

2011 15th International Software Product Line Conference

(SPLC 2011)

**Munich, Germany
22 – 26 August 2011**



**IEEE Catalog Number: CFP1162A-PRT
ISBN: 978-1-4577-1029-2**

2011 15th International Software Product Line Conference

SPLC 2011

Table of Contents

Welcome Message from the Conference Chairs.....	x
Organization Committee.....	xi
Program Committee and Additional Reviewers.....	xii
Sponsors and Supporters.....	xiv

Keynotes

The Role of Requirements and Specification in Product Line Engineering	3
<i>Manfred Broy</i>	
Families (of Products) in Space	8
<i>Mike Hinchey</i>	
Product Line Engineering at Siemens—Challenges and Success Factors: A Report on Industrial Experiences in Product Line Engineering	10
<i>Reinhold Achatz</i>	

Research Papers

Product Lines Planning and Decision Making

Value-Based Portfolio Optimization for Software Product Lines	15
<i>Johannes Müller</i>	
Optimizing User Guidance during Decision-Making	25
<i>Alexander Nöhrer and Alexander Egyed</i>	
Optimizing the Product Derivation Process	35
<i>Sheng Chen and Martin Erwig</i>	

Product Lines Automation

Feature-Based Customisation of Tool Environments for Model-Driven Software Development	45
<i>Christian Wende, Uwe Assmann, Srdjan Zivkovic, and Harald Kühn</i>	
Towards Cost-Effective High-Assurance Software Product Lines: The Need for Property-Preserving Transformations	55
<i>Stuart Hutchesson and John McDermid</i>	

A Toolset for Feature-Based Configuration Workflows	65
<i>Ebrahim Khalil Abbasi, Arnaud Hubaux, and Patrick Heymans</i>	
Model-Driven Product Lines	
Product Line Engineering Using Domain-Specific Languages	70
<i>Markus Voelter and Eelco Visser</i>	
Automatic Derivation of a Product Performance Model from a Software Product Line Model	80
<i>Rasha Tawhid and Dorina C. Petriu</i>	
Model Comparison to Synthesize a Model-Driven Software Product Line	90
<i>Xiaorui Zhang, Øystein Haugen, and Birger Møller-Pedersen</i>	
Service Oriented Product Lines	
Context-Aware Autonomous Web Services in Software Product Lines	100
<i>Germán H. Alférez and Vicente Pelechano</i>	
Variability Modeling for Service Oriented Product Line Architectures	110
<i>Mohammad Abu-Matar and Hassan Gomaa</i>	
Configuration of Multi Product Lines by Bridging Heterogeneous Variability Modeling Approaches	120
<i>Deepak Dhungana, Dominik Seichter, Goetz Botterweck, Rick Rabiser, Paul Grünbacher, David Benavides, and José A. Galindo</i>	
Variability Management/Modeling	
Formal Description of Variability in Product Families	130
<i>Patrizia Asirelli, Maurice H. ter Beek, Stefania Gnesi, and Alessandro Fantechi</i>	
Variation Management for Software Product Lines with Cumulative Coverage of Feature Interactions	140
<i>Shigeo Kato and Nobuhito Yamaguchi</i>	
Hierarchical Variability Modeling for Software Architectures	150
<i>Arne Haber, Holger Rendel, Bernhard Rumpe, Ina Schaefer, and Frank van der Linden</i>	
Non-functional Properties	
Scalable Prediction of Non-functional Properties in Software Product Lines	160
<i>Norbert Siegmund, Marko Rosenmüller, Christian Kästner, Paolo G. Giarrusso, Sven Apel, and Sergiy S. Kolesnikov</i>	
Verifying Non-functional Properties of Software Product Lines: Towards an Efficient Approach Using Parametric Model Checking	170
<i>Carlo Ghezzi and Amir Molzam Sharifloo</i>	
Problem Frames-Based Approach to Achieving Quality Attributes in Software Product Line Engineering	175
<i>Tung M. Dao, Hyesun Lee, and Kyo C. Kang</i>	

Feature-Oriented Software Development

From Requirements to Features: An Exploratory Study of Feature-Oriented Refactoring	181
<i>Roberto E. Lopez-Herrejon, Leticia Montalvillo-Mendizabal, and Alexander Egyed</i>	
Abstract Features in Feature Modeling	191
<i>Thomas Thüm, Christian Kästner, Sebastian Erdweg, and Norbert Siegmund</i>	

Industry Papers

Product Line Economics

Towards the Integration of Quality Attributes into a Software Product Line Cost Model	203
<i>Andy J. Nolan, Silvia Abrahão, Paul Clements, John D. McGregor, and Sholom Cohen</i>	
Adding Value through Software Product Line Engineering: The Evolution of the FISCAN Software Product Lines	213
<i>Dong Li and David M. Weiss</i>	
Requirements Uncertainty in a Software Product Line	223
<i>Andy J. Nolan, Silvia Abrahão, Paul C. Clements, and Andy Pickard</i>	

Architecture

Re-engineering of a Hierarchical Product Line	232
<i>Jörg Bartholdt and Detlef Becker</i>	
Implementing a Software Product Line for a Complex Avionics System	241
<i>Frank Dordowsky, Richard Bridges, and Holger Tschöpe</i>	

Introducing and Growing Product Lines

Experiences with Software Product Line Development in Risk Management Software	251
<i>Gerard Quilty and Mel Ó. Cinnéide</i>	
Key Activities for Introducing Software Product Lines into Multiple Divisions: Experience at Hitachi	261
<i>Kentaro Yoshimura, Jun Shimabukuro, Takatoshi Ohara, Chikashi Okamoto, Yoshitaka Atarashi, Shinobu Koizumi, Shigeru Watanabe, and Kazumi Funakoshi</i>	
Experiences from a Large Scale Software Product Line Merger in the Automotive Domain	267
<i>Christian Tischer, Andreas Müller, Thomas Mandl, and Ralph Krause</i>	

Supporting Production, Deployment and Test

Engineering a Production Method for a Software Product Line	277
<i>Gary Chastek, Patrick Donohoe, John D. McGregor, and Dirk Muthig</i>	
A Deployment Infrastructure for Product Line Models and Tools	287
<i>Michael Vierhauser, Gerald Holl, Rick Rabiser, Paul Grünbacher, Martin Lehofer, and Uwe Stürmer</i>	
Governance and Cost Reduction through Multi-tier Preventive Performance Tests in a Large-Scale Product Line Development	295
<i>Subrata Sinha, Thomas Dasch, and Reinhard Ruf</i>	

Variability Modeling and Management

Experience with Variability Management in Requirement Specifications	303
<i>Ekaterina Boutkova</i>	
Metadoc Feature Modeler: A Plug-in for IBM Rational DOORS	313
<i>Anil Kumar Thurimella and Dirk Janzen</i>	
Bottom-up Modeling for a Software Product Line: An Experience Report on Agile Modeling of Governmental Mobile Networks	323
<i>Pietu Pohjalainen</i>	

Workshops

Fifth International Workshop on Dynamic Software Product Lines (DSPL 2011)	335
<i>Svein Hallsteinsen, Mike Hinchey, Sooyong Park, and Klaus Schmid</i>	
Formal Methods and Analysis in Software Product Line Engineering (FMSPLE 2011)	336
<i>David Benavides, Martin Leucker, Martin Becker, Rick Rabiser, Karina Villela, and Peter Y.H. Wong</i>	
Third International Workshop on Feature-Oriented Software Development (FOSD 2011)	337
<i>Sven Apel, Florian Heidenreich, Christian Kästner, and Marko Rosenmüller</i>	
Second International Workshop on Knowledge-Oriented Product Line Engineering	339
<i>Haitham S. Hamza, Jabier Martinez, and Andreas Rummler</i>	
Joint Workshop of the Third International Workshop on Model-Driven Approaches in Software Product Line Engineering and the Third Workshop on Scalable Modeling Techniques for Software Product Lines (MAPLE/SCALE 2011)	340
<i>Goetz Botterweck, Natsuko Noda, Deepak Dhungana, Rick Rabiser, Muhammad Ali Babar, Sholom Cohen, Kyo C. Kang, and Tomoji Kishi</i>	
First International Workshop on Quantitative Methods in Software Product Line Engineering	341
<i>Silvia Abrahão, Andy J. Nolan, Paul C. Clements, and John D. McGregor</i>	
SCArVeS: Services, Clouds, and Alternative Design Strategies for Variant-Rich Software Systems	342
<i>Karina Villela, Sholom Cohen, and Luciano Baresi</i>	

Doctoral Symposium

Doctoral Symposium	345
<i>Tomi Männistö</i>	

Tutorials

Successful Product Line Engineering: Experiences from the Real World	349
<i>Frank Buschmann and Christa Schwanninger</i>	
Introduction to Software Product Lines	350
<i>Patrick Donohoe</i>	
Software Ecosystems—Implications for Strategy, Business Model and Architecture	351
<i>Jan Bosch</i>	

Achieving Speed in Legacy Systems	352
<i>Jan Bosch</i>	
DSLs for Product Lines: Approaches, Tools, Experiences	353
<i>Markus Völter</i>	
Management and Operation of a Software Product Line	354
<i>John D. McGregor and Dirk Muthig</i>	
Production Planning in a Software Product Line Organization	355
<i>Gary Chastek and John D. McGregor</i>	
Leveraging Model Driven Engineering in Software Product Line Architectures	356
<i>Bruce Trask and Angel Roman</i>	
Creating Domain-Specific Modeling Languages for Product Lines	358
<i>Juha-Pekka Tolvanen and Steven Kelly</i>	
Introduction to Software Product Lines Adoption	359
<i>Linda M. Northrop and Lawrence G. Jones</i>	
Industry Trends in Systems and Software Product Line Engineering	360
<i>Charles W. Krueger</i>	
Transforming Legacy Systems into Software Product Lines	361
<i>Danilo Beuche</i>	
Managing Requirements in Product Lines	362
<i>Danilo Beuche</i>	
Author Index	363