

Sphinx

Docware for Creation Review

Dr. Stephan Eberle, Geensys



Dr. Sébastien Gérard, CEA-LIST



Outline

- Executive Summary
- Background & Motivation
- Project Scope and Description
- Relation with other Projects
- Code Contributions
- Roadmap
- Mentors, Initial Committers, Communication Channel
- Interested Parties, Community Feedback

Executative Summary

- Sphinx aims at providing a platform for creating integrated modeling tool environments supporting individual or multiple modeling languages (which can be UML-based or native DSLs)
- The codebase will be seeded with contributions from the Artop¹ and MDT Papyrus² projects

1. <http://www.artop.org>

2. <http://www.eclipse.org/papyrus>

Background

- Model-based design (MBD) and Model Driven Software Development (MDSO) were introduced in the IT industry first, leading to the definition of the Unified Modeling Language (UML)
- Subsequently, they penetrated vertical domains and have yielded all kinds of Domain-Specific Languages (DSL) which are dedicated to the particular concerns in each domain

Types of DSLs

- UML-profiles (light-weight approach):
 - Definition as extensions/specializations of UML using the profile concept
 - UML core modeling concepts remain available
 - Existing UML tools can be reused for authoring in DSL and DSLs may be easily combined
- “Native” DSLs (heavy-weight approach):
 - Full metamodels which are implemented independently of UML
 - Strictly limited to required modeling concepts
 - Complete tool support needs to be specifically developed

Some prominent DSLs

“Native” DSLs:



Telecommunication

UML profiles:



Real-time & embedded systems



Transportation

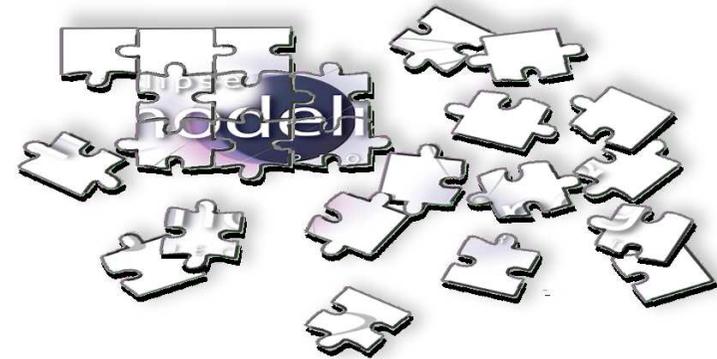
Key Requirements on Modeling Tool Support

- Tight integration of modeling tools for different activities (authoring, validation, simulation, code & documentation generation, versioning, auditing, etc.)
- Support of multiple domain-specific modeling languages and/or UML in parallel
- Integration with existing tools and systems (SCM, issue tracking, document mgnt, IDEs, user mgnt, etc.)
- Tailoring to user-defined processes/practices
- Long-term availability, transparent strategy, end-user control

Creating Modeling Tools with Eclipse

- Good news:

- Generic IDE platform
- 60+ modeling projects



- But:

- Significant fragmentation and duplication
- Major effort required for consistent integration in higher level modeling tool applications
- Major effort required for obtaining satisfying results in terms of scalability and robustness

Scope

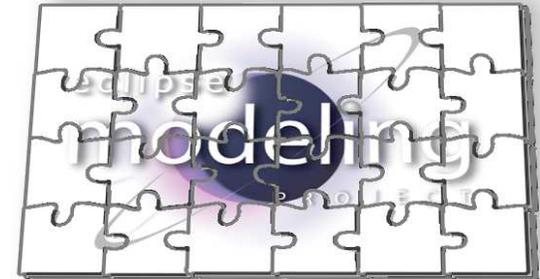
- To provide an open and extensible platform enabling rapid creation of integrated modeling tool environments (IME) for one or several modeling languages
- To ensure industrial strength scalability and robustness out-of-the box
- To foster a domain- and vendor-independent interoperability layer (backbone) for off-the-shelf and in-house modeling tool components

Scope (cont'd)

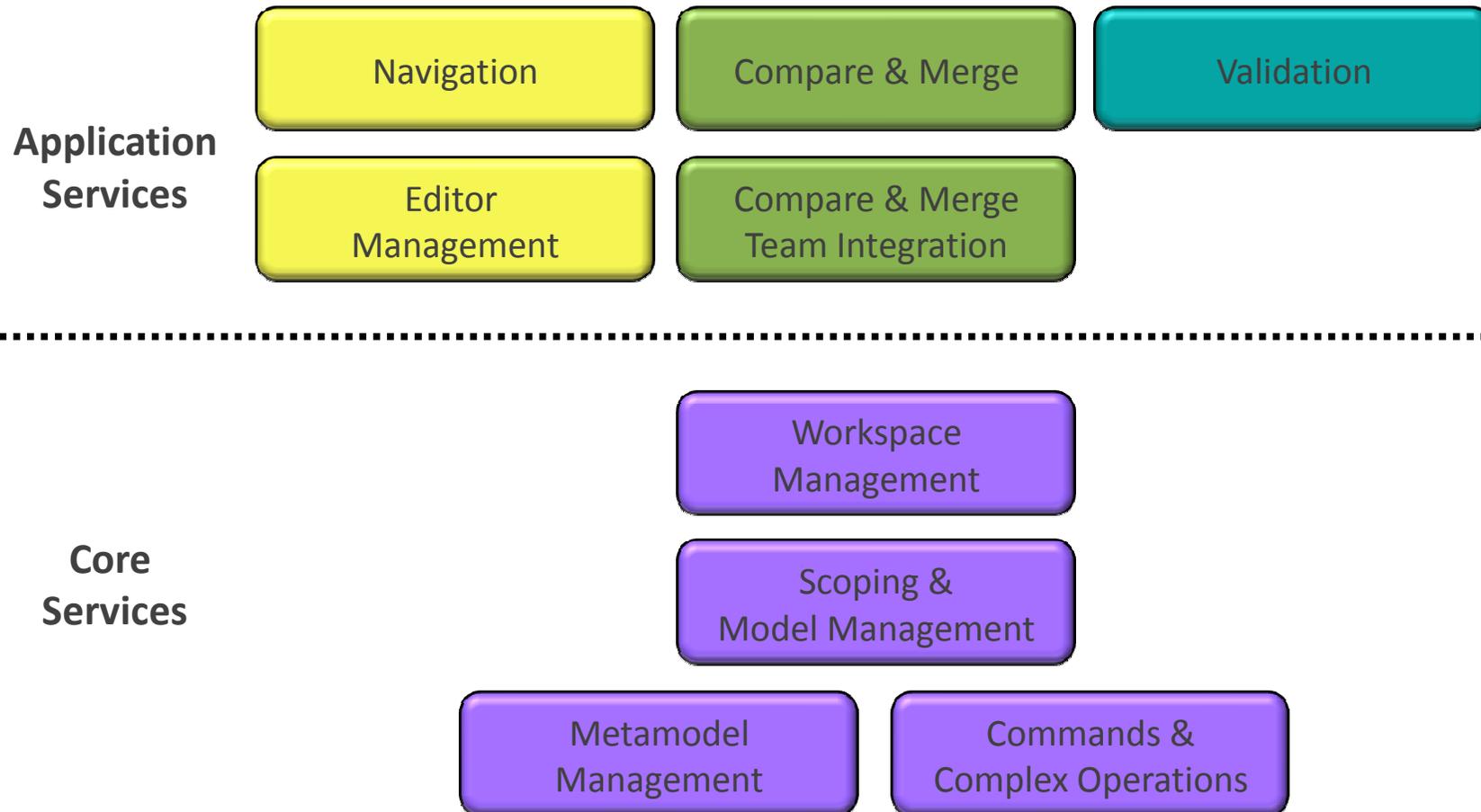
- To support controlled and coordinated management of modeling tool environments including
 - Addition/update/removal of individual tool components
 - Switchover/reversal to new/old versions of entire tool chains

Mission of Sphinx

- Focus on infrastructure
(no finished modeling tools)
 - To provide common components and services required for developing modeling tools
 - To support usage in other MDT projects providing exemplary tools for dedicated modeling languages
- Collaboration with existing projects
(no reinvention or replacement of existing efforts)
 - To leverage and build upon suitable existing projects
 - To enable consistent integration across projects
 - To implement missing features and optimizations either in Sphinx or directly in affected projects



“Service-Oriented” Architecture



Selected Future Components

- Model query and indexing service for significantly improving performance and memory consumption based on EMF Query 2
- Model repository and database persistence support based on CDO and MTF
- Socket for Xtext-based textual editors supporting thread-safe operation on shared model instances in the workspace
- Code generation and model transformation interfaces supporting Xpand, MTL, JET and Xtend, QVT, ATL
- Task focused modeling through integration with Mylyn

Relation to other Projects

- Sphinx will be built on top of the Eclipse Platform and EMF
- Sphinx will also use complementary components of the Eclipse Modeling Project (EMP)
 - EMF Transaction, EMF Validation, EMF Compare, and GMF will be needed immediately
 - Others like EMF Query 2, CDO, BIRT, Xtext, Graphiti, parts of M2T and M2M, EMF Search, MTF, EMF Feature Model, etc. are likely to be required later on

Code Contributions

■ Eclipse Complementary Layer (ECL) of **Artop**

- Artop is an Eclipse-based platform for building model-driven AUTOSAR design tools required in automotive software engineering
- It includes the Eclipse Complementary Layer (ECL), a set of generic components and services that are independent of AUTOSAR and therefore can be reused in design tools for other modeling languages
- Hosted at Artop.org¹
- Copyright of Artop ECL is owned by the following authors: Geensys, BMW Car IT, Continental Engineering Services
- Transfer of Artop ECL to Eclipse Sphinx
 - Current Artop Software License (ASL) but will be changed into EPL
 - Current plug-in name prefix “org.artop.ecl.*” will be changed to “org.eclipse.sphinx.*”

1. <http://www.artop.org>

Code Contributions (con't)

- No trademarks are associated with the existing ECL code
- No use of 3rd-party plug-ins/libraries, only dependencies to Eclipse projects and Eclipse Orbit plug-ins
- Backbone of **Papyrus**
 - Papyrus aims at providing an integrated, user-consumable environment for editing any kind of EMF model and particularly supporting UML and related modeling languages such as SysML and MARTE
 - Already hosted at Eclipse.org¹, component of the Model Development Tools (MDT) subproject

1. <http://www.eclipse.org/papyrus>

Roadmap

- July 2010: Creation review
- August 2010: Initial code contribution from Artop
- August 2010: Start of consolidation with and code contribution from Papyrus Backbone
- November 2010: Artop AUTOSAR Layer (AAL) migrated to Sphinx, ECL removed from Artop
- June 2011: First Sphinx release

Mentors

- Ed Merks (Macro Modeling)
- Sven Efftinge (itemis AG)

Project Leads

- Stephan Eberle, Ph.D. (Geensys)
 - Works as product development manager at Geensys in France and leads the Artop sub-projects Core and Validation. He is also committer for Teneo and EMF Search. Stephan has 6+ years of experience with Eclipse technology and development of model-driven solutions using EMP.

Project Leads

- Sébastien Gérard, Ph.D. (CEA LIST)
 - Works at CEA LIST as senior expert and research team leader on model-driven engineering. He is the CEA LIST representative at OMG where he is the chair of MARTE and he is participating to UML2 and SysML standardization. He is also the project leader of the Eclipse project Papyrus within MDT.

Initial Committers

- Yannick Didierjean (Geensys)
 - Works as software engineer at Geensys in France and has made significant contributions to divers components of the Artop Core sub-project.
- Romain Sezestre (Geensys)
 - Works as system and business analyst at Geensys in France and has made significant contributions to divers components of the Artop Core sub-project.

Initial Committers (cont'd)

- Ali Akar (Independent)
 - Works as software engineer for Geensys in France and has made significant contributions to Artop Core and Validation sub-projects.
- Dao Hoang (GATe Technology)
 - Works as quality engineer for GATe Technology, a Geensys subsidiary in Vietnam and has made significant contributions to the automated tests in Artop Core and Validation sub-projects.

Initial Committers (cont'd)

- Yann Tanguy (CEA LIST)
 - Works as a research engineer at CEA LIST since 2001. Expert in model driven engineering methods and tools, he is involved in the development of Papyrus modeling tools since its beginning.
- Thibault Landre (Atos Origin)
 - Works as software engineer for Atos Origin in France and has made significant contributions to Papyrus and Topcased projects.
- Cédric Dumoulin (Lifl)
 - Cedric is Assistant Professor at the University of Lille (France), and member of the DaRT INRIA Team. Cedric is the architect of the Papyrus Core and is committer on the Eclipse project Papyrus within MDT. Cedric is the creator of the Tiles Framework within the Struts Apache Project.

Initial Committers (cont'd)

- Kenn Hussey (Cloudsmith)
 - Leader of the Model Development Tools (MDT) project and a committer on the Eclipse Modeling Framework (EMF) project (among others)

Communication Channel

- eclipse.modeling.mdt forum¹

1. <http://www.eclipse.org/forums/eclipse.modeling.mdt>

Interested Parties

- BMW Car IT (contact: Michael Rudorfer)
- Bosch, Germany (contact: Harald Mackamul)
- Continental Engineering Services, Germany (contact: Stefan Voget)
- itemis, Germany (contact: Andreas Graf)
- Mia Software, France (contact: Frédéric Madiot)
- Olivier Moïses, France (Generic Concept)
- OpenSynergy, Germany (contact: Mark Brörkens)
- PSA Peugeot Citroën, France (contact: Aldric Loyer)

Interested Parties (cont'd)

- Protos, Germany (contact: Henrik Rentz-Reichert)
- pure-systems, Germany (contact: Holger Papajewski)
- SAP, Germany (contact: Bernd Kolb)
- Zeligsoft, Canada (contact: Bran Selic)

Community Feedback

- At the beginning some worries regarding the scope and positioning/relationship to other projects
- Increasing list of interested parties
- Among target projects identified by Eclipse Modeling Platform Industry Working Group
- Unfortunately long project proposal phase due to legal clarifications related to changing the license of code contribution from Artop to EPL (which are resolved now)
- People want to see the code now