EU-funded project to research advantages of parallel computing in consumer devices

NXP, STMicroelectronics, Nokia, INRIA, IBM Haifa Research Lab and Universitat Politècnica de Catalunya kick off ACOTES Project to address software complexity to drive down power consumption

London (UK), October 4, 2006 – A European group of high technology companies and research groups today announced their collaboration in the ACOTES Project to research and implement the advantages of massive parallel processing for consumer devices. The project will use efficient compilation techniques to enable a dramatic increase in productivity for application programmers to leverage the benefits of parallel computing. As a result, consumers will be able to run applications demanding high compute power and enjoy increased battery life on their mobile devices.

The ACOTES (Advanced Compiler Technologies for Embedded Streaming) Project started in June 2006 for a period of three years, till mid-2009. Project members include NXP Semiconductors (formerly Philips Semiconductors), the Netherlands; IBM Haifa Research Lab, Israel; STMicroelectronics, Switzerland; NOKIA, Germany; INRIA, France; and Universitat Politècnica de Catalunya, Spain. The project is partly funded under the European Union's Sixth Framework IST Program and partly by the project members.

The findings of the ACOTES Project will be used to program streaming data applications on modern parallel architectures such as the NXP Ne-XVP, STMicroelectronics streaming processor and Sony/Toshiba/IBM Cell Architecture processors, enabling the implementation of new multimedia and video features that were not possible before.

The ACOTES Project has identified a significant increase in parallelism as the answer to the increasing demand for compute power for consumer applications as well as longer battery life on mobile devices. Massive parallel processing, however, introduces significantly greater complexity for application programmers because they have to express the parallelism, and prioritize tasks and resources that should be allocated for parallel computing. They must also take into account any real-time processing constraints of the application. The project team aims to address this added complexity.

"Creating standalone compilers that optimize parallel computing in a program has proven to be too difficult in the past," says ACOTES Project leader, Harm Munk, NXP Semiconductors, Corporate Research. "The ACOTES Project takes a more pragmatic approach of developing compiler extensions that provide hints to the compiler on possible opportunities for turning the program into a parallel version – increasing performance, while drastically reducing power consumption."

Building on the existing GNU Compiler Collection (GCC) – a set of programming language compilers that convert high-level application programs into machine code for a wide range of target processors – the ACOTES Project will develop compiler extensions that help programmers to express and exploit parallelism in their programs. These compiler extensions will then be incorporated into GCC and made available to the GNU community under the Free Software Foundation's GNU General Public License, which essentially makes them free-to-use open-source software tools.

More information on the ACOTES project can be found at www.hitech-projects.com/euprojects/ACOTES/