Overview of TOPCASED Project: Why, What, Who and How?

Why?

- To reduce development costs for embedded systems (Aeronautical, space and automotive domains) by promoting optimised process and tools: maturity, competitiveness and time to market end product. Supports Model Based Engineering.
- To ensure durability of the toolkit through an Open source approach: limited market, very, very long life, editors durability, editors strategy, deployment facilities.
- To integrate current academic research results in industrial development process.
- To enforce Academics / Industries relationship.
- To provide student engineers with knowledge of industrial process and related tools.
- To enforce SMEs / Industries relationship.
Overview of TOPCASED Project: Why, What, Who and How?

Analyses or Design Model

Simulation

Verification loop

Formal checking

Transformation

Source or Test Code Documentation

Configuration, Change and Requirement management tools communication
Overview of TOPCASED Project: Why, What, Who and How?

WP1/WP8
Define overall process

WP2
Develop modeling tools

(Meta-)Model Editor

External tools

WP3
Define & integrate formal verification tool and simulation

WP4
Support Coding activities

WP5
Transform models

WP6
Interconnectivity

Conf. M. / Communication / Change M. / Req. M.

IDE

Models

Exchange

Generation

Verifications Tools

More than 20 M€ for 4 Years
Overview of TOPCASED Project: Why, What, Who and How?

**Modelling Languages**
- PDL
- AADL
- SDL
- UML2.0
- SYSML
- ... (other modelling languages)

**Editors**
- Modelling Languages
  - PDL
  - AADL
  - SDL
  - UML2.0
  - SYSML
  - ... (other modelling languages)

**Meta-Modeller**
- Editors
- Meta-Modelling Languages

**Transformation Engine**
- ATL, KERMETA, ...

**Compilers**
- ATL, KERMETA, ...

**Model-Checkers**
- TINA
- CADP
- ... (other model-checkers)

**Simulator**
- Simulation & Formal Verification

**Common Format**
- Translation

**Translation Engine**
- ATL, KERMETA, ...

**Simulation & Formal Verification**
- TINA
- CADP
- ... (other simulation & formal verification tools)
Overview of TOPCASED Project: Why, What, Who and How?

2004
- Airbus proposal to CNRT-AE

2005
- WPs launching
- STages/thesis definition
- Technical Workshop
- First Steering Committee

2006
- Partners collecting
- First release of open source software
- STages/thesis synchronisation
- Technical Workshop
Where we are, Expected soon

- 1.0.0 M1 Editors for UML, AADL, SysML, SAM, gPM
- Users Beta Test
- Users Experimentation
- 2.0.0
- Launch National Plateform: Systematics, Minalogic, Aerospace Valley
Collaboration with other projects

- Eclipse
- OpenEmbeDD
- AADL
- SAE International
- SPICES
- OSATE
- Systematic@TIC
- TOPCASED
- Assert
- Honeywell
- DARPA

The Open Source toolkit for critical systems
Current Results

- Two years working together, better knowledge of the target
- Global studies and survey
- Industry/Academic/School Coordination on thesis and stages
- Several technical workshops, a lot of publications and conference talks
- First national funding in November
- Several releases (from 0.5.0 to 1.0 M1) of Open source tools: meta-editor + 4 instances, toolkit infrastructure, communications means. UML, Sildex like, SysML, OSATE/AADL. Import of Rose and Sildex models.
  
  More than 20000 downloads

- Generic process Management tool gPM
- STOOD connection
- Some tools already used for student training: N7, INSA
- Diffusion of the Open Source way of life
- A 2 days workshop in January
- Launch of Quality Development Kit
Other partners: industries, SMEs, academics, school, SSII, editors.

Connecting COTS: Matlab, Scade ...

The 1.0.0 in July 2007 synchronized with Eclipse Europa

New editors dedicated to new modelling language: SysML, LDS, SPEM ...

Integration of formal verification tools with editor.

Developing model simulation

First code generators (structural UML > Java/C/Ada, ...), document generator

Solution for Version/configuration management

A first version of Traceability tool: TramWay

A National and International cooperation

A new 2 days international workshop during 2007

Integration in Tri-pôle platform

TOPCASED contribution to Eclipse Modelling Project