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# THE FUTURE OF QUANTUM TECHNOLOGY IN CALGARY IS BRIGHT

A conversation with **EDWARD MCCAULEY**, University of Calgary President and Vice Chancellor



Calgary is taking a leap and setting its sights on being a quantum technologies hub. In June 2021, the Indian technology company, Mphasis, announced its plan to set up its Canadian headquarters in the city, and will partner with the University of Calgary to build the Quantum City Centre for Excellence, a new technology hub. It will create up to 1,000 jobs at first—helping the economy diversify and grow. Edward McCauley, discusses the significance of Mphasis’s choice, and what he expects from Calgary’s future as a quantum city.

## Why transform Calgary into a quantum city?

Quantum science underpins many sectors of Calgary’s economy, from financial services, the energy and environment sectors, and life sciences and biotechnology. The city already has the infrastructure in place to support new industry growth and job creation. The Quantum City Centre of Excellence will cement Calgary’s existing multi-industry ecosystem, and enable the city to become a global hub for quantum-based industries.

The University of Calgary’s Institute of Quantum Science and Technology encourages a strong interdisciplinary and entrepreneurial approach, with almost 20 research groups involving more than 120 scholars collaborating across faculties. We will encourage uptake of novel quantum technologies across the city, providing extensive benefits for society.

## How will this partnership benefit Calgary and Alberta?

I see many parallels with Pittsburgh in the 1970s. Following the collapse of the steel industry, the city collaborated with Carnegie Mellon to develop a robotics institute, which then attracted associated companies and industries. As a result, there are more than 80,000 STEM workers in Pittsburgh today. Attracting Mphasis to Calgary will create at least 1,000 jobs in commercialized quantum science within the next two

years. The presence of Mphasis will entice other companies to our region. Mphasis will take full advantage of the Calgary technology ecosystem to foster collaborations with innovators in all sectors alongside our students and faculty. Mphasis is also creating the Sparkle Calgary programme, which aims to upskill our regional talent, with a particular focus on automation and artificial intelligence (AI).

## How has the University of Calgary built its reputation in quantum science?

Calgary has a long history of high-tech research and development, particularly in the energy sector, and the University of Calgary is one of Canada’s leaders in quantum science. One of its partners is NASA, which is also part of an international research group creating the quantum internet. We believe this will revolutionize how vast amounts of data are transported securely. Imagine someone is in a car crash on a remote rural road — the quantum internet would give paramedics safe and instant access to their medical records. Improving security and confidence in data transfer will literally save lives.

Another area we’ve been working on is quantum radar. While many people may think of radar as a method for tracking planes, it’s perhaps less well known that some types of radar are already used in medical imaging. Quantum

radar offers a more efficient and pinpoint accurate method to detect objects in the body, which we believe could make the early detection of cancers easier. Quantum science is incredibly broad, and we plan to tap into our strengths and form collaborations with others to extend our reach further.

## What role did the University of Calgary play in bringing Mphasis to Canada?

We were pivotal. Mphasis is a visionary company that recognizes the value of collaboration with research-intensive universities, not only in terms of nurturing talent, but also exploring how we can take on some of the world’s biggest challenges. Calgary now has a critical mass of expertise in quantum science, with many graduates immersed in this field. Without this, Calgary wouldn’t be able to host an initiative at the scale of the Quantum City Centre of Excellence.

Mphasis was particularly impressed by the university’s flourishing Innovation Quarter, which houses our Life Sciences hub, as well as multiple technology, social impact and social enterprise companies. It provides 35,000 square feet of laboratory space and supports seedling companies to scale from prototype to manufacturing capacity. This includes companies that have either grown out of the university, or those that wish to grow via collaboration

with us. The Innovation Quarter also provides opportunities for our students to gain valuable, real-world experience through work-integrated learning.

## What changes might Mphasis inspire at the university?

We are interested in an interactive, personalized learning system that Mphasis has been developing, which uses AI and machine learning to provide advice on how people can best use and improve their skills. Such AI-driven personalized learning trajectories could transform how our students see themselves, and harness skills across sectors to bring innovative technologies to life. It will provide a valuable tool for our university, helping us develop new programmes, as well as helping Calgary’s economy grow and diversify.

## Why work in Calgary’s quantum sector?

When great minds come together from diverse backgrounds and disciplines to tackle challenges, the solutions that they come up with are truly special. We warmly welcome people from all walks of life to join us in building this exciting future for our city.



# THE UNIVERSITY OF CALGARY IS HELPING CALGARY TAKE A QUANTUM LEAP FORWARD. LITERALLY.

## Quantum at UCalgary

**Calgary’s always been a place to start something.**

Thanks to the University of Calgary’s leading work in quantum science, the city will be Canada’s quantum hub—creating up to 1,000 jobs.

**Learn more about Canada’s entrepreneurial university at [ucalgary.ca/quantum](https://ucalgary.ca/quantum)**



