The effects of UML modeling on the quality of software

Nugroho, A.

The Effects of UML Modeling on the Quality of Software

Ariadi Nugroho

The Effects of UML Modeling on the Quality of Software

Proefschrift

ter verkrijging van de graad van Doctor aan de Universiteit Leiden,
op gezag van de Rector Magnificus Prof. Mr. P.F. van der Heijden,
volgens besluit van het College voor Promoties
te verdedigen op donderdag 21 oktober 2010
te klokke 13.45 uur

door

Ariadi Nugroho
geboren te Blitar – Indonesia, 1979

Promotiecommissie

Promotor	: Prof. dr. Joost N. Kok	
Co-Promotor	: Dr. Michel R.V. Chaudron	
Overige Leden	: Prof. dr. Thomas H.W. Bäck	
	Prof. dr. Frank S. de Boer	
	Prof. Jon Whittle	(University of Lancaster)
	Dr. Marcela G. Bocco	(University of Castilla-La Mancha)

The work in this thesis has been carried out under the FINESSE project (des7015) supported by the STW (Stichting Technische Wetenschappen), the Netherlands.

The work in this thesis has been carried out under the auspices of the research school IPA (Institute for Programming research and Algorithmics).

ISBN 978-90-9025677-1

This thesis is dedicated to my familiy...

Publications

During my Phd research, I have co-authored several publications. I list these publications below in chronological order.

1. **A Survey of the Practice of Design – Code Correspondence amongst Professional Software Engineers**.
   Ariadi Nugroho and Michel R.V. Chaudron.
   Proceedings of the 1st International Symposium on Empirical Software Engineering and Measurement (ESEM), September 2007.

2. **On the Relation between Class-Count and Modeling Effort**.
   Ariadi Nugroho and Christian F.J. Lange.
   Proceedings of Model Size Metrics Workshop (Co-located with MODELS Conference), October 2007.
   Received best paper award.

3. **A Survey into the Rigor of UML Use and its Perceived Impact on Quality and Productivity**.
   Ariadi Nugroho and Michel R.V. Chaudron.
   Proceedings of the Second International Symposium on Empirical Software Engineering and Measurement (ESEM), October 2008.

4. **Managing the Quality of UML Models in Practice**.
   Ariadi Nugroho and Michel R.V. Chaudron.
   In Model-Driven Software Development: Integrating Quality Assurance. Hershey, PA: Information Science Reference - Imprint of: IGI Publishing; 2008.

5. **Empirical Analysis of the Relation between Level of Detail in UML Models and Defect Density**.
   Ariadi Nugroho, Bas Flaton, and Michel R.V. Chaudron.
   Proceedings of the 11th International Conference on Model Driven Engineering Languages and Systems (MODELS), September 2008.
   Received best papers awards from ACM SIGSOFT and Springer.

6. **Evaluating the Impact of UML Modeling on Software Quality: An Industrial Case Study**.

Ariadi Nugroho and Michel R.V. Chaudron.
Proceedings of the 12th International Conference on Model Driven Engineering Languages and Systems (MODELS), October 2009.

7. **Level of Detail in UML Models and its Impact on Model Comprehension: A controlled Experiment**.
   Ariadi Nugroho
   Information and Software Technology Journal, 2009.

8. **Assessing UML Design Metrics for Predicting Fault-prone Classes in a Java System**.
   Ariadi Nugroho, Michel R.V. Chaudron, and Erik Arisholm.
   Proceedings of the 7th International Working Conference on Mining Software Repositories (MSR), May 2010.

Contents

List of Tables

List of Figures