

# DTGov Guide

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# Chapter 1. Introduction to DTGov

## 1.1. Design Time Governance

The DTGov project layers Design Time Governance functionality on top of an S-RAMP repository. These two projects work together to provide the following:

- Store and Govern artifacts
- Custom Governance Workflows
- Integrated Governance Human Task Management

This guide will discuss the various pieces of functionality provided by DTGov and how to configure and use them.

## 1.2. Use Cases

In addition to a general framework for triggering business workflows based on changes to artifacts in the S-RAMP repository, the DTGov project focuses on the following specific Governance Use Cases:

- Deployment Lifecycle Management

This guide will not only discuss the generic governance capabilities provided by the DTGov project, but also the specific Use-Cases listed above.

## 1.3. How DTGov Works

- Workflows are created from JBoss jBPM (BPMN2) process definitions.
- A version of jBPM is embedded in the deployed dtgov.war. This version of jBPM is configured to use the S-RAMP repository as the source for workflow definitions.
- To use a workflow with DTGov, the jBPM workflow files must be bundled into a Jar file named "dtgov-workflows.jar" and uploaded to the DTGov S-RAMP repository. There are several methods that can be used to deploy the workflow jar file to S-RAMP. We recommend that you use maven.
- The embedded jBPM pulls the dtgov-workflow.jar out of S-RAMP at runtime and uses the workflow definitions found therein.
- In this context, "runtime" refers to whenever a new workflow **instance** is created (typically triggered by an artifact being added or changed in the s-ramp repository).

- Any human tasks that are used in any DTGov workflow will appear in the Tasks UI included in the DTGov UI (<http://localhost:8080/dtgov-ui>)
- A workflow deployment only shows up in the dtgov-ui/#deployments page once a lifecycle management jBPM process is kicked off for it.

### 1.4. The Sample Process Workflow: "SimpleReleaseProcess"

- A sample Process Workflow ("SimpleReleaseProcess") is packaged with DTGov
- OOTB SimpleReleaseProcess does "Lifecycle Management" governance on an artifact by monitoring the S-RAMP repository periodically (60 sec default) - this monitoring takes the form of a query on the repository.
- When an artifact matches that S-RAMP query as configured in the DTGov config file (dtgov.properties) which is mapped to the SimpleReleaseProcess a new jBPM process instance is created for that artifact. The process can do anything it wants at that point.



# Chapter 2. Getting Started

## 2.1. Prerequisites

The DTGov application is written in Java. To get started make sure your system has the following:

- Java JDK 1.6 or newer
- Apache Ant 1.7 or newer to use the installer
- Maven 3.0.3 or newer
- Overlord S-RAMP version 0.6.0.Final or newer

This Getting Started guide assumes you do not already have Overlord S-RAMP installed.

## 2.2. Download, Installation and Configuration

First, we recommend you download the following:

- [JBoss EAP 6.3](http://www.jboss.org/jbossas/downloads) [http://www.jboss.org/jbossas/downloads]
- [S-RAMP 0.6.0.Final](http://www.projectoverlord.io/s-ramp/) [http://www.projectoverlord.io/s-ramp/]
- [DTGov 1.4.0.Final](http://www.projectoverlord.io/dtgov/) [http://www.projectoverlord.io/dtgov/]

Next, you must follow these steps to install and configure the application:

1. Download and install your preferred runtime platform. We currently support:
  - a. JBoss EAP 6.x
  - b. JBoss Fuse 6.1
  - c. Tomcat 7
  - d. Jetty 8
2. Download and unpack S-RAMP 0.6.0.Final
3. Download and unpack DTGov 1.4.0.Final
4. Run the S-RAMP installer, installing into your installed runtime platform
5. Run the DTGov installer, installing into your installed runtime platform

6. Start your application container (e.g. JBoss EAP)
7. Populate the S-RAMP repository with DTGov seed data

Some psuedo-shell code that might help

```
mkdir ~/overlord
cd ~/overlord
# Download JBoss EAP 6.3 (e.g. jboss-eap-6.3.0.zip)
#   From - http://www.jboss.org/jbossas/downloads
# Download S-RAMP distribution (s-ramp-0.6.0.Final.zip)
#   From - http://www.projectoverlord.io/s-ramp/
# Download S-RAMP distribution (dtgov-1.4.0.Final.zip)
#   From - http://www.projectoverlord.io/dtgov/
unzip jboss-eap-6.3.0.zip
unzip s-ramp-0.6.0.Final.zip
unzip dtgov-1.4.0.Final.zip
cd s-ramp-0.6.0.Final
ant install
# !!Follow installation instructions here!!
cd ../dtgov-1.4.0.Final
ant install
# !!Follow installation instructions here!!
# Start JBoss (/path/to/jboss-eap-6.1/bin/standalone.sh) - wait for startup to
  complete
ant seed -Ds-ramp.shell.password=ADMIN_PASSWORD
```

The dtgov.war and dtgov-ui.war applications are deployed to the runtime platform during the installation. The DTGov web UI (<http://localhost:8080/dtgov-ui>) is provided by dtgov-ui.war. You will see references to these in the server.log at startup and when the services are invoked.

## 2.3. Check your Installation

Now that everything is installed and running, you should be able to verify that everything is working by logging in to the S-RAMP Browser UI and verifying that you can see the DTGov seed data.

<http://localhost:8080/s-ramp-ui> (admin/ADMIN\_PASSWORD)

You should see something like this:

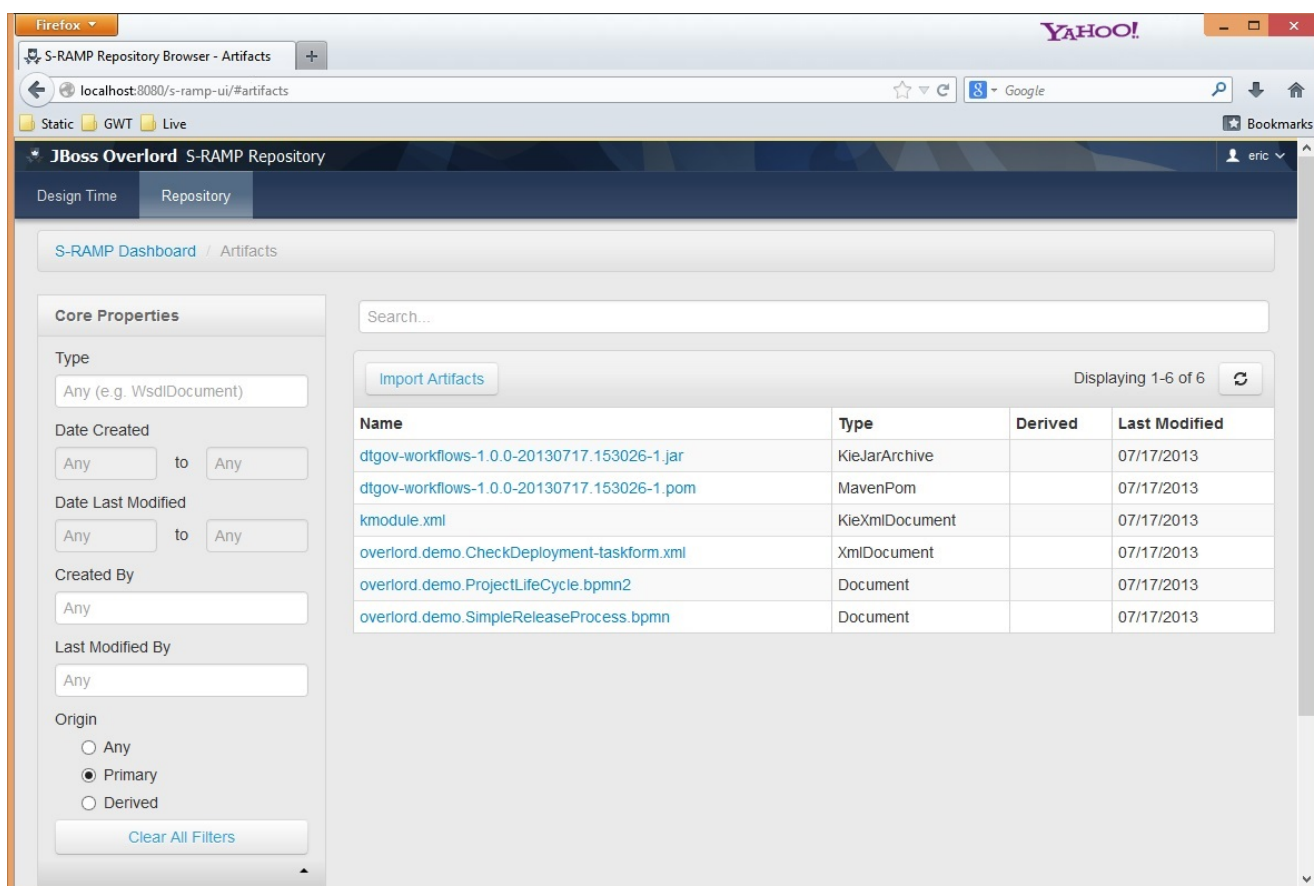


Figure 2.1. Screenshot of the DTGov data in S-RAMP

## 2.4. Get to Work

It's all installed, running, and checked? Now it's time to use the software! This guide will explain advanced configuration and usage, but you can get started by logging in to the DTGov User Interface as admin:

<http://localhost:8080/dtgov-ui>

It's likely that users will need to customize the system based on their organization's specific work processes. The **Configuring** and **Governance Workflows** chapters should be helpful in describing how to customize the system.

## 2.5. Getting Started With Fuse 6

If you would like to run DTGov on the Fuse platform, the procedure for installation is a bit different. Follow these steps and you should get up and running with no problems!

Follow these steps to get up and running with DTGov (and S-RAMP) on Fuse:

## Chapter 2. Getting Started

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### Step 1

Download Fuse 6.x: [http://www.jboss.org/download-manager/file/jboss-fuse-6.1.0.GA-full\\_zip.zip](http://www.jboss.org/download-manager/file/jboss-fuse-6.1.0.GA-full_zip.zip)

### Step 2

Unpack Fuse 6.x

### Step 3

Download a patch for Fuse 6.x - this patch fixes some problems with the Fuse package itself: <https://developer.jboss.org/servlet/JiveServlet/download/52861-11-125645/patches.zip>

### Step 4

Unpack the patches.zip into the Fuse 6.x installation - it should prompt you to replace a few files.

### Step 5

Launch Fuse 6.x (typically via the fuse or fuse.bat script). You should probably also beef up your memory settings on Fuse. For example:

```
-Xms512M -Xmx1G -XX:PermSize=384m -XX:MaxPermSize=384m
```

### Step 6

Run the following commands on the Fuse console:

```
features:addurl mvn:org.overlord.sramp/s-ramp-distro-fuse61/0.6.0-SNAPSHOT/xml/features
features:addurl mvn:org.overlord.dtgov/dtgov-distro-fuse61/1.4.0-SNAPSHOT/xml/features
features:install -v s-ramp-karaf-commands
overlord:s-ramp:configure <ADMIN-USER-PASSWORD>
features:install -v dtgov-karaf-commands
overlord:dtgov:configure <ADMIN-USER-PASSWORD>
features:install -v s-ramp
features:install -v dtgov
```

### Step 7

Once everything has installed, you must seed the initial DTGov data into the S-RAMP repository. This can be done using the following command at the root of this distribution:

```
ant seed -Ds-ramp.shell.password=<ADMIN-USER-PASSWORD> -Ds-ramp.endpoint=http://localhost:8181/s-ramp-server/
```

### Step 8

Go ahead and get started using DTGov and S-RAMP! You can find the UI here: <http://localhost:8181/dtgov-ui/>

```
Username: admin
```

Password: <ADMIN-USER-PASSWORD>

---

# Chapter 3. User Management

## 3.1. Overview

In order to do work in the DTGov system, a valid user must first be authenticated. The specific details regarding how to create and manage the list of allowed users will vary depending on the runtime configuration. This guide will focus on the mechanisms supported by the DTGov community installer.



### Tip

Please note that the installer creates a single user (named *admin*) during the installation process.

## 3.2. Required Roles

There are several roles that the user must have in order to interact with DTGov. These roles are as follows:

- **overlorduser** : users must have this role in order to access the DTGov user interface
- **admin.sramp** : users must have this role in order to access the S-RAMP repository (both read and write)
- **dev** : users with this role will be able to view and complete Dev environment and developer human tasks
- **test** : users with this role will be able to view and complete Test environment human tasks
- **stage** : users with this role will be able to view and complete Staging environment human tasks
- **prod** : users with this role will be able to view and complete Production environment human tasks
- **ba** : users with this role will be able to view and complete business analyst human tasks
- **arch** : users with this role will be able to view and complete architect human tasks

## 3.3. Adding a User

### 3.3.1. JBoss EAP 6

By default DTGov uses the standard EAP Application Realm configuration as its authentication source. This means that adding users is a simple matter of using the existing EAP **add-user** script. If you are running on Windows you can use the `add-user.bat` script. Otherwise run the `add-user.sh` script. Both of these scripts can be found in EAP's *bin* directory.

Here is an example of how to add an S-RAMP user using the **add-user.sh** script:

```
[user@host jboss-eap-6.x]$ pwd
/home/user/FSW6/jboss-eap-6.x
[user@host jboss-eap-6.x]$ ./bin/add-user.sh

What type of user do you wish to add?
  a) Management User (mgmt-users.properties)
  b) Application User (application-users.properties)
(a): b

Enter the details of the new user to add.
Realm (ApplicationRealm) : ApplicationRealm
Username : fitzuser
Password : P4SSWORD!
Re-enter Password : P4SSWORD!
What roles do you want this user to belong to? (Please
  enter a comma separated list, or leave blank for none)[  ]:
  overlorduser,admin.sramp,dev,test
About to add user 'fitzuser' for realm 'ApplicationRealm'
Is this correct yes/no? yes
Added user 'fitzuser' to file '/home/user/FSW6/jboss-eap-6.x/standalone/
configuration/application-users.properties'
Added user 'fitzuser' to file '/home/user/FSW6/jboss-eap-6.x/domain/
configuration/application-users.properties'
Added user 'fitzuser' with roles overlorduser,admin.sramp to file '/'
home/user/FSW6/jboss-eap-6.x/standalone/configuration/application-
roles.properties'
Added user 'fitzuser' with roles overlorduser,admin.sramp to file '/home/
user/FSW6/jboss-eap-6.x/domain/configuration/application-roles.properties'
Is this new user going to be used for one AS process to connect to another
  AS process?
e.g. for a slave host controller connecting to the master or for a Remoting
  connection for server to server EJB calls.
yes/no? no
```



### Tip

the above example will create a user who can view and complete Dev and Test environment human tasks. Any other human tasks will not be visible.

### 3.3.2. JBoss Fuse 6.1

When running DTGov in JBoss Fuse 6.1, the user credentials are stored in a plain text properties file in the `etc` directory.

**etc/users.properties.**



```
#user=password,role1,role2
admin=ADMIN_PASSWORD,overlorduser,admin.sramp,dev,test,stage,prod,ba,arch
```

Simply add users to this file and restart Fuse. Make sure you include the necessary roles of `overlorduser` and `admin.sramp` (along with any additional optional roles the particular user might need) in any user you create.

### 3.3.3. Tomcat 7

When running DTGov in Tomcat 7, the source of authentication is an XML configuration file located in Tomcat's `conf` directory named **tomcat-users.xml**. To add another user, simply add a **user** element to this XML configuration file. For example, adding a user named *fitzuser* might make the file look like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<tomcat-users>
<!--
  NOTE:  By default, no user is included in the "manager-gui" role required
  to operate the "/manager/html" web application.  If you wish to use this
  app,
  you must define such a user - the username and password are arbitrary.
-->
  <role rolename="tomcat"/>
  <role rolename="overlorduser"/>
  <role rolename="admin.sramp" />
  <user username="admin" password="4dmln!"
    roles="tomcat,overlorduser,admin.sramp,dev,test,stage,prod,ba,arch"/>
  <user username="fitzuser" password="P4SSW0RD!"
    roles="tomcat,overlorduser,admin.sramp,dev,test"/>
</tomcat-users>
```

### 3.3.4. Jetty 8

When running in Jetty 8, the users are configured in the `$JETTY_HOME/etc/realm.properties` file. The format is the same as the above Fuse 6 documentation:

```
username=password123!,overlorduser,admin.sramp,dev,test
```



# Chapter 4. Configuring DTGov

## 4.1. Overview

DTGov has two configurations that can be modified to suit a particular deployment and business. Specifically, the back-end DTGov system (dtgov.war) has a configuration file as does the User Interface (dtgov-ui.war). This chapter describes these two configuration files so that users can configure DTGov for their particular deployment environment and organization's unique business processes.

## 4.2. Back-End Configuration

The configuration of the back-end system can be modified by making changes to an external configuration file found in the application server's **configuration** directory. In JBoss EAP by default the configuration file can be found here:

**jboss-eap/standalone/configuration/dtgov.properties**

If the file does not exist it can be created and will be picked up by the DTGov app during startup. The location of this file can be overridden by setting the following Java System Property to be the full path to a properties file anywhere on the server's file system:

**governance.file.name**

For example, this system property could be configured by adding the following to the script that starts up your application server:

```
-Dgovernance.file.name=/home/jdoe/config/overlord/dtgov/dtgov.properties
```

The dtgov.properties configuration file is used to control a number of settings, listed and described in the following section.

## 4.3. Back-End Configuration (EAP)

When running in JBoss EAP this same configuration information is stored in the **JBoss/standalone/configuration/standalone.xml** file under the **urn:jboss:domain:overlord-configuration:1.0** subsystem. For example:

```
<subsystem xmlns="urn:jboss:domain:overlord-configuration:1.0">
  <configurations>
    <oc:configuration xmlns:oc="urn:jboss:domain:overlord-configuration:1.0" name="dtgov">
      <oc:properties>
        <oc:property name="sramp.repo.url" value="${overlord.baseUrl}/s-
ramp-server" />
      </oc:properties>
    </oc:configuration>
  </configurations>
</subsystem>
```

```
<oc:property name="governance.url" value="${overlord.baseUrl}/
dtgov" />
<oc:property name="dtgov.ui.url" value="${overlord.baseUrl}/
dtgov-ui" />
<oc:property name="governance.query.interval" value="20000" />
<oc:property name="dtgov.workflows.group"
value="org.overlord.dtgov" />
<oc:property name="dtgov.workflows.name" value="dtgov-
workflows" />
<oc:property name="dtgov.workflows.package"
value="SRAMPPackage" />
<oc:property name="dtgov.workflows.version" value="1.3.0-
SNAPSHOT" />
<oc:property name="governance.bpm.user" value="dtgovworkflow" />
<oc:property name="governance.bpm.password"
value="${vault:VAULT::dtgov::dtgovworkflow.password::1}" />
<oc:property name="sramp.repo.user" value="dtgovworkflow" />
<oc:property name="sramp.repo.password"
value="${vault:VAULT::dtgov::dtgovworkflow.password::1}" />
<oc:property name="governance.user" value="dtgovworkflow" />
<oc:property name="governance.password"
value="${vault:VAULT::dtgov::dtgovworkflow.password::1}" />
</oc:properties>
</oc:configuration>
</configurations>
</subsystem>
```

All of the same properties as described above are applicable to EAP - they are simply configured in a slightly different location.

### 4.4. Back-End Configuration Properties

```
# S-RAMP Connection details
sramp.repo.url
sramp.repo.auth.provider
sramp.repo.user
sramp.repo.password
sramp.repo.validating
sramp.repo.auth.saml.issuer
sramp.repo.auth.saml.service

# Location of the DTGov WAR
governance.url
# Frequency with which to poll S-RAMP for query matches
governance.query.interval
# Location in JNDI of the email service
governance.jndi.email.reference
# "From" information to use when sending email (domain and address)
governance.email.domain
```

```
governance.email.from

# JNDI location of the User Transaction
governance.jndi.userTx.reference

# RHQ connection info
rhq.rest.user
rhq.rest.password
rhq.base.url

# BPM connection info
governance.bpm.user
governance.bpm.password
governance.bpm.url

# BASIC auth user used to invoke DTGov provided services
governance.user
governance.password

# Deployment targets configured for the DTGov deployment service
governance.targets

# Location of the DTGov UI
dtgov.ui.url

# S-RAMP
s-ramp-wagon
dtgov.s-ramp-wagon.snapshots
dtgov.s-ramp-wagon.releases

# DTGov Workflow maven info
dtgov.workflows.group
dtgov.workflows.name
dtgov.workflows.version
dtgov.workflows.package
```

In particular, the **governance.targets** and **governance.queries** configuration properties bear additional explanation. Please see the **Governance Workflows** chapter for more information on how to use these properties to configure the DTGov Deployment Service and the Governance Workflow Queries, respectively.

## 4.5. User Interface (UI) Configuration

The DTGov user interface can also be configured for a specific deployment and business environment. The configuration of the UI can be modified by making changes to an external configuration file found in the application server's **configuration** directory. In JBoss EAP the configuration file can be found here:

**jboss-eap/standalone/configuration/dtgov-ui.properties**

The location of this file can be overridden by setting the following system property to be the full path to a properties file anywhere on the server's file system:

### **dtgov-ui.config.file.name**

This configuration file is used to control a number of settings, listed and described in the following section.

## 4.6. User Interface (UI) Configuration (EAP)

As mentioned above, when running in JBoss EAP the configuration properties are stored in the standalone.xml file. See the section **Back-End Configuration (EAP)** above. The UI properties are stored in a section named **dtgov-ui**:

```
<subsystem xmlns="urn:jboss:domain:overlord-configuration:1.0">
  <configurations>
    <oc:configuration xmlns:oc="urn:jboss:domain:overlord-configuration:1.0" name="dtgov-ui">
      <oc:properties>
        <!-- Below is not the full list of properties needed - it is
        imply illustrative of the format -->
        <oc:property name="dtgov-ui.workflows.group"
value="org.overlord.dtgov" />
        <oc:property name="dtgov-ui.workflows.name" value="dtgov-
workflows" />
        <oc:property name="dtgov-ui.workflows.version" value="1.3.0-
SNAPSHOT" />
      </oc:properties>
    </oc:configuration>
  </configurations>
</subsystem>
```

## 4.7. UI Configuration Properties

```
# S-RAMP API connection endpoint
dtgov-ui.s-ramp.atom-api.endpoint
# Whether to validate the S-RAMP connection
dtgov-ui.s-ramp.atom-api.validating
# What kind of authentication to use (class name)
dtgov-ui.s-ramp.atom-api.authentication.provider
# Only used when the provider is basic auth
dtgov-ui.s-ramp.atom-api.authentication.basic.username
dtgov-ui.s-ramp.atom-api.authentication.basic.password
# Only used when the provider is SAML bearer token auth
dtgov-ui.s-ramp.atom-api.authentication.saml.issuer
dtgov-ui.s-ramp.atom-api.authentication.saml.service
dtgov-ui.s-ramp.atom-api.authentication.saml.sign-assertions
dtgov-ui.s-ramp.atom-api.authentication.saml.keystore
```

```
dtgov-ui.s-ramp.atom-api.authentication.saml.keystore-password
dtgov-ui.s-ramp.atom-api.authentication.saml.key-alias
dtgov-ui.s-ramp.atom-api.authentication.saml.key-password

# Task API connection endpoint
dtgov-ui.task-api.endpoint
# Implementation of a task client
dtgov-ui.task-client.class
# Authentication to use when invoking the task API
dtgov-ui.task-api.authentication.provider
# Only used when using basic auth
dtgov-ui.task-api.authentication.basic.username
dtgov-ui.task-api.authentication.basic.password
# Only used when using saml bearer token auth
dtgov-ui.task-api.authentication.saml.issuer
dtgov-ui.task-api.authentication.saml.service
dtgov-ui.task-api.authentication.saml.sign-assertions
dtgov-ui.task-api.authentication.saml.keystore
dtgov-ui.task-api.authentication.saml.keystore-password
dtgov-ui.task-api.authentication.saml.key-alias
dtgov-ui.task-api.authentication.saml.key-password

# Dtgov API related properties
dtgov-ui.dtgov-api.endpoint
dtgov-ui.dtgov-client.class
dtgov-ui.dtgov-api.authentication.provider
# Only used when using saml bearer token auth
dtgov-ui.dtgov-api.authentication.saml.issuer
dtgov-ui.dtgov-api.authentication.saml.service
dtgov-ui.dtgov-api.authentication.saml.sign-assertions
dtgov-ui.dtgov-api.authentication.saml.keystore
dtgov-ui.dtgov-api.authentication.saml.keystore-password
dtgov-ui.dtgov-api.authentication.saml.key-alias
dtgov-ui.dtgov-api.authentication.saml.key-password

# Deployment lifecycle base classifier
dtgov-ui.deployment-lifecycle.classifiers.base
dtgov-ui.deployment-lifecycle.classifiers.initial
# Classifier to use when querying for all deployments
dtgov-ui.deployment-lifecycle.classifiers.all
dtgov-ui.deployment-lifecycle.classifiers.in-progress
# This next one is a prefix for any property that will indicate a possible
  classifier stage that
# should be displayed in the UI. In the dtgov ui configuration file,
  multiple properties would
# be specified that begin with this prefix and have a value of the format
  {label}:{classifier}
dtgov-ui.deployment-lifecycle.classifiers.stage
```

```
# And another one that is a prefix for any property that will indicate a
# possible deployment type
# that should be displayed in the UI. In the dtgov ui configuration file,
# multiple properties would
# be specified that begin with this prefix and have a value of the format
# {label}:{type}
dtgov-ui.deployment-lifecycle.types

# S-RAMP UI integration properties
dtgov-ui.s-ramp-browser.url-base
```

In particular, the **dtgov-ui.deployment-lifecycle.classifiers.stage** and **dtgov-ui.deployment-lifecycle.types** properties require further explanation. See the following sections for details.

### 4.8. Configuring UI Deployment Stages

The DTGov user interface has a page that allows users to see a list of all deployments being tracked. That page allows the user to filter the list of deployments based on the environments in which the deployment is...deployed. In other words, the UI page allows the user to show only the deployments that are currently deployed in, for example, the DEV environment. Since different organizations have different numbers and names for these environments, the actual filter options are configurable. An example will prove useful:

```
dtgov-ui.deployment-lifecycle.classifiers.stage.dev=Development:http://
www.jboss.org/overlord/deployment-status.owl#InDev
dtgov-ui.deployment-lifecycle.classifiers.stage.qa=QA:http://www.jboss.org/
overlord/deployment-status.owl#InQa
dtgov-ui.deployment-lifecycle.classifiers.stage.stage=Staging:http://
www.jboss.org/overlord/deployment-status.owl#InStage
dtgov-ui.deployment-lifecycle.classifiers.stage.prod=Production:http://
www.jboss.org/overlord/deployment-status.owl#InProd
```

If the above configuration is used (in the **dtgov-ui.properties** file) then the UI will show four possible environments that the user can use to filter deployments (dev, qa, stage, prod). The format for the value of each entry is:

#### Label : Classifier

The Label will be shown in the UI (in the filter drop-down) and the Classifier will be used when performing the S-RAMP query to retrieve the filtered list of deployments.

### 4.9. Configuring UI Deployment Types

The DTGov user interface's deployment listing page also allows users to filter by the type of deployment (Java Web Application, SwitchYard Application, etc). Since different organizations will likely work with varying technologies, the Deployment Type filter is configurable. For example:



```
dtgov-ui.deployment-lifecycle.types.switchyard=SwitchYard Application:ext/
SwitchYardApplication
dtgov-ui.deployment-lifecycle.types.jar=Java Archive:ext/JavaArchive
dtgov-ui.deployment-lifecycle.types.war=Java Web Application:ext/
JavaWebApplication
```

In the above example, the user would be able to filter by SwitchYard Application, Java Archive, and Java Web Application. The format for each entry is:

#### Label : S-RAMP Artifact Type

The Label will be shown in the UI (in the filter drop-down) and the S-RAMP Artifact Type will be used when performing the S-RAMP query to retrieve the filtered list of deployments.

Note: the list of Deployment Types is also used in the **Add Deployment** dialog when adding a new deployment. In this case, the S-RAMP Artifact Type is used when adding the deployment to the repository.

This configuration works in conjunction with the Deployment Service described in the **Deployment Management** chapter of this guide. The classifiers specified when configuring Deployment Targets should be represented here.

## 4.10. Configuring Authentication

By default, the S-RAMP repository and all of the Design Time Governance REST services are protected by BASIC and SAML Bearer Token authentication mechanisms (allowing clients to use **either**). Configuring the authentication of the REST services varies depending on application server. In JBoss the authentication is typically configured in the **standalone.xml** file. This section describes how the various client components can be configured when the server authentication mechanism is changed.

There are several Design Time Governance components that invoke protected REST services, and each component must be configured individually. In each case an authentication provider must be implemented and configured via either **dtgov.properties** or **dtgov-ui.properties**. The following are the client components which can be customized in this way:

- DTGov :: S-RAMP Repository Monitoring (automated process that triggers workflows when repository changes are detected)
- DTGov :: Governance Services Invoking the S-RAMP API (some of the Governance REST services invoke the S-RAMP API)
- DTGov UI :: S-RAMP Invokes (the UI displays governance data that it gets from the S-RAMP repository)
- DTGov UI :: Task Inbox Invokes (the UI queries a pluggable Task API to get human task data for display in the Task Inbox)

In each case, an authentication provider can be specified that will control how authentication information is passed to the service being invoked. The authentication provider must be a Java class that implements a specific provider interface. The classname can be set in the relevant configuration file. The following table provides the relevant details for each component:

Component	Provider Interface	Config Property	Config File
DTGov :: S-RAMP Repository Monitor	org.overlord.sramp.clients.sramp.authentication.Provider	sramp.authentication.provider	dtgov.properties
DTGov :: Governance Services → S-RAMP	org.overlord.sramp.clients.sramp.authentication.Provider	sramp.authentication.provider	dtgov.properties
DTGov UI :: S-RAMP Invokes	org.overlord.sramp.clients.sramp.authentication.Provider	dtgov-authentication-provider-ui.authentication.provider	dtgov-ui.properties
DTGov UI :: Task Inbox Invokes	org.overlord.dtgov.taskclient.auth.AuthenticationProvider	dtgov-authentication-provider.authentication.provider	dtgov.properties

### Example

A reasonable example might be that the Task API is configured to use some alternative authentication mechanism, in which case the DTGov UI must be configured with a different (custom) provider. The following steps will accomplish this:

1. Create a new Java class that implements *org.overlord.dtgov.taskclient.auth.AuthenticationProvider*

```
package org.example.auth;

import org.apache.http.HttpRequest;
import org.overlord.dtgov.taskclient.auth.AuthenticationProvider;

public class CustomAuthenticationProvider implements AuthenticationProvider
{
    // Constructor.
    public CustomAuthenticationProvider() {
        // Note, you may also choose to have a constructor that accepts an
        // Apache Commons
        // Configuration object, which will allow you to access
        // configuration properties
        // in the dtgov-ui.properties file:
        // org.apache.commons.configuration.Configuration
    }

    // Provide any custom authentication here.
    @Override
    public void provideAuthentication(HttpRequest request) {
        // Do custom authentication now.
    }
}
```

```
}
```

### 1. Configure the provider in **dtgov-ui.properties**

```
dtgov-ui.task-  
api.authentication.provider=org.example.auth.CustomAuthenticationProvider  
# Optional custom configuration properties  
dtgov-ui.task-api.authentication.custom.property1=some-value  
dtgov-ui.task-api.authentication.custom.property2=some-value
```

### 1. That's it!



# Chapter 5. DTGov and S-RAMP

## 5.1. Overview

DTGov integrates tightly with a compliant S-RAMP repository, and it is recommended that the Overlord S-RAMP implementation is used. The S-RAMP repository is used as the storage mechanism for all artifacts that DTGov is interested in (e.g. Deployments). This chapter describes this integration as well as how it is configured.

DTGov is integrated with S-RAMP via the Atom based REST API that all S-RAMP repositories expose. The repository is leveraged in a number of ways, including:

- Storage of all artifacts
- Monitor for changes to trigger business workflows (described in another chapter)
- Managing deployments

## 5.2. Configuration Properties

A number of configuration properties drive the integration between DTGov and S-RAMP. In particular note that the DTGov back-end and the DTGov User Interface each have their own separate configuration. This is because the back-end and UI are separate applications that can be independently deployed.

Note that in addition to configuring the DTGov UI itself, the shared Overlord Header functionality (the top header for all Overlord applications) must also be customized so that the tabs in the header point to the right places. This is done by customizing the files installed (for example) in `$jboss_home/standalone/configuration/overlord-apps`.

### DTGov Back-End Configuration.

```
# S-RAMP Connection details
sramp.repo.url
sramp.repo.auth.provider
sramp.repo.user
sramp.repo.password
sramp.repo.validating
```

### DTGov User Interface Configuration.

```
# S-RAMP API connection endpoint
dtgov-ui.s-ramp.atom-api.endpoint
dtgov-ui.s-ramp.atom-api.authentication.provider
```

```
dtgov-ui.s-ramp.atom-api.authentication.saml.issuer
dtgov-ui.s-ramp.atom-api.authentication.saml.service
dtgov-ui.s-ramp.atom-api.authentication.saml.sign-assertions
dtgov-ui.s-ramp.atom-api.authentication.saml.keystore
dtgov-ui.s-ramp.atom-api.authentication.saml.keystore-password
dtgov-ui.s-ramp.atom-api.authentication.saml.key-alias
dtgov-ui.s-ramp.atom-api.authentication.saml.key-password
dtgov-ui.s-ramp.atom-api.validating
dtgov-ui.s-ramp-browser.url-base
```

### **overlord-apps/\*-overlordapp.properties Configuration.**

```
overlordapp.href
```

Now for some examples. These examples assume that S-RAMP has been installed on server "sramp.example.org" and DTGov has been installed on server "dtgov.example.org".

First let's make sure the UI Headers are properly configured. To do this, we want to make sure that the files in overlord-apps are properly configured and copied to **both** servers (when running in EAP these files are found in \$jboss\_home/standalone/configuration/overlord-apps). There are two files of importance: srampui-overlordapp.properties, dtgov-overlordapp.properties

### **Example: srampui-overlordapp.properties.**

```
overlordapp.app-id=s-ramp-ui
overlordapp.href=http://sramp.example.org:8080/s-ramp-ui/
overlordapp.label=Repository
overlordapp.primary-brand=JBoss Overlord
overlordapp.secondary-brand=S-RAMP Repository
```

### **Example: dtgov-overlordapp.properties.**

```
overlordapp.app-id=dtgov
overlordapp.href=http://dtgov.example.org:8080/dtgov-ui/
overlordapp.label=Design Time
overlordapp.primary-brand=JBoss Overlord
overlordapp.secondary-brand=Governance
```

Now both servers should know where the appropriate UIs are located. This allows the shared Overlord Header (at the top of all Overlord UIs) to create the appropriate tabs.

Next let's make sure that the DTGov back-end can properly communicate with the S-RAMP repository. This is done by editing the dtgov.properties file on the dtgov server.

**Example: DTGov Back End Configuration.**

```

sramp.repo.url=http://sramp.example.org:8080/s-ramp-server/
sramp.repo.auth.provider=org.overlord.sramp.governance.auth.BasicAuthenticationProvider
sramp.repo.user=dtgov
sramp.repo.password=DTG_PASSWORD
sramp.repo.validating=true

```

The above configuration uses BASIC authentication when connecting to the S-RAMP repository. It will connect to S-RAMP at "sramp.example.org" (port 8080). Note that the DTGov back-end uses BASIC authentication against the S-RAMP repository because some of the functionality in DTGov occurs on the behalf of a workflow without the security context of an authenticated user. Obviously you must make sure that the user credentials you list in the configuration represent a valid S-RAMP repository user. We recommend creating a "dtgov" or "dtgovworkflow" user in S-RAMP for this purpose. Most likely you will be sharing users/authentication between the two servers in some way, but that is beyond the scope of this documentation.

Now that the back end is configured, we can configure the DTGov UI so it knows where the S-RAMP repository is (as well as where the S-RAMP UI is!). This is done by editing the dtgov-ui.properties file on the dtgov server.

**Example: DTGov UI Configuration.**

```

dtgov-ui.s-ramp.atom-api.endpoint=http://sramp.example.org:8080/s-ramp-server
dtgov-ui.s-ramp.atom-
api.authentication.provider=org.overlord.dtgov.ui.server.services.sramp.SAMLSignerTokenAuthentic
dtgov-ui.s-ramp.atom-api.authentication.saml.issuer=/dtgov-ui
dtgov-ui.s-ramp.atom-api.authentication.saml.service=/s-ramp-server
dtgov-ui.s-ramp.atom-api.authentication.saml.sign-assertions=true
dtgov-ui.s-ramp.atom-api.authentication.saml.keystore=
${sys:jboss.server.config.dir}/overlord-saml.keystore
dtgov-ui.s-ramp.atom-api.authentication.saml.keystore-
password=KEYSTORE_PASSWORD
dtgov-ui.s-ramp.atom-api.authentication.saml.key-alias=overlord
dtgov-ui.s-ramp.atom-api.authentication.saml.key-password=KEY_PASSWORD
dtgov-ui.s-ramp.atom-api.validating=true

dtgov-ui.s-ramp-browser.url-base=http://sramp.example.org:8080/s-ramp-ui

```

The above configuration connects to S-RAMP at "sramp.example.org" (port 8080) and uses SAML bearer token authentication. Please note that both the S-RAMP repository and the DTGov installation must share the same SAML keystore (the keystore contains encryption keys used to sign and verify SAML Assertions). This can be done by making sure that overlord-saml.keystore is the same file for both installations. Also note that the SAML Assertion used in this type of

authentication has a time-to-live of only 10 seconds per request. This means that both of your servers must have their system times reasonably well in sync or this time-to-live test may fail.

The configuration also sets up the URL of the S-RAMP browser (UI). This is important because the DTGov UI occasionally creates links directly to the S-RAMP browser. Please note that this latter functionality may be adversely affected by user authentication (if the user must re-authenticate when navigating from the DTGov UI to S-RAMP UI then the right page may not display).

### 5.3. Authentication

Both the UI and the back-end support pluggable authentication mechanisms. Out of the box DTGov provides implementations for BASIC authentication and SAML Bearer Token authentication. If the S-RAMP repository is protected by some alternative form of authentication, another implementation of the authentication provider can be created. In both cases, the authentication provider must implement the following interface:

**org.overlord.sramp.client.auth.AuthenticationProvider**

The DTGov back-end provides the following authentication provider implementations:

- 1. **BASIC** - *org.overlord.sramp.governance.auth.BasicAuthenticationProvider*
- 2. **SAML Bearer Token** - **not supported**

The DTGov user interface provides the following authentication provider implementations:

- 1. **BASIC** - *org.overlord.dtgov.ui.server.services.sramp.BasicAuthenticationProvider*
- 2. 

<b>SAML</b>	<b>Bearer</b>	<b>Token</b>	-
<i>org.overlord.dtgov.ui.server.services.sramp.SAMLBearerTokenAuthenticationProvider</i>			



# Chapter 6. Governance Workflows

## 6.1. Overview

One of the most important features of the Overlord: DTGov software is the ability to trigger Governance Workflows based on changes detected in the S-RAMP repository. This chapter discusses this functionality, including:

1. How to create a workflow
2. Using DTGov supplied supporting Governance Services
3. How to deploy a workflow
4. Configuring a workflow to execute (trigger) when repository content changes
5. Managing running Workflows (processes)

## 6.2. Creating Workflows

Overlord: DTGov integrates tightly with the jBPM business process management system. This allows DTGov to utilize any business process that is compatible with jBPM 6. The tooling available to author jBPM compatible business processes is varied and extensive (and is outside the scope of this document). One possibility is using the Eclipse based BPM tools. Another alternative is using the web based Drools authoring tools.

### 6.2.1. Create Workflows using Eclipse Tooling.

#### 6.2.1.1. Prerequisites

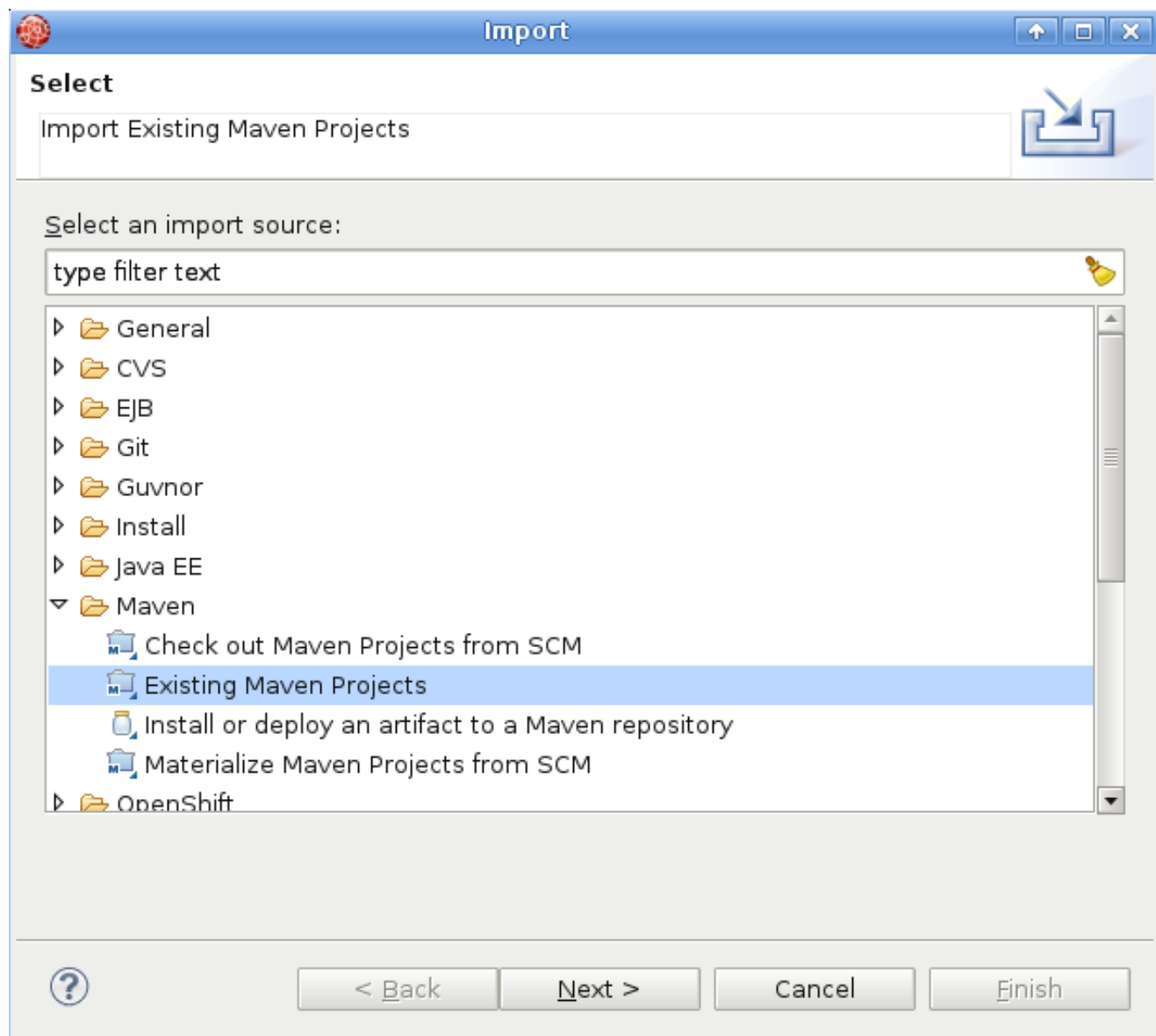
You need to have installed DTGov from JBoss Overlord project or as a part of Red Hat JBoss Fuse Service Works 6 and JBoss Developer Studio along with the Integration Stack plugins:

- JBoss Developer Studio with the Integration Stack can be installed according to Integration Stack for [JBoss Tools and Developer Studio](https://community.jboss.org/community/tools/blog/2013/10/11/integration-stack-for-jboss-tools-and-developer-studio) [https://community.jboss.org/community/tools/blog/2013/10/11/integration-stack-for-jboss-tools-and-developer-studio]
- FSW can be obtained from [Red Hat JBoss Fuse Service Works](http://www.jboss.org/products/fsw.html) [http://www.jboss.org/products/fsw.html] and DTGov from JBoss Overlord project can be found at [Overlord - JBoss Community](http://www.jboss.org/overlord/) [http://www.jboss.org/overlord/].

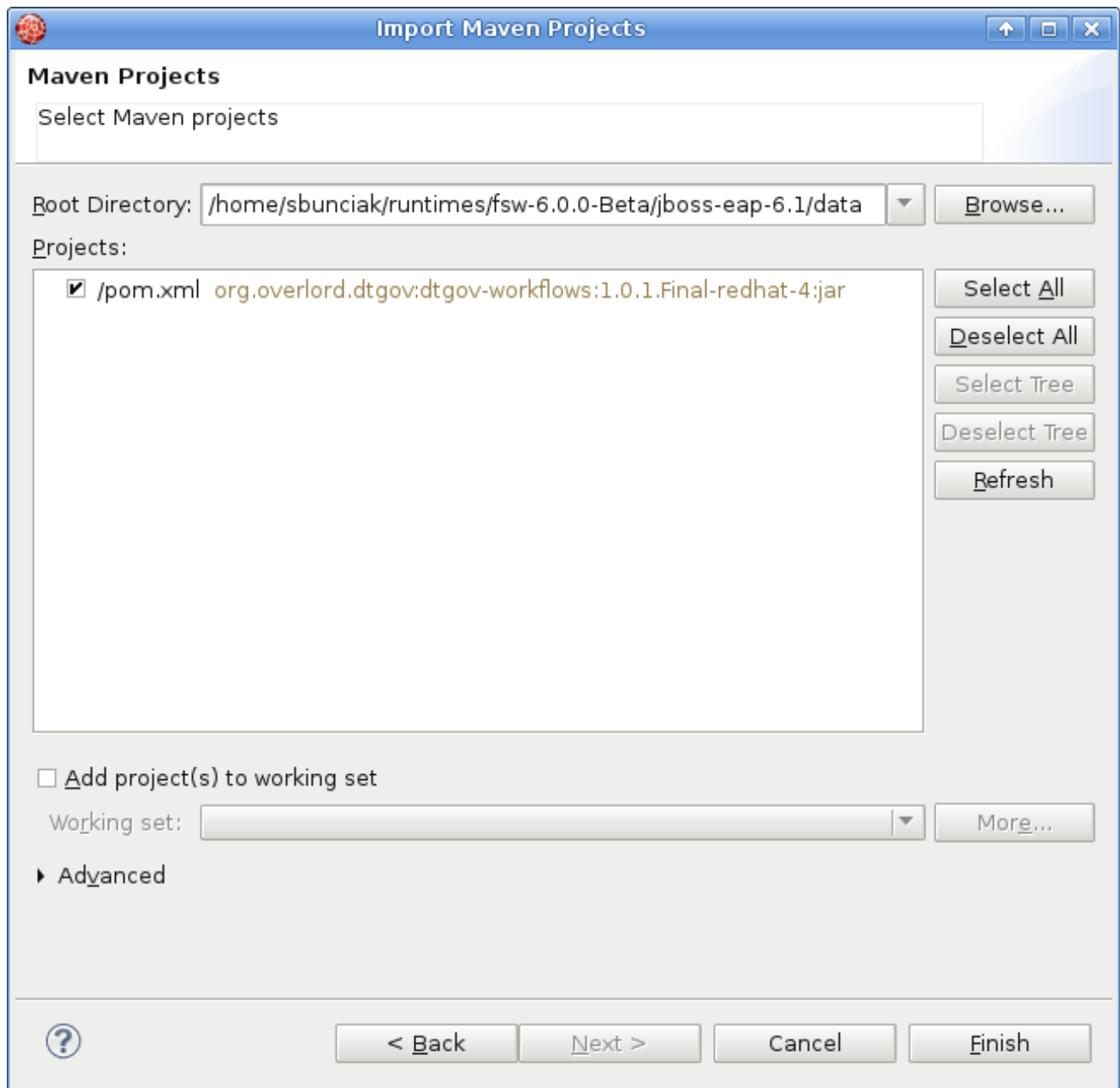
#### 6.2.1.2. Create new governance workflow

At the moment DTGov only supports one KieJar for all DTGov workflows, so first thing you need to do, after starting JBDS, is to import the default dtgov workflows into you workspace:

- In JBDS select *File # Import # Maven # Existing Maven Projects* and navigate to `<FSW installation>jboss-eap-6.1/data` where the dtgov workflows are located. The Maven integration in JBDS will take care of the rest.



**Figure 6.1. Importing workflow as maven project into your eclipse workspace**



**Figure 6.2. Importing workflow as maven project into your eclipse workspace**

- At this point you can author new governance workflows in `src/main/resources/SRAMPPackage` folder. To create new BPMN2 Process Diagram select *File # New # Other # BPMN2 # Generic BPMN 2.0 Diagram # Process Diagram Type*.

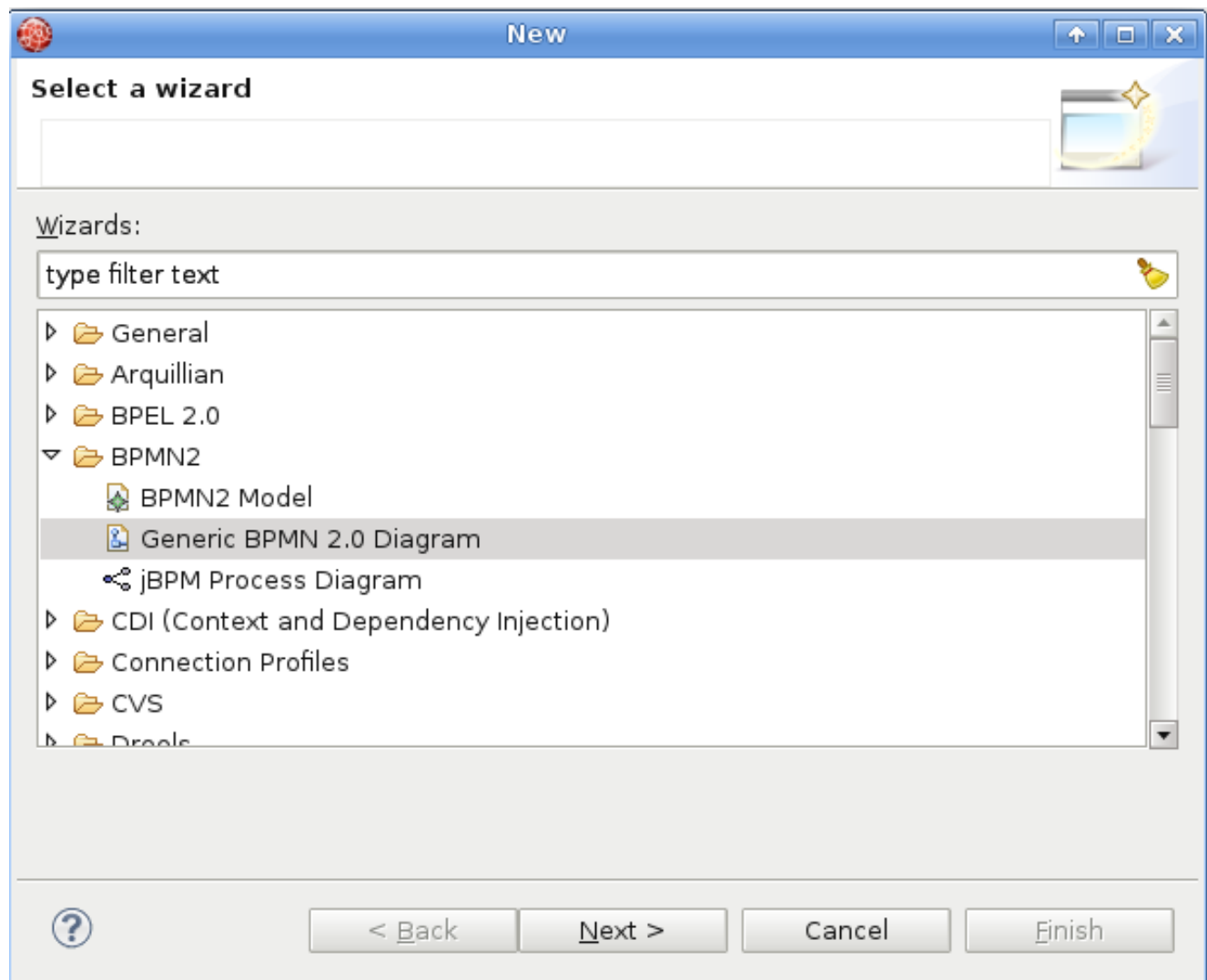
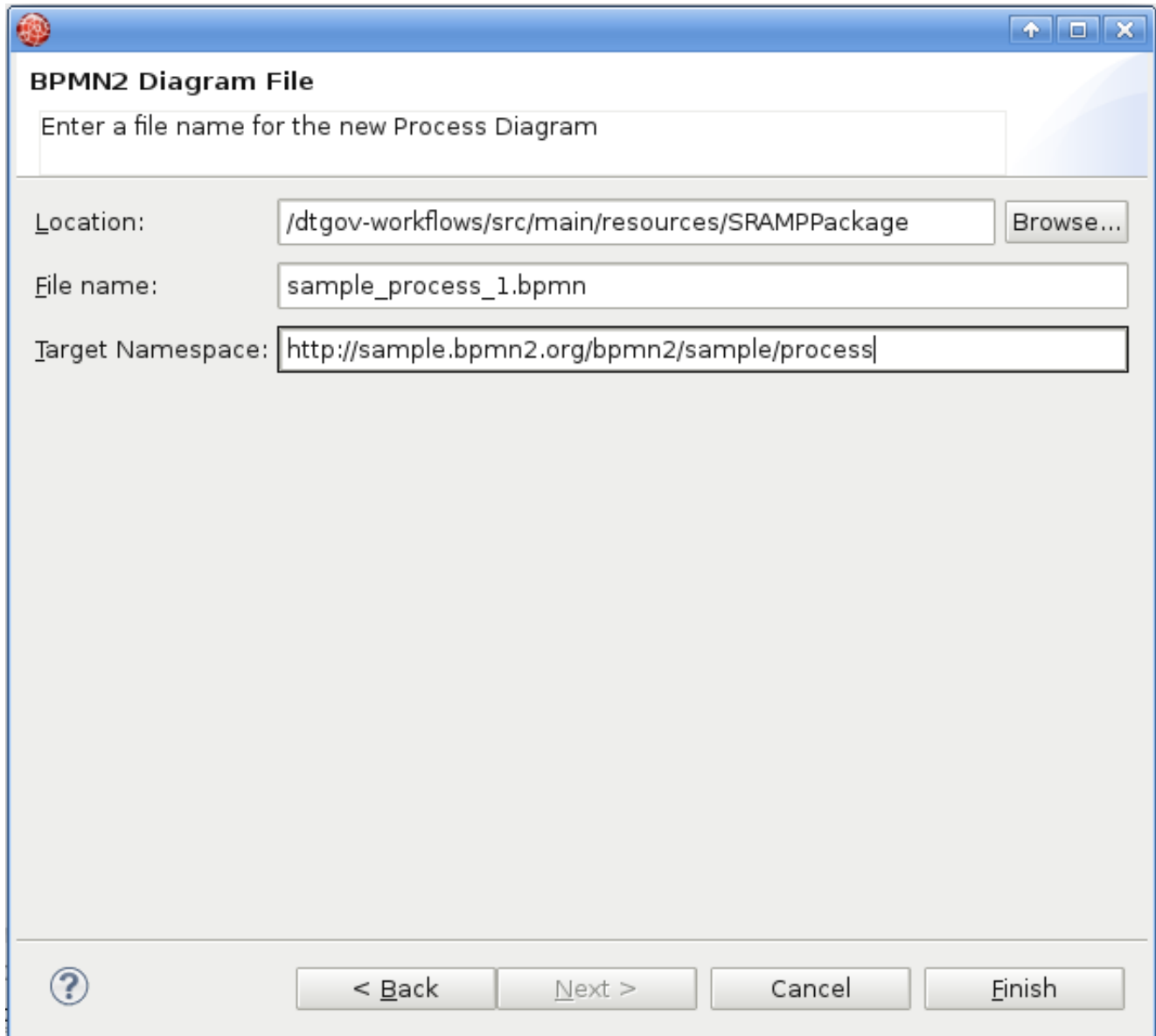
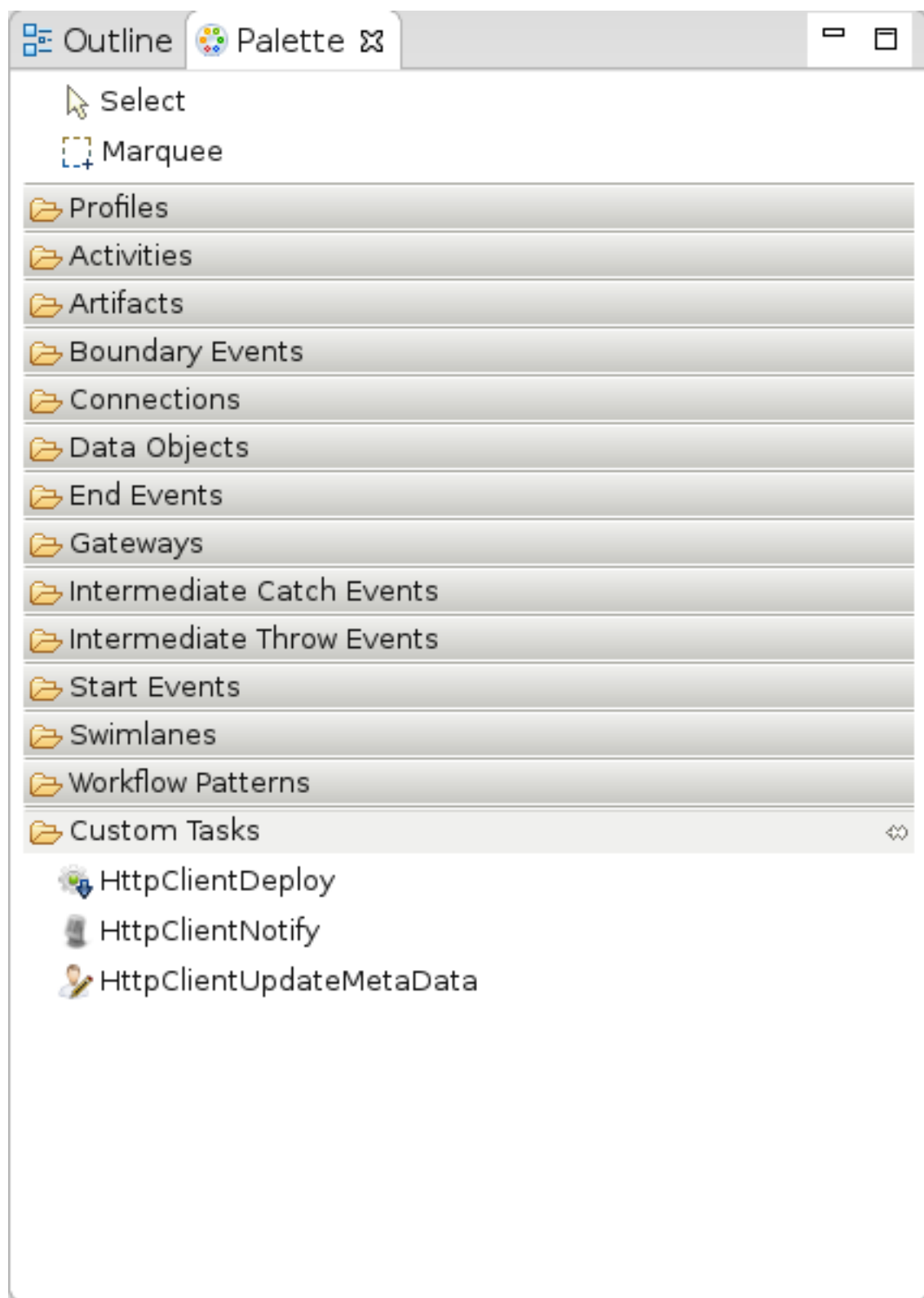


Figure 6.3. Choose Generic BPMN 2.0 Diagram

A screenshot of the 'BPMN2 Diagram File' dialog box in Eclipse. The dialog has a title bar with a red icon and standard window controls. The main area contains three input fields: 'Enter a file name for the new Process Diagram' (empty), 'Location:' (containing '/dtgov-workflows/src/main/resources/SRAMPPackage' with a 'Browse...' button), 'File name:' (containing 'sample\_process\_1.bpmn'), and 'Target Namespace:' (containing 'http://sample.bpmn2.org/bpmn2/sample/process'). At the bottom, there is a help icon, and four buttons: '< Back', 'Next >', 'Cancel', and 'Finish'.

**Figure 6.4. Choose Generic BPMN 2.0 Diagram and enter the filename.**

- Once the new process definition is opened in BPMN2 Modeler, make sure you have Custom tasks Modeler palette. If you don't, right click on dtgov-workflows in *Project Explorer* # *Properties* # *BPMN2* # *Target Runtime* # select 'JBoss jBPM 5 Business Process Engine'.

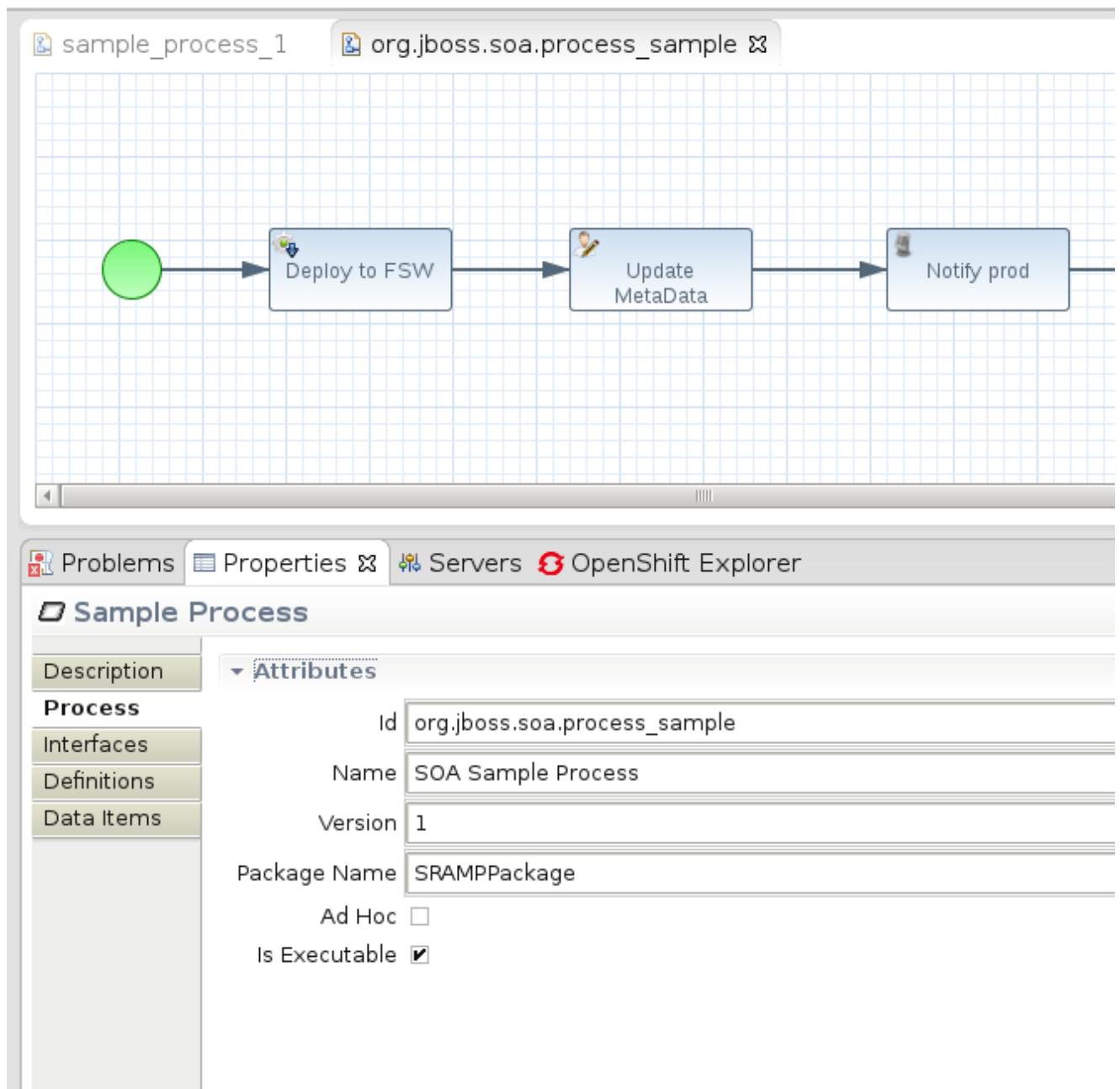


**Figure 6.5. Show the custom governance tasks**

- Create model a brand new BPMN2 workflow diagram of your own. You can use overlord.demo.SimpleReleaseProcess.bpmn, which is part of the default dtgov-workflows, as

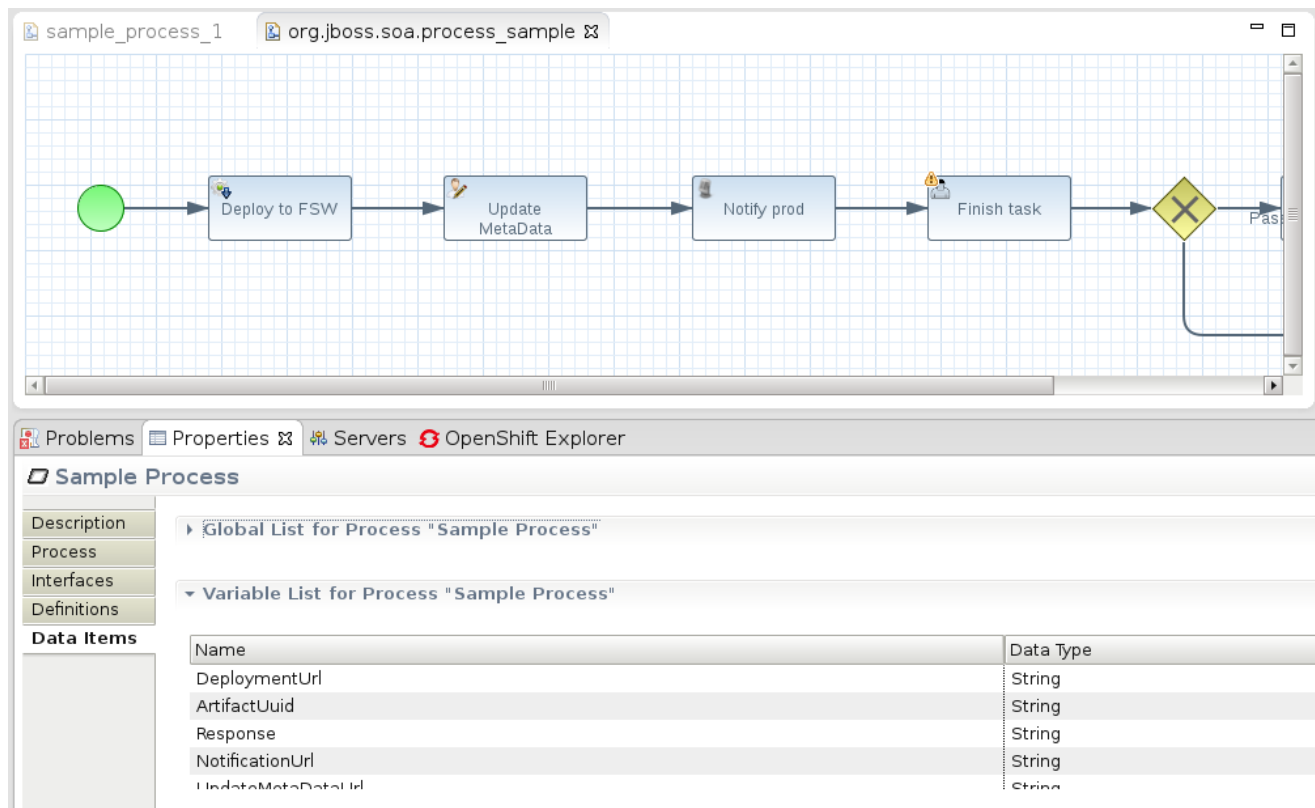
an inspiration and sample for configuring DTGov Supporting Services tasks. Official DTGov demos can be found here: <https://github.com/Governance/dtgov/tree/master/dtgov-demos>

- Few tips for DTGov workflow modeling:
  - at first, set appropriate process id (will be used by DTGov to pick up the definition from S-RAMP repository) and package name:



**Figure 6.6. Show and set the Workflow properties.**

- second, create DTGov-specific Process variables in Data Items tab: *DeploymentUrl* , *ArtifactUuid* , *Response* , *NotificationUrl* , *UpdateMetaDataUrl* , *DTGovUrl* (these are used in DTGov Supporting Services):



**Figure 6.7. Show and set the Workflow Data Items.**

### 6.2.2. Create Workflows using Drools web based tools.

You can download the guvnor console from the Drools-jBPM project and work on the workflows there. Once you are ready to deploy you will need to export the project and deploy to S-RAMP using a KJar format. Our experience is that this is similar to using the eclipse tooling but there are some differences regarding how to work with custom tasks. We therefor recommend using the eclipse based tooling. (note: this is an opportunity for you to contribute documentation)

For additional information about how to create jBPM processes, please consult the [jBPM and Drools documentation](http://www.jboss.org/jbpm) [http://www.jboss.org/jbpm].

## 6.3. Deploying Workflows

All of the workflows and supporting files (images, task forms, etc) should be bundled together into a KIE archive. A KIE archive is simply a JAR with a particular structure assumed by jBPM. For example, your archive file structure might look something like this:

```

META-INF/kmodule.xml
SRAMPPackage/HttpClientWorkDefinitions.wid
    
```



```
SRAMPPackage/com.mybusiness.deploy.EARLifeCycle.bpmn2
SRAMPPackage/com.mybusiness.deploy.WARLifeCycle.bpmn2
SRAMPPackage/com.mybusiness.validate.NewSchemaReview.bpmn2
SRAMPPackage/run-build-install.png
SRAMPPackage/user-properties.png
SRAMPPackage/audio-input-microphone-3.png
```

What are all these files?

The **kmodule.xml** file is a jBPM artifact (it makes this a Kie Archive rather than just a plain old JAR file). This file should have the following content:

```
<?xml version="1.0" encoding="UTF-8"?>
<kmodule xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="https://raw.github.com/droolsjbpm/droolsjbpm-
knowledge/master/kie-api/src/main/resources/org/kie/api/kmodule.xsd"
        xmlns="http://jboss.org/kie/6.0.0/kmodule" >

    <kbase name="SRAMPPackage">
        <ksession name="ksessionSRAMP"
scope="javax.enterprise.context.ApplicationScoped">
            <workItemHandlers>
                <workItemHandler name="HttpClientDeploy" type="new
org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler()"/>
                <workItemHandler name="HttpClientNotify" type="new
org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler()"/>
                <workItemHandler name="HttpClientUpdateMetaData" type="new
org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler()"/>
            </workItemHandlers>
        </ksession>
    </kbase>

</kmodule>
```

Next, there is a folder in the archive that maps to the **kbase** element found in the **kmodule.xml** file. This folder contains all of the business process resources, primarily the BPMN2 files. There is a file called **HttpClientWorkDefinitions.wid** which contains the custom work items used by Governance Workflows. It might look something like this:

```
import org.drools.process.core.datatype.impl.type.StringDataType;
[
    // the HttpClient work item
    [
        "name" : "HttpClientDeploy",
        "parameters" : [
            "Url" : new StringDataType(),
            "Method" : new StringDataType(),
```

```
        "Uuid" : new StringDataType(),
        "Target" : new StringDataType()
    ],
    "displayName" : "Deploy",
    "icon" : "run-build-install.png",
],

// the HttpClient work item
[
    "name" : "HttpClientNotify",
    "parameters" : [
        "Url" : new StringDataType(),
        "DTGovUrl" : new StringDataType(),
        "Method" : new StringDataType(),
        "Uuid" : new StringDataType(),
        "Target" : new StringDataType(),
        "Group" : new StringDataType(),
    ],
    "displayName" : "Notify",
    "icon" : "audio-input-microphone-3.png",
],

// the HttpClient work item
[
    "name" : "HttpClientUpdateMetaData",
    "parameters" : [
        "Url" : new StringDataType(),
        "Method" : new StringDataType(),
        "Name" : new StringDataType(),
        "Value" : new StringDataType(),
        "Uuid" : new StringDataType(),
    ],
    "displayName" : "UpdateMetaData",
    "icon" : "user-properties.png",
]
]
```

This file also refers to some images files (useful for BPMN editors) which are also included in the package.

Once the workflows are built, they must be deployed into the S-RAMP repository so that the embedded version of jBPM can find them properly. It is recommended that the S-RAMP maven integration is used to do this. The best way is to put all of the business process resources into a simple JAR style maven project. Then use the S-RAMP maven integration to **mvn deploy** the project directly into S-RAMP. Please see the Overlord: S-RAMP documentation's "Maven Integration" section for details on how this works. The result should be that your Governance workflow JAR (Kie Archive) is uploaded to the S-RAMP repository, complete with relevant maven properties set.

The embedded jBPM engine will pick up the Governance Workflows by pulling the Kie Archive out of the S-RAMP repository and using the content it finds within. It's worth noting that the maven information of the Kie Archive can be configured in the DTGov back end configuration file (dtgov.properties). The following properties control exactly what Kie Archive artifact the embedded jBPM engine will grab from S-RAMP:

```
dtgov.workflows.group=com.mybusiness
dtgov.workflows.name=governance-workflows
dtgov.workflows.version=1.0.7
dtgov.workflows.package=SRAMPPackage
```

## 6.4. DTGov Supporting Services

In order to make it a little easier to author interesting Governance Workflows, DTGov provides a set of useful Governance Services. A list of these services follows:

- **Deployment Service** - deploys a binary application artifact to a configured target
- **Meta-Data Update Service** - allows simple modification of an artifact's meta-data
- **Notification Service** - provides a simple way to send email notifications

These services can be invoked by using the work items defined above in the **HttpClientWorkDefinitions.wid** file.

E-mail templates for notifications can be modified at:

```
dtgov.war/WEB-INF/classes/governance-email-templates/
```

Note: more information about the Deployment Service can be found in the **Deployment Management** chapter of this guide.

## 6.5. Query Configuration

Currently the only way to trigger the execution of a Governance Workflow is by configuring an S-RAMP query that will be used to monitor the S-RAMP repository for interesting changes. When changes are discovered, a new instance of the configured workflow is created and invoked. This section of the guide describes how to configure these query triggers.

All query triggers are defined as artifacts in the S-RAMP repository. These artifacts can be created and managed using the Workflow Trigger Query administrative UI found in DTGov. Simply log into the dtgov-ui web application and click on "Manage Workflow Queries" from the dashboard. You should see a screen like this:

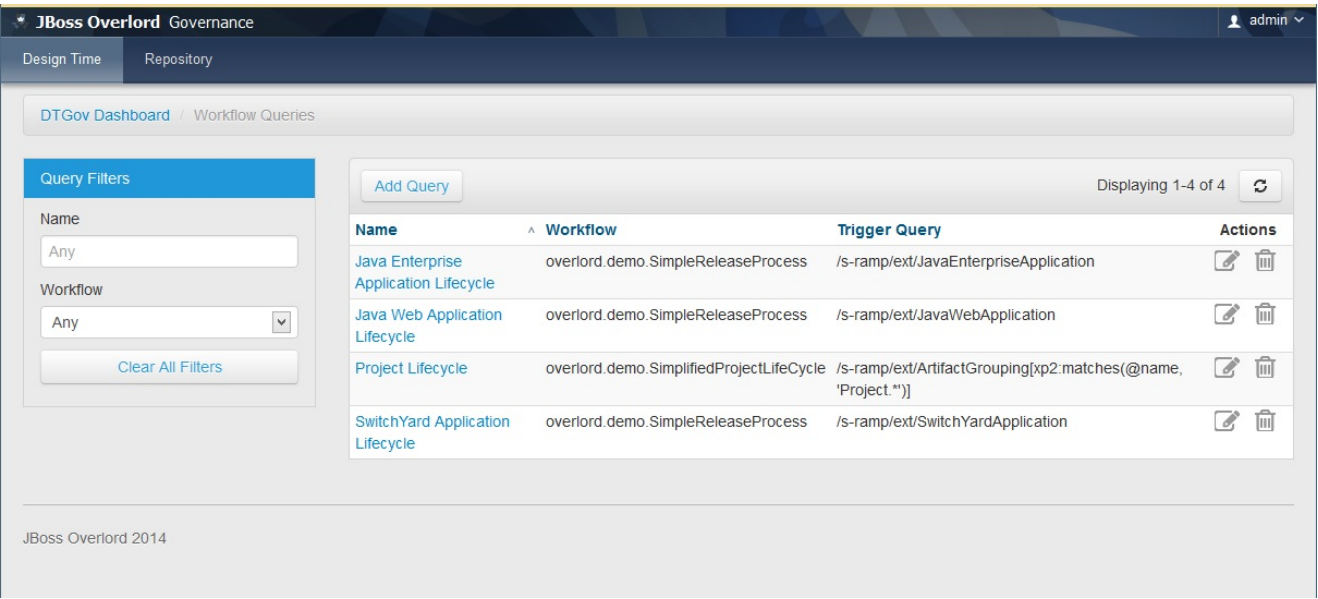



Figure 6.8. Screenshot of the DTGov data in S-RAMP

Use this page to manage the list of workflow trigger queries configured in DTGov.



### Tip

You must be an Overlord Admin to access the DTGov Workflow Trigger Query UI page

You can add new queries or edit existing queries (either by clicking *Add Query* or by clicking one of the queries in the list). The resulting UI page will look like this:

**JBoss Overlord Governance** | Design Time | Repository | admin

DTGov Dashboard / Workflow Queries / Edit Workflow Query

**Workflow Trigger Query Details**  
Make changes to this workflow trigger query by using the form below, then click the Save button to commit your changes.

Name:

Trigger Query:

Description:

Workflow:

Workflow Properties:

Name	Value	Actions
<input type="text" value="UpdateMetaDataUrl"/>	<input type="text" value="{governance.url}/rest/update/{name}/{value}/{uuid}"/>	<input type="button" value="Delete"/>
<input type="text" value="NotificationUrl"/>	<input type="text" value="{governance.url}/rest/notify/email/{group}/deployed/{target}"/>	<input type="button" value="Delete"/>
<input type="text" value="DeploymentUrl"/>	<input type="text" value="{governance.url}/rest/deploy/{target}/{uuid}"/>	<input type="button" value="Delete"/>

**Figure 6.9. Screenshot of the DTGov data in S-RAMP**

All Workflow Trigger Queries must have a name and description. In addition a valid S-RAMP query must be specified. All artifacts that are returned by the query will be processed and a new workflow instance created. The specific workflow that will be triggered must be chosen in the "Workflow" drop-down.

Finally, an optional set of properties can be specified to pass to the workflow. This is primarily useful in passing the various DTGov service URLs to the workflow, although arbitrary property mappings can be made. The following standard properties are supported and can be easily configured (with default values):

- UpdateMetaDataUrl - the URL to the "Update Meta-Data" DTGov service
- NotificationUrl - the URL to the "Notification" DTGov service
- DeploymentUrl - the URL to the "Deployment" DTGov service

When the new process is created, the set of properties specified in the UI will be passed to the process. Additionally, the following standard properties will **always** be passed to the new process instance upon creation:

- ArtifactUuid
- ArtifactName

- ArtifactVersion
- ArtifactCreatedBy
- ArtifactCreatedTimestamp
- ArtifactLastModifiedBy
- ArtifactLastModifiedTimestamp
- ArtifactType

### 6.6. Managing Workflow Instances (Processes)

Once a new workflow instance is triggered for an artifact in the S-RAMP repository, the DTGov system will track the existence and status of that instance. This allows you to see how many workflow instances have been created and how many are currently running. There is a simple UI available in DTGov that provides this functionality. Simply log in to the DTGov UI and navigate to the "Workflows" section (linked off of the DTGov UI Dashboard page).



#### Tip

You must be an Overlord Admin to access the DTGov Workflows UI page

# Chapter 7. Configuring the Notification Service

The Notification Service is a service included by DTGov to make it easy to send out email notifications to users directly from the workflow. However, it can easily be used to send email notifications by any client that can perform a simple REST API call. This chapter describes how to enable and configure the Notification Service.

## 7.1. Invoking the Notification Service

Invoking the Notification Service is a simple matter of sending a POST request to the proper dtgov service endpoint. For example:

```
http://localhost:8080/dtgov/notify/email/{group}/{template}/{target}/{uuid}
```

The path is made up of the following segments (see above):

- group: a logical group name - maps to a "Notification Destination" (see below)
- template: a logical name of a Template - maps to a Template (see below)
- target: string passed to the Template
- uuid: the UUID of an artifact - the name of the artifact can be used in the template

## 7.2. Notification Destinations

First, DTGov must either be configured with an "email" notification destination in the dtgov.properties file **or** the destination configuration must be left blank so that the default email settings are used. To configure explicit destination settings, the following can be set in the dtgov.properties file:

```
governance.email=<group1>|<fromAddress>|<toAddresses>  
governance.email=<group2>|<fromAddress>|<toAddresses>  
governance.email=<groupn>|<fromAddress>|<toAddresses>
```

This allows a mapping of logical group names to real destination email addresses. Note that the toAddresses value is a colon-separated list of real email addresses. Therefore an example configuration might be:

```
governance.email=DEV|overlord@mycompany.com|  
developers@mycompany.com:qa@mycompany.com
```

```
governance.email=PROD|overlord@mycompany.com|sysops@mycompany.com
```

If the *governance.email* property information is missing from `dtgov.properties`, then an implicit mapping will be used based on the group name passed to the Notification Service when it is invoked and the following global email settings configured in `dtgov.properties`:

```
governance.email.domain
governance.email.from
```

When these default settings are used, the Notification Service will send the email from the configured *from* address specified above to the following email address:

```
${groupName}@${governance.email.domain}
```

The group name is whatever is passed to the notification service and the domain comes from the *governance.email.from* property in `dtgov.properties`.

### 7.3. Email Templates

When sending an email notification, the subject and body of the email are generated by leveraging a template. When invoking the Notification Service, the template name is passed as one of the REST path segments. This logical name is used to look up the email template either from the classpath or from the S-RAMP repository.

The resulting template is then processed so that any Ant-style properties found in the template are resolved. A typical email body template might look like this:

```
Artifact ${uuid} with name '${name}' has been deployed to target ${target}.
Please claim this task, test this deployment and set a pass/fail status at
the taskform at

${dtgovurl}/#taskInbox

--Overlord
```

There are two types of templates: one for the email body and one for the email subject. These template files can be located either on the classpath or in the S-RAMP repository.

#### 7.3.1. S-RAMP Artifact Templates

When discovering the email template to use, DTGov will first look in the S-RAMP repository. DTGov will search for an artifact using the following query (for the email body template):

```
/s-ramp/ext/DtgovEmailTemplate[@template = '<templateName>' and @template-
type = 'body']
```



Similarly, when looking for the email subject template, this query will be used:

```
/s-ramp/ext/DtgovEmailTemplate[@template = '<templateName>' and @template-type = 'subject']
```

### 7.3.2. Classpath Templates

When discovering the email template to use, DTGov will search the classpath for the body template here:

```
/governance-email-templates/<templateName>.body.tpl
```

And for the subject it will look here:

```
/governance-email-templates/<templateName>.subject.tpl
```

### 7.3.3. Template Lookup Summary

As a result, if the Notification Service is invoked with the following URL:

```
http://localhost:8080/dtgov/notify/email/DEV/invoiceReady/foo/12345
```

DTGov will look for email templates in the following places (in this order):

```
/s-ramp/ext/DtgovEmailTemplate[@template = 'invoiceReady' and @template-type = 'body']  
/s-ramp/ext/DtgovEmailTemplate[@template = 'invoiceReady' and @template-type = 'subject']  
/governance-email-templates/invoiceReady.body.tpl  
/governance-email-templates/invoiceReady.subject.tpl
```



# Chapter 8. Governance Human Tasks

## 8.1. Overview

Overlord: DTGov uses an embedded version of jBPM by default. However, human tasks can easily be included in Governance Workflows because the Task Inbox is integrated directly into the DTGov User Interface.

Out of the box, Human Task functionality should work seamlessly. However, it is also possible to integrate a separate task system by providing an alternative (custom) Task API implementation.

## 8.2. Using Human Tasks in a Workflow

To use a human task in a Governance workflow, you can simply drop a human task activity onto the canvas (when you are authoring your workflow using, for example, the Eclipse BPMN editor). Please see the documentation for your BPMN editor for more details on using jBPM human task activities. Note that, by default, a human task that executes in a Governance workflow will create a task instance that will appear in the Governance Task Inbox user interface provided with DTGov.

## 8.3. Custom Task Forms

Whenever a task is created in a governance workflow (using a human task activity as discussed above), the Task Inbox is responsible for presenting the details of the task to relevant users. The Task Inbox allows users to perform human task related actions such as claiming, starting, and completing the tasks assigned to them.

It is important to understand that the Task Inbox must have access to a Form for each type of task it is expected to display. This is accomplished by creating a Task Form XML file for each type of task used in your Governance workflow(s). A Task Form XML file is simply an HTML5 snippet with the presentation markup specific to a task type. The Task Form XML file must be added to the S-RAMP repository that the DTGov system is connected to, so that it can be looked up when DTGov is presenting the task instance to a user.

An example Task Form XML file follows:

```
<form>
  <fieldset>
    <label>Notification</label>
    <p>
      You are hereby notified that a new Schema artifact named
      <b><span data-name="SchemaName">Unknown</span></b> has
      been added to the repository. Please review it.
    </p>
  </fieldset>
</form>
```

```
<label>Validation</label>
<label class="radio">
  <input type="radio" name="Status" value="pass"></input>
  Schema accepted as valid
</label>
<label class="radio">
  <input type="radio" name="Status" value="fail"></input>
  Schema <em>not</em> accepted
</label>
</fieldset>
</form>
```

Custom task forms in DTGov will be pulled from the S-RAMP repository when needed and displayed dynamically in the user interface. Any input variables configured in the human task activity (in the governance workflow) will be used as inputs to the form. Inputs can be substituted into the following HTML elements:

- input type="text"
- input type="hidden"
- textarea
- input type="checkbox"
- input type="radio"
- select
- div
- span
- label

For HTML elements with *name* attributes (e.g. input, select, textarea), the name of the element must match the input variable name. For all other HTML elements the name must be specified in a *data-name* attribute.

When the user completes or fails a task, the data they entered in the task form is gathered up and submitted to the task engine (and is consequently sent back to the governance workflow).

Once the Task Form XML file is written, it must be added to the S-RAMP repository. The name of the file (and thus the name of the artifact in the S-RAMP repository) must be of the form:

```
<taskName>-taskform.xml
```

The taskName can be identified and configured when setting up the human task activity in your workflow. For example, if you configure the task name in your workflow to be

**mycompany.appx.VerifySchema** then the Task Form XML file should be added to S-RAMP with a name of **mycompany.appx.VerifySchema-taskform.xml**.

## 8.4. Fail Button

For code newer than version 1.2 the *Fail* button in the TaskDetail form next to the *Complete* button is no longer visible. However in certain cases it may make sense to have a *Fail* button . To make this button visible you need to open the *edit user task* screen in your workflow editor and add an *Input Parameter Mapping*:

```
From: true (use expression and no language)
To: FailButtonIsVisible (type String)
```

## 8.5. Customizing the Task API

Simply put, the Task API system used by the DTGov user interface can be swapped out by setting the following property in the DTGov UI configuration file (dtgov-ui.properties):

**dtgov-ui.task-client.class**

This property must point to a fully qualified Java class that implements the following interface:

**org.overlord.dtgov.ui.server.services.tasks.ITaskClient**

Of course, any Governance Workflows that create Human Task instances must also point to the alternate task system. That configuration is out of the scope of this guide.



# Chapter 9. Managed Deployments

## 9.1. Overview

One of the most useful services provided by the Overlord: DTGov system is the Deployment Service. This is a service that makes it possible to deploy a binary artifact stored in the S-RAMP repository into a target runtime environment such as JBoss EAP. This Deployment Service can easily be invoked from a Governance Workflow and is often included as part of a Deployment Lifecycle business process.

## 9.2. Invoking the Deployment Service

Invoking the Deployment Service from a Governance Workflow should be a simple matter of using the **HttpClientDeploy** task defined in the **HttpClientWorkDefinitions.wid** file as described in the **Governance Workflows** chapter of this guide. Within a BPMN2 process, the XML markup might look something like this:

```
<bpmn2:task id="Task_1" drools:taskName="HttpClientDeploy"
  drools:displayName="Deploy" drools:icon="run-build-install.png"
  name="Deploy to DEV">
  <bpmn2:incoming>bpmn20:SequenceFlow_9</bpmn2:incoming>
  <bpmn2:outgoing>bpmn20:SequenceFlow_10</bpmn2:outgoing>
  <bpmn2:ioSpecification id="_InputOutputSpecification_10">
    <bpmn2:dataInput id="_DataInput_47" itemSubjectRef="__NameInputItem"
  name="Url" />
    <bpmn2:dataInput id="_DataInput_48" itemSubjectRef="__NameInputItem"
  name="Method" />
    <bpmn2:dataInput id="_DataInput_49" itemSubjectRef="__NameInputItem"
  name="Uuid" />
    <bpmn2:dataInput id="_DataInput_50" itemSubjectRef="__NameInputItem"
  name="Target" />
    <bpmn2:inputSet id="_InputSet_10" name="Input Set 10">
      <bpmn2:dataInputRefs>_DataInput_47</bpmn2:dataInputRefs>
      <bpmn2:dataInputRefs>_DataInput_48</bpmn2:dataInputRefs>
      <bpmn2:dataInputRefs>_DataInput_49</bpmn2:dataInputRefs>
      <bpmn2:dataInputRefs>_DataInput_50</bpmn2:dataInputRefs>
    </bpmn2:inputSet>
  </bpmn2:ioSpecification>
  <bpmn2:dataInputAssociation id="_DataInputAssociation_47">
    <bpmn2:sourceRef>DeploymentUrl</bpmn2:sourceRef>
    <bpmn2:targetRef>_DataInput_47</bpmn2:targetRef>
  </bpmn2:dataInputAssociation>
  <bpmn2:dataInputAssociation id="_DataInputAssociation_48">
    <bpmn2:targetRef>_DataInput_48</bpmn2:targetRef>
  <bpmn2:assignment id="Assignment_1">
    <bpmn2:from xsi:type="bpmn2:tFormalExpression"
  id="FormalExpression_16">POST</bpmn2:from>
```

```
<bpmn2:to xsi:type="bpmn2:tFormalExpression"
id="FormalExpression_17">_DataInput_48</bpmn2:to>
</bpmn2:assignment>
</bpmn2:dataInputAssociation>
<bpmn2:dataInputAssociation id="_DataInputAssociation_49">
  <bpmn2:sourceRef>ArtifactUuid</bpmn2:sourceRef>
  <bpmn2:targetRef>_DataInput_49</bpmn2:targetRef>
</bpmn2:dataInputAssociation>
<bpmn2:dataInputAssociation id="_DataInputAssociation_50">
  <bpmn2:targetRef>_DataInput_50</bpmn2:targetRef>
  <bpmn2:assignment id="Assignment_14">
    <bpmn2:from xsi:type="bpmn2:tFormalExpression"
id="FormalExpression_17">dev</bpmn2:from>
    <bpmn2:to xsi:type="bpmn2:tFormalExpression"
id="FormalExpression_18">_DataInput_50</bpmn2:to>
  </bpmn2:assignment>
</bpmn2:dataInputAssociation>
</bpmn2:task>
```

The above task uses the **DeploymentUrl** and **ArtifactUuid** parameters that were passed in to the business process when it was invoked. It populates the inputs required by **HttpClientDeploy** including an input parameter named **Target**. The **Target** parameter maps to a configured Deployment Target. The target is a logical name and corresponds to a physical runtime environment configured in the DTGov configuration file (dtgov.properties). See the next section for details.

### 9.3. Configuring Deployment Targets

In order to make logical Deployment Targets available they must be configured in the DTGov Deployment Targets user interface. To access this UI simply log into the DTGov UI and navigate to the "Deployment Targets" section which is linked off of the main Dashboard.



#### Tip

You must be an Overlord Admin to access the DTGov Deployment Targets UI page

This UI allows you to create and manage your logical Deployment Targets. Each deployment target contains the following information:

- **Name** - a logical name, such as "DEV" or "PROJ\_A\_1"
- **Type** - one of the supported deployment types, such as **Copy** or **RHQ**
- **Description** - a friendly explanation of what the target represents
- **Target Classifier(s)** - the set of S-RAMP classifiers applied to the target artifact when it is deployed successfully



Additionally, there are type-specific information that must be configured for each deployment target depending on the type selected above. For example, if the **Copy** type is selected, then a valid server file path must be configured.

## 9.4. Undeployment

Whenever the Deployment Service is used to deploy an artifact from the repository, it also annotates that artifact with relevant undeployment information. This annotation takes the form of another artifact in the repository of type **ext/UndeploymentInformation**. The annotation artifact will have a relationship named **describesDeployment** pointing from it back to the deployment artifact it annotates.

This undeployment information is used whenever an artifact needs to be undeployed. Undeploy of an artifact happens when a new version of that artifact is being deployed to a particular environment (deployment target). When this happens, the old version (whichever version is currently deployed in that environment) is undeployed in preparation of the new deployment.

Once the artifact is undeployed, its undeployment information artifact is deleted from the repository and any relevant classifier associated with the target environment is removed from the deployment artifact.

Note: please see the **Configuring DTGov** chapter for information about how to coordinate the configuration of the Deployment Service with the configuration of the DTGov User Interface (the Deployment Management UI).

## 9.5. Demo

For a short video see: <http://jboss-overlord.blogspot.com/2013/11/managed-deployments-using-dtgov.html>

### 9.5.1. Summary

This demo shows how DTGov can start a Project Workflow via a simple Maven build. This demo contains two projects:

- project: a very simple maven module with artifactId of "project".
- service: a maven module containing the Hello World Service API, expressed in WSDL.

The goal is to show that an upload of a pom.xml with artifactId of "project" kicks off a workflow of type `overlord.demo.SimpleReleaseProcess.png`.

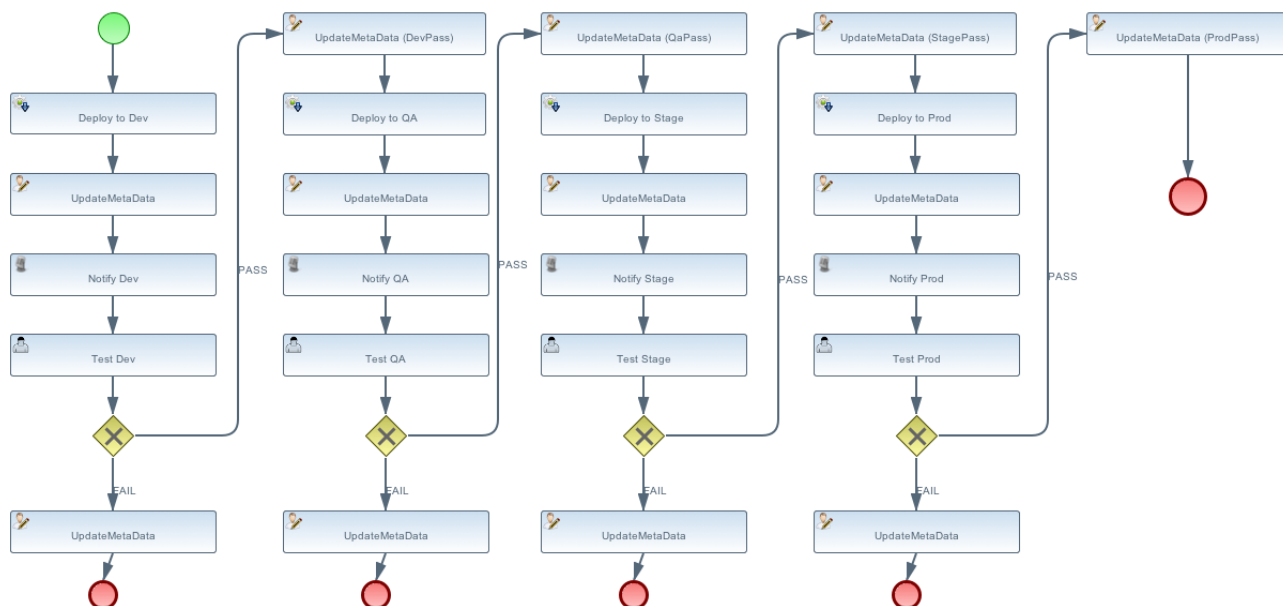


Figure 9.1. Release Process Workflow

## 9.5.2. Requirements

### 9.5.2.1. Email Server

To receive email notifications you need a running email server. The connection settings can be provided in the `dtgov.properties` file. It uses a mail session bound to JNDI to send the email. For example, in JBoss EAP it uses the `mail-smtp` settings defined in the `standalone/configuration/standalone.xml`

```
<outbound-socket-binding name="mail-smtp">
  <remote-destination host="localhost" port="25"/>
</outbound-socket-binding>
```

The easiest way to fulfill this requirements is to run the FakeSMTP server (<http://nilhcem.github.io/FakeSMTP/>), since this will list emails send to all email addresses. Just download it and run:

```
sudo java -jar fakeSMTP-1.0.jar
```

### 9.5.2.2. Users and Roles

This demo uses the roles `dev`, `qa`, `stage` and `prod`. By default the `admin` user has all of these roles, see the `standalone/configuration/application_roles.properties`

```
admin=overlorduser,admin.sramp,dev,qa,stage,prod
```

which means that the admin will see tasks for all roles in this example. Follow the instructions in the *application-users.properties* to add users. Note that a new new user needs at least the *overlorduser* role.

### 9.5.2.3. Authentication Settings

Be aware that you must supply the maven build with credentials for your S-RAMP repository. This can be done by adding a section to your settings.xml file (or by providing a custom settings.xml on the mvn command line using the *-s* argument).

For more information see: <http://maven.apache.org/settings.html>

Your settings.xml file should contain two additional server entries in the servers section:

```
<server>
  <id>local-sramp-repo</id>
  <username>admin</username>
  <password>YOUR-PASSWORD</password>
</server>
<server>
  <id>local-sramp-repo-snapshots</id>
  <username>admin</username>
  <password>YOUR-PASSWORD</password>
</server>
```

## 9.5.3. How It Works

### 9.5.3.1. Deploying the *artifacts* JAR to S-RAMP

To get this demo working you must be running the DTGov server and the S-RAMP repository (see documentation for the DTGov and S-RAMP projects to learn how to run the S-RAMP repository).

The first step is to build and deploy all artifacts to S-RAMP using Maven. The demo is configured to run against the default security settings found in the distribution.



#### Important

Authentication settings in your *.m2/settings.xml* are required.

```
$ mvn -Pdemo clean deploy
```

The *-Pdemo* flag will enable the *demo* profile, which tells the Maven **distributionManagement** to point to your local S-RAMP repository (<http://localhost:8080/s-ramp-server/>). Therefore you need to be running S-RAMP on port 8080 and deployed as the *s-ramp-atom* context.

The build should complete successfully and on the server you should see logging along the lines of

```
09:04:10,929 INFO [org.overlord.sramp.governance.QueryExecutor] (EJB
default - 5) Starting workflow overlord.demo.SimpleReleaseProcess for
artifact 44021610-f85e-48bf-9alc-9adcdbe485b6
```

At this point there should be a number of artifacts stored in the S-RAMP repository. You can verify that by deploying the "s-ramp-ui" project and then navigating to <http://localhost:8080/s-ramp-ui> (or the appropriate URL for you).

You should see the following primary artifacts in the S-RAMP repository:

- dtgov-demos-switchyard-VERSION.jar
- dtgov-demos-switchyard-VERSION.pom
- OrderService.wsdl
- beans.xml
- orders
- org.overlord.sramp.demos.switchyard.service.InventoryService
- org.overlord.sramp.demos.switchyard.service.InventoryServiceBean
- org.overlord.sramp.demos.switchyard.service.Order
- org.overlord.sramp.demos.switchyard.service.OrderAck
- org.overlord.sramp.demos.switchyard.service.OrderService
- org.overlord.sramp.demos.switchyard.service.OrderServiceBean
- org.overlord.sramp.demos.switchyard.service.Transformers

Where the OrderService.wsdl, beans.xml, orders as well as some class With the query defined in the dtgov.properties:

```
governance.queries=/s-ramp/ext/SwitchYardApplication|
overlord.demo.SimpleReleaseProcess|DeploymentUrl={governance.url}/rest/
deploy/{target}/{uuid}::NotificationUrl={governance.url}/rest/notify/email/
{group}/deployed/{target}/{uuid}::UpdateMetaDataUrl={governance.url}/rest/
update/{name}/{value}/{uuid}....
```

it will start a *SimpleReleaseProcess* workflow when a *SwitchYardApplication* lands in the repository. You should see a custom property getting created which should look similar to

```
workflowProcessId=overlord.demo.SimpleReleaseProcess_0:workflowParameters=DeploymentUrl=http
localhost:8080/dtgov/res...
```

Note that the definition of the *overlord.demo.SimpleReleaseProcess* lives in the SRAMPPackage in the dtgov-workflows-VERSION.jar. If you want to update the workflow you need to use eclipse

tooling to modify the bpmn, build and upload a new dtgov-workflow.jar to S-RAMP. The GAV settings are defined in the dtgov.properties file.

### 9.5.4. Artifact Deployment

The workflow (and the deployment ontology) specifies four different environments:

- dev - development: machine hosting deployed released artifact before they go to QA. Developers can do a quick test to make sure things work on more than just their desk.
- qa - quality assurance: machine hosting deployed released artifacts so that they can go through the testing process.
- stage - staging: an environment identical to production where qa'ed artifacts can be tested on the real hardware and with interactions with other systems.
- prod - production: the final place where the artifacts are deployed and run

```
When the _SimpleReleaseProcess_ is instantiated it deploy the artifact to
the _dev_ environment.
The workflow makes a POST call to DeploymentUrl={governance.url}/rest/
deploy/{target}/{uuid}
where
* {governance.url} is location where the DTGov REST API is hosted; this
  defaults to 'http://localhost:8080/dtgov'
  and can be overridden in the dtgov.properties.
* {target} is the name of the deployment target which defined in the
  dtgov.properties and is
  referenced in the 'Deploy to Dev' task.
* {uuid} is the UUID of the artifact which is set as a process parameter
  in the _SimpleReleaseProcess_
  instance at creation time.
```

In this case, we assume the dev target is defined as

```
governance.targets= dev|http://www.jboss.org/overlord/deployment-
status.owl#InDev|copy|/tmp/dev/jbossas7/standalone/deployments
```

where \* dev: name of the target \* <http://www.jboss.org/overlord/deployment-status.owl#InDev>:  
classification when deployed to Dev \* copy: use file copy \* /tmp/dev/jbossas7/standalone/  
deployments: deploy directory

We assume there is jbossas7 server running in /tmp/dev/jbossas7, and thus it uses a simple file copy to place the artifact in /tmp/dev/jbossas7/standalone/deployments. The appserver will take of deploying the artifact and on the server we should see logging along the lines of

```
09:04:11,168 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(EJB default - 5) Calling POST TO: http://localhost:8080/dtgov/rest/deploy/
dev/44021610-f85e-48bf-9a1c-9adcdb485b6
```

```
09:04:11,274 INFO [org.jboss.resteasy.cdi.CdiInjectorFactory]
(http-/127.0.0.1:8080-13) Found BeanManager at java:comp/BeanManager
09:04:11,300 INFO [org.jboss.resteasy.spi.ResteasyDeployment]
(http-/127.0.0.1:8080-13) Deploying javax.ws.rs.core.Application: class
org.overlord.sramp.governance.services.GovernanceApplication$Proxy$_$
$_WeldClientProxy
09:04:12,170 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(EJB default - 5) reply={status=success, target=COPY:/tmp/dev/jbossas7/
standalone/deployments/dtgov-demos-switchyard-2.0.0-SNAPSHOT.jar}
```

### 9.5.5. Classify as DevTest

The next task *Classify #DevTest* calls a REST service in DTGov using endpoint using a PUT to:

where \* {governance.url} is location where the DTGov REST API is hosted; this defaults to <http://localhost:8080/dtgov> and can be overridden in the dtgov.properties. instance at creation time.

which adds the #DevTest classification onto the artifact. You can verify by navigating to this details of this artifact in the s-ramp-ui or by using the s-ramp.sh cli. The logging on the server should read

```
09:04:12,202 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(EJB default - 5) Calling PUT TO: http://localhost:8080/dtgov/rest/update/
classification/http%3A*2F*2Fwww.jboss.org*2Foverlord*2Fdeployment-status.owl
%23DevTest/44021610-f85e-48bf-9a1c-9adcdbe485b6
09:04:12,414 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(EJB default - 5) reply={artifactName=dtgov-demos-
switchyard-2.0.0-20131107.140403-1.jar, artifactCreatedBy=admin,
status=success}
```

### 9.5.6. Notify Dev

The next task in the *SimpleReleaseProcess* is an email notification. The "Notification Task" calls a REST service in DTGov using a POST to:

where \* {governance.url} is location where the DTGov REST API is hosted; this defaults to <http://localhost:8080/dtgov> and can be overridden in the dtgov.properties. is is set to *dev* the first go-around. \* deployed is the name of the notification template. referenced in the *Deploy to Dev* task. This info is construct the notification message. instance at creation time.

On the server we should see the following logging

```
09:04:12,419 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(EJB default - 5) Calling POST TO: http://localhost:8080/dtgov/rest/notify/
email/dev/deployed/dev/44021610-f85e-48bf-9a1c-9adcdbe485b6
09:04:12,862 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(EJB default - 5) reply={status=success}
```

By default an email is sent the server *localhost* at port 25. By default the TO address used is *overlord@example.com*. If you don't want to use *example.com* then this can be overridden in the *dtgov.properties* using key *governance.email.domain* and *governance.email.from* for the FROM address. It is recommended to use an email alias or group to tie the *group* email to actual email addresses.

The email contains the following info:

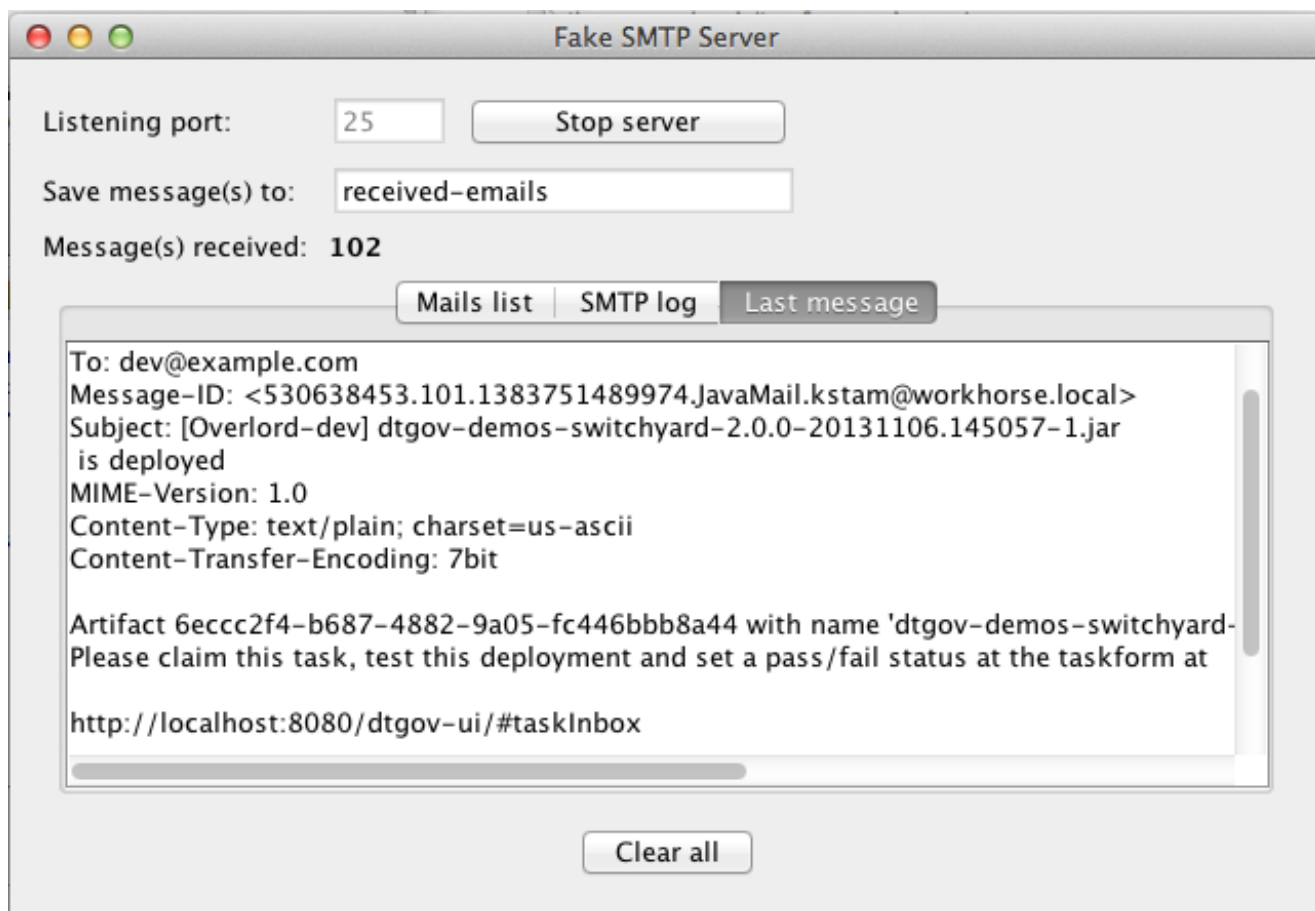
```
Subject: [Overlord-dev] dtgov-demos-switchyard-2.0.0-20131106.145057-1.jar
is deployed

Artifact 6eccc2f4-b687-4882-9a05-fc446bbb8a44 with name 'dtgov-demos-
switchyard-2.0.0-20131106.145057-1.jar' has been deployed to target dev.
Please claim this task, test this deployment and set a pass/fail status at
the taskform at

http://localhost:8080/dtgov-ui/#taskInbox

--Overlord
```

and Figure [Figure 9.2, “Notification Email in FakeSMTP”](#) shows displays the email in the FakeSMTP UI.

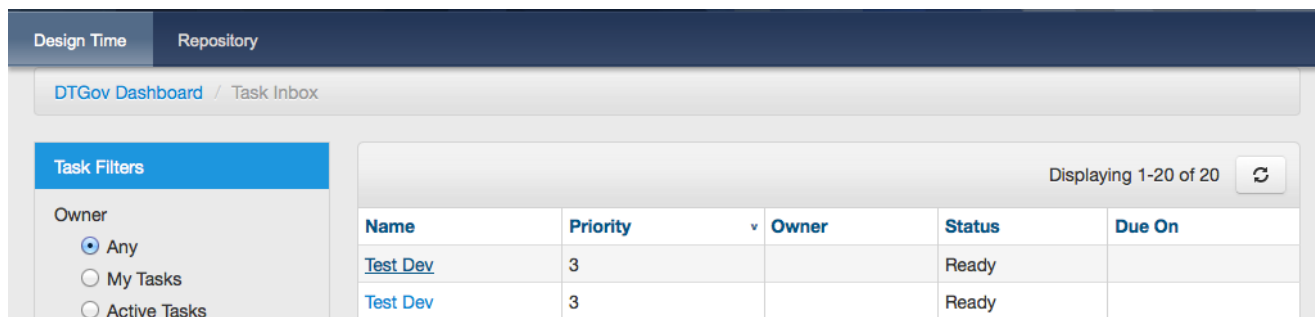


**Figure 9.2. Notification Email in FakeSMTP**

Email templates are deployed in the *dtgov.war/WEB-INF/classes/governance-email-templates* directory. in this case are *deployed.subject.tmpl* and *deployed.subject.tmpl*.

### 9.5.7. Test Dev

Any user in the *dev* group can now navigate to the taks list, and the user should see at least one entry



**Figure 9.3. Dev Task List.**

The user can click on this task to arrive at the detail screen:



**JBoss Overlord Governance** admin

Design Time Repository

DTGov Dashboard / Task Inbox / Task Details

**Test Dev** Claim Release Start Stop

**Task Properties**

ID: 419  
 Status: Ready  
 Owner:  
 Priority: 3  
 Due Date:

**Description**

Please Claim & Start this Task, then check the deployment and mark as Pass/Fail

**Artifact**

Unknown (UUID: 6eccc2f4-b687-4882-9a05-fc446bbb8a44)  
**Deployed to Target**  
 Unknown  
**Please record your findings**

☐ Pass  
☐ Fail

Complete Fail

**Figure 9.4. Dev Task Detail**

The dev user should *claim* and *start* the task and then mark as Pass/Fail and *Complete*. The artifact will get classified as #DevPass and you should see the following logging on the server:

```
09:17:21,161 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(http-//127.0.0.1:8080-39) Calling PUT TO: http://localhost:8080/dtgov/rest/
update/classification/http%3A*2F*2Fwww.jboss.org*2Foverlord*2Fdeployment-
status.owl%23DevPass/44021610-f85e-48bf-9alc-9adcdbe485b6
09:17:21,359 INFO [org.overlord.dtgov.jbpm.util.HttpClientWorkItemHandler]
(http-//127.0.0.1:8080-39) reply={artifactName=dtgov-demos-
switchyard-2.0.0-20131107.140403-1.jar, artifactCreatedBy=admin,
status=success}
```

## 9.5.8. Gateway

Based on the user input during the *Test Dev* task, a Gateway will now determine where to go next:  
 \* PASS - mark as passed in Dev, and send the artifact to QA \* FAIL - mark as failed in Dev and Stop

A PASS will basically rerun the same tasks we just discussed but now in for *qa*, followed by *stage* and *prod*. So proceed *Classify as DevTest*, but you need to pretend it reads *Classify as QaTest* and so on.

When you navigate to the detail screen of the dtgov-demos-switchyard-VERSION.jar you should see the #DevPass, #InQA and #QaTest classifiers set on this artifact.

## Classifiers

<http://www.jboss.org/overlord/deployment-status.owl#DevPass>

<http://www.jboss.org/overlord/deployment-status.owl#InQa>

<http://www.jboss.org/overlord/deployment-status.owl#QaTest>

Modify Classifiers

Figure 9.5. Classifiers.

### 9.5.9. Governing Deployments

The DTGov console has a screens specifically designed to govern deployment like these. Navigate to <http://localhost:8080/dtgov-ui/#deployments> and select your deployment from the list.

The screenshot shows the JBoss Overlord Governance console. The top navigation bar includes "Design Time" and "Repository" tabs. The breadcrumb trail is "DTGov Dashboard / Deployments / Deployment Details". The main content area displays details for the deployment "dtgov-demos-switchyard-2.0.0-20131107.140403-1.jar" (SwitchYardApplication) with version "(2.0.0-SNAPSHOT)".

Deployment Properties		Description
UUID:	44021610-f85e-48bf-9a1c-9adcdbe485b6	<no value>
Deployment Status:	InQa	
Version:	2.0.0-SNAPSHOT	
Type:	SwitchYardApplication	
Initiated:	11/07/2013 by admin	
Maven Group:	org.overlord.dtgov.demos.switchyard	
Maven Id:	dtgov-demos-switchyard	
Maven Version:	2.0.0-SNAPSHOT	

Below the table are three action buttons:

- Deployment History**: Click to see the history of this deployment, from the time it was added to the system until now. The history includes its transitions within the Deployment Lifecycle.
- Deployment Contents**: Here you can view a list of the interesting artifacts that the system located within the deployment. This often includes artifacts such as XML files, WSDLs, and Schemas.
- Browse in S-RAMP**: Click here to browse this deployment artifact in the S-RAMP browser interface. This may allow you to view and modify all aspects of the artifact.

Figure 9.6. Deployments

From here you can look at the deployment history, the interesting content of the artifact.

This completes this demo.

# Chapter 10. SOA Governance Projects and Organizational Roles

## 10.1. Introduction

In large organizations building and maintaining services is not a one man job, instead it is a process that touches many people in the organization. [Figure 10.1, “SOA Governance Roles”](#) is a copy of figure 5.6 on page 95 of the *SOA Governance* book by Thomas Erl et al.

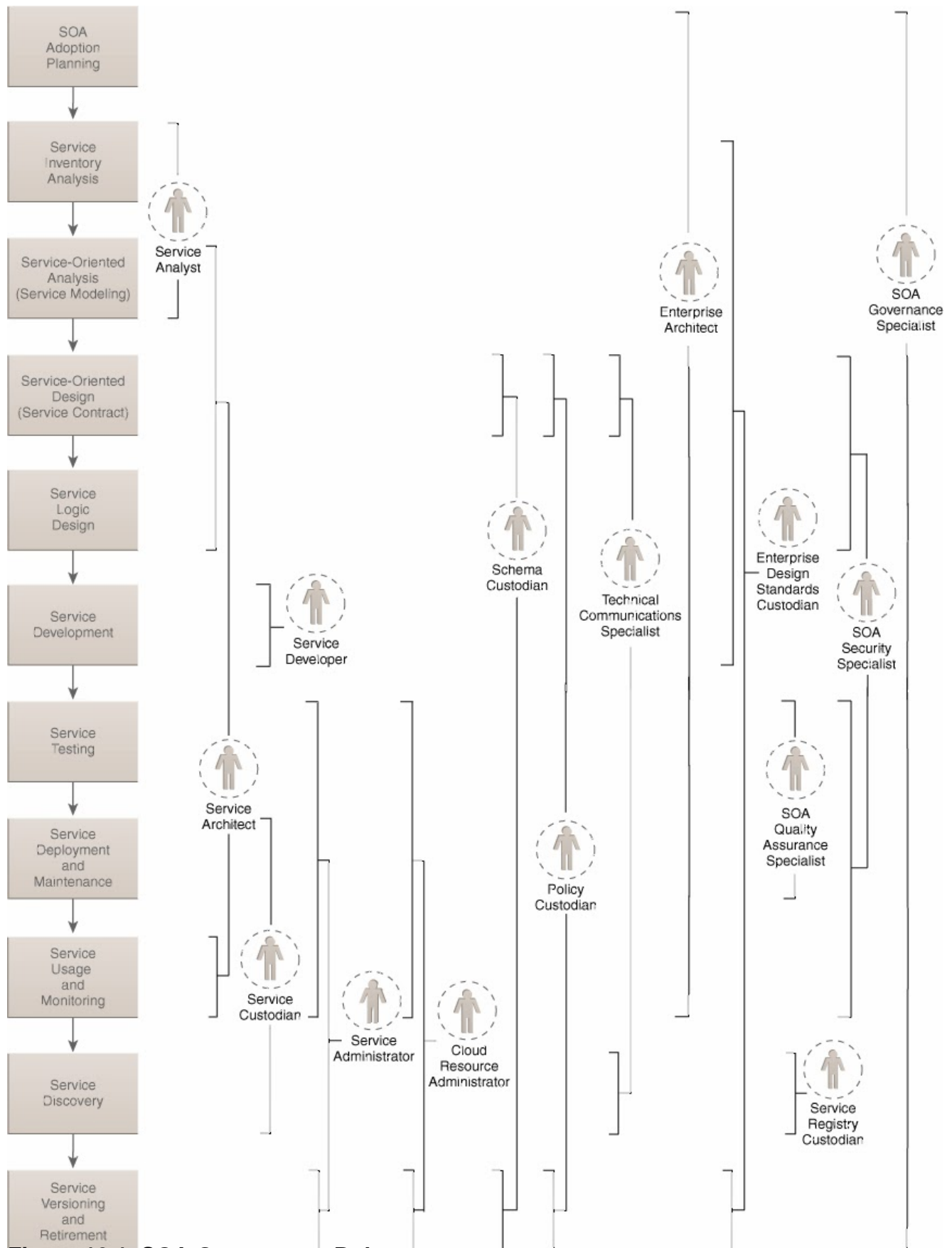


Figure 10.1. SOA Governance Roles

With this many people and roles involved, how to you manage a project like this? Especially since in a large organization you will have many of these project running simultaneously. We would have loved to implement a full project workflow based on the figure 1 process, but two things are currently standing in our way: time and real world input. Who is going to pick up the challenge?

To get you started we created a *Simplified Project Lifecycle Workflow* demo that implements just 3 boxes; Requirements gathering, Service Design and Service Implementation, with one role responsible for each stage, which are a Business Analyst, SOA Architect and SOA Developer. Each role can be fulfilled by more then one person. In the demo we assigned all three roles to the *admin* user so we don't have to log in and out as different users all time. The demo uses the workflow shown in [Figure 10.3, "Project Workflow"](#). Each column represents one of the phases. The first phase being Business Analysis. The hope is this demo provides you with the building blocks to create the real world implementation we talked about earlier.

Some benefits of using this workflow are:

- Helps your organization with adoption of SOA by following proven processes. It is clear who is responsible for approval.
- Provides insight in where your projects are.
- Helps your organization work together in different teams.
- Audit features allow full history tracking.
- Released artifacts are in the repository, the artifact is automatically in escrow this way, and documentation and sources are stored along side the binaries all in one place.

Some optional benefits:

```
It is possible to send a BPMN event at the end of the workflow (or
from anywhere else), which can kick off a release workflow to automate
deployment. Though one could also write a governance query looking for a
service implementation artifact with classification #ImplPass.
Easy integration with other systems (think bug track systems, or time
management systems)
```

If you want to follow along with the demo you should

1. Have DTGov running; see <http://jboss-overlord.blogspot.com/2013/11/bleeding-edge-governance-getting-started.html>.
2. Install the Eclipse BPMN2 Modeler into your Eclipse IDE, or you can try the early access JBoss Developer Studio.

## 10.2. Demo Maven Project Workflow Integration

For a short video see: <http://jboss-overlord.blogspot.com/2013/11/soa-governance-projects-and.html>

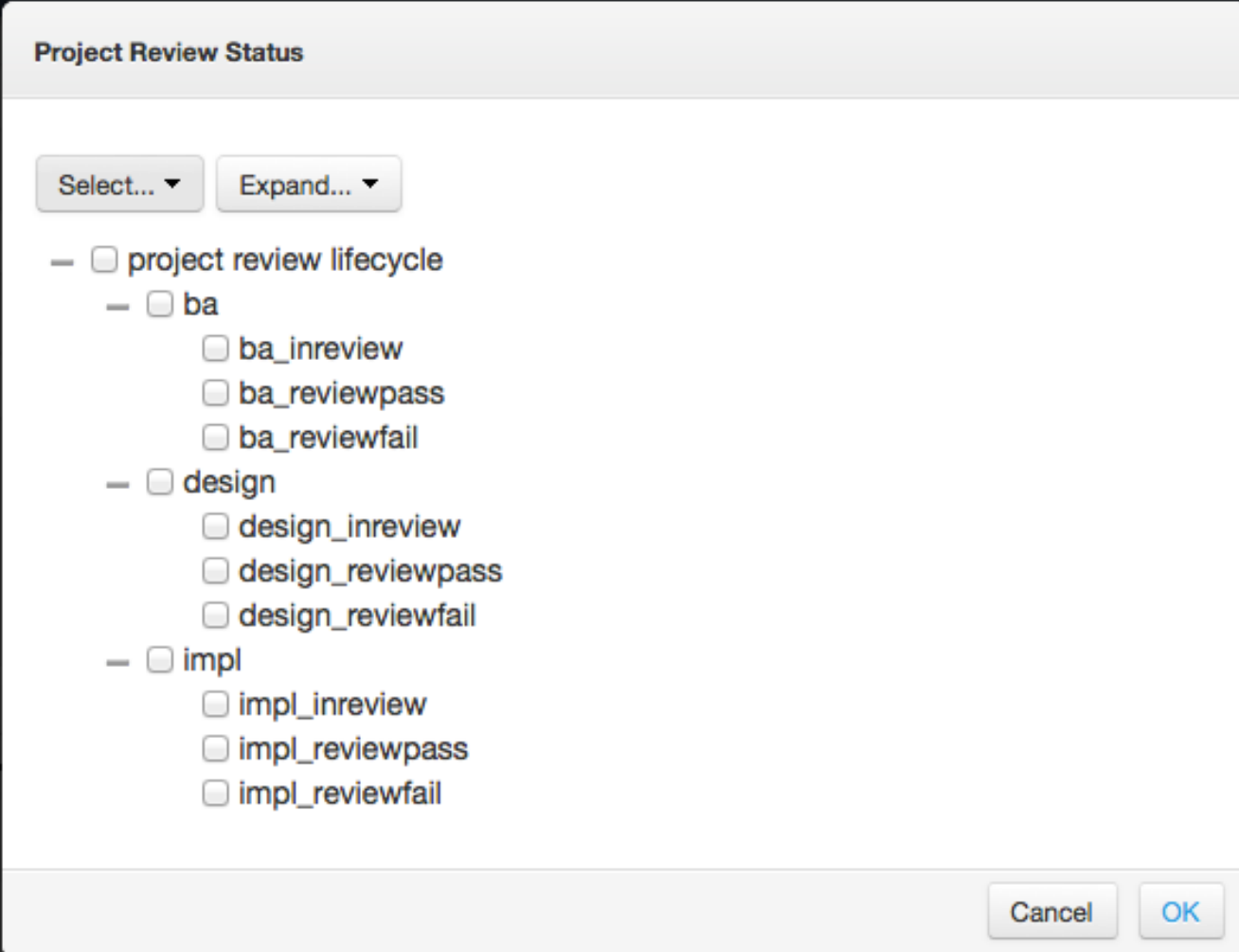
### 10.2.1. Summary

This demo shows how teams can collaborate using a ProjectLifeCycle Workflow. In this example we have a simplified Project workflow with only three phases with their respective teams. Each team delivers a set of deliverables which are uploaded to the repository. Each upload triggers a review of the artifacts. The artifacts are *groupedBy* an *ArtifactGrouping* which is represented as a parent in S-RAMP.

This demo contains three submodules:

- project-requirements: a requirements doc created a Business Analyst.
- project-service-api: a service design created by a SOA-Architect.
- project-service-impl: the service implementation created by a SOA Developer.

The `overlord.demo.ProjectLifeCycle.bpmn` resides in the `dtgov-workflow.jar` in the `SRAMPPackage` and this should already be deployed. Also the classification ontologies should already have been installed as part of the data seeding process during install of DTGov. In the `s-ramp-ui` artifacts screen you can click on *Classifiers* to check that the Project Review Status is present.



The image shows a software dialog box titled "Project Review Status". At the top, there are two buttons: "Select..." and "Expand...", both with dropdown arrows. Below these buttons is a hierarchical list of project review lifecycle stages. Each stage is preceded by a minus sign and a checkbox. The stages are: "project review lifecycle", "ba", "design", and "impl". Each of these stages has three sub-items: "inreview", "reviewpass", and "reviewfail", each with its own checkbox. At the bottom right of the dialog box are two buttons: "Cancel" and "OK".

**Project Review Status**

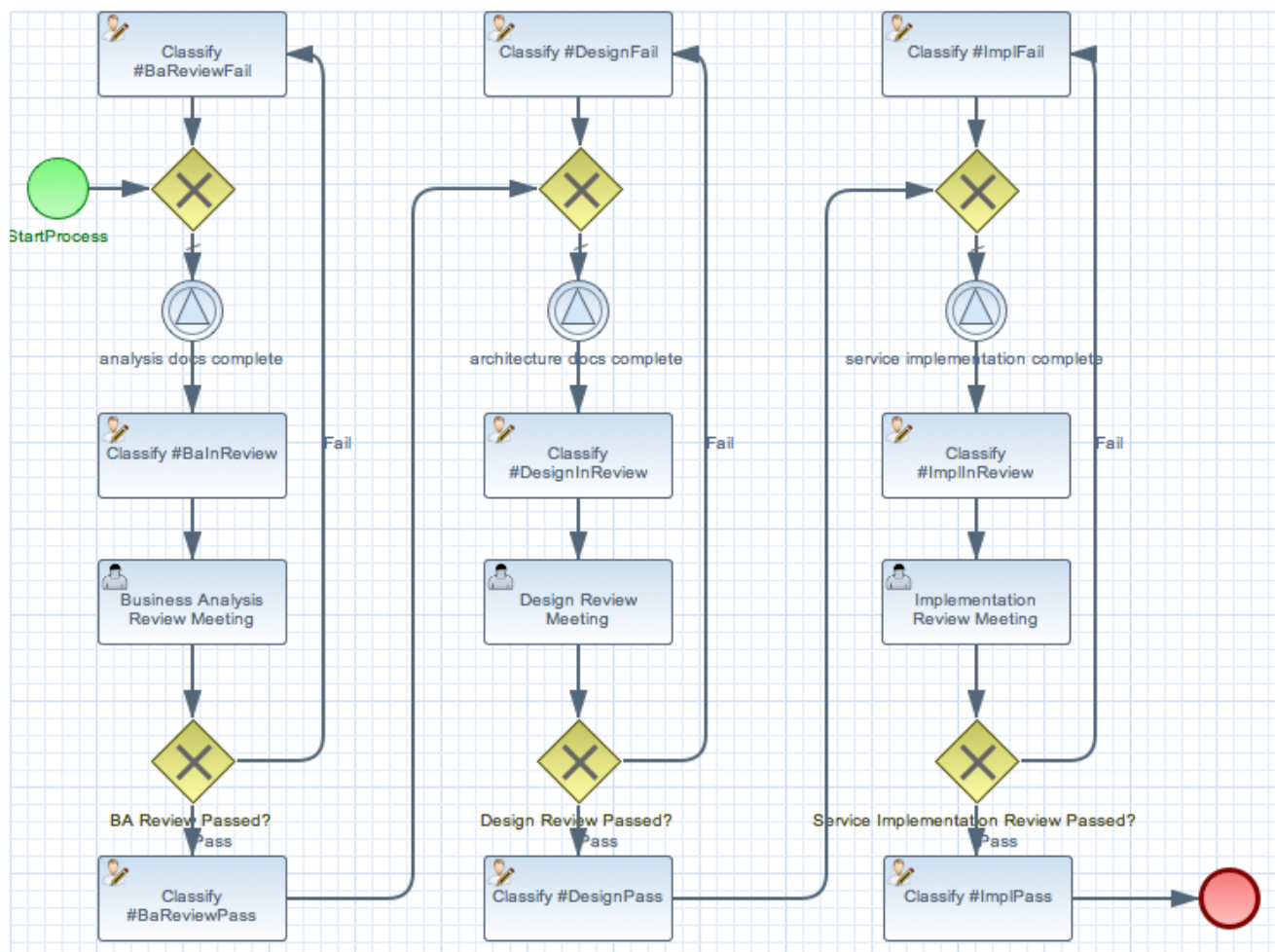
Select... Expand...

- ☐ project review lifecycle
  - ☐ ba
    - ☐ ba\_inreview
    - ☐ ba\_reviewpass
    - ☐ ba\_reviewfail
  - ☐ design
    - ☐ design\_inreview
    - ☐ design\_reviewpass
    - ☐ design\_reviewfail
  - ☐ impl
    - ☐ impl\_inreview
    - ☐ impl\_reviewpass
    - ☐ impl\_reviewfail

Cancel OK

**Figure 10.2. Project Review Status Ontology**

These classifications will be applied by the *Classify* nodes in the workflow as the project moves through its lifecycle.



**Figure 10.3. Project Workflow**

You can create and update workflows using the Eclipse BPMN Editor, which can be installed from <http://download.eclipse.org/bpmn2-modeler/updates/kepler/> (1.0 or newer). The project starts with a business analyst creating a requirements document, which is then reviewed and approved. On a successful approval a SOA-Architect creates a design, followed with another review meeting and finally a SOA-Developer creates an implementation of the design. When the implementation is reviewed the Service Implementation can be released into a formal QA process. The *Deployment Process* of an Artifact is covered in the dtgov-switchard demo.

## 10.2.2. How It Works

### 10.2.2.1. Starting the Simplified ProjectLifeCycle Workflow

To get this demo working you must be running the DTGov server and the S-RAMP repository (see documentation for the DTGov and S-RAMP projects to learn how to run the S-RAMP repository).

When the Business Analyst finishes the requirement doc *project-requirements/src/main/resources/requirements-doc.txt*. The next step is to build and deploy the *requirements* archive to S-RAMP using Maven:



```
$ cd project-requirements
$ mvn -Pdemo clean deploy
```



## Important

Be aware that you must supply the maven build with credentials for your S-RAMP repository. This can be done by adding a section to your settings.xml file (or by providing a custom settings.xml on the mvn command line using the `-s` argument).

For more information see: <http://maven.apache.org/settings.html>

Your settings.xml file should contain two additional server entries in the servers section:

```
<server>
  <id>local-sramp-repo</id>
  <username>admin</username>
  <password>PASSWORD</password>
</server>
<server>
  <id>local-sramp-repo-snapshots</id>
  <username>admin</username>
  <password>PASSWORD</password>
</server>
```

### 10.2.2.2. Results of the Deploy

That will enable the *demo* profile, which will configure the Maven **distributionManagement** to point to a local S-RAMP repository (<http://localhost:8080/s-ramp-server/>). Therefore you need to be running S-RAMP on port 8080 and deployed as the *s-ramp-atom* context.

The build should complete successfully.

At this point there should be a number of artifacts stored in the S-RAMP repository. You can verify that by deploying the "s-ramp-ui" project and then navigating to <http://localhost:8080/s-ramp-ui> (or the appropriate URL for you).

You should see the following artifacts in the S-RAMP repository:

- project-requirements-<version>.jar
- project-requirements-<version>.pom
- Project-org.overlord.dtgov.demos.project.<version>

The requirements-doc.txt is shipped in the requirements-<version>.jar. Note that you can use other formats if you like. You may have expected the jar and the pom, but what created the

*Project-org.overlord.dtgov.demos.project.<version>* artifact? In the dtgov-demos-project/pom.xml you may have noticed the following section:

```
<distributionManagement>
  <repository>
    <id>local-sramp-repo</id>
    <name>S-RAMP Releases Repository</name>
    <url>sramp://localhost:8080/s-ramp-server/?artifactGrouping=Project-
    ${project.groupId}.${project.version}</url>
  </repository>
  <snapshotRepository>
    <id>local-sramp-repo-snapshots</id>
    <name>S-RAMP Snapshots Repository</name>
    <url>sramp://localhost:8080/s-ramp-server/?artifactGrouping=Project-
    ${project.groupId}.${project.version}</url>
  </snapshotRepository>
</distributionManagement>
```

This section is active when using the *demo* profile, and in it we specified an artifact grouping *artifactGrouping=Project-\${project.groupId}.\${project.version}*. During the upload this ArtifactGrouping artifact is created along with groupBy relationships to this parent artifacts. The dtgov.properties file defines the following :

```
governance.queries=/s-ramp/ext/ArtifactGrouping[xp2:matches(@name
\, 'Project.*')]|overlord.demo.SimplifiedProjectLifeCycle|
UpdateMetaDataUrl={governance.url}/rest/update/{name}/{value}/{uuid}
```

This starts a *overlord.demo.SimplifiedProjectLifeCycle* workflow when a ArtifactGrouping with a name that starts with *Project* lands in the repository. When the workflow is created you should see a new custom property on this artifact which should look like

```
workflowProcessId=overlord.demo.SimplifiedProjectLifeCycle_0:4_workflowParameters=UpdateMeta
localhost:8080/dtgov/rest/update/{name}/{value}/{uuid}
```

If you where to delete this property then a new workflow will be started, and a new property will be recreated.

### 10.2.3. Signaling *Analysis Docs Complete*

The upload of the requirements also triggered an *AnalysisArtifactsComplete* signal to the newly created workflow, to signal the workflow that the requirements docs are ready for review. This signal was triggered by upload of the project-requirements/pom.xml. Note that in this pom we have the following properties section

```
<properties>
  <signal>AnalysisArtifactsComplete</signal>
```

```
</properties>
```

During a MavenPom upload all properties are extracted and added as custom properties, prefixed with *maven.property.*; so the signal property end up as *maven.property.signal* with value *AnalysisArtifactsComplete*. When DTGov discovers this signal property it looks up the accompanying workflow referenced in the Project\* ApplicationGroup artifact signals this process instance. After sending the signal the name of the property changes to *\_maven.property.signal.sent*. When the signal is *caught* by the workflow, it will classify the Project\* ApplicationGroup artifact with the *#BaInReview* classification, and start a *Business Analysis Review Meeting* task. This task is assigned to the *ba* role. You can defined roles in the *standalone/configuration/overlord-idp-roles.properties*. These roles can be referenced in the human task definition as the *groupId*.

By default the *standalone/configuration/overlord-idp-roles.properties* looks like

```
admin=overlorduser,admin.sramp,dev,qa,stage,prod,ba,arch
```

The *admin* user has all roles. So when logged in as admin you can work on ALL tasks. For this example the *ba*, *arch*, and *dev* roles in use. More roles can be created as needed.

You can work on your tasks by navigating to <http://localhost:8080/dtgov-ui#taskInbox>. After you've reviewed the requirements documents with all stakeholders, you go here to Claim, Start and record the Pass/Fail verdict. For the *Business Analysis Review Meeting* task you will need the *ba* role. On a Fail the workflow records the fail and loops back so that a new version can be submitted. On a Pass the workflow records the pass and enters the *waiting for* architecture docs complete state.

## 10.2.4. Signaling Architecture Docs Complete

The architect can now take the detailed and approved requirements:

```
Requirements Document
-----
We have a pressing need for an Hello World Service.
Please develop one that can print "Hello World" when invoked.
```

and turn them into a design. At a minimum, for this webservice an annotated interface or a WSDL should be created. Both of these can be found in the *project-service-api* module. Since these are ready to go, proceed with deploying them to S-RAMP using:

```
$ cd project-service-api
$ mvn -Pdemo clean deploy
```

### 10.2.4.1. Results of the Deploy

The build should complete successfully.

You should see the following newly created artifacts in the S-RAMP repository:

- project-service-api-<version>.jar
- project-service-api-<version>.pom

In this pom the signal property

```
<properties>
  <signal>ArchitectureArtifactsComplete</signal>
</properties>
```

will cause a *ArchitectureArtifactsComplete* signal to be send to the project workflow signalling that the design documents are ready for review. A review meeting should be called and someone with the *arch* role can pick up the *Design Review Meeting* task in the <http://localhost:8080/dtgov-ui#taskInbox>.

### 10.2.5. Signaling *Service implementation Complete*

Finally, when the SOA-Developer has finished the implementation, it can be uploaded to the repository using

```
$ cd project-service-impl
$ mvn -Pdemo clean deploy
```

#### 10.2.5.1. Results of the Service Deploy

The build should complete successfully.

You should see the following newly created artifacts in the S-RAMP repository:

- project-service-impl-<version>.jar
- project-service-impl-<version>.pom

In this pom the signal property

```
<properties>
  <signal>ServiceImplArtifactComplete</signal>
</properties>
```

will cause a *ServiceImplArtifactComplete* signal to be send to the project workflow signalling that the design documents are ready for review. A review meeting should be called and someone with the *dev* role can pick up the *Service Implementation Review Meeting* task in the <http://localhost:8080/dtgov-ui#taskInbox>.

This completes this demo.

# Chapter 11. DTGov Data Model

## 11.1. Overview

DTGov makes use of the configured S-RAMP repository to store various internal objects as extension artifacts. This section of the guide documents this data model, providing a list of all extension artifact types, their use, and their properties. All DTGov artifacts can be modified either via the DTGov UI or by directly manipulating them using standard S-RAMP tools.

## 11.2. Notification Templates (DtgovEmailTemplate)

The DTGov notification service uses templates when sending notifications to users. These templates can be stored in the S-RAMP repository and queried via:

```
/s-ramp/ext/DtgovEmailTemplate
```

Each template artifact can have the following properties:

Property Name	Description
template	A logical identifier used by the Notification Service when looking up the template to use for a particular notification.
template-type	The type of template, for example <i>subject</i> or <i>body</i> .

## 11.3. Undeployment Information (UndeploymentInformation)

The DTGov deployment service stores some information about the deployment in the S-RAMP repository so that it is possible to later undeploy the deployment. A list of all these undeployment artifacts can be found via:

```
/s-ramp/ext/UndeploymentInformation
```

Each undeployment artifact can have the following properties and relationships:

Property Name	Description
deploy.target	
deploy.type	
deploy.classifier	

Relationship Name	Description
describesDeployment	A relationship from the UndeploymentInformation artifact that points to the deployment artifact it describes.

Additional custom properties will be added to the undeployment info artifact depending on the type of deployment:

### 11.3.1. File Copy

Property Name	Description
deploy.copy.file	The location that the deployment was copied to (so it can be deleted).

### 11.3.2. RHQ

Property Name	Description
deploy.rhq.baseUrl	URL of the RHQ server.
deploy.rhq.port	Port of the RHQ server.
deploy.rhq.groupId	The RHQ group the deployment was added to.
deploy.rhq.name	The deployment's name.
deploy.rhq.pluginName	The RHQ plugin name - needed to support multiple versions of RHQ.

### 11.3.3. JBoss CLI

Property Name	Description
deploy.cli.name	The name of the deployment.
deploy.cli.host	The JBoss CLI server host.
deploy.cli.port	The JBoss CLI server port.
deploy.cli.domainMode	Boolean indicating whether the deployment was done in Domain mode.

### 11.3.4. Maven

(Does not support undeployment)

## 11.4. Workflow Queries (DtgovWorkflowQuery)

A primary feature of DTGov is to watch the S-RAMP repository for changes and, when it detects them, trigger a new instance of a BPMN2 workflow for the artifact that caused the change. The DTGov UI provides a way to manage these queries - each one is stored in the S-RAMP repository as a *DtgovWorkflowQuery*, which can be queried with the following:

```
/s-ramp/ext/DtgovWorkflowQuery
```

Each workflow query artifact can have the following properties:

Property Name	Description
query	A valid S-RAMP query used to scan the repository for matching artifacts.
workflow	The ID of the BPMN2 workflow that will be triggered when an artifact matches the query.

Additionally, the workflow query is configured with a number of custom properties configured in the UI. These properties are passed to the workflow instance when it is created. Each property is stored on the DtgovWorkflowQuery as a custom property prefixed with *prop.*

## 11.5. Workflow Instances (DtgovWorkflowInstance)

Whenever a workflow is triggered for an artifact in the S-RAMP repository (see the *Workflow Queries* section above), DTGov will add an artifact to S-RAMP that represents the workflow instance. This provides a way to easily track all of the workflow instances, their state, and which S-RAMP artifact they are governing. A list of these workflow instances can be queried using the following:

```
/s-ramp/ext/DtgovWorkflowInstance
```

Each workflow query artifact can have the following properties and relationships:

Property Name	Description
workflow.processId	The ID of the workflow instance in jBPM.
workflow.numParams	The number of parameters passed to the workflow instance when it was created.
workflow.status	The current status of the process (RUNNING, ABORTED, COMPLETED).
workflow.param.*	Each parameter passed to the workflow instance is prefixed by this.
workflow.artifactId	The ID of the S-RAMP artifact being governed.
workflow.artifactName	The name of the S-RAMP artifact being governed.

Relationship Name	Description
governs	A pointer to the artifact in S-RAMP that is being governed by this workflow instance.

## 11.6. Deployment Targets (DtgovDeploymentTarget)

The DTGov deployment service is responsible for deploying an S-RAMP artifact (deployment) into a runtime environment such as JBoss EAP or Apache Tomcat. The service must be configured with at least one logical deployment target. This configuration information is managed via the DTGov user interface. Each deployment target is stored in the S-RAMP repository as a *DeploymentTargetType*. These target artifacts can be queried with the following:

```
/s-ramp/ext/DtgovDeploymentTarget
```

Each workflow query artifact can have the following properties:

Property Name	Description
deployment.type	The type of deployer to use (e.g. CLI, RHQ, File Copy, Maven).
deployment.classifiers	The classifier(s) to add to the artifact being deployed.

Additional properties are added to the deployment target artifact depending on its type:

### 11.6.1. File Copy

Property Name	Description
deployment.deployDir	The server-side file directory/path to copy the deployment artifact into.

### 11.6.2. RHQ

Property Name	Description
deployment.baseUrl	The URL of the RHQ server.
deployment.pluginName	The RHQ <i>plugin name</i> - needed to support multiple versions of RHQ.
deployment.user	The RHQ username.
deployment.password	The RHQ password.
deployment.group	The RHQ server group to deploy into.

### 11.6.3. JBoss CLI

Property Name	Description
deployment.host	The host JBoss is running on.
deployment.port	The CLI port for JBoss.
deployment.user	The JBoss CLI username.



Property Name	Description
deployment.password	The JBoss CLI user's password.
deployment.domainMode	Boolean indicating whether to use domain mode or standalone.
deployment.serverGroup	If domainMode=true, required to indicate the server group to deploy into.

#### 11.6.4. Maven

Property Name	Description
deployment.repositoryUrl	The URL of the maven repository.
deployment.releaseEnabled	Boolean indicating whether releases are enabled.
deployment.snapshotEnabled	Boolean indicating whether snapshots are enabled.
deployment.user	The username for authenticating into the repository.
deployment.password	The password for authenticating into the repository.



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# Bibliography

## Books

[erl-bennet-etall] .Thomas Erl et all. *SOA Governance*. Prentice Hall, 2011.

