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e2E becomes consortium partner after £5m boost for Free Space Optical Satellite Communications development.

A consortium of high-tech companies and academic Institutions, led by Northumbria University, are set to launch the UK's first university-led multi-satellite space mission to test a new satellite communications system after being awarded almost £5 million by the UK Space Agency.

The funding announcement will allow the consortium to take forward its prototype work on this new laser-based system set to transform the satellite communications industry.

The [UK Space Agency](#) had already [awarded over £1 million](#) to Northumbria to fund the earlier phases of this inter-satellite communications research through its National Space Innovation Programme.

The UK Space Agency award of £4.98 million to the consortium, that now includes [e2E](#) as a consortium partner, will enable the design, test, and build of the first CubeSat with laser optical communications technology ready to be launched into space in 2025.

The consortium recently further expanded to include global aerospace and security company [Lockheed Martin](#) who will be leading the systems engineering development and supporting the eventual market launch of the system.

It was one of 22 projects initially chosen in a first phase to receive funding in 2020, with further funding granted in 2021 which welcomed e2E as a sub-contractor to deliver the specification and prototype of a key subsystem needed to drive the lasers in space. It is now one of only two projects selected for this third and final phase of funding.

e2E will continue to provide specialised communications systems engineering, to further develop the systems very low form factor modules, along with the software and firmware required to carry out functions of data buffering and encoding and decoding of the optical and data signals.

Barry Ross, CEO of e2E said: "I am delighted that this innovative and leading-edge initiative is progressing through into market exploitation as it builds greatly on our unique engineering capabilities that have developed over the last decade. The increasing maturity and operational benefits of optical communications should no longer be ignored. The consortium represents an extremely collaborative UK partnership that certainly has the drive and support to make a difference in helping to shape the future Satcom landscape."

The rapidly evolving satellite communications sector is facing new technological challenges as prime operators and new space players, planning to launch mega constellations of satellites, are adapting free space optical communications to transmit and receive data. In addition to providing significantly higher data rates and alternative communication options to today's congested radio frequency

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spectrum, optical communications offer increased security in the communications link, making it attractive to defence and government applications.

John Bone, COO of e2E said: “e2E is proud to be involved in such a ground-breaking project with our partners Northumbria University, [Durham University](#), [SMS Electronics Limited](#) and Lockheed Martin. In my role as chair of the North East Space Leadership Group (NESLG), I am especially pleased to see a North-East of England based consortium taking a lead on optical communications technology. This clearly demonstrates the innovation and ambition of industry and academia in the region to collaborate and set the agenda for future resilient satellite communications.”

Dr Eamon Scullion, a solar physicist at Northumbria University is leading the project. He said: “We are absolutely thrilled to be one of the two final projects chosen by the UK Space Agency for funding after a highly competitive process over the last three years.

“With our new technology, we are not only bridging the gap between satellites in Low Earth orbit but we are bridging an even bigger gap between academic R&D and industry.

“Thanks to previous funding from the UK Space Agency we have established the working principles and a prototype of a unique, compact, lightweight, high-speed inter-satellite laser optical communication device.

Professor Robert Wicks, Head of Northumbria Space Technology Laboratory at Northumbria University, and CubeSat development lead of the project, added: “We are now ready to follow a rigorous technology-readiness process to build and test of a pair of flight-ready, payload-integrated CubeSats that are not only ready for launch to space in 2025 but will also be ready for sale as the UK’s first commercially available laser communication device for small satellites.

“We are very excited to be designing, building and testing our very own CubeSat mission here in the Northumbria Space Technology Laboratory. It is a great way to get our Electronic Engineering and Physics students involved in cutting-edge research.”

Tony Forsyth, Head of Space Technology at the UK Space Agency, said: “This funding will support Northumbria University to develop its innovative technology that will enhance inter-satellite communications systems by using efficient optical lasers, in comparison to the traditional devices.

“The UK Space Agency’s National Space Innovation Programme prioritises funding for innovative technologies that will enhance UK space capabilities and help the sector, already worth £16.5 billion to the UK economy, continue to grow.”

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