A Model-Driven Approach for Visualisation Processes using VizDSL

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Abstract

- Problem: understanding complex structured information (standards specifications) using interactive visualisation
- Combining model-driven techniques with interactive visualisation simplifies understanding
- Proposed solution: Our approach is tool independent, separates data navigation and changes in presentation for reusability and doesn’t require programming expertise

Industry Case Study

- Taken from engineering domain: Oil and Gas Interoperability (OGI) Pilot
- Automation of maintenance processes requires standards-based interoperability for simplification of information exchange (MIMOSA CCOM)
- MIMOSA CCOM: information model for exchange of asset model; complex and difficult to understand; subject to change
- Interactive visualisation: aids understanding
  - Software tools: lack separation between data navigation and presentation so difficult to reuse; no clarity regarding interactions and navigation
  - Programmatic approach: requires programming expertise; users are engineers/domain experts, not programmers
- Model-driven approach: uses VizDSL to model and execute interactive visualizations in the visualisation process

Visualisation Process

- Identifying changes between different versions of the MIMOSA CCOM specifications is very important for correct information management
- For example, deprecated elements may have associated instance data; needs to be checked by domain expert/engineer
- Three visualisation processes in this case:
  - Gaining overall understanding of structure of standard versions
  - Comparing different standard versions to identify elements which have been created, modified or deleted
  - Exploring raw data associated with these elements

Model for Standard Version Comparison

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Comparing MIMOSA CCOM Versions

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References