Enterprise IT Architectures
SOA Part 3

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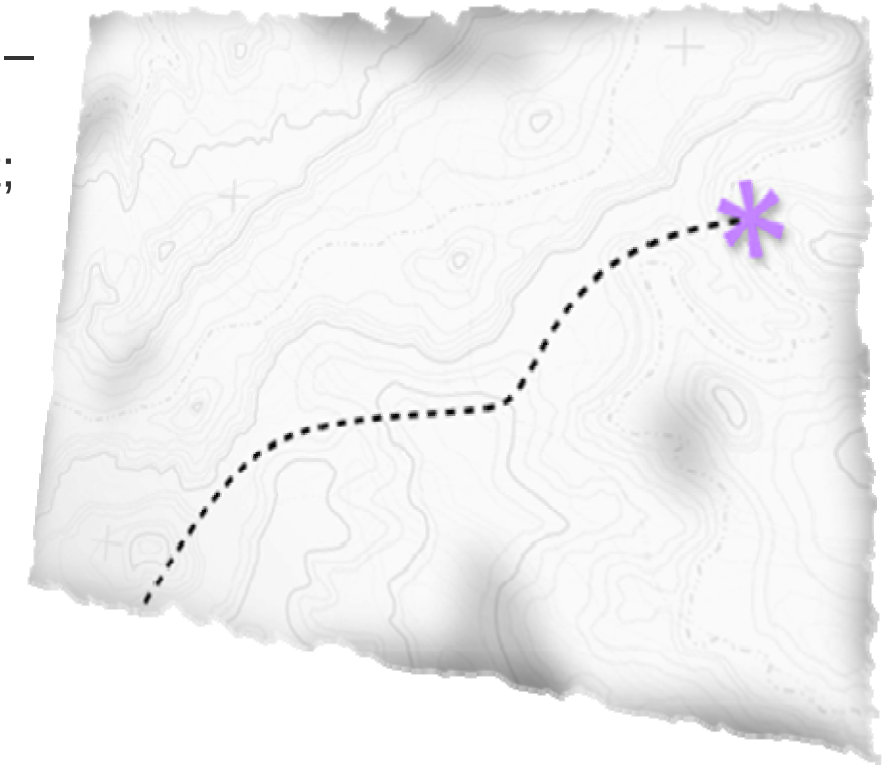
SOA – Because Innovation Requires Change and SOA Makes Change Easier

… a service?

A **repeatable business task** – e.g., check customer credit; open new account

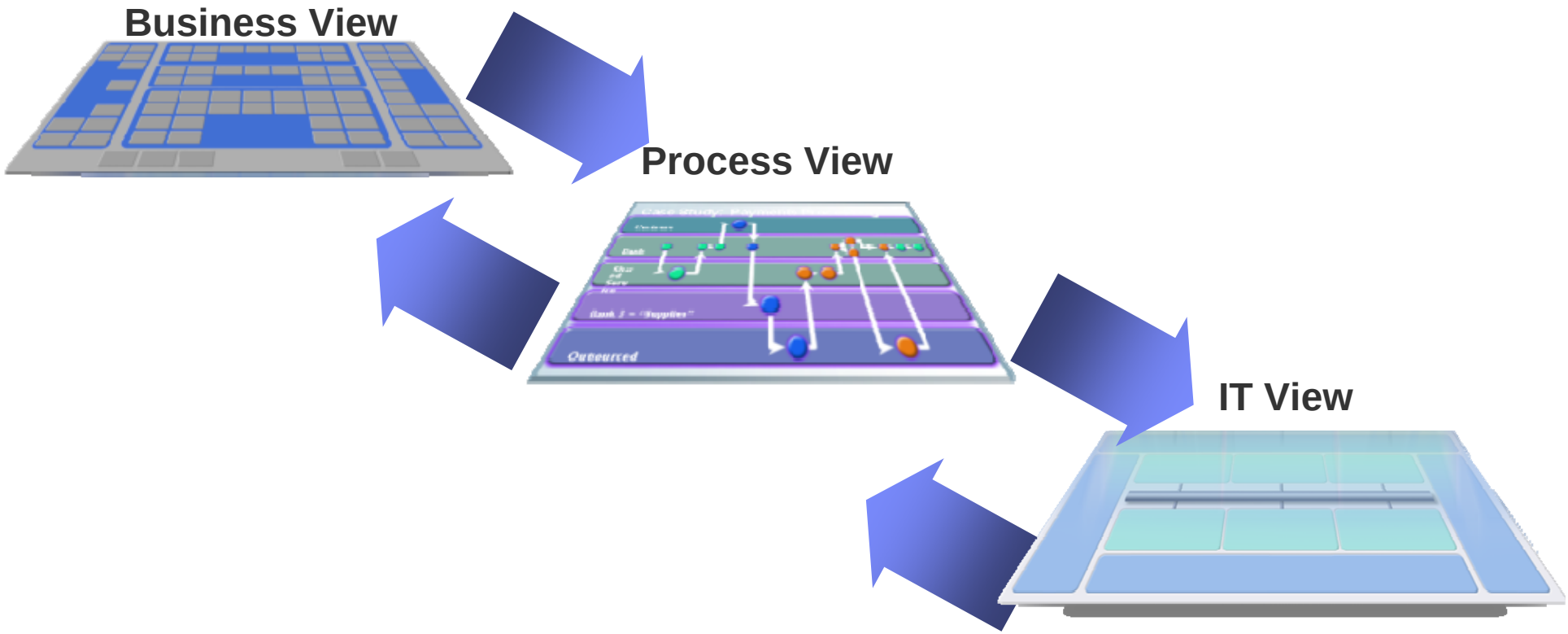


… service oriented architecture (SOA)?

An IT **architectural style** that supports integrating your business as linked services

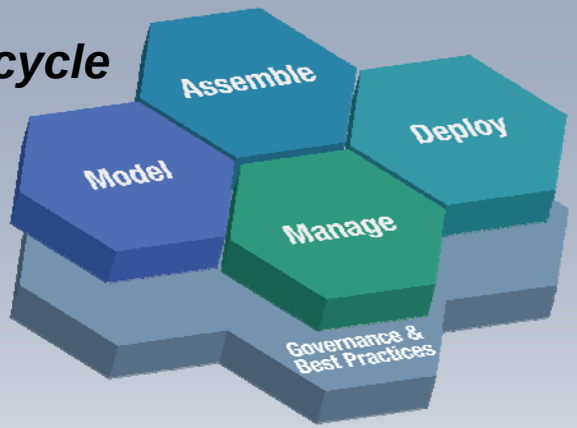
SOA can be your treasure map to innovation

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

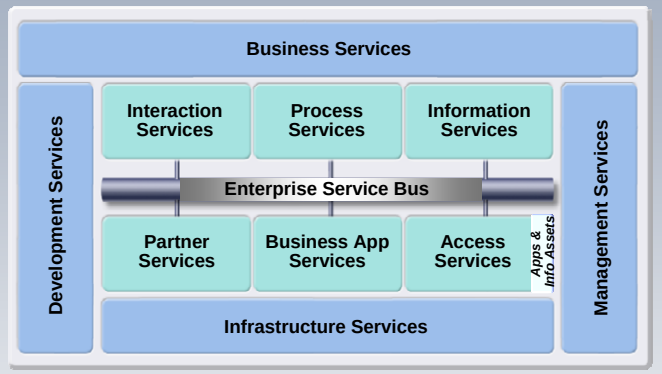


Key Models for SOA

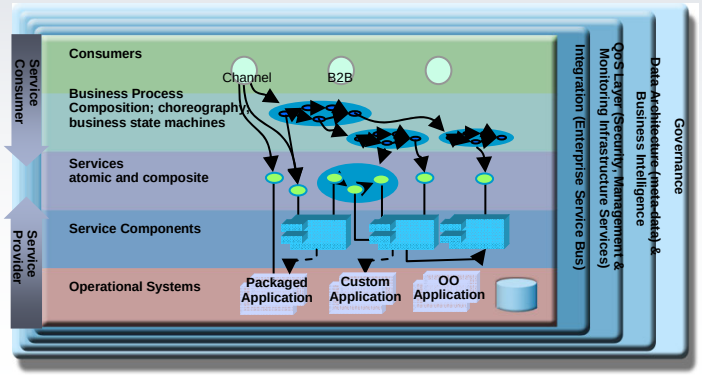
SOA Lifecycle



SOA Reference Architecture



SOA Solution Layering



Agenda

I. Business Process Management – from end-to-end

II. SOA Entry Points & SOA Reference Architecture

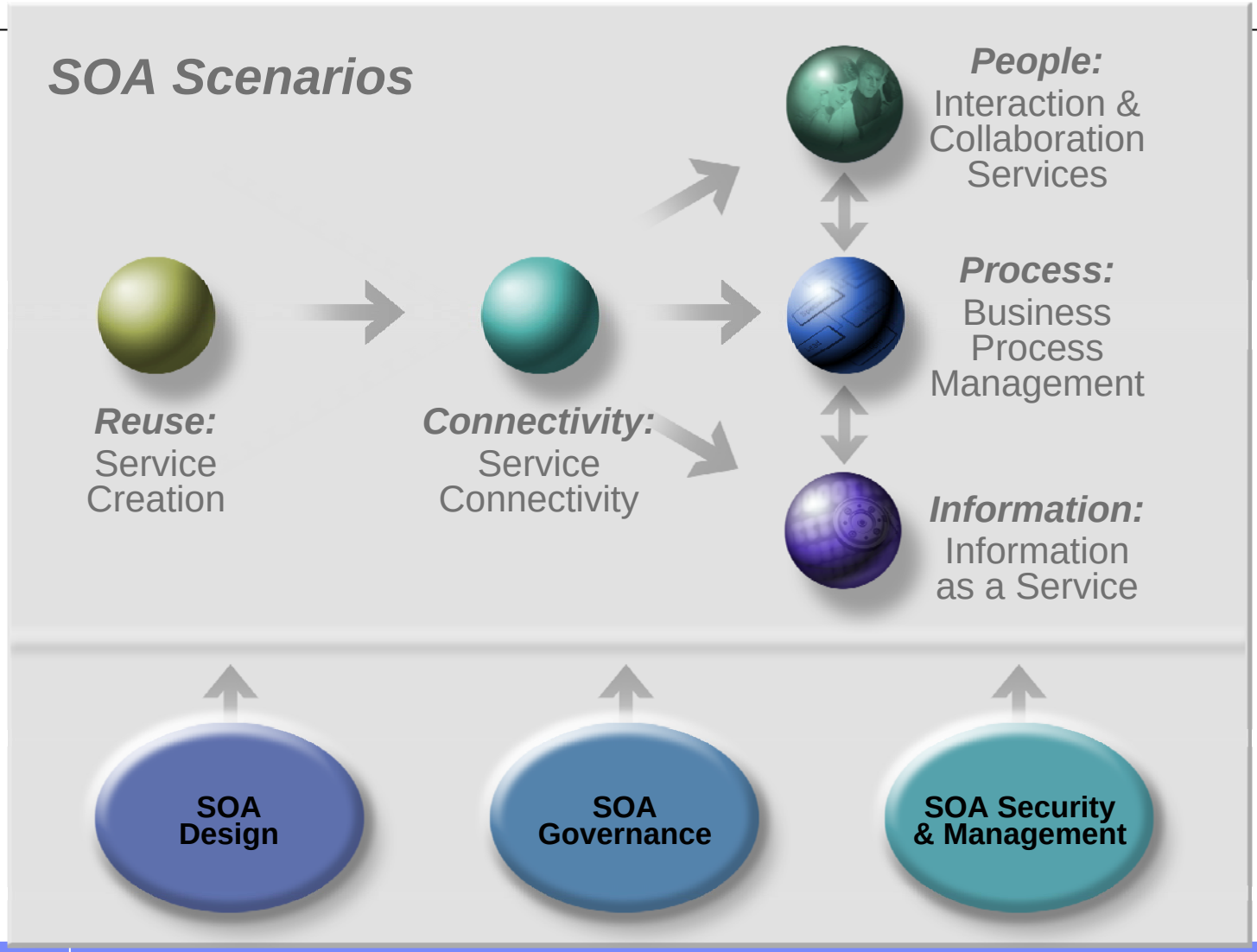
III. Student's Presentation(s)

IV. Solutions of Case 2

I. Business Process Management – from end-to-end (from Part 2)

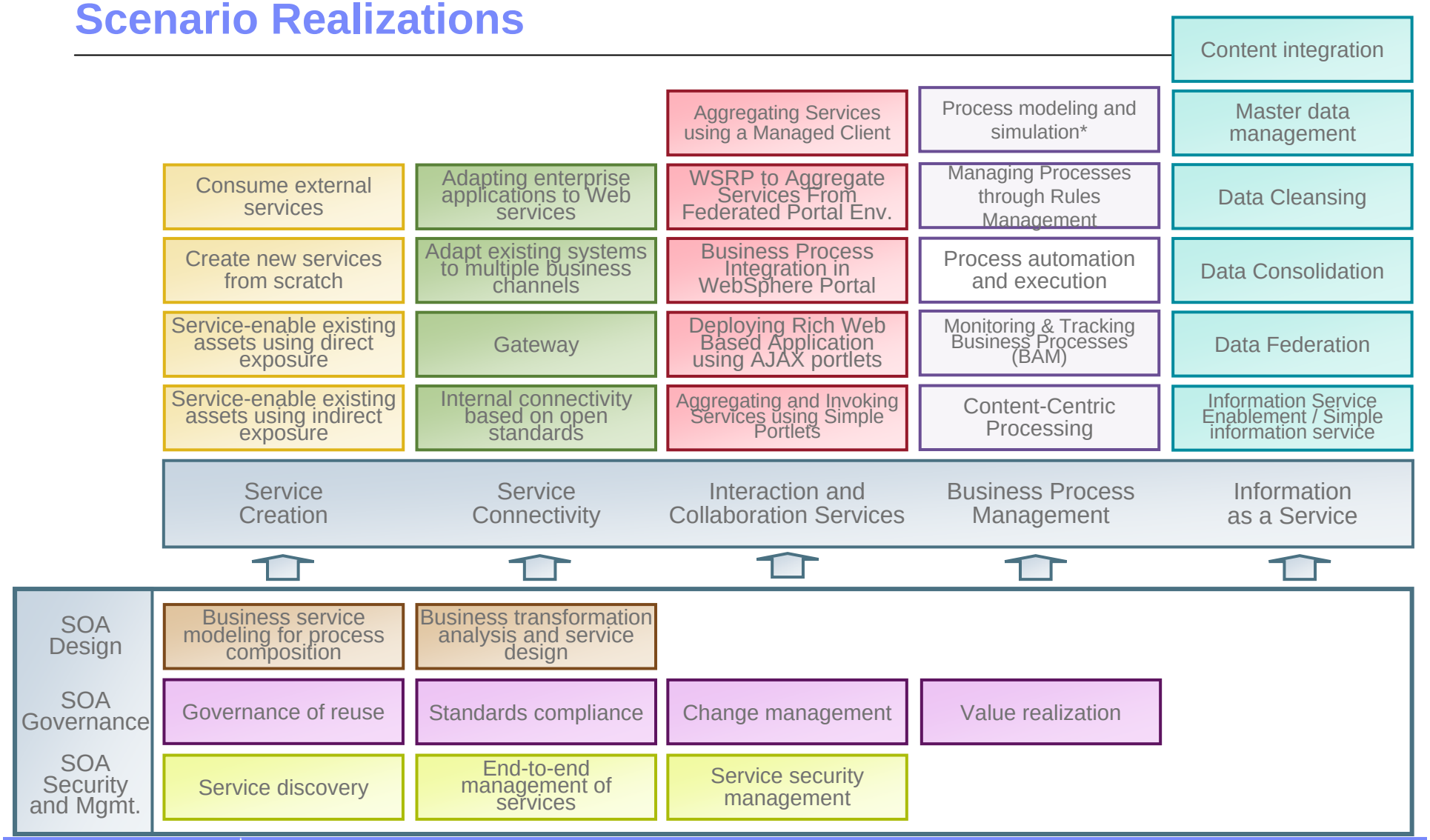
II. SOA Entry Points & SOA Reference Architecture

SOA Scenarios



SOA Entry Points are Both Business Centric and IT Focused

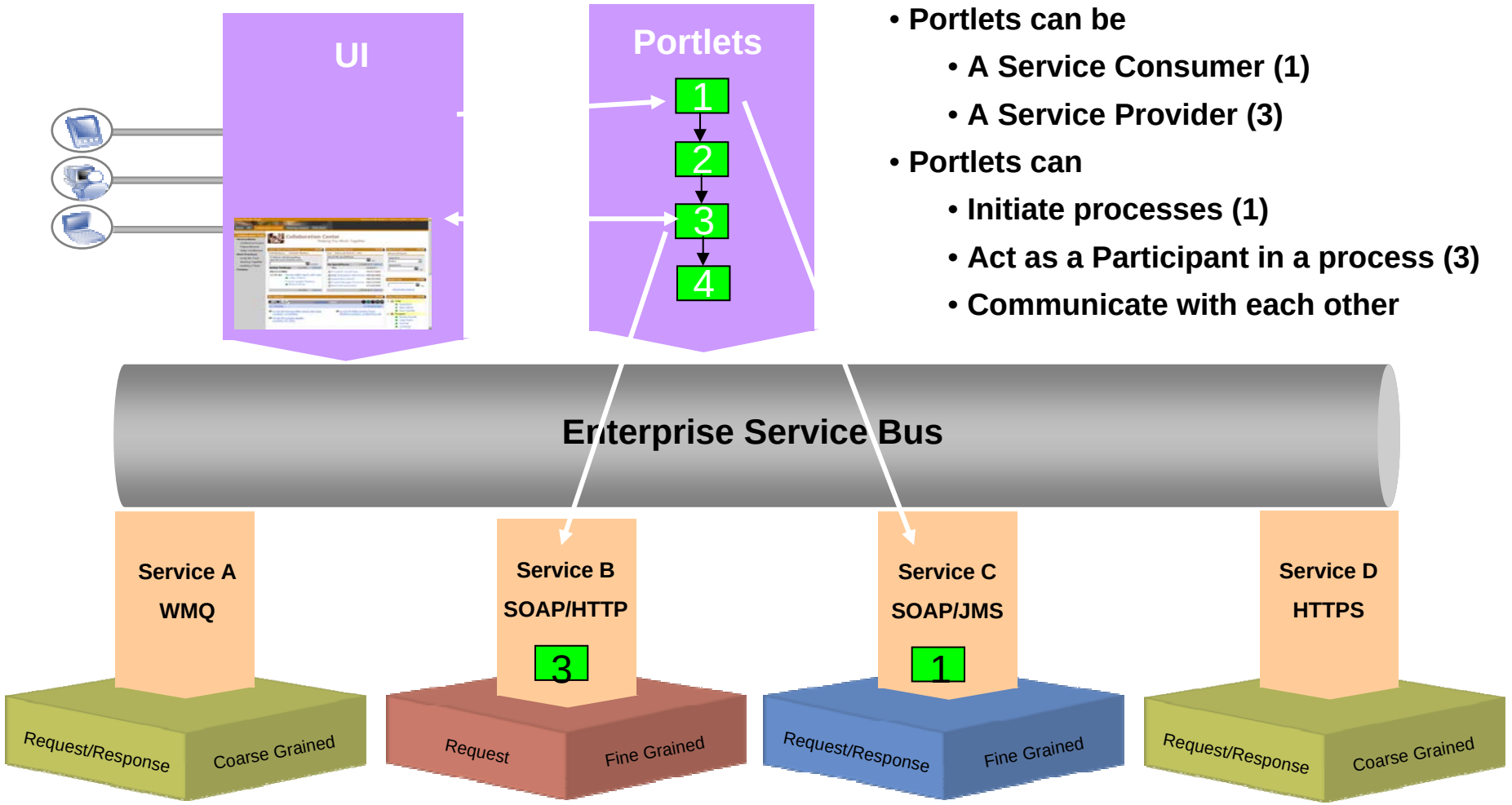
Scenario Realizations



People: Interaction & Collaboration 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**, relying on security for the managing user access
- Based on Web Servers, new is the use of **AJAX**
- Link with **Web 2.0**

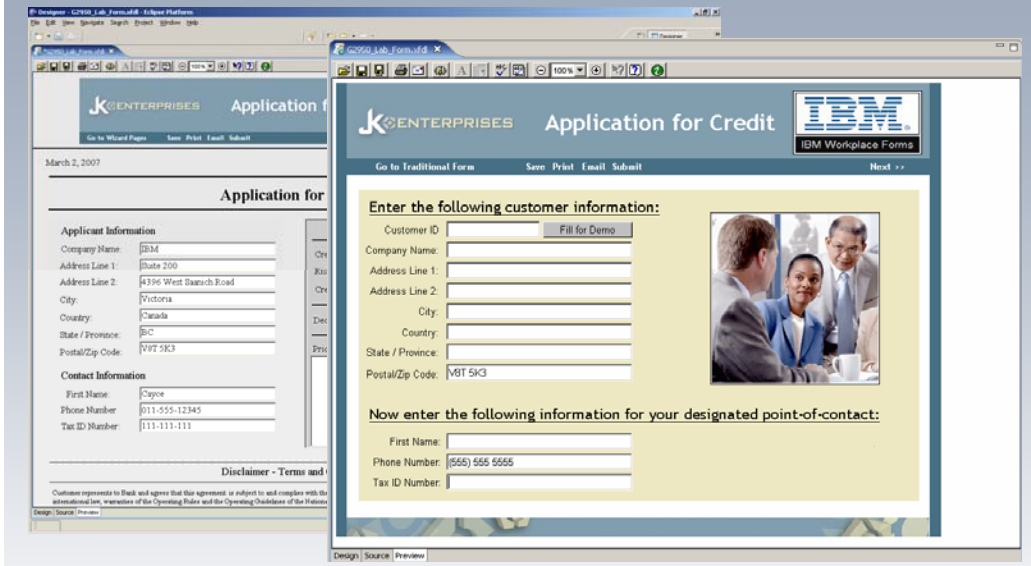
What is an Interaction Service?



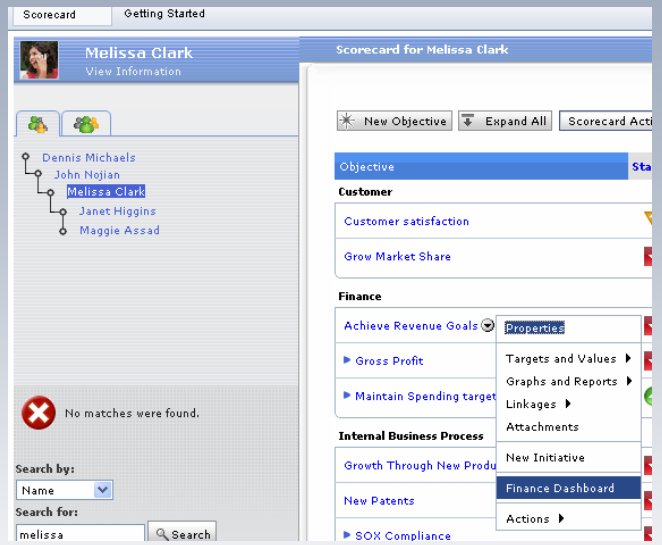
- Portlets can be
  - A Service Consumer (1)
  - A Service Provider (3)
- Portlets can
  - Initiate processes (1)
  - Act as a Participant in a process (3)
  - Communicate with each other

The Portal Framework Provides Service Aggregation

Building User Interaction Services

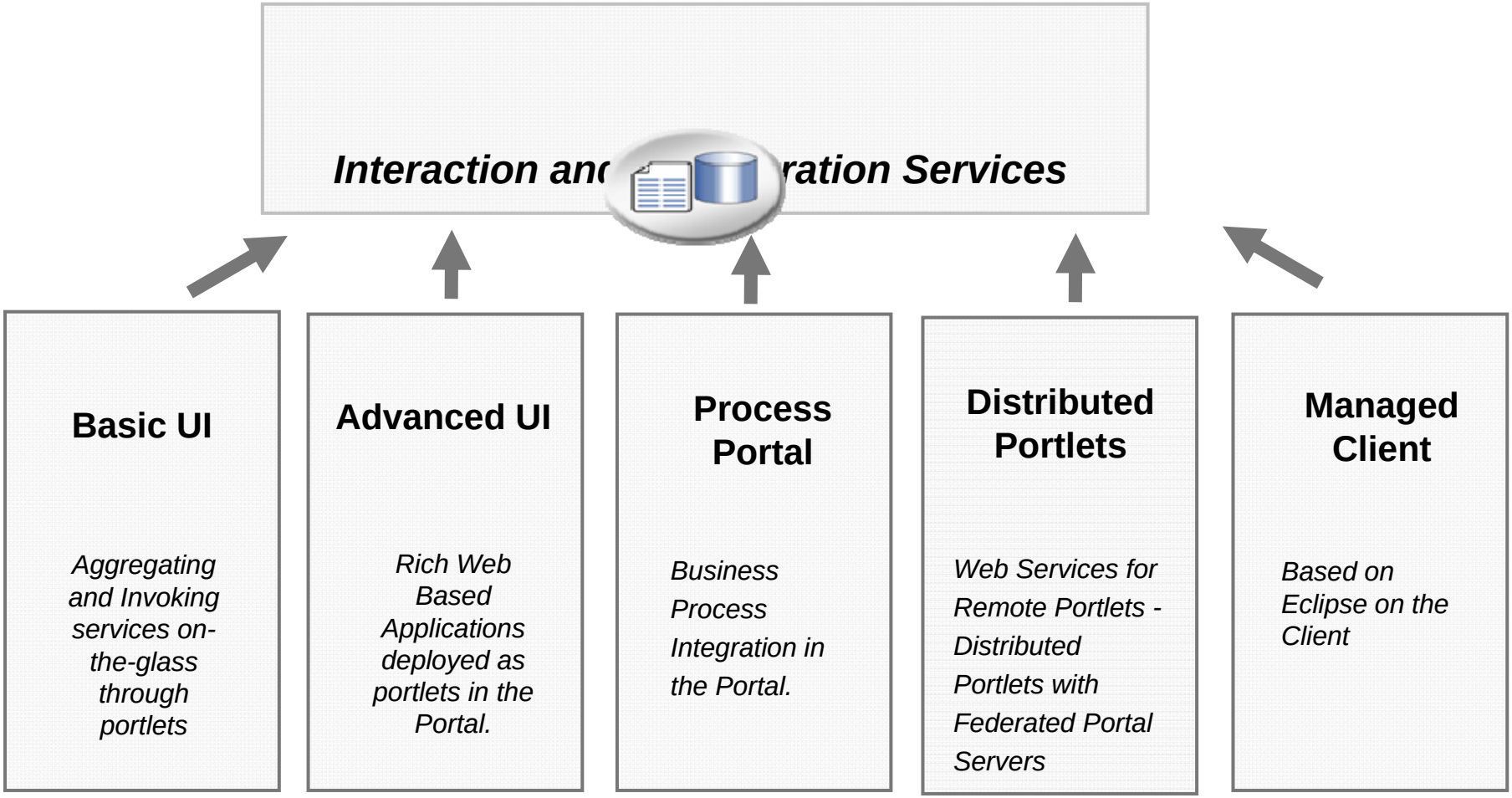


Developing and Deploying the "New Account" Application

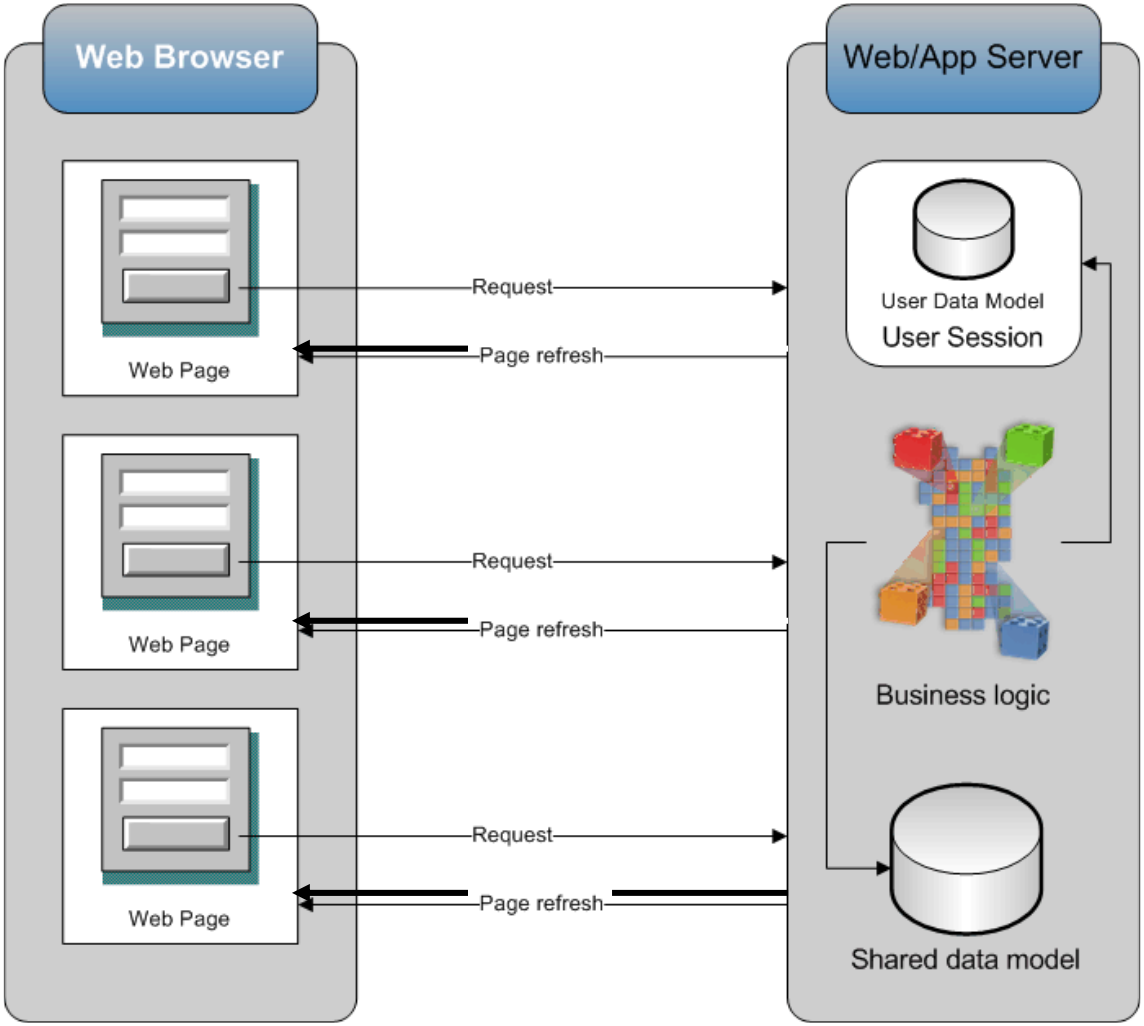


Building Role-Specific Portlets and Dashboards

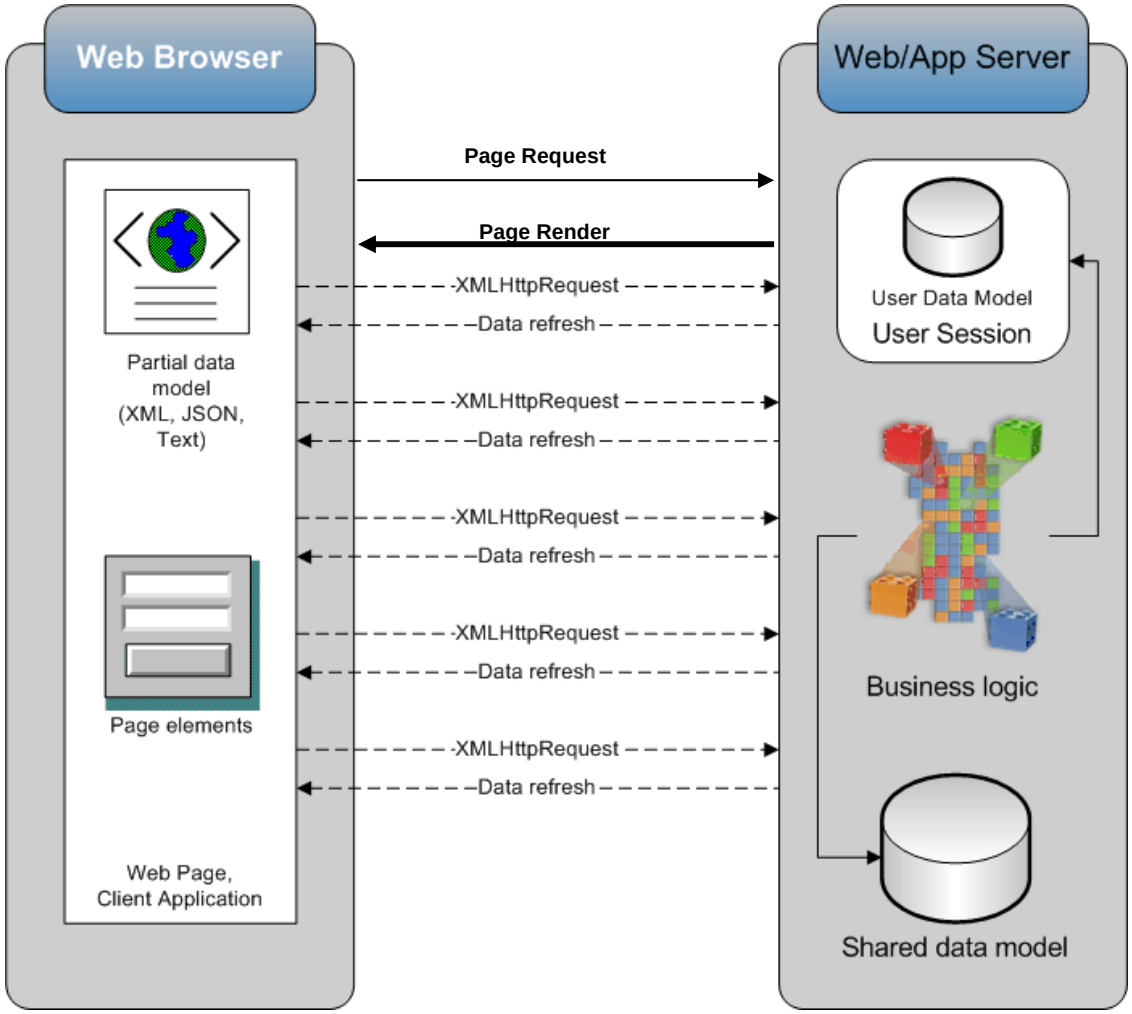
SOA Interaction and Collaboration Realizations



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

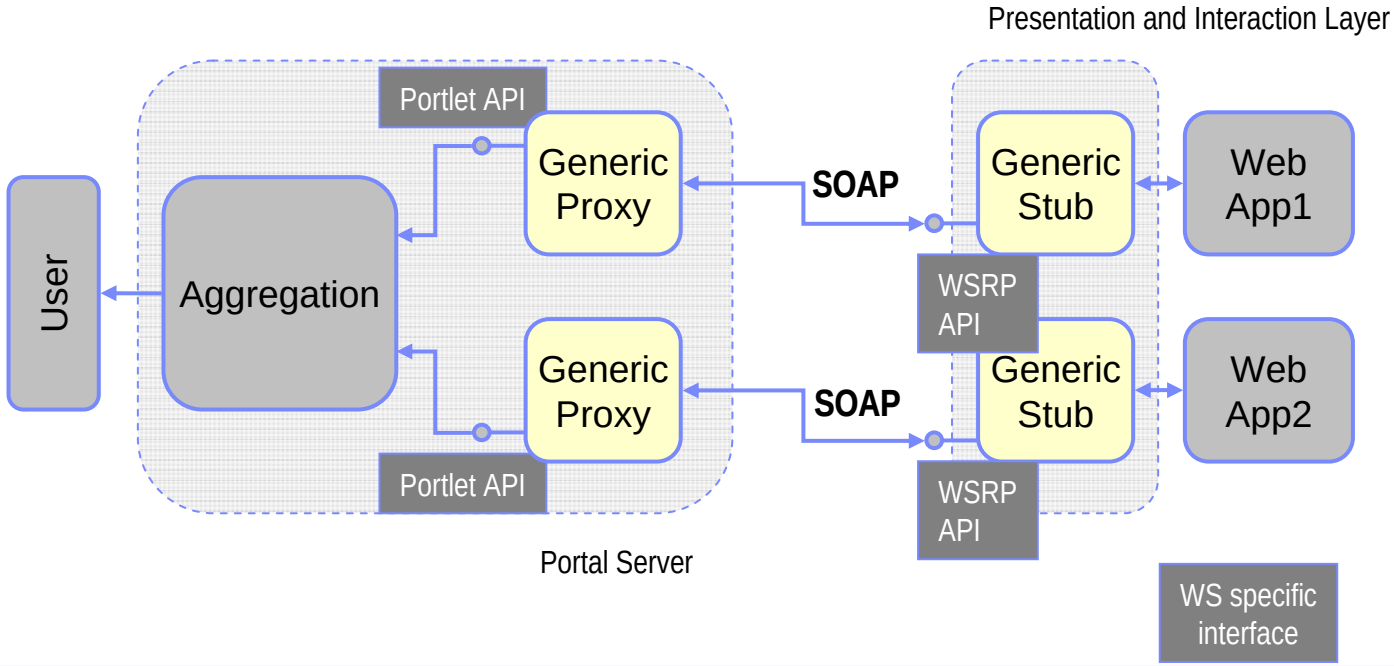


AJAX Web Interaction: Continuous user interaction with event driven processing and dynamic content refresh



Interaction with WebServices for Remote Portlets (WSRP) – Web Services for Remote Portlets

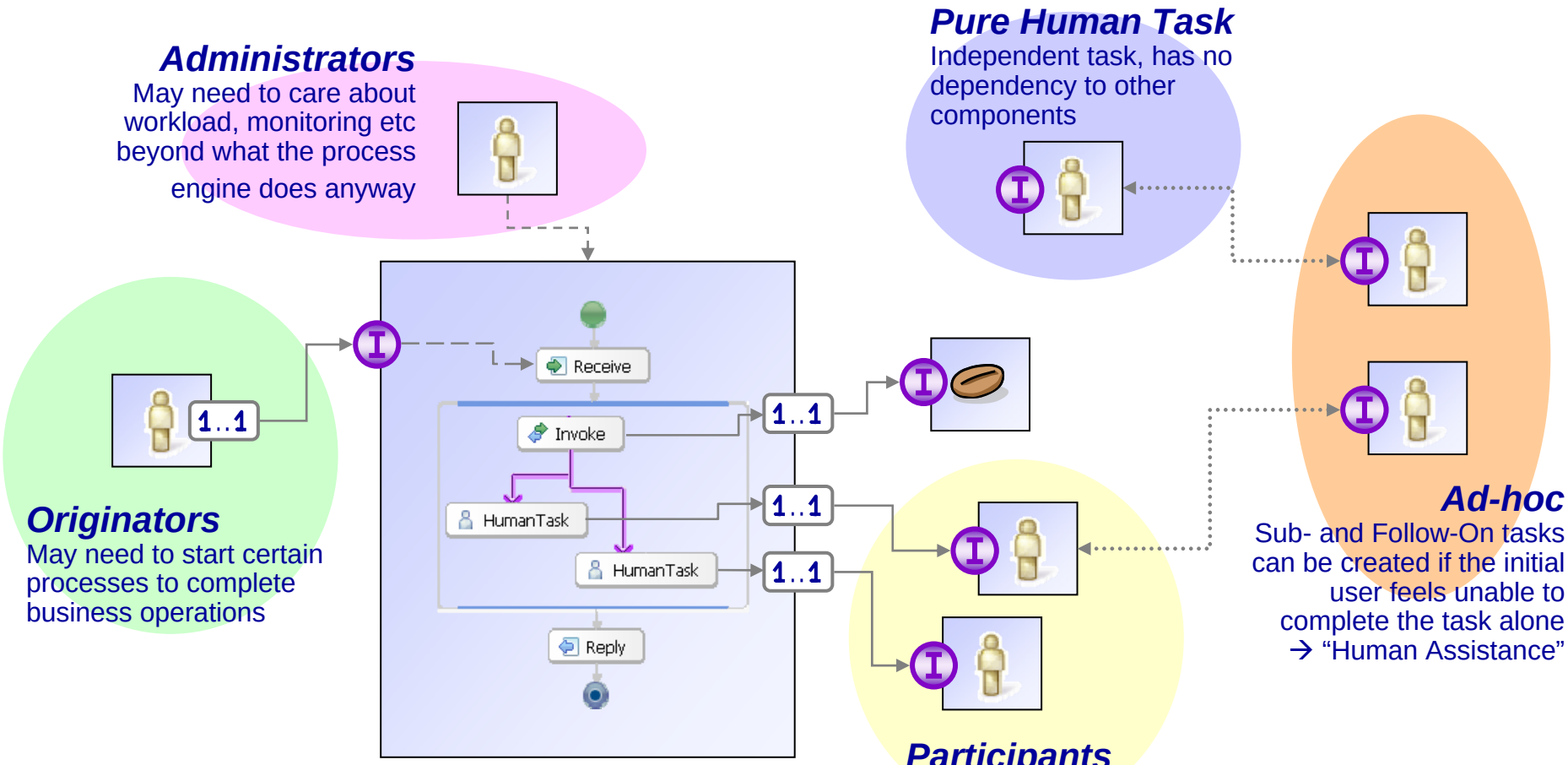
- All remote connections share a unified API ✓
- No coding required, proxy and stub are coded once or generated automatically ✓
- Stable and standardized transport mechanism (e.g. SOAP) ✓
- Visual and user-facing ✓



Process: Business Process Management / Process Services in SOA Reference Architecture

- Integrates and synchronizes business systems and choreographs business and system activities into reusable process components
- Includes Business Process Modeling and Assembling of Business Processes with Services – see SOA Part 2
- Automated processes reduce administrative time and adaptable and reusable processes to enable faster reaction to business indicators – provided by Business Process management – see Chapter I
- Supports Human Interactions

Human Tasks – Included in Portals

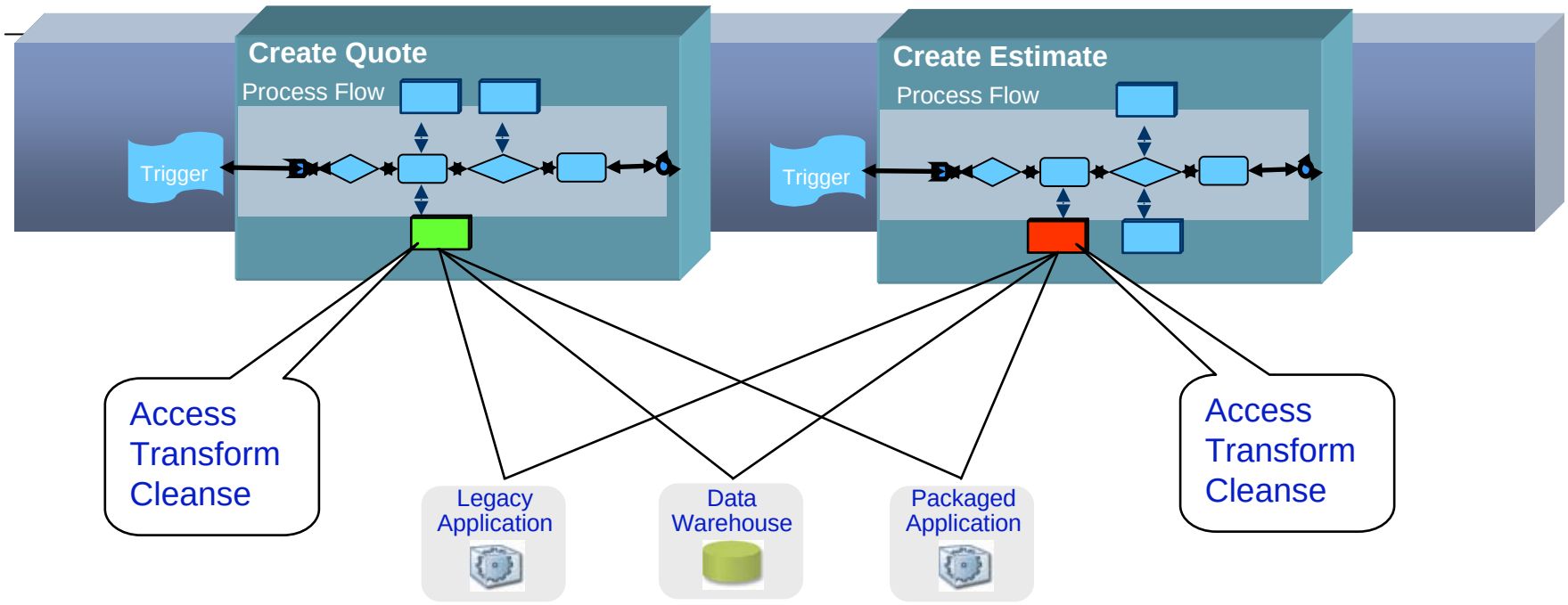


...Human Tasks can be called from other Component types (e.g. Business Rules)

Information: Information as a Service / Information Services in SOA Reference Architecture

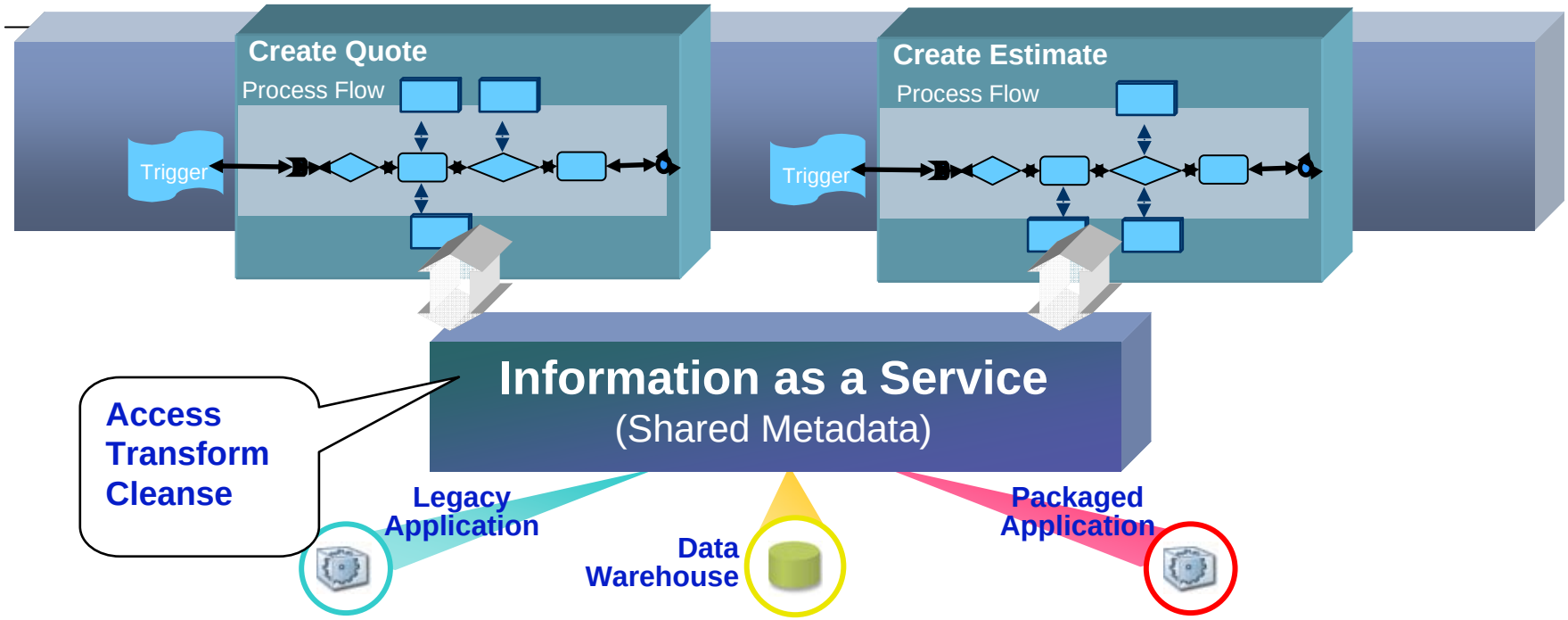
- Delivering actionable information to people and processes
- Connect, enhance and deliver in-context information across diverse operating systems, applications and legacy systems through reusable services
- The Information Services enables consistent views and maintenance of data and content, providing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

Information: 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

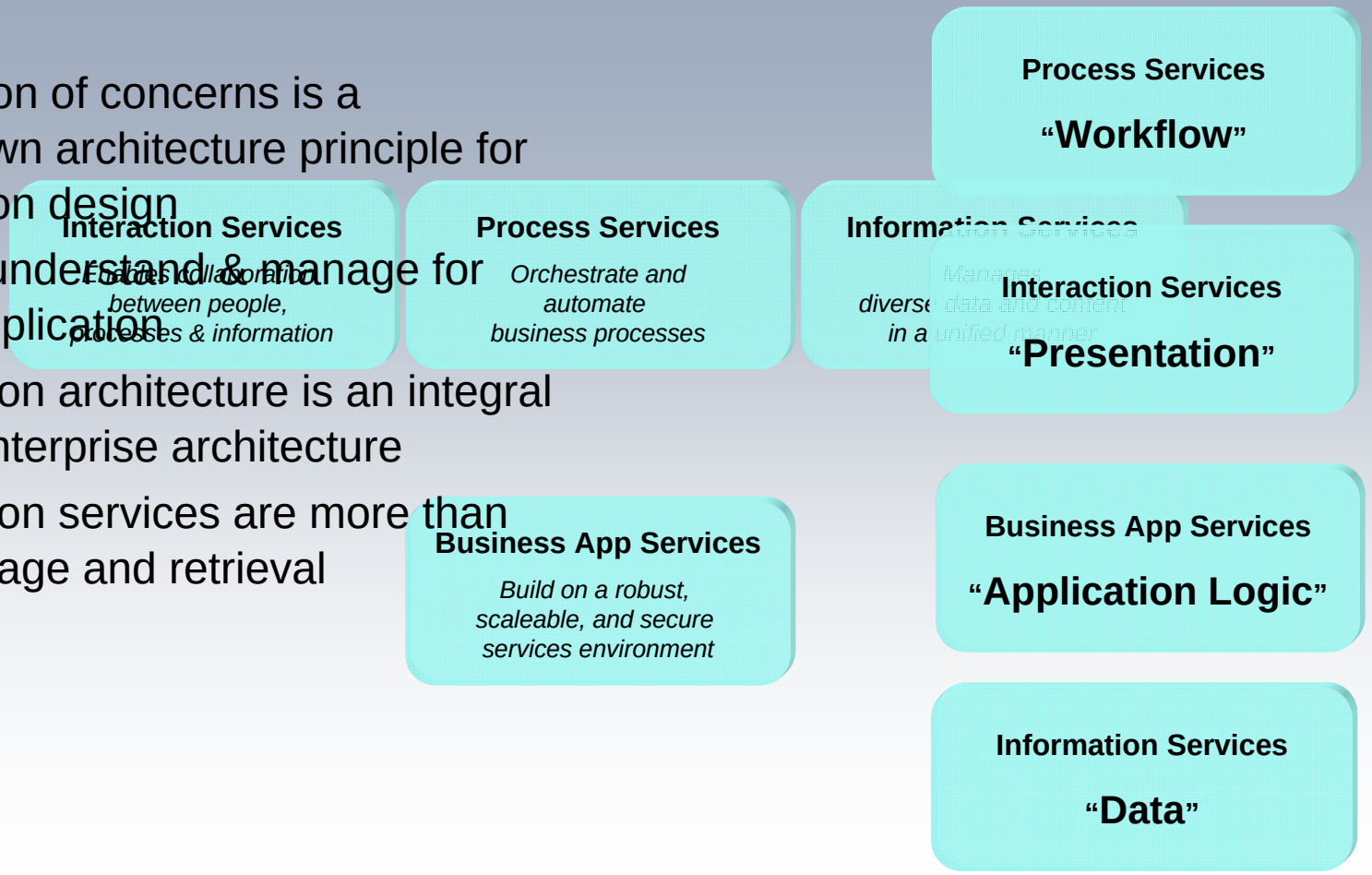
Information as a Service (IaaS) as Solution



- 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…

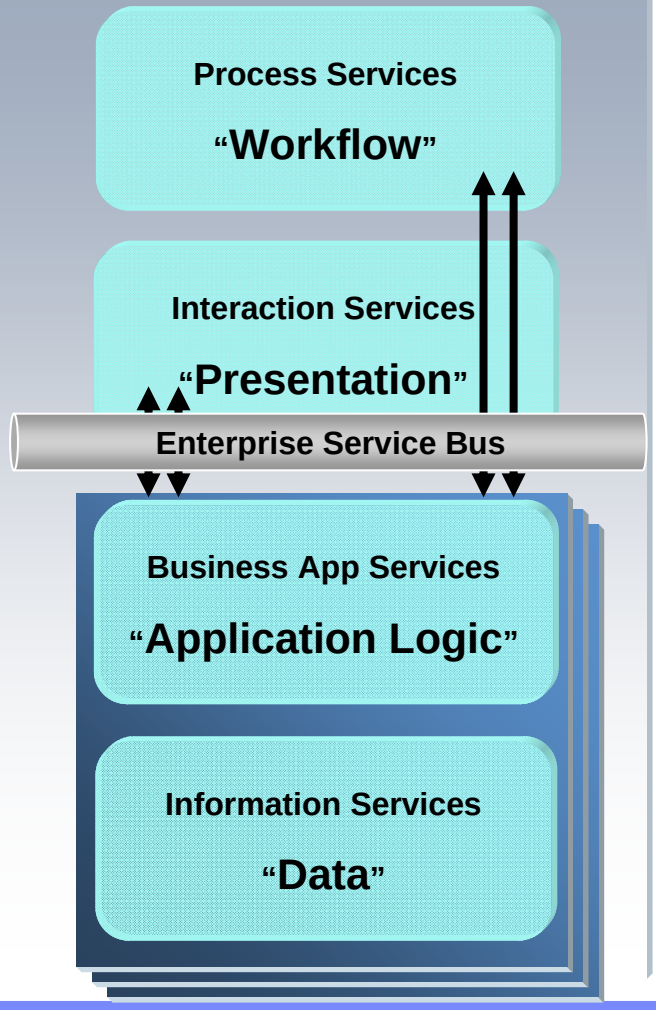
- Separation of concerns is a well-known architecture principle for application design
- Easy to understand & manage for single application
- Information architecture is an integral part of enterprise architecture
- Information services are more than data storage and retrieval



Separations of Concerns Focussing 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**



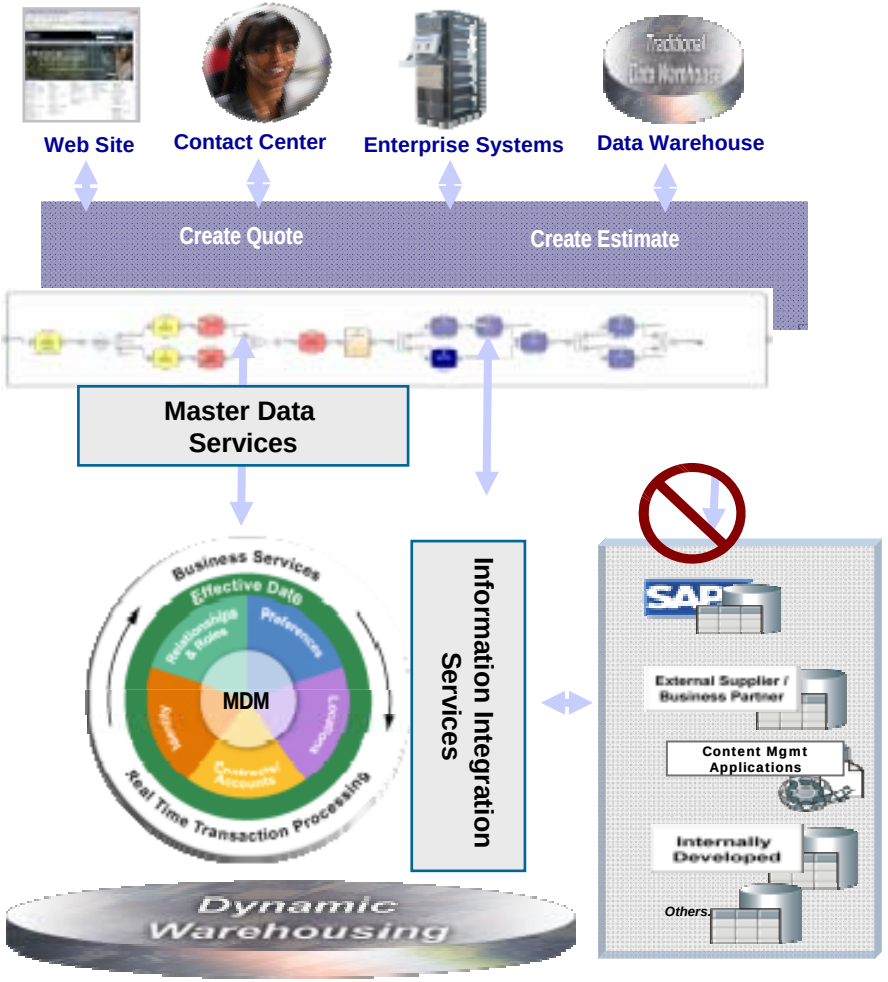
Information as a Service

Critical business initiatives depend on Information

Key Issues
- Separation of Information & Process
- In-context delivery

Enablers
- Information Infrastructure
- Metadata Management

Hot Topics
- Dynamic Warehousing
- Analytic Services
- Models and Metadata



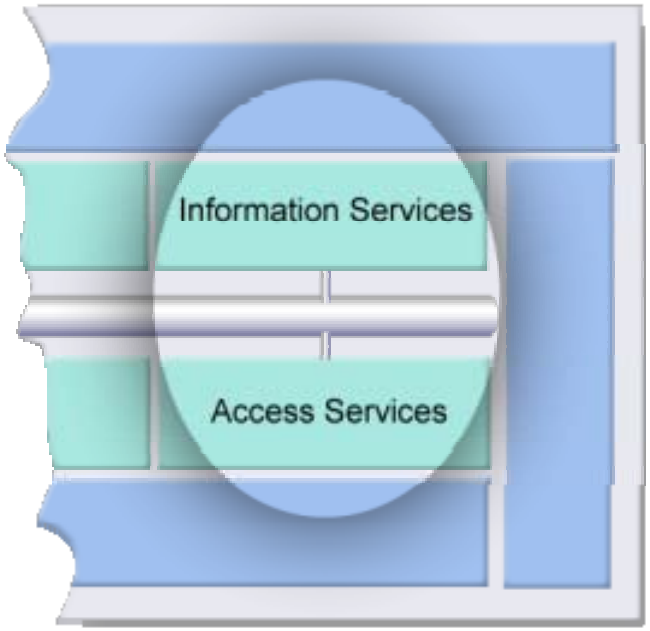
Classifying Information Services patterns
Identifying usage patterns to focus the business case

Data Complexity, & Accessibility

Deliver trusted information as a service

Multiple Versions of the Truth

Build master data services for product and customer info



An enterprise-wide information management strategy increases the chance of success for service oriented architecture efforts by at least 70%...

Gartner, February 2006

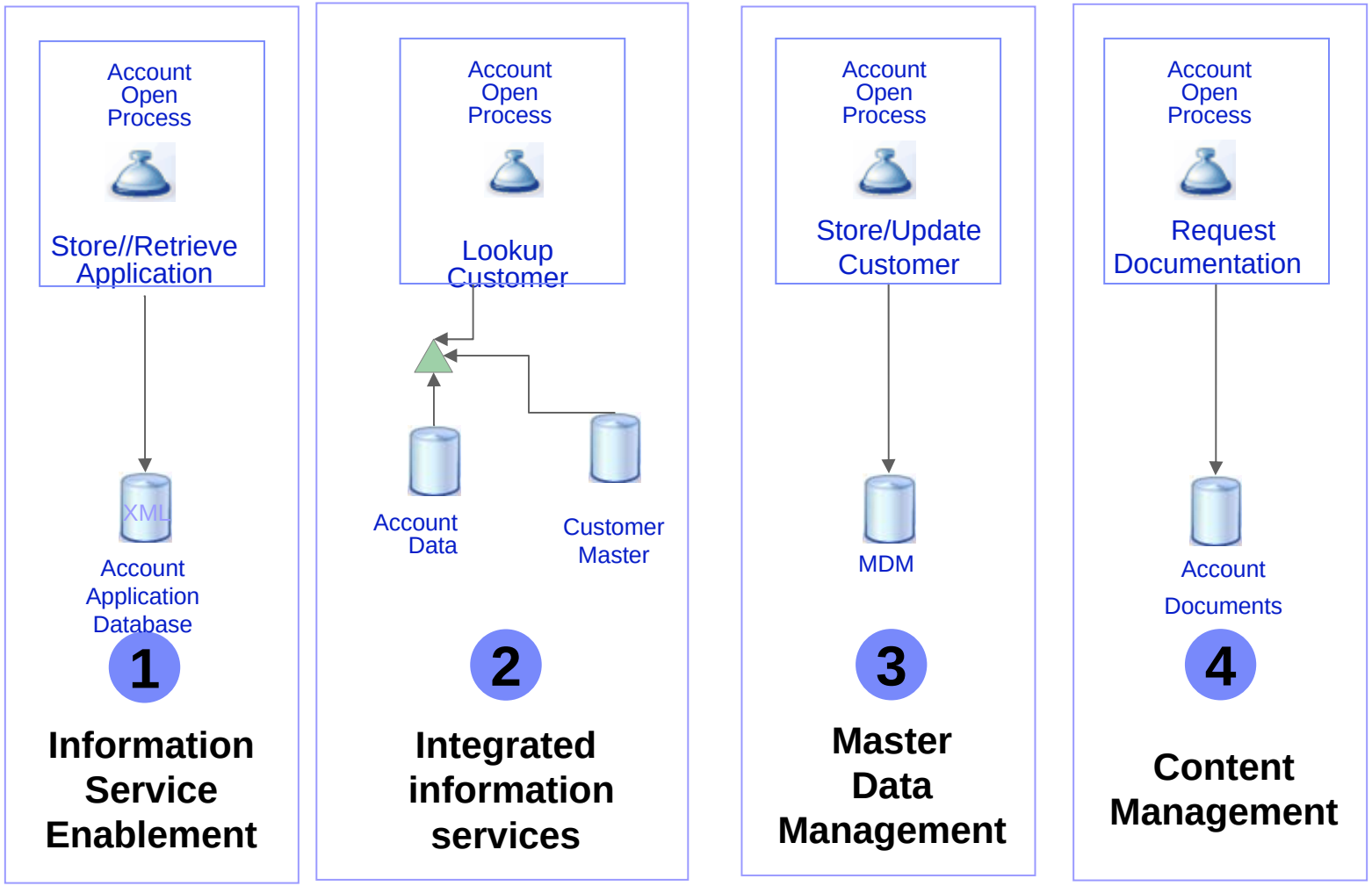
Enterprise Content Management

Build services to integrate content into processes

Real time access to analytical information

Deliver analytical services for structured an unstructured data

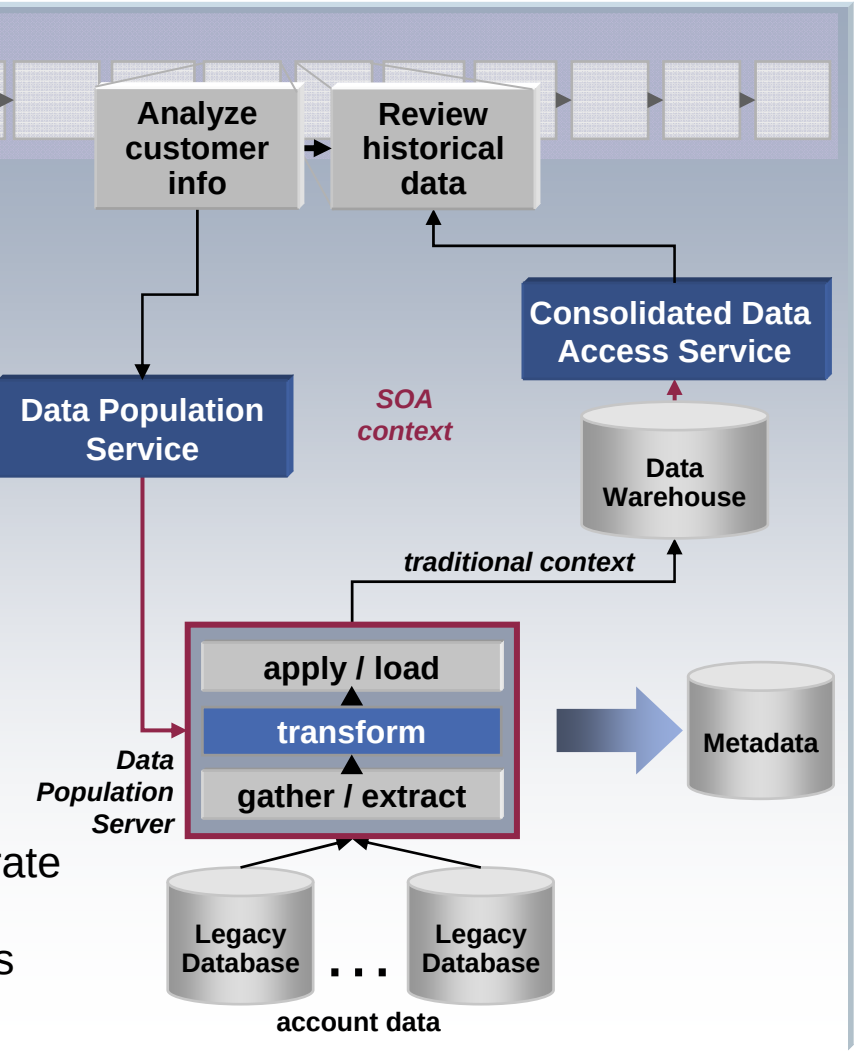
IAAS Patterns in JK Enterprises



IaaS Example – Transform Your Data

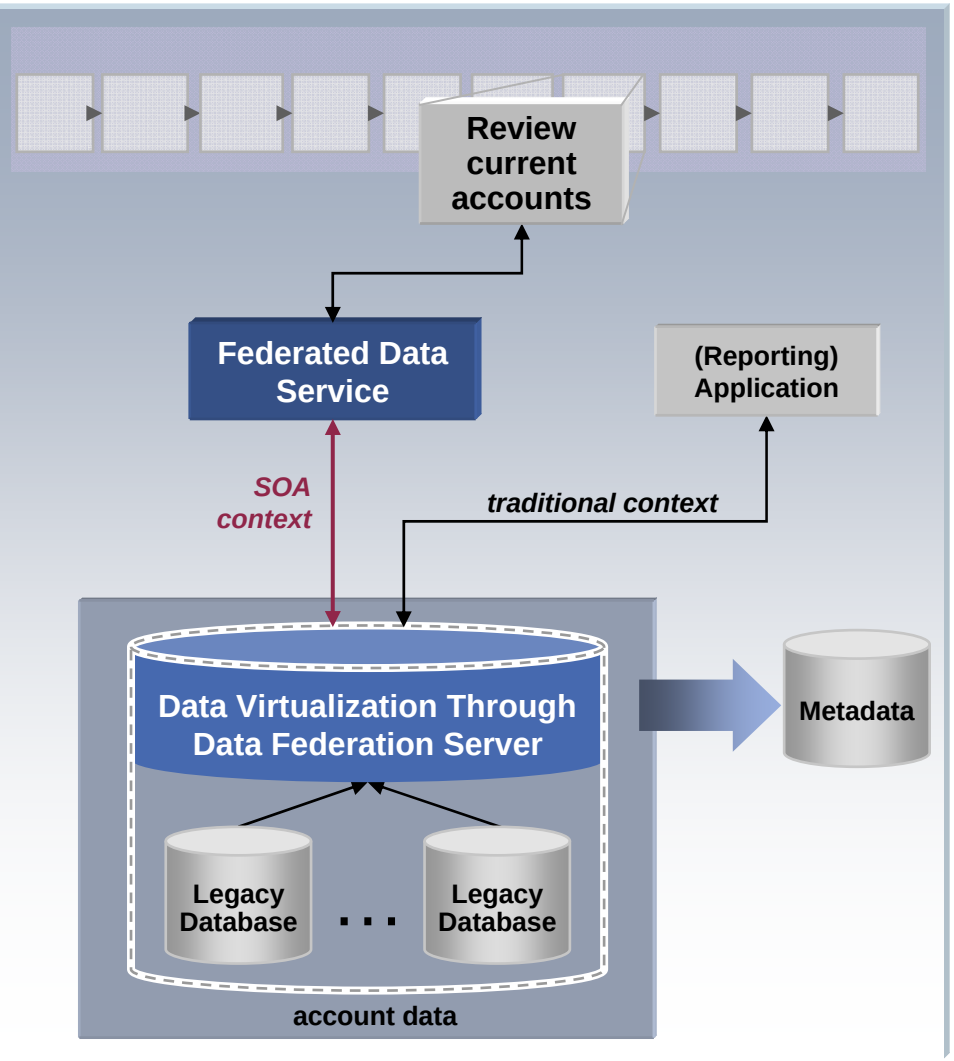
Create Trusted Information from Disparate Sources

- **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



IaaS Example – Deliver Your Data
Virtualized Through Services

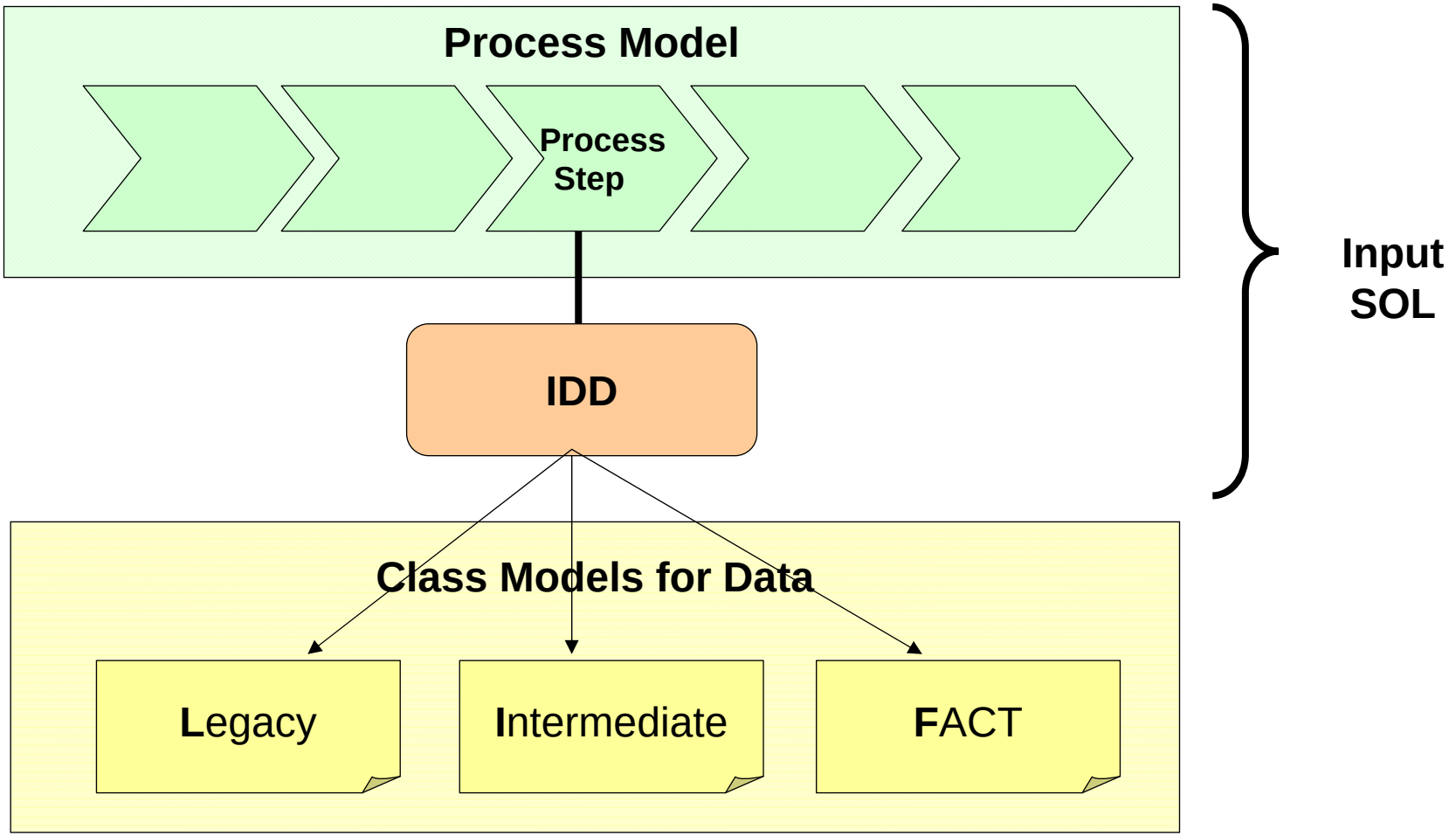
- **As-Is Environment**
  - Data resides in disparate sources
  - Manual & redundant integration of data by multiple consumers results in high costs and inconsistent/inaccurate data
  - Slow response time due to inefficient real-time access
- **Solution Characteristics**
  - On demand integration instead 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



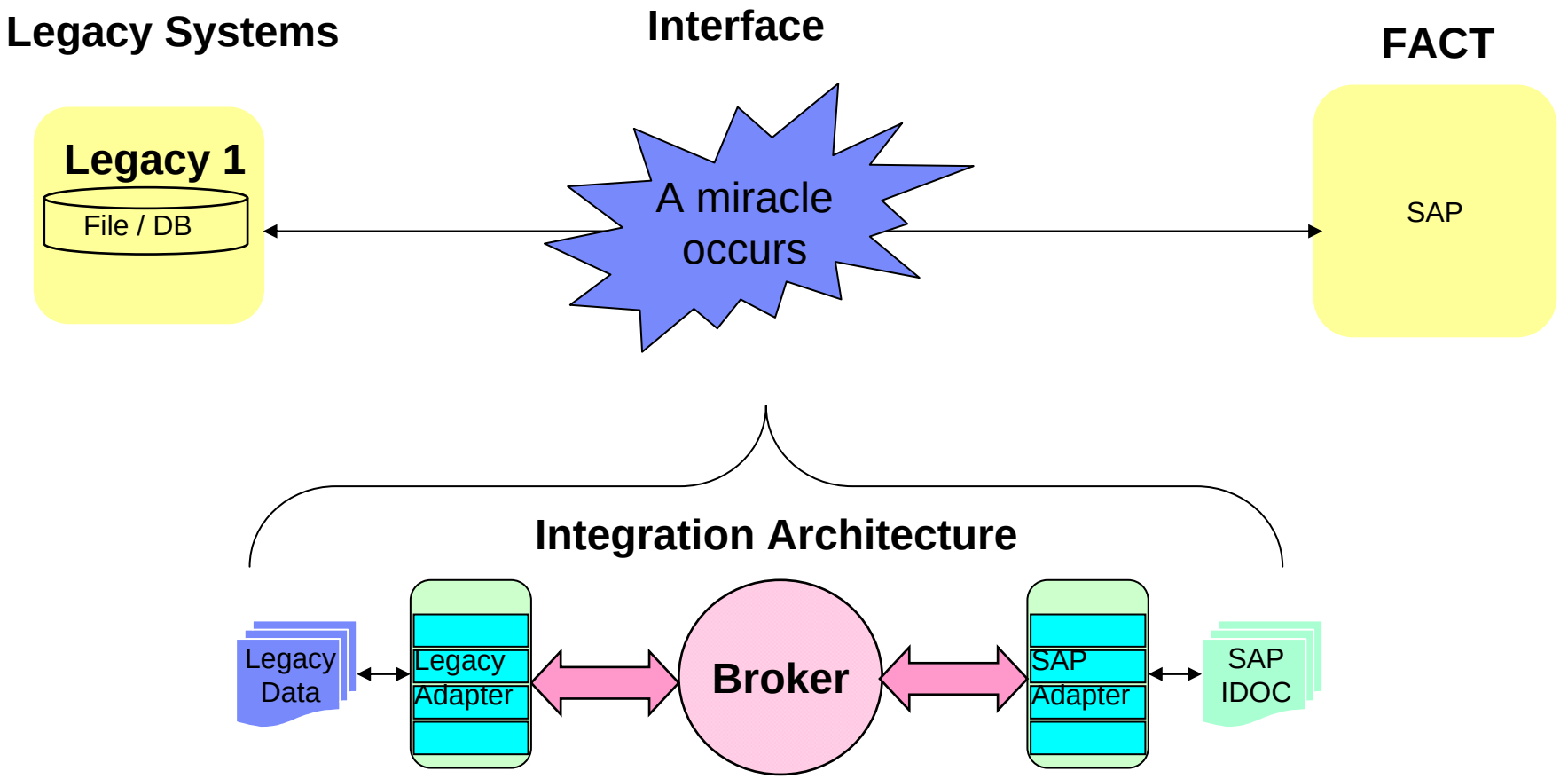
III. Student's Presentation(s)

IV. Solutions Case 2 (FACT)

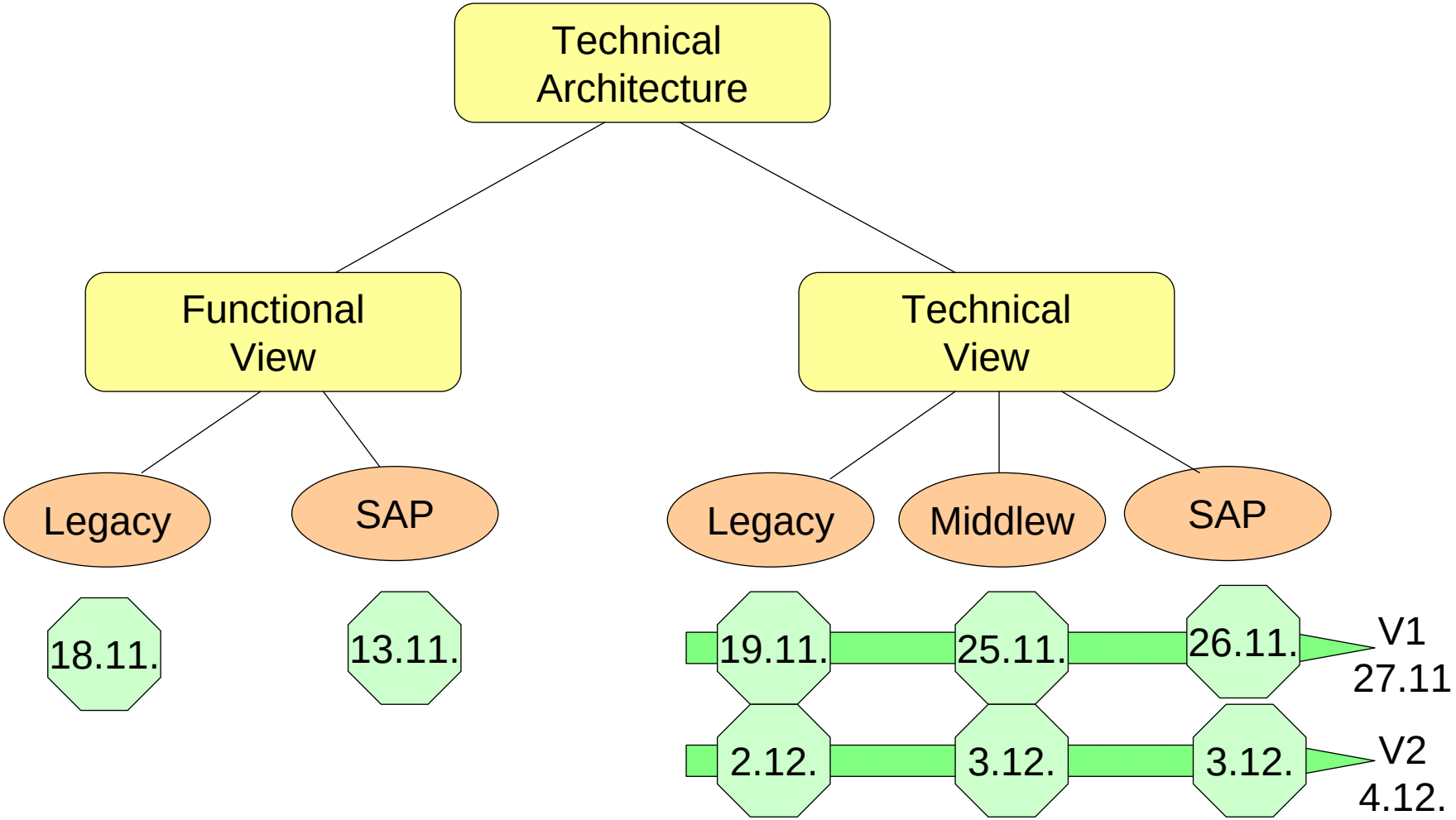
Process Model / IDD / Class Models for Data Structures



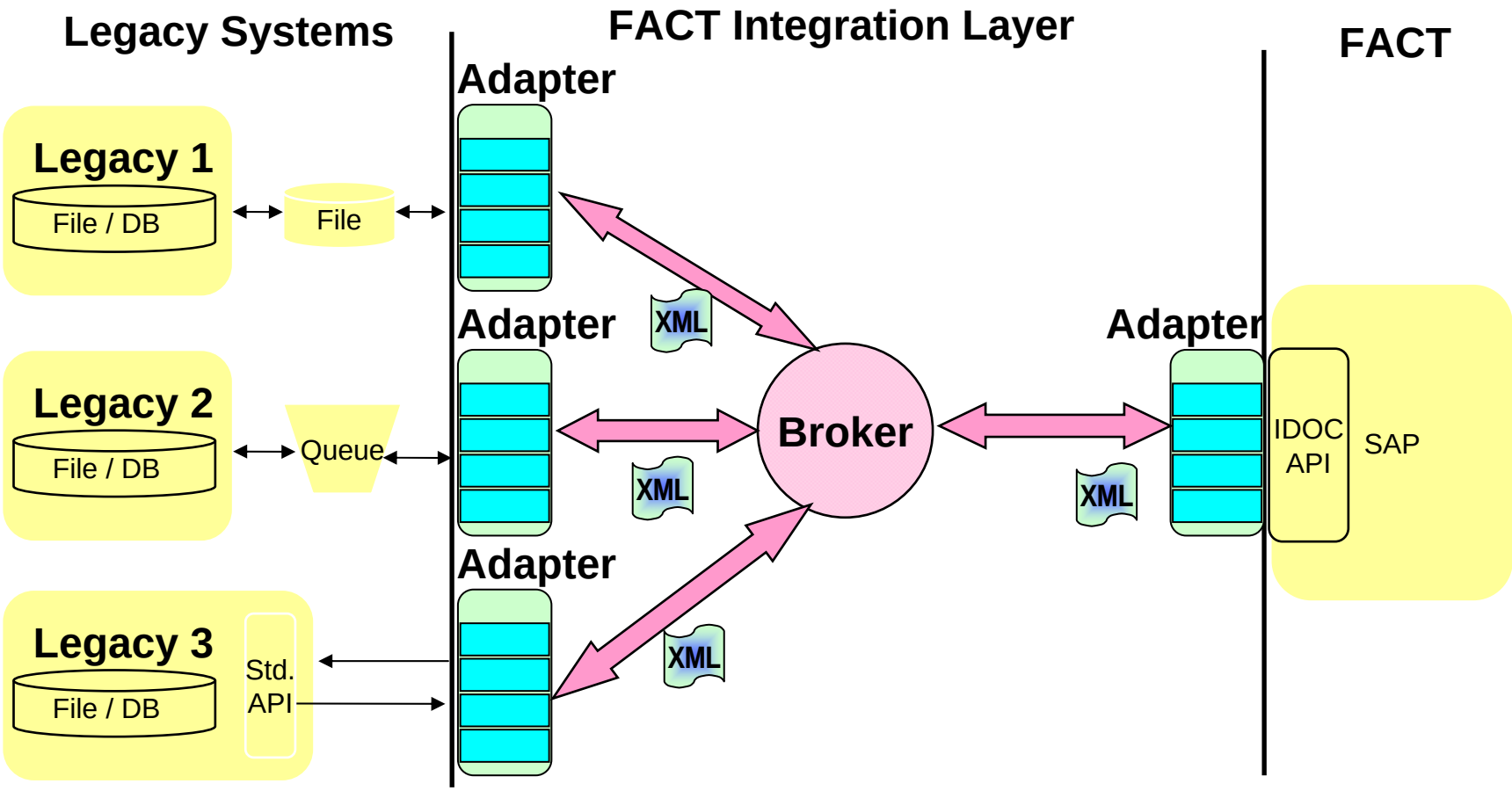
Integration Architecture is about breaking “Interfaces” into smaller chunks



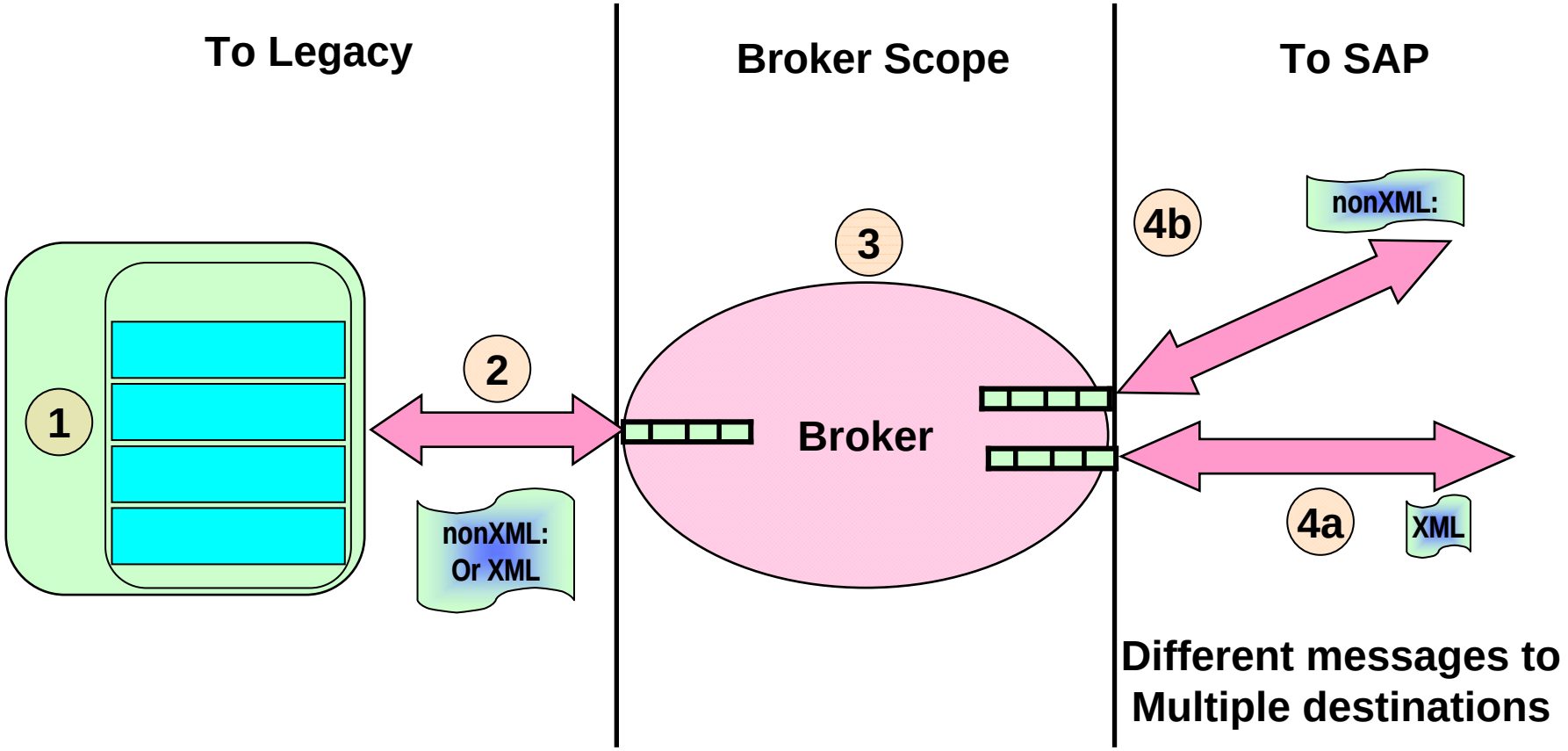
Technical Architecture – Planning End of 2003



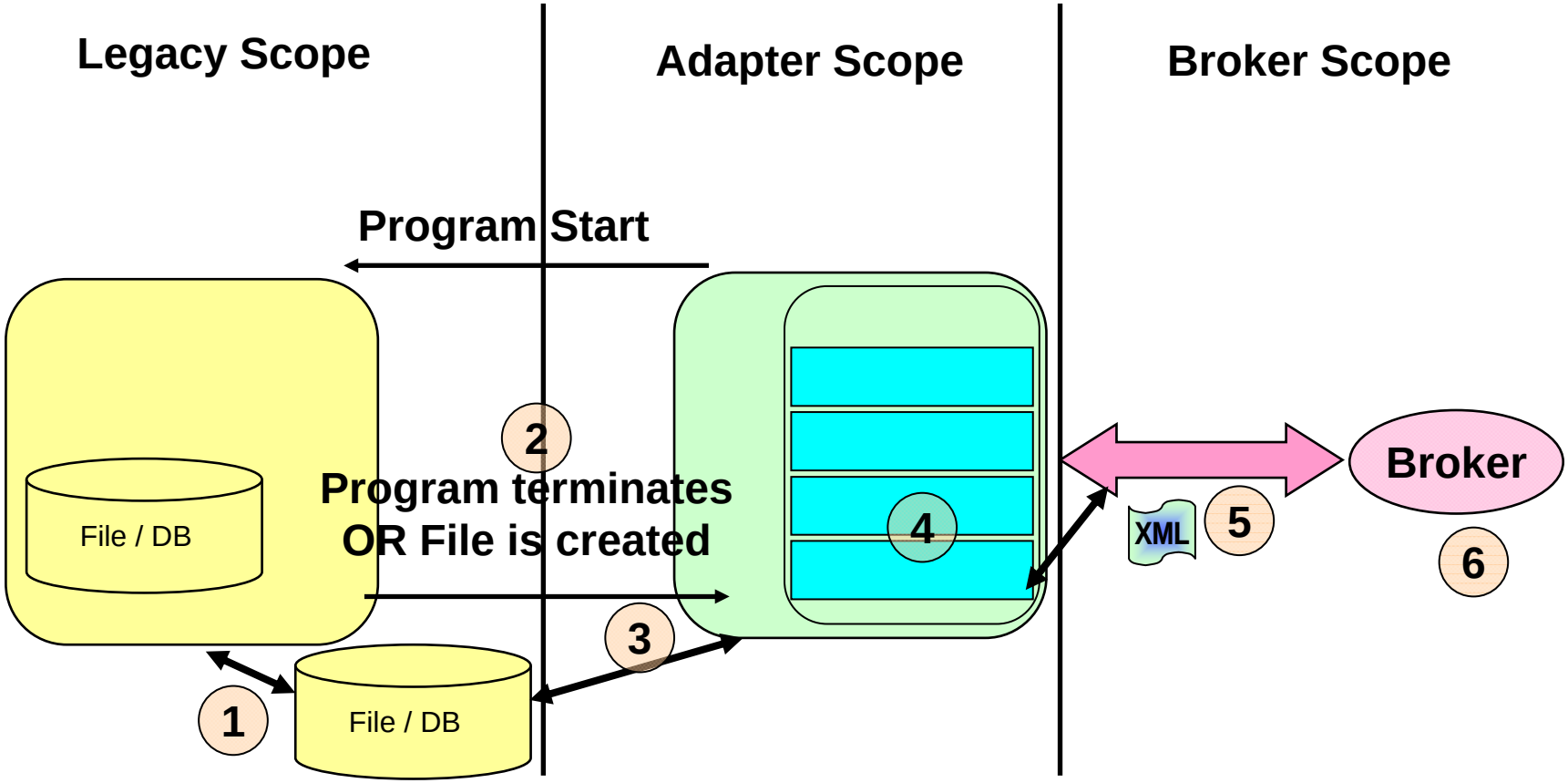
FACT Integration Layer – Technical View



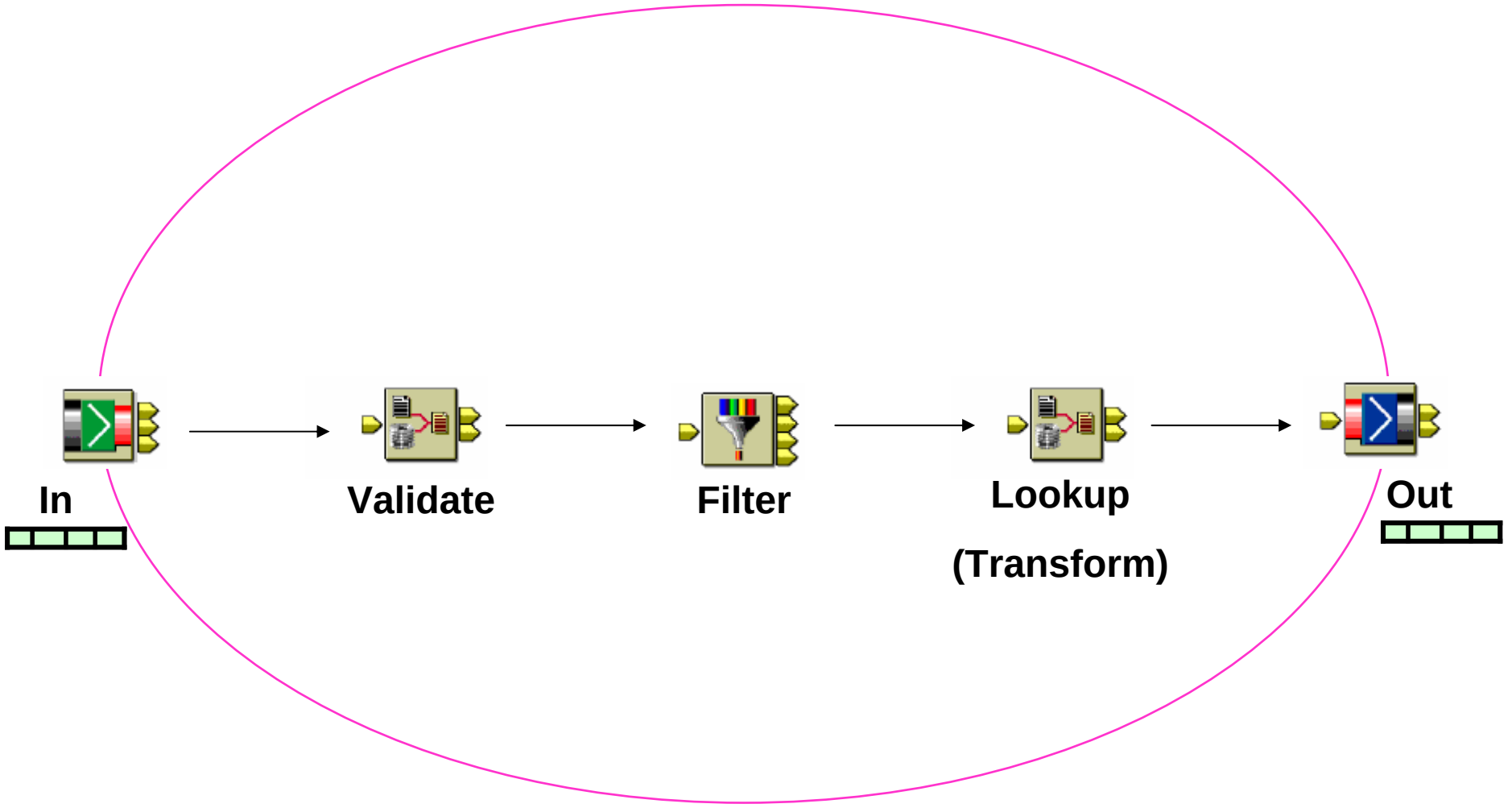
Example use of Pattern: one-to-many with different messages (Feed and R/R – Request/Reply)



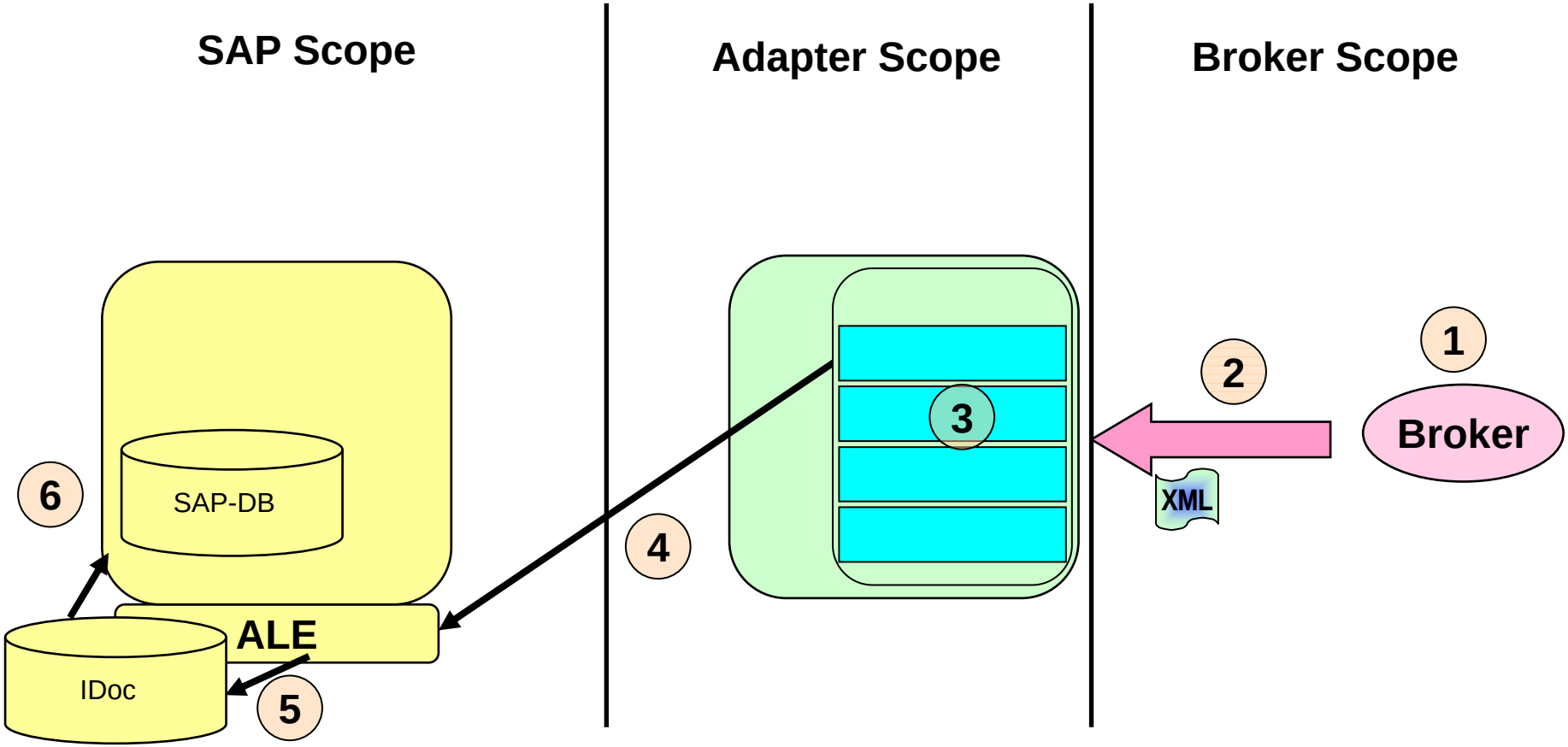
Patterns for Information Flow “Feed” – 1: Legacy



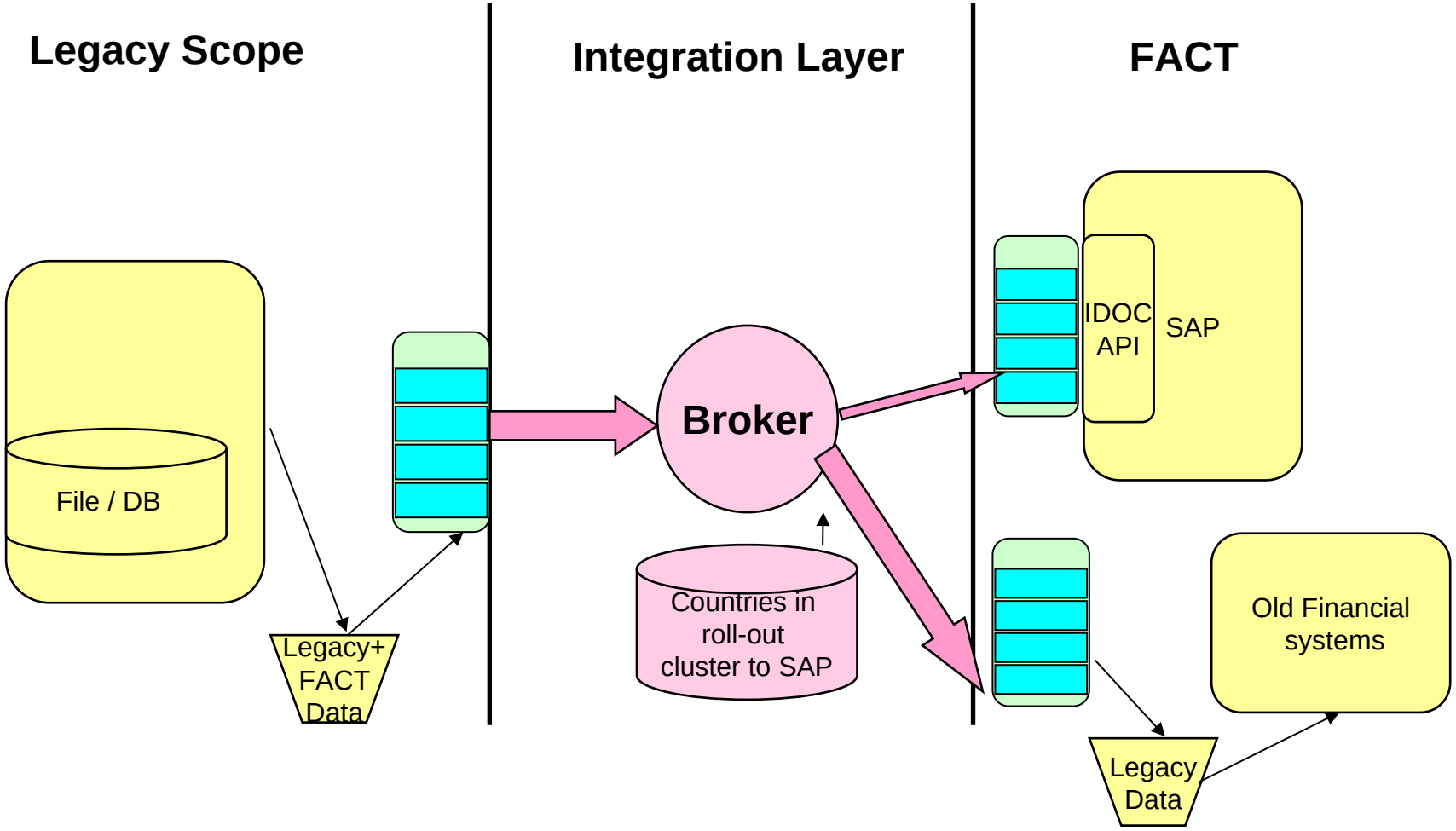
Patterns for Information Flow “Feed” – 2: Broker Flow



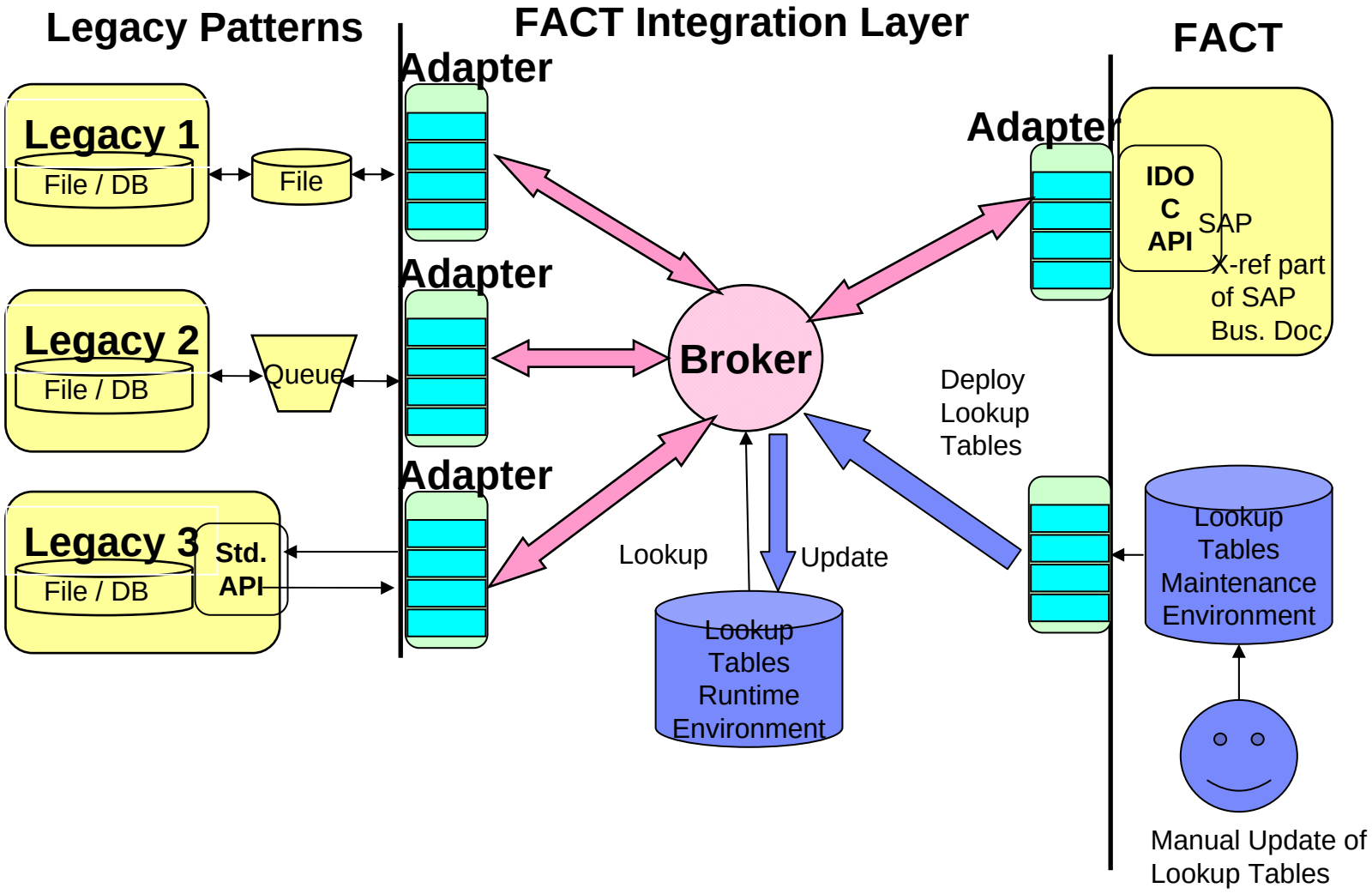
Patterns for Information Flow “Feed” – 3: SAP



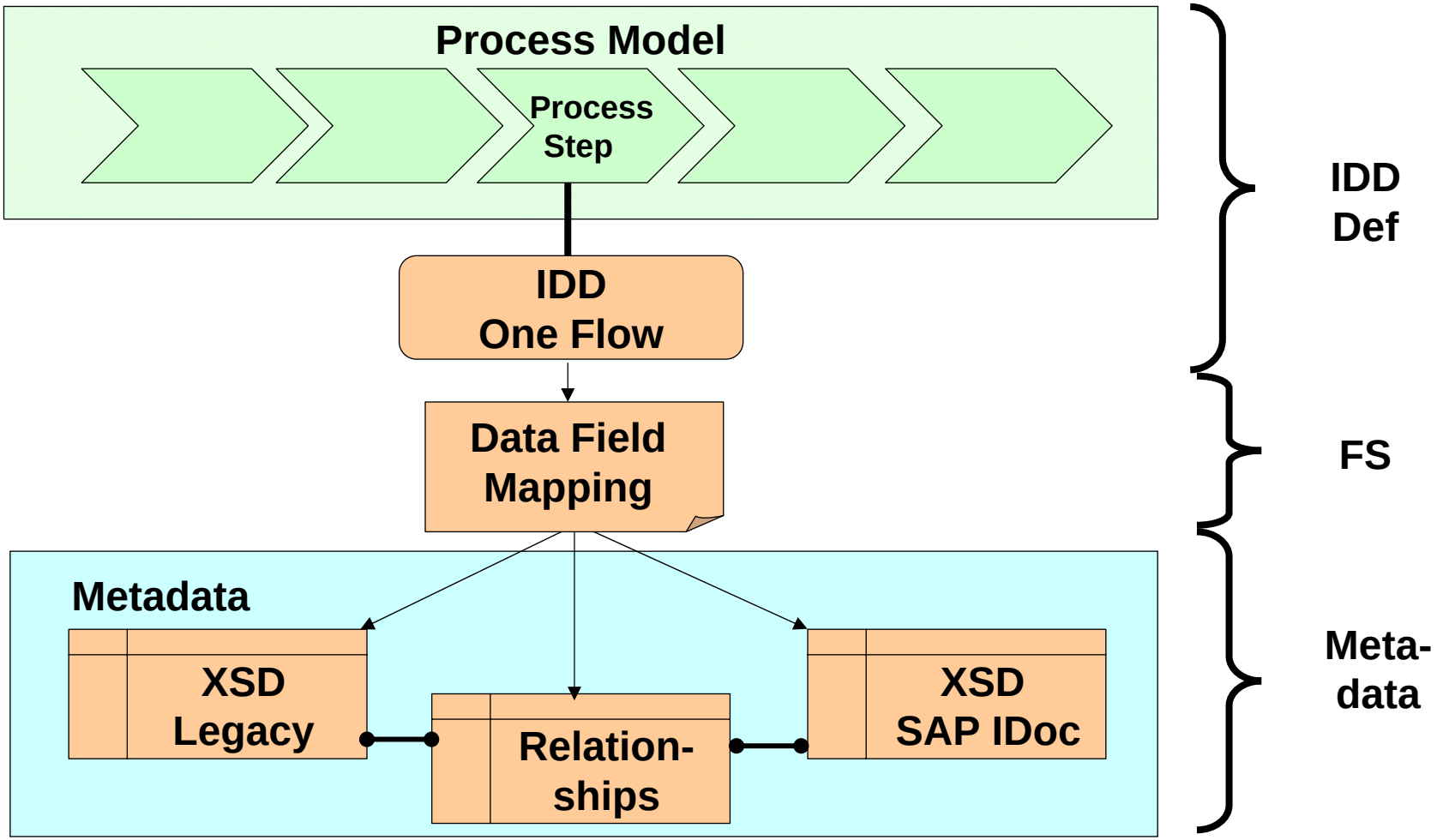
Technical Architecture Specifics: Switching supported by Country Dependent Routing



Technical Architecture Specifics: Translation of codes



Deliverables of Data Structures for an IDD



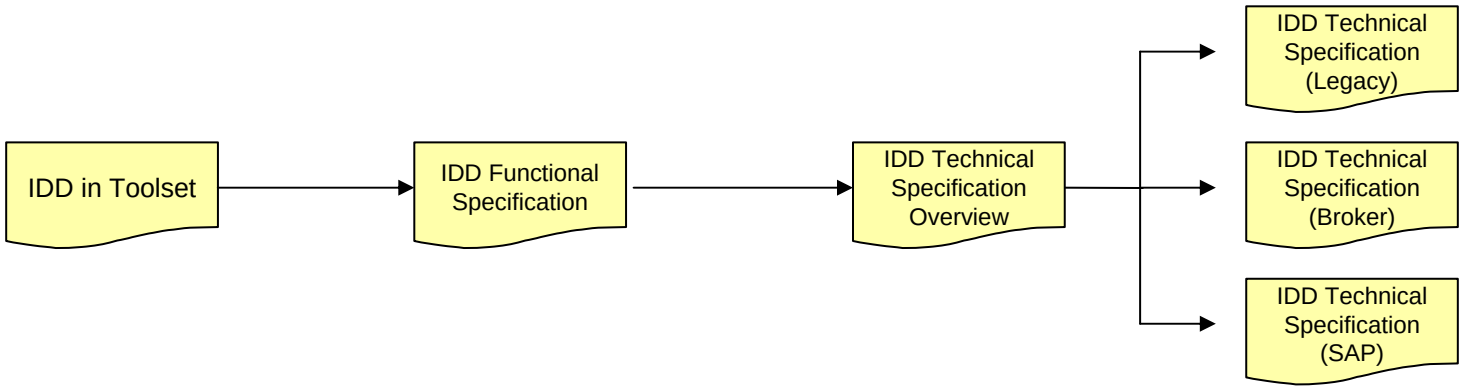
Overview

- IDD (Interface Detailed Definition) related to a step in the Business Process – may include multiple information flows

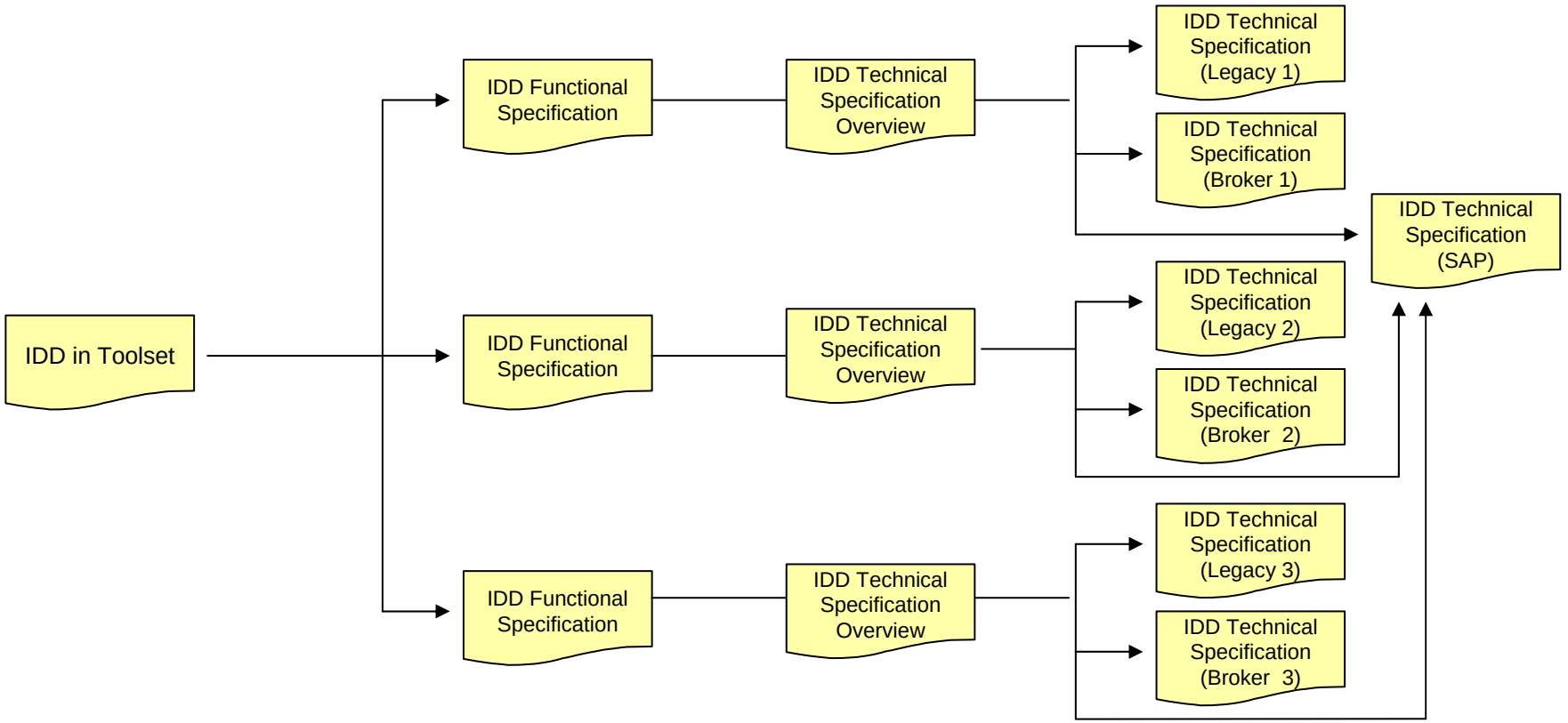
- FS (Functional Specification)
  - *Functional Specification* (FS) defines data (SAP and Legacy) from Business Perspective, including some transformations
  - Data Structure include IDoc / BAPI as well as Legacy interface data structure to be used and or customized

- 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

Functional and Technical Specification: IDD and Regular Information Flow



Functional and Technical Specification: IDD and Multiple Information Flows



Overview