Tools for Software Product Lines

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Tools

- Feature Modeling Plug-in (FMP)
- XFeature
- Pure::Variants
- SPLOT
- FeatureIDE

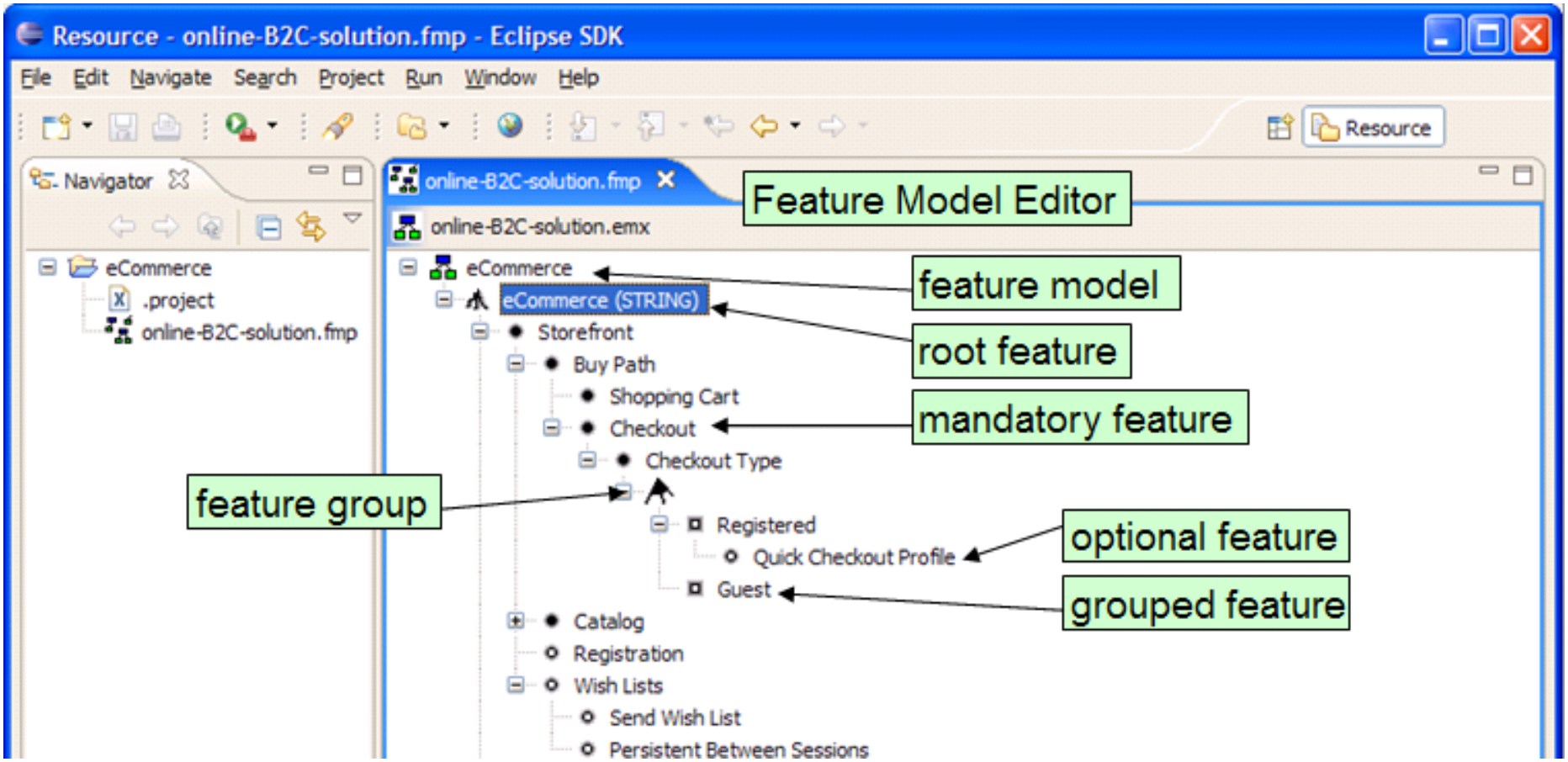
Feature Modeling Plug-in (FMP)

http://gsd.uwaterloo.ca/fmp

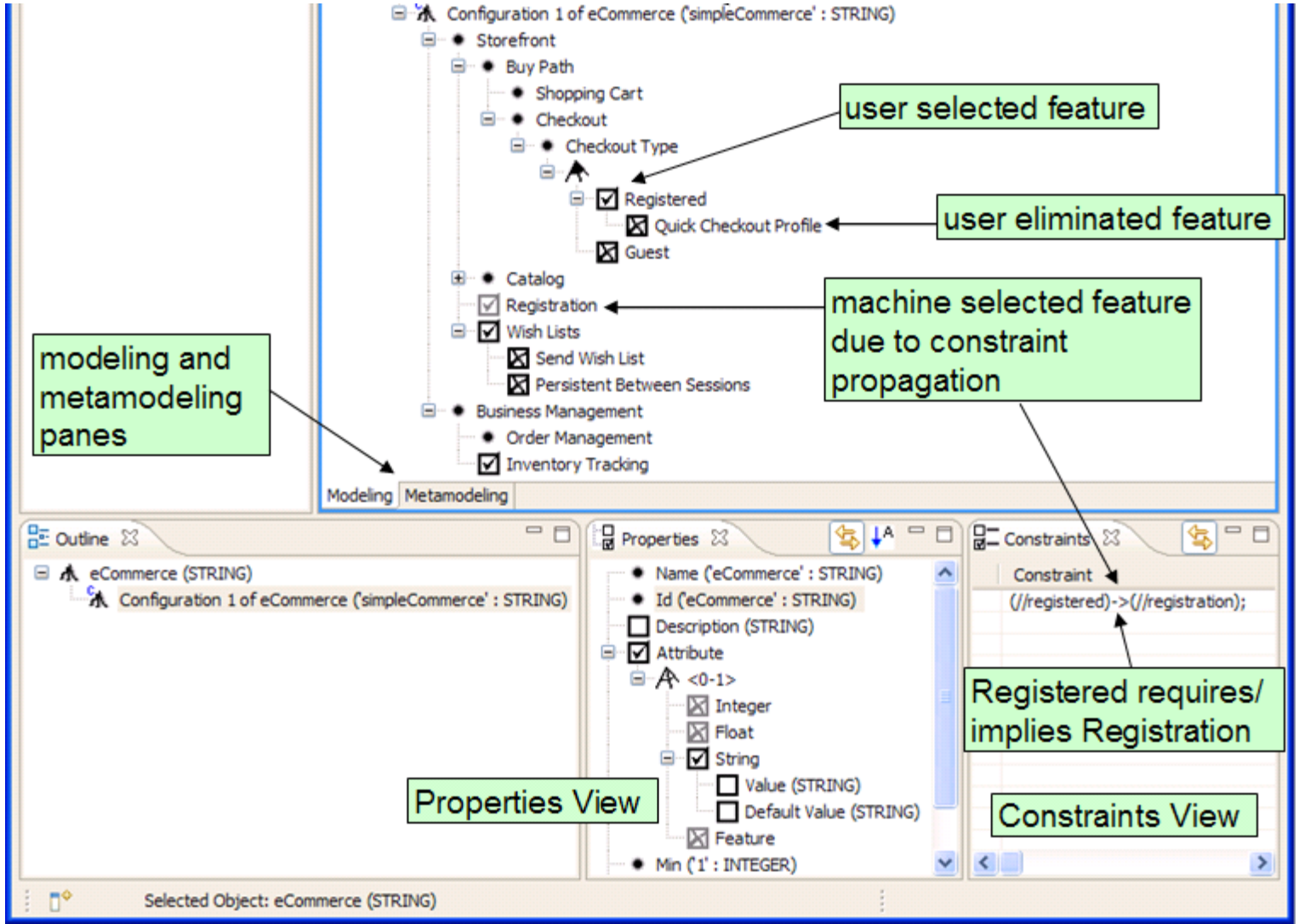
FMP

- It allows for editing and configuring feature models in SPL
  - Eclipse Plug-in
  - Prototype tool developed in 2005
  - No longer maintained
- Created in the University of Waterloo
  - Research leader: Krzysztof Czarnecki
  - Well known by his research on feature modelling

Feature Model Editor



Product Configuration



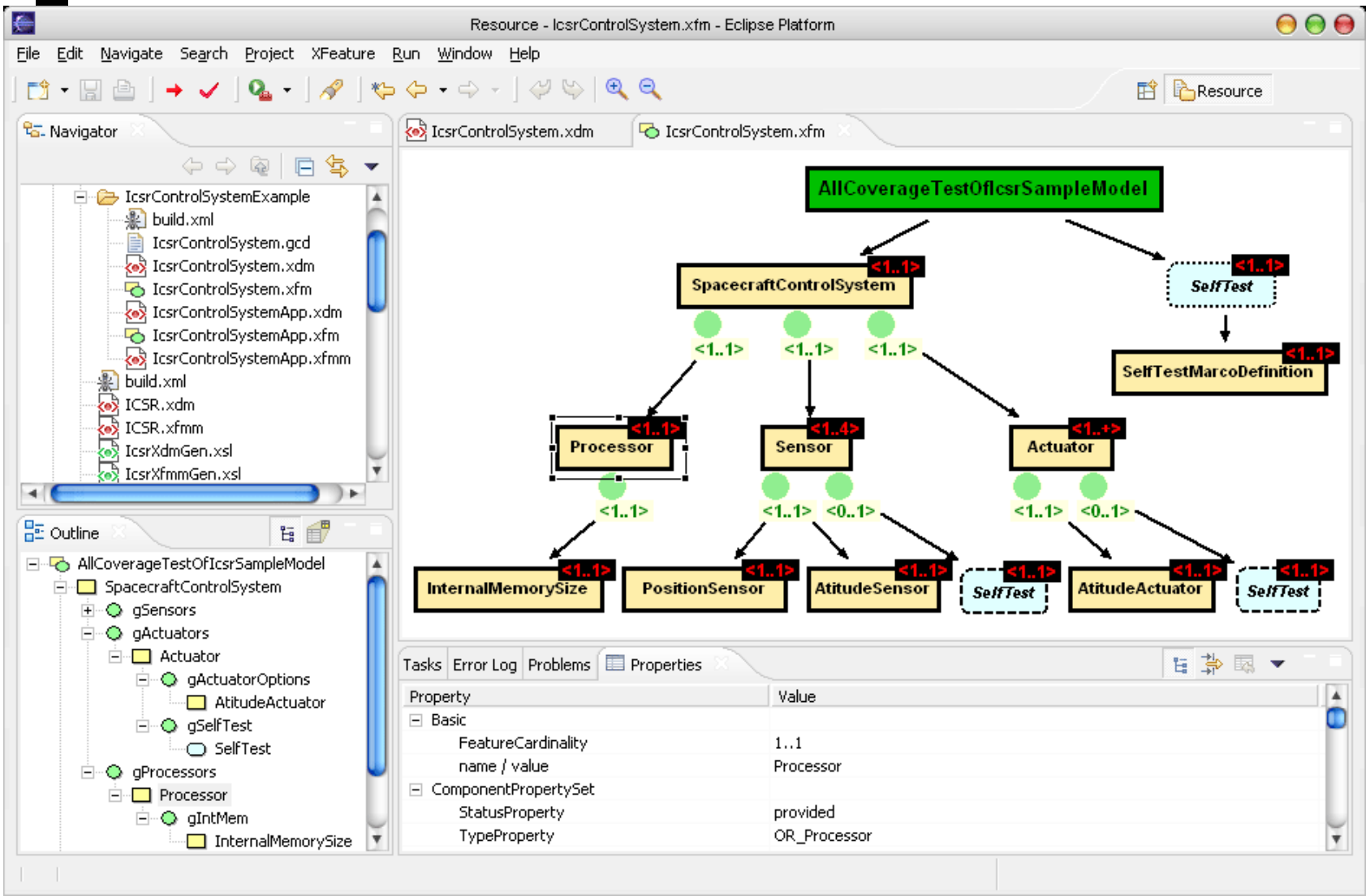
XFeature

http://www.pnp-software.com/XFeature/

XFeature

- Prototype tool similar to FMP
  - Feature modelling
  - Eclipse Plug-in
  - Developed in 2005
  - Created at ETH Zurich in Switzerland
- Free and open software under GNU General Public License

XFeature Main Screen



S.P.L.O.T.

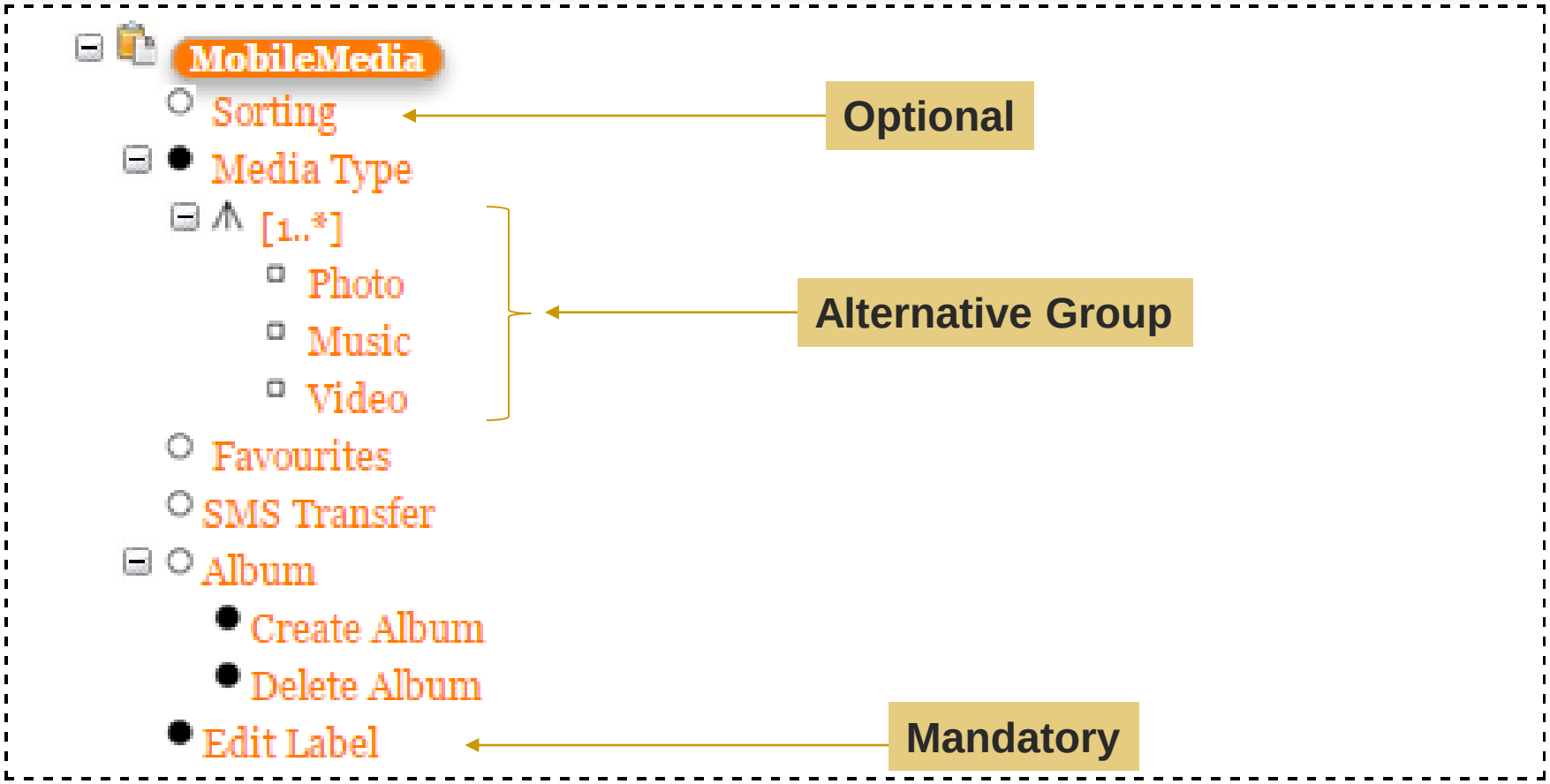
http://www.splot-research.org/

SPLOT Overview

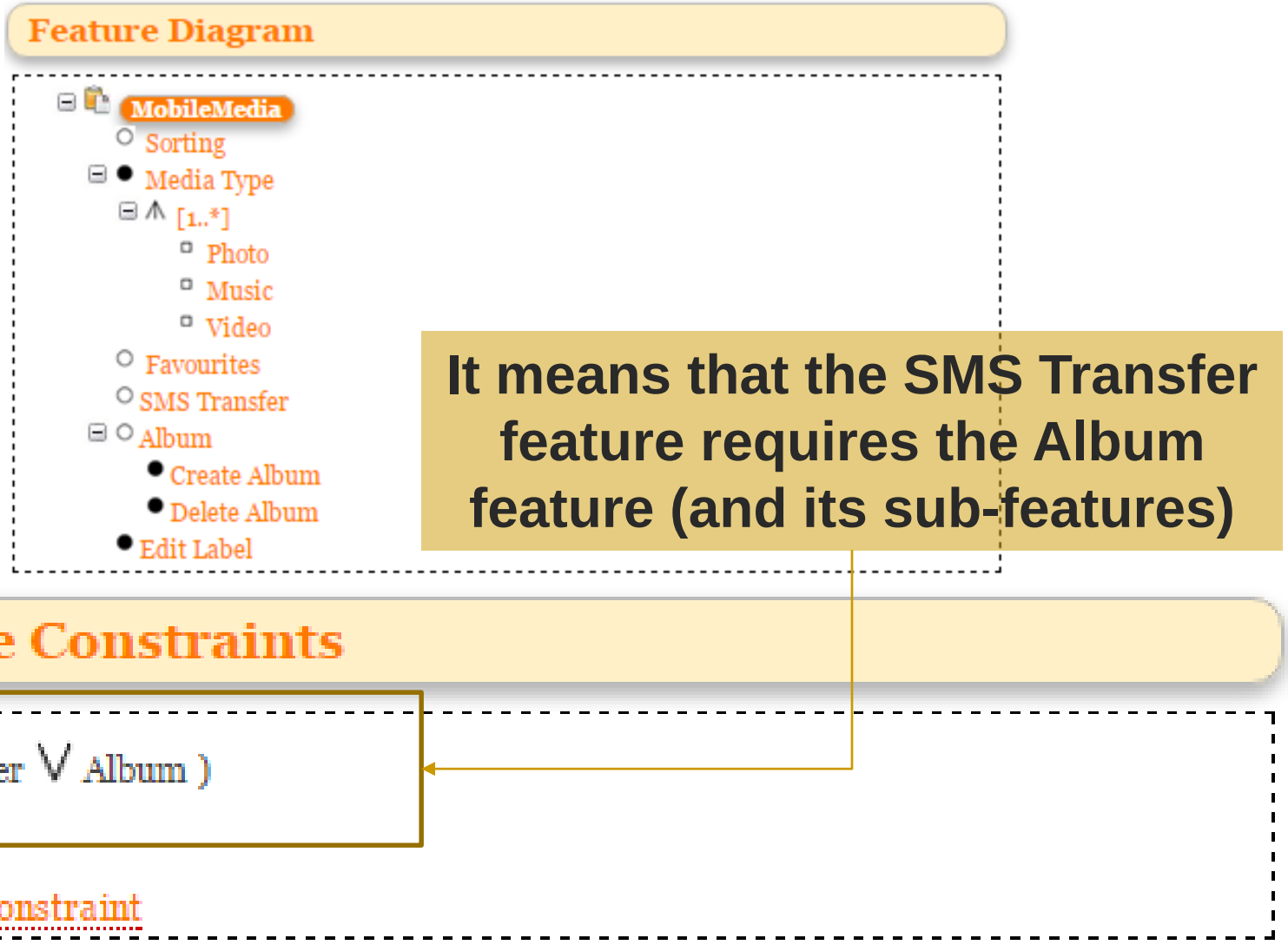
- Released in 2009
  - University of Waterloo
  - Krzysztof Czarnecki
- Open source Web-based tool
- It allows to edit, debug, analyze, configure, and share feature models
  - Its repository includes hundreds of feature models

Feature Model Editor

Feature Diagram



Cross-Tree Constraints



Automated Analysis

Feature Model Statistics

#Features	14
#Mandatory	3
#Optional	1
#XOR groups	3
#OR groups	1
#Grouped	9
#Cross-Tree Constraints (CTC)	2
CTCR (%)	0.29
#CTC distinct vars	4
CTC clause density	0.50

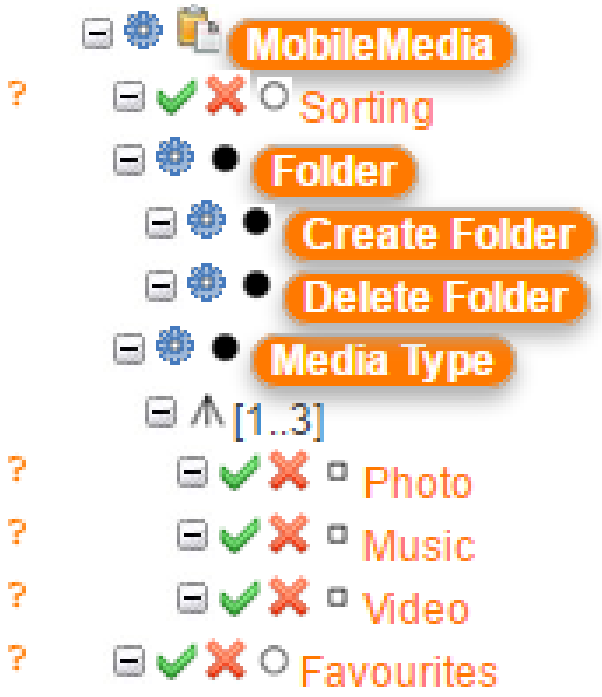
Feature Model Analysis

✔	Consistency	Consistent
✔	Dead Features	None
✔	Core Features	4 feature(s)
✔	Valid Configurations	30

Run Analysis

Product Configuration

MobileMedia (10 features)



Configuration Steps [reset]

50%

Step	Decision	#Decisions (cummulative)	#Propagations (at step)	#SAT checks (at step)	SAT time (at step)
1	✔ MobileMedia	5 (50.0%)	4	6	1 ms

Auto-completion: Less Features | More Features

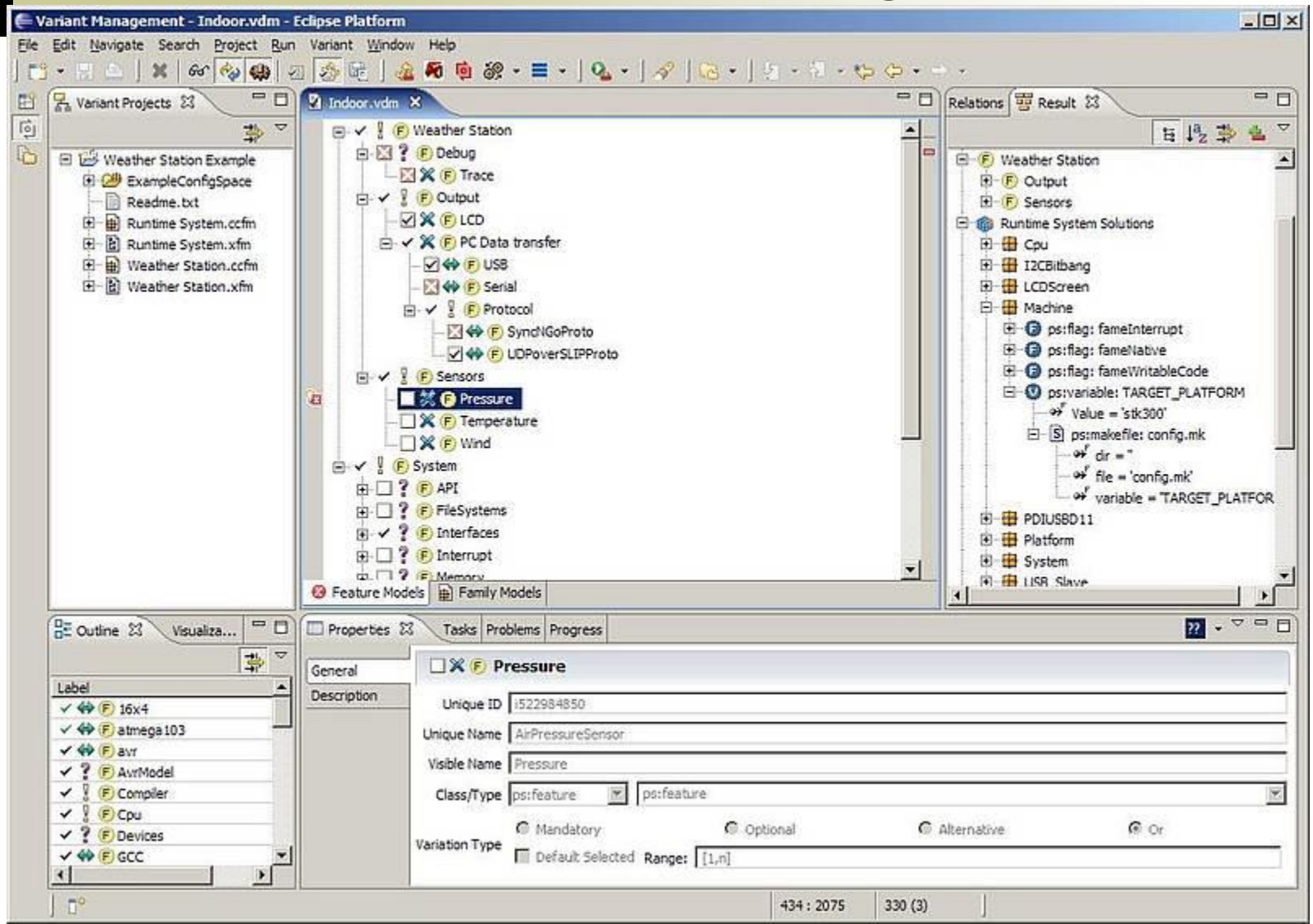
Pure::Variants

http://www.pure-systems.com/products/pure-variants-9.html

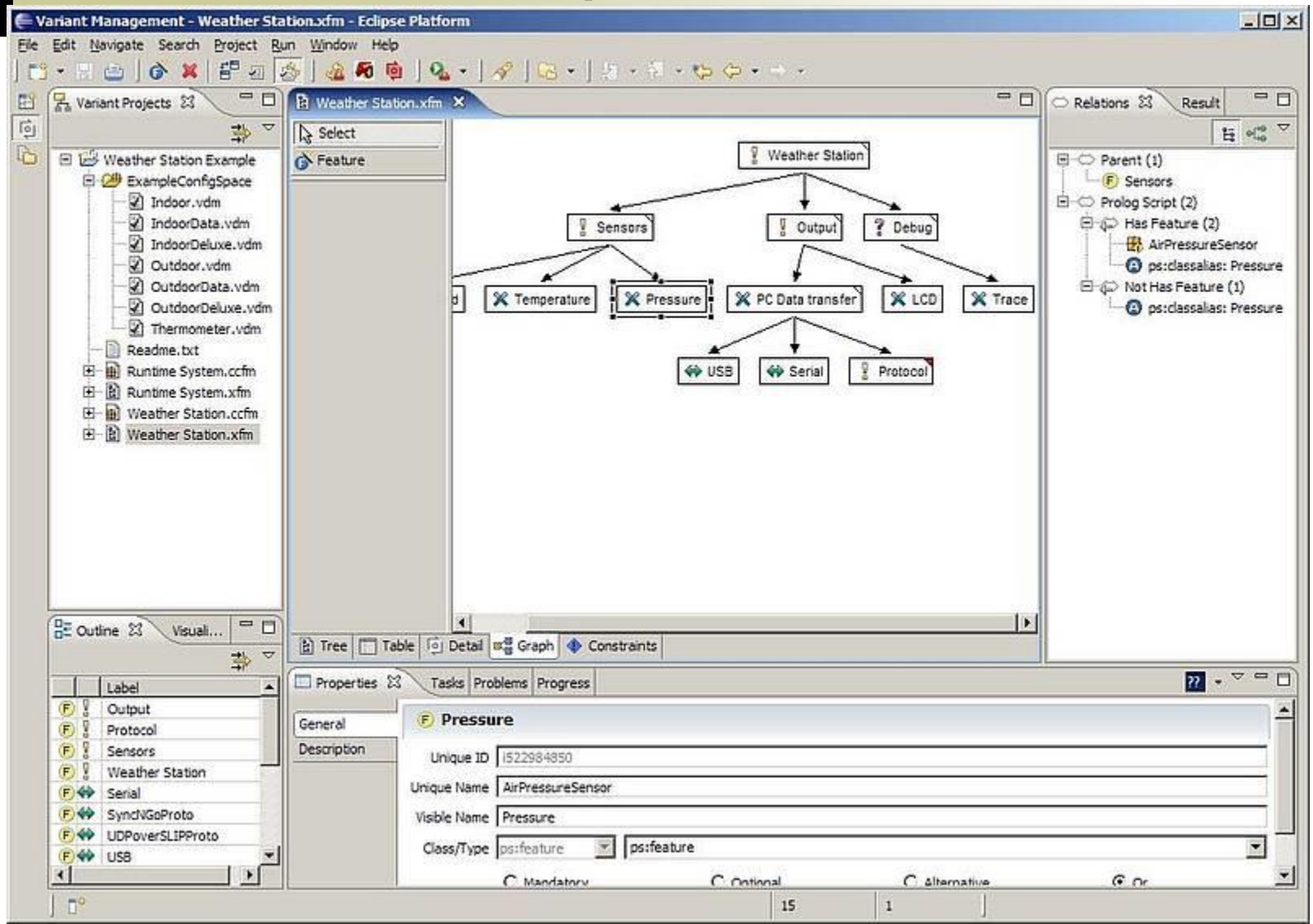
Pure::Variants

- Comercial system (IDE)
  - Evaluation copy available
- Include several tools for developing and management of variability
- It integrates to Eclipse and other IDEs
  - Enterprise Architect, IBM Rational DOORS, IBM Rational Rhapsody, etc.

Screen 1: Product Configuration



Screen 2: Graphical View



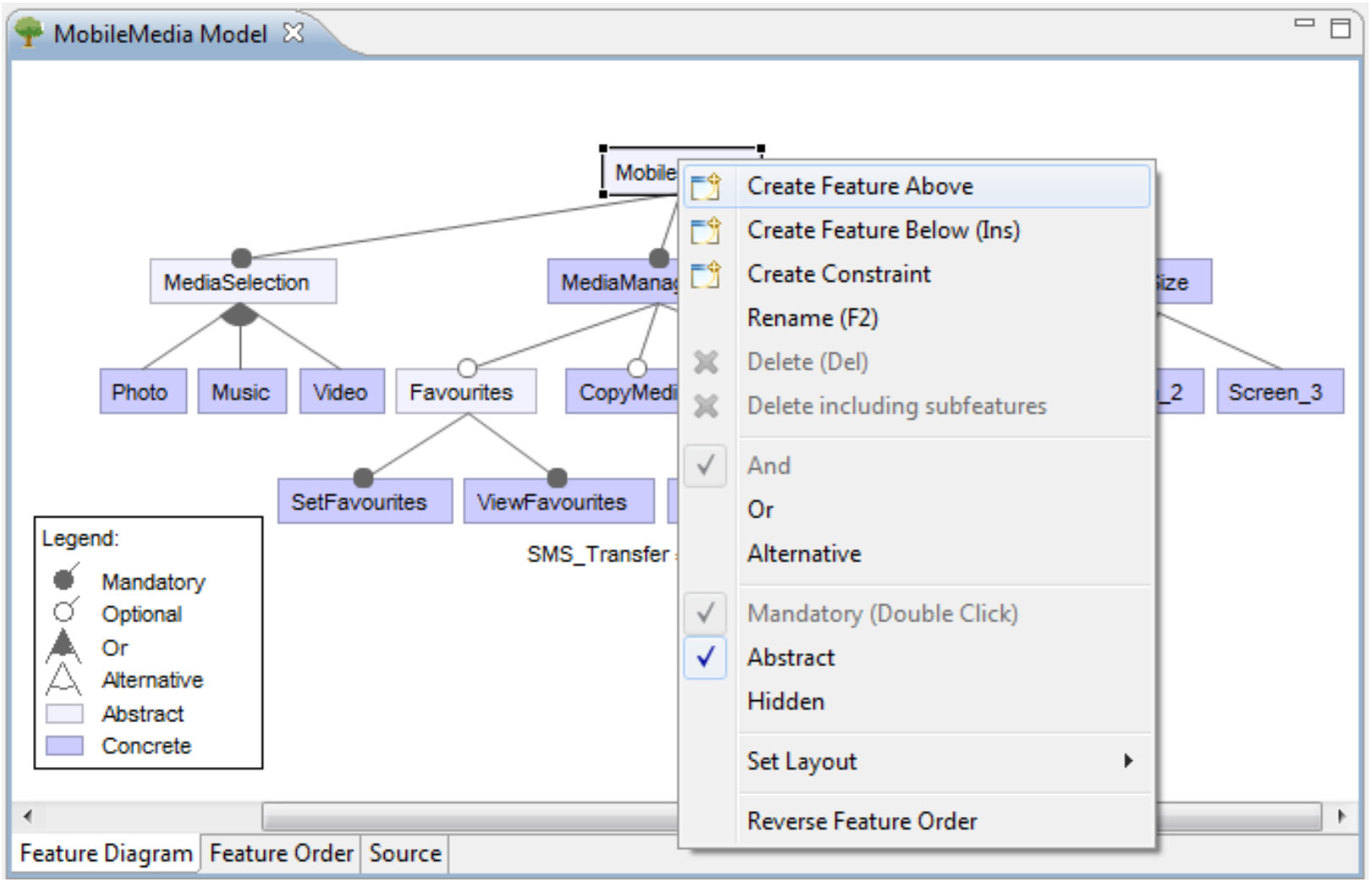
FeatureIDE

https://featureide.github.io/

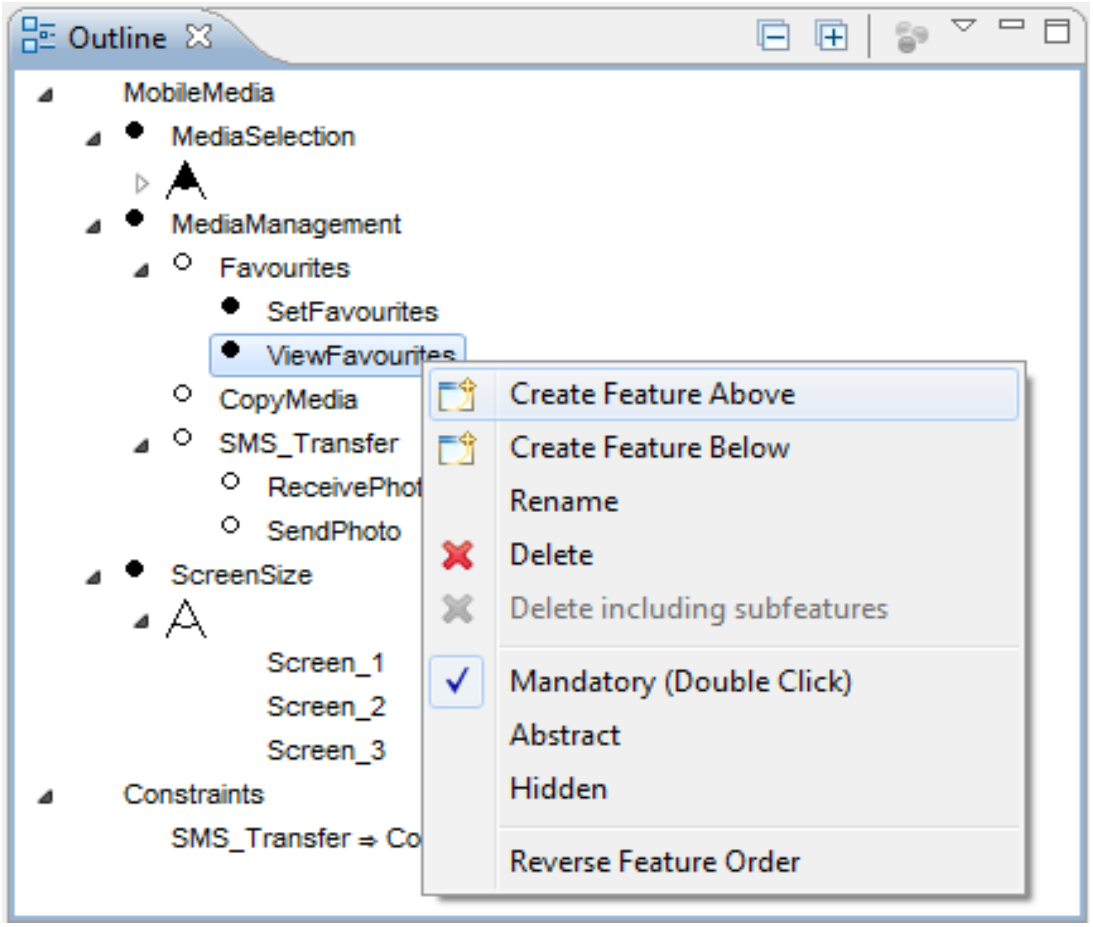
FeatureIDE

- It allows domain analysis implementation of SPL
  - Eclipse-based IDE
- It supports programming techniques
  - Feature-oriented programming (FOP)
  - Aspect-oriented programming (AOP)
  - Delta-oriented programming (DOP)
  - Preprocessors

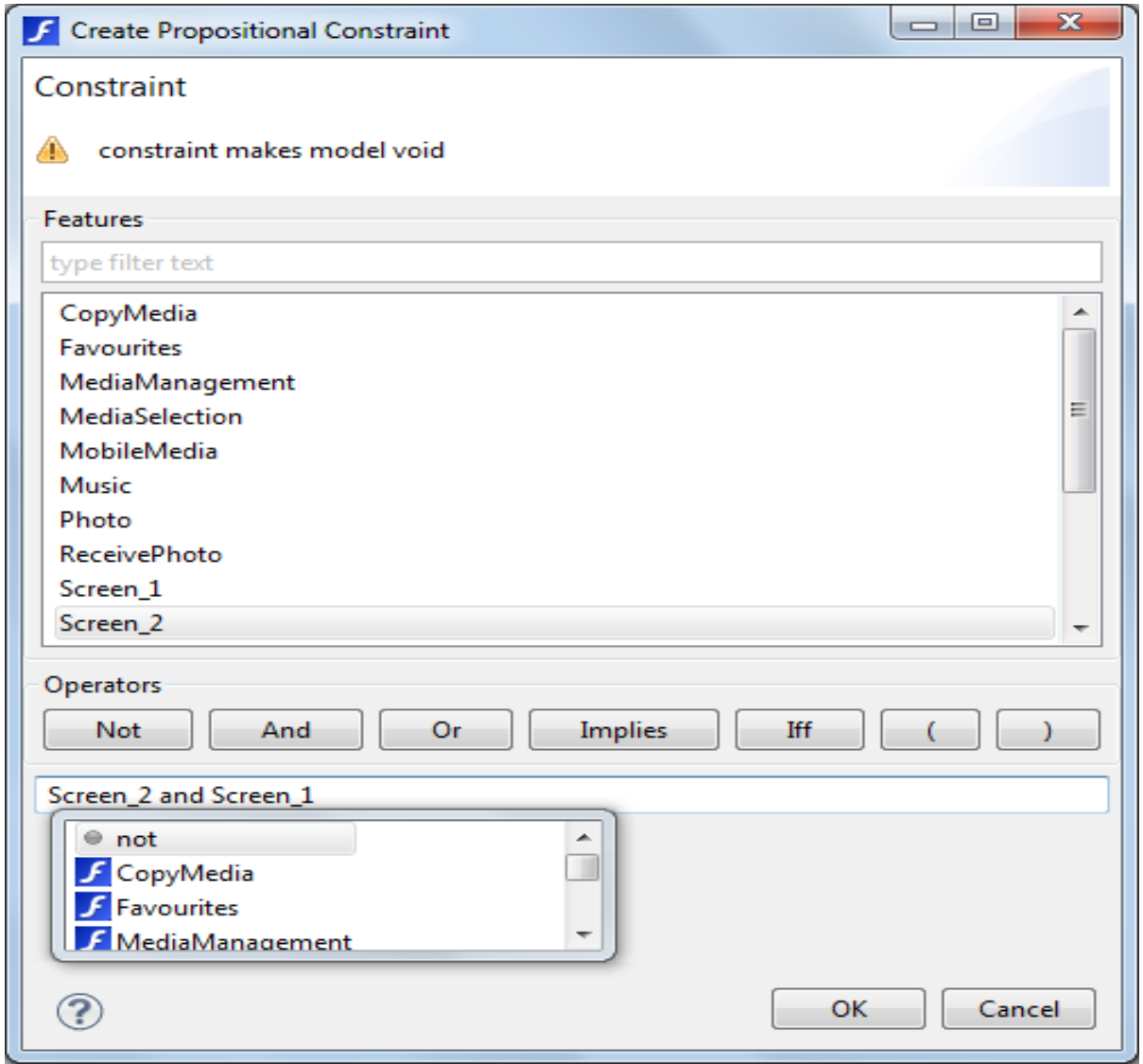
Feature Model Editor



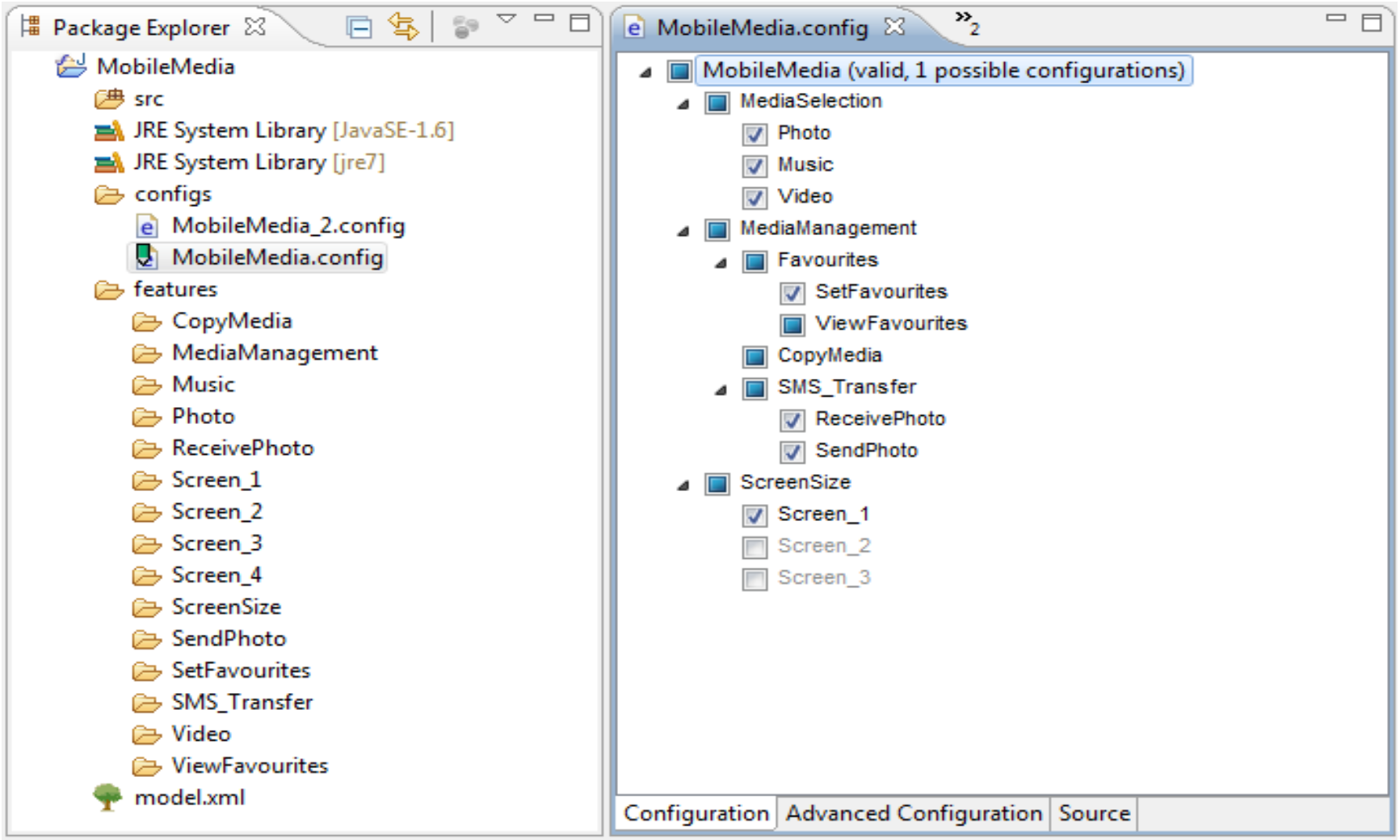
Alternative View



Cross-Tree Constraints



Product Configuration



Bibliography

- Websites of the Tools
  - http://gsd.uwaterloo.ca/fmp
  - http://www.pnp-software.com/XFeature/
  - http://www.splot-research.org/
  - http://www.pure-systems.com/products/pure-variants-9.html
  - https://featureide.github.io/