

## International collaboration will deliver high-performance, low-power embedded vision platform to the R&D community

Canadian researchers will soon have access to a powerful new development platform to create the next generation of vision applications for devices such as smart cameras, and create a class of new digital appliances with consumer, automotive and security applications.

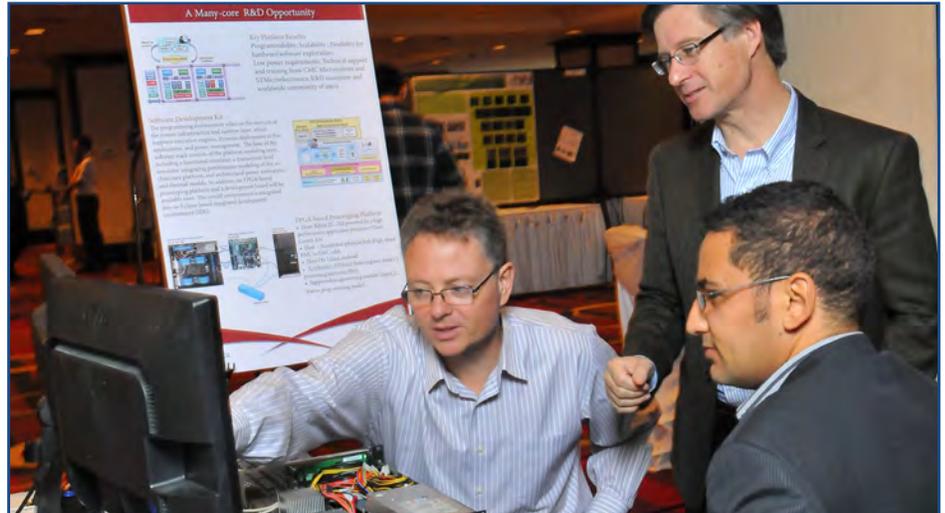
STHorm is a new platform from STMicroelectronics that combines, in one system, advanced parallel processing capabilities and application software development tools. The company has partnered with CMC Microsystems to introduce the design platform to researchers at universities and companies across Canada.

The STHorm platform will help researchers to develop a new class of digital applications such as computational photography and virtual and augmented reality. These require a lot of number-crunching and involve video, face and voice recognition, motion detection and image analysis.

"You are analyzing video, images, motion, and audio and combining these together to provide a rich interpretation of a multi-dimensional environment," says Pierre Paulin, director of System-on-Chip Platform Automation at STMicroelectronics (Canada).

The partnership with CMC Microsystems allows researchers in Canada to be part of the international "STHorm ecosystem" of design engineers and researchers who are testing the product and providing feedback about what it can do and how it can be improved.

Some researchers already have access to the platform's Software Development Kit that they use on their workstations. The programming environment supports execution engines, dynamic deployment of the applications, and



Pierre Paulin, STMicroelectronics (Canada) (centre) as well as Peter Stokes (left) and Yassine Hariri (right), both from CMC Microsystems demonstrate STHorm at the CMC Symposium. STMicroelectronics (Canada) and CMC Microsystems are collaborating on the development of an FPGA-based development environment for the programmable multi-processor SoC platform, STHorm. The platform ecosystem is open and includes a worldwide community of academic and industrial participants.

power management. "It is something you can experiment with, and get deep visibility and control on the application mapping, but it is considerably slower than the actual platform," says Paulin.

In the next stage, researchers will get access to a multi-FPGA prototyping platform (BEEcube BEE4), which is faster than the virtual platform, but not as powerful as the final development platform. CMC projects the actual evaluation board and STHorm chip will be available to researchers in the second quarter of 2013.

CMC Microsystems is helping to put together the prototyping platform, says Paulin. Canadian researchers will benefit from having early access to new technology. In addition, they will offer important product feedback to STMicroelectronics and the "STHorm ecosystem".

Paulin uses the colourful comparison that it's a little like giving a new car to race car drivers to test. "They can use it as it is, or add on hardware accelerators. A V-6 engine is what it is. You can fine-tune it, or you can say 'I am going to put a turbo onto it'," says Paulin.

In its present configuration, the STHorm development board will provide up to 80 giga operations per second (GOPS) of processing power with less than 2 watts of power

consumption. "The combination of the STHorm evaluation board and CMC's prototyping platform will allow researchers to experiment with a rich spectrum of parallel software solutions and hardware-accelerated co-processing to define novel high-performance and low-power platforms," says Paulin. For the Canadians who will be part of the "ecosystem," access to the platform will make it easier to undertake research that requires advanced technology, including architecture exploration, algorithm mapping to a multiprocessor architecture and development of computer-assisted design tools.

It will also give them a chance to build relationships with STMicroelectronics, an important international player that has a long-standing partnership with CMC. The STHorm researchers will participate in workshops, discussion forums, and publish articles to describe their ideas and obtain feedback, says Peter Stokes, CMC's Director of CFI Projects. Projects moving to a commercialization phase will then benefit from DMT Microsystems, CMC's subsidiary that specializes in assisting new ventures.

"There is an important international component to this. CMC is a Canadian organization enhancing Canadian industrial innovation in microsystems. That cannot be done in isolation and that's why we are working with university researchers and ST engineers worldwide to develop the STHorm platform technology," says Stokes. [cmc](http://www.cmc.ca)