

NEWS & EMERGING TECHNOLOGY

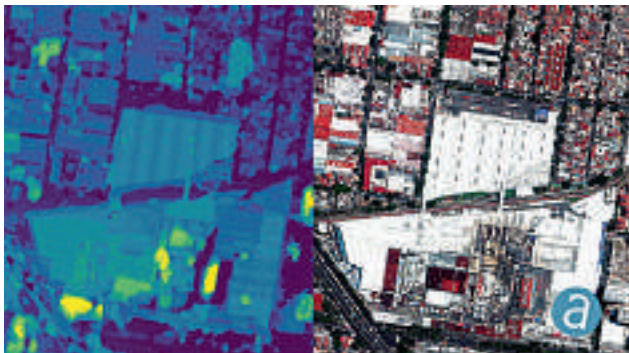
BENTLEY SYSTEMS ANNOUNCES THE ACQUISITION OF GROUPBC

Bentley Systems, a global provider of comprehensive software and digital twins services for advancing the design, construction, and operations of infrastructure, announced the acquisition of **GroupBC**, a **UK SaaS software innovator**. For over twenty years, GroupBC's and Bentley's software solutions have been deployed for complementary purposes to improve project and asset information management. The transaction results from GroupBC's expansion agenda, and Bentley's investment appetite, for international growth opportunities stemming from the UK's national initiatives for major infrastructure investment and towards infrastructure digital twins. www.bentley.com



SIMACTIVE USED TO DETERMINE SOLAR POTENTIAL FROM SATELLITE IMAGERY

SimActive, a developer of photogrammetry software, announces that the **Correlator3D** product is used by Dutch company **NEO B.V.** to assess solar potential in multiple cities. Digital surface models (DSMs) are generated from **WorldView** and **GeoEye satellite stereo images** and serve to calculate solar panel capacity. DSMs covering hundreds of square kilometres are quickly generated by the software. Key metrics to estimate solar potential are then derived, including roof orientation, pitch and shaded areas. "We have been impressed by the quality of SimActive's DSMs, especially considering the limited spatial resolution of the imagery", said Rob Beck, Managing Director at NEO B.V. "Another definite advantage of Correlator3D is the simplicity of the workflow, making it easy to use by our team." www.simactive.com



APEI FIRST TO PURCHASE LEICA CITYMAPPER-2

Hexagon's Geosystems division announced **Aero Photo Europe Investigation (APEI)**, an international aerial survey firm with headquarters in Moulins, France, has become the first customer to purchase the **Leica CityMapper-2** oblique imaging and LiDAR hybrid airborne sensor. With the CityMapper-2, APEI expands its business to the rapidly growing smart city market, which today requires more detailed and more accurate data on larger areas in fast-changing urban environments. APEI is currently operating a CityMapper that incorporates the latest-generation **linear-mode LiDAR** from the **Leica TerrainMapper**. With the higher performance **2 MHz pulse rate LiDAR scanner**, the firm has benefitted from significant operational advantages, such as an increased data collection rate versus flying height. This performance improvement enables flying larger swaths for any given point density and to achieve more efficient flight planning and even point distribution for all flying heights from 300 - 5,500 m AGL with up to 35 pulses in the air and with no range gate limitations. www.hexagon.com



SEPTENTRIO LAUNCHES AN ONLINE SHOP OFFERING HIGH-ACCURACY GNSS RECEIVER MODULES

Septentrio, a global provider of high-precision positioning solutions, opened an online store shop.septentrio.com, selling high-performance **GPS/GNSS module receivers**. This web shop is accessible via the Septentrio website, offering customers multi-constellation multi-frequency GNSS technology, which provides reliable centimetre level positions suitable for demanding applications. The first product available for sale online is **mosaic**, Septentrio's **most compact GNSS receiver module**. This light-weight, low-power receiver brings robust high-accuracy positioning to the mass market. With its security-centred anti-jamming and anti-spoofing technology, **mosaic** provides positioning to numerous demanding applications such as automotive ADAS, logistics automation, and robotics. www.septentrio.com

CGG WINS MULTI-YEAR DEDICATED CENTRE CONTRACT RENEWAL FOR TOTAL

CGG announced that its **Geoscience division** has been awarded a contract renewal by **Total**, for the continued operation of its **Dedicated Processing Centre (DPC)** in Pau, France. The new contract will run for five years starting in January 2020. The two companies have been working in close collaboration at the DPC since 2006. Through this long-term relationship and CGG's timely delivery of its innovative technologies and tailored workflows for a variety of environments around the world, the DPC has established a reputation for excellence, especially in 4D processing. www.cgg.com

CASABLANCA'S MEDINA BUILDINGS MONITORED DURING TUNNEL CONSTRUCTION

Vibrations during the construction of a new 1,890-meter tunnel adjacent to Casablanca's Old Medina, the 250-year-old section of the famed Moroccan city, challenged the stability of its historically important buildings. To monitor in real time the effects on the Medina's aging buildings and to confirm that the construction work meets all engineering standards and guidelines, **ETAFAT**, a geospatial information acquisition and processing company, used the **Nikon XF Total Station** to perform more than **100 daily inspections**. The ETAFAT team relied on optical targets placed on building facades whose coordinates were determined by forced centering to complete the inspections. According to ETAFAT engineers, the Nikon XF 1" with its fast autofocus function, saved considerable field time. The Nikon XF enabled very fast collection of highly accurate observations throughout the monitoring and control of the planimetric and altimetric locations of the structure. The monitoring of the buildings during the various phases of the tunnel's construction generated a large amount of data essential for understanding the consequences of the work and defining any necessary corrective measures.

www.spectrageospatial.com

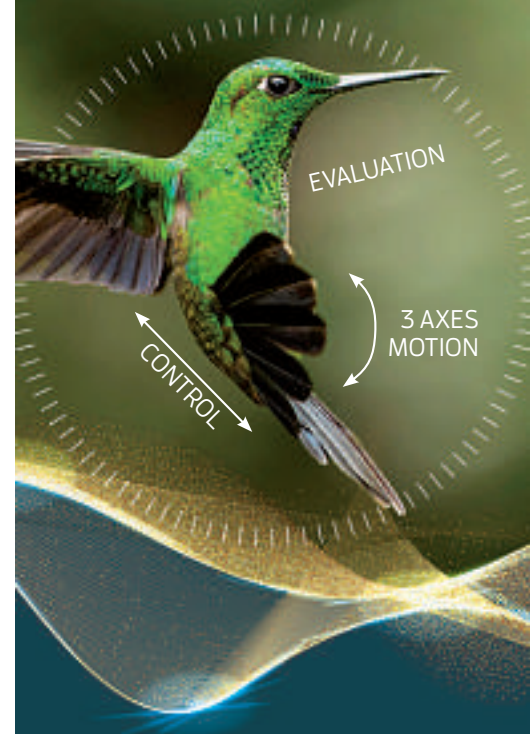


PARROT CHOSEN BY THE SWISS ARMY FOR THE SUPPLY OF MICRO-DRONES

Parrot has been chosen to equip the Swiss Armed Forces with micro-drones as part of the "**Swiss Mini UAV Program**" (Swiss MUAS) call for tender against major civilian UAV players. Parrot's expertise in professional drones, the performance of its solutions dedicated to Defence and Security, and the high level of cyber security required by the Swiss armed forces were decisive assets in the final choice. The call for tender launched at the beginning of 2019 by **armasuisse**, the federal procurement agency responsible for the Swiss Armed Forces, is intended to get the right cost-effective training aids for the troops to become familiar with **Mini UAV operations**. The safety of people and military personnel, as well as knowledge of the terrain, can be significantly enhanced and easily deployed thanks to the high-performant, light and evolving drones developed by Parrot. www.parrot.com

OGC TO CONSIDER APPLE'S INDOOR MAPPING DATA FORMAT AS COMMUNITY STANDARD

The Open Geospatial Consortium (OGC) is in the process of ratifying **Apple's Indoor Mapping Data Format (IMDF)** as a Community Standard. OGC Members Autodesk, Esri, Google, New York City Department of Information Technology and Telecommunications (DOITT), Ordnance Survey Limited, and Safe Software support the submission and welcome public comment ahead of the voting period for the Work Item Justification on March 17, 2020. Apple designed IMDF to deliver **indoor maps for thousands of airports and shopping centers** around the world, making it possible for users of the Maps app to find their way indoors and discover places to shop and eat. IMDF provides a mobile-friendly, compact, and human-readable data model for any indoor space, providing a basis for orientation, navigation, and discovery. www.ogc.org



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NEW CAMERA TO MAKE CROP DISEASE DETECTION EASIER AND LESS EXPENSIVE

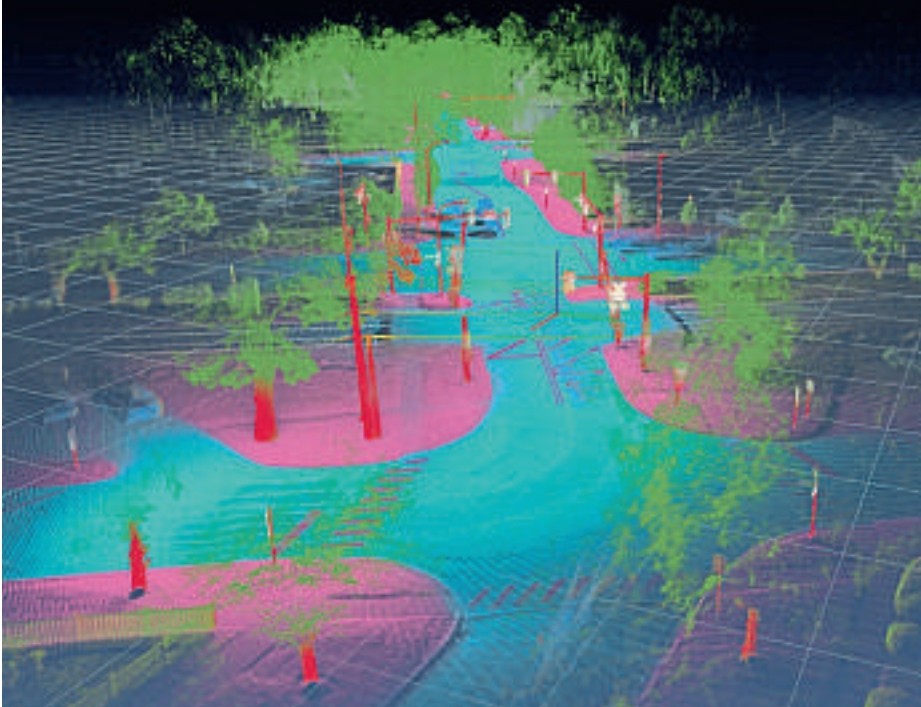
Multi-award winning product consultancy Wideblue has designed a **low cost camera** which will be used in agriculture to test for early onset disease in various crops including potatoes and soft fruits. The **Hyperspectral Crop Camera (HCC)**, costing under £1000, is capable of taking images across a wide continuous spectrum of wavelengths of light. In the case of the HCC prototype this was in the visible wavelength region. However, the same technology within device could also be applied to non-visible wavelengths such as **short wave infrared**.

The device uses a **Linear Variable Filter (LVF)** rather than a traditional diffraction grating (similar to a prism). The LVF is a narrowband filter that allows light to pass through it linearly along its length. By moving this lightweight component rapidly across a standard image sensor (camera) the HCC can capture images in real-time across the full visible spectrum of light, one wavelength at a time. www.wide-blue.com



HERE UNVEILS GEODATA MODELS TO LOWER 5G WIRELESS NETWORK PLANNING COSTS

CGG HERE, a location data and technology platform, unveiled **HERE Geodata Models** to help accelerate the telecommunications industry's planning and deployment of **5G wireless networks** while reducing network planning operational expenses. HERE Geodata Models is a highly precise and scalable **3D digital representation** of the **buildings, trees and roadside objects** (e.g. streetlights, utility poles, overpasses, billboards, etc.) making up the physical environment surrounding **5G antennas**. The 3D digital representations provide 5G network planners and radio frequency (RF) engineers with the ability to remotely conduct field surveys and precisely plan where to locate 5G antennas in order to create optimal signal coverage. www.here.com



MANUAL AND ROBOT MOUNTED 3D SCANNERS FOR QUALITY CONTROL AND PRODUCT DEVELOPMENT

Creaform responds with its **portable** and **automated measurement solutions** to needs in 3D scanning, reverse engineering, quality control, non-destructive testing, product development, and digital simulation (FEA/CFD). Its technologies are used in many industries, including automotive, aerospace, consumer products, heavy industry, healthcare, manufacturing, oil and gas industry, production of energy, as well as research and education. The **HandySCAN BLACK** and **Go!SCAN SPARK portable 3D scanners**, launched in 2019, are ideal for quality control and product development. They take measurements everywhere in seconds, for all kinds of parts, regardless of their size, materials, and complexity. With the Go!SCAN SPARK it is even possible to scan in color. This scanner is the ideal solution for product development and reverse engineering tasks, while the HandySCAN BLACK is the right scanning system for all types of jobs along the life cycle management process of the product (PLM), from product development to manufacturing, quality assurance and quality control phases. www.creaform3.com

OGL ENGINEERING FIRST CANADIAN COMPANY TO PURCHASE GALAXY T2000 LIDAR SYSTEM

Teledyne Optech announced that OGL Engineering of Calgary, Alberta is the first Canadian company to purchase the **Optech Galaxy T2000** lidar sensor. With the purchase of the Galaxy T2000 and a **GSM4000 sensor mount**, OGL will increase the efficiency of their aerial data collection, which includes projects for a variety of industries including: electric utilities, pipelines, forestry, mining, and government infrastructure. As a team that provides A to Z aerial survey services from project design and data acquisition, through to data processing and engineering analysis, OGL understands how integral a reliable and efficient data acquisition solution is to achieve project success. The Galaxy T2000 boasts a true 2 MHz laser emission rate directed fully to the ground by a new high frequency, programmable scanner for effective point distribution. www.teledyneoptech.com



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TYPE APPROVED WÄRTSILÄ SCENESCAN PUSHES DP CAPABILITY ENVELOPE

The technology group Wäertsilä has received type approval for its **SceneScan position reference system** by the DNV GL classification society. As the world's first **laser-based targetless relative dynamic positioning (DP) reference system**, SceneScan represents a paradigm shift from **conventional DP reference systems**. It can work without the need for pre-placed positioning targets, thus providing significantly greater operational flexibility than with conventional systems. Furthermore, since it doesn't require reflector targets, costs are reduced. Whereas DP reference systems are typically utilised on offshore vessels, the type approval tests for SceneScan were carried out onboard the 'Kairos', an LNG bunker vessel owned by Germany's Bernhard Schulte KG. This extends the potential for DP applications beyond the traditional offshore sector. The system was installed and commissioned during October 2019, and the successful type approval testing was finalised in December 2019. www.wartsila.com



MOBILE APP HELPING LATIN AMERICAN FARMERS INCREASE CROP YIELDS

Rezatec, a provider of geospatial data analytics, has launched a **free smartphone app** which acts as a portal for farmers to record their agricultural activities and provides recommendations for **optimal sowing** and **irrigation scheduling**. Based on preliminary results from the experimental stations, the app has demonstrated the potential to increase wheat yields by up to 12%. COMPASS v2.0 provides decisions based on **Earth observation satellite data, in-situ field data** captured by farmers, and a **sophisticated crop model**, to identify factors which might cause lower crop performance. In the Yaqui Valley in Mexico, a region which relies on irrigation due to varying climatic conditions, water security is a serious challenge. With general circulation models predicting less water availability in the future, farmers must be very precise in their irrigation management. The technology will track crop growth performance allowing farmers to make more informed decisions about crop management. www.rezatec.com



2020 ESRI FEDERAL GIS CONFERENCE HIGHLIGHTS

The 2020 Esri Federal GIS Conference focused on how GIS is evolving to become a smart, connected global geospatial infrastructure—one that allows the planet to react, respond, and grow intelligently. The FedGIS Conference also provided a great insider's look at what's new from Esri, such as **ArcGIS Analytics for IoT**, a new capability in ArcGIS Online, allows users to ingest, visualize, analyze, store and act upon massive velocities and volumes of internet of things (IoT) sensor data. **Site Scan for ArcGIS** is a new end-to-end enterprise drone data and analytics solution for Esri's ArcGIS platform that is also operational from the cloud. **ArcGIS Mission**, an all-inclusive, tactical situational awareness and mission management software solution that provides organizations with a comprehensive understanding of an operating environment. www.esri.com

COMBINING TERRESTRIAL AND UAV-BORNE SCAN DATA IN AN ARCHAEOLOGY APPLICATION

RIEGL, along with the scientific support from the **Ludwig-Boltzmann Institute** in Vienna, conducted an extensive surveying campaign at the ruins of the medieval castle Gars in Lower Austria. For data acquisition, the **RIEGL VZ-400i** and **2000i 3D terrestrial laser scanners** and the **RiCOPTER**, RIEGL's remotely piloted airborne laser scanning system, as well as ground radar have been used. Terrestrial and airborne datasets have been registered together, images were automatically geo-referenced – the result is a comprehensive, highly accurate point cloud of the area providing numerous additional information and features. www.riegl.com

CGG COMPLETES EXIT FROM LAND DATA ACQUISITION

CGG announced that it has completed the wind-down and exit from its land seismic data acquisition business after completing its last land seismic acquisition contract in **Tunisia**. Following on from the company's recently announced exits from seabed and marine data acquisition, this milestone marks the successful completion of CGG's strategy to exit the seismic data acquisition business. To date, CGG still retains a minority shareholding in the ARGAS company operating in the Middle East. www.cgg.com

PARACOSM PARTNERS WITH GEO-PLUS TO EXPAND LAND SURVEY OFFERINGS

Paracosm announced a partnership with Geo-Plus to offer the **VisionLiDAR point cloud processing software** in a bundle with the **PX-80 handheld scanner**. "We are delighted to offer this software to our PX-80 customers" says Amir Rubin, Paracosm president. "The versatile VisionLiDAR works as a standard point cloud processing tool—a critical need in many workflows—but also includes comprehensive functionality for specific applications like topography generation, city assets extraction, and tree extraction. It allows us to offer a truly complete 3D mapping solution to meet the needs of demanding users in surveying and other industries." www.paracosm.io



G-CORE LABS LAUNCHED NEW EUROPEAN HOSTING & CDN POP IN LONDON

G-Core Labs, the international provider of cloud and edge solutions, is expanding its presence in Europe by opening its **24-th hosting point** in London. The new location in the capital of the United Kingdom is demonstrating one of the best connections on the local market with an average response time of 19 ms (according to Citrix independent analytical system). The infrastructure in London also became a part of the company's global content delivery network. The functionality of the automatic installation of the most popular operating systems (OS) (Windows and Unix), installed when ordering the server, is provided company's dedicated and virtual servers. It significantly saves time for system deployment. All G-Core Labs servers are protected from DDoS attacks using G-Core Labs unique technology for intelligent filtering of network traffic. www.gcorelabs.com

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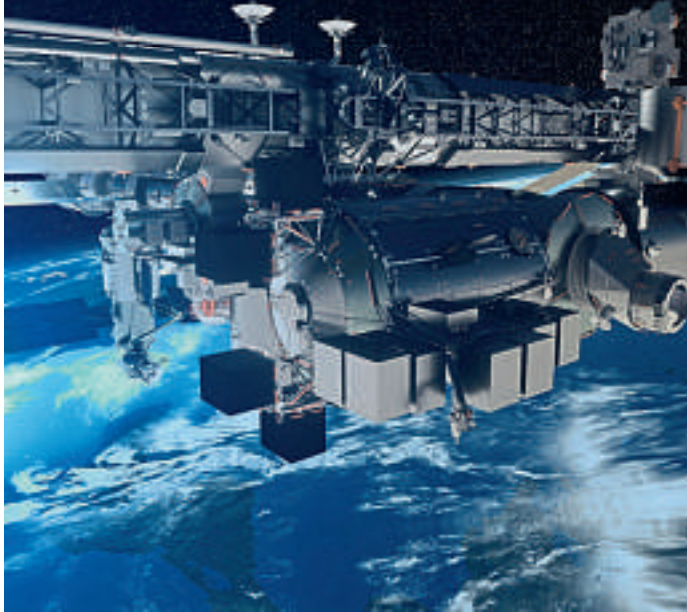
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SUCCESSFUL LAUNCH FOR AIRBUS' BARTOLOMEO

The Airbus built Bartolomeo platform has been successfully launched on 06 March from Cape Canaveral, Florida, US. Bartolomeo is now on its journey to the **International Space Station (ISS)** and will be installed outside of the Columbus Laboratory, the European module of the ISS built by **Airbus**. Bartolomeo - named after Christopher Columbus' younger brother - is funded by Airbus and will be operated with the support of the **European Space Agency (ESA)**. The platform can host up to 12 different payload slots, providing them with a power supply and data transmission back to Earth. Not only does this provide opportunities for Earth observation, but also environmental and climate research, robotics, material sciences, astrophysics or to test new technologies in space, paving the way for their commercialisation. The platform's unique vantage point **400 kilometres above the Earth** offers unobstructed views of our planet enabling the hosting of external payload in low-Earth-orbit. www.airbus.com



GARMIN GFC 600H HELICOPTER FLIGHT CONTROL SYSTEM APPROVED IN THE AS350

Garmin announced it has received **Federal Aviation Administration (FAA) Supplemental Type Certification (STC)** for the GFC 600H helicopter flight control system in the AS350 B2/B3. The attitude-based (AHRS-derived) flight control system boasts a number of helicopter-tailored safety features, including attitude hold (ATT), Garmin Helicopter Electronic Stability and Protection (H-ESP), dedicated return-to-level (LVL) mode, hover assist, as well as overspeed and low speed protection. The GFC 600H requires the **Garmin G500H1** or **G500H TXi** flight display and offers integration with compatible instruments and navigation sources. With its advanced AHRS technology and redundant, cross-checking sensors, the GFC 600H was designed for smooth handling. The GFC 600H provides inputs to help stabilize the helicopter while hand-flying. The stability provided by the GFC 600H system offers significant workload reduction and benefits helicopter operators by maintaining a commanded attitude. www.garmin.com



VIRTUAL SURVEYOR STREAMLINES VOLUMETRIC CALCULATIONS

Virtual Surveyor has released Version 7.1 of its popular **drone surveying software**, introducing functionality to efficiently calculate **volumetrics in quarries, mine pits, retention ponds**, and other **basins** that fill with water. This new functionality complements advanced cut-and-fill mapping capabilities unveiled in late 2019. Virtual Surveyor is popular among surveyors because it bridges the gap between UAV photogrammetric processing applications and engineering design packages. The software generates an interactive onscreen environment with **UAV orthophotos/DSMs** and/or **LiDAR point clouds** where the surveyor selects **survey points** and **break lines** to define the topography, creating highly accurate products up to five times faster than otherwise possible. www.virtual-surveyor.com

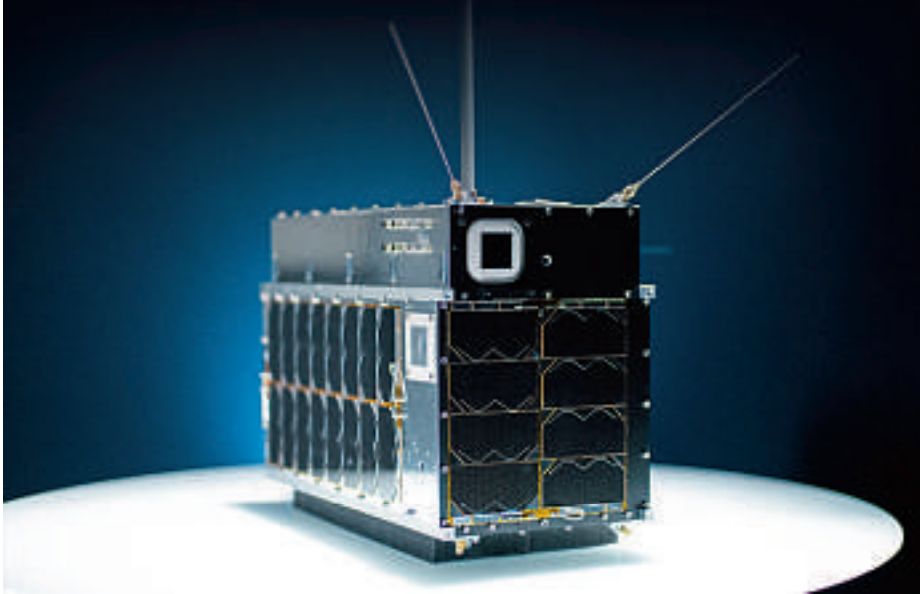


SWIFT NAVIGATION AND DEUTSCHE TELEKOM ANNOUNCE PARTNERSHIP

Swift Navigation, a San Francisco-based tech firm redefining **GNSS positioning technology** for **autonomous vehicles**, announced a partnership with Deutsche Telekom, one of the world's leading **integrated telecommunications companies**. This partnership brings the precise positioning of Swift's Skylark Cloud Corrections Services to Telekom's comprehensive communications infrastructure via its new Precise Positioning product offering. The Precise Positioning service is currently available across the United States and Germany, with expansion across Europe already underway. Swift and Telekom's lane-level accurate Precise Positioning is specifically poised to benefit **level 2 and 3 automotive applications** including **advanced driver-assistance systems (ADAS)**, such as lane assist, highway autopilot, cellular vehicle-to-everything (CV2X) communications and lane level directions. www.swiftnav.com

HAWKEYE 360 PATHFINDER SELECTED FOR EXHIBITION IN NEW SMITHSONIAN GALLERY

HawkEye 360, the first commercial company to use formation flying satellites to create a new class of radio frequency (RF) data and data analytics, announced that a model of its **Pathfinder satellite** has been transferred to the Smithsonian's permanent collection and will be displayed in a future gallery at the National Air and Space Museum. This comes one year after **HawkEye 360's Pathfinder** satellites were formally commissioned into service to geolocate RF signals. HawkEye 360's cluster of three satellites has successfully geolocated over 11 million RF signals in the past year. This data enables a safer world by supporting many applications, such as finding dark ships that may be engaged in smuggling or illegal fishing. www.he360.com



U-BLOX STRENGTHENS IOT ECOSYSTEM SECURITY BY IMPLEMENTING GSMA'S IOT SAFE RECOMMENDATION

u-blox, a global provider of positioning and wireless communication technologies, will strengthen the security of IoT ecosystems built upon its dedicated **LTE-M** and **NB-IoT chipset** by implementing a key set of **security features** endorsed by the GSMA. Support for the IoT SAFE (IoT SIM applet for secure end-to-end communication) implementation guide will be included in a software maintenance release for u-blox devices based on the **UBX-R5 chipset**, such as the new **SARA-R5** series in 2020. The SARA-R5 series is a 5G-ready, software-configurable family of IoT devices that support LTE-M and NB-IoT communications over multiple radio bands. It includes a secure element, certified to the Common Criteria EAL5+ High security assurance standard, which also acts as a hardware root of trust (RoT) for processes such as authentication and encryption. www.u-blox.com

LAND INFO ANNOUNCES 5G WIRELESS MAPPING TEAM IN EUROPE

LAND INFO Worldwide Mapping LLC, a provider of mapping solutions for 5G wireless in North America, has assembled a world-class team of geospatial companies to extend its reach in the **5G industry** in Europe. The LAND INFO team includes **Bluesky International Ltd.** in the U.K. and **COWI** (soon to be part of Hexagon Group) in continental Europe. Based in Ashby-De-La-Zouch, England, Bluesky is an innovative **aerial survey company** with offices in Great Britain, Ireland, and the U.S. COWI is an **international engineering consultancy** based in Denmark with more than **400 aerial mapping personnel** in offices across Europe and India. COWI's aerial mapping business will join Hexagon in Q2 2020. LAND INFO entered into the collaboration with Bluesky and COWI based on their acknowledged leadership in aerial data acquisition and well-established sales networks across the United Kingdom and Europe. Both organizations are constantly adding updated data to their geospatial archives, capturing in stunning 3D detail the rapid changes occurring across Europe. www.landinfo.com

