

FROM OPEN SOURCE PROJECT TO INDUSTRIAL SOLUTION: THE ROLE OF PAPYRUS IC

Presented by Francis Bordeleau
francis.bordeleau@ericsson.com



OUTLINE

- PERSONAL BACKGROUND
- OPEN SOURCE IS NECESSARY
- ... BUT NOT SUFFICIENT -- ROLE OF INDUSTRY CONSORTIUM
- PAPYRUS IC
- CURRENT STATUS OF PAPYRUS
- KEY CHALLENGES
- SUMMARY

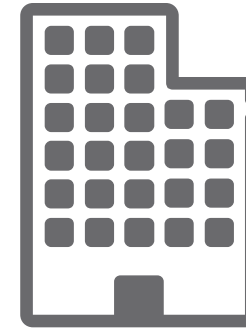
PERSONAL BACKGROUND



RESEARCH/
ACADEMIA
10 YEARS



CEO OF SME
10 YEARS



PRODUCT MANAGER
3 YEARS



TEACHING



CONSULTING



TELECOM



SDR



DEFENCE
AEROSPACE



Open source is necessary

SW IS EATING THE WORLD ... OPEN SOURCE IS EATING THE SW WORLD

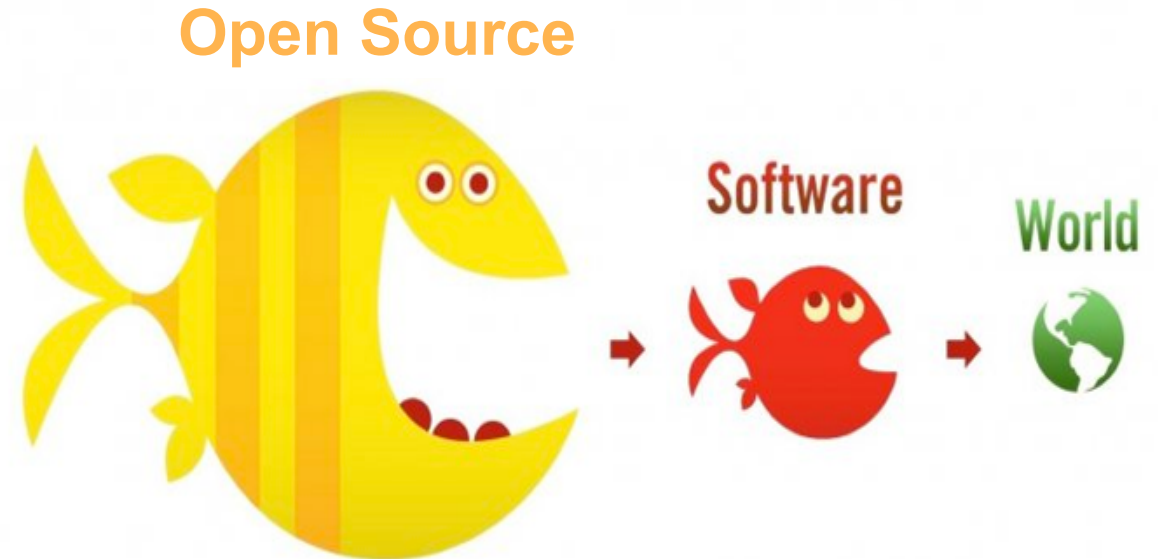


Market for highly specialized modelling tools starts to collapse.

Tool vendor development investments shrinks or stops. No velocity on new features.

At Ericsson, “Work-in-progress” open source tools are favored.

Company strategy veers towards favoring open source tools.

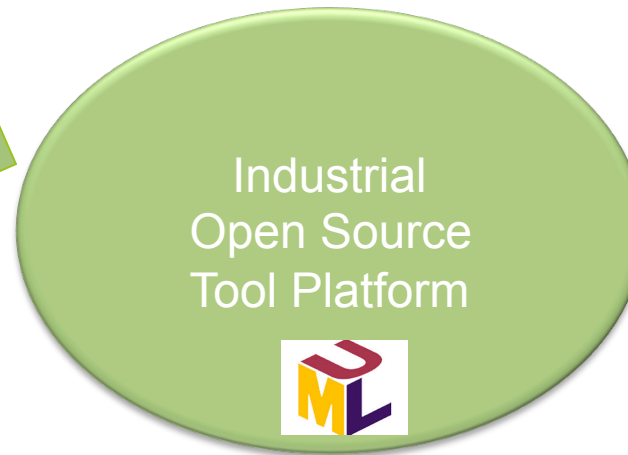


OPEN SOURCE IS A NECESSARY CONDITION!



- ✓ Open technologies
- ✓ Much simplified legal and business context
- ✓ Enables fruitful collaborations and tech transfer

- ✓ No vendor lock-in
- ✓ Ability to independently develop required capabilities
- ✓ Possibility to use same tool/technology for both industrial development and research

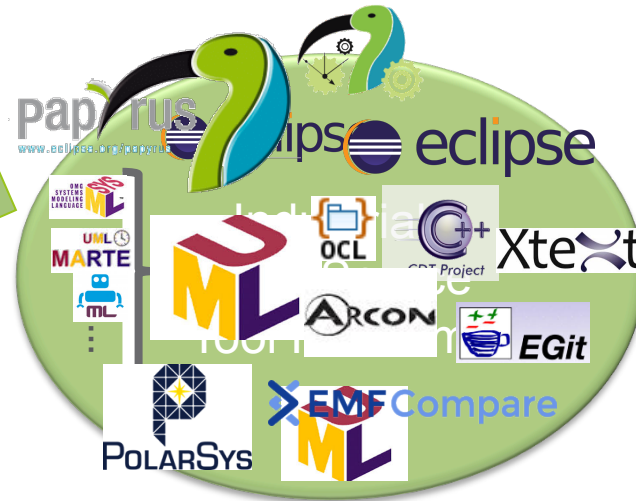


ECLIPSE AND POPYRUS PROVIDE THE BASIS

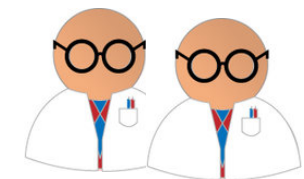
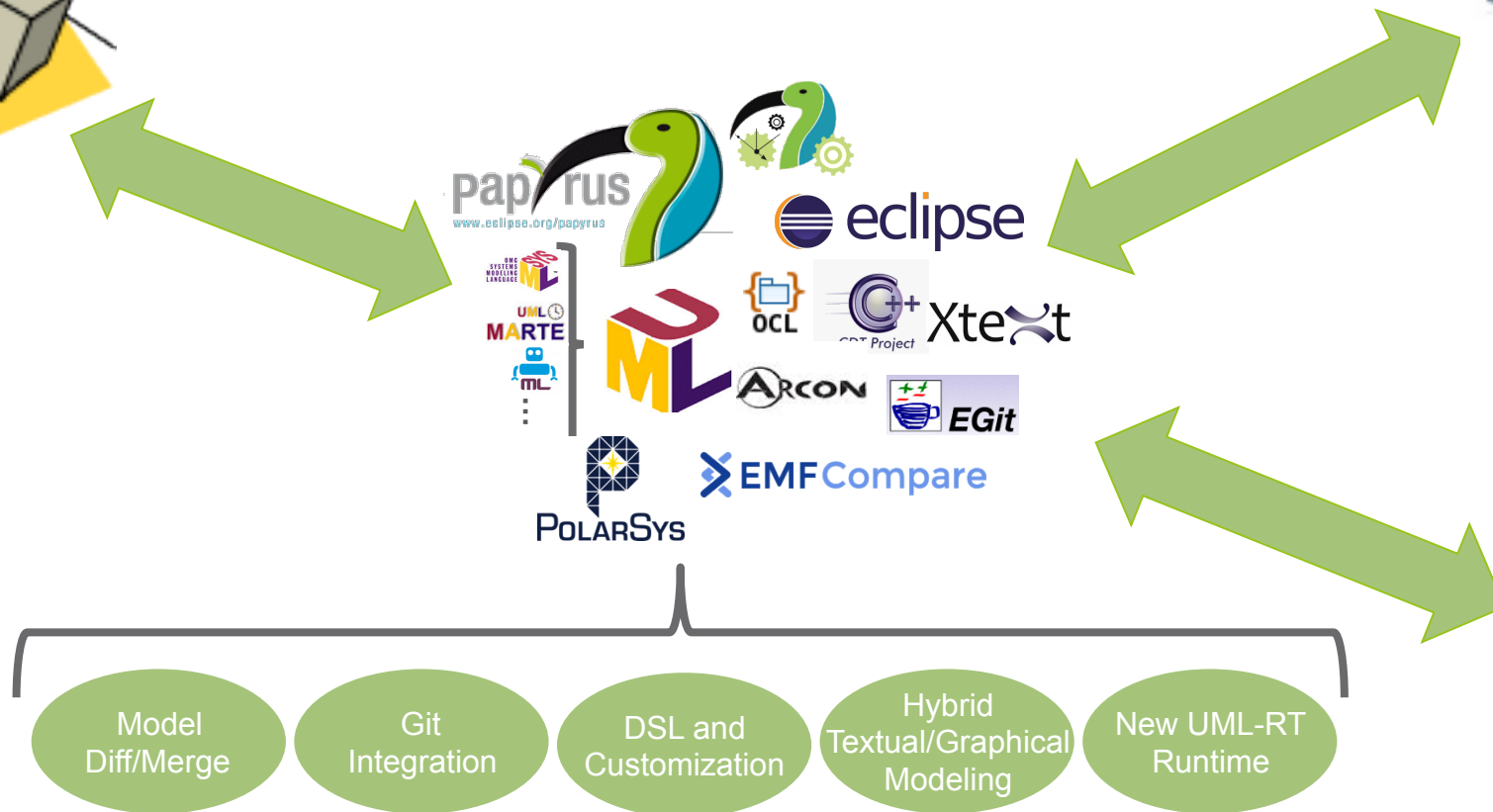


- ✓ Open technologies
- ✓ Much simplified legal and business context
- ✓ Enables fruitful collaborations and tech transfer

- ✓ No vendor lock-in
- ✓ Ability to independently develop required capabilities
- ✓ Possibility to use same tool/technology for both industrial development and research



PROVIDES THE FLEXIBILITY WE NEED TO DEVELOP KEY REQUIRED CAPABILITIES





... but not sufficient --
Role of Industry Consortium

... BUT OPEN SOURCE IS NOT SUFFICIENT!



Open source projects by themselves don't provide the required level of industrialness

- › No industrial product management
- › No real product roadmap
- › Difficult to achieve the required level of quality, stability, and usability – 80% is not good enough!
- › No long-term commitment

Industrial deployment requires

- › Governance
- › Industrial project/product management
- › Product roadmap
- › Requirements management
- › Long-term availability/evolution
- › Joint-development financing
- › Commercial support

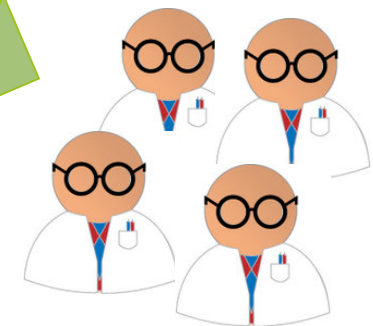
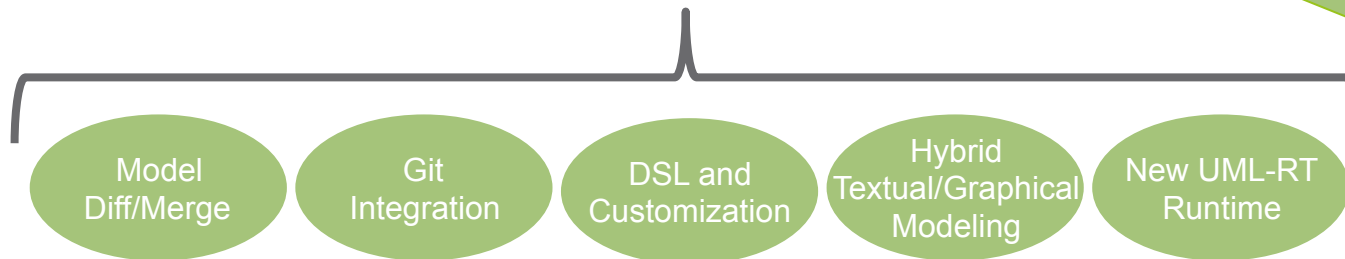


Goal: Define strategy to ensure the long-term availability/evolution of Papyrus

WE ALSO NEED A VIBRANT COMMUNITY!



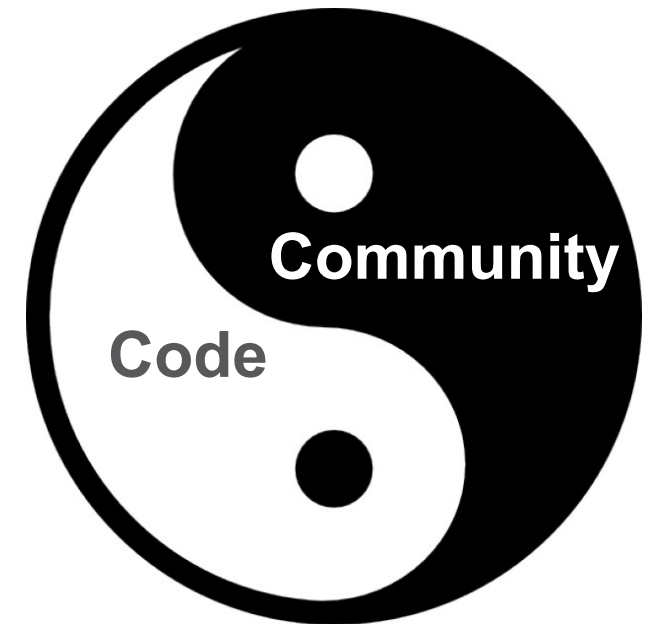
- ✓ Industrial project/product management
- ✓ Commercial product offerings
- ✓ Consulting services



MAIN CHALLENGE: DEVELOPMENT OF THE COMMUNITY



- › End-user driven
 - Need strong leadership from end-user companies
- › Strong supplier ecosystem
 - Need to ensure financial success of the suppliers
- › Attract leaders from researcher community
- › Establish Papyrus as main tool for MBE education/training
- › Grow the number of contributors/committers
- › Foster contributions from all participants
- › Establish clear governance





Papyrus IC

PAPYRUS IC



- › Eclipse Polarsys IC founded in Jan 2016 – https://wiki.polarsys.org/Papyrus_IC
- › User Lead members



- › Supplier Lead members



- › Participant members



MISSION/VISION



WHAT it does

Develop a **customizable and extensible industrial-grade open source MBE tool suite** based on the Papyrus/Eclipse platform, other key open source technologies, and leading industry standards

WHO it does it for

For companies developing software-based systems, from **Enterprise Software** to **Internet of Things (IoT)** and **Cyber-Physical Systems (CPS)**

HOW it does what it does

By fostering and leveraging collaborations between members of a **vibrant community** composed of **end-users, suppliers, and research/academia**

OVERALL GOALS



- › Development of industrial-grade open source solution
- › Joint development financing
- › Knowledge sharing
- › Promotion of open source solution
- › Development of the community
- › Standardization
- › Collaboration on research projects
- › Contribution to MBE education and training



Current Status of Papyrus



PAPYRUS UPDATE

- › Papyrus 2.0 was released as part of Eclipse Neon in June 2016
 - Major improvements in last year regarding both the technical and the project management aspects
 - Support for UML 2.5 and SysML 1.2/1.4
 - Used by many companies at an industrial level for different aspects – however, not ready for all aspects
 - Papyrus 3.0 is planned for June 2016 as part of the Eclipse Oxygen release
- › Papyrus-RT 0.8 was released on October 26th
 - Includes DSL support for UML-RT, and C++ runtime and code generator
 - Main focus of 0.8 on UML-RT structure modeling
 - Papyrus-RT 1.0 is planned for January 2017
 - Will provide the basis for open source alternative to Rhapsody
- › Papyrus for System Engineering
 - Plan is being defined – Good opportunity to provide input
 - Main focus for 2017
- › World-class development team
 - CEA (project lead), All4Tec, Combitech, EclipseSource, Montages, Obeo, Tieto, Zeligsoft
 - Technology experts – currently have technology experts involved in all main aspects
 - University/research centers in North America and Europe

CURRENT TECHNICAL FOCUS -- ERICSSON



- › Papyrus
 - Overall improvements on stability, usability, customizability and DSML
- › Papyrus-RT
 - Provides complete support for UML-RT and includes UML-RT C++ Runtime and associated C++ Code Generator
- › Collaborative Modeling
 - Main focus on Model diff/merge and Git/Egit integration
- › Proprietary DSML's
- › Testing/QA framework
- › Hybrid graphical/textual modeling
- › Integration of modeling and coding

All of these projects are developed in collaboration with 3rd parties

PAPYRUS DEPLOYMENT



- › Network architecture (NWA) modeling
 - Focus: Proprietary DSL
 - Status: ~40 active users (architects, expect) 2x by end of 2017Q1
- › O&M modeling
 - Focus: Conventional UML with many proprietary profiles
 - Status: In deployment as replacement of RSA. Currently ~120 users, expect to reach 200 users by end of 2017Q1
- › Baseband -- Proprietary multicore platform
 - Focus: Proprietary DSL based on Papyrus-RT
 - Status: In development, pilot project targeted for 2017Q1
- › System Modeling
 - Focus: System modeling using Papyrus-RT
 - Status: In development, pilot project targeted for 2017Q1
- › Others in Ericsson
 - SW Design – Papyrus-RT
 - Business process modeling (BPMN) and enterprise architecture modeling
- › Outside Ericsson
 - MEF, ITU, TM Forum
 - Airbus Helicopters, Airbus Defence & Space, Flanders Make, Plastic Omnium, Spacebel, and many others

KEY CHALLENGES



- › Company culture
 - Culture change – migration to open source requires a real culture change
- › Community
 - Provide the required infrastructure to enable the growth of the community
 - Industry Consortium to lead/govern the development of Papyrus open source solution
- › Product management
 - Manage requirements and priorities
 - Ensure delivery of top industrial-grade solution
- › Papyrus to support a broad range of customizations and DSLs
 - Manage Papyrus solutions/products as a product line
 - Ensure that we don't create a set of divergent products

Open source is not free, it requires involvement and investment
Unfortunately, it is not a silver bullet!

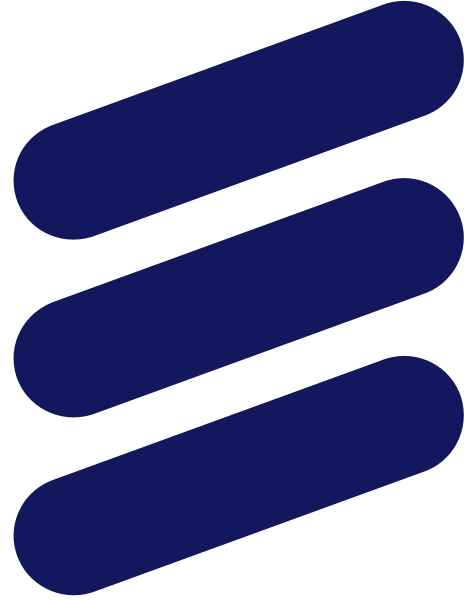
SUMMARY



- › Ericsson has been using MBE at a large scale for over 20 years
- › Lots of benefits, but proprietary tools are a main issue
- › Open source tools are needed, ... but not sufficient by themselves!
- › A vibrant and extensive end-user driven community is required
- › Industry Consortium is needed to provide the required governance and industrial product/project management

Success is the only option!
There is no alternative!





ERICSSON