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Karlskrona 980512

Concerning the project "Design Guidelines and Visualization Support for Developing Parallel Real-Time Applications"

Ericsson Software Technology are developing a number of software products for the Telecommunication market. Many of these products are implemented as multithreaded programs executing on multiprocessor systems. Two such products are the Billing Gateway (BGw) and the Fraud Detection system. Both of these systems use Solaris and Sun multiprocessors. High, predictable and scalable performance is very important since these systems operate in a real-time environment.

The Fraud Detection system is a new product, whereas the first versions of BGw was developed four years ago. During these years we have had a productive cooperation with the group at the University College of Karlskrona/Ronneby (HKR), and a number of their results have been included into the current version of BGw. In the future we see the need for continuously developing the BGw in order to include new functionality and performance requirements, such as hot billing (real-time billing of calls from mobile phones) and increased capacity requirements due to a growing number of subscribers. Currently, approximately 20 people are working full time with maintenance and further development of BGw.

Historically, our cooperation with HKR has been done in the following way. We have provided full access to our products, real work-load scenarios (simulators and real input data), support for installing our products and for setting up realistic test scenarios and, if required, we have also provided equipment such as multiprocessor hardware and disc arrays. The University College has evaluated different implementation alternatives, e.g. binding threads to processors, using a mixture of operating system processes and threads, and using local memory pools for dynamic memory management. In order for the University staff to do these evaluations, our designers have helped them to navigate in the source code and recompile the system. The results from these evaluations have been communicated back to us, thus generally resulting in a interesting discussion which has often improved the implementation of later versions of the product.

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One side effect of the cooperation with HKR is that one of our most experienced designers (Daniel Häggander) has now started as a Ph.D. student at HKR. Although we miss Daniel, we believe that we will benefit from this in the end since Daniels long experience fromour products will guarantee that the cooperation between Ericsson and HKR will be even more productive in the future.

This project addresses real problems which we are interested in. We believe that the University staff is competent and that they have a lot of relevant experience in this field. Furthermore, the rather long experience we have from previous cooperation is very positive.

Therefore, we fully support this project and we look forward to participating in it. We plan to cooperate in the same way as we have done previously in similar projects.
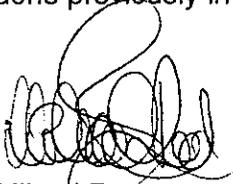
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