SysML
version 0.10.1-SNAPSHOT
Developer Guide
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1 Developer

1.1 Download
The developer guide could be downloaded as a pdf [here](#).

1.2 Requirements

1.2.1 Eclipse
Use Eclipse, at least Neon version.

1.2.2 Maven
Use Maven 3.3.1 at least.

1.2.3 Eclipse plugins
Install M2e plugin in your Eclipse
Install Tycho Configurator as an additional maven connector
No specific extra from papyrus.

1.2.4 SysML
Have a look to the normative document of OMG: [Embedded norm](#).

1.2.5 Check your installation by a basic checkout, compilation

- Clone the sysml 14 git repository git clone https://git.eclipse.org/r/papyrus/org.eclipse.papyrus-sysml.
- Run maven at the root of the repo: mvn clean install; it should pass
- Get sysml14 plugins in your eclipse workspace
- Et “Voila” you are good to go.

1.2.6 Target Environment
We have developed a target-platform-configuration artifact located at /org.eclipse.papyrus-sysml/org.eclipse.papyrus.sysml14.targetdef/org.eclipse.papyrus.sysml14.targetdef.target
Open it and click at the upper right corner to set it has the target platform.

1.3 Product Life Management
The PLM is Maven with Tycho plugins for OSGI.

1.3.1 Run a default installation

```bash
mvn clean install
```
1.3.2 To build also the modules relatives to RCP and Product, please activate the following profile:

```mvn clean install -Pproduct```

It could be necessary to use the following workaround to ensure the version of Neon plugins, you
used to build against:

```mvn clean install -Pproduct -Dtycho.localArtifacts=ignore```

Sometimes when Eclipse release train is on the move, you will need to add the following option, to
force to download directly from Eclipse main download site:

`-Dtycho.disableP2Mirrors=true`

1.3.3 Generate and deploy the web site

```mvn clean site site:stage-deploy scm-publish:publish-scm -Pdocumentation```

1.3.4 A minimal iteration

This section describes the different steps relative to the integration of a new feature or to the
correction of a bug: from bug definition, to requirement, to code integration through gerrit review
with the continuous integration system.

- Describe in Bugzilla the bug, feature you are working on. Please use the component SysML. And
  begins with [SysML 1.4] for Summary.
- Get the code from the master with git, git clone https://git.eclipse.org/r/papyrus/
  org.eclipse.papyrus-sysml, and work on a local branch,
- Add the new requirement in the different sysml 1.1 models located in the doc folder of the
  relevant plugin. have a look to SOP4: Requirement
- Modify the code
- Push on Gerrit ssh://{ECLISPEUSERLOGIN}@git.eclipse.org:29418/papyrus/
  org.eclipse.papyrus-sysml
- Ask for a review https://git.eclipse.org/r/#/dashboard/self
- After a few iteration, you code should be merged and accessible in the master.

Have a look to default rules miscellaneous.html

1.3.5 Tips

If you are working with multiple version of Papyrus, it is possible that Tycho do not pull the right one.
You can force it by using the following parameter in the build command. More details here

```mvn clean install -Dtycho.localArtifacts=ignore```

Please find additional information here: Miscellaneous

1.4 Standard Operating Procedures and FAQ

1.4.1 SOPS

- SOP1: OMG Norm requirements automanual extraction
- SOP2: From a OMG profile to a dedicated Papyrus application (elementype, palette etc...)
• SOP3: Extended the norm by adding a new operation.
• SOP4: Add a new requirement.
• SOP5: Make the release.

1.4.2 Dev FAQ

• FAQ.

1.5 Miscellaneous

1.5.1 Libraries

QUDV and others
2 SOP1 Norm requirement extraction

2.1 Pre-requisit
install pdfminer  http://www.unixuser.org/~euske/python/pdfminer/

2.2 Extract the TOC

2.2.1 Extract the toc from the pdf with pdfminer

dumppdf.py -T foo.pdf > toc.xml]
</subsection>
</subsection>

name="Extract basic data from the generated toc file">
<source><![CDATA[ cat toc.beta.xml | egrep "<outline|pageno" | tr '\012' '"' | sed</source>

2.2.2 Layout the data
Generate the elements for each requirements
Create a basic maven java project with the follwoing dependencies

<dependency>
<groupId>org.eclipse.emf</groupId>
<artifactId>org.eclipse.emf.ecore</artifactId>
.VERSION>2.11.0-v20150123-0347</version>
</dependency>
<dependency>
<groupId>org.eclipse.emf</groupId>
<artifactId>org.eclipse.emf.common</artifactId>
.VERSION>2.11.0-v20150123-0347</version>
</dependency>

Make a main class based upon the following code: RequirementGenerator.java

2.2.3 Create a sysml model with the requirements
Create a sysml project and add the requirement data in it
Reference this new model/library from your MDE model project
3 SOP2 Generation from Norm to code and configuration files

3.1 Pre-requisite
Have your profile myprofile.profile.uml, in our case SysML14.profile.uml
Have a Papyrus instance with UML2Extension and Developer tools installed

3.2 Step 1: generation of model, edit plugins code

3.2.1 1.0: Purpose
Generate the "static profile" (the java code related to the UML profile)

3.2.2 1.1: Create the EMF generator Model
right-click on the profile, select new EMF Generator Model
Options
  • load
  • skip warning
  • next
  • select SysML

3.2.3 1.2: Generate the code
Modify the options
  • switch the default output directory from src to src-gen
  • for the EditPluginClass remove intermediate package name, to reflect .provider.SysmlEditPlugin
  • switch NLS on
Right click generate Model and Edit code

3.2.4 1.x: Validation
Code should compile at this step

3.3 Step 2: generation of ElementType configuration files

3.3.1 2.0: Purpose
Generate semantic and diagramatics elementtypes related to the profile

3.3.2 2.1: Semantic Elementtypeconfiguration
  • Open the profil with Papyrus
  • Select generate Tooling Model Elementtype
  • base: uml o.e.p.uml.servicetype
  • identifier o.e.p.sysML14
  • file name: SysML.elementtypeconfiguration
Move it to the right plugin place
3.3.3 2.1: UI Elementtypeconfiguration

- Open the profil with Papyrus
- Select generate Tooling Model> Elementtype
- base: uml o.e.p.uml.uml.diagramclass and composite
- identifier o.e.p.sysML14
- file name: SysML.elemeznttypeconfiguration

Move it to the common plugin place and do it foreach root diagrams

3.3.4 2.x: Validation
to be completed...

3.4 Step 3: generation of New Child Menu

3.4.1 3.0: Purpose
Generate the new child menu present in the model explorer

3.4.2 3.1: Action
to be completed...

3.4.3 3.x: Validation
to be completed...

3.5 Step 4: generation of Property view

3.5.1 4.0: Purpose
Generate the default property views (one context .ctx file and multiple xwt files)

3.5.2 4.1: Action
- Select New...> Other
- Select Papyrus Category
- Select Property view Configuration
- Choose create from UML Profile
- Source: /org.eclipse.papyrus.sysml14/resources/profile/SysML.profile.uml
- Choose Standard Layout Generator
- Target: /org.eclipse.papyrus.sysml14.ui/resources/properties/SysML1.4.ctx

3.5.3 4.x: Validation
Should generate one *.ctx file and many *.xwt files
3.6 Step 5: generation of Assistant

3.6.1 5.0: Purpose
Generate the tooling to have assistants in customized diagrams

3.6.2 5.1: Action
to be completed...

3.6.3 5.x: Validation
to be completed...
4 SOP3 Adding operations to the norm

4.1 Contexte
Sometimes the sysml profile norm do not reflect the text/pdf norm document. It is pertinent to modify the sysml profile to add new operations.

4.2 SOP

4.2.1 Documentation
Reference your new operations here, in order to be able to process the model automatically in a near future.: /org.eclipse.papyrus.sysml14/doc/SysML-Extension.di
Open it with UML Editor to access UML type and cardinality
You should export the org.eclipse.papyrus.sysml14 plugin to have access to the pathmap for the different UML models, such as:
- OMG norm: resources/doc/omg.sysml.uml
- SysML 1.4 extension model: resources/doc/SysML-Extension.uml

4.2.2 SysML profile: semantic upgrade
Modify /org.eclipse.papyrus.sysml14/resources/profile/SysML.profile.uml to add a new operation, with its parameters.
Open the genmodel, right click on ti and click on Reload the UML profile and regenerate the Model and Edit code.
Validate your enhancement by looking in /org.eclipse.papyrus.sysml14/src-gen
Implement the function in the /org.eclipse.papyrus.sysml14/src; do not forget to reference the requirement
You have to procure eventually a new XFactoryCustomImpl that has to be referenced in the plugin.xml

4.2.3 SysML diagram upgrade
Modify the Expansion diagram of your /org.eclipse.papyrus.sysml14.diagram.blockdefinition/configuration/blockDefinitionDiagramConfig.expansionmodel
Add new representation, a new induced representation and do not forget to add it to the context.
Bewareful to replace with text editor the kind href="../..../plugin/org.eclipse.papyrus.uml.diagram.common/ with kind href="platform:/plugin/

4.2.4 SysML element type
/org.eclipse.papyrus.sysml14.diagram.common/resources/SysML14ClassDiagram-extension.elementtypesconfigurations
Add a new Specialization type configuration and eventually its edit helper
4.2.5 Palette
Add your element in the palette: /org.eclipse.papyrus.sysml14.diagram.blockdefinition/resources/palette/blockDefinitionDiagram.paletteconfiguration

4.2.6 CSS
Modify the CSS to display your compartment:/org.eclipse.papyrus.sysml14.diagram.blockdefinition/resources/style/blockDefinitionDiagram.css

4.2.7 Test
Implement your test in /org.eclipse.papyrus.sysml14.tests/src/org/eclipse/papyrus/sysml14/tests/blocks/BlockTest.java
Open a runtime, you should be able to do the move from the palette to your compartment

4.2.8 todo

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Create a Block Part</td>
</tr>
<tr>
<td>Hint</td>
<td>SysML: Block::Port_label</td>
</tr>
<tr>
<td>Identifier</td>
<td>org.eclipse.papyrus.SysML14::Part</td>
</tr>
<tr>
<td>Kind</td>
<td>org.eclipse.gmf.runtime.emf.type.core.ILeafType</td>
</tr>
<tr>
<td>Name</td>
<td>Port</td>
</tr>
<tr>
<td>Specialized Types ID</td>
<td>org.eclipse.papyrus.SysML14::Part</td>
</tr>
</tbody>
</table>
5 SOP4 Requirement

5.1 Context
In order to develop the SysML 1.4 application, the developer team has chosen to use a model based approach. At least, it is used to gather all requirements in different SysML 1.1 models.

A first model of requirement has been made by extracting all basic requirements from the Norm. Each section of the norm described in the table of content has been extracted as a requirement.

This model is located here core/org.eclipse.papyrus.sysml14/doc/omg.sysml.uml

New requirements, through the use of papyrus Req plugin, are created in each SysML 1.1 model located in the doc folder of each module. They should use the "DeriveReq" link.

Finally, you could reference your requirement anywhere in your code, document by using the following convention:

```
@pap.req $(Model.ID)#(Req.ID)
```

The goal is to have a tool, plugin that will be able to parse this snipped of code to link it to the model, and eventually open the model.

5.2 Example

5.2.1 Zoom on OMG SYSML Requirement Model
Pay attention to the ID, NAME and the TEXT, that have been normalized.

5.2.2 Zoom on a Derivereq Link
Pay attention to the ID, it has to be uniq, it is generated by the Papyrus Req plugin: /org.eclipse.papyrus/extraplugins/req/org.eclipse.papyrus.req.reqif

Papyrus Req plugin is an extra plugin of Papyrus project, you have to download it and install it in your own Eclipse installation. Then when opening a requirement diagram, you will have a new right-click menu that allows you to create directly new derived requirement from an initial requirement. It will compute automatically the identifier and pre-fill the text.
6 SOP5 Release

6.1 sop5-Release

6.1.1 Who is in charge of?
Committer + a basic developer in order to transfer knowledge and improve the process.

6.1.2 When?
when you need it, on a regular basis, every two month.

6.1.3 How long?
It last at least 120mn

6.2 Prerequisite

6.2.1 Access
Have the Hudson access

6.2.2 General release information
You will find the general information on How to make a release for a Papyrus specialization here

6.3 Pre-Actions
You can send an email to the developers mailing list.

6.4 Steps

6.4.1 Create a bugzilla ticket.

6.4.2 No critical bugs open for the release you are targeting

6.4.3 Jobs (master,website,quality,deploy) are green

6.4.4 Initial Version should match qualifier and -SNAPSHOT
You must fill the changelog to describe the new version feature.

/org.eclipse.papyrus-sysml/src/changes/changes.xml

Details https://maven.apache.org/plugins/maven-changes-plugin/changes.html

6.4.5 Upgrade the version of application
use tycho-versions plugin to switch from qualifier to release, and then back from release to qualifier

check the different pom.xml and MANIFEST.MF
You have to manually update the category.xml at /org.eclipse.papyrus.sysml/releeng/
org.eclipse.papyrus.sysml14.p2/category.xml
Update also the pom

mvn org.eclipse.tycho:tycho-versions-plugin:update-pom -Dtycho.localArtifacts=ignore

Upgrade also the target platform version in the main pom

6.4.6 Push on gerrit the different modifications
Who: non committer action
egit or others.

6.4.7 Accept the changes
Who: committer action
gerrit web action.

6.4.8 Rexecute the job Master and Website
Who: any
Goal is to use this job version as data for the promotion.

6.4.9 Tag the release
Who: committer action
how

6.4.10 Deploy the product (update site and the rcp)
Who: non-committer action
how: job on Hudson, fill the fields

6.4.11 Deploy the web site
Who: non-committer action + committer review
Generate the new web site

mvn install site site:stage-deploy -Pproduct,documentation,documentation-pdf,quality,web.release ...

Copy/paste it in the git repository dedicated to the web, in its own version folder
Update the root index.html


Ask for validation by adding Remi SCHNEKENBURGER as reviewer.
6.4.12 Upgrade to the next snapshot version of the application

use tycho-versions plugin

```
```

You have to manually update the category.xml at /org.eclipse.papyrus-sysml/releng/
org.eclipse.papyrus.sysml14.p2/category.xml

check the different pom.xml and MANIFEST.MF

6.5 Web-site release

You need also to deploy the new web site matching your release product version.

By going to https://hudson.eclipse.org/papyrus/view/Sysml/job/papyrus-sysml-eclipse-web-deploy/, you could retrieve the zip of the site under the workspace ws/site-staging/3DIGITVERSION

Then you have to submit a gerrit patch on the Papyrus git repository, located here: www.eclipse.org papyrus.git modeling.mdt.papyrus project website

You have also to modify the main index.html file to update the current website version and to add your version in the menu.

The final result should be available after a few minutes here https://www.eclipse.org/papyrus/components/sysml/3DIGITVERSION/

6.6 Post-Actions

You can send an email to the developers mailing list
7 FAQ Developer

7.1 Frequently Asked Questions

General

1. Where to retrieve the code?
2. Where is the website of the project?
3. Where is the javadoc of the project?
4. Where are the continuous integration jobs?
5. Where is the review server?

Installation

1. How do I install SysML?

7.2 General

Where to retrieve the code?
You have to clone the git repository

```
git clone https://git.eclipse.org/r/papyrus/org.eclipse.papyrus-sysml
```

Where is the website of the project?
You have to go https://hudson.eclipse.org/papyrus/view/Sysml/job/papyrus-sysml-website/ws/site-staging/index.html

Where is the javadoc of the project?
You have to go https://hudson.eclipse.org/papyrus/view/Sysml/job/papyrus-sysml-website/ws/site-staging/apidocs/index.html

Where are the continuous integration jobs?
You have to go https://hudson.eclipse.org/papyrus/view/Sysml/

Where is the review server?
You have to go to gerrit: https://git.eclipse.org/r/#/q/status:open+project:papyrus/org.eclipse.papyrus-sysml

7.3 Installation

How do I install SysML?

SysML 1.4 is an eclipse project and follow the standard recommendation of the Eclipse Foundation for installation.