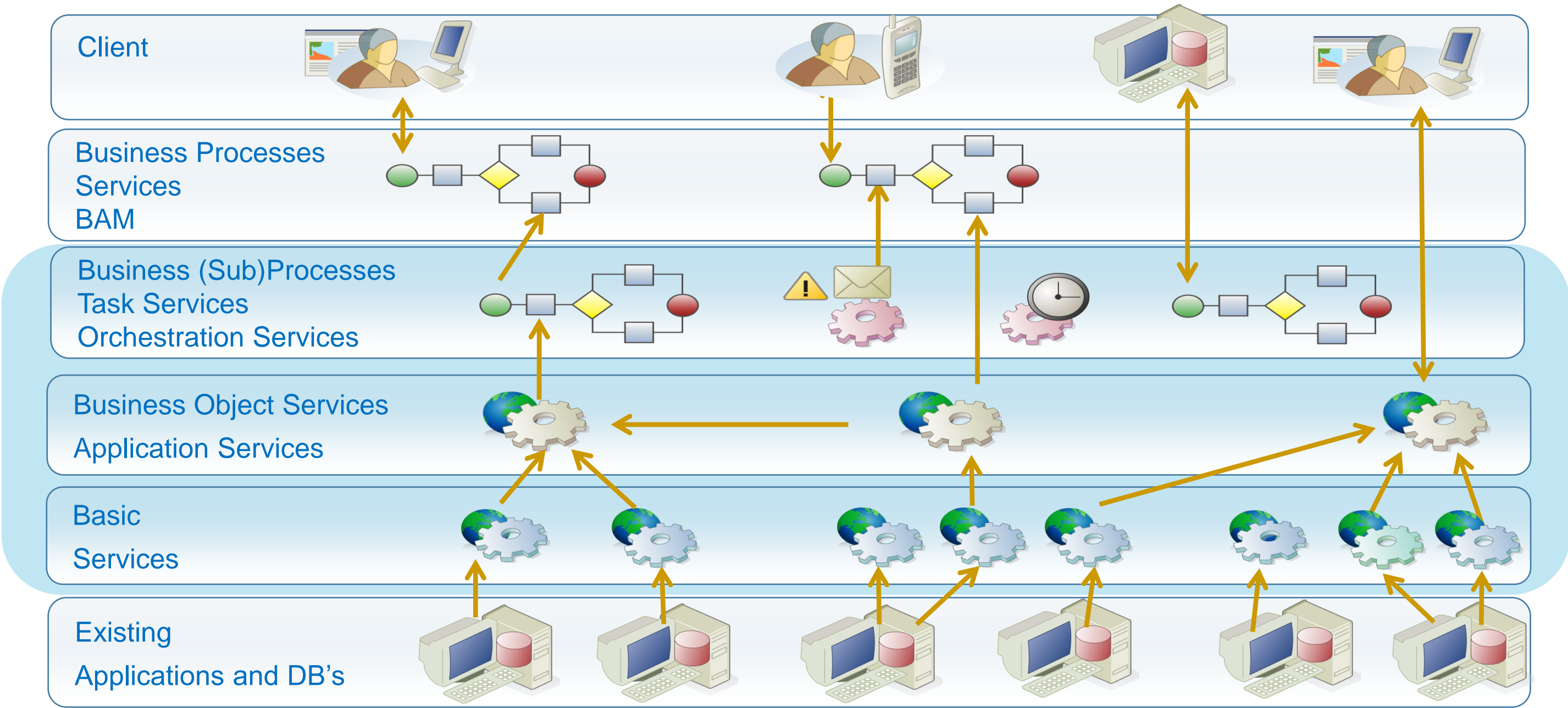


Developing Web Services

Cordys BOP 4.1 Fundamentals

CORDYS

- ◆ Service Types
- ◆ Service Development
 - ◆ Existing Services
 - ◆ Business Process Services
 - ◆ Metadata Services
 - ◆ Application Server Services



◆ Basic Services:

- ◆ Interaction with 1 backend
- ◆ 1 to1 relationship with backend application object
- ◆ 1 function
- ◆ Often generated
- ◆ Examples:
 - ◆ getOrder_header,
 - ◆ CurrencyConvert

◆ Composite Services

- ◆ (Composite) Business Object with its Services
- ◆ Combination of several basic services provides a business level service (BO)
- ◆ Usually directly applicable in a business process or UI
- ◆ Examples:
 - ◆ OrderSupplies,
 - ◆ BookTrip,
 - ◆ GetTransportationRequest



Platform Connectors

- ◆ Business Process Management
- ◆ Notification
- ◆



Out of the Box Technology Connectors:

- ◆ UDDI: Connect to existing (external) web services
- ◆ WS-AppServer (Web Service Application Server)
- ◆ Email
- ◆ FTP



Connectors of Partners



Custom Connectors

- ◆ Service Types
- ◆ Service Development
 - ◆ Existing Services
 - ◆ Business Process Services
 - ◆ Metadata Services
 - ◆ Application Server Services

◆ UDDI Explorer

- ◆ tool to browse through any UDDI business registry
- ◆ search criteria like Name, Categories, Identifiers

◆ Web Service Generation

- ◆ Operations are generated based on WSDL

◆ Advantages:

- ◆ Central administration
- ◆ Security
- ◆ Separation of concerns

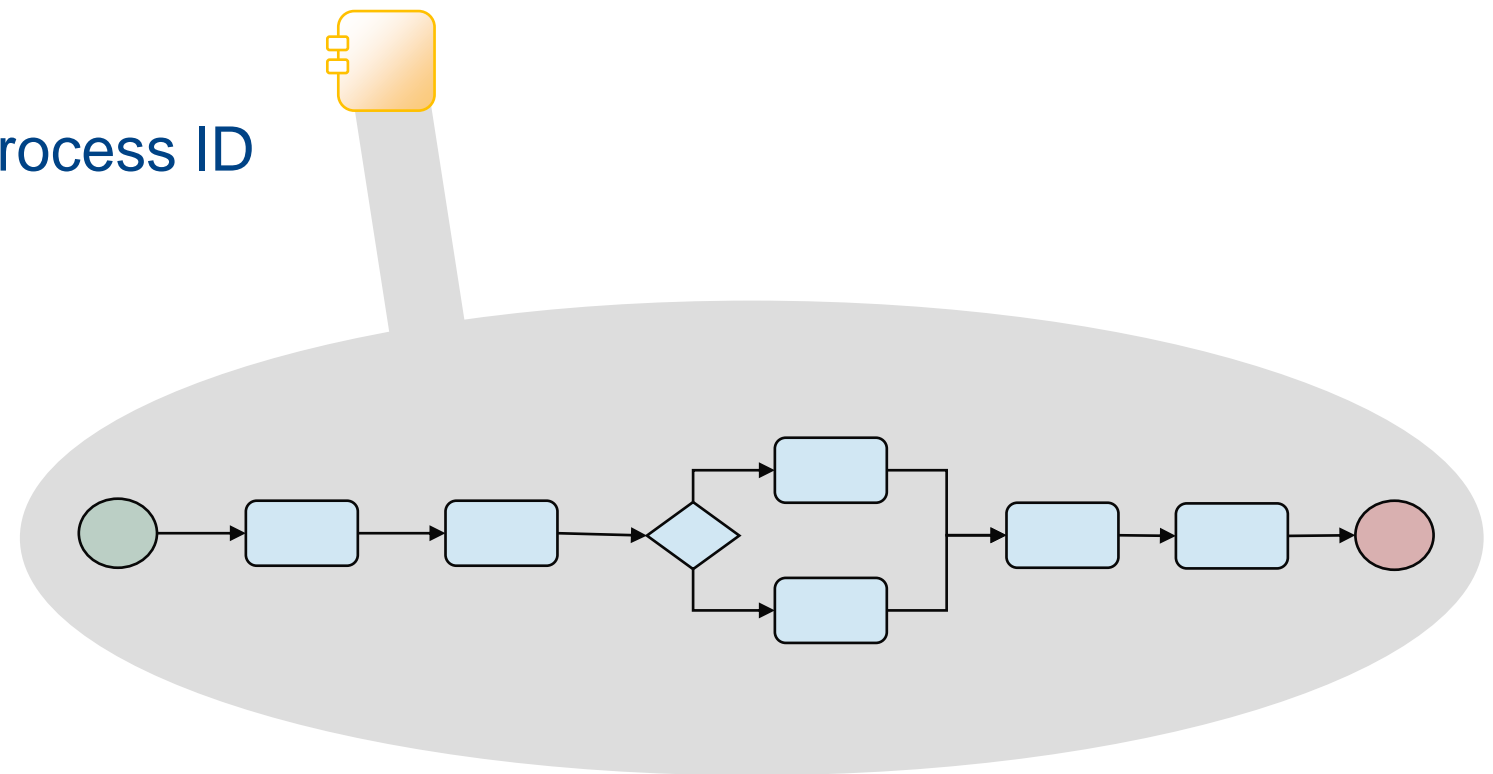
- ◆ Service Types
- ◆ Service Development
 - ◆ Existing Services
 - ◆ Business Process Services
 - ◆ Metadata Services
 - ◆ Application Server Services

- ◆ Short-lived Process:

- ◆ Output message returns synchronously

- ◆ Long-lived Process:

- ◆ Output message immediately returns Process ID
 - ◆ Process runs asynchronously =>
No feedback on errors



- ◆ Service Types
- ◆ Service Development
 - ◆ Existing Services
 - ◆ Business Process Services
 - ◆ Metadata Services
 - ◆ Application Server Services

- ◆ Metadata is data about data
- ◆ Cordys provides tools to explore Metadata
- ◆ Metadata Explorer currently available for
 - ◆ Databases
 - ◆ Java Classes
 - ◆ Custom Logic
- ◆ Helps to generate Web Service Operations automatically

Java Class Metadata

- ◆ Allows to view the Java packages and Classes
- ◆ Provides following details
 - ◆ Packages
 - ◆ Classes
 - ◆ Static Methods
 - ◆ Parameters

Training helper - Java Class Metadata*

Name
Training helper

Description
Training helper

Java Archive Path(Specify the absolute path on the machine where CWS container is installed)
c:\Cordys\default\inst\com\company1\casedemos\traininghelper.jar

Fully Qualified Class Name(Specify the classes available in CWS container class path)

Training helper - Java Class Metadata

Java Class Metadata Explorer

- Training helper
 - traininghelper.jar
 - com
 - company
 - casedemos
 - traininghelper
 - Duration

Class Name
DurationCalculator

Package
com.company2.casedemos.traininghelper

Methods Web Service Interface Details

Webservice Name	Methods
calculateDuration	public static java.lang.String com.compan...
calculateDurationWithOffset	public static java.lang.String com.compan...

<Previous Next> Finish Cancel

Database Metadata

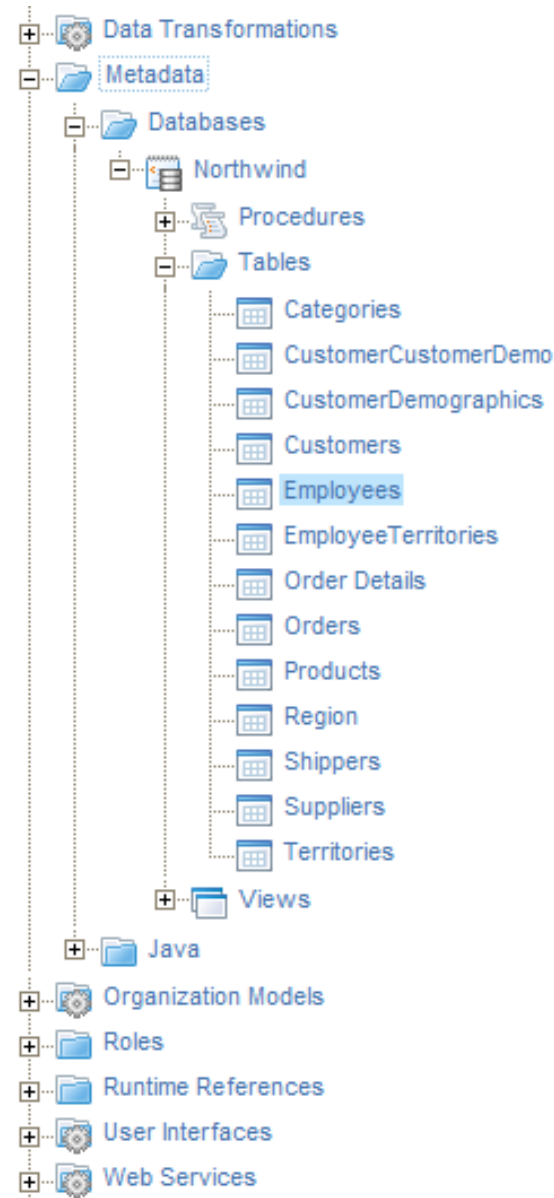
CORDYS

◆ Database Metadata contains

- ◆ Tables
- ◆ Relations
- ◆ Fields
- ◆ Data types
- ◆ Stored Procedures
- ◆ Views

◆ Generate Database Web Service

- ◆ SQL (without Logic)
- ◆ Java (with Logic)



A screenshot of a window titled 'Employees - DBTable'. It contains the following fields: 'Table' (Employees), 'Catalog' (Northwind), and 'Schema' (empty). Below these is a table with columns: 'Primary Key', 'Column', 'Type', and 'Size'. The table lists the following columns: EmployeeID (Primary Key, i4, 10), LastName (string, 20), FirstName (string, 10), Title (string, 30), TitleOfCourtesy (string, 25), and BirthDate (dateTime). Below this table is another table with columns: 'Key Name (PK/FK)' and 'Related Table'. It lists: PRIMARY (empty) and FK_Employees_Employees (Employees). At the bottom of the window is a button labeled 'Generate Custom Web Service on SQL Query'.

Primary Key	Column	Type	Size
	EmployeeID	i4	10
	LastName	string	20
	FirstName	string	10
	Title	string	30
	TitleOfCourtesy	string	25
	BirthDate	dateTime	

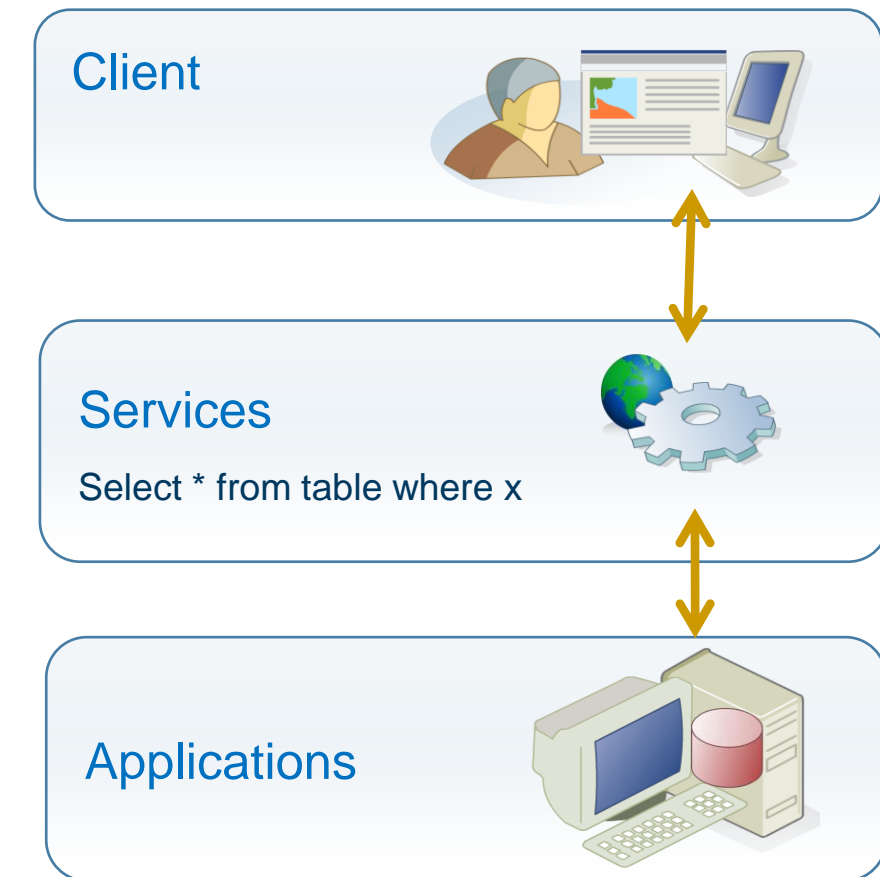
Key Name (PK/FK)	Related Table
PRIMARY	
FK_Employees_Employees	Employees

Generate Custom Web Service on SQL Query

SQL Database Web Service - Without Logic

CORDYS

- ◆ Implementation type is SQL
- ◆ Standard Web Services generation
 - ◆ GetSingle
 - ◆ GetMulti
 - ◆ Navigational GetNext,GetPrevious
 - ◆ Update
 - ◆ GetAForB (Related Tables)
- ◆ Custom Web Service generation
 - ◆ Custom Queries
 - ◆ Composite Queries
 - ◆ Nested Queries

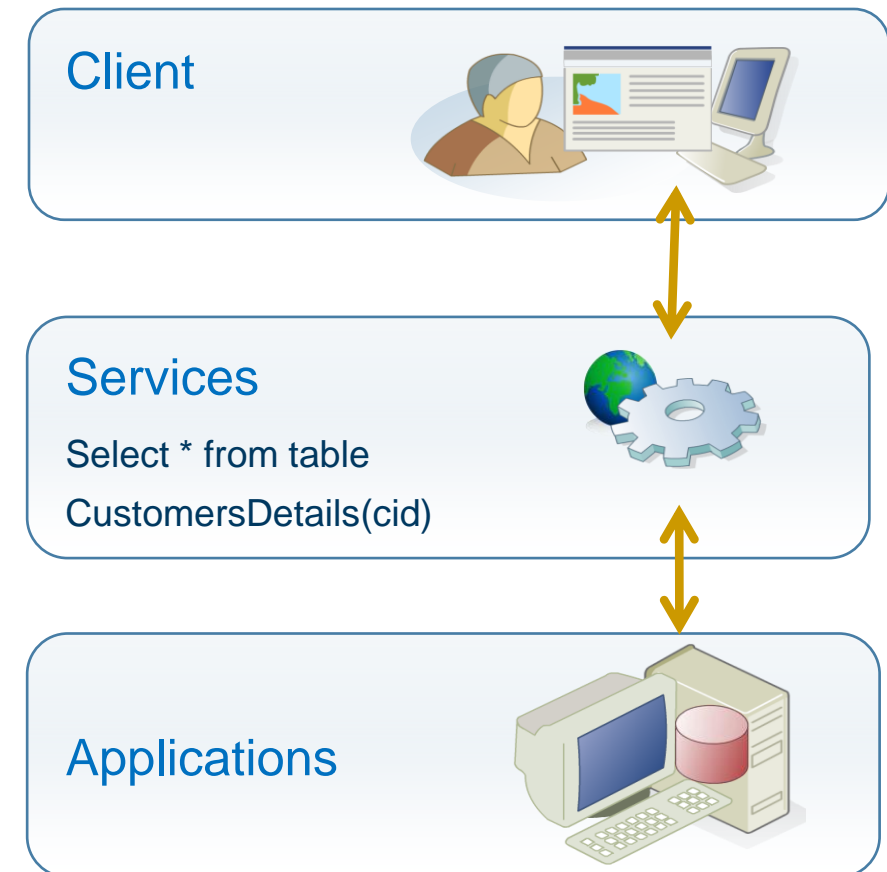


- ◆ Service Types
- ◆ Service Development
 - ◆ Existing Services
 - ◆ Business Process Services
 - ◆ Metadata Services
 - ◆ Application Server Services

Service Without Business Logic Layer

CORDYS

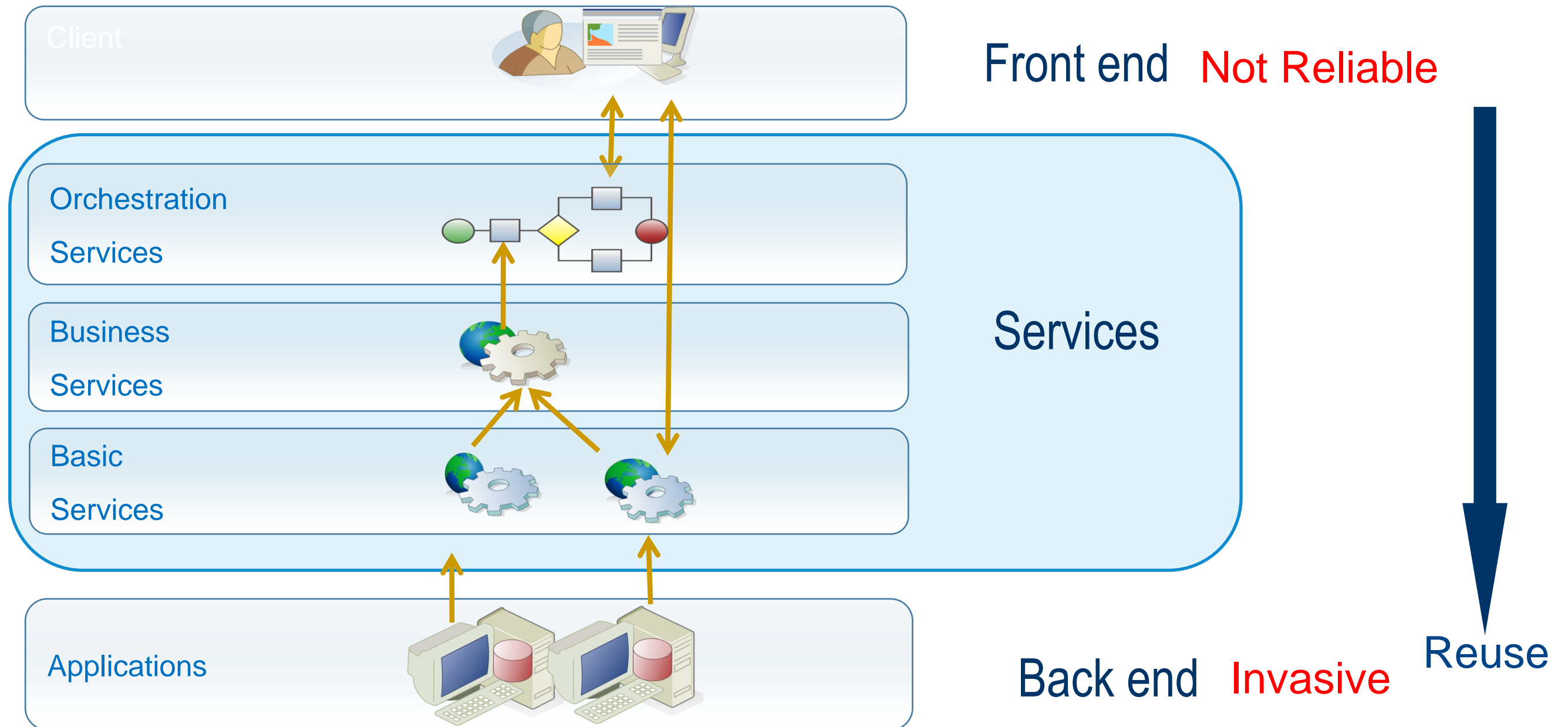
- ◆ Where to Place Business Logic
- ◆ No Metadata Abstraction
- ◆ No DB Transaction Support
- ◆ No Dynamic Integration with User Interfaces
- ◆ ...



- ◆ Initialization
 - ◆ OrderDate = now
- ◆ Access logic
 - ◆ Field/Object not accessible
- ◆ Validation
 - ◆ Order must have customer
- ◆ Application/Business logic
 - ◆ If order amount > 100000 then discount = 3%
- ◆ ...

Where to Place Logic

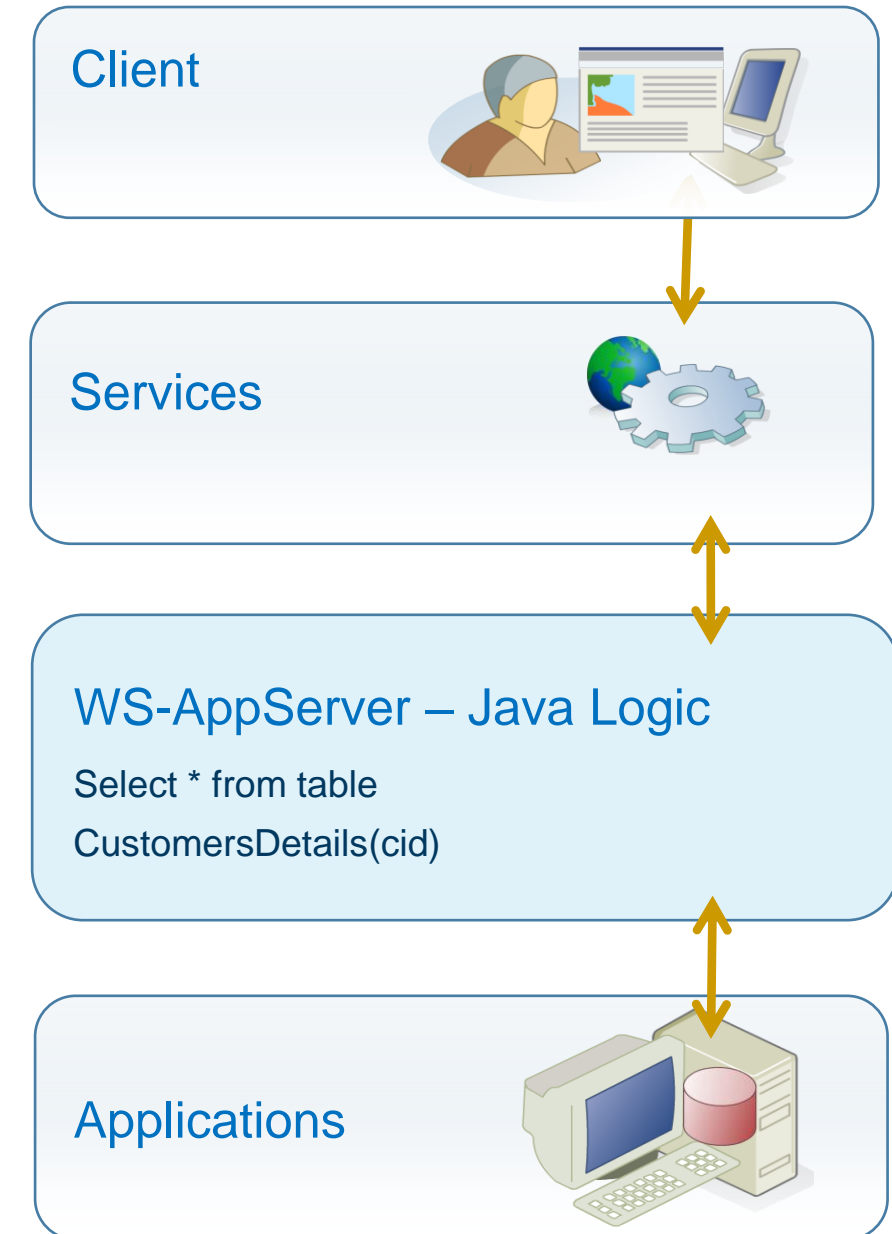
CORDYS



Service With Business Logic Layer

CORDYS

- ◆ Business Logic Server Side
- ◆ Metadata Abstraction
- ◆ DB Transaction Support
- ◆ Dynamic Integration with User Interfaces
- ◆ Rules Support

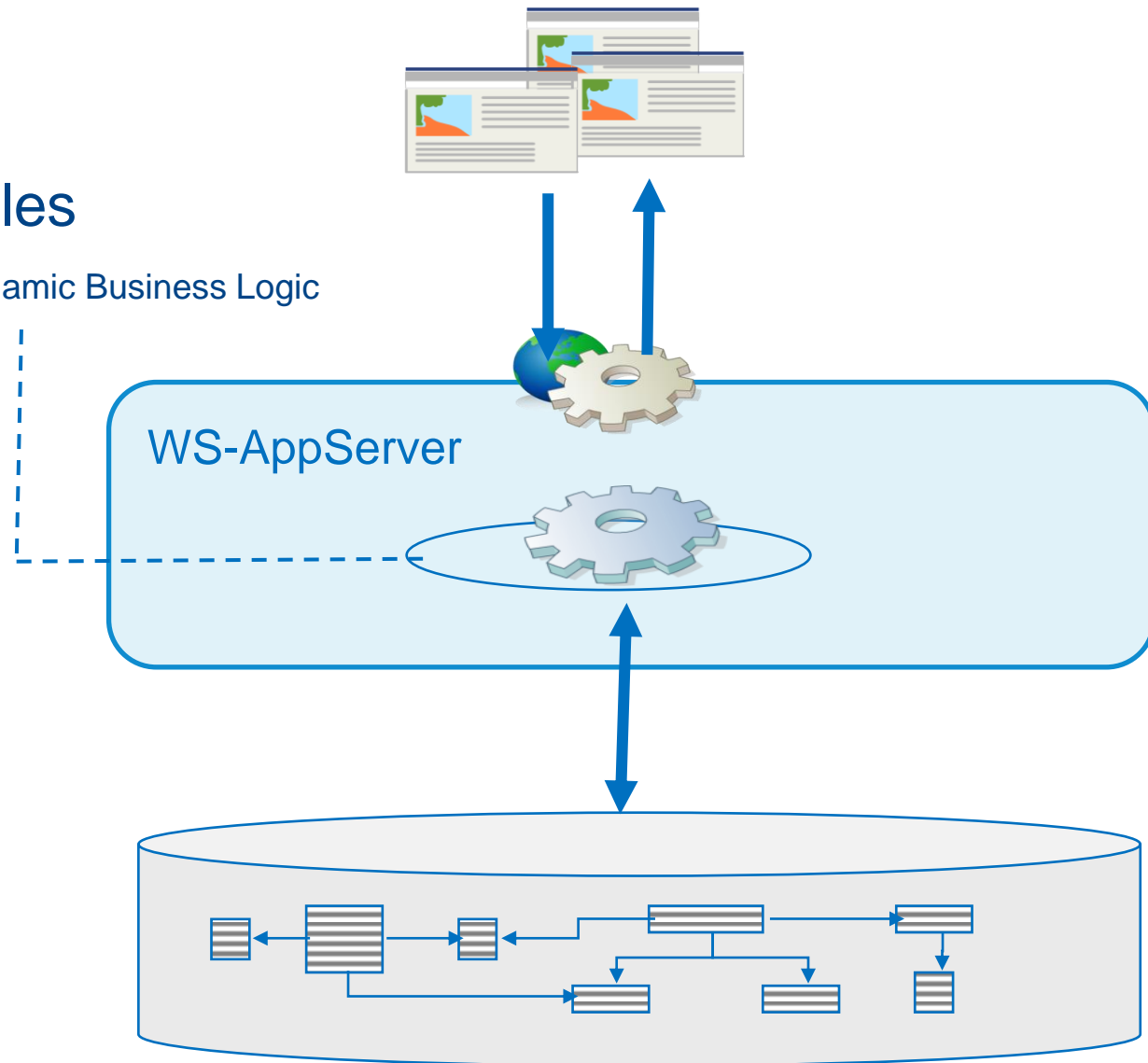


Where to Place Logic cont'd

CORDYS

Rules

Dynamic Business Logic



◆ Presentation (Usability) Logic

◆ Application / Business Logic

◆ Access Logic

◆ Constraint Logic

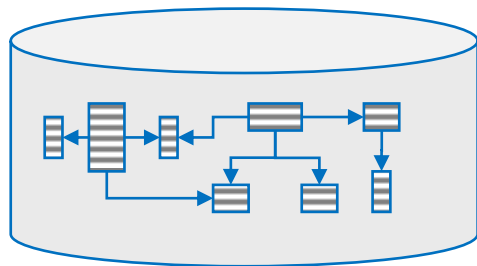
◆ Backend Logic **Invasive**

Creation of a WS-AppServer Package

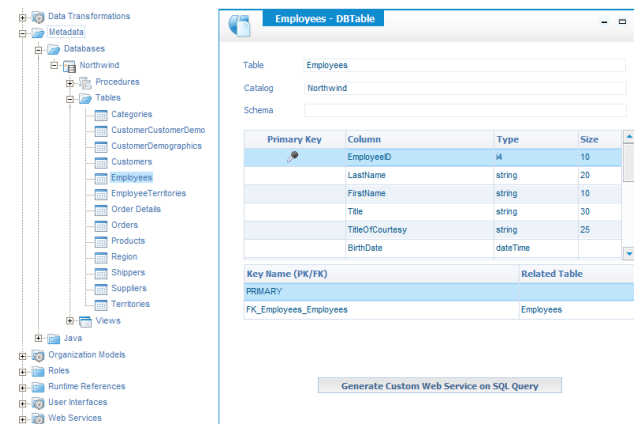
CORDYS

- ◆ Manual (databases, application, system, etc)
- ◆ Generate from Database Metadata

Database/Schema



Database Metadata

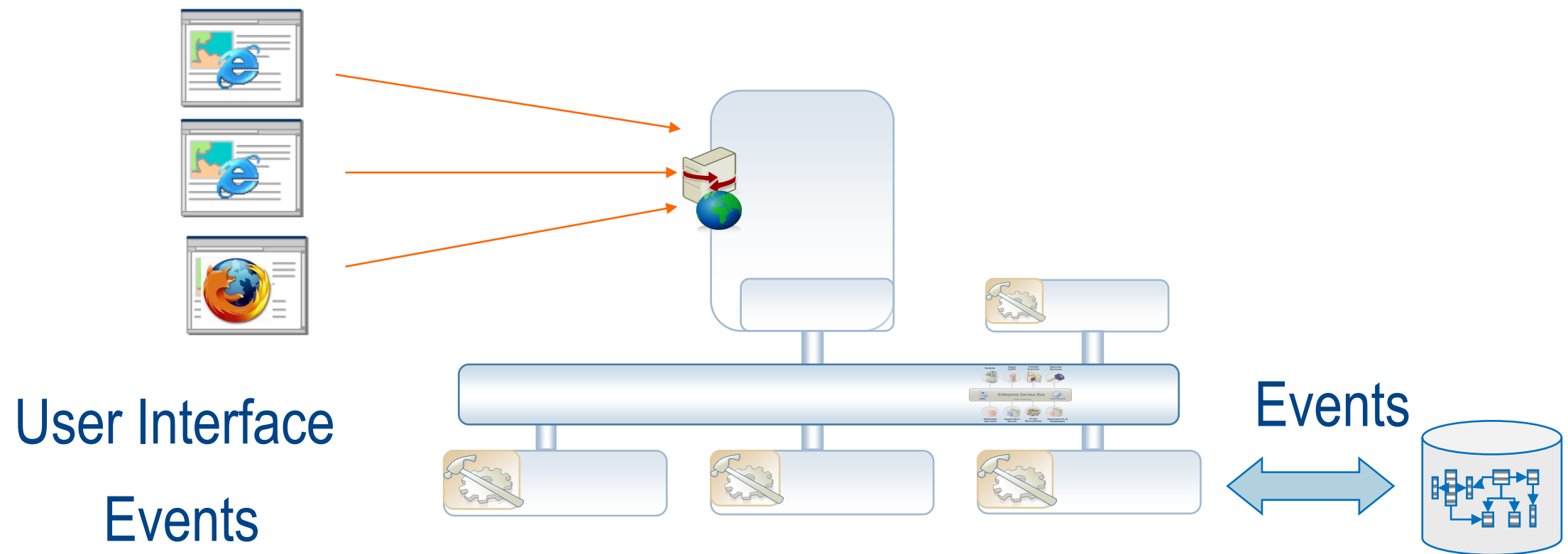


WS-AppServer Package



- ◆ Standard Services are generated automatically
 - ◆ GetSingle
 - ◆ GetMulti
 - ◆ Navigational GetNextA,GetPreviousA
 - ◆ **Validate**
 - ◆ Update
 - ◆ GetAForB (based on relations)
- ◆ Customizations
 - ◆ Addition of Queries
 - ◆ Composite Objects (Multiple tables, other services)
 - ◆ Composite Services (multiple actions)

- ◆ onAccess, onDisplay
- ◆ onBeforeInsert(), onInsert(), onAfterInsert()
- ◆ ...



Thank You

Questions?