

# U-Sem plug-in environment tutorial

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In this tutorial we demonstrate how to create and deploy U-Sem plug-ins.

## 1 Requirements

- U-Sem - installed and running
- Eclipse IDE ( $\geq 3.7$  Indigo). We recommend using the *Eclipse for RCP and RAP Developers* package - <http://www.eclipse.org/downloads/>
- U-Sem SDK for Eclipse - <https://code.google.com/p/rdfgears/>

## 2 Set-up the IDE

Before being able to start developing plug-ins for U-Sem we have to set up the IDE. This process consists of two main steps:

### 2.1 Import the U-Sem core project

Plug-ins normally depend on functionality provided by the U-Sem project and therefore, in order to be able to compile them correctly we need to import the U-Sem project into the IDE. Currently, all dependencies are contained in the **rdfgears-core** sub-project and thus, importing only it is enough. For more information on importing existing projects in eclipse read the *Importing existing projects* section in Eclipse documentation(<http://help.eclipse.org/juno>).

### 2.2 Install the U-Sem SDK

U-Sem comes with SDK that helps engineers to easily create plug-ins. It provides project template which creates and automatically makes all necessary configurations for a plug-in project. In order to install it copy the SDK jar file to the *dropins* folder of Eclipse and start/restart the IDE.

## 3 Create plug-in

### 3.1 Step 1 - Create plug-in project

In order to create new plug-in project for U-Sem the following steps has to be followed:

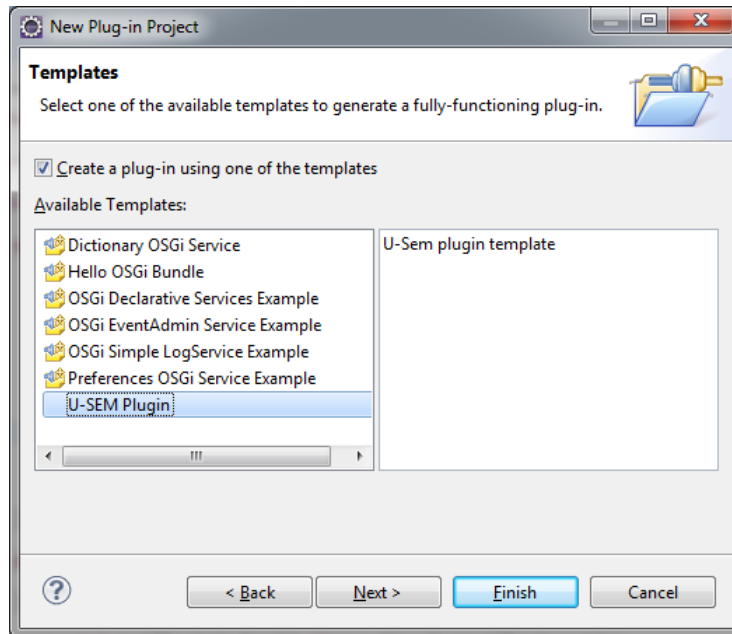


Figure 1: Select plug-in template

1. Open the *New plug-in wizard* in Eclipse - it can be found under File/New/Plug-in Project
2. Fill in all standard configuration details and click next until the *Templates* section appears
3. Select the *U-Sem* template and click next. The window is shown on Figure 1.
4. The plug-in template creates sample RDFGears function and workflow which are wired to work together. Users have to specify their names. Figure 2
5. Click Finish and the plug-in is automatically created and configured. The

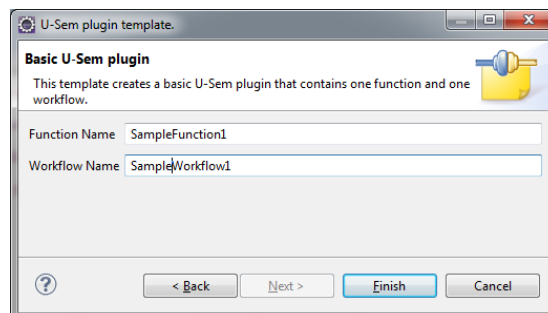


Figure 2: Specify artefact names

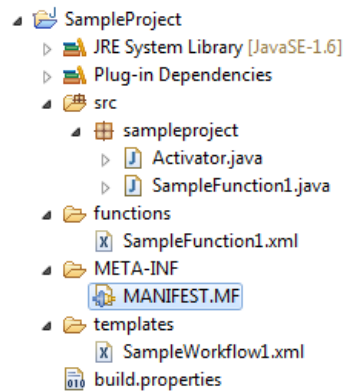


Figure 3: Structure of the created plug-in

newly created project has the structure showed in Figure 3

### 3.2 Step 2 - Create U-Sem artefacts manually

Engineers can also add U-Sem artefacts(functions, workflows) manually. In order to do that, the following steps has to be performed:

1. **Create artefacts** - Engineers have to create the desired U-Sem functions and workflows following the specification([https://code.google.com/p/rdfgears/wiki/Creating\\_cstom\\_functions](https://code.google.com/p/rdfgears/wiki/Creating_cstom_functions)). The produced files has to be added to the plug-in project.
2. **Register the artefacts** - The already produced artefacts has to be registered so that the engine knows about their existence. The registration is done in the *start* method of the *Activator* java class:

- In order to register functions the following code has to be included:

```
context.registerService(FunctionDescriptor.class,
    new FunctionDescriptor(getClass().getResourceAsStream("/<xml>"),
        <class>), null)
```

Where *< xml >* is the path to the xml file describing the function and *< class >* is the java class that contains function's logic.

- In order to register workflows the following code has to be included:

```
context.registerService(WorkflowTemplate.class,
    new WorkflowTemplate(getClass().getResourceAsStream("/<xml>")),
    null);
```

Where *< xml >* is the path to the xml file describing the workflow.

3. **Configure plug-in export** - Before exporting the plug-in make sure all resource files(xml, etc.) will be included. More information on how to do that can be found under the *Plug-in Build* section in Eclipse documentation(<http://help.eclipse.org/juno>).

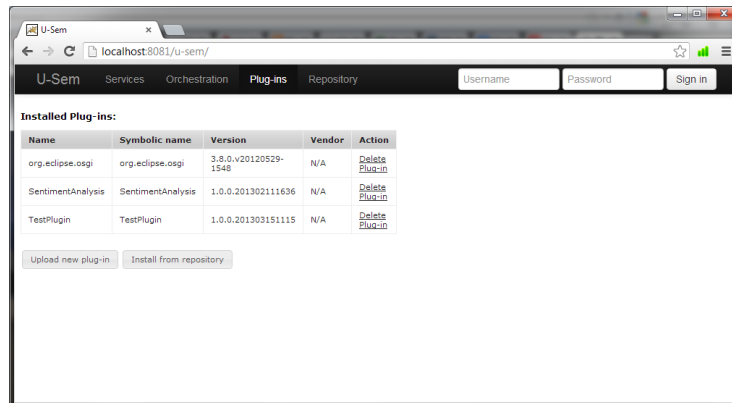


Figure 4: U-Sem Plug-ins user interface

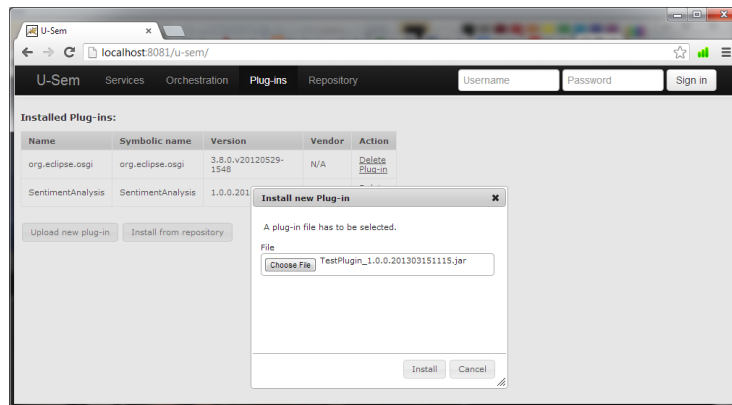


Figure 5: UI for selecting a plug-in to be installed

### 3.3 Step 3 - Export the project

Once the plug-in is ready then it has to be exported into a jar file so that it can be later deployed to the U-Sem platform. Eclipse provides wizard that completely automates this process. It is accessible under *File/Export/Deployable plug-ins and fragments*. More information about it can be found under the *Plug-in Export* section in Eclipse documentation(<http://help.eclipse.org/juno>).

## 4 Install plug-ins in U-Sem

The functionality for installing a plug-in to the U-Sem platform is available under the *Plug-ins* section in the user interface of U-Sem shown on Figure 4. Users have to click on the *Upload new plug-in* button which will enable them to select a plug-in to be installed. This is shown on Figure 5. Finally, after the successful installation of the plug-in all artefacts provided by it will be available to use in U-Sem.