UK companies join forces to build revolutionary beam-hopping satellite

A group of UK space tech companies are developing a new beam-hopping satellite that will allow satellites to switch which part of the world they cover, managing real-time surges in commercial demand or responding to emergencies such as natural disasters, thanks to government funding.

Led by global satellite communications network OneWeb, the industrial partners have received over £32 million from the UK Space Agency, via the European Space Agency's Sunrise Programme, for a demonstration satellite due for launch in 2022.

The satellite, nicknamed 'Joey-Sat' for its beam-hopping abilities, will be able to remotely direct beams to boost coverage in certain locations, such as areas of high usage where the network is struggling to cope with demand.

Science Minister Amanda Solloway said:

> From helping during a disaster to providing broadband on planes, this amazing technology will show how next-generation 5G connectivity can benefit all of us on Earth.
>
> It is fantastic to see some of our finest space tech companies joining forces on this exciting project which will put the UK at the forefront of satellite communications technology.

The new funding, which builds on the UK Space Agency's previous investments in the Sunrise Programme, will see OneWeb team up with other UK companies, SatixFy, Celestia UK and Astroscale UK, to demonstrate the technology for its second-generation constellation of satellites.

Massimiliano Ladovaz, Chief Technical Officer at OneWeb, said:

> Innovation and collaboration are at the core of OneWeb. Working together with our partners, Oneweb will accelerate the development and expansion of our cutting-edge technologies and manufacturing capabilities for the benefit of communities, enterprise and governments around the world.
>
> This is an exciting opportunity to work with talented potential supply chain partners and we are delighted with the support from ESA and the UK Space Agency to bring continued innovation across the whole of OneWeb's connectivity ecosystem.

The satellite's pilot beam-hopping payload will be developed by SatixFy,

based in Farnborough. The user terminal to support this satellite is also being developed by SatixFy, who have been awarded over £25 million.

Charlie Bloomfield, CEO of SatixFy Space Systems, said:

> We are really excited to be demonstrating new game-changing satellite payload capabilities in space next year, in collaboration with OneWeb.
>
> The £25m funding from the UK Space Agency via ESA, matched with SatixFy's own internal investment, will not only demo best-in-class future payload capability, but will also result in the lowest-cost and highest performance electronically-steered multibeam user-terminals on the market. UKSA and ESA support has been fundamental in unlocking these new technologies and we look forward to a fruitful and ongoing partnership with them.

Celestia UK, based in Edinburgh, has been given £4.4 million to develop and trial smart ground-station technology featuring multibeam electronically steered antenna to reduce the footprint and costs of each ground station and increase the efficiency of the whole ground network.

Credit: Celestia

José Alonso, President of Celestia UK, said:

> The business opportunity that OneWeb and UK Space Agency have presented to Celestia UK in the context of the Sunrise Programme is outstanding. The pioneering project we are developing looks set to become a game changer in the satcom ground segment market.
>
> Gateways and user terminals are key elements in the OneWeb constellation, and Celestia UK's products will be state-of-the-art and fit for commercial purpose. We are very proud to be part of Sunrise.

The Sunrise Programme has maintained a clear focus on encouraging the development of Responsible Space using debris removal technologies, and this element is being developed by Astroscale UK, based at Harwell Campus, Oxfordshire. Astroscale UK has received close to £2.5 million to develop novel technologies to safely de-orbit unresponsive satellites.

Astroscale's current mission, ELSA-d, is preparing the way for a multi-debris removal service, ELSA-M. This funding will support further technological innovations and UK in-orbit servicing skills development and demonstrate the government's commitment towards developing a sustainable and vibrant New Space economy.

John Auburn, Managing Director of Astroscale UK and Co-Chair of the In-orbit Servicing and Manufacturing Working Group at UKspace, said:

> Astroscale UK will deliver important innovations in space debris removal, develop new expertise on Harwell Campus, and provide UK commercial leadership to help protect space for future generations.
>
> Following our ELSA-d mission demonstrations later this year, the Sunrise programme will help to mature our debris removal technologies ready for commercial service launch by 2024.

OneWeb currently has 182 satellites with another launch of 36 satellites scheduled for 27th May. Designed to provide organisations and governments with global and resilient connectivity services, OneWeb's network will feature 648 Low Earth Orbit (LEO) satellites, global gateways and air, maritime and land user terminals. In late 2021, OneWeb will begin providing commercial services across the Arctic regions and expanding to global coverage in 2022.

Elodie Viau, Director of Telecommunications and Integrated Applications at ESA, said:

> Joey-Sat will be used to demonstrate how next-generation 5G connectivity can benefit life on Earth. ESA is proud to support the space industry in Europe to bring such innovation to the competitive global telecommunications market. We congratulate all the partners involved.

With the support of these British companies, OneWeb is already starting to create the roadmap for its future generation constellation so as to be launch-ready for its Gen2 constellation in 2025.

OneWeb recently launched its first Innovation Challenge to seek further new technology to give its future constellations the capabilities to keep it at the forefront of satellite communications technology and meeting end-user demands.

The findings from the latest '[Size and Health of the UK Space Industry]' report, commissioned by the UK Space Agency and published this week, show income from the UK space sector has risen from £14.8 billion to £16.4 billion, representing growth of 5.7% in real terms, while employment is up by 3,200 from 41,900 to 45,100.

Government launches new pilots to further support people to self-isolate

- Local authorities will pilot alternative accommodation and translation help to further support those who have to self-isolate

- Programme designed to help find further ways to support people self-isolating across the country

The government is to launch 9 trailblazing pilots in England to test new, creative ways to help ensure people stick to self-isolation rules in areas with higher prevalence of infection including from new variants.

In partnership with local authorities, the government is backing the pilots with £12 million which will be used for a range of initiatives including providing alternative accommodation for people in overcrowded households, social care support such as increasing existing social care support for vulnerable adults and providing 'buddying' services for people whose mental health has been affected by lockdown and the variant outbreaks, and language communications support for individuals where English isn't their first language. These pilots are designed to encourage people most at risk of catching and transmitting COVID-19 to come forward for testing and to self-isolate successfully if they test positive.

The areas that will receive funding for these pilots are: Newham; Yorkshire and Humber; Lancashire, Blackburn & Darwen, Blackpool; Greater Manchester; Cheshire and Merseyside; Royal Borough of Kingston; Hackney; Peterborough, Fenland and South Holland, and Somerset.

Health and Social Care Secretary Matt Hancock said:

> From the very beginning of this global pandemic, the British public have made tremendous sacrifices and played their part whenever they're asked – social distancing, self-isolating, getting tested and now finally, getting the jab.
>
> Variants have the potential to be a Trojan horse for our hard won progress and it is more vital than ever that we do what we can to show them the exit door, following the rules and self-isolating when asked.
>
> We recognise just how challenging self-isolation is for many people and these pilots will help us find the best ways to support people and making it easier for everyone to keep doing their bit.

To test ways to best support people to stay self-isolating if they test

positive for COVID-19 and to encourage uptake of testing, the government is already backing a pilot across the Greater Manchester region with £2 million of funding. This cash injection is assessing ways to boost people's ability to keep isolating , including 'support and engagement teams' who work with households within 24 hours of a positive test to develop a bespoke plan for self-isolation.

Dr Jenny Harries, Chief Executive of the UK Health Security Agency, said:

> We are doing everything we can to send this virus into retreat and stifle the spread of new variants, and at the heart of this effort is our collaboration with local authorities.
>
> COVID-19 is a global disease but it requires local solutions as well as national ones, and I am hugely grateful for the efforts of the local authorities that are going to be involved with these pilots.
>
> Our partnership with local councils has seen us reach more positive cases of the virus than ever before, many of whom were people who could otherwise have unknowingly spread the virus to their loved ones.

The government has acted swiftly and decisively to tackle head-on the spread of the B1.617.2 variant, first identified in India. Working in partnership with local authorities, strengthened testing operations are working round the clock to help to control the spread of variants wherever they have been detected.

Additional surge testing, genomic sequencing and enhanced contact tracing is helping to control the spread of variants by rapidly break chains of transmission. NHS Test and Trace continues to trace the contacts of any individual who has tested positive while also providing support to local authorities throughout the process.

Cllr James Jamieson, Chairman of the Local Government Association, said:

> Rapidly targeting local outbreaks and supporting people to self-isolate when required is absolutely crucial to our continuing fight against coronavirus.
>
> These pilot schemes will provide further insight into what works best in supporting those who test positive and their contacts to do the right thing to protect themselves, their families and their wider communities.
>
> All councils continue to use their unique local knowledge and connections to reach out to areas where they are most needed,

> working with government in our joint national effort to stop the spread and keep case rates as low as possible as we look towards a return to our normal way of life.

Notes to editors

Low-carbon concrete flood defences to help Environment Agency hit net zero by 2030

The Environment Agency (EA) has pledged to default to low-carbon concrete when constructing flood defences and other critical infrastructure projects, provided they meet performance requirements, as it sets out its roadmap to hit net zero as an organisation by 2030.

The comprehensive new roadmap demonstrates how the organisation will cut its carbon footprint by 45% by 2030. As well as the use of low-carbon concrete, this includes using energy-efficient pumps to help move water away from homes during floods, switching to only electric cars by 2023, and reducing the overall number of vehicles.

With emissions from the supply chain accounting for a significant proportion of the Environment Agency's current carbon footprint, contractors and suppliers will also be pushed to take action, with large contracts including commitments to reduce carbon footprint year-on-year.

Where appropriate, staff will continue to receive support to work from home and reduce emissions from commuting. Flexible working arrangements during the pandemic have already reduced the Environment Agency's emissions from business travel by 48% and emissions from buildings by 22%, against the previous financial year.

An offsetting strategy is also in development to address all remaining emissions. The strategy, due out by April 2022, will outline how the EA will work with key partners on projects to harmlessly lock away carbon while bringing added benefits to people and nature, such as reduced flood risk and improved habitats.

Sir James Bevan, Chief Executive of the Environment Agency, said:

> Reaching net zero will be one of the biggest challenges the Environment Agency has ever faced. It will require every single one of us to play our part, and to think and act differently.

> We will integrate net zero into every aspect of our work over the coming decade. By learning, sharing best practice and partnering with our suppliers, businesses and communities across the country, we will do everything we can to play our part in becoming a net zero nation and tackling the climate emergency that we all face".

Emma Howard Boyd, Chair of the Environment Agency, said:

> In the flurry of net zero announcements recently, many have questioned how some organisations are going to reach future targets. This roadmap sets out credible short-term and long-term action to bring down emissions in our operations and supply chain.
>
> We can't insulate our activities from the wider economy's impact on the climate, which is why the Environment Agency's work to help the country become more resilient to shocks like floods and heatwaves has never been more important.
>
> You can do both. We are working with businesses and Departments across government to create resilient infrastructure and reach net zero at the same time, with tools like low carbon concrete. As a global ambassador for COP26's Race to Resilience, I aim to bring practical examples of this work to the attention of the world.

Tom Brown, Jacobs CSF Framework Director and Chair of the Framework Directors' Net Zero Group, said:

> It is clear just how passionate and committed the Environment Agency's supplier partners are to delivering our work more sustainably, understanding the hugely significant part we play in helping the Environment Agency achieve its net zero ambitions together.
>
> Meeting this challenge will take many forms, including innovative low-carbon solutions, new ways of thinking and delivering to use less carbon in all that we do whilst delivering resilient flood risk management.

More than half of the EA's carbon emissions currently come from the construction of flood defences – and while the vital work to protect people and property from flooding will continue, there will also be an increasing focus on nature-based solutions that don't require hard defences built from carbon-intensive concrete.

Low-carbon concrete has already been used by the EA to construct the recently completed Hythe Ranges sea defence, helping to cut more than 1,600 tonnes of emissions from the project's footprint and now better protects nearly 800 properties from flooding. The works also saw the refurbishment and raising of

30 timber groynes and the recharging of the shingle beach with over 300,000 cubic metres of material.

Government announces £38 million for major new Devon road scheme

- government to fund multi-million-pound road scheme in Devon, providing vital boost to local economy as we build back better
- scheme will see an overhaul of the A382 as well as various new routes to cater for more active forms of travel
- announcement is latest example of government levelling up transport, providing better journeys for people around the country

A vital new road scheme to improve journey times, provide new cycling and walking routes and support the construction of thousands of homes in Devon will receive more than £38 million of government funding.

The project will see a major overhaul of key transport links in the county, including plans to upgrade the A382 and build a new dual carriageway near Newton Abbot.

Today's funding announcement comes as part of the government's drive to build back better from the pandemic and boost transport links across the country.

Transport Minister Baroness Vere said:

> This multi-million-pound investment will totally change the transport landscape in this part of Devon.
>
> Funding will go towards easing congestion so that motorists in the area can enjoy better, faster journeys. Not only that – the scheme involves various plans to allow pedestrians and cyclists to get around the region safely and with ease, as we also look to build back greener from the pandemic.
>
> This government is dedicated to levelling up regions across the country and we will continue to support regional economies by investing in local transport projects like this one.

Councillor John Hart, the Leader of Devon County Council, said:

> I would like to thank the Department for Transport for providing this funding.

> This is the final stage of a major investment programme for the A382 corridor which is the culmination of several years of investment by the Council.
>
> It is very important for the Newton Abbot's economy and will unlock the development of new homes and jobs, resulting in reduced journey times, improved safety and ease congestion. It will also provide safe, high quality cycling and pedestrian routes, giving those wishing to make short journeys realistic alternative transport options.

The total cost of the scheme comes to £44.85 million, with Devon County Council providing the remaining £6.7 million alongside the Department for Transport's multi-million-pound contribution.

The project will see the A382 widened between Trago roundabout and Forches Cross, boosting capacity on the road to ease congestion and allow more motorists to access the Newton Abbot area. This will support the construction of 2,500 new homes in the region and pave the way for the local economy to continue growing in the future. A new dual carriageway between Drumbridges and Trago roundabout will also be built.

Pedestrians and cyclists will enjoy better journeys, with plans for a shared pedestrian and cycle path along the length of the road, along with a bridge to allow them to safely cross.

A shared-use path for pedestrians and cyclists will be constructed along Exeter Road, along with plans to widen the road to ease congestion.

The green light has also been given to construct the planned Jetty Marsh II connection as part of the scheme, which will provide a new road between Whitehill Cross and West Golds way, with a shared-use path adjacent to the route – reducing traffic on Exeter Road and providing better links to the A38.

British spaceflight to become reality as government provides launchpad for spaceports

- government paves the way for commercial space launches from UK soil with new regulations
- planned spaceport sites across Great Britain to create hundreds of jobs as we build back better
- regulations provide grounding for new business opportunities such as

> space tourism from newly established spaceports

Another barrier to space exploration from UK soil is lifted today (24 May 2021), with spaceports expected to be in operation from next summer.

Developed with the UK Space Agency and the Civil Aviation Authority, new regulations being laid in Parliament today will mean satellites and rockets can launch from UK soil for the first time – with spaceports planned for Cornwall, Wales and Scotland.

Future satellite launches will improve our access to data and communications, and revolutionise services such as satellite navigation and earth observation – enhancing the way we live, work, travel and interact with our planet.

Space exploration has a long history of inspiring us all to consider our impact on the Earth, and access to space is essential as we tackle global environmental issues such as climate change.

Transport Secretary Grant Shapps said:

> This is a pivotal moment for our spaceflight ambitions. Since the start of the spaceflight programme in 2017, we have been clear that we want to be the first country to launch into orbit from Europe.
>
> The laying of these regulations puts us firmly on track to see the first UK launches take place from 2022, unlocking a new era in commercial spaceflight for all 4 corners of our nation.

The legislation, laid just 2 weeks before the G7 summit in Cornwall, will come into force this summer and will help propel the development of commercial spaceflight technologies, from traditional rockets to high-altitude balloons and spaceplanes.

In time, we will also start to see new and emerging space activity – including sub-orbital space tourism and eventually new transport systems such as hypersonic flight, which will dramatically reduce aviation travel times.

UK spaceport launches will help create new jobs and offer economic benefits to communities across the country, as well as inspiring the next generation of space scientists.

Not only will this support our thriving space sector, it will also attract companies from around the globe to come to, and benefit from, these commercial opportunities.

Science Minister Amanda Solloway said:

> Continuing to grow our launch capability will help bring jobs and economic benefits across the UK. The Space Industry Regulations we've tabled today will create a supportive, attractive and safe

environment for commercial spaceflight.

Today marks another crucial milestone that will enable the first launches from British soil in 2022 and make UK commercial spaceflight a reality.