From Acceleo.org to Eclipse Modeling

Migrating an OSS project to Eclipse

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Obeo
France

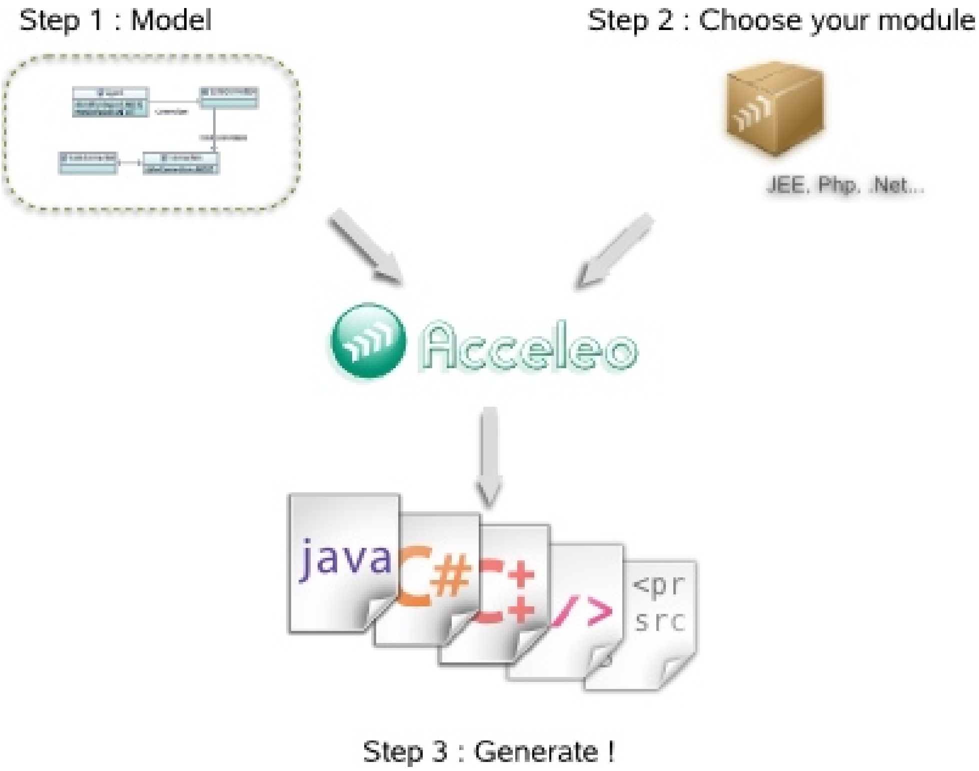
- Eclipse **Strategic Member**

- Eclipse Modeling Project
  - M2T : Acceleo
  - M2M : ATL
  - EMFT : EMF Compare, EEF
  - Papyrus UML, OCL, Amalgamation …

- Eclipse STP – SCA

Once upon a time ...

(a story of an OSS project building its own community and then moving to Eclipse)



Step 1 : Model

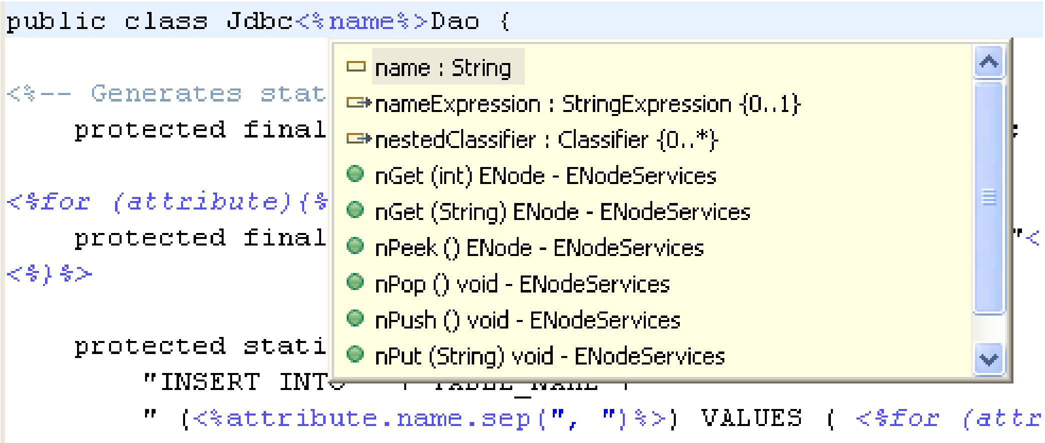
Step 2 : Choose your module

JEE, Php, .Net...

Step 3 : Generate !

Acceleo Core Tooling

- Built on Eclipse
- GPL Licensed
- Mainly an Obeo effort
- OW2 project



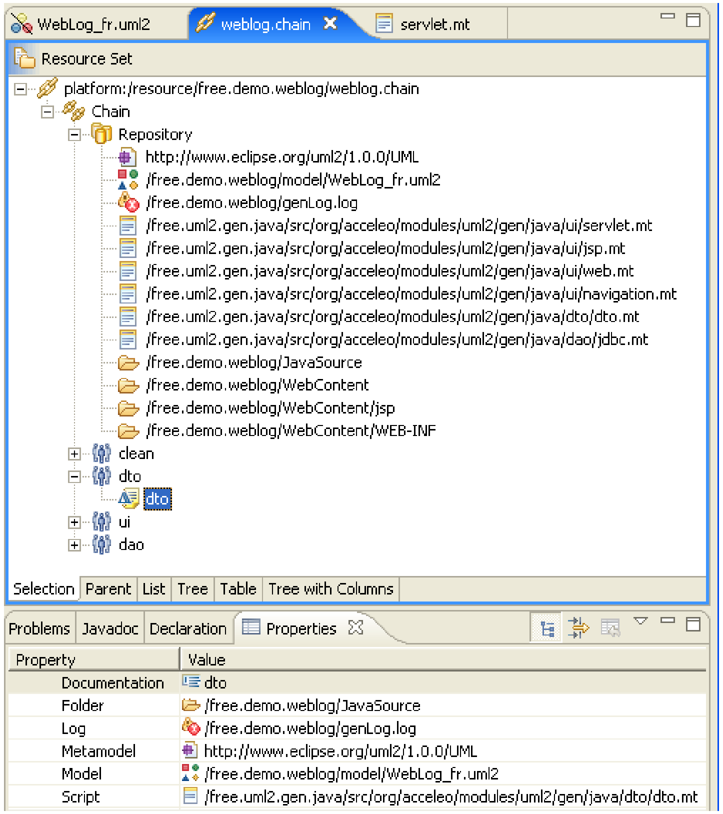
```
public class Jdbc<%name%>Dao {

<%-- Generates stat
    protected final

<%for (attribute){%
    protected final
<%}%>

    protected stati
        "INSERT INTO
        " (<%attribute.name.sep(", ")%>) VALUES ( <%for (attr
```

```
name : String
nameExpression : StringExpression {0..1}
nestedClassifier : Classifier {0..*}
nGet (int) ENode - ENodeServices
nGet (String) ENode - ENodeServices
nPeek () ENode - ENodeServices
nPop () void - ENodeServices
nPush () void - ENodeServices
nPut (String) void - ENodeServices
```



```
platform:/resource/free.demo.weblog/weblog.chain
  Chain
    Repository
      http://www.eclipse.org/uml2/1.0.0/UML
      /free.demo.weblog/model/WebLog_fr.uml2
      /free.demo.weblog/genLog.log
      /free.uml2.gen.java/src/org/acceleo/modules/uml2/gen/java/ui/servlet.mt
      /free.uml2.gen.java/src/org/acceleo/modules/uml2/gen/java/ui/jsp.mt
      /free.uml2.gen.java/src/org/acceleo/modules/uml2/gen/java/ui/web.mt
      /free.uml2.gen.java/src/org/acceleo/modules/uml2/gen/java/ui/navigation.mt
      /free.uml2.gen.java/src/org/acceleo/modules/uml2/gen/java/dto/dto.mt
      /free.uml2.gen.java/src/org/acceleo/modules/uml2/gen/java/dao/jdbc.mt
      /free.demo.weblog/JavaSource
      /free.demo.weblog/WebContent
      /free.demo.weblog/WebContent/jsp
      /free.demo.weblog/WebContent/WEB-INF
    clean
    dto
      dto
    ui
    dao
```

Property	Value
Documentation	dto
Folder	/free.demo.weblog/JavaSource
Log	/free.demo.weblog/genLog.log
Metamodel	http://www.eclipse.org/uml2/1.0.0/UML
Model	/free.demo.weblog/model/WebLog_fr.uml2
Script	/free.uml2.gen.java/src/org/acceleo/modules/uml2/gen/java/dto/dto.mt

Spirit ... (démo flash acceleo.org ?)

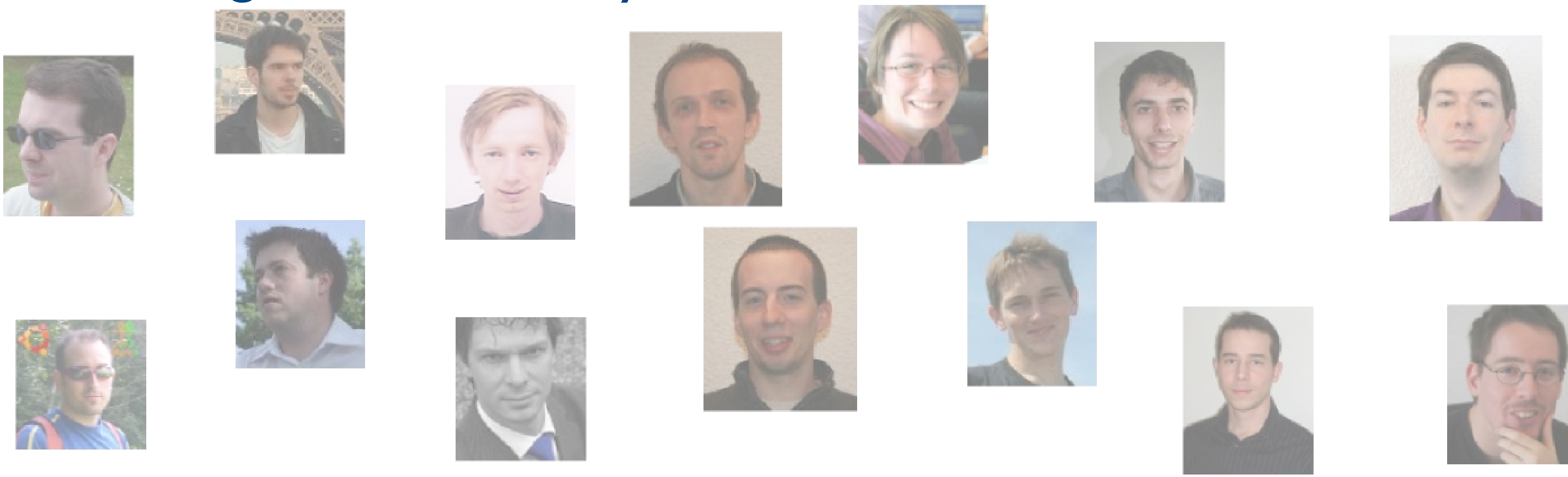
- Pragmatism : create a dedicated tool and keep using the others
- State of the art tooling
- Easy to start with
- Magic inside

Picture under creativecommons.org/licenses/by/2.0/deed.fr, author : bageta

Then people gathered ...

(well, we had to bring them together..)

Building the community



- EPL licensing
- Active presence both on Web and Real World

Generated code is a bridge between your model and any technology (and as such, any community)

- Acceleo **Modules** Repository
  - JEE , C#, Python, PHP, C, Java, Zope, Leonardi, ...

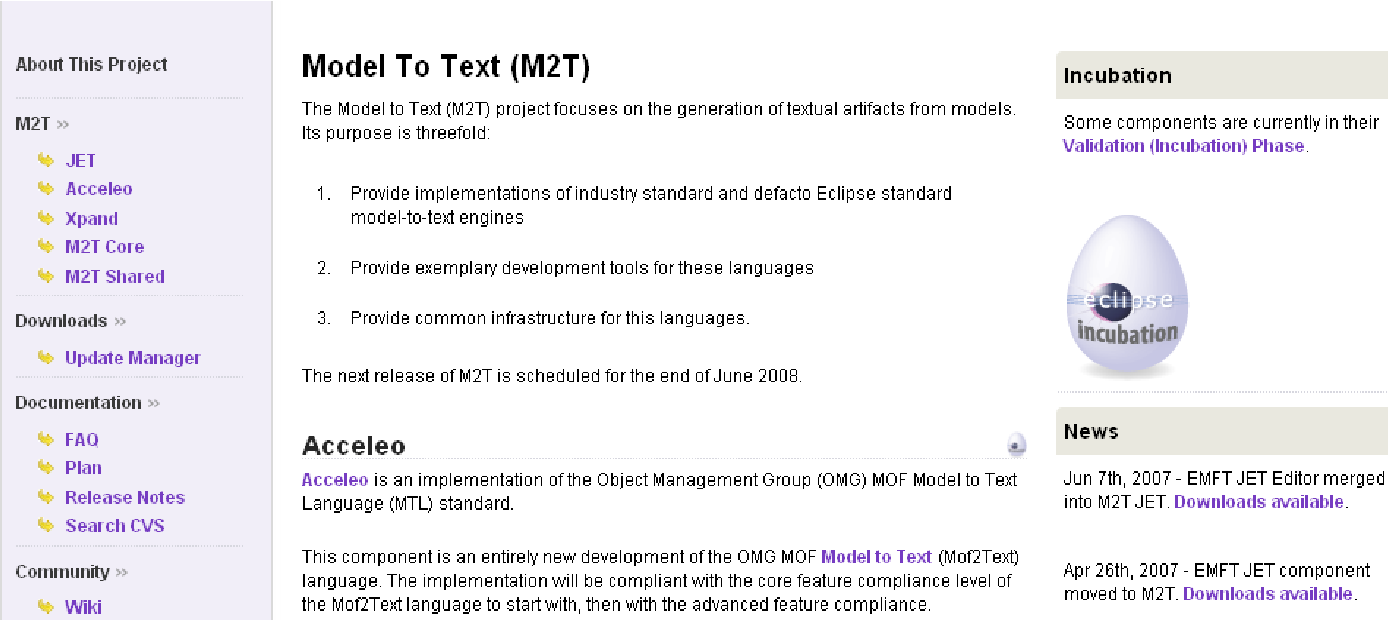
- **Component lead**, incubation status
- **Ecosystem** : Cap Gemini NL, Makina Corpus, Lyria ...

SVN hosting, bug tracker, simultaneous release

Ring a bell ?

In the meantime

- OMG released the MOF Model To Text Language Specification
- The Acceleo core team is convinced it's the way to go



About This Project

M2T »

- JET
- Acceleo
- Xpand
- M2T Core
- M2T Shared

Downloads »

- Update Manager

Documentation »

- FAQ
- Plan
- Release Notes
- Search CVS

Community »

- Wiki

Model To Text (M2T)

The Model to Text (M2T) project focuses on the generation of textual artifacts from models. Its purpose is threefold:

1. Provide implementations of industry standard and defacto Eclipse standard model-to-text engines
2. Provide exemplary development tools for these languages
3. Provide common infrastructure for this languages.

The next release of M2T is scheduled for the end of June 2008.

Acceleo

Acceleo is an implementation of the Object Management Group (OMG) MOF Model to Text Language (MTL) standard.

This component is an entirely new development of the OMG MOF Model to Text (Mof2Text) language. The implementation will be compliant with the core feature compliance level of the Mof2Text language to start with, then with the advanced feature compliance.

Incubation

Some components are currently in their Validation (Incubation) Phase.

News

Jun 7th, 2007 - EMFT JET Editor merged into M2T JET. Downloads available.

Apr 26th, 2007 - EMFT JET component moved to M2T. Downloads available.

Why Eclipse ?

- Obeo's involvement in Eclipse Modeling
- Visibility, users and easier integration with other projects
- OMG's reference implementations are in Eclipse
- We loved the « Best Open Source Eclipse-Based Developer Tool » award !

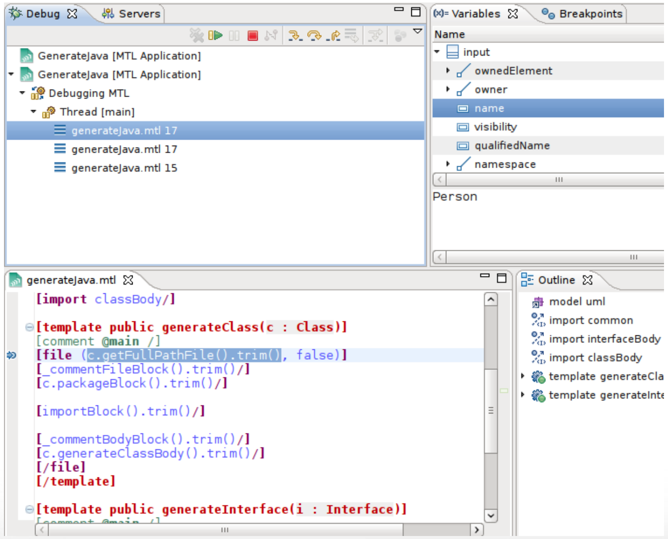
The challenges

- Keeping the spirit whereas moving to the OMG standard
- Keeping the project's user base
- Keeping what made the project successful at first
- Playing well : « The Eclipse Way »

Keeping the spirit

Acceleo's new implementation aka : Eclipse Acceleo

- Starting from scratch
- **State of the Art ++ Tooling**
- Usable everywhere : Java jar, OSGi, Eclipse RCP or IDE



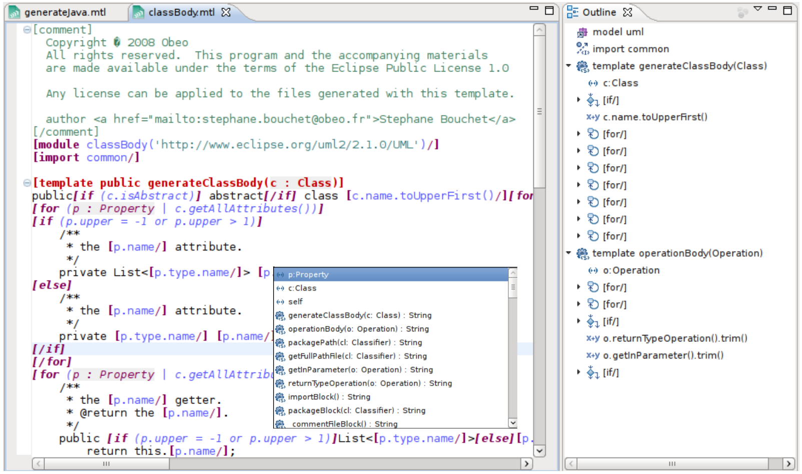
```
[import classBody/]

[template public generateClass(c : Class)]
[comment @main /]
[file (c.getFullPathFile().trim(), false)]
[_commentFileBlock().trim()/]
[c.packageBlock().trim()/]

[importBlock().trim()/]

[_commentBodyBlock().trim()/]
[c.generateClassBody().trim()/]
[/file]
[/template]

[template public generateInterface(i : Interface)]
```



```
[comment]
  Copyright © 2008 Obeo
  All rights reserved.  This program and the accompanying materials
  are made available under the terms of the Eclipse Public License 1.0

  Any license can be applied to the files generated with this template.

  author <a href="mailto:stephane.bouchet@obeo.fr">Stephane Bouchet</a>
[/comment]
[module classBody('http://www.eclipse.org/uml2/2.1.0/UML')/]
[import common/]

[template public generateClassBody(c : Class)]
public[if (c.isAbstract)] abstract[/if] class [c.name.toUpperFirst()/][for
[for (p : Property | c.getAllAttributes())]
[if (p.upper = -1 or p.upper > 1)]
    /**
     * the [p.name/] attribute.
     */
    private List<[p.type.name/]> [p.
[else]
    /**
     * the [p.name/] attribute.
     */
    private [p.type.name/] [p.name/
[/if]
[/for]
[for (p : Property | c.getAllAttribu
    /**
     * the [p.name/] getter.
     * @return the [p.name/].
     */
    public [if (p.upper = -1 or p.upper > 1)]List<[p.type.name/]>[else][p.
        return this.[p.name/];
```

```
p:Property
c:Class
self
generateClassBody(c: Class) : String
operationBody(o: Operation) : String
packagePath(cl: Classifier) : String
getFullPathFile(cl: Classifier) : String
getInParameter(o: Operation) : String
returnTypeOperation(o: Operation) : String
importBlock() : String
packageBlock(cl: Classifier) : String
_commentFileBlock() : String
```

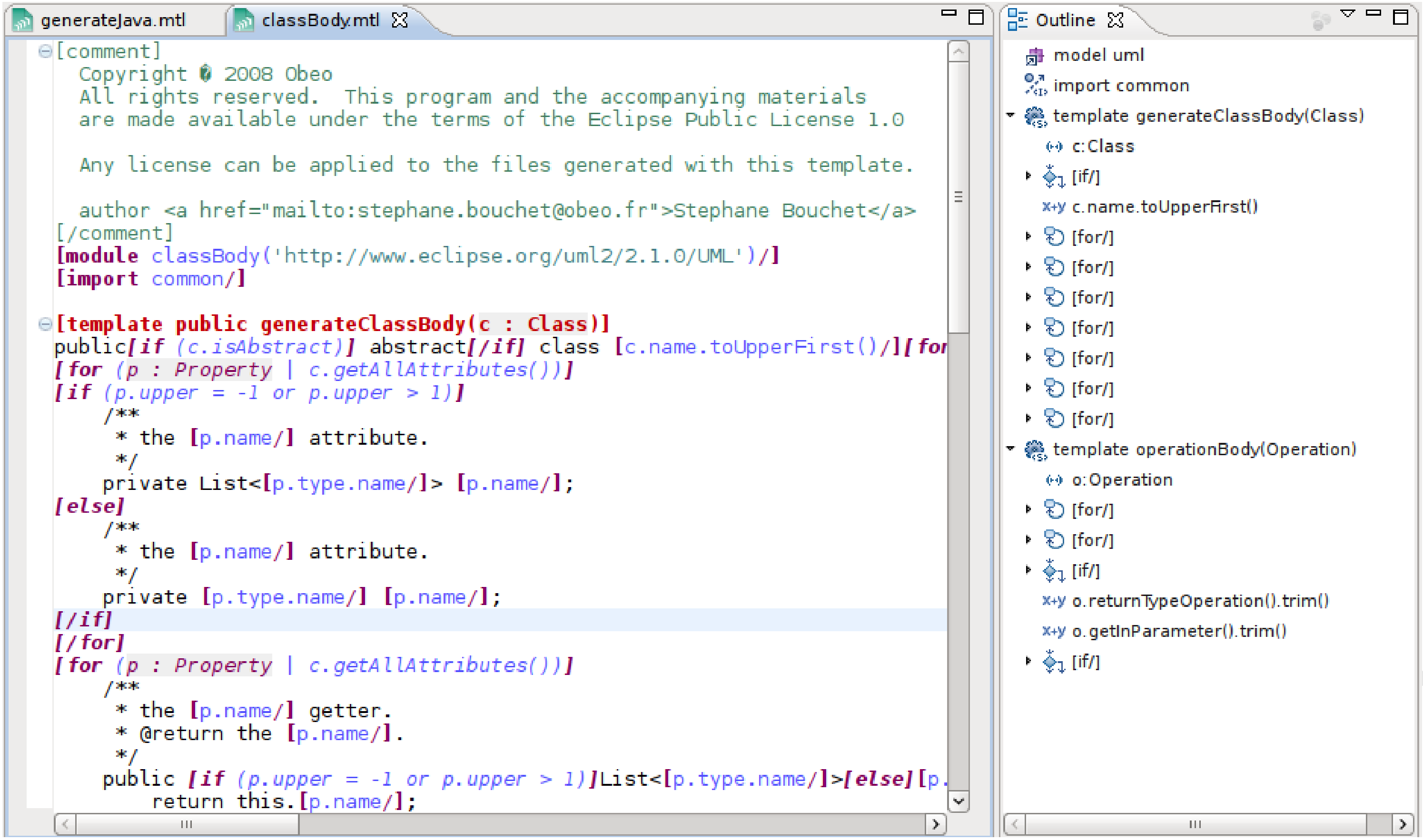
A alléger/disséminer Features

- OMG-MTL implementation
  - Template language extending OCL
  - Template imports, inheritance and guards
  - Aspect oriented overrides of an existing module
- Init wizards, editors with advanced completion, validation, quick fixes, show references...
- Views to manage overrides , patterns
- Debugger, Performances Profiler
- Text indent, encoding management
- Java API, generator pluginization
- User code areas through explicit tags or Jmerge
- Standalone core

But changing ...

(for the good)

Acceleo Syntax – Model to Text Language (MTL)



```
[comment]
  Copyright © 2008 Obeo
  All rights reserved.  This program and the accompanying materials
  are made available under the terms of the Eclipse Public License 1.0

  Any license can be applied to the files generated with this template.

  author <a href="mailto:stephane.bouchet@obeo.fr">Stephane Bouchet</a>
[/comment]
[module classBody('http://www.eclipse.org/uml2/2.1.0/UML')/]
[import common/]

[template public generateClassBody(c : Class)]
public[if (c.isAbstract)] abstract[/if] class [c.name.toUpperFirst()/][for
[for (p : Property | c.getAllAttributes())]
[if (p.upper = -1 or p.upper > 1)]
    /**
     * the [p.name/] attribute.
     */
    private List<[p.type.name/]> [p.name/];
[else]
    /**
     * the [p.name/] attribute.
     */
    private [p.type.name/] [p.name/];
[/if]
[/for]
[for (p : Property | c.getAllAttributes())]
    /**
     * the [p.name/] getter.
     * @return the [p.name/].
     */
    public [if (p.upper = -1 or p.upper > 1)]List<[p.type.name/]>[else][p.
        return this.[p.name/];
```

tax.htm

OMG Specification

- Compliance Level

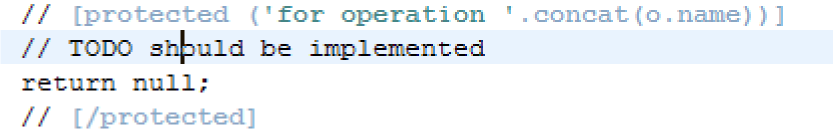
Syntax Features	Core	Advanced
Abstract	Minimal	Intermediate
Concrete	Basic	Complete

Helios : complete support excepted Macros and code explicit syntax

- Standard evolution at the OMG
- Interactions with the OMG are slooooooow
- STD versus Non-STD library for blocker features (encoding ..)

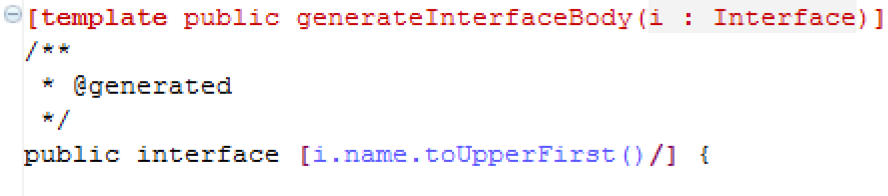
User Code

- Protected Areas (STD)



```
// [protected ('for operation '.concat(o.name))]
// TODO should be implemented
return null;
// [/protected]
```

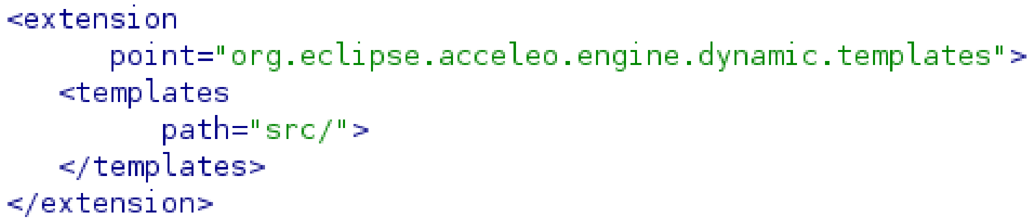
- Jmerge (Non-STD)



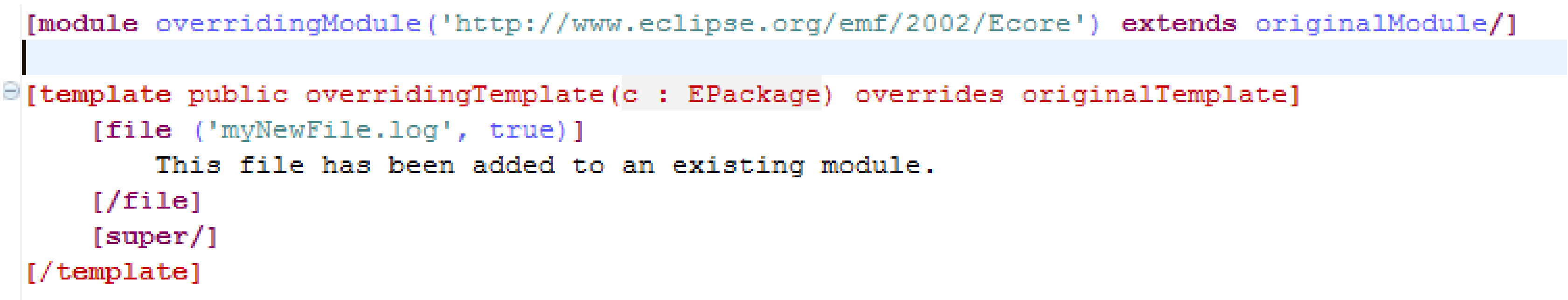
```
[template public generateInterfaceBody(i : Interface)]
/**
 * @generated
 */
public interface [i.name.toUpperFirst()/] {
```

Advanced Eclipse Features

- Dynamic contributions / Template Aspects



```
<extension
      point="org.eclipse.acceleo.engine.dynamic.templates">
   <templates
         path="src/">
   </templates>
</extension>
```



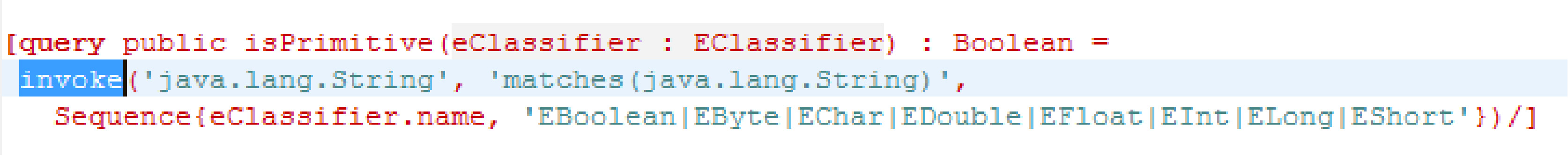
```
[module overridingModule('http://www.eclipse.org/emf/2002/Ecore') extends originalModule/]

[template public overridingTemplate(c : EPackage) overrides originalTemplate]
    [file ('myNewFile.log', true)]
        This file has been added to an existing module.
    [/file]
    [super/]
[/template]
```

- Overrides view

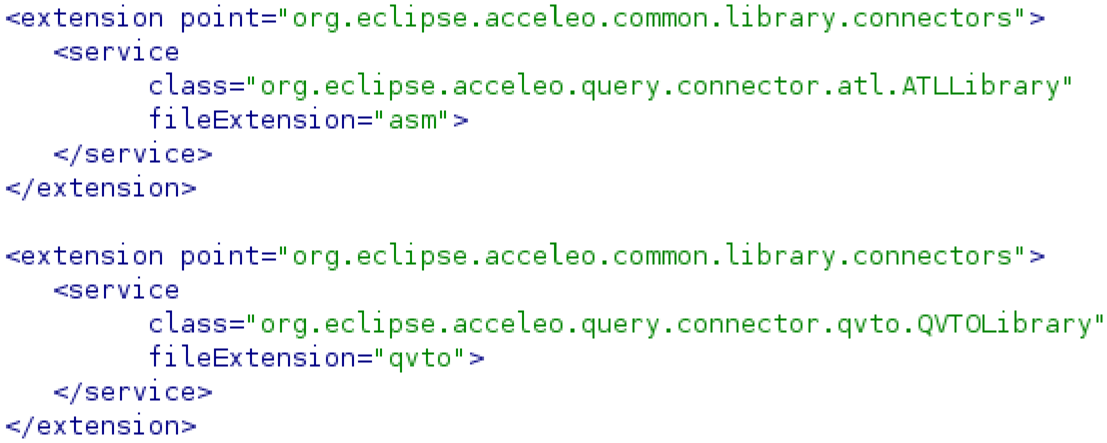
Advanced Eclipse Features

- Java extensions



```
[query public isPrimitive(eClassifier : EClassifier) : Boolean =
 invoke('java.lang.String', 'matches(java.lang.String)',
   Sequence{eClassifier.name, 'EBoolean|EByte|EChar|EDouble|EFloat|EInt|ELong|EShort'})/]
```

- M2M and M2T interoperability (coming soon)

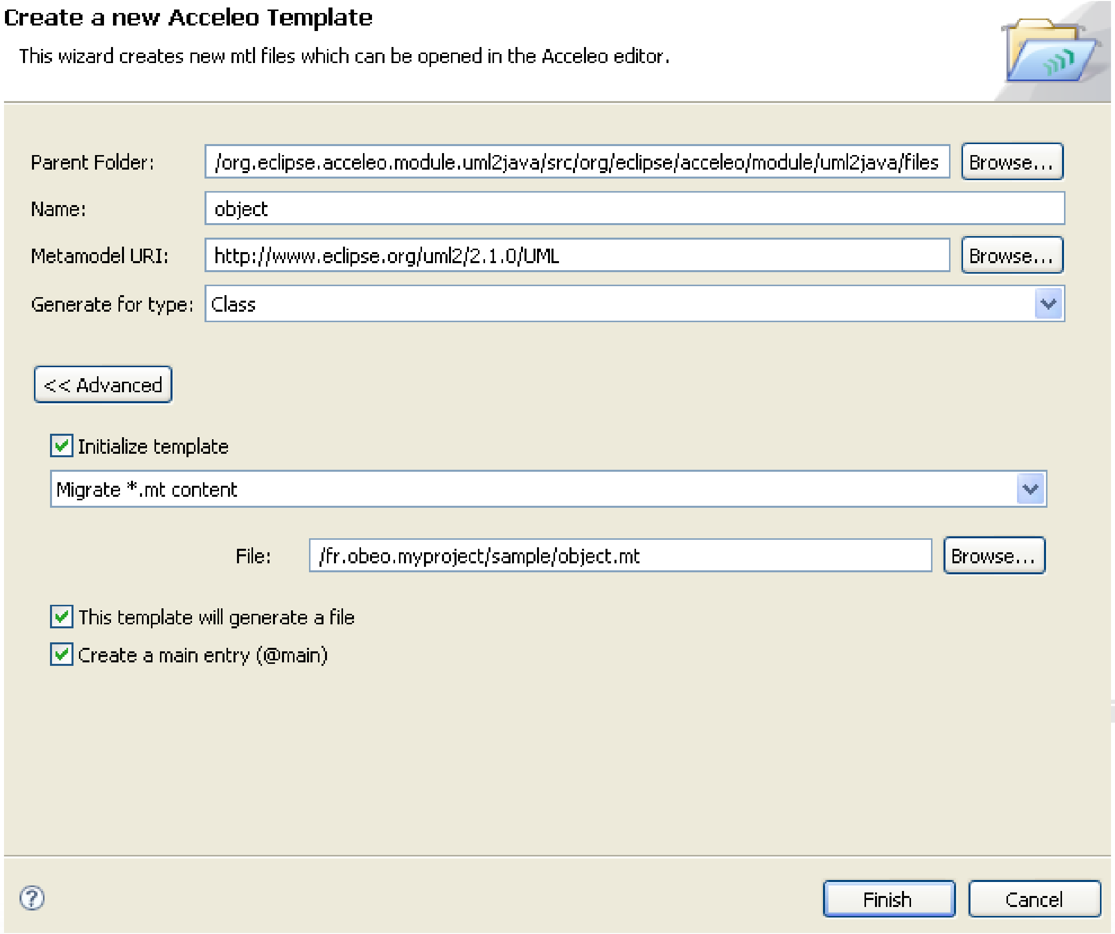


```
<extension point="org.eclipse.acceleo.common.library.connectors">
   <service
         class="org.eclipse.acceleo.query.connector.atl.ATLLibrary"
         fileExtension="asm">
   </service>
</extension>

<extension point="org.eclipse.acceleo.common.library.connectors">
   <service
         class="org.eclipse.acceleo.query.connector.qvto.QVTOLibrary"
         fileExtension="qvto">
   </service>
</extension>
```

Dealing with the change

Assisted migration



Create a new Acceleo Template

This wizard creates new mtl files which can be opened in the Acceleo editor.

Parent Folder: /org.eclipse.acceleo.module.uml2java/src/org/eclipse/acceleo/module/uml2java/files

Name: object

Metamodel URI: http://www.eclipse.org/uml2/2.1.0/UML

Generate for type: Class

☑ Initialize template

Migrate *.mt content

File: /fr.obeo.myproject/sample/object.mt

☑ This template will generate a file

☑ Create a main entry (@main)

igrate.htm

Community, Users (un autre slide ?)

- IP/Brand now owned by the Eclipse Foundation
- Maintenance build and support for Acceleo.org implementation
- Technically better and usable in more contexts
- French forums ?

- Progressive move from acceleo.org to eclipse.org
- Generator modules : a decision by each lead

What's next ?

Next steps

- 2010 : website and infrastructures progressively moving to Eclipse.org
- Rock stable, graduated and production-ready release : **Eclipse Helios**

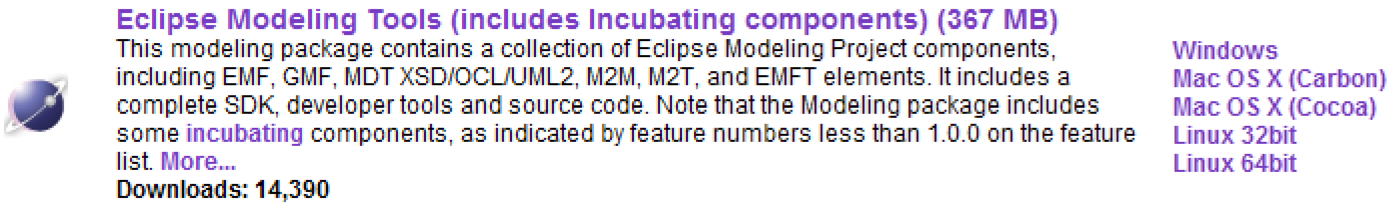
Events

- Sprints
- Eclipse Acceleo Day
- Eclipse DemoCamp at Paris
- Conferences : ESE, Econ, Linux Solutions..

Conclusion

- We still have to evaluate the benefit of this move, positive feedback so far.

- In the **Galileo/Helios** Train and **Eclipse Modeling Package**



Eclipse Modeling Tools (includes Incubating components) (367 MB)
This modeling package contains a collection of Eclipse Modeling Project components, including EMF, GMF, MDT XSD/OCL/UML2, M2M, M2T, and EMFT elements. It includes a complete SDK, developer tools and source code. Note that the Modeling package includes some incubating components, as indicated by feature numbers less than 1.0.0 on the feature list. More...
Downloads: 14,390

Windows
Mac OS X (Carbon)
Mac OS X (Cocoa)
Linux 32bit
Linux 64bit

- Ready to use, try it !

- Examples are available : uml to java, ecore to python

Thanks for your attention

M2T newsgroup, mailling list and #acceleo or #eclipse-modeling on freenode

- Further information :
  - http://www.eclipse.org/m2t
  - http://www.omg.org/docs/ptc/07-08-16.pdf
  - http://www.obeo.fr
  - http://www.eclipse.org/proposals/eef

cedric.brun@obeo.fr