

Merlin collaboration handbook: Challenges and Solutions in Global Collaborative Product Development

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Abstract: Global, collaborative and distributed development is increasingly common in software development. However, the traditional product and software development technologies do not support this way of working well, e.g., time and cultural differences cause new requirements for these technologies. In this paper, we introduce a public web-based handbook, collecting the challenges encountered in global collaborative development by the companies, and also a large number of solutions that help in tackling these challenges. The handbook was implemented using an ontology editor and generating HTML pages. In the final phase of the development the handbook was validated by several external testers, with main feedback being that the handbook was found useful, but more practical solutions would be welcome. Handbook was also updated based on the feedback.

1 Introduction

In the perspective of growing size and complexity of embedded systems, companies are not able to develop all the required functionality by themselves. As a result, suppliers specialize in specific functionality or specific skills which they can sell to others. This is clearly visible in the growing numbers of the outsourcing constructions in the past years. For example, a survey [1] found that 74% of the participated companies had more than one development location. 48% had four or more locations and 26 % had more than 20 locations. Furthermore, a major survey carried out by the Software & Information Industry Association (in January 2007) indicates that companies are increasing their global development efforts: 57% of the survey participants have significantly increased offshore work in the past 18 months and many plan to add still more in the next 18 months. Growth strategy was cited as an important or critical driver for 84% of respondents, while increasing speed to market and productivity were the next most important drivers. Collaborative engineering of embedded systems has become a fact of life, and currently there is no way back anymore; companies have already outsourced large parts of their developments to other companies, resulting in no longer having the related skills available in their own organisations. Instead, the companies need to manage a complex situation of many partners, sub-contractors, suppliers, software platforms and so on.

Practice has shown that the traditional single company development technologies do not support collaborative product development well. For example, another survey shows that 80% of companies are unsatisfied with their overall collaborative development efforts. Survey respondents expressed as main problems the poor foundation for collaboration and poor management of partner relationships. These problems are often caused by, e.g., time difference and geographical distribution that cause new requirements to the ways of working and tools. Also, understanding each other is not straightforward due to different backgrounds, e.g., different terminologies, cultures etc. but needs to be supported by technologies.

There are some experience reports about challenges companies have faced in collaboration, for example, Philips [2], Siemens [3], Motorola [4], Alcatel [5], and Lucent Technologies [6]. Also several books that are discussing the problematics in collaboration and solutions to address them have been published [7. 8. 9. 10 & 11]. There are also conferences and workshops such as ICGSE (International Conference on Global Software Engineering) dedicated to global software engineering. However, these sources cover only some viewpoints of collaborative software development and until now no comprehensive collection of challenges and solutions for product development in collaboration could be found. Still, all these sources have been used as input for the Merlin Collaboration Handbook.

In this paper collaboration means that two or more entities work together to create mutual value. These entities can be companies, departments or even teams and they can combine in any one of several different business relationships and for very different periods of time. Importantly, the entities are physically in different locations, i.e., the development is distributed.

This paper is organized as follows: first, in chapter 2 we discuss the process of writing the handbook. Next we present the contents of the handbook in general level, including the structure and technical implementation of the handbook in chapter 3. In chapter 4 we discuss the validation of the handbook and end the paper with some conclusions and thoughts for further work.