

OPERATIONALISING THE SPACE DOMAIN

WITH MORE THAN £6 BILLION EARMARKED FOR UK MILITARY SPACE-RELATED ACTIVITIES OVER THE COMING DECADE, AND WITH A NEWLY-FORMED JOINT SERVICES SPACE COMMAND TO OVERSEE THEM, TURNING WORDS INTO ACTION TOOK FRONT AND CENTRE STAGE AT THIS YEAR'S DEFENCE SPACE 2022 CONFERENCE

This was certainly the takeaway from the opening keynotes of this hybrid event, hosted over two days in mid-May at the Institution of Engineering & Technology in London and livestreamed to a global audience. First up was Air Vice-Marshal Harv Smyth, Director Space at the MoD Space Directorate, who explored what he regarded as the strategic imperative to 'reboot' our use of space-derived information in support of military operations.

Cohesive and ambitious

That imperative had, he said, been pursued over the past two years with an increasingly cohesive and ambitious programme. He pointed to the publication of the UK Defence Space Strategy in February of this year¹ and, a month later, the achievement of an initial operational capability for UK Space Command.² A contract for the first in a series of MINERVA Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) satellites had been placed and its launch scheduled for next year.

MINERVA will form the digital backbone of what, over the coming decade, will be a much larger £968m multi-satellite, multi-spectral global surveillance and intelligence system. In Smyth's words, it will deliver "Real-time intelligence at what we call the speed of relevance, exploiting AI and ML on-orbit, and pushing product directly to decision-makers at every level."

There were challenges aplenty, with space becoming an increasingly contested and complex domain, but Smyth emphasised that standing still was not an option. "We need to be on this fast-moving train or risk being left standing at the last-generation station."

Ticket to ride

Ensuring that Britain has a ticket to ride is its development of a sovereign satellite launch capability. And it was Jeremy Quin, Minister of State for Defence Procurement, who took to the stage to announce that Spaceport Cornwall will make its



Keynote speakers (From top left clockwise): Air Vice-Marshal Harv Smyth, Jeremy Quin MP, Volodymyr Usov, General James H Dickinson

debut launch this year by lofting a pair of Prometheus-2 satellites into Low Earth Orbit.

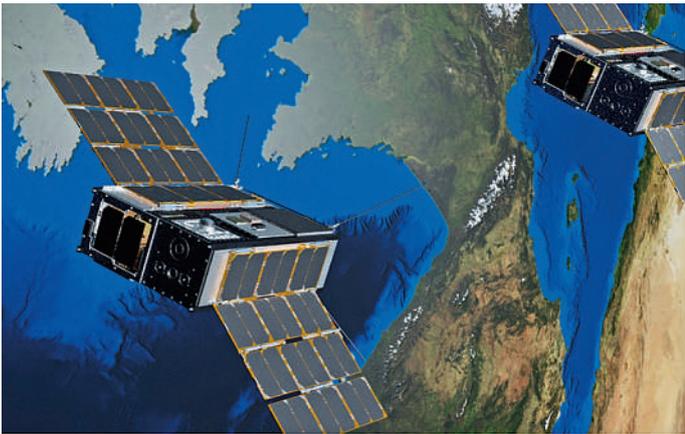
The shoebox-sized cubesats will provide a test platform for monitoring RF signals including GPS, and boast a sophisticated imaging capability. For Quin, their importance is far-reaching. "This mission is about examination, experimentation, exploration. There is so much we need to learn, and we know that Prometheus-2 will provide sparks to illuminate our future in space." It was, he added, "Another giant step forward in our surge to become a space power."

Designed by Airbus Defence and Space and built by In-Space Missions in Hampshire, Prometheus-2 is a collaboration between the UK Ministry of Defence and international partners, including the US National Reconnaissance Office (NRO).

The ongoing conflict in Ukraine was a recurring theme of the conference and, here, the minister paid tribute to the resilience and determination of the Ukrainian people, noting that their resolve has been assisted by the resilience and utility of space assets, both civil and military. And on this note, Quin acknowledged that



UK Space Command (RAF photo left) will soon have two new assets at its disposal. Below left: graphic of two Prometheus-2 CubeSats in Low Earth Orbit above Great Britain and the North Atlantic. Image: Dstl. Below: the MINERVA ISTAR payload will be based on SSTL's Carbonite+ platform. Image: SSTL



space is no longer the sole preserve of governments. "Today's space enterprise is about collaboration, bringing together the unique skills and intellectual heft of our supply base." In addressing some of the key issues arising from the conflict in Ukraine, his hope was that the conference would ultimately help shape our space future.

Working together

Anglo-US collaboration is always high on the agenda of such proceedings, and it was General James H Dickinson, Commander US Space Command, who came to the rostrum to highlight the importance of international partnerships. He was struck by the mission statement contained in the UK Defence Space Strategy – 'to make space safe, secure and sustainable for all generations' – and said this complemented US Space Command's stated objective of 'deterring conflict from beginning or extending into space.'

Yet the reality of space as an increasingly competitive, contested and congested environment had to be recognised, said Dickinson, along with the fact that our space systems are potential targets. He singled out China and Russia as posing the most immediate and serious threats, not least through their active anti-satellite (ASAT) and hypersonic missile programmes. It was, he said, the role of US Space Command to deter such threats and, if necessary, protect and defend its spaceborne assets.

Of equal importance, said Dickinson, was the collective ability of allied nations to develop best practices, adopt common standards and set out norms for responsible behaviour in space. And here, he applauded the UK's lead in pushing for a UN resolution calling for international norms, rules and principles for responsible behaviour in space. It was a move supported by US Vice-President Kamala Harris, along with a commitment not to conduct direct-ascent ASAT testing.

'Live' from Odesa

In the final presentation of the opening plenary, a warm welcome was accorded to Volodymyr Usov, former Chairman of the State Space Agency of Ukraine who, between air raid warnings, addressed the conference 'live' from Odesa.

Having thanked Ukraine's allies for their support in the current conflict, he went on to review the nation's long tradition of space-based activities, having delivered some 230 spacecraft and managed 150 successful launches for a score of countries over the past 20 years.

Even so, Usov admitted that Ukraine was ill-prepared for the invasion. It lacked its own remote sensing and communications satellite constellations; nor did it enjoy autonomous access to space. Moves have been made to reduce its reliance on just a few space-related

state enterprises, and the rapid roll-out of Elon Musk's Starlink service to replace or augment war-damaged communications infrastructure had demonstrated just what can be achieved by private enterprise.

High resolution optical imagery supplied by MAXAR and radar imagery from ICEYE have, said Usov, been a game-changer, both for all-weather intelligence-gathering and for documenting war crimes. Looking to the near future, he believed that Ukraine should follow Britain's lead by developing facilities for rapid vertical and horizontal satellite launches from its own territory. It was also aspiring to be a trusted global supplier of launch infrastructure and vehicles and, in this context, has recently agreed deals with Italy and the U.S for the Vega and Antares programmes respectively.

Further details of this event, organised by the Air & Space Power Association and supported by strategic industry partners Northrop Grumman, Viasat and Airbus, can be found at <https://airpower.org.uk/defence-space-2022/>.

1. <https://www.gov.uk/government/publications/defence-space-strategy-operation-alising-the-space-domain>
2. <https://www.gov.uk/government/news/uk-space-command-marks-one-year-anniversary#:~:text=We%20are%20all%20dependent%20on,for%20the%20benefit%20of%20all.>

GeoConnexion

Company Directory

Our Company Directory offers a full website page on which to profile your company's News and Videos showcasing your Products and Services. These can be categorised by vertical markets and applications for easy reader shortlisting. As a bonus, we can also feature your company on our homepage for added exposure. The Directory can be accessed easily and instantly online and on mobile.

Hexagon AB

Hexagon - Empowering an autonomous future

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous - ensuring a scalable, sustainable future.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.9bn EUR.

NEWSLINK VIDEO



The new generation of automated total stations - Meet the "five big ones" >

9th February 2021

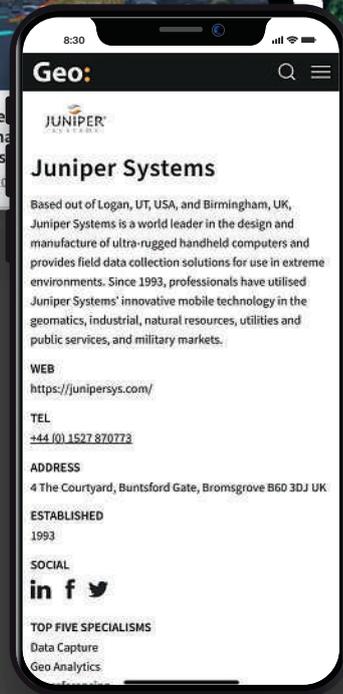
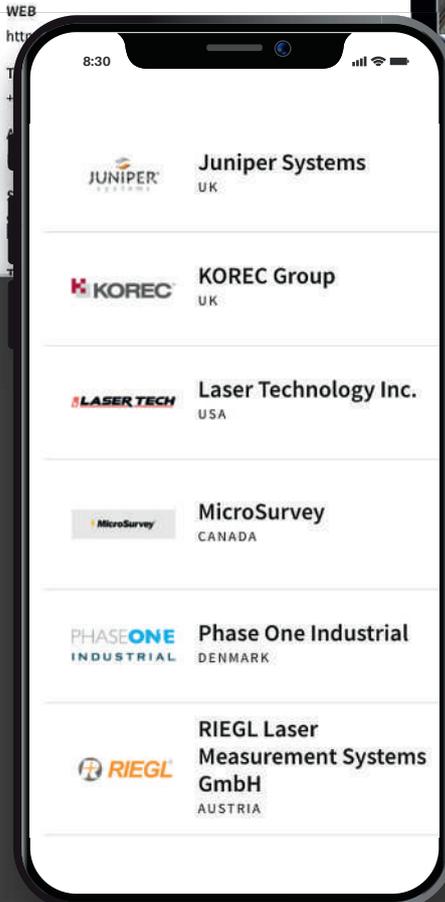


South Carolina Department of Transportation Selects Hexagon for Safety Management Solution >

29th December 2020

86

Editorial Topics



3,500

News, Articles, Videos, Events posting a year

+ 324

GeoSpatial Companies contribute

To book your entry, contact mickiknight@geoconnexion.com

COMPANY SHOWCASE

For only £300, be part of the twice yearly Supplier's Company Showcase

No Artwork needed!

Published in the Spring & Autumn Print and Online editions, plus Bonus Distributions at major events

Only
£300

It's an opportunity not to be missed!

To book your entry, email Micki NOW:
mickiknight@geoconnexion.com

COSTAIN 3




Improving people's lives with smart infrastructure solutions across the UK's energy, water and transportation infrastructures.

We help to safeguard the security, increase the capacity, improve customer service and drive efficiency in our clients' infrastructure programmes. We offer a broad range of innovative services across the whole life cycle of our clients' assets by integrating complex, delivery, consultancy, technology and asset optimisation services.

Our technology-enabled solutions create added value for clients through intelligent mobility, asset optimisation, and digital operations with expertise in GIS consultancy and implementation, data capture and integration (including LiDAR, UAVs and videography) and BIM.

Find us at the Esri UK AC in May 2019 for more information.



Costain
Costain House, Vanwall Business Park,
Maidenhead, Berkshire SL6 4UB
T: 01628 842444
E: gis.support@costain.com
www.costain.com

EOS POSITIONING 4



Eos Positioning Systems™ (Eos) believes high-accuracy field location should be simple, flexible, and affordable. This is why our team designed the world's first Bluetooth® GNSS receiver for any device or app.

The Arrow Series™ GNSS receivers were the first on the market to bring submetre and centimetre accuracy to iOS, Android, Windows, and Windows Mobile devices — using any field data-collection app. With real-time positioning and rugged design, you get instant accuracy and metadata under nearly any field condition, without any need for post processing. Receivers such as the Arrow 100 and Arrow Gold utilize all four global constellations, free SBAS corrections, support RTK networks, and provide an option for Adas satellite-based differential correction services. See why GIS professionals around the world are adopting to Eos Arrow receivers. Visit EOS-GNSS.com today for more information.

INQUIRE:
www.eos-gnss.com
+1 450 824 3325 (Canada)

IN PERSON
Visit Eos Positioning Systems at the Esri UK Annual Conference
May 21, 2019



Eos Positioning Systems
41 Coniston Corporate
Tel: +1 450 824 3325
e-mail: info@eos-gnss.com
www.eos-gnss.com

EUROPEAN SPACE IMAGING 5



**MORE SATELLITES
MORE SOLUTIONS**

Based in Munich, Germany and established in 2002, European Space Imaging is a leading premium supplier of global very high-resolution (VHR) satellite imagery and derived services.

With over 15 years' experience, European Space Imaging have developed a reputation for expert and personalized customer service and an unbeatable track record for supplying tailored very high resolution imagery solutions to meet the diverse projects and requirements of their customers.



**True 30cm
VERY HIGH RESOLUTION**

HIGHEST SPECTRAL DIVERSITY | **NEAR REAL-TIME DELIVERY**

+3 million km² COLLECTED Every Day | **DIRECT SATELLITE TASKING**

MULTI-MISSION GROUND STATION

European Space Imaging
Amulfstrasse 199
80634 Munich, Germany
Tel: +49 (0) 89 130 142 0
e-mail: info@spacesatimaging.com
www.espaceimaging.com

ADVERTISER INDEX

COMPANY		PAGE
BlueSky	bluesky-world.com	21
DroneX Event	dronexpo.co.uk	37
FIG Congress	fig.net/fig2022	13
GeoConnexion	geoconnexion.com	61, 66, 67
Global Infrastructure Dialogue Summit	dialoguecapital.com	43
Intergeo Event	intergeo.de	49
ION GNSS+ Event	ion.org/gnss	15
Korec Group	korecgroup.com	29
Phase One	geospatial.phaseone.com	11, 18
Riegl	riegl.com	68
Tallysman	tallysman.com	2
Topcon	topconpositioning.com	5
Vexcel	vexcel-imaging.com	9

To advertise call:

Micki: +44 (0)7801 907666

PR/MARKETING SERVICES



**STAND OUT
IN A CROWDED FIELD**

**QUARRY ONE ELEVEN
MARKETING FOR GEO**

AERIAL SURVEY SERVICES

**AERIAL
SURVEY** .com

**ClearSkies Geomatics
announces our
acquisition of the
AERIALSURVEY.com
brand.**

We have great end-of-year opportunities for pre-owned LiDAR, cameras, sensors, aircraft, and more.

CONTACT US NOW:

Email:
aerialsurvey@aerialsurvey.com
Web: aerialsurvey.com

**ADVERTISE HERE
FROM ONLY £30
PER MONTH!**

Contact:
MickiKnight@geoconnexion.com

RIEGL WAVEFORM LiDAR FOR FORESTRY



A BROAD SENSOR PORTFOLIO SERVING ALL LEVELS OF FORESTRY SURVEY



Terrestrial Laser Scanning with the RIEGL VZ-i Series

unrivalled level of detail

- single tree, stem and branch segmentation
- convex hull of crown
- crown volume, tree metrics, tree height, crown coverage

UAV-based Laser Scanning with the RIEGL VUX-120, VUX-240, VUX-1 & miniVUX-Series

unrivalled views and flexibility

- segmented point clouds for display of single trees
- volume models for biomass measurements
- 3D piped model of tree stem

Airborne Laser Scanning with the RIEGL VQ-480 II, VQ-580 II & VQ-1560 Series

unrivalled area efficiency

- growth monitoring by vegetation masks, canopy models, crown coverage, etc.
- underwood and deadfall visualization and calculation
- detailed terrain models



Scan this QR code to get detailed information of RIEGL LiDAR in Forestry.

Explore the full portfolio of proven RIEGL LiDAR Sensors and Systems at www.riegl.com

