

Workflow Basics: Architecture and Applications

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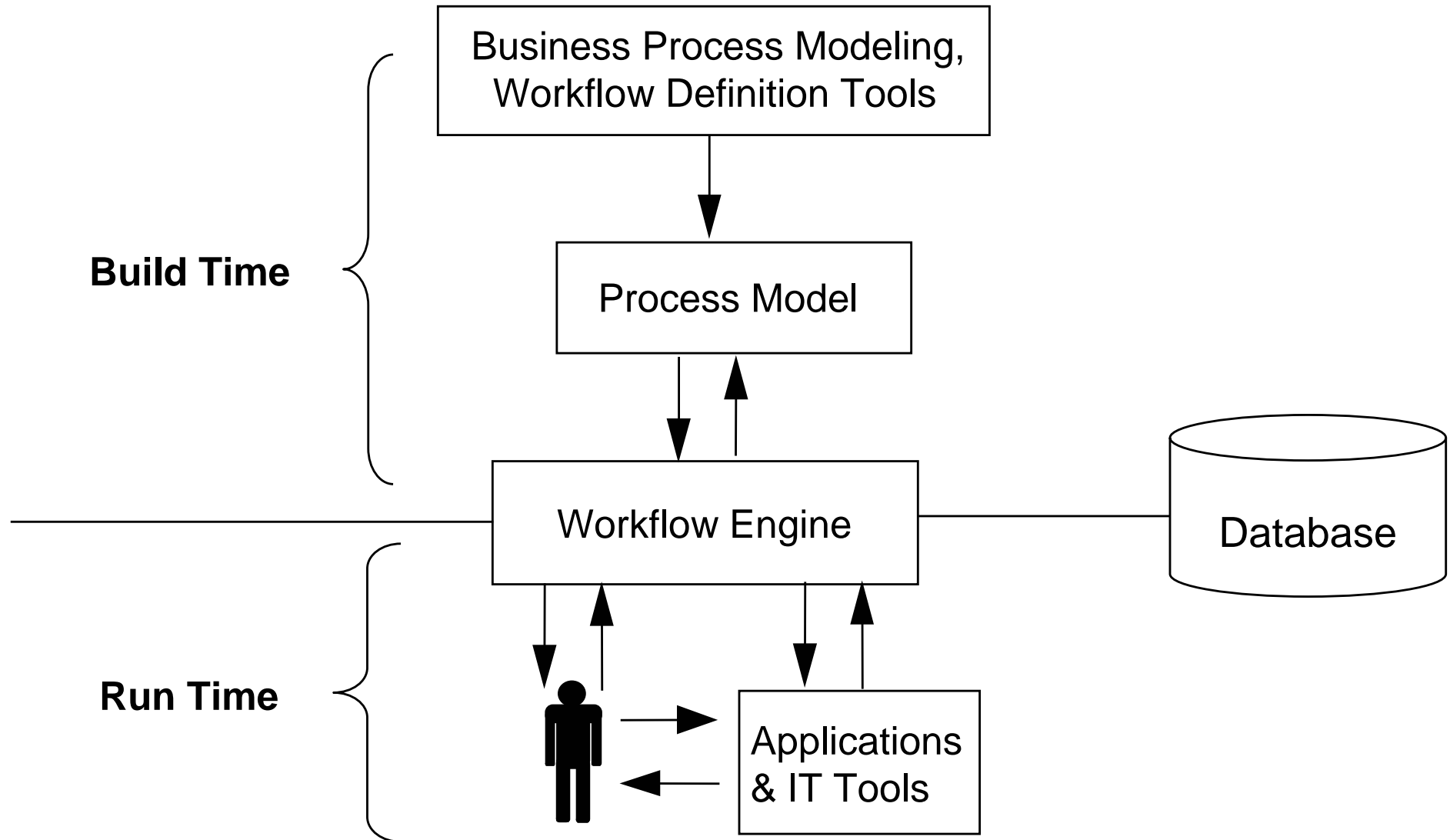
SIG on Process Automation and Management
<http://www.sigpam.org>



Outline

1. Major Components of a WFMS 
2. WfMC Architecture Standards
3. Example: Oracle Workflow System
4. Workflow as the e-Business Hub

Components of a Workflow Management System





Build Time and Run Time Activities

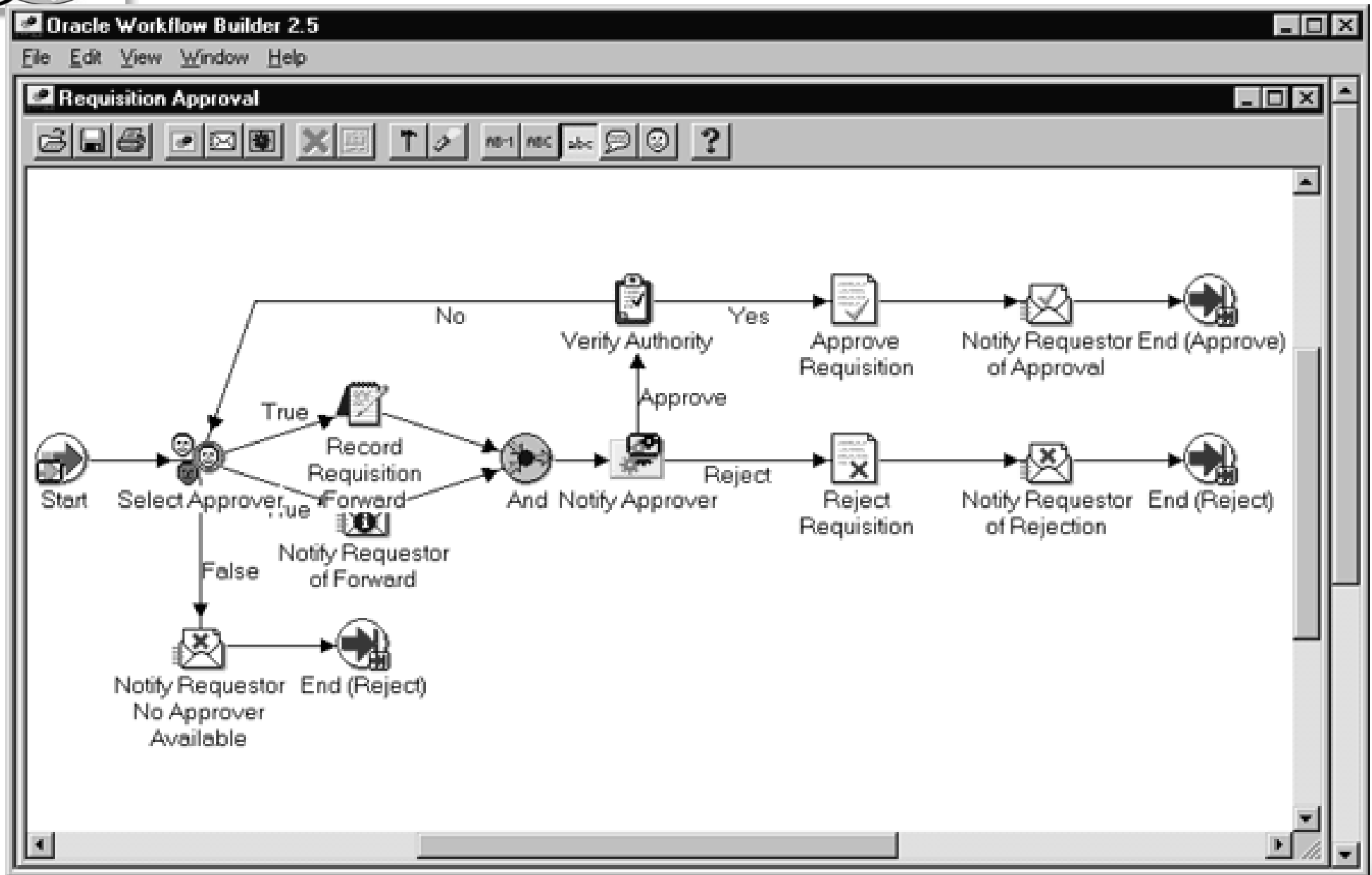
Build Time:

- Create the process model
- Create business rules
- Create User model

Rule Time:

- Create process instances
- Route activities
- Control processes and activities

Graphical Workflow Builder (Oracle)





Worklist

Worklist - Pierson, Ms. Sandra (Sandy) - Netscape

File Edit View Go Communicator Help

ORACLE

Select	Priority	Type	Subject	Sent	Due
<input type="checkbox"/>		Requisition	Requisition R52709131, Office Desk for 2,599.00 requires your approval	13-SEP-1999	15-SEP-1999
<input type="checkbox"/>		Requisition	Requisition R52709132, Office Supplies for 98.00 requires your approval	13-SEP-1999	15-SEP-1999
<input type="checkbox"/>		Requisition	Requisition R52709139, Reference Books for 189.00 requires your approval	13-SEP-1999	15-SEP-1999
<input type="checkbox"/>		Requisition	Requisition R52709144, Office Supplies for 245.00 requires your approval	13-SEP-1999	15-SEP-1999
<input type="checkbox"/>		Requisition	Requisition R52709146, OAG Airfare for 432.00 requires your approval	13-SEP-1999	15-SEP-1999
<input type="checkbox"/>		Requisition	Requisition R52709149, Headset for 121.00 requires your approval	13-SEP-1999	15-SEP-1999

Close Reassign...

Reassign...



Work Item

Detail notification for Pierson, Ms. Sandra (Sandy) - Netscape

File Edit View Go Communicator Help

ORACLE

To: Pierson, Ms. Sandra (Sandy) Sent: 13-SEP-1999 11:02:29 Due: 15-SEP-1999 11:02:29

Subject: Requisition R52709131, Office Desk for 2,599.00 requires your approval

Approval requested for:

Requisition
Number: R52709131
Description: Office Desk
Amount: 2,599.00

Forward From: Douglas, Mr. Carl Lawrence (Carl)
Requestor: Lewis, Mr. Barry
Note

[Justification](#) [Requisition Details](#)

Note

Action:

Document: Done



Monitor the Approval Process

Notifications List - Netscape

File Edit View Go Communicator Help

PRAC1E

Requisition Approval Requisition, Office Desk
Started: 13-SEP-1999 (0 Days)

Done	Who	Activity	Started	Duration	Result
✓	Walker, Mr. Kenneth (Ken)	Notify Requisition Approval Required	13-SEP-1999 11:01:18	38 Seconds	Approve
✓	Douglas, Mr. Carl Lawrence (Carl)	Notify Requisition Approval Required	13-SEP-1999 11:02:00	28 Seconds	Approve
	Fischer, Ms. Sandra (Sandy)	Notify Requisition Approval Required	13-SEP-1999 11:02:29	20 Minutes 55 Seconds	

View Diagram Advanced Options

Advanced Options

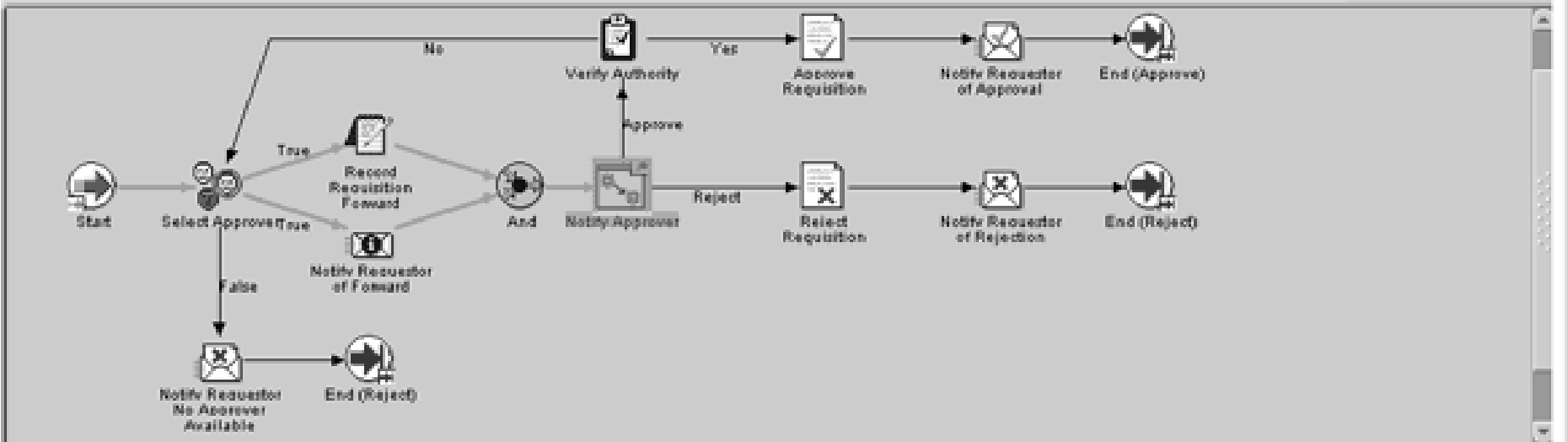
Workflow Monitor Allows Process Control

WFDEMO R52709131 - Netscape

File Edit View Go Communicator Help

ORACLE

Requisition Approval : WFDEMO,Office Desk Zoom In Zoom Out



Definition	Usage	Status	Notification	Item
Current Location : Requisition Approval/Notify Approver				
Item Type :	Requisition			(WFDEMO)
Activity Name :	Notify Approver			(NOTIFYAPPROVER)
Description :	Notify an approver and send a reminder			
Activity Type :	Process			
Message :				
Function :				
Result Type :	Approval			(WFRTD APPROVAL)

Abort Process Suspend Process Resume Process Reassign Expedite Attribute

Applet oracle.apps.fnd.wf.Monitor running



Workflow Navigator to Launch Processes

The screenshot displays the Oracle Applications Workflow Administrator interface. The window title is "Oracle Applications" and the menu bar includes "File", "Edit", "View", "Folder", "Tools", "Window", and "Help". The "ORACLE" logo is visible in the top right corner. The main window is titled "Navigator - Workflow Administrator" and has three tabs: "Functions", "Documents", and "Processes".

The "Processes" tab is active, showing a list of processes on the left and a detailed view on the right. The list includes:

- Sourcing
- Internal Requisitions
- Software Documentation
- PO Creation
- Reference Books
- Office Supplies
- Office Desk** (highlighted)
- Standard Receipts

The detailed view for the selected process shows the following text:

Once your purchase order has been approved, send it to the supplier by Electronic Data Interchange (EDI), the Web, or fax. If you communicate your purchase order by the Web, Oracle Web Suppliers allows your supplier to view and download the purchase order into their system.


Below the text, the process details are shown: "Purchase Order Process: 6724" with a zoom level of "100 %". There are "Zoom In" and "Zoom Out" buttons. The process flow diagram consists of four steps:

- Start
- Create and Approve Purchase Order
- Communicate Purchase Order to Supplier** (highlighted)
- Acknowledge Purchase Order

At the bottom of the interface, there are three buttons: "Abort", "Next Step", and "Launch". The status bar at the very bottom shows "Record: 1/1", "List of Valu...", "<OSC>", and "68528 : 188".



Outline

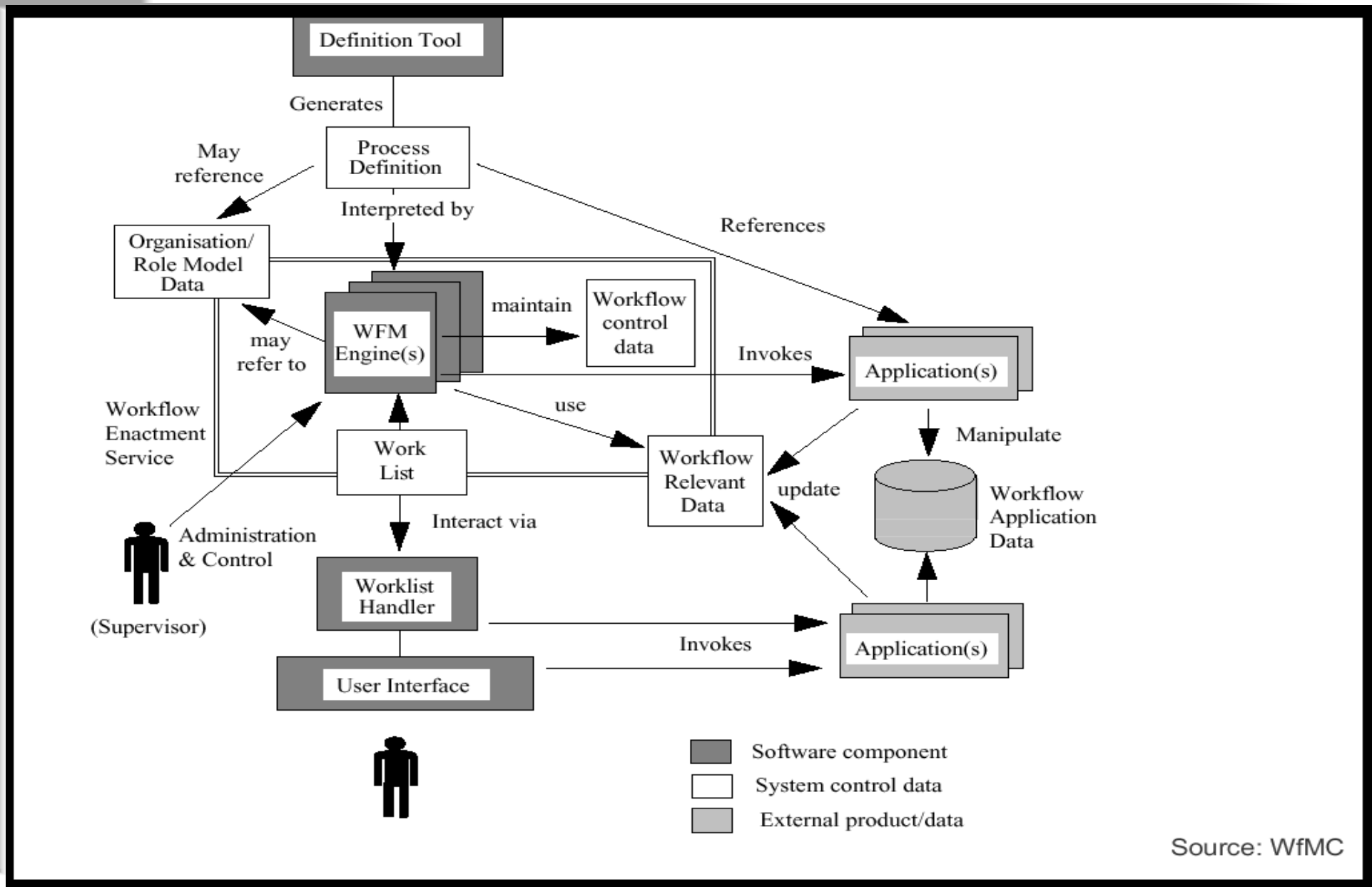
1. Major Components of a WFMS
2. WfMC Architecture Standards 
3. Example: Oracle Workflow System
4. Workflow as the e-Business Hub

Workflow Management Coalition

- non-profit international body
- established Aug. 1993
- development and promotion of workflow standards
- <http://www.aiai.ed.ac.uk/wfmc>
- Workflow Glossary
- Workflow Reference Model
- Standards for Interface to Workflow Systems
- Demonstration of interoperability



Architecture of Workflow Management System



Build-time: Process Definition

- set of discrete activity steps
- associated human and/or computer operations
- rules for progression of process through steps
- may be altered at run-time
- various forms (textual, graphical, control flow, data flow)

Run-time: Process Control

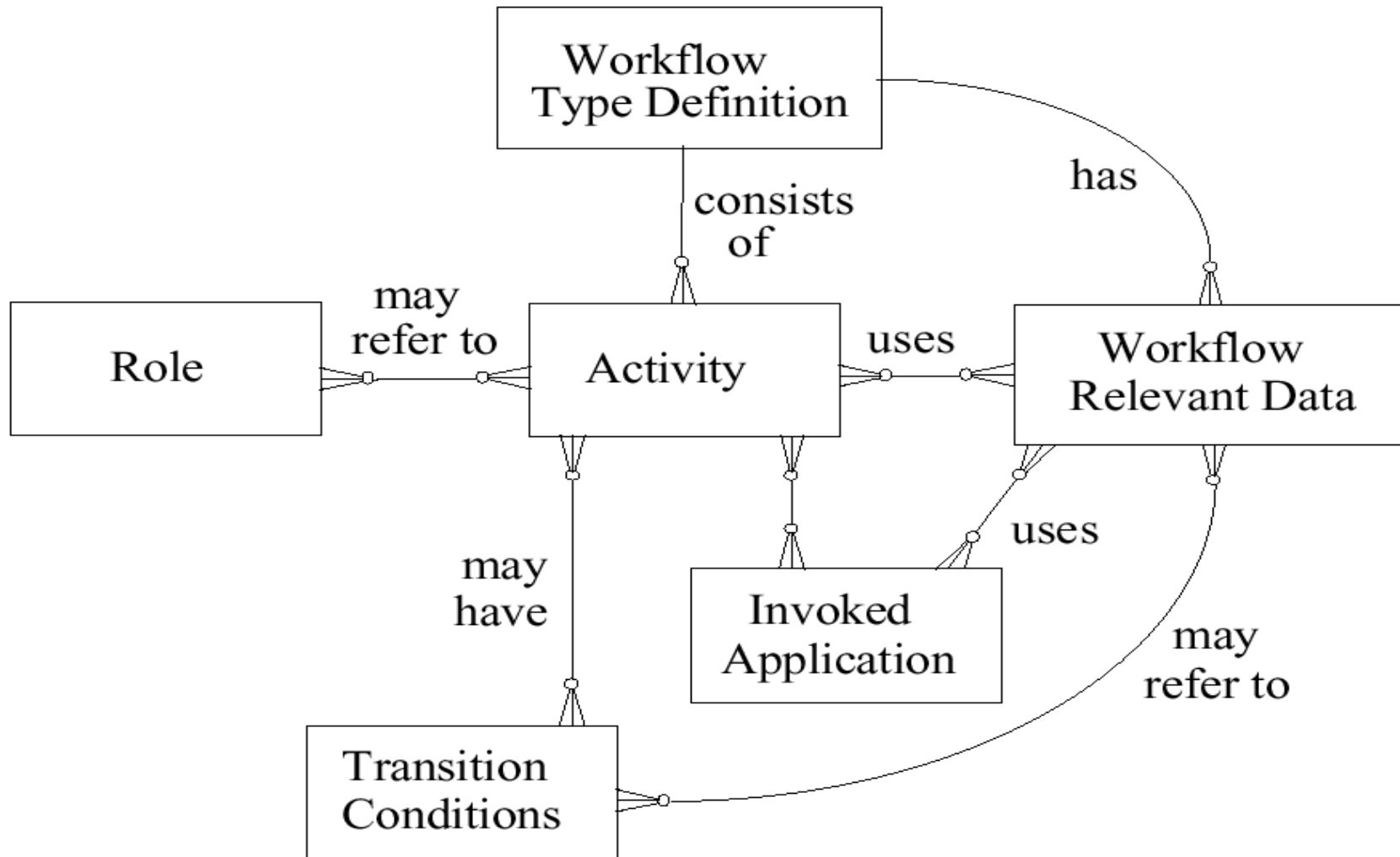
Process control functions

- interpretation of process definition
- creating and controlling process instances
- scheduling activity steps
- invoking activities

Activity Interactions

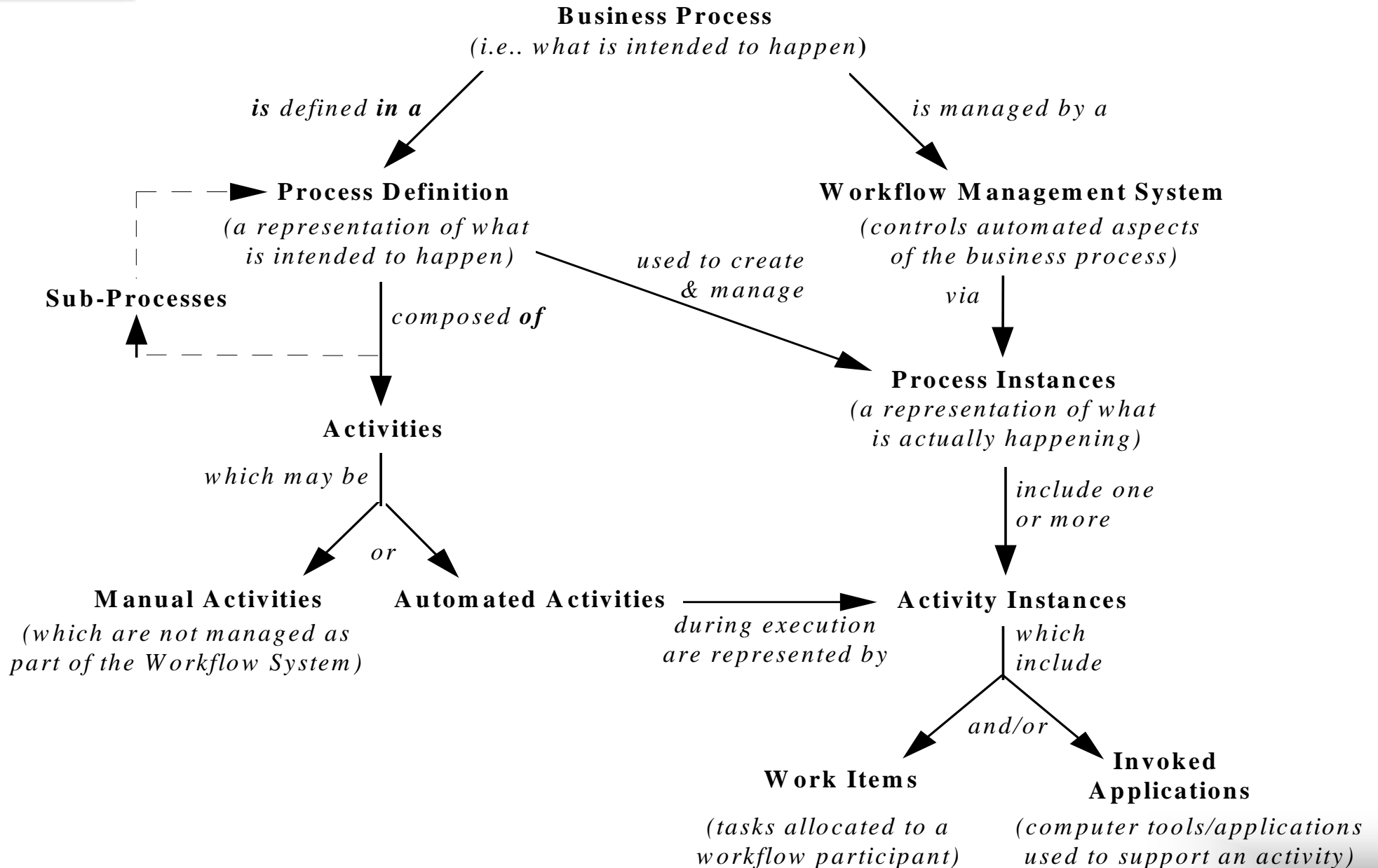
- interaction with workflow participants
- interaction with IT-systems
- operations performed outside of WFMS
- Interaction:
 - transfer of control
 - ascertain operational status
 - invoke application tools
 - pass data

Process Definition Model

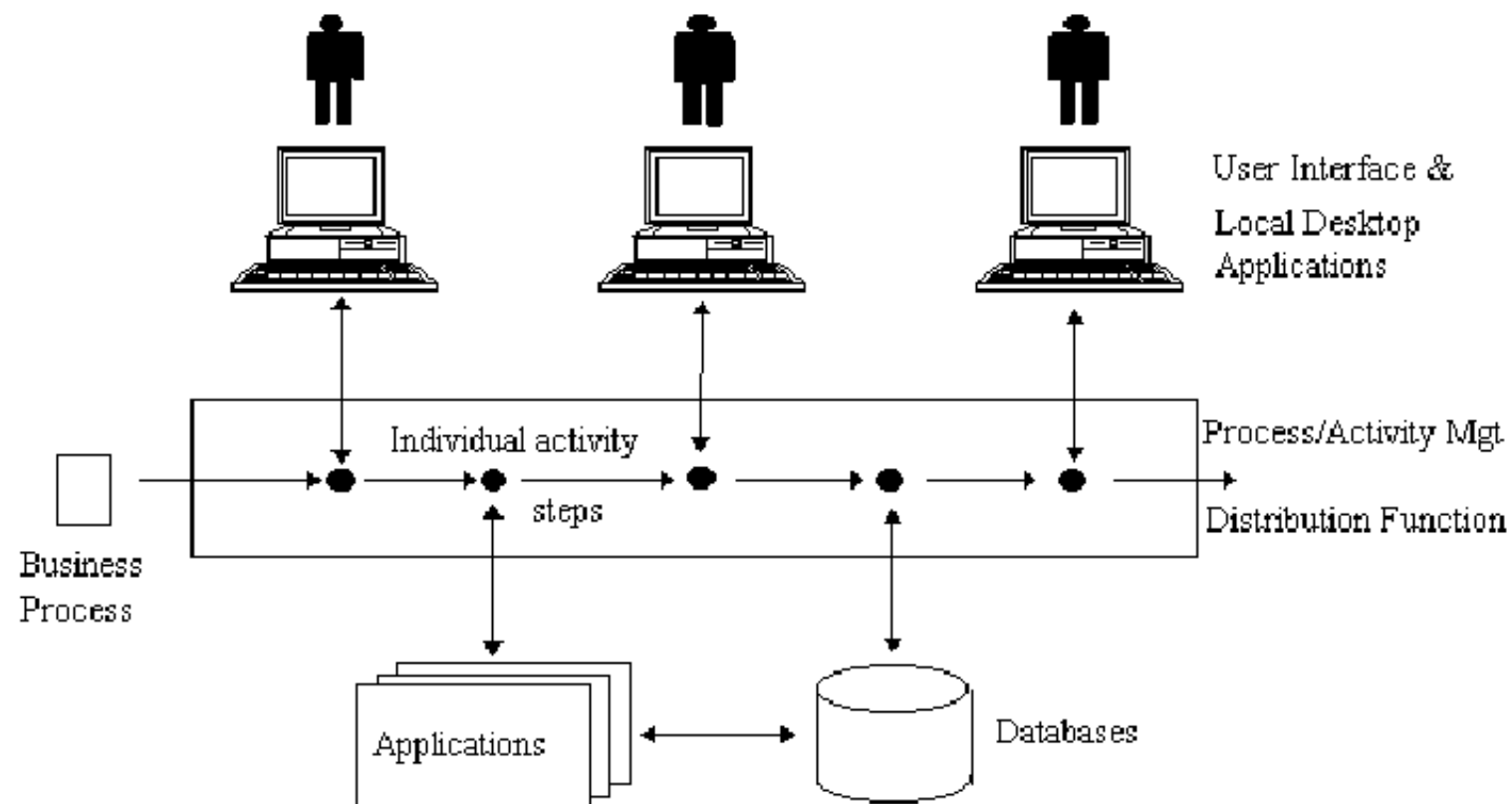


Source: WfMC

Relationships among Workflow Concepts

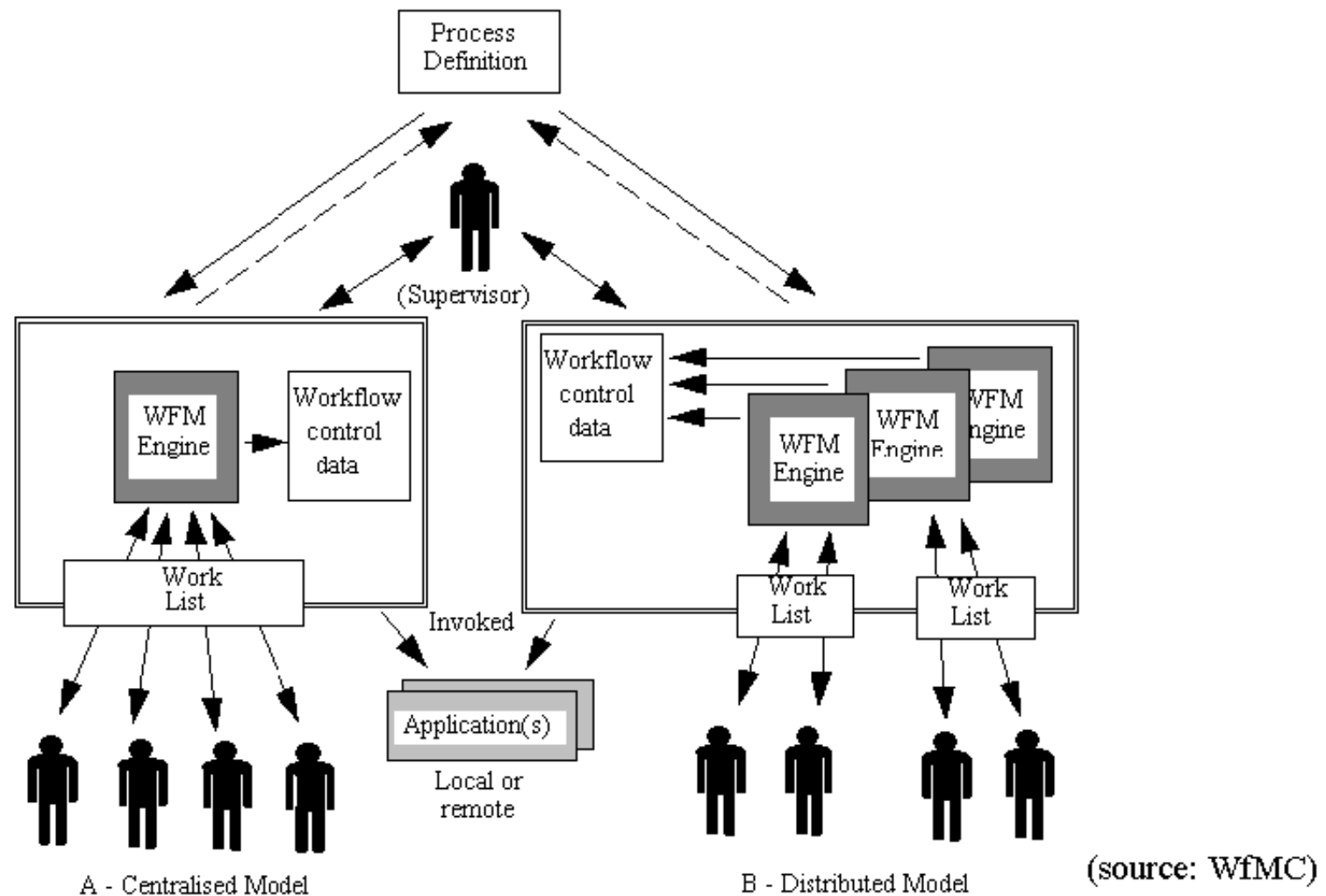


Distribution and System Interface

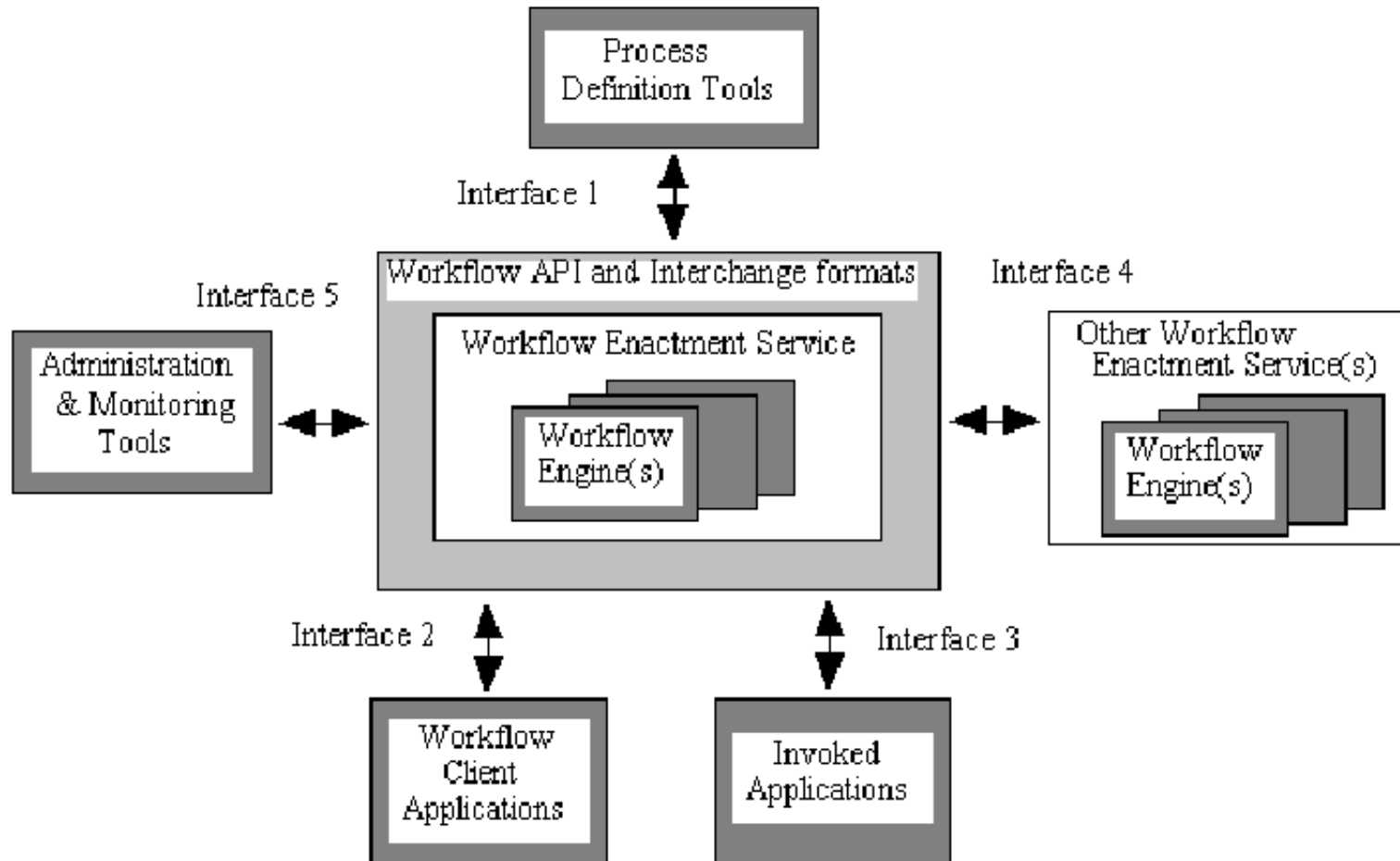


(source: WfMC)

Workflow Enactment Software

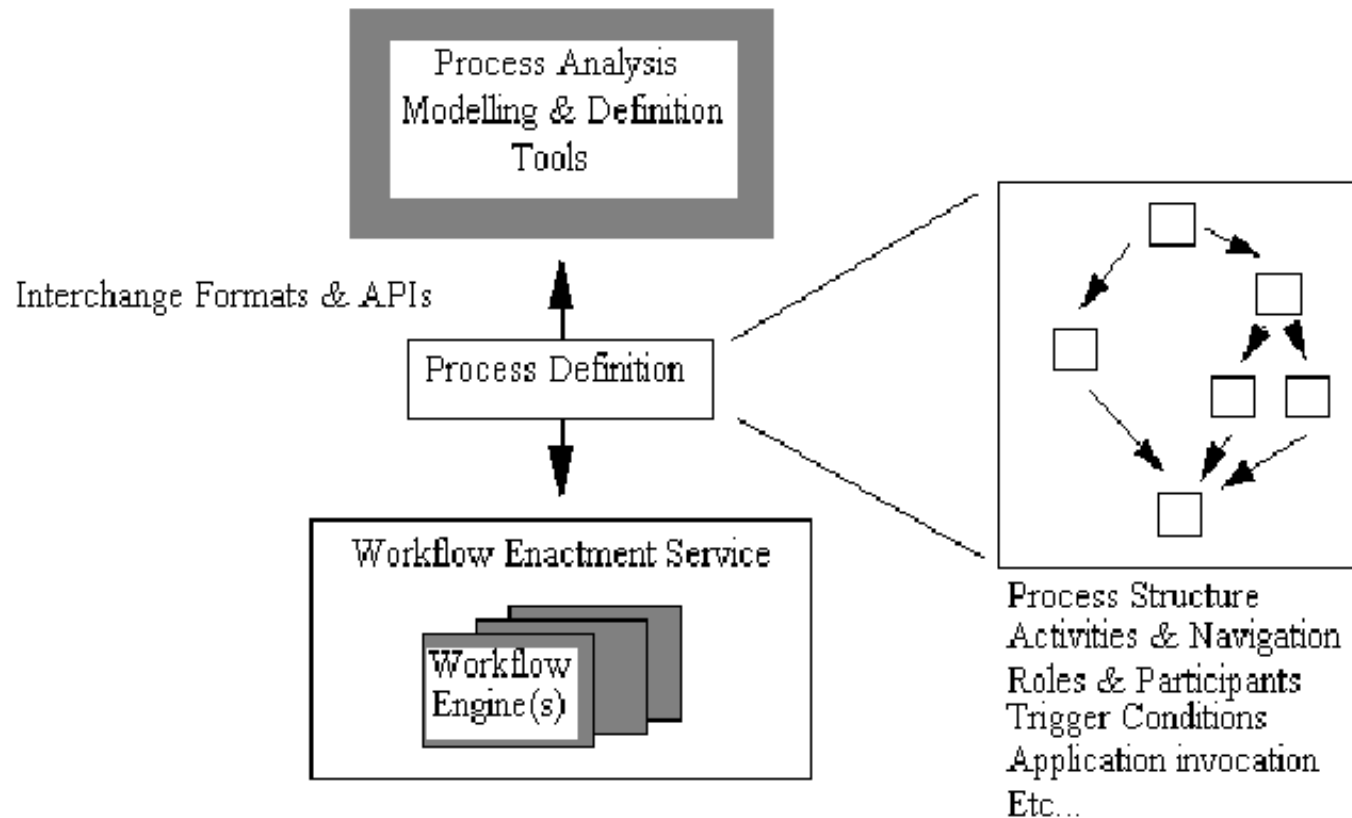


Workflow Reference Model



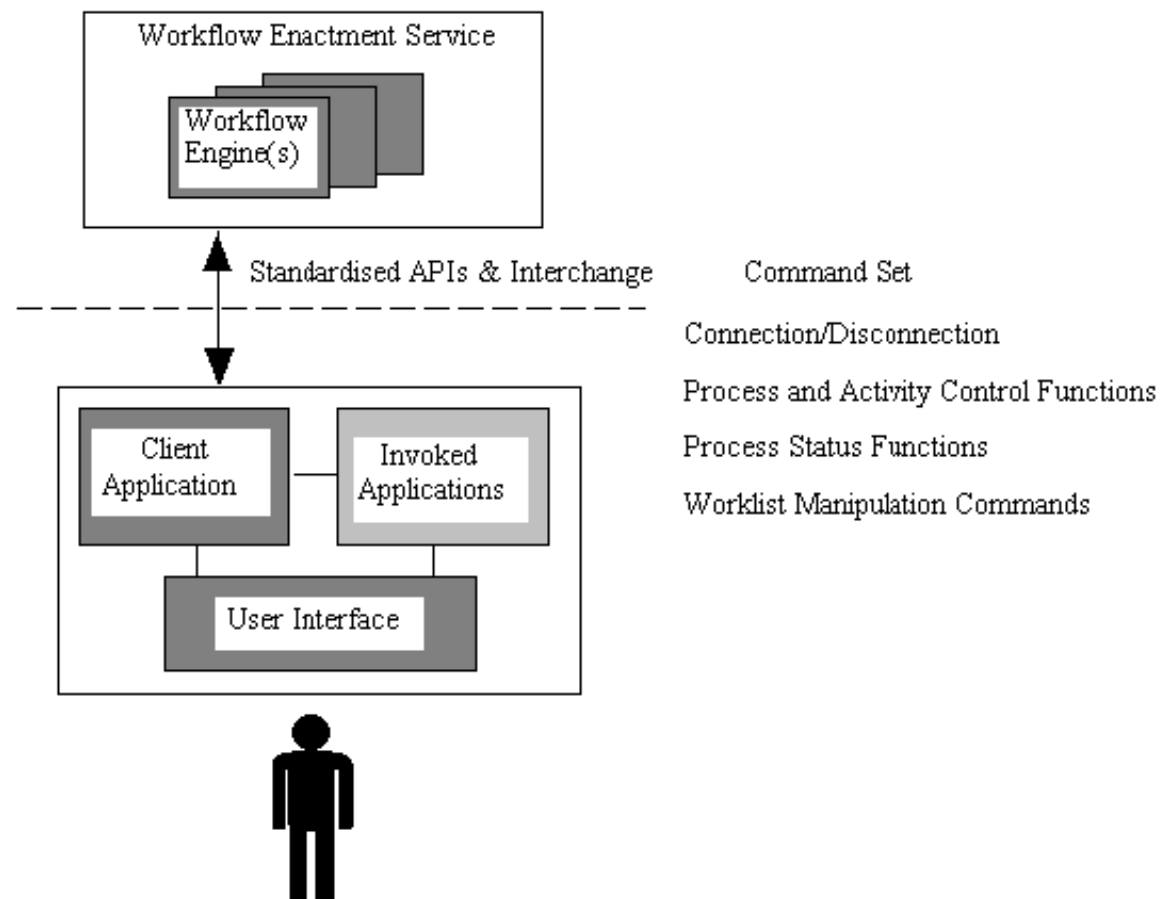
(source: WfMC)

Interface 1: Workflow Definition Interchange



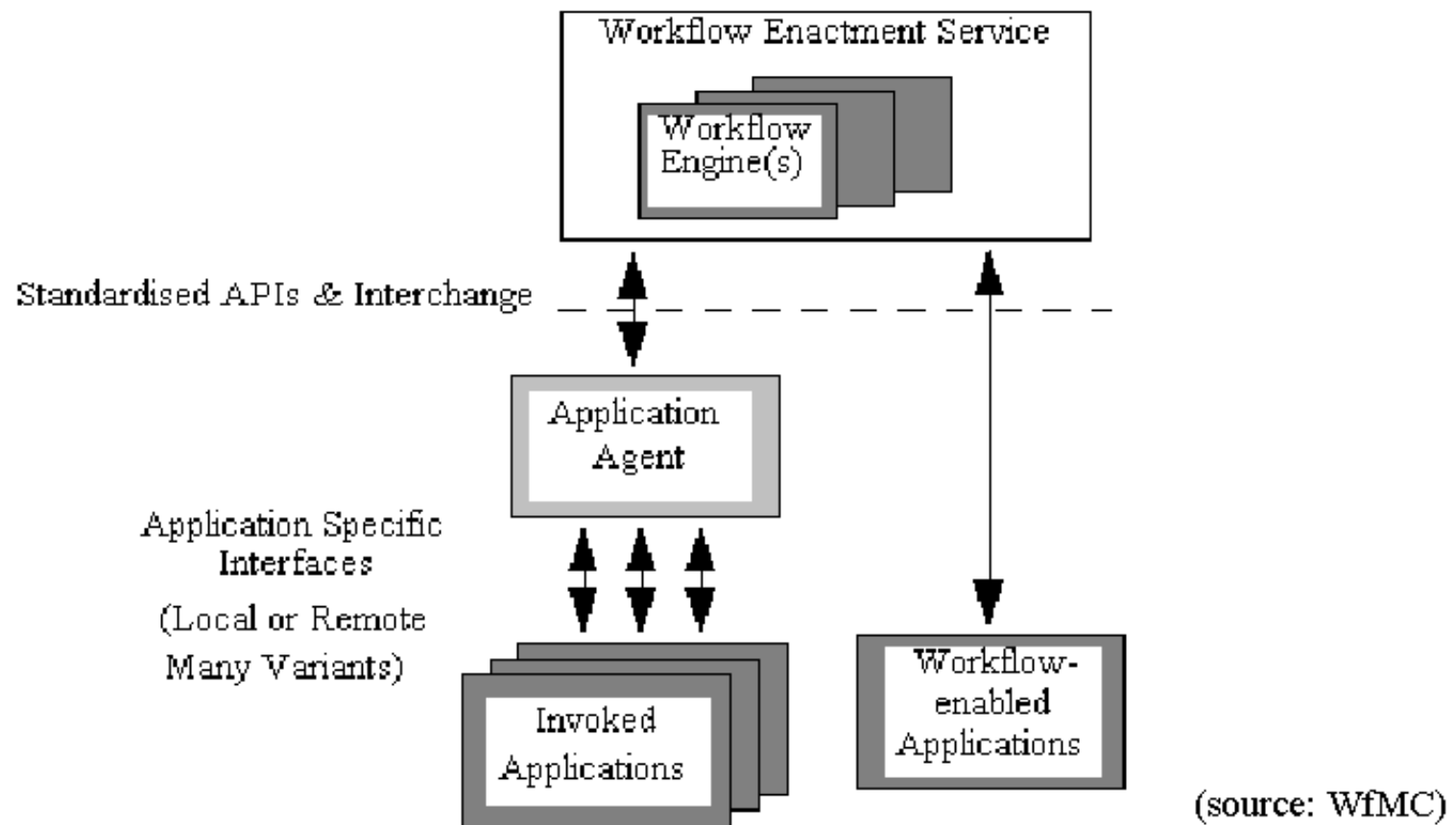
(source: WfMC)

Interface 2: Workflow Client Application Interface

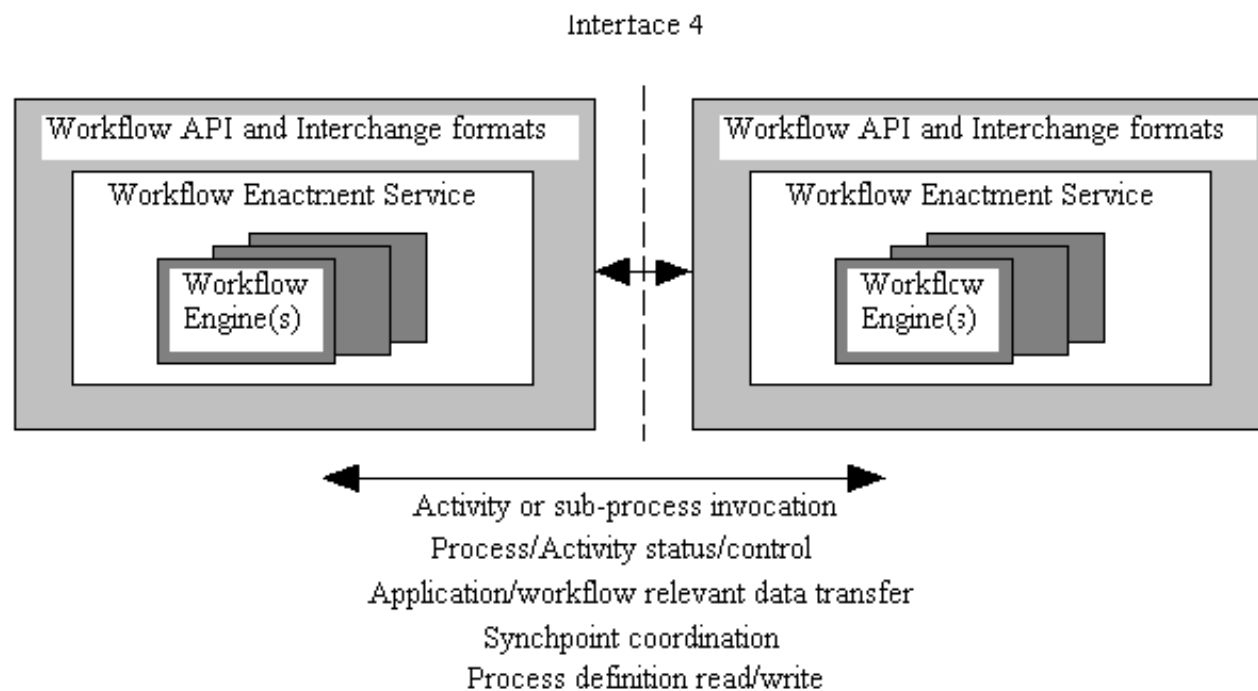


(source: WfMC)

Interface 3: Invoked Applications Interface

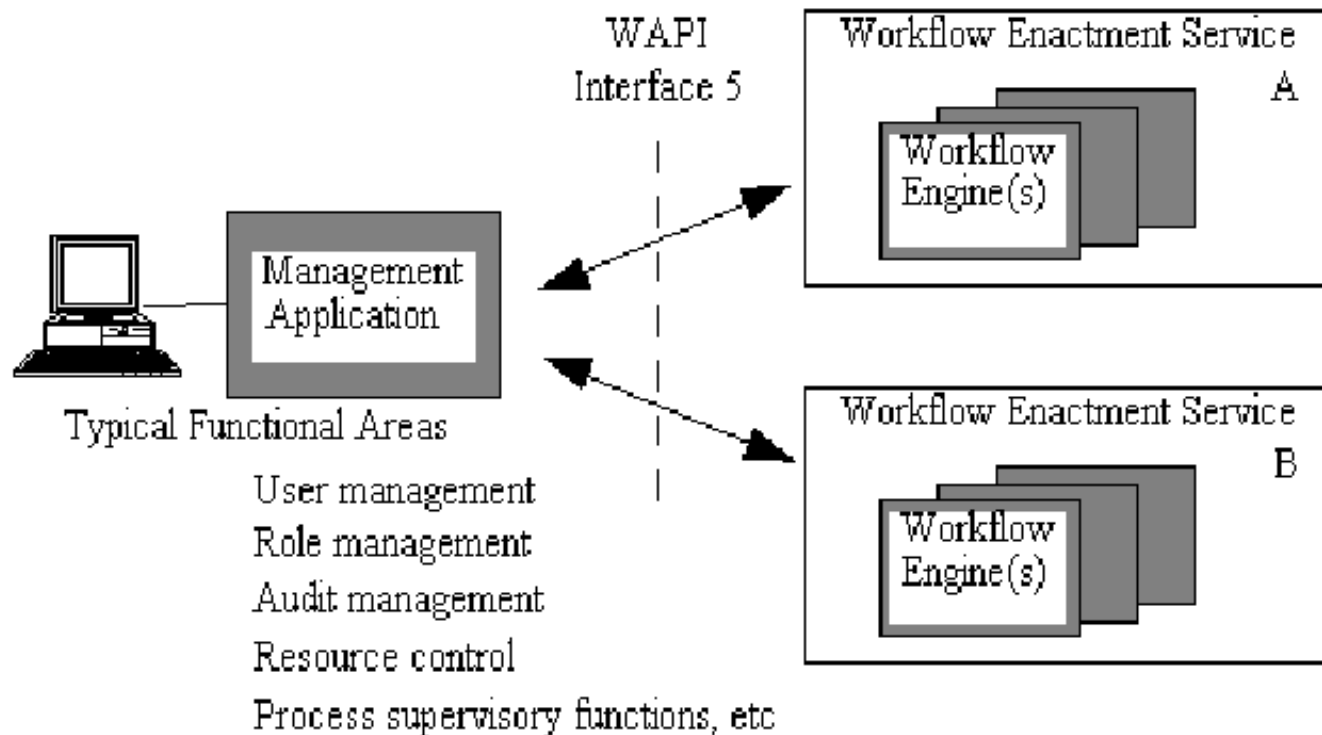


Interface 4: WAPI Interoperability Functions



(source: WfMC)

Interface 5: System Administration Interface



(source: WfMC)

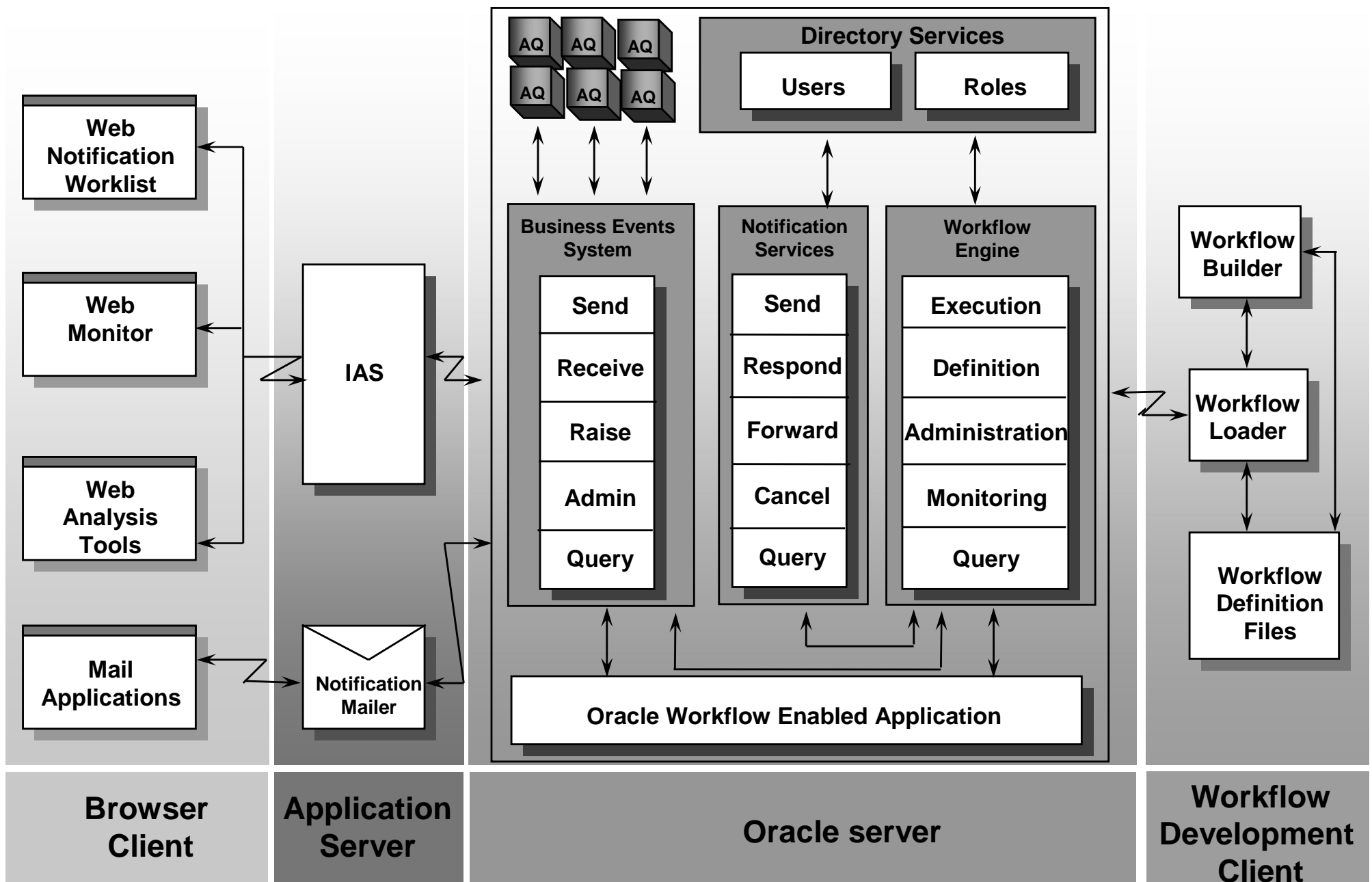


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Oracle Workflow Components



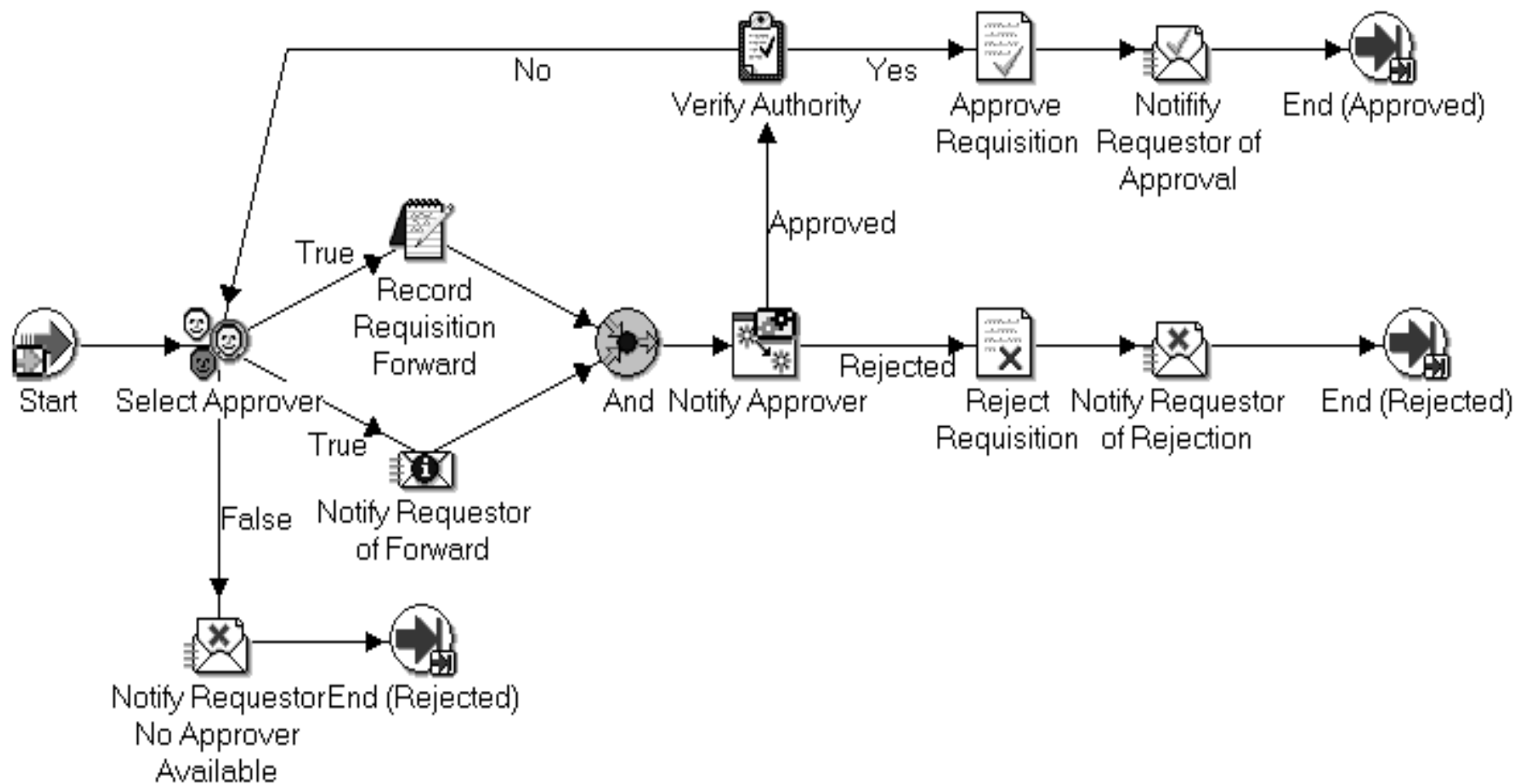


Workflow as Process Management Tool

- Modeling the Business Process
 - How are Requisitions Approved
 - What Happens After a Candidate Accepts an Offer
- Automating Business Rules
 - What Functions Need to be Executed
 - Who is the Next Approver
 - What Happens if Somebody Does Not Take Action
 - Who Gets Notified of Progress
- Separation of Application and Process Logic
 - Changes in the Business Process Need Not Affect the Code

Model The Business Process

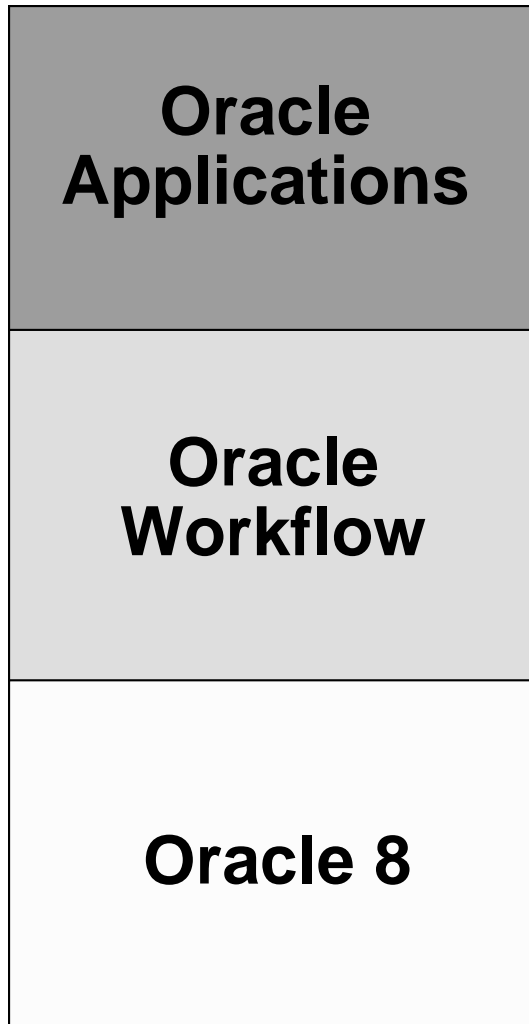
Example Process: Requisition Approval





Rule-Based Workflow Engine

Server Side Architecture Ensures Optimal Performance



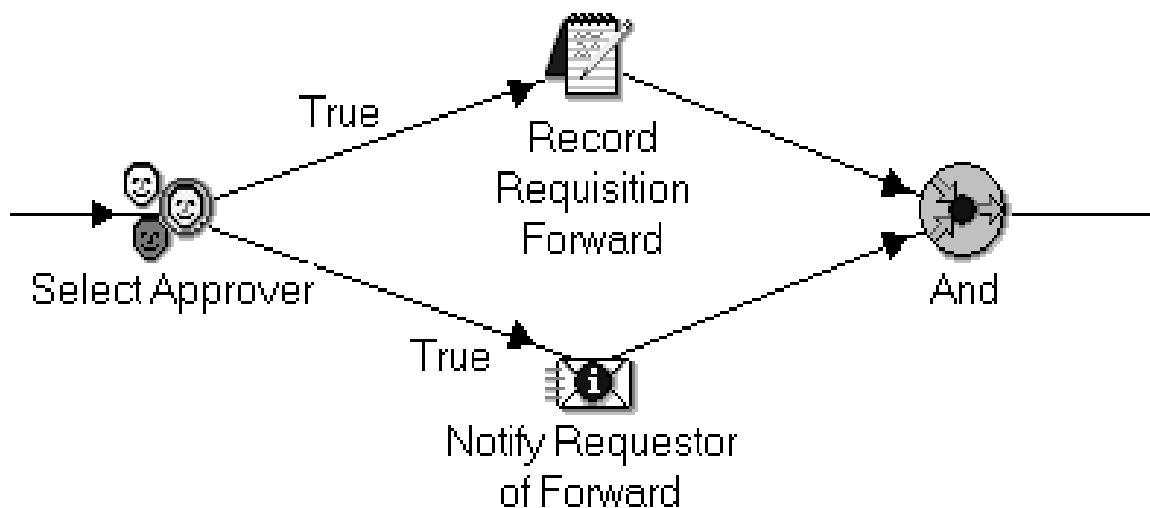
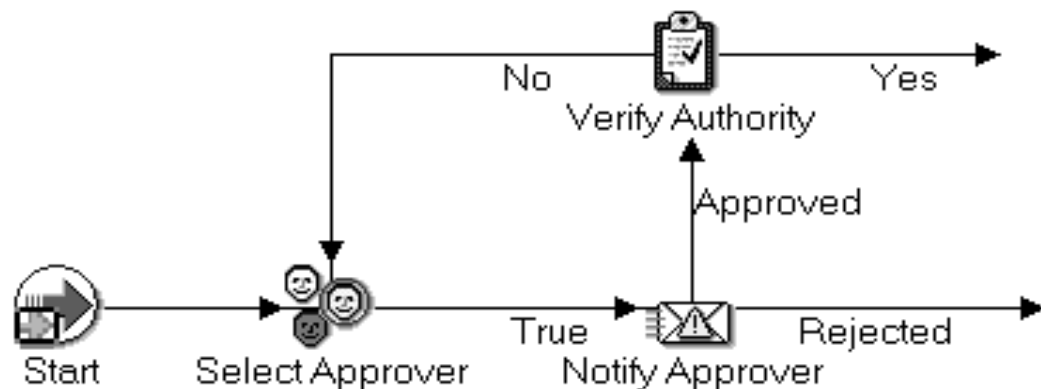
- Manages the Execution of a Business Process
- Immediate and Background Operation
- Generates 100% Audit Trail
- Delivers Notifications When Human Activities are Required
- Oracle 8 Transactional Integrity Guarantees Consistency Between Application and Workflow State

Rule-Based Workflow Engine

Supports Sophisticated Constructs

- Looping
- Results-Based Branching

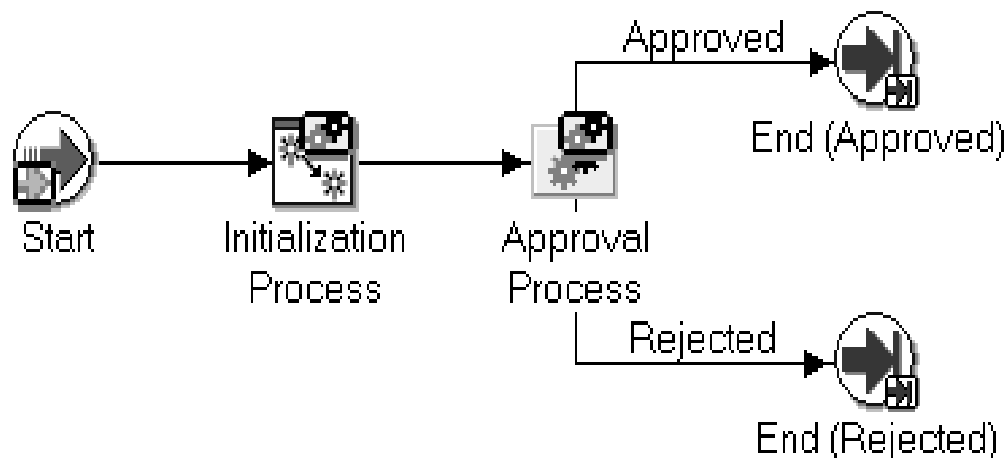
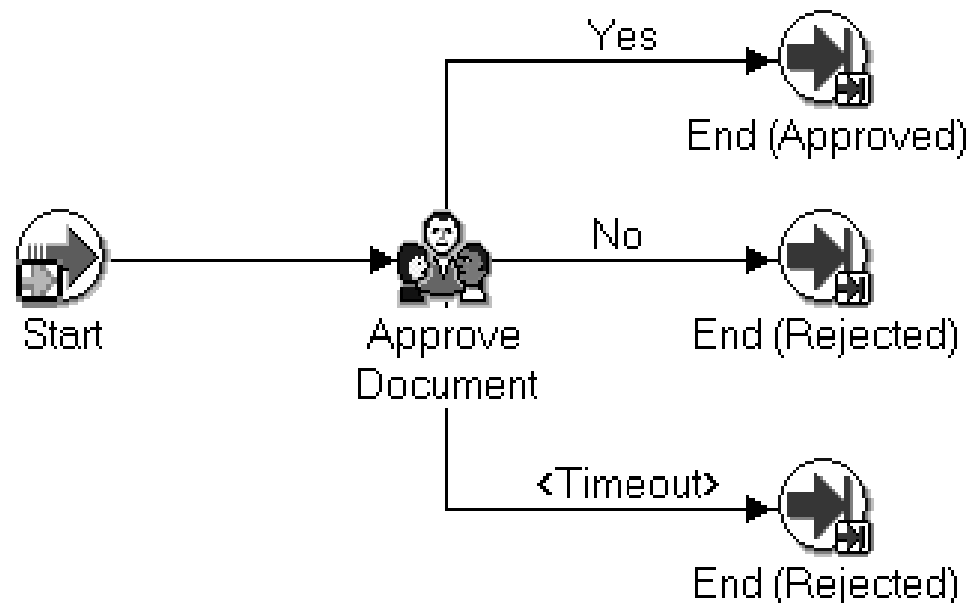
- Parallel Flows
- Rendezvous



Rule-Based Workflow Engine

- Voting
 - Escalations
 - Automatic Forwarding

- Sub-Processes
 - Unlimited Hierarchy of Sub-Processes



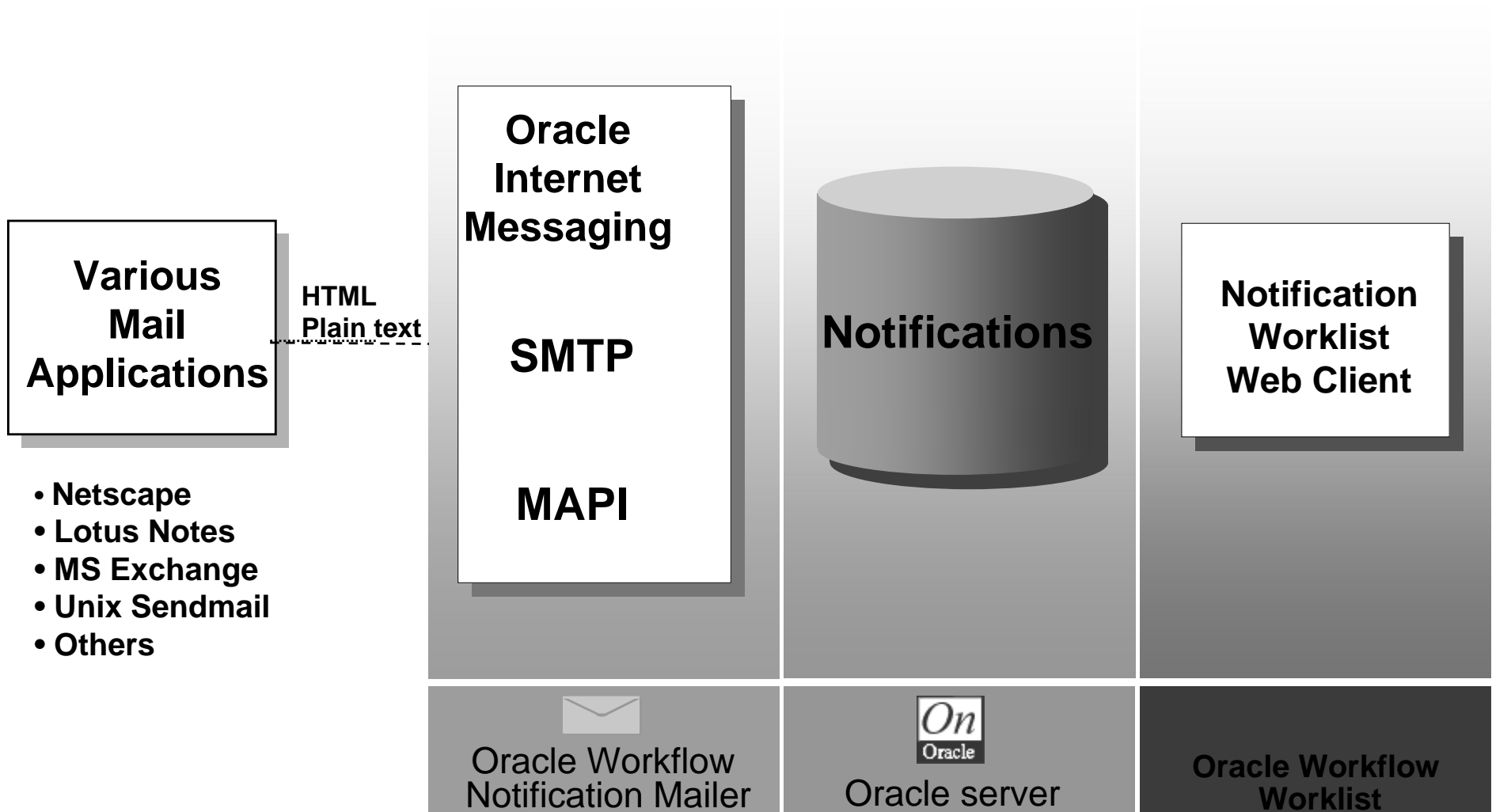


Rule-Based Workflow Engine

- **Complete Programmatic Extensibility**
 - Express Any Complex Business Rule as a PL/SQL Activity, and Allow Workflow to Branch on the Result
 - Write Custom Code as a PL/SQL Activity and Have the Workflow Engine Execute Your Code
- **PL/SQL API Available for All Engine Operations**
 - Communicate with the Workflow Engine Via Any Application Capable of Making a Remote Procedure Call to an Oracle Server



Human Notification System





Electronic Notifications

Reaching *Inside* and *Outside* the Enterprise

- Notify Users to Handle Activities that Cannot Be Automated
- Send Notifications to Individuals, Roles or Workgroups
 - Change the Participants in a Role Without Changing the Process
- Automatic Notification Forwarding
 - When User Is Unavailable (Vacation, Sick Leave)
 - When User Wants to Temporarily Delegate a Task



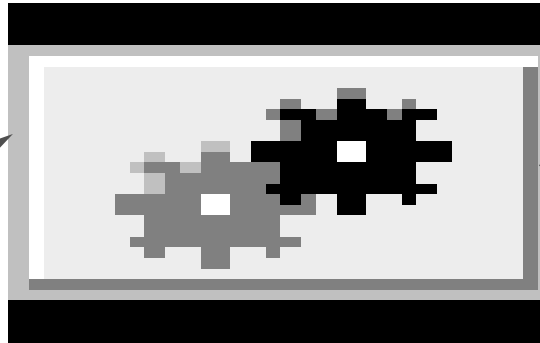
Electronic Notifications

Multiple Notification Methods

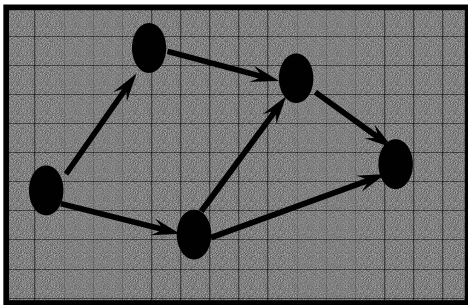
- Central Notification Viewer Form
 - Ideal for Regular Oracle Applications Users
 - Allows Drill-Down to Oracle Applications Screens to Facilitate Task Completion
- Internet-Enabled
 - Use Standard Web Browser to Review and Respond to Notifications
 - Allows Drill-Down to Any URL to Facilitate Task Completion
- Email (Oracle InterOffice, MAPI, UNIX Sendmail)
 - Detail and Summary Formats
 - Plain Text Email or HTML Attachment
 - True Disconnected Work

Closing the Business Process Reengineering Loop

Workflow Engine



Workflow Definition



Oracle
Express Analyzer

Enabling end user analysis and decision making.



Oracle Workflow Future Plans

- Integration With Document Management Systems
 - Oracle InterOffice Document Library
 - Third Party Document Management Systems
- CORBA
 - Interface to Oracle Workflow Engine
 - Object Management Group, Workflow Management Facility
- Workflow Management Coalition
 - Interface II Compliance
- 100% Java



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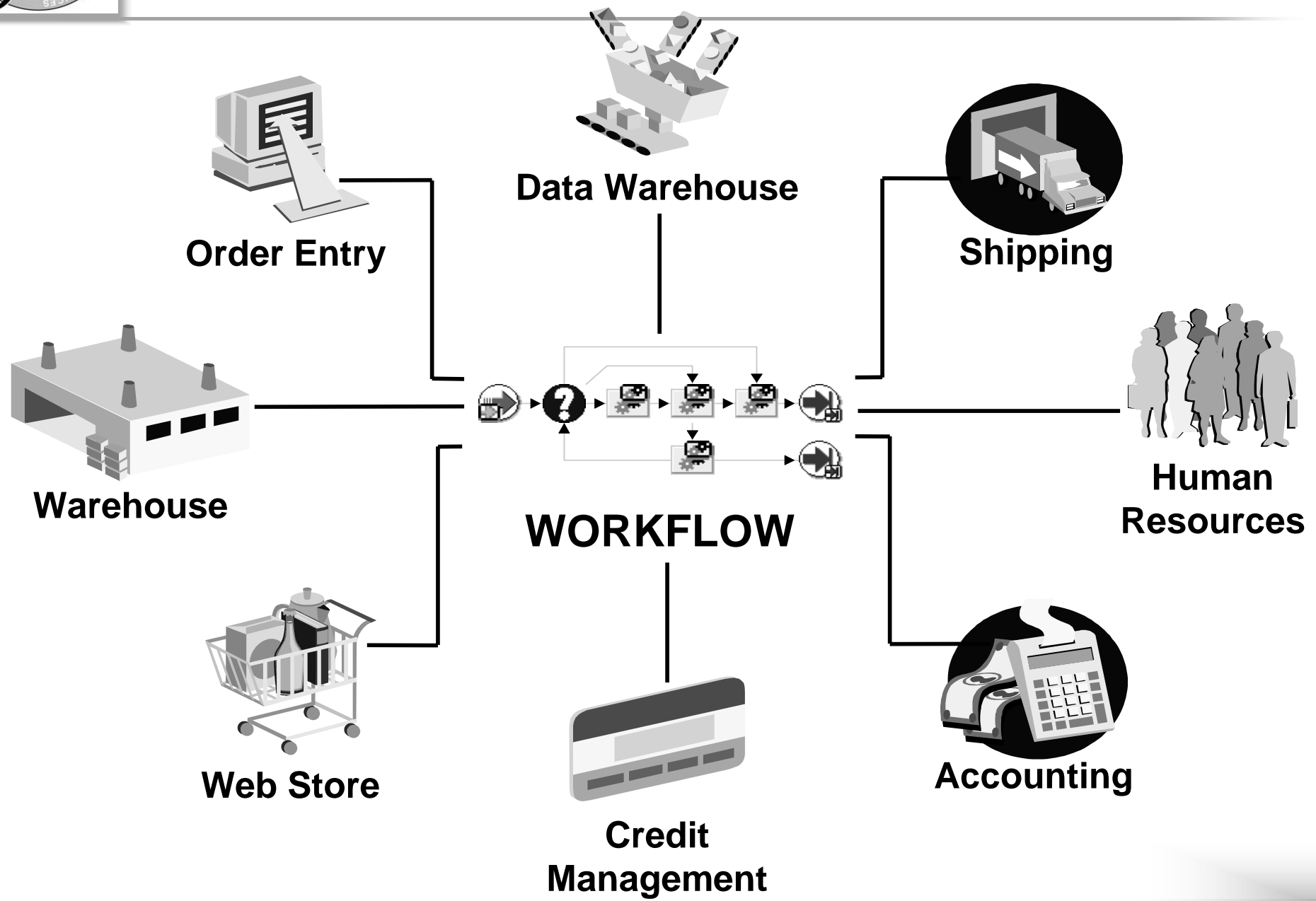




e-business Integration

- e-business is accelerating demand for integration
 - Business-to-Business Commerce
 - Corporate Self-Service
 - Virtual Supply Chains
 - Customer Relationship Management
 - Application Service Providers/Hosting
- Communication is required between systems both within and beyond the enterprise

Model Driven Integration





Workflow Embedded In Oracle Applications

- Core Technology Embedded Since Release 10.7
 - Over 700 Workflow Activities Will Be Shipped with Release 11
-
- **Oracle Purchasing**
 - **Oracle General Ledger**
 - **Oracle Projects**
 - **Oracle Payables**
 - **Oracle Human Resources**
- Oracle Service
 - Oracle Engineering
 - Oracle Web Employees
 - Oracle Web Customers
 - Oracle Web Suppliers



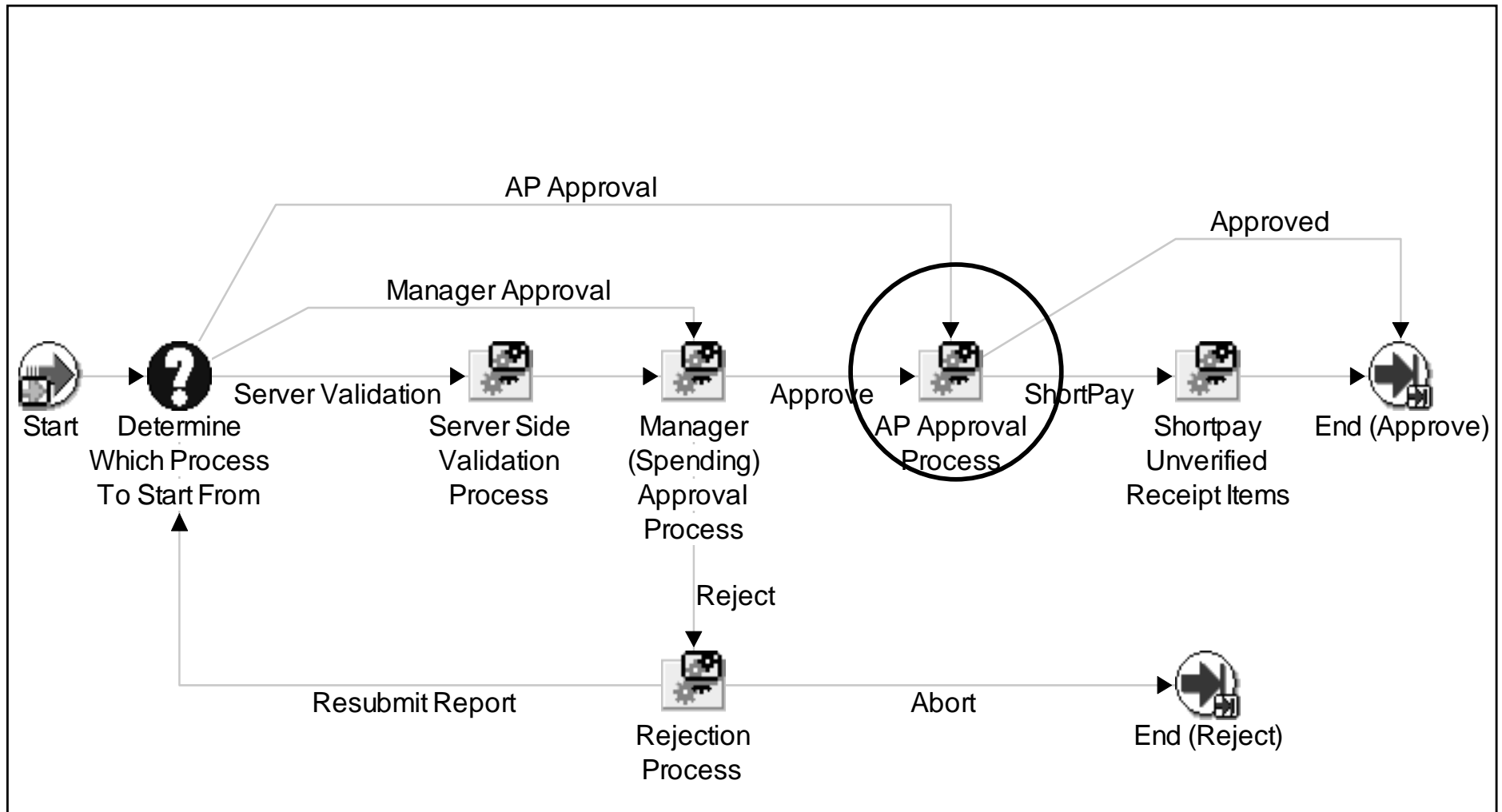
Workflow is Essential

Workflow enables continuous process improvement

- Complete process representation
 - Crosses organizational, company boundaries
 - Build in management metrics, performance goals
- Adaptable workflow processes
 - Provides alternatives
 - Allow for refinement
- Analyze time and costs of entire processes with multi-dimensional analysis
 - Reducing costs and time

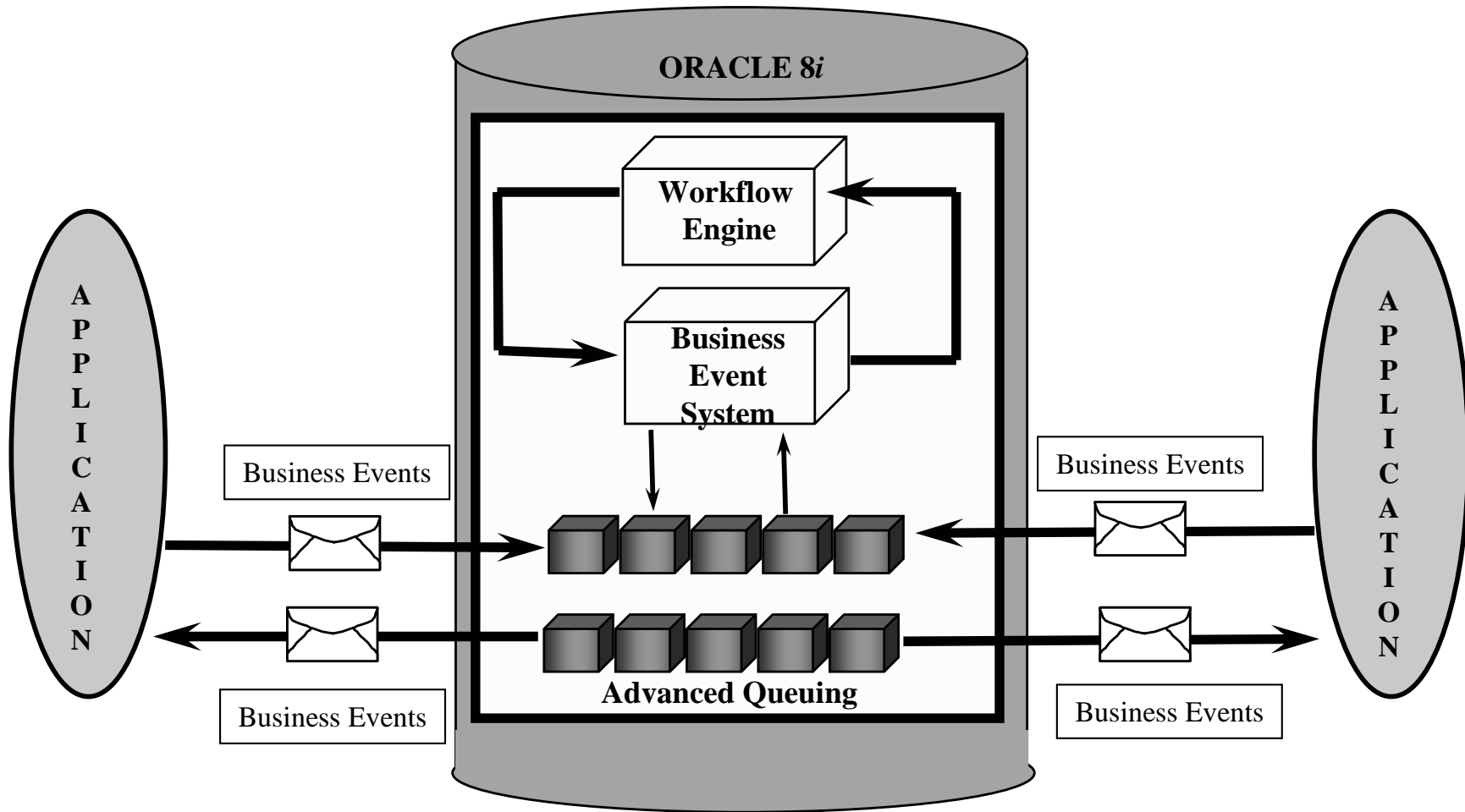
Expense Report Processing @ Oracle

AP Standard Expense Report Process

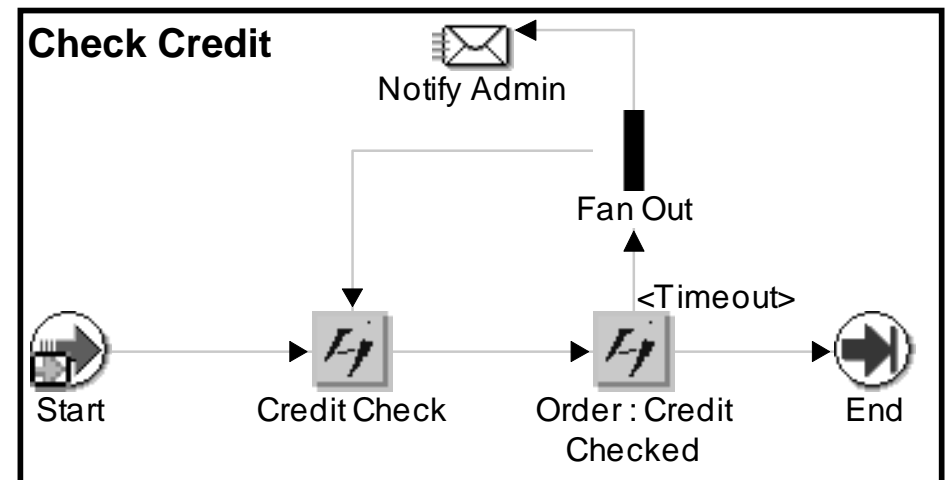
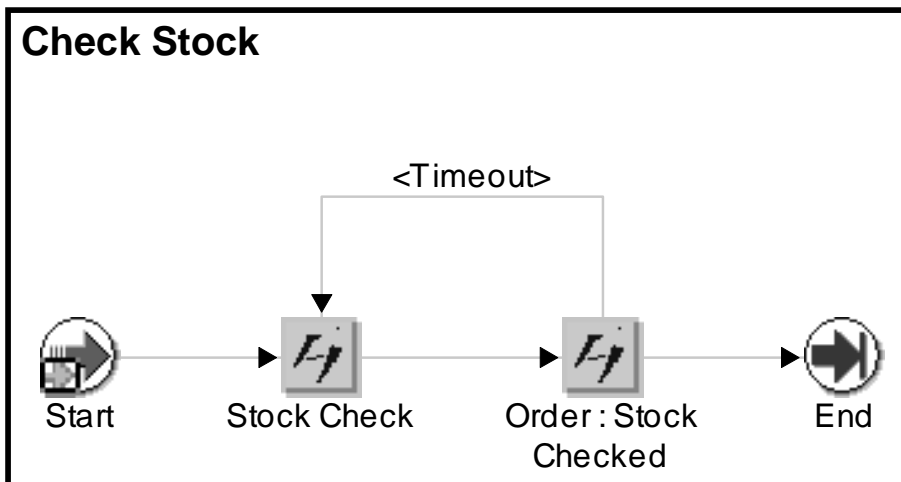
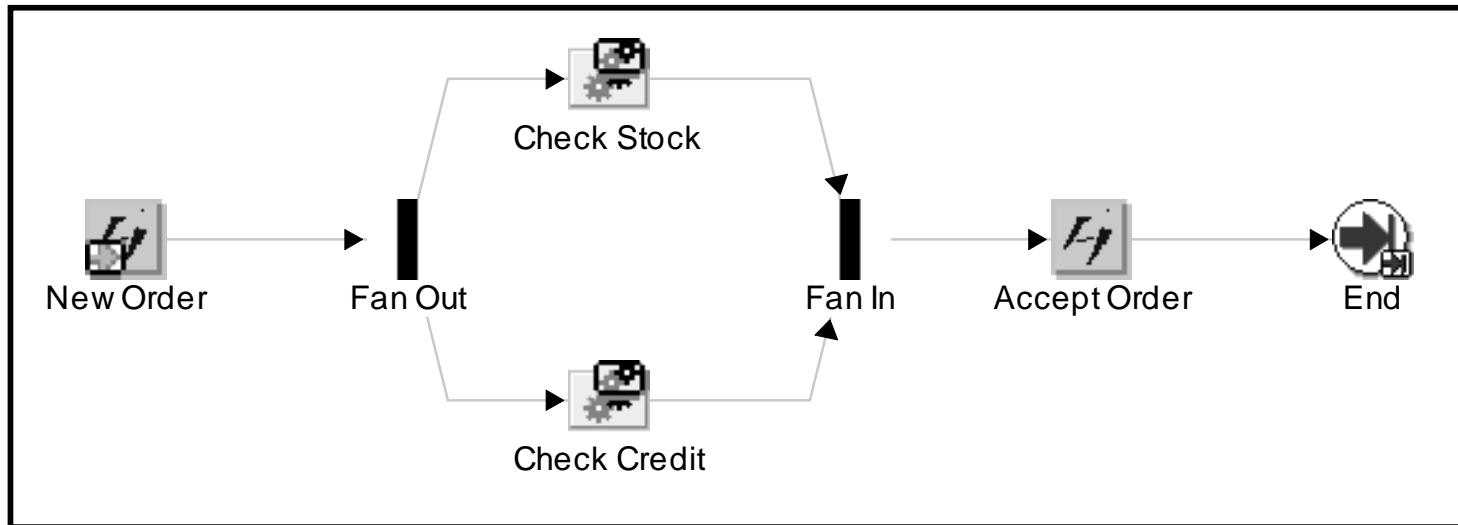


Business Event Driven Workflow

System Integration Messaging Hub



Workflow Business Events - Example



Internet Procurement 100% Lifecycle Automation

Workflow is much more than approvals

