Work Flow Engine

Related MIS Term project,
Based on http://www.uengine.org,
'The Workflow Management Coalition Specifiacation(wfMC)'

with

uEngine
the universal engine for e-Business

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What is Workflow?

Definition –Workflow

The computerised facilitaion or automation of a business process , in whole or part.

Concretely, workflow is concerned with the automation of porcedures where documents, information or tasks are passed between participants according to a defined set of rules to achieve, or contribute to, an overall business goal.

Definition –Workflow Management System

A system that completely defines, manages and executes "workflows" through the execution of software whose order of execution is driven by a computer representation of the workflow logic.

Concretely, WMS is one which provides procedural automation of a business process by management of the sequence of work activities and the invocation of appropriate human and/or IT resources associated with the various activity steps.

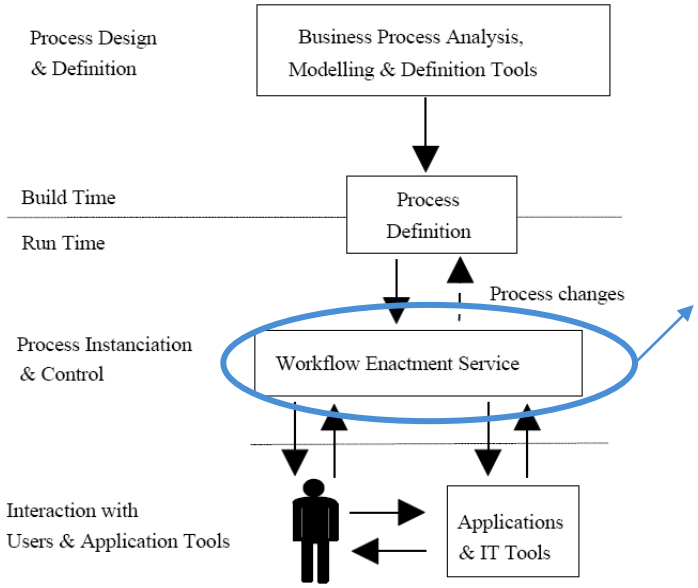
Definition –Process Definition

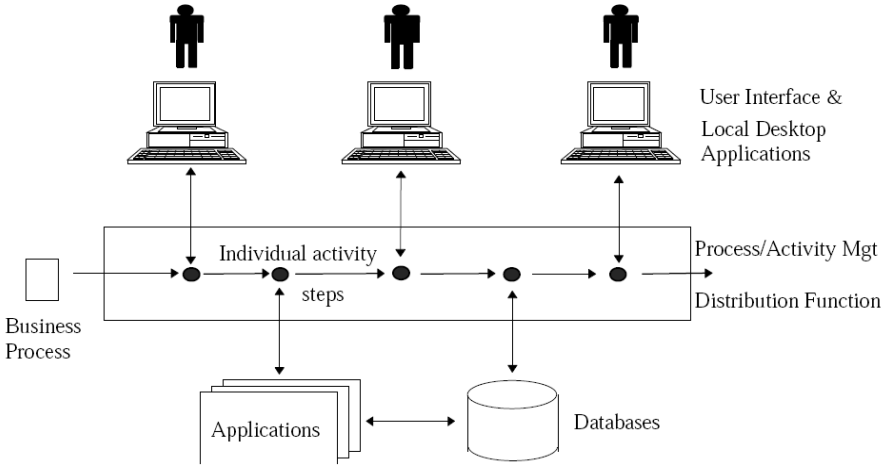
The computerised representation of a process that includes the manual definition and workflow definition

What is Workflow?

At the highest level, all WFM systems may be characterised as providing support in three functional areas

1. **The Build-time functions,** concerned with defining and possibly modelling the workflow process.
2. **The Run-time control functions,** concerned with managing the workflow processes in an operational environment.
3. **The Run-time interactions** with human users and IT application tools for processing the various activity steps



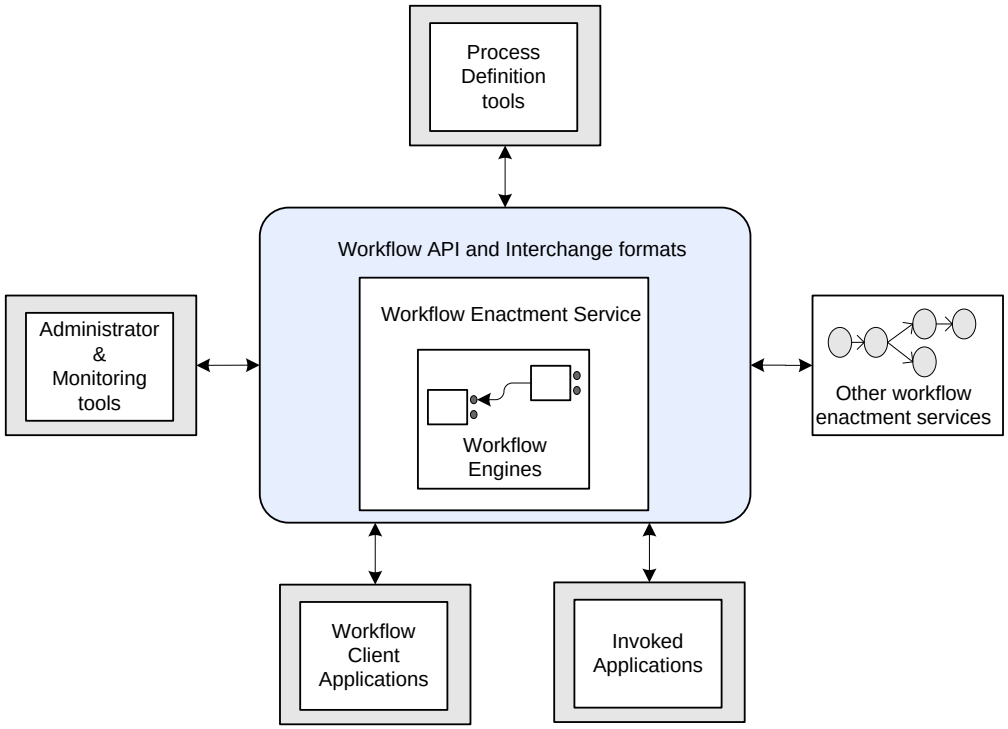


Workflow System Characteristics(wfMC, 1995)

Distribution within the workflow enactment service (wfMC, 1995)

What is Workflow?

Components of workflow engine are illustrated in figure below.

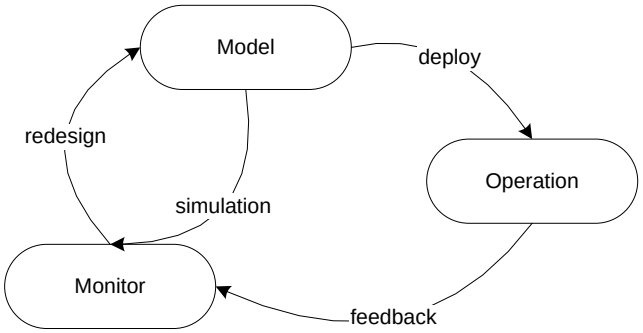


- **Process Definition tools**
- **Administrator & Monitoring tools**
- **Workflow Enactment Server**
- **Workflow Client Applications(or Worklist Handler)**
- **Invoked Applications**

What is Workflow?

Difference, Normal developing tools VS Workflow Engines

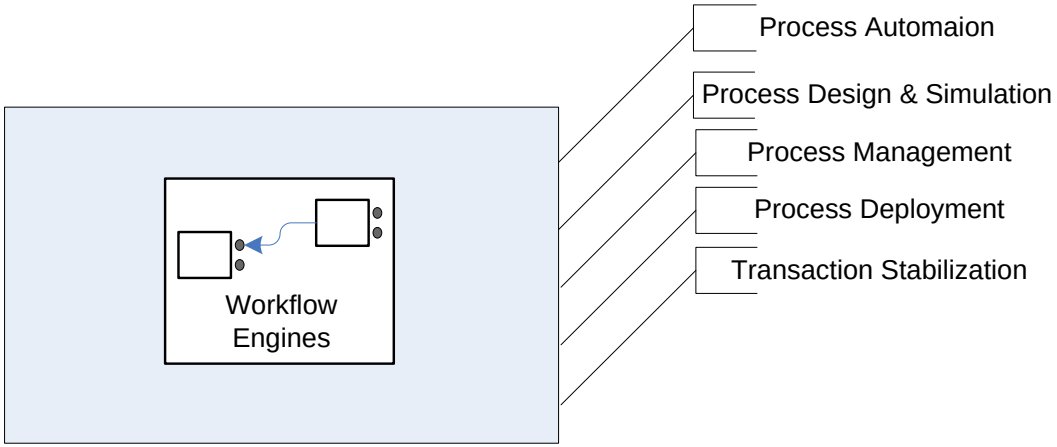
	Normal Developing Tools	Workflow Engines
Developer	• Technical based, Process designer	• Process designer
Goal	• Focused implementation..	• More Focused Workflow or Processflow
Workunit	• Command(for SQL query, invoke function..)	• Activity(in process level)
Datum	• Data structure(e.g. int, String, record..)	• Document(e.g. word, XML..)
Operation	• Step by Step, reengineering	• respond immediately and give feedback.



What is Workflow?

That is, Workflow..

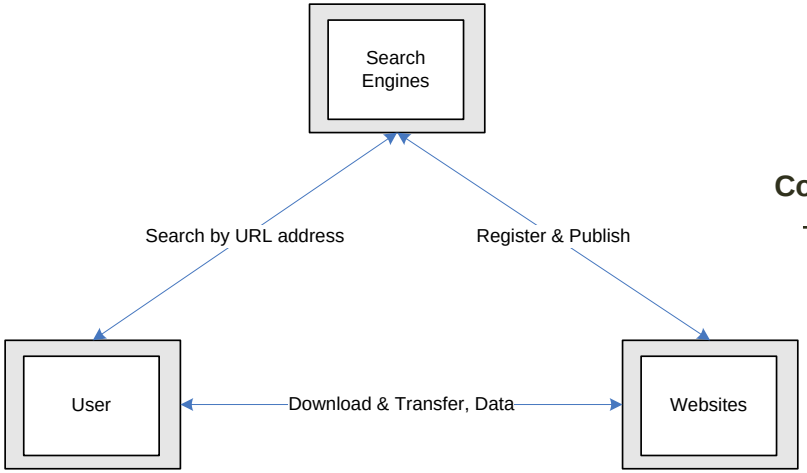
Support ‘Environments for System Implementation and Operation’ through many applications and development tools.



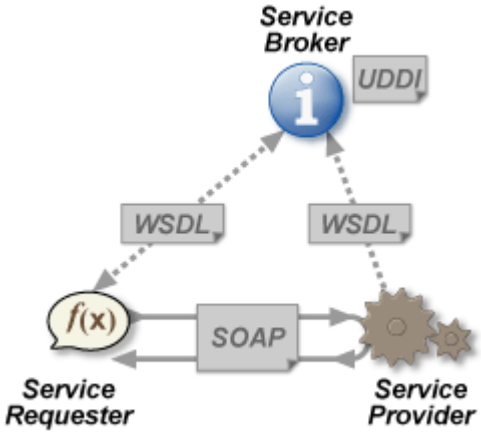
What is Workflow?

Web Service Definition

Web service is a sofrware system designed to support interoperable Machine to Machine interaction over a network. (Defined by W3C)



Compare with



- **SOAP :** An XML-based, extensible message envelop format, with “binding” to HTTP, HTTPS, SMTP(simple mail trasfer protocol), XMPP(extensible messaging and presence protocol) protocols.
- **UDDI :** A protocol for publishing and discovering metadata about Web services, to enable applications to find Web services, eigher at design time or runtime.
- **WSDL :** An XML format that allows service interfaces to be described, along with the details of their bindings to specific protocols. Typically used to generate server and client code, and for configuration.

What is Workflow?

The example of SOAP(Service Oriented Architecture Protocol)

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <getProductDetails xmlns="http://warehouse.example.com/ws">
      <productID>827635</productID>
    </getProductDetails>
  </soap:Body>
</soap:Envelope>
```

The example of WSDL(Web Service Definition Language)

```
<?xml version="1.0" encoding="utf-8" ?>
<description
    xmlns="http://www.w3.org/ns/wsdl"
    targetNamespace= "http://greath.example.com/2004/wsdl/resSvc"
    xmlns:tns= "http://greath.example.com/2004/wsdl/resSvc"
    . . . >

  . . .
</description>
```

[Note]

Most of these core specifications have come from W3C, including XML, SOAP and WSDL, UDDI comes from OASIS.

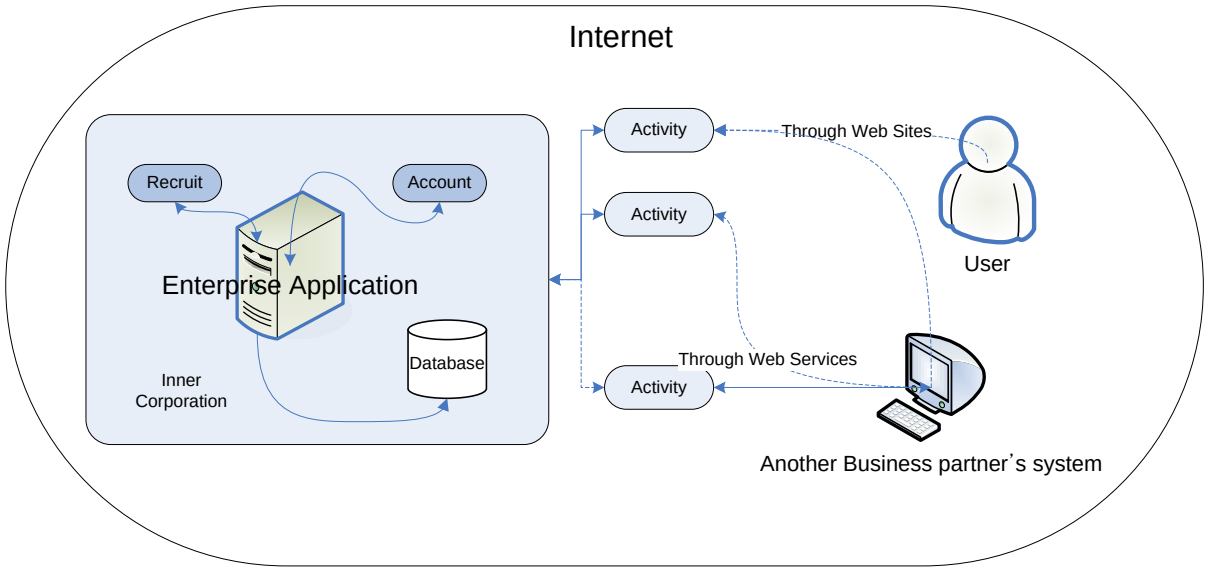
What is Workflow?

The Characters of Web Service

- **Information Exchange in the interoparable way**
- **Dynamic Service Binding & Advertizement**

The Strategies and Characters of Web Service Business

- **Single product(contains Single Service) and Variety of suppliers**
- **Globalized Outsourcing**
- **Short-Term Partenership**
- **Business Wrapper**



What is Workflow?

The List of Web service FrameWorks from wikipedia.org

Name	Platform	Destination	Specifications	Protocols
Apache Axis	Java	Client/Server	WS-ReliableMessaging, WS-Coordination, WS-Security, WS-AtomicTransaction, WS-Addressing	SOAP, WSDL
JSON-RPC-Java	Java	Server	???	JSON-RPC
Java Web Services Development Pack	Java	Client/Server	WS-Addressing, ???	SOAP, WSDL, ???
Web Services Invocation Framework	Java	Client	???	SOAP, WSDL
Windows Communication Foundation	.Net	Client/Server ?	WS-Addressing, WS-ReliableMessaging, WS-Security	SOAP, WSDL
XFire	Java	Client/Server	WS-Addressing, WS-Security	SOAP, WSDL
XML Interface for Network Services	Java	Server ?	??	SOAP, XML-RPC
gSOAP	C++	Client/Server	WS-Addressing, WS-Discovery, WS-Enumeration, WS-Security	SOAP, XML-RPC, WSDL

What is Workflow?

Next..

Let’s talk about the WFE(workflow engine) and operate it.

Search ‘workflow engine’ (open source)

reference address: http://SourceForge.net

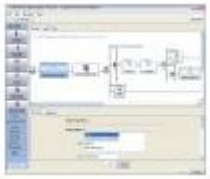
Here are results

Name	Activity		Rank	Registered	Latest File	Downloads (count)
uEngine BPM		99.85%	280	2003-12-18	2007-03-13	12,692
JTrac		99.76%	447	2006-03-17	2006-12-12	14,754
YAWL		99.70%	544	2004-07-15	2007-03-16	39,920
OpenWFE		99.70%	557	2002-05-29	2007-02-07	93,274

Search ‘workflow engine’ (open source)

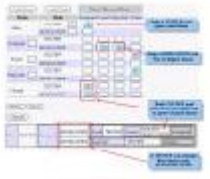
workflow engine’s characteristic feature(1)

uEngine BPM



A BPM (Business Process Management) / Workflow Solution based on Web Services and CBD-concept, which provides most features of commercial one - Process Designer, EIP, Web service tools and OLAP based Process Analyzer.

JTrac



JTrac is a generic issue-tracking web-application that can be easily customized by adding custom fields and drop-downs. Features include customizable workflow, field level permissions, e-mail integration, file attachments and a detailed history view.

Search ‘workflow engine’ (open source)

workflow engine’s characteristic feature(2)

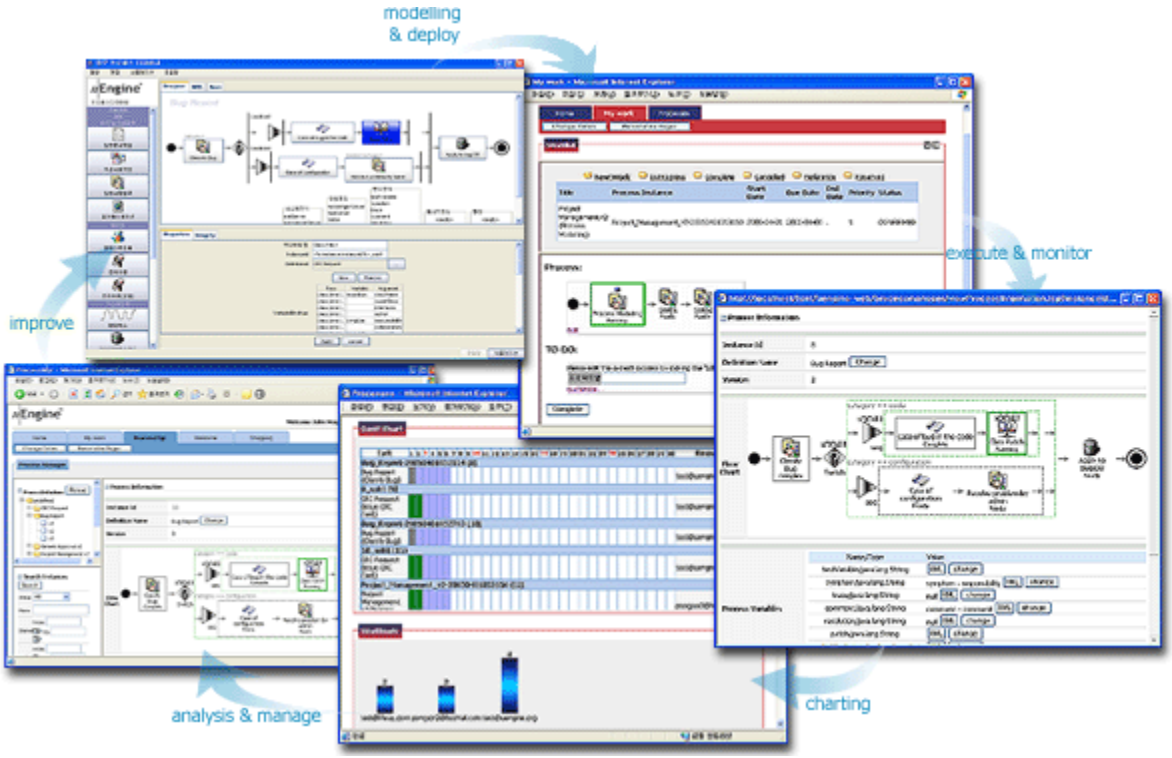
YAWL

YAWL is a Workflow/BPM system. Based on a concise and powerful modeling language; YAWL handles complex data, transformations & Web Service integration. Built in Java, it uses XML Schema, X Path/Query, & X Forms natively. It is compatible with SOAP & WSDL.

OpenWFE

OpenWFE is an open source java workflow engine / environment. It is a complete Business Process Management suite, with 4 components : an engine, a work list, a web client and an ‘APRE' (Automatic Participant Runtime Environment).

Introduction ‘Uengine’



Installation Uengine

Step 1 Download uEngine and extract it. Download

Step 2 Launch the run.bat script in ‘was/bin’

That’s all about installing and running uEngine.

[Note]

uEngine was tested in JDK v1.4.(not JRE) so if your server does not start up property, insert following command into the start of the Run.bat

SET, JAVA_HOME=<directory for JDK>

How to Run U-engine

Just connect to http://localhost:8080 , that's all.

[Note]

uEngine has java container(Jboss), already. so you need not download 'Jboss_java'

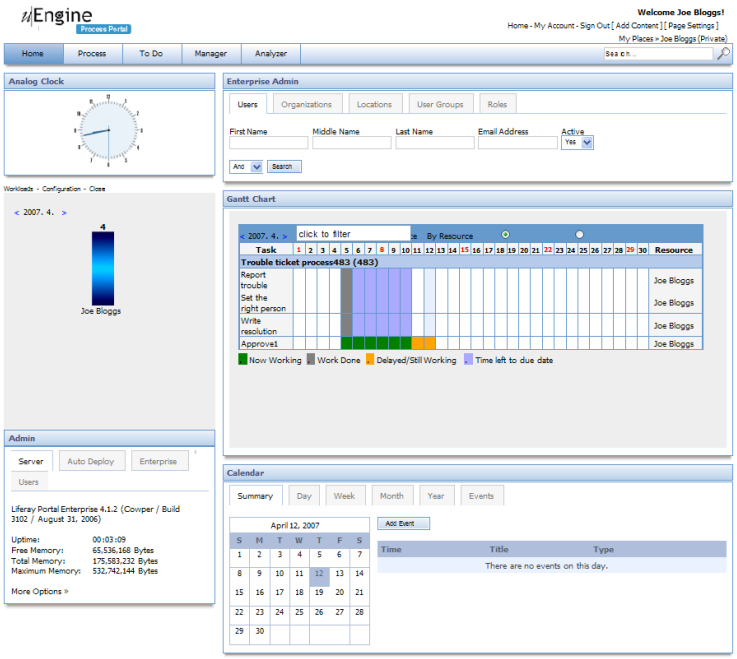
Start up, Uengine

First,

Login, ID: test@liferay.com | PassWord: test

Then,

You will see below feature.



Regist and Management(Admin)(1)

First,

Click ‘Home’ at initial administrator page.

Second,

To Set ‘Admin category’, See below chart.

Category	Specification
Company	Register Company name , info, logo
Portlets	Manage Portlets, Modify, Set roles..
Server	Read & Modify Server infomation
User	Register & Modify User infomation
Groups	Register & Modify the Groups of User infomation
Roles	Set Roles..

Regist and Management(Admin)(2)

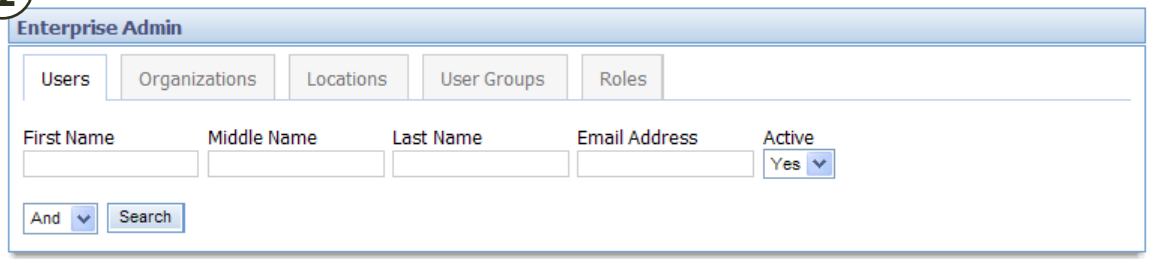
Regist User..

Click ‘Search’ and fill out below form.

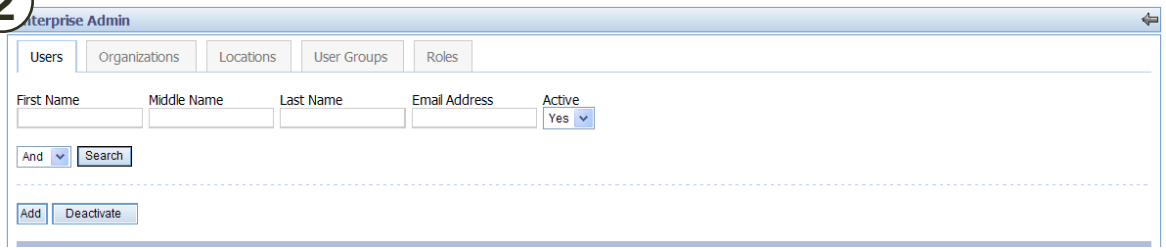
Then,

Click ‘Add’ and Set role of users..

1



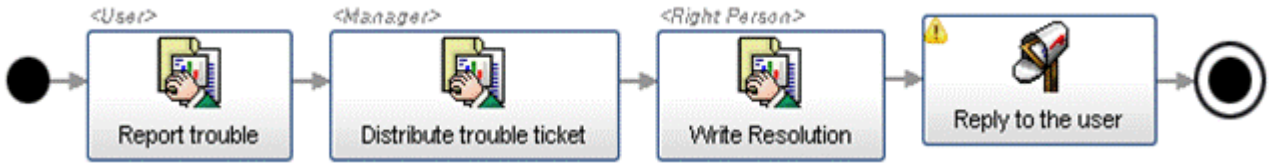
2



Start-up,Process Design

Simple process, Example

Trouble-Ticket Process diagram



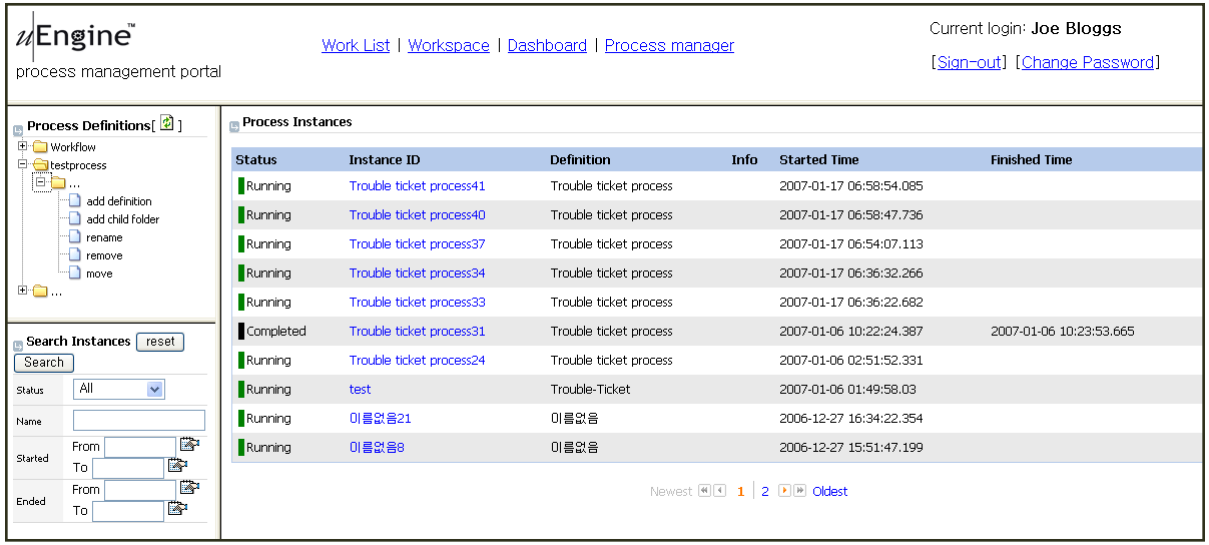
Trouble Ticket is a process that handles trouble tickets by distributing them to the right person who is responsible for the maintenance of the system and gives feed back of the result to the user by e-mail notification.

Process steps

Report trouble → **Distribute trouble ticket** → **Write resolution** → **Reply to the user**

Process Design(cont'd)

How to create process and use it(1)

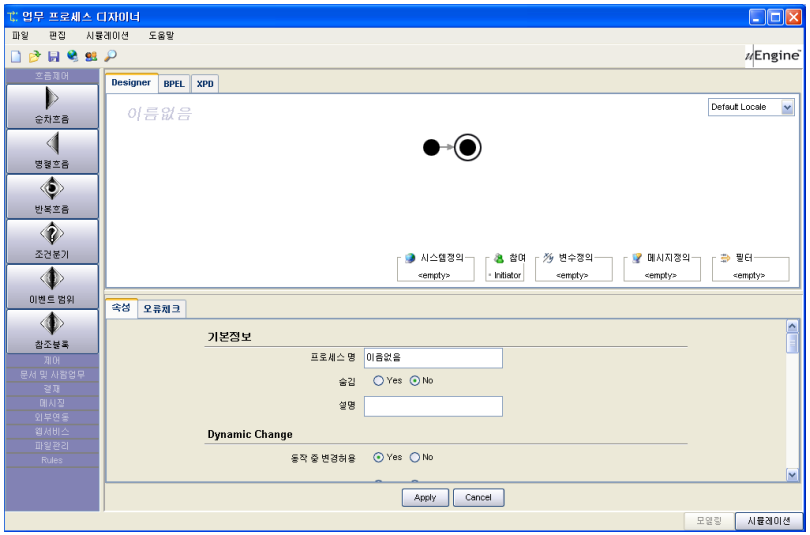


Step 1 Go http://localhost:8080/uengine-web, and login.

Step 2 Click process management, and add your own process folder

Process Design(cont'd)

How to create process and use it(2)



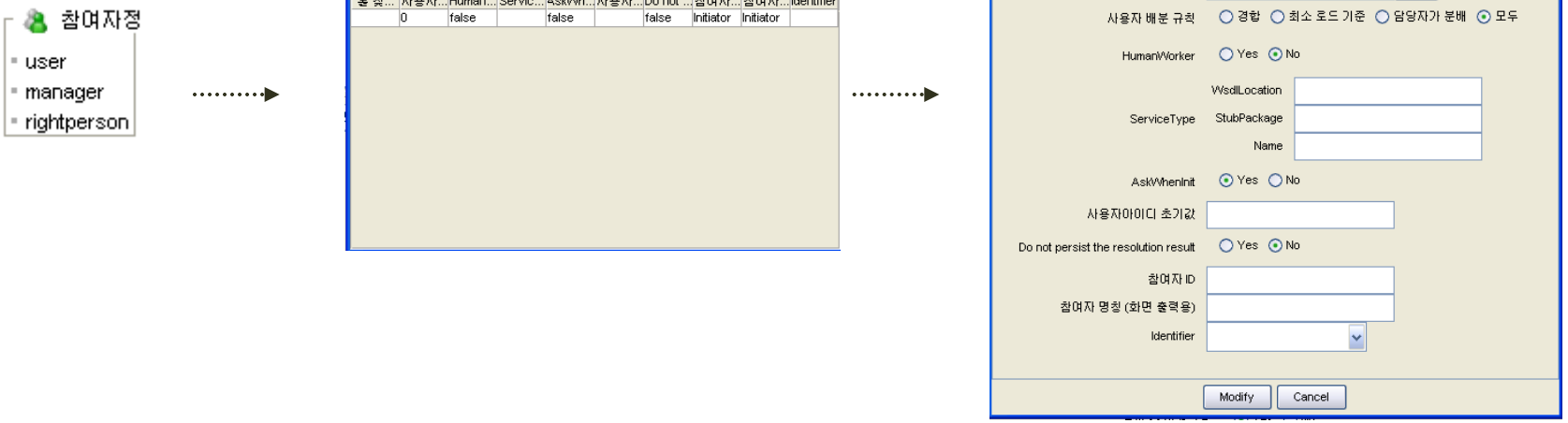
Process design tool(uengine)

Step 3 And click 'add process definition'(and then auto downloading, process design tool'

Step 4 And then draw process diagram.

Process Design(cont'd)

How to create process and use it(3)



Step 5 And then you must define 'attending user', so click 'user define'

Step 6 And then fill out the 'attending user form'

Process Design(cont'd)

How to create process and use it(4)

*** The Kinds of valiable form**

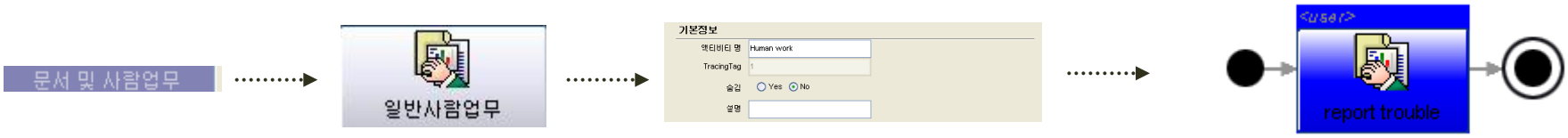
- **Select box**
- **Radio button**
- **TextArea**

Step 7 And then click the 'variable define'

Step 8 And then fill out the 'variable form'

Process Design(cont'd)

How to create process and use it(5)

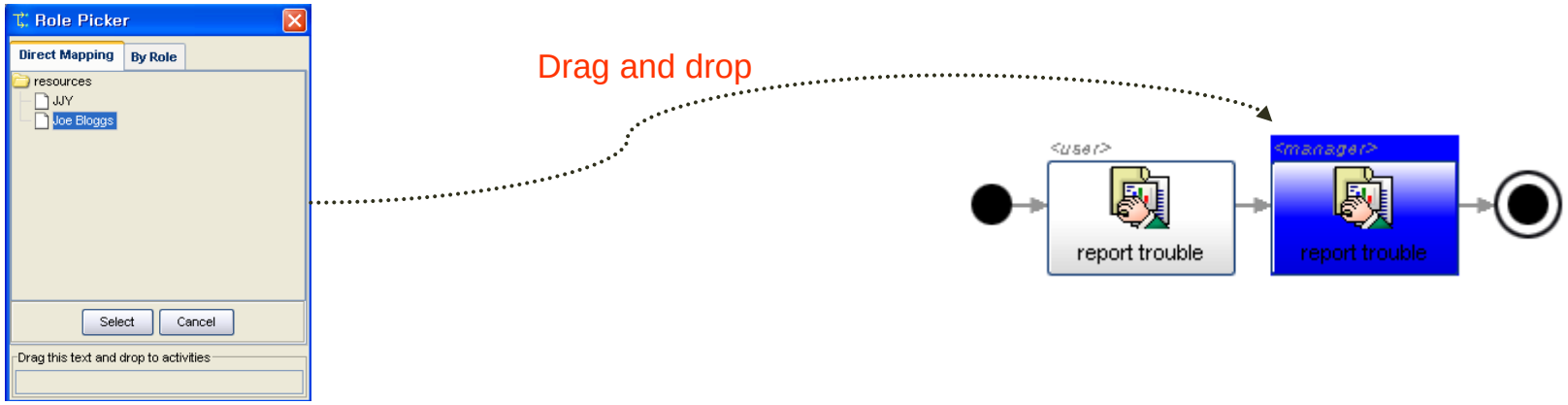


Step 9 Click '문서 및 사람업무', and then click '일반사람업무'

Step 10 And then fill out the 'form' , click 'apply'

Process Design(cont'd)

How to create process and use it(6)



Step 11 Next replicate step 9, and create manage box

Step 12 Click role picker, and select manager, drag and drop in manager box.

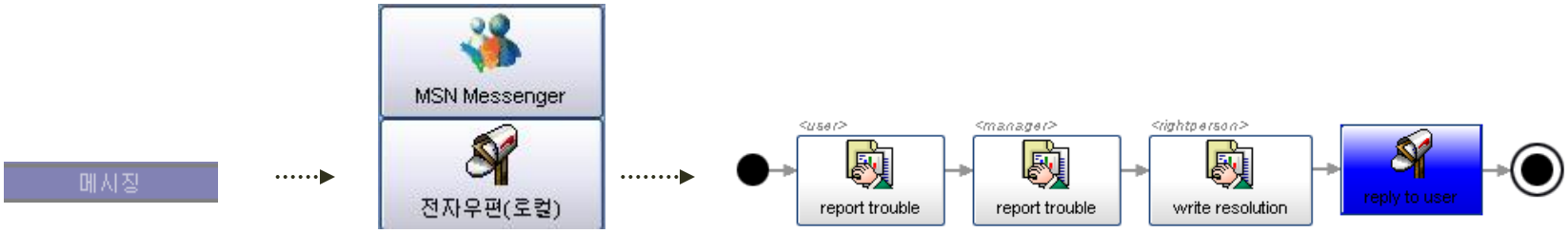
Process Design(cont'd)

How to create process and use it(7)

Step 13 Next iterate step 9~10, and you will see above diagram.

Process Design(cont'd)

How to create process and use it(8)

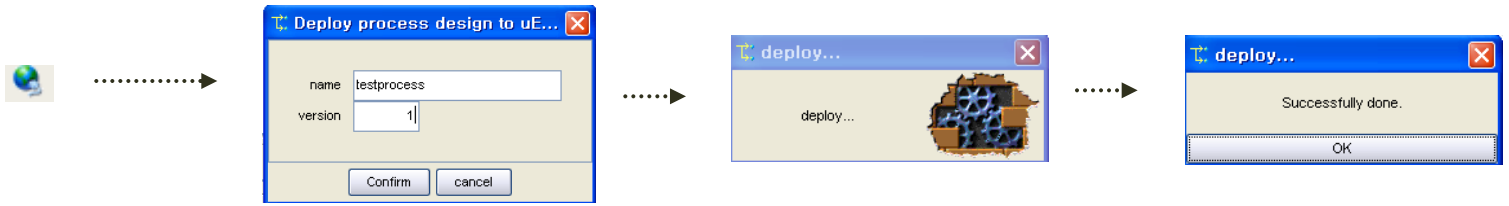


Step 14 Now for messeging you must create messeging box, so click the '메시징'

Step 15 Click '전자우편(로컬)' and fill out the form

Publishing..

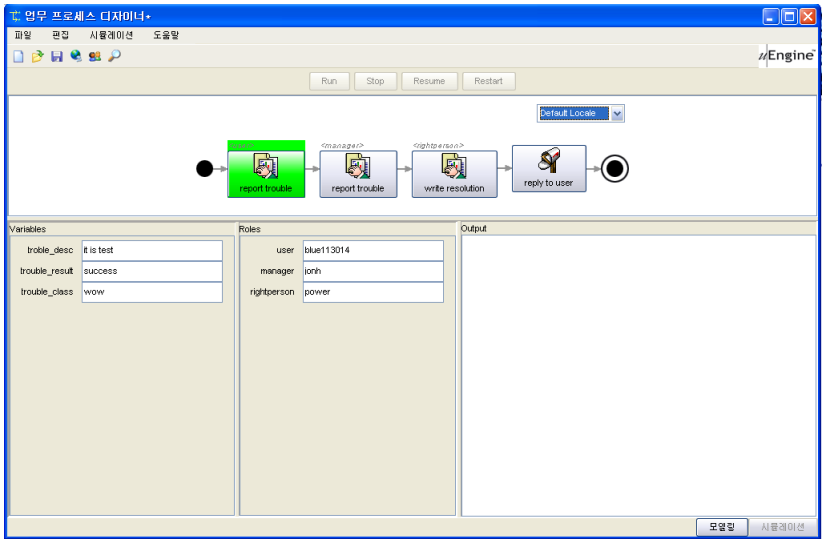
How to Deploy this process model



Step 16 Now deploy this model, click the button(above) and fill out the box, click ‘confirm’

How to Simulation on Modeling Tool

To Simulation this process model

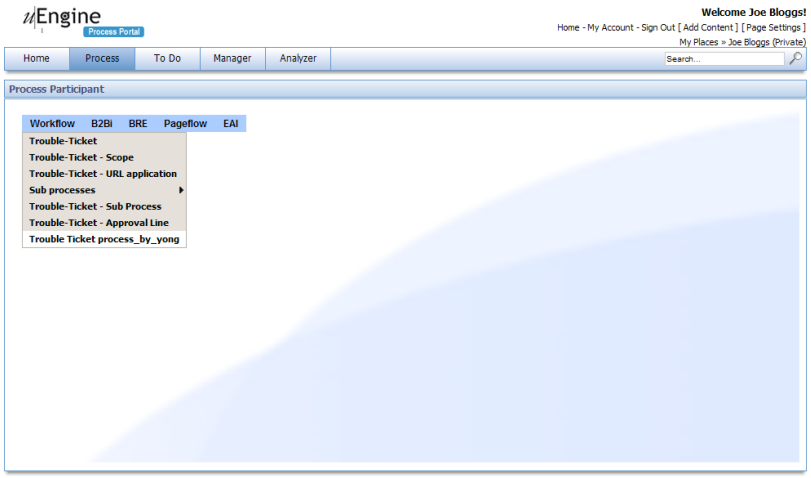


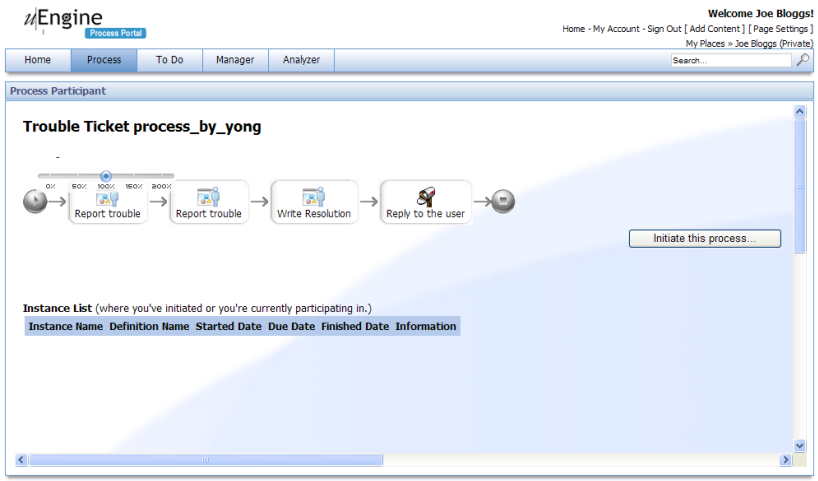
Step 17 Click the ‘simulation’ and then you will see this screen.

Step 18 Each step, you fill out the input box and then ‘run’

Deploying the Model

Deploy this process model(1) on Local Server..



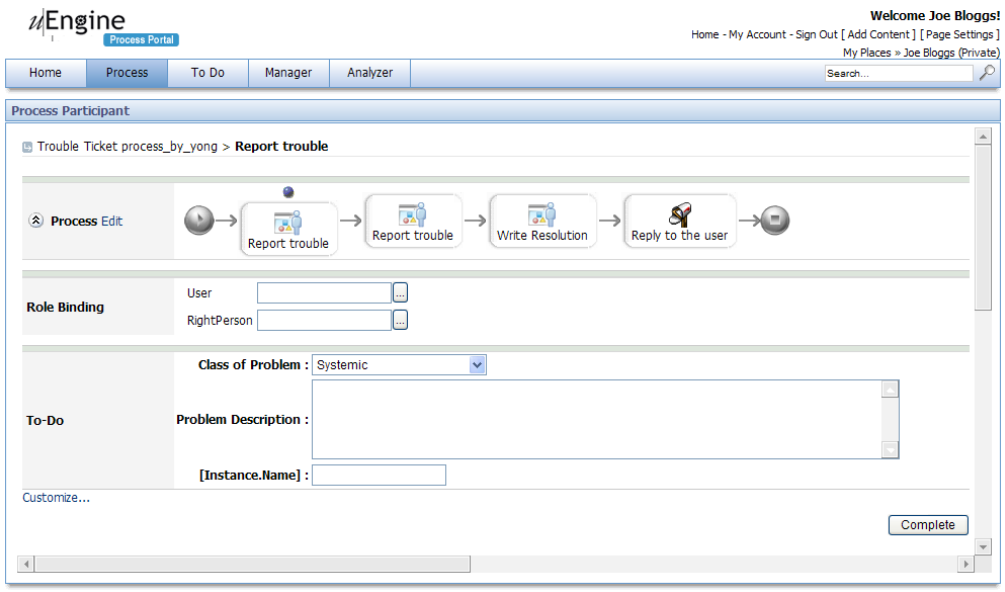


Click the ‘process tab’ then, you will see featuer 2,

Next, click ‘initiate the process’

Deploying the Model

Deploy this process model(2)



Fill out the form.. And click complete.

Thank You !