Papyrus for Education

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Abstract. The CEA List[3] laboratory has recently launched an initiative to define a version of Papyrus dedicated to education and/or beginners that are interested in using a fully UML/SysML compatible open source tool, but without the complexity of a complete tool. This short article provides the latest improvements on this initiative and discuss the possible and expected contributions from the community.

1 Introduction

Papyrus [1] is an open source modeler[4] that provides an integrated environment for editing UML and SysML models. Specially, this project provides the glue around valuable UML and SysML diagram editors and other MDE tools. It also offers support for UML profiling mechanisms. As such, it is an industrial-strength tool fully compliant with the OMG standards.

When it comes to using Papyrus for education purposes or for basic users, the tool might appear too detailed and too powerful. Thanks to the tuning and adaptation mechanisms that are nowadays available in Papyrus, it is possible to completely setup the tool to match any particular user needs.

We examine in this paper an illustration of such an adaptation, through the *Papyrus for Education* initiative, which aim at defining a teaching version of Papyrus that allows students and beginners to access basic notions with all the strength of the full tool in terms of code generation for example. In section 2, we explain how to install the Papyrus4Education tool. In section 3, we shortly describe how to use the tool and tune it to adapt it to the user needs. In section 4 we address the particular aspect of our experiment: the definition of the subset of the UML elements to be included in Papyrus4Education. Finally, in section 5 we provide insights about how to participate in the initiative itself.

2 Give it a try

In this section we detail how you can simply install and start using the tool.

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[3] `http://www-list.cea.fr/`
[4] An Eclipse Foundation Project to be more precise.

2.1 Requirements

Papyrus4Education is now available as a Papyrus Mars extra[5] Hence the only thing you require is the last version of eclipse on your machine.

2.2 Install

Classically, eclipse plugin are installed using an update site[6]. So here is the process:

1. Go to $\boxed{\text{Help}}\rangle\boxed{\text{Install New Software...}}\rangle\boxed{\text{Add...}}$
2. Add the update site link
3. Select $\boxed{\text{Papyrus Extra (Others)}}$ (see Fig. 1)
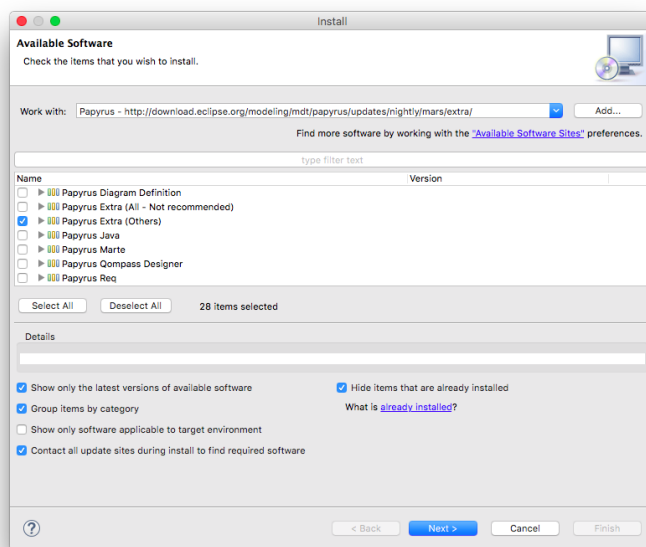
Fig. 1. Installing Papyrus Extra

4. Select $\boxed{\text{Papyrus For Education (Incubation)}}$ (see Fig. 2)
5. Select $\boxed{\text{Next}}$ and let Eclipse add all the required dependencies

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[5] See `https://eclipse.org/downloads/index-developer-installer.php` for eclipse mars, and `http://download.eclipse.org/modeling/mdt/papyrus/updates/releases/mars` for Papyrus installation.

[6] See `http://download.eclipse.org/modeling/mdt/papyrus/updates/releases/mars/extra`
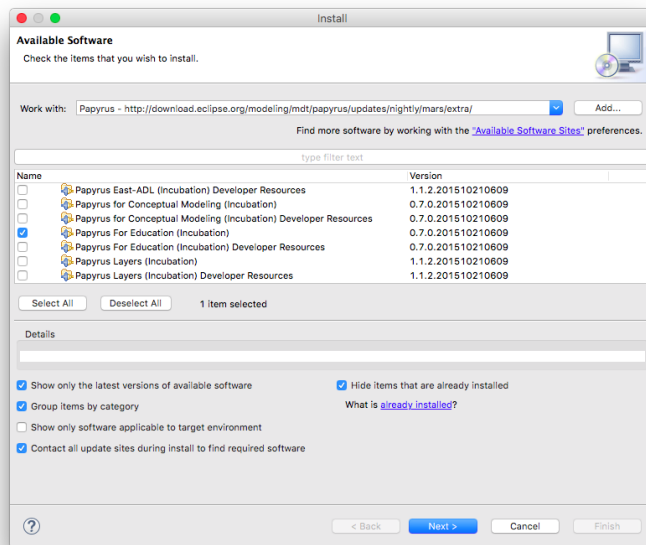
Fig. 2. Installing the Papyrus4Education plugin

6. Proceed by eventually accepting licenses concerns and restart Eclipse as advised by the install process.

The current Papyrus4Education feature has been published with 0.7.0 version since the work is still in progress.

3 Getting started

To start Papyrus4Education you need first to tell Papyrus to use the *For Education* version in the form of selecting the appropriate Viewpoint. The Viewpoint mechanism is the one that allows to assemble the customizations of Papyrus.

For this select Preferences ⟩ Papyrus ⟩ ViewPoints Configuration (see Fig. 3). From now, when you will start a new mode or project (File ⟩ New ⟩ Other... and then Papyrus ⟩ Papyrus Project ⟩ Next) you will benefit from a completely customized version of Papyrus. For example, Fig. 4 shows how the New Diagram menu now only shows the selected subsets of diagrams we have decided to keep in Papyrus4Education.

For more details about the current version of Papyrus4Education, we invite the reader to the eclipse wiki page[7]. For more detail about contributing and making the initiative evolve, please check section 5. In the following section we

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[7] Available at: https://wiki.eclipse.org/Papyrus_for_Education.
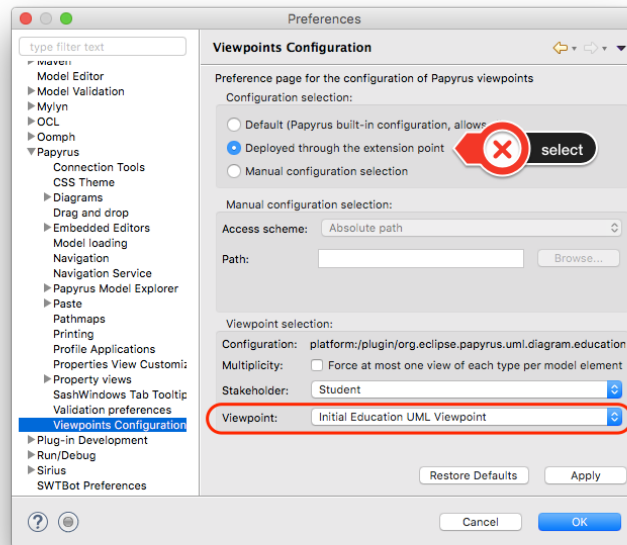
Fig. 3. Viewpoint selection

expose the core concepts we have decided to start with in the Papyrus4Education tool.

4   List of features

4.1   Initial implementation

The current implementation implements the initial and basic lists of concepts (through dedicated Viewpoints).

For each UML$^{\mathrm{TM}}$ type of diagram, we have brainstormed on the classification of the main concepts involved grouping them in terms of:

– `Initial`, meaning that the concept should be available from scratch, as they are considered as necessary for the diagram;
– `Basics`, meaning that those concepts are taught to beginners, but most of the time in a second step, when the initials concepts are acquired; and
– `Advanced`, which are all the concepts that are rarely taught.

For the first implementation of Papyrus4Education, we have first chosen a subset of diagrams that are almost all taught in basic UML$^{\mathrm{TM}}$ courses:
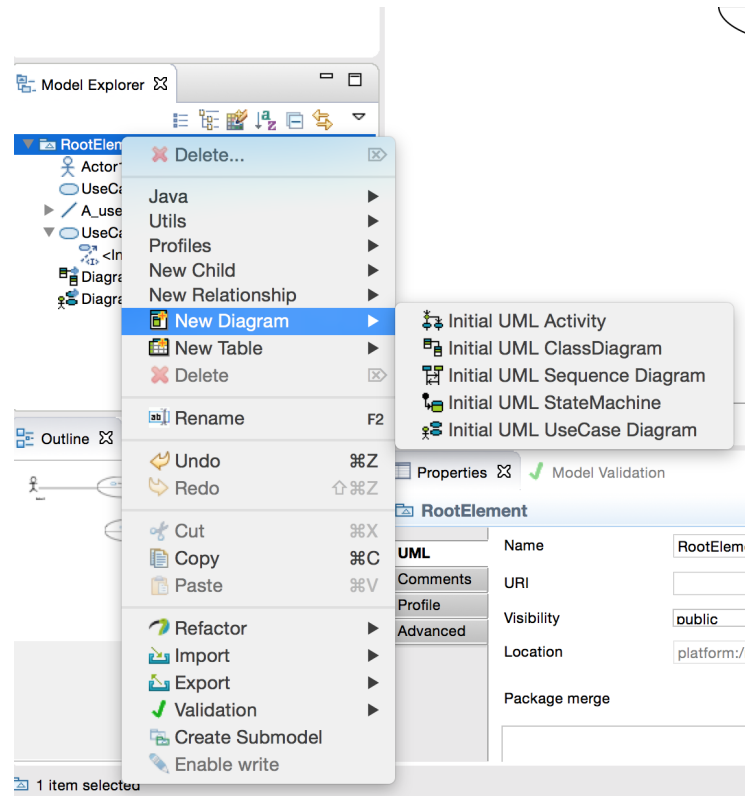
– Use Case Diagrams

Fig. 4. Customized modeler

- Class Diagrams
- Sequence Diagrams
- Activity Diagrams
- State Machines

Those decisions were partial and not ment to define the only definition of what should be the core concepts of an introduction modeling tool. We had more the idea of building an example of what such a tool could be.

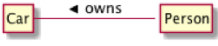### 4.2   Need a broader survey to define them

The very next step will be to try to get a consensus on these core concepts, as well as getting insight about the way they are taught. We are hence going to submit in close future a survey to teachers (in academics but also in industry) to get as much objectivity as possible when it comes to the choice of the core concepts. Fig. 5 is a small illustration of the kind of question we will ask.

Fig. 5. Expected survey

5 Stay tuned and participate

If the reader wants to stay tuned with this initiative, he/she can subscribe to the mailing list[8].

For a more active contribution, there is also the possibility to clone the repository[9]. As for all open source initiative, contributions are welcome!

References

1. Sébastien Gérard. Once upon a time, there was papyrus... In *MODELSWARD 2015 - Proceedings of the 3rd International Conference on Model-Driven Engineering and Software Development, ESEO, Angers, Loire Valley, France, 9-11 February, 2015.*, pages IS–7, 2015.

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[8] More details here: `https://dev.eclipse.org/mailman/listinfo/papyrus4edu`.
[9] `https://git.eclipse.org/c/papyrus/org.eclipse.papyrus.git/`.