



SPLC 2018

22nd International Systems and
Software Product Line Conference,
September 10-14, Gothenburg, Sweden

■ Welcome message.....	3
■ Program at a glance.....	4
■ Keynotes	5
■ Organization.....	6
■ Tutorials	8
■ Workshops.....	10
■ Industry Forum.....	13
■ Venue.....	14
■ General map	15
■ Monday program	16
■ Tuesday program.....	17
■ Wednesday program	18
■ Thursday program.....	19
■ Friday program.....	20

A conference badge is handed over to you as soon as you have registered at the registration desk. **Please keep the badge visible all the time** during the conference, workshops, and social events.

Jan Bosch and Dan Hao,
general chairs of SPLC 2018

Welcome to SPLC 2018!

Welcome to SPLC 2018, the 22nd International Systems and Software Product Line Conference. For the last decades, SPLC has been the meeting ground for practitioners, researchers and educators interested in systems and software product lines. With the size of software still growing with an order of magnitude every five to ten years in many industries, achieving efficiency and economies of scale has never been more important. SPLC 2018 provides a great venue for learning about the state of the art as well as practice, trends, innovations, industry experiences and challenges in the area of systems family engineering at large. SPLC 2018 is organized September 10 to 14, 2018 in Gothenburg, Sweden. Gothenburg is the industrial heart of Sweden and in many ways the entire Nordics and it is exciting to host the conference here.

As SPLC aims to combine academic excellence with industrial relevance, also this year's incarnation of the conference series offers an exciting program of top notch research and industry papers as well as workshops, demonstrations, tutorials and keynote presentations. We encourage you to take a look at the program as the entire team has been working hard to create a diverse program that serves the needs and interests of everyone.



Jan Bosch



Dan Hao

A conference is a community event and could not exist without the contributions of many for which we are grateful. We cannot mention everyone, but we would like to mention a few people. First, our keynote speakers, Judith Bishop, Martin Hiller and Markus Völter who graciously agreed to share their perspectives, experiences and insights. Second, the Program Committee members deserve a mention for their hard work in reviewing and discussing the papers that you'll find in the proceedings as well as the other papers that were submitted to the conference. Third, as general chairs, we have been blessed with a great organizing team whose efforts were instrumental for ensuring the success of the conference. Finally, we would like to thank our sponsors and institutional partners for their support and contributions. These include Software Center, Chalmers University of Technology (especially the ICT Area of Advance), University of Gothenburg, Pure-Systems GmbH, BigLever Software Inc. INCOSE and Metop. Special

thanks go to the city of Gothenburg for their financial and logistic support.

If this is your first visit to Gothenburg, we encourage you to make sure that also to enjoy the beautiful city of Gothenburg. The city has a rich history as a central naval location for the kingdom of Sweden and has always enjoyed an international culture as traders from several European countries were based here. Today Gothenburg hosts the largest port in Scandinavia and is the home city for Volvo Car Corporation and AB Volvo (trucks). Other major companies with major sites in Gothenburg include SKF, Astra Zeneca, Ericsson, Saab and many others. Finally, of course the Swedish west coast is amazing for those who enjoy the outdoors, either on the water in kayaks or on land along the coast and numerous hiking trails. The diversity of this wonderful place is amazing and we wish you a very warm welcome!

Sincerely,
Jan Bosch and Dan Hao,
general chairs of SPLC 2018

Program at a glance

	Pre-conference event & Workshops		Main Conference		
	Monday September 10	Tuesday September 11	Wednesday September 12	Thursday September 13	Friday September 14
09:00	09:00-12:00 REVE (Room Kelvin)	09:00-12:00 Tutorial 6 (Room Kelvin)	Opening speech by General Chair (Room Pascal)	Keynote 2 by Judith Bishop (Room Pascal)	Keynote 3 by Martin Hiller (Room Pascal)
09:30			Keynote 1 by Markus Völter (Room Pascal)		
10:00	09:00-12:00 Tutorial 1 (Room Aktiviteten 13)	09:00-12:00 Tutorial 4 (Room Tesla)	Coffee Break	Coffee Break	Coffee Break
10:30	09:00-12:00 Tutorial 2 (Room Aktiviteten 12)	09:00-12:00 Tutorial 7 (Room Aktiviteten 13)		10:20-12:15 Session 3 Variability Design & Impl. (Room Pascal)	10:20-12:15 Session 7 Variability Modeling & Extraction (Room Pascal)
11:00	09:00-12:00 IWODPLE (Room Tesla)	09:00-12:00 Industry Forum (Room Aktiviteten 12)	10:50-12:30 Challenge Track (Room Tesla)	Session 4 Configuration (Room Tesla)	Session 8 Analysis & Vulnerabi- lity (Room Tesla)
11:30			Session 1 - Evolution & Coordination (Room Pascal)	Lunch (Venue)	Lunch (Venue)
12:00	Lunch (Venue)	Lunch (Venue)	Lunch (Venue)		
12:30				13:30-16:30 VariVolution (Room Kelvin)	13:30-16:30 Tutorial 8 (Room Kelvin)
13:00	13:30-16:30 Tutorial 3 (Room Aktiviteten 13)	13:30-16:30 Industry Forum (Room Aktiviteten 12)	Doctoral Symposium Track (Room Tesla)		
13:30				13:30-16:30 Tutorial 5 (Room Aktiviteten 12)	13:30-16:30 Industry Forum (Room Aktiviteten 12)
14:00	13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)	15:15-17:00 Doctoral Symposium Track (Room Tesla)		
14:30				13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)
15:00	13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)	Session 6 Community (Room Pascal)		
15:30				13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)
16:00	13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)	Session 6 Community (Room Pascal)		
16:30				13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)
17:00	13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)	Session 6 Community (Room Pascal)		
17:30				13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)
18:00	13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)	Session 6 Community (Room Pascal)		
18:30				13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)
19:00	13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)	Session 6 Community (Room Pascal)		
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	13:30-16:30 IWODPLE (Room Tesla)	13:30-16:30 SPLTea (Room Aktiviteten 13)	Session 6 Community (Room Pascal)		
				13:30-16:30 IWODPLE	

Keynote 1: Markus Völter

September 12 • 09:30 • Room Pascal



Domain-Specific Languages in SPLE: Why and How?

Markus works as a language engineer, bridging the gap from industry and business domains to software systems. He analyses domains, designs user-friendly languages and supporting analyses, and implements language tools and IDEs, architects efficient and reliable backends based on interpreters and generators. He also works on formalisms and meta-tools for language engineering.

Markus helps organisations uncover and understand the unique knowledge at the core of their business, building a common foundation between business and IT. As a language engineer, he designs and implements languages to capture and validate this knowledge, and to make it executable on modern IT platforms. Markus also works with organisations to successfully introduce this approach.

For 20 years, Markus has consulted, coached and developed in a wide range of industries, including finance, automotive, health, science and IT. He has published numerous papers in peer-reviewed conferences and journals, has written several books on the subject and spoken at many industry conferences world-wide. Markus has a diploma in technical physics from FH Ravensburg-Weingarten and a PhD in computer science from TU Delft.

Keynote 2: Judith Bishop

September 13 • 09:00 • Room Pascal



Software Product Lines – Predicting the Success of Software Reuse in Industry

Judith Bishop is a computer scientist and author whose career spans industry and academia. At Microsoft Research, she led and coordinated cross group projects, empowering people in teams to produce high quality products that have lasting impact. As a professor, she was recognized as an innovator, who increased the perception and adoption of strategic new technologies globally. After studying in South Africa, Judith received her PhD from the University of Southampton, UK. She then served as a professor in South Africa, most recently at Stellenbosch University. Judith's 17 books written over a period of 30 years have highlighted the evolution of programming languages. Judith is an ACM Distinguished Member, and has received the IFIP Silver Core Award, among other awards. She is a Fellow of the British Computer Society and the Royal Society of South Africa.

Keynote 3: Martin Hiller

September 14 • 09:00 • Room Pascal



How do we avoid getting devoured when software is eating the automotive world?

Martin Hiller is Technical Leader in Logical Design Elements and Software Architecture at Volvo Cars, Gothenburg, Sweden. Before joining Volvo Cars in 2015, he worked at ESA's technological heart, ESTEC, in Noordwijk, The Netherlands, coordinating ESA's efforts to introduce IMA (Integrated Modular Avionics) principles from the aeronautical domain to the space domain. Prior to ESA, he was with the Volvo Group, focusing on dependable embedded systems, AUTOSAR, and automotive electronic architectures.

Martin has worked in the area of embedded distributed systems & software for over 20 years and received a MSc in Computer Science & Engineering in 1996, and a PhD in Computer Engineering in 2002, both from Chalmers University of Technology.

Martin is currently working with future generations of the automotive electronic architecture at Volvo Cars. The future of the automobile and the automotive industry is moving towards more integrated computerisation, autonomy, and interconnection across vehicles, infrastructure and cloud. Martin does what he can to ensure that Volvo Cars is prepared for this transformation.

Organization

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General Chair



Dan Hao
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Thorsten Berger
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Lines Chair



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Sarah Nadi
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Timo Kehrer
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Industrial Systems and Software Product Lines Track

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Jan Bosch, Chalmers University of Technology, Sweden
Paul Clements, BigLever Software, Inc., USA
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Ramesh S., General Motors R&D, India
Daniel Schall, Siemens, Austria
Bran Selic, Malina Software Corp., Canada
Hailong Sun, Beihang University, China
Mikael Svahnberg, Blekinge Institute of Technology, Sweden
Juha-Pekka Tolvanen, MetaCase, Finland
Hironori Washizaki, Waseda University, NII, System Information, Japan
Tao Yue, Simula Research Laboratory and University of Oslo, Norway

Journal First Track

Chairs

David Benavides, University of Seville, Spain

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Ebrahim Bagheri, Ryerson University, Canada
Rafael Capilla, Universidad Rey Juan Carlos, Spain
Lidia Fuentes, University of Málaga, Spain
Jesús García-Galán, Lero, Ireland
Iris Groher, Johannes Kepler University Linz, Austria
Marcello La Rosa, Queensland University of Technology, Australia
Ina Schaefer, Braunschweig University of Technology, Germany
Maurice H. Ter Beek, ISTI-CNR, Italy
Myra Cohen, University of Nebraska-Lincoln, USA

Doctoral Consortium Track

Chairs

Oscar Díaz, University of the Basque Country, Spain
Julia Rubin, University of British Columbia, Canada

Program committee

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Don Batory, University of Texas at Austin, USA
Rick Rabiser, Christian Doppler Lab. MEVSS, Johannes Kepler University Linz, Austria
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Jabier Martinez, Tecnalia, Spain
Lidia Fuentes, University of Málaga, Spain
Fogdal Thomas Sorensen, Danfoss Group, Denmark
Christoph Seidl – Technische Universität Braunschweig, Germany

Data, Demonstrations and Tools Track

Chairs

Philippe Collet, Université Côte d'Azur, France
Jianmei Guo, Alibaba Group, P.R. China

Program committee

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Gilles Perrouin, University of Namur, Belgium
Atrisha Sarkar, University of Waterloo, Canada
Stefan Stanculescu, ABB Corporate Research, Switzerland
Tewfik Ziadi, University Pierre et Marie Curie, France

Tutorial 1

September 10 • 09:00 • Room Aktiviteten 13

Klaus Schmid, Christian Kröher and Sascha El-Sharkawy (University of Hildesheim)

Variability Modeling with the Integrated Variability Modeling Language (IVML) and EASy-Producer

The tutorial introduces the variability modeling capabilities of the Integrated Variability Modeling Language (IVML), which is part of the EASy-Producer product line environment. EASy-Producer is an open-source research toolset for engineering product lines, variability-rich software ecosystems and dynamic software product lines. It has been applied in several industrial case studies and research projects showing its practical applicability both from a stability and a capability point of view. The tool-set consists of an interactive approach to product line definition and configuration through DSLs. The focus of the tutorial will be on variability modeling using DSL-based techniques, here the Integrated Variability Modeling Language IVML, but we will also provide an outlook on instantiating variability using EASy-Producer. As an outcome, the participants of the tutorial will understand the capabilities and design decisions of the toolset and gain a basic practical understanding of how to use it to define variability models, constraints and product configurations.

Tutorial 2

September 10 • 09:00 • Room Aktiviteten 12

David Benavides and José A. Galindo (University of Seville)

Automated analysis of feature models. Current state and practices

Software Product Lines (SPLs) are about developing a set of different software products that share some common functionality. Feature models are widely used to encode the common and variant parts of an SPL. The number of products encoded in a feature model grows with the number of features. Given n features and no constraints on valid feature combinations, there are 2^n possible products. To deal with this complexity, automated mechanisms are used to extract information from feature models, such as features present in every product. A diversity of operations have been developed to model check, test, configure, debug, or compute relevant information by analyzing feature models. Moreover, such operations have been used in scenarios from different domains ranging from operating systems to video analysis optimization. In this tutorial, we go through the different automated analysis operations identifying its usage in the literature. Later we will present how to implement these operations within the FaMa framework.

Tutorial 3

September 10 • 13:30 • Room Aktiviteten 13

Klaus Schmid, Christian Kröher and Sascha El-Sharkawy (University of Hildesheim)

Model-based Product Line Development with EASy-Producer using VIL and VTL

The tutorial aims at introducing the EASy-Producer capabilities for model-based development and implementation to the participants. EASy-Producer is an open-source research toolset for engineering product lines and variability-rich software ecosystems. It has been applied in several industrial case studies showing its practical applicability both from a stability and a capability point of view. The tool-set consists of an interactive approach to product line definition and configuration and provides DSLs for this purpose. The focus of the tutorial will be on the DSL-based techniques for product derivation from an existing variability model. These implementation techniques are rather generic and can thus be applied in diverse circumstances, like product line engineering, but also for more typical model-based development scenarios.

Tutorial 4

September 11 • 09:00 • Room Tesla

Thomas Thüm (TU Braunschweig), Sebastian Krieter (OvGU) and Thomas Leich (Metop Research Institute)

Clean Your Variable Code with FeatureIDE

FeatureIDE is an open-source framework to model, develop, and analyze feature-oriented software product lines. It is mainly developed in a cooperation between TU Braunschweig, University of Magdeburg, and Metop GmbH. Nevertheless, many other institutions contributed to it in the past decade. Goal of this tutorial is to illustrate how FeatureIDE can be used to clean variable code, whereas we will focus on dependencies in feature models and on variability implemented with pre-processors. The hands-on tutorial will be highly interactive and is devoted to practitioners facing problems with variability, lecturers teaching product lines, and researchers who want to save resources in building product line tools.

	Monday, September 10		Tuesday, September 11		
	Room Aktiviteten 13	Room Aktiviteten 12	Room Kelvin	Room Tesla	Room Aktiviteten 13
09:00-12:00	Tutorial 1	Tutorial 2	Tutorial 6	Tutorial 4	Tutorial 7
12:00-13:30	Lunch (Venue)		Lunch (Venue)		
13:30-16:30	Tutorial 3	Tutorial 5	Tutorial 8		

Tutorial 5 September 10 • 13:30 • Room Aktiviteten 12

Juha-Pekka Tolvanen and Steven Kelly (MetaCase)

Describing Variability with Domain-Specific Languages and Models

This tutorial will teach participants about domain-specific languages and models, where they can best be used (and where not), and how to apply them effectively to improve the speed and quality of product development within a product line.

Tutorial 6 September 11 • 09:00 • Room Kelvin

Danilo Beuche and Mustafa Al Hajjaji (pure-systems GmbH)

Using Feature Models to Manage Variability and Requirements Reuse

The tutorial aims at providing the essential knowledge for managing variability in product lines using feature models, with a special focus on creating and maintaining reusable requirements with the help of feature models. It explains the concept of feature models and their role in product line engineering, such as how feature models can be used to control development and also product configuration. Participants will learn how to build feature models from typically available sources of variability information; how to link feature models with requirements and keep reusable requirements “alive”.

Tutorial 7 September 11 • 09:00 • Room Aktiviteten 13

Hermann Kaindl (TU Wien ICT) and Mike Mannion (Glasgow Caledonian University)

Software Reuse and Mass Customisation: Feature Modelling vs. Case-based Reasoning

Several socio-economic trends are driving customer demands towards individualisation. Many suppliers are responding by offering supplier-led software product design customization choices (“mass customization”). Some are also offering customer-led software product design choices (“mass personalization”). This tutorial introduces these concepts and explores the implications for software product line development. One particular technical challenge is being able to respond to and manage at scale the increasing variety of common, supplier-led and customer-led features. We will discuss two different approaches to address this challenge. One is grounded in feature modelling; the other is grounded in case-based reasoning. Both approaches aim to support the identification and selection of similar products. However, they each place different emphases on these activities, use different product descriptions, and deploy different product derivation methods. Accordingly, each approach has different key properties, benefits and limitations.

Tutorial 8 September 11 • 13:30 • Room Kelvin

Charles Krueger and Paul Clements (BigLever Software Inc.)

Feature-Based Systems and Software Product Line Engineering: PLE for the Enterprise

This tutorial introduces a product line engineering solution, including tools and methods, that is the subject of an upcoming ISO standard and known as “Feature-Based Systems and Software Product Line Engineering.” Its usage is spreading beyond the traditional engineering realm, across the entire enterprise in areas such as product marketing, portfolio planning, manufacturing, supply chain management, product service and maintenance, and much more.

	Room Kelvin	Room Tesla
09:00-12:00	REVE 6th International Workshop on Reverse Variability Engineering	IWODPLE 1st International Workshop on Documentation of Industrial Product Line Examples
12:00-13:30	Lunch (Venue)	
13:30-16:30	VariVolution 1st Intl. Workshop on Variability and Evolution of Software-intensive Systems	IWODPLE

Workshop

September 10 • 09:00 • Room Kelvin

REVE 6th International Workshop on Reverse Variability Engineering

From organizational issues to purely technical challenges, there is a wide range of barriers that complicates SPL adoption. This workshop aims to foster research about making the most of the two main inputs for SPL migration:

1) domain knowledge and 2) legacy assets.

Domain knowledge, usually implicit and spread across an organization, is key to define the SPL scope and to validate the variability model and its semantics.

At the technical level, domain expertise is also needed to create or extract the reusable software components.

Legacy assets can be, for instance, similar product variants (e.g. requirements, models, source code etc.) that were implemented using ad-hoc reuse techniques such as clone-and-own.

More generally, the workshop REverse Variability Engineering (REVE) attracts researchers and practitioners contributing to processes, techniques, tools, or empirical studies related to the automatic, semi-automatic or manual extraction or refinement of SPL assets.

Workshop

September 10 • 09:00 and 13:30 • Room Tesla

IWODPLE 1st International Workshop on Documentation of Industrial Product Line Examples

This workshop is part of the 22nd International Systems and Software Product Line Conference, and is intended for product line experts from industry who wish to learn and share experiences on real-world implementations of product lines. There exist many papers describing certain aspects of real-world product lines. We also have the well-known SPLC Hall of Fame with quite a number of what we call real-world product lines. The purpose of this workshop is to work on defining a concise format for documenting different cases of product lines implementations so that others (especially new actors from industry) can understand how the product line operation can be run. The main focus of the first workshop is to define what information regarding a product line should be documented, brainstorm how this could be done, and to come up with a concrete working plan for continuing the work on this topic and, in fine, dress a consistent and purposeful list of examples.

We are mainly seeking industry practitioners with strong product line experience to join this workshop. We will limit the number of participants to about 10 attendees in order to be able work together on the topic in a very efficient manner. Please apply for a seat in this workshop with a short information about what is your interest in this topic and what background you have in product lines. If your organization has already a publicly documented product line, please include references to the documentation available.

The workshop is organized by Danilo Beuche, CEO, pure-systems; Hugo Guillermo Chale-Gongora, Director PLE, Thales; and Thomas Fogdal, Manager – Software Platform Engineering, Danfoss Drives.

Workshop

September 10 • 13:30 • Room Kelvin

VariVolution 1st International Workshop on Variability and Evolution of Software-intensive Systems

Just like software in general, software product lines are permanently subject to change. This introduces evolution as a second problem dimension in addition to variability, which is the primary phenomenon addressed by software product line engineering. Traditionally, the methods and tools applied for revision control and variant management are radically different and mutually disjoint, although research has already suggested that evolution and variability can be tackled in a holistic way. Concrete examples of integrating approaches include uniform or unified versioning, delta-orientation in connection with hyper feature models, evolution-aware clone-and-own, projectional SPL editing, and variation control systems.

VariVolution (the 1st International Workshop on Variability and Evolution of Software-intensive Systems) aims at bringing together active researchers studying software evolution and variability from different angles as well as practitioners who encounter these phenomena in real-world applications and systems. The workshop offers a platform for exchanging new ideas and fostering future research collaborations and synergies.



Room Aktiviteten 13	
09:00-12:00	Tutorial 7 Software Reuse and Mass Customisation: Feature Modelling vs. Case-based Reasoning
12:00-13:30	Lunch (Venue)
13:30-16:30	SPLTea 3rd International Workshop on Software Product Line Teaching

Workshop

September 11 • 13:30 • Room Aktiviteten 13

SPLTea 3rd International Workshop on Software Product Line Teaching

Education has a key role to play for disseminating the constantly growing body of Software Product Line (SPL) knowledge. Teaching SPLs is challenging and it is unclear how SPLs can be taught, what are the possible gaps and difficulties faced, what are the benefits, or what is the material available. This workshop aims to explore and explain the current status and ongoing work on teaching SPLs at universities, colleges, and in industry (e.g., by consultants). Participants will discuss gaps and difficulties faced when teaching SPLs, benefits to research and industry, different ways to teach SPL knowledge, common threads, interests, and problems. The overall goal is to strengthen the important aspect of teaching in the SPL community.

Recent surveys on teaching of SPLs provide some insights, but much more things remain to be done.



08:30-09:00	REGISTRATION
	Room Aktiviteten 12
09:15-10:30	Keynote Speaker: Mattias Nyberg (Scania and KTH), Generating assurance cases for product lines of trucks Discussion
10:30-11:00	Coffee / tea
11:00-12:00	Best practices: Dr. Charles Krueger and Dr. Paul Clements, BigLever Software, Feature-Based Systems and Software Product Line Engineering: PLE for the Enterprise Prof.dr. Danilo Beuche, Pure Systems GMBH, The Future of Product Line Engineering Infrastructures – A Tool Vendor's Perspective
12:00-13:30	Lunch
13:30-14:00	Best practice: Dr. Juha-Pekka Tolvanen, MetaCase, Experiences on Applying Domain-Specific Languages for Variant Development.
14:00-16:30	Group Discussion and Closing

Keynote Speaker

September 11 • 09:15 • Room Aktiviteten 12

Mattias Nyberg, Scania and KTH Royal Institute of Technology, Sweden

Generating assurance cases for product lines of trucks

An assurance case is a structured argument for showing that a product satisfies some important property, typically safety, and in that case, the assurance case is called "safety case". Assurance cases for complex products like trucks are challenging to derive, and for large product lines that contains potentially huge numbers (billions) of different product variants, deriving assurance cases is even harder. New systematic methodologies are needed and also tool support. Due to the high degree of criticality of many systems, the systematic methodologies should be grounded in formal theoretical frameworks. Moreover, to cope with the huge number of different products, the methodologies need to be based upon compositional verification. That is, it is not realistic to verify that each product variant satisfies the considered property; rather, this has to be derived from verification of individual components combined with knowledge of how the components constitute the different products. A suitable framework for such formal compositional reasoning is contracts-based frameworks, which lately have been extended, from supporting only software development, to now support general development of heterogeneous systems. Regarding tool support, a cornerstone for its industrial success is digitalization of engineering. This is a challenge since engineering, like in the automotive area, is today often organized in a relatively unstructured way and with many important pieces of information stored in non-machine-readable format and in isolated data silos. To be able to construct a tool for automatic generation of assurance cases, this information needs to be made machine-readable and integrated, something that in turn will challenge current unstructured work processes.

Best Practice Reports

September 11 • 11:00 and 13:30 • Room Aktiviteten 12

Prof.dr. Danilo Beuche, Pure Systems GMBH, The Future of Product Line Engineering Infrastructures – A Tool Vendor's Perspective.

Dr. Charles Krueger and Dr. Paul Clements, BigLever Software, Feature-Based Systems and Software Product Line Engineering: PLE for the Enterprise.

Dr. Juha-Pekka Tolvanen, MetaCase, Experiences on Applying Domain-Specific Languages for Variant Development.

Conference Venue

The conference venue “Lindholmen Conference Centre” is located next doors to Chalmers Technical University and surrounded by several companies at Lindholmspiren 5, Gothenburg, Sweden.

The Conference Centre is located along Lindholmen’s waterfront and at the center of Lindholmen Science Park, which is an internationally renowned Science Park in the fields of intelligent transport systems, mobile internet, and media.

All conference events will be held at the Lindholmen Conference Centre and there will be signs and student volunteers guiding you in the right direction. The venue can be reached using the free ferry (with a green flag) from station “Stenpiren” or by bus number 16 or bus number 55 from the city center (stop “Brunnsparken”). Please use Västtrafik’s travel planner online or their free mobile app to find suitable connections. To reach the conference venue, you can use the following two stations as destinations in the planner: “Lindholmen” (bus stop) or “Lindolmspiren” (ferry stop). You can also input a specific address in the planner, and it should suggest the best route.



Sightseeing

As social event, we will have a sightseeing to the ship named Götheborg, which is a sailing replica of the Swedish East Indiaman Götheborg I, launched in 1738. The original ship, the Swedish East Indiaman Götheborg I, sank off Gothenburg, Sweden, on 12 September 1745, while approaching the harbour on her return from a third voyage to China. Construction of the replica started in 1995, with the hull launched in 2003, and the rig fully tested for the first time in 2005. Much of the time was spent researching how to rebuild the replica. In 2008, Götheborg completed the first Baltic Sea Tour.

Reception Venue

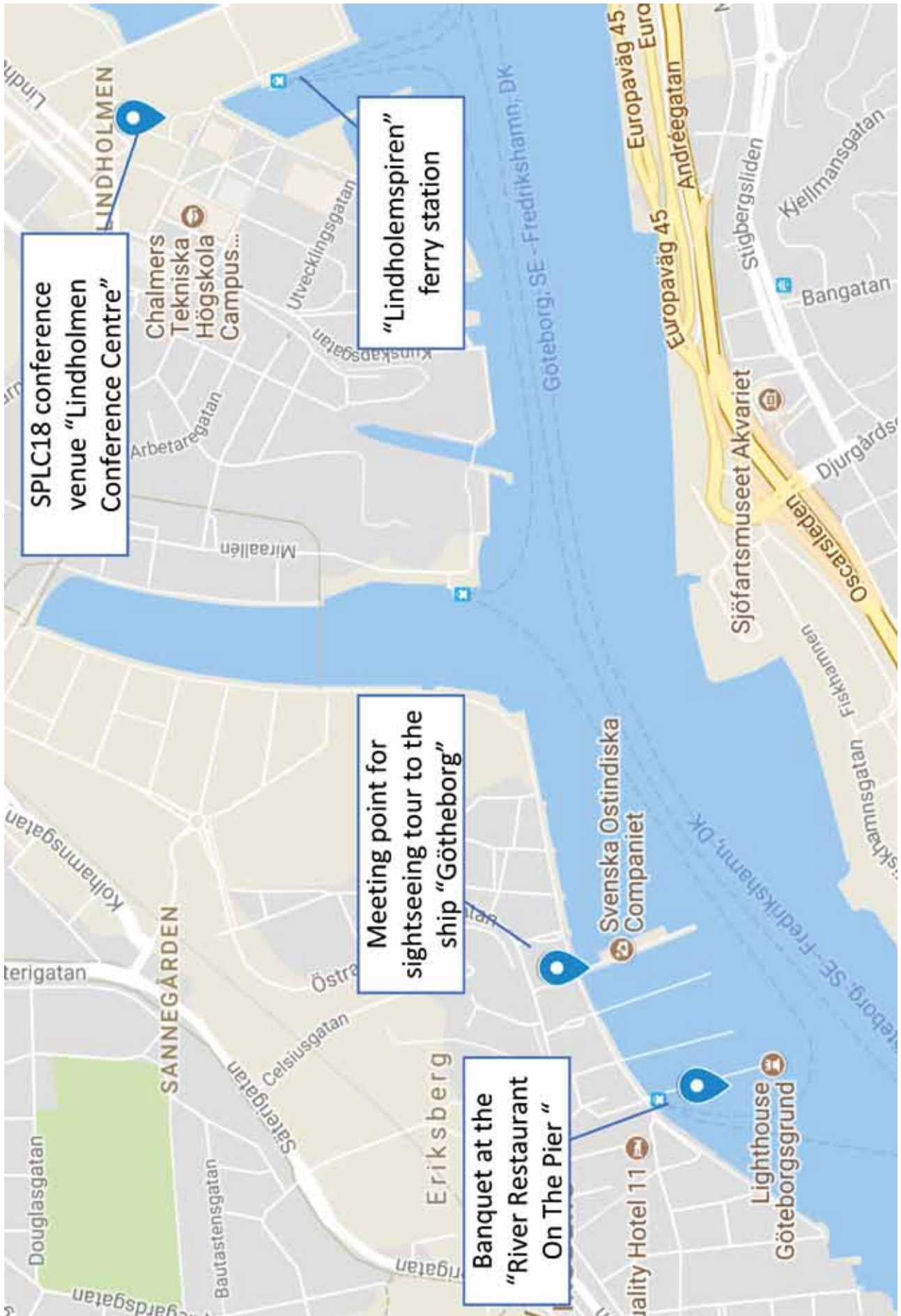
Reception will take place at the conference venue, namely Lindholmen Conference Centre. The specific location of the reception within Lindholmen Conference Center, will be the foyer outside the Main Hall.

The reception is sponsored by the City of Gothenburg and it will be hosted by a representative in the City Council presidium.



Banquet dinner

River Restaurant On The Pier is a singularly remarkable attraction in the Gothenburg restaurant world. During the SPLC2018 banquet dinner, you will experience dining in the midst of ships coming into port, framed by views of gorgeous central Gothenburg. A feast for all the senses!



SPLC conference program Monday, September 10

08:30-09:00	REGISTRATION			
	Room Kelvin	Room Tesla	Room Aktiviteten 13	Room Aktiviteten 12
09:00-12:00	REVE 6th International Workshop on Reverse Variability Engineering	IWODPLE 1st International Workshop on Documentation of Industrial Product Line Examples	Tutorial 1 Variability Modeling with the Integrated Variability Modeling Language (IVML) and EASy-Producer	Tutorial 2 Automated analysis of feature models. Current state and practices
12:00-13:30	Lunch (Venue)			
13:30-16:30	VariVolution 1st Intl. Workshop on Variability and Evolution of Software-intensive Systems	IWODPLE	Tutorial 3 Model-based Product Line Development with EASy-Producer using VIL and VTL	Tutorial 5 Describing Variability with Domain-Specific Languages and Models



08:30-09:00	REGISTRATION			
	Room Kelvin	Room Tesla	Room Aktiviteten 13	Room Aktiviteten 12
09:00-12:00	Tutorial 6 Using Feature Models to Manage Variability and Requirements Reuse	Tutorial 4 Clean Your Variable Code with FeatureIDE	Tutorial 7 Software Reuse and Mass Customisation: Feature Modelling vs. Case-based Reasoning	Industrial Forum
12:00-13:30	Lunch (Venue)			
13:30-16:30	Tutorial 8 Feature-Based Systems and Software Product Line Engineering: PLE for the Enterprise		SPLTea 3rd International Workshop on Software Product Line Teaching	Industrial Forum



SPLC conference program Wednesday, September 12

08:20-09:00	REGISTRATION	
	Room Pascal	Room Tesla
09:00-09:30	Opening speech by the general chair Joint speech by the main track chairs	
09:30-10:30	Keynote 1 by Markus Völter Domain-Specific Languages in SPLE: Why and How?	
10:30-10:50	Coffee Break	
10:50-12:30	Technical Session 1 – Evolution and Coordination <i>Chair: Mike Mannion</i> Identifying the Intensity of Variability Changes in Software Product Line Evolution <i>by Christian Kröher, Lea Gerling and Klaus Schmid</i> Timing: 20+5 min (Research Track) Towards Automated Test Refactoring for Software Product Lines <i>by Jacob Krüger, Mustafa Al-Hajjaji, Sandro Schulze, Gunter Saake and Thomas Leich</i> Timing: 20+5 min (Research Track) CIAHelper: Towards Change Impact Analysis in Delta-Oriented Software Product Lines <i>by Mostafa Hamza, Robert Walker and Maged Elaasar</i> Timing: 20+5 min (Research Track) Reducing Coordination Overhead in SPLs: Peering in on Peers <i>by Leticia Montalvillo Mendizabal, Oscar Diaz and Thomas Fogdal</i> Timing: 20+5 min (Research Track)	Challenge Track (parallel to Technical Session 1) Chair: TBD Opening: Overview of the track <i>by Timo Kehrer and Sarah Nadi</i> Timing: 10:50-11:00 Case 1: Interoperability of Software Product Line Variants <i>by Ferruccio Damiani, Reiner Hähnle, Eduard Kamburjan, and Michael Lienhardt</i> Timing: 11:00-11:20 Solution 1 for Case 1: Modeling Multi Software Product Lines using UML <i>by Maya R. A. Setyautami, Daya Adianto and Ade Azurat</i> Timing: 11:20-11:45 Case 2: Localizing Configurations in Highly-Configurable Systems <i>by Paul Gazzillo, Ugur Koc, Thanhvu Nguyen, and Shiyi Wei</i> Timing: 11:45-12:05 Solution 2 for Case 2: PCLocator: A Tool Suite to Automatically Identify Configurations for Code Locations <i>by Elias Kuiter, Sebastian Krieter, Jacob Krüger, Kai Ludwig, Thomas Leich and Gunter Saake</i> Timing: 12:05-12:30
12:00-13:30	Lunch (Venue)	
13:30-15:35	Technical Session 2 – Case Studies 1 <i>Chair: Rick Rabiser</i> Software Product Line Extraction from Variability-Rich Systems: The Robocode Case Study <i>by Jabier Martinez, Xhevahire Tërnava and Tewfik Ziadi</i> Timing: 20+5 min (Research Track) Getting Rid of Clone-And-Own: Moving to a Software Product Line for Temperature Monitoring <i>by Elias Kuiter, Jacob Krüger, Sebastian Krieter, Thomas Leich and Gunter Saake</i> Timing: 20+5 min (Industry Track) Product line models of large cyber-physical systems: the case of ERTMS/ETCS <i>by Maurice H. Ter Beek, Alessandro Fantechi and Stefania Gnesi</i> Timing: 20+5 min (Industry Track) Feature-Based Reuse in the ERP Domain: An Industrial Case Study <i>by Markus Noebauer, Iris Groher and Norbert Seyff</i> Timing: 20+5 min (Industry Track) CustomDIFF: A Tool for Customization Analysis in SPLs. <i>by Leticia Montalvillo Mendizabal, Oscar Diaz and Maider Azanza</i> Timing: 15+5 min (Demo Track)	Challenge Track (parallel to Technical Session 2) Chair: TBD Case 3: Apo-Games – A Case Study for Reverse Engineering Variability from Cloned Java Variants <i>by Jacob Krüger, Wolfram Fenske, Thomas Thüm, Dirk Aporius, Gunter Saake, and Thomas Leich</i> Timing: 13:30-13:50 Solution 1 for Case3: Multi-Objective Optimization for Reverse Engineering of Apo-Games Feature Models <i>by Willian D. F. Mendonça, Wesley K. G. Assunção and Lukas Linsbauer</i> Timing: 13:50-14:15 Solution 2 for Case3: Recovering the Product Line Architecture of the Apo-Game <i>by Crescencio Lima, Ivan Machado, Eduardo Almeida and Christina Chavez</i> Timing: 14:15-14:40 Case 4: Feature Location Benchmark with ArgoUML SPL <i>by Jabier Martinez, Nicolas Ordoñez, Xhevahire Tërnava, Tewfik Ziadi, Jairo Aponte, Eduardo Figueiredo, and Marco Tulio Valente</i> Timing: 14:40-15:00 Closing: Experience report on the challenge track + open discussion with the community <i>by Timo Kehrer and Sarah Nadi</i> Timing: 15:00-15:30
15:35-16:00	Coffee Break	
16:00-16:10	Brief introduction of MIP Award by Rick Rabiser	
16:10-16:50	MIP Award Presentation Feature-Oriented Programming: A Fresh Look at Objects by Christian Prehofer	
19:00-20:30	Reception (Venue)	

	Room Pascal	Room Tesla
09:00-10:00	Keynote 2 by Judith Bishop Software Product Lines - Predicting the Success of Software Reuse in Industry	
10:00-10:20	Coffee Break	
10:20-12:15	Technical Session 3 – Variability Design and Implementation <i>Chair: Mohammad Mousavi</i> Generative Software Product Line Development using Variability-Aware Design Patterns by <i>Christoph Seidl, Sven Schuster and Ina Schaefer</i> Timing: 20+5 min (Journal-First Track) A Multiple Product Line Development Method Based on Variability Structure Analysis by <i>Kengo Hayashi and Mikio Aoyama</i> Timing: 20+5 min (Industry Track) Integrating the Common Variability Language with Multilanguage Annotations for Web Engineering by <i>José Miguel Horcas Aguilera, Alejandro Cortiñas, Lidia Fuentes and Miguel R. Luaces</i> Timing: 20+5 min (Industry Track) Safety-oriented Process Line Engineering via Seamless Integration between EPF Composer and BVR Tool by <i>Muhammad Atif Javed and Barbara Gallina</i> Timing: 15+5 min (Demo Track) ProductLinRE: Online Management Tool for Requirements Engineering of Software Product Lines by <i>Javad Ghofrani and Anna Lena Fehlhaber</i> Timing: 15+5 min (Demo Track)	Technical Session 4 – Configuration (parallel to Technical Session 3) <i>Chair: Klaus Schmid</i> Optimal Reconfiguration of Dynamic Software Product Lines Based on Performance-Influence Models by <i>Markus Weckesser, Roland Kluge, Martin Pfannemüller, Michael Matthé, Andy Schürr and Christian Becker</i> Timing: 20+5 min (Research Track) Heuristic and Exact Algorithms for Product Configuration in Software Product Lines by <i>Juliana Alves Pereira, Lucas Maciel, Thiago F. Noronha and Eduardo Figueiredo</i> Timing: 20+5 min (Journal First Track) N-dimensional Tensor Factorization for Self-Configuration of Software Product Lines at Runtime by <i>Juliana Alves Pereira, Sandro Schulze, Eduardo Figueiredo and Gunter Saake</i> Timing: 20+5 min (Research Track) Feature-Based Systems and Software Product Line Engineering with Gears from BigLever by <i>Charles Krueger and Paul Clements</i> Timing: 15+5 min (Demo Track) Using a feature model configurator for release planning by <i>Mikko Raatikainen, Juha Tiitonen, Tomi Männistö, Alexander Felfernig, Martin Stettinger, Ralph Samer, Cristina Palomares and Xavier Franch</i> Timing: 15+5 min (Demo Track)
12:15-13:15	Lunch (Venue)	
13:15-14:55	Technical Session 5 – Case Studies 2 <i>Chair: Maurice ter Beek</i> Reverse Engineering Variability in an Industrial Product Line: Observations and Lessons Learned by <i>Sascha El-Sharkawy, Saura Jyoti Dhar, Adam Krafczyk, Sławomir Duszynski, Tobias Beichter and Klaus Schmid</i> Timing: 20+5 min (Industry Track) Reverse engineering language product lines from existing DSL variants by <i>David Méndez-Acuña and José A. Galindo</i> Timing: 20+5 min (Journal First Track) Modular Feature-Oriented Graphical Editor Product Lines by <i>Thomas Kühn, Kevin Ivo Kassin, Walter Cazzola and Uwe Assmann</i> Timing: 20+5 min (Research Track) Modeling Language Variability with Reusable Language Components by <i>Arvid Butting, Robert Eikermann, Oliver Kautz, Bernhard Rumpe and Andreas Wortmann</i> Timing: 20+5 min (Research Track)	Doctoral Symposium Track (parallel to Technical Session 5) <i>Chair: TBD</i> Introduction and openings by <i>Julia Robin and Oscar Diaz</i> Timing: 13:15-13:30 Keynote by <i>Paul Clements</i> Timing: 13:30-14:00 Keynote: A template for helping students come up with their design problems by <i>Oscar Diaz</i> Timing: 14:00-14:30 Verification of Migrated Product Lines by <i>Mukelabai Mukelabai</i> Timing: 14:30-14:55
14:55-15:15	Coffee Break	
15:15-17:00	Technical Session 6 – Community <i>Chair: David Benavides</i> A Study and Comparison of Industrial vs. Academic Software Product Line Research Published at SPLC by <i>Rick Rabiser, Klaus Schmid, Martin Becker, Goetz Botterweck, Matthias Galster, Iris Groher and Danny Weyns</i> Timing: 20+5 min (Research Track) A Classification of Product Sampling for Software Product Lines by <i>Mahsa Varshosaz, Mustafa Al-Hajjaji, Thomas Thüm, Tobias Runge, Mohammadreza Mousavi and Ina Schaefer</i> Timing: 20+5 min (Research Track) Teaching Software Product Lines: A Snapshot of Current Practices and Challenges by <i>Mathieu Acher, Roberto Erick Lopez-Herrejon and Rick Rabiser</i> Timing: 20+5 min (Journal First Track) How do our neighbours do product line engineering? - A comparison of hardware and software product line engineering approaches from an industrial perspectives by <i>Martin Becker and Bo Zhang</i> Timing: 20+5 min (Industry Track)	Doctoral Symposium Track (parallel to Technical Session 6) <i>Chair: TBD</i> Feature and Variability Extraction from Natural Language Software Requirements Specifications by <i>Yang Li</i> Timing: 15:15-15:40 Supporting Feature-Oriented Development and Evolution in Industrial Software Ecosystems by <i>Daniel Hinterreiter</i> Timing: 15:40-16:05 A methodological framework to enable the generation of code from DSML in SPL by <i>Maouaheb Belarbi</i> Timing: 16:05-16:30 Group discussion and closing Timing: 16:30-17:00
17:00-18:00	Townhall Meeting	
18:30-22:00	Conference Banquet	

SPLC conference program Friday, September 14

	Room Pascal	Room Tesla
09:00-10:00	Keynote 3 <i>by Martin Hiller</i> How do we avoid getting devoured when software is eating the automotive world?	
10:00-10:20	Coffee Break	
10:20-12:15	Technical Session 7 – Variability Modeling and Extraction <i>Chair: Dan Hao</i> An Inductive Learning Perspective on Automated Generation of Feature Models from Given Product Specifications <i>by Hermann Kaindl, Stefan Kramer and Ralph Hoch</i> Timing: 20+5 min (Research Track) Extracting Software Product Line Feature Models from Natural Language Specifications <i>by Anjali Sree-Kumar, Robert Clarisó and Elena Planas</i> Timing: 20+5 min (Research Track) Variability Extraction and Modeling for Product Variants <i>by Lukas Linsbauer, Roberto Erick Lopez-Herrejon and Alexander Egyed</i> Timing: 20+5 min (Journal First Track) Reverse Engineering Variability from Requirement Documents based on Probabilistic Relevance and Word Embedding <i>by Yang Li, Sandro Schulze and Gunter Saake</i> Timing: 20+5 min (Research Track)	Technical Session 8 – Analysis and Vulnerability (parallel to Technical Session 7) Chair: Philippe Collet Similarity Analysis of Product-Line Variants <i>by Mustafa Al-Hajjaji, Michael Schulze and Uwe Ryssel</i> Timing: 20+5 min (Industry Track) Understanding Vulnerabilities in Plugin-based Web Systems: An Exploratory Study of WordPress <i>by Oslien Mesa, Reginaldo Vieira, Marx Viana, Vinicius Durelli, Elder Cirilo, Marcos Kalinowski and Carlos Lucena</i> Timing: 20+5 min (Research Track) Using Static Analysis to Support Variability Implementation Decisions in C++ <i>by Samer Al Masri, Sarah Nadi, Matthew Gaudet, Xiaoli Liang and Robert Young</i> Timing: 20+5 min (Industry Track) Modelling and Analysis with Featured Modal Contract Automata <i>by Davide Basile, Maurice H. Ter Beek and Stefania Gnesi</i> Timing: 15+5 min (Demo Track) KernelHaven - An Open Infrastructure for Product Line Analysis <i>by Christian Kröher, Sascha El-Sharkawy and Klaus Schmid</i> Timing: 15+5 min (Demo Track)
12:15-12:35	Coffee Break	
12:35-13:30	Hall of Fame Closing SPLC 2018 Handover to SPLC 2019	
13:30-14:30	Lunch (Venue)	





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