SAP NetWeaver BPM 简介

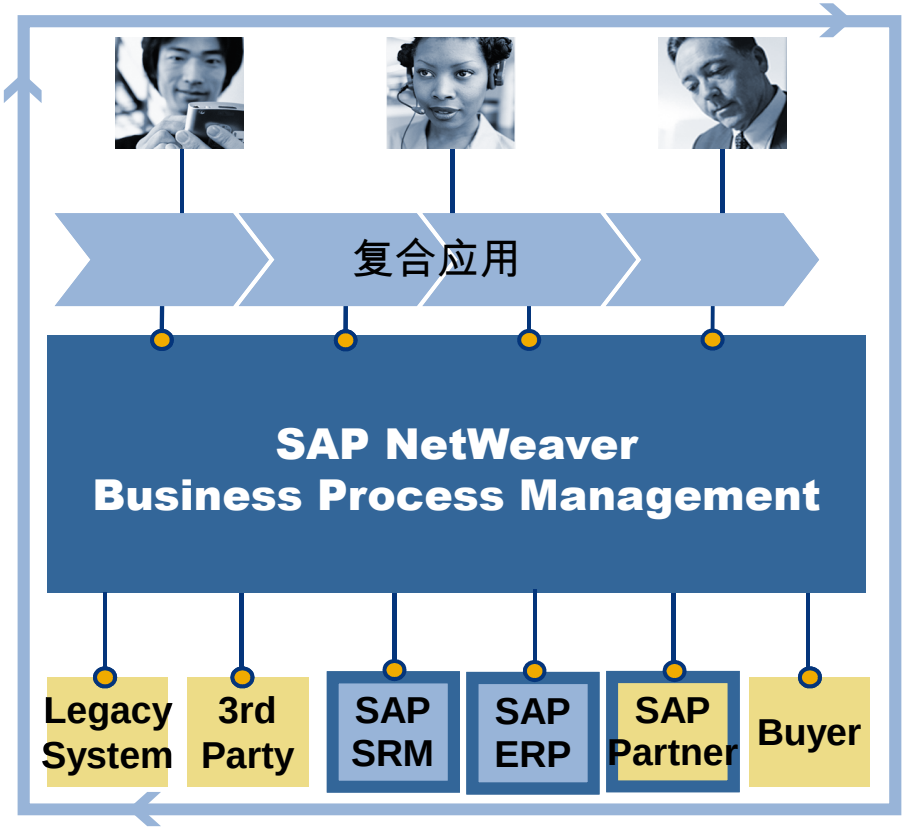
(Business Process Management)

confidential

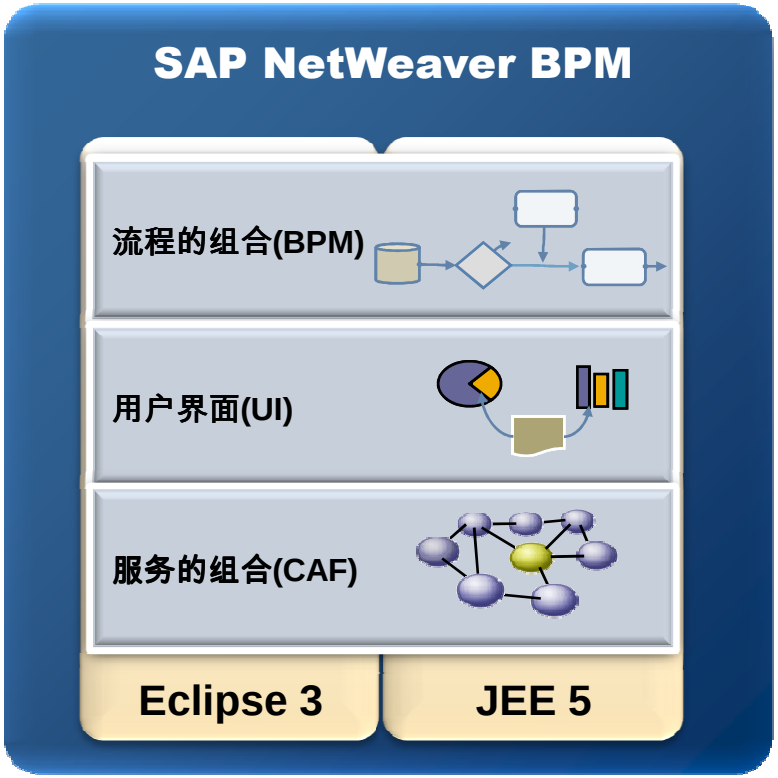
复合应用程序/复合业务流程

复合应用/复合流程的特征

- 以用户为中心的流程
- 跨越多个系统和组织
- 高度协作和动态的业务流程
- 调用其它系统提供的服务(功能)
- 有时需要实现新的业务逻辑或修改已有的业务逻辑



SAP NetWeaver 业务流程管理 (BPM)



复合流程: **BPM**

- 使用图形化工具建模流程
- 聚合来自可重用块的工作流

用户界面: **Visual Composer、Web Dynpro、Adobe Forms**

- 以图形化的方式建模UI
- 在无需编码的前提下应用UI更改
- 使用专为满足特定需求而调整过的交互式表单

业务对象和服务: **CAF**

- 企业服务的导入
- 建模业务对象
- 复合应用程序逻辑

基于开放标准

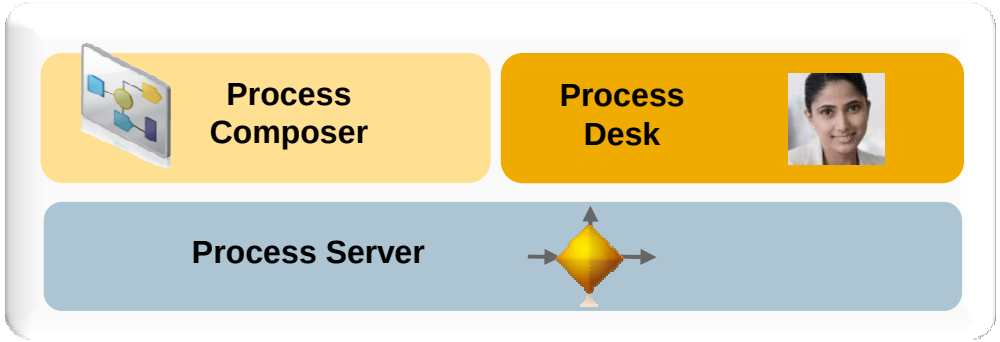
- **Java EE 5**
- **Eclipse 3**

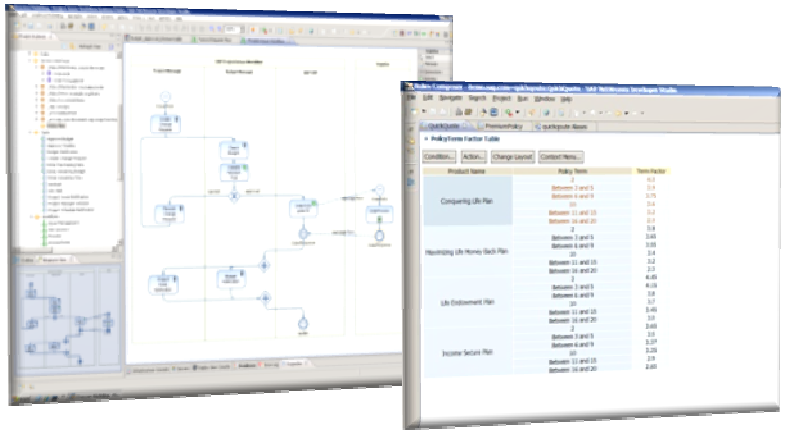
CAF: Composite Application Framework

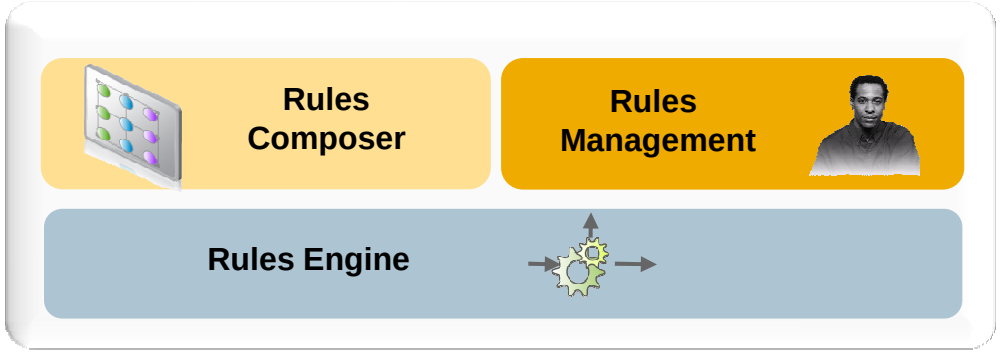
UI: User Interface

BPM: Business Process Management

复合业务流程中的业务流程管理







基于BPMN的图形化建模工具

- 图形化流程设计
- 支持关键流程概念的整个生命周期(工作流, 事件, 任务, 环境, 角色, 用户界面)
- 将人工交互和系统集成整合进一个模型中

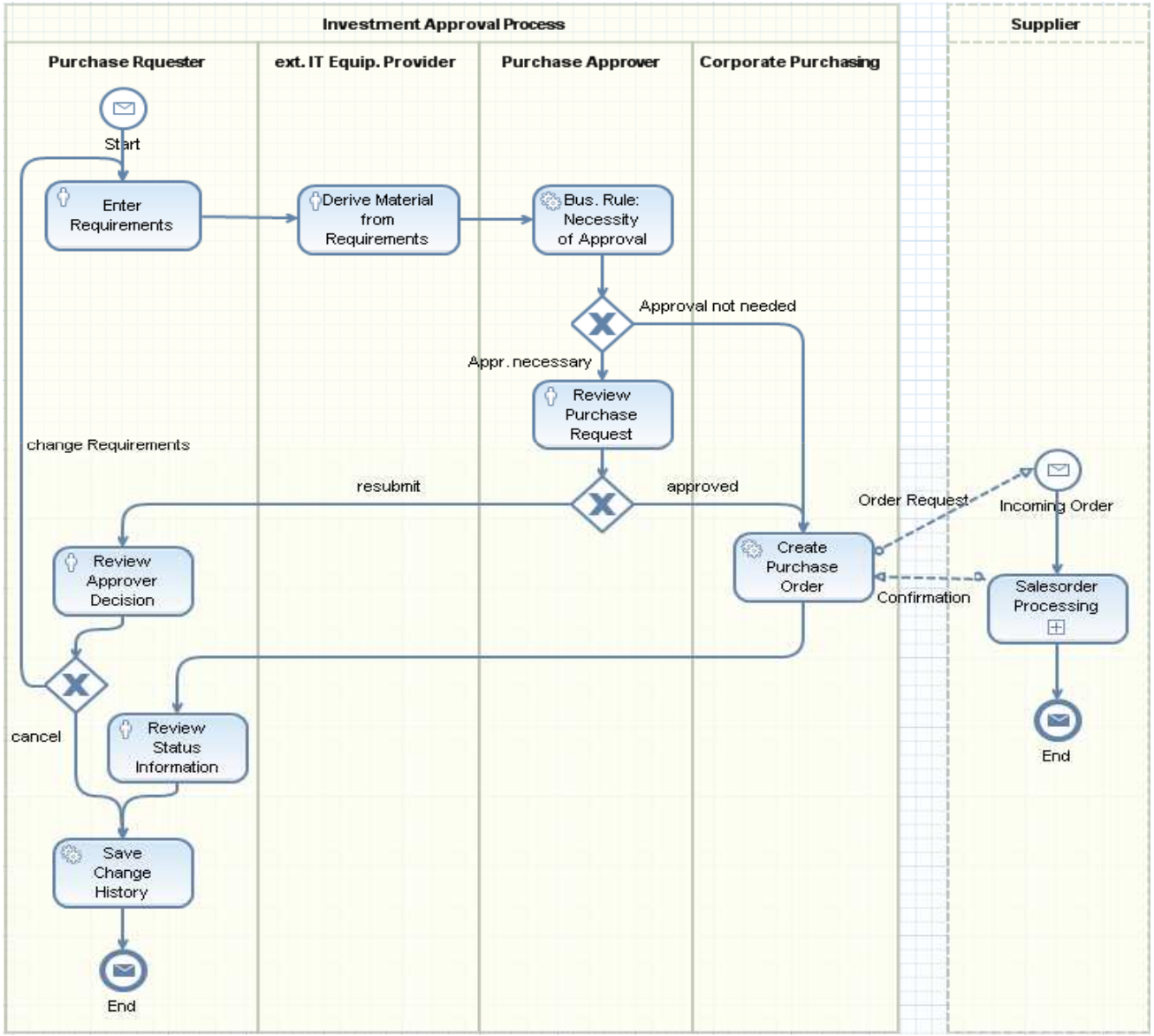
直接从业务视图到流程执行

- 从设计到实现完全一致，无需任何转化
- 动态的基于角色的视图
- 单个激活模型
- 灵活执行

业务规则管理

- 嵌入到流程中的规则使流程更灵活

在SAP NetWeaver BPM中设计业务流程



业务流程建模标注简介
(BPMN, Business Process Modeling Notation)

“BPMN的主要目标是提供一些容易被所有业务用户理解的符号，从创建流程轮廓的业务分析到这些流程的实现，直到最终用户的管理监控。可以说，BPMN的出现弥补了从业务流程设计到流程开发的缺口。”

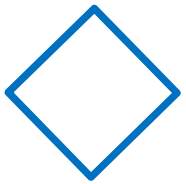
OMG, BPMN Specification

- 2002年首次发布
- 对象管理组织(OMG, Object Management Group)的官方标准

  自2006年起实施
- 最新版本: BPMN 1.2

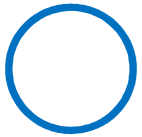
业务流程建模标注 – 顺序流(Sequence Flow Overview)

步骤(Activity):
- 流程中的某一步
- 表示工作或者需要执行的动作



Gateway
网关

网关(Gateway):
- 控制流程的分支，合并以及并行动作
- 自身不作任何决定



Event
事件

事件(Event):
- 一个信号：表示在业务流程的运行过程中某件事情发生了
- 用来开始，暂停，继续，中断和重定向一个流程或步骤

业务流程建模标注 – 步骤(Activities)

人工步骤:

- 需要人来进行的步骤

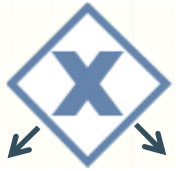
自动化步骤:

- 由系统进行的步骤

子流程:

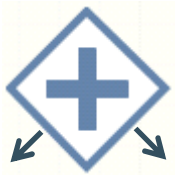
- 一个流程可以包含多个子流程，每个子流程是一个复合步骤(包含一系列步骤)
- 每个子流程在图中可以被展开(查看它所包含的步骤)或者收起(见左图的加号)

业务流程建模标注 – 网关(Gateways)



互斥选择(Exclusive Choice):

- 只能选择一条路径
- 每个出口用布尔表达式来控制将走两条路径中的哪一条



并行分支(Parallel Split):

- 也称为”与”网关
- 把顺序流分成并行的分支

自由合并(Uncontrolled Merge):

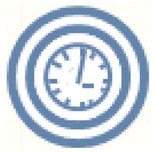
- 把互斥的多条顺序流合并成一条顺序流输出

并行联结(Parallel Join):

- 把并行的顺序流合并成一条顺序流输出

业务流程建模标注 – 事件(Events)

开始事件(Start Event):
- 创建新的流程实例或者表示一个子流程的开始



中间定时事件(Intermediate Timer Event):
- 在一定时间内暂停流程或子流程的顺序流

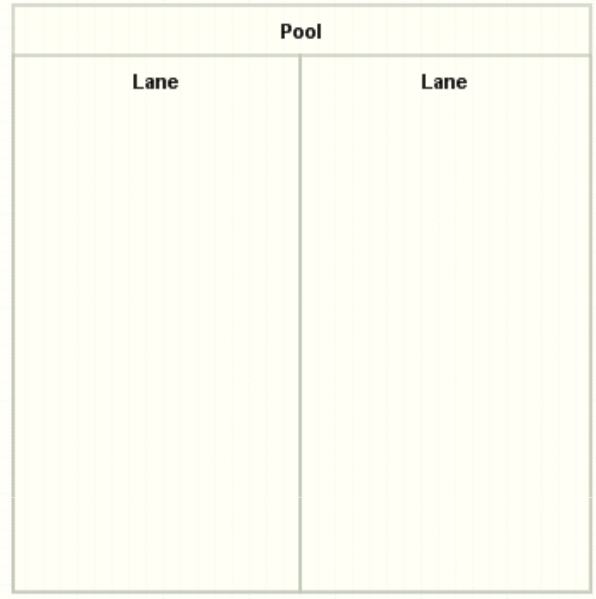
中间消息事件(Intermediate Message Event):
- 等待接受某个消息

中间错误(Intermediate Error):
- 由于错误中止某个步骤

结束事件(End Event):
- 结束流程或者子流程的顺序流

终止(Termination):
- 立即停止一个流程或者子流程

业务流程建模标注 – 顺序编排和交互设计(Orchestration and Choreography)



池(Pool):

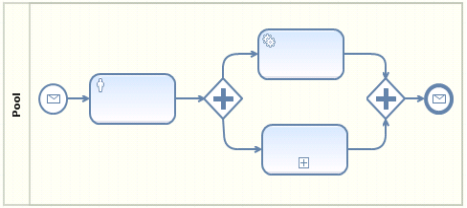
- 包含单个BPMN流程
- 一个顺序流被限制在一个Pool中
- 一个流程图可以包含多个Pool
- 区分两类Pool：Active Pool(活动的)和Inactive Pool(非活动的，描述性)
- 每个模型只能有一个Active Pool
- 一个Pool一般表示若干角色(Roles)，组织单元(Organization Units)和系统(Systems)的逻辑集合

道(Lane):

- 一个Pool可被划分为多个Lane
- 一个Lane一般表示一个Role或者一个Organization Units

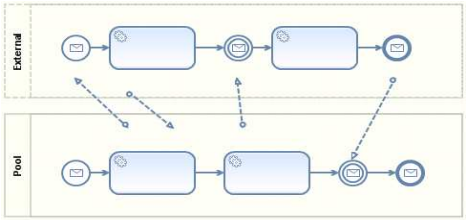
顺序编排(Orchestration):

- 在一个Active Pool中编排一系列控制流
- 表示为**顺序流(Sequence Flow)**

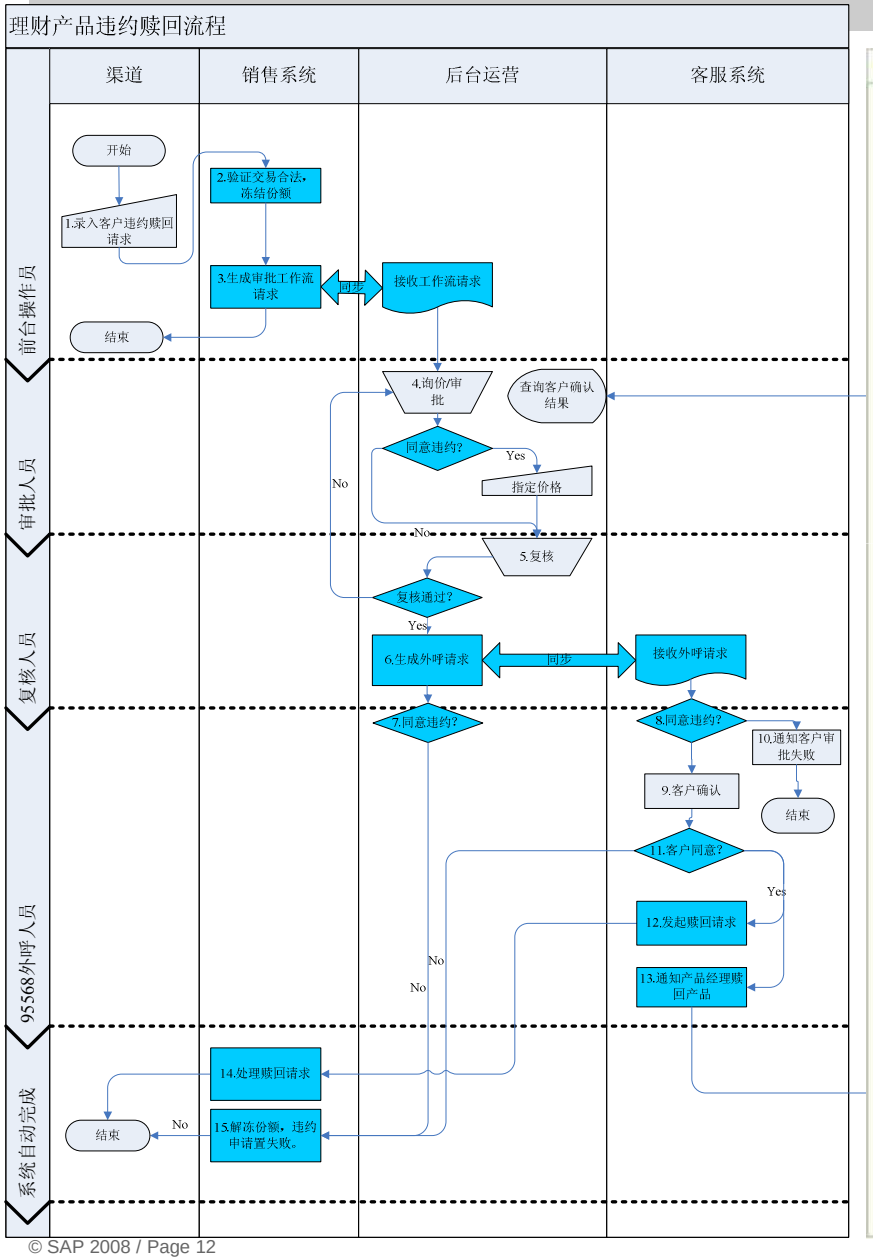


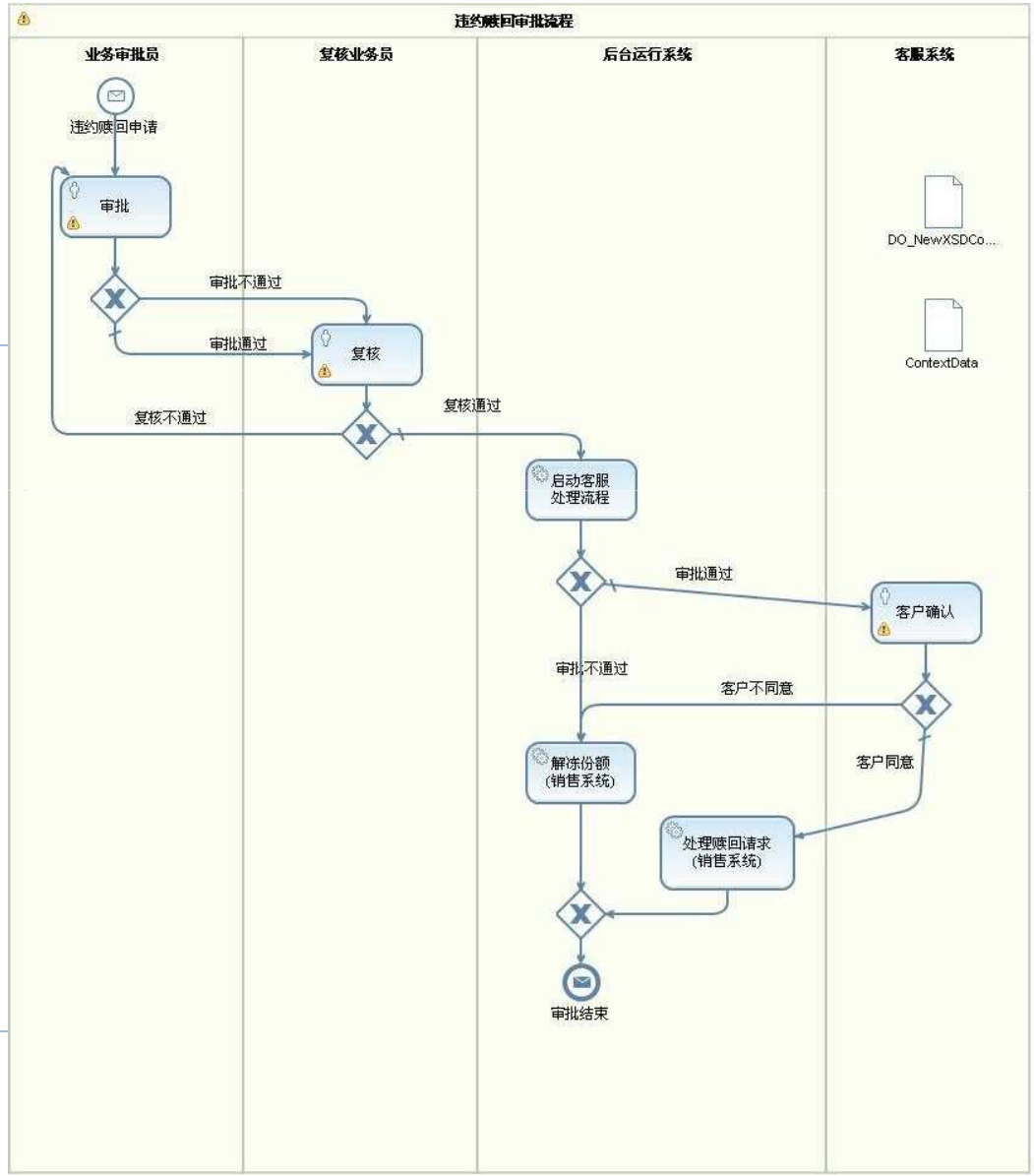
交互设计(Choreography):

- 设计两个Pool之间的交互(不是控制流！)
- 表示为**信息流(Message Flow)**

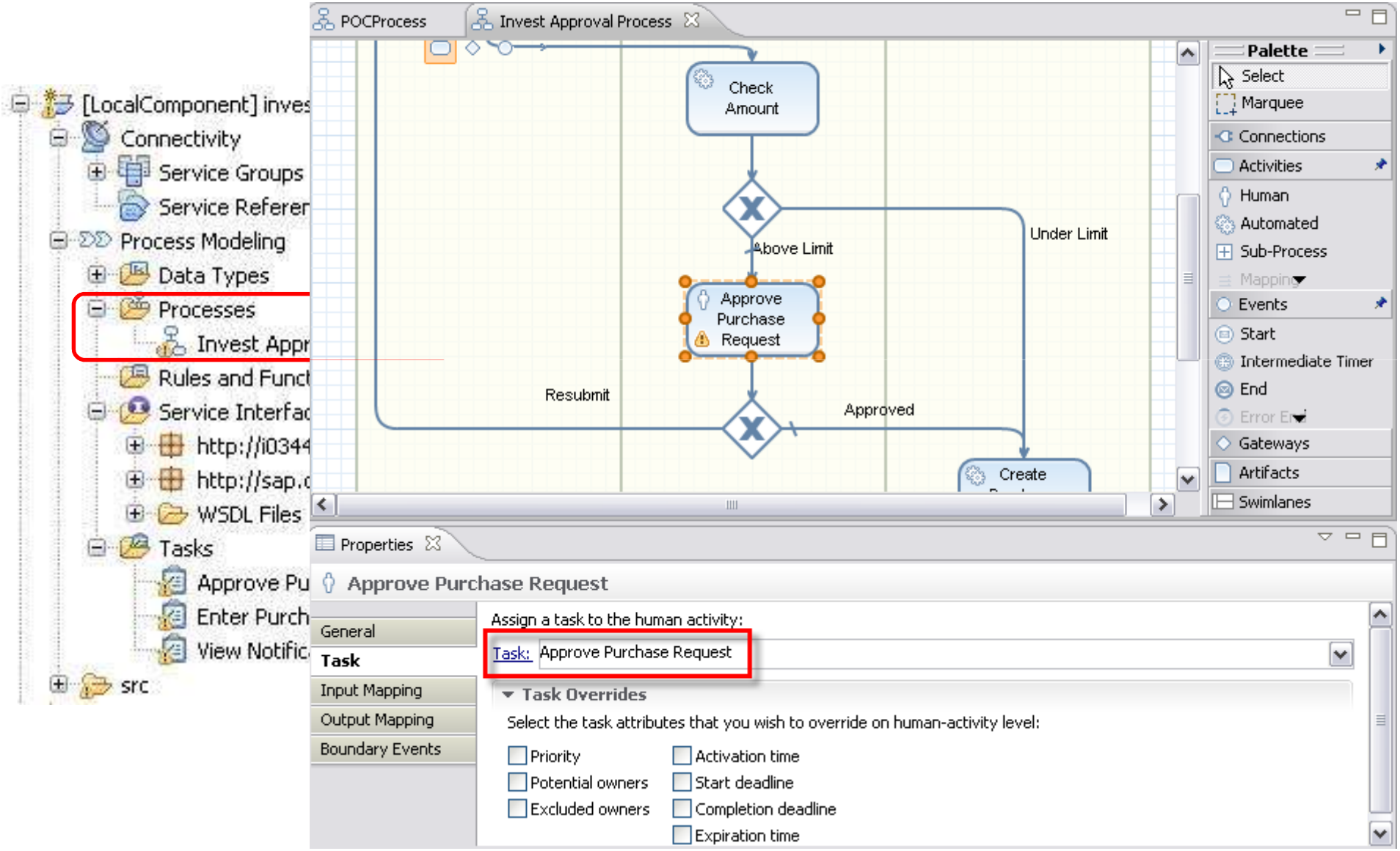


SAP BPM 流程建模举例：理财产品违约赎回

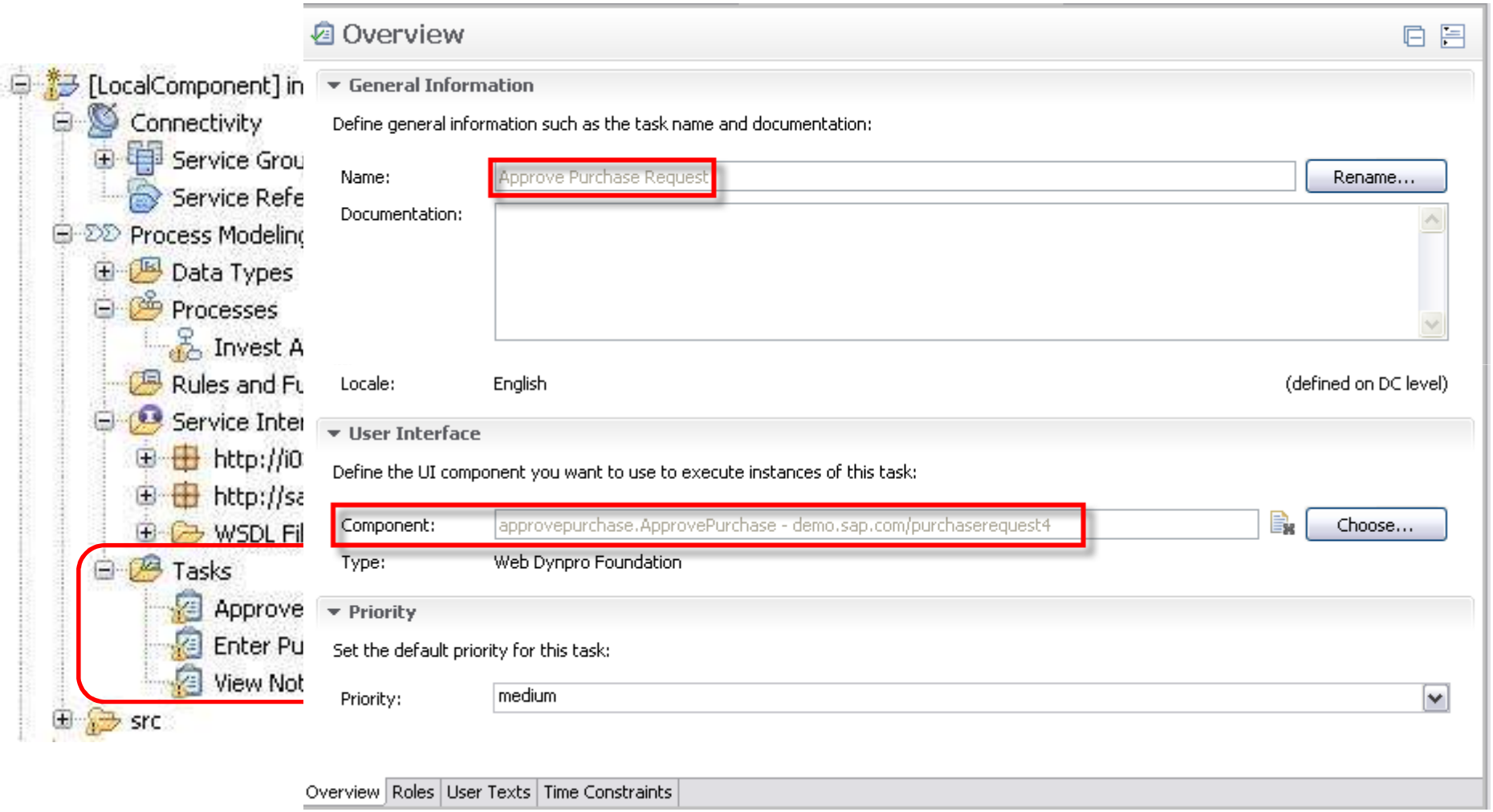




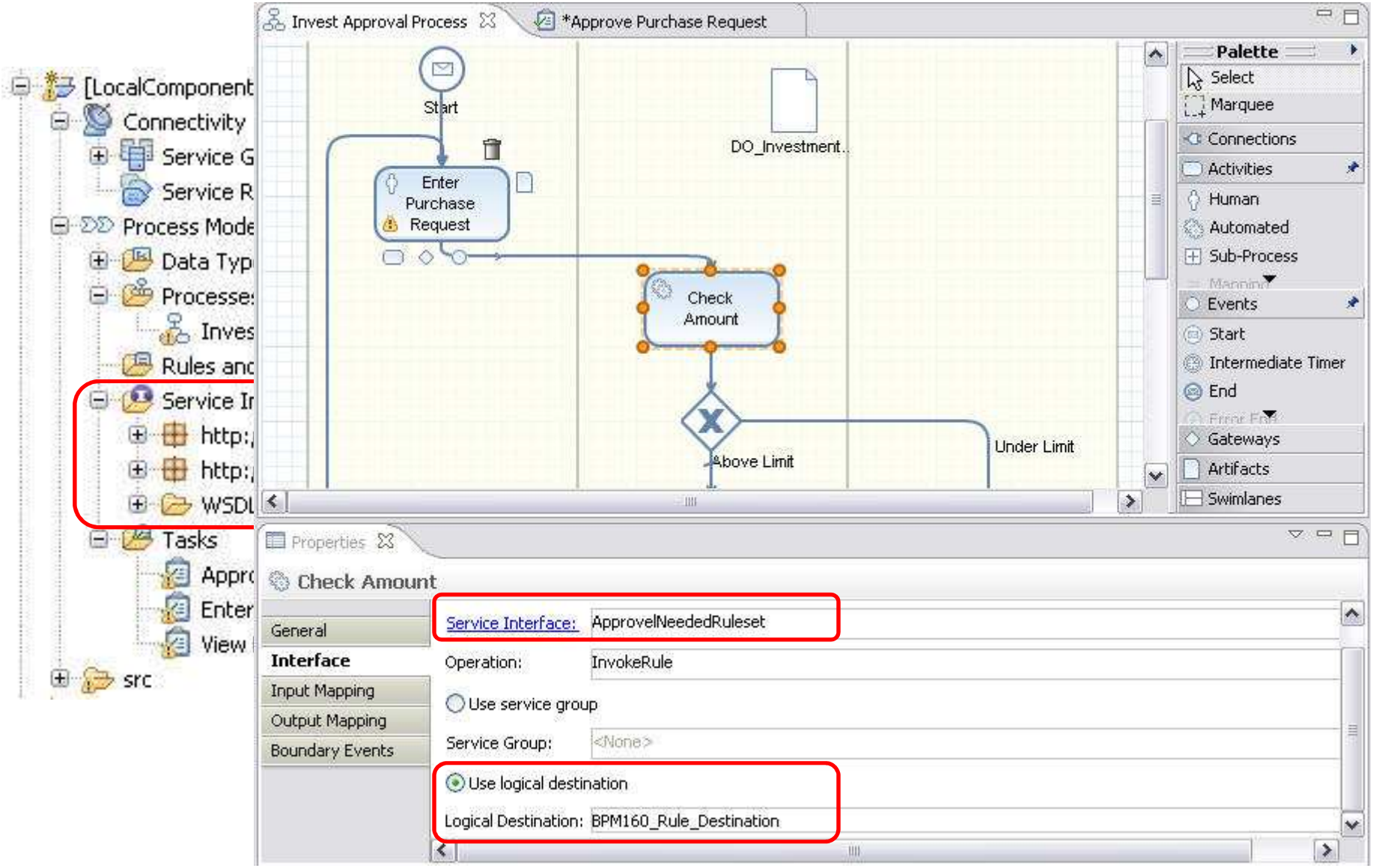
流程(Process)----任务(Task)----UI组件



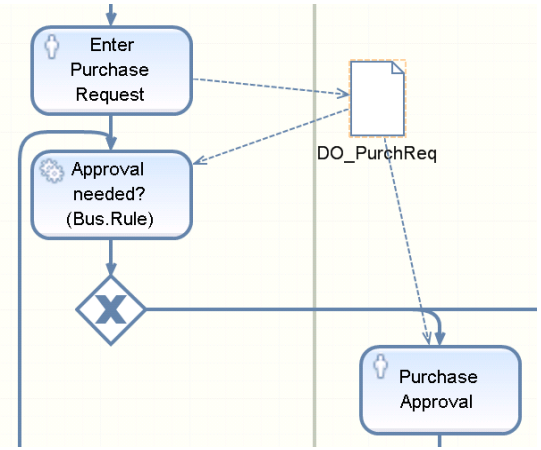
流程(Process)----任务(Task)----UI组件



流程(Process)----任务(Task)----服务调用



设计数据流(Data Flow)

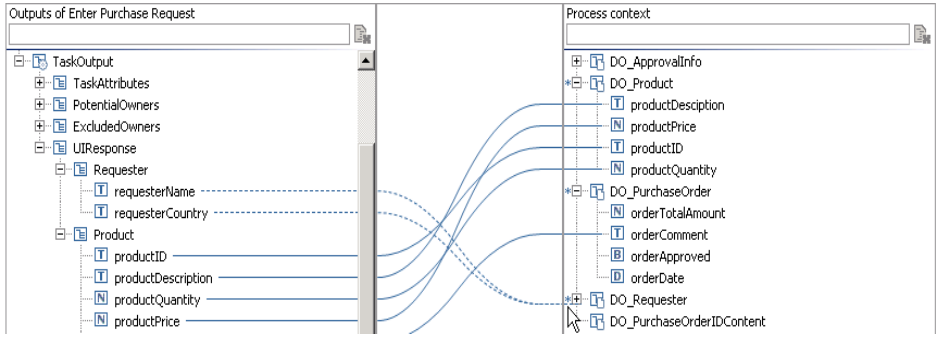


在数据对象(Data Objects)中保存流程相关的信息:

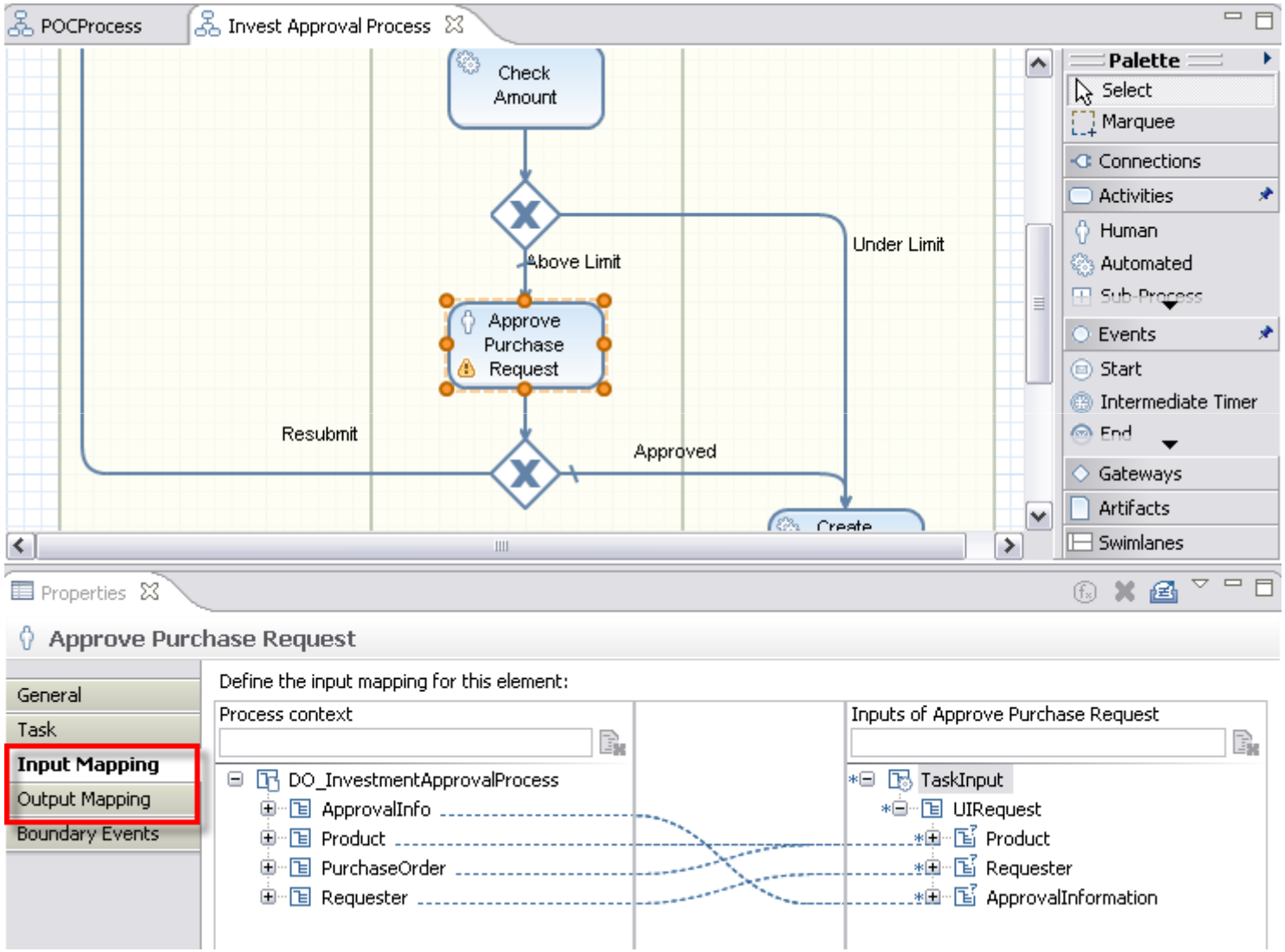
- 生成Artifacts:保存由Services或Human Interaction提供的与流程相关的信息和数据-流程上下文(Process Context)
- 在流程的任何一步都可以读写数据对象

设计数据流(Data Flow)和映射(Mappings):

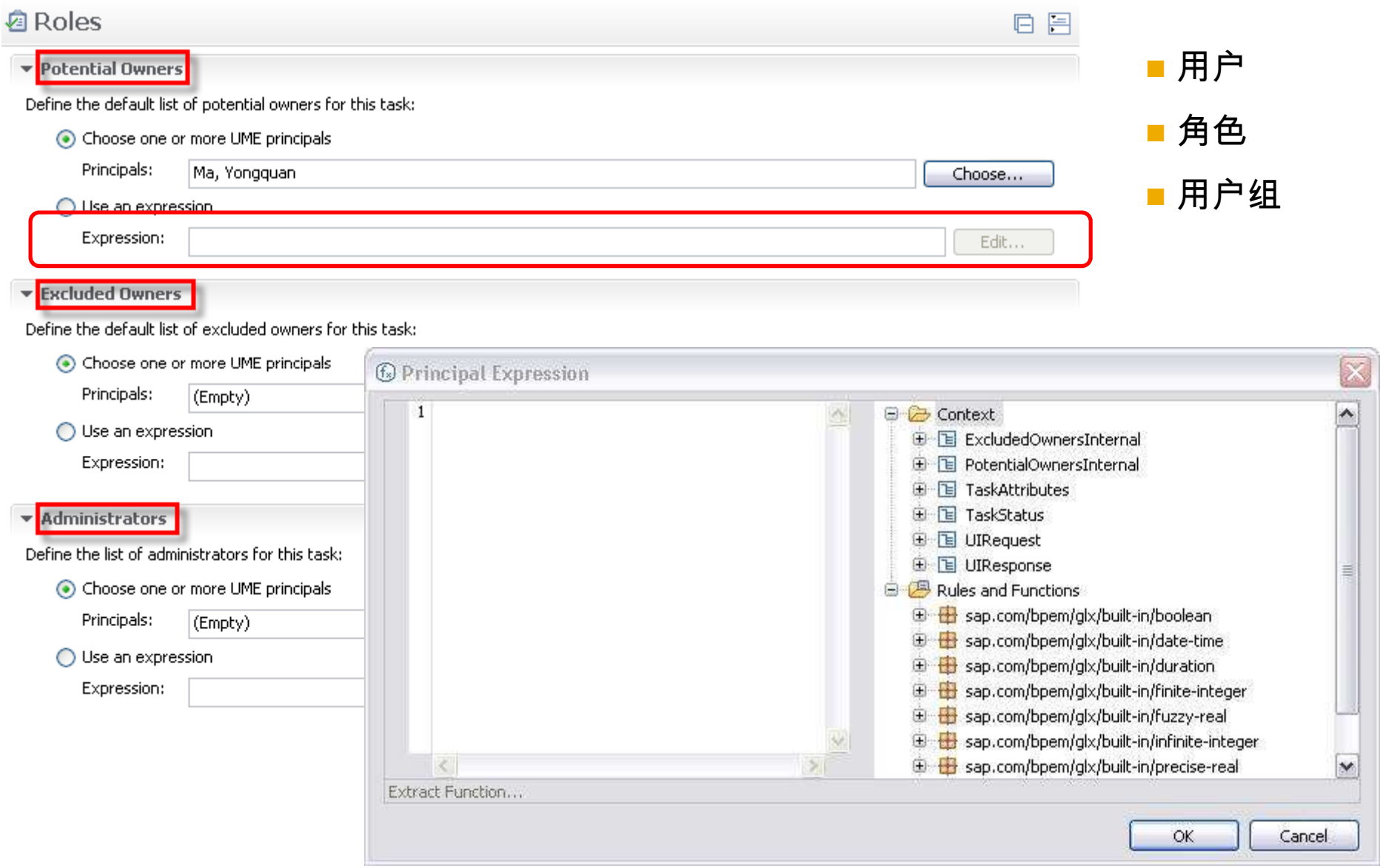
- 设计数据流来存储或者读取数据对象
- 设计从步骤(Activities)的数据接口到流程上下文的映射，从而实现不同步骤之间的数据流



数据流实现

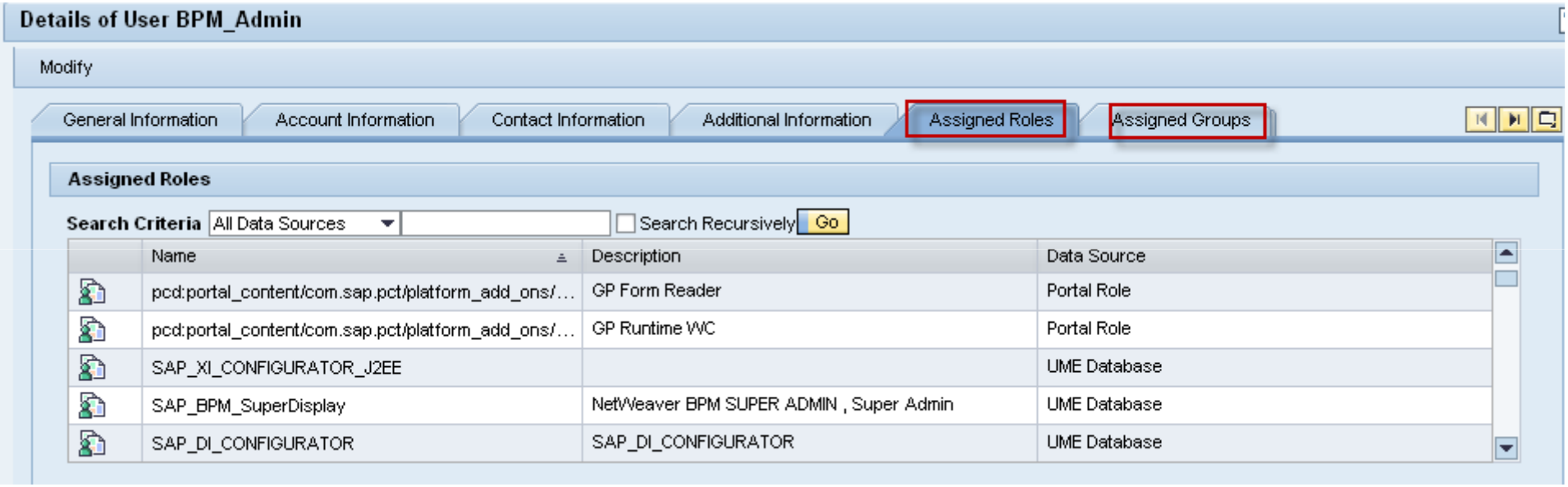

POCProcess
Invest Approval Process
Check Amount
Above Limit
Under Limit
Approve Purchase Request
Resubmit
Approved
Palette
Select
Marquee
Connections
Activities
Human
Automated
Events
Start
Intermediate Timer
Gateways
Artifacts
Swimlanes
Properties
Approve Purchase Request
General
Task
Input Mapping
Output Mapping
Boundary Events
Define the input mapping for this element:
Process context
DO_InvestmentApprovalProcess
ApprovalInfo
Product
PurchaseOrder
Requester
Inputs of Approve Purchase Request
TaskInput
UIRequest
Product
Requester
ApprovalInformation

流程中的权限管理----流程设计时

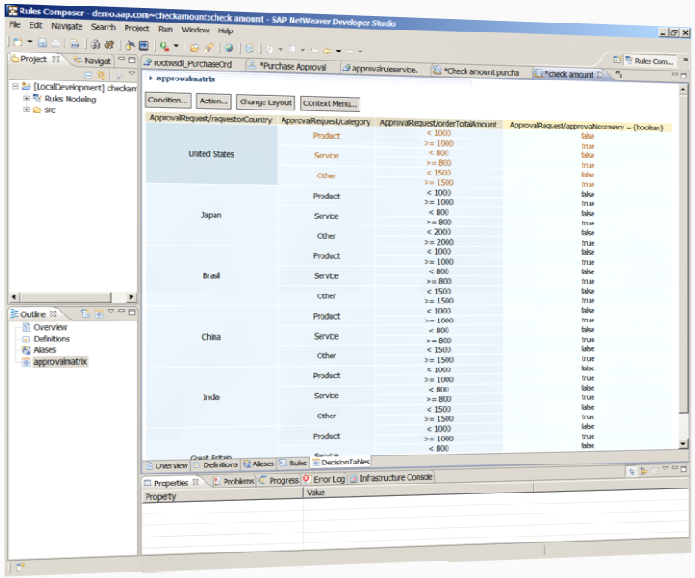


- 用户
- 角色
- 用户组

流程中的权限管理----管理员配置



SAP NetWeaver 业务规则管理
通过规则管理引擎在企业业务流程中加入需要的规则



SAP NetWeaver 业务规则管理

在需要的业务流程中加入适当的规则来加速业务流程效率

- 提供了丰富的工具来在流程中实现业务的规则
- 封装好的一些标准规则能够被重复使用
- 在同一的环境中同时集成对流程和规则的设计
- 可以通过简单的界面操作使得不懂编程的业务用户来修改流程中的规则

SAP业务规则管理介绍

FCL Handling Rates – Decision Table

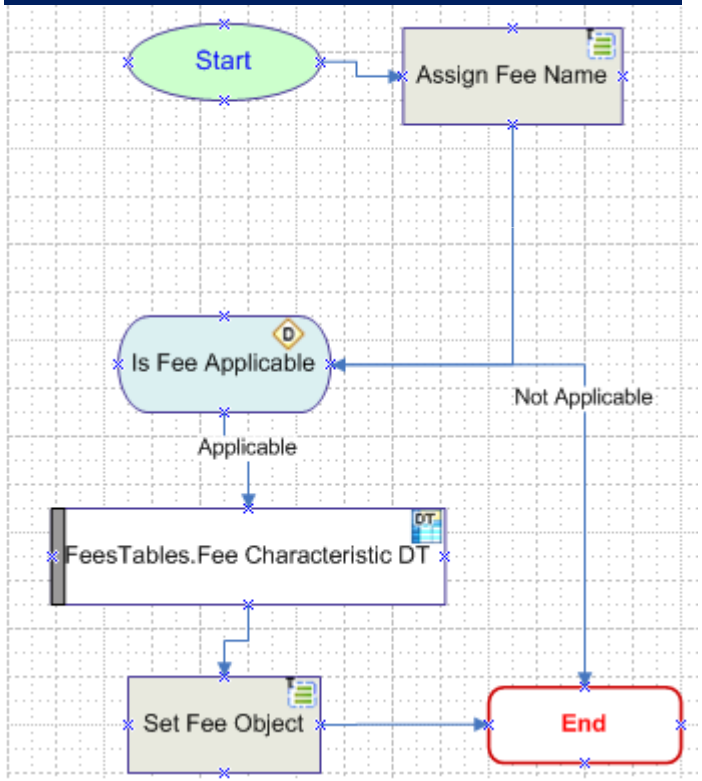
Port	EmptyIndicator	ContainorSize	Handling Rate
Mumbai	false	10	374
		20	748
		40	1496.5
	true	10	112.2
		20	299
		40	599.9
Cochin	false	10	283.5
		20	567
		40	1134
	true	10	85
		20	226.5
		40	454

Patient Billing Rules – If Then Rules

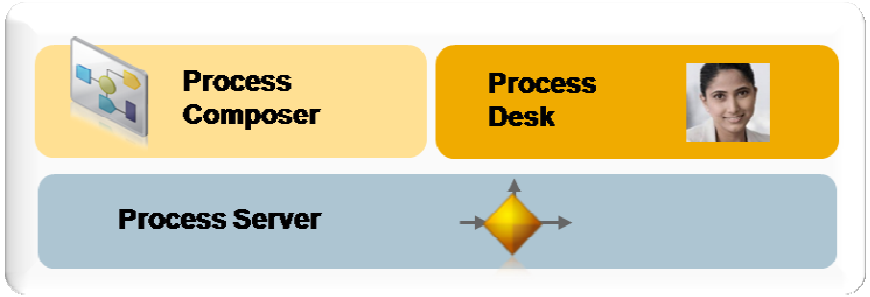
```
If
{
    Bill Last Day Equals true
    and Bill First Day Equals false
    and Is Same Day Entry and Exit Equals true
}

Then
Assign :: Billable Days = Billable Days + 1
```

- 经典的If-Then规则
- 决策表格 – 计分卡、表格规则
- 规则序列 – 复杂的、模块化的规则执行序列

Credit Score Fee Calculation – Rule Flow

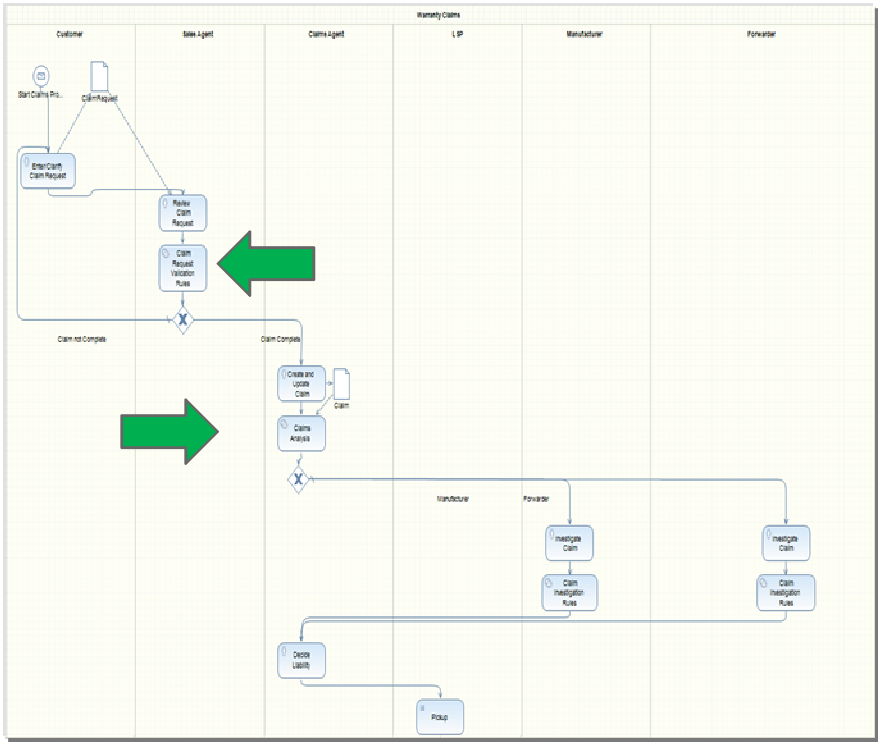


SAP NW BPM 与 BRM 集成简介



BPM中的规则 – 部分用例

- 基于复杂规则的决策（定价，信用度评定等）
- 责任划分 （基于规则的任务分配）
- 业务事件识别
- 路线规则 (接收方确认)
- 参数区间和容限 (限制规则)



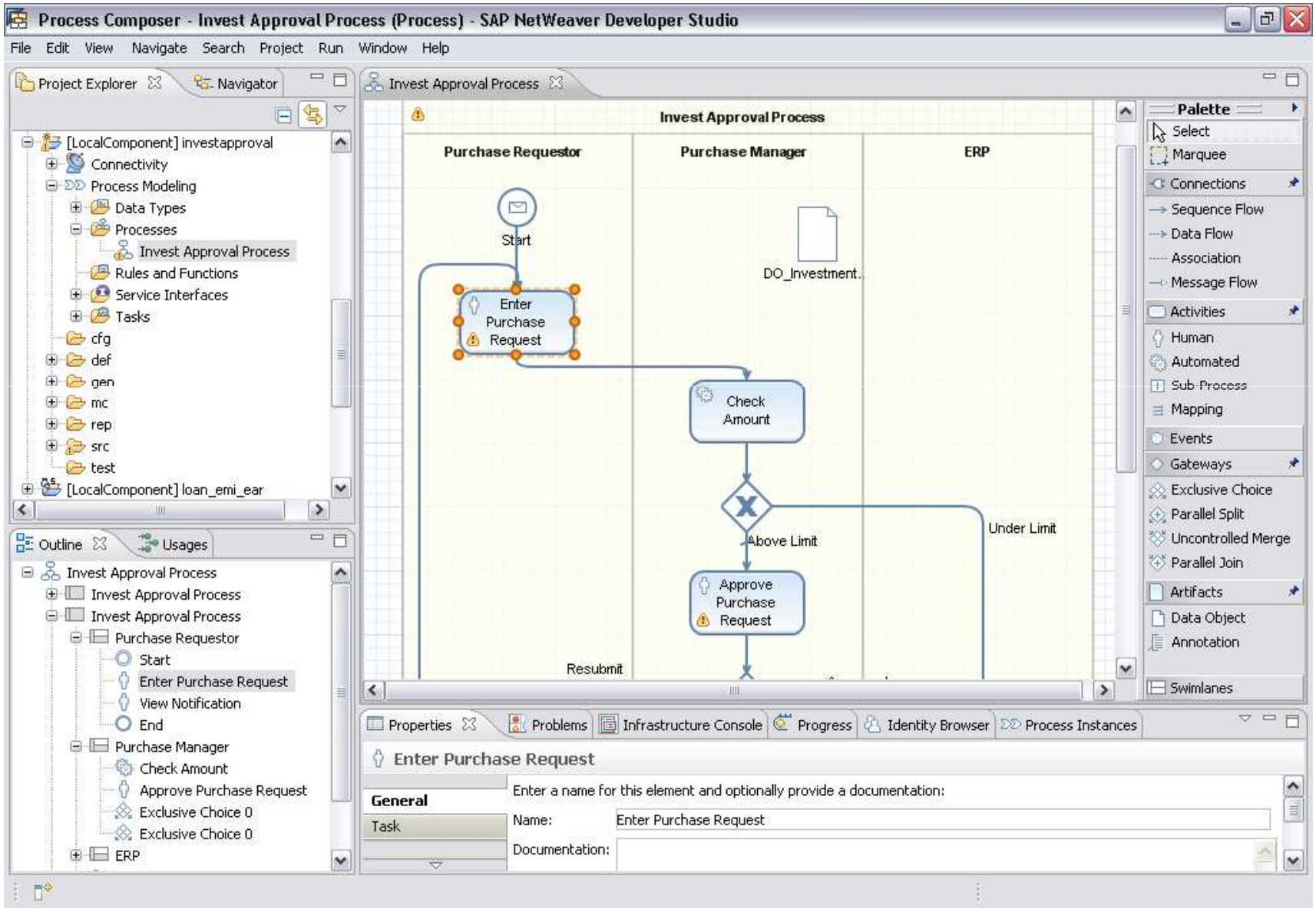
规则建模方式的多样性

- 利用Rules Composer建模，并将其作为一个规则服务
- 在业务流程中建模

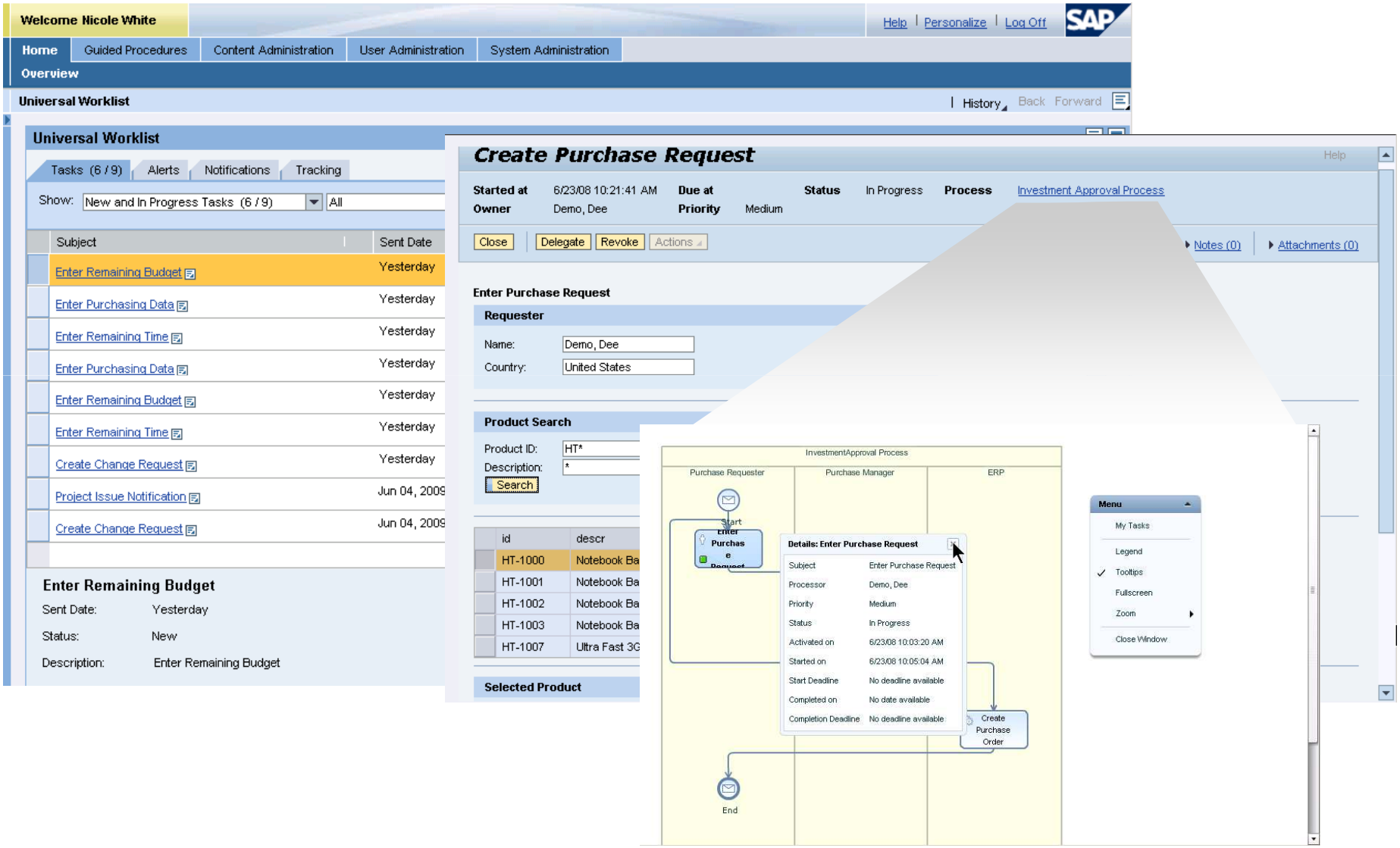
集成方式的多样性

- 将规则服务用于自动化活动
- 将规则作为映射转换
- 将规则用于EJB函数
- 在规则用于人工作业的用户界面
- 将规则作为网关条件

业务流程建模与后续开发无缝衔接



最终用户视角


Welcome Nicole White
Help | Personalize | Log Off
Home
Guided Procedures
Content Administration
User Administration
System Administration
Overview
Universal Worklist
History
Back
Forward
Universal Worklist
Tasks (6 / 9)
Alerts
Notifications
Tracking
Show: New and In Progress Tasks (6 / 9)
All
Subject
Sent Date
Enter Remaining Budget
Yesterday
Enter Purchasing Data
Yesterday
Enter Remaining Time
Yesterday
Enter Purchasing Data
Yesterday
Enter Remaining Budget
Yesterday
Enter Remaining Time
Yesterday
Create Change Request
Yesterday
Project Issue Notification
Jun 04, 2009
Create Change Request
Jun 04, 2009
Enter Remaining Budget
Sent Date: Yesterday
Status: New
Description: Enter Remaining Budget
Create Purchase Request
Help
Started at 6/23/08 10:21:41 AM
Due at
Status In Progress
Process Investment Approval Process
Owner Demo, Dee
Priority Medium
Close
Delegate
Revoke
Actions
Notes (0)
Attachments (0)
Enter Purchase Request
Requester
Name: Demo, Dee
Country: United States
Product Search
Product ID: HT*
Description: *
Search
id
descr
HT-1000
Notebook Ba
HT-1001
Notebook Ba
HT-1002
Notebook Ba
HT-1003
Notebook Ba
HT-1007
Ultra Fast 3G
Selected Product
InvestmentApproval Process
Purchase Requester
Purchase Manager
ERP
Start
Enter Purchase Request
Details: Enter Purchase Request
Subject Enter Purchase Request
Processor Demo, Dee
Priority Medium
Status In Progress
Activated on 6/23/08 10:03:20 AM
Started on 6/23/08 10:05:04 AM
Start Deadline No deadline available
Completed on No date available
Completion Deadline No deadline available
Create Purchase Order
End
Menu
My Tasks
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管理员视角

业务流程与任务管理

状态信息

集成在SAP NetWeaver Administrator中

任务实例详情

任务的截止时间

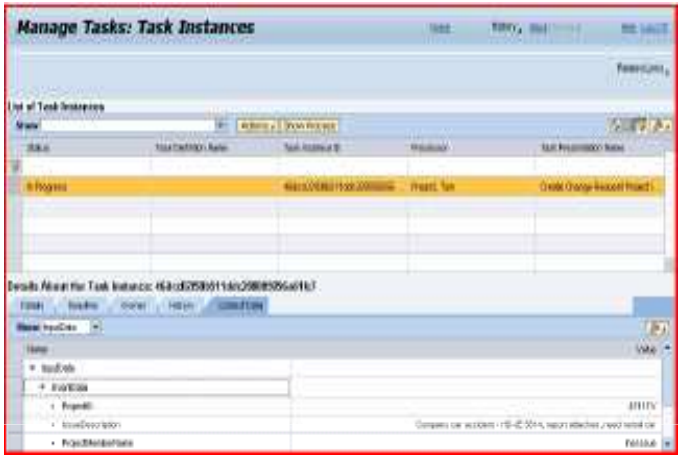
任务的拥有者

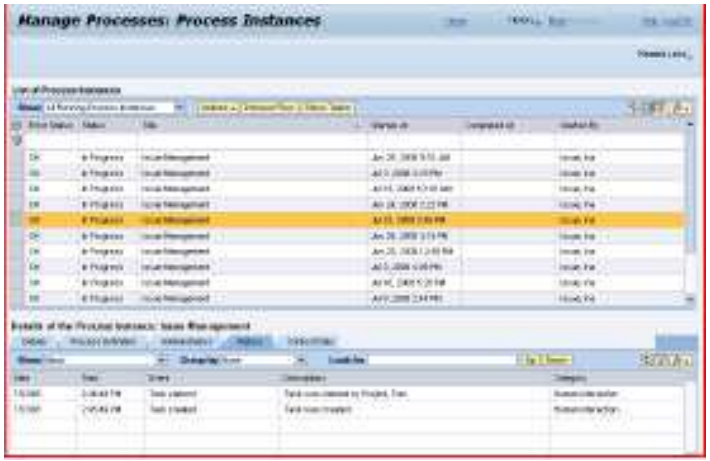
任务的历史

其他上下文数据

流程实例详情

……





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