

# 2009 Workshop on Service-Oriented Architectures and Software Product Lines (SOAPL 2009)

## Enhancing Variation

Software Engineering Institute  
Carnegie Mellon University  
Pittsburgh, PA 15213

Bob Krut & Sholom Cohen  
25 August 2009  
San Francisco, California, USA



# Agenda

8:30 - 8:45	Welcome, Agenda, and Summary of Previous Workshops
8:45 - 9:30	Invited Talk: Jaejoon Lee, Lancaster University, UK
9:30 - 10:00	Paper #1 Presentation & Discussion
10:00 - 10:30	Break
10:30 - 11:00	Paper #2 Presentation & Discussion
11:00 - 11:30	Paper #3 Presentation & Discussion
11:30 - 12:00	Context Setting for Afternoon Discussion
12:00 - 13:30	Lunch
13:30 - 14:00	Paper #4 Presentation & Discussion
14:00 - 15:00	Workshop Discussions
15:00 - 15:30	Break
15:30 - 16:30	Workshop Discussions Continued
16:30 - 17:00	Conclusion: Goals Addressed, Topics for SOAPL 2010, Future Work



# Workshop Organizers

Sholom Cohen, Software Engineering Institute, USA

David Benavides, University of Seville, Spain

Dragan Gasevic, Athabasca University, Canada

Andreas Helferich, Universität Stuttgart, Germany

Robert Krut, Software Engineering Institute, USA

Grace Lewis, Software Engineering Institute, USA

Dennis Smith, Software Engineering Institute, USA

Christoph Wienands, Siemens Corporate Research, USA

Peter Dolog, Aalborg University, Denmark



# The First Workshop on Service-Oriented Architectures and Product Lines (SOAPL 2007)

Part of the 2007 Software Product Line Conference (SPLC 2007),  
10 September 2007, Kyoto, Japan.

Service Oriented Architectures and Product Lines - What is the Connection?  
(<http://splc.net/prev-conferences/soapl-2007.pdf>)

SOAPL 2007 explored the connections from two perspectives:

1. Can services support product lines using a service-oriented architecture?
2. How can use of product line practices support services and service-oriented architectures?

Proceedings of the First Workshop on Service-Oriented Architectures and Product Lines  
(CMU/SEI-2008-SR-006).

<http://www.sei.cmu.edu/publications/documents/08.reports/08sr006.html>



# The Second Workshop on Service-Oriented Architectures and Product Lines (SOAPL 2008)

Part of the 2008 Software Product Line Conference (SPLC 2008),  
8 September 2008, Limerick, Ireland

Service Oriented Architectures and Product Lines - Putting Both Together  
(<http://splc.net/prev-conferences/soapl-2008.pdf>)

SOAPL 2008 explores experiences in integrating SOA and SPL:

1. How web services have been used to support product lines using a service-oriented architecture?
2. How product line practices have been used to support web services and service-oriented architectures?

Workshop papers are published in the  
*Proceedings of the 12th International Software Product Lines Conference (SPLC 2008),  
Second Volume*. Limerick, Ireland, September 8-12, 2008. University of Limerick,  
Ireland: Lero International Science Centre, 2008 (ISBN 978-1-905952-06-9).

The outcome of SOAPL 2008 discussion will be the basis of today's workshop.



# The Third Workshop on Service-Oriented Architectures and Product Lines (SOAPL 2009)

Service-Oriented Architectures and Software Product Lines - Enhancing Variation  
(<http://www.sei.cmu.edu/splc2009/soapl.html>)

SOAPL 2009 will explore how service-oriented architectures and software product lines can benefit from each other, specifically

1. how service-oriented systems can benefit from software product lines' variation management approaches to identify and design services targeted to multiple service-oriented systems
2. how software product lines can benefit from service-oriented architectures by employing services as a mechanism for variation within a product line

Four position papers were accepted.



# Accepted Papers

- 1) “*Service-Oriented Architecture (SOA) and Software Product Lines: Pre-Implementation Decisions*”  
Dennis Smith, Grace Lewis
- 2) “*Semantic Variability Modeling for Multi-staged Service Composition*”  
Bardia Mohabbati, Nima Kaviani, Dragan Gasevic
- 3) “*Managing SOA System Variation through Business Process Lines and Process Oriented Development*”  
Nicola Boffoli, Marta Cimitile, Fabrizio Maria Maggi, Giuseppe Visaggio
- 4) “*Towards an Approach for Service-Oriented Product Line Architectures*”  
Flávio Mota Medeiros, Eduardo Santana de Almeida, Silvio Romero de Lemos Meira

Papers are available at <http://www.sei.cmu.edu/splc2009/soapl.html>



# Workshop Theme

The two major themes addressed from the accepted SOAPL 2008 papers were:

1. Variability and variability mechanisms
2. Product composition

The aspects of scope, design approach, source of variation, application target, composition elements, and technical approach were the focus of discussion during the workshop.

These discussions lead to four principles for SOA and PL variation:

1. recognizing the commonality and variants across the scope of a product line or across some group of service-oriented systems within the enterprise
2. leveraging the recognized commonality by building core assets, including services, across the variants with established points of variation
3. recognizing the enterprise integration needs that service-oriented systems must address
4. addressing end user needs for variation within service-oriented systems





# Workshop Theme (cont.)

For SOAPL 2009, we would like to address these four principles by focusing on

1. Scope - identifies those entities with which products in the product line will interact (that is, the product line context), and it also establishes the commonality and sets limits on the variability of the products in the product line. [Northrop, L. & Clements, P. *A Framework for Software Product Line Practice, Version 5.0* <<http://www.sei.cmu.edu/productlines/framework.html>> (2009).]
2. Source of variation – What is the source of variation within a scope or across products that define a new product line? Do SOA methods help identify new services and their variations?
3. Variation management - comprises all activities to explicitly model, manage, and document those parts, which vary among the products of a product line. [John, I.; Pech, D. *Scalable Variability Instantiation Strategies*. Scalable Modeling Techniques for Software Product Lines (SCALE 2009) Workshop, SPLC 2009.]
4. Variation mechanisms - a mechanism to support the creation and/or selection of variants that are compliant with the constraints for a variable part of a core asset . [Bachmann, F. & Clements, P. *Variability in Software Product Lines* (CMU/SEI-2005-TR-012, ADA450337). Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 2005.]

And from this years papers

1. Ontology's, semantic variability modeling
2. Business process variation

What other approaches do people use to address these four principles?



# Invited Speaker

Dr. Jaejoon Lee  
Lecturer  
Computing Department  
Lancaster University, UK

Main Research Areas:

- Product Line Software Engineering
- Software Architecture
- Service-oriented Software Systems



Presentation Title: *“A Negotiation Framework for Service-Oriented Product Line Development”*



# Paper Presentation

Presenter: Dennis Smith  
Senior Member of Technical Staff  
Software Engineering Institute  
Carnegie Mellon University



## Main Research Areas:

- Migrating Legacy Systems to SOA Environments
- Integration of Software-Intensive Systems
- Service-oriented Architectures
- Software Product Lines

Presentation Title: “*Service-Oriented Architecture (SOA) and Software Product Lines: Pre-Implementation Decisions*”

Authors: Dennis Smith, Grace Lewis



# Paper Presentation

Presenter: Bardia Mohabbati  
Ph.D Student  
Simon Fraser University  
Laboratory for Ontological Research



## Main Research Areas:

- Semantic Web Techniques in Software Engineering
- Software Language Engineering
- Business Process Modeling
- Software Product Line
- Service-oriented Architecture

Presentation Title: “*Semantic Variability Modeling for Multi-staged Service Composition*”  
Authors: Bardia Mohabbati, Nima Kaviani, Dragan Gasevic



# Paper Presentation

Presenter: Nicola Boffoli

PresentationTitle: *“Managing SOA System Variation through Business Process Lines and Process Oriented Development”*

Authors: Nicola Boffoli, Marta Cimitile, Fabrizio Maria Maggi, Giuseppe Visaggio



# Paper Presentation

Presenter: Flávio Mota Medeiros

Presentation Title: “*Towards an Approach for Service-Oriented Product Line Architectures*”

Authors: Flávio Mota Medeiros, Eduardo Santana de Almeida, Silvio Romero de Lemos  
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