

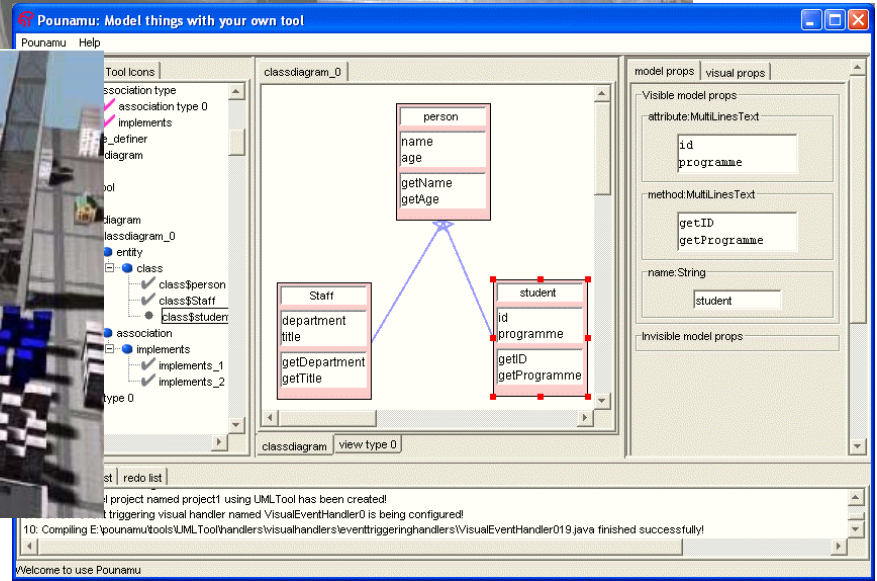
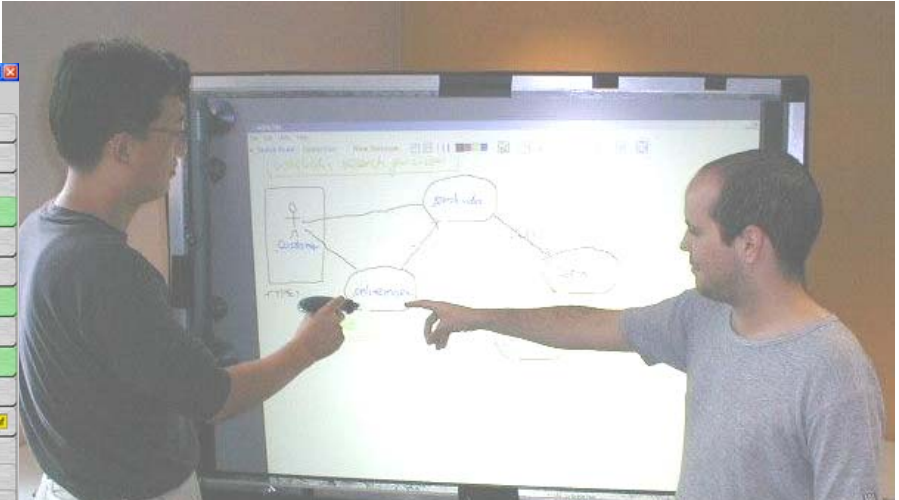
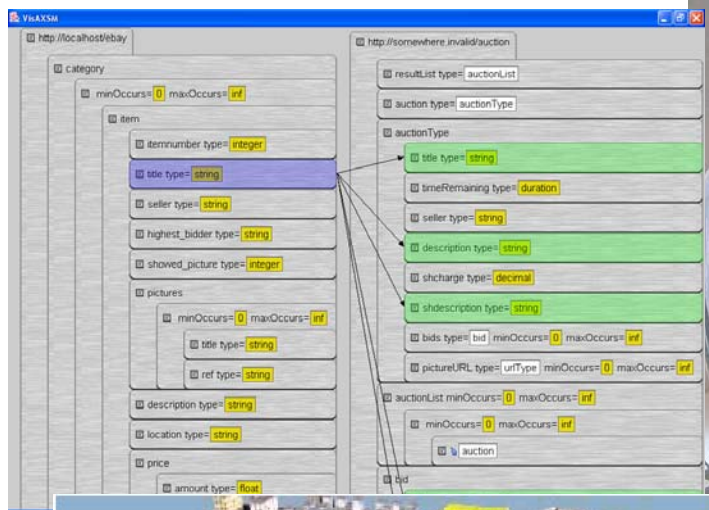
Software Tools Research

Prof. John Grundy & Prof. John Hosking

2004

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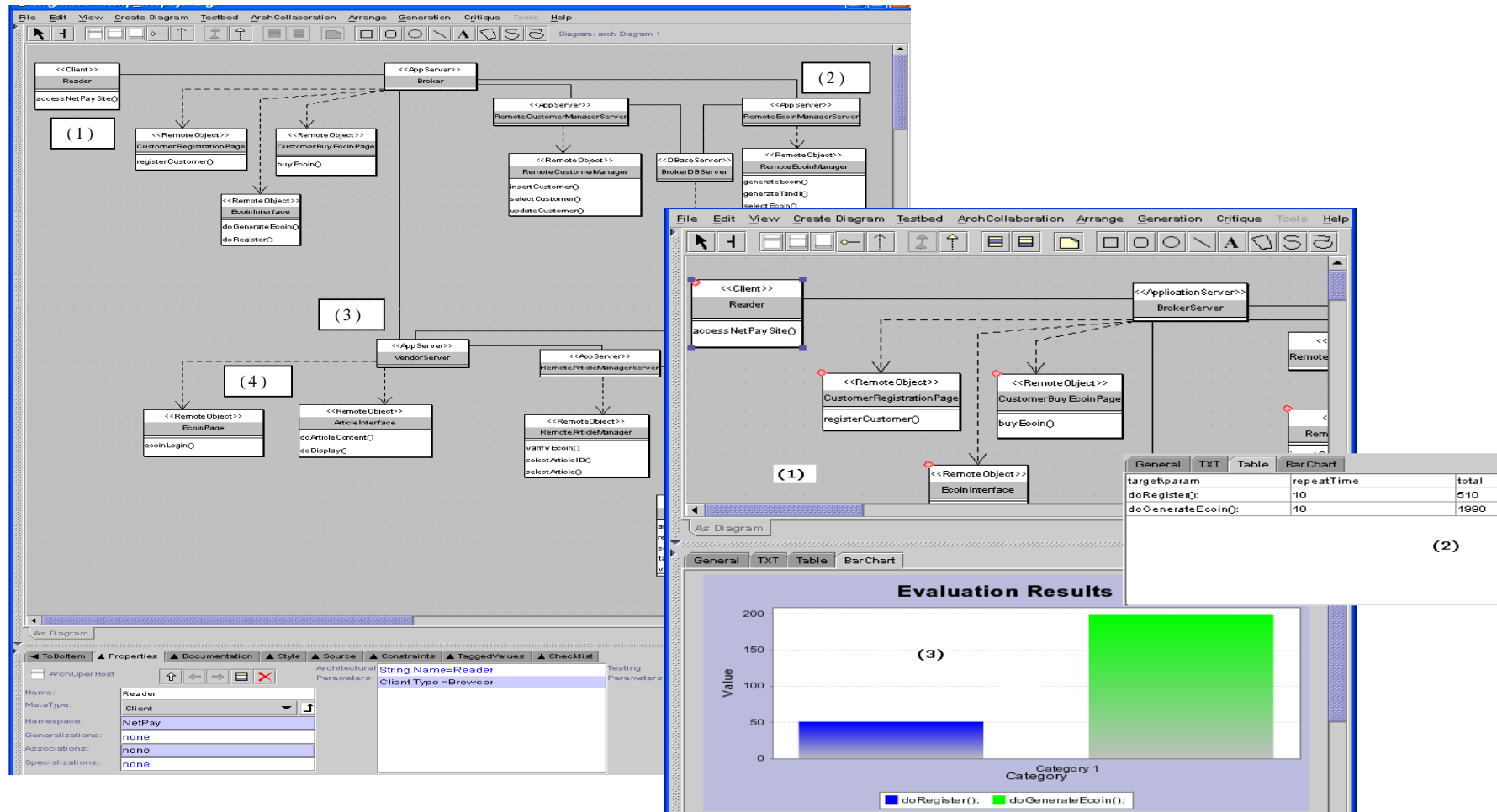


Software Tools

- **Tools that assist people to design and construct software**
- Have interests in the following sorts of software tools:
 - **Visual tools** - ie tools that use diagrams to express parts of the software design or implementation
 - **Meta Tools** - tools that are used to construct other tools
 - **Domain Specific tools** - software tools tailored for a very restricted set of problem domains (particularly information mapping)
 - **End user tools** - tools that allow specific groups of people (typically non programmers) to construct software
 - **Collaborative tools** - tools that allow multiple people to construct software together
 - **Sketch based tools** - tools where users interact using a pen rather than a mouse
- Many projects done with local software companies e.g. data mapping (Orion, XSol); process modelling (Peace); project management (WhiteCloud); tutoring (Orion); integration (XSol)

Example #1: Argo/MTE

- Performance test-bed generator extending open source ArgoUML
- Performance engineering for complex distributed systems



Example #2: Pounamu Meta-Tool

"A tool for building tools..."

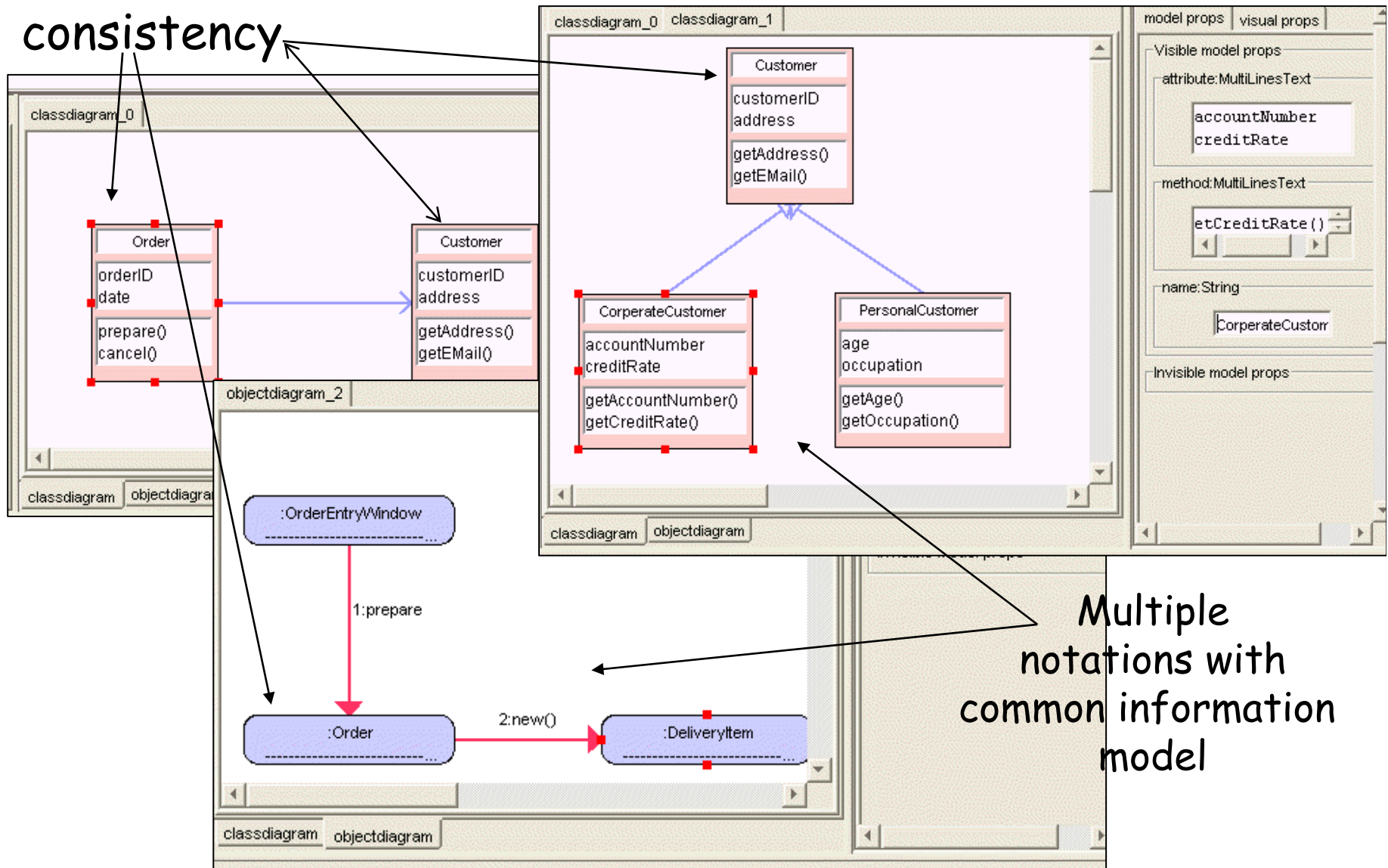
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consistency

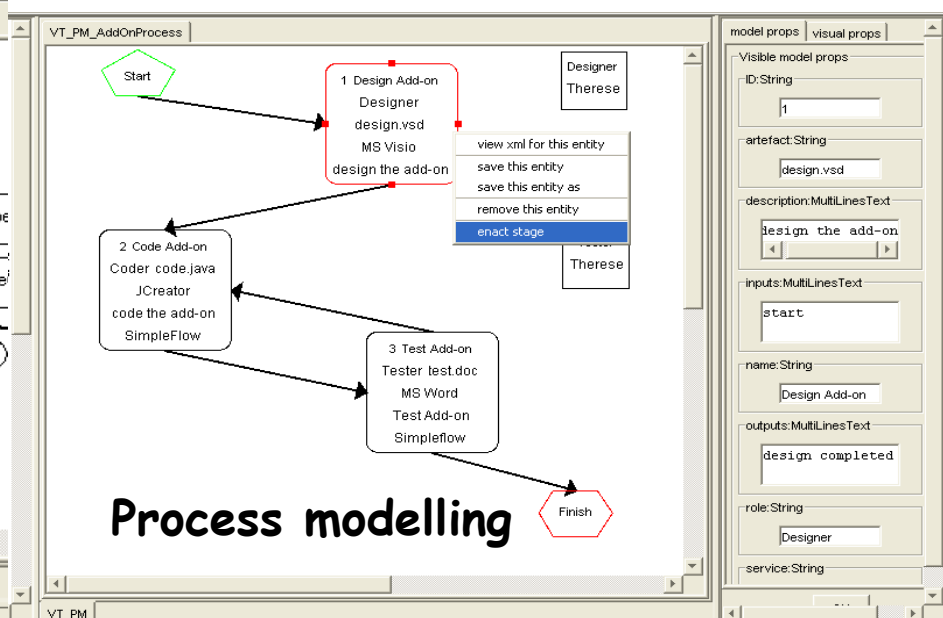
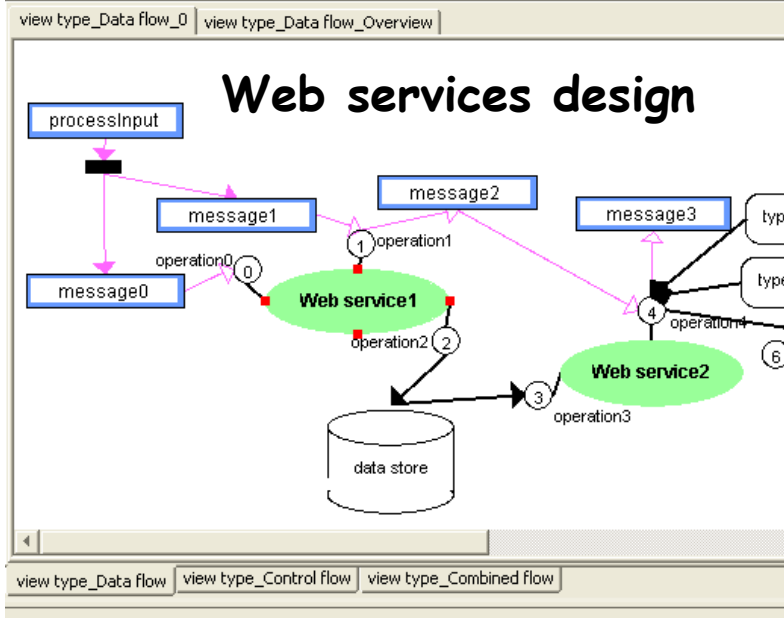
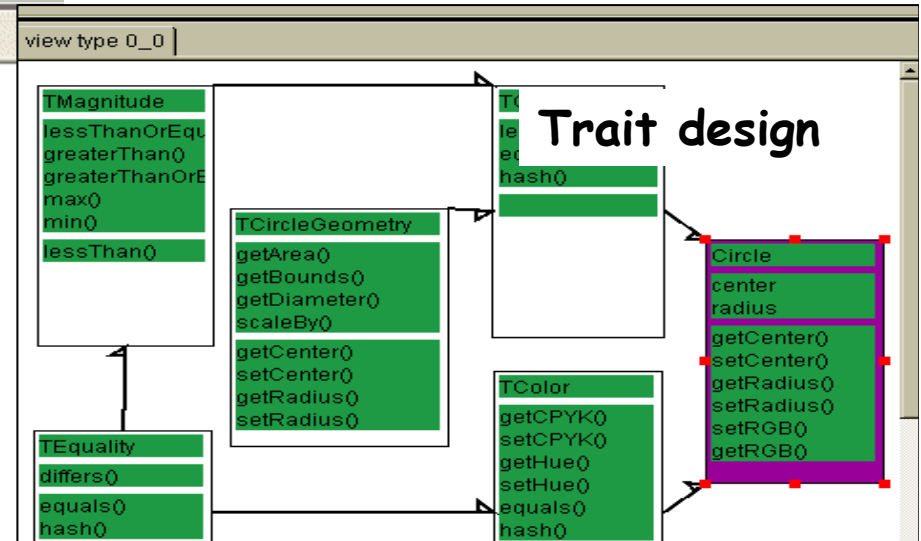
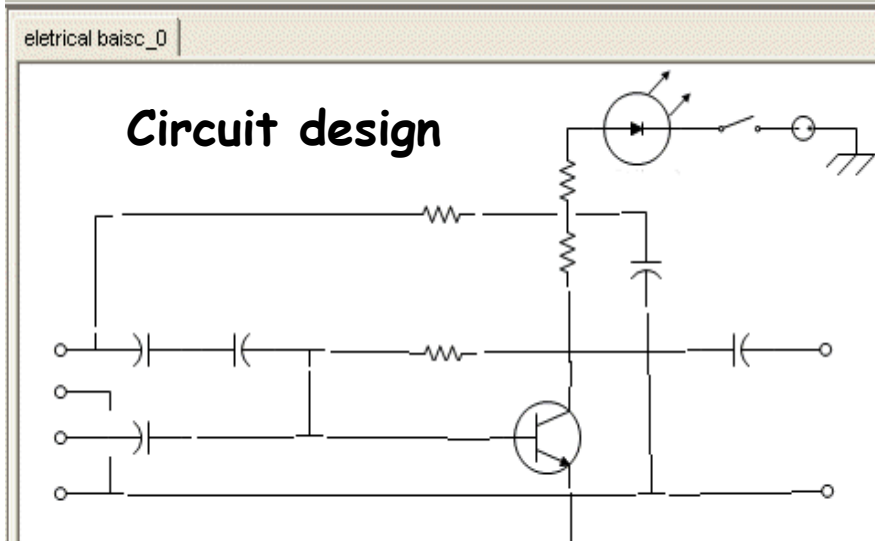


Multiple notations with common information model

Pounamu - Other Tool Examples

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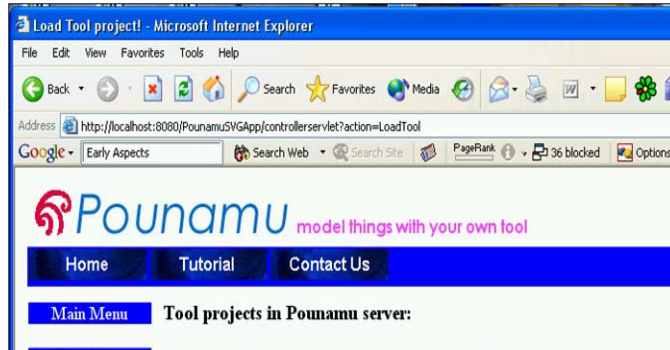


Adaptive UIs

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Main Menu Display the updated PounamuView diagram:

Specify a Pounamu tool

Load Tool

The result of your previous editing action on the PounamuView Diagram is shown in the left menu bar for another editing action.

Specify Pounamu project & view

New ModelProject

Load ModelProject

New Pounamuvuew

Load Pounamuvuew

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findVideos ()

addVideo ()

rentVideo ()

Type Property Value

g Video

Properties

Type Property Value

Change CancelChange

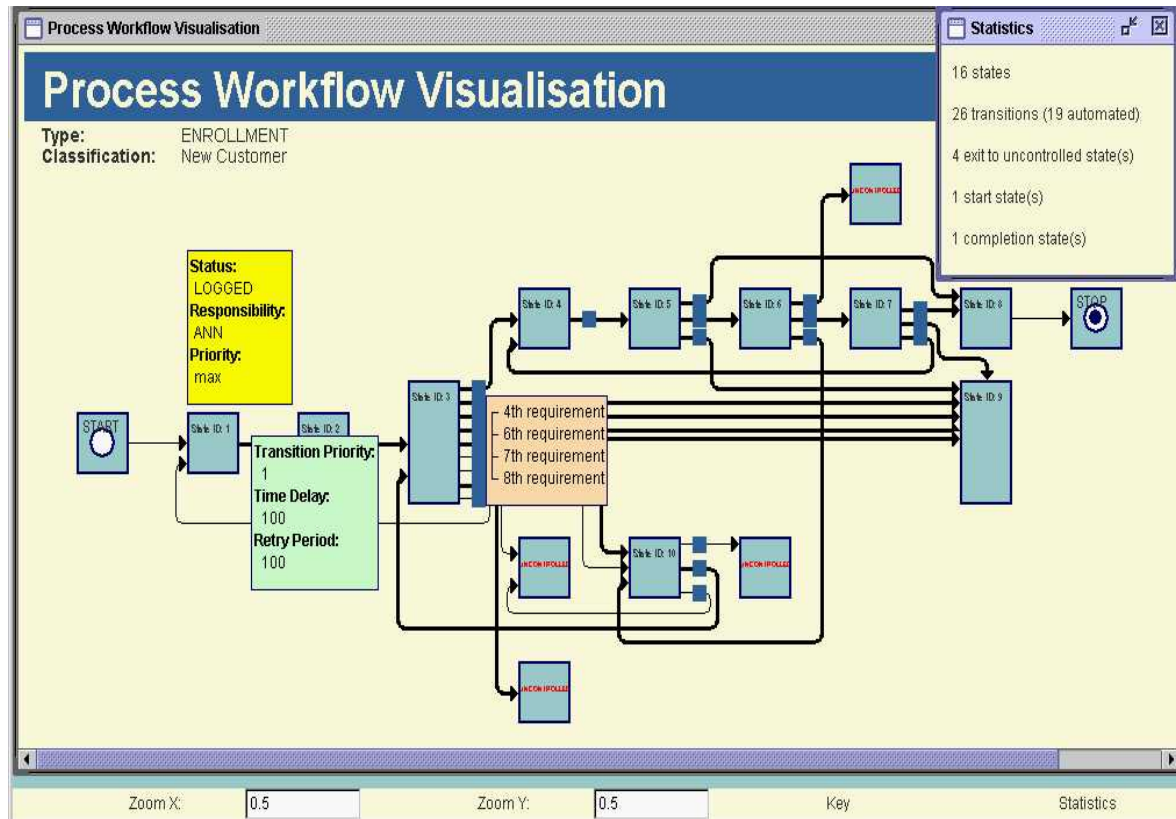
Industrial Collaboration (1): Peace Software Ltd

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- Visualising workflow models
- Describe complex business processes for Peace's main software product
- End user support
- Project student
- Peace developed add-on to product

(2) MSc TIF Student Example: Orion Systems Ltd

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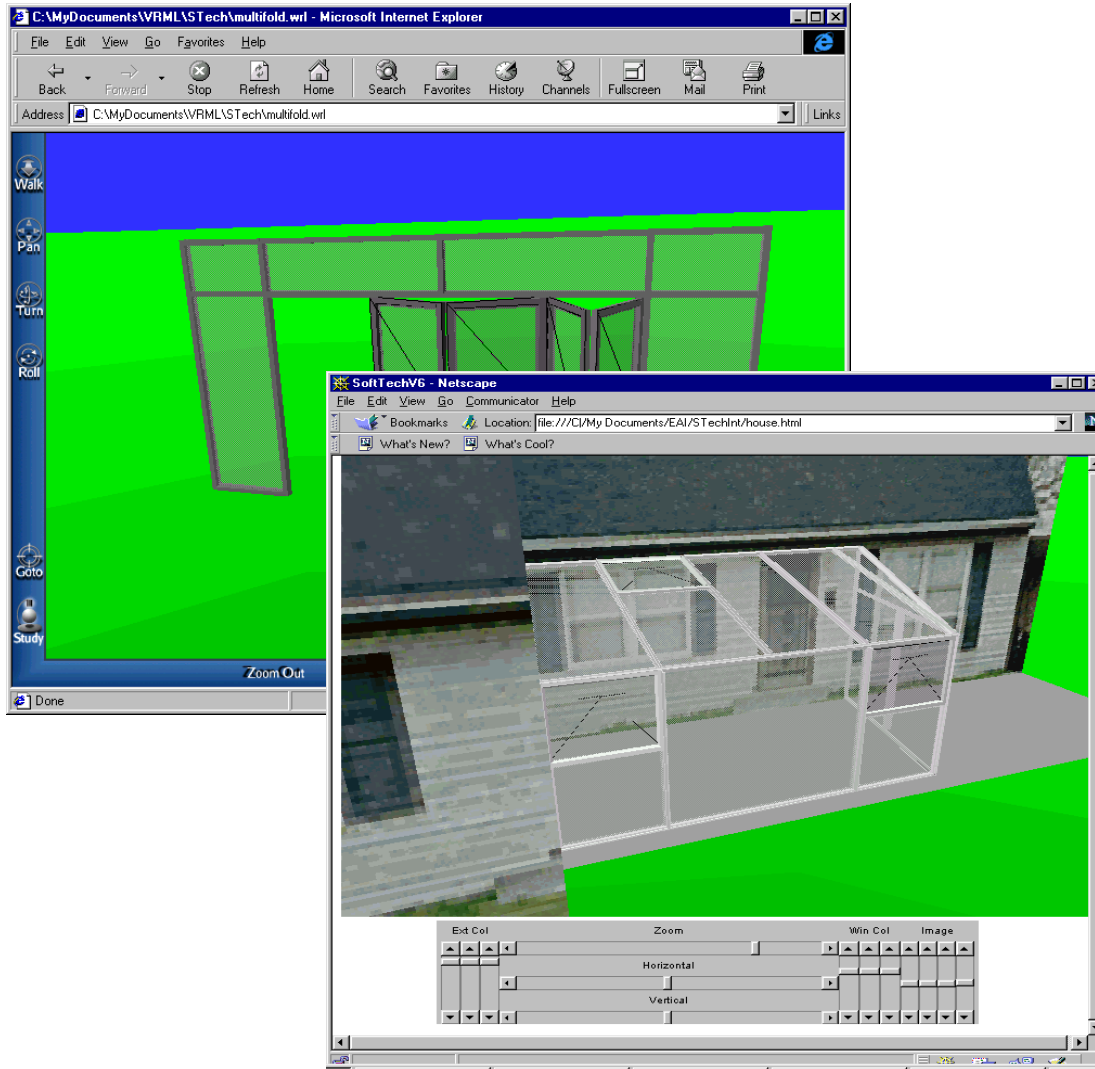
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The screenshot displays the Reciprocity Author interface. The main window shows a course structure with lessons and subjects. The 'Installation' page is selected, displaying text about administrative privileges. A 'Rating Page Specification' dialog box is open, showing criteria for 'Helpfulness' and 'Overall' with choices like '[Not helpful]', '[Slightly helpful]', '[Helpful]', '[Very Hel...]', '[Poor, 1]', '[2]', '[3]', '[4]', and '[Excellent, 5]'. Below the dialog, the 'Action Editor' shows an 'InstallShield Wizard' with a 'Welcome to the InstallShield Wizard' message. The 'Single Click Parameters' section is visible, showing a dropdown menu with options like 'single click', 'double click', 'right click', 'key press', and 'type characters'. The 'Instructions' section contains a numbered list: '1. After reading the instructions on the screen, click once with the left mouse button on the Next button to progress to the next step in the dialog.'

- TIF grant supporting MSc student
- Tutorial designer and viewer and feedback
- Student did prototype
- Orion's documentation team sponsors and users

(3) TBG Example #1: Softech Ltd



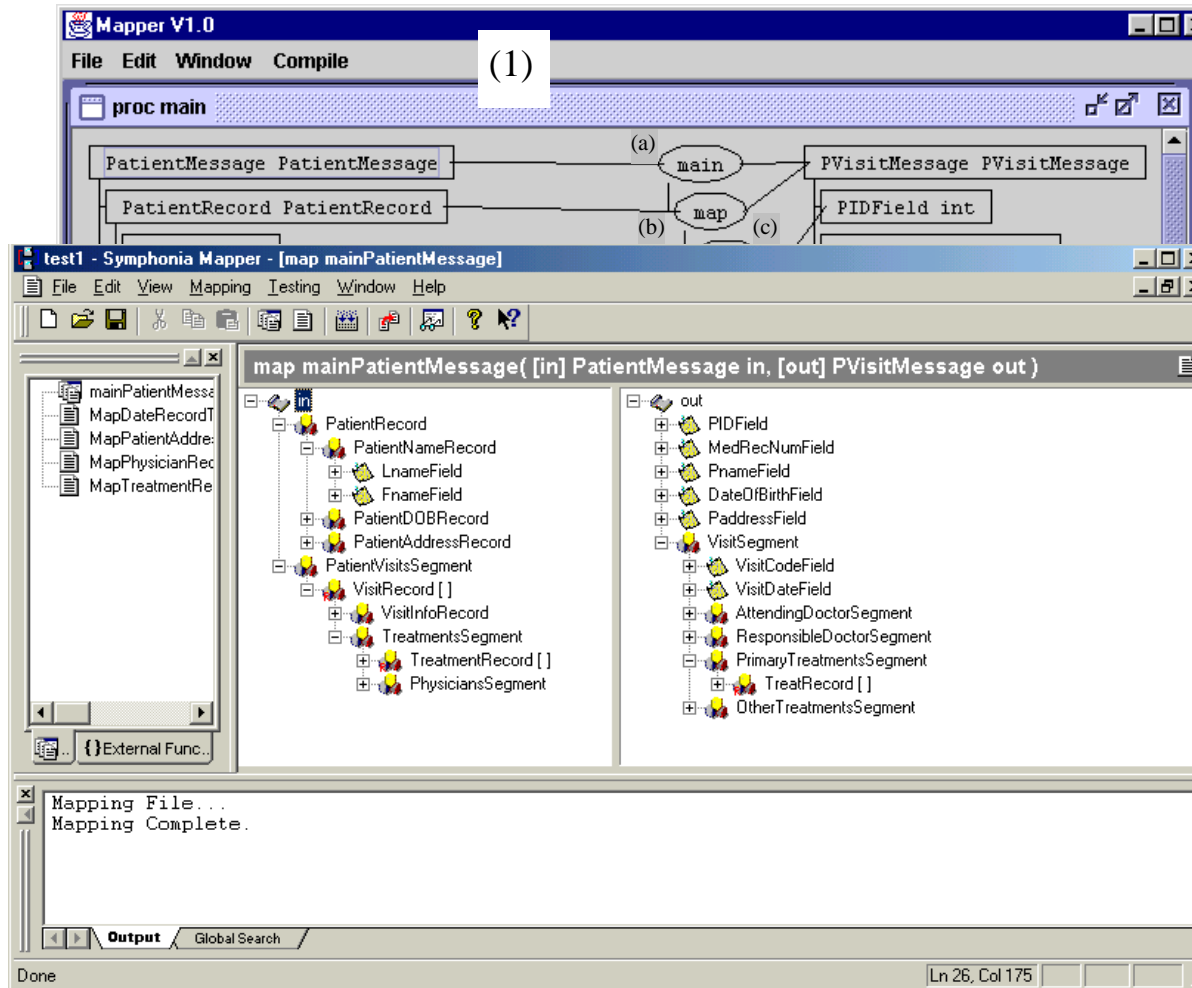
- Using VRML to visualise complex 3D designs
- Aluminium window design domain
- Visualise with images
- Navigation
- Academics doing applied research
- Softech incorporated in next version of their CAD tool

(4) TBG Example #2: Orion Systems Ltd

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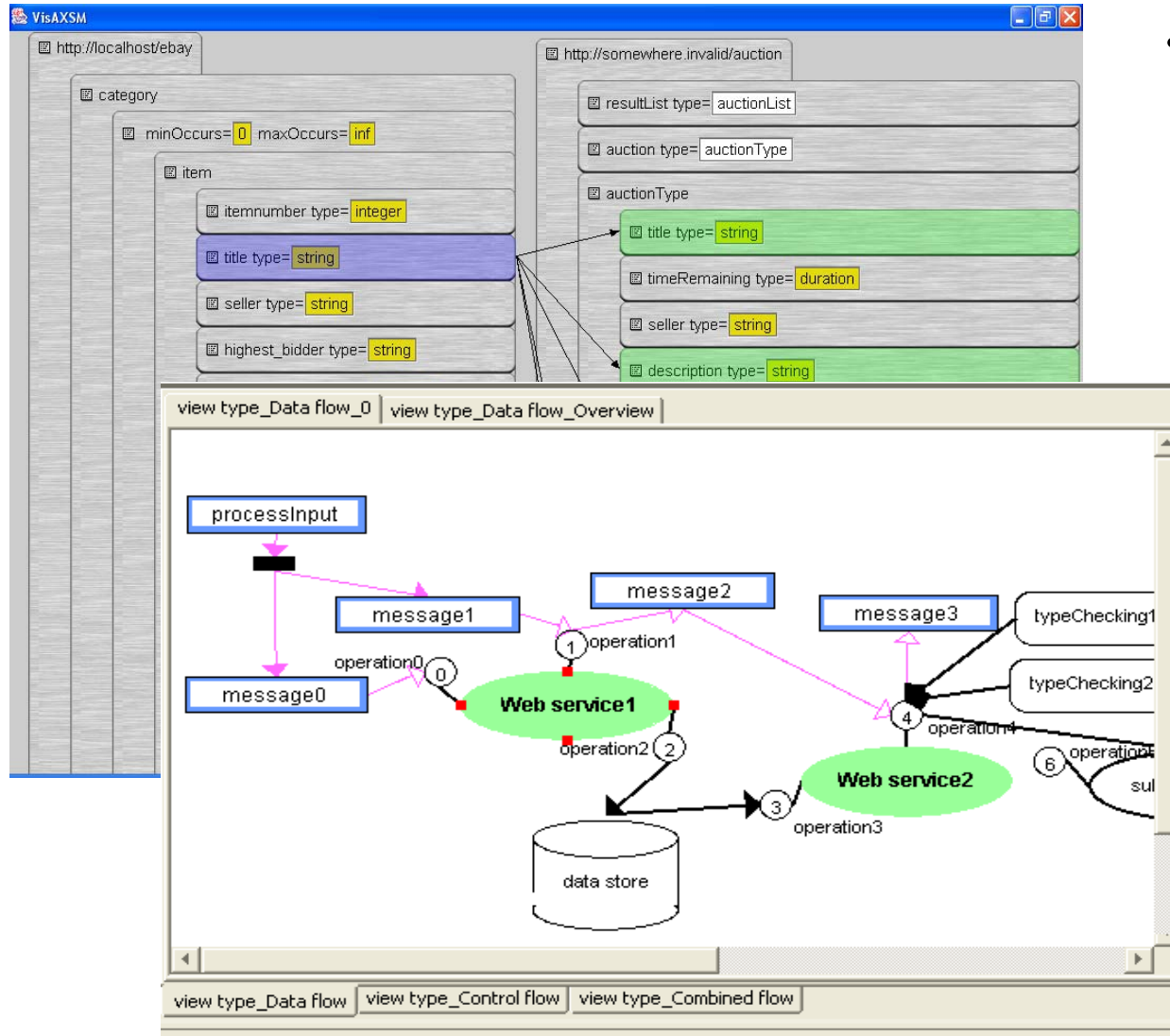
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- EDI message transformation
- Specify using visual language
- Generates code to do transforms
- Academics doing applied research
- Orion has commercialised
- Developed IDE + language + transformation engine

(5) NERF Example #1: XSol Ltd



- Integration system via "Virtual database" supporting data aggregation & update from wide variety of sources

Academics & practitioners co-located

Several student TIF projects @ company

XSol in process of commercialising

Other tools research

- **Sketching interfaces**
 - For large screen and tablet PC
 - UML tool with sketch interface - would like to extend Pounamu to make this generic
- **Mobile system interfaces**
 - Specifying user interfaces that adapt to the technology they are displayed on (eg mobile phone, Palm pilot, tablet)
- **Mapping tools**
 - Specifying mappings for health messages, business forms, construction tool data, visual notations
- **Software Architecture and Aspect oriented design**
 - Specifying software designs using aspects, which cross cut other ways of structuring software such as object oriented design
- **Collaborative work support**