

June 8, 2010



# Intel, imec and Five Flemish Universities Open Flanders ExaScience Lab

New Lab to Develop Solar Flare Prediction as Driver for Intel's Future Exascale Supercomputers

## NEWS HIGHLIGHTS

- Intel, imec, the Flemish Agency for Innovation by Science and Technology (IWT) and five Flemish universities announced the opening of the ExaScience Lab in Leuven, Belgium
- The lab's goal is to achieve breakthroughs in power reduction and reliability, an effort critical to extend today's supercomputer architecture to exascale levels of performance, or speeds 1,000 times faster than today's supercomputers.
- The first scientific application the ExaScience Lab will address is predicting "space weather," and the effects to safety and security on Earth.
- The ExaScience Lab is the latest member of Intel Labs Europe.

LEUVEN, Belgium--(BUSINESS WIRE)-- Today, Intel Corporation, imec and 5 Flemish universities officially opened the Flanders ExaScience Lab at the imec research facilities in Leuven, Belgium. The lab will develop software to run on Intel-based future exascale computer systems delivering 1,000 times the performance of today's fastest supercomputers, using up to 1 million cores and 1 billion processes to do so.

The ExaScience Lab will be the latest member of Intel's European research network - Intel Labs Europe - that consists of 21 labs employing more than 900 R&D professionals.

Breakthroughs in exascale computing could mean the ability to simulate very complex systems, impossible to replicate today like the human body or Earth's climate. The result, if the computing industry is successful, could mean finding cures for diseases or better predicting natural disasters. The Flanders ExaScience Lab will be focused at enabling scientific applications, beginning with the simulation and prediction of "space weather," or electromagnetic activity in the space surrounding Earth's atmosphere. Solar flares - large explosions in the Sun's atmosphere - can cause direct damage to Earth. Damage can be to electric power networks, pipeline systems and the quality of wireless communication, as examples. To accurately predict and understand the effects, exascale computing power is needed. Chosen for its extremely complex nature, the software findings are expected to be used and extended to address many other problems.

Designing exascale computers using current technology and design methodologies would mean the systems would become extremely hot and require a power plant to deliver the power needed to run them. When building a system consisting of millions of cores, getting all of them to work together for an extended period of time also represents a challenge. Hence,

completely new computer programming methods and software will be required to bring power consumption to acceptable levels and to make the system fault tolerant. Power and reliability will be key challenges that will need to be understood to turn the vision of exascale computing into reality.

"Intel's long-standing and fruitful relationship with imec was instrumental in developing this unique opportunity," said Stephen Pawlowski, Intel Senior Fellow and general manager of Intel's Central Architecture and Planning. "We are excited to embark on this innovative collaboration in Flanders, bringing together scientific expertise in the fields of space weather prediction, computational simulation, reliability, visualization and performance modeling."

The Flanders ExaScience Lab brings together all Flemish universities - University of Antwerp, Ghent University, Hasselt University, Katholieke Universiteit Leuven and Vrije Universiteit Brussel - along with imec and a world-leading semiconductor company in a unique research collaboration. The Flanders ExaScience Lab kicks off with close to two dozen researchers and will add another dozen or so by 2012. The lab will be hosted at imec and is supported by the Flemish Government agency for innovation by science and technology (IWT).

"We are excited about this unique collaboration with Intel and five Flemish universities here at imec, said Luc Van den hove, president and CEO of imec. "By sharing our expertise, I'm convinced that the Flanders ExaScience Lab will bring valuable software solutions for Intel's future exascale computers. I would like to express my thanks to the Flemish government, Flanders Investment and Trade and the IWT for supporting this lab, and I'm looking forward to this long-term strategic partnership."

#### About Intel Labs Europe

Intel R&D/Innovation in Europe is driven by a network of research labs, product development labs and innovation labs spanning the region as well as a variety of Intel business units. Intel Labs Europe was formally established in early 2009 as the central means of coordinating activities across this diverse and extensive network, and to strengthen and improve Intel's alignment with European R&D. Today, Intel Labs Europe consists of 21 labs employing more than 900 R&D professionals.

#### About Intel

Intel (NASDAQ:INTC) is a world leader in computing innovation. The company designs and builds the essential technologies that serve as the foundation for the world's computing devices. Additional information about Intel is available at [www.intel.com/pressroom](http://www.intel.com/pressroom) and [blogs.intel.com](http://blogs.intel.com).

#### About imec

Imec performs world-leading research in nanoelectronics. Imec leverages its scientific knowledge with the innovative power of its global partnerships in ICT, healthcare and energy. Imec delivers industry-relevant technology solutions. In a unique high-tech environment, its international top talent is committed to providing the building blocks for a better life in a sustainable society. Imec is headquartered in Leuven, Belgium, and has offices in Belgium, the Netherlands, Taiwan, United States, China and Japan. Its staff of

more than 1,750 people includes over 550 industrial residents and guest researchers. In 2009, imec's revenue (P&L) was 275 million euro. Further information on imec can be found at [www.imec.be](http://www.imec.be).

Intel and the Intel logo are trademarks of Intel Corporation in the United States and other countries.

\* Other names and brands may be claimed as the property of others.

Source: Intel Corporation