IDCM – MODELING GUIDE

(DOCUMENTATION FROM HTTPS://IDCM.WP.MINES-TELECOM.FR)

Purpose : define a methodology to create UML models under TopCased 4.3 environment that can be analysed with ICDM

Steps:

1. create a **project (main package)**
2. create component **interfaces (main packages)**
3. create **Receive Operation Event** for each operation
4. create **packages** (1 for each component and its evolution)
5. create **components** (external view) and create **ports**
6. **associate interfaces** to components through **ports**

Complete the description of components (internal view)

7. Atomic Compoennt : associate a **state machine**

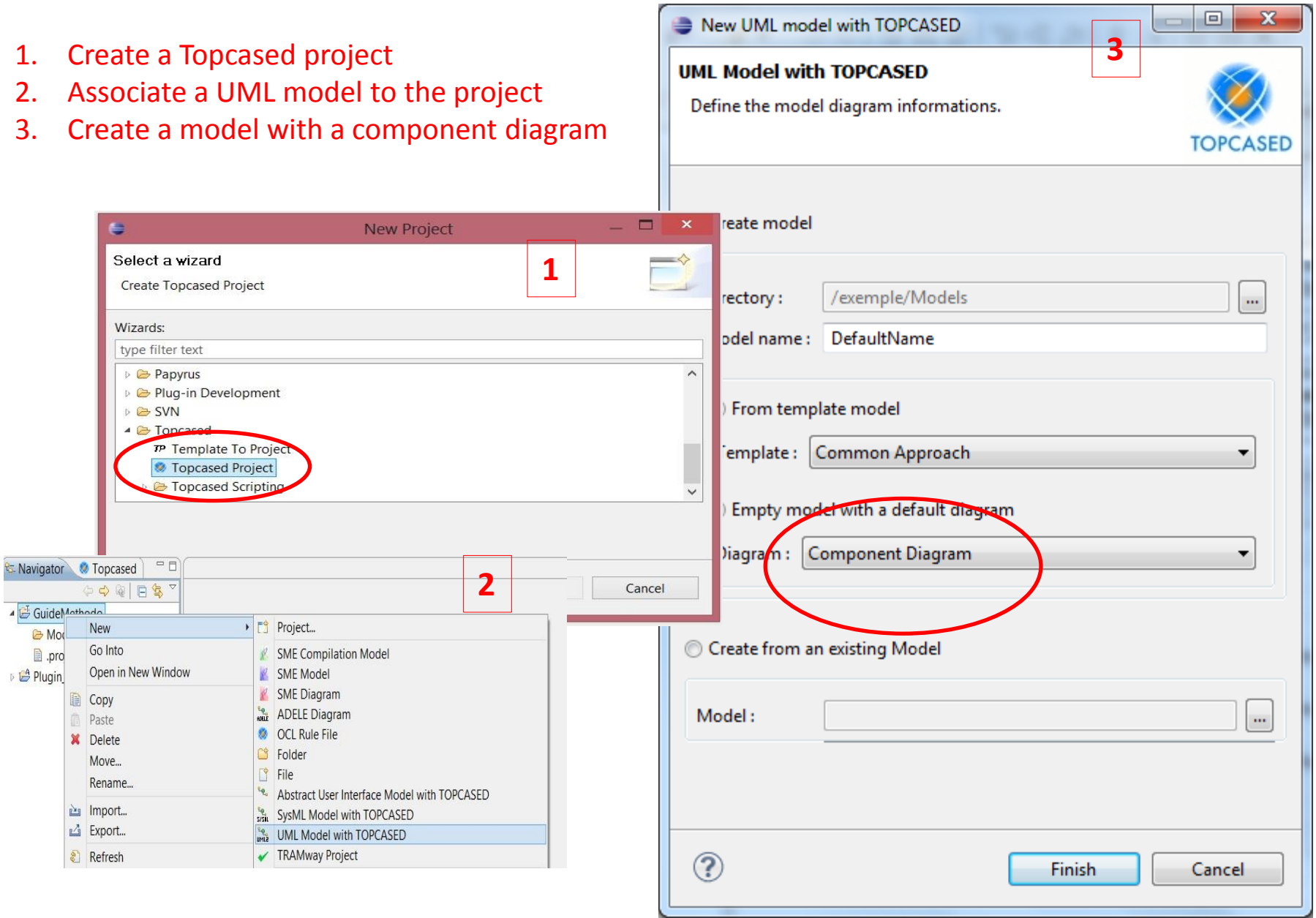
or

8. Composite Component : associate of **composite diagram**

Overview of a project

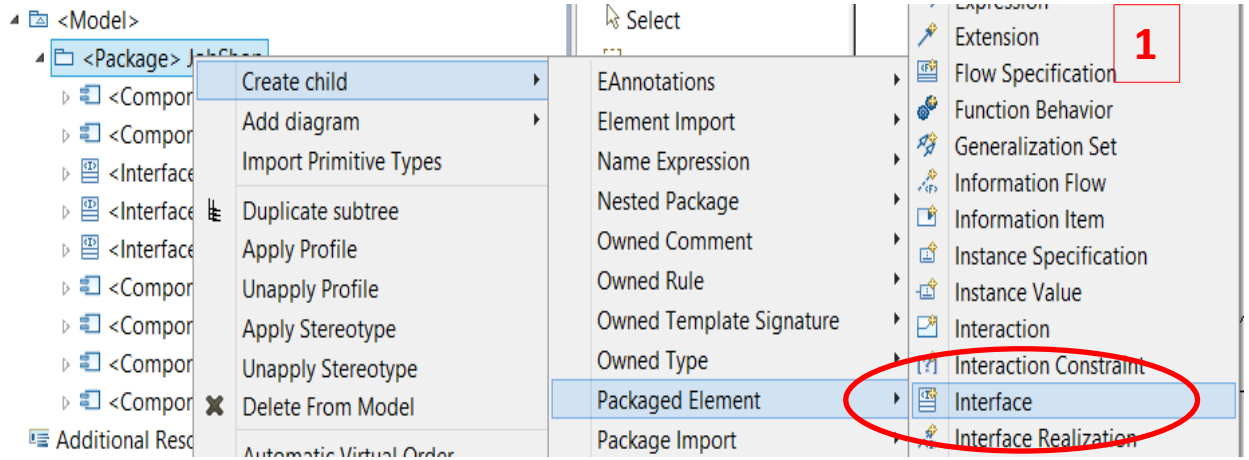
Creation of a UML project under Topcased

1. Create a Topcased project
2. Associate a UML model to the project
3. Create a model with a component diagram

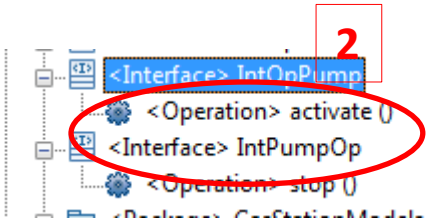


Creation of Interfaces

1. Create interfaces
(package or model >> create child >> packaged element >> interface)



2. Add operations to the interfaces
(interface >> create child >> behaviour >> own operation)

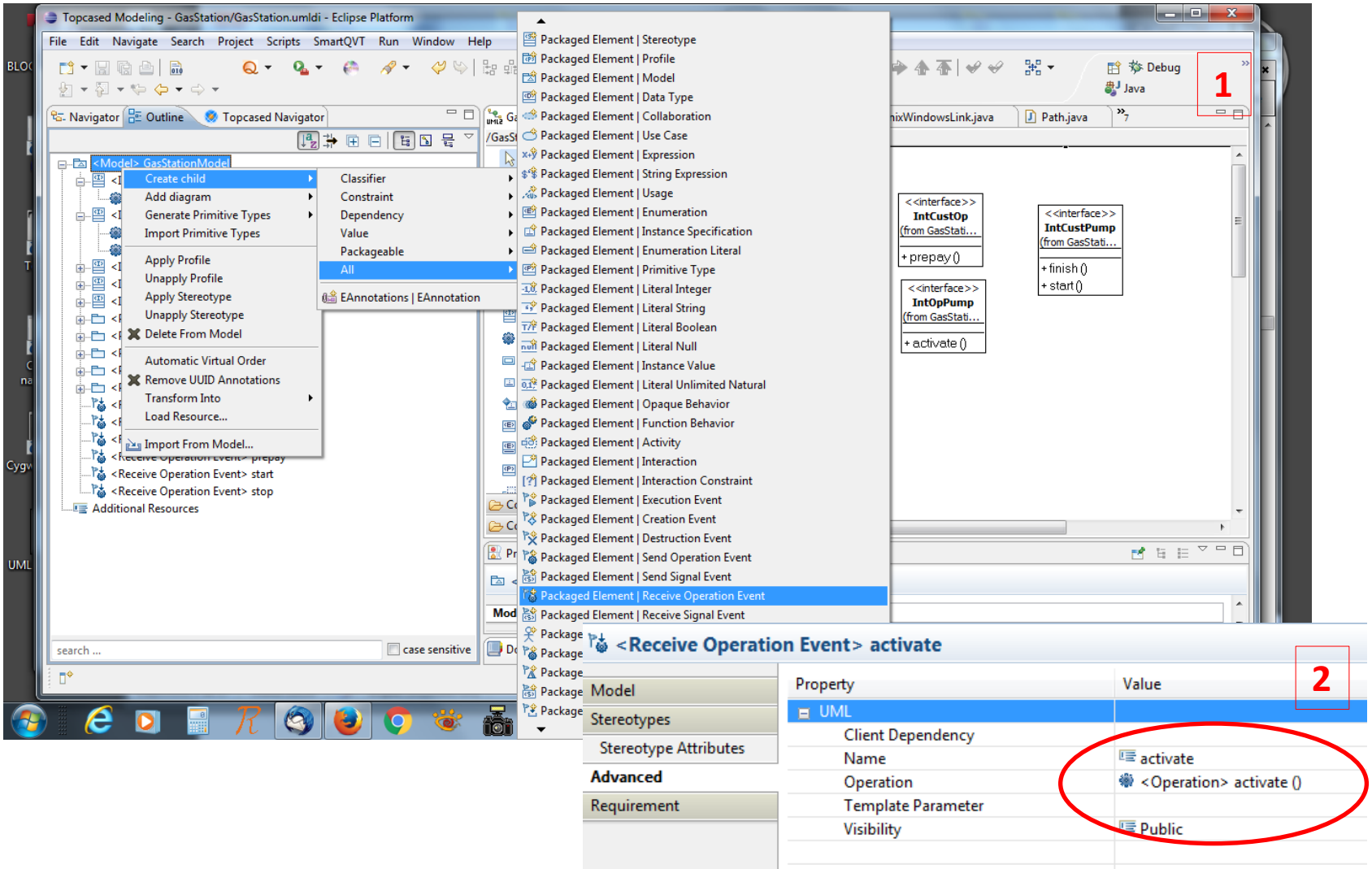


Creation of « Receive Operation Events »
(used in Trigger definitions)

1. Add receive events

(Package or Model >> create child >> All >> packaged element >> receive operation event)

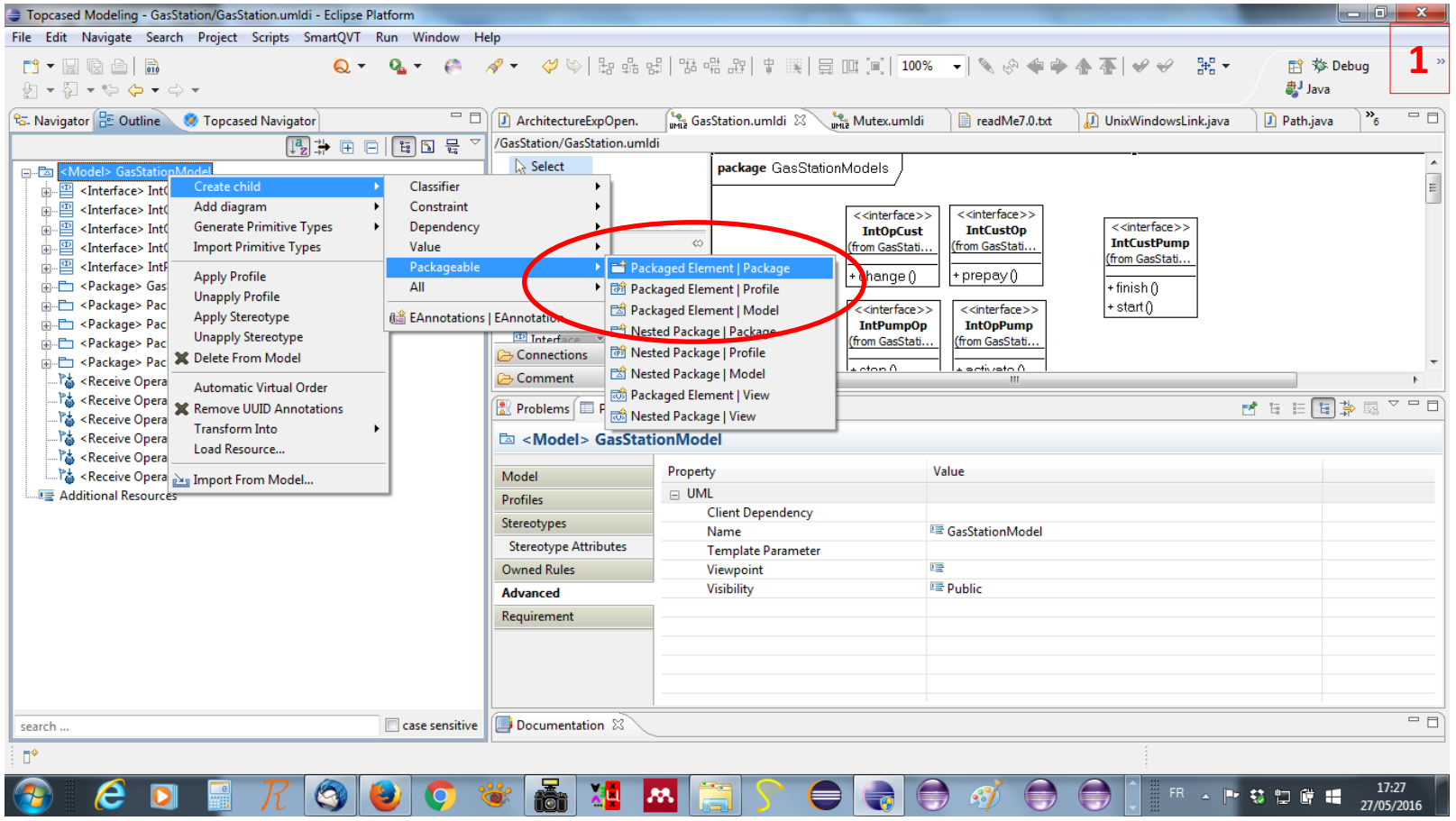
2. Associate an operation defined in one interface



Creation of Packages
(for better oragnisation, use 1 package for 1 component development)

1. Add Package

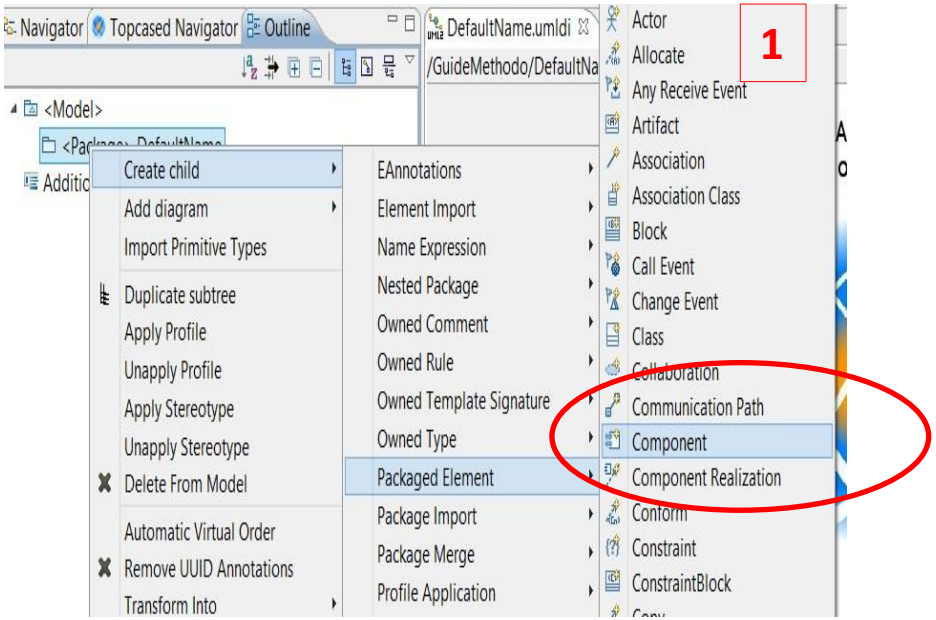
(Package or Model >> Create child >> Packageable >> Packaged Element | Package)

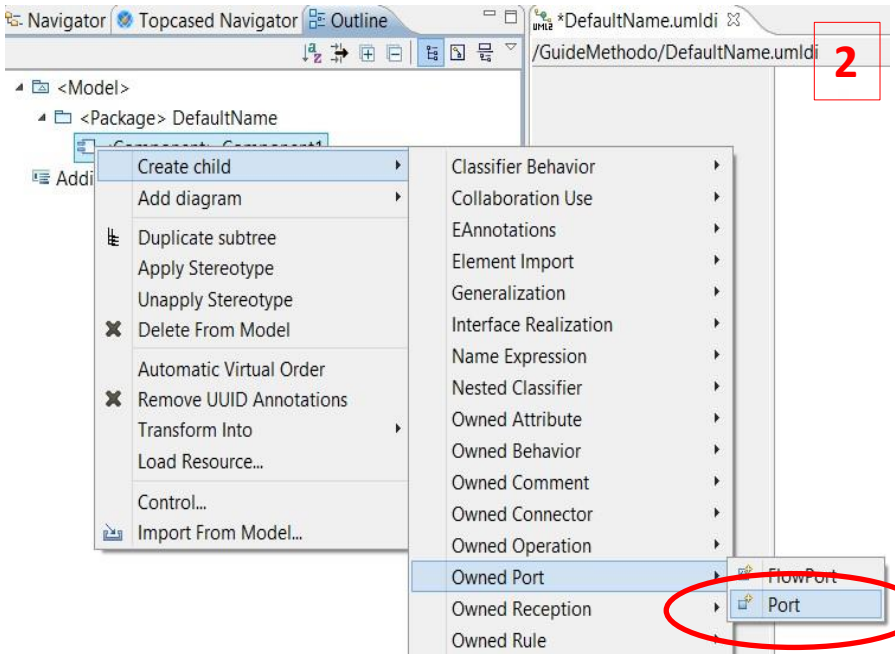


Creation of Components

1. Create components
(Package >> Create child >> Packaged Element >> Component)

2. Create ports
(Component >> Create child >> Owned Port >> Port)
Ports are useful for atomic component definition (Trigger and Effect definitions),
and for composite compoennt (assembly definitions)





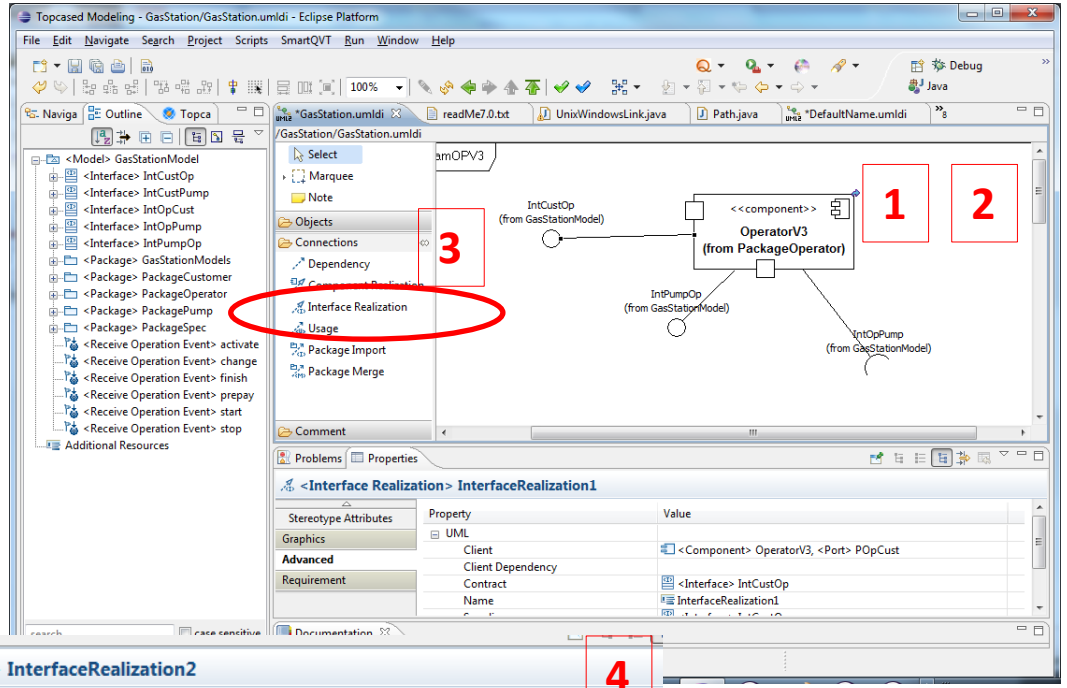
Creation of associations between components and their interfaces (requires the use of a Component Diagram)

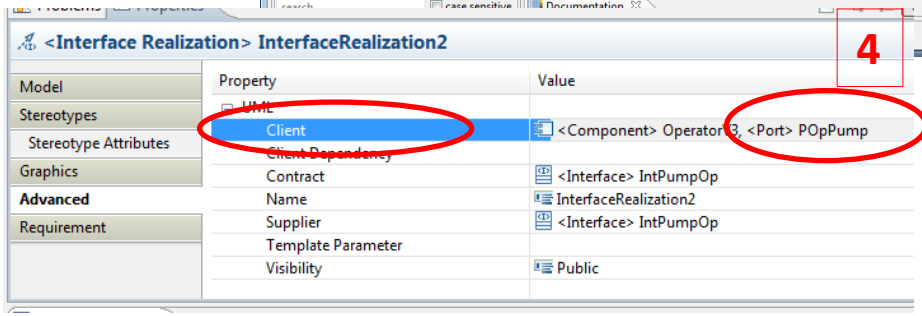
1. Create a component diagram –
you may use the default component but better to define at least one component diagram per package (package >> add diagram >> component diagram)

2. Drag and drop a component and its interfaces

3.Trace connections of type
Interface realization or
Usage
between the component and an interface

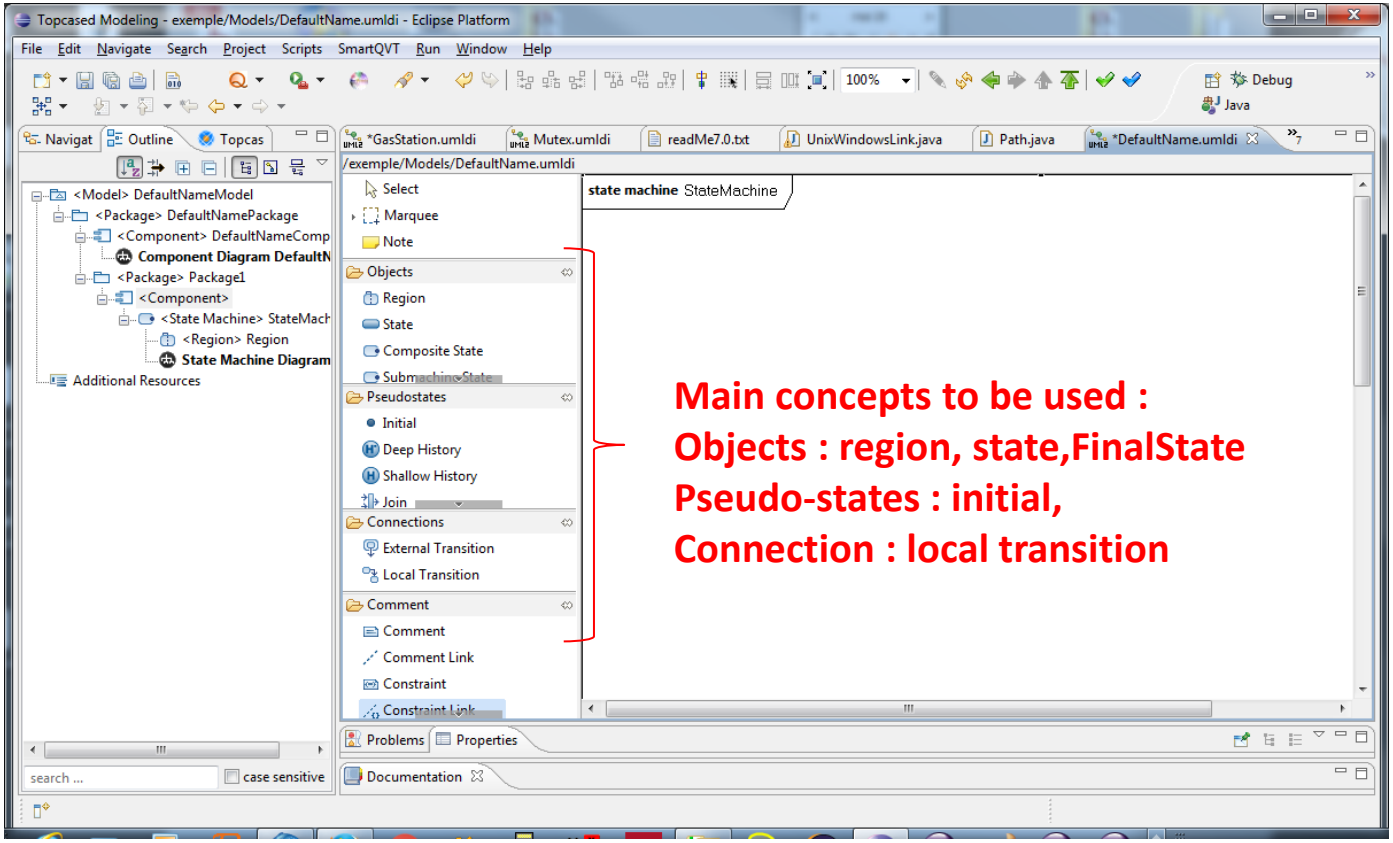
4. Associate a port to the connection:
Select the connection
Add a port of the component as a Client





Associate a State Machine to a component

1. Create a state machine
(Component >> add diagram >> state machine diagram)



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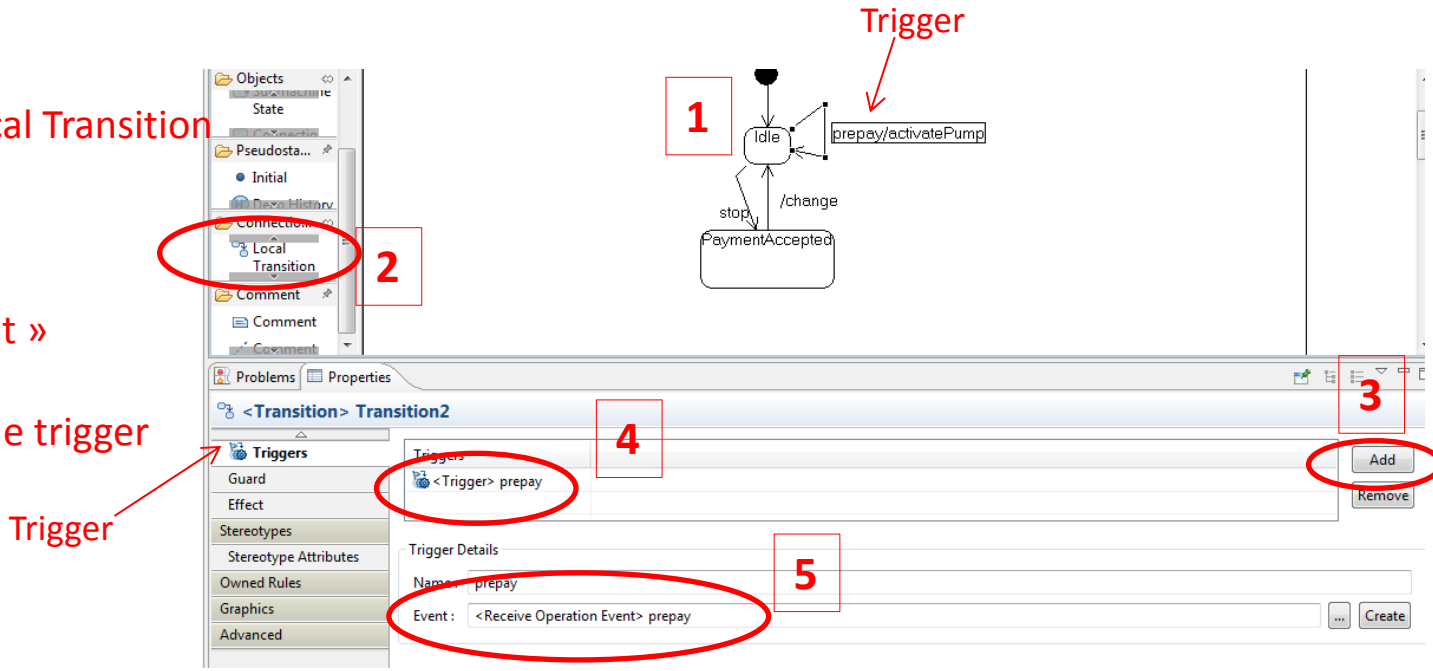
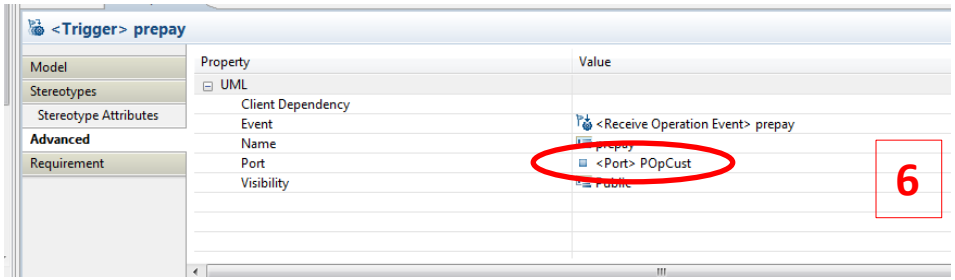
Creation of a Transition with a Trigger

1. Create States
2. Create or select a Local Transition
3. Add a trigger
4. Select the Trigger
5. Associate a « Receive Operation Event » created in step 3
6. Associate a port to the trigger





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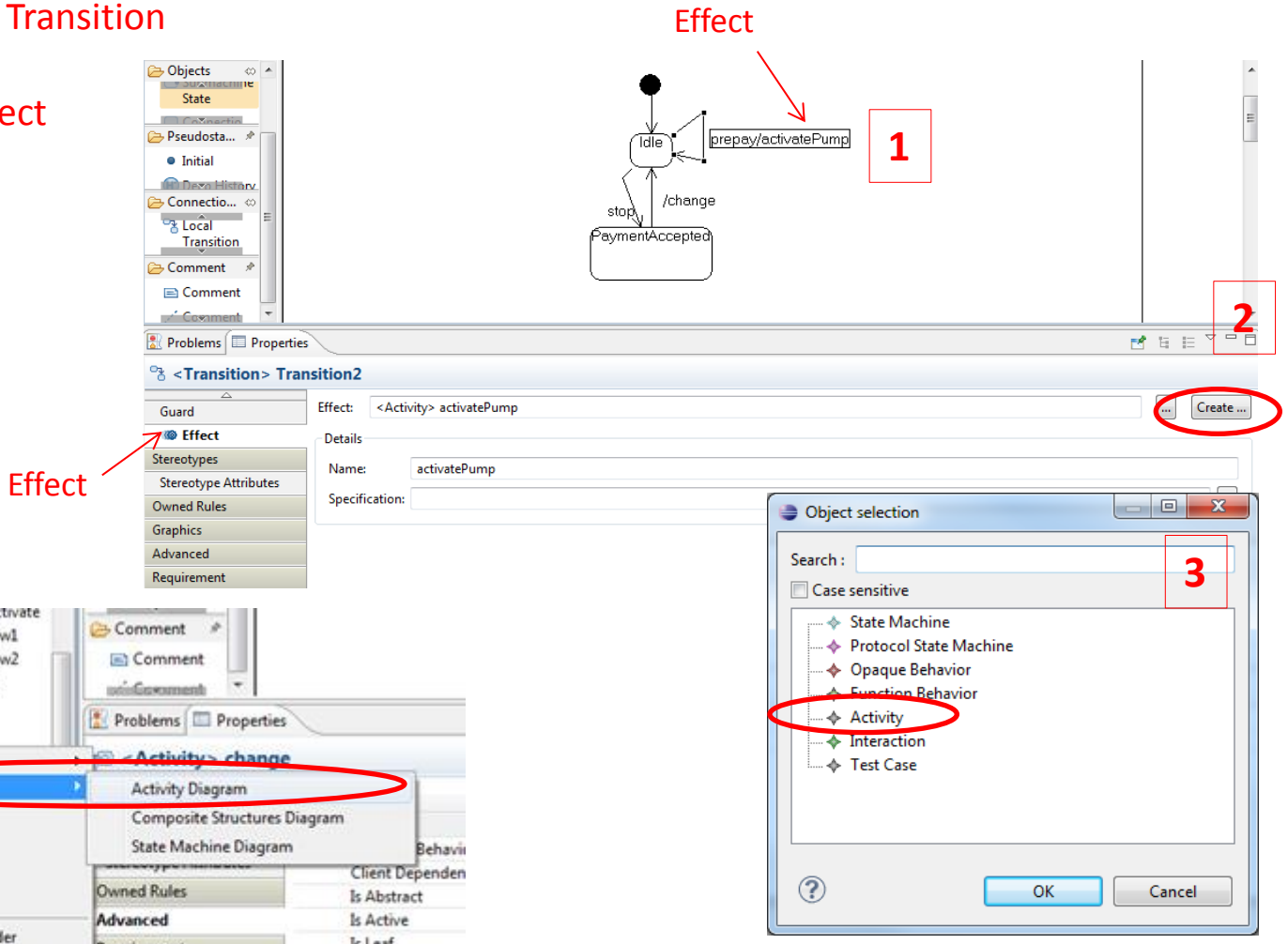
Creation of a Transition with an Effect (requires Activity Diagram creation)

1. Create or select a Local Transition
2. Create an Effect
3. Choose Activity type effect
4. Select the activity and add Activity Diagram

(see slide 11)



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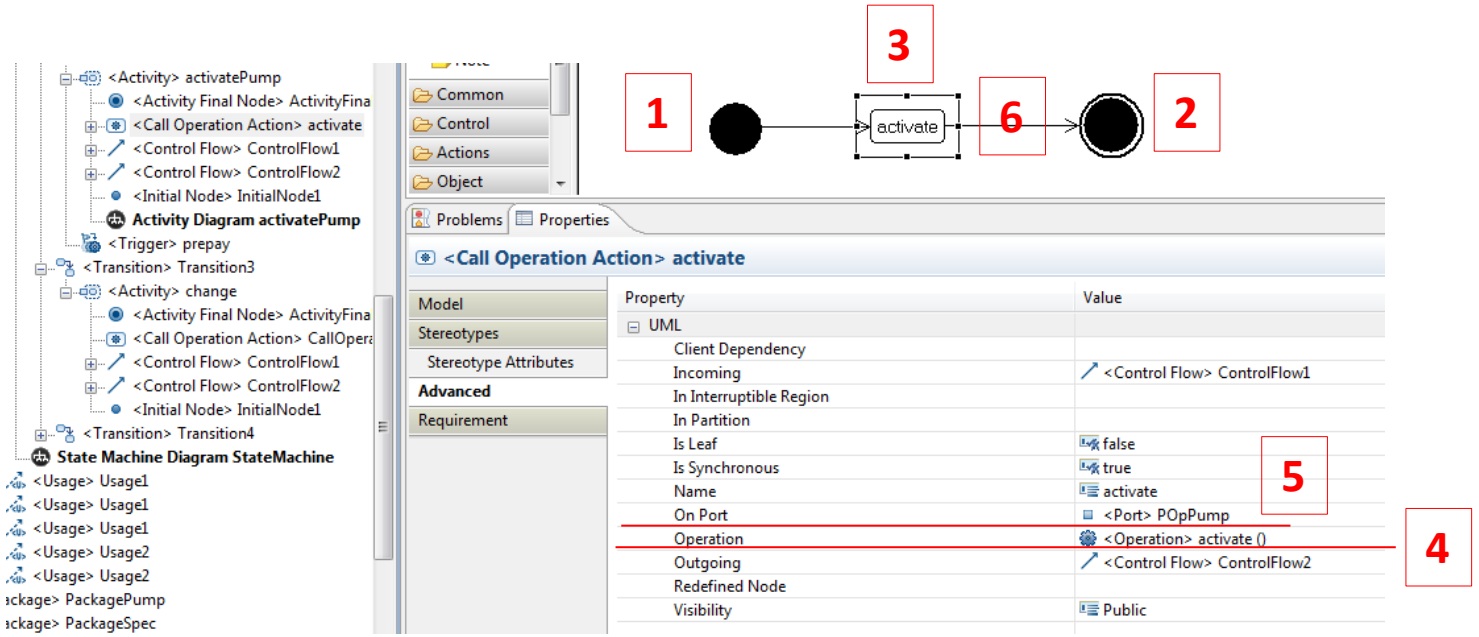
Activity Diagram creation

1. Create an Initial Node (Menu Common Menu)
2. Create a Final Node (Menu Common Menu)
3. Create a Call Operation Action (Menu Actions)
4. Associate an Operation (internal or from a required interfaces)
5. Associate a Port if the operations is defined in a required interface
6. Create Connections of type Control Flows (Menu Connections)



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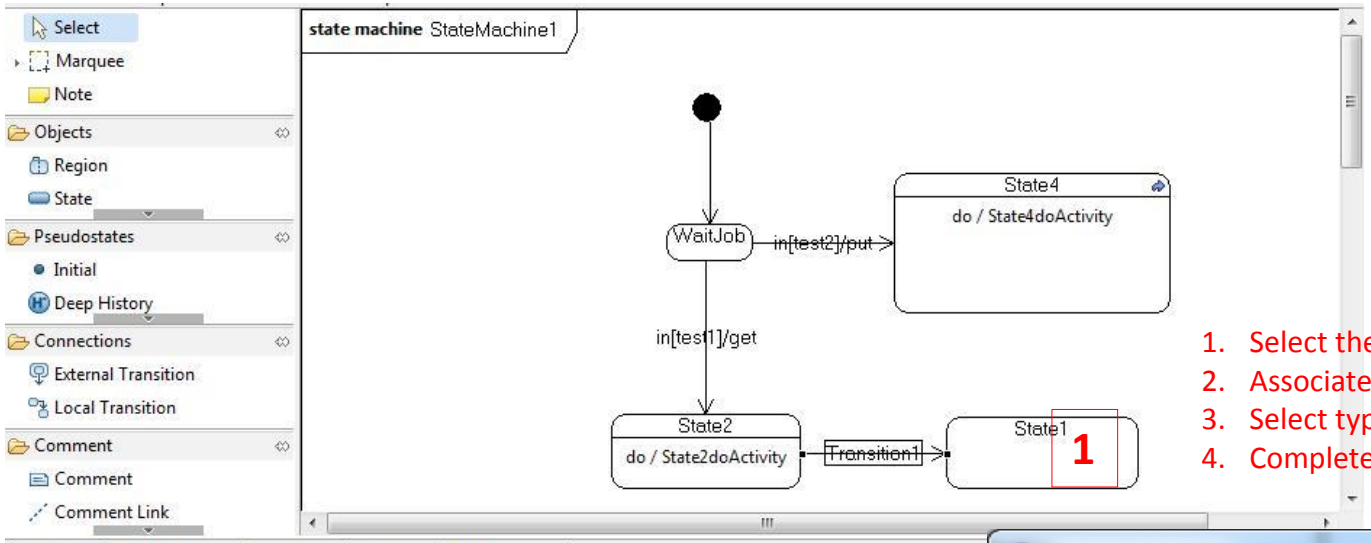
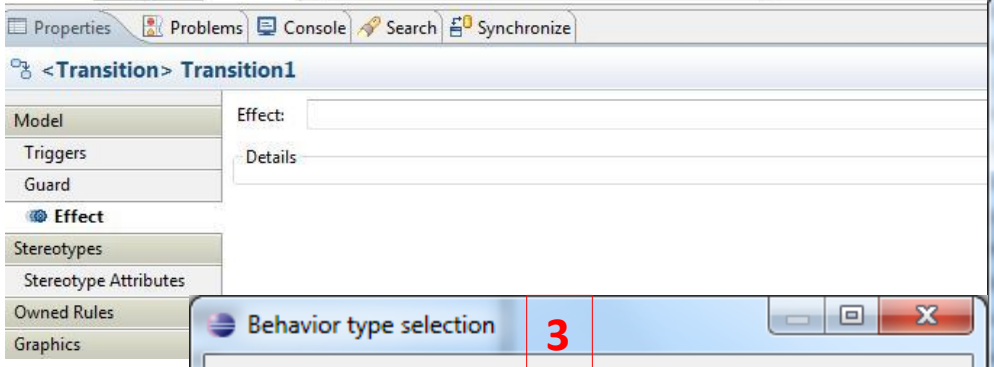
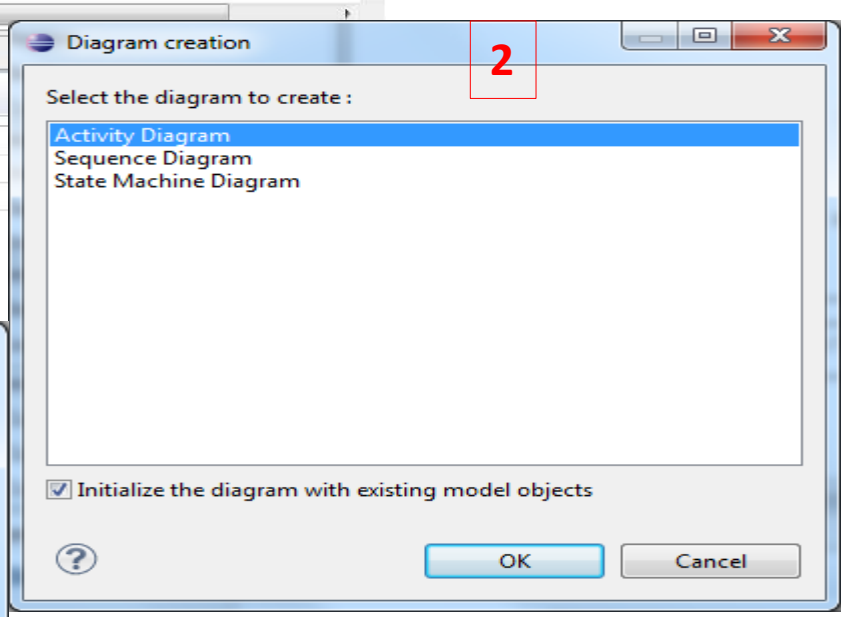
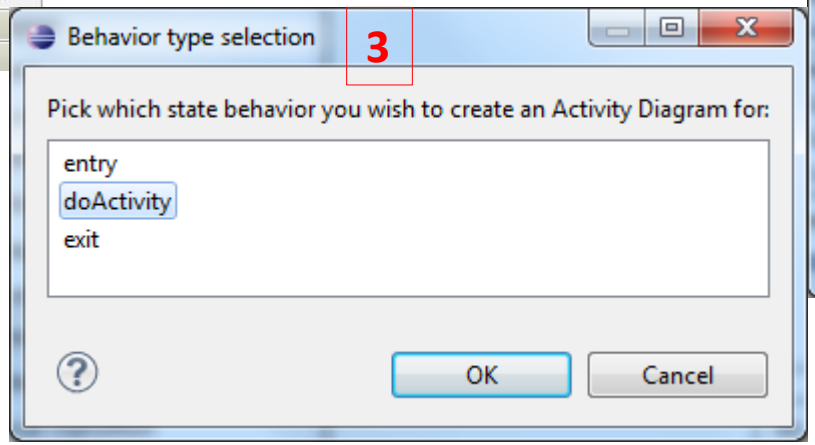
Creation of State with an Activity (required Activity Diagram creation)



1. Select the State
2. Associate an Activity Diagram
3. Select type doActivity
4. Complete the diagram (explained in slide 11)



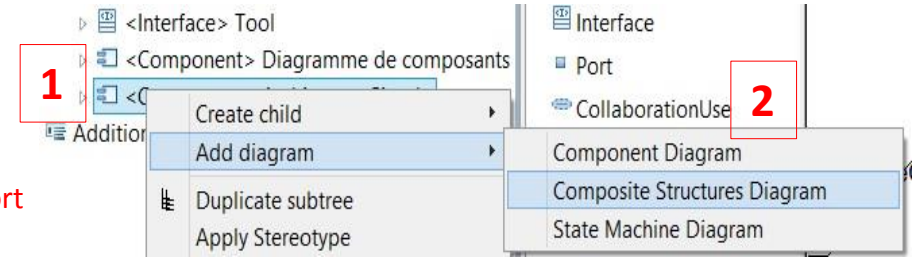


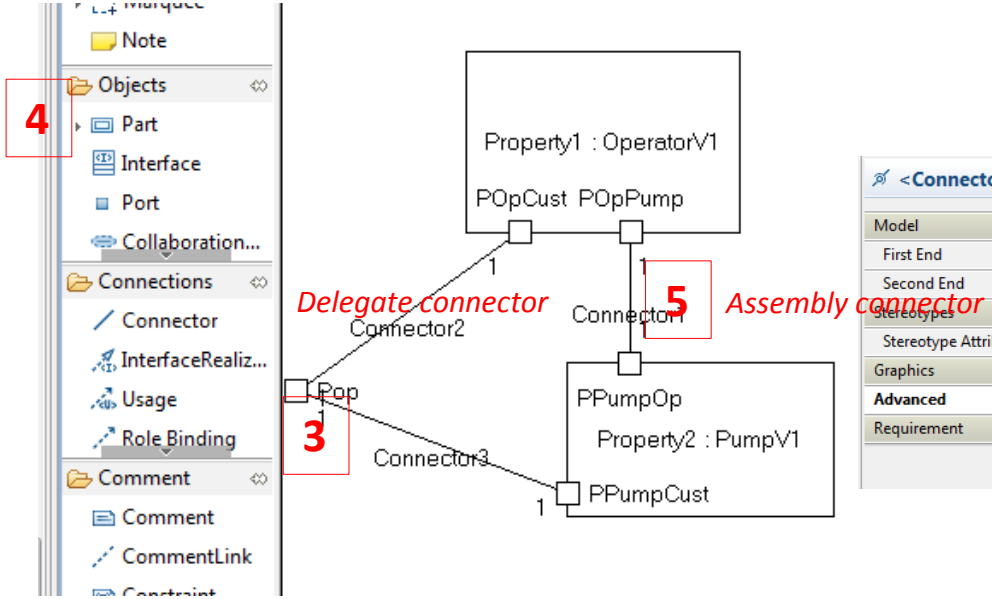


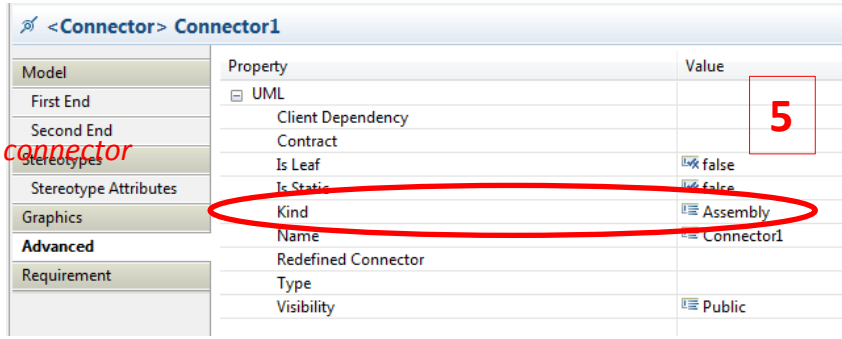
Creation of a Composite Component
(requires Composite Structure Diagram creation)

1. Select the Component (see creation slide 6)
2. Associate a Composite Structure Diagram
3. Drag and Drop Ports (see creation slide 6)
4. Select Parts to associate sub-components
5. Connect Ports using Connectors (Menu Connections)
6. Select the type of the Connector

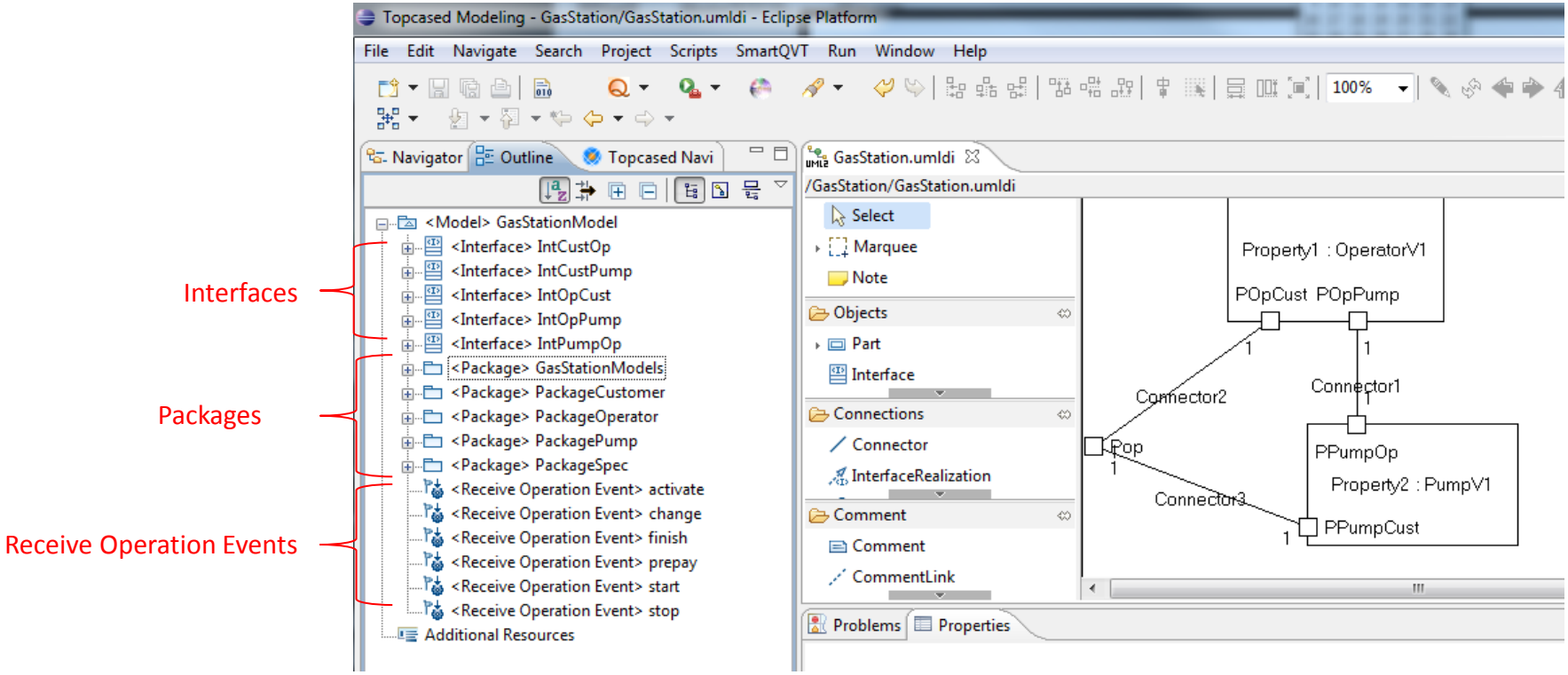
(*assembly* for links of internal Ports, *Delegate* for links with a port of the Composite Component)





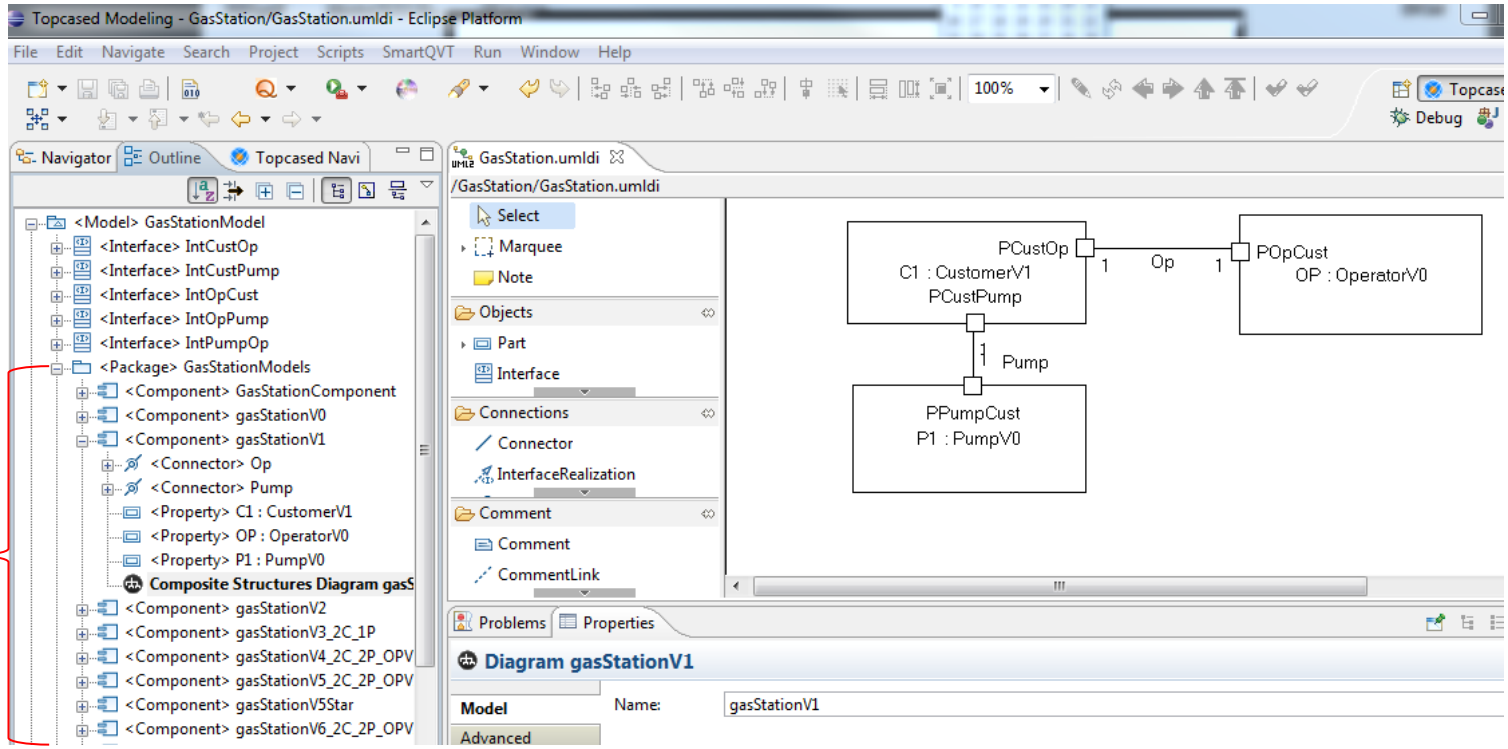


Overview of a Modeling Project



Overview of a Modeling Project

Composite
Component
Package



Overview of a Modeling Project

Atomic Component Package