



POPKIN SOFTWARE

BUSINESS • OBJECTS • XML
COMPONENTS • DATA

Welcome!

Notation Standards for TOGAF: BPMN and UML Play Together

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THE *Open* GROUP
Member



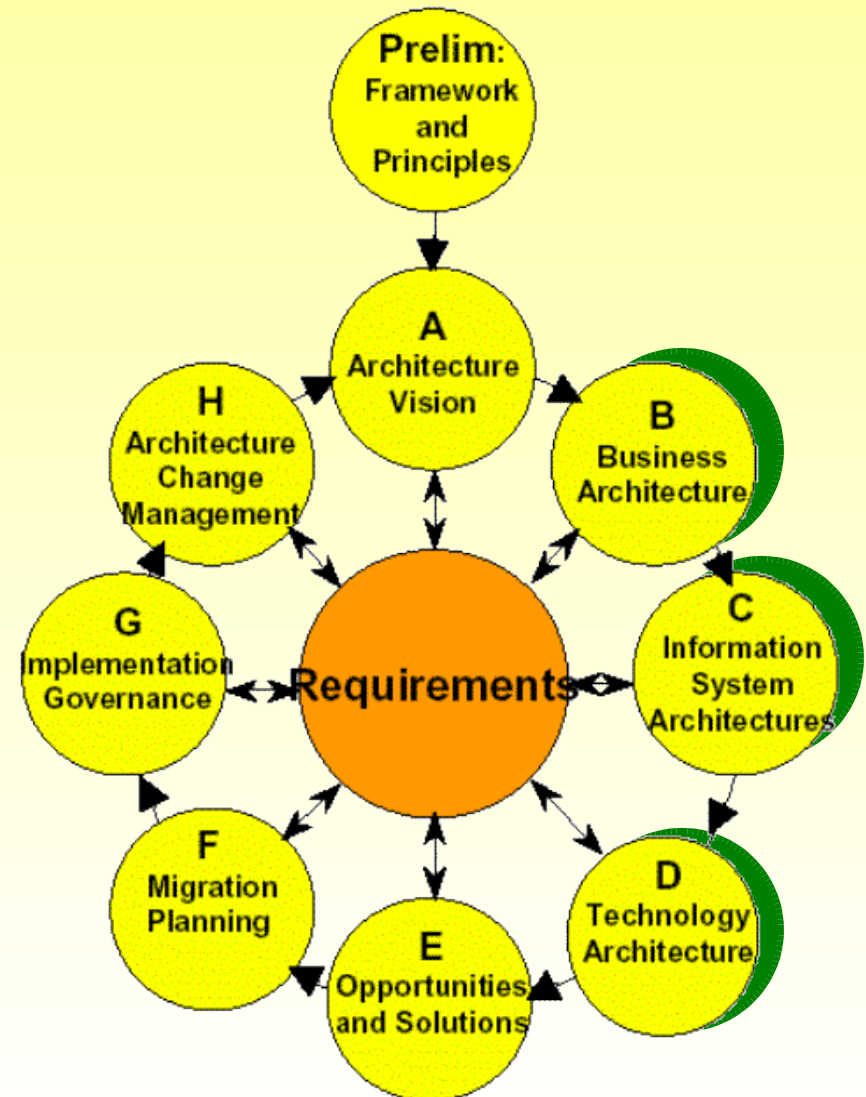
Architecture Context

❖ Business Modeling

- Process
- Information
- Messaging
- Participants

❖ Software Systems Analysis and Design

❖ Deployment



Architecture Scope

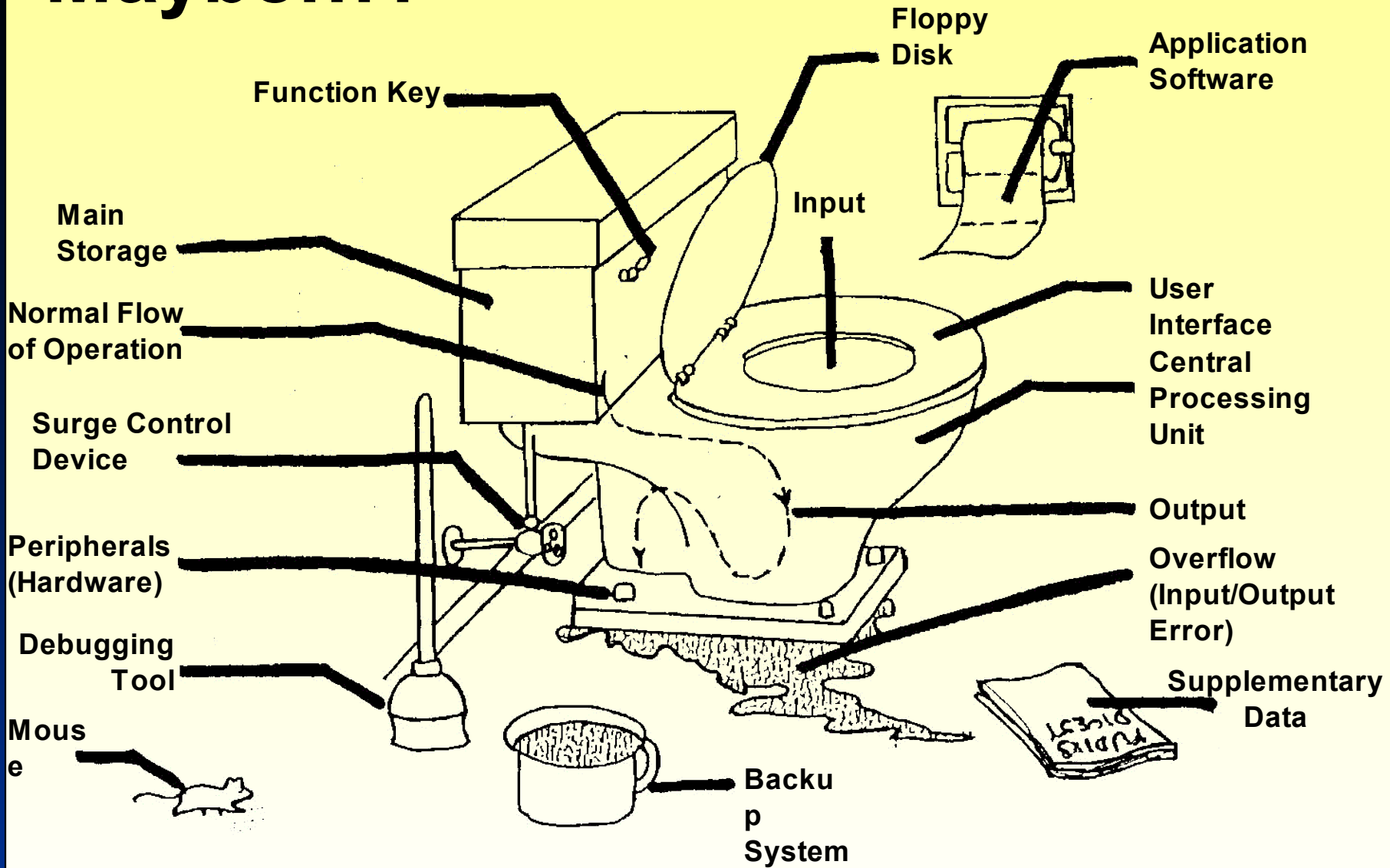
- ❖ Scope (Context View)
- ❖ Enterprise Model (Conceptual View)
- ❖ System Model (Logical View)
- ❖ Technology Model (Physical View)
- ❖ Detailed Representations (Out-of context View)



UML...or something else?

- ❖ Is a single modeling language enough?
 - UML describes system behavior (Zachman Rows 4 & 5)
 - Existing UML extensions for business modeling are described in terms of OO concepts, with which most business users are unfamiliar
 - A single modeling language to span all the abstractions required by business users, analysts, systems designers and developers is open to interpretation
- ❖ Using UML to describe Scope or Enterprise perspectives:
 - Takes it out of its original domain; and
 - Requires us to map the existing symbol set onto different concepts

Maybe...?

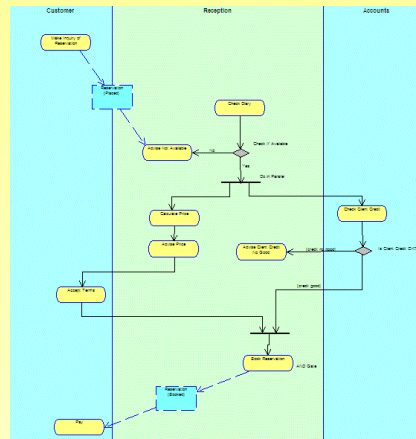


The “Something Else”

❖ A process-centric approach:

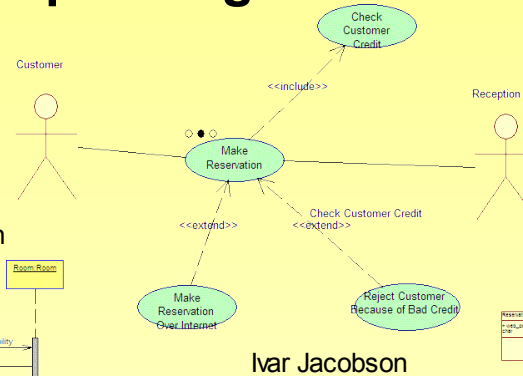
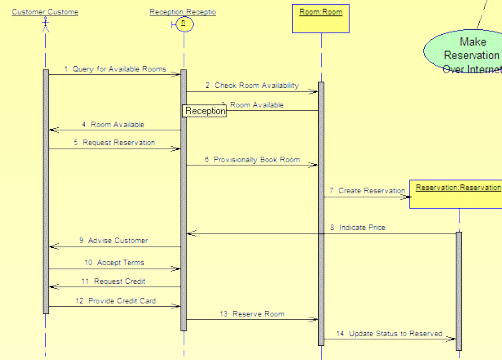
- Natural and intuitive for business analysts to use
- Control and message flows of processes modeled first
- Object model for the process defined implicitly
 - May also be modeled explicitly to show exposure through business services.

UML – Aggregation of multiple diagrams



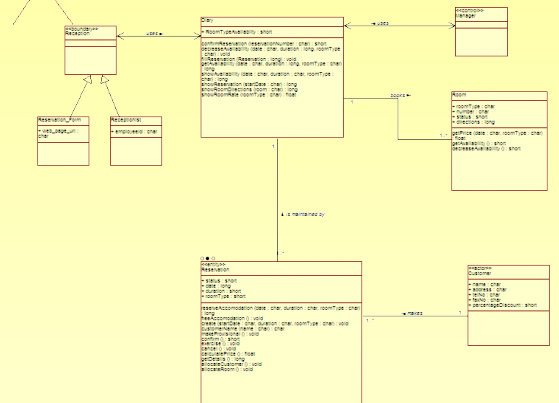
James Odell and Oracle

OMT and Grady Booch

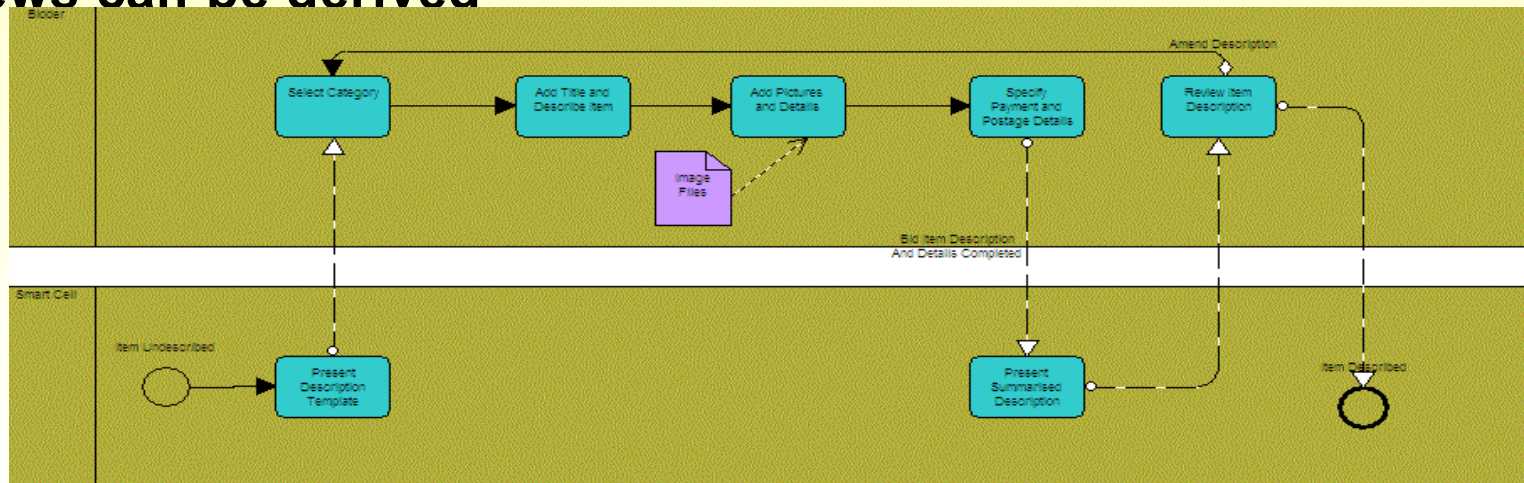


Ivar Jacobson

Grady Booch and OMT



Process-centric – single diagram type from which multiple views can be derived



Business Process Modeling Notation (BPMN)



What is BPMN?

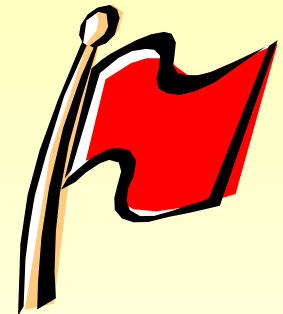
- ❖ BPMN – acronym for Business Process Modeling Notation.
- ❖ New standard for modeling business and web service processes.
- ❖ Provides users with an industry standard set of diagramming syntax and semantics, through a graphical diagram to facilitate the representation of business processes.
- ❖ Owned by BPMI – www.BPMI.org - the Business Process Management Initiative

BPMI.org



Why is BPMN needed?

.... oh no not another new standard!



Why is BPMN needed?

- ❖ Provide a standard where there hasn't been a standard
- ❖ BPMN helps with Process
 - Design
 - Deployment
 - Execution
 - Maintenance
 - Optimization
- ❖ Aid interoperability between Business Process Management tools
 - Support generation of process execution languages
- ❖ BPMN is a core enabler for Business Process Management (BPM) which is concerned with *managing change to improve business processes.*

Goals of BPMN

Provide a notation

- ❖ that is readily understandable by a business audience
- ❖ capable of providing technical detail for the purposes of implementation
- ❖ that supports generation of XML based execution languages such as Business Process Execution Language (BPEL)

Distinguishing Features

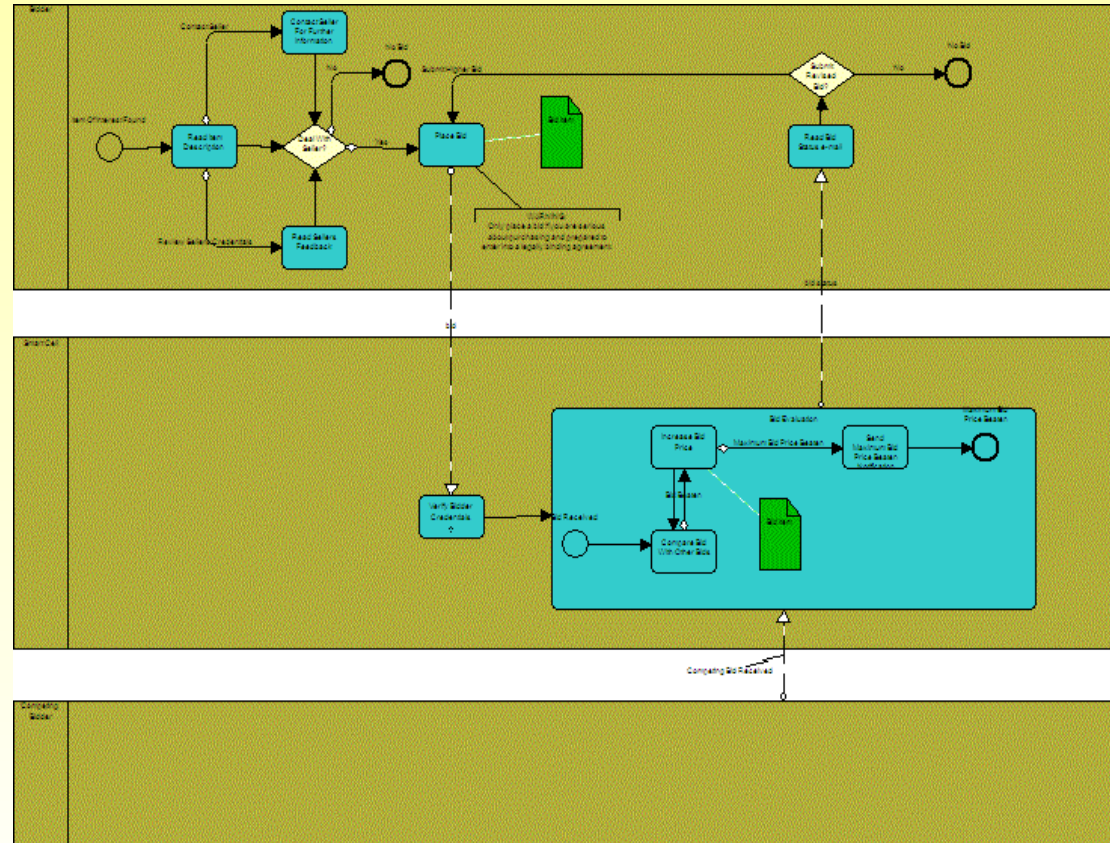
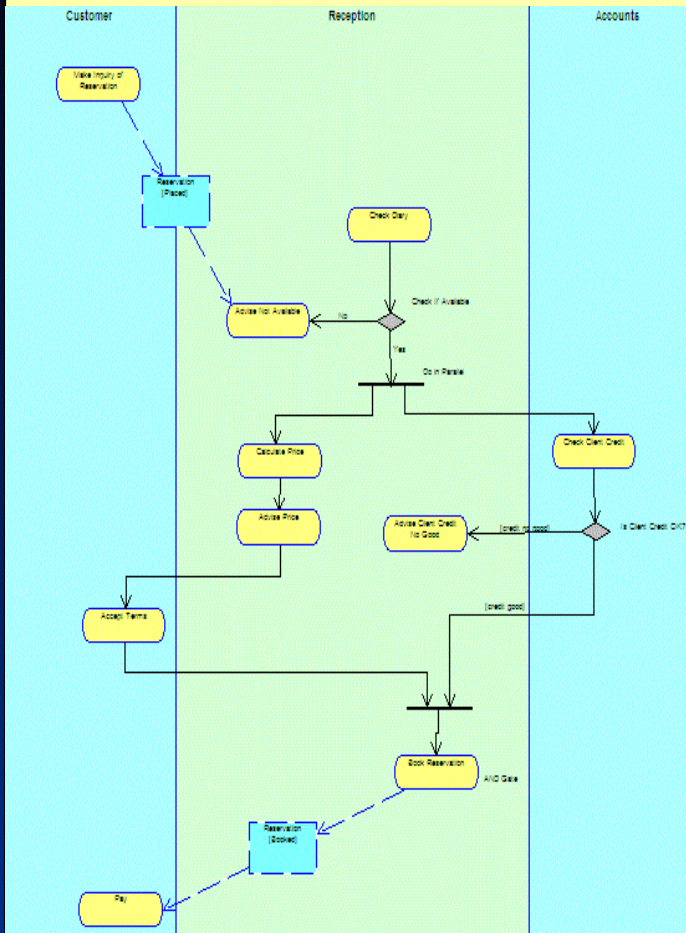
- ❖ Created with business execution languages and web services in mind.
- ❖ Define process interactions with process partners
- ❖ Depicts messaging
 - process behavior based on Web Services.
- ❖ Describe orchestration of Web Services
 - specifying the order in which it is meaningful to call Web services
- ❖ Error handling and compensation



Business Process Execution

- ❖ UML lacks mathematical foundation to map to Business Process Execution Languages
 - No defined execution meta-model for business processes
 - Any execution meta-model must be defined using MDA
- ❖ BPMN is based on BPML's execution meta-model
 - Does not require any additional steps for modeling fully executable processes

Spot the difference?



BPMN and UML Play Together

- ❖ BPMN and UML will co-exist
- ❖ Technical users may continue to use UML
- ❖ BPMN can be used to drive solutions that will run directly on a BPMS
- ❖ BPMN can be used as a business analysis front end for subsequent systems development using UML
 - UML users would then regard business processes merely as another type of component

BPMN and Web Services Description and Deployment



Key Components in Business Process Management

❖ Application Development

- description of web services
- concerned with modeling business processes

❖ Generation of Business Process Execution Language (BPEL)

- production of executable code

❖ Business Process Operation

- running the BPEL code

Application Development - Web Services Description Language

❖ What is WSDL?

- stands for Web Services Description Language
- is written in XML
- is an XML document
- is used to describe Web services
- is also used to locate Web services and the operations (or methods) the service exposes

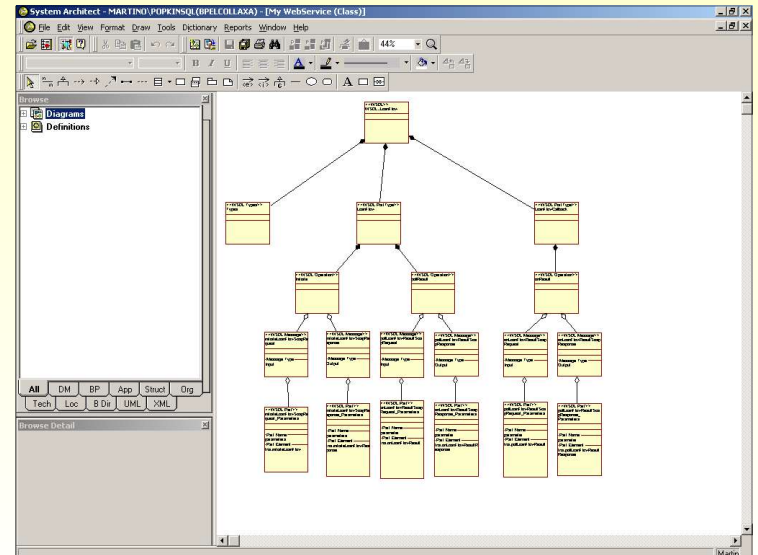
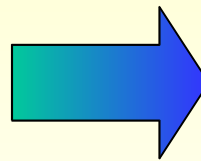


Web Services Description Language

- ❖ Because WSDL is written in XML format it is not easy to work with; need to relate business processes to the web services that they call
- Reverse the WSDL into System Architect as an XML Schema Hierarchy



Web Service



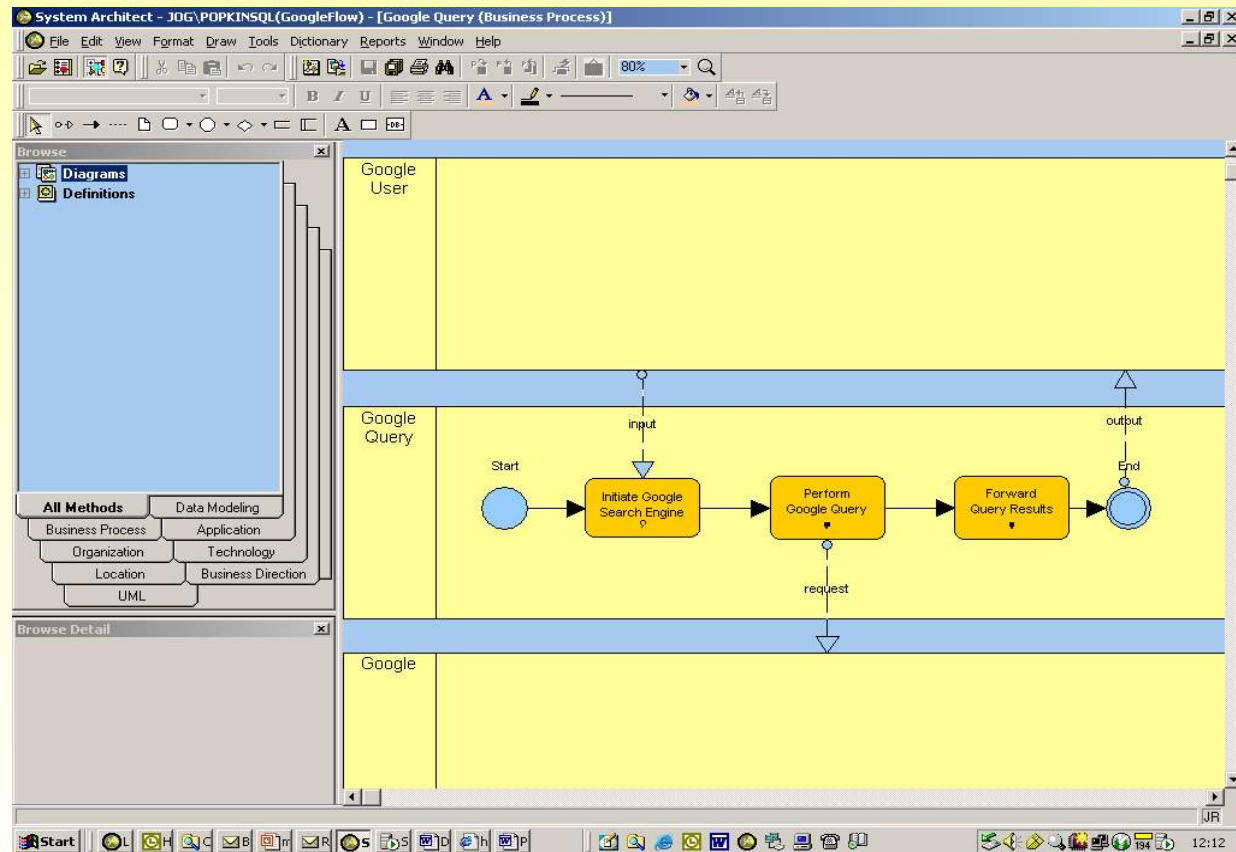
Application Development – Business Process Models

The **Business Process Modeling Notation (BPMN)** provides users with an industry standard set of diagramming syntax and semantics, through a graphical diagram, to facilitate the representation of business processes.

The “Functions” described in the XML hierarchy are re-used as UML Class Methods by dragging and dropping into BPMN Processes and Message Flows.

Business Process Modeling

- Design and develop business processes using BPMN and utilising WSDL



Generate Business Process Execution Language

❖ What is BPEL?

- Stands for Business Process Execution Language and is used for describing the execution of business processes
- provides an XML notation and semantics for specifying business process behavior based on Web Services.
- A BPEL process is defined in terms of its interactions with partners.
- BPEL orchestrates Web Services by specifying the order in which it is meaningful to call services
- It assigns responsibilities for each of the services to partners.
- It is used to specify both the public interfaces for the partners and the description of the executable process
- Is written in XML format
- Is an XML document



Deploying BPEL

- ❖ BPEL is intended to be platform independent.
- ❖ Execution bindings to specific hardware/software platforms, and other mechanisms required for a complete runtime environment for process implementation, need to be specified prior to running.

Execution of BPEL

Load the business processes into the server

Example of business process ready for execution within Collaxa BPM Server

Collaxa BPEL Console v2.0 - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media

Address http://jog:9700/BPELConsole/index.jsp

Collaxa BPEL Console

Module BPEL Manager Logout Support

Purge Database

Deployed BPEL Processes		Running BPEL Process Instances		
Name	Instance	BPEL Process	Last Modified	↑
CreditRatingService				
GoogleFlow				
LoanFlow				
StarLoan				
TaskService				
UnitedLoan				
Wait				

Deploy New Process

Logged to domain: default Collaxa BPEL Console v2.0 rc1

http://jog:9700/BPELConsole/displayProcess.jsp?processId=GoogleFlow&revisionTag=2.0

Local intranet 12:56



Example execution of BPEL

example showing diagrammatically the status of one instance of execution of the process

The screenshot displays the Collaxa BPEL Console v2.0 interface within a Microsoft Internet Explorer browser. The browser's address bar shows the URL: `http://jog:9700/BPELConsole/displayInstance.jsp?referenceId={A0F940CF-376A-4B96-A131-516CB974892D}&mode=flow`. The application title is "Collaxa BPEL Console".

The interface features a navigation menu with tabs for "BPEL Processes", "Instances", and "Activities". The "Instances" tab is selected, showing details for a specific instance:

- Title:** Instance #601 of GoogleFlow
- Reference Id:** bpel://localhost/default/GoogleFlow~2.0/601
- BPEL Process:** [GoogleFlow \(v. 2.0\)](#)
- Last Modified:** 2004-01-07 12:58:05.458
- State:** closed.completed
- Priority:** 0

Below the instance details, there is a section titled "Visual representation of the history of this BPEL business flow" with a timestamp "[As of 1/7/04 12:58 PM]" and a "Refresh View" link. The flow path is visualized as follows:

```
graph TD; start([start]) --> receive[receive]; receive --> assign[assign]; assign --> invoke[invoke];
```

The flow path is labeled "Path:" and includes the following steps:

- start** (represented by a green box)
- receive** (represented by a blue box with a gear icon), labeled "client (initiate)" with an incoming arrow from the left.
- assign** (represented by a yellow box with a document icon), labeled "Manipulate 'request1'".
- invoke** (represented by a blue box with a gear icon and an outgoing arrow to the right), labeled "GoogleSearch (doSpellingSu...".

The interface also shows a "Logged to domain: default" status and the version "Collaxa BPEL Console v2.0 rc1". The browser's taskbar at the bottom indicates "Done. 26 entries rendered." and "Local intranet".

BPMN Summary

- ❖ BPMN is designed to enable
 - Modelling of simple and complex business processes
 - Offers the capability to model the exchange of messages involved in web services delivery
 - Supports generation of Business Process Execution Languages (BPEL)
- ❖ It is expected to become the new standard to model business processes and web services.



BPMN and the future

Vendors are expected to provide support for

- ❖ Simulation of BPMN processes
- ❖ Generation of Business Process Execution Languages
- ❖ Integration into workflow management tools



Reference Material

- ❖ BPMN specifications from www.bpmi.org
- ❖ A White Paper titled '*BPMN and Business Process Management. Introduction to the New Business Process Modeling Standard*' available from www.popkin.com
- ❖ BPMN Tour from

<http://bpmi-notation-wg.netfirms.com/index.htm>





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Thank you

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