Web Services - A Consultant's View
From IT Stategy to IT Architecture

transforming results
PWC CONSULTING

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A business of PRICEWATERHOUSECOOPERS

Agenda

I. Motivation
II. Real World Situation
III. From Business to Architecture
IV. What an Architecture has to provide
V. From Architecture to running services
VI. Summary: Outstanding Issues & Conclusion

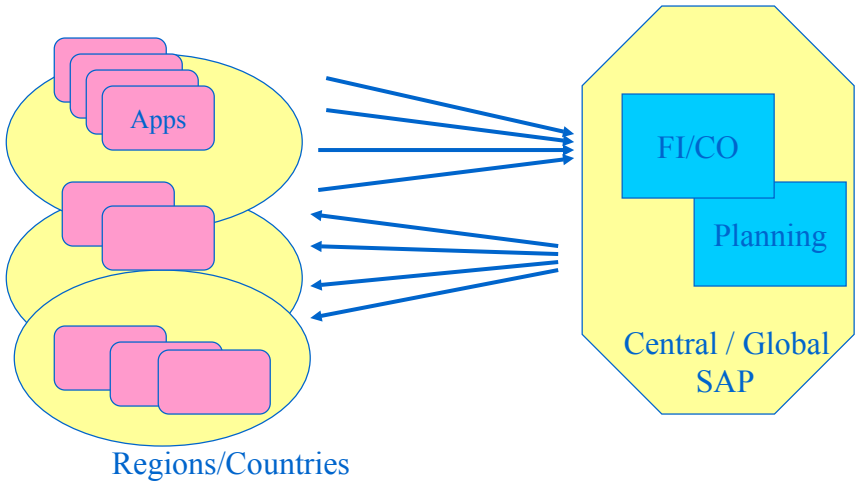
I. Motivation

- Consultant‘s View:
  - Integration plays an important role
  - Coexistence of existing applications with new ERP systems
- Promise Web Services
  - Bridging gaps among heterogeneous platforms
  - Faster Development
  - Easier collaboration of organisations
  - Enabling SOA (Service Oriented Architecture)
- *Let‘s perform a reality check*

II. Real World Situation

- PwC carries out large projects with global customers:
  - New business processes must be implemented, e.g. for global operations
  - New governance procedures over heterogeneous business environments must be supported
  - Solutions crossing boundaries of divisions, companies must be provided
- Facets of integration solutions are:
  - Global or regional solutions
  - Regional / country / plant specific software components
  - Heterogeneous infrastructure (hardware and software)

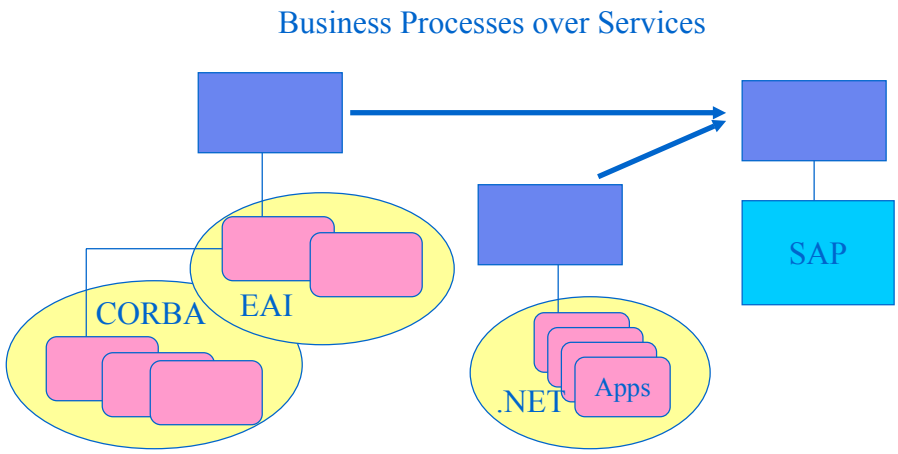
Business and Application Landscape



Examples of Application Landscapes

- Examples:
  - Operational systems in each company feed global FI/CO system, which provides controlling on the holding level
  - Production planning on the corporate layer drives production in local plants
  - Consolidation of planning across various legal entities
  - Central procurement system
- Implications of new IT Strategies:
  - Implementing new business processes for reporting
  - Replacement of local FI/CO systems by a global solution
  - Regional IT support instead of IT support per country

Mix of platforms – a closer look



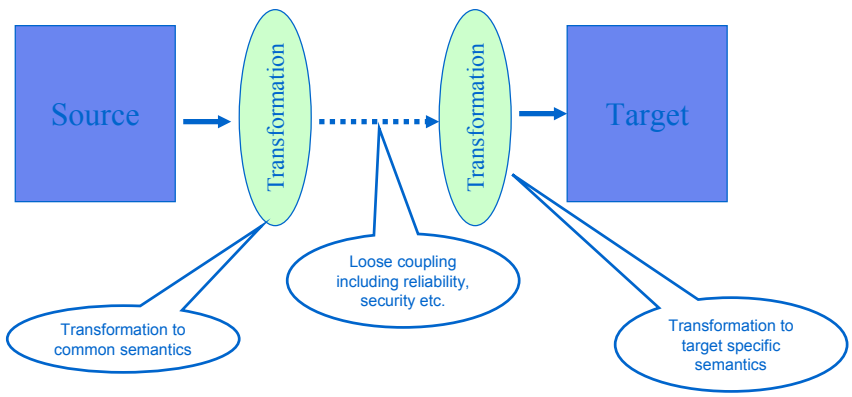
IT Environment - Consequences

- Mix of technologies and paradigms to enable information flow (e.g. from and to ERP systems) among „Extended Enterprise“
  - Close coupling (synchronic)
  - Loose coupling (Messaging)
  - Loose coupling (Web Services)
- Consequences:
  - The view of the business processes drive the use of technology
  - There is the need for a holistic approach

III. From Business to Architecture

- Key information items describing business processes:
  - Business function / service (not necessarily IT supported)
  - Business system (grouping of business functions)
  - Information flow (contains information objects)
  - Representation of business objects differ (e.g. identifiers are different in various systems).
- What do we need is a holistic view
  - of the business and its processes
  - over heterogeneous platforms addressing multi-language, multi-culture, multi-company aspects

Applications / Components and Information Flow



Requirements

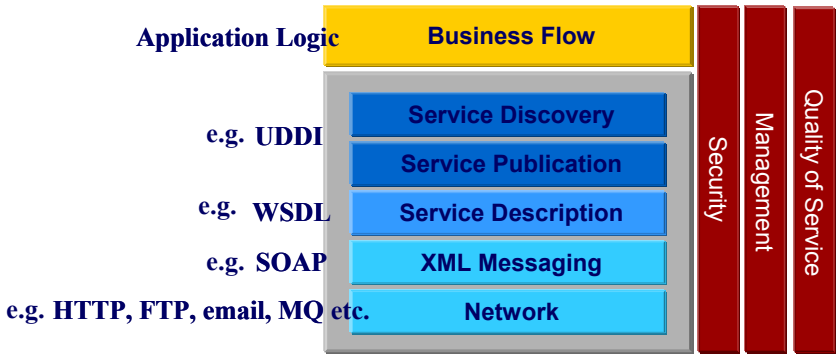
- Holistic view of the business including common semantics of business terms
- An architecture that is independent of company boundaries and managing heterogenous technology platforms (where platforms themselves will change)
- Coexistence of Components and Web Services, unified view of various kind of services
- Concepts of transformations embedded in information flow and workflow concepts

IV. An Architecture has to provide Unified Views of

- Rules and Procedures
  - to capture business processes with the needed precision
- Semantics and ontologies
  - use the same terminology
- Service definitions
  - definitions of components and interfaces
  - access methods
- Addressing different abstraction layers

An Architecture has to cover various abstraction layers

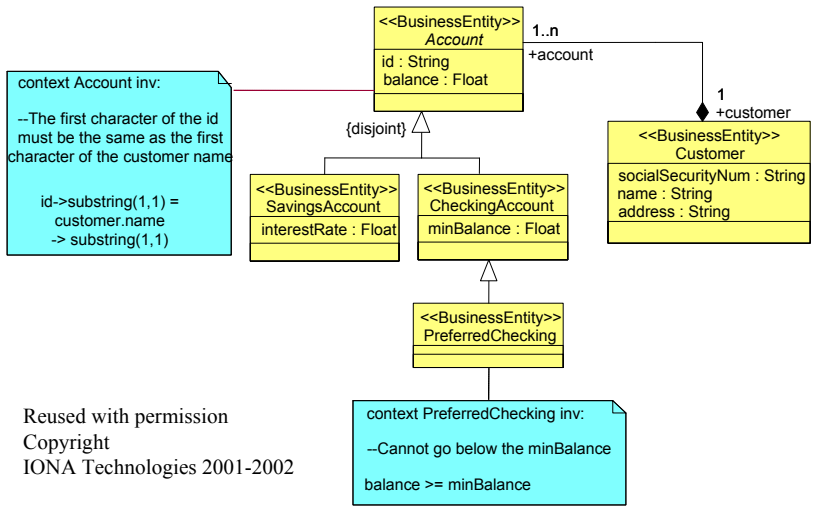
A service architecture may consist of the following layers:



Elements of a Solution - Specifications

- UML (Unified Modeling Language)
  - Means to define rigorous specifications that are precise and complete
- Metamodels and Profiles
  - *Business Process and Information Flow*: Providing specifications for the execution and interoperation of business processes
  - *Components and Interfaces*: Providing specifications for the definition of collaboration (including composition and decomposition of components)

Example Precise and Complete Business Information Model



Elements of a Solution – Semantics

- *ebXML*: Standardization of business messages
  However, ebXML emphasizes the Web Services approach, but the semantics are valid for a larger scope
  - Holistic view
- Broader view of *„Services“* (SOA – Service Oriented Architecture)
  - „Business Services“ (e.g. enroll customer)
  - „Technical services“ (e.g. add_customer)
- *Composition / Collaboration* of services
  - ECA – Enterprise Collaboration Architecture

Bridging the Gaps - The MDA Promise

- *Horizontally*:
  - Business process execution and interoperation (some more standards needed)
  - Flow of information
  - Data transformations
  - Transactions
- *Vertically*:
  - Mappings to various platforms – from PIM to PSM (including Web services)
  - Generation of definitions and code (including WSDL descriptions)

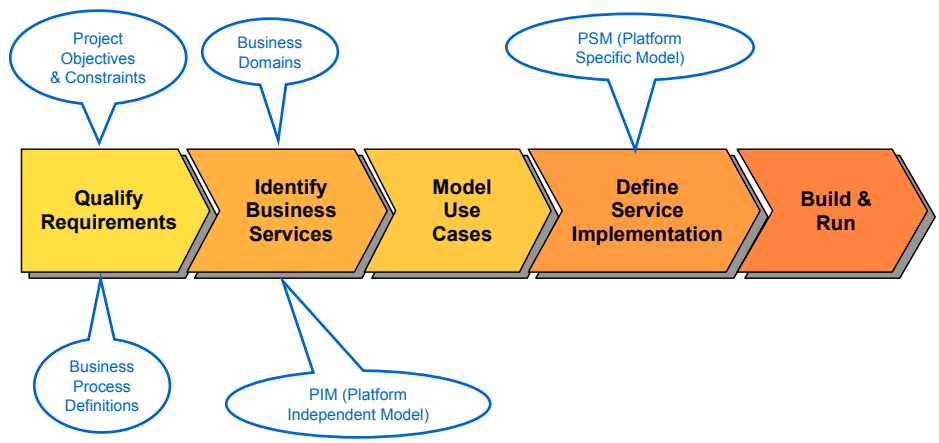
Holistic View - The MDA Promise

- Isolation of information and processing logic from technology specifics
  - Consistent view of the business processes and information flow
- Mappings of technology independent models to platform specifics
  - Common modeling rules
  - Common definition for code generation
- Help to integrate the mix of today, an architecture framework to support the unexpected
  - Integration of assets
  - Flexibility

Web Services in this Picture

- Web Services support
  - an application-to-application integration that is loosely-coupled over the web
  - Support information flow among heterogeneous platforms
  - Are based on well-defined technical standards (XML, SOAP, WSDL)
- MDA provides
  - Separation of various abstraction levels
  - Leveraging the technology mechanisms for business puposes
  - Positioning of Web Services within holistic view

V. From Architecture to Running Services



From Architecture to Running Services (cont.)

- Qualify Requirements: addresses business process requirements, scope, constraints
- Identify business services from business domains definitions and PIMs (Platform Independent Models)
- Model use cases based on business process definitions
- Define Service Implementation using PSM (Platform Specific Models), producing (technical) service definitions (e.g. WSDL, IDL, etc…), Design level class / interaction diagrams
- Build & Run the defined services

VI. Summary: Outstanding Issues

- The influence of packaged applications:
  - Exposure of critical services
  - Support for Web Services
- Web Services is only a part of the picture:
  - Seamless integration of various technologies is required
  - We must still consider existing integration platforms
- Improvements of Web Services are required:
  - Security
  - Transaction management

Conclusion

A holistic view of an enterprises business services is required.

Web Services promises to be technical enabler of seamless integration at the application layer.