MDE WITH PAPYRUS

novelties and beyond

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CEA is a major actor in research and innovation.

- **16 000 people**
- **16 centers in France**
- **Budget : 4,3€ bilions**
- **1 600 patents**
- **4 000 publications / year**
- **150 startup created since 1984**
The LISE labs in a nutshell

Correct-by-construction design of safe CPS

A laboratory of 50 persons (+ 5 new permanent open positions for 2015... ;-) )

- 33 permanent members + 17 non-permanent members including PhD students, post-docs and CDDs

Main research concerns

- Modeling Language Engineering
- Model-based Formal Analysis (e.g., auto gen. of tests)
- Run-time Formal Verification and Monitoring
- Model-based Simulation
- Model-based Security & Safety Engineering
- Archi. Exploration, Configuration & Deployment
- Process, Requirement and Variant Engineering

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Agenda

About Papyrus 1.1.3
Ericsson: Papyrus deployment
What next?
And now…

http://www.eclipse.org/papyrus
THE MAIN CONCERNS OF THE PAPYRUS TEAM

1.1.3

- Usability
- Robustness
- Performance
- Customizability & configurability
- Conformity to MDE-standards
- Maintainability & Evolvability

✔

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NEW FEATURES HIGHLIGHTS

Dynamic shape customization

Modeling Assistants

Tree Table editors

Rich text support

Information synchronization

Model ↔ View

Diagram expansion

Extend existing diagram editors to create specific ones

Support for ALF modeling

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Main Improved Features

- Project and model creation wizards
- Papyrus Navigation
- Search UI
- Papyrus EMF Compare
- Stereotype support
- Activity diagram editor has been finalized
- RSA import
- Table filters (including numeric and regex filters)
- Improve CDO integration within Papyrus
FOR SUCCESSFUL FOSS, COMMUNITY IS A PRIME-CONCERN
A world-class international development team
Some figures to outline the Papyrus community

#commits

1270 tasks closed (including bug fixing and enhancement) from July 2014 to June 2015!

A large international community

<table>
<thead>
<tr>
<th>#Committers</th>
<th>#Average commits PM</th>
<th>#Ext. contributors</th>
<th>#Ext. contribution accepted via gerrit PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>300</td>
<td>30</td>
<td>150</td>
</tr>
</tbody>
</table>

↑ External contributions via Gerrit
Goal is to develop an integrated modeling, development, validation and testing framework for leveraging the cost-efficient and reliable implementation of ETCS. Papyrus has been chosen for modeling concerns.

Papyrus chosen for modeling control command system of next generation of nuclear plant.
Esterel Tech. and CEA LIST create an innovative lab on **Critical systems and software development tools and processes**

Sherpa Engineering and CEA LIST create an innovative lab on **Control engineering in the automotive domain**

All4Tec and CEA LIST create an innovative lab on **Model-based system engineering and safety analysis**

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What next?
5 Years of “Papyrusing”
Francis bordeleau, Ronan Barrett Ericsson AB

Based on a paper published at OSS4MDE ‘15
Motivation

- No license costs
- Active research/support Community
- Textual Integration
- Simple Installation
- One install many tools
- Collaborative development process
We can have 1,000+ classes and 10,000+ properties.

Our “DNA” makes Mobile Communication possible!

Modeling Tool

O&M Interface

Managed Elements
Assumptions

- Unified Modeling Language (UML)
- Eclipse
- DIY (Do It Yourself)
- Open Source
Engagement
Papyrus Engagement
Engagement Numbers

5x

Bugs Filed

4x

9x
Lessons Learned
Communication

- Long Email
- Long Document

Ericsson Engineer

Papyrus Engineer

Call me!

Write a Bugzilla

Screen Share
How to Evaluate?

Your Needed Features + Your Test Coverage = O&M Modeling

Supporting Documentation + Your Evaluation - Preconceptions = O&M Modeling
Conclusions

› Is Papyrus good enough to be used in industry?
  – Yes it is in many, but probably not all, contexts today
  – If it doesn’t meet your requirements then get involved

› Don’t try to build our own DSL/UML Tool
  – Instead become a contributor and together we can build a great tool

› In open source there is no customer vendor relationship
  – Don’t ask for non generic features
  – Communicate openly and effectively

› Papyrus is only one part of a larger eco system
  – Manage integration of other components carefully

› Expectations must be managed
  – No false starts
  – Don’t release until you have the “right quality”
Agenda

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IMPROVING MODEL EXPLOITATION:
FROM MENTAL TO COMPUTER-AIDED ANALYSIS.

Mental-based model analysis

High-expertise
Unreliable
Not-scalable

Computer-aided model analysis

👍 expertise
👍 reliability
👍 scalability
PAPYRUS EXTENSIONS FOR A FULL-FLEDGED AND POWERFUL MDE SOLUTION

Safety/Security

Analysis-driven Architecturing

Requirements Engineering

Model-based Simulation

Model-based Monitoring

Model-based formal-analysis (incl. MBTesting)

Product Line
OUTLINE OF THE ROADMAP FOR PAPYRUS 1.2 (ECLIPSE NEON)

- Customizability
- Robustness
- Performance
- Usability
- Maintainability & Evolvability
- Standards Conformity

- Papyrus-FM
- Papyrus-Manuflex
- Papyrus-Req
- Papyrus-RT

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A maintenance agreement for Papyrus

Commercial support

✓ Created middle of 2014, with trained Papyrus developers