



Draft Media Release

QuantX Labs & SmartSat CRC accelerate the development of an orbiting space clock in an Australian First

- The SmartSat CRC is partnering with QuantX Labs and the University of Adelaide to space qualify a world-leading compact clock technology that better the clocks in the GPS network.
- Precise timing in space is a fundamental building block for satellite navigation systems such as GPS.
- This is a key step on the path to a sovereign Australian GPS system.

Adelaide, 3 May 2022 – SmartSAT CRC today announced \$1 million to assist QuantX Labs in the development of its optical atomic clock satellite payload that will deliver the heart of a future Australian sovereign navigation and timing capability.

This partnership will accelerate the space-qualification and commercialisation of a new type of atomic clock. QuantX's clock delivers a quantum leap in timing performance by using high-precision lasers to interrogate a specially prepared vapour of Rubidium atoms. Precision timing is of vital importance to our modern society and is utilised daily through the Global Navigation Satellite Systems (GNSS), such as GPS, which generates trillions of dollars each year in economic benefits around the globe.

The new technology behind the optical clock was created in the Precision Measurement Group at The University of Adelaide, and developed into a product in a collaboration between QuantX Labs, the University of Adelaide, and the SmartSat CRC Aurora Space Cluster start-up incubator. The optical clock is the central technology of QuantX Labs' Alternate Positioning, Navigation and Timing (PNT) product, which answers the needs of numerous applications in defence, space and critical infrastructure.

QuantX Labs Founder and Managing Director **Andre Luiten** said: "Access to sovereign satellite-based timing and positioning information is vital for the smooth operation and security of numerous Australian businesses as well as the defence forces. Our next-generation optical clocks aim to be cheaper, smaller and more precise clocks than those used in current GNSS satellites. This funding will help us build momentum in our atomic clock development – which is vital for the space and terrestrial components of our alternate precision navigation and timing products."

"This latest project with SmartSat CRC is crucial to accelerate progress as we plan to trial the Compact Optical Clock in space within the next 24 months. This latest funding builds on SmartSat's ongoing support, having supported the research and development through the Aurora Space Cluster, as well as facilitating connections with industry and government partners to help us bring the space clock to market."

Established in 2016, QuantX Labs is already a world-leader in high-precision timing and quantum sensors—partnering with organisations such as Department of Defence and BAE Systems to roll out new innovative technologies. Its flagship product – Cryoclock – is in development for inclusion in the \$1.2 billion AIR2025



JORN Phase 6 Defence upgrade program. Over the next year, QuantX expects to double its headcount to 30 at its headquarters in Adelaide's Lot Fourteen innovation precinct.

SmartSat CRC CEO Professor **Andy Koronios** said "We are excited to be involved in the development of this truly transformational space technology – the Compact Space Clock will play a vital role in building a sovereign satellite navigation capability for Australia. This is not just a 'me too' capability. This technology already matches the performance of very best space clocks and is on track to improve performance by an order of magnitude, while at the same time significantly reducing its size, weight and power consumption."

"In just a few years QuantX have transformed an idea to a product – from research to break-through technology. The Optical Space Clock project is an excellent and powerful example of the important role that the SmartSat CRC is playing in catalysing collaboration between universities, industry and defence and helping to build military industrial capability."

Defence's program lead in quantum assured positioning, navigation and timing (PNT), Dr Giuseppina Dall'Armi-Stoks explained that the project is closely aligned with Defence capability priorities.

"The project builds on research and development supported by our Quantum Assured PNT research program - the Quantum Assured PNT STaR Shot - as well as the Quantum Research Network, funded through the Defence Next Generation Technologies Fund," she said.

"These programs are aimed at ensuring that our warfighters have adequate and protected PNT capability in contested environments where critical systems such as GPS may be unreliable or unavailable."

"This partnership between the SmartSat CRC, QuantX Labs and the University to Adelaide addresses a very real need in that space, and demonstrates that collaborations such as this are critical to delivering the capability the ADF needs, both now and into the future."

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ABOUT THE SMARTSAT CRC

The SmartSat Cooperative Research Centre brings together over 100 national and international partners who have invested over \$190 million, along with \$55 million in Federal Government funding under its Cooperative Research Centres Program, in a \$245 million research effort over seven years. Working closely with the Australian Space Agency, SmartSat will make a strong contribution to the Australian Government's goal of tripling the size of the space sector to \$12 billion and creating up to 20,000 jobs by 2030. Priority industry sectors for SmartSat include telecommunications, agriculture and natural resources, transport and logistics, mining, and defence and national security.