DEPLOY Integrated Project

Deployment of advances engineering methods for high productivity and dependability in European industry

http://www.deploy-project.eu/

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Information

- EC Information Communication Technologies (ICT) FP7, call 1, Strategic Objective ICT-2007.1.2: Service and Software Architectures, Infrastructures and Engineering
- Total: 17885406 Euro; EC contribution: 12060000 Euro
- February 2008 - January 2012
- FP6 STREP RODIN project (2004-2007) on creating a rigorous open development environment for complex systems rodin.cs.ncl.ac.uk
- www.event-b.org - an open-source extendable Eclipse development environment, called the RODIN platform

Challenges

- Increasing dependence of our society on critical systems
- Dealing with complexity of software-intensive systems
- Building highly dependable systems and assuring that they are correct, trustworthy and resilient
- Understanding and justifying the role of advanced formal engineering methods
- Industrial deployment of the existing advanced methods and supporting tools

Formal Methods

B

tion de la méthode B développée

CLEARSY
SYSTEM ENGINEERING

ALSTOM

SIEMENS

ATELIER B Projets ferroviaires
Avril 2007

DEPLOY Philosophy

- Mastering complexity through **rigorous stepwise development**
- Systems should be designed by **modellers and architects**
- Ensuring **dependability** through rigorous system development
- Use of **advanced engineering** methods supported by the tools
  - System level modelling at multiple levels of abstraction
  - Importance of proof
  - Strong incremental tool support
- Deploy a **professional scalable development** environment

DEPLOY Objectives

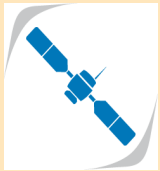
- The **overall aim** is to make major advances in engineering methods for dependable systems through the deployment of formal engineering methods
- DEPLOY aims to really help **European industry** and to support efficient development of real-scale systems
- Drivers
  - achieving and evaluating industrial **take-up** of the DEPLOY methods and tools
  - necessary **further research** on methods and tools
- Demonstrate improvements in system **dependability** and **productivity**
  - by reducing test-debug-rework and facilitating reuse

Industrial Deployment Partners

The industrial deployment will be in four sectors

- automotive
- rail transportation
- space systems
- business information






Technology Providers

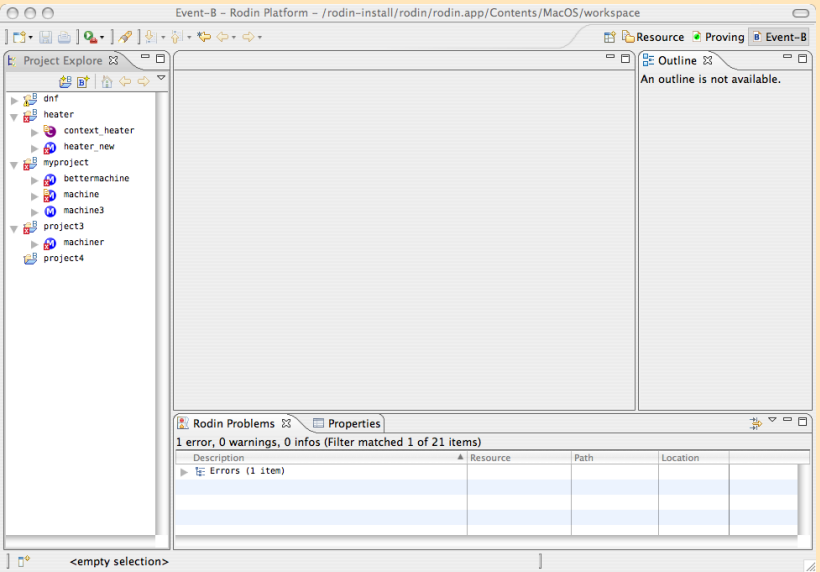
- Newcastle University (Coordinator)
- Aabo Akademi University
- ETH Zurich
- Heinrich-Heine Universität Düsseldorf
- University of Southampton
- Systerel (FR)
- CETIC (BE)
- ClearSy (FR)

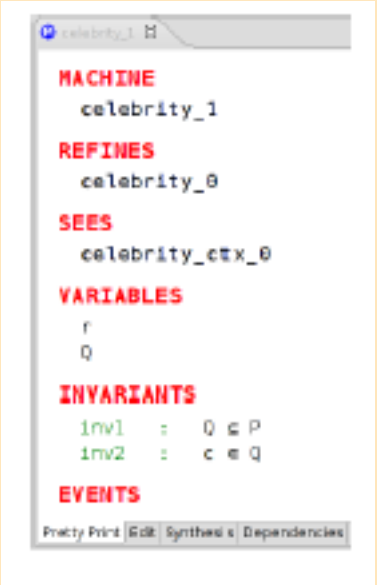
Method

- stepwise development based on model refinement, exemplified by Event B
- combined with the use of a number of other modelling techniques
  - UML
  - CSP
  - B
  - UPPAAL
  - π-calculus
  - …

The RODIN platform

- Eclipse environment for Event B development
- Extendable with **plugins**:
  - UML, animation, model-checking, B, requirement tracing, pattern support, model testing, documentation, debugging, composition/decomposition, modularisation, π-calculus/mobility modelling, CSP, …
- Several provers
- Open source, openly available





Expected Results

- ***Real industrial deployment***
- Each deployment partner will become ***self sufficient***
- DEPLOY will provide ***scientifically valuable artefacts***
- ***Thorough assessment*** of formal engineering methods
- ***Research advances*** in complex systems engineering methods
- ***A professional open development platform*** based on Eclipse
- ***Strategies*** for ***integration*** of formal methods and tools with existing ***sector-specific*** development processes
- An ***organisation*** which will be the home of the open platform
- A ***body*** made of industrial users and technology providers
- ***Training material and courses***

Where we are now (month 27)

Year 1:

- project infrastructure created
- initial technology transfer to the deployment partners
- training courses for the industrial engineers
- a number of minipilots developed and analysed
- identification of the major methodological and tooling needs
- first feedback to method and tool developers is received from the deployment partners
- succesful project review

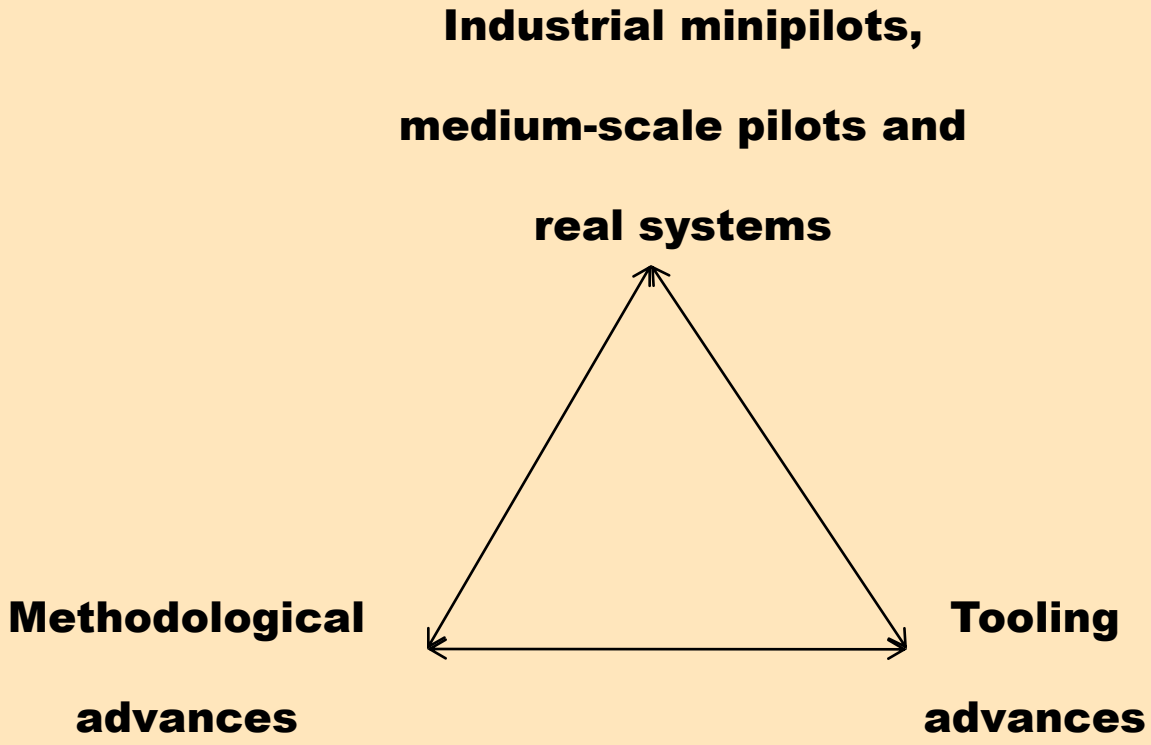
Where we are now (month 27)

Year 2:

- project refocus (code generation, model-based testing, real-time, evidence)
- pilot deployment in 4 sectors
- 18 engineers trained
- first success stories in real deployment
- 2 Deploy Associates now work with the project
- number of the platform downloads per month – often close to 1400
- 47 members of the DEPLOY Interest Group
- succesful project review

Where we are now (month 27)

- The triangle is working



Open sources

- DEPLOY project http://www.deploy-project.eu/
- Event-B http://www.event-b.org/
- Platform http://sourceforge.net/projects/rodin-b-sharp/
- All plugins are open-source and downloadable free
- Technology transfer wiki http://wiki.event-b.org/index.php/Main_Page
- Public deliverables http://www.deploy-project.eu/html/deliverables.html
- DEPLOY publications, reports and projects/models: http://deploy-eprints.ecs.soton.ac.uk/
- Six monthly we produce DEPLOY Newsletters