# Variation Mechanisms and Multi-view Architecting in Platform-based Product Family Development

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# Chapter 2
# Overview of the Articles

This chapter gives an overview of the papers that are presented in this thesis. It is divided into three parts, as mentioned in section 1.3:

- Variation Mechanisms in Product Family Architectures
- Multi-view Architecting, Quality Attributes and Design Aspects
- Product Family Development and Evolution

Together with the papers included in this thesis, we also give an overview of related papers in section 2.4.

## 2.1 Part I: Product Family Architectures and Variation Mechanisms

The papers presented in this part present two ways of dealing with variation within a product family. The papers are based on work that has been performed for two product families at Philips Medical Systems.

- **Chapter 3:** Jan Gerben Wijnstra, *Supporting Diversity with Component Frameworks as Architectural Elements*, Proceedings of the 22nd International Conference on Software Engineering (ICSE 2000), Limerick (Ireland), pp. 51-60, ACM, June 2000. [113]
- **Chapter 4:** Jan Gerben Wijnstra, *Components, Interfaces and Information Models within a Platform Architecture*, Proceedings of the 3rd International Conference of Generative and Component-Based Software Engineering (GCSE 2001), Erfurt (Germany), pp. 25-35, Springer Verlag LNCS 2186, September 2001. [115]

## 2.2 Part II: Multi-view Architecting, Quality Attributes and Design Aspects

The papers presented in this part show how multiple views can be used during the architecting and design of a product family. The focus lies on the quality attributes and design aspects and the relationship between them.

- **Chapter 5:** Jan Gerben Wijnstra, *Quality Attributes and Aspects of a Medical Product Family*, Proceedings of the Thirty-Fourth Annual Hawaii International Conference on Software Sciences (HICSS-34), Maui (USA), IEEE Computer Society, January 2001. [114]
- **Chapter 6:** Jan Gerben Wijnstra, *From Problem to Solution with Quality Attributes and Design Aspects*, Journal of Systems and Software, Volume 66, Number 3, pp. 199-211, June 2003. [117]

## 2.3 Part III: Product Family Development and Evolution

The papers presented in this part provide guidance on how to carry out product family development and evolution. This work is based on experience gained with product families of PMS and PKI. Both technical and non-technical topics are addressed.

- **Chapter 7:** Jan Gerben Wijnstra, *Critical Factors for a Successful Platform-based Product Family Approach*, Proceedings of the 2nd International Software Product Line Conference (SPLC2), San Diego (USA), pp. 68-89, Springer Verlag LNCS 2379, August 2002. [116]
- **Chapter 8:** Jan Gerben Wijnstra, *Classifying Product Families using Platform Coverage and Variation Mechanisms*, accepted for publication in Software Practice and Experience. [119]

## 2.4 Related Work

In addition to the six papers that form the content of this thesis, other related work is also available in the form of papers, workshops and tutorials. This work is listed below:

- Eelco Rommes, Jan Gerben Wijnstra, *Implementing a Reuse Strategy: Architecture, Process and Organization Aspects of a Medical Imaging Product Family*, to appear in Proceedings of the Thirty-Eighth Annual

Hawaii International Conference on Software Sciences (HICSS-38), Big Island (USA), January 2005. [92]

- André Postma, Pierre America, Jan Gerben Wijnstra, *Component Replacement in a Long-Living Architecture: The 3RDBA Approach,* 4th Working IFIP Conference on Software Architecture (WICSA4), Oslo (Norway), pp. 89-98, IEEE Computer Society, June 2004. [85]
- Jan Gerben Wijnstra, *Evolving a Product Family in a Changing Context*, Proceedings of the 5th International Workshop on Software Product Family Engineering (PFE-5), Siena (Italy), pp. 120-138, Springer Verlag LNCS 3014, November 2003. [118]
- Martin Pinzger, Harald Gall, Jean-Francois Girard, Jens Knodel, Claudio Riva, Wim Pasman, Chris Broerse, Jan Gerben Wijnstra, *Architecture Recovery for Product Families*, Proceedings of the 5th International Workshop on Software Product Family Engineering (PFE-5), Siena (Italy), pp. 354-375, Springer Verlag LNCS 3014, November 2003. [82]
- Awais Rashid, Bedir Tekinerdoğan, Ana Moreira, João Araújo**,** Jeff Gray, Jan Gerben Wijnstra, Paul Clements, *Early Aspects: Aspect-Oriented Requirements Engineering and Architecture Design*, Workshop at the 1st International Conference on Aspect-Oriented Software Development (AOSD 2002), Enschede (Netherlands), April 2002. (http://trese.cs.utwente.nl/AOSD-EarlyAspectsWS/) [88]
- Frank J. van der Linden, Jan Gerben Wijnstra, *Platform Engineering for the Medical Domain*, Proceedings of the 4th International Conference on Product Family Engineering (PFE-4), Bilbao (Spain), pp. 224-237, Springer Verlag LNCS 2290, October 2001. [53]
- Henk Obbink, Jürgen Müller, Pierre America, Rob van Ommering, Gerrit Muller, William van der Sterren, Jan Gerben Wijnstra, *COPA: A Component-Oriented Platform Architecting Method for Families of Software-Intensive Electronic Products*, Tutorial at the 1st International Software Product Line Conference (SPLC1), Denver (USA), August 2000. (http://www.extra.research.philips.com/SAE/COPA/COPA_Tutorial.pdf). [70] (also given at Symposium on Software Reusability, May 2001 and the 1st Working IEEE/IFIP Conference on Software Architecture, August 2001)
- Henk Obbink, Rob van Ommering, Jan Gerben Wijnstra, Pierre America, *Component Oriented Platform Architecting for Software Intensive Product Families*, Proceedings of SACT 2000, Enschede, pp. 99-141, Kluwer Academic Publishers, January 2000. [71]