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Integrating Variability Management and Software Architecture

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Contents

- Variability Management and Architecture – State of the Art
- Background – Architecture Management in LISA
- Variability Management in LISA
- Current and Future Work

Variability Management and Architecture

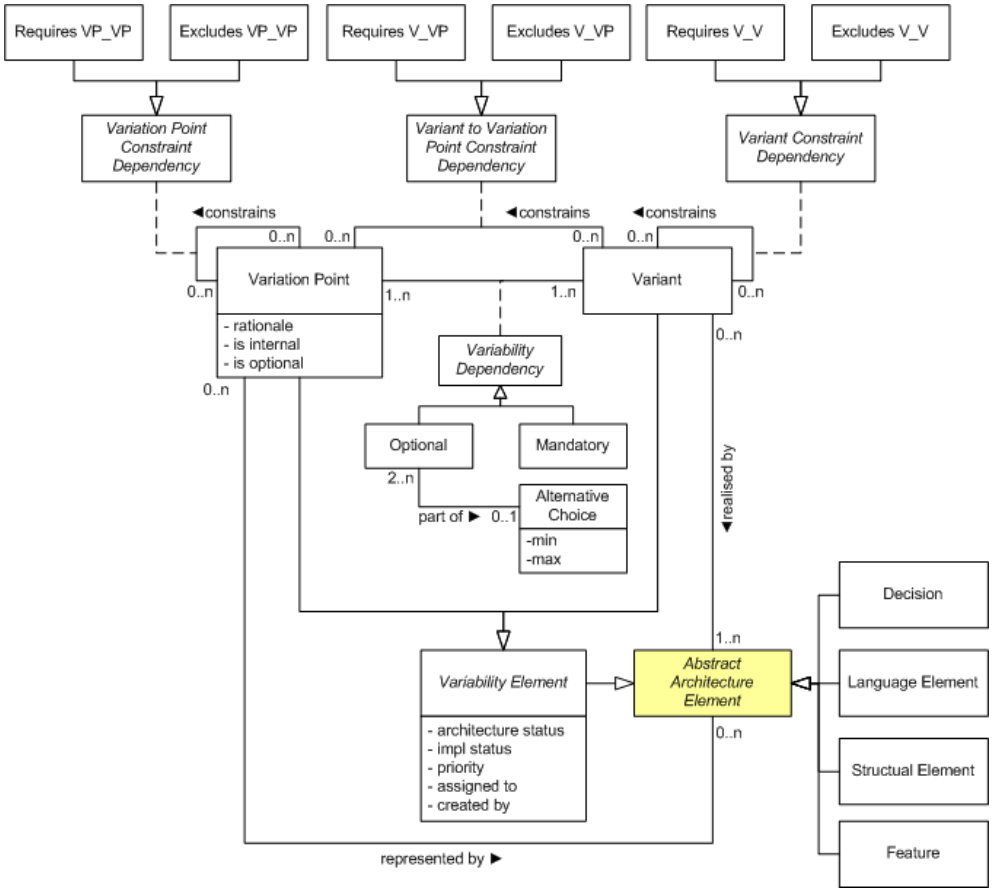
- State-of-the Art
  - Variability management and architecture development are often separated
    - Hinders traceability
    - Requires complex mappings between the models used in the different approaches
    - Danger of overengineering and model violations
- Approach
  - Integrate variability management and architecture design and development
  - Variability awareness

Architecture Management in LISA

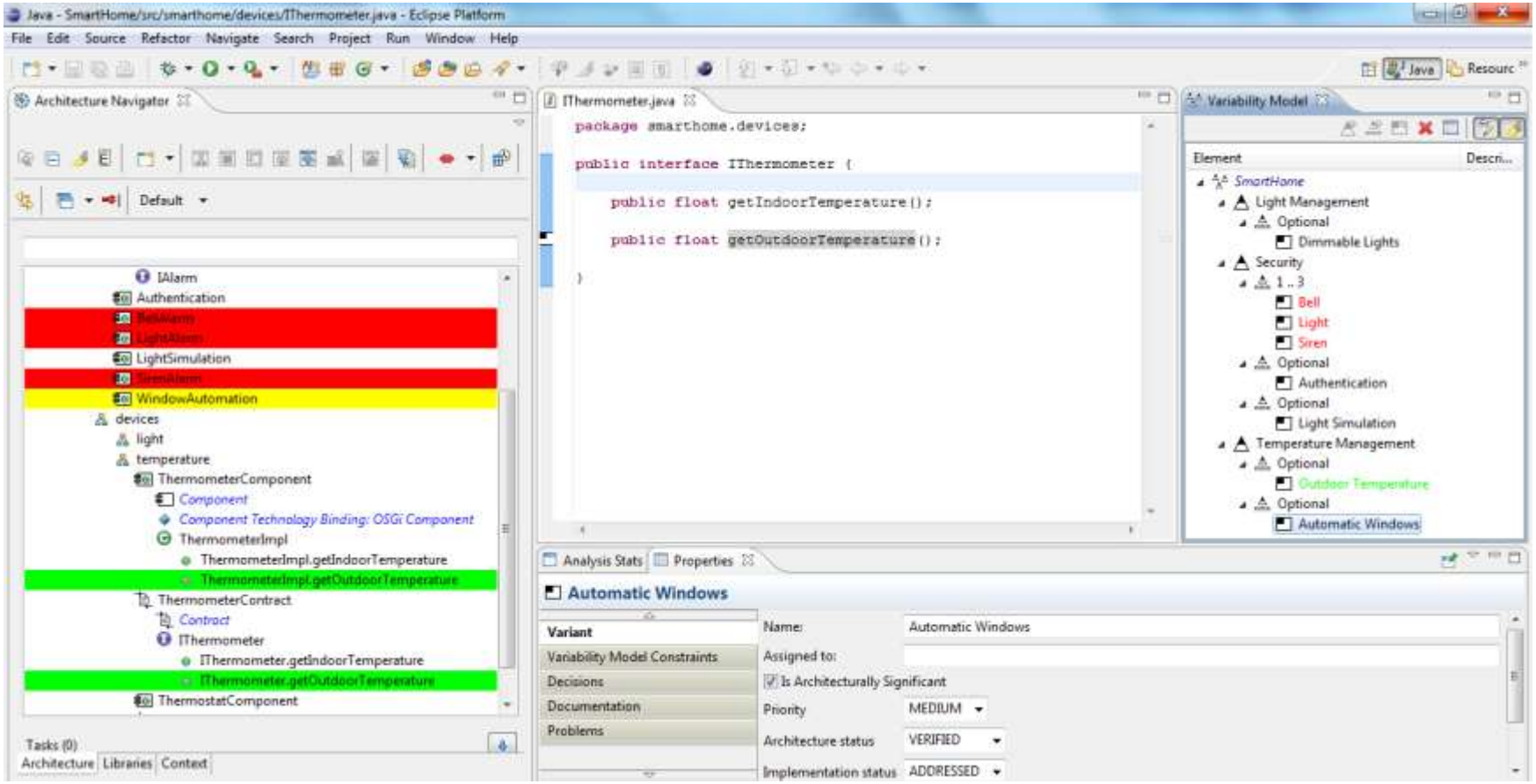
- Model and toolkit for continuous architecture management and analysis
- Single, formalized component-based architecture model
- Integration and connection of requirements, design decisions, architectural abstractions and implementation artefacts
- Creation and manipulation of architecture models, gathering and analysis of architectural knowledge, synchronization of architecture and implementation

Variability Management in LISA (1)

- Integration of the Orthogonal Variability Model (OVM)
- Feature modelling support
- Different views for working with these models
- Visualizations for variability awareness during architecture development



Variability Management in LISA (2)



Current and Future Work

- Additional visualization options
- Product derivation
- Model analysis
  - Variability-specific constraints
- Case studies

Conclusions

- Existing variability management approaches focus on product derivation
- Product line architecture development from different perspectives and viewpoints is neglected
- LISA provides integration of variability management and architecture development activities
  - Model integration – architectural and variability concepts are treated uniformly
  - Tool integration – variability management as architectural viewpoint