September 3, 2015

# Intel Invests US$50 Million to Advance Quantum Computing

**NEWS HIGHLIGHTS**

- Intel will invest US$50 million with QuTech, the quantum research institute of Delft University of Technology (TU Delft) and TNO, and will dedicate engineering resources to advance research efforts.
- The collaboration over the next 10 years will accelerate quantum computing research, which holds the promise of solving complex problems that are practically insurmountable today.

DELFT, Netherlands--(BUSINESS WIRE)-- Today Intel Corporation announced a 10-year collaborative relationship with the Delft University of Technology and TNO, the Dutch Organisation for Applied Research, to accelerate advancements in quantum computing. To achieve this goal, Intel will invest US$50 million and will provide significant engineering resources both on-site and at Intel, as well as technical support.

This Smart News Release features multimedia. View the full release here: http://www.businesswire.com/news/home/20150903005352/en/

Quantum computing holds the promise of solving complex problems that are practically insurmountable today, including intricate simulations such as large-scale financial analysis and more effective drug development. Quantum computing is an area of research that Intel has been exploring because it has the potential to augment the capabilities of tomorrow's high performance computers.

"A fully functioning quantum computer is at least a dozen years away, but the practical and theoretical research efforts we're announcing today mark an important milestone in the journey to bring it closer to reality," said Mike Mayberry, Intel vice president and managing director of Intel Labs.

Intel's goal is to extend the university's physics expertise and diverse quantum computing research efforts by contributing advanced manufacturing, electronics and architectural expertise.

It believes no one company or organization will succeed alone in unlocking the path to advanced quantum computing. Instead, partnerships – such as this one between Intel and the QuTech institute in Delft – and industry collaboration will help realize the promise of such a technically complex issue.

"Expertise in specialized electronics combined with advanced physics is required to move quantum computing closer to being a reality," said Mayberry. "While qubit development has

been the focus of quantum computing research to date, low-temperature electronics will be required to connect, control and measure multiple qubits, and this is where we can contribute. Our collaboration with QuTech will explore quantum computing breakthroughs that could influence the industry overall."

"In the next five to 10 years, progress in quantum computing will increasingly require the combination of excellent science with high-level engineering," said lead scientist Lieven Vandersypen from QuTech. "For the realization of complex circuits containing large numbers of quantum bits, the know-how from the semiconductor industry is essential, and QuTech is thrilled to partner with the leading semiconductor company in the world."

Intel CEO Brian Krzanich published a blog today explaining the company's strategic interest in quantum computing, and the relevance of electronics and manufacturing expertise in making quantum computing a reality.

**What is Quantum Computing?**

Quantum computers use quantum bits (qubits), unlike digital computers, which are based on transistors and require data to be encoded into binary digits (bits). These qubits can exist in multiple states simultaneously, offering the potential to compute a large number of calculations in parallel, speeding time to resolution.

**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. As a leader in corporate responsibility and sustainability, Intel also manufactures the world's first commercially available "conflict-free" microprocessors. Additional information about Intel is available at newsroom.intel.com and blogs.intel.com, and about Intel's conflict-free efforts at conflictfree.intel.com.

**About TU Delft**

Delft University of Technology, or TU Delft, is the oldest and largest Technical University in the Netherlands, founded in 1842. It employs about 5000 staff, and has more than 20.000 campus students. It has 8 faculties, including the Faculty of Applied Sciences and the Faculty of Electrical Engineering, Mathematics and Computer Science. Staff of both faculties form the main workforce of QuTech. QuTech staff from Applied Sciences are also part of the Kavli Institute of Nanotechnology Delft, partly funded by the prestigious Kavli Foundation from the United States.

**About TNO**

TNO has some 3000 professionals who put their knowledge and experience to work in creating smart solutions to complex issues. These innovations help to sustainably strengthen industrial competitiveness and social wellbeing. We are partnered by some 3000 companies and organisations, including SMEs, in the Netherlands and around the world. For example on the topic of Industrial Innovation we reinforce the innovative strength of industry through innovation in products and processes, with a strong focus on sustainability.

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.

View source version on businesswire.com:
http://www.businesswire.com/news/home/20150903005352/en/

Intel Corporation
Laura Anderson, 480-552-9020
laura.m.anderson@intel.com
TU Delft
Michel van Baal, +31 15 278 5454
m.vanbaal@tudelft.nl

Source: Intel Corporation