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community eclipse awards 2011

Tools and Methodologies for GMF

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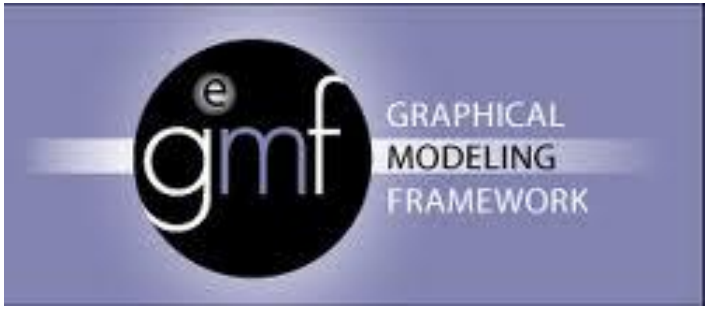
Agenda

- Show me a GMF editor
- GMF Big Picture
- Methodologies
- Tooling

GMF BIG PICTURE

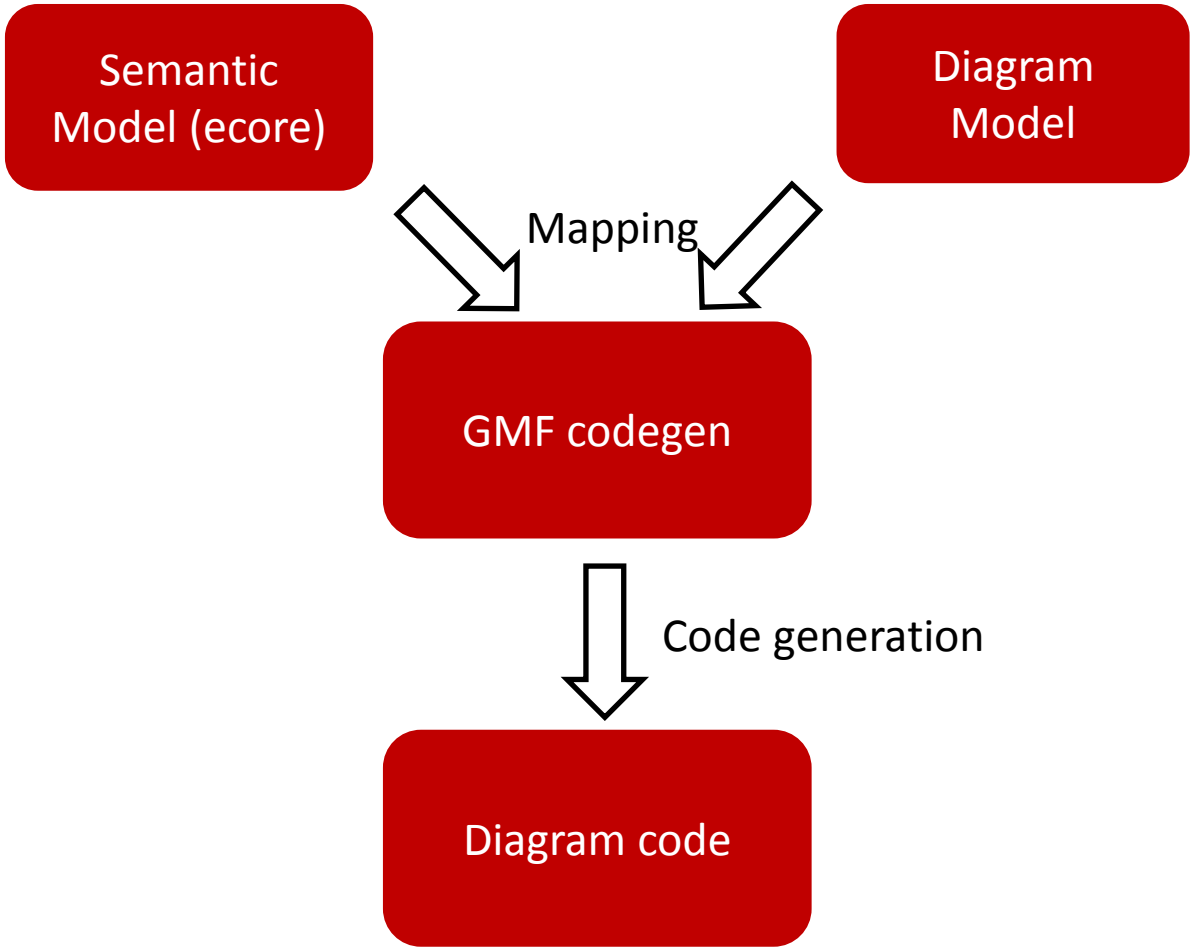
GMF


gmf
GRAPHICAL
MODELING
FRAMEWORK


emf
ECLIPSE MODELING FRAMEWORK


G.E.F.

GMF Basic Workflow



What happens after the first generation?

- Requirements update
- Introduce specific behavior
- I’m not able to do a one shot!

METHODOLOGIES

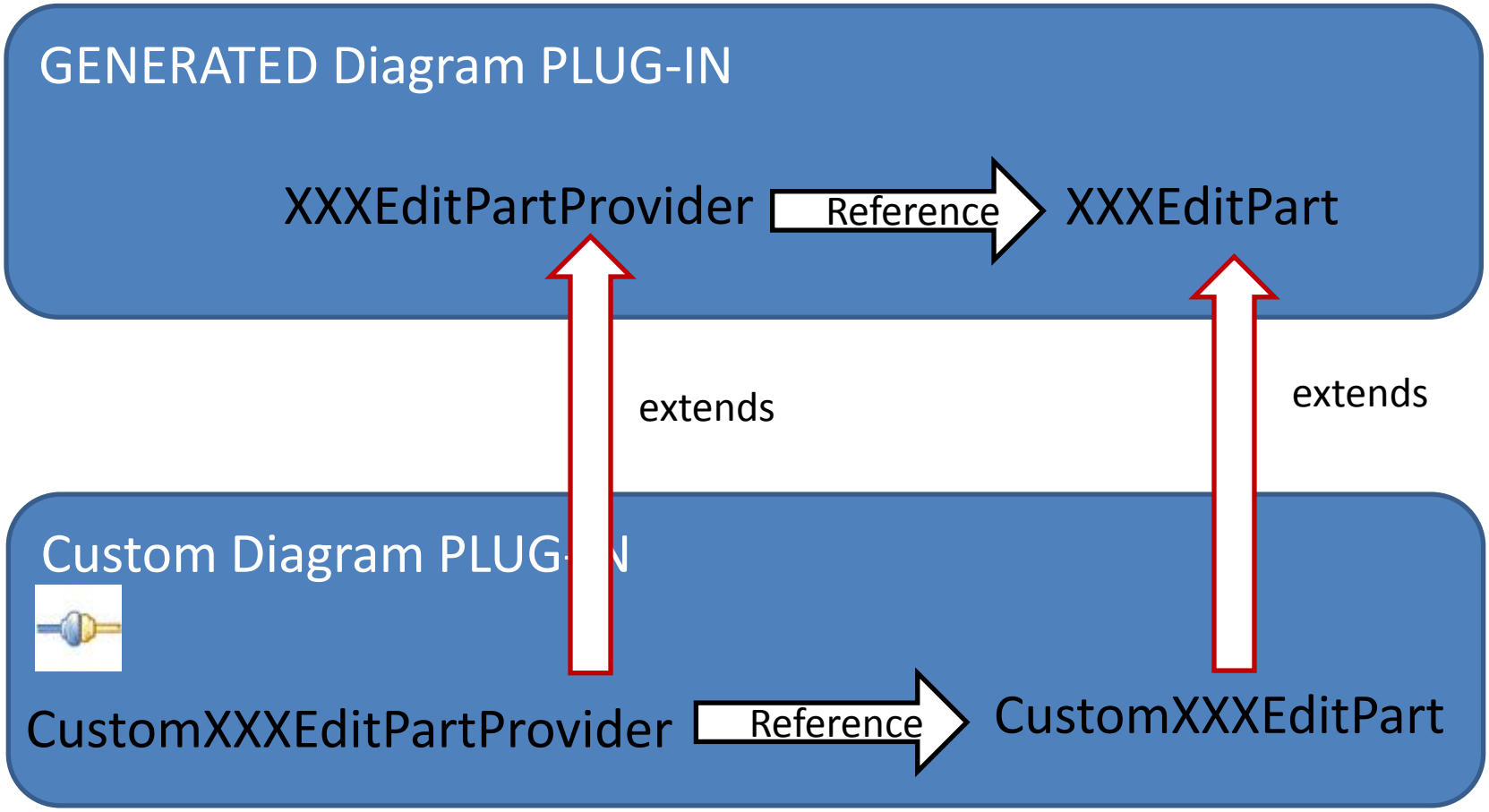
Update the model!

- Straightforward
- Best maintainability
- Easiest solution

GMF Extension points

- 24
- Classical Eclipse way

Extension points – Typical pattern



Generation templates

- When?
  - Apply to a whole kind of elements
  - Ultimately
- Useful for:
  - Regeneration
  - New element introduced

Generation aspect templates

- Reduce amount of code to maintain
- Avoid code duplication
- *Down grain from class to method*

Generation aspect templates

```
«AROUND handleNotificationEventBody FOR gmfgen::GenExternalNodeLabel-»
    Object feature = event.getFeature();
    «EXPAND xpt::diagram::editparts::Common::handleText FOR self-»
    //if 'to' link changed
    if(event.getEventType() == org.eclipse.emf.common.notify.Notification.SET
        && feature.equals(org.bonitasoft.studio.model.process.ProcessPackage.Literals.THROW_LINK_EVENT__TO)){
        refreshLabel();
    }
    super.handleNotificationEvent(event);
«ENDAROUND»
```

```
«IMPORT 'http://www.eclipse.org/gmf/2009/GenModel'»

«DEFINE initializer FOR gmfgen::GenExternalNodeLabel-»
    «EXPAND xpt::Common::generatedMemberComment»
    static {
        registerSnapBackPosition(«EXPAND xpt::editor::VisualIDRegistry::typeMethodCall», new org.eclipse.draw2d.geometry.Point(0, 0));
    }
«ENDDEFINE»

«DEFINE _constructor FOR gmfgen::GenExternalNodeLabel-»
    «EXPAND xpt::Common::generatedMemberComment»
    public «editPartClassName»(org.eclipse.gmf.runtime.notation.View view) {
        super(view);
    }
«ENDDEFINE»

«DEFINE createDefaultEditPoliciesBody FOR gmfgen::GenExternalNodeLabel-»
    super.createDefaultEditPolicies();
    installEditPolicy(org.eclipse.gef.EditPolicy.DIRECT_EDIT_ROLE, new org.eclipse.gmf.runtime.diagram.ui.editpolicies.LabelDirectEditPolicy());
    installEditPolicy(org.eclipse.gef.EditPolicy.SELECTION_FEEDBACK_ROLE, new «getDiagram().getTextSelectionEditPolicyQualifiedClassName()»());
    «EXPAND xpt::diagram::editparts::Common::behaviour FOR self-»
«ENDDEFINE»

«DEFINE getBorderItemLocator FOR gmfgen::GenExternalNodeLabel-»
    «EXPAND xpt::Common::generatedMemberComment»
    public org.eclipse.gmf.runtime.diagram.ui.figures.IBorderItemLocator getBorderItemLocator() {
        org.eclipse.draw2d.IFigure parentFigure = getFigure().getParent();
        if (parentFigure != null && parentFigure.getLayoutManager() != null) {
            Object constraint = parentFigure.getLayoutManager().getConstraint(getFigure());
            return (org.eclipse.gmf.runtime.diagram.ui.figures.IBorderItemLocator) constraint;
        }
        return null;
    }
«ENDDEFINE»

«DEFINE refreshBounds FOR gmfgen::GenExternalNodeLabel-»
    «EXPAND xpt::Common::generatedMemberComment»
    public void refreshBounds() {
```

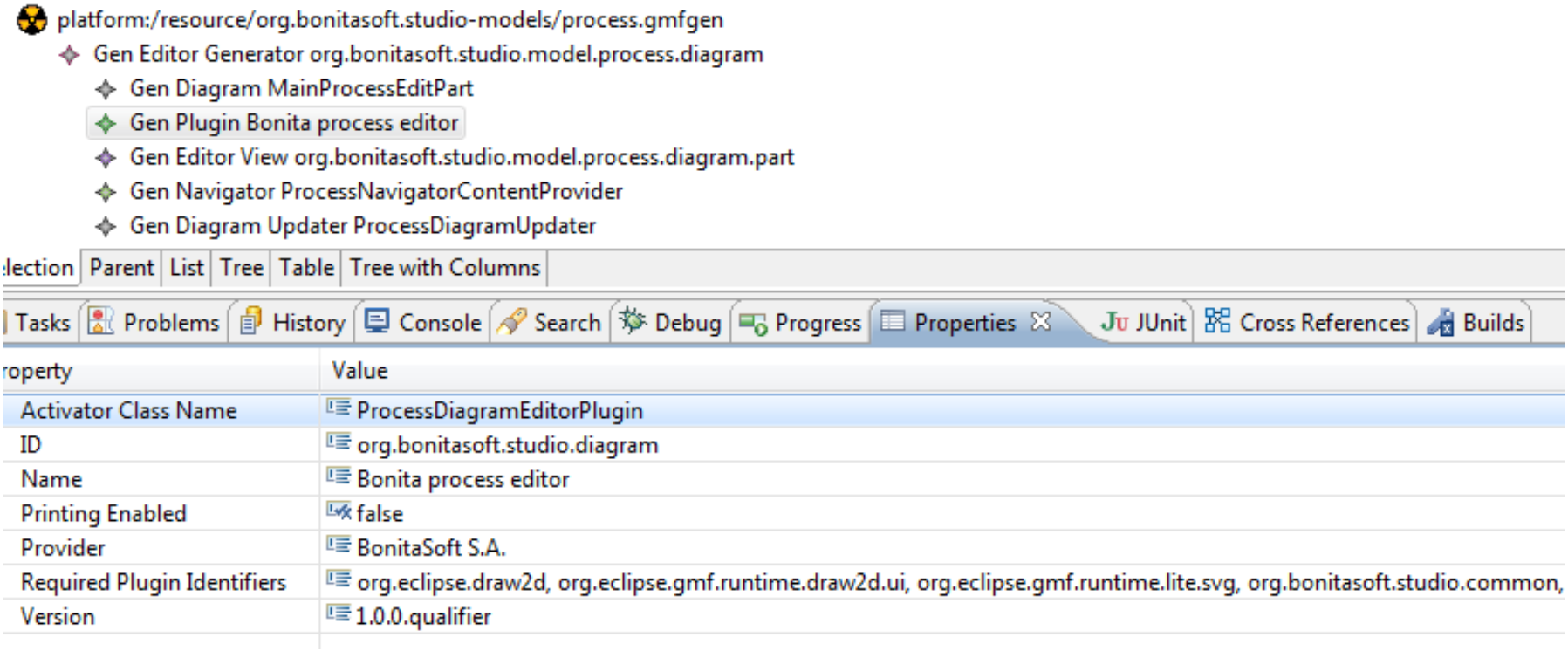
Another tip to reduce size of custom generation templates?

Utility plugin – why?

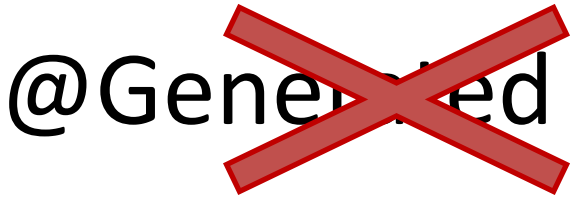
```
«AROUND extendsList FOR gmfgen::GenExternalNodeLabel»extends org.bonitasoft.studio.common.gmf.CustomEventLabelEditPart«ENDAROUND»
```

```
package org.bonitasoft.studio.common.gmf;

import org.eclipse.draw2d.IFigure;
import org.eclipse.draw2d.geometry.Dimension;
import org.eclipse.draw2d.geometry.Point;
import org.eclipse.gef.GraphicalEditPart;
import org.eclipse.gmf.runtime.diagram.ui.editparts.LabelEditPart;
import org.eclipse.gmf.runtime.diagram.ui.figures.LabelLocator;
import org.eclipse.gmf.runtime.notation.NotationPackage;
import org.eclipse.gmf.runtime.notation.View;

/**
 * @author Baptiste Mesta
 *
 */
public class CustomEventLabelEditPart extends LabelEditPart {

    /**
     * @param view
     */
    public CustomEventLabelEditPart(View view) {
        super(view);
    }


    public void refreshBounds() {
        IFigure refFigure = ((GraphicalEditPart) getParent()).getFigure();
        int dx = ((Integer) getStructuralFeatureValue(NotationPackage.eINSTANCE
                .getLocation_X())).intValue();
        int dy = ((Integer) getStructuralFeatureValue(NotationPackage.eINSTANCE
                .getLocation_Y())).intValue();
        Point offset = new Point(dx, dy);
        if(getFigure().getParent() != null){
            getFigure().getParent().setConstraint(getFigure(),
                    new LabelLocator(refFigure, offset, getKeyPoint()) {

                public void relocate(IFigure target) {
                    Point location = getReferencePoint().getTranslated(
                            getOffset());
                    location.translate(-target.getBounds().width / 2, 0);
                    target.setLocation(location);
                    target.setSize(new Dimension(
                            target.getPreferredSize().width, target
                            .getPreferredSize().height));
                }

                protected Point getReferencePoint() {
                    return getLabelLocation(parent);
                }
            });
        }
    }

    @Override
    public Point getReferencePoint() {
        return getLabelLocation(((GraphicalEditPart) getParent()).getFigure());
    }
```

Utility plugin – how?

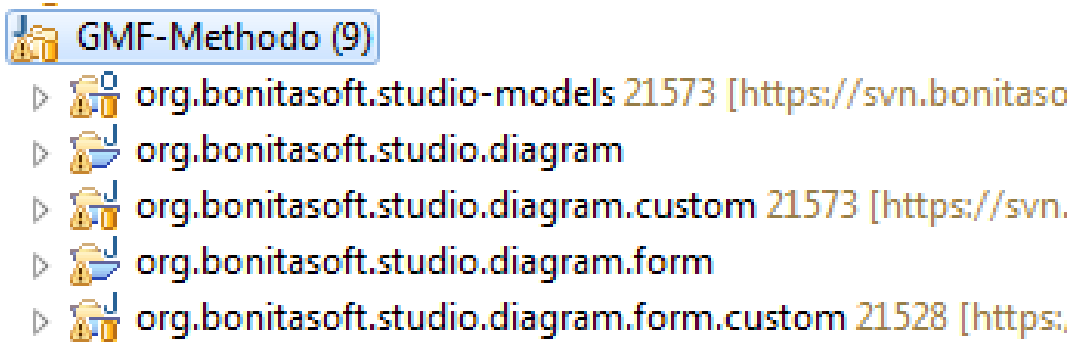


Modify Generated code

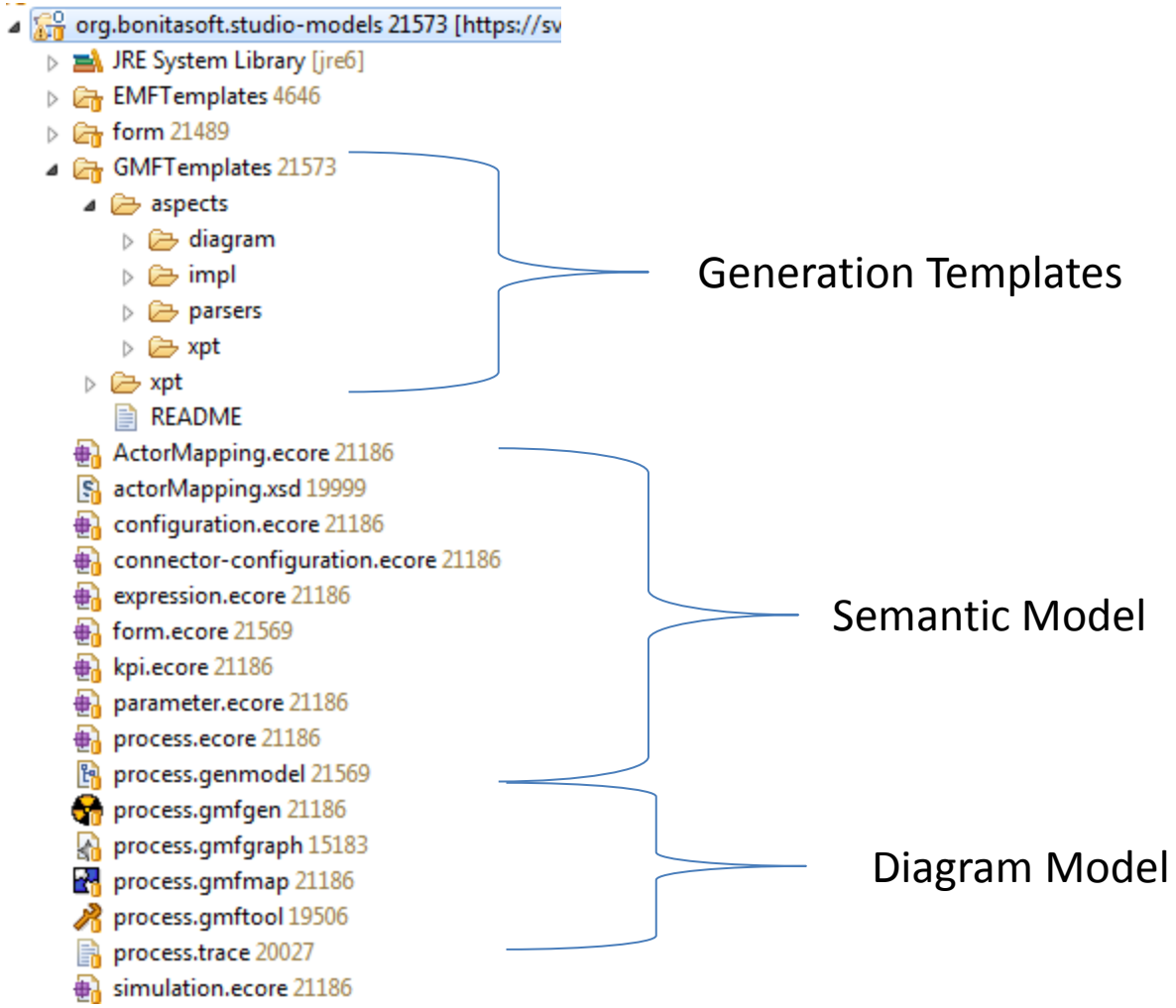


Sandbox

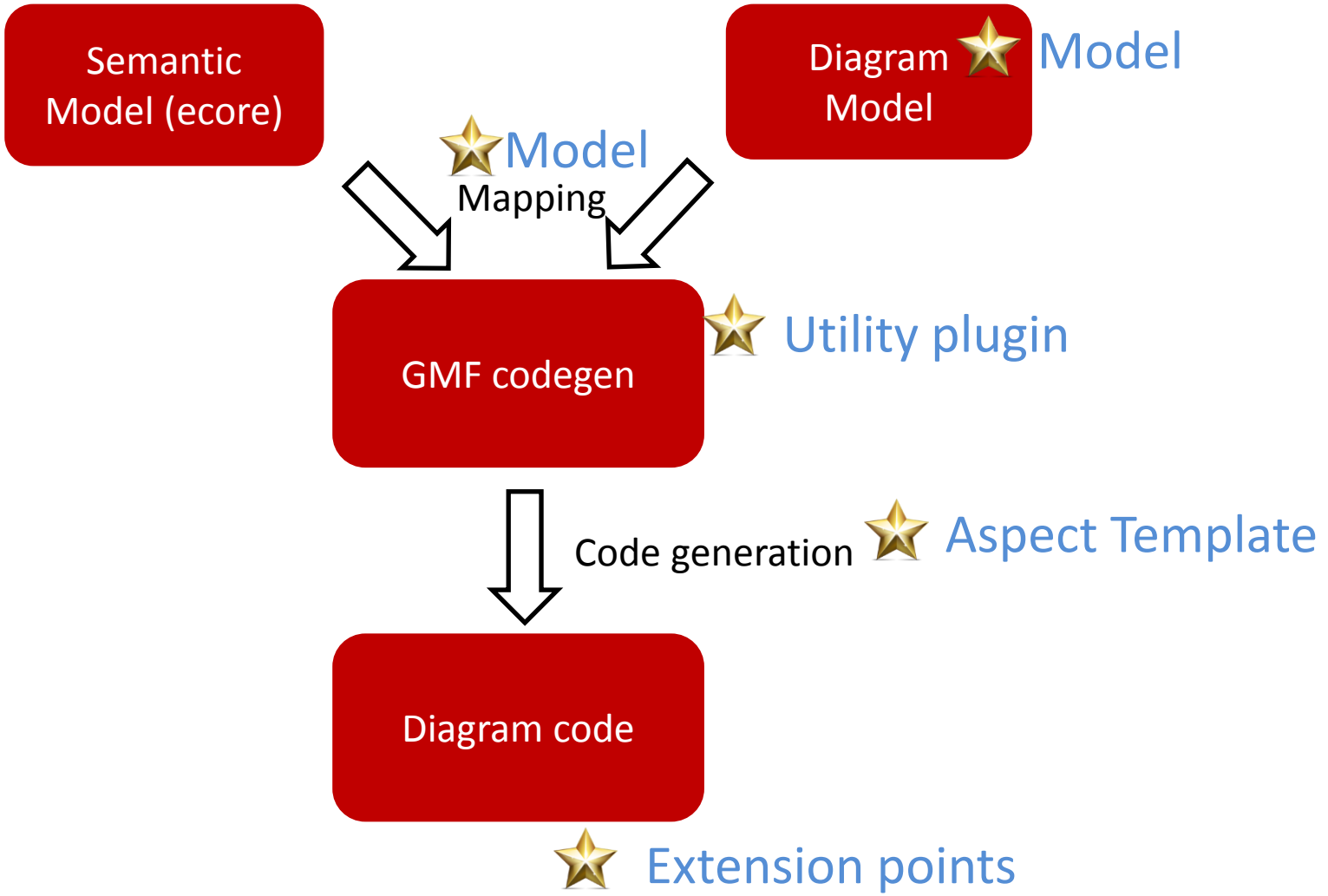
Projects Structure (1/2)



Projects Structure (2/2)



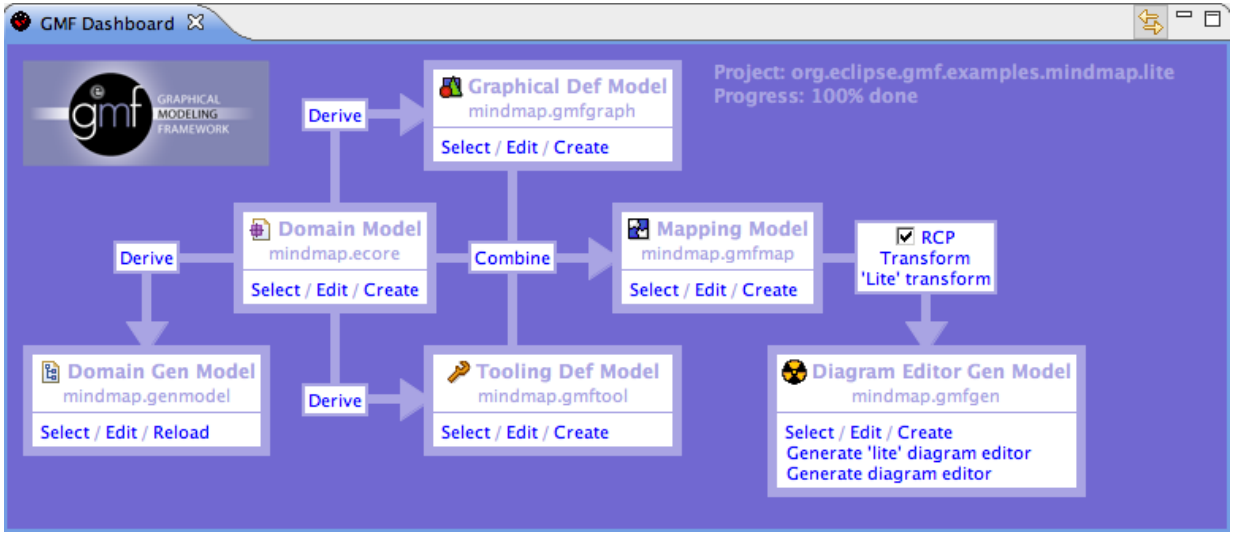
GMF Workflow



TOOLING

GMF-Tooling

- Official tooling of GMF
  - Several editors
  - Wizards
  - GMF Dashboard



SWTBot4GEF

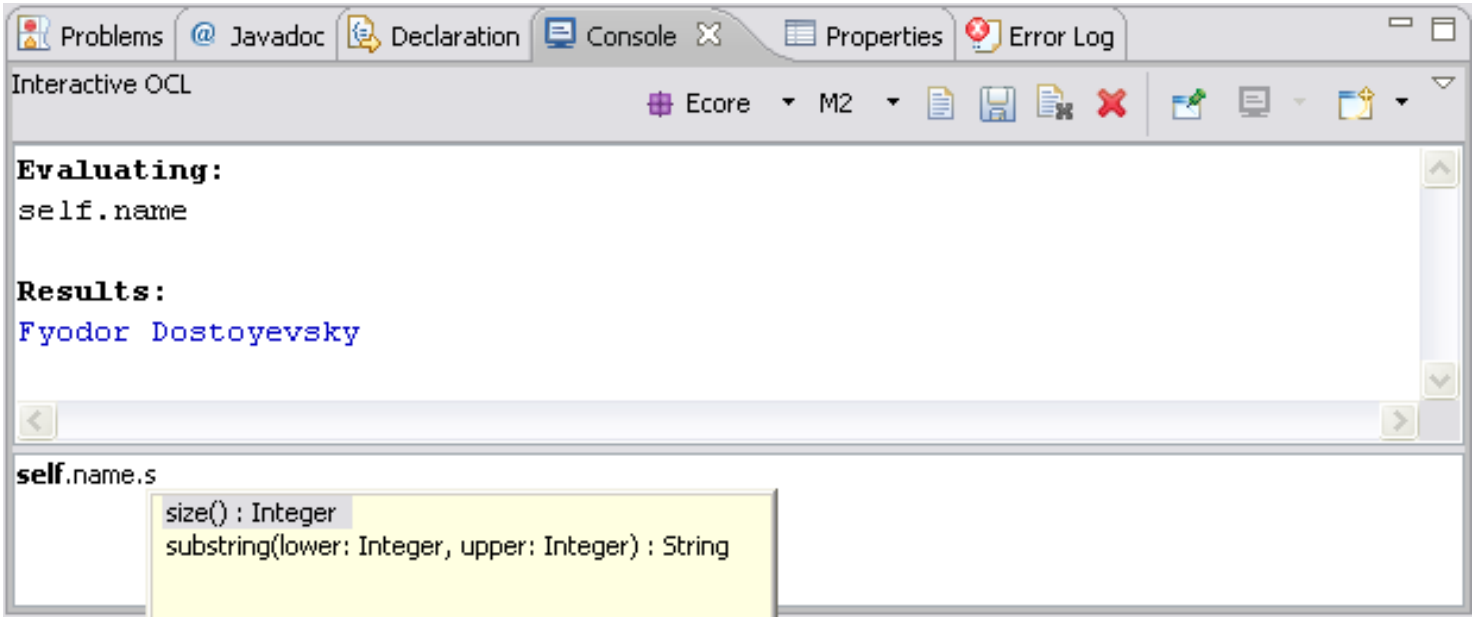
- Automated UI tests
- Simple API:
  - click
  - drag
  - select
  - activateTool

Code generation Ant Task

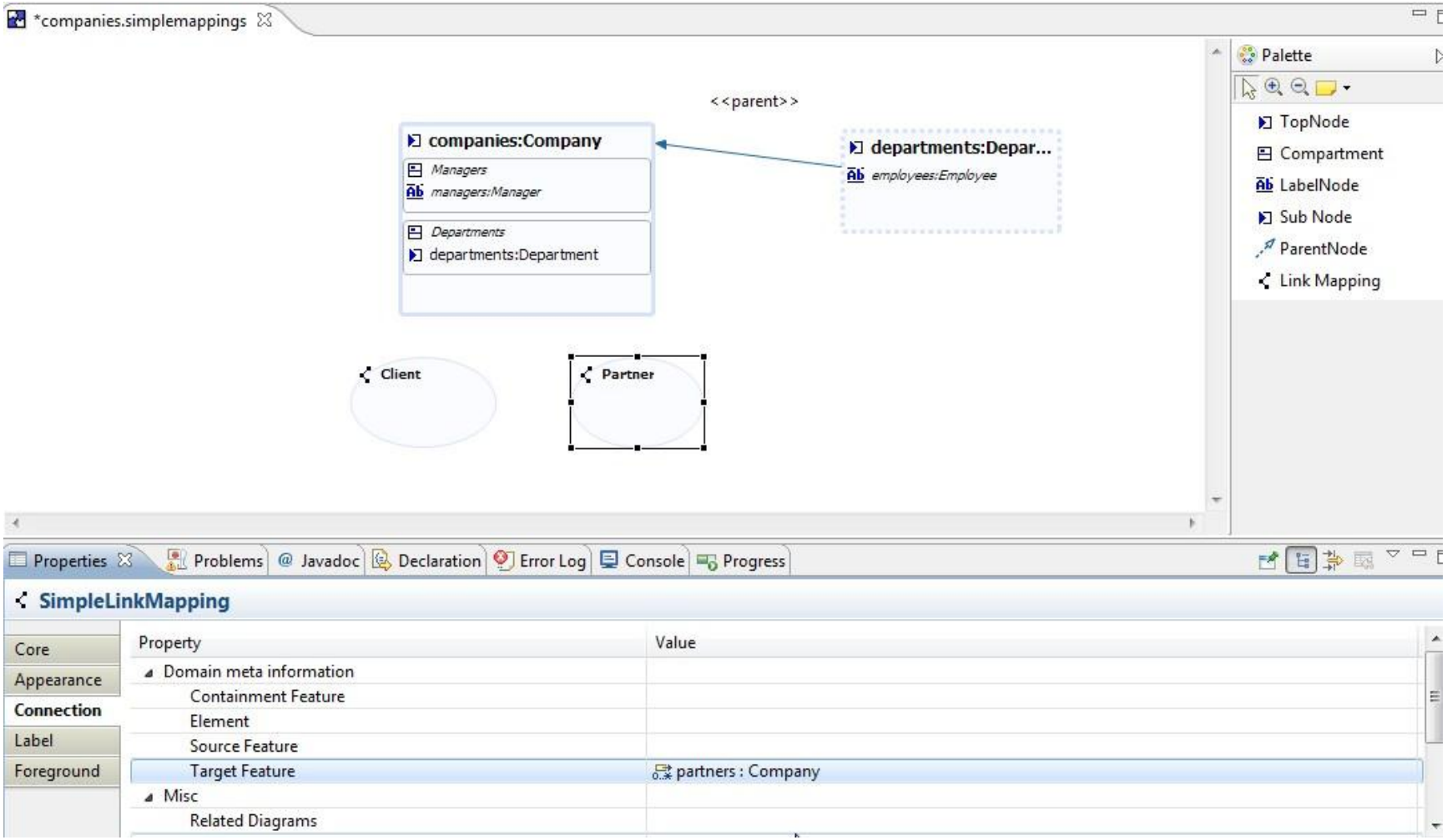
- Generate code at build time
- Avoid *reconcilier* issues
- Avoid modification of your *sandbox* commited

OCL Editor and Interpreter

- Write and Test constraints



Simple Mapping Editor (1/2)



Simple Mapping Editor (2/2)

- All-in-one editor
- Keep separation of concerns available
- Eating your own dog food

EDapt

- Big underlying model modifications
- PoC for BOS 6.0

Keep in mind

- Great tooling ecosystem
- Proven methodologies for continuous improvement

To go further

- Eclipse GMF Forum: http://www.eclipse.org/forums/index.php/f/16/
- Eclipse GMF Wiki: http://wiki.eclipse.org/GMF
- Talk together ☺

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