



Institutional Repository - Research Portal

Dépôt Institutionnel - Portail de la Recherche

researchportal.unamur.be

RESEARCH OUTPUTS / RÉSULTATS DE RECHERCHE

Behavioural Model-Driven Validation of Software Product Lines

Devroey, Xavier; Perrouin, Gilles; Schobbens, Pierre; Heymans, Patrick; Baudry, Benoit

Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (HARVARD):
Devroey, X, Perrouin, G, Schobbens, P, Heymans, P & Baudry, B 2012, 'Behavioural Model-Driven Validation of Software Product Lines', 2nd PReCISE Day, University of Namur, Belgium, 24/04/12.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

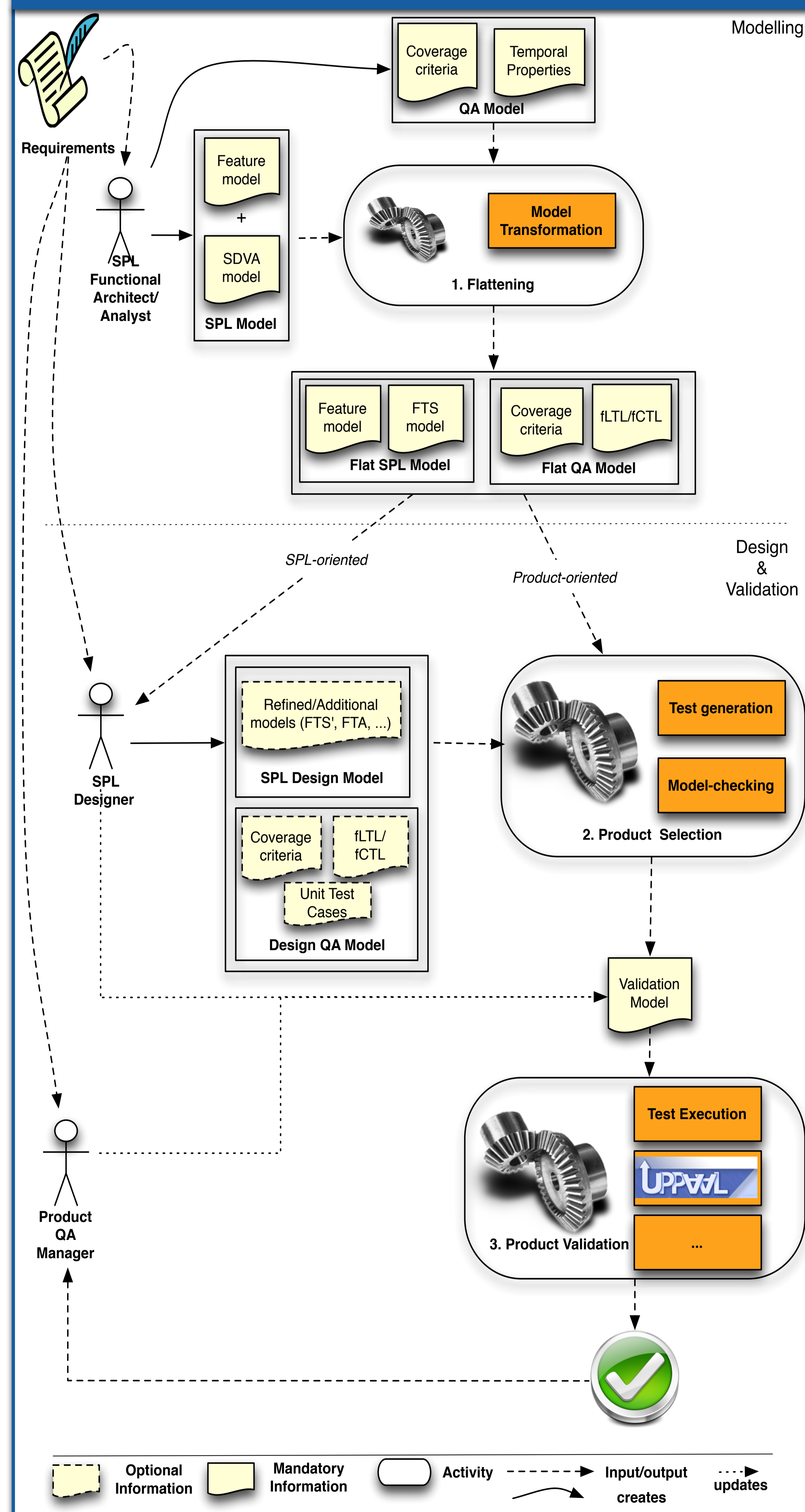
Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Highlights

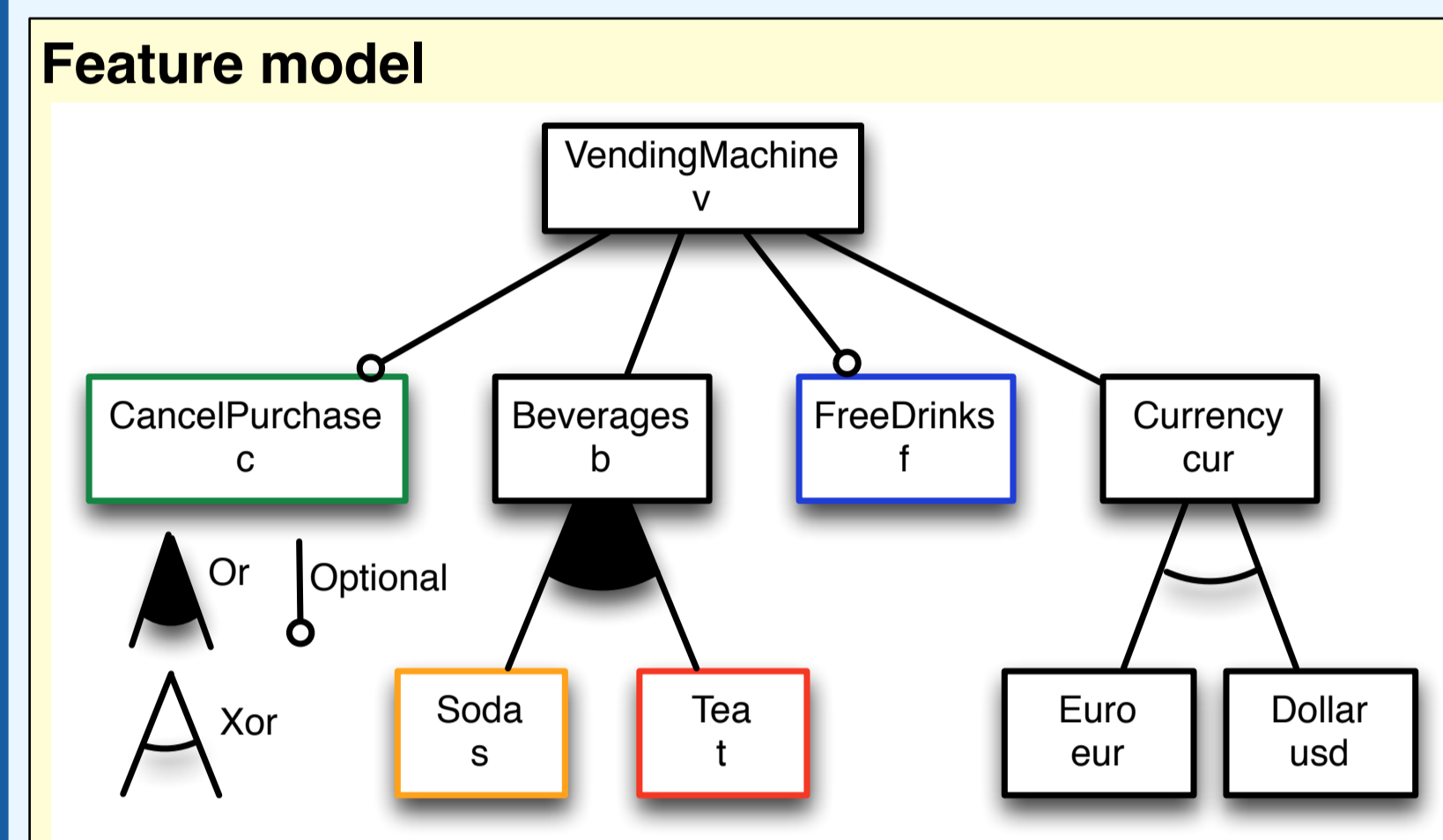
- Combining Model-checking and Test-case Generation techniques in a Model-driven [2,4] Quality Assurance Framework
- Focus on Variability-aware Behavioural Models
- Formal Foundations (e.g. Featured Transition Systems [1]) suitable for Analysis and Checking
- Human-centric: Easily Understandable Input Models, Test Criteria and Results

Approach Overview

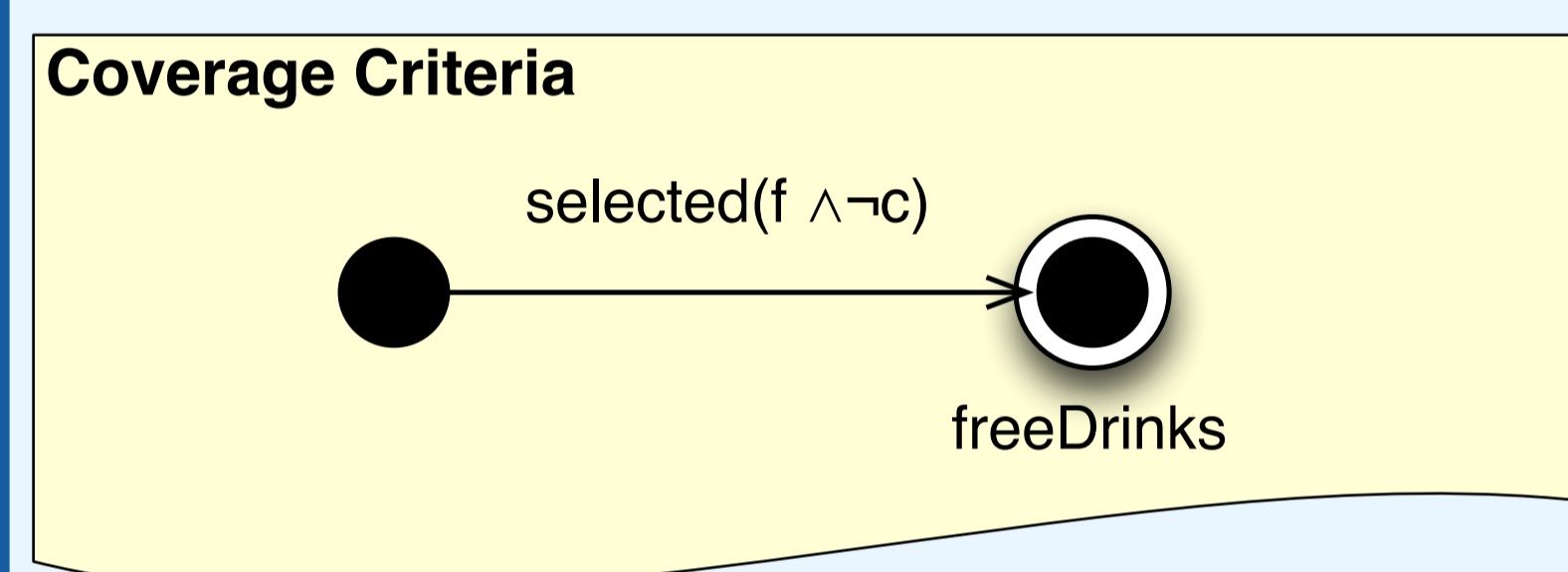


Modelling

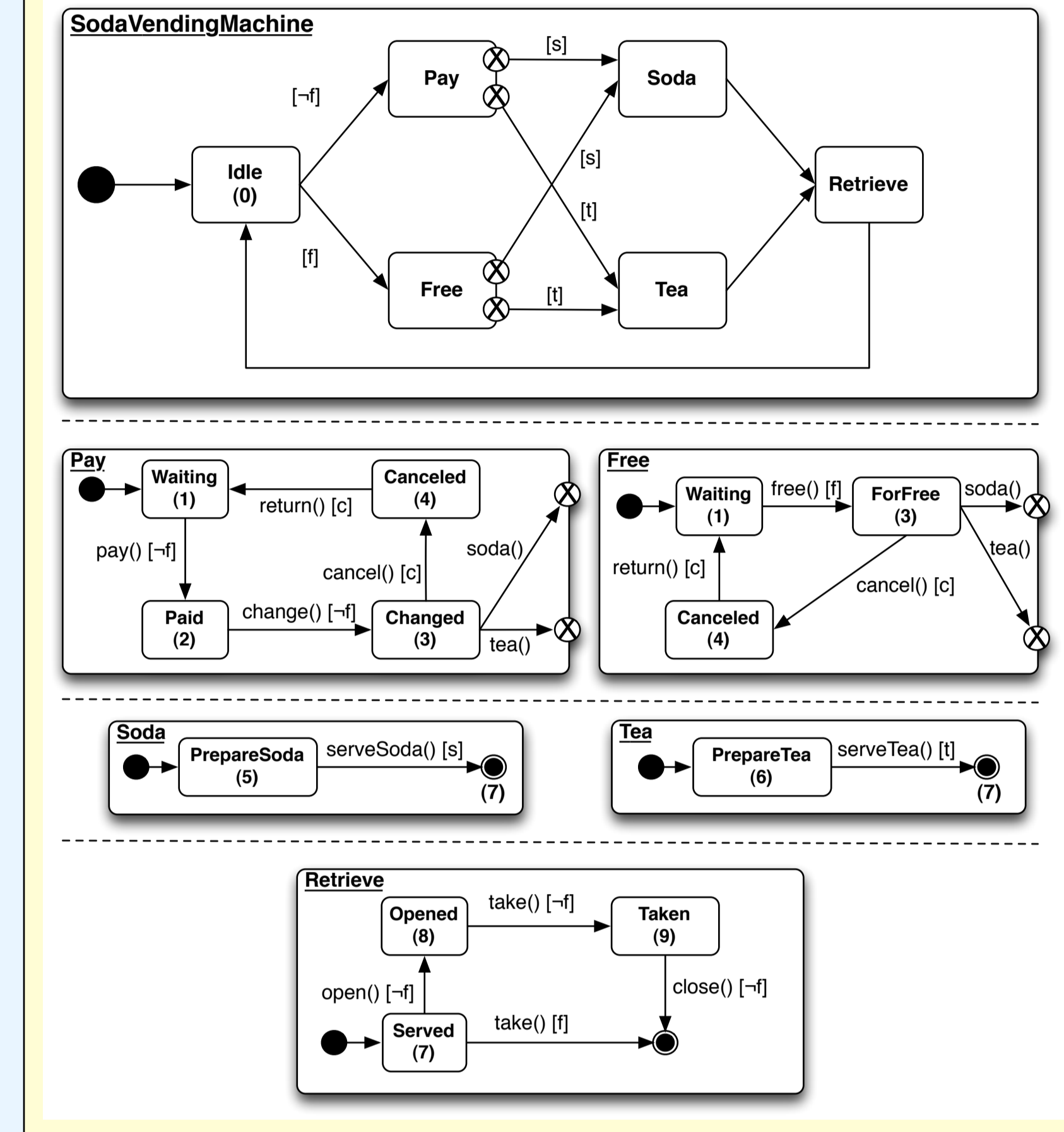
SPL Model



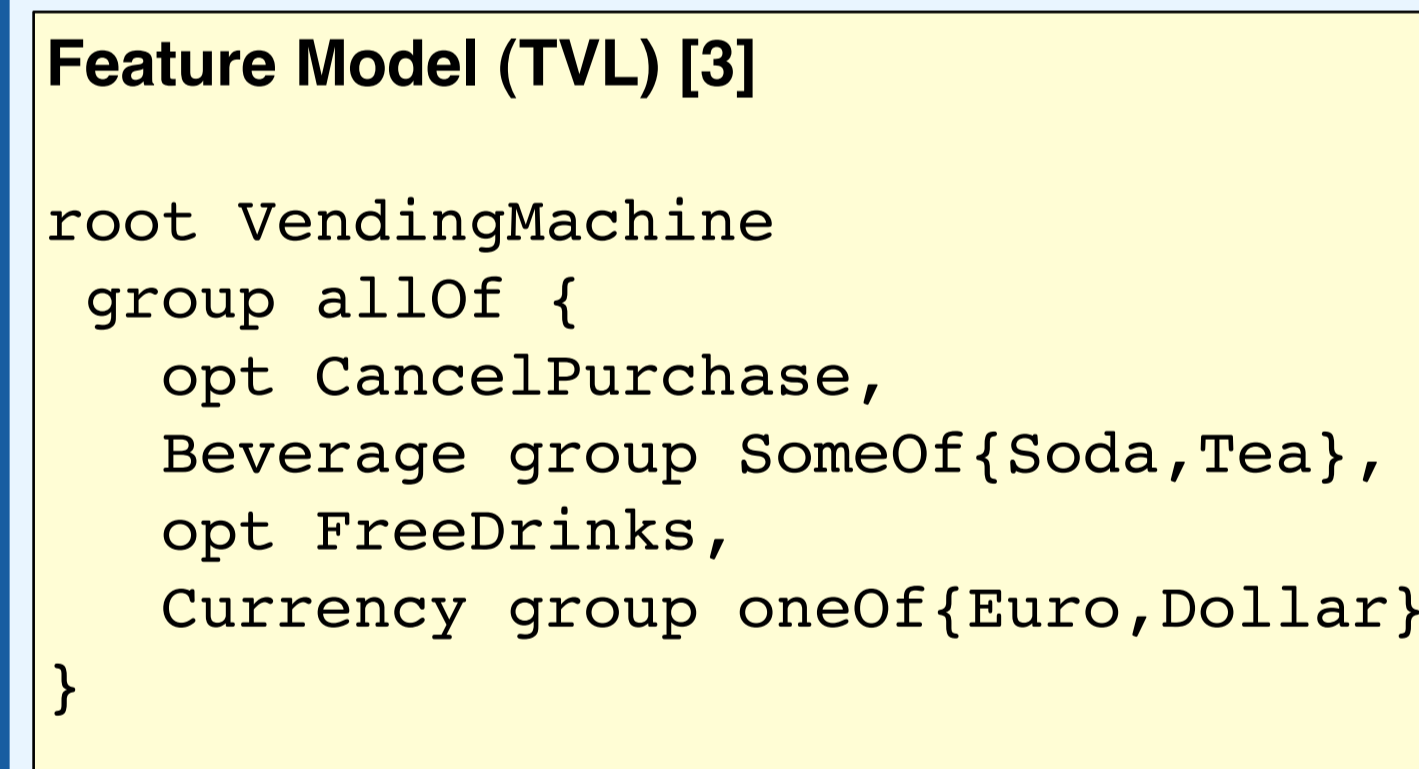
QA Model



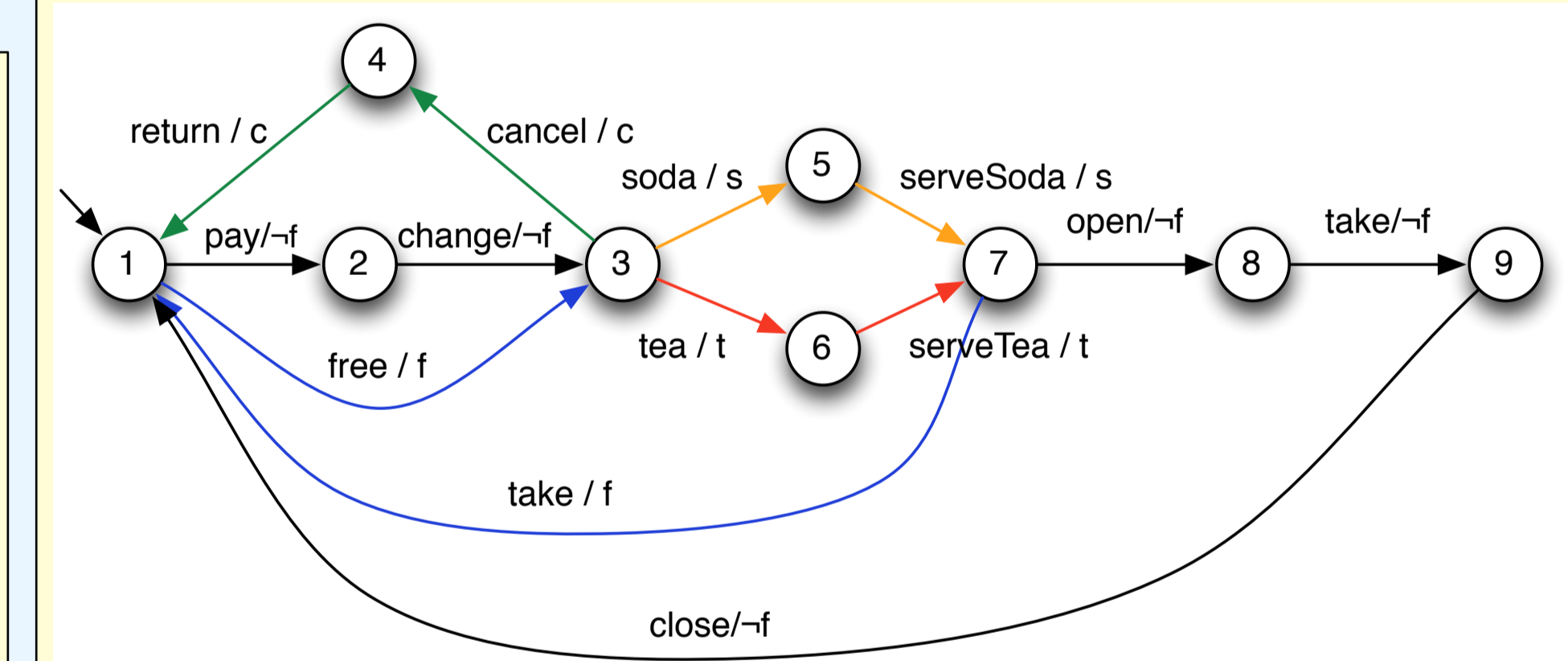
SDVA model



1. Flattening



FTS Model



Design & Validation

2. Product Selection:

Selection of relevant test-cases and/or products using:

- Test Coverage algorithms
- Model Checking techniques [1]

3. Product Validation:

- SPL-oriented: seeks exhaustiveness at SPL level using refined FTS
- Product-oriented: relies on the QA product manager's knowledge for in-depth validation

Ongoing and future work

- Define State Diagram Variability Analysis (SDVA)
- Define coverage criteria language
- Define and implement appropriate flattening algorithm
- Propose test reduction and generation techniques
- Validate the human focus through specific case studies

Bibliography

- [1] Classen, A.; Modelling and Model Checking Variability-Intensive Systems; *Phd Thesis (FUNDP)*, 2011
- [2] Utting, M. & Legeard, B.; Practical model-based testing: a tools approach; *Morgan Kaufmann*, 2007
- [3] Classen, A.; Boucher, Q. & Heymans, P.; A Text-based Approach to Feature Modelling: Syntax and Semantics of TVL; *Science of Computer Programming, Special Issue on Software Evolution, Adaptability and Variability*, 2011, 76, 1130-1143
- [4] Oster, S.; Wöbbeke, A.; Engels, G. & Schürr, A.; Zander, J.; Schieferdecker, I. & Mosterman, P. J. (Eds.); Model-Based Software Product Lines Testing Survey; *Model-Based Testing for Embedded Systems, CRC Press*, 2011, 688

Sponsors

