

# Tutorial 2

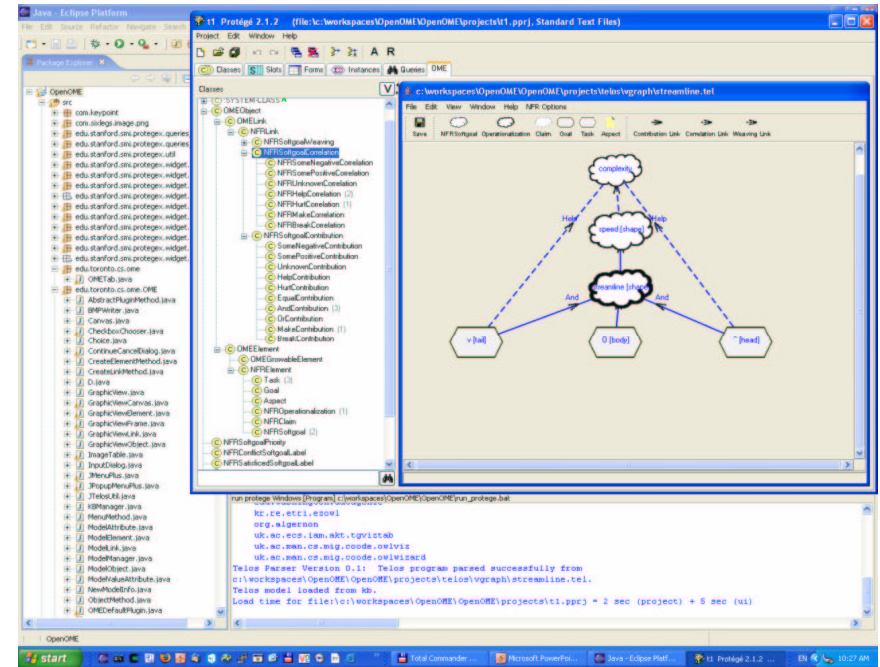
## OpenOME distilled

On the Requirements, Design and Implementation of the legacy tool  
<http://www.cs.toronto.edu/~yijun/OpenOME.html>  
<http://sourceforge.net/projects/openome>

Spring 2005

ECE450H1S

Software Engineering II



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## 1. Historical retrospective

- OME stands for Organizational Modeling Environment. It was part of the *Tropos* project to support goal-oriented and agent-oriented requirements engineering methodologies (at least 5 years development involving 10 man-year efforts)
- OME has been widely used by more than 130 users (across the globe)
- Every OME user must sign an agreement with *Techne* because the Knowledge Base was a module protected by the license
- To enlarge the user-base, we decide to open-source it last year ... OpenOME

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## 2. Requirements and features

- Is a Graph editor
  - A graph has elements and links in various form, basic operations include: Load, Save, Insert, Delete, Select, Cut, Paste, Hide, Highlight, Labelling, etc.
  - Multiple views (under development)
- Supports requirements engineering
  - Goal-oriented: goal reasoning through label propagation (NFR)
  - Agent-oriented: group goals into agents rationale (i\*)
- Interchanges with other graph editors
  - Semantic Web queries: Protégé (OWL)
  - Layout algorithms: AT&T Graphviz (DOT)
  - Scalability: Microsoft Visio (XSLT) .....under development
  - Model-driven development: Rational Rose (EMF/XMI) .....under planning

## 3. Design: MVC

- Model-View-Controller design pattern
  1. *Model*: The Telos Knowledge Base representaiton and OME models
  2. *View*: Graph presentation
  3. *Controller*: commands in menu, toolbar and various methods

### 3.1 Model

- *ModelManager*
- *Telos\**: requirements as knowledge
- Telos as metamodeling language
  - Level: Token, SimpleClass, MetaClass, MetaMetaClass, Builtin classes ...
  - \*.tel: L X IN {Y}\* ISA {Z}\* WITH {attribute,U:V}\*
  - ER, NFR(vgraph), ISTAR, GRL
  - From *jtelos.dll* to *TelosParser*
  - Export Telos model to other models: *JTelosUtil.java*  
*OTelos (ConceptBase)*, *Protégé (KnowledgeBase)*  
*TODO: Eclipse Modeling Framework (XMI)*

### 3.2 View

- *GraphicView* is a collection of *GVElement*, *GVLinks*, maps the tokens in Telos model into geometric shapes in the presentation  
*GVE\$Record*, *GVL\$Record* ...encodes the location of the shapes, states of the presentation, etc. They are saved as *SerializedViewObjects*
- *GVElement*, *GVLink*  
Visitor pattern and Decorator pattern
- They are extended by the OME plugins

## 3.3 Controller

- *OMETab*: run it as standalone Java application, or as a plugin for Protégé or Eclipse (under development)
- *GraphViewFrame* and *OMEDefaultPlugin*: control the menu, toolbar and methods  
A method is interpreted as commands
  - No argument command: Layout
  - With one argument: Insert, ...
  - With two arguments: CreateLink, Move ...
  - With multiple arguments: Select, ...
- They are extensible using the OME plugins

## 4. Implementation issues

- OME: 90% Java + 10% C/C++
- Recently
  - OpenOME: 99% Java + 1% scripts
  - Use the Eclipse IDE
  - CVS, bug report: host at SourceForge
  - 3 research developers + some contribution from you ☺

## 5. Relation to your project

- It is the graph editor client of the choice for your OmniGraphEditor project. You may choose additional open-source graph editor as bonus point (such as Dia, Visio, Eclipse GEF etc.), but that is not recommended because of the large efforts
- Opportunities:
  - You may add junit test cases to the code base to reveal bugs (publish it to the bug tracking system) and fix them (+5%)
  - You may apply design patterns, refactoring techniques on this legacy code base, showing as an improved complexity metrics (+2.5%)
  - You may tune the performance of the system to speed up the display, load/save for scalable graphs (+2.5%)
- Don't forget your major project task (up to 100%!)
  - To study the editor methods in the OpenOME and adapt them to the OmniGraphEditor web service.