

# DATA & SPACE (2020-2030)

In 2030 the Cornwall and Isles of Scilly creative and carbon-neutral economy will be realising opportunities for its people, communities and businesses to thrive, benefitting the environment and providing an outstanding quality of life for all.



**CORNWALL &  
ISLES OF SCILLY**  
LOCAL ENTERPRISE PARTNERSHIP

**GYLLYN WARBARTH  
TOGETHER WE CAN**  
Leading in sustainable living for  
the wellbeing of future generations



## REGIONAL CONTEXT



### This brochure presents the Cornwall and Isles of Scilly (CloS) Local Enterprise Partnership (LEP) Strategy for the 'Data and Space' opportunity presented in the Local Industrial Strategy.

It replaces the CloSLEP 'Human Centred Action Plan, 2018' and draws on Cornwall Council's Environmental Growth Strategy and the Employment and Skills Strategy. It aims to articulate how the Data and Space sectors will increase productivity across the CloS economy, looking ahead over the next 10 years to 2030.

The new 'Data and Space' 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 business. Cornwall's net carbon neutral space and satellite cluster will provide satellite data that helps tackle global issues such as deforestation, disaster response and sustainable food production.

The CloS Data and Space Strategy outlines activity to accelerate growth in the Data and Space sectors, building on the CloS's strengths in these sectors. It sets out the strategic ambition and objectives with realistic targets for CloS over the short (2 years), medium (3-5 years) and long term (6-10 years).

The CloS Data and Space Strategy outlines how the CloS's assets will be exploited and when, and which capabilities will be leveraged across a distributed cluster of Data and Space stakeholders including industry, academia and local government. It also outlines the work required to develop a broad, internationally credible space cluster and an overview of the research,

development and innovation programmes which will support economic growth in this sector. It aims to demonstrate how the space sector can help create a fairer, more inclusive Cornwall and a cleaner, greener Cornwall.

Data and Space is one of five distinct opportunities, identified in the Local Industrial Strategy, which underpin CloS ambitions to lift performance across the economy measured by a decrease in the productivity gap, an increase in quality of life and the achievement of carbon neutrality by 2030.

Data and Space already add significant value to other sectors where CloS has competitive advantage (clean energy resources, georesources, agri-food and the visitor economy), underpinning the Local Industrial Strategy. These sectors contribute significantly to the ambitions to lift performance across the economy, with particular emphasis on ideas and infrastructure.

The Data and Space sectors provide many opportunities to embed R&D, creativity and innovation in business to improve productivity across CloS. The knowledge base within space science and data science communities is at the forefront of driving the ideas agenda within the LIS. 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.

Investment in Data and Space will contribute to the LIS digital infrastructure ambition to have a fully connected economy, built environment and transport system powered by a zero-carbon smart grid and accessible green infrastructure. CloS will become a leading hub for AI, big data and HPC, especially when applied to environmental data using assets such as Goonhilly, Spaceport Cornwall and the Alan Turing Institute work at the University of Exeter.

Inclusive growth and environmental growth are key principles of design in the development of the LIS. The Data and Space strategy aims to ensure as many people as possible contribute to, and benefit from, economic growth. It also aims to reverse environmental degradation, restore nature and seek to protect businesses and communities from the impact of climate change. The environmental intelligence gained from satellite data will be used to

inform policy and resource decisions to exceed global carbon reduction targets and contribute to the vision for CloS to be a carbon-neutral economy by 2030. This is key to The Cornwall Plan's digital revolution for sustainable living – leveraging the globally significant space and satellite cluster which is net carbon neutral and generates satellite data that is helping improve how we tackle global issues such as deforestation, sustainable food production and disaster response.

CloS has positioned itself at the forefront of the UK's developing space economy and is playing an increasingly important role in the national space programme. CloS is committed to working with national Government to grow the UK Space economy and, in so doing, grow the CloS economy and deliver jobs and investment, whilst offering an outstanding quality of life for its people.

## UK CONTEXT

### THE UK HAS SIGNIFICANT GROWTH PLANS FOR THE SPACE INDUSTRY

The "Prosperity for Space" report issued by the Space Growth Partnership in May 2018 provides a good summary of the sector performance:

Sector productivity of nearly three times the national average, with a skilled workforce creating £140,000 of value per person.

Year-on-year growth of five times greater than the wider economy since 1999.

£415m invested by industry in research and development in 2014-2015 alone.

A sector worth £13.7bn in 2015 – three times its value in 2000.

36.4% of sector turnover generated by exports and 6.5% UK share of the global space economy.

**As a result, an ambition has been set for the UK space sector to have a 10% share of the global space market by 2030, and additional government funding has been allocated to help achieve that goal through the national space programme.**





## STRATEGIC AMBITIONS

Following a period of investment from the public sector, investment in the Data and Space sectors will increasingly come from commercial activities as well as private investment into the products and services offered by these sectors.

The CloSLEP will lead the acceleration of that growth, drive investment, support skills development and lobby national Government to ensure CloS remains a key part of the national space programme. The CloSLEP must be aware of and influence national activities, plans and policies coming from the National Space Council. We must also ensure that CloS's Data and Space strategic ambitions are firmly understood and promoted nationally.

To facilitate this, local and national strategic leads have been identified who will support the CloSLEP in maintaining awareness of priorities. As humanity moves from suborbital and orbital space into deep space, and commercial operations migrate from GEO orbit to lower earth orbits and to wider exploration, the CloSLEP is implementing a strategy to create sustained value in the short, medium and long term.

BY 2030, CIO S WILL BE

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

BY 2030

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

## STRATEGIC OBJECTIVES

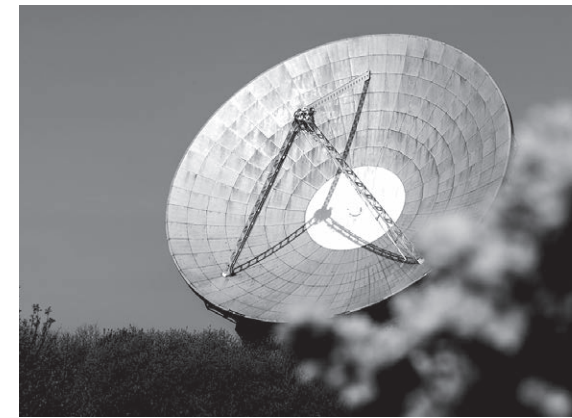
In order to contribute to £1bn of additional economic value to CloS by 2030, CloS has four objectives.

Each objective is associated with a key location, a strategic lead and dedicated resources which, when combined effectively, have the potential to leverage significant value and drive the growth of the Data and Space sectors.

Each strategic lead has a responsibility to i) coordinate activities across CloS and promote the associated ambitions and capabilities at national and international level and ii) translate the national agenda into key objectives for stakeholders within CloS. These strategic leads work together in a virtual cluster of stakeholders comprised of industry, academia and government, each with established local networks and relevant links across the South West and at a national level.



## Be the UK's primary data communications and satellite operations centre for Government



STRATEGY

Exploit the Goonhilly Earth Station assets and skilled workforce and build on the capability to operate and control satellites with the required TT&C (Telemetry, Tracking and Commanding) infrastructure, including the provision of managed data services.

Focus is on commercial growth through data management, ground segment and satellite operations services as well as providing professional education services into the Data and Space sectors.

**Interfaces:** UK Space Agency (UKSA) Mission Office and links to the European Space Agency (ESA).

**CloSLEP role:** provide financial support for the 'Space AI Institute', enabling continued rapid growth at Goonhilly Earth Station so it can secure commercial contracts and inward investment from established satellite operations and manufacturing companies.



### COMMITTED ACTIVITY TO DATE (2018-2020)

£8.4m investment in the DSN Antenna at Goonhilly which used CloSLEP support for a commercial procurement via ESA, rather than using a grant approach, which has then led on to opportunities for private investment. This suggests a role for local and national government to consider future "smart procurements", rather than grants, to support Space industry.

Goonhilly Earth Station has privately invested £2m in Tier 4 Data Centre and High-Performance Computing capability to leverage further investment in the 'Space AI Institute'. This has resulted in project partnerships with industry and universities, e.g. Oxford, paving the way for further collaboration with other space clusters across the UK.

**CIO SLEP WILL ALSO WORK TO NURTURE THE EMERGING SUPPLY CHAIN AND ATTRACT AND RETAIN SKILLED TALENT TO SUSTAIN THOSE BUSINESSES**

**STRATEGY**

**Opportunity:** Create facilities and infrastructure to support launch system deployment and supply chain.

**Strategy:** leverage the investment in Spaceport Cornwall to provide horizontal launch services and mission management; global leadership in responsible horizontal launch; operators and supply chain activity, attracting investment to Cornwall, inspiring the next generation and generating income from consultancy services relating to 'Airport to Spaceport' transition. Deliver mission management and range management services for other UK and international sites. Focus is on small satellite launch services and the supply chain to support payload and satellite integration.

**Interfaces:** UK Space Agency (UKSA) Launch Office, Dept. for Transport, Civil Aviation Authority.

**CloSLEP role:** leverage the investment in Spaceport Cornwall to integrate space launch into an active civilian airport, providing the infrastructure required to offer flexible, low-cost, dedicated and responsible access to space for horizontal launch systems. Facilities will also include the workspace needed for high-value satellite technologies to be developed alongside launch, creating sustainable activities that occur even between launch campaigns.

**Be globally recognised as a centre for horizontal launch services**

**COMMITTED ACTIVITY TO DATE (2018-2020)**

£7.35M Launch UK grant funding between UK Space Agency and Virgin Orbit to establish a launch location at Spaceport Cornwall by 2022

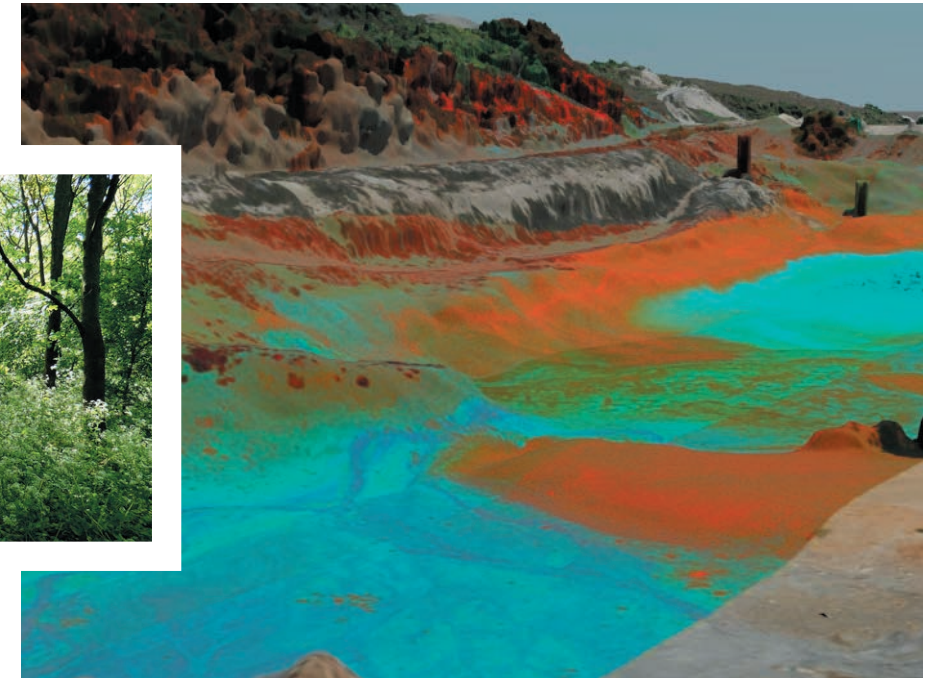
£500k LEP investment in Spaceport Cornwall, with additional £5.8M from Cornwall Council to upgrade airport infrastructure to create a safe operational environment for launch, beginning the transition from air to space port

ERDF investment of £2.8m to establish the Centre for Space Technologies by December 2021

Getting Building Fund investment of £1m to establish the Launch Operations Facility by December 2021. This will include a launch centre as well as education outreach facility

**3**

**Be globally recognised for applying environmental intelligence to solve local and global challenges**



**STRATEGY**

**Opportunity:** To position CloS as the UK's portal for environmental intelligence.

**Strategy:** ensure CloS play a strategic role in offering access to environmental intelligence through satellite applications development, using Data and Space as a key driver in a new low-carbon economy.

**Interfaces:** Satellite Applications Catapult, Space Academic Network (SPAN), UKRI, Joint Centre for Excellence in Environmental Intelligence between University of Exeter and the Met Office.

**CloSLEP role:** apply space technology to exceed global carbon reduction targets. This supports the CloS objective of sustainable economic growth whilst reducing the environmental impact of industry in the CloS, and provides thought leadership opportunities across the SW and the UK.



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LOCAL ENTERPRISE PARTNERSHIP



STRATEGY

**Opportunity:** Create further 'Data and Space Education and Training' facilities and programmes across CloS, expanding on the courses offered in satellite operations and communications to include launch services, satellite applications, space economy, business and space law.

These facilities will be part of a virtual Data and Space education and training cluster, including the three Universities in Cornwall, The Eden Project, Goonhilly Earth Station, Spaceport Cornwall, Software Cornwall and the Cornwall Manufacturers Group. They will provide specialist education and training for professionals, although the facilities could also support secondary-school-level and 16+ further / higher education. In so doing, the facilities will attract space professionals, generate revenue through paid professional courses, stimulate skills development and inspire and equip the next generation of scientists, software and technology developers, engineers and entrepreneurs.

**Strategy:** create economic value from horizontal and vertical collaborations within the 'Cornwall Space' cluster, and between this and other national and international innovation, Data and Space clusters. Focus is on manufacturing, engineering and software development global supply chain capability through Software Cornwall and the Cornwall Manufacturers Group.

Ensure Launchpad innovation businesses

are able to scale up in CloS through digital technology commercialisation.

**Interfaces:** UK Space Agency (UKSA) Communication Office, UK Space, Space Growth Partnership, Department for International Trade, National and International Space Clusters, Science and Technology Facilities Council (STFC).

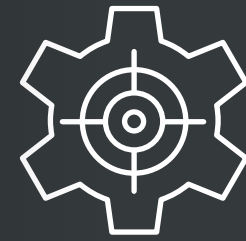
**CloSLEP role:** work closely with our schools, colleges and universities to drive education and skills development and to transfer knowledge from the research base into the business community; create highly skilled opportunities for space professionals, motivating them to move to CloS; encourage individuals to retrain for high-tech industry careers and support businesses to pivot into the high-value Data and Space sectors.

COMMITTED ACTIVITY TO DATE (2018-2020)

£1m match funding approved for £10m RD&I project focused on Space / Aerospace cluster development, supply chain capability and attracting large-scale inward investors

**4** Have inspired and equipped the next generation of scientists, software and technology developers, engineers and entrepreneurs to engage with the Data and Space sectors and develop products and services which create sustained value for the economy

STRATEGIC TARGETS



SHORT TERM 2020 - 2022

01 FIRST ORBITAL LAUNCH FROM SPACEPORT CORNWALL IN 2022 AND ESTABLISH CORNWALL AS A HORIZONTAL LAUNCH LOCATION RECOGNISED GLOBALLY

02 GOONHILLY EARTH STATION 

Selected for operations for 'Outside Earth Orbit' Deep Space programmes (e.g. Lunar mission)

'Space AI Institute' and 'Receiver Factory' built at Goonhilly Enterprise Zone

03 Develop a stronger research and innovation platform to enhance supply-chain capability, and secure a small number of strategic national and international alliances and / or collaborations to drive trade and investment and deliver local benefits

04 Establish further Data and Space education and training facilities and programmes across CloS



05 PLAY A STRATEGIC ROLE IN OFFERING ACCESS TO ENVIRONMENTAL INTELLIGENCE

06 Respond to appropriate Innovate UK, UK Space Agency and European Space Agency calls to secure investment in the CloS and partner on the Moon Village project

07 Establish Centre for Space Technologies facilities to enable spacecraft developers to integrate their payloads at Spaceport Cornwall

08 Develop and implement a Data and Space Skills Action Plan as part of the CloS Employment and Skills Strategy delivered through the Digital Skills Partnership





## MEDIUM TERM 2022 - 2025

### 01 CREATE SUSTAINABLE REVENUE FROM SPACEPORT CORNWALL FEES, THE COMMERCIALISATION OF THE DEEP SPACE NETWORK AND INVESTMENT IN LOCAL BUSINESSES

### 02 GOONHILLY EARTH STATION

Hosts spacecraft operations and ground services for major 'Outside Earth Orbit' space programmes (such as Lunar Pathfinder mission) as well as providing other satellite and ground operation services, especially in the growing 'constellation' market

### 03 Environmental intelligence and the Centre for Space and for Extreme Environments are firmly established by the University of Exeter at the Penryn Campus and supported by the 'Space AI Institute' at Goonhilly, generating sustainable growth

### 04 Ensure ground station technology remains competitive through continued research, development and innovation in the use of automation, artificial intelligence, machine learning, advanced manufacturing and digital innovation

### 05 Commercialise the test, maintenance and operations services related to future transport and propulsion

### 06 The Data and Space Education and Training facilities and programmes are nationally known for regularly exemplary courses. Educational framework built up around Data and Space themes and delivered across CloS working with Goonhilly Earth Station, Spaceport Cornwall, the Penryn Campus and The Eden Project

### 07 Develop the supply chain to secure global commercial contracts in the Data and Space sectors

### 08 In recognition of global leadership role on sustainable Data and Space, host a major UK space-themed event / conference / exhibition (such as UK Space Conference) in CloS, showcasing achievements and future ambitions across the Data and Space sectors



Develop the supply chain to secure global commercial contracts in the Data and Space sectors

Seek relocation of a major UK Government Space-related agency to Cornwall

Leverage the University of Exeter's world-class mining expertise at the Camborne School of Mines to develop Space mining capability

Seek to lead on global projects which focus on carbon reduction through the use of space data

## LONG TERM 2025 - 2030

### 01 GLOBAL SPACE AGENCIES AND BIG FOUR CLOUD COMPANIES HAVE PRESENCE IN CIOS

### 02 GOONHILLY EARTH STATION

Internationally known as the Commercial Operator for Exploration programmes with wrap-around infrastructure including accommodation, transport etc

Is the primary operations centre for UK endeavours to Moon and Mars, for Space Resource Mining and for supporting UK sovereign missions

Becomes a centre of excellence in advanced communications, using quantum computing for data validation in near and deep space, HPC and advanced manufacturing applications

### 03 CloS internationally recognised for Data and Space assets, capabilities, clusters and RD&I

### 04 Data and Space Education and Training facilities and programmes across CloS are internationally known for professional courses across a very broad range of Data and Space topics

### 05 Launch cluster growing with sustainable commercialisation of the Centre for Space Technologies and reintegration services

### 06 NATIONALLY RECOGNISED SPACE LAUNCH EDUCATION AND VISITOR CENTRE ESTABLISHED

### 07 The South West region internationally known as the UK's portal for environmental intelligence, and for generating state-of-the-art technology which addresses global environmental challenges

### 08 Recognised as a key player in the global network of Spaceports with point-to-point connectivity



Spaceport Cornwall regularly providing horizontal launch services and orbital research payloads into LEO and higher orbits, with a sustainable business model with 12 launches every year and globally recognised for environmental / sustainable launch capability. Full capability with permanently based Launch systems being deployed to other Spaceports

Spaceport Cornwall looking to support spaceflight and beyond using fully reusable orbital spacecraft and propulsion technologies that will support Space-based future travel

**INCLUSIVE  
GROWTH**

**CLEAN AND  
CIRCULAR ECONOMIC  
DEVELOPMENT**

**THE CREATIVE  
ECONOMY DRIVING  
INNOVATION**

**ENVIRONMENTAL  
GROWTH**



HM Government



**European Union**  
European Regional  
Development Fund

**Cornwall**  
AEROSPACE

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