Using Sphinx to create multi-language multi-view DSL tool environments

Stephan Eberle, itemis
About

- Stephan Eberle
  - R&D director at itemis France
  - Lead of Artop Core and Validation
  - Sphinx project co-lead
Outline

- About building system engineering tools
- What is Sphinx
- How can Sphinx help you?
- Wrap-up
Retrospect (automotive)

- Implementation
- Simulation, automation
- Complexity, exchange
- Safety

Specification

Coding

Code generation

EAST-ADL

ReqIF

Speciﬁcation

Code generation

Matlab Simulink

AUTOSAR

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System Engineering = Modeling!

DSLs + DSL Standards + UML
Common task for tool smiths

① Adequate tooling in Eclipse
② Interoperability with other modeling languages
Option 1: Build from scratch

1. Adequate tooling in Eclipse

2. Interoperability with other modeling languages
Option 2: Sphinx
Outline

- About building system engineering tools
- What is Sphinx?
- How can Sphinx help you?
- Wrap-up
Sphinx: Less effort

Modeling tools

Modeling language

Modeling platform

Tool platform
Sphinx: More interoperability
Outline

- About building system engineering tools
- What is Sphinx?
- How can Sphinx help you?
- Wrap-up
“... eases the creation of integrated modeling tool environments supporting one single or multiple modeling languages and has a particular focus on industrial strength and interoperability.”
Model-oriented IDE experience
“… eases the creation of integrated modeling tool environments supporting **one single or multiple modeling languages** and has a particular focus on industrial strength and interoperability.”
Multi-modeling language IDEs
“… eases the creation of integrated modeling tool environments supporting one single or multiple modeling languages and has a particular focus on **industrial strength** and interoperability.”
The two sides of model bigness

XML data size

- 100M
- 10M
- 1M
- 100k

# files

- 1
- 10
- 100
- 1k
- 10k

60 MB

5000

Reference model “Echo”
High performance model loading

Load time for reference model “Echo”: content type detection + deserialization + proxy resolution = approx. 30s
Workspace Management

- Centrally managed shared model instances
- Common edit/dirty/save lifecycle
- Automatic synchronization workspace resource changes
  - Load upon creation/drag & drop of new files
  - Reload upon file change
  - Unload upon file/project deletion
  - Unload upon workbench shutdown
Model repository-like editing experience
You find tree-based modeling boring?
System Engineering = Multi-View!

Trees + forms + graphical + textual
… eases the creation of integrated modeling tool environments supporting one single or multiple modeling languages and has a particular focus on industrial strength and interoperability.
Synchronized editing of Graphiti diagrams
Synchronized editing of GMF diagrams
... eases the creation of integrated modeling tool environments supporting one single or multiple modeling languages and has a particular focus on industrial strength and interoperability.
Synchronized editing of embedded Xtext fragments
Still things missing?
System Engineering = much more

...  

eclipse

LTS/VLTS

Certification

ECE 2012

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Wrap-up & Outlook

sphinx =

Certification

LTS/VLTS

Automotive IWG

Polarsys
Thank you!