The ePNK:
An extensible Petri net tool for PNML

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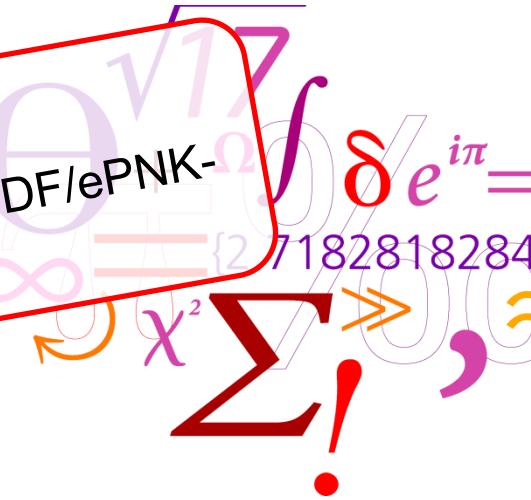
For more details see ePNK documentation:
http://www2.compute.dtu.dk/~ekki/projects/ePNK/PDF/ePNK-manual-1.0.0.pdf



New Petri net type

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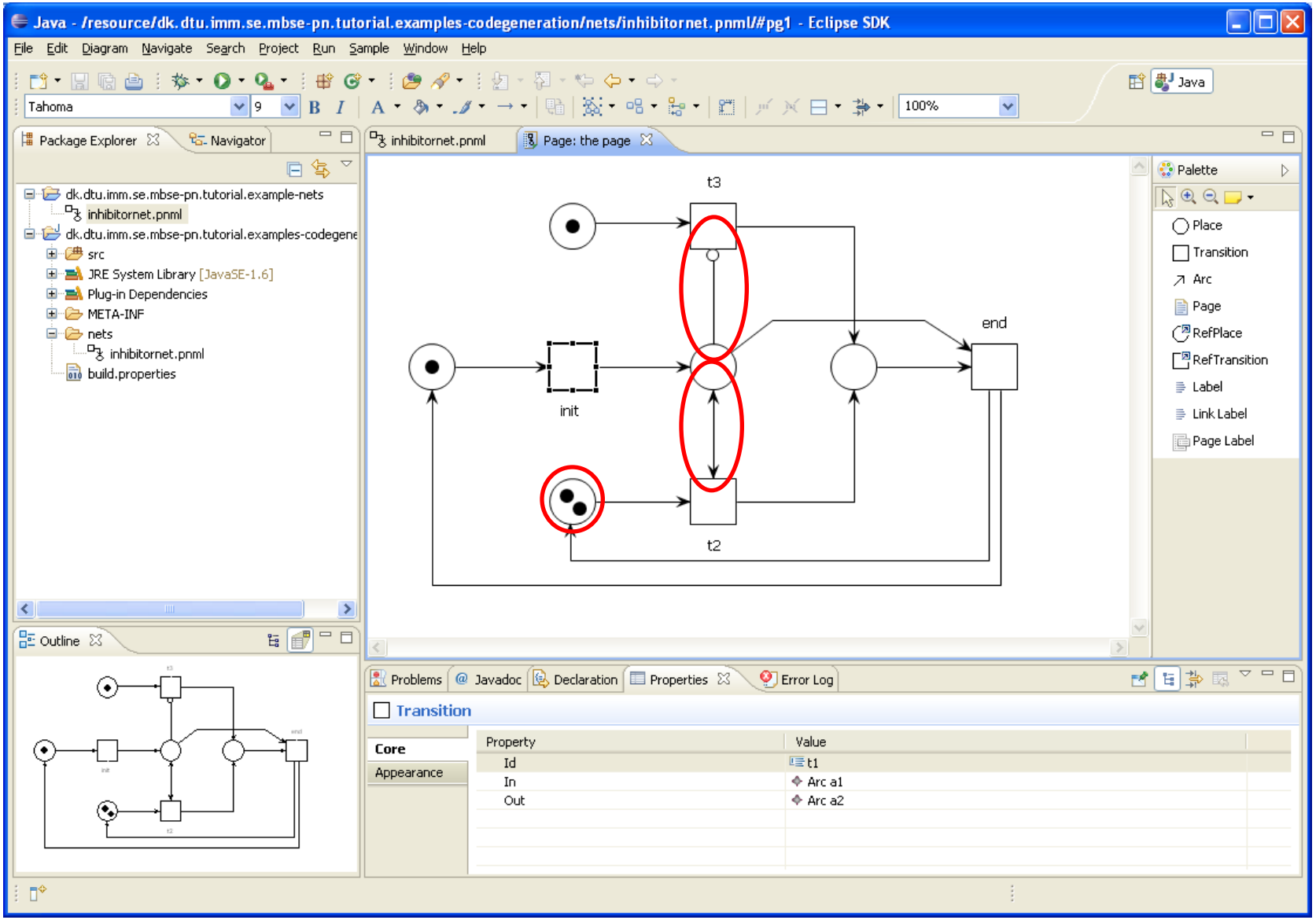

Define a Petri Net Type

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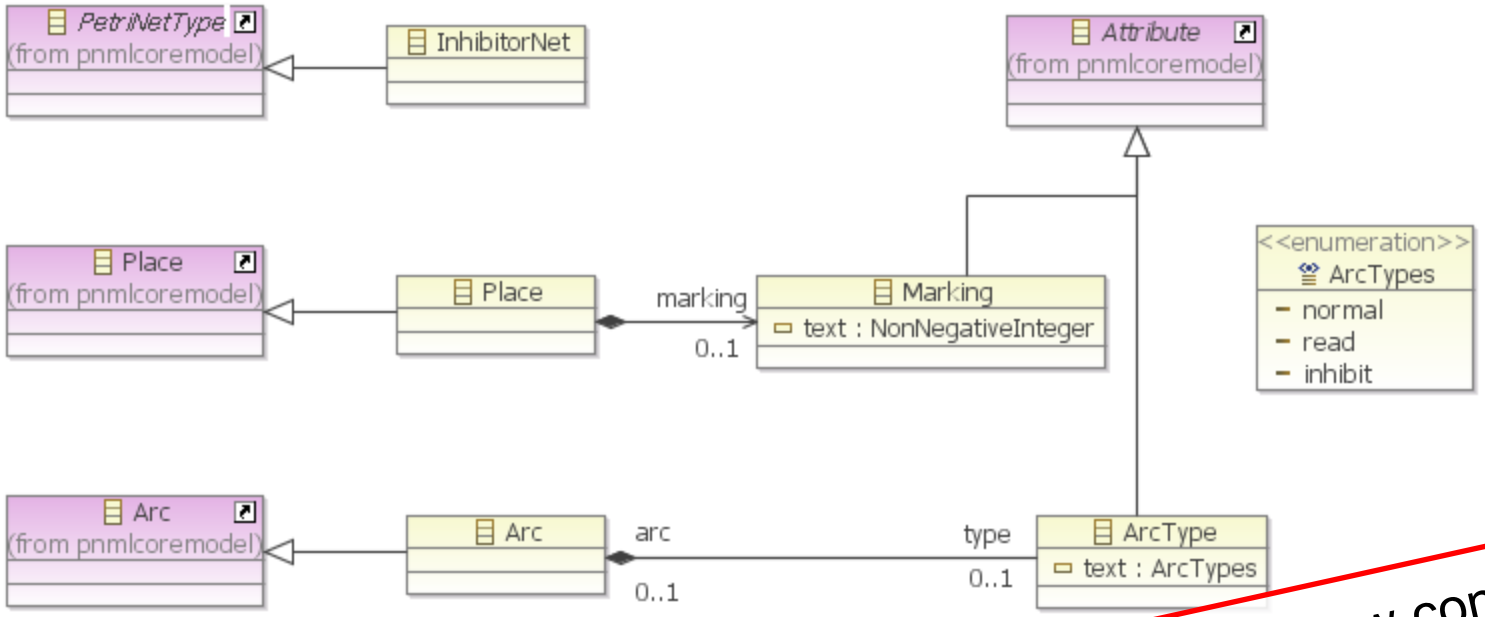
What should it take to define this new Petri Net type conceptually?



Define the new concepts:
As a software engineer, I do it that with a class diagram

Define a Petri Net Type

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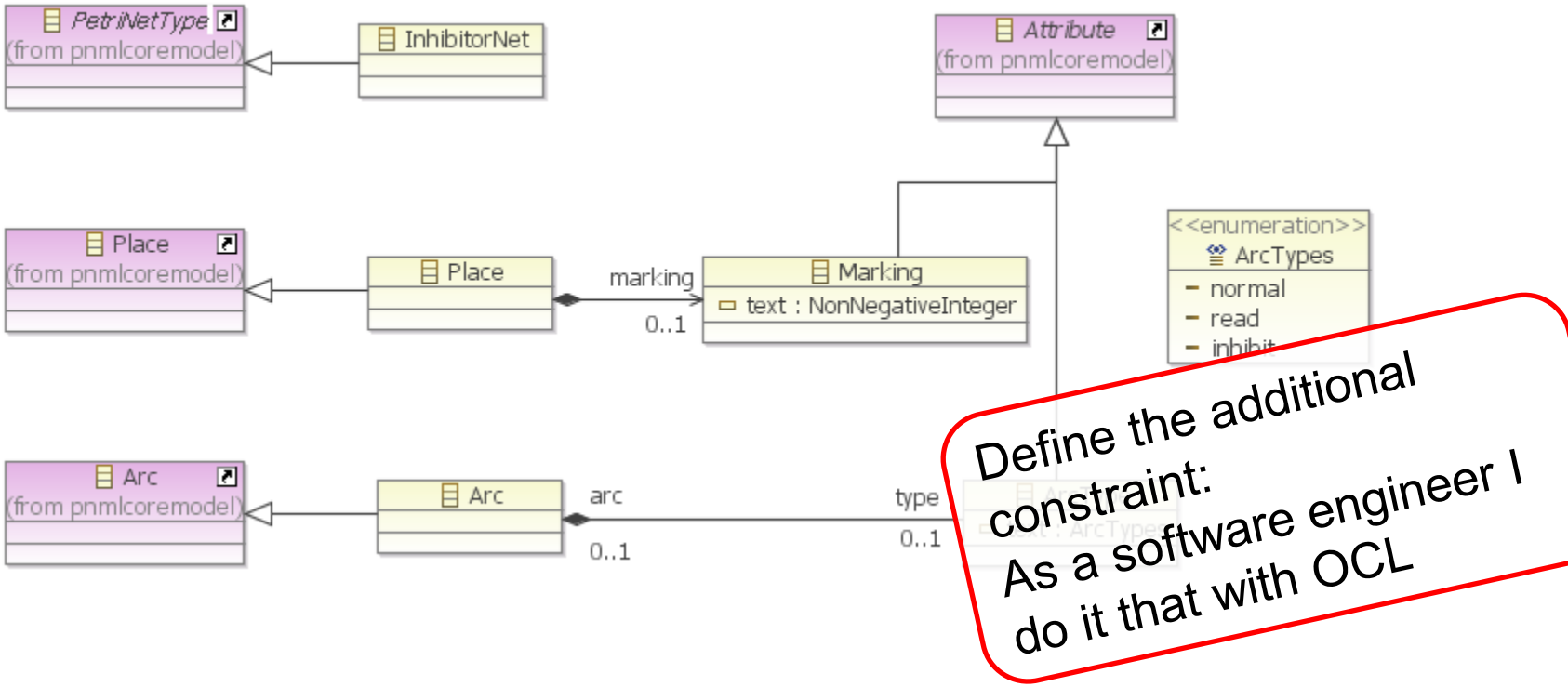


```
( self.source.oclIsKindOf(pnmlcoremodel::PlaceNode) and
  self.target.oclIsKindOf(pnmlcoremodel::TransitionNode) )
or
( self.source.oclIsKindOf(pnmlcoremodel::TransitionNode) and
  self.target.oclIsKindOf(pnmlcoremodel::PlaceNode) and
  not ( self.type.text = ArcTypes::inhibit ) )
```

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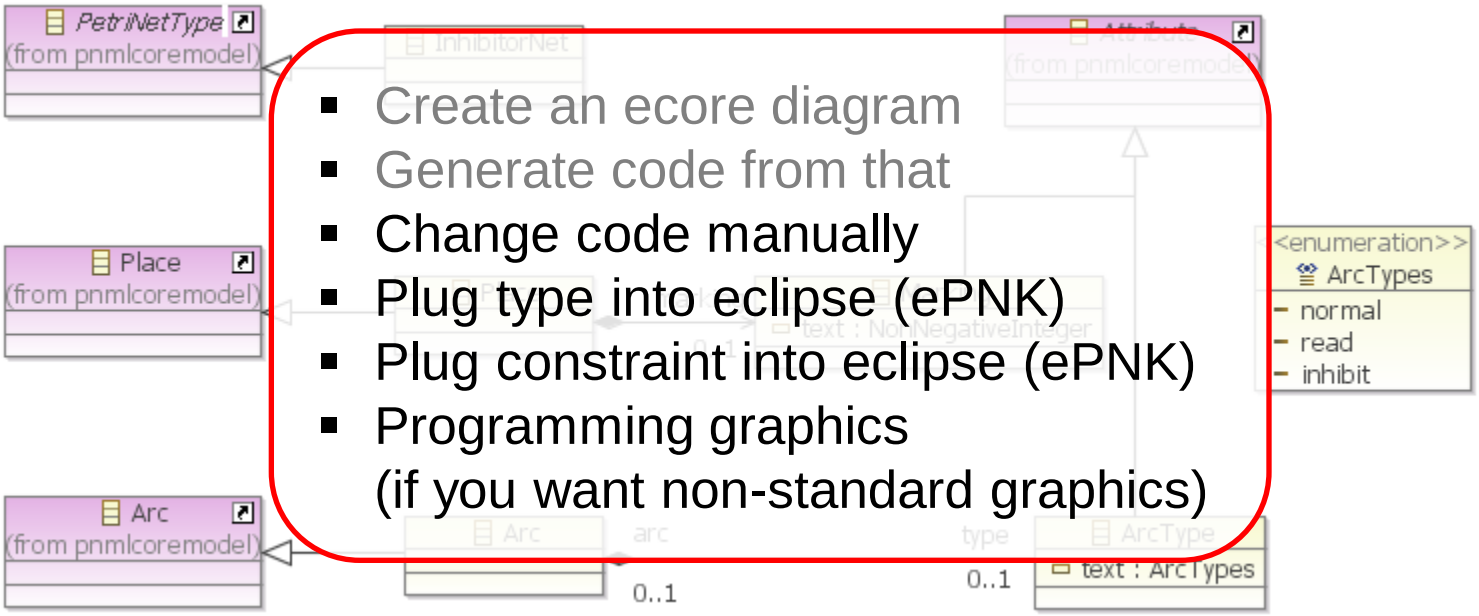
What does it take to implement it now?



- Create an ecore diagram
- Generate code from that
- Change code manually
- Plug type into eclipse (ePNK)
- Plug constraint into eclipse (ePNK)
- Programming graphics
  (if you want non-standard graphics)

```
( self.source.oclIsKindOf(pnmlcoremodel::PlaceNode) and
  self.target.oclIsKindOf(pnmlcoremodel::TransitionNode) )
or
( self.source.oclIsKindOf(pnmlcoremodel::TransitionNode) and
  self.target.oclIsKindOf(pnmlcoremodel::PlaceNode) and
  not ( self.type.text = ArcTypes::inhibit ) )
```

Change code manually

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```
package inhibitornets.impl;

[…]

public class InhibitorNetImpl extends PetriNetTypeImpl implements
   InhibitorNet {

   public InhibitorNetImpl() {
        super();
   }

   protected EClass eStaticClass() {
        return InhibitornetsPackage.Literals.INHIBITOR_NET;
   }

   public String toString() {
        return "http://dk.dtu.imm.se.mbse-pn.tutorial.inhibitornet";

   }

}
```

Making constructor of generated code public is not so nice! Extend the class and make the constructor of the extended class public.

Plug in net type

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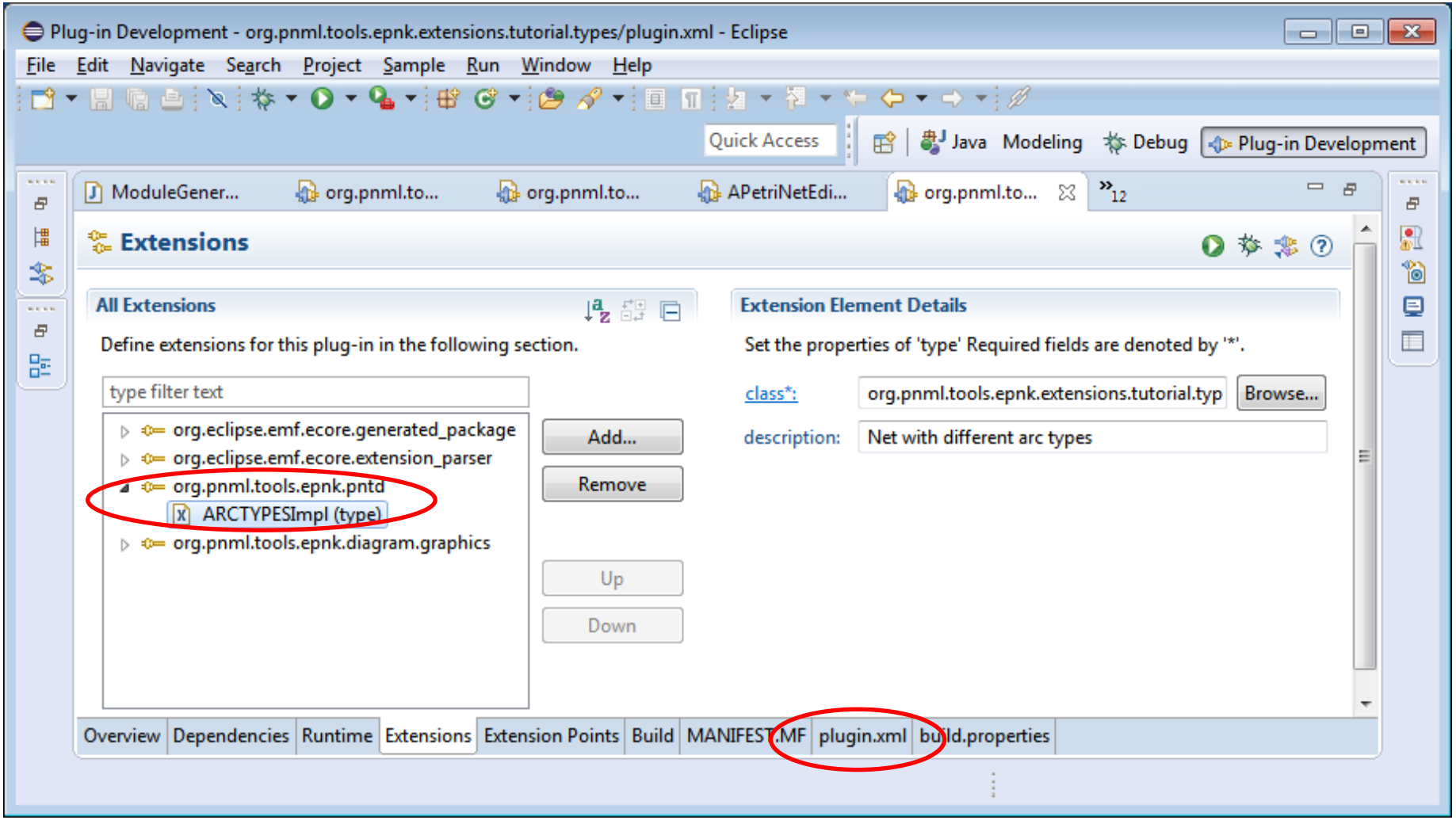

plugin.xml

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```
<extension
      id="org.pnml.tools.epnk.extensions.tutorial.types.arctypes"
      name="ArcTypes"
      point="org.pnml.tools.epnk.pntd">
   <type
       class="org.pnml.[…].tutorial.types.arctypes.arctypes.impl.ARCTYPESImpl"
       description="Net with different arc types">
   </type>
</extension>
<extension
      id="org.pnml.tools.epnk.extensions.tutorial.types.arctypes.graphics"
      name="ArcTypes Net graphical extensions"
      point="org.pnml.tools.epnk.diagram.graphics">
   <graphicsextension
         class= "org.pnml.tools.epnk.[…].ArcTypesGraphicalExtension"
         description="Special graphics for arcs in this kind of net">
   </graphicsextension>
</extension>
```

Plug in constraint

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```
<extension
    point="org.eclipse.emf.validation.constraintProviders">

      [about 40 other boring but technically important lines]


  <![CDATA[
  ( self.source.oclIsKindOf(pnmlcoremodel::PlaceNode) and
    self.target.oclIsKindOf(pnmlcoremodel::TransitionNode) )
  or
  ( self.source.oclIsKindOf(pnmlcoremodel::TransitionNode) and
    self.target.oclIsKindOf(pnmlcoremodel::PlaceNode) and
    not ( self.type.text = ArcTypes::inhibit ) )
  ]]>
     </constraint>
    </constraints>
  </constraintProvider>
</extension>
```

Unfortunately, this is a bit technical

Constraints can also be programmed

Programm Graphics

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```
public class InhibitornetsArcFigure extends ArcFigure {
[...]
  private void setGraphics() {
    RotatableDecoration targetDecorator = null;
    RotatableDecoration sourceDecorator = null;

    if (type.equals(ArcTypes.NORMAL)) {
      targetDecorator = new ReisigsArrowHeadDecoration();

    } else if (type.equals(ArcTypes.INHIBIT)) {
      CircleDecoration circleDecoration =
        new CircleDecoration();
      circleDecoration.setLineWidth(this.getLineWidth());
      targetDecorator = circleDecoration;

    } else if (type.equals(ArcTypes.READ)) {
      targetDecorator = new ReisigsArrowHeadDecoration();
      sourceDecorator = new ReisigsArrowHeadDecoration();
[...]
```

Just a glimpse!

Result

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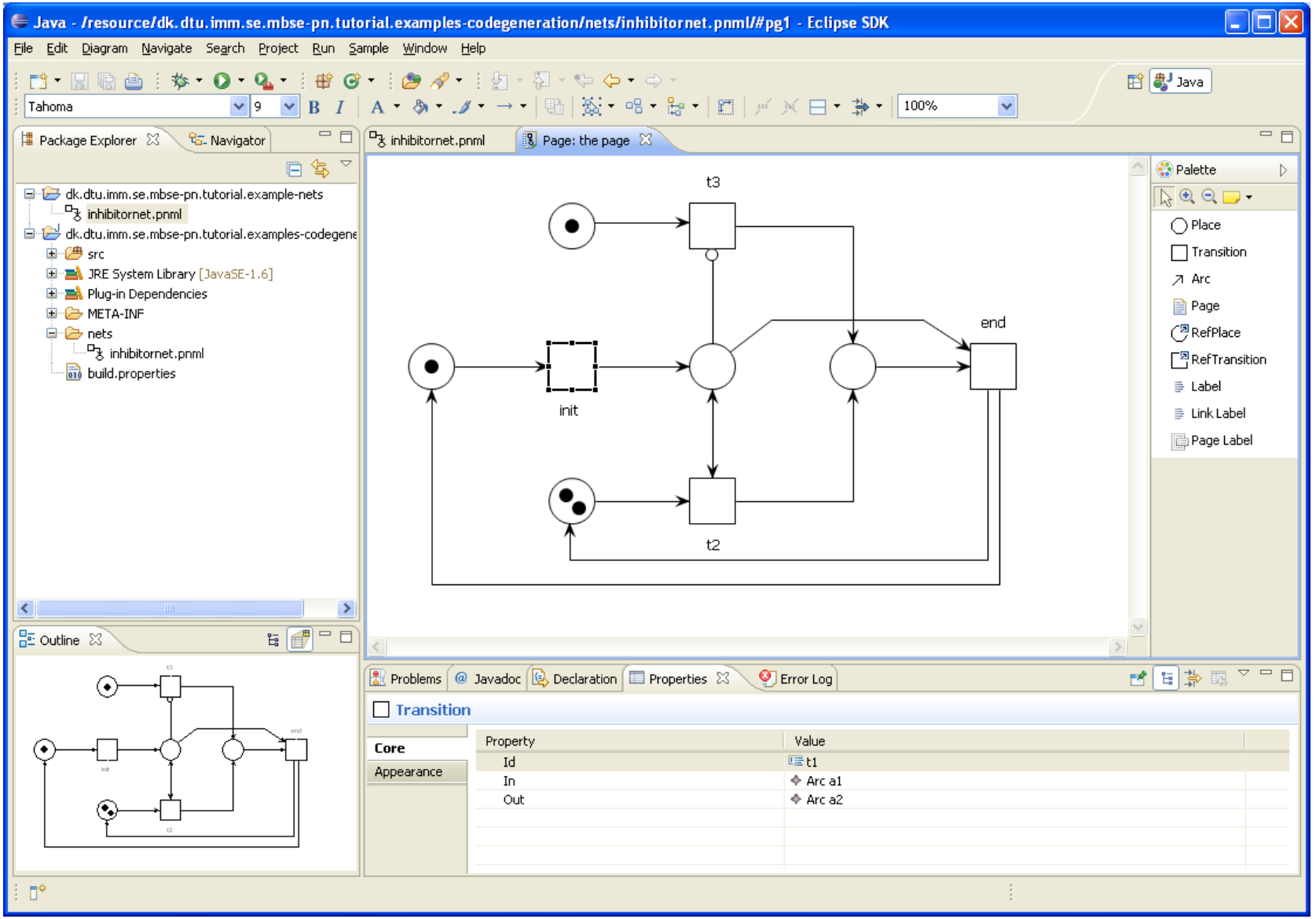

Technical details

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You can look up some details in the version of the ePNK that was deployed in the SE2 course:

`org.pnml.tools.epnk.extensions.tutorial.types`

`org.pnml.tools.epnk.extensions.tutorial.types.edit`

In order to see these projects to your workspace:

- Open “Plug-ins” view
- Select the resp. plug-in project(s)
- Right-click and choose
  Import As → Source Project