

How Reference Architectures support the evolution of Product Families; the Darwin research project

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Abstract

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This work has been carried out as part of the Darwin project under the responsibility of the Embedded Systems Institute. This project is partially supported by the Netherlands Ministry of Economic Affairs under the BSIK program.

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version: 0.4

status: planned

June 23, 2016

1 Introduction

Products in product families are often derived from a common platform. The platform is a means to re-use past knowledge and efforts. Many successful platforms exist, from cell phones and televisions, to cars and airplanes. However, most of the platforms are successful in more mature markets, where change is mostly extension and (cost) optimization. Platform strategies struggle more in dynamic environments where continuously many changes are imposed on the products. When the organization size also grows beyond a critical mass, then the platform strategy hits the next obstacle: (over) specialization of project members and practical limits of communication between all project members.

Our hypothesis is that Reference Architectures improve the capability to evolve platform based product families when the organization size has exceeded the critical boundary imposed by interpersonal communication. Reference Architectures start to capture the essence of the Business and Technical Architectures of past systems. Based on strategy, vision and future stakeholder needs Reference Architectures are adapted to facilitate future products. Our hypothesis is based on the communication value of Reference Architectures. A compact set of artefacts that together form a Reference Architecture can more easily be shared by large teams that create platforms and products. Reference Architectures make relationships and key design decision explicit, which supports the reasoning about high-impact changes.

2 Acknowledgements

The Darwin project members helped to shape this paper. Especially the Darwin Project Management Team members contributed: Joland Rutgers, Pierre America, Dave Watts, Teade Punter, Sjir van Loo, Pierre van de Laar.

References

- [1] Gerrit Muller. The system architecture homepage. <http://www.gaudisite.nl/index.html>, 1999.

History

Version: 0.4, date: 14 November, 2007 changed by: Gerrit Muller

- added annotation to product families item added set based design

Version: 0.3, date: 31 October, 2007 changed by: Gerrit Muller

- added high level problem statement
- updates to add configuration diversity

Version: 0.2, date: 12 October, 2007 changed by: Gerrit Muller

- updated project goal

Version: 0.1, date: 27 September, 2007 changed by: Gerrit Muller

- added project goal

- added set of MR architecture figures from “Architectural Refactoring; illustrated by MR”

Version: 0, date: 26 September, 2007 changed by: Gerrit Muller

- Created, no changelog yet