Technology study, software Design and Development of a web based wafer map analysis tool at Infineon Technologies AG

Summary of the Master Thesis

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Dipl.-Wirtsch.-Inf. (FH) Simon Preis
Regensburg

Adviser
Dipl.-Inf. (FH) Stefan Müller
Infineon Technologies AG
VSA
Wernerwerkstraße 2
93051 Regensburg

Adviser Professor Dr.-Ing. Frank Herrmann
Second Advisor Professor Dr.-Ing. Athanassios Tsakpinis
Modern Information Technology is in a permanent progress. Especially high tech branches like the semiconductor industry need sophisticated software and hardware to process data and information fast, safe and flexible. Since technologies in software developing change frequently, the IT departments in companies have to look after future trends. But these changes are also forced due switches to new technologies and releases of business architectures and platforms. For instance at Infineon, UWMAT needs currently some enhancements since the client side switch from Windows 2000 to Windows 7 and the server side switch from Windows Server 2003 to 2008. This is because of the outbound support from Microsoft. Also databases have to be upgraded to version 11 because of outbound support of Oracle 10. This Master Thesis has presented modern technologies and design standards theoretically and has shown how these techniques can be applied in real scenarios.

WPF is a strong programming technology and especially applicable at professional and complex software projects in companies. The WPF-components and the classes of the .NET framework allow efficient developing with a modern language as fundament – C#. WPF is, however, at some points very exact where the developer must define a lot of basic things. Also the special techniques of WPF and WCF needed some time to understand for optimal appliance. This, however, has blocked the entire process and needed some more days of work, especially in the beginning phase. Other features, like working with the operating system, are rather simple, e.g. the copying of content to the clipboard. Of course, the project could be implemented using older techniques like ASP.NET. But one thing is clear: WPF is the future in web and desktop based programming, so it is just a question of time until companies – especially companies with Microsoft background like Infineon – have to switch to this technology. The design of the web pages is modern and according to Usability standards, so the users in production will have a better handling compare to UWMAT. Although the functional range is not as big as UWMAT, basic analyses can be done and the software allows modular expansion of functionality in future.

The thesis shows also the strengths and weaknesses of service orientated architectures. In the practice part, the SOA which was built with Microsoft WCF brings flexibility and an obvious structure in server logic. Decoupling the EFF-extraction from the main service brings the benefit that other applications can use this service, too.