PAPYRUS USAGE
SHORT INTRODUCTION

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CEA LIST

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WHAT IS SYSML ?

- **A customization ("profile") of UML2**
  - The specification defines language concepts, …
  - Semantics (= meaning) & Notation (= representation)
  - … **but no methodological aspects** (Methodology and tool independence)

- **A graphical modeling language**
  - In response to the UML for System Engineering RFP developed by the OMG, INCOSE, and AP233 WG

SysML support the specification, analysis, design, verification, and validation of systems or systems of systems

- **OMG SysML specification status**
  - First version finalized in Sept. 2007
  - Current version 1.3
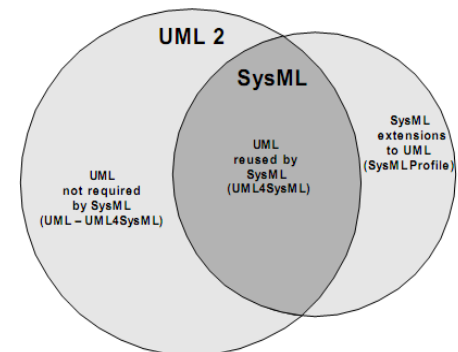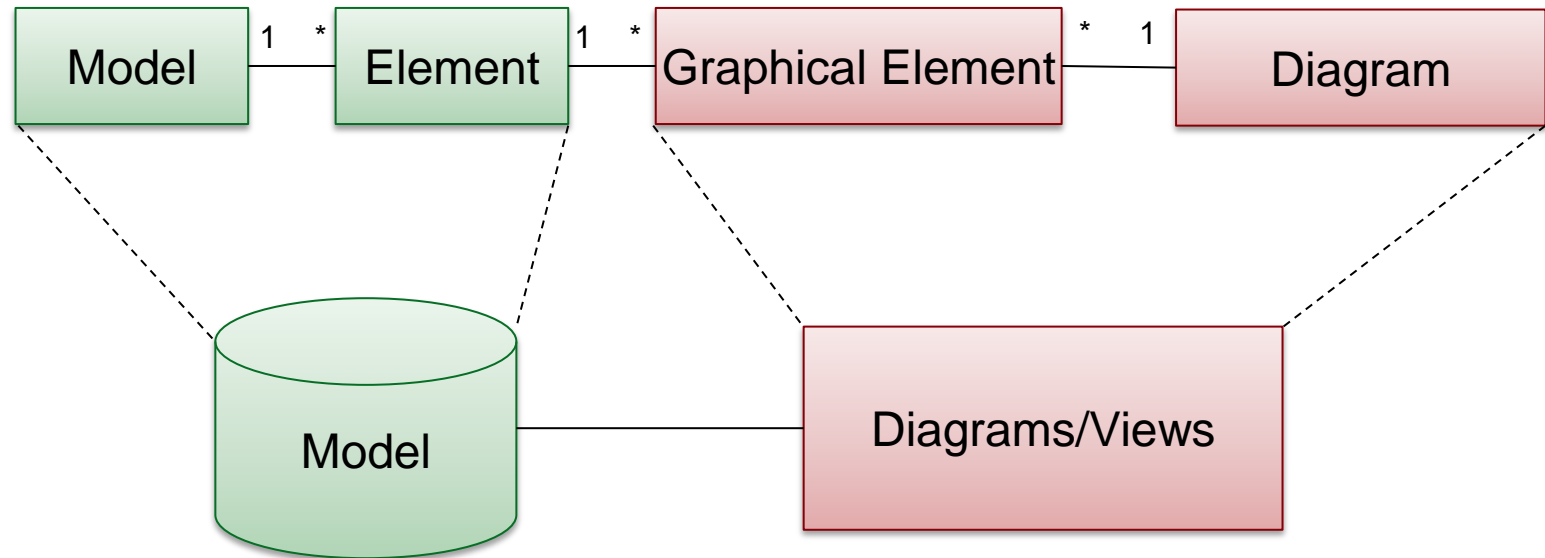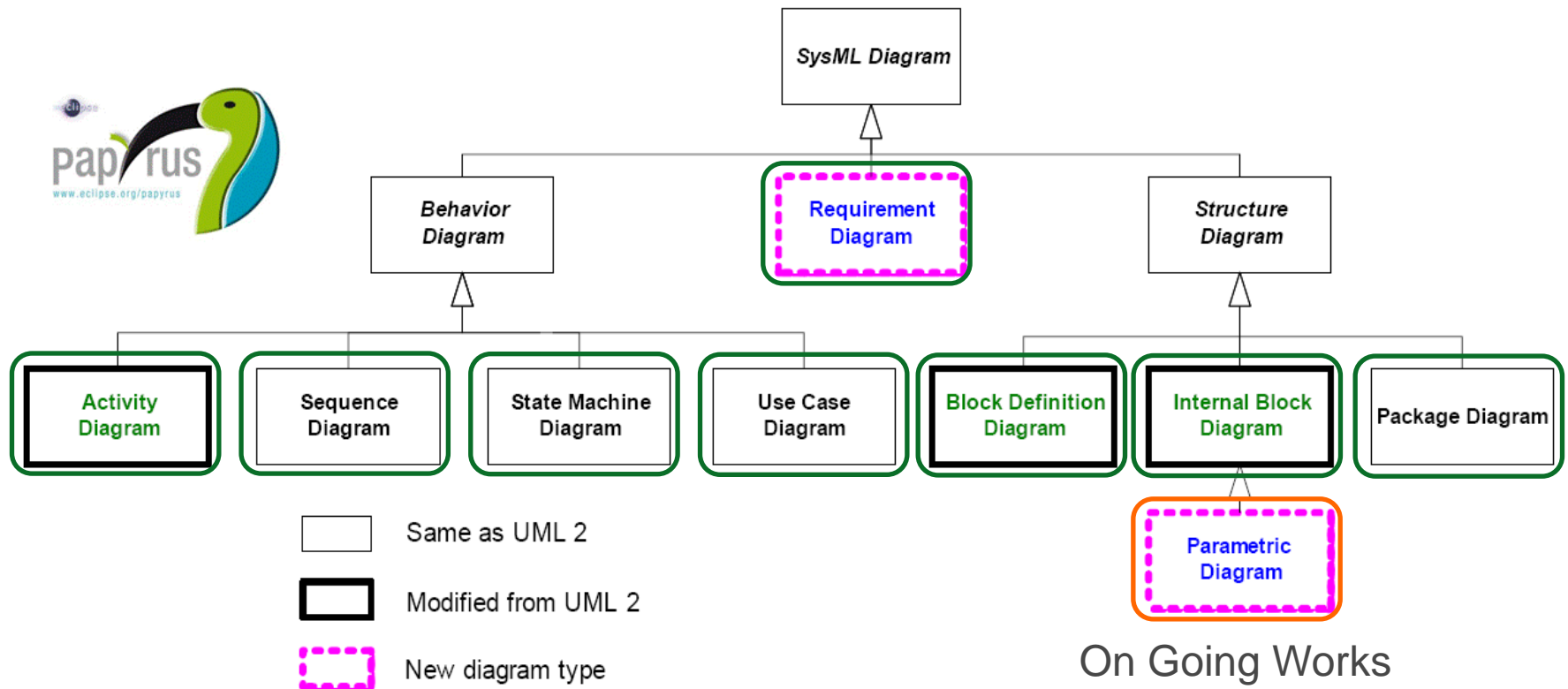 http://www.omg.org/spec/SysML/1.3/

Figure 4.1 - Overview of SysML/UML interrelationship

WHAT IS SYSML: MODEL – DIAGRAM LINK

- **This means that**
  - Delete an element from the model => delete all its graphical elements from the diagram.
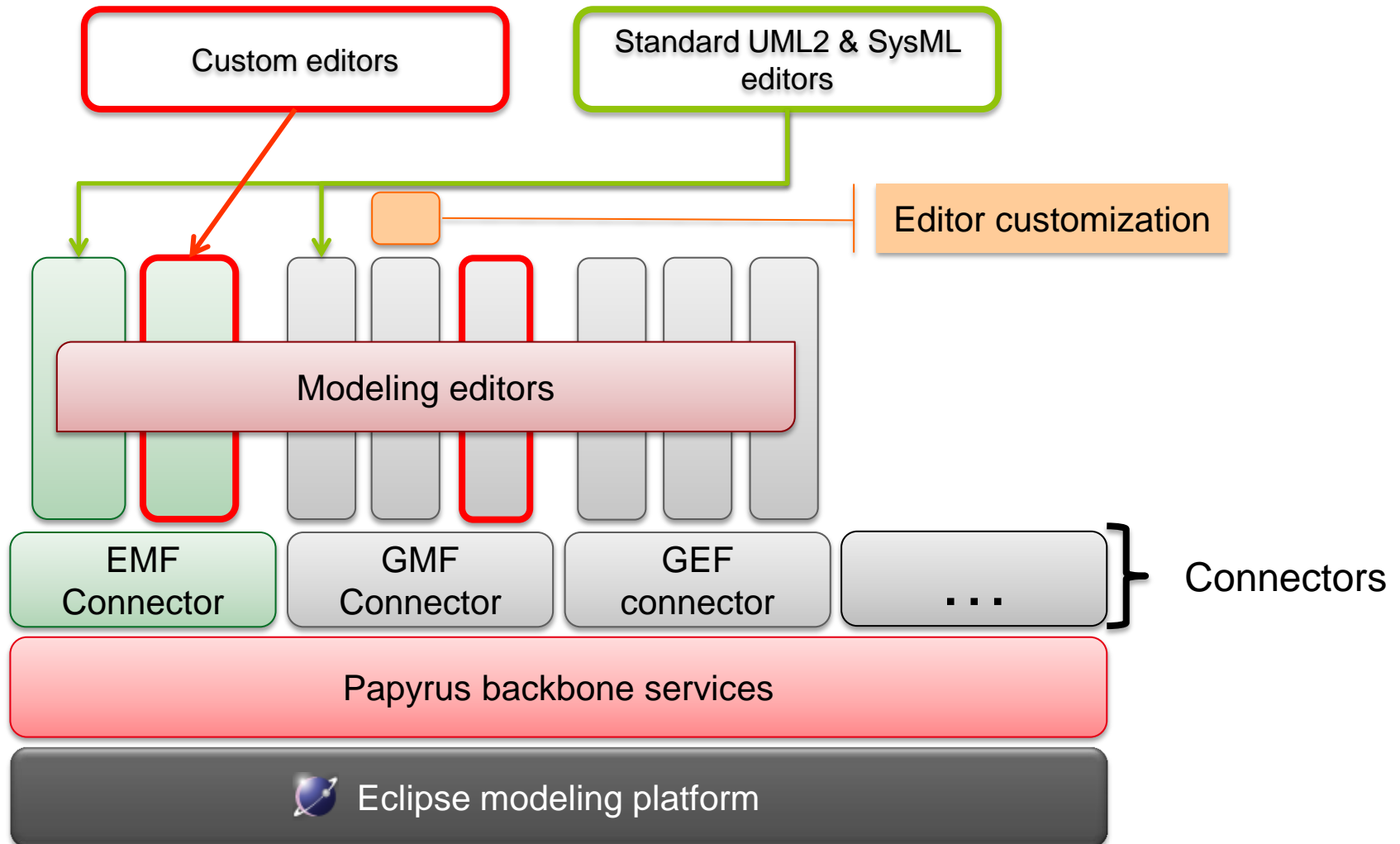 - Delete a graphical element => DO NOT delete the corresponding element in the model.
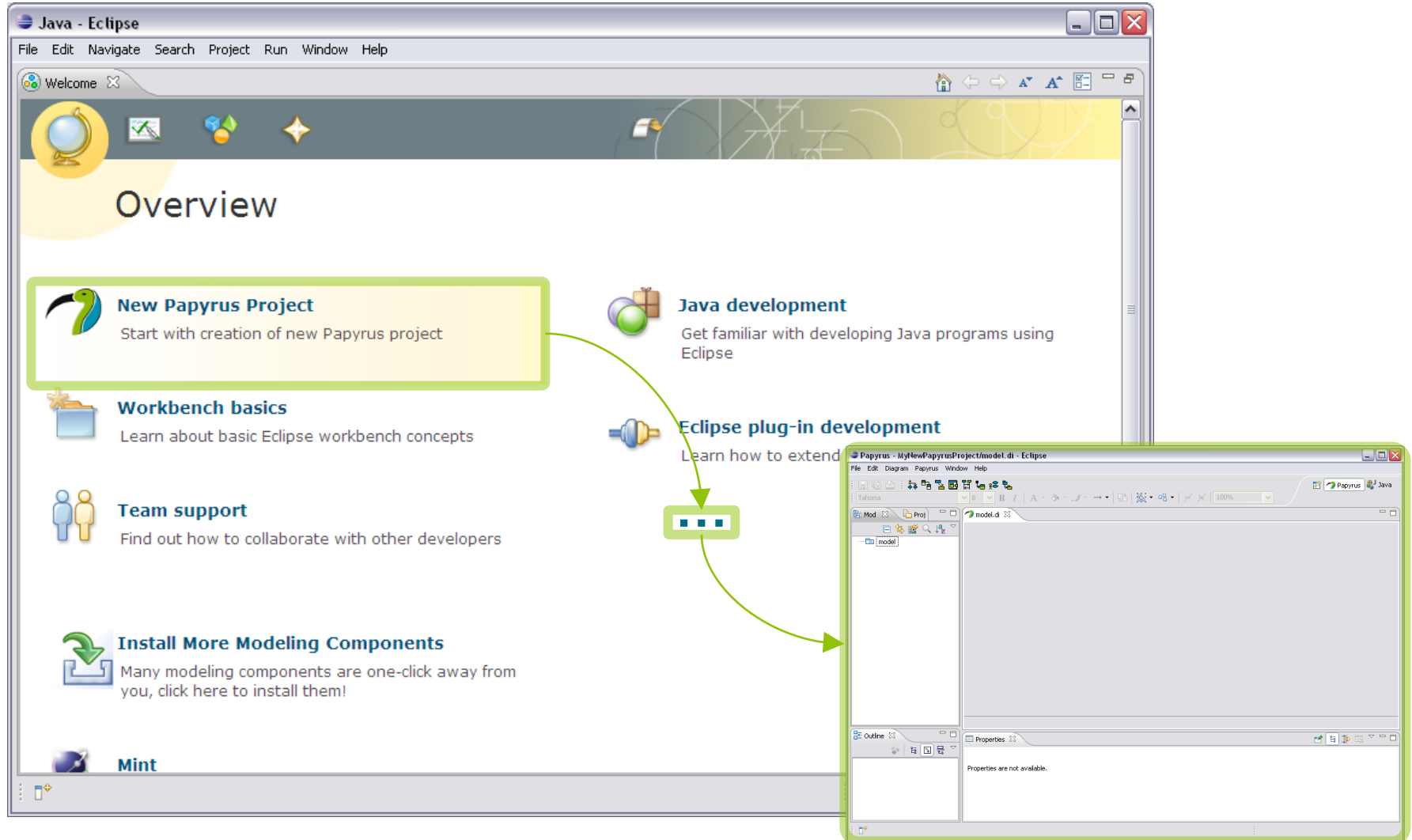
WHAT IS SYSML: DIAGRAMS

PRESENTATION PLAN

- **PAPYRUS INFRASTRUCTURE**

- **GETTING STARTED**

- **DIAGRAMS & EDITORS**

- **EDITORS USAGE**

PAPYRUS INFRASTRUCTURE (SHORT)

GETING STARTED: WELCOME PAGE

GETTING STARTED: OUTLINES OF THE PAPYRUS PERSPECTIVE

**Project explorer:** used to manage Papyrus projects at file system level.

Main toolbar: diagram creation, graphical editing (align, distribute…), show /hyde, …

Perspective: switch the modeling context, define windows (eclipse views) arrangement, define the list of available diagrams, define the available menus and toolbars.

Model editors: model editor enabling to edit models through a given modeling language.

Outline view: provide overview of the model (read only).

Property view: form-based model editor enabling to view & edit model element properties.

Model explorer: tree-based model editor covering the whole model.
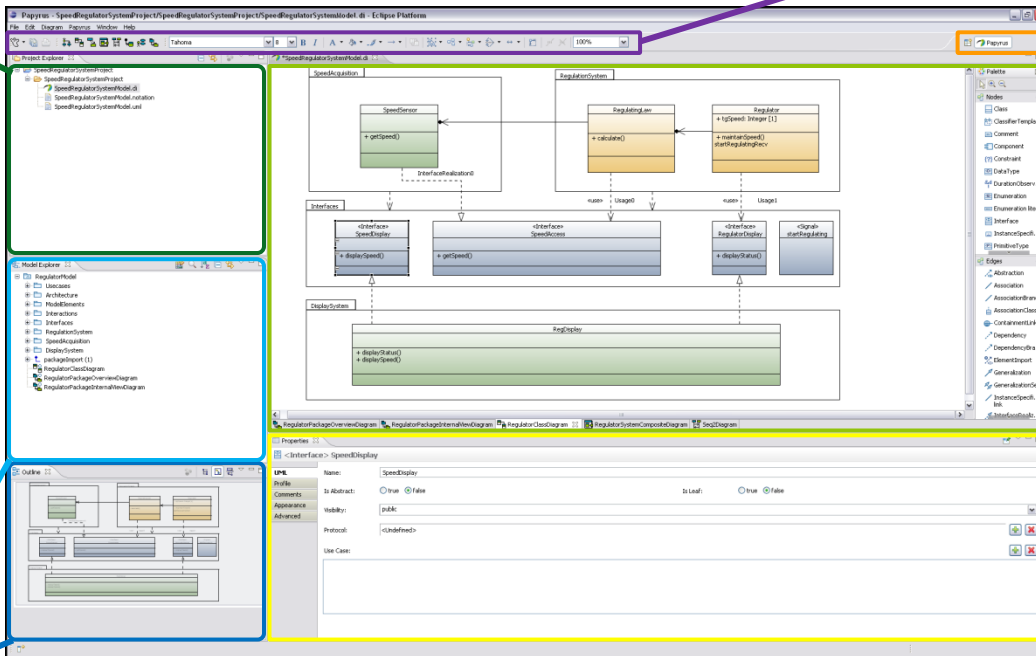
GETTING STARTED: PROJECT CREATION

- **Creating a Papyrus project**
  - In the Menu bar, click on: File > New>Papyrus Project

Enter a project name and press Next.

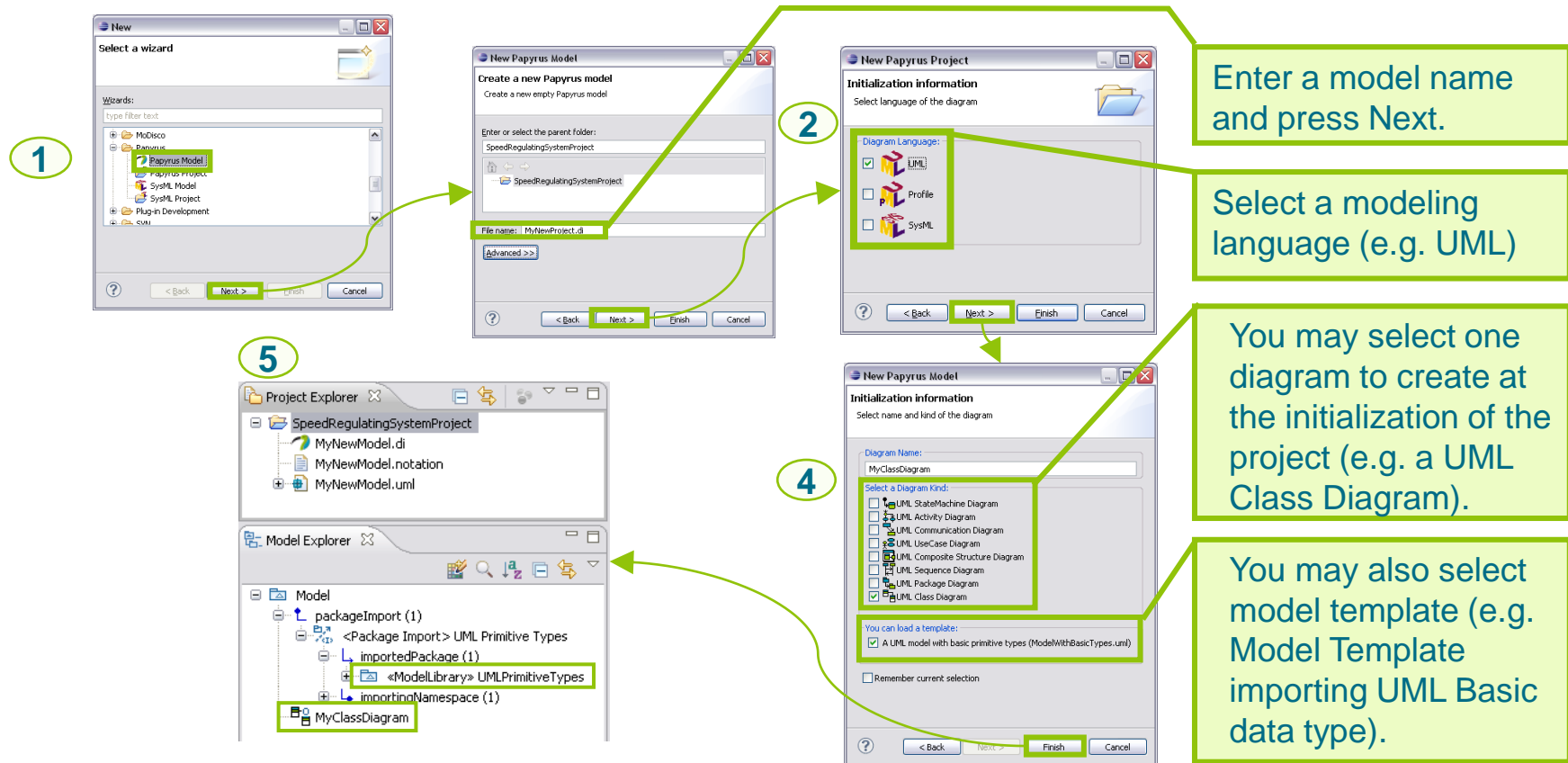Select a modeling language (e.g. SysML).

New created UML model:
- *.di: tool metadata
  ➥ entry point for starting modeling!
- *.notation: graphical data
- *.uml: UML model data

GETTING STARTED: MODEL MANAGEMENT

- **Creating a new Papyrus model**
  - Within the project explorer view:

 Select a project > Right click on it > New > Other

Enter a model name and press Next.

Select a modeling language (e.g. UML)

You may select one diagram to create at the initialization of the project (e.g. a UML Class Diagram).

You may also select model template (e.g. Model Template importing UML Basic data type).

GETTING STARTED: FILE RENAMING

- **Within the project explorer:**
  - Select the model to rename
  - Right-click on it > Rename (short cut: F2)

Enter a new name and press Ok.

All related files are renamed.
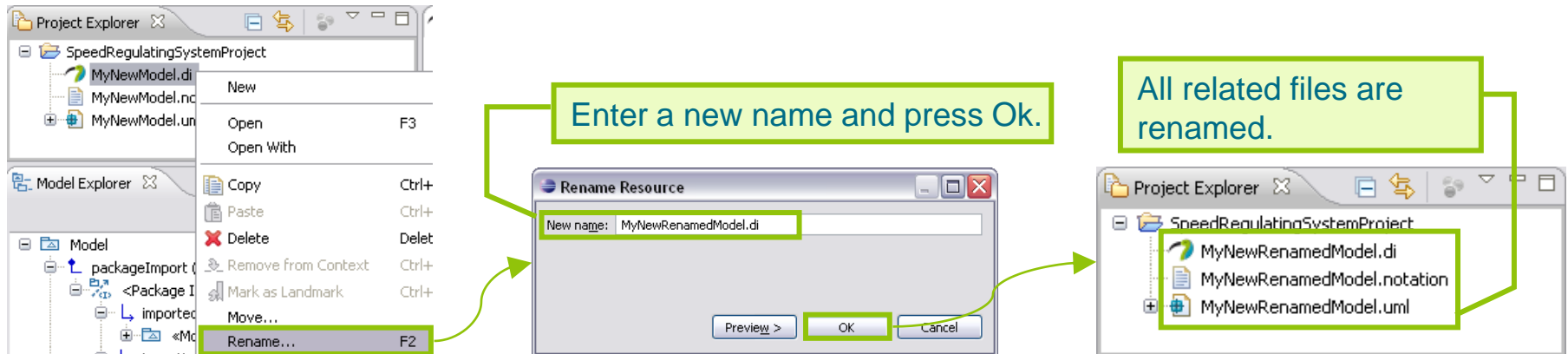
DIAGRAMS & EDITORS: DIAGRAMS CREATION

- **E.g., creating new class diagram (≈ BDD)**
  - Within the model explorer, select the model element that will host the new diagram
  - For creating a class diagram:
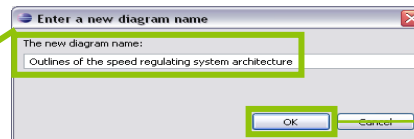   - Scenario 1: in the Papyrus tool bar, click on the diagram to create.
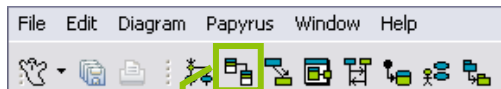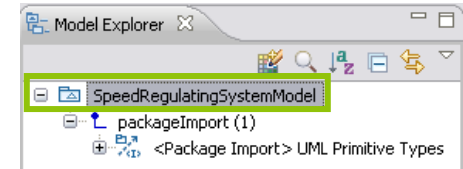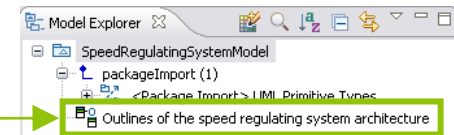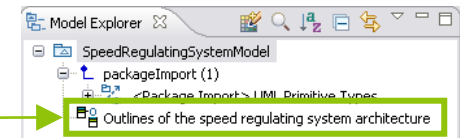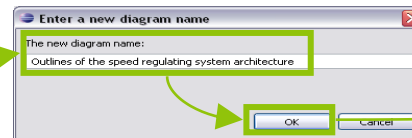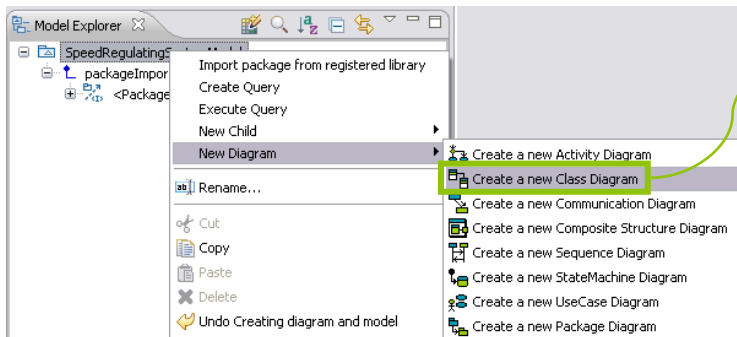
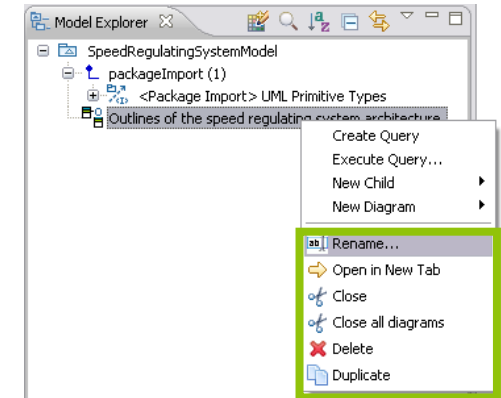New UML Class diagram

Diagram name

  - Scenario 2: left-click on the selected element > New Diagram > Create a new Class Diagram

DIAGRAMS & EDITORS: DIAGRAMS LIFECYCLE MANAGEMENT

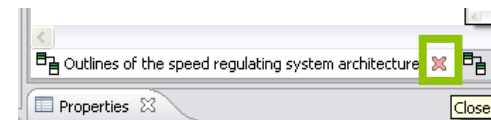- **Diagrams can be:**
  - Renamed, Closed, Open in a new tab.
  - Deleted, Duplicated.
  - Moved from holder to a new one in the model explorer
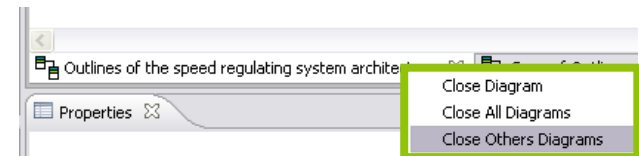

- **Options:**
  - Right-click on it in the model explorer > select a command.

  - Click on the cross located on left-side of the tab of a diag. to close it.

  - Right-click on the diag. tab for accessing additional close actions:

  - Moving one diagram in model explorer : Within the model explorer, drag and drop the diagram from its origin place into its targeted place.

DIAGRAMS & EDITORS: DETAILS ON THE MODEL EDITOR

Palette: enables model elements creation for a given diagram kind (e.g., UML2 class diagram).

Note: "*" means the model has been modified since last save.

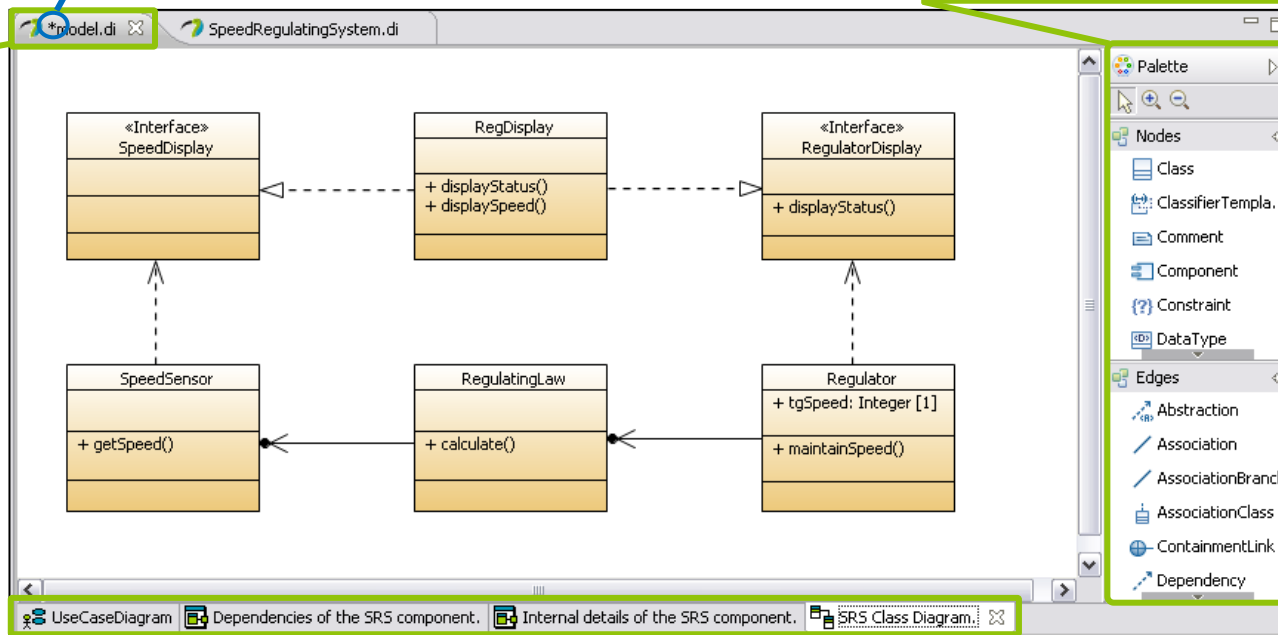Editor tab: within one editor tabs, several diagrams may be open.

Diagram tabs: each tab holds for one open diagram (e.g., 4 diagrams are open).

EDITORS & DIAGRAMS: GENERICS ON PAPYRUS EDITORS

- **Sash editor facilities**
  - Enable organizing various diagram editors within one model editor tab.
  - Scenario:
    - Select the diagram,
    - Click on its tab,
   - Drag&drop it on the place you want to show it.
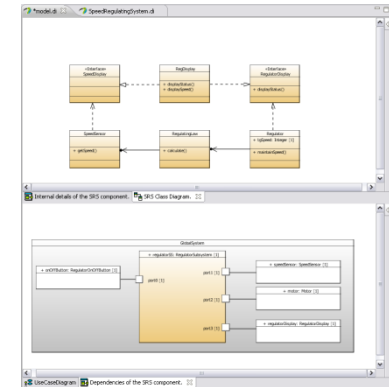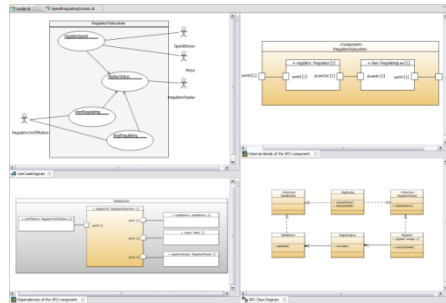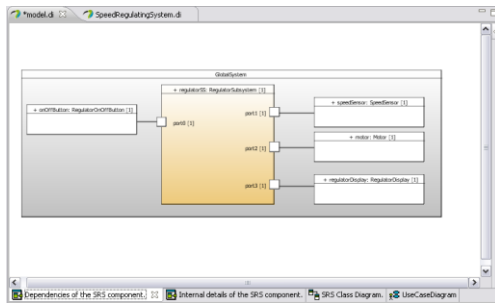
- **Graphical editors are made of two element kinds**
  - Nodes
    - E.g., Class, Lifeline, State.
  - Edges
   - Associations, Message, Transitions.

EDITORS USAGE: CREATING NODES

- **Using the palette**
  - Scenario 1:
    - Within the palette, click the kind of element to create.
    - Click within the diagram editor frame where you want to create the model element.
    - Enter a name and press Return.

Name of the element to create + ENTER
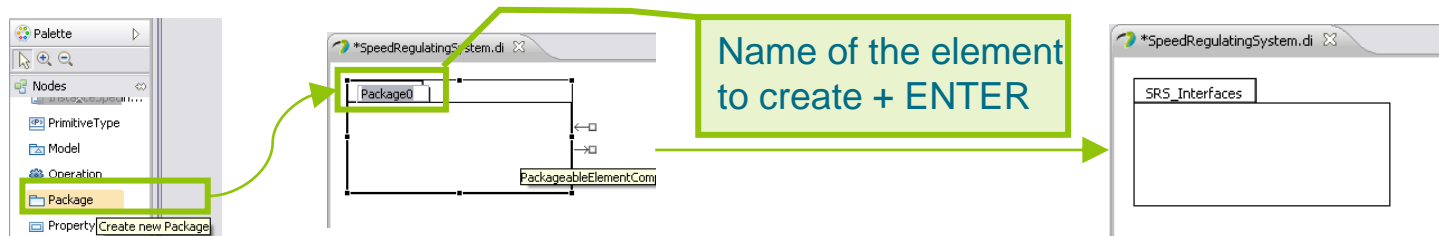
  - Scenario 2 (for creating several model elements):
    - Within the palette, double-click the kind of element to create as many time as you want to create model elements.
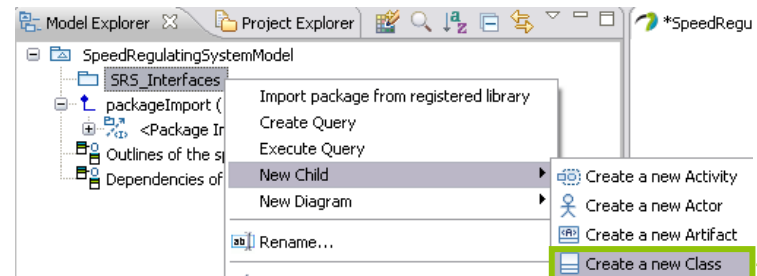

Double-click
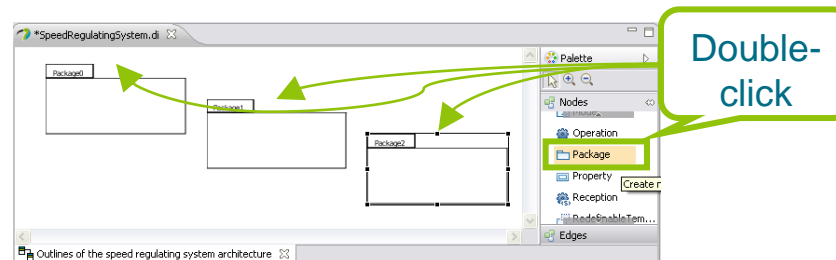
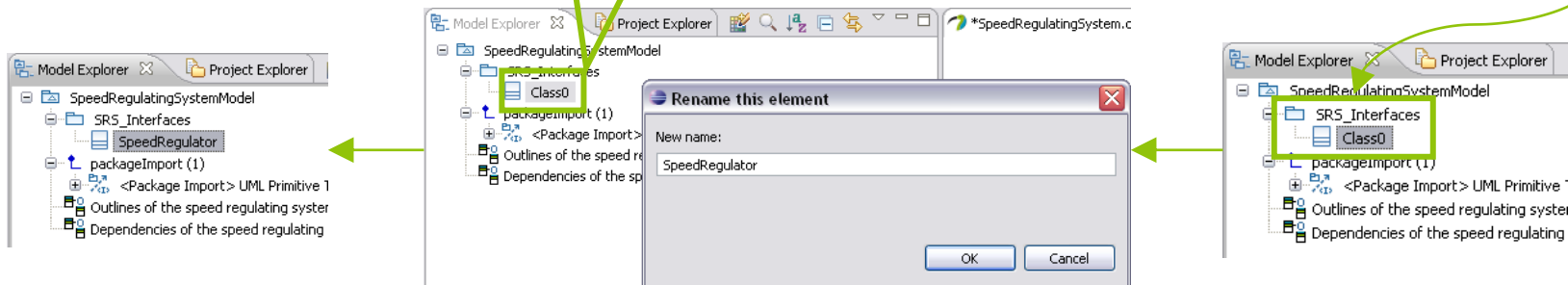# EDITORS USAGE: CREATING NODES

- **Using the model explorer**
  - Scenario:
    - Within the model explorer, right-click on the model element that will contain the element to create.
    - Select New Child and then select the kind of model element to create.
    - To rename the created element, select it and either press F2 or right-click and select Rename.
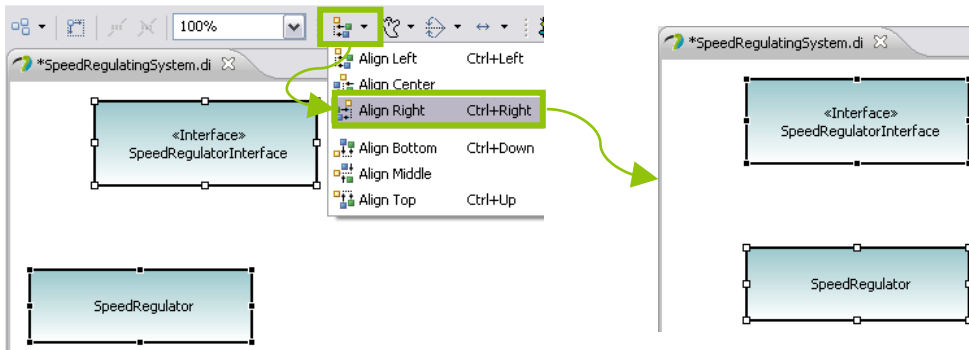

F2 for renaming

EDITOR USAGE: GRAPHICAL ALIGNMENTS OF ELEMENTS

- **Aligning node elements**
  - Scenario 1:
    - Select the nodes to align,
    - In the tool bar, select the button and then select one available alignment policy.

It is the last selected element that is used as reference position!
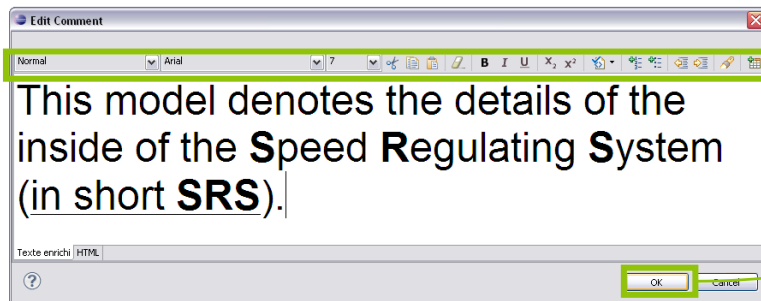
  - Scenario 2:
    - Select the nodes to align,
    - Then, hit keys Ctrl + Arrow (←,↑,→, or ↓).

EDITOR USAGE: ADDING A COMMENT

- **Adding a new Comment**
  - Scenario:
    - Add an Comment node on the diagram,
    - Type your comment using the enriched textual editor.
    - Add the links between the new Comment and the elements being element.
    - For that purpose, let's use the tool "Link" in the Palette, and draw a link between the created Comment and each element being commented.


Possible to format the text of the comment to add in the diagram!
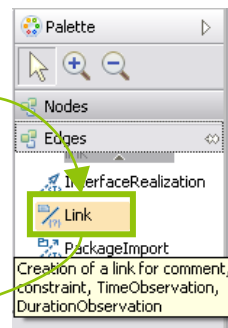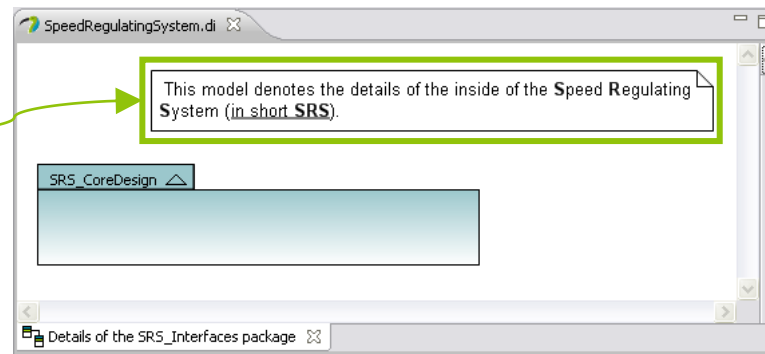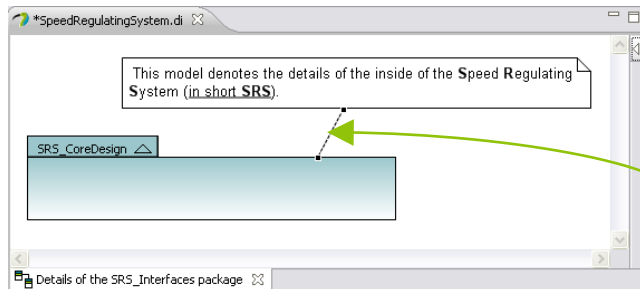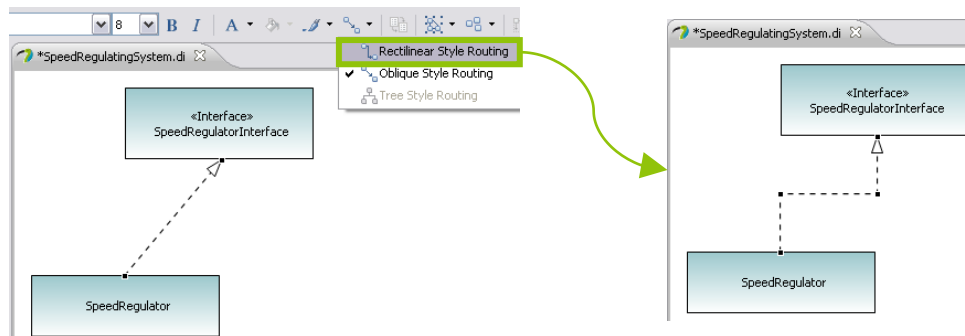
EDITOR USAGE: CREATING EDGES

- Scenario 1:
  - Within the palette, click the kind of link to create.
  - Within the diagram editor frame, drag and drop the link from its source to its target.

- Scenario 2:
  - Within the diagram editor frame, select both source and target elements.
  - Next, within the palette, double-click on the edge kind you want to create.
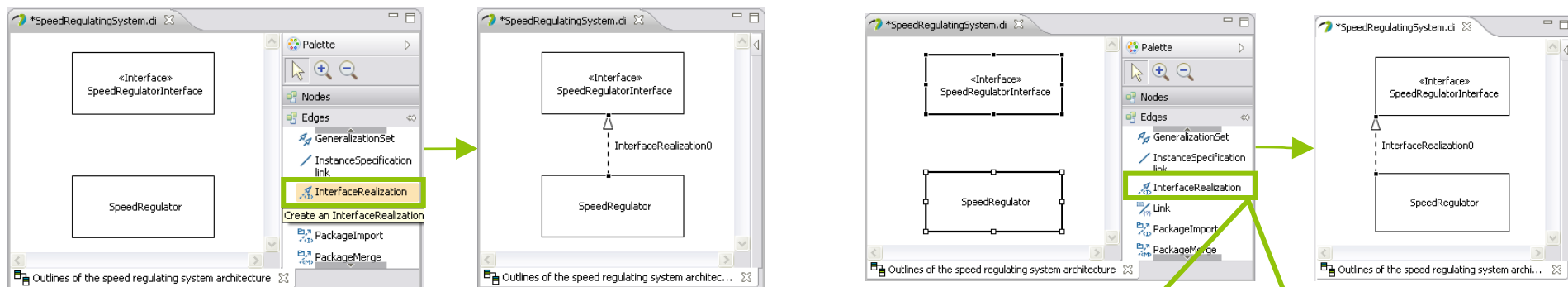
Once elements are selected, double-click on the edge kind to create.
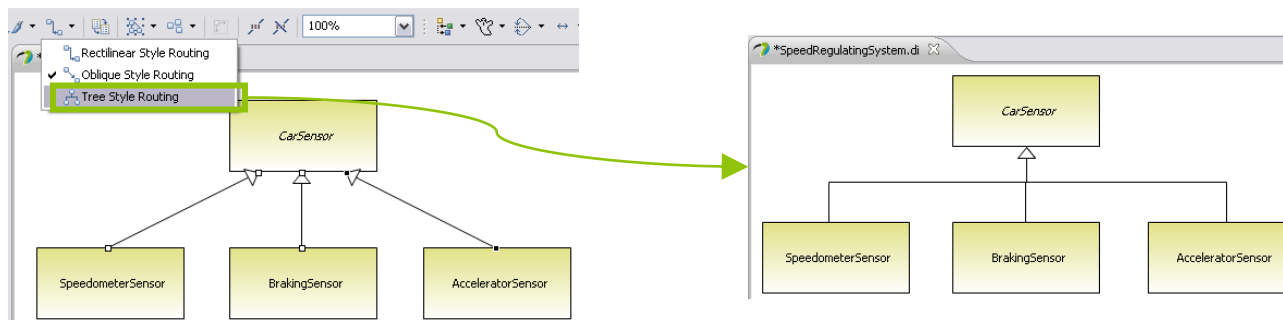
EDITOR USAGE: ROUTING EDGE POLICIES

- **Oblique versus rectilinear routing policies for edges**
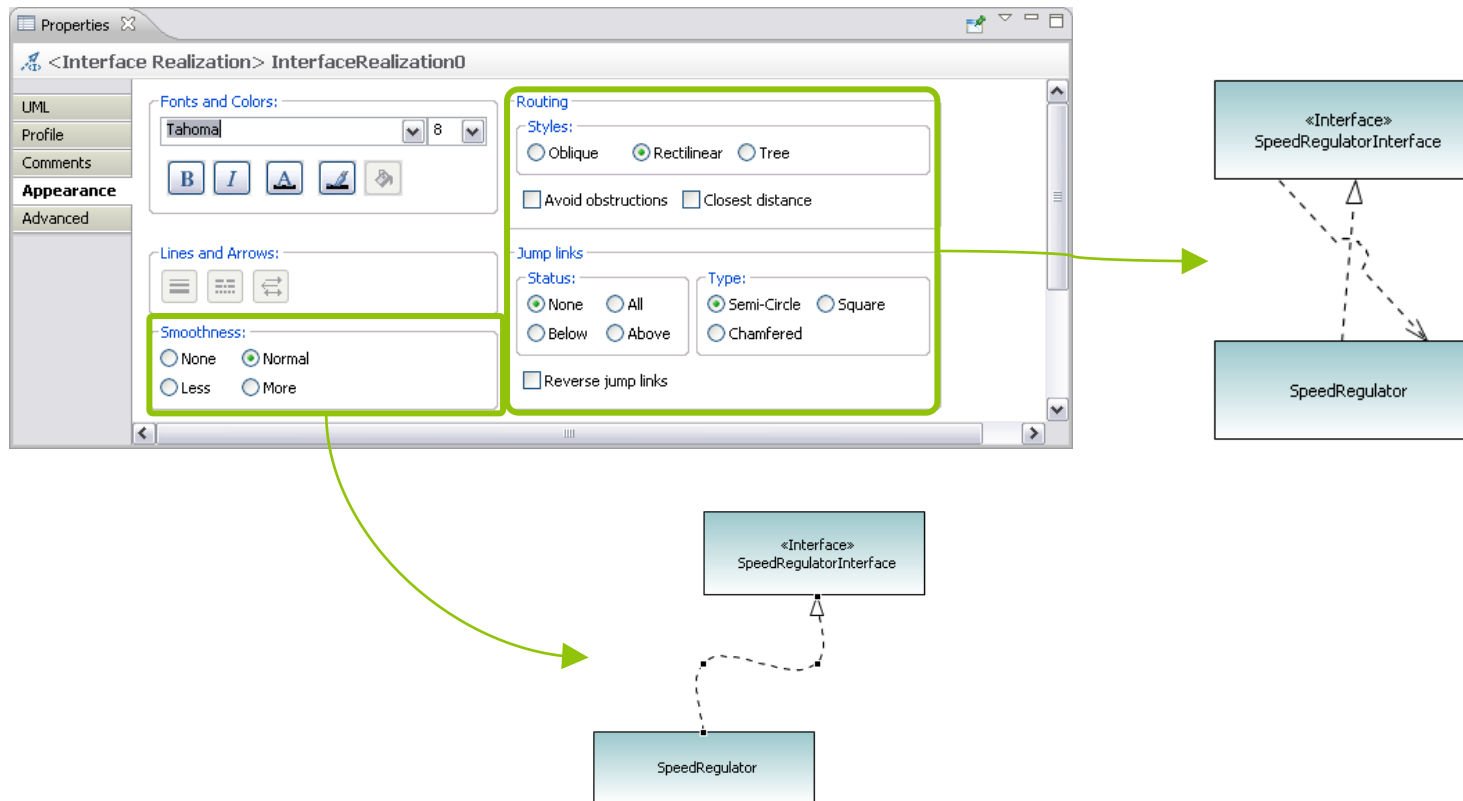

- **Using tree style routing**
  - Scenario:
    - Select the edges to route and apply tree-style routing policy.

EDITOR USAGE: ROUTING EDGE POLICIES

- **Possible parameterizations of routing policies within the Appearance tab of the property view:**

HELP LINKS

Help links related to SysML

- **SysML Norm :**
  - Papyrus supported, 1.2 : http://www.omg.org/spec/SysML/1.2/
  - New version, 1.3 : http://www.omg.org/spec/SysML/1.3/

- **SysML tutorial :**
  - Official : http://www.omgsysml.org/INCOSE-OMGSysML-Tutorial-Final-090901.pdf

- **If needed, a formation session dedicated to SysML and/or Papyrus may be held at CEA (France) Within WP3 or WP6**

Thanks!

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