Data, Space & AeroSpace

2020 · 2030

Cornwall and the Isles of Scilly:
the Home of Innovation

CORNWALL SPACE CLUSTER

The Data, Space and Aerospace sectors in CloS will

uplift the economy boost productivity increase quality of life achieve carbon neutrality by

2030

UK Strengths & Opportunities

The UK space sector is growing faster than the rest of the UK economy.

It is worth over £16.4 billion per year employs over 45,000 people, and satellites underpin £360 billion per year of wider economic activity.

The National Space Strategy (2022) highlights four enablers to achieving its goals;

01. **Unlock growth in the space sector.**
02. **Grow the UK as a science and technology superpower.**
03. **Collaborate internationally.**
04. **Develop resilient space capabilities and services.**

In doing so, the UK will become one of the most innovative and attractive space economies in the world.

Building on the Data, Space and Aerospace opportunities presented by The UK Government's National Space Strategy, this brochure outlines our exciting 2030 Data Space and Aerospace Strategy for Cornwall and Isles of Scilly (CIoS). It draws on Cornwall Council's Environmental Growth Strategy, the Employment and Skills Strategy and Local Skills Improvement Plan for Cornwall.

Regional Context

This strategy supports the vision for Cornwall as set out in Gyllyn Warbarth, Together We Can: The Cornwall Plan 2020-2050.

We want a Cornwall where everyone is digitally included, and where Cornwall is one of the best-connected places in the world — making it the natural place to grow great businesses.

What role does the Cornwall Space Cluster play in delivering on these ambitions?

The satellite data we provide informs policy and resource decisions in order to exceed global carbon reduction targets, and contributes to the vision of CloS as a carbon neutral economy by 2030. The environmental intelligence gained from satellite data will help tackle local and global issues such as deforestation, disaster response and sustainable food production. We are excited to use our resources to support regional green infrastructure ambitions of a fully connected economy, built environment, and transport system, powered by a zero-carbon smart grid.

So, why focus on CloS?

- The Data, Space and Aerospace sectors already add significant value to other sectors where we have competitive advantage (floating offshore wind, geothermal, critical minerals, agri-food and tourism).
- The knowledge base within the space science and data science communities here is at the forefront of driving the ideas agenda within the local strategy.
- Anchor institutions such as the University of Exeter, Falmouth University, Plymouth University and the South West Institute for Technology, led locally by Truro and Penwith College, are working collaboratively to nurture an entrepreneurial culture and translate research into commercial opportunity that benefits CloS.
- CloS is fast becoming a leading hub for emerging technologies, such as AI and Machine Learning, especially when applied to environmental data.

CloS is at the forefront of the UK's developing space economy and is playing an increasingly important role in the national space programme. To ensure as many people as possible contribute to, and benefit from, economic growth, our Data, Space and Aerospace Strategy Ambitions include:

- Mitigating and reversing environmental degradation, restoring nature and seeking to protect businesses and communities from the impact of climate change, both locally and globally.
- Working with the national Government to grow the UK Space economy.
- Growing the CloS economy, delivering jobs and international investment, whilst offering an outstanding quality of life for local people.

Capitalising on the strengths of the CloS' well-established and thriving Data, Space and Aerospace sectors, our strategy outlines how, and where, we're focusing our efforts to accelerate growth in the region:

- The strategic ambition and objectives with realistic targets for CloS over the long and medium term.
- How the CloS's assets will be exploited and when, and which capabilities will be leveraged across a distributed cluster of Data, Space and Aerospace stakeholders including industry, academia and local government.
- The work required to further develop the internationally recognised Cornwall Space Cluster (CSC) and an overview of the research, development and innovation programmes which will support economic growth in these sectors.
- How the Data, Space and Aerospace sectors can help create a fairer, more inclusive, cleaner and greener Cornwall.

Strategic Ambitions

Following investment from the public sector, investment in the Data, Space and Aerospace sectors will increasingly come from commercial activities, as well as private and institutional investment into the products and services offered by these sectors. CIoS will lead the acceleration of that growth, drive investment, support skills development and lobby the national Government to ensure we remain a key part of the national space programme.

We are implementing a strategy to create sustained value in the short, medium and long term;

BY 2030

CIoS will be a leader in the national space programme by exploiting the physical, digital and intellectual assets in the CIoS and using satellite data to overcome local and global challenges such as the impact of climate change.

'Data, Space and Aerospace' in CIoS will have contributed to an additional £1bn of economic value for CIoS through increased productivity, jobs and turnover, creating twice the average GVA/capita of £45k+

To facilitate these strategic ambitions, we've identified local and national strategic leads to support CIoS in maintaining awareness of priorities. The CIoS Data, Space and Aerospace Steering Group coordinates activities across CIoS, promotes the associated ambitions and capabilities at national and international level and translates the national agenda into key objectives for stakeholders within CIoS. The Steering Group comprises stakeholders from industry, academia and government, each with established local networks and relevant links across the South West and at a national and international level.

Strategic Objectives

In order to contribute to £1bn of additional economic value to CIoS by 2030, CIoS has four objectives:

01. To be the global partner of choice for satellite operations and communications.
02. To be a global leader in testing and development of aerospace and space flight systems within recognised regulatory sandboxes, transitioning into operational services.
03. To be a global leader in disruptive innovation which creates a more responsible and sustainable future.
04. Increase the value of the sector by £150m, providing opportunities for people, communities and businesses to grow.

Partners: UK Space Agency (UKSA), European Space Agency (ESA) and National Aeronautics and Space Administration (NASA), Satellite Applications Catapult, Commonwealth Telecommunications Organisation, Ministry of Defence (MoD) inc. UK Space Command, Department of Science, Innovation & Technology (DSIT), Department for Business and Trade (DBT), Department for Transport, Civil Aviation Authority, Military Aviation Authority, Science and Technology Facilities Council (STFC), UK Research and Innovation, Innovate UK Future Flight, Space Academic Network (SPAN), UKspace, Joint Centre for Excellence in Environmental Intelligence and Green Futures initiative (University of Exeter and Met Office), the three Universities and two FE Colleges in Cornwall, the Eden Project, Tech Cornwall, the Cornwall Manufacturers Group and 700X (the Navy's experimental drone squadron), national and international aerospace and space clusters.

01.

To be the global partner of choice for satellite operations and communications

How will we achieve it?

Goonhilly Earth Station Ltd is a pioneer and innovator in commercial space communications and the primary commercial ground to spacecraft communications centre for exploration missions. It's home to a number of businesses utilising the region's data, aerospace and space capabilities, including **Avanti Communications (Avanti).**

We will use Goonhilly's knowledge and experience of advanced space communications to map mission contact opportunities to international ground station facilities and develop 'space communication digital twin' products. These products will be used for simulation, training, deployment and collaboration in all aspects of mission preparation and operations (mission protocol development, software defined radio programming, radio frequency and optical communication systems operation and integration).

Avanti is a global multi-orbit satellite provider of fully integrated connectivity services and solutions. Avanti connects people, businesses and communities across the world — operating three of its four Ka-band HYLAS satellites at the Goonhilly and Spaceport Cornwall sites. Their fleet of four Ka-band HYLAS satellites offer 50Ghz capacity and a secure ground network of seven Gateway Earth Stations has the power to connect more than 1.7 billion people across 118 countries. We will leverage Avanti's capabilities and expertise in satellite connectivity to protect communities and create opportunities for individuals and private and & public sector organisations around the world.

GOONHILLY EARTH STATION

AVANTI

01.

TARGETS

Short term
What has already been achieved
2020-2022

So far Goonhilly Earth Station has...

01. Provided communication services for Deep Space programmes (NASA Artemis 1, I-Space Hakuto-R and ISRO Chandrayaan-3, ADTYA-L1).
02. Recieved £2 million of private investment in Tier 4 Data Centre and High-Performance Computing capability to leverage further investment.
03. Businesses — with offices in the US and Australia, the acquisition of Comsat teleports in Connecticut and California, land lease in Western Australia and development of on-site ground station facilities.

So far Avanti has...

01. Agreed a five-year partnership agreement with Free in Senegal to build and host a new satellite gateway in Senegal for Avanti's HYLAS 4 state-of-the-art Ka-band satellite.
02. Become the market-leading high-throughput satellite capacity partners in sub-Saharan Africa for the second year running (2021, 2022).
03. Joined the Paris Peace Forum's 'Net Zero Space' Initiative to help create a sustainable outer space environment by 2030, by initiating immediate action to contain and mitigate the growing threat of in-orbit debris.

Medium term
2022-2025

We want to...

01. Exploit the global infrastructure (US and Australia) by adding 20 metre antennas at each location to provide Deep Space Telemetry, Tracking and Control (TT&C) and Space Domain Awareness (SDA) services, all controlled from Goonhilly.
02. Develop and deploy space communications 'Digital Twin' simulator product suite to provide operational and training capabilities for clients.
03. Strategically reposition Avanti from an operator of satellites in geostationary orbit to a global multi-orbit provider of fully integrated connectivity services and solutions.

Long term
2025-2030

We aim to...

01. Focus on growth of the commercial satellite communications business combining the joint knowledge and experience of the Goonhilly and Comsat teams, and exploiting the larger global footprint enabled by the international acquisitions.
02. Create a professional training capability in space communication systems based on practical, hands-on lab work linked to our space communications digital twin products.
03. Develop a space communication service solution allowing third party antennas to join the Goonhilly network.

02.

To be a global leader in testing and development of aerospace and space flight systems.

How will we achieve it?

We will ensure Spaceport Cornwall is Europe's preferred horizontal launch partner and encourage R&D and collaboration for businesses looking to develop, integrate, launch and operate space systems. Alongside this, we'll ensure that Cornwall Airport Newquay, Wholeship's Lizard Range and Land's End Airport are recognised as national centres for testing, evaluating and operating Uncrewed Aerial Systems (UAS), acting as catalysts for aerospace R&D.

02.

Short term

What has already been achieved

2020-2022

So far we have...

01. Completed the UK's first mainland to island and first inter-island drone deliveries trial on Isles of Scilly.
02. Undertaken the first orbital launch from Spaceport Cornwall.
03. Opened the Centre for Space Technologies at Cornwall Airport Newquay and Wholeship's Lizard Range, which offers facilities, independent expertise and access to over 5,500km2 of segregated airspace.
04. Innovate UK Future Flight 'Open Skies Cornwall' project started testing the next generation of drones, embedding infrastructure and 'sky highways' to connect the people of Cornwall with the local services.

Medium term

2022-2025

We want to...

01. Attract high tech industries to Cornwall Airport Newquay and be recognised as a destination for aerospace and space innovation.
02. Use our Future Flight capabilities to secure significant investment for infrastructure, networks and personnel, and develop the Lizard Range into the UK's National Drone Hub: The centre of excellence for independent Test and Evaluation of Uncrewed Aerial Systems (UAS) and associated technologies.

Long term

2025-2030

We aim to...

01. Generate significant commercial income from the provision of space and launch-related projects and services.
02. Enable the Land's End Airport to operate the UK's first hydrogen airline and become a centre for excellence in UAS operations.

TARGETS

03.

To be a global leader in disruptive innovation which creates a more responsible and sustainable future.

How will we achieve it?

We will overcome local and global challenges using ‘Space for Good’ — to shape research, inform debates and engage in global policy discussions which will promote and nurture responsible global aerospace and space activities and supply chains.

03.

Short term

What has already been achieved

So far we have...

01. Over 50 businesses have completed R&D projects and developed innovative products and services, with an average private sector follow-on investment of £1.5m per business.
02. We have created and distributed space education packs themed around ‘Space for Good’ to all schools and colleges across Cornwall.
03. Released the ‘Spaceport Operator Carbon Impact — A Life Cycle Analysis’ in 2022, as well as the ‘Environmental impacts of increasing numbers of artificial space objects’ in 2023.

Medium term

After signing the Astra Carta, we’re now looking to...

01. Develop Data, Space and Aerospace R&D projects, using geospatial data and AI to advance innovation in: satellite communications and operations, launch, uncrewed aerial systems, in-orbit services and renewable energy.
02. Leverage the SPACE-Gov project and KernowSat programme to drive academic and industrial collaborations for space-based projects and services.
03. Advance space sustainability throughout the satellite lifecycle by shaping and pioneering standards in Life Cycle Assessment (LCA) for future space activities, with the ambition to conduct research with impact in collaboration with major space agencies and space actors.
04. Secure £10m investment for a Centre for Sustainability to advance the uptake of Environmental Intelligence across key sectors in the South West.
05. Host a major UK space-themed event / conference / exhibition (e.g. UK Space Conference) in CIoS, showcasing achievements and future ambitions.
06. Work with Innovate UK on future Net Zero, Digital and Technology opportunities including environmental sustainability, resilient supply chains, circular economy adaptation, advanced tech applications, automated systems and future network communications.

TARGETS

04.

Increase the value of the sector by £150m, providing opportunities for people, communities and businesses to grow.

How will we achieve it?

We will ensure the Data, Space and Aerospace sectors are more accessible to people from all backgrounds at all stages of their career, by diversifying, reskilling and upskilling the workforce where required. We will also support businesses to pivot into these high-value sectors, creating opportunities for aerospace and space professionals.

04.

TARGETS

Short term

2020-2022

What has already been achieved

So far we have...

01. Developed a stronger research and innovation capability in the supply chain, driving £42m of growth and the creation of 270 jobs.
02. Established space-specific education and training programmes and developed a national reputation for space training.
03. Commissioned a Space Skills Opportunities Report to support the development of a Space Skills Action Plan.
04. Secured Cluster Development funding from the UK Space Agency to focus on skills development.
05. Delivered a Spaceport Cornwall outreach programme which connected with every school in Cornwall, reaching over 100,000 young people across the world.

Medium term

2022-2025

We want to...

01. Encourage the adoption of space technology in adjacent sectors (e.g. energy, defence) and support workers with transferable skills from other sectors to work in Data, Space and Aerospace.
02. Develop new workforce development programmes and educational pathways, expanding course offerings to include data science and processing of geospatial data applications, space law and business.
03. Work with local and international clusters to transfer knowledge from the research base into the business community.

Long term

2025-2030

We aim to...

01. Use the KernowSat programme to increase the awareness of the importance, uses and applications of space regionally, and to inspire participation in STEAM activities.
02. Ensure our training programmes are recommended by national organisations and regularly used and trusted.
03. Support the Cornwall Space Cluster to collaborate successfully with other nationally recognised space education providers.
04. Establish a Cornwall Space Cluster visitor centre which has the prestige to host events of national importance, and welcomes 200,000 visitors annually.

CORNWALL SPACE CLUSTER

cornwallspacecluster.co.uk

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