UQ, partners taking computing out of this world

June 8 2017

University of Queensland researchers have partnered with global technology leader Lockheed Martin to develop next generation computers for aerospace applications.

ARC Future Fellow and project lead Professor Warwick Bowen said the partnership would develop a new approach to computer technology, with the potential for future commercial impacts in the aerospace industry.

"In contrast to today's computers, which rely on electric currents, this new approach will use mechanical vibrations inside the computer chip to perform computations," Professor Bowen said.

"This makes it much more robust to radiation exposure in near-earth orbit and deep space applications.

"An expected further project outcome is the development of nanotechnologies that could have wide uses in sensing, health and communications.

"The project could also improve heat management and energy efficiency in future computers."

Speaking on the partnership with UQ, Lockheed Martin Australia Chief Executive Vince Di Pietro said Lockheed Martin had a long history of collaborative research and innovation across the globe, including investment in the world's best research in Australia.

"By leveraging an existing contract established through our Global Supply Chain Enabled Innovation program into this ARC Linkage grant with UQ, we see a true partnership between industry, academia and government growing Australia's future defence industry capability," Mr Di Pietro said.

Chief investigator Dr Rachpon Kalra, awarded a UQ Development Fellowship to work with Lockheed Martin Australia, said the project would strengthen UQ's ties to one of the world's largest aerospace companies.

Fellow chief investigator Dr Christopher Baker said the project built upon UQ's expertise in nanotechnology and nanoengineering.

UQ made a recent multi-million dollar investment in nation-leading nanofabrication tools capable of building devices with features only a few tens of atoms in size.

The project is part of the University of Queensland Precision Sensing Initiative, a joint initiative of the Schools of Mathematics and Physics and of Information Technology and Electrical Engineering.

It will benefit from substantial Federal Government investment into the Australian Centre of Excellence for Engineered Quantum Systems, which aims to develop next generation quantum technologies for future Australian industries.

Federal Minister for Education and Training Simon Birmingham announced the funding last month, making it one of four UQ proposals that attracted $1.28 million in Australian Government funding through the Australian Research Council (ARC) Linkage Projects scheme.

The computers for aerospace project received $334,710 Federal

Government funding, with cash and in-kind funding by the University and industry partner.

Dr Luke Uribarri from Lockheed Martin will be the fourth investigator on the project.

Provided by University of Queensland