

# Summary of Dagstuhl-Seminar 03151 “Product Family Development”

## Organizers:

Peter Knauber, Fachhochschule Mannheim, Mannheim, Germany  
Frank van der Linden, Philips, Eindhoven, Netherland  
Linda Northrop, SEI, Carnegie Mellon University, Pittsburgh, USA  
Klaus Pohl, University of Essen, Essen, Germany

Product family engineering is a new paradigm in software engineering research, which promises high quality software products at lowered cost and shorter time schedules. The key idea is to emphasize proactive reuse, interchangeable components, and multi-project planning cycles, similar to practices applied for a long time for example in car manufacturing. Product family engineering has recently gained much interest in various application domains including electronic commerce, information systems, medical systems, and telecommunication systems. Product family engineering focuses on the creation and maintenance of a whole set, i.e., a family, of software products. A distinction is made between development *for* reuse (called *domain engineering*) dealing with planning, creation, and maintenance of system assets (development artifacts) common to the various application systems and development *with* reuse (called *application engineering*) where the parts that are specific to particular applications are handled.

The seminar built on the results of the very successful Dagstuhl Seminar on Product Family Development held in April 2001 (Seminar No. 01161). The focus of the first seminar was on the technical aspects of product family engineering, while the focus of this seminar was on management and organizational aspects. The objective of the seminar was to cross-fertilize and synthesize the work done by the different universities, research institutes, and industrial research groups working on product family engineering. The topics of the seminar were strategies for product family adoption, organizational forms that support product family development, testing of product family assets and application specific extensions, production of customer-specific applications, product family maturity, and lessons learnt from industrial product family development

This Dagstuhl Seminar brought together twenty-five leading practitioners and researchers from various disciplines to cross-examine the effectiveness and the efficiency of product family based software system development. The seminar was mainly organised by the ITEA Project CAFÉ (From Concept to Application in System-Family Engineering) in cooperation with the SEI (Software Engineering Institute, Carnegie Mellon University, PA, USA). The emphasis of the seminar was on joint work in working groups. The seminar had two parts, an overview talk part over half a day and a working group part that took 2-and-a-half days. Each working group gave an intermediate and a final presentation of their results.

Two overview talks were given on the view of product family engineering in the core European projects on this topic, i.e., CAFÉ and its successor FAMILIES, by Frank v. d. Linden (Philips, The Netherlands) and the view of the Software Engineering Institute (SEI), as the North American leader in software engineering and in the transition of new software engineering technology into practice, by Linda Northrop (SEI, USA). Additional plenary talks were held on variability management by Jan Bosch (University of Groningen, The

Netherlands), maturity and assessment by Kari Käsälä (Nokia, Finland), testing by John McGregor (Clemson University, USA), and on production by Gary Chastek (SEI, USA).

Four topics of joint interest were identified and parallel working groups were established:

- Economic models
- Variability
- Adoption
- Maturity

The groups worked together to find common grounds and to synthesize their views on these topics. Each group presented their results in intermediate and summary presentations. Moreover, an one-page summary was written by each group, and a conference paper was outlined. These four conference papers were completed after the Dagstuhl Seminar and were submitted to the Fifth International Workshop on Product Family Engineering (<http://www.extra.research.philips.com/SAE/pfe-5.html>).

Thanks are due to the Dagstuhl Directorate for accepting this international event, and to the ITEA and local founding organisations for supporting the travel of the CAFE project participants. Without the enthusiastic cooperation of all participants this workshop would not have been the success as we feel it has been. Last, but definitely not least, our final thanks go to the Dagstuhl office in Saarbrücken and the local staff at Schloss Dagstuhl without whose support this event would have been much more work.