



EM3 SPACE HUB INTRODUCING ITS GROWING SPACE ECOSYSTEM UK SPACE AGENCY LOCAL SPACE CLUSTER DEVELOPMENT PROJECT

MARCH 2021

AN EVIDENCE AND INTELLIGENCE-BASED SKILLS
ACTION PLAN FOR THE ENTERPRISE M3 AREA

UNIVERSITY OF
Southampton

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SURREY

 **Hampshire**
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Centre of Excellence in Satellite Applications

 **UK SPACE
AGENCY**

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ABSTRACT

“A VIBRANT COMMUNITY AND LEADING SPACE ECOSYSTEM, SUPPORTED WITH A NEWLY-DEVELOPED SPACE INCUBATOR, STRONG ACADEMIA, AND HIGHLY-SKILLED ENVIRONMENT-FOCUSED WORKFORCE”

EM3 Space Hub has a clear vision and is seeking to promote the significant strengths in its space industry as a forward-looking sector, capable of releasing huge potential for enabling a number of key priority sectors through satellite applications. Our space industry distinguishes itself for a **think-out-of-the-box approach**, converging with other sectors to tackle global challenges like climate change. Perhaps unique among space clusters in UK, its mindset is beyond ground-breaking; the result of a long-standing tradition of being a confluence of innovative sectors such as aerospace, immersive reality, AI, 5G, and maritime. Wirth a strong aerospace and defence heritage, this interconnected, innovation focused ecosystem makes our region a fertile environment for new SMEs joining UK Space Industry, leading to a resilient economic picture – especially within the post-Covid and post-Brexit context.

EM3 Space Hub Landscape report will identify strengths and weaknesses of the sector, as well as growth opportunities, access to talent and skills, soft-landing options, and business support. It will highlight the extent to which the local space industry complements other space clusters in the UK, such as Harwell and Leicester and the opportunities to build on these relationships. The report, which will address both a private and public sector audience, will also define and illustrate the regional inward investment offer. Aligning with the LEP’s **Local Industrial Strategy (2019-20)**, **EM3 Revive and Renew Action Plan (2020)**, **Investment Strategy**, and **Skills Action Plan (2021)**, this report is the final product of the work delivered as part of *UKSA Local Space Cluster Development Project*.

EM3 Space Hub Consortium comprises of Enterprise M3 LEP, Hampshire County Council University of Surrey, University of Southampton, Oxford Innovation, South Coast Centre of Excellence in Satellite Applications.

1. OVERVIEW OF OUR SPACE & SATELLITE CAPABILITIES

SIZE OF THE OPPORTUNITY

Birthplace of the British Aviation Industry, with a strong defence & security heritage, our region is globally competitive – unique for its knowledge, digital and design-based economy, with demonstrable strengths in profitable industries including satellite technology. According to UK Space Agency (2019), in 2018 the local space sector comprised 105 organisations, with a total turnover of £9bn, and 33% growth since 2016. However, recent research by the space hub has revealed a wider sector, **with over 185 organisations focused across the value chain** including major players like BAE Systems, Surrey Satellite Technology, Airbus, Earth-I, Lockheed Martin, and ViaSat. Hampshire sees a concentration of large companies with more than 250 employees, while Surrey is a cluster for micro and small companies exploring satellite technologies.

ECONOMY AND SECTORS

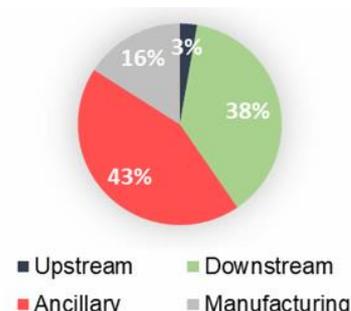


SPECIALISMS IN HI-TECH, KNOWLEDGE-BASED INDUSTRIES



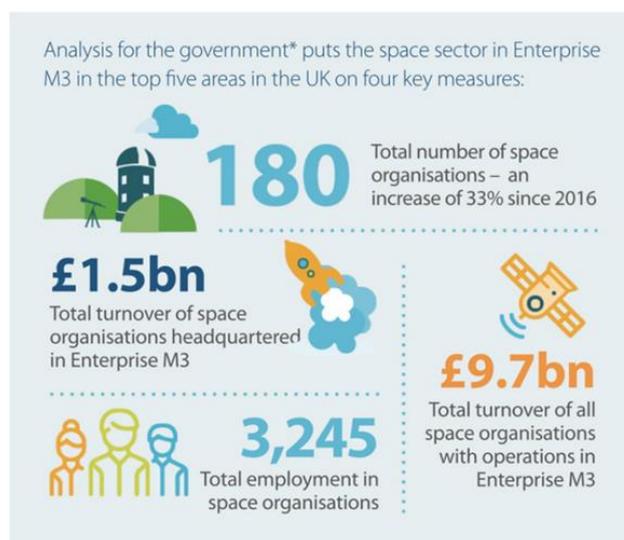
The scale for the **space commercial opportunity** is high, especially in current times. With an ongoing pandemic proving difficult to manage, clear environmental challenges and the beginning of the post-Brexit era, government is questioning to what extent space applications can provide solutions (House of Commons, February 2021).

Our **Space sector** has demonstrated versatility, with strengths in satellite applications for environmental management and clean growth, as well as a multi-skilled workforce with capabilities across diverse areas of activity. More than £9bn of the local GVA is generated through space activity, contributing significantly to the £54.3bn regional economy.



Although upstream technologies and manufacturing do not feature high in our region, our space industry stands out for its downstream focus. Already 38% of our space industry is downstream, with a focus in delivering regional clean growth ambitions. 72% of the subsector is earth observation (EO) enabled and 18% is satellite communications focused. Along with industry, the region boasts a strong space and environment-oriented academia, with an internationally acclaimed Centre for Environment and Sustainability, a WHO EO lab for pollution monitoring, and an effective partnership with the National Physics Laboratory (NPL). There is a tight interlink between space and clean growth. The vast majority of the local EO enabled technologies is key in delivering the regional clean growth strategy, by underpinning transport solutions, agriculture, marine and maritime. EO enables pollution monitoring, GIS & mapping, environment conservation and Agri-tech – as demonstrated by Earth-I, ICEYE, WWF, and Ordnance Survey.

Our economy is multi-faceted, with strong cross-sector collaboration opportunities. EM3 LCEGS (EM3 LEP, 2018) report highlights the opportunity for businesses to diversify, and the Space Hub supports them to deliver these ambitions by incentivising cross-sector activity. Similarly, with the 5G Innovation Centre and a 5G Living Lab, there is a strong commitment in continuing leading 5G satellite network development. The local space industry also underpins growing sectors such as gaming/immersive technology, along with animal welfare management and marine/maritime.



By underpinning several high-innovative industries, our local space sector aims to unlock their full potential through R&D and cross-cutting applications. Companies in our region are already developing clean technologies, supported by skilled networks, institutions, local LEPs and local authorities.

Last but not least, our region offers an impressive multi-disciplinary graduate pool and a knowledge-intensive workforce. Over 43% of the overall sector is ancillary, and includes universities, research centres, innovation centres with a space focus. With over 50,000 employees in digital and space technologies, the hub boasts the highest rate of education and knowledge creation nationally, with great potential to respond to new business models.

1.1 OUR UPSTREAM INDUSTRY

Our Space Industry does not own a wide upstream sector – **representing 3% of the overall local sector**. This is rather surprising, given the recent increase in upstream inward investment opportunities, and the growth in the development of new space technologies. Most of our upstream companies are based in Hampshire and are likely to be larger than mainstream SMEs, with more than 250 employees each. These include Airbus, SERCO, BAE Systems, SatixFy, InSpace Missions, Lockheed Martin, and NanoAvionics. Surrey is home to Surrey Satellite Technologies (SSTL) – a spin-off of University of Surrey and a world's leading commercial small satellite company.

Although our upstream sector is quite small compared to other clusters in UK i.e., Harwell, Leicester Space Park, it is recognised internationally for its internationally acclaimed products and solutions. Moreover, given its strength in downstream applications and ancillary services, it offers opportunities for new investors looking for direct access to the pipeline and space value chain. The local upstream industry also works tightly with our manufacturing services, which make up **16% of the overall sector**.

INSPACE MISSIONS LTD



Located at BASE Innovation Centre in Bordon, [InSpace Missions Ltd](#) aims to develop new space missions, as well as to provide consultancy and procurement support to the space sector.

It provides In-Orbit Test Facilities through its Faraday Mission series, enabling demonstration of new space-based technologies and services. The Faraday-1 spacecraft was launched in December 2019, carrying 7 commercial payloads for domestic and international customers.

The company has also teamed with an Immersive Tech Design studio to develop an AR/VR service mission which will offer immersive space experiences for leisure, education, and business. [SpaceTime Enterprises](#) wants to democratise space through the provision of virtual and augmented reality (VR/AR) products developed using better than retina level resolution, wide field of view, real-time space imagery.

NANOAVIONICS LTD

[NanoAvionics](#) is a smallsat platform manufacturer and mission integrator currently based in five locations across the UK, US and Lithuania. The company's efforts are focused on enabling critical satellite functions and optimising their hardware, launch and satellite operation costs - ranging from single missions to constellations. Its core engineering team has implemented over 85 successful satellite missions and commercial projects during the past several years.



NanoAvionics flagship multi-purpose M6P, M12P and M16P are the first preconfigured nanosatellite platforms in the sector, designed to serve emerging commercial space markets. The company uses modularity as the fundamental principle of its systems' architecture – hardware, software of NanoAvionics satellite platforms, as well as mission operations infrastructure are based on “building blocks” for the flexible, time/cost efficient, and rapid integration, resulting in wide applicability, reliability, repeatability, and manufacturability. With this technology at the centre, NanoAvionics provides economic viability to a wide range small satellite constellation-based missions, businesses, and organizations worldwide.

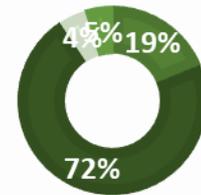
1.2 OUR DOWNSTREAM INDUSTRY

Complementary to other space clusters in the UK with a stronger upstream focus, our region stands out for its plethora of cross-sector applications of satellite enabled technologies, across a variety of innovative, high-value sectors.

An in-depth mapping of the local space industry has demonstrated that **38% of the overall sector is downstream, with a specialism in EO enabled technologies (72%)**. As supported by the Hub's recent analysis of the sector and highlighted through the cross-sector events organised as part of the project, most technologies are utilised as enablers for green/environmental technologies. The latter is not surprising as the region boasts a thriving clean growth community, one of the biggest nationally. In 2019, **the local low carbon industry (LECGS) was valued at £18.2bn**, making up a significant proportion of the local overall economy of £54.3bn (EM3 LEP, 2019). Satellite-enabled solutions are also used as enablers for innovative animal welfare technologies and Agri-tech, as well as marine and maritime. As demonstrated by the graph, **19% of the downstream subsector focuses on GPS technologies** – most of which are employed within the local low carbon industry and transports.

DOWNSTREAM APPLICATIONS

- Satellite Communication
- Earth Observation
- GPS/Navigation Systems
- Software



The region is home to organisations like Ordnance Survey, Geosphere, Earth-I, GHGSat, ICEYE, Mantle Labs, Absolar and many more – all of which are highly committed in delivering greener and more sustainable environments.

EARTH-I



Based on Surrey Research Park, [Earth-I](#) is at the forefront of the commercialisation of space. Today it supplies high-resolution image data services from the DMC3/TripleSat Constellation, KOMPSAT series of satellites and SuperView satellites to clients across the globe. Its range of services, from data processing to analytics, help the policy makers and innovators of today take more effective decisions, more rapidly.

Earth-I is currently developing analytics and insights products based on Earth Observation images and satellite data. On this note, it is exploring ways of combining satellite applications with advanced technologies i.e., Machine Learning, AI, Computer Vision, and many more to derive meaning from the satellite data.

“**ACCORD**” is an IPP Earth-I has been involved with. The ACCORD programme provides a new solution, offering accurate and timely data to farmers, enabling them to act in alleviating the impacts of climate change. By bringing greater certainty and precision to coffee farming, it helps deliver reliable and high-quality supply and protects farmer livelihoods: building a more sustainable supply chain, from bean to brew.

ALCIS HOLDINGS LTD

Based on Surrey Research Park but operating worldwide, Alcis Holdings Ltd applies its expertise and GIS capabilities to deliver innovative and ground-breaking solutions across a number of sectors.



These include development & aid, governance, defence & security, agriculture, forestry, environment & conversation, climate change, natural resources, energy & infrastructure, health, and education.

Searching for shelters is one of ALCIS' most successful project, and seeks to map change in the movement of internally displaced people (IDP) camps across Western Afghanistan. By developing an analytical tool to assess satellite images Alcis and the Norwegian Refugee Council mapped and counted the number of tented communities developing in Afghanistan as a result of drought. ALCIS is also the only company in the UK to be chosen as a key deliverer of UN Covax Initiative.

1.3 OUR ANCILLARY SUBSECTOR

WITH OVER 90 SUPPORT ORGANISATIONS, 42% OF THE LOCAL SPACE SECTOR IS DEFINED AS ANCILLARY.

Support organisations are varied and include a large number of **consultancy services (69%)**, ranging from space, technology, environment and digital. **National support bodies and non-for-profit organisations make up 9%** of the overall subsectors, while **universities and education providers feature high, with 22%**.

Our region is home to UKSpace, Ordnance Survey, National Oceanographic Centre (NOC), Surrey Space Centre, Surrey 5G Innovation Centre, Chilbolton Observatory, Farnborough International Centre, to name a few.

Similarly, with the highest rate of education and knowledge creation in UK, the region is a talent factory, and complements other less knowledge-intensive clusters in the UK, whose academic offer is more constrained and limited. We are home to five world-leading universities with outstanding capabilities in space & satellite technologies, including University of Surrey, University of Southampton, and University of Portsmouth.

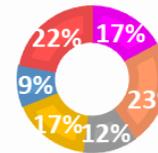
UK SPACE



UKspace is the trade association of the British space industry and has been its leading voice for over 30 years. Based at BASE Innovation Centre in Whitehill & Bordon, it promotes the interests of the space industry with the UK government, parliament, and national and international stakeholders. Representing a diverse membership, it works with its members to achieve the best business framework to promote growth, and drive change locally and nationally.

ANCILLARY SERVICES

- Space Consultancy
- Technology Consultancy
- Environmental Consultancy
- Engineering Consultancy
- National Support



ORDNANCE SURVEY

Based in Southampton, Ordnance Survey (OS) provides national mapping services for Great Britain and is a world-leading geospatial organisation.



Its location data and expertise has helped governments make smarter decisions, businesses gain valuable data insight, and everyone experience the world outside for over 225 years. In addition to maintaining OS Net, its highly accurate and resilient network of Global Navigation Satellite System (GNSS) base stations across Great Britain, it actively uses Earth Observation (EO) data to derive novel insights for our customers, to support the Public Sector Geospatial Agreement and drive internal efficiencies. OS also takes its geospatial and EO expertise internationally, working in over 40 countries for public and private sector customers.

One such example of this is where OS helped the United Arab Emirates monitor changes to their natural environment and more easily integrate change updates into a national geospatial infrastructure.

Dubai is a rapidly developing city, and this growth can sometimes impact the environment, natural resources, and native habitats. OS and Deimos Space UK worked with the Mohammed Bin Rashid Space Centre to automate the production of geospatial information from satellite EO data using machine learning algorithms. The project focussed on identifying and mapping palm trees and mangroves in Dubai. The team developed a prototype palm tree and mangrove feature identification algorithm for EO data using state-of-the-art deep learning techniques. This supported an interoperable data model to easily share data with other government departments to help inform decisions for environmental management. A strategy was also created so that new data and change updates were easily integrated into Dubai's Spatial Data Infrastructure and the wider Dubai geospatial sector.

The project was supported by the UK Space Agency and UK Department for Business, Energy and Industrial Strategy (BEIS) as part of the Gulf Science, Innovation and Knowledge Economy Programme.

1.4 CROSS-SECTOR ACTIVITY IN THE REGION

As part of UKSA Local Space Cluster Development Project, the hub organised a set of events to explore to what extent satellite applications could either enable or aid other key priority sectors within the region. We identified four growing industries clustered in the region and rich in potential: *Gaming & Immersive Technology, Animal Welfare Management, Clean Growth, and Marine & Maritime.*

All events were well-attended, with an average of 74% attendance, and peaks of 165 attendees. Because of their virtual nature, the cross-sector events were very accessible. Over the course of the project, the hub targeted over 600 businesses worldwide, not only from the space and satellite industry, but also from across the great value chain, as well as from adjacent sectors, like defence, security, aquaculture, farming, and many more. We attracted senior members of companies like CEOs and directors, as well as a number of PhD students and researchers, interested in exploring further the potential of combining different, yet compatible and complementary, industries.

Given the engagement generated by this set of cross-sector events, the hub is interested in organising follow-up targeted workshops to specifically deconstruct and address key outputs. Feeding into the hub's sustainability plan, it will also contribute to the shaping of a future Space strategy for the region. The recording of each cross-sector event is available for streaming on the LEP's YouTube Channel, as well as on the Hub's Website and LinkedIn Page (@em3space).

SATELLITE APPLICATIONS/ GAMING/ IMMERSIVE TECHNOLOGY – SPACE FOR ALL - HARNESSING THE POWER OF GEOSPATIAL DATA IN IMMERSIVE TECHNOLOGY AND GAMING DEVELOPMENT

Organised in collaboration with the **Knowledge Transfer Network (KTN)**, **Immerse UK**, and **EM3 Growth Hub**, the event took place in December 2020 and explored the overlaps between geospatial applications, immersive technology, and gaming. Part of [KTN Geospatial Insights initiative](#), it marked the beginning of the hub's direct involvement in UKSA Local Space Cluster Project.



Our region is not only home to a thriving space industry, but also to a significant world-recognised [Game Development cluster](#), with more than 110 video game development studios employing more than 1,800 creative technology professionals – 10% of the UK games industry workforce, generating

£3.4 billion per annum in GVA. To name a few, the region is home to Electronic Arts (EA), Supermassive Games, nDreams and many more. 34 years of industry history in the area has led to a strong base of supportive institutions and ecosystem elements, from specialised service companies and networking events to co-working spaces and knowledgeable local authorities. Based just 30 minutes from London, the region benefits from access to a further 12,500 creative technology professionals in the city. Recently the region has spawned successful SME's who are applying games technology to more traditional industries such as the automotive sector and space & satellite, leading the region to being designated as one of High Potential Opportunity by the Department for International Trade.

This event represented the first of its kind in bringing together those key sectors for the exploration of collaboration opportunities in greater detail. Despite the nicheness of the event and the reluctance of many companies to participate as rather innovative, the event was well-received and described as engaging and insightful.

LINE-UP OF PANELLISTS:

NATIONAL PANEL	REGIONAL PANEL
Geve	Mantle Labs
GeoARGames	Vector Suite
SpinView	Vision Engineering
Google	InSpace Missions
European Space Agency (Business Applications)	

KEY FINDINGS:

- There is still some degree of resistance from the gaming/immersive technology industry to collaborate with other high growth sectors. However, collaboration between these two industries in Surrey and Hampshire has demonstrated to generate world-changing opportunities.
- Gaming technology is an incredible pathway to expanding the use of geo-technology. Change can happen in both these industries if barriers are to be removed.
- Geospatial data can enable great things, and gaming tech is an example.
- Content-creation games platforms continue to offer huge opportunities for local businesses and can be combined to satellite applications.
- The combination of these two sectors can generate a resilient economy.
- Software skills developed within the gaming industry are transferable and can be used within the space industry too.

SATELLITE APPLICATIONS FOR ANIMAL WELFARE MANAGEMENT



Organised in partnership with **University of Surrey** with the support of **Oxford Innovation** and the **South Coast Centre of Excellence in Satellite Applications**, the event explored to what extent animal welfare management can be eased and enabled by satellite applications. This event was the first of its kind in bringing together these key sectors to showcase some of their latest developments and to explore opportunities for collaboration.

Space technology is rapidly transforming the welfare of animals. The location, behaviour and health of household pets, farm animals and wildlife on land sea and air can today all be tagged, tracked, and monitored remotely using a combination of sensors, satellite positioning and ubiquitous communications networks. In recent years, the cost of deploying small, so-called 'new-space' satellites has plummeted, while the availability of very high-quality, often free-to-access, EO images and data continues to accelerate. This provides new opportunities to gather and eventually automate sophisticated, near real-time data on the welfare of all living species and habitats from a planetary level down to an individual field and creature.

Apart from its vibrant space and satellite industry, the local region champions a growing Animal Health sector, with over 190 organisations, ranging from national agencies to international pharmaceutical corporations, and internationally-acclaimed research institutes. Surrey only, is home to University of Surrey School of Veterinary Medicine, a Veterinary Incubation Centre (vHive) in collaboration with Zoetis, the Pirbright Institute, along with a robust veterinary network of over 70 practices. Similarly, Hampshire is home to a number of equine centres, and international companies like Elanco, Eli Lilly, and Genus PLC. In July 2020, EM3 LEP was also awarded by the Department for International Trade a High Potential Opportunity for its Animal Health ecosystem which is world-leading.

According to a post-event survey launched by the Hub, there is a general interest in exploring further the cross-overs between these developing industries, whether through focussed workshops, continued community engagement to develop collaborative projects, knowledge sharing, awareness of the options/potential and accessibility.

LINE-UP OF PANELLISTS:

CONTEXT	CASE STUDIES
Earth-I	AgriEPI
Animal Plane Health Agency (APHA)	The Pirbright Institute

University of Surrey (Veterinary)	Lacuna Space Ltd
Mantle Labs	Alcis Holdings Ltd
KTN Livestock & Aquaculture	

KEY FINDINGS:

- Satellite Applications such as **EO and GPS tracking** can be optimal enablers of animal welfare management solutions.
- GPS Tracking can be used for **livestock monitoring and counting**.
- Due to ubiquitous coverage, **5G Development for animal welfare management** is a topic being progressively explored by companies as it provides live and immediate information.
- **Remote sensing can help assess soil moisture**, facilitating animal welfare-related decisions.
- Satellite applications can ensure the safety of the overall **food supply chain**.
- **Satellite Applications for human safety** is another area that needs investigation as too niche.
- **Transferability of skills and multi-disciplinarity of profiles** – life sciences can complement technical skills acquired in the space sector, and vice-versa.

SATELLITE APPLICATIONS/ CLEAN GROWTH – SATELLITE APPLICATIONS FOR CLEAN GROWTH

This cross-sector event was organised by EM3 LEP in collaboration with the **University of Surrey**, the **University of Portsmouth** (GreenTech South), the **South Coast Centre of Satellite Applications**, and **Oxford Innovation**.



Clean Growth is a key priority for the Hub and is at the heart of the [UK's Industrial Strategy](#). The intention is to grow UK national income while cutting greenhouse gas emissions and ensuring an affordable energy supply for all. This means establishing economic growth that is energy efficient, implementing sustainable practices and utilising renewable energy technologies.

The Space sector is a lynchpin of the UK's economy, serving many sectors including the Environment, Smart cities, Agriculture, and the Telecommunications sector. Satellite Applications and Clean Growth have a strong history of collaboration, with the UK's longstanding expertise and advancement in space-based EO being a key asset in supporting decision making in sustainable development.

The tight interlinkage between these two industries is mirrored in the breakdown of the local space ecosystem, with downstream applications for clean growth featuring high (p. 6). The local region has **7,169 Clean Growth/Low Carbon companies**, almost 10% of the entire UK low carbon and environmental goods and services sectors, generating £18.2bn worth of sales – most of which are satellite enabled.

LINE-UP OF PANELLISTS:

CONTEXT	CASE STUDIES
European Space Agency (Business Applications)	Geosphere
Surrey Centre for Environment and Sustainability	FlightForm
UK Space Agency	Alcis
	GHGSat
	Absolar

KEY FINDINGS:

CHALLENGE 1: ADAPTION AND CHALLENGE

- To monitoring **Air Quality and Carbon Emissions** in real time with wide access to data.
- Use of data to create digital twin to assess **Value of different interventions**.
- To manage deployment of assets/resources for **disaster management**.
- To study cities and capture **urban changes**.
- EO can be used for **construction resilience, water level monitoring and prediction**.

CHALLENGE 2: NATURE

- To monitor **habitat coverage and connectivity**.
- To monitor use of **natural environment by people and animals**.
- To monitor **natural capital**, temperature, water, wind, vegetation, ice melting, forest fire etc. Satellite data can also be used to study and predict earth movements, i.e., upwelling before earthquakes.
- For **coastal oceanography**, waves, and bathymetry; for the development of early warning systems for flooding, and the monitoring of ocean plastics.
- To monitor **rural land use** and provide ongoing measurement of carbon capture (evidence in trading of carbon credits).

CHALLENGE 3: ENERGY TRANSITIONS

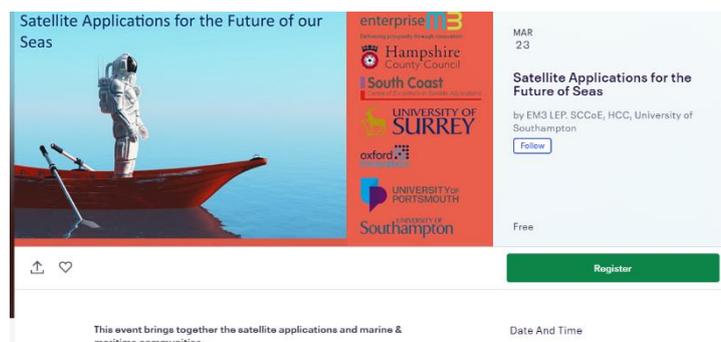
- To identify **sites for solar panels, and offshore wind farms**.
- To forecast short term solar and wind energy capture to enable storage planning.
- To retrieve real time data of **energy usage** and estimate **heat loss** from buildings.
- **Green fuel replacements** for satellite propulsion.
- To provide consumers with information about **emissions impact** of their supply chain.

CHALLENGE 4: CLEAN TRANSPORT

- To monitor **transport movement** to enable more efficient logistics management.
- To deploy autonomous electric vehicles/public transport.
- To identify sites for **EV charging stations**.
- To monitor real time **transport movement, emissions, and fuel spillage**.
- For disaster management as well as **urban challenges**.

SATELLITE APPLICATIONS / MARINE & MARITIME – SATELLITE APPLICATIONS FOR THE FUTURE OF THE SEAS

This cross-sector event was organised by EM3 LEP, **Hampshire County Council, South Coast Centre of Excellence in Satellite Applications, University of Surrey, Oxford Innovation** and supported by **University of Southampton** and **Knowledge Transfer Network**.



This event brought together the satellite applications and marine & maritime communities to showcase the latest developments and to explore opportunities for collaboration. The need for innovative and ambitious ideas across maritime industries has never been greater, while the space industry is becoming increasingly accessible with its wide-range of data products offering continual improvement in quality and availability.

As a leading maritime nation with a rich history of exploration and innovation in the sector, the sea is not only an important asset, but an environment where satellite and marine technology can converge to meet the needs of the 21st Century. Whether it is pioneering new ways to map the vast unknown of the unexplored sea floors surrounding the UK or helping to police illegal fishing, the increasing reliance on satellite technology at sea is clear. Indeed, [the UK Government's Maritime 2050 strategy](#) and the [Foresight Future of the Sea report](#) recognises the need to create a long-term innovation pipeline for UK businesses to capitalise on growing global opportunities and the Space sector can be at the forefront.

The Space sector has demonstrated to be a key enabler of a number of industries, including Environment, Smart Cities, Agriculture, and the Telecommunications sector. New space players, technologies and services have dramatically reduced barriers to entry. This includes several ‘mega-constellations’ providing services for IOT and broadband communications, continuous EO (incl. radar and infrared) and asset tracking. In addition, our ocean-reliant sectors are in transition with pioneering developments fast emerging in maritime business services, high-value manufacturing, autonomy and robotics, marine science, and hydrographic surveying and mapping – there will be an increasing reliance on satellite technology at sea and a growing market for a data-sharing infrastructure across sectors.

Linking the existing local space sector expertise to the maritime sector demonstrated to undoubtedly unlock new cross-sector potential through the future of shipping, smart ports, communication, navigation, and exploration.

LINE-UP OF PANELLISTS

CONTEXT	CASE STUDIES
Southampton Marine & Maritime Institute	Paromat
Maritime and Coastguard Agency	National Oceanographic Centre (NOC)
Theyr Ltd	TP Group
Dendrityca	ClutchSpace
Ocean Infinity	ICEYE
UK Hydrography Office (UKHO)	

KEY FINDINGS:

- Satellite imagery can help **revolutionising** the way we operate offshore.
- EO can be used to **predict and prevent industrial disasters** i.e., oil spillages.
- EO can be help mapping the seabed.
- Satellite imagery can help **reduce environmental impact, including minimisation of CO₂ emissions**, of underwater noise, unnecessary air travel and transit. There is an urgency for decarbonisation within the shipping industry (90% of world trade carriage).
- Satellite enabled technologies can also help **reducing human risk exposure**.
- **5G Development** can be very beneficial too and can complement services enabled by satellite technologies.
- The **recruitment of young graduates** is valuable as it challenges the norm, bringing fresh perspectives and views, new techniques, and ultimately diversity.

2. OUR SKILLS' OFFER

A mixed urban and rural economy cutting across Surrey and Hampshire, our **region is a £55 billion economy with more than 760,500 jobs and a workforce of approximately 804,500 people**. It has the fourth highest productivity nationally, and is second for employment, with **81.8 per cent of working age** people in work – compared to UK average of 75.6 per cent; it has the fifth highest share of workers with higher education, and it is ranked third for gross disposable income per head (EM3 LIS, 2020).

According to a study commissioned by the LEP in 2020 (EMSI), **12% of employment is in Science, Professional and Technical activities** (compared to 9% in UK) and **7% in Information and Communication** (4% in UK). Innovative businesses in sub-sectors like Space and Satellite, Digital, Games & Immersive Technology and Telecommunications are drawn to the area by the **knowledge-based economy, skilled labour force**, proximity to London, and excellence in exporting goods and services (EM3 LIS, 2019-20).

Transferability of skills, upskilling and re-skilling are priorities of the hub, as well as the LEP and local councils, whose attempt is to provide these services holistically; collaborating with a number of partners and education providers across the whole region, the hub aims to identify and address skills needs in key high growth industries and emerging sectors, exploring opportunities for resilience. This commitment aligns with UKSA's most recent Skills Survey (2021) which highlights the important of transferable skills within the space and satellite industry. "Over two thirds of businesses are in fact looking to recruit staff with **specialised space** (average 71%) or **transferable skills (83%)**". "The demand for transferable skills is consistently higher than demand for space specialist skills" (UKSA, 2021).

Transferable skills do not only include space-specific skills i.e., engineering, physics, but also comprise interpersonal skills, such as project management (67%), teamwork (48%), leadership, business planning, and client management (43%). Similarly, communication skills, including languages, rate high (84% of jobs) (UKSA, 2021). These findings are not surprising to the hub. As endorsed by the cross-sector events held, and as supported by recent research, within the local space sector there is a growing employer demand for people with diverse backgrounds, including humanities or social sciences. Although not space-specialist, they are equipped with flexibility, and a higher level of critical thinking which are equally relevant within the workplace. It is the case of graduates in Geography, Security studies, International Relations, and International Development (EM3 LIS, 2019-2020).

Finally, according to UK Space Agency (2021), "40% of companies said there were **gaps in current training provision**, primarily at the graduate/post-graduate level. As with recruitment, the range of skills in demand is very broad, but groups into three main areas: space-specific skills (e.g., GNSS, orbital mechanics, space systems), generic technical skills (e.g., software, data-science, electronics), and generic management and commercial skills (e.g., commercial awareness, mid-level

management, negotiation).” On this note, more than ever, the LEP, local authorities and education providers are strongly collaborating through a number of activities and programs, to ensure the local community is trained and skilled, fit for a changing society and economy. The latter will be explored in the next chapter, where access to talent and support to recruitment will be addressed.

2.1 ACCESS TO TALENT AND RECRUITMENT

With education and knowledge creation higher than UK average, the region has the lowest proportion of residents with no qualifications nationally (4 in 10 have a degree), and one of the highest intensive-knowledge workforces nationally. The resident population is highly employable and has an outstanding quality of life.

ACADEMIC INSTITUTIONS:



With a talent pool of over 21,000 graduates yearly across a number of faculties, our region is home to five world-recognised academic institutions, and a number of further education colleges with bespoke accredited courses. The area is referred to as a talent factory, generating a pool with **multi-disciplinary profiles and skills, ranging from high-end engineering, design, computing & software development, humanities, and life sciences**. The latter is mirrored in the think-out-of-box approach and encompassing nature of the hub which seeks to promote cross-sector collaboration and cross-regional partnerships across all levels of activity.

UNIVERSITY OF SURREY, GUILDFORD

Bringing together world-leading expertise in satellite manufacturing and applications, as well as AI algorithms for practical and real-world applications, [University of Surrey](#) has been conducting pioneering research in high-end engineering, AI and machine perception for over 30 years.



With a network of over 300 researchers, an internationally-acclaimed Space Centre, a WHO-funded EO laboratory, a world-leading 5G/6G Innovation Centre, and a collaboration with NPL, University of Surrey stands out for generating the next generation of space experts. Surrey's Centre for Vision, Speech and Signal Processing (CVSSP) and Nature Inspired Computing and Engineering Group (NICE) form a core part of this network while it also draws on the University's expertise in law, politics, sociology, languages, health sciences, future communication, space technology, and environment and sustainability. University of Surrey is also at the heart of the local Animal Health cluster, with a renown Veterinary school, and an innovative Veterinary Incubation Centre (vHive) in collaboration with Zoetis.

University of Surrey boasts a long track experience of working with space businesses across the region and beyond. It is an active member of SETSquared Incubator, SPRINT, and FairSpace Hub.

UNIVERSITY OF SURREY: THE ACADEMIC OFFER

Space engineering:

- Advanced mission analysis
- Astrodynamics and propulsion
- Payload engineering
- On-board computing
- Space robotics
- Communications, radar and RF systems
- Remote sensing applications and instrumentations
- Orbit/altitude determination
- Nano/pico-satellite technologies
- Spacecraft structures
- Centre for environment and sustainability
- NPL Hub

- [Surrey Space Centre](#): world-leading Centre of Excellence in Space Engineering for small, cost effective space missions; it offers dedicated testing facilities, including a Ground Station, a set of Clean Rooms, as well a number of laboratories for vacuum and thermal testing.
- [FAIRSpace Hub](#): The Future AI and Robotics for Space (FAIR-SPACE) Hub brings together leading experts from academia, industry, and governments, and aims at pushing the boundary of AI robotics for future space utilization and exploration.
- [Surrey Centre for Environment & Sustainability](#): Acclaimed centre of excellence, with a WHO-funded EO lab for pollution monitoring and a partnership with NPL.
- [Surrey 5G Innovation Centre](#): First ever 5G Testbed in the UK, it brings together leading academics and key industry partners with the same vision, to help define and develop the 5G infrastructure that will underpin the way we communicate, work, and live our everyday lives in the nearer future.
- [The Veterinary Health Innovation Engine \(vHIVE\)](#): vHive is an innovation hub supported by a co-investment of £8.5 million in resources, dedicated to the development and adoption of new digital technologies in animal health. Situated within the University of Surrey's School of Veterinary Medicine, vHive gathers both academic and commercial experts engaged in carrying out new, complex endeavours on behalf of their partners who require academically verified output and bespoke business development.

UNIVERSITY OF SOUTHAMPTON, SOUTHAMPTON

Within the global top 100 Universities, [University of Southampton](#) distinguishes itself for its 40 academic schools, cutting-edge research facilities, and specialist business support. It is a superlative research-intensive Russell Group University, with over 96% of its research being assessed as world-leading and internationally excellent.

The university boasts world-class researchers working in various elements of space, including clean debris and earth observation, as well as AI, machine learning, game theory, evolutionary algorithms and many more. University of Southampton is also renowned for its Centre of Excellence in Cybersecurity which focuses on the security of the cyber space



from all digital and human threats. The centre was awarded by GCHQ as part of the Government's national cyber security strategy.

University of Southampton is a member of both SETSquared, and SPRINT Networks.

UNIVERSITY OF SOUTHAMPTON: THE ACADEMIC OFFER

- Space Systems Engineering 2020
- Robotics & Autonomous systems
- Manufacturing materials of the future
- Space/satellite technology
- Transformative digital technology (5G/IoT)
- Remote sensing Research Group

- [Research Groups in EO/remote sensing](#): Staff offer a range of expert services in the application of EO and geographical information system (GIS) tools to a range of environmental and human problems – including spatial, space-time analysis, spatial dynamic modelling, and data assimilation. The group also offers expertise in the calibration and validation of EO data. Application areas include landscape change, landscape ecology, vegetation phenology, burned area mapping, epidemiology, climate change impacts, sustainability, and human resilience.

- [Southampton Data Science Academy](#): Part of the Web Science Institute at the University of Southampton, the Academy was established to bridge the data skills gap in today's increasingly data-driven world, through world-class training and education. The Academy has now trained, assessed, and certified more than 1,000 students across insurance, actuarial, legal, financial services professional, and in the public sector.
- [Centre of excellence in Cybersecurity](#): Opened in 2012, the centre focuses on the security of the cyber space from all digital and human threats. The Centre of Excellence status was awarded by GCHQ as part of the Government's national cyber security strategy. This recognition is made in partnership with Research Council UK's Global Uncertainties Programme, and the Department for Business, Innovation and Skills, The Centre is one of only eight in the UK.

ROYAL HOLLOWAY UNIVERSITY OF LONDON, EGHAM

Ranked within the top 25 universities in the UK for research, rated 'world-leading' or 'internationally excellent', [Royal Holloway University of London](#) offers a range of targeted courses and research groups.

Royal Holloway's Department of Computer Science champions world-leading researchers in algorithms and complexity, artificial intelligence, bioinformatics, global computing, machine learning, and software language engineering.

Apart from being a leader in Cybersecurity with an International Cybersecurity Centre of Excellence and a doctoral training in cybersecurity, the university is also home to a Centre for Algorithms and Applications, a Smart Card and IoT Security Centre, a System and a Software Security Lab. Royal Holloway University also hosts the Storyfutures Academy, UK's National Centre for Immersive Storytelling.



ROYAL HOLLOWAY UNIVERSITY OF LONDON: THE ACADEMIC OFFER

- Electric engineering
- Computer systems engineering
- Software engineering
- Computer science and mathematics
- Computer science (Artificial Intelligence)
- Cybersecurity

-
- [Cybersecurity Data Centre](#): Alongside the university's Cyber-Physical Engineering Collaboration Space (CPECS), Royal Holloway's Cybersecurity Data Centre aims to directly engage and support industrial innovation, along with meeting rooms, training areas, and incubation space for start-up companies. The new centre aims to deliver incubation for a minimum of 25 businesses and 500 new jobs over five years, as well as lead to an increase in GVA of £300m to £500m over a ten-year period.
 - [Storyfutures Academy](#): The UK's National Centre for Immersive Storytelling, it is run by the National Film and Television School and Royal Holloway University of London. Funded as part of UK Research and Innovation's Audience of the Future industrial strategy challenge fund, the Academy develops cutting-edge creative training and research programmes to ensure the UK creative workforce is the most skilled in the world in the use of VR, AR and MR.

UNIVERSITY OF PORTSMOUTH, PORTSMOUTH



Ranked in the top 25 universities in the UK and with an 88% student satisfaction rate, the University of Portsmouth stands out for innovation and research.

Not only the University is home to the South Coast Centre of Excellence in Satellite Applications, but it also hosts an Institute of Cosmology and Gravitation Studies. The University also stands out for an excellent faculty of creative arts, with bespoke courses in graphics, design, animation, and architecture. The University has recently launched a

Centre of Excellence in XR Technologies which will be operations from next year. Furthermore, the university offers computational intelligence research studies, including computational paradigms for artificial intelligence, exploring to what extent they can be applied to real-world problems.

The University of Portsmouth is also part of HORIZONS 5G Network.

UNIVERSITY OF PORTSMOUTH: THE ACADEMIC OFFER

- Data science and analytics
 - Software engineering
 - Geographical Information Systems (GIS)
 - Marine Environmental studies
 - Coastal and Marine resource management
 - Crisis and disaster management
 - Centre of Earth and environmental sciences
 - Engineering: electronic, industrial, innovation
 - Creative studies: animation, VR/AR Technologies
 - Innovation Centre (SCCoE)
-
- [Institute of Cosmology and Gravitation](#): The ICG is an international centre of research excellence in cosmology, gravitation, and astrophysics. It seeks to understand the physics of the Universe and inspire the next generation of scientists through education and training in mathematics and data science. Research ranges from Galaxy formation to observational astronomy, theoretical cosmology, and gravitational waves.
 - [Quantum Science and Technology Hub](#): With the advent of the second quantum revolution and an increasing global demand for faster computing power, more secure communication protocols, and high-precision metrological schemes for use in medical, environmental, and engineering settings, the University of Portsmouth has created this hub to explore Quantum Science and Technology Hub (QSTH). The QSTH connects the University's core quantum science and technology staff with experts in related departments across the University and with external collaborators worldwide.
 - [South Coast Centre of Excellence in Satellite Applications \(SCCoE\)](#): Supported by a large consortium of academic, industrial, government and third-sector partners, the mission of the SCCoE is to promote the continued exploitation of satellite data and technology in order to allow the South Coast region to gain a competitive advantage in a global market. The centre is especially keen to embed and grow satellite applications in Transport & Logistics, Autonomous Systems, and Offshore Assets while utilising cutting-edge technological developments in Artificial Intelligence, Earth Observation & Navigation, and Communications. The SCCoE also hosts the Satellite Applications Catapult, and ESA Regional Ambassador for the Southeast.
 - [ASTA Technology](#): Sitting within University of Portsmouth, ASTA Technology offers electronic assembly and inspection certification to ensure that space manufacturing and quality assurance personnel meet the international standards for mission-critical space applications.

ASTA Technology is the sole provider of accredited European Space Agency (ESA) Training in the UK.

- [Centre for creative and immersive extended reality \(CCIXR\)](#): The Centre for Creative and Immersive Extended Reality (CCIXR) is the UK's first integrated facility to support innovation in the creative and digital technologies of virtual, augmented, and extended realities. CCIXR will deliver immersive and creative extended reality facilities to enable, support, and grow the significant Digital Creative Industries sector. Through innovation and the application of XR technology, CCIXR will support economic growth and enhanced productivity in a variety of sectors locally, nationally, and globally. The centre will also enable students in the Faculty of Creative and Cultural Industries to explore next-generation XR facilities, and to discover how the immersive pipeline works by helping make virtual and immersive worlds come to life, with an enormous range of applications.
- [The Horizon 5G Network](#): The Horizons 5G network was formed to ensure that air and space-borne data capability and connectivity are part of future networks. The network is a collaborative membership organisation with a physical hub at the University of Portsmouth, with links in place to other trial and testbed sites across the country. Other members of the network include AIRBUS, BT, Methera, RHEA, Avanti, and CGI.

UNIVERSITY OF CREATIVE ARTS (UCA), FARNHAM



Providing creative education for 160 years, [UCA Farnham](#) is the 2nd largest provider of creative education in Europe. It provides pre-degree, undergraduate, and postgraduate education to the next generation of creatives. Its Business School for the Creative Industries is the first of its kind in the UK.

Oscar-winning film makers and animators, world-renowned fashion designers, television presenters and Turner-Prize nominees are just some of UCA's high-profile graduates who have enriched the world with their creative talents. Subject areas include Gaming & Animation, Architecture & Interior Design, Photography, Media & Journalism.

SOLENT UNIVERSITY, SOUTHAMPTON

[Solent University](#) offers expertise and experiences you could not get anywhere else, especially within the context of Marine and Maritime.

At the heart of Southampton, it offers a broad range of facilities, including a 3D Modelling Lab, Advanced Composites & Advanced Manufacturing Labs, CISCO networking labs, and a Solent Maritime Simulation Centre.



SOLENT UNIVERSITY: THE ACADEMIC OFFER

- Digital technology solutions
 - Software engineering
 - Future transport engineering
 - Marine operations
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- [Solent Maritime Simulation Centre](#): the UK's largest ship and port simulation centre, the centre delivers the best in maritime training. The centre offers specialist training for ship's officers, harbourmasters, pilots, port superintendents and a range of other maritime professionals. The centre was built with the latest in Wärtsilä technology and everything is networked for joint exercises.
 - [CISCO Networking Laboratory](#): A high-tech computer networking lab, the facility is a training partner with EC-Council to provide Certified Ethical Hacker (CEH) qualification. The lab machines are equipped with a multitude of academic and commercial software to design, simulate, test, monitor and manage computer networks, as well as to learn ethical hacking, virtualisation, and software defined networks. In collaboration with Westermo, the centre also provides training on the Westermo Networking equipment, designed specifically for extreme weather conditions.

UNIVERSITY OF WINCHESTER



With an ambitious strategy, a growing reputation for research excellence and 82 % of submitted research recognised internationally, the [University of Winchester](#) is passionate about providing an outstanding, personalised experience for its students and partners - meeting their needs and the needs of the economy and society at large through high-quality teaching and research. The University has recently promised to continue investing in widening participation, including a £2.9m in non-repayable fellowships, bursaries, scholarships, and prizes to support students.

Ultimately, University of Winchester builds on strong foundations and is determined to flourish through a continuous drive for excellence. Subject areas include Arts, Business & Law, Digital Technologies, Health & Wellbeing, Humanities & Social Sciences.

FURTHER EDUCATION (FE) COLLEGES

Farnborough College of Technology:

Farnborough College of Technology is based at our campus in Farnborough, Hampshire. It has a warm and friendly atmosphere and is where the majority of our courses are delivered. It is also home to its University Centre Farnborough

higher education provision. we are known for our work-focused qualifications, dynamic training facilities, and industry-experienced teachers. It offers a range of courses for both School Leavers and Adults, including A Levels, Apprenticeships, BTECs, Degrees and Higher Education, Part-time and Professional Courses, Technical and Vocational Courses, T Levels.



**Farnborough College
of Technology**

University Centre Farnborough: Based at Farnborough College of Technology, University Centre Farnborough offers a range of higher education courses and degrees awarded by the prestigious University of Surrey. This includes a number of accelerated degrees, which allow students to gain a full degree in just two-years. The University Centre has its own dedicated building, facilities, and study spaces. Compared to traditional universities, University Centre Farnborough is known for the high level of support it can offer to students, thanks to its close-knit campus and classroom-based lectures.

Aerospace Innovation Centre (ARIC): Being developed in partnership with Enterprise M3 LEP, Hampshire County Council, Rushmoor Borough Council and Farnborough Aerospace Consortium, ARIC is set to become an iconic aerospace gateway, embodying, and celebrating Farnborough's

aviation history. The College and its partners are also collaborating with local aerospace companies, including Airbus, Gulfstream, TAG and 2Excel.

Basingstoke College of Technology:

Compared to other colleges focusing on classroom-based learning, BCoT distinguishes itself for preferring a more ‘active’ learning approach. Its courses combine academic study alongside practical application, ensuring students acquire a broad range of practical skills, and learn to implement them accordingly. BCoT works with a wide range of local and national employers, including leading brands such as Toni&Guy, Mercedes-Benz and Steiner.



The college is also committed to the progression of its students and has set up partnership agreements with universities to benefit BCoT students. The agreement gives Level 3 students a reduction in the UCAS points needed for entry onto a selection of their degree courses. Partner universities include University of Reading, University of Portsmouth, and UCA University for Creative Arts.

Future Skills Centre (FSC), Bordon: Opened in September 2017 as part of BCoT, the Future Skills Centre in Bordon is a £3.8million facility offering a wide range of specialist construction courses, designed to meet the needs of employers in the construction industry.

HSDC Alton College of Technology, Alton

With an excellent reputation, HSDC Alton provides an inspiring and outstanding bridge between school and Higher Education or employment. Exceeding the national average in qualifications, HSDC Alton is an innovative college, grounded in academic knowledge, open-minded and further-reaching.



Alton College was designed to ensure students maximise their potential and to get you ready to apply to competitive courses at university, including at The Russell Group and Oxbridge Universities. As well as going on to Higher Education, its students enter a wide and exciting range of careers and Apprenticeships in all sorts of fields – including Creative Industries, Health & Social Sciences, Technology & Engineering.

Sparsholt College, Sparsholt

Nestled in the heart of the Hampshire countryside, Sparsholt College is a 450-acre campus, with a range of industry standard facilities and state-of-the-art equipment to provide its students with the best experience and practical skills needed for heading into their chosen sector. Sparsholt

College stands out, for offering courses in Agriculture, Animal, Zoo and Wildlife Management, Conservation and Environment, Equine Studies, and Motor Vehicle Engineering. Key facilities on campus are an Equine Centre, and an Aquatic Research and Conservation Centre (ARCC).



University Centre Sparsholt

A partnership between the University of Portsmouth, and Sparsholt College, University Centre Sparsholt was created in December 2016. The University Centre offers degrees in Agriculture, Animal Science and Biology, Equestrian Science, Aquaculture, Veterinary Nursing, and Wildlife Ecology and Conservation.

Brooklands College, Weybridge

Brooklands College is a Further Education college based on two campuses, one in Weybridge, Surrey and the other in Ashford, Middlesex. Opened in 1951, and one of Surrey's largest providers of vocational training and further and higher education, Brooklands College offers a diverse range of courses, ranging from Applied Science, Engineering, Construction, and Health & Social Sciences.

The college also provides a good range of programmes for adults and Higher Education provision in partnership with Oxford Brooks University and Kingston University.



Activate Learning, Guildford College

The largest further and higher education college in the region, Guildford College offers over 100 courses, and qualifications ranging from foundation level to degree level. The centre has industry-standard resources and facilities, including hairdressing and beauty salons, a TV studio, cabin crew room, kitchens, and a restaurant.



2.2 SUPPORT TO RECRUITMENT

The employment rate in the region is 82%, highest among LEPs and well above the UK employment rate of 75%. Over the past decade the share of working aged residents with an NVQ4 or above increased by 11.5%, exceeding the national increase of 9.9% (EM3 LIS, 2019-20). The hub is committed in supporting businesses and organisations accessing the best talent pool and human resources.

This is particularly relevant within the space & satellite sector, as demonstrated by the recent Space Skills Report published by UK Space Agency (2021). According to the report, all space businesses are struggling to recruit. “The main causes for these difficulties are lack of experience (88%) and lack of specialist skills (73%). Other causes are Brexit (61%), competition from other businesses (50%), and difficulty getting people to relocate (49%)” (UKSA, 2021).

The latter has been exacerbated by current circumstances. The impact of Covid-19 has posed a further challenge to recruitment across all sectors of activity. As assessed by the LEP during the business intelligence exercise undertaken since the outbreak of the pandemic, particularly space manufacturing was severely hit. Although the local downstream sector proved to be resilient and expanded positively, access to the supply chain and to manufacturing facilities was compromised by the travel bans and national restrictions, leading to decreased productivity, increasing redundancies, and a halt in recruitment. Furthermore, with the advent of a post-Brexit era, recruitment and access to talent has become a very debated topic, especially within the space sector, where a large sect of employees are non-UK citizens – as agreed by UK Space Agency (2021). This is why the hub has made skills and support to recruitment a priority and is thereafter committed in supporting and facilitating access to the local talent pool.

- EM3 LEP can provide access to labour and salary information to help shape and inform the recruitment of employees into the business. As set in EM3 latest Skills Strategy (2021), one of the LEP’s key priorities is to use economic data to build business resilience, addressing the skill gap, and matching skills supply to employer demand. By collaborating with partners, the LEP can also provide bespoke advice on apprenticeships, information on the skills grants and incentives and link you with the most appropriate providers. Through our communication channels, and those of Business Hampshire and Invest Surrey we can help raise the profile of the company to support your brand awareness activities and promote vacancies and opportunities where appropriate.
- EM3 LEP also has strong relationships with the region’s universities, many of whom have a talent service offering student/graduate placements and free jobs boards, where companies can advertise their vacancies. The LEP and the education authorities Hampshire County Council and Surrey County Council can also facilitate engagement with schools and further education colleges.

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- **EM3 Apprenticeship and Skills Hub**: It will provide an impartial service to support SMEs and other employers to identify and source apprenticeships at all levels to help them develop their workforce to improve productivity and reduce skills gaps. Right now, the Hub is happy to hear from any businesses in the EM3 area with particular skills challenges.
 - **EM3 Job Fuse Scheme** matches employers with vacancies to individuals across the region. The scheme was launched to help employers and individuals with employment challenges during the COVID-19 pandemic. This is a joint service created by Enterprise M3 LEP, Enterprise M3 Growth Hub, The Education Development Trust (a prime contractor for the National Careers Service) and the Department for Work and Pensions. The aim is it will help match skills and employment opportunities as new and replacement needs arise as a result of the COVID-19 pandemic
 - **The Hampshire and Skills Participation Service**, part of Hampshire County Council (HCC), provides a comprehensive support package around traineeships, apprenticeships, and supported internships. The programmes are delivered by a team of experienced tutors and pastoral staff, and learners are supported throughout. Each individual has their learning needs assessed and is supported with English, maths, ICT and employability skills as appropriate.
 - The **Transfer to Transform offer** designed to provide financial support to supply chain and smaller businesses based in Hampshire, by accessing underspent levy money. Businesses can transfer up to 25% of unspent levy per annum which is then used to support SMEs in the region.
 - Hampshire Council Council's **Employment and Skills Hub** also works with businesses to provide work-based opportunities for young people on a range of schemes such as the traineeship programme for 16-24-year-olds. By offering a work placement and the opportunity to achieve qualifications, employers receive a £1000 bonus for each trainee.
 - The Universities in Hampshire and Surrey also have a comprehensive business support offer, including consultancy projects for master and PhD students, graduate placements, degree apprenticeships, free job boards for employers, knowledge transfer partnerships and knowledge transfer networks. Both the LEP and County Councils can facilitate engagement with universities to help identify opportunities and upskilling initiatives, as well as links with the relevant schools and colleges in the region.

3. ACCESS TO RESEARCH & DEVELOPMENT (R&D)

According to a recent analysis carried out by the LEP as part of its most recent Local Industrial Strategy (2020), **80% of the overall spending is used by local businesses for research & development.** The hub is working with partners to incentivise collaborative working among local education providers, businesses, and support networks – particularly through initiatives, such as business forums – i.e., Space Hub Business Delivery Groups, EM3 Clean Growth Forum –, Skills Advisory Panels (SAP), and cross-sector workshops.

The local region is a powerhouse of business-led R&D, innovation, and commercialisation with plans to unlock even more value. In principle, this makes the economy more resilient, adaptable, and capable of diversification from existing strengths. As aforementioned, business investment is the primary source of R&D (80% of total). This means that local area is likely to spend **1.8 times more on R&D than businesses in the UK**, with high-value innovation occurring in priority sectors such as Space and Digital Services.

Commercialisation of innovation is a stand-out strength of local businesses. The region attracts an average of **£13.5m of Innovate UK funding each year** (and £19.1m in 2018/19), supporting more than 1,200 projects in the region since 2003/04 (EM3 LIS, 2019-20).

Research has demonstrated that the region is the **5th highest area for commercialisation performance, high value innovation in space, digital services, materials, and manufacturing.**

R&D OPPORTUNITIES WITHIN THE LOCAL SPACE SECTOR:

- [EM3 LEP](#) & [Growth Hub](#) connect businesses with stakeholders. [EM3 Careers & Enterprise Company](#) links businesses with academia and colleges, ensuring [collaboration](#).



IDEAS

80% R&D spend from businesses

Business R&D spend **1.8x higher** than UK average

5th highest LEP for commercialisation performance

High-value innovation in **Space, Digital Services, Materials & Manufacturing**

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- A plethora of EM3 **corporates** provide R&D, like [IBM](#), [QinetiQ](#), [BAE Systems](#), [L3Harris](#), [Airbus](#), [Roke Manor Research](#), [KISPE](#).
 - The [SPRINT](#) programme, of which both University of Surrey and Southampton are pioneers, offer cheap solutions to businesses seeking quick R&D.
 - [Fair Space Hub](#) is the UK national centre of research excellence in space robotics and AI. Sitting at University of Surrey, it enables academia-industry partnerships.
 - The European Space Agency & Satellite Applications Catapult at the [South Coastal Centre of Excellence in Satellite Applications](#) at University of Portsmouth encourage industrial partnerships and innovation.
 - [Ordnance Survey](#) (OS) and [National Oceanographic Centre](#) (NOC) sit within the EM3 Region. Adopting E- enabled technologies, both contribute to the success and performance of EM3 Space Industry and clean growth strategy.
 - [Surrey 5G Innovation Centre](#) and [Basing View 5G Living Lab](#): respectively in Surrey and Hampshire, they exemplify EM3's efforts in developing and delivering 5G satellite-enabled network solutions.
 - EM3 hosts a £50m [Network Rail national training centre](#). Partnerships between satellite-enabled applications and rail services will contribute towards the development of greener transport solutions.
 - [The Pirbright Institute](#) – a world-leading centre of excellence in research and surveillance of viruses spreading from animals to humans. During the Covid-19 outbreak, government repeatedly questioned to what extent satellite data could aid viral monitoring and surveillance.
 - [The Veterinary Health Innovation Engine](#) (vHive) – an innovation hub supported by a co-investment of £8.5 million in resources dedicated to the development and adoption of new digital technologies in animal health. Situated at the University of Surrey's School of Veterinary Medicine, vHive is made up of both academic and commercial experts who have expertise necessary to carry out new, complex endeavours on behalf of their partners who require academically verified output and bespoke business development.
 - UK Space Agency champions the [SPIN program](#), a scheme intended for companies looking for cheap R&D, aiming to provide students with placements in industry, and a facilitated access to their career in space.

R&D can be delivered through national innovation calls. The [Defence and Security Accelerator](#) (DASA), UK Space Agency, [European Space Agency](#), [Innovate UK](#), the [Knowledge Transfer](#)

[Network](#) (KTN), and [the Department for Environment, Food and Rural Affairs](#) (DEFRA) launch competitions for businesses willing to innovate and commercialise new concept ideas.

4. BUSINESS SUPPORT

ENTERPRISE M3 GROWTH HUB

The operational arm of EM3 LEP, [EM3 Growth Hub](#) has been developed by businesses, for businesses. It is a business-led Local Enterprise Partnership hub working with private and public sector partners to realise the full growth potential of the area. To create sustainable impact and increase employment, it is critical to support businesses to become more productive, profitable and grow over the longer term. All businesses at any stage of their development can access and benefit from the Enterprise M3 Growth Hub's services, including an Information Bank, a Resource Network, and a Helpline.

EM3 CAREERS AND ENTERPRISE COMPANY (CEC)

Enterprise M3 LEP is delivering a programme of support and activity with the Careers Enterprise Company across the EM3 area. [EM3 Careers and Enterprise Company](#) exists to facilitate a world-class careers education, inspiring and preparing young people for the world of work.

[EM3 Enterprise Advisor Network](#) is working with businesses to ensure that skills are addressed as a significant factor in the growth of our economy, and that potential skills shortages and gaps do not become a barrier or have an impact on this growth. Further initiatives include careers shows, apprenticeship exhibitions, and STEM fairs.

CHAMBERS OF COMMERCE

The Chamber of Commerce Network exists to support and connect companies, bringing together firms to build new relationships, share best practices and foster new opportunities. Through practical on the ground support, they also help companies trade locally, nationally and globally. EM3 is home to [Hampshire Chamber of Commerce](#), and [Surrey Chambers](#).

SETSQUARED PARTNERSHIP

[SETsquared](#) is a unique enterprise partnership and a dynamic collaboration between the five-leading research-led UK universities of Bath, Bristol, Exeter, Southampton, and Surrey. Ranked as the Global No. 1 Business Incubator, the partnership provides a wide range of support programmes to help turn ideas into thriving businesses. Since launching in 2002, SETsquared has supported over 4,000 entrepreneurs, generating up to 10,900 jobs across the UK.

INNOVATE UK EDGE

A new bespoke support to help innovative businesses grow and scale up. It complements Innovate UK project funding with intensive, specialist-led support. Services offered by [Innovate UK EDGE](#) include innovation exploitation, analysis of new markets, and source funding.

OXFORD INNOVATION

As a high growth business itself, [Oxford Innovation](#) understands what innovators, start-ups, entrepreneurs, and emerging businesses are experiencing, supporting them in their journey of

growth. Oxford Innovation does not only offer incubation services, but it also connects over 1,000 businesses across the country. Since it was funded in 1959, Oxford Innovation has supported over 7,000 SMEs creating high value jobs, innovative products, and services, ultimately enhancing local economies.

4.1 SPACE SUPPORT NETWORKS

SATELLITE APPLICATIONS CATAPULT

[The Satellite Applications Catapult](#) is one of a network of UK technology and innovation companies which aim to drive economic growth through the commercialisation of research. Its aim is to support UK industry by accelerating the growth of satellite applications and to contribute to capturing a 10% share of the global space market predicted by 2030.

UK SPACE

[UKspace](#) is the trade association of the British space industry, representing and promoting space to government and other key stakeholders nationally and internationally. Together with ADS and TechUK, it represents all sizes of businesses from start-ups to major companies, acting as a leading voice for UK space community.

SPRINT – SPACE RESEARCH AND INNOVATION NETWORK FOR TECHNOLOGY

[SPRINT](#) provides unprecedented access to the expertise and facilities at top UK space universities to help businesses accelerate the development of their products and services through the commercial exploitation of space data and technologies. SPRINT is delivered by the University of Surrey, University of Southampton, University of Leicester, University of Edinburgh, and the Open University.

FAIRSPACE HUB

The [FAIR-SPACE Hub](#) is a UK national centre of research excellence in space robotics and AI Lead by the University of Surrey. The Hub was launched in November 2017 as part of UK government's £84m R&D funding on "robotics and AI for extreme environments" through the Industry Strategic Challenge Fund (ISCF).

DEFENCE AND SECURITY ACCELERATOR (DASA)

[The Defence and Security Accelerator \(DASA\)](#) is part of UK Government. Announced in the 2015 UK Strategic Defence and Security Review, DASA's mission is for the UK to gain strategic advantage through the innovative capabilities and technologies it has identified and supported, like aerospace, space, and satellites.

THE SCIENCE AND TECHNOLOGY FACILITY COUNCIL (STFC)

A branch of UK Research and Innovation (UKRI), [STFC](#) works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish. The latter includes supporting university-based research, providing access to world-leading large-scale facilities, as well as inspiring and involving youth excited about STEM learning.

KNOWLEDGE TRANSFER NETWORK (KTN)

With 200 staff across the UK, deep sector expertise, and over 44,000 organisations in its network, the [Knowledge Transfer Network \(KTN\)](#) collaborates to bring together innovation communities. It works in close partnership with Innovate UK and UKRI to support businesses in their innovation journey, including identifying strategic goals and innovation pathways, and deliver a rich annual portfolio of activities at regional, national, and global level. Apart from the space & satellite industry, KTN supports a large number of industries, including AgriFood, Marine & Maritime, Robotics & AI, Sensors, and Transport.

STEM AMBASSADOR HUB

Working with the largest cohort of STEM volunteers in Europe, the STEM Ambassador Hub works to inspire young people to pursue careers in STEM subjects and take advantage of the many opportunities available. The [STEM Ambassador Programme](#) was launched in 2008, first for Hampshire and the Isle of Wight and then for the Central South England Hub area (Hampshire, Berkshire, Oxfordshire, Buckinghamshire, and Hertfordshire). STEM NOW is also responsible for supporting and establishing STEM school networks throughout the South of England.

ESERO UK

[ESERO-UK](#) is the UK Space Education and Resource Office. It aims to use the context of space to open doors for young people by delivering engaging, world-class teaching in STEM subjects. Funded by ESA, the UK Space Agency, and STFC, ESERO-UK supports the teaching of STEM subjects in schools and colleges.

EUROPEAN SPACE AGENCY (ESA) BUSINESS APPLICATIONS PROGRAMME

The [ESA Business Applications programme](#) is a Europe wide initiative to support entrepreneurs in the development of commercial solutions using satellite applications and space technology. Project funding is available via an open call for downstream proposals with a mature business case and good market potential. The UK Regional Ambassador for the South East is based in the region to provide pre-submission support for companies and to help them access ESA funding.

5. LOCATION

Stretching from Staines-Upon-Tames and dissected by the M3, our region covers large parts of Hampshire and Surrey, touching the Solent.

Sitting on the outskirts of London (30 minutes from London Waterloo), it is a peri-urban polycentric economy, where high-value sectors meet, and innovation thrives. Because of its excellent strategic location, the region benefits from influences both from the city, and the neighbouring counties, acting as a corridor of advanced technologies.

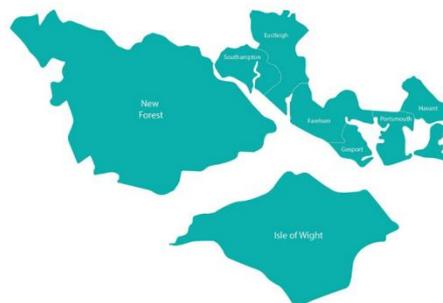


It is superbly well-connected, with direct access to the M27 and A3, as well as to major international ports and airports like Heathrow, Gatwick, Farnborough Private Airport, and Southampton Airport.

THE SOLENT

The Solent is anchored around the Isle of Wight, the two cities of Portsmouth and Southampton, the New Forest, the M27 corridor and the Solent waterway.

Representing a coastal economic area of approximately 600 square miles, it contains the New Forest National Park, is bordered by the South Downs National Park, and has a natural geography comprising three islands and two peninsulas.



The coastal location, business base, research assets and educational strengths positions make the Solent **UK's leading marine cluster**, at the heart of the UK's marine and maritime economy. Its **marine and maritime sector** is one of the largest and most productive sectors in the area, accounting for 20.5% of the local GVA, providing 40,000 jobs in the area, and supporting more than 3,000 businesses.

The Solent has recently been confirmed as one of eight new **UK freeports**.

FAWLEY WATERSIDE

Hampshire's version of Venice, Fawley Waterside aims to be an **Intelligent “Merchant City” of the future.**

Sitting on the former Fawley Power Station site, this new project has the ambition to create a place where people can live, work, and socialise, within a place of learning, of natural beauty, while leading sustainable lives, respecting the natural and human capital.



Fawley Waterside intends to be a place which promotes the use of green spaces, delivering a sustainable environment, promoting coastal renaissance, and eco-friendly economic growth.

A place of hope and belief, where jobs are created and there is an offer of affordable homes for our young people, through a combination of the newest technologies and intelligent solutions.

These include:

- A DISC Maritime & Space Incubator
- Water and energy consumption
- Promote health and well being
- Better use of transport and mobility
- Affordable homes for young people
- Ethical use of data to improve and shape lives
- A green and prosperous land, which uses natural capital for common good

5.1 BUSINESS PARKS

SURREY RESEARCH PARK

As a University of Surrey Enterprise, Surrey Research Park is a major centre of excellence in technology, science, health, and engineering for all sizes of business, ranging from start-ups to multinationals. With its outstanding enterprise ecosystem, it delivers added value, offering an incubation hub, R&D funding initiatives, recruitment and training support.

Businesses on the Research Park have developed strategic collaborations with the University's Centres of Excellence, such as Surrey 5G Innovation Centre, VHive, Surrey Advanced Technology Institute, and Surrey Business School. Areas of specialism of businesses based on the park include Space (small satellite innovations, space debris prevention and removal, space robotics and AI); Digital (digital gaming, X-Technology, AI, digital health, autonomous vehicles, IoT, cyber, Blockchain, 5G); and Medical and Health (Animal welfare, pharmaceuticals).

Renown companies include BAE Systems, Gold-I, Philips. Surrey Research Park is also home to Rocketdesk – a high quality workspace and home to innovative game development and world-leading tech firms.

[Rocketdesk](#) – Created to help foster and grow the creative tech community and development communities in Guildford, Rocketdesk is an exciting new home for start-ups, indie and freelance creative technology professionals in Surrey.

FARNBOROUGH CODY TECHNOLOGY PARK

Based in Farnborough, Cody Technology Park comprises approximately 1.3m sq ft of buildings on a site, totalling c.183 hectares, with a wide variety of accommodation ranging from high quality offices to laboratory and R&D space.

A unique business campus in the M3 area, the park's amenity offers, and technological bias is unrivalled by other business destinations. Cody Technology Park appeals both to national and international companies looking for a UK base, as demonstrated by high-growth Israeli company SatixFy. Other organisations based at Farnborough Cody Technology Park include QinetiQ, GE Oil & Gas, Intertek, Airbus Defence & Space, UK Cloud, and Ultra Electronics.

Farnborough Cody Park also hosts an Ark Data Centre, and it sits just a few steps away from Farnborough Private Airport, and Farnborough International Exhibition Centre.

SOUTHAMPTON SCIENCE PARK

Primarily formed to support early-stage technology businesses, Southampton Science Park accommodates over 100 science and technology businesses, employing over 1,000 talented

people. With an estimated economic impact of £550m per annum, the Science Park is a hotbed of innovation and R&D. In the last 15 years the Southampton Science Park has carried out 98 Innovate UK projects and attracted £20.3m in grant funding.

Linked to the University of Southampton, the SETsquared business incubator, and Wessex Academic Health Science Network, the Science Park aims to convert academic research and innovative business concepts into commercial success, providing the support necessary to bring innovations to the market.

Key companies based at the park include Tonic Analytics, Filament, NquiringMinds and Fresh Relevance.

5.2 ENTERPRISE ZONES

EM3 benefits from a multi-site Enterprise Zones, EZ³ incorporating three sites: Basing View, Basingstoke; Longcross Park, Chertsey; Techforest at Whitehill and Bordon, with differing selling points. Techforest addresses high-Tech Industries, such as new space technologies, digital, 5G. Longcross Park has a focus on big data management.



One of the key **benefits of moving or expanding on an Enterprise Zone** is the eligibility for up to 100% business rates relief for a period of five years. Businesses relocating before 31st March 2022 will be able to receive business rates discounts up to £275,000 over a period of five years (£55,000 per year). Businesses can also benefit from expert support to access the Government R&D Tax Credit scheme.

The three sites in EZ³ comprise a total area of about 40 hectares with new development and investment forecast to

create more than 10,000 jobs and attract over 130 new businesses to Enterprise M3 area. In addition, an estimated £115 million in revenues from business rates retention, generated over a 25-year period, will be retained, and reinvested to drive growth in the local economy.

If you are starting up or relocating to an enterprise zone you could qualify for business rates relief. The Local authority responsible for business rates on the Enterprise Zone site works out how the relief is applied. You may benefit from up to £55,000 a year over 5 years in discounts for business rates.

Businesses (rate payers) that enter or expand in a zone on or before 31 March 2022, i.e., if an eligible business enters the zone on 31 March 2022, it can receive the rates relief until 30 March 2027. To minimise displacement, this incentive is subject to businesses meeting certain criteria, which are set out later in this document. Companies may be eligible to benefit from the business rates relief from your local council to reduce your bill. The EM3 LEP and the local authorities covering the locations where the Enterprise Zone sites are situated retain 100% of Business Rate growth for a 25-year period and will utilise the net additional funding to invest further in the Enterprise Zone sites as well as the local areas.

BASING VIEW, BASINGSTOKE



A flourishing business ecosystem – a mix of large and small businesses working together, providing an attractive complement and ultimately an alternative to Reading and the M4 corridor.

Basing View delivers the best of both worlds: the advantages of a town centre location combined with ease of access. It is a mixed-use central business district, located just a short walk from the Basingstoke rail station and bus station, and just five minutes' drive from Junction 6 of the M3.

With a programme of continual renewal and improvement, Basing View is attracting new companies of all sizes, from start-ups to corporate headquarters. Recent newcomers include the Village Hotel, Eli Lilly and companies as Waitrose, John Lewis at home store and Network Rail. As the landowner, Basingstoke & Deane Borough Council committed to £2.3 million of investment for public realm infrastructure and appointed award-winning company Muse Developments as its development partner.



[Deskldodge](#) – Based at the heart of Basing View, just a 10 minutes' walk from Basingstoke Train Station, Deskldodge is the perfect space for start-ups, SMEs, freelancers, and larger companies looking to grow. With a thriving community and amazing businesses, it is an optimal coworking solution.

WHITEHILL & BORDON – TECH FOREST



A key complement for the establishment of a vibrant new settlement, incorporating wider regeneration and transformative place-making, accommodating high growth SMEs from across the region. With a vision to create a brand-new base for up-and-coming entrepreneurs in Hampshire, Tech Forest aims to be a central hub for businesses growth an excellence.

Managed by Oxford Innovation, BASE Bordon Innovation Centre boasts a total of 31 private offices with flexible rental terms, as well as dedicated desks and co-working space. Beyond office space,

members can also take advantage of comprehensive and insightful business support and incubation programs.

LONGCROSS PARK, CHERTSEY

An internationally significant business destination on the M3-M25 axis, Longcross Park is closer to Heathrow than the other Enterprise Zone sites in the EM3 sub-region.



With 22 hectares of development land, Longcross Park is creating a new settlement, with a good balance of commercial and residential services, improved public, and road transport, integrating harmoniously with the natural environment.

Part of the zone – approximately 10 acres – will be developed as a datacentre campus. This is being undertaken by Ark Data Centres and will create 385,000 sq feet of space to house data storage and processing facilities, due to go live from 2023.

LIVING IN OUR REGION

Home to 2.6% of UK population, our region is renowned for its outstanding natural beauty, and optimal quality of life. It does not only offer a relaxed countryside life, but, because of its proximity to London, it also offers quick and direct access to the capital. At the heart of the South East, the region is a corridor, connecting London with the maritime cities of Southampton and Portsmouth.

As a peri-urban polycentric area within London’s gravitational pull, the region is comprised of a network of longstanding small and medium sized settlements which are heavily constrained but provide much of the productive capacity in the area which needs to be used as effectively as possible. These include towns like Guildford, Woking, Basingstoke, and Winchester, and step-up towns like Aldershot, Andover, and Camberley.



Proximity to London creates opportunities and challenges. Opportunities, because of access to London’s complex economy and substantial infrastructure assets, particularly airports and rail networks. On the other hand, challenges are posed by the rural nature of the region, which represents almost 55% of the area.

With respect to natural capital, the regions are home to Surrey Hills Area of Outstanding Natural Beauty, Thames Basin Heaths, Hampshire Downs, and is just a step away from the New Forest, the Isle of Wight, and the Cotswolds.



EM3 SPACE HUB – THE CONSORTIUM

Since the launch of the UKSA Local Space Cluster Development, all the members of EM3 Space Hub have operated closely and efficiently, demonstrating a high level of collaborative and partnership work. The consortium commits in continuing doing so, with the ambition of affirming and developing the local ecosystem further, while providing support across a number of themes and activities underpinning space and satellite technologies.

ENTERPRISE M3 LEP

EM3 LEP is one of 38 Local Enterprise Partnerships (LEP) in England. Its job is to help deliver increased productivity, prosperity, and an improved quality of life for people living and working across the area. In line with its Revive and Renew Action Plan, and emerging Local Industrial Strategy, the LEP's vision for the future economy consists in boosting productivity and quality of life through the enhancement of high-value sectors such as Space & Satellite, Immersive Technology, Clean Growth, and Infrastructure. The LEP also offers services, such as EM3 Growth Hub and EM3 Careers and Enterprise Company (CEC). EM3 Growth Hub is the business support arm of the LEP and provides businesses with consulting services and scale-up support. EM3 CEC Team connects businesses with 115 schools and colleges across the region, with the objective to deliver top quality careers education in STEM subjects.

The LEP started focusing on space and on the development of a regional space ecosystem in September 2019 as the significant strategic value of the sector began to emerge. Since then, it has been engaging actively with partners across the space industry, running cyclical sector groups, including local authorities, national bodies, and leading businesses.

HAMPSHIRE COUNTY COUNCIL

Hampshire County Council's Economic Development Team has specific expertise and experience across a wide range of industry sectors, with an overall objective of supporting local economic growth and delivering inward investment and jobs to the region. HCC works closely with strategic

partners in the development of economic development strategies and identifies the best support for indigenous companies and new investors alike, supporting key priority sectors for Hampshire.

HCC also supports wider economic growth through the promotion and progressing of strategic development sites, delivering a pipeline of new employment space for existing business and facilitating economic growth through inward investment activity. HCC is the local highway authority and leads on investment in the road network - other than the motorways and main trunk roads (which is the responsibility of Highways England). HCC is also responsible for delivering education, health and social care, and environmental services.

UNIVERSITY OF SURREY

A world-leading university, University of Surrey stand out for its experience in space research, AI, high-end engineering, and animal health. Home to 16,828 students – out of which 6,230 non-UK –, it boasts a world-leading centre of excellence in space engineering with dedicated testing facilities and a research group in In-Space AI and robotics; as well an internationally-recognised Centre for environment and sustainability, with a WHO-funded EO Lab for pollution monitoring and a partnership with the National Physical Laboratory (NPL).

The university is also renown for an extensive focus on connectivity and 5G technologies, as demonstrated by Surrey 5G Innovation Centre on campus. The University is also an active member of the SPRINT University Partnership which supports the growth of SMEs in the UK through the commercial exploitation of space data and space technologies, as well as the SETsquared Business Incubator

UNIVERSITY OF SOUTHAMPTON

A Russell Group University with a rich history in all areas of space development and research. Its Aeronautics and Astronautics department formed in 1959 continues to be an academic world leader over 60 years later. Whether in EO, AI, Physics or Engineering, its research activity, and international collaborations across the space sector place the University of Southampton at the forefront of developments in the UK and worldwide. Its space capability is underpinned by education i.e., an integrated Master of Physics in Astrophysics with a year at Harvard and a two-week field trip at the space observatory in Tenerife for a space mission design project. Its Spacecraft Engineering degree with modules on the design and operation of spacecraft, was the first of its kind in the UK.

The University has world class space facilities and expertise including in propulsion, maritime engineering, machine Learning, sensing and space debris. It is part of the SPRINT consortium and is a SETsquared member.

OXFORD INNOVATION (OI)

Oxford Innovation Ltd operates a UK-wide network of innovation and incubation workspaces, including three in Hampshire supporting nearly 200 businesses. The sectors represented include

digital and creative services, marine, space and satellite, electronics, power systems and materials, all of which complement the growing number of space companies across its network.

Oxford Innovation sits within the BASE Bordon Centre at Whitehill and Bordon, along with the sector trade body UK Space, and two high profile satellite firms. OI has successfully delivered two Space Incubators for UKSA, drawing upon our expertise in building clusters and cross-sector networks to promote new market opportunities.

SOUTH COAST CENTRE OF EXCELLENCE IN SATELLITE APPLICATIONS

The South Coast Centre of Excellence in Satellite Applications (SCCoE), along with the South East ESA Business Applications Ambassador, is hosted by the University of Portsmouth. The centre is one of 3 regional centres located across the UK supported by the Satellite Applications Catapult with the aim of accelerating the development of satellite application solutions in the UK.

The University is also one of four UK Universities to host a Regional Ambassador for the ESA Business Applications Programme, the European Space Agency's primary network for engaging with downstream commercial space activities. The Ambassador is well-networked throughout the region with a large number of SMEs and larger organisations operating in the space-enabled-services sector.

The University of Portsmouth is renowned for hosting an Institute of Cosmology and Gravitation Studies, and for offering quantum communication and remote sensing expertise. It is also involved in the Greentech South Initiative, part of the Clean Growth UK network.

EM3 VISION FOR THE FUTURE: RECOMMENDATIONS

As outlined in the Abstract, the Hub's ultimate vision is to create a **vibrant community and leading space ecosystem, supported with a newly-developed space incubator, strong academia, and highly-skilled environment-focused workforce.**

To achieve this vision, the Hub has developed and listed a set of short-term and long-term objectives it is committed to follow once the project has terminated.

Short term objectives:

1. Direct involvement in the Satellite Application Catapult's Virtual Innovation Network.
2. The organisation of a workshop addressing sustainability of the cluster (April 2021).
3. A more granular mapping of the local ecosystem.
4. Collaboration with neighbouring LEPs and local authorities, to ensure the regional space offer for the Southeast is complete and thereafter convincing.

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5. Work with other Space Hubs across the UK to ensure complementarity and coherence. The latter should enable the hub to exchange ideas and best practices.
 6. Ensure coherence across the number of business support schemes and strains already available.
 7. Seeking DIT's support in further activities with relation to the local space industry, including participating in DIT's Space Export Academy.
 8. Involvement in the upcoming Space-Comm Expo (July 2021).
 9. Involvement in UKSA Space Conference 2021 (October 2021).

Long Term objectives:

1. Creating a space strategy for the region.
2. DISC Innovation Centre at Fawley Waterside
3. Tech Forest Innovation Centre at Whitehill & Bordon
4. Application towards and ESA BIC (Business Incubation Centre)