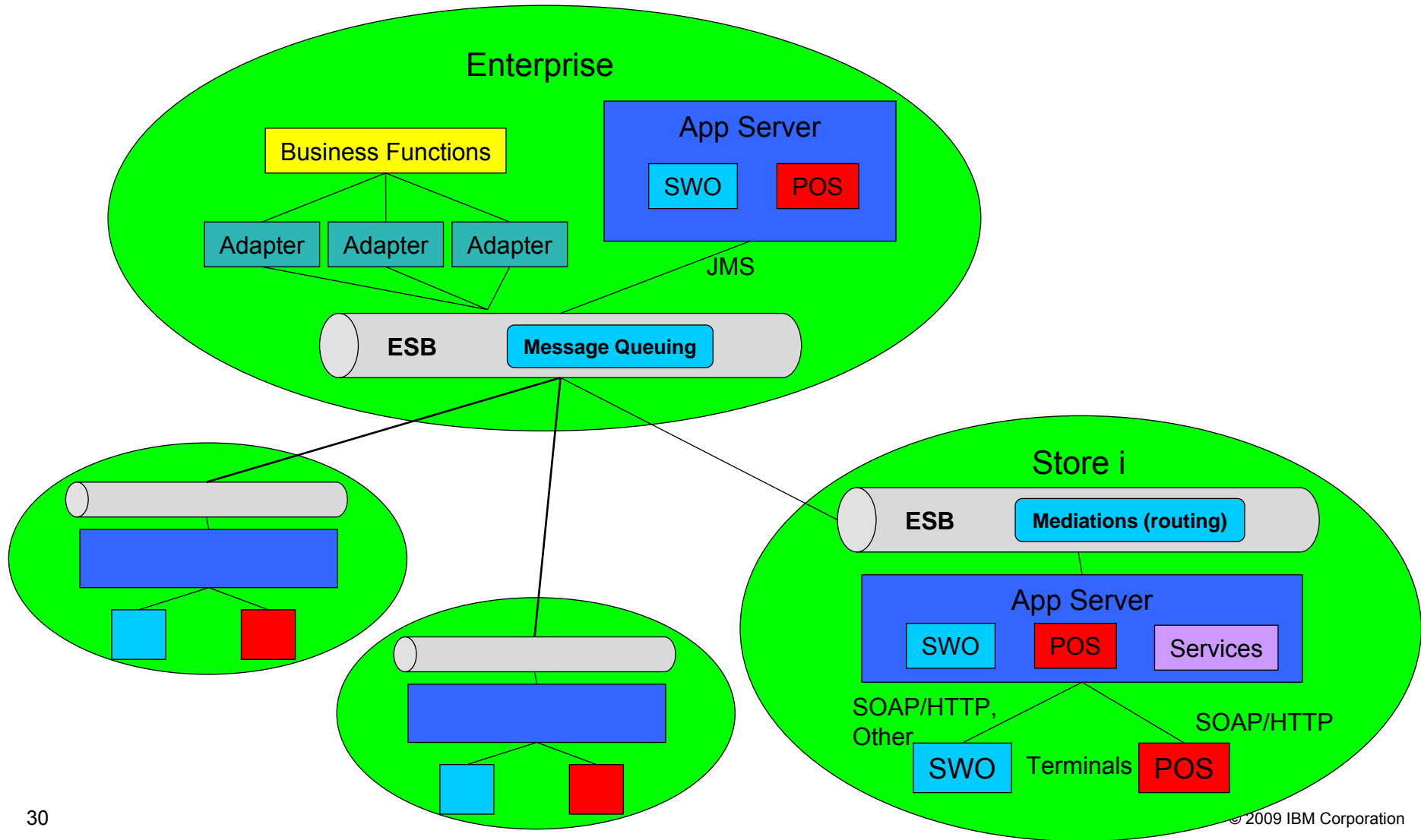
- **An Enterprise Service Bus (ESB) is an architectural pattern defining a flexible connectivity infrastructure for integrating applications and services.**

- **The architecture pattern is a guiding principle to enable the integration and federation of multiple service bus instantiations.**

- **An ESB performs:**
 - **Routing messages between services**
 - **Converting transport protocols between requestor and service – managing multiple protocols**
 - **Transforming message content between requestor and service**
 - **Handling business events from disparate sources**



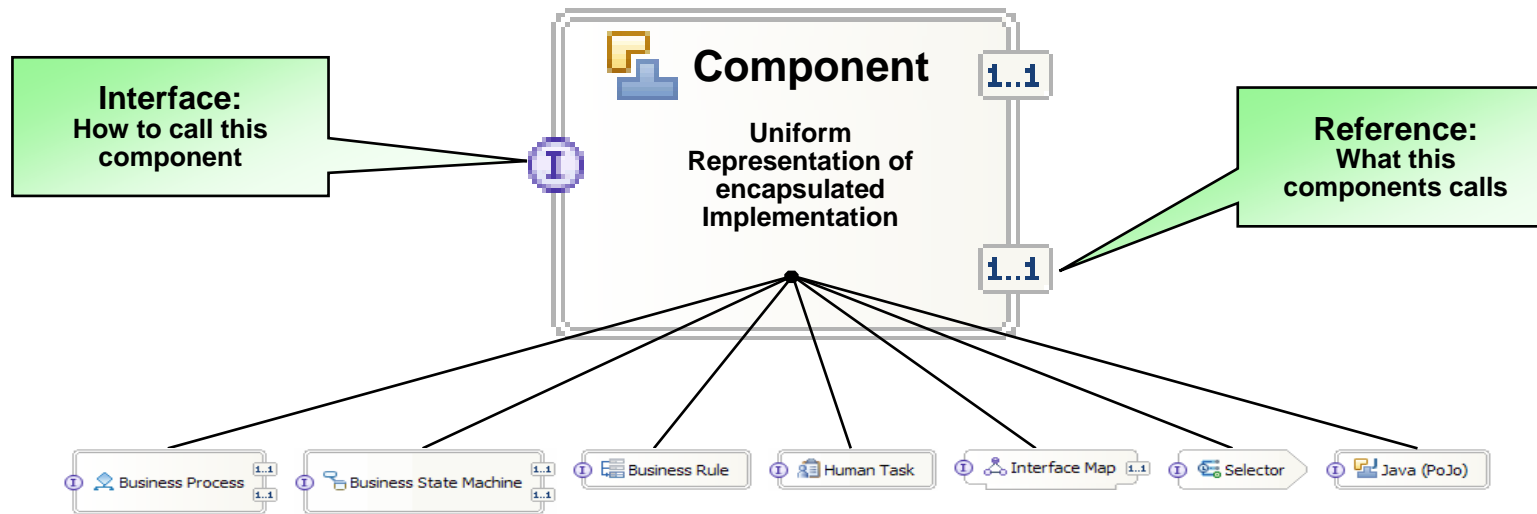
ESB Pattern in Action – Retail Scenario





Connectivity: Standard SCA (Service Component Architecture) for Common Invocation

IBM, along with BEA, Oracle, SAP, IONA, Siebel and Sybase have announced the new specifications for SCA

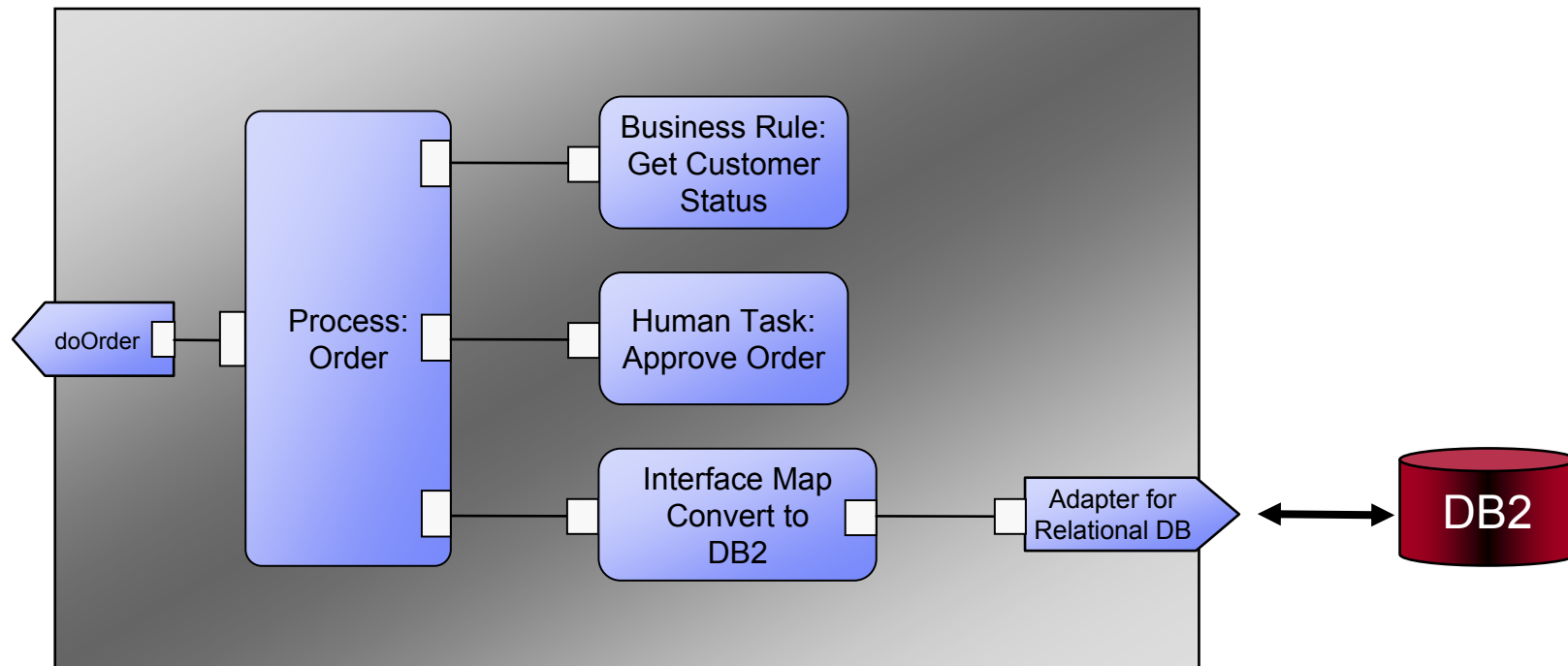


Encapsulate components for reuse

All components (e.g., services, rules, human interactions) are represented consistently and invoked identically



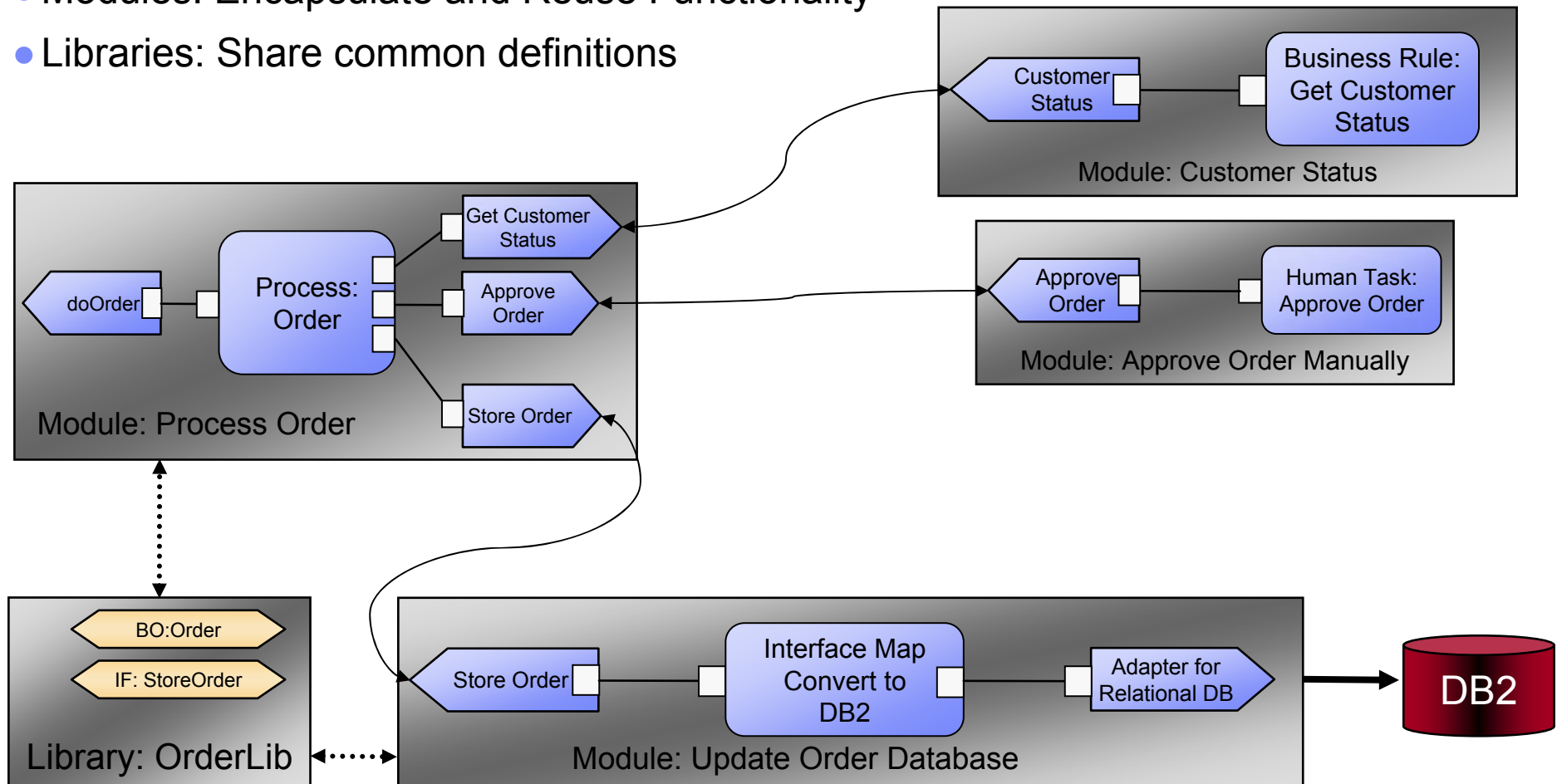
Connectivity: Standard SCA (Service Component Architecture) – Component Assembly





Connectivity: SCA (Service Component Architecture) – Example Part 1

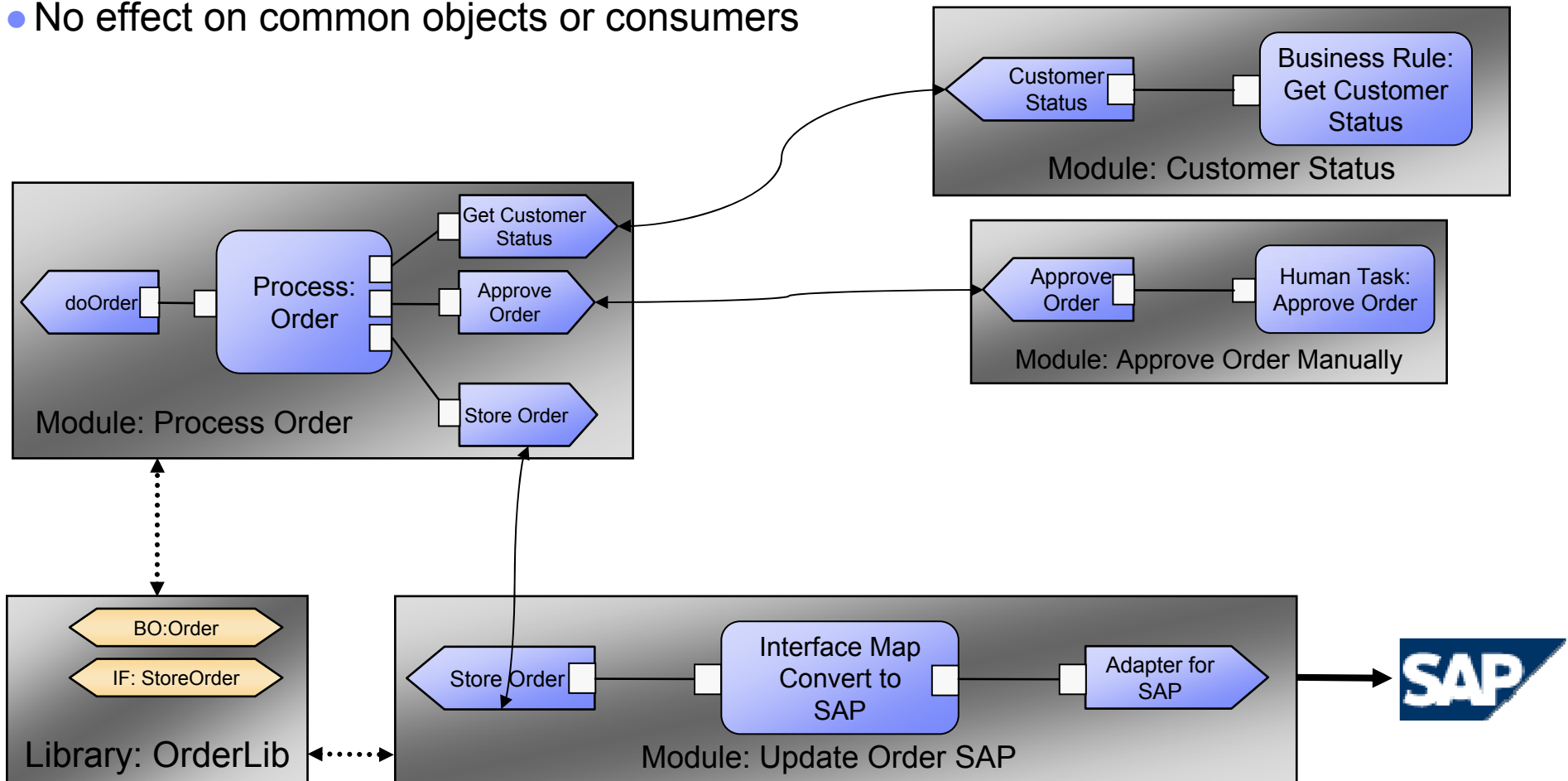
- Modules: Encapsulate and Reuse Functionality
- Libraries: Share common definitions





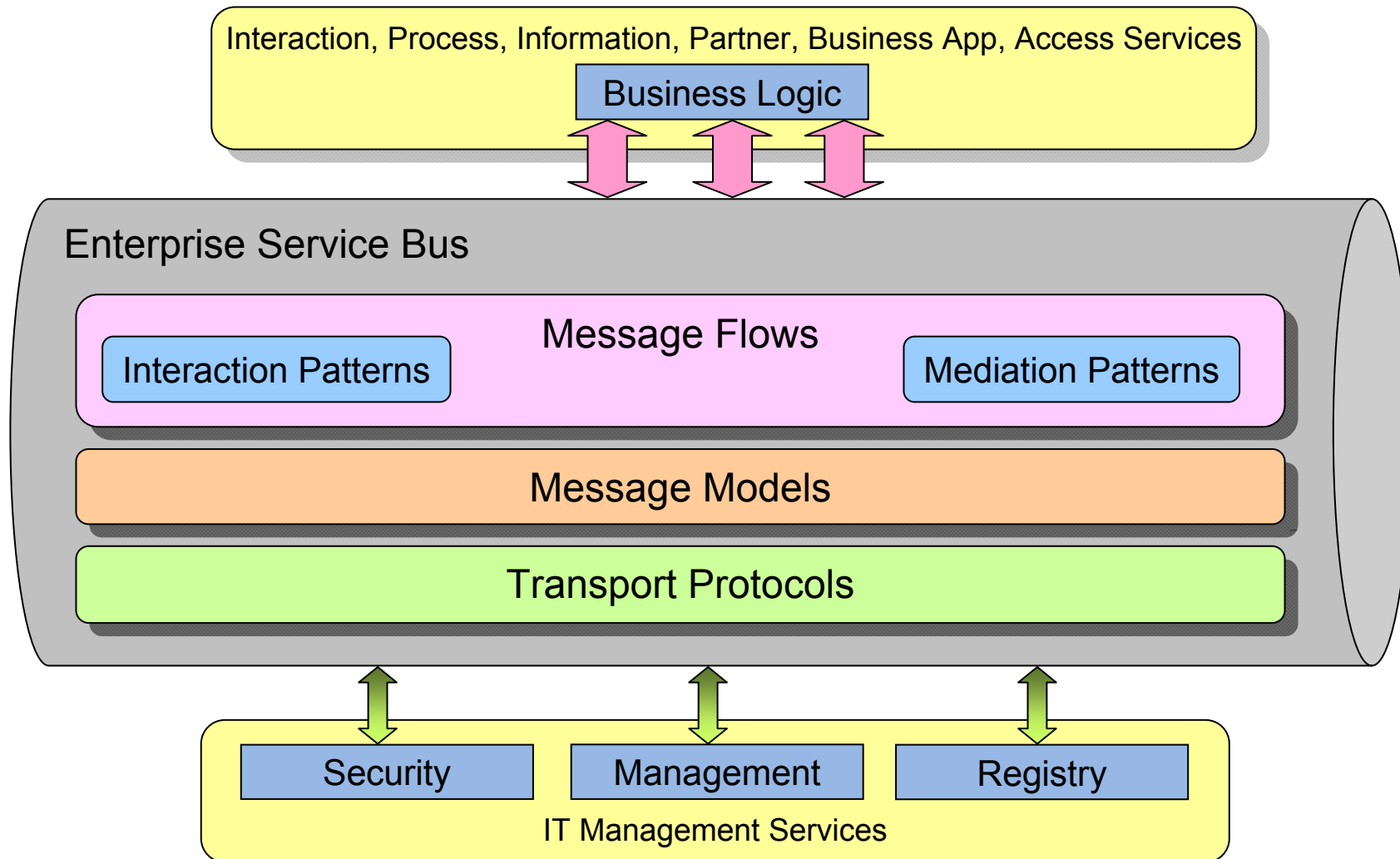
Connectivity: SCA (Service Component Architecture) – Example Part 2

- Store Order in SAP instead of DB2
- No effect on common objects or consumers



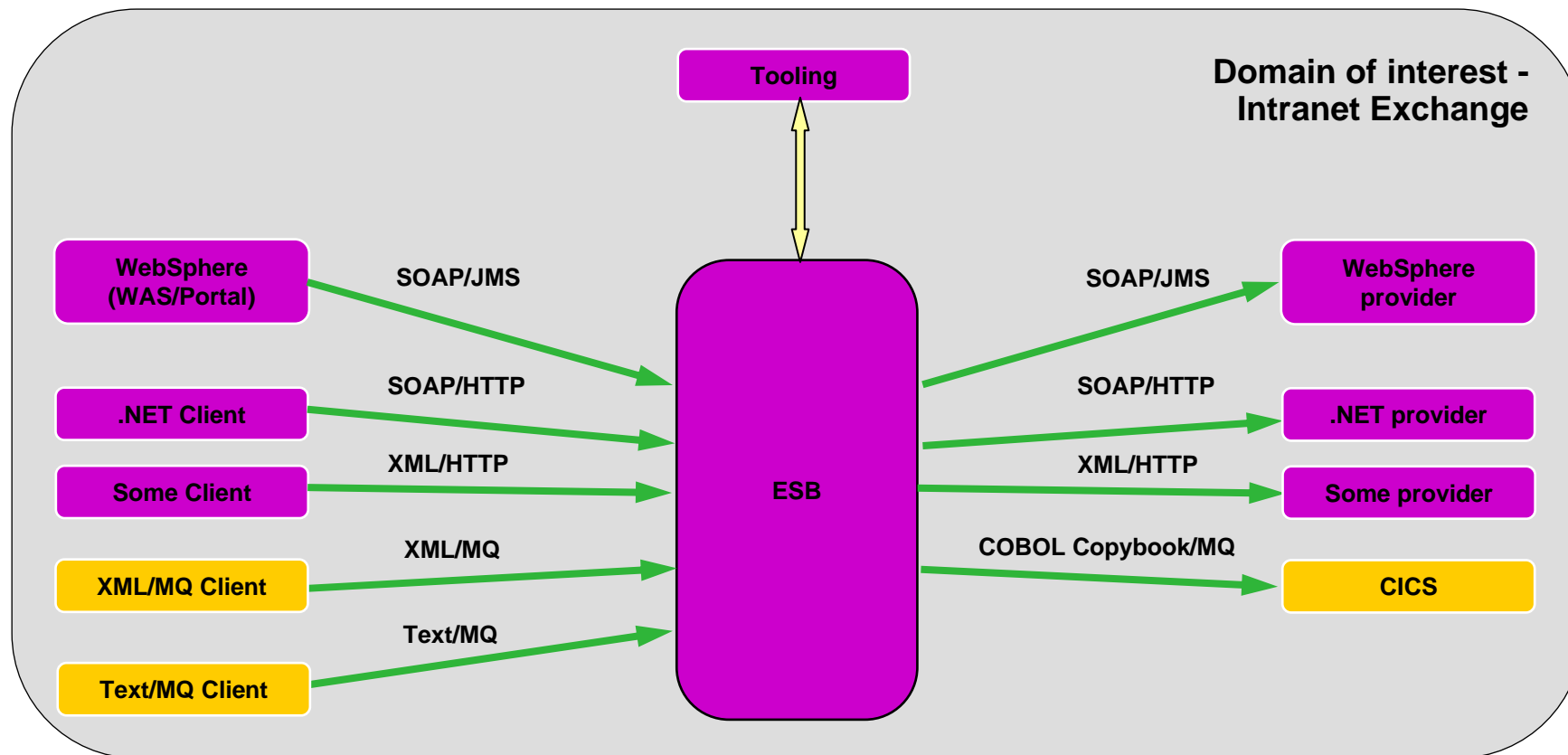


Expanded View of the Enterprise Service Bus



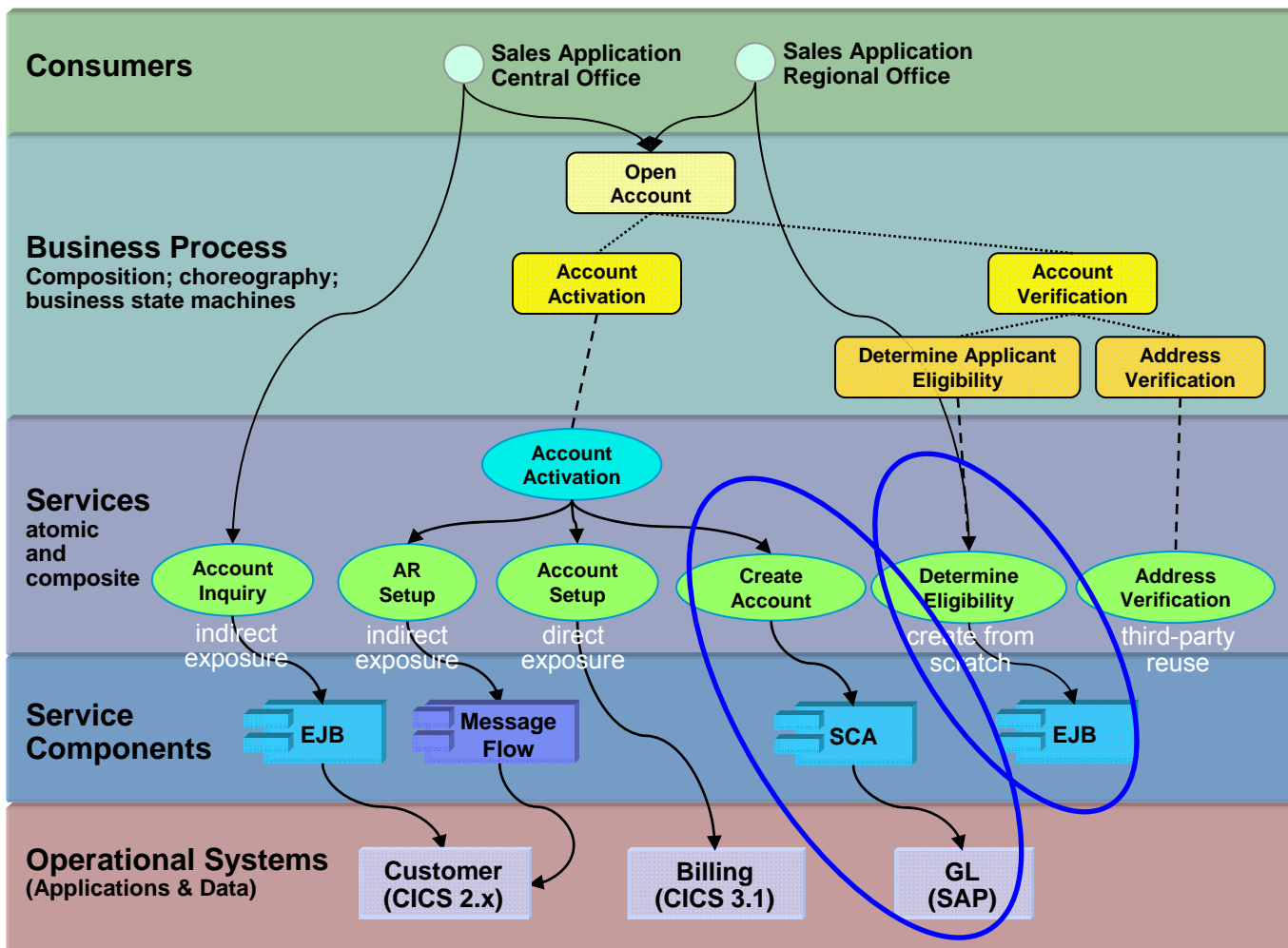


Case: Multi-protocol Exchange – Intermediary decoupling heterogeneous consumers and suppliers



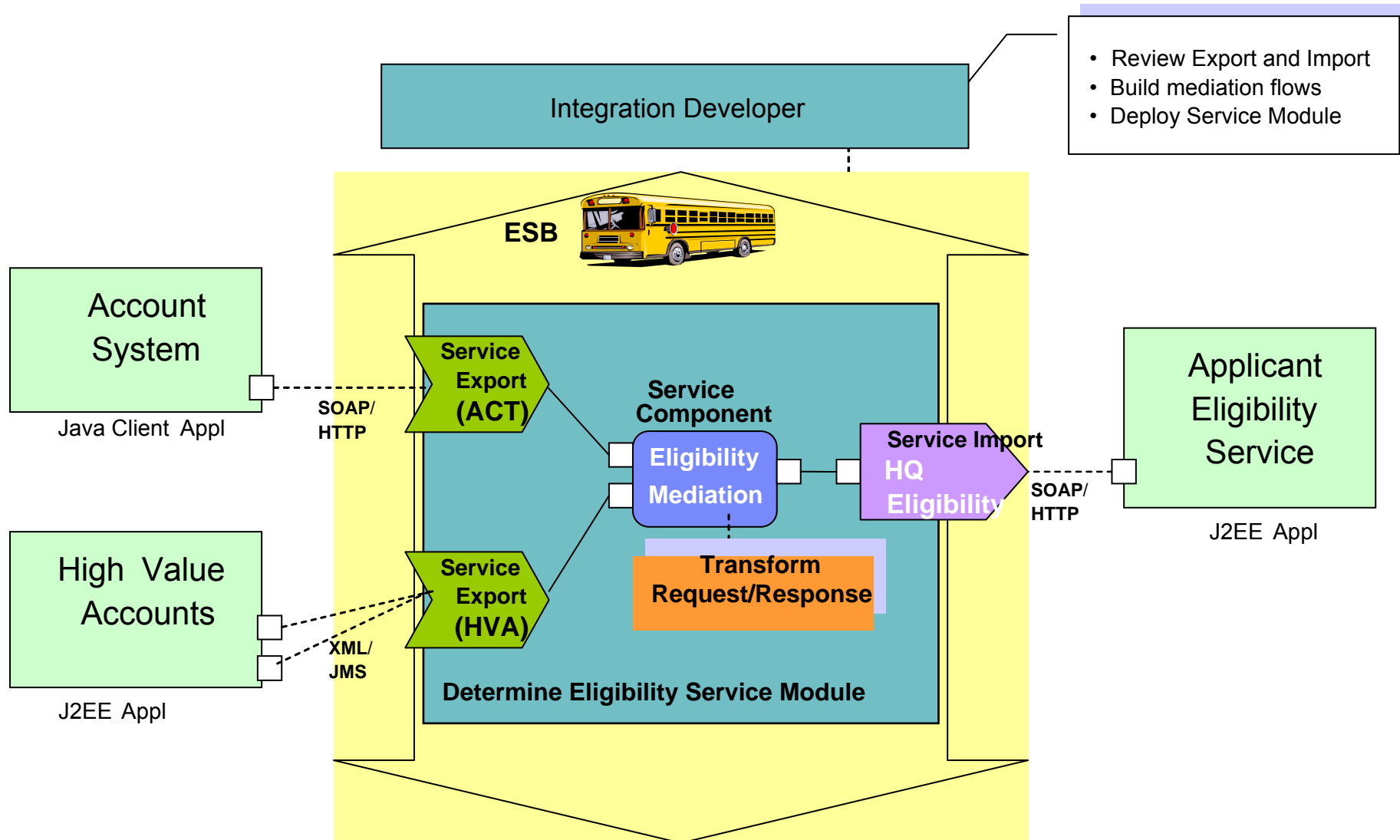


Example JK Enterprise – a virtual company with an „Open Account Process“



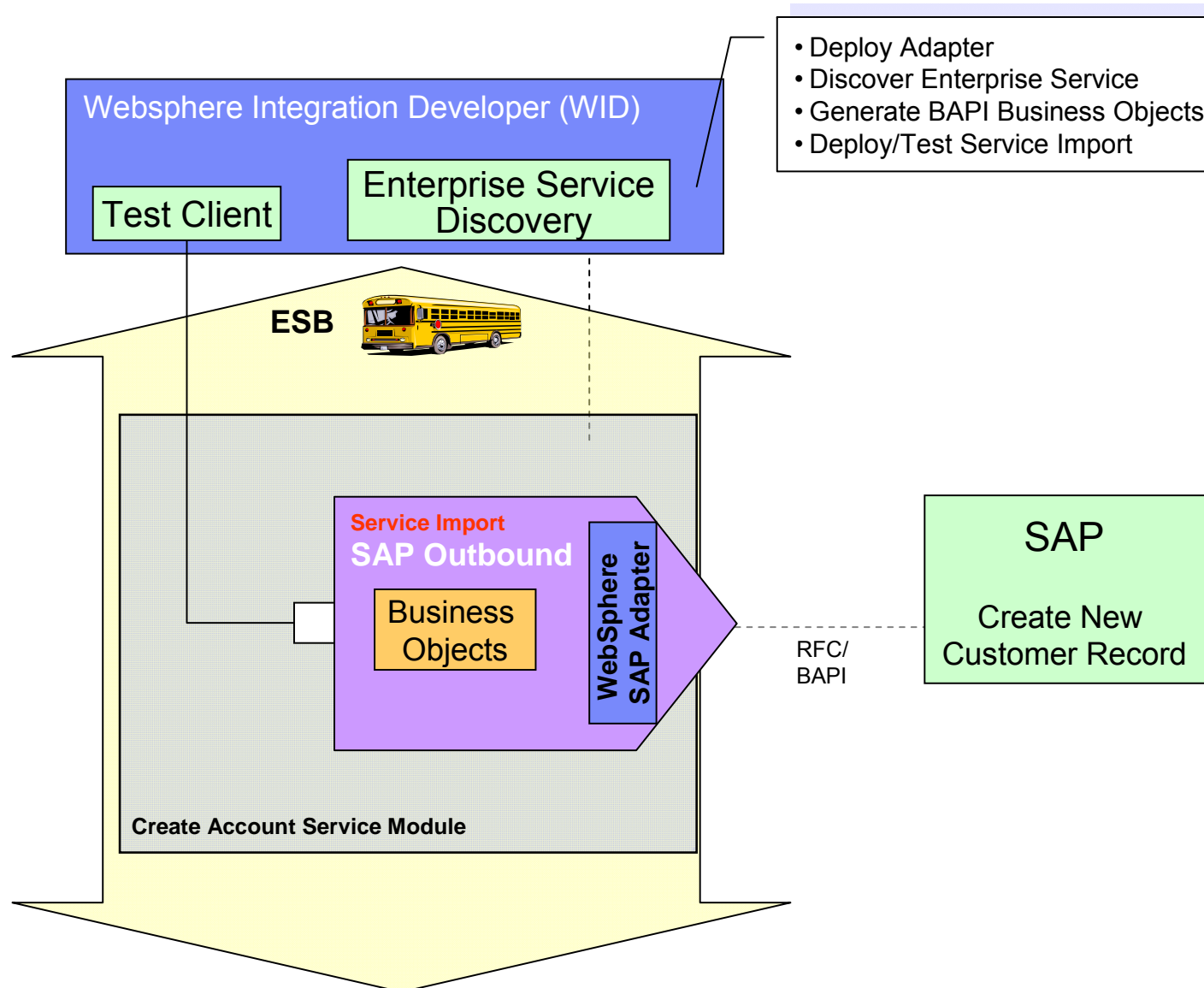


Example A: Multiple Channel Access to Backend Service





Example B: Create SAP Service

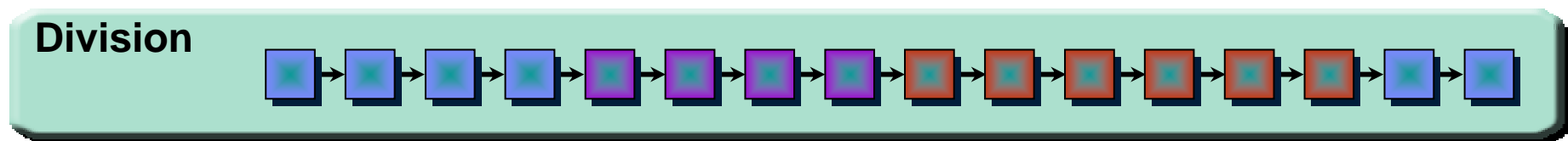




BPM (Business Process Management)



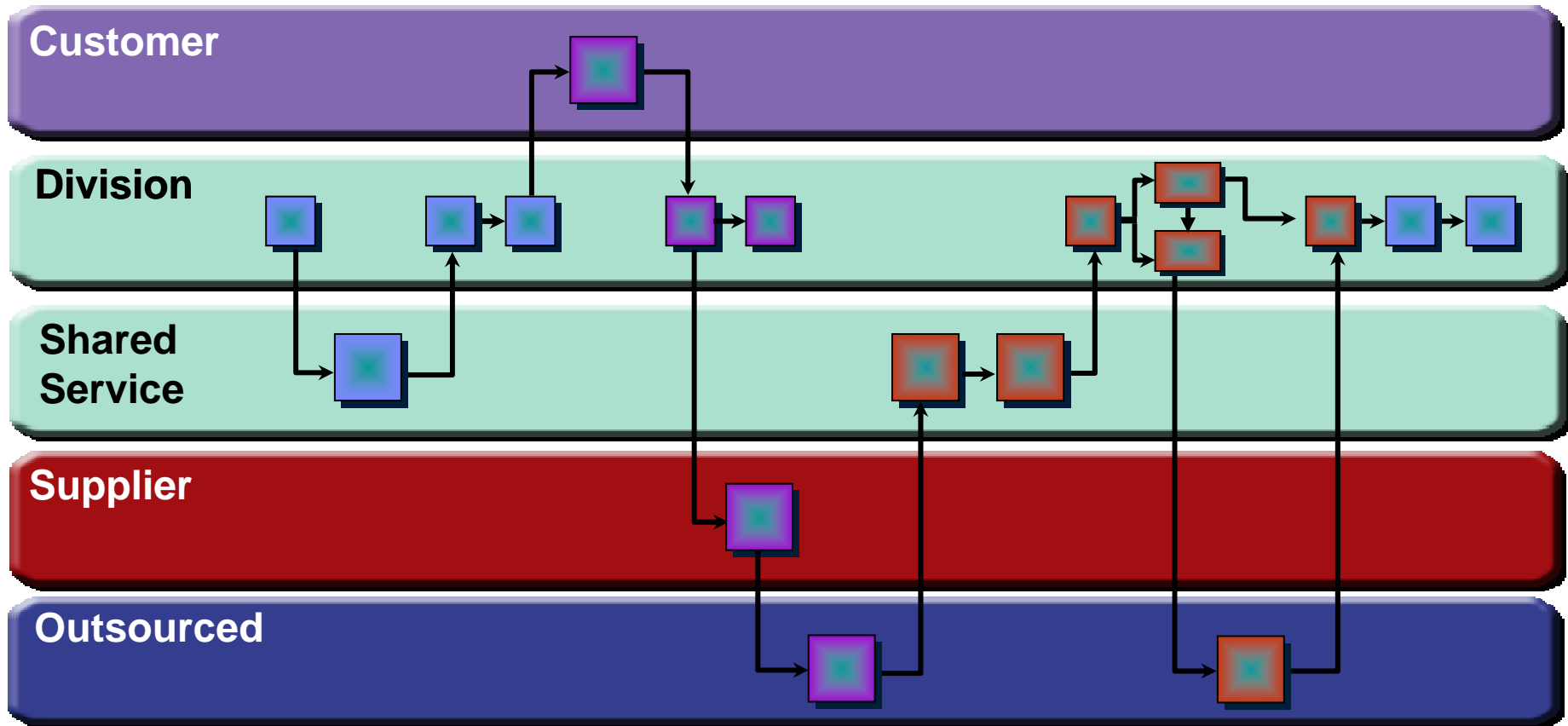
Where We Are Heading – Start



Case Study: Procure to Pay Process



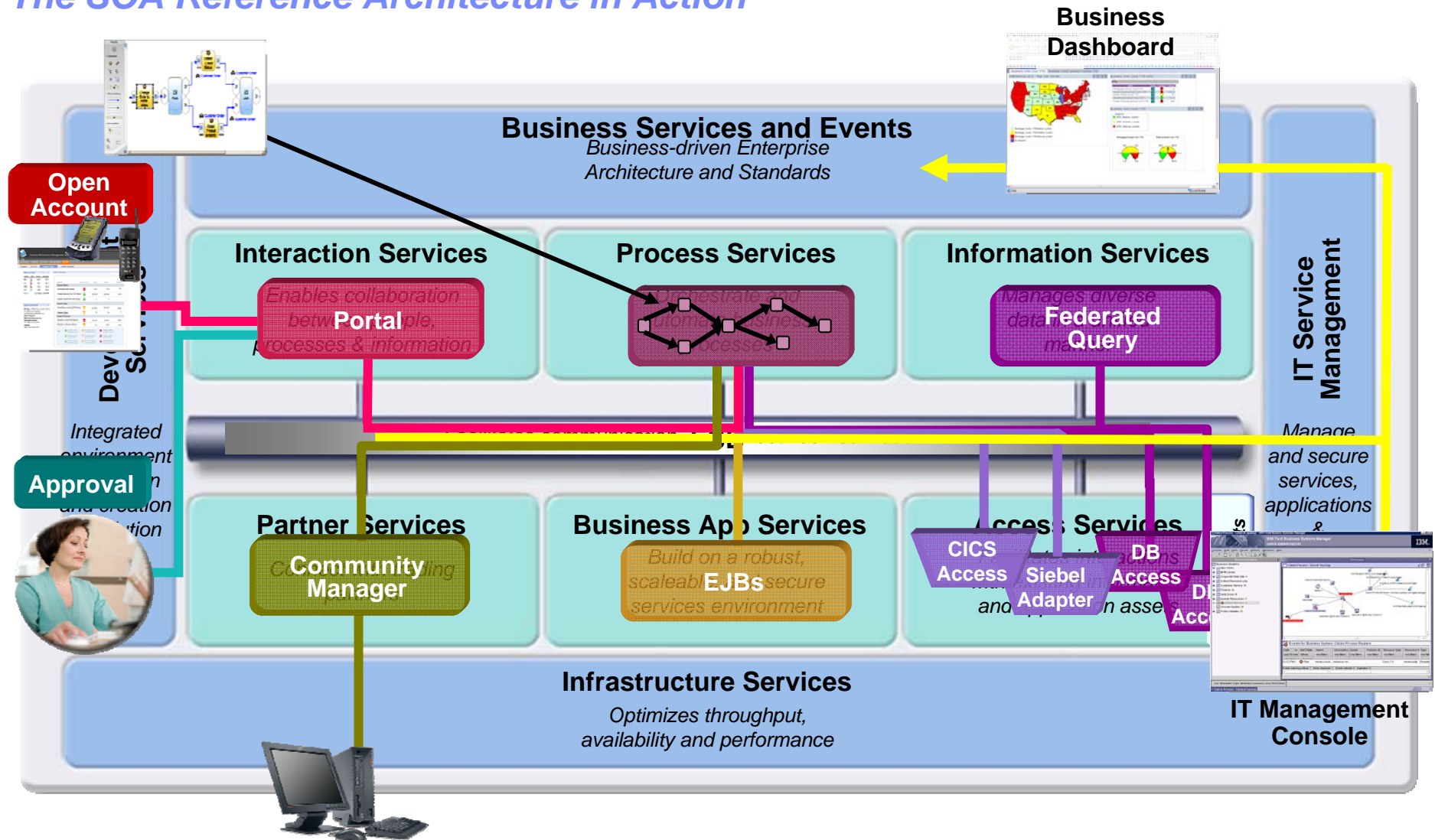
Where We Are Heading – Goal



Case Study: Procure to Pay Process

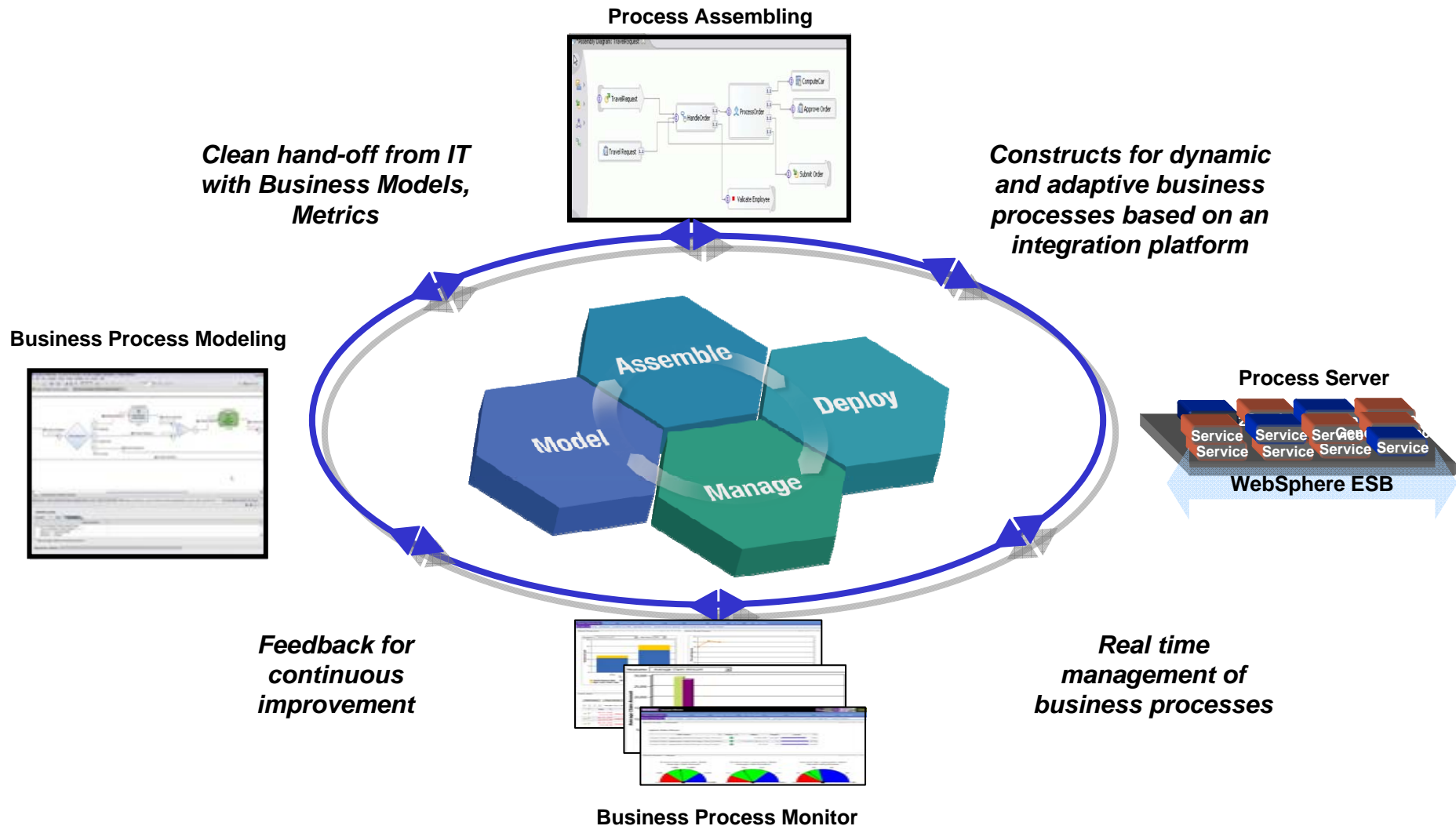


Separation of Concerns: Example “Open Account” Process The SOA Reference Architecture in Action



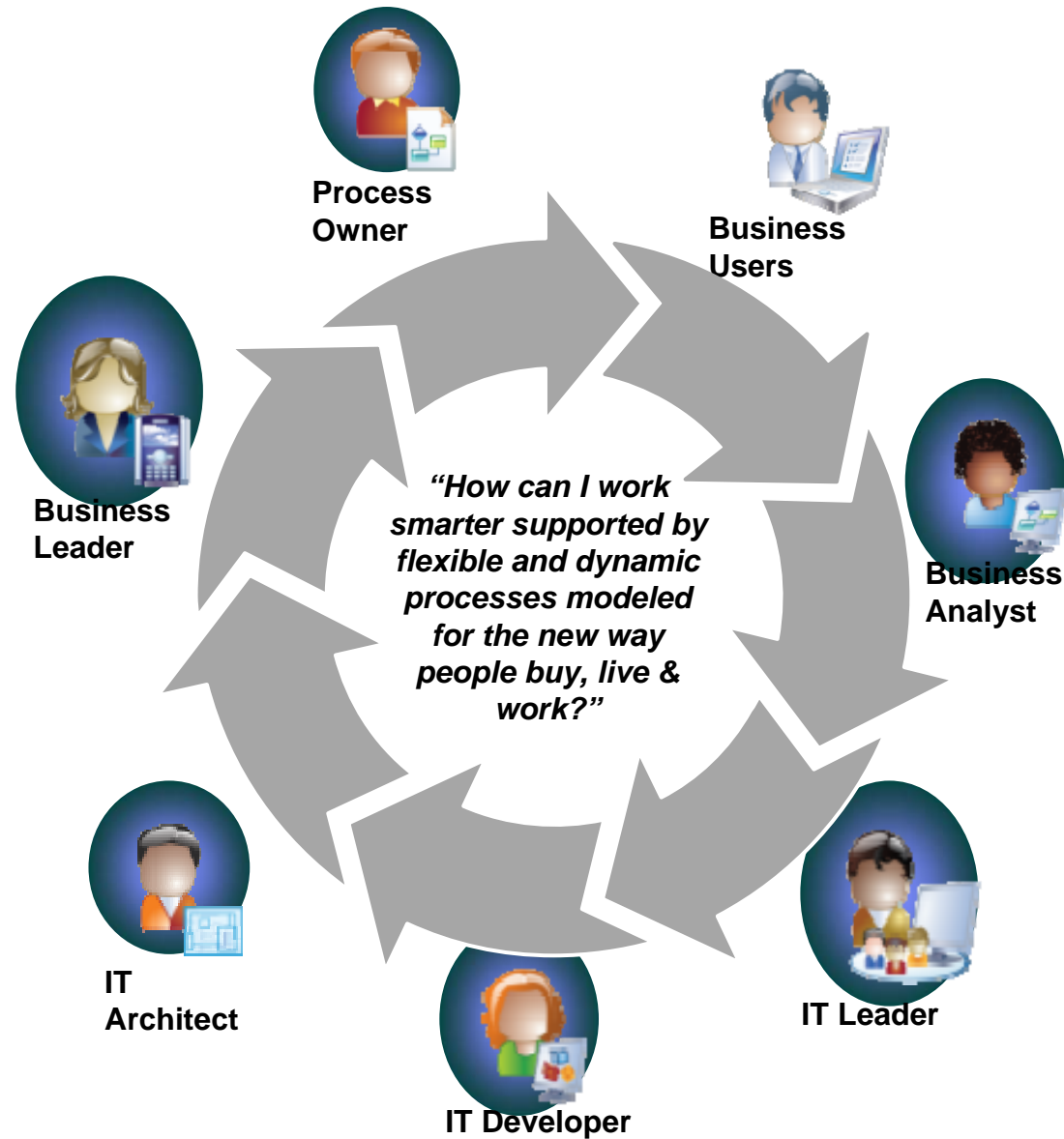


Process Services: Managing Your Business Processes





Business Process Management is a team sport ...





Key Roles in BPM



Business Leader

Responsible for Overall Business Performance, Compliance, and Governance



Business Professional

Manage business performance and decides on strategic and tactical needs for a specific area of responsibility



Business Analyst

Interprets business professional and business leader requests and documents them into process models



Process Analyst

Specialized business analyst that concentrates on the simulation & analysis of processes in their business environments and their interactions



IT Leader

A Business Leader responsible for delivering technology solutions that enable the business



IT Analyst

Interprets business analyst inputs/requirements in the context of IT capabilities, works with team on IT-based Business Process improvement



IT Architect

Defines basic operational imperatives in the provision of IT services with a focus on resiliency, reuse, and adaptability



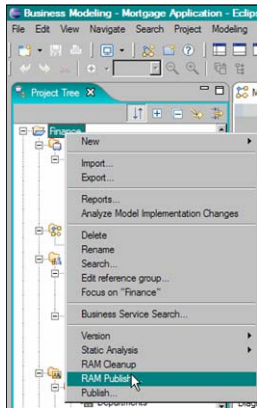
IT Developer

Follow's IT Architectural principles to create 'building' blocks for the construction of applications



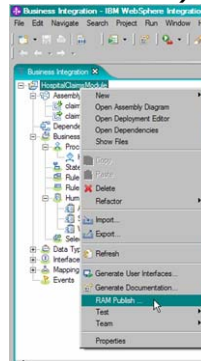
BPM Lifecycle Support

**Search, Consume,
And Submit Modeler Assets
(e.g. process model)**



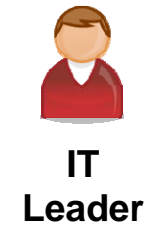
**IT
Architect**

**Search, Consume,
And Submit Assets
(e.g. BPEL
implementation)**

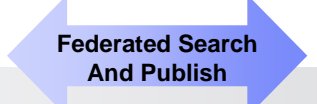


**IT
Developer**

**Impact Analysis, Reviews
and Governance**



**IT
Leader**

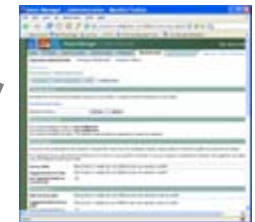


**IT
Architect**



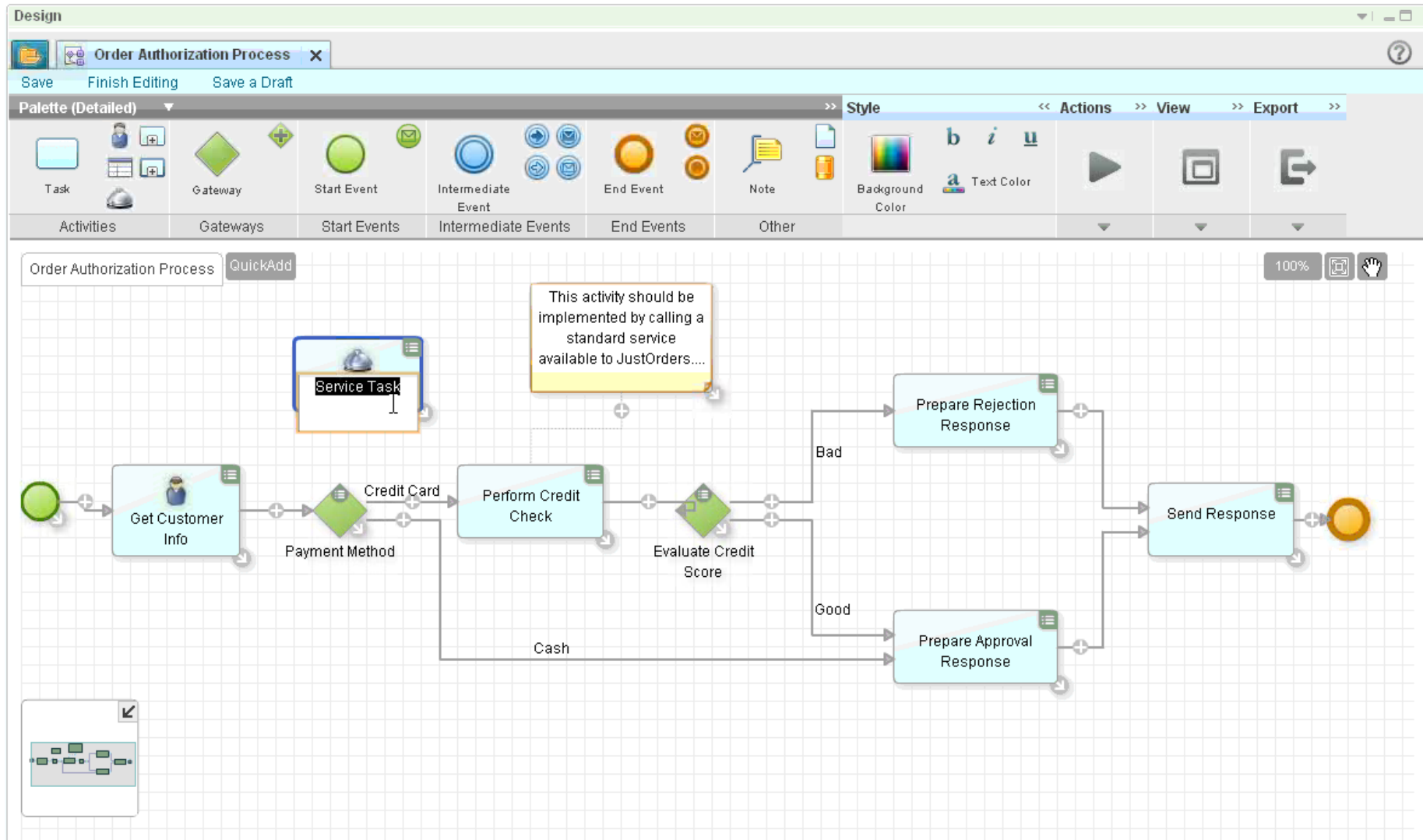
**Administer BPM
Repository & Taxonomy**

**Deploy to production:
Publish Service Interface**





Modeling a Business Process – Tasks, Flows, Organization, ... Standard is BPMN (Business Process Modeling Notation)



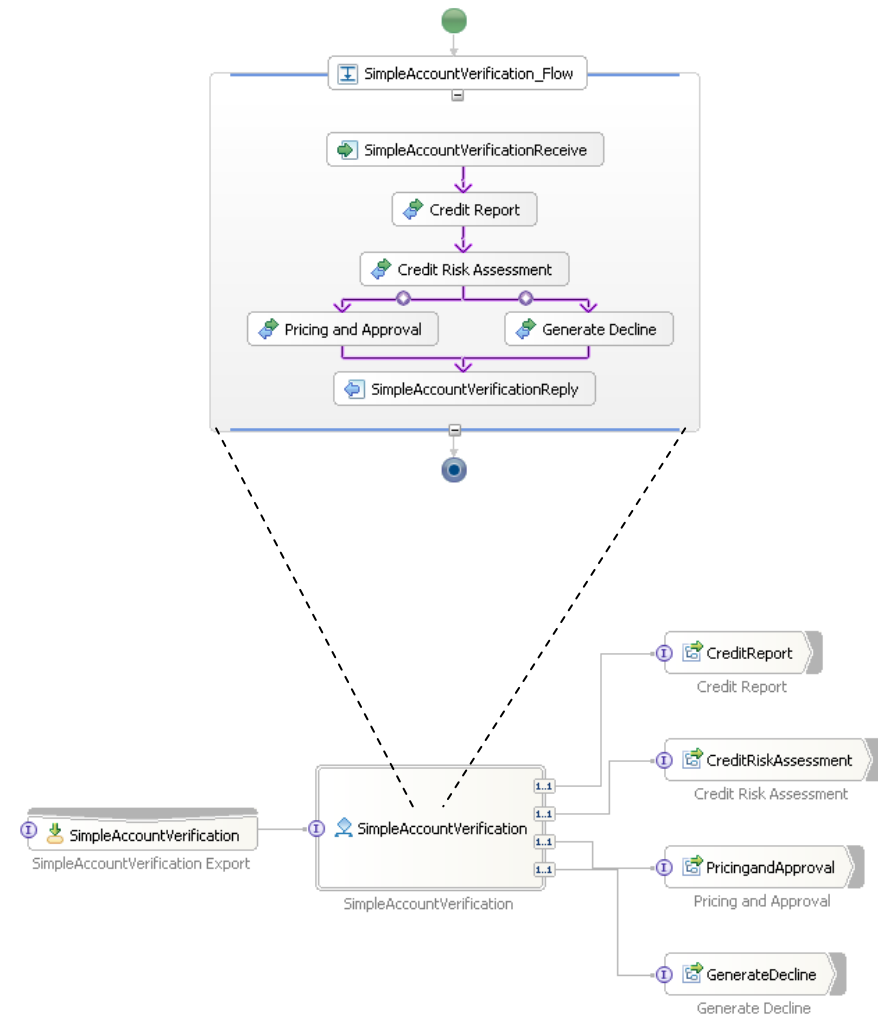


Process Services: Business Process – Assemble and Deploy for Execution

- **Assemble a Business Process Model**
 - Import the Process Model Modeling
 - Graphical Notation for BPEL (Business Process Execution Language)

- **Assembling**
 - Apply the building-block approach
 - Integrate services provided by service components

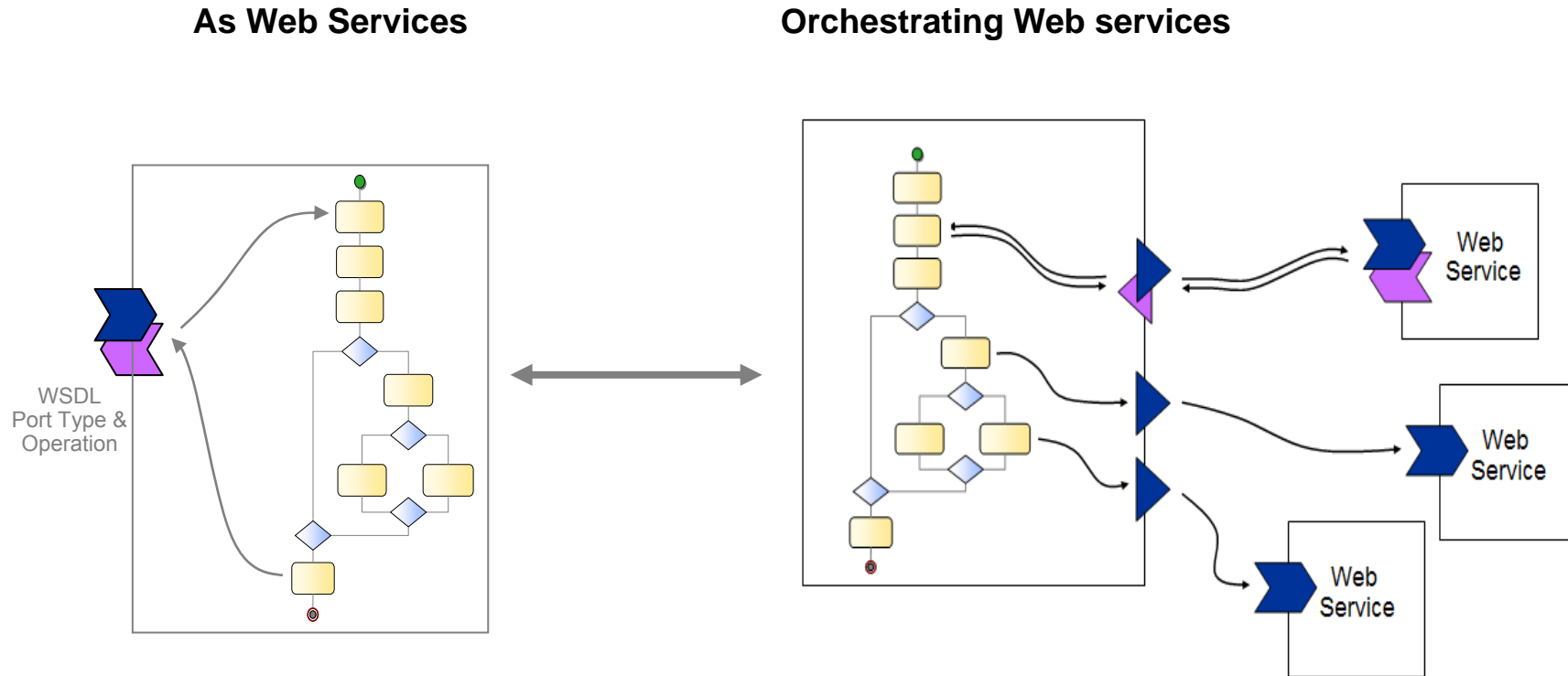
Role: Integration Developer





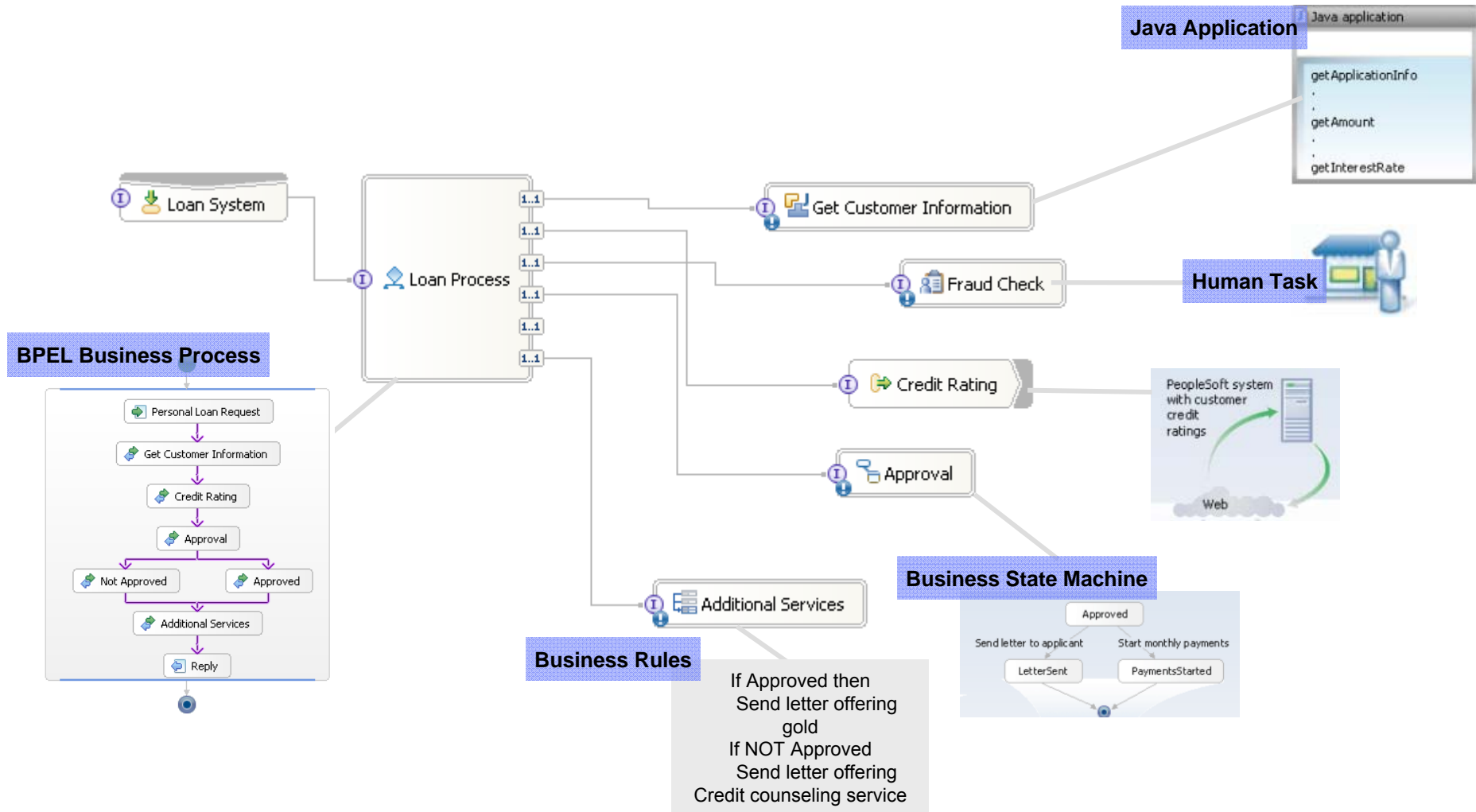
What is BPEL (Business Process Execution Language)

- Use the specification of a Business process
- Assemble the process and (web) services



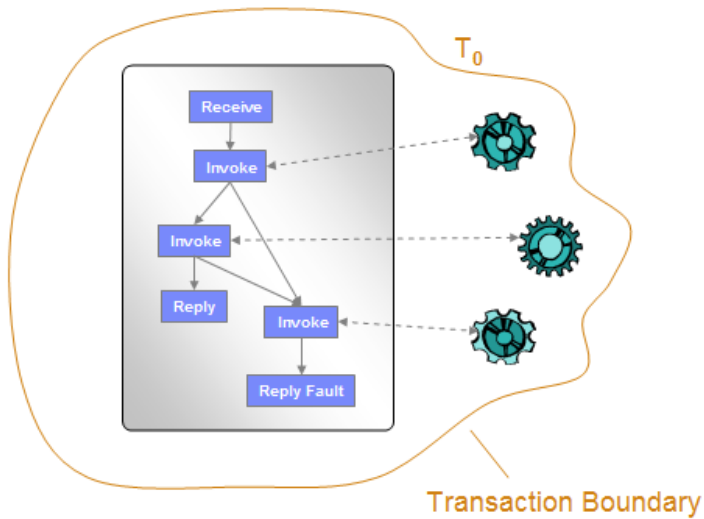


Common Invocation Model

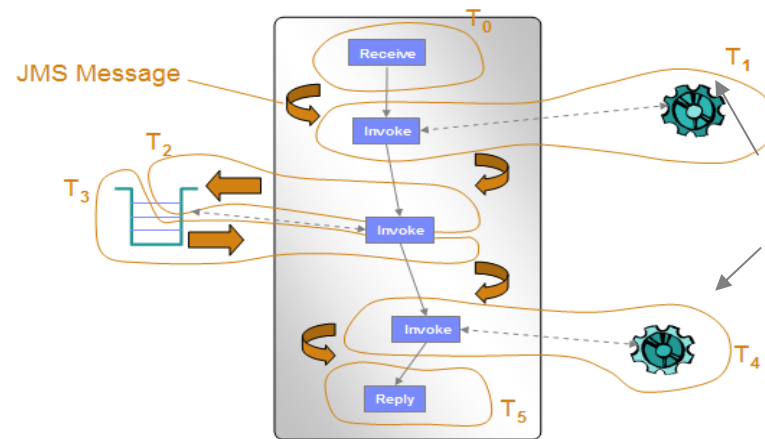




WS-BPEL Business Process: Microflows and Macroflows



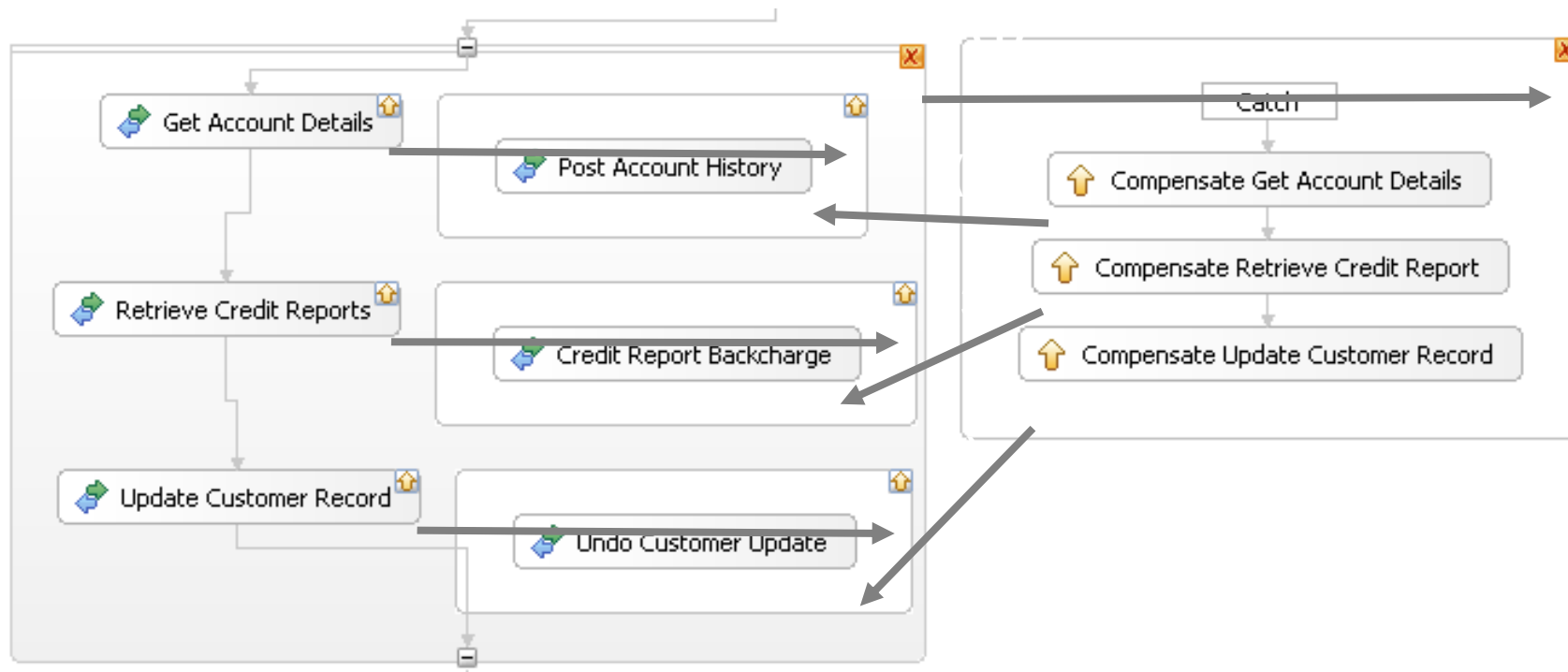
Microflows
One Transaction



Macroflows
Multiple Transactions
And compensation transactions

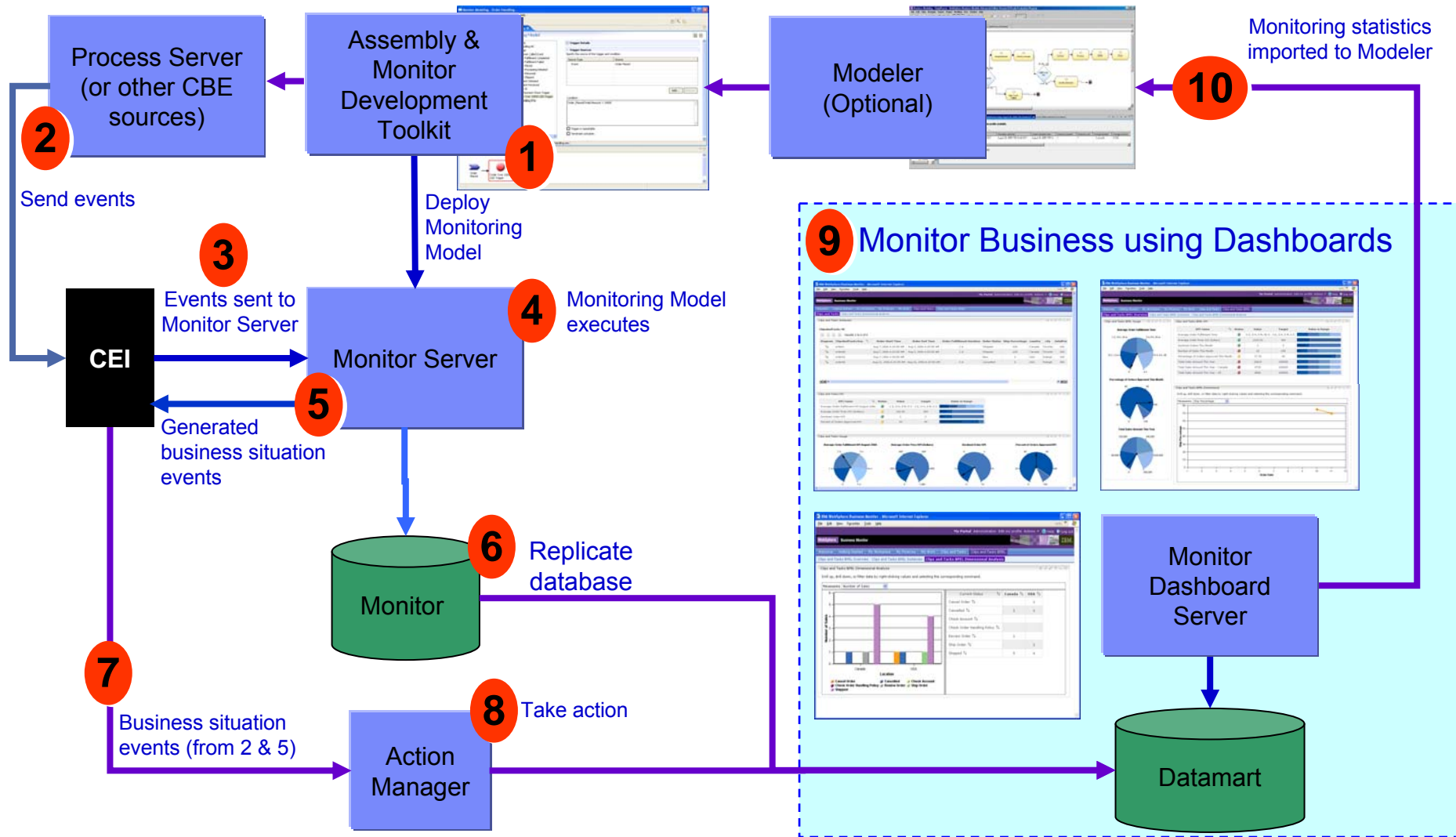


BPEL Business Process: Compensation



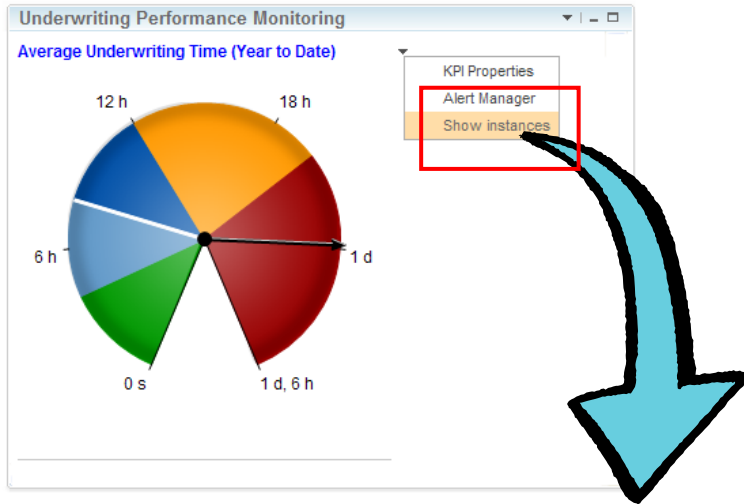


Logical Architecture for Business Activity Monitoring





Monitoring Example: Drill to Instances



- Improved identification of the source of business problems through dynamic drill down from aggregate data to individual instances contributing to the problem – *KPIs to Instances*

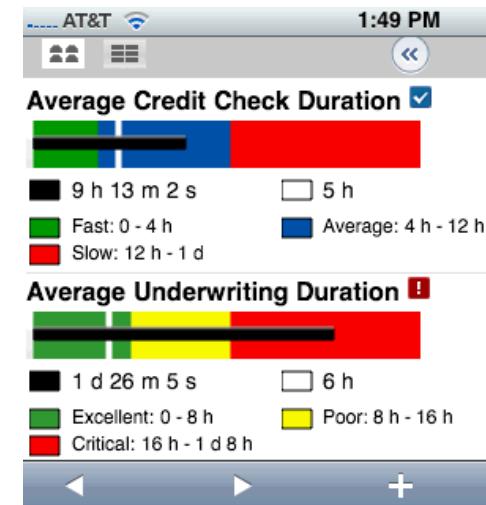
The screenshot shows a window titled "Instances" with a search bar and a table of loan data. The table has columns for Diagram, Loan ID, Loan Type, Size of Loan, Rate, Status, Loan Document MC, Associate ID, Credit Check Duration, and Underwriting Duration. The data is as follows:

Diagram	Loan ID	Loan Type	Size of Loan	Rate	Status	Loan Document MC	Associate ID	Credit Check Duration	Underwriting Duration
	11000	Jumbo	525,000	5.375	Completed	↕	Tim Copner	12 h, 0 m, 0 s	1 d, 1 h, 0 m, 0 s
	18000	Conforming	10,000	5.875	Processing	↕	Steve Haskey	4 h, 0 m, 0 s	18 h, 0 m, 0 s
	21000	Conforming	200,000	5.5	Rescinded	↕	Paul Lyon	8 h, 0 m, 0 s	1 d, 0 h, 0 m, 0 s
	6000	Conforming	200,000	6	Processing	↕	Paul Lyon	16 h, 0 m, 0 s	22 h, 0 m, 0 s
	1000	Conforming	350,000	6.125	Completed	↕	Jane Parsons	9 h, 0 m, 0 s	1 d, 3 h, 0 m, 0 s
	8000	Conforming	200,000	6	Processing	↕	Paul Lyon	16 h, 0 m, 0 s	22 h, 0 m, 0 s
	7000	Conforming	200,000	5.5	Rescinded	↕	Paul Lyon	8 h, 0 m, 0 s	1 d, 0 h, 0 m, 0 s
	14000	Conforming	350,000	6.125	Completed	↕	Jane Parsons	9 h, 0 m, 0 s	1 d, 3 h, 0 m, 0 s
	15000	Conforming	350,000	6.25	Completed	↕	Jane Parsons	2 h, 0 m, 0 s	1 d, 4 h, 0 m, 0 s
	23000	Jumbo	525,000	5.375	Completed	↕	Tim Copner	12 h, 0 m, 0 s	1 d, 1 h, 0 m, 0 s

Page 1 of 3 | Go to page: | Results 1 to 10 of 23



Experience Monitor through your iPhone



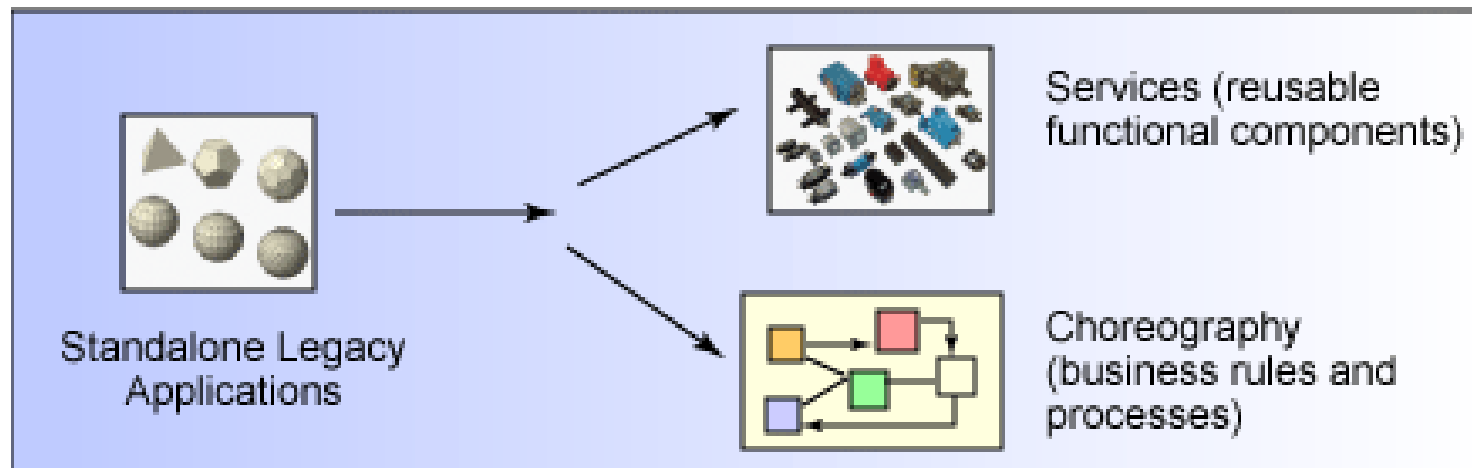


Software Engineering for SOA



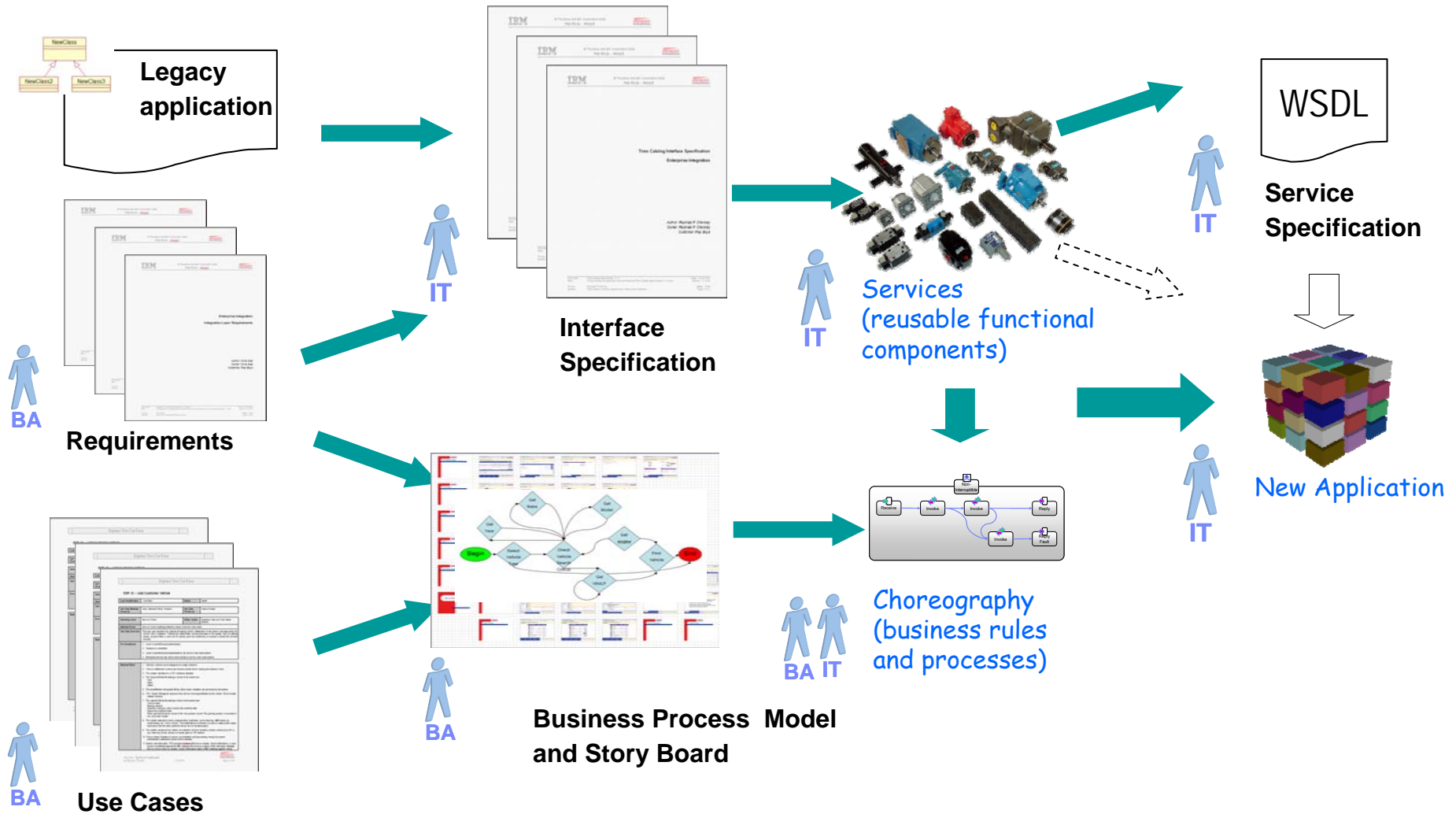
Enablement of Business Integration

- **Business and IT are no longer separate tracks**
- **Choreography of services**
 - The sequencing, selection, and execution of operations



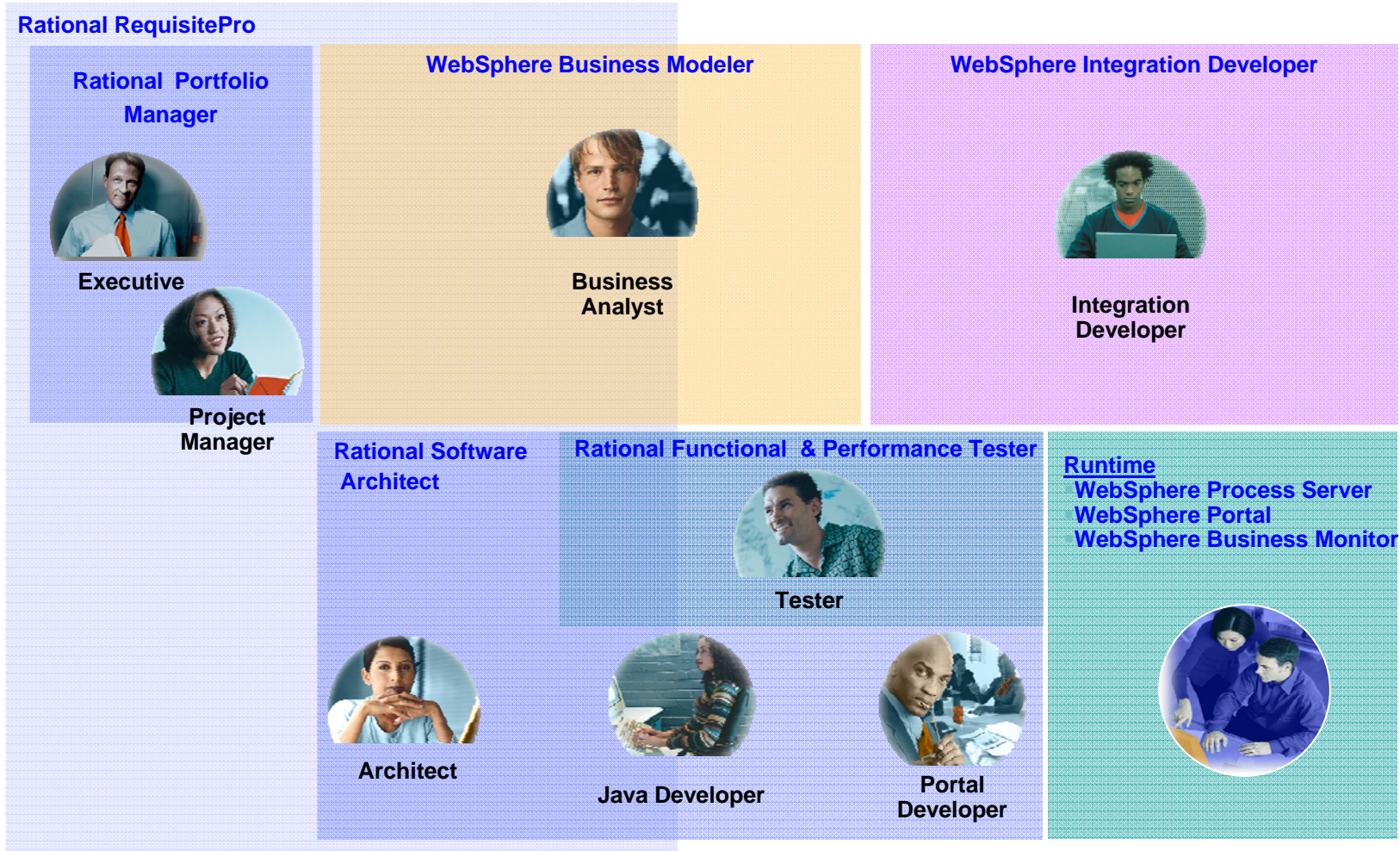


BDD Overview (including Legacy Applications)



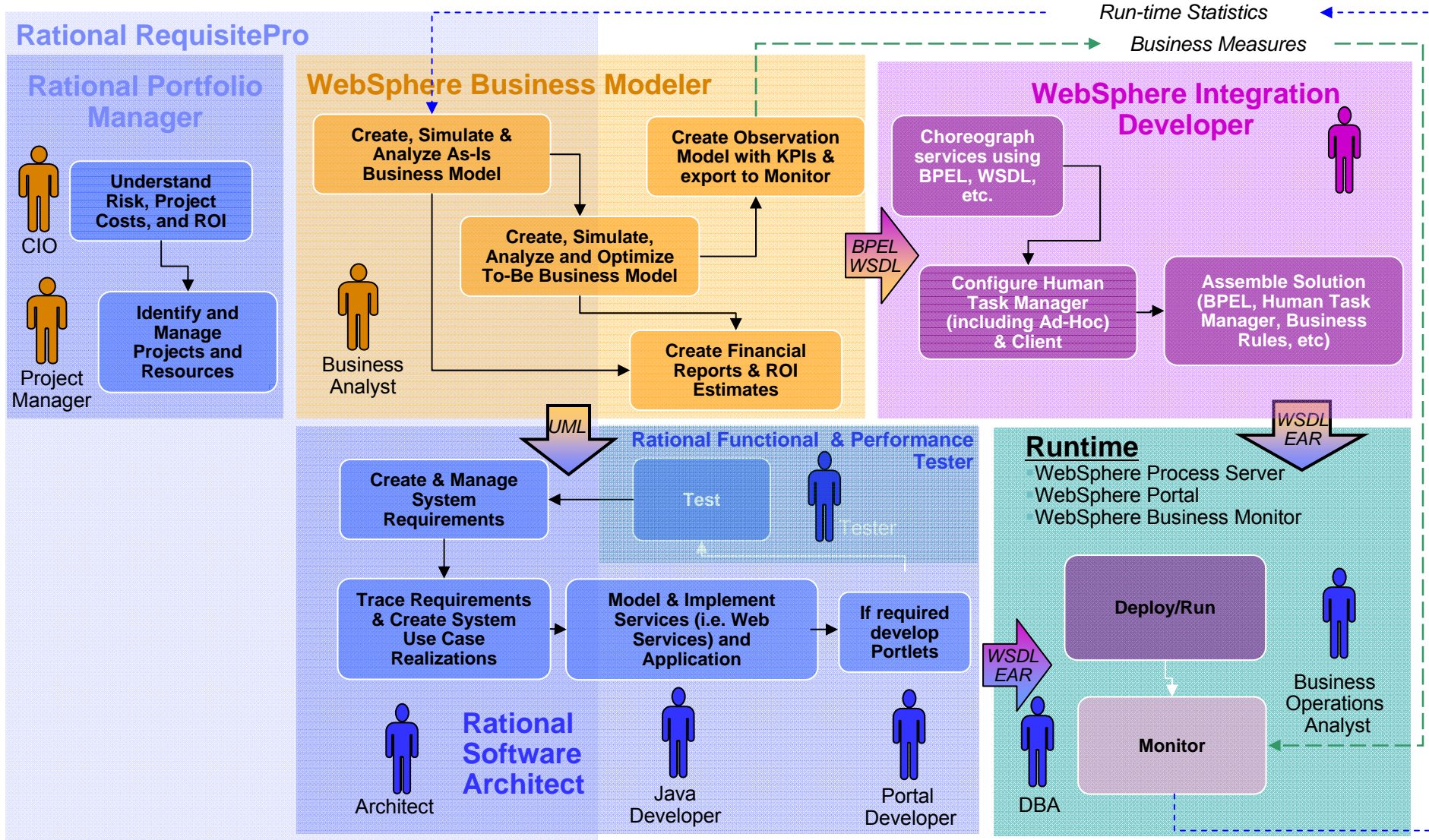


Areas for Business Driven Development





Big Picture of BDD for SOA

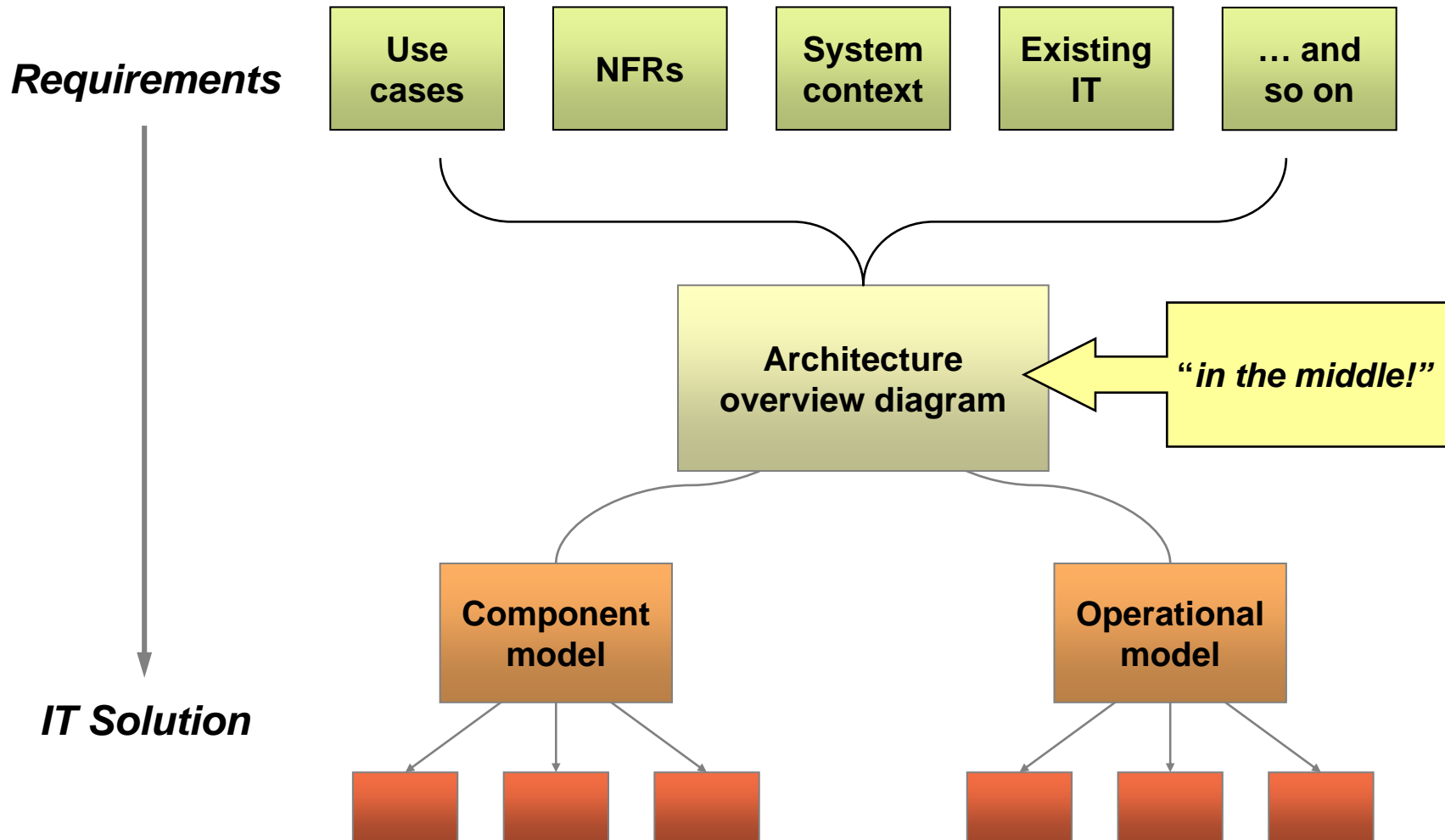




SOA Solution Design – Recap Methodology

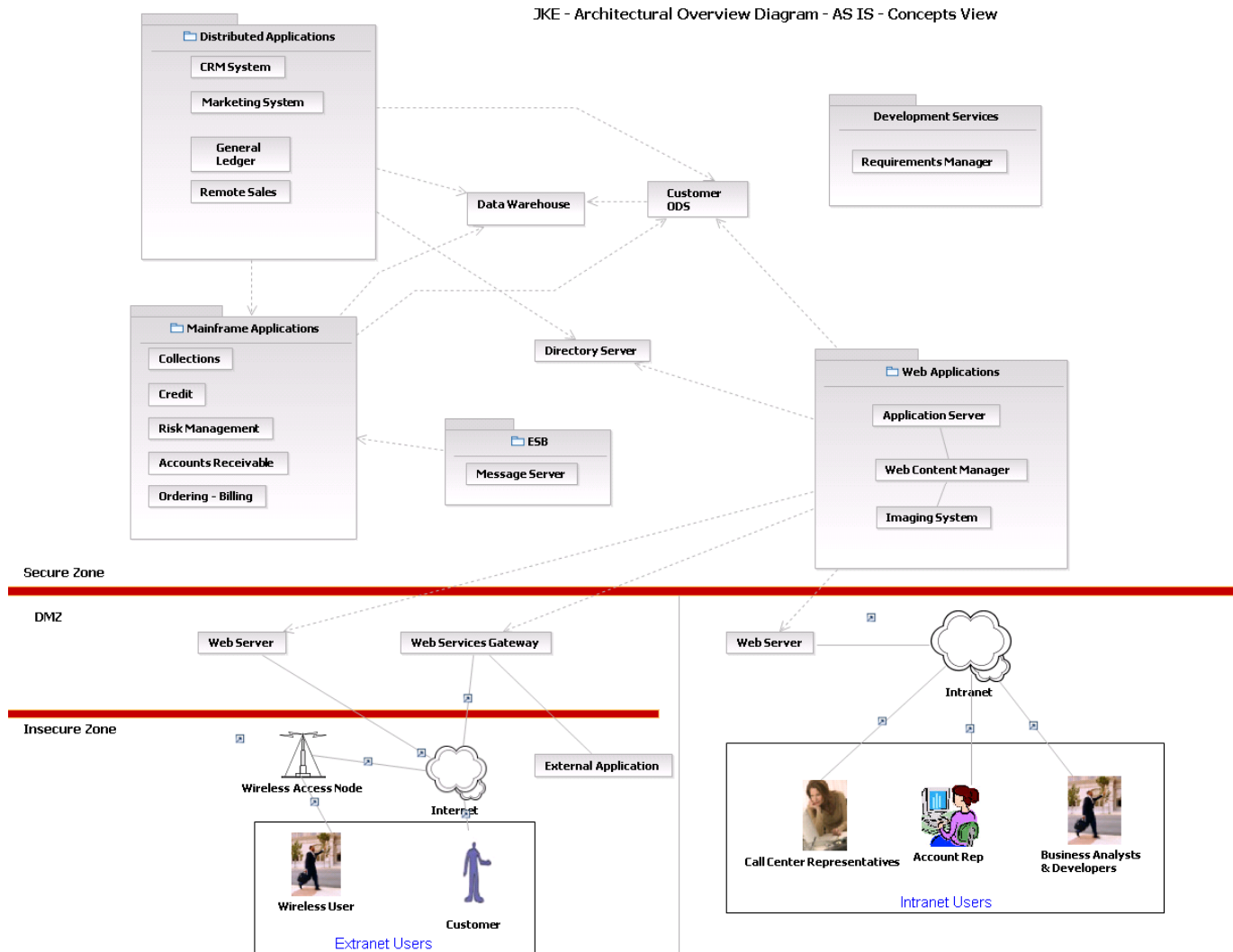


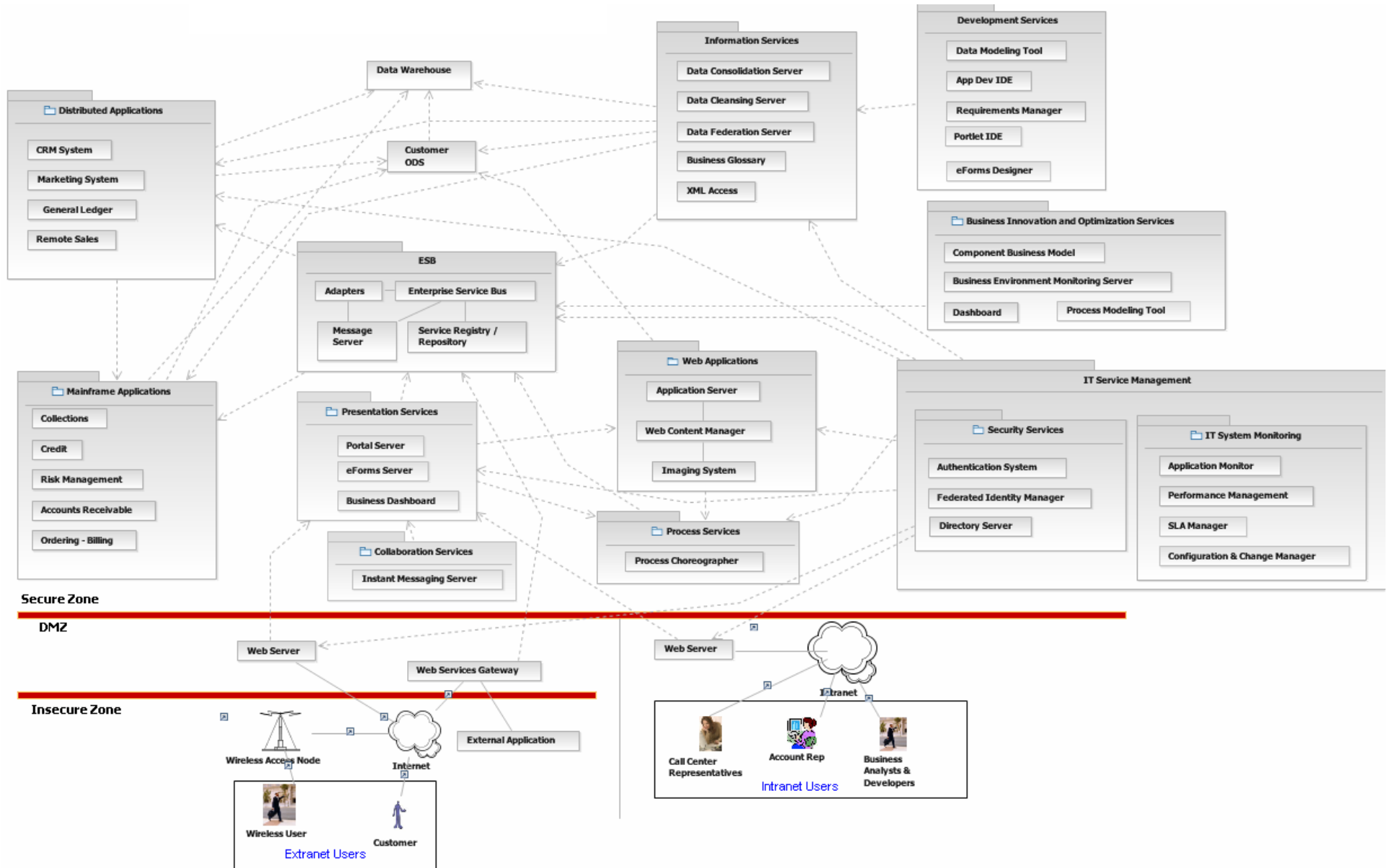
Where does the Architecture Overview Diagram fit?





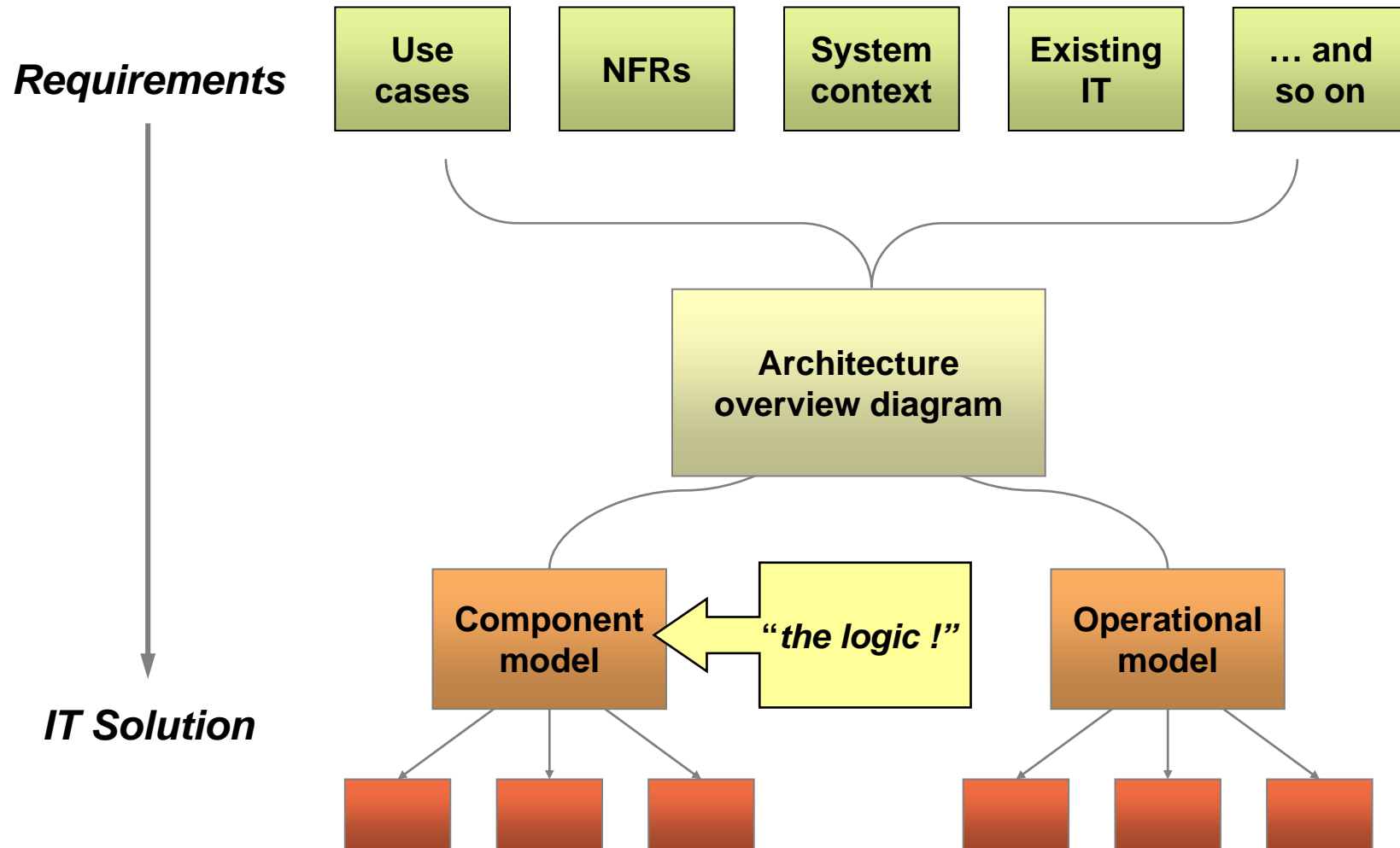
Example Input – As-Is Architectural Overview Diagram







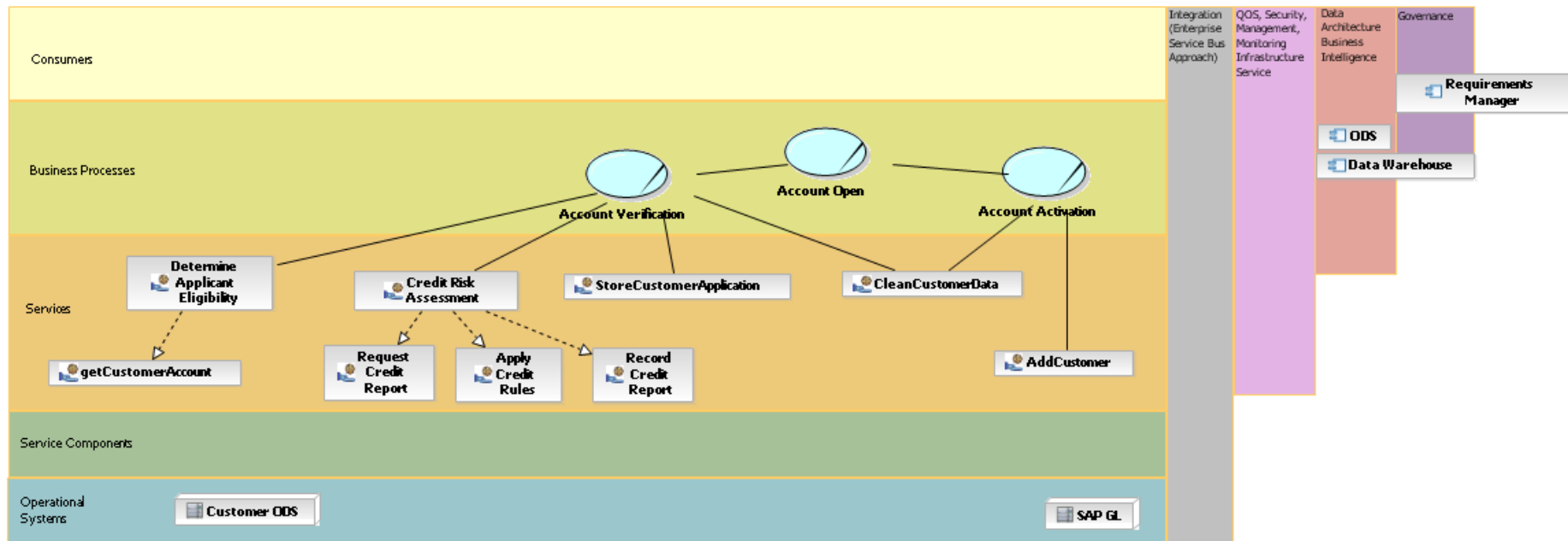
Where does the Operational Model fit?





SOA Solution Layer Perspective – Start

JKE SOA Solution Layer Perspective - AS IS

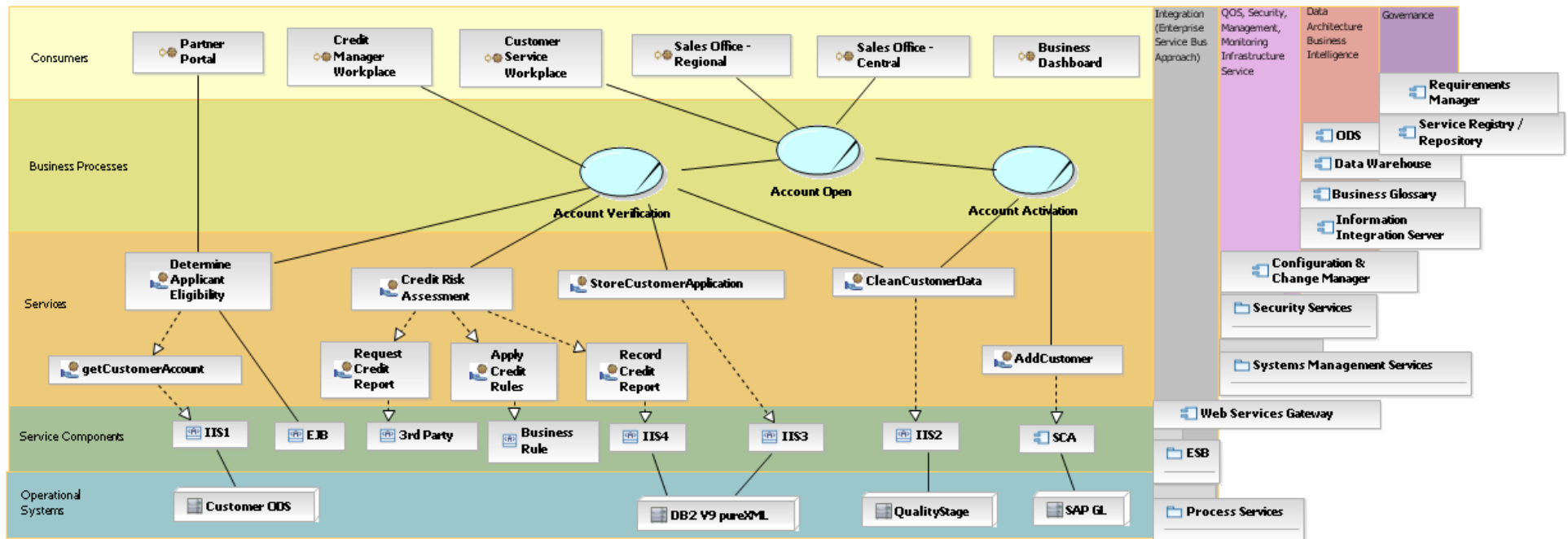


- Among the missing artifacts from this diagram, the Service Components (service realization)
- Also missing are To-Be supporting operational systems



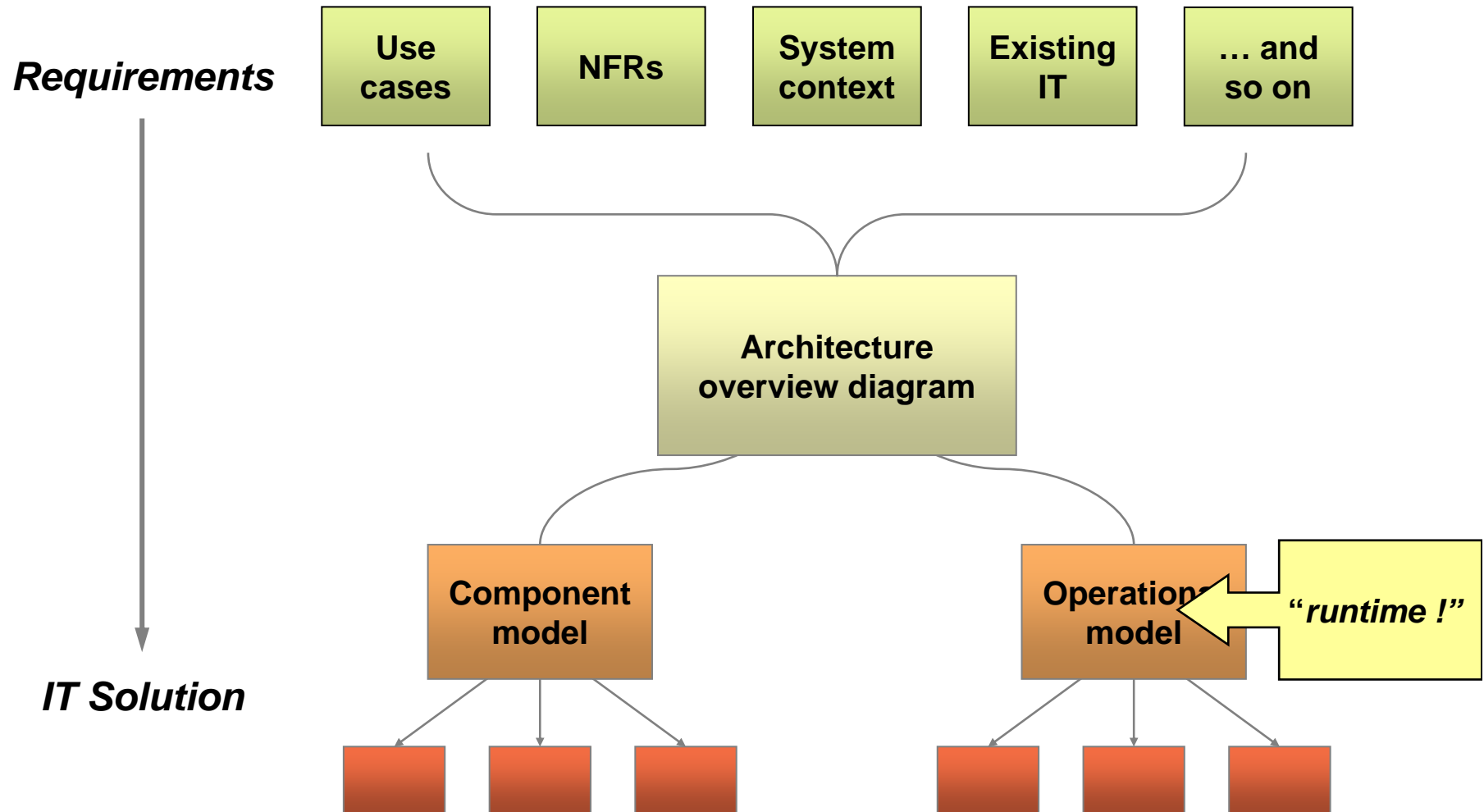
SOA Solution Layer Perspective – possible Solution

JKE SOA Solution Layer Perspective - Case Study 5 - TO BE





Where does the Operational Model fit?





Questions

