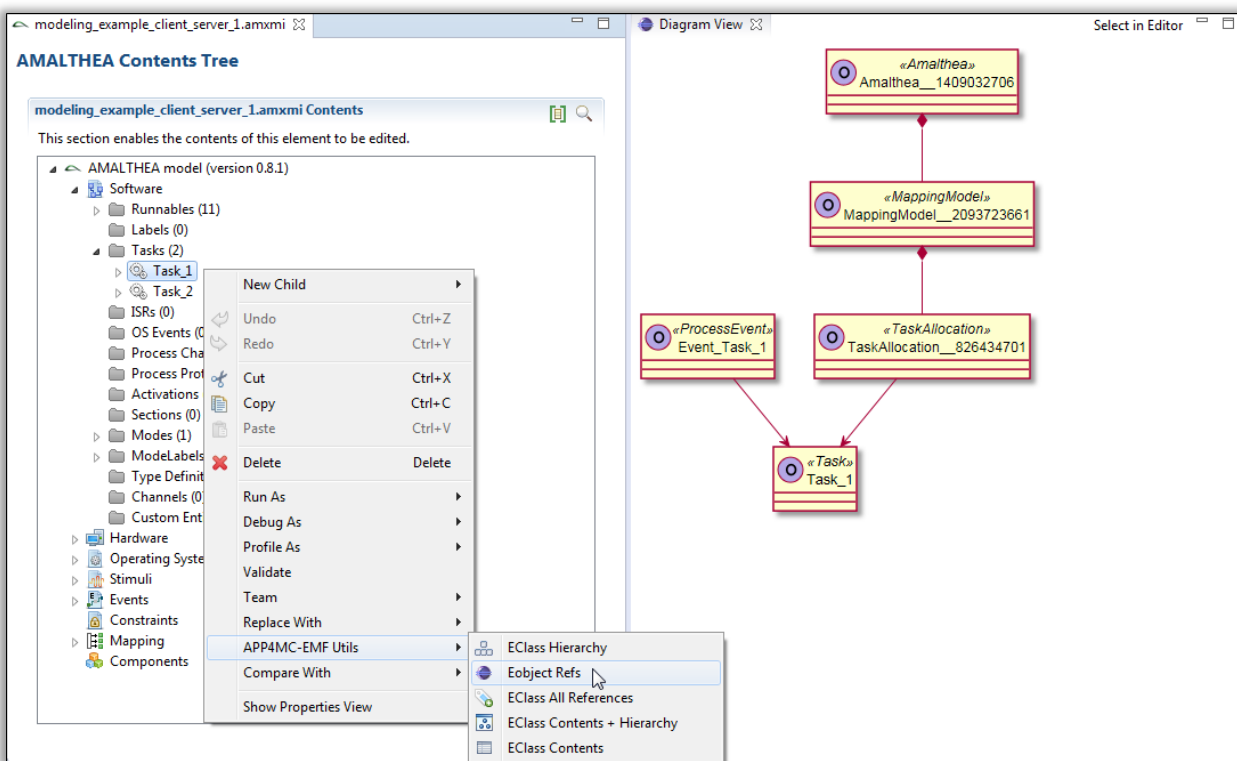


# Understand complex EMF models like an expert

Zakir Meer, Robert Bosch GmbH  
Harald Mackamul, Robert Bosch GmbH

# Model Explorer

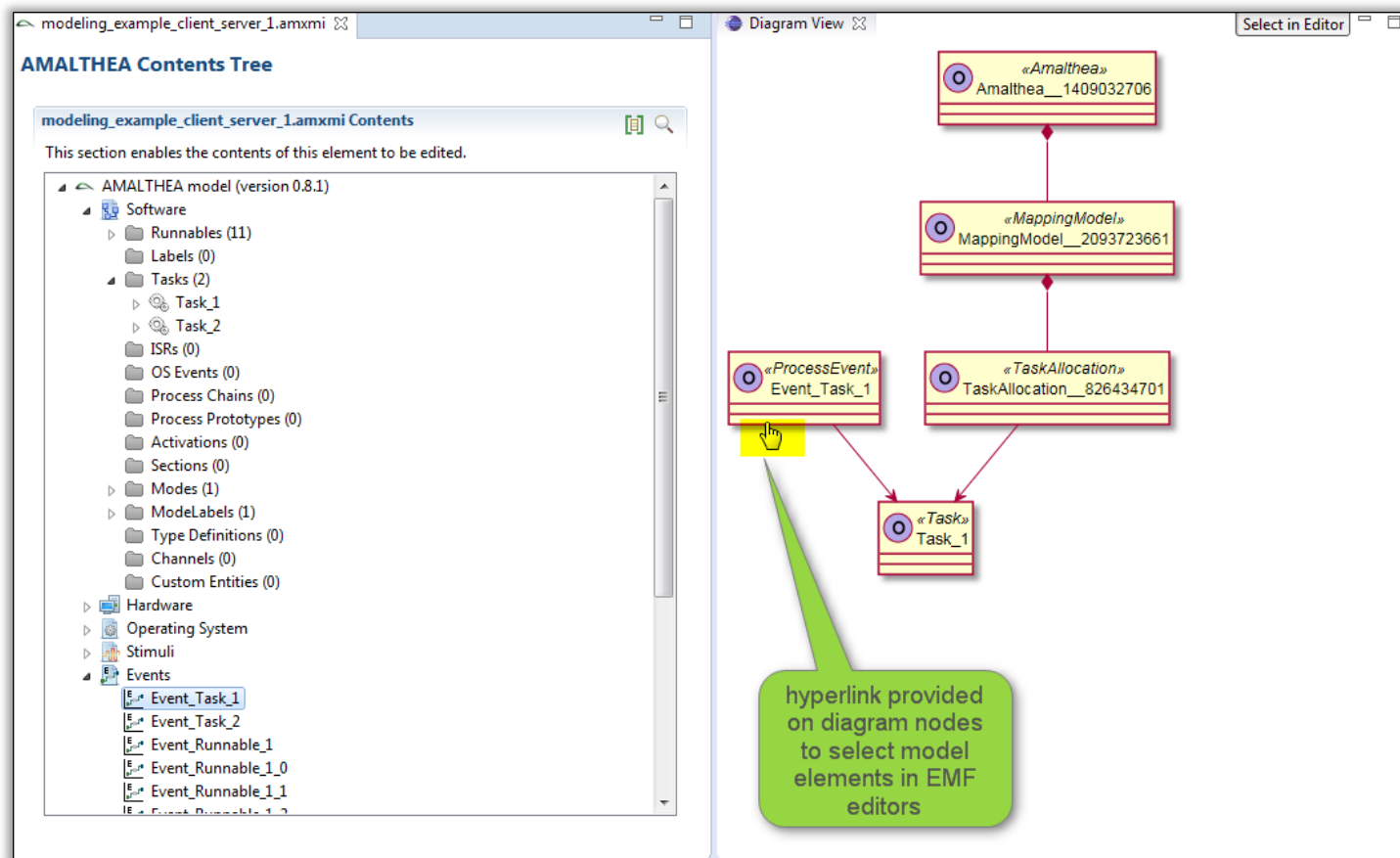
## Model Explorer – Eobject references in model scope (usage)



On selection of any EObject, it is possible generically to find its usage across the model scope and display the contents in diagram view.

-- On click of element in diagram view, there is a possibility to directly select element in editor

## Model Explorer – select model data in editor



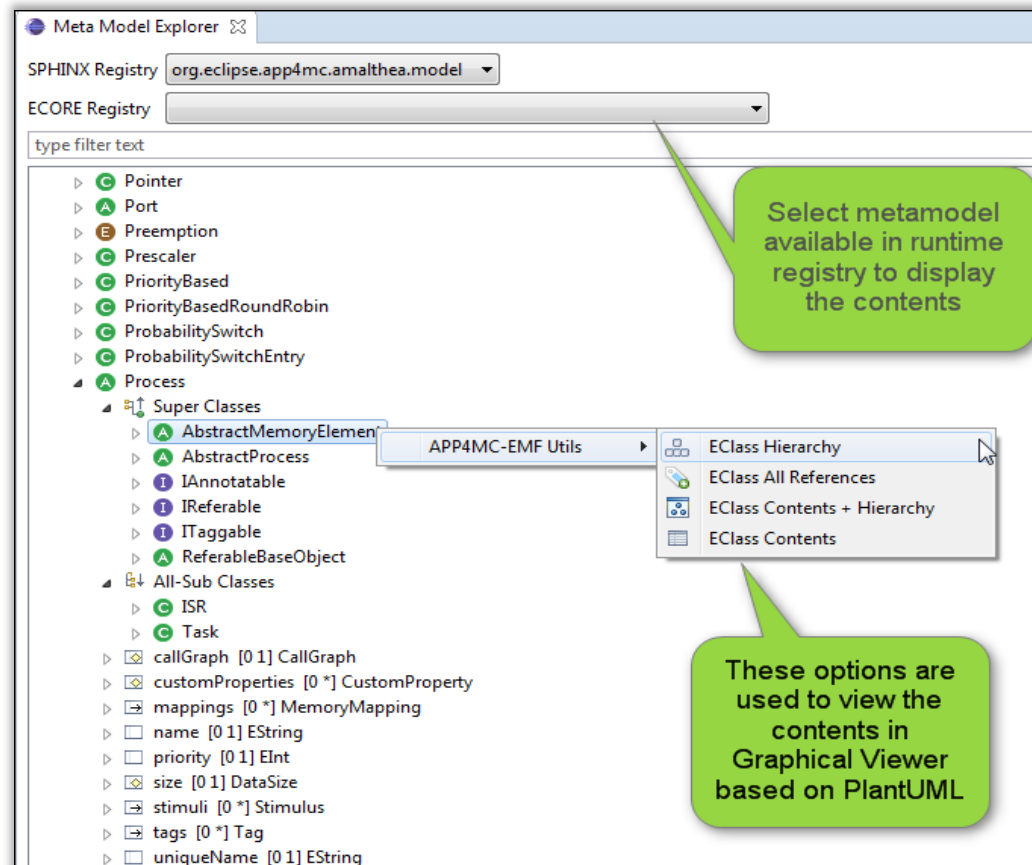
The screenshot displays the AMALTHEA Model Explorer interface. On the left, the 'AMALTHEA Contents Tree' shows a hierarchical view of the model. The 'Events' folder is expanded, and 'Event\_Task\_1' is selected. On the right, the 'Diagram View' shows a UML class diagram with nodes for «Amalthea», «MappingModel», «ProcessEvent», «TaskAllocation», and «Task». A yellow highlight is on the «ProcessEvent» node, and a green callout bubble points to it with the text: 'hyperlink provided on diagram nodes to select model elements in EMF editors'.

# Meta Model Explorer

# Interactive (Meta) Model Explorer

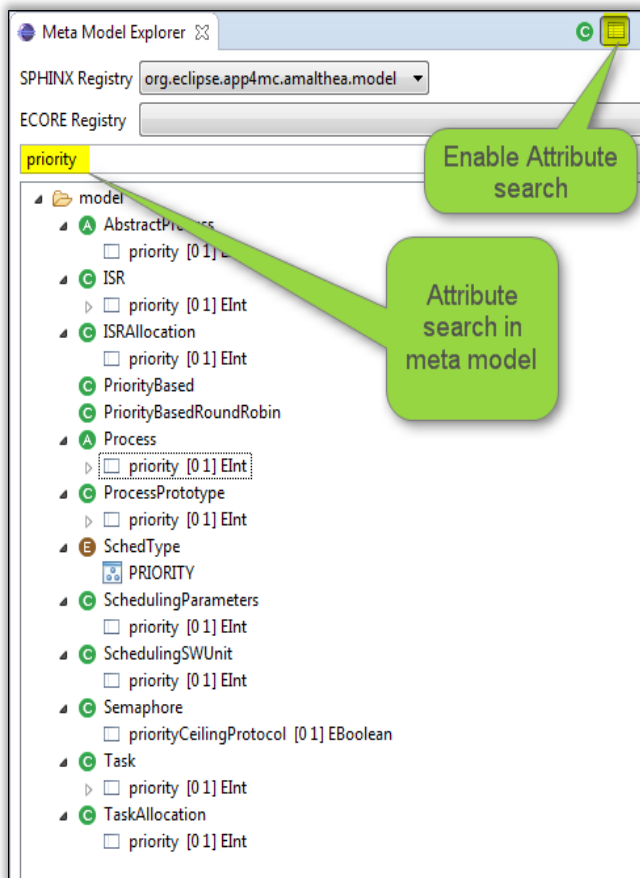
## Meta Model Explorer

Provides possibility to visualize the contents of selected metamodel available in runtime environment



# Interactive (Meta) Model Explorer

## Meta Model Explorer - Filters



Meta Model Explorer

SPHINX Registry: org.eclipse.app4mc.amalthea.model

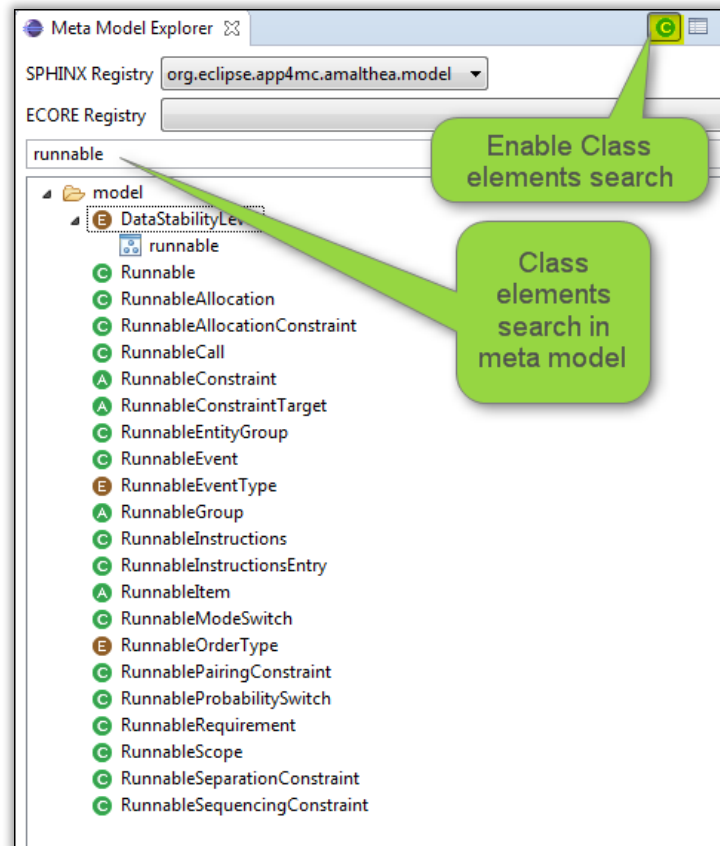
ECORE Registry

priority

- model
  - AbstractProcess
    - priority [0 1] EInt
  - ISR
    - priority [0 1] EInt
  - ISRAllocation
    - priority [0 1] EInt
  - PriorityBased
  - PriorityBasedRoundRobin
  - Process
    - priority [0 1] EInt
  - ProcessPrototype
    - priority [0 1] EInt
  - SchedType
    - PRIORITY
  - SchedulingParameters
    - priority [0 1] EInt
  - SchedulingSWUnit
    - priority [0 1] EInt
  - Semaphore
    - priorityCeilingProtocol [0 1] EBoolean
  - Task
    - priority [0 1] EInt
  - TaskAllocation
    - priority [0 1] EInt

Enable Attribute search

Attribute search in meta model



Meta Model Explorer

SPHINX Registry: org.eclipse.app4mc.amalthea.model

ECORE Registry

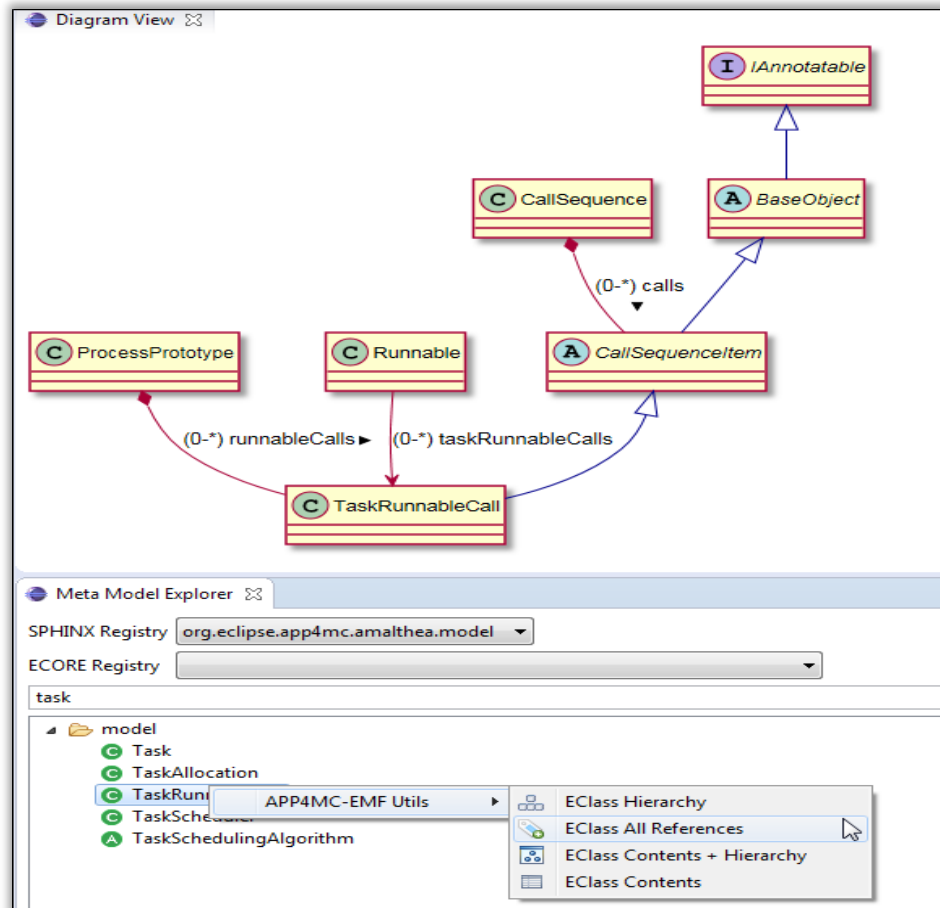
runnable

- model
  - DataStabilityLevel
    - runnable
  - Runnable
  - RunnableAllocation
  - RunnableAllocationConstraint
  - RunnableCall
  - RunnableConstraint
  - RunnableConstraintTarget
  - RunnableEntityGroup
  - RunnableEvent
  - RunnableEventType
  - RunnableGroup
  - RunnableInstructions
  - RunnableInstructionsEntry
  - RunnableItem
  - RunnableModeSwitch
  - RunnableOrderType
  - RunnablePairingConstraint
  - RunnableProbabilitySwitch
  - RunnableRequirement
  - RunnableScope
  - RunnableSeparationConstraint
  - RunnableSequencingConstraint

Enable Class elements search

Class elements search in meta model

## Meta Model Explorer – EClass all references



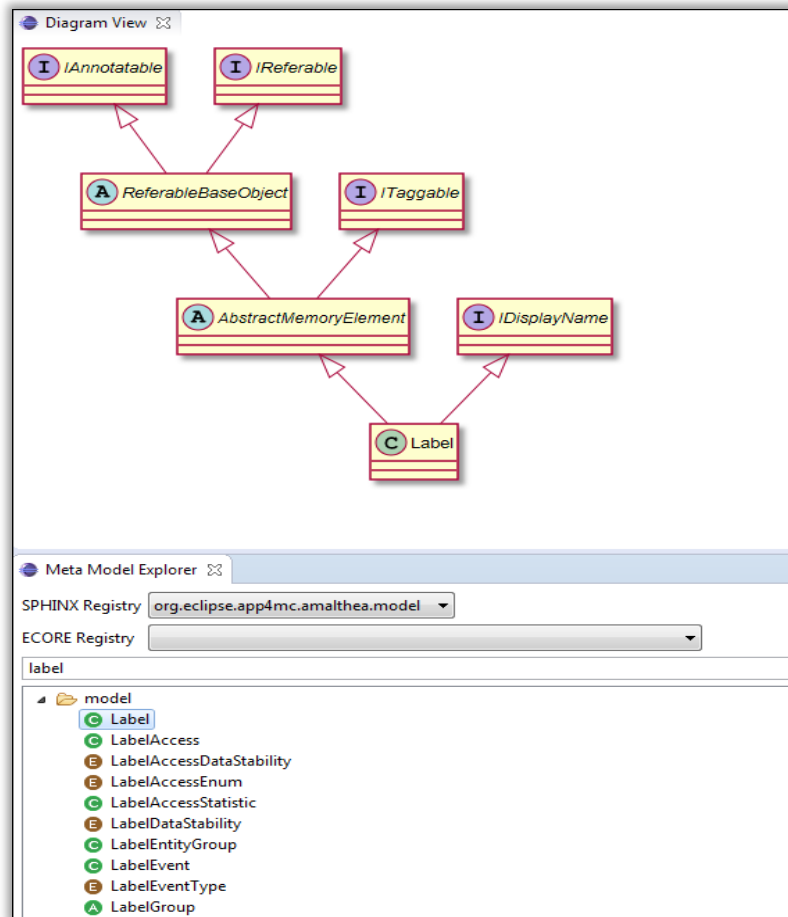
On selection of Eclass it is possible to generate graphical contents which displays the **usage** of Eclass element.

- e.g: In screenshot it displays that -
- Runnable element has a list of TaskRunnableClass (relation is not **containment**)
  - ProcessPrototype element has a list of TaskRunnableClass (relation is **containment**)



# Interactive (Meta) Model Explorer

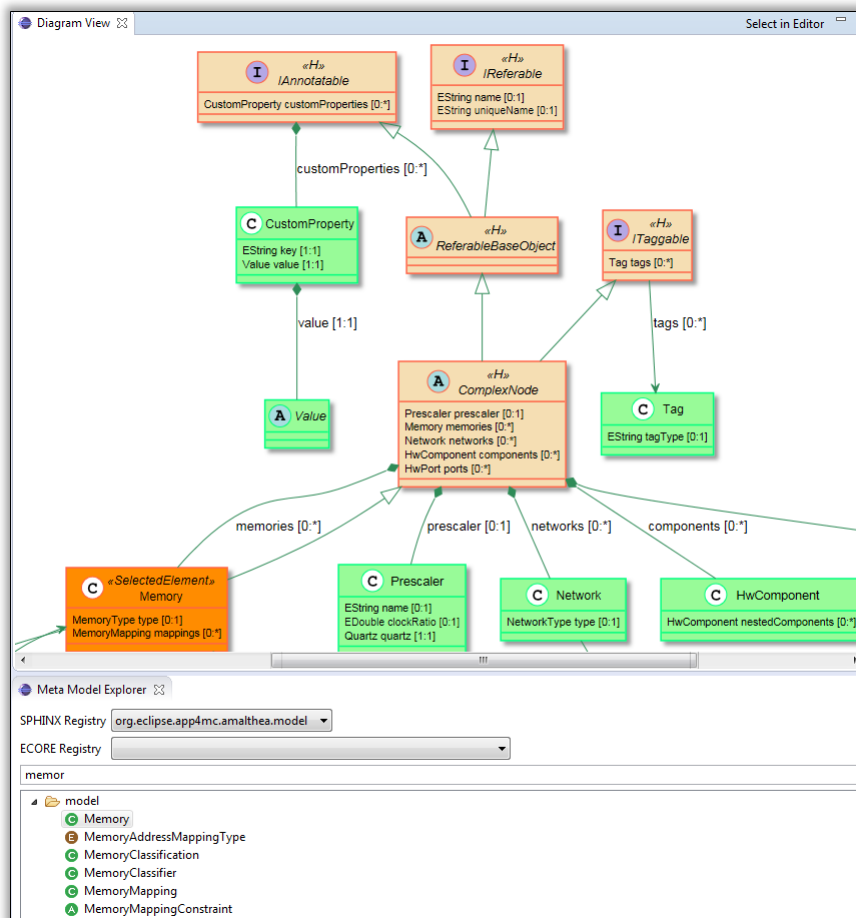
## Meta Model Explorer – EClass hierarchy



On selection of Eclass it is possible to generate graphical contents which displays the **hierarchy** of Eclass element.

# Interactive (Meta) Model Explorer

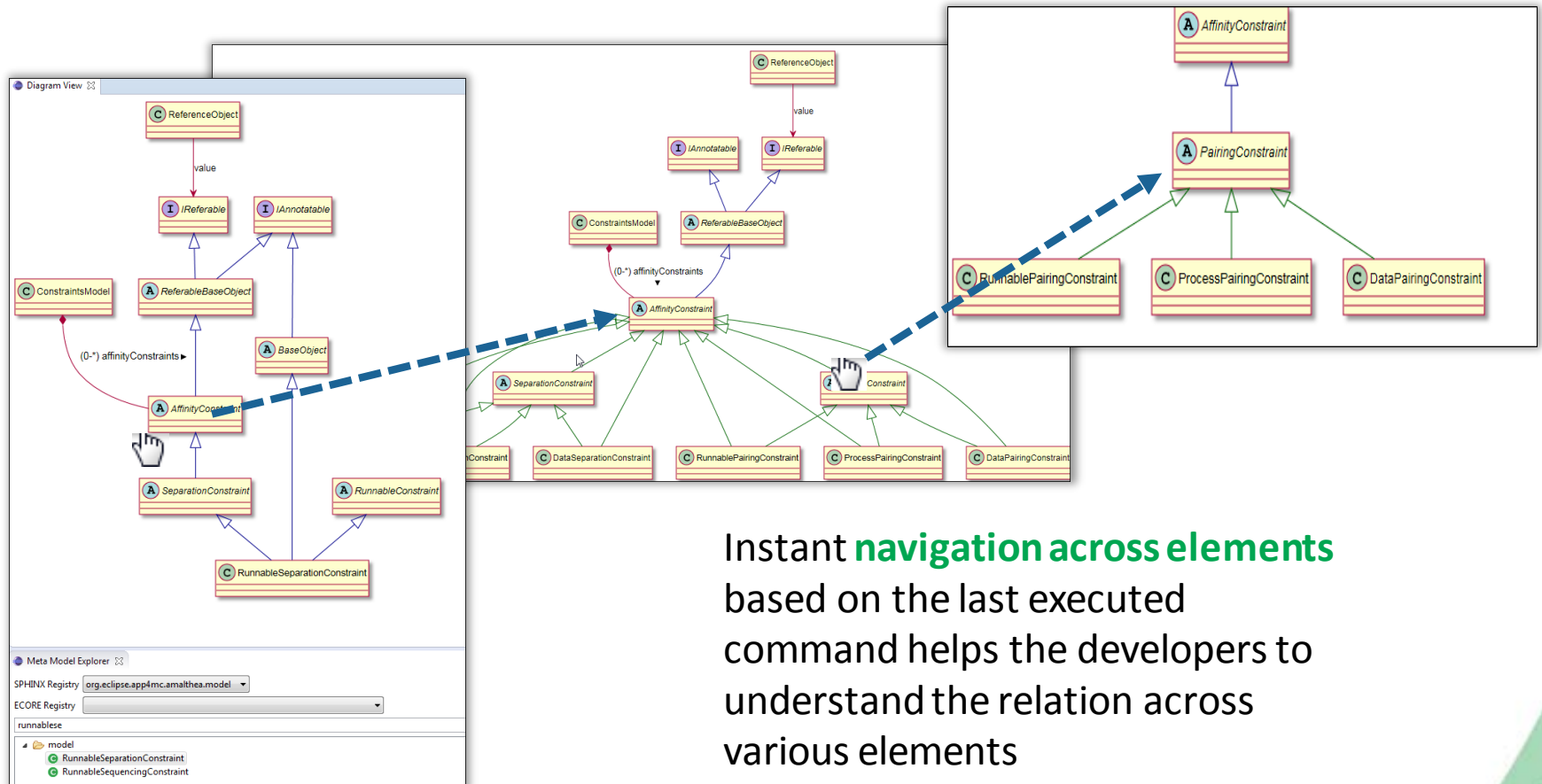
## Meta Model Explorer – Eclass contents and hierarchy



On selection of Eclass it is possible to generate graphical contents which displays the **UML diagram** of Eclass element and its **associated elements**.

# Interactive (Meta) Model Explorer

## (Meta) Model Explorer – instant navigation



Instant **navigation across elements** based on the last executed command helps the developers to understand the relation across various elements

# Interactive (Meta) Model Explorer

## Implementation

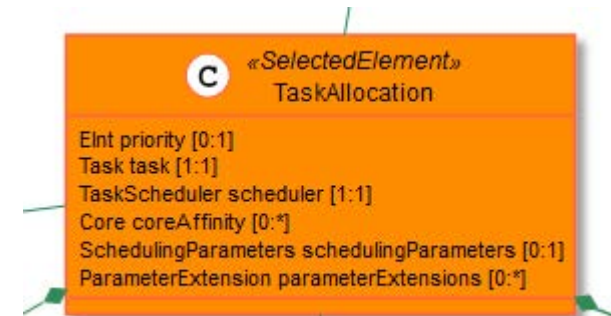
```

@startuml
skinparam class {
BackgroundColor PaleGreen
ArrowColor SeaGreen
...
}
skinparam stereotypeCBackgroundColor YellowGreen
skinparam stereotypeCBackgroundColor <<H>> DimGray
class "TaskAllocation" <<SelectedElement>> [[_0dJCMGeiEeeoI9aUfAez2g]] {
Elnt priority [0:1]
Task task [1:1]
TaskScheduler scheduler [1:1]
Core coreAffinity [0:*]
...
}
    
```

PlantUML

- PlantUML
  - Graphviz

has to be installed manually



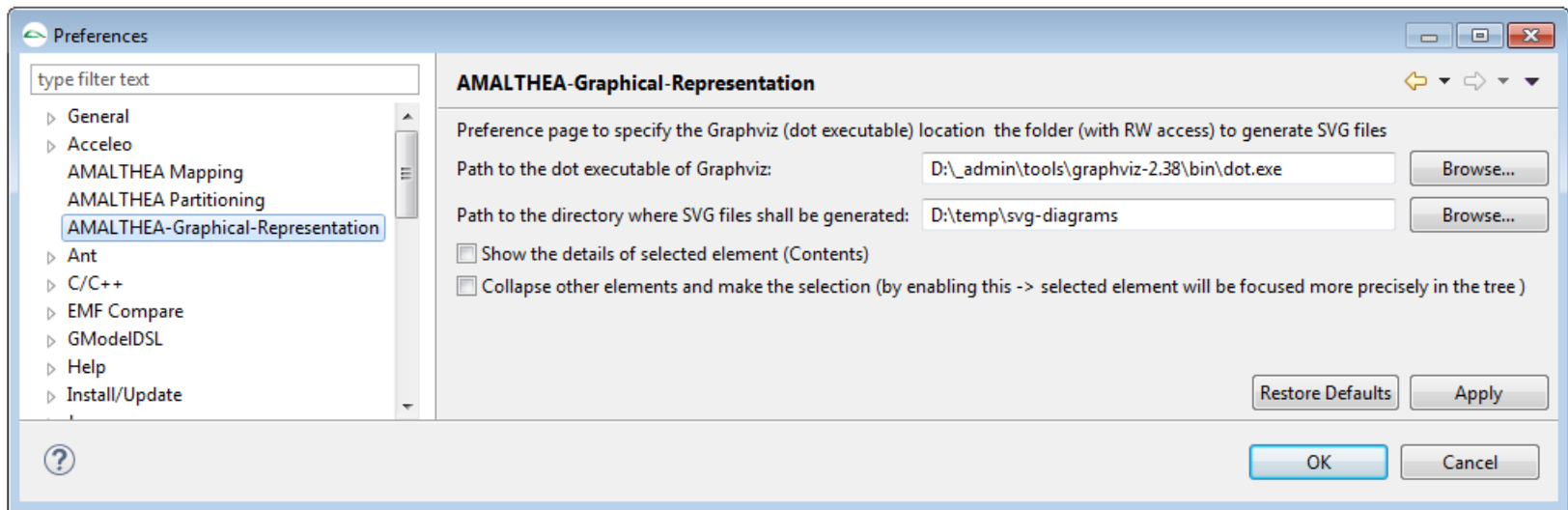
SVG

<http://plantuml.com/>

<http://www.graphviz.org/>

# Interactive (Meta) Model Explorer

## Setup



# Interactive (Meta) Model Explorer

---

## Try it !

### Update site

- <https://ci.eclipse.org/app4mc/job/emf-graphical-viewer-develop/lastSuccessfulBuild/artifact/eclipse-tools/emf-graphical-viewer/build/org.eclipse.app4mc.emfutils.p2repo/target/repository/>

## Give us feedback

## Improve it

### APP4MC Tools git repository

- <http://git.eclipse.org/c/app4mc/org.eclipse.app4mc.tools.git/>