

Software Product Lines: Economics, Architectures, and Applications

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1 SCOPE OF THE WORKSHOP

Product line engineering is a concept that has emerged in the 80's in the business schools and is now among the hottest topics in software engineering.

Software product lines aim at achieving scope economies through synergetic development of software products. Diverse benefits like cost reduction, decreased time-to-market, and quality improvement can be expected from reuse of domain-specific software assets. But also non-technical benefits can be expected as result of network externalities, product branding, and sharing organizational costs.

Product lines introduce additional complexity. In a sense they go against the common adage of "divide and conquer." Planning and/or developing of more than one product at a time have to be managed technically and organizationally.

However, the rate of innovation of the technology and the intrinsic nature of software products do not let alternatives to developers: users like to jump into the bandwagon of new products, and old products often drive preferences to new products.

Research has been conducted in software product lines for the past few years. Some of it has focused on demonstrating that existing systems and approaches were indeed instrumental for product line development, such as generative techniques, domain analysis and engineering

and software components. Another portion of the research effort has tried to determine how it is possible to create a comprehensive methodology and an associated tool for product lines, starting from the business idea of line of products down to the development of a product and trying to exploit all the possible synergies existing at each phase, from network externalities to component reuse.

2 AIM OF THE WORKSHOP

This workshop aims at bringing together researchers and practitioners in software product lines, with the intent of sharing the different aspects of research and development, discussing conceptual and practical experience, establishing key contacts, and starting the discussion on the subject that will be then continued on the discussion server of IESE.

The workshop is centered on to the following conceptual and technical questions. The presenters are required to explain what is their position on them.

- Product lines introduce extra complexity in software but offer high returns: What are the tradeoffs and when should software firms decide to go for a product line approach?
- How is it possible to support the heavy interactions required by software product lines between people with very different profiles, from marketing down to development?
- Do product lines affect customer preferences? How and why is a product in a product line more desirable than a product commercialized alone?
- What are the specific architectural issues in a product line? How can the products of a product line share a common architecture?
- What is needed as theoretical and technical support for product lines?
- How do product lines affect the organization of a software company?
- Is product line development manageable by small and medium-sized companies?
- Is it possible to predict when product line investment pays in a specific domain and environment?

- Which existing tools support product line engineering best?

3 ORGANIZATION OF THE WORKSHOP

The workshop is the *final point* of a discussion that started with the selection of the papers to be presented at the workshop. More than 20 papers have been submitted for the workshop. Such papers have been placed on a web-based cooperation server located at Fraunhofer IESE. The organizing committee of the workshop posted on the server a sequence of critical points and the authors of the selected papers were required to comment on them and then to participate at the pre-workshop discussion.

The workshop is also the *starting point* of a discussion to be continued on the web-cooperation server of Fraunhofer IESE.

4 PROGRAM OF THE WORKSHOP

The workshop includes also invited speakers with different backgrounds. They will focus on:

- The goals and objectives of a large project aiming at the establishment of product line approaches
- Practical experience in software product lines development

The presenters for the three presentation sections are clustered according to their main topic addressed:

- *Economic and organizational aspects of product line development.*

The issues addressed in this session include the planning of product lines (i.e., which products should be developed as part of the product line) with respect to the expected (economic) benefits and organizational issues that have to be addressed when introducing product line development into an organization.

- *New product line approaches.*
In this session, new concepts for the development of product lines and the management of their evolution over time are presented. These include addressing single aspects or the complete product line life cycle.

- *Case studies, experiments, reports from industrial projects.*
Experience presentation and exchange is the main purpose of this third session. Presented are industrial projects, experiments, and case studies together with the respective approaches used, their results, as well as lessons learned. This experience helps other organizations that intend to invest in product line development to get a feeling for the main risk factors and the critical issues to consider.

The following table contains the schedule of the workshop.

Time	Topic
09:00 - 09:15	Introduction from the co-chairs
09:15 - 10:00	Invited Talk <i>Establishing Product Lines</i>
<i>Short Break</i>	
10:15 - 11:15	Session 1: <i>Economic and organizational aspects of product line development</i>
<i>Short Break</i>	
11:30 - 12:30	Session 2: <i>New product line approaches</i>
<i>Lunch Break</i>	
14:00 - 14:45	Invited Talk <i>Experience in Product Lines</i>
<i>Short Break</i>	
15:00 - 16:30	Session 3: <i>Case studies, experiments, reports from industrial projects</i>
<i>Break</i>	
17:00 - 18:00	Final Panel Discussion

Particular emphasis is on the final panel discussion. Here, communities with different backgrounds (theoretical, practical, academic, industrial, etc.) will be in touch with each other. The participants of the panel will be selected based on their contributions during the workshop.

5 WORKSHOP ORGANIZING COMMITTEE

Chairs

- Peter Knauber, Fraunhofer IESE, Germany
- Giancarlo Succi, University of Alberta, Canada

Program Committee

- Luigi Benedicenti, University of Regina, Canada
- Jorge Diaz-Herrera, Southern Polytechnic State University, USA
- Loris Gaio, Università di Trento, Italy
- Peter Knauber, Fraunhofer IESE, Germany
- Masao J. Matsumoto, University of Tsukuba, Japan
- Frank Maurer, University of Calgary, Canada
- Maurizio Morisio, University of Maryland, College Park, USA
- Giancarlo Succi, University of Alberta, Canada
- Tullio Vernazza, Università di Genova, Italy
- Enrico Zaninotto, Università di Trento, Italy

6 INFORMATION AND QUESTIONS

For more information, contact the workshop chairs Peter Knauber (knauber@iese.fhg.de) or Giancarlo Succi (Giancarlo.Succi@ee.ualberta.ca).