MEDIA RELEASE

Adelaide, Australia

QuantX Labs to Launch Pioneering Optical Atomic Clock Technology into Space

QuantX Labs, a world-leader in precision timing and quantum sensor technologies, is gearing up for a major milestone in Australian space technology, as it prepares to launch its leading-edge technology into space. In concert with French space logistics company Exotrail, QuantX will launch a key component of its atomic clock technology, TEMPO, hosted on the spacevan™ vehicle departing on a SpaceX mission in December 2025 at the earliest.

With the support of a $3.7 million grant from the Australian Space Agency's Moon to Mars initiative, QuantX Labs will launch a key sub-system of their next-generation optical atomic clock. This investment reflects the Agency's strong focus, foresight, and belief in the Australian space industry, fostering sovereign capabilities that will position Australia as a leader in space-based precision timing and navigation.

This key subsystem, termed an Optical Frequency Comb, is a cutting-edge tool that unlocks a myriad range of space applications beyond high-performance timing including deep-space communications, navigation, positioning, and synchronised Earth observations. Optical combs were first invented at the turn of the century and won the Nobel Prize in Physics in 2005 because of their potential broad-ranging impact. QuantX's demonstration will be the first time that an optical frequency comb has been launched into orbit. Our comb has already completed rigorous environmental tests, including the need to survive the extreme conditions during launch. This included operation over the punishing temperature variations expected in space, vacuum exposure, extreme vibration and acceleration, as well as radiation levels beyond that expected over its full mission lifetime.

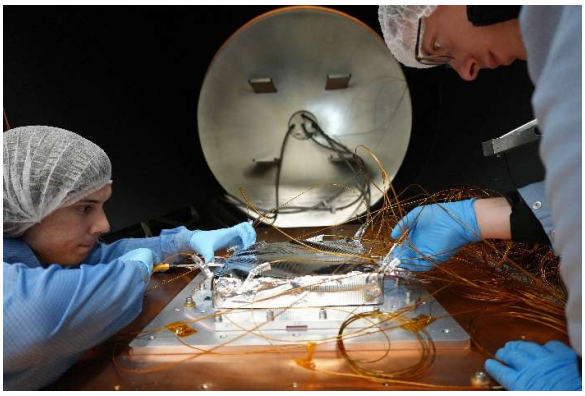

Figure 1 QuantX personnel conducting environmental testing on the frequency comb

High-precision timing in space is already a valuable resource underpinning the satellite-navigation systems (GPS and similar networks) that we all use every day in phones and cars. This first launch of TEMPO's ultra-precise timing capability aims to lay the foundations for an Australian sovereign solution as well as an alternate to current GPS and similar networks.

QuantX Labs' Managing Director, Professor Andre Luiten, highlighted the significance of the upcoming launch: "*This launch represents not only a breakthrough for our TEMPO technology but also the culmination of countless hours of hard work by our engineers and physicists. We*

have managed to deliver this outcome in much less time and at much less cost than is traditional. We are incredibly proud of what we've achieved and excited to see Australia take a leading role in space-based precision timing."

Figure 2 QuantX engineers at Exotrail, France

A team from QuantX Labs will travel to France this month to collaborate with Exotrail on further testing and integration of the module onboard space**van**™. These operations will be performed just south of Paris, at Exotrail's HQ facilities, before shipping the vehicle with the QuantX payload onboard, to the U.S. launch site. This one-year in-space mission will be the second conducted by Exotrail with its space**van**™, after their successful demonstration flight launched end 2023 and still operating for customers in orbit.

QuantX Labs' PNT Program Lead, Dr. Sebastian Ng, emphasised the importance of this launch, "*the launch of the Frequency Comb is a critical milestone for the KAIROS mission, as the enabling technology for LEO optical clocks. Its successful deployment will provide valuable insights as we progress towards the full clock payload. With this technology paving the way for next-generation positioning, navigation, and timing capabilities, our team will continue with the development and integration of the complete TEMPO system, ensuring it is ready for future space missions.*

The successful deployment of the Frequency Comb in space will mark a groundbreaking achievement for both QuantX Labs and Australia's growing space sector. As the KAIROS mission moves toward launch, this collaboration with Exotrail underscores the strength of international partnerships in advancing cutting-edge technologies. With Exotrail's proven expertise in in-space mobility solutions and a track record of successful missions, this launch will not only demonstrate *TEMPO*'s potential but also solidify Australia's position as a leader in space-based precision timing.

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About QuantX Labs

Established in 2016, QuantX Labs is a privately-owned, highly respected Australian company and a world-leader in high-precision timing and quantum sensor technologies.

QuantX is at the forefront of quantum technology innovation, developing and delivering precision solutions that transform communication, navigation, computing, and defence systems.

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About Exotrail

Exotrail is a leading space logistics provider, delivering end-to-end space mobility solutions. From state-of-the-art electric propulsion for small satellites to in-orbit services, our products help optimize the deployment of satellites, increase their performance and address the challenge of space sustainability. Incorporated in 2017, Exotrail has secured over €70M of funding, more than 30 customers in North America, Europe, Asia and Oceania. Exotrail's team consists of +180 passionate people operating out of two locations in France (Toulouse and Massy), as well as in the U.S. through Exotrail U.S.

More information: https://www.exotrail.com/