



Business Architecture, SOA & BPM

- Learn about SOA and Business Process Management (BPM)
- Learn how to build process diagrams using business process modeling notations (BPMN), and more.
- Touch existing BPM tools:
 - IBM Lombardi, TIBCO BPM Studio, Oracle BPM
- Learn about enhancing BPM via Conversational Semantic Decision Support, while working with Business Architecture Sandbox for Enterprise (BASE)

What is SOA and Business Architecture?

Architecture:

- The art and science of designing complex systems
- Provides high level views of a complex system

SOA:

- Service Oriented Architecture focuses on enterprise software services reused for multiple applications

Business Architecture:

- Looks at a system from business perspectives
- Provides business product and process views
- A collaborative ground for enterprise architects and business analysts

Business Architecture Views

Answer the questions: What and How

- **Business Architecture/Product View:**

- Products Lines – Products – Features **(What)**

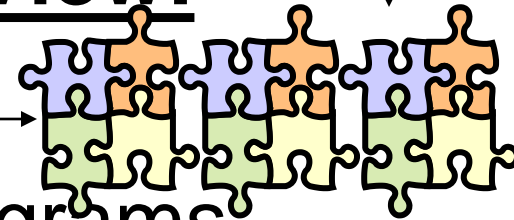
(Services)

- **Business Architecture/Process View:**

- Business Process **(How)**

- Business Process or Workflow Diagrams

connect business functions/services into applications



A common approach to Transportation Services



In the Net-Centric Architecture every airport, airline, seaport, plane, train, or ship is a **Service Agent**, which can produce and consume services



- List Services**
- Order Services**
- Register Services**
- Subscribe to Services**

Service Centric Mentality

Business Process

(use)

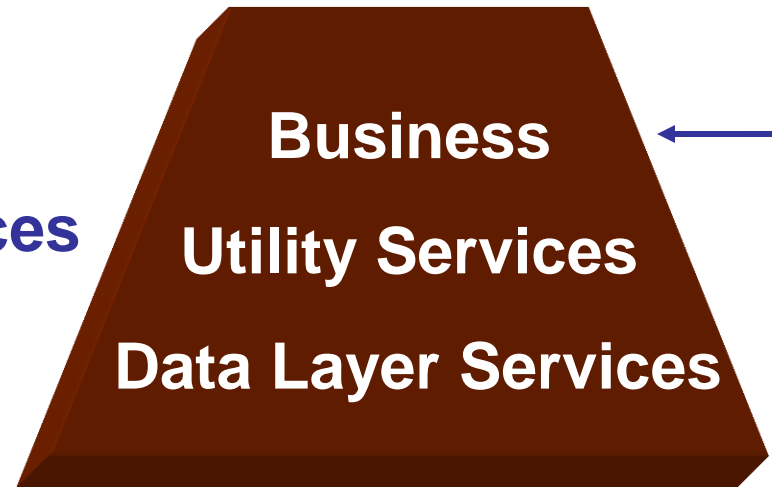
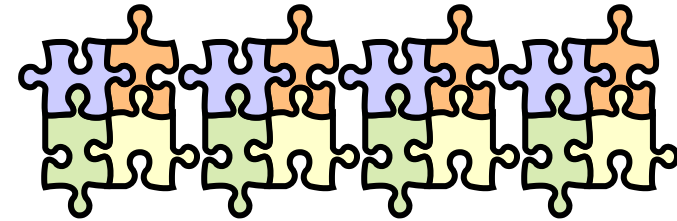
Business Services

(use)

Integration and Internal Services

(use)

Data Layer Services



Business Architecture/Product View:

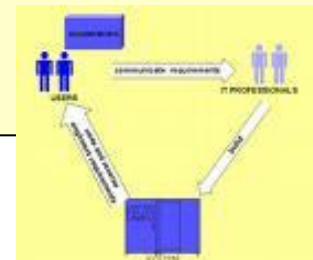
Product Lines – Products – Features

Technology Architecture: Business Services

With SOA from Applications to Service Scenarios



```
<scenario name="Order" type="CompositeService">  
<action scenario="Login" result="UserID" />  
<action scenario="GetOrderData(UserID)"  
  result="OrderID" />  
<action scenario="PlaceOrder(UserID,OrderID)" />  
</scenario>
```

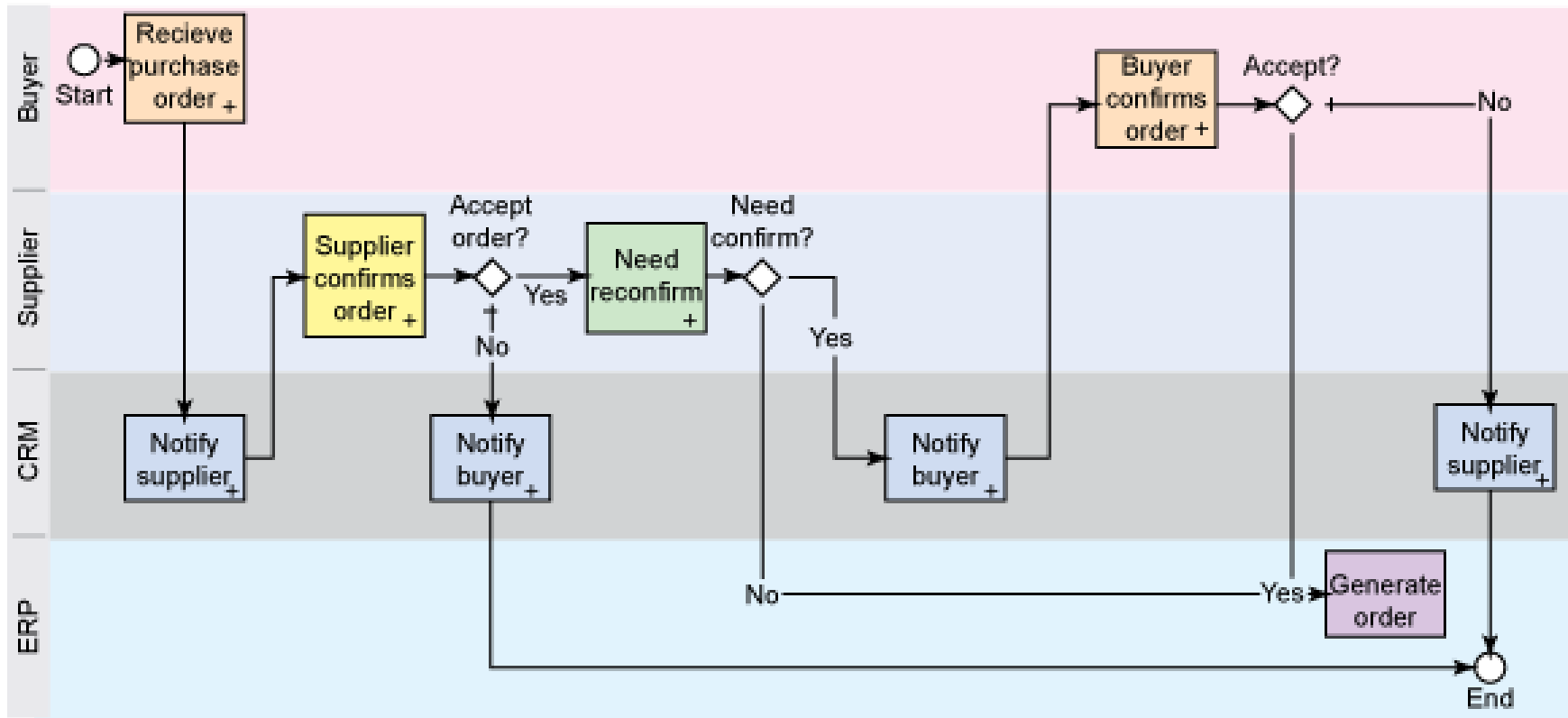


NEXT:

- 1) Allow Subject Matter Experts to Define the Rules
- 2) Map business descriptions to existing services (semantics)

Modeling Business Process as a Set of Connected Services

Example: Order Process*

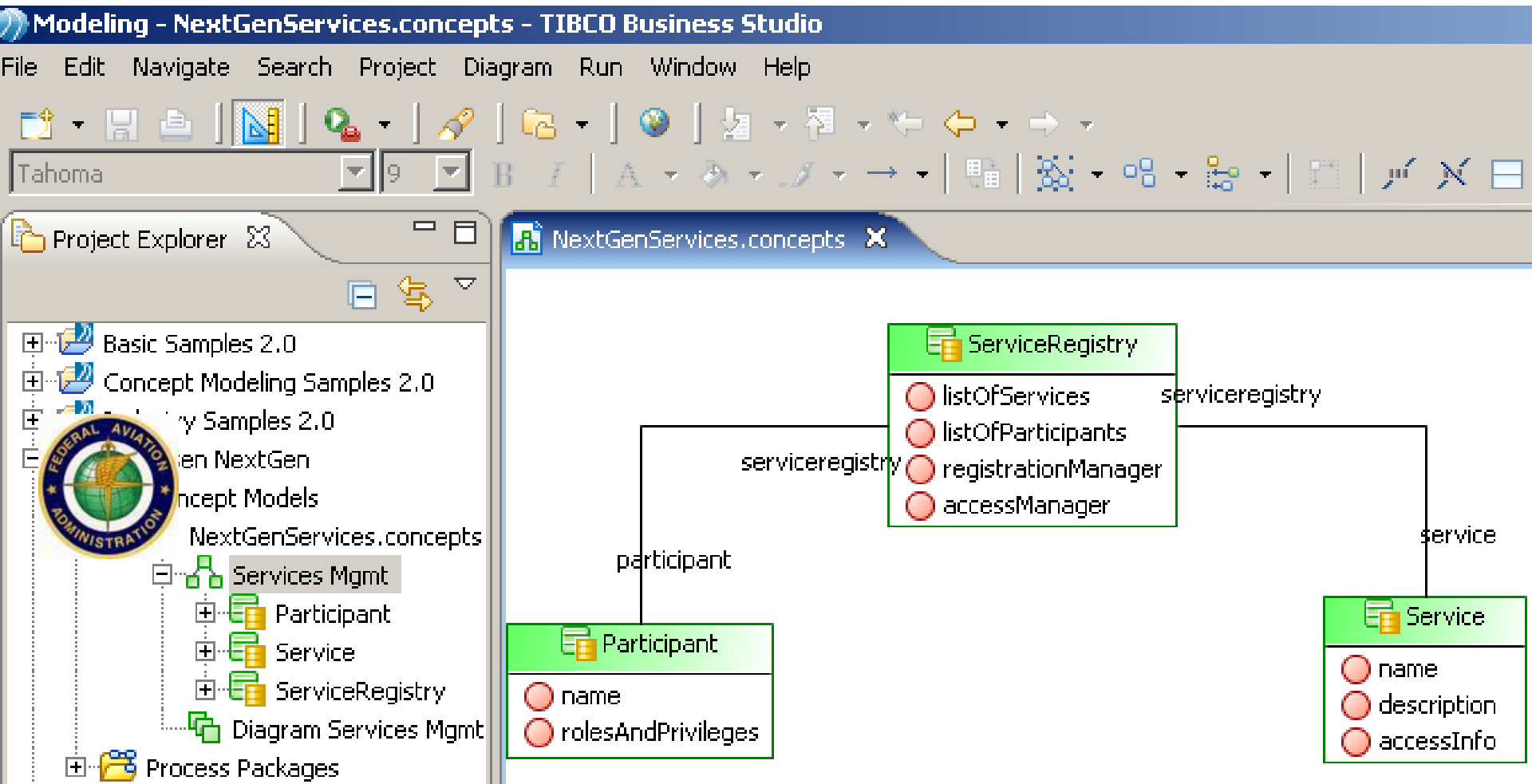


*From IBM Lombardi Tutorial:

http://www.ibm.com/developerworks/websphere/library/techarticles/1101_wang/1101_wang.html

Business Process Management

FAA Next Gen Service Registration Example (with TIBCO BPM)



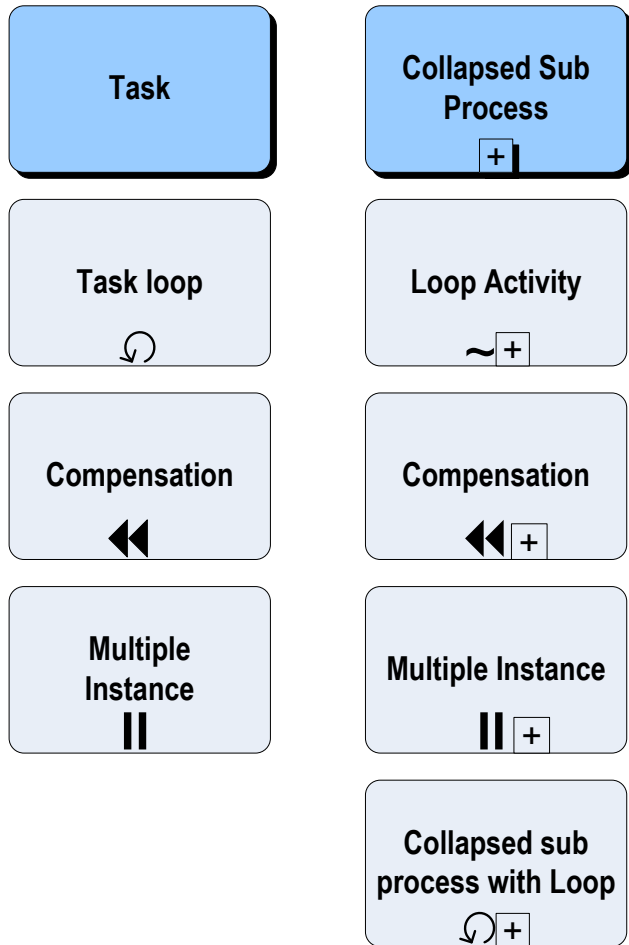
Connect Model To Reality (existing services) and Make it Work

The screenshot displays a BPMN editor interface. At the top, a yellow task box labeled "Make payment" is shown with a server icon and a circular connector below it. Below the diagram is a Properties window with the following configuration:

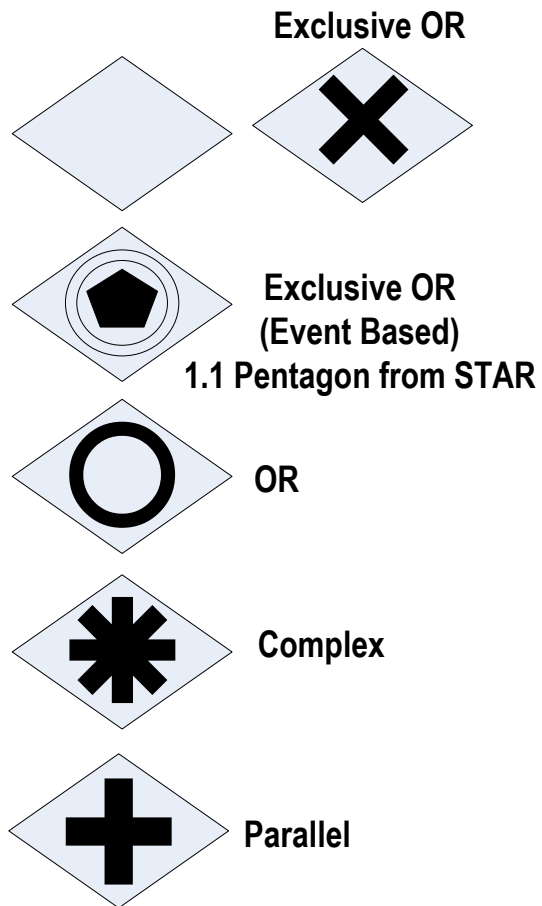
- Task** (selected)
- Name:** Make payment
- Activity Markers:**
 - Standard Loop
 - Multiple Instance Loop
 - Ad-Hoc
- Participant:** Payroll System
- Activity Type:** Service Task
- Service Type:** Web Service (dropdown menu open showing: Web Service, Java, Database, E-Mail, BW Service)
- Service Name:** (empty)
- Port Name:** (empty)
- Operation Name:** (empty)
- Use local WSDL
- Use remote WSDL

BPMN

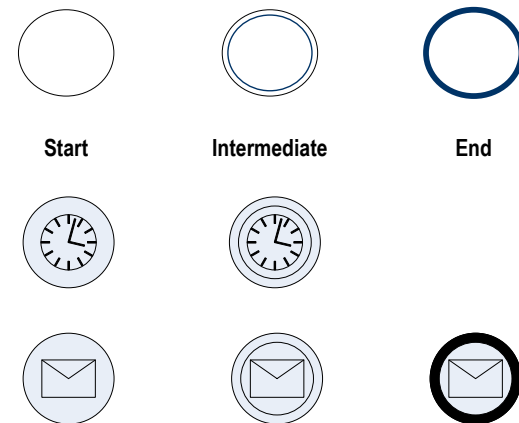
Activity



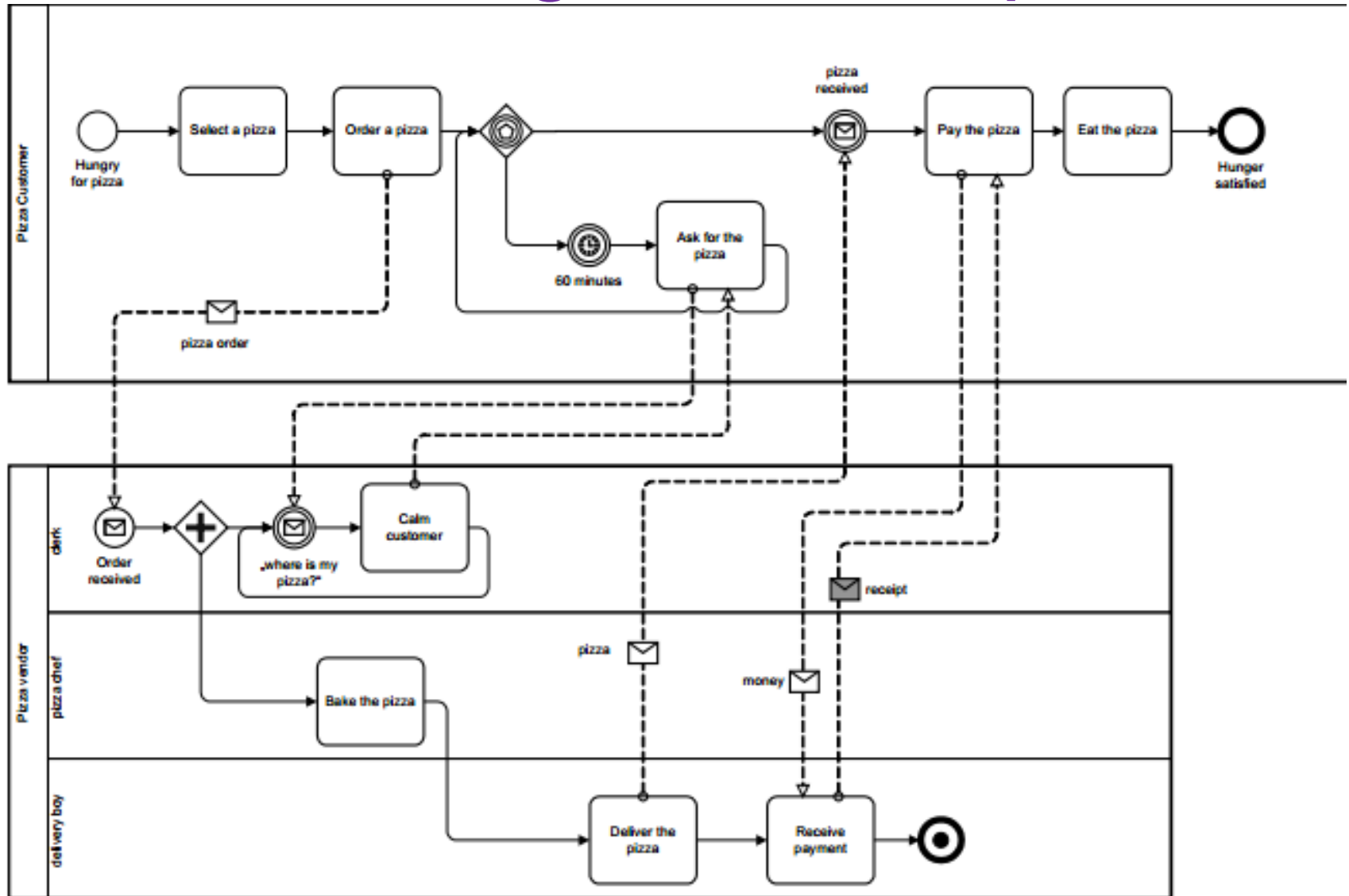
Gateways



Events



BPM Diagram Example*

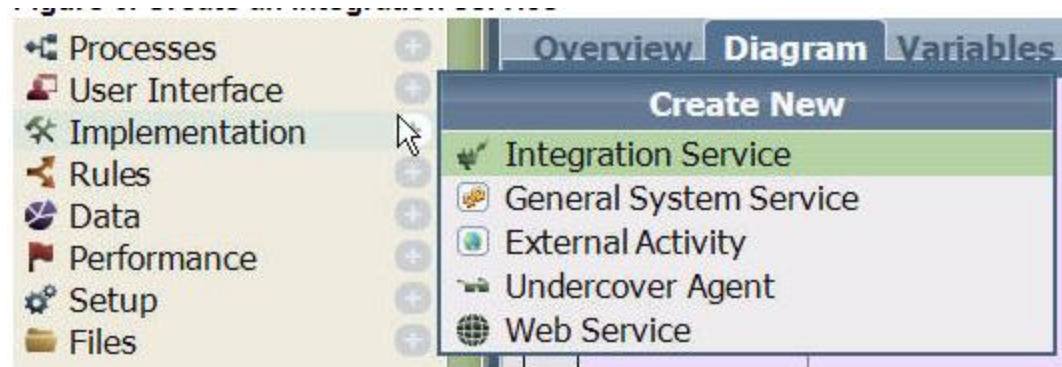
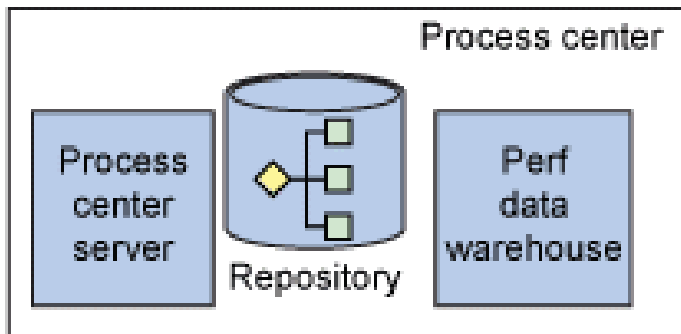


*From BPMN 2.0 by Example: <http://www.omg.org/spec/BPMN/20100601/10-06-02.pdf>

IBM (Lombardi) BPM Components

- **Process Center**

- A central development environment and repository for multiple process authors working in the Process Center Console and other interfaces.
- **Includes:**
- **Process Center Server** that executes the processes and services built in the Authoring Environment
- **Performance Data Warehouse** that collects process data according to tracking requirements established in Lombardi Authoring Environment.



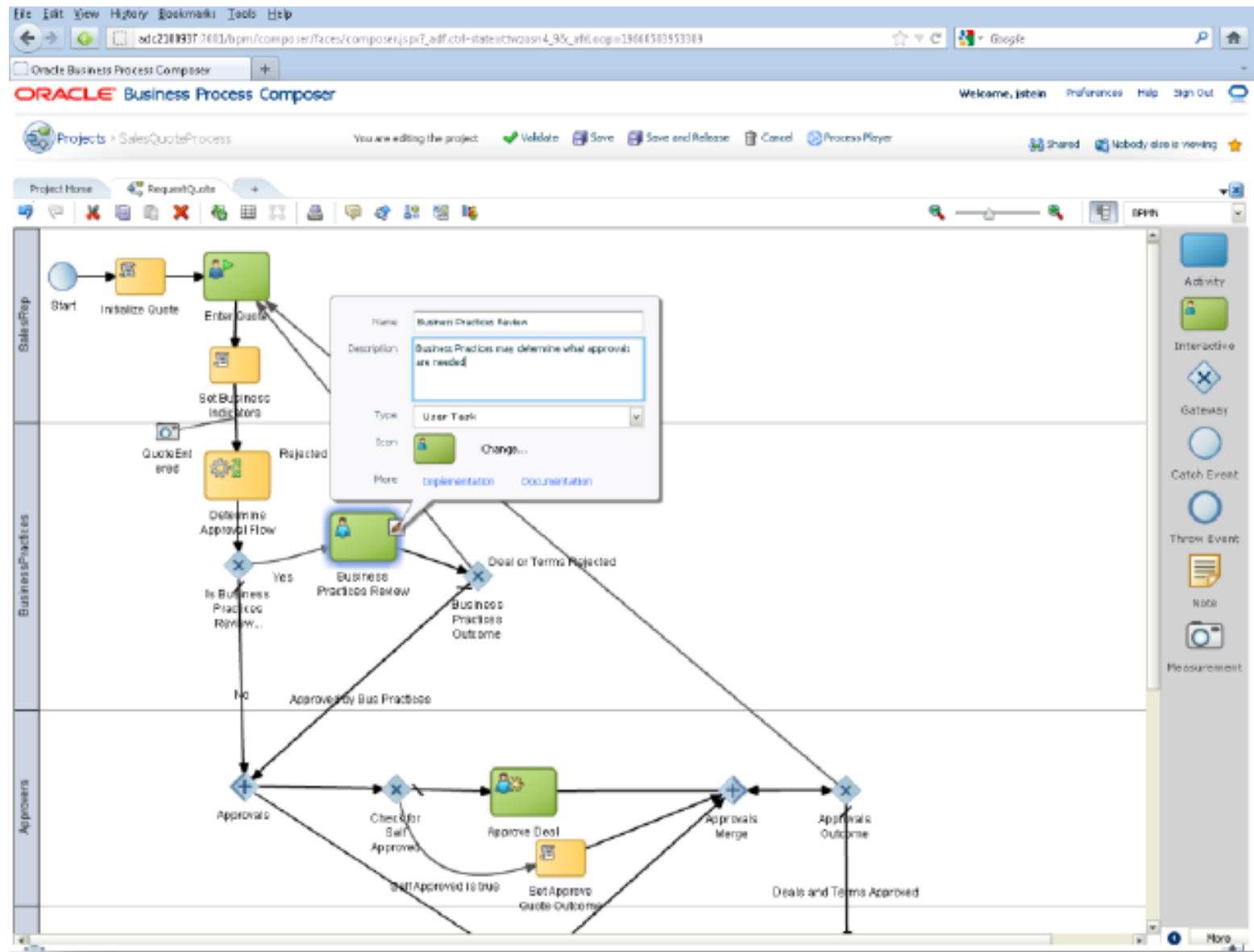
Reference: <http://pic.dhe.ibm.com/infocenter/wle/v7r1/index.jsp>

Process modeling and management interfaces



- **Actors: Individuals, Groups and System Participants**
- **Authoring Environment**
- Interfaces to model, implement, simulate, and inspect business processes. Authors can create process models, services, and other assets within process applications.
- **Process Center Console**
- Allows users to for create Business Process Definitions (BPD), process applications, General, Integration and Human Services, Rule Services and Toolkits.
- Managing workspaces and snapshots, configuring Inspector (Debugging) and Simulations.
- Enables the installation of applications on Process Servers in runtime environments.
- **Process Admin Console**
- Enables administrators to configure and maintain the Process Servers in any configured runtime environment, such as staging, test or production environments.
- **Performance Admin Console**
- Enables administrators to configure and maintain Performance Data Warehouses
- **Process Portal**
- Enables process participants to perform assigned tasks, view the history of tasks, and view the performance of their processes and teams.

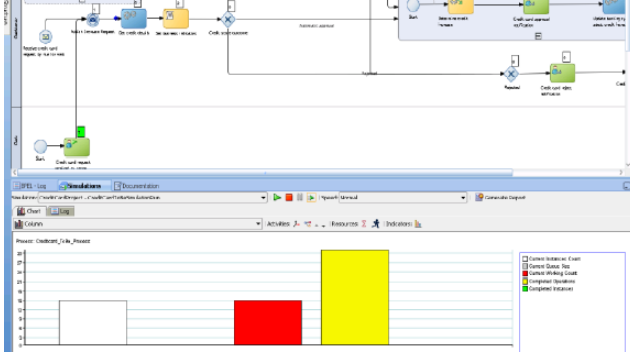
BPM with Oracle Business Process Composer



Reference: http://docs.oracle.com/cd/E28280_01/user.1111/e15177/toc.htm

BPM with Oracle Business Process Composer

- Oracle BPM Supports:
 - Process Modeling with BPMN 2.0
 - Process Simulation and Analysis
 - User Interface Design
 - Rules Management



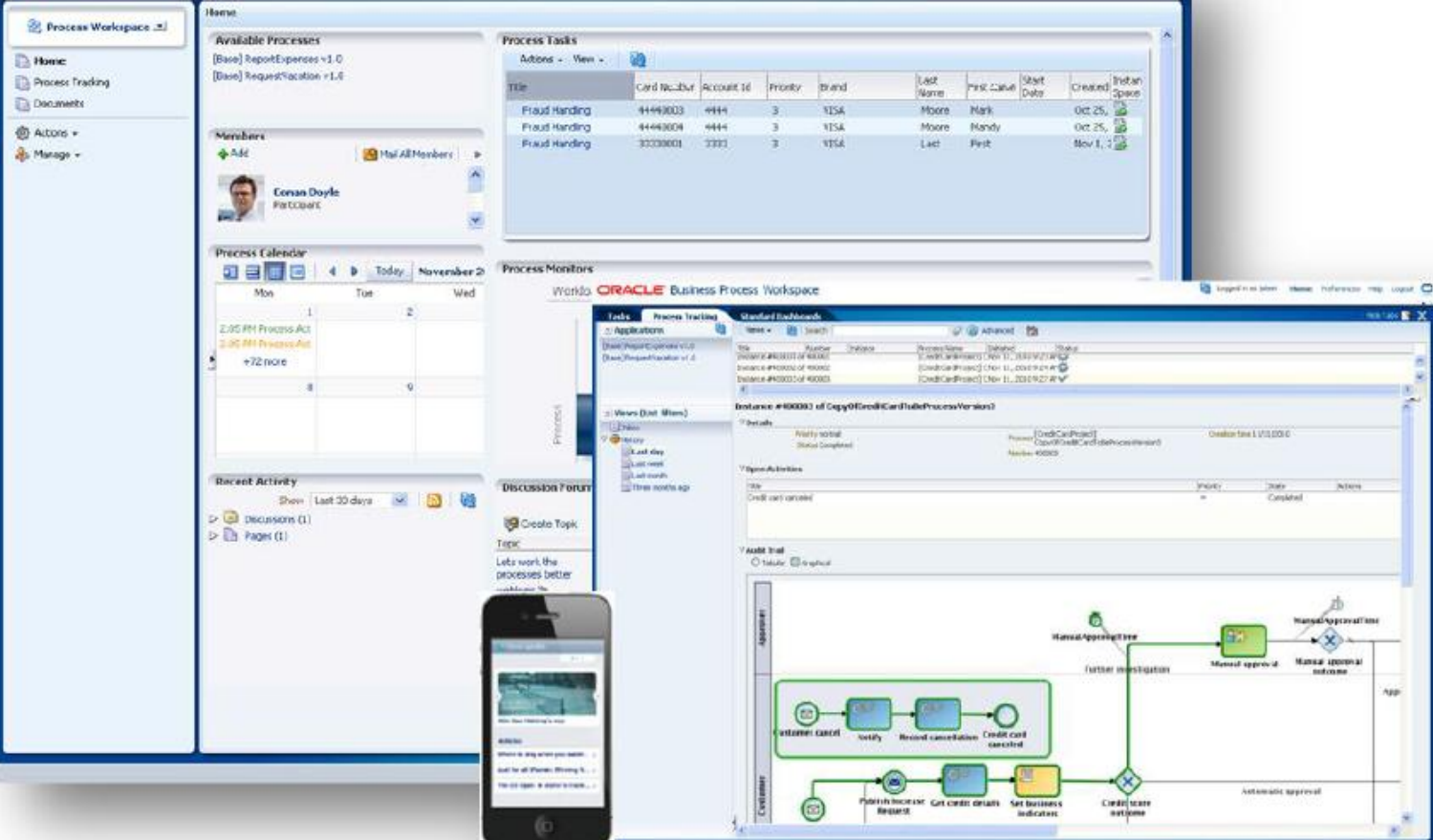
This screenshot shows the user interface design tool in Oracle BPM. It features a 'Properties' panel on the left with tabs for 'Settings', 'Style', and 'Form Info'. The 'Form Info' tab is active, showing fields for 'Name' (LintonResidentialLoanApplication), 'Description', 'Visibility' (Public), 'Tracking Id', 'Tracking Url', and 'Deployment' (Development). There are also checkboxes for 'Save', 'Revisible', and 'Force Auth', and buttons for 'Save PDF' and 'Capsa'. A 'DATA SOURCES' section is visible at the bottom.

This screenshot shows a form layout design in Oracle BPM. It includes sections for 'Application PDF', 'Form Help', and 'Borrower Instructions'. The 'Borrower Instructions' section contains a text block: 'If this is an application for joint credit, Borrower and Co-Borrower each agree that we intend to apply for joint credit:'. Below this are two input fields: 'Borrower' and 'Co-Borrower'. Further down, there is a section titled 'TYPE OF MORTGAGE AND TERMS OF LOAN' with a 'Panel 1215' containing 'Agency Case Number' and 'Lender Case Number' input fields, and a 'Mortgage Applied for:' dropdown menu.

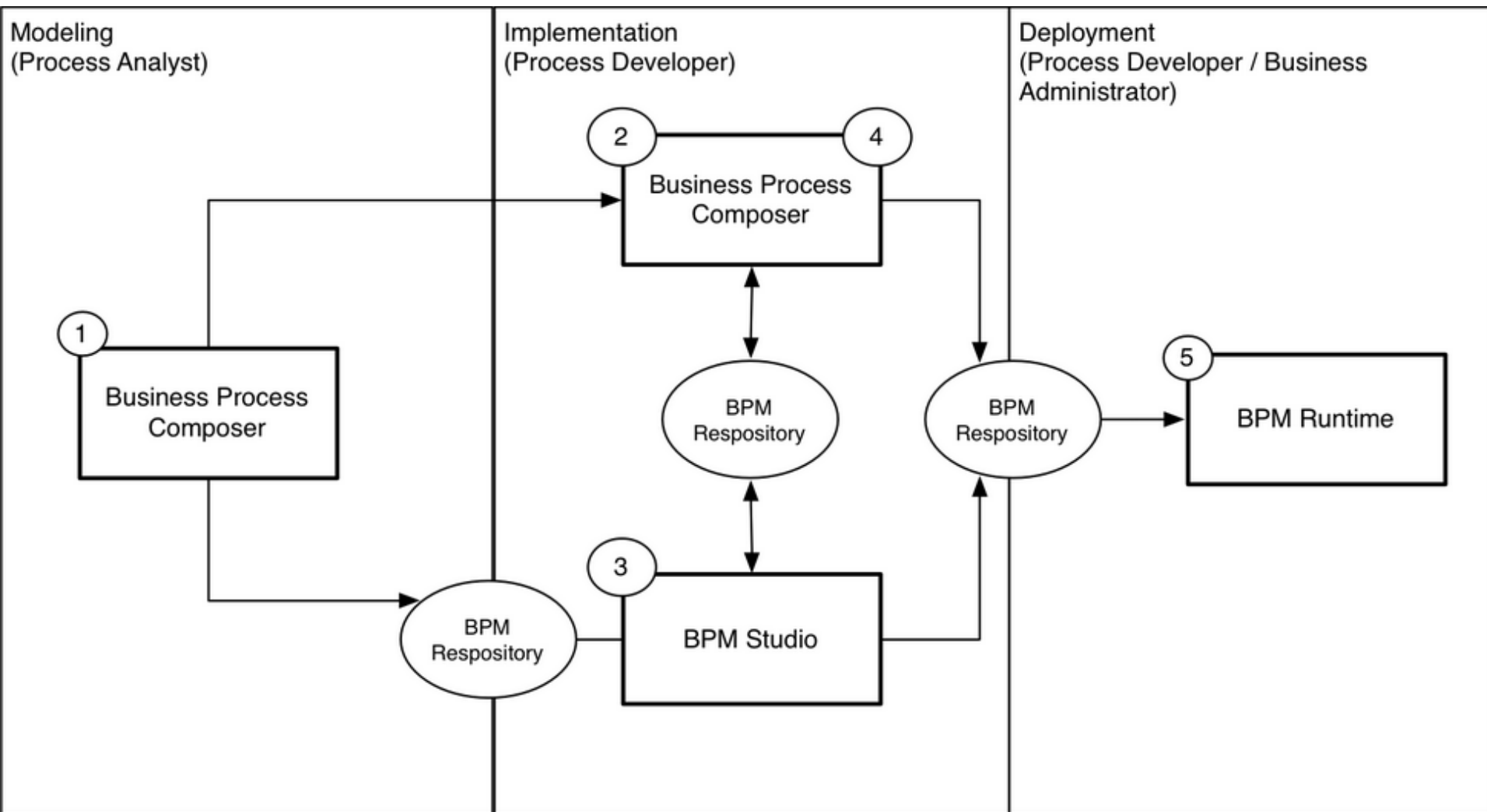
This screenshot shows the Oracle Business Process Composer rules management interface. The top bar includes 'Project', 'Tools', and 'Welcome, jstein'. The main area displays a 'Rules' table with columns for 'Conditions', 'R1', 'R2', 'R3', and 'R4'. The 'Conditions' column contains the expression '[5000.0 < 10000.0]'. The interface also shows a 'Rulesets' list on the left and a 'Show Conflicts' checkbox.

BPM with Oracle Business Process Composer

- **Oracle BPM Supports:**
 - Business and IT Collaboration
 - Web and Mobile Workspaces

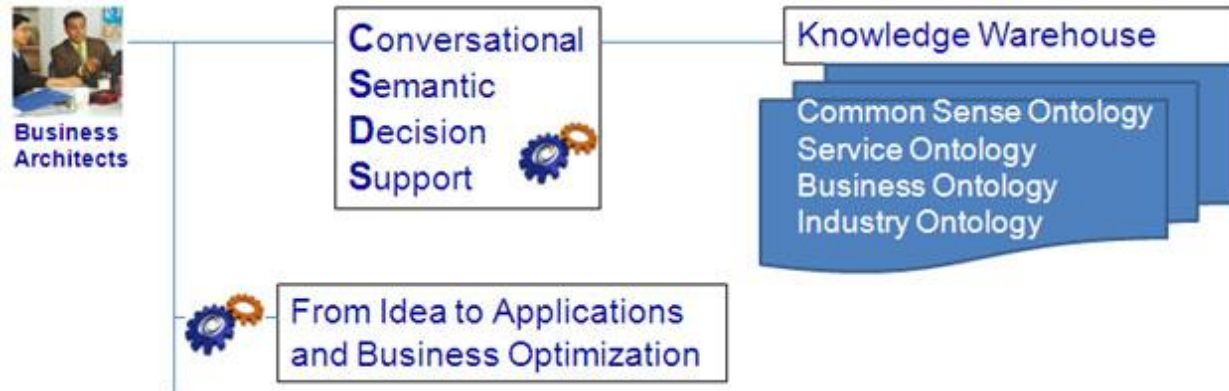


Major Steps in Creating an Application with Oracle BPM



Applying the conversational, semantic approach to Business Process Management (BPM)

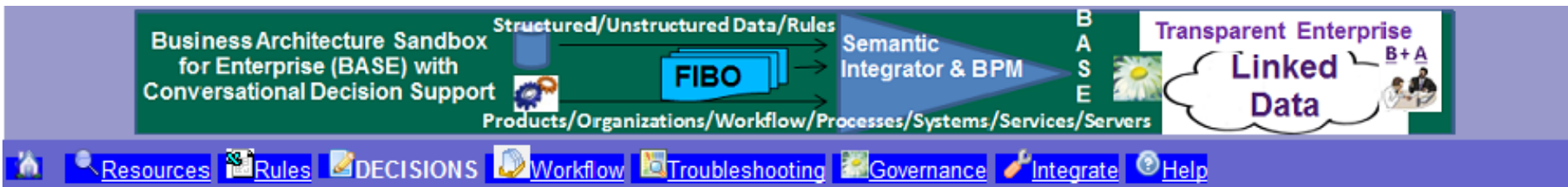
- While technology speaks XML and Web Services, business people prefer natural language (NL)
- A conversational semantic decision support can bridge these two worlds and provide mapping between NL and services
- For example, a Business Analyst (BA) writes a line of requirements: “application starts with login.”
- The program would reply “Do you mean the Authentication Service?”



Reference: <http://ITofTheFuture.com>

Business Architecture Sandbox for Enterprise (BASE)

- BASE* offers to business an easy entrance and a playground to collaborate with IT.
- BASE helps placing the seeds of semantic technology in the current business ground and helps transitioning to Semantic Cloud Architecture.

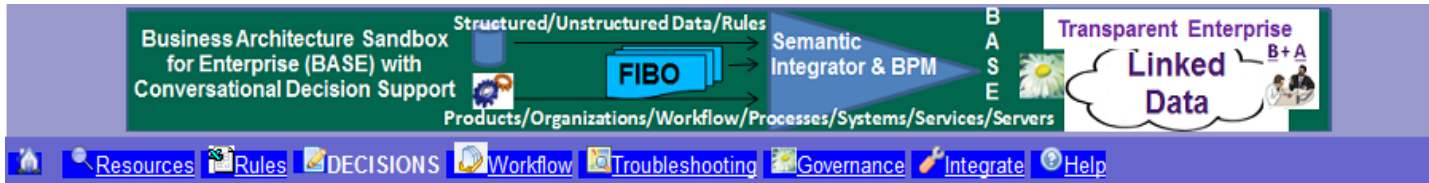


Reference: <http://ITofTheFuture.com>

Development of Workflow Components within the semantic model

A business analyst can type: “build a new **enrollment** workflow” and the program will display existing workflows and services that can be used for the **Enrollment** workflow.

Then, BASE will start a conversational wizard helping to connect a new component to the existing model and will continue with the development recommendations.



Welcome Yefim Zhuk

Business processes, data and system components are interrelated. Exposing these relationships in the [Enterprise Business Model](#) and further in a Business Ontology will transform the islands of enterprise data into linked and living knowledge in a semantically-rich environment to support Decision Making:

1) Find a Line Of Business to build a workflow with a sequence of Business Goals implemented with business states/processes.

A Business State or Process might have some decision points and an associated Decision Model to achieve specific business goals. For example, "Determine Person Likelihood of Defaulting on a Loan".

To re-enforce the top-down modeling approach, you start with the final state and move backwards to provide necessary support with additional states.

2) Build a Decision Model for a selected workflow or a business process. Each Decision Model consists of a sequence of Rules or Rule Families.

3) Build a Rule Family. A Rule Family is a table with one or more rules. Each Rule is a row in the table with the Conditions and Conclusion columns. In the illustration below, a Rule Family consists of a single rule.

Conditions					Conclusion	
Person Credit Score	Person Employment History	Person Other Loans Assessment			Person Likelihood of Defaulting on a Loan	
Is less than 650	is Unstable	is High	is	High	is	High

Business Architecture Sandbox for Enterprise (BASE) offers Data Dictionary & Semantic Model Integrator with built-in Rules Engine & Decision Modeling, allows SMEs and IT collaborate on Business Architecture tasks, while focusing on information, and transitioning to Semantic Cloud Architecture.

[View and Update New Components](#) | [View all components](#)

[List Business Functions or/and Processes](#) | [List System Components](#)

SOA & BPM

<http://ITofTheFuture.com>

Example: “On Boarding” Workflow

We’ll pick up an existing component, in this case “On Boarding Workflow” and use the EDIT control to customize this component.

Name of a Business Workflow: Enter the name according to the major goal of the workflow:

Description: Briefly describe the Business Workflow with their business states and processes:

The workflow is used to sync the internal systems with FDR while sharing new customer profile.
The workflow is designed of two business states (steps): a) Get customer profile via the web and store; b) Share saved data with FDR.

Auto entry !RUN http://ServiceGateway makes it runnable and the system will configure implementation for you. Alternatively you can enter reference links/info or TBD if no information available:

Supports an existing Business Workflow(s) or a Line of Business (parent):

| or

When you UPDATE or CREATE SIMILAR, the wizard helps providing semantically-rich environment

We will use the **Create Similar** control to end up with the new component, **Enrollment for Web Services Workflow**, similar to the existing component. We customize the new component and provide a URL to the Service Gateway for Service Registration. Before updating the business state, the program will check for unique and meaningful names, provide automatic linkage to existing enterprise components, and make all changes visible to collaborative communities.

Creating a rule with semantic check

Current decision model for the selected business component is below. [!Run the Component Decision Model](#)

Test rules: [Match](#) | [MisMatch](#) | [Random](#)

RuleFamilyId	RuleFamilyName
8	Determine Person Identity
ConditionDataNames: SSN Person Name Find Best Match or Create Person Address Find Best Match or Create Person Account Status Find Best Match or Create	
ConclusionDataNames: Person Identity Validation Action Find Best Match or Create	
Edit Record Delete Record Conditions and conclusions History Export Disconnect the rule from the component	

[Add more records](#)

Semantic reality check for Condition data names:

Known DATA ATTRIBUTE: [SSN](#)

Definition:

No match was found for **PERSON NAME** in the Enterprise Business Model. You still can [CREATE PERSON NAME](#) in your Local Glossary and collaborate with an architect to indicate the *Retrieval and Validation Methods* for the Data Attribute. Meanwhile we recommend you consider suggestions below and [collaborate](#) to map this data attribute to the Enterprise Business Glossary. Another option is to [come back to change the name of the data attribute](#)

The best matches for **PERSON NAME** are:

Type: DATA ATTRIBUTE; Name: [LAST NAME](#)

The resulting screen displays this rule family and automatically produces the links for running and testing the model. The program provides the semantic reality check for Condition Data Names. Some data attributes, like SSN, are already in the system, and some are not. The program provides recommendations on mapping the data names to similar data attributes, existing in the system, or creating new attributes on-the-fly.

Decision Table based Rules Engine (RE)

[List all rules](#) | [List all rule-based components](#) | Selected Rule Family is [Determine Person Identity](#) (id#8)

The rule family is used by the following components: [ENROLLMENT FOR WEB SERVICES WORKFLOW](#) | [STORE CUSTOMER PROFILE FROM THE WEB](#)

Conditions				Conclusions	
SSN Edit/Delete Data Name	Person Name Edit/Delete Data Name	Person Address Edit/Delete Data Name	Person Account Status Edit/Delete Data Name	Person Identity Validation Action Edit/Delete Data Name	
Existing Value true Edit Condition	Existing Value true Edit Condition	Existing Value false Edit Condition	Valid Value In Good Standing Edit Condition	Message: Existing account is valid for practical purposes Edit Conclusion	Delete Rule
Existing Value true Edit Condition	Existing Value true Edit Condition	Existing Value false Edit Condition	Valid Value Not Valid Edit Condition	Message: accept new customer profile instead of existing one. Edit Conclusion	Delete Rule
Add Condition	Add Condition	Add Condition	Add Condition	Add Conclusion	

The rules are present as the rows and columns in the **decision table**. Each row is a separate rule, which includes several **conditions** and a **conclusion**.

BASE uses semantic approach to connect the rules and data (a common RE problem). From “applications know how to handle data” to “data know how to handle data”.

Reference: <http://ITofTheFuture.com>

[SOA & BPM](#)

<http://ITofTheFuture.com>