

To: ALEXANDER LAZOUSKI(al@lzlawoffice.com)
Subject: U.S. Trademark Application Serial No. 90075674 - SPACECLOUD
Sent: May 24, 2023 03:15:31 PM EDT
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Attachments

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United States Patent and Trademark Office (USPTO)
Office Action (Official Letter) About Applicant's Trademark Application

U.S. Application Serial No. 90075674

Mark: SPACECLOUD

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Applicant: Unibap AB

Reference/Docket No. N/A

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REQUEST FOR RECONSIDERATION AFTER FINAL ACTION DENIED

Issue date: May 24, 2023

Applicant's request for reconsideration is denied. *See* 37 C.F.R. §2.63(b)(3). The amended identification of goods and services is acceptable. However, the trademark examining attorney has carefully reviewed applicant's request and determined the request did not: (1) raise a new issue, (2) resolve all the outstanding issue(s), (3) provide any new or compelling evidence with regard to the outstanding issue(s), or (4) present analysis and arguments that were persuasive or shed new light on the outstanding issue(s). TMEP §§715.03(a)(ii)(B), 715.04(a).

Accordingly, the following refusal made final in the Office action dated November 17, 2022 is maintained and continued:

- **The refusal under Trademark Act Section 2(d) with respect to U.S. Registration No. 6608777.**

See TMEP §§715.03(a)(ii)(B), 715.04(a).

Registration of the applied-for mark is refused because of a likelihood of confusion with the mark in U.S. Registration No. 6608777. Trademark Act Section 2(d), 15 U.S.C. §1052(d); *see* TMEP §§1207.01 *et seq.* See the attached registration. The examining attorney has considered the applicant's argument, but is not persuaded. **Therefore, for the reasons set forth below, the final refusal under Trademark Act Section 2(d) is maintained and continued with respect to U.S. Registration No. 6608777.** *See* 15 U.S.C. §1052(d); 37 C.F.R. §2.63(b).

Trademark Act Section 2(d) bars registration of an applied-for mark that is so similar to a registered mark that it is likely consumers would be confused, mistaken, or deceived as to the commercial source of the goods and/or services of the parties. *See* 15 U.S.C. §1052(d). Likelihood of confusion is

determined on a case-by-case basis by applying the factors set forth in *In re E. I. du Pont de Nemours & Co.*, 476 F.2d 1357, 1361, 177 USPQ 563, 567 (C.C.P.A. 1973) (called the “*du Pont* factors”). *In re i.am.symbolic, llc*, 866 F.3d 1315, 1322, 123 USPQ2d 1744, 1747 (Fed. Cir. 2017). Any evidence of record related to those factors need be considered; however, “not all of the *DuPont* factors are relevant or of similar weight in every case.” *In re Guild Mortg. Co.*, 912 F.3d 1376, 1379, 129 USPQ2d 1160, 1162 (Fed. Cir. 2019) (quoting *In re Dixie Rests., Inc.*, 105 F.3d 1405, 1406, 41 USPQ2d 1531, 1533 (Fed. Cir. 1997)).

Although not all *du Pont* factors may be relevant, there are generally two key considerations in any likelihood of confusion analysis: (1) the similarities between the compared marks and (2) the relatedness of the compared goods and/or services. *See In re i.am.symbolic, llc*, 866 F.3d at 1322, 123 USPQ2d at 1747 (quoting *Herbko Int’l, Inc. v. Kappa Books, Inc.*, 308 F.3d 1156, 1164-65, 64 USPQ2d 1375, 1380 (Fed. Cir. 2002)); *Federated Foods, Inc. v. Fort Howard Paper Co.*, 544 F.2d 1098, 1103, 192 USPQ 24, 29 (C.C.P.A. 1976) (“The fundamental inquiry mandated by [Section] 2(d) goes to the cumulative effect of differences in the essential characteristics of the goods [or services] and differences in the marks.”); TMEP §1207.01.

The proposed mark is SPACECLOUD in standard characters for, as amended,

International Class 009: Downloadable software used to transmit images and information of earth, space systems and other astronomical bodies from thermal, optical, visual or near-infrared imaging cameras or lidar, and used to transmit synthetic aperture radar (SAR) imaging, and downloadable software for onboard satellite or onboard spacecraft image processing, processing of data and sensor management; Downloadable databases in the field of photographic images of earth, space systems and other astronomical bodies; Media content, namely, downloadable databases in the field of photographs of earth, space systems and other astronomical bodies; apparatus for transmission of communication, namely, computer networking and data communications equipment, point-to-point communications equipment, broadcasting equipment and antennas and aerials as communications apparatus; Data storage devices, namely, computer storage devices, namely, high-speed storage subsystems for storage and backup of electronic data either locally or via a telecommunications network, memory modules and media, namely, blank digital storage media; Audio/visual and photographic devices, namely, cameras; Cables for electrical or optical signal transmission, namely, signal cables for IT, AV and telecommunication; Recorded content, namely, electronic databases in the field of photographs of earth, space systems and other astronomical bodies recorded on computer media; Magnets, magnetizers and demagnetizers; Scientific and laboratory devices for treatment using electricity, namely, electrical switches; Apparatus, instruments and cables for electricity, namely, electrical controllers, electric relays, electrical adapters and electrical cables; Optical devices, enhancers and correctors, namely, optical readers, optical filters, optical lenses, optical filters, optical reflectors, optical inspection apparatus and instruments for astronomy, optical inspection apparatus and instruments for physics; Safety, security, protection and signalling devices, namely, alarm installations and alarms, and transmitters of electronic signals; Navigation, guidance, tracking, targeting and map making devices, namely, electric navigational instruments, electronic navigational and positioning apparatus and instruments, optical position sensors, airborne data acquisition instruments, apparatus and instruments for geolocation, Measuring, detecting, monitoring and controlling devices, namely, meteorological instruments, computer peripherals for measuring, detecting, monitoring and controlling devices for astronomy, computer peripherals being instruments for remote monitoring of earth, space systems and other astronomical bodies, lidar apparatus, lasers for measuring purposes; Testing and quality control devices, namely, computer component testing and calibrating equipment for measuring, detecting, monitoring and controlling devices; Measuring devices, namely, time measuring instruments being

chronographs for use as specialized time recording apparatuses, not including clocks and watches, distance and dimension measuring instruments, speed measuring instruments, temperature measuring instruments; Data loggers and recorders, namely, electronic data loggers and time lapse image recorders; Sensors, detectors and monitoring instruments, namely, meteorological monitoring devices, sensors and instruments for monitoring of earth, space systems and other astronomical bodies, radar detectors, and environmental monitoring systems comprised of meters and sensors that measure pressure, humidity, and temperature; Scientific research and laboratory apparatus, namely, astronomical spectrographs, scientific meteorological instruments, electronic telescopes, geophysic apparatus in the nature of seismic exploration machines and apparatus, geoseismic apparatus in the nature of seismic exploration machines and apparatus, imaging devices for scientific apparatus in the nature of cameras and telescopes; all of the above used for processing of images, data received from space and exclude server hosting

International Class 038: Telecommunication services, namely, electronic data transmission, satellite transmission services, electronic data transmission services for spacecraft; Computer communication, namely, electronic data transmission, and Internet access, namely, provision of access to the internet; Broadcasting services, namely, Internet broadcasting services, satellite broadcasting services; Provision of telecommunications facilities and equipment, namely, rental of telecommunications apparatus and installations, and rental of telecommunications facilities and equipment; all of the above used for processing of images, data received from space and exclude server hosting

International Class 042: Software development, programming and implementation; Software as a service (SAAS) services featuring software used for electronic transmission of data and software used for processing of data; rental of computer software IT consultancy and advisory services, and IT information services, namely, providing information on computer technology and programming; IT security, protection and restoration, namely, computer security consultancy, computer security threat analysis for protecting data, and design and development of electronic data security systems; Data duplication, namely, media duplication of data and digital information; data conversion services, namely, data conversion of electronic information; data coding services, namely, computer programming services; Science and technology services, namely, scientific research, computer programming services, and software development services; Rental of science and technology equipment, namely, rental of software, and rental of laboratory apparatus and instruments; Engineering services; Surveying and exploration services, namely, aerial surveying services, conducting geological surveys, topographic surveying, cartography and mapping services, environmental survey services, and conducting engineering surveys; Architectural and urban planning services; Natural science services, namely, scientific research; Testing, namely, environmental testing and inspection services and testing the functionality of apparatus and instruments; Quality control for others; Electronic document and e-mail authentication services; User authentication services using single sign-on technology for online software applications; all of the above used for processing of images, data received from space and exclude server hosting

The registered mark is SPACECLOUD in standard characters for:

International Class 9: Computer hardware

International Class 42: Server hosting

In a likelihood of confusion determination, the marks in their entirety are compared for similarities in appearance, sound, connotation, and commercial impression. *In re i.am.symbolic, llc*, 866 F.3d 1315,

1323, 123 USPQ2d 1744, 1748 (Fed. Cir. 2017); *Stone Lion Capital Partners, LP v. Lion Capital LLP*, 746 F.3d 1317, 1321, 110 USPQ2d 1157, 1160 (Fed. Cir. 2014) (quoting *Palm Bay Imps., Inc. v. Veuve Clicquot Ponsardin Maison Fondee En 1772*, 396 F.3d 1369, 1371, 73 USPQ2d 1689, 1691 (Fed. Cir. 2005)); *In re E. I. du Pont de Nemours & Co.*, 476 F.2d 1357, 1361, 177 USPQ 563, 567 (C.C.P.A. 1973); TMEP §1207.01(b)-(b)(v).

In the present case, applicant's mark is SPACECLOUD in standard characters and registrant's mark is SPACECLOUD in standard characters. The applicant argues that the marks have different meanings. However, these marks are **identical** in appearance, sound, and meaning, "and have the potential to be used . . . in exactly the same manner." *In re i.am.symbolic, llc*, 116 USPQ2d 1406, 1411 (TTAB 2015), *aff'd*, 866 F.3d 1315, 123 USPQ2d 1744 (Fed. Cir. 2017). Additionally, because they are identical, these marks are likely to engender the same connotation and overall commercial impression when considered in connection with applicant's and registrant's respective goods and/or services. *Id.* Therefore, the marks are confusingly similar.

The applicant argues that, despite the marks being identical, that they differ because "Applicant's mark SPACECLOUD- which covers software and equipment used to transmit images and information of earth, space systems and other astronomical bodies - suggests that its products are used or somehow related to **outer space**. On the contrary, Registrant's mark, which is registered for hosting services and computer hardware, implies that the Registrant offers cloud storage services and equipment therefor." See Applicant's attached argument, page 2 to the 05/17/23 Request for reconsideration.

However, SPACE has the same meaning in both marks, and the parties' marks are likely to engender the same connotation and overall commercial impression, as, like the applicant, the registrant Lockheed Martin provides goods and services focused on outer space:

"The space economy is evolving, and the need for human advancement and technological innovation is greater than ever. Lockheed Martin is at the forefront of **outer space** development by partnering with government and commercial customers to create breakthrough technologies that bring us closer to discovering more of **space**. We're designing, building and testing lunar and **deep space** exploration capabilities, including NASA's Orion spacecraft, and creating early-warning weather and climate observation satellites, like the GOES-R series." <https://www.lockheedmartin.com/en-us/capabilities/space.html> Retrieved May 18, 2023.

"Spacecloud: From Keyboard To Orbit." See accompanying pictures showing satellites in outer space. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.lockheedmartin.com/content/dam/lockheedmartin/space/documents/space/hivestar-spacecloud.pdf Retrieved May 18, 2023. See attachment.

In space, "on-orbit processing like SmartSat and cloud-computing structures like Lockheed Martin's SpaceCloud are opening new doors for AI in **space**," he adds. "On-orbit processing ultimately saves time and money because the satellite is no longer tied to its downlink window to send data. The onboard computer can analyze and process data, gaining new insights about data that was simply dumped in the past." <https://militaryembedded.com/ai/machine-learning/nanosats-put-ai-at-the-edge-computing-to-the-test-in-space> Retrieved May 18, 2023. See attachment.

"The aerospace giant has already registered two trademarks for satellite cloud systems — HiveStar and SpaceCloud — and it's considering how the approach can be applied to a range of **space missions**. Yvonne Hodge, vice president and chief information officer at Colorado-based Lockheed

Martin Space, lifted the curtain on the HiveStar project last week at Amazon's re:MARS conference in Las Vegas. 'It's not just about collecting the data and then sending it back to the ground for processing,' Hodge said. 'It's about analyzing the information in **space** ... and then sending the knowledge, the intelligence back to Earth.'" <https://www.geekwire.com/2019/lockheed-martin-space-cloud-hivestar-satellites/> Retrieved May 18, 2023. See attachment.

In this case, the registration uses broad wording to describe "computer hardware", which presumably encompasses all goods of the type described, including computer hardware used for processing of images, and data received from space, which is the same purpose for which the applicant's goods and services are used. *See, e.g., Made in Nature, LLC v. Pharmavite LLC*, 2022 USPQ2d 557, at *44 (TTAB 2022); *In re Solid State Design Inc.*, 125 USPQ2d 1409, 1412-15 (TTAB 2018); *Sw. Mgmt., Inc. v. Ocinomled, Ltd.*, 115 USPQ2d 1007, 1025 (TTAB 2015). Thus, applicant's and registrant's goods and services are related. *See, e.g., In re i.am.symbolic, llc*, 127 USPQ2d 1627, 1629 (TTAB 2018) (citing *Tuxedo Monopoly, Inc. v. Gen. Mills Fun Grp., Inc.*, 648 F.2d 1335, 1336, 209 USPQ 986, 988 (C.C.P.A. 1981); *Inter IKEA Sys. B.V. v. Akea, LLC*, 110 USPQ2d 1734, 1745 (TTAB 2014); *Baseball Am. Inc. v. Powerplay Sports Ltd.*, 71 USPQ2d 1844, 1847 n.9 (TTAB 2004)). The goods and services of the registrant have no restrictions as to nature, type, channels of trade, or classes of purchasers and are "presumed to travel in the same channels of trade to the same class of purchasers." *In re Viterra Inc.*, 671 F.3d 1358, 1362, 101 USPQ2d 1905, 1908 (Fed. Cir. 2012) (quoting *Hewlett-Packard Co. v. Packard Press, Inc.*, 281 F.3d 1261, 1268, 62 USPQ2d 1001, 1005 (Fed. Cir. 2002)); *Made in Nature, LLC v. Pharmavite LLC*, 2022 USPQ2d 557, at *49. Thus, applicant's and registrant's goods and/or services are related.

Based on the original identification, the parties provide identical goods in Class 9, namely, computer hardware. For example, in Class 9, the applicant provides "Data processing equipment and accessories, namely,...computer hardware", "computer hardware for the transmission of positioning data, computer hardware for the compilation of positioning data" and many other goods encompassed by the term "Computer hardware". Applicant argues that it has now "deleted all references to hardware". See Applicant's attached argument, page 3 to the 05/17/23 Request for reconsideration. However, as shown by the attached excerpts from the applicant Unibap's website, the applicant clearly provides computer hardware under its SpaceCloud mark: "SpaceCloud®...Our software and **hardware** offer world-leading cloud services, intelligent data processing, sensor management, and storage of data analyses for adapted distribution of relevant information...Unibap core space offerings include: Radiation tolerant payload **computing hardware**" (emphasis added) <https://unibap.com/en/our-offer/space/>; Retrieved May 18, 2023. See attachment. Unibap's **computer hardware** has an HDMI output that can be connected to TVs or computer screens with up to full HD (1080p) resolution. <https://unibap.com/en/our-offer/space/spacecloud-services/> "SpaceCloud® **Hardware... Hardware** for intelligent onboard data processing" <https://unibap.com/en/our-offer/space/spacecloud-products/> Retrieved May 24, 2023. See attachment. In addition, the applicant's Class 9 identification contains many goods that could be in the form of computer hardware, for example, "apparatus for transmission of communication, namely, computer networking and data communications equipment, point-to-point communications equipment", "Data storage devices, namely, computer storage devices, namely, high-speed storage subsystems for storage and backup of electronic data either locally or via a telecommunications network, memory modules", "Measuring, detecting, monitoring and controlling devices, namely, ... computer peripherals for measuring, detecting, monitoring and controlling devices for astronomy, computer peripherals being instruments for remote monitoring of earth, space systems and other astronomical bodies".

Although the applicant similarly previously deleted the wording "server hosting" from its Class 42 identification, the original inclusion of these services and the inclusion of "hosting services" in the

applicant's foreign registration indicate that the registrant provides hosting services. Also, in the original Class 42 identification, the applicant listed "Design services, namely, computer software and hardware design", which is highly related to the applicant's Class 9 goods of computer hardware. Consumers are likely to be confused by the use of similar marks on or in connection with goods and with services featuring or related to those goods. TMEP §1207.01(a)(ii); see *In re Detroit Athletic Co.*, 903 F.3d 1297, 1307, 128 USPQ2d 1047, 1051 (Fed. Cir. 2018) (finding retail shops featuring sports team related clothing and apparel related to various clothing items, including athletic uniforms); *In re Hyper Shoppes (Ohio), Inc.*, 837 F.2d 463, 6 USPQ2d 1025 (Fed. Cir. 1988) (finding retail grocery and general merchandise store services related to furniture); *In re United Serv. Distribs., Inc.*, 229 USPQ 237 (TTAB 1986) (finding distributorship services in the field of health and beauty aids related to skin cream); *In re Phillips-Van Heusen Corp.*, 228 USPQ 949 (TTAB 1986) (finding various items of men's, boys', girls' and women's clothing related to restaurant services and towels); *Steelcase Inc. v. Steelcare Inc.*, 219 USPQ 433 (TTAB 1983) (finding refinishing of furniture, office furniture, and machinery related to office furniture and accessories); *Mack Trucks, Inc. v. Huskie Freightways, Inc.*, 177 USPQ 32 (TTAB 1972) (finding trucking services related to motor trucks and buses). In addition, the applicant provides related Class 38 telecommunication services and related Class 42 technical, design, and computer services. Although the applicant continues to delete various terms from its identification, that does not change the fact that the parties continue to provide related goods and services.

The examining attorney refers to the evidence from the USPTO's X-Search database consisting of a number of third-party marks registered for use in connection with the same or similar goods and/or services as those of both applicant and registrant in this case. This evidence, attached as a representative sample, shows that applicant's hardware and software goods in Class 9, telecommunication services in Class 38, and technical, design, and computer services in Class 42 and the registrant's Class 9 computer hardware and/or Class 42 hosting services are a kind that may emanate from a single source under a single mark. See *In re I-Coat Co.*, 126 USPQ2d 1730, 1737 (TTAB 2018) (citing *In re Infinity Broad. Corp.*, 60 USPQ2d 1214, 1217-18 (TTAB 2001); *In re Albert Trostel & Sons Co.*, 29 USPQ2d 1783, 1785-86 (TTAB 1993); *In re Mucky Duck Mustard Co.*, 6 USPQ2d 1467, 1470 n.6 (TTAB 1988)); TMEP §1207.01(d)(iii). Retrieved 11/22/2022. See attachments to the 11/17/2022 final refusal.

In addition, the examining attorney refers to the attached excerpts from the following websites attached as a representative sample showing Class 9 goods, Class 38 services, and Class 42 services of the applicant are provided by the same source and/or found in the same channels of trade as the registrant's Class 9 computer hardware and Class 42 server hosting.

- Airbus – applicant's class 38 telecom services: <https://www.airbus.com/en/products-services/defence/milsatcom>
- Airbus – applicant's class 42 mapping services: <https://www.intelligence-airbusds.com/markets/agriculture/precision-farming/>
- Airbus – applicant's class 9 antenna and map making device: <https://airbusus.com/motac-ng/>
- Airbus – applicant's class 9 database: <https://aircraft.airbus.com/en/services/operate/flight-operations-solutions/supply-aero-data>
- Airbus – applicant's class 9 software: <https://www.intelligence-airbusds.com/markets/defence/joint-isr/mono-domain-exploitation/fortion-image-analyst/>
- Airbus – registrant's class 42 hosting services (no 'server'): <https://www.airbus.com/en/newsroom/news/2016-10-airbus-defense-and-space-provides-managed-hosting-geospatial-streaming>

- Airbus – registrant’s class 9 computer hardware: <https://www.airbus.com/en/products-services/space/equipment>
- IEC Telecom – applicant’s class 38 communication services and rental of telecom apparatus: <https://iec-telecom.com/en/become-our-partner/>
- IEC Telecom – applicant’s class 42 user authentication: https://iec-telecom.com/wp-content/uploads/2021/04/21_04_28_Brochure_OneGate_NEW_A4_GLOBAL_PREVIEW_01_LR.pdf
- IEC Telecom – applicant’s class 9 software: https://iec-telecom.com/wp-content/uploads/2019/12/Brochure_OptiAccess_A4_GLOBAL_2019_Update_3_PREVIEW.pdf or <https://iec-telecom.com/en/value-added-services/optiaccess/>
- IEC Telecom – registrant class 42 server hosting: <https://iec-telecom.com/wp-content/uploads/2020/05/IEC-Telecom-ONEGATE.pdf>
- IEC Telecom – registrant's class 9 computer hardware : <https://iec-telecom.com/en/product/fleet-one/>
- Iridium – applicant’s class 38 telecom services: <https://www.iridium.com/broadband/>
- Iridium – applicant’s class 42 cloud service used for electronic transmission of data: <https://investor.iridium.com/2022-12-21-Iridium-Introduces-its-Next-Generation-Satellite-IoT-Data-Service>
- Iridium – applicant’s class 9 apparatus for transmission of communication/geolocation: <https://www.iridium.com/products/iridium-go/>
- Iridium – applicant’s class 9 software application and apparatus for transmission of communication: <https://www.iridium.com/products/go-exec-app/>
- Iridium – registrant’s class 42 hosting services and class 9 hardware: <https://www.iridium.com/blog/what-is-a-hosted-payload-iridium-aircon/>
- Kongsberg – applicant’s class 38 rental of telecommunications apparatus services: <https://www.kongsberg.com/maritime/services/rental/>
- Kongsberg – applicant’s class 42 software as a service (data visualization/geospatially): <https://kongsbergdigital.com/news/kongsberg-digital-to-become-the-majority-owner-futureon/>
- Kongsberg – applicant’s class 9 telecom equipment: <https://www.kongsberg.com/no/what-we-do/outer-space/>
- Kongsberg – registrant’s class 42 server hosting: <https://www.kongsberg.com/maritime/about-us/news-and-media/news-archive/2018/the-skys-the-limit-for-multibeam-data-visualisation-and-sharing-with-new/>
- Kongsberg – registrant’s class 9 hardware (and communicate): <https://www.kongsberg.com/maritime/products/onshore/space-based/ais-space-receiver/>
- OneWeb – applicant’s class 38 communication services: <https://oneweb.net/solutions/government/first-responders-solution>
- OneWeb – registrant’s class 42 hosting services and applicant’s class 42 surveying services: <https://oneweb.net/solutions/carrier-enterprise/cellular-backhaul-solution>
- OneWeb – registrant’s class 9 hardware and applicant’s class 9 software: <https://oneweb.net/solutions/carrier-enterprise/community-broadband>
- Redwire – applicant’s class 38 telecom services: N/A
- Redwire – applicant’s class 42 engineering services and class 9 camera: <https://redwirespace.com/capabilities/>
- Redwire – applicant’s class 9 sensor instrument for monitoring space systems: <https://redwirespace.com/products/digital-sun-sensor-64/>
- Redwire – registrant’s class 42 server hosting: N/A

- Redwire – registrant’s class 9 computer hardware: https://redwirespace.com/products/?_sft_product_category=space-based-research and <https://redwirespace.com/products/adsep/>
- Viasat – applicant’s class 42 computer security services: <https://www.viasat.com/defense/solutions/cybersecurity-data-protection/services/>
- Viasat – applicant’s class 9 point-to-point communications equipment: <https://www.viasat.com/products/terminals-and-radios/ground-terminals/>
- Viasat – applicant’s class 9 software and class 38 telecom services: <https://www.viasat.com/content/dam/us-site/antenna-systems/documents/viasat-real-time-earth-brochure.pdf>
- Viasat – registrant’s class 42 server hosting services: <https://www.viasat.com/products/software-and-services/mobile-integrated-solutions/>
- Viasat – registrant’s class 9 hardware (satellite/payload): <https://www.viasat.com/space-innovation/space-systems/small-satellites/>
- Xplore – applicant’s class 42 engineering and class 38 communication services: <https://www.xplore.com/xpeditions/custom.html>
- Xplore – applicant’s class 42 scientific services: https://www.xplore.com/press/releases/2023/01.31.2023_Xplore_multi-sensor_satellite_to_offer_space_data_products_under_NOAA_imagery_license.html
- Xplore – applicant’s class 9 software: https://www.xplore.com/press/releases/2022/04.04.2022_Xplore_reaches_agreement_to_acquire_major_tom_cloud-based_mission_operation_software_and_kubos_flight_software.html
- Xplore – registrant’s class 42 hosting service: <https://www.xplore.com/services/satellite-as-a-service.html>
- Xplore – registrant’s class 9 hardware: <https://www.xplore.com/xcraft.html>

Retrieved May 23, 2023. See attachments.

The applicant's exclusionary language "all of the above used for processing of images, data received from space and exclude server hosting" does not overcome the likelihood of confusion. The evidence shows that consumers are accustomed to encountering the types of goods and services offered by the applicant and registrant from a single source. When such a connection exists in the consumers' minds, the goods and services are related and the exclusionary language does not negate this determination. Consumers may be unaware of the exclusions in applicant's identifications and, given an established relationship between the goods or services being offered under these identical marks, consumers are likely be confused as to the source of the goods and services.

Consumers who encounter the parties' identical marks used in connection with their identical goods and the registrant's related goods and services are likely to be confused about the source of the goods and services.

If applicant has already filed an appeal with the Trademark Trial and Appeal Board, the Board will be notified to resume the appeal. *See* TMEP §715.04(a).

If applicant has not filed an appeal and time remains in the response period for the final Office action, applicant has the remainder of that time to (1) [file another request for reconsideration](#) that complies with and/or overcomes any outstanding final requirement(s) and/or refusal(s), and/or (2) [file a](#)

[notice of appeal](#) to the Board. TMEP §715.03(a)(ii)(B).

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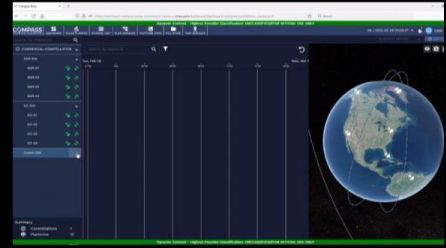
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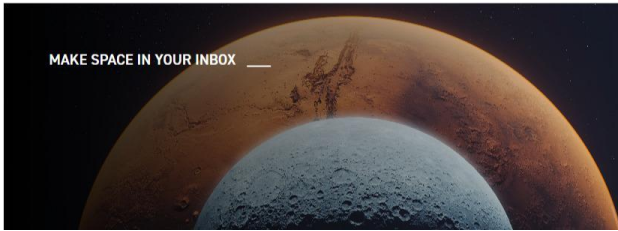


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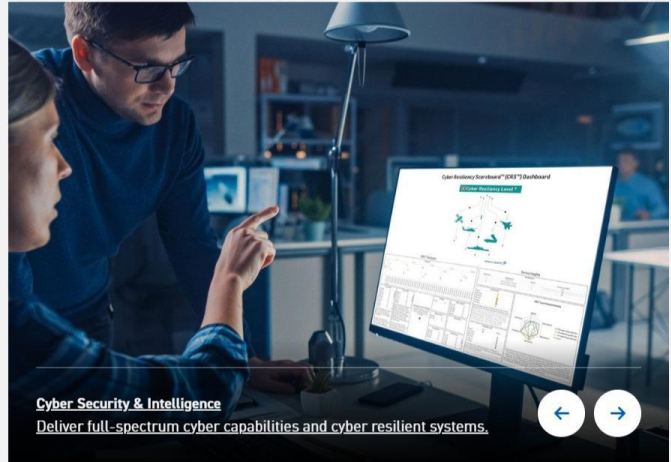
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Nanosats put AI-at-the-edge computing to the test in space

Story

November 16, 2020



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Story



The U.S. military is harnessing and exploring algorithms and machine learning, not just on the ground but also 300-plus miles aloft for small-form-factor space applications.

Artificial intelligence (AI) is rapidly being explored or adopted by the U.S. military for many applications, and one of the most intriguing is tiny satellites, sometimes called nanosats. Machine learning (ML) is creating new opportunities for spacecraft avoidance, automated retasking of sensors based on detected and predicted environmental changes, and direct downlink of mission-significant products to end users.

One noteworthy small-satellite project currently underway is being run by the Space and Engineering Research Center at the University of Southern California's Information Sciences Institute. The goal for its four La Jument nanosatellites is to enhance AI and ML space technologies. Lockheed Martin is building mission payloads for the nanosats, which will use the company's SmartSat software-defined satellite architecture for both the payload and



Exploiting direct RF FPGAs for electronic warfare

May 15, 2023



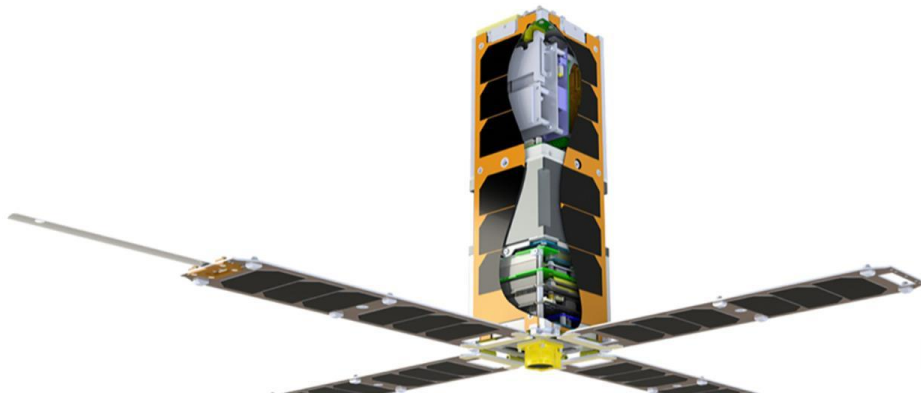
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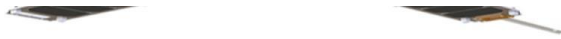
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bus. SmartSat is designed to let satellite operators quickly change missions while in orbit with the simplicity of starting, stopping, or uploading new applications.

“Onboard machine learning in space has many benefits, including improving satellite autonomy and decreasing the time between collecting sensor data and distributing it,” says Adam Johnson, La Jument program director and software engineering director for Lockheed Martin Space (Denver, Colorado). “Today, most missions are planned hours to months ahead of time by analysts on Earth, with autonomy limited to only making critical decisions for navigation and health and status monitoring.”

The La Jument nanosats will enable AI/ML algorithms in orbit, thanks to advanced multicore processing and onboard graphics-processing units. An app being tested is an algorithm known as SuperRes, developed by Lockheed Martin, which can automatically enhance the quality of an image in the same way as a smartphone does. SuperRes enables exploitation and detection of imagery produced by lower-cost, lower-quality image sensors. (Figure 1.)





[Figure 1 | Pictured is an artist rendering of La Jument nanosatellites. Credit: University of Southern California.]

SmartSat also provides cyberthreat detection, while the software-defined payload houses advanced optical and infrared cameras used by Lockheed Martin's Advanced Technology Center to qualify AI and ML technologies for space.

These systems are powered by the NVIDIA Jetson platform, built on top of the CUDA-X capable software stack, and supported by NVIDIA Jetpack software development kit. This configuration facilitates powerful AI-at-the-edge computing capabilities to unlock advanced and digital-signal processing.

AI/ML challenges

While there are significant benefits to using AI in nanosats, it also poses a few challenges.

One major challenge "is the orders of magnitude difference between the compute capacity available aboard a spacecraft vs. on the ground," Johnson points out. "Today, cloud computing offers flexible storage and highly scalable compute options. In space, processors are several generations behind because they must be shielded against the sun's radiation, which adds significant cost."

Lockheed Martin Space is addressing this challenge in several ways, including partnering with universities to research optimizing algorithms for low-powered embedded devices and spacecraft with intermittent connectivity.

"We're leveraging our university partnerships as well as scientists from our Advanced Technology Center to improve fault tolerance of nontraditional space compute devices while exploring techniques for injecting fault tolerance directly into machine-learning algorithms that execute on devices susceptible to radiation effects," Johnson adds.

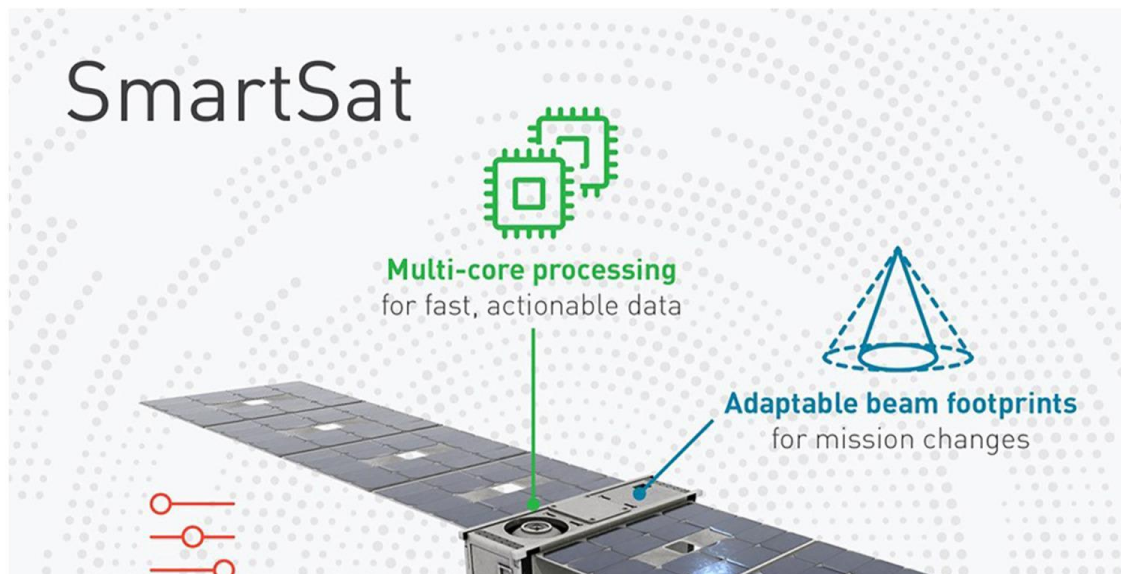
Another major challenge currently being addressed in the AI for nanosats arena is the substantial difference between space and terrestrial environments. "Many AI/ML engineers are accustomed to using high-powered discrete graphics processing units (GPUs) for machine-learning tasks," Johnson says, "whereas deployments to spacecraft might require targeting a field-programmable gate array (FPGA) or low-powered embedded GPU on a

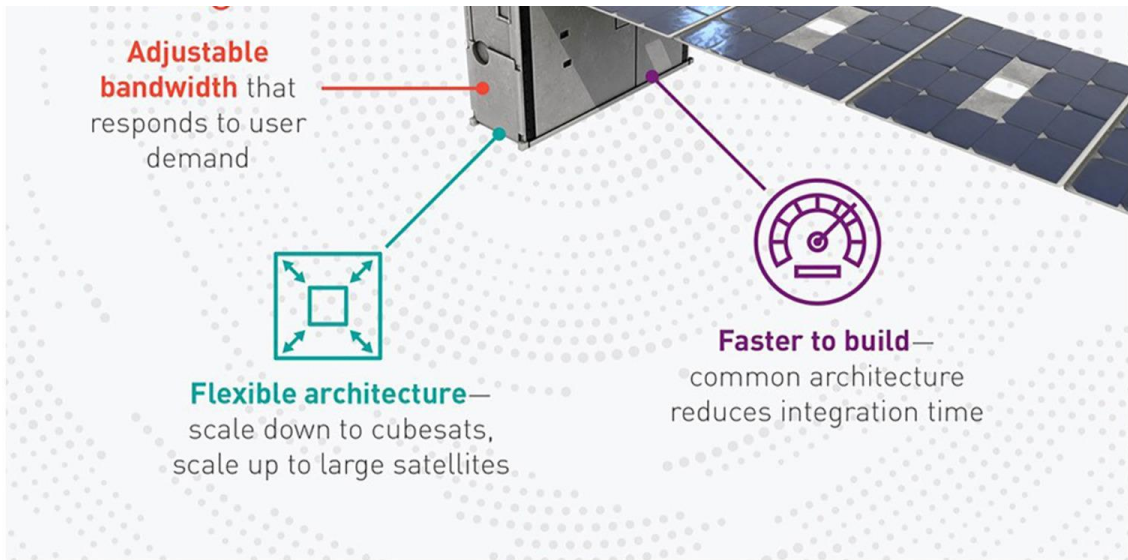
spacecraft might require targeting a field-programmable gate array (FPGA) or low-powered embedded CPU on a system-on-a-chip.”

AI on orbit

SmartSat software-defined satellite architecture enables artificial intelligence on-orbit that wasn't previously possible.

“Today, remote-sensing satellites collect terabytes of data that must be downlinked to a ground station where it's processed and reviewed,” Johnson says. “But SmartSat-enabled satellites could carry mission applications onboard the satellite – including AI – that will conduct processing on the satellite. Doing so means the satellite would only transmit the most relevant data, saving on downlink costs and letting ground analysts focus on the data that matters most.” (Figure 2.)





[Figure 2 | SmartSats is a software-defined satellite architecture created by Lockheed Martin. Credit: Lockheed Martin.]

CubeSats are providing an ideal, low-cost proving ground for Lockheed Martin Space’s software and hardware technologies. “Programs like La Jument are helping advance technology development and to gather meaningful flight data we can use to improve and refine our products,” Johnson asserts.

Lockheed Martin develops single-board computers (SBCs) as well as dedicated processing cards containing FPGAs and GPUs, determining appropriate processing capacity required based on customers’ mission needs and spacecraft size, weight, and power constraints.

“From a software architecture perspective, we use SmartSat open architecture as our application hosting platform across ground and space assets,” Johnson says. “We leverage various open source and vendor-provided

AI/ML frameworks and libraries, including PyTorch, ONNX, and TensorFlow. And we also maintain a significant set of internally developed AI/ML-focused software ranging from space-mission management and command and control to specific mission algorithms.”

Opening doors

AI and autonomy are quickly being adopted by the commercial sector within environments that are predictable and where technology can operate from existing data. The end-user situation is a little different when it comes to government and military systems.

“To integrate AI and autonomy into government and military systems that operate within extreme, highly variable environments requires both technological expertise and deep experience working with defense systems,” Johnson says.

Cloud computing and storage are also opening the door for more widespread AI development on the ground. In space, “on-orbit processing like SmartSat and cloud-computing structures like Lockheed Martin’s SpaceCloud are opening new doors for AI in space,” he adds. “On-orbit processing ultimately saves time and money because the satellite is no longer tied to its downlink window to send data. The onboard computer can analyze and process data, gaining new insights about data that was simply dumped in the past.”

Trusting AI

One of the biggest hurdles for AI so far is trust: “Trusting the behavior and outcomes of our systems is critical to our collective success,” Johnson notes. “The challenge we have as a society is where we place that human within the loop. AI will never replace human intelligence, but it will augment and enrich it.”

Trust is such a critical aspect of AI that “we must be just as strategic about trust as we are about our missions,” he adds. “In space, our systems are thousands of miles away. It’s not easy or even possible to send a repair crew to fix something. Likewise, our astronauts on the International Space Station or the first ones to land on Mars will rely on systems that can predict, self-diagnose problems, and fix themselves while continuing to perform without failing. Human lives depend on it.”

La Jument launches

The first La Jument satellite is a student-designed and -built 1.5U CubeSat that will launch before the end of 2020 with a CubeSat-based payload that will test the complete system from ground to space to the ground station.

with a SmartSat payload. It will test the complete system from ground to space, including ground-station communications links and commanding SmartSat infrastructure while in orbit.

The second to launch is a 3U nanosat, roughly the size of three small milk cartons stacked atop each other, with optical payloads connected to SmartSat to allow AI/ML in-orbit testing. This 3U nanosat is scheduled to launch in February 2021.

The final launch in the La Jument sequence will be a pair of 6U CubeSats, which are being designed jointly by Lockheed Martin Space and a team at the University of Southern California (USC – Los Angeles, California). These will launch mid-2022, and are set to include future research, including new SmartSat apps, sensors, and software bus technologies.

Sidebar

U.S. Army embraces algorithms for situational awareness

Researchers are creating a way to get information updates to warfighters faster via new machine-learning (ML) techniques.

A new method to train classical ML algorithms to operate within constrained environments – especially ones involving coalitions that can be used within various devices by soldiers – has been created by a team of researchers from the U.S. Army's Combat Capabilities Development Command's Army Research Laboratory Defense Science and Technology Laboratory (Aberdeen Proving Ground, Maryland), IBM Thomas J. Watson Research Center (Yorktown Heights, New York), and Pennsylvania State University (State College, Pennsylvania).

Tactical networks tend to suffer from intermittent and low-bandwidth connections within hostile operation environments. Even though artificial intelligence (AI) techniques can potentially improve the situational awareness of soldiers to keep them updated about fast-changing situations, "machine-learning models need to be retrained using updated data, which is often distributed across data sources with unreliable or poor connections," says Ting He, an associate professor at Penn State.

This challenge demands new generations of model-training techniques, the researchers say, to strike a desirable tradeoff between the quality of the obtained models and the amount of data transfer needed.

To tackle this balance, they created "coreset," which uses the approach of a lossy data-compression technique designed for ML applications. It filters and discards redundant data to reduce the amount of data that must be compressed.

"A smaller version of the original dataset that can be used to train machine-learning models with guaranteed approximation to the models trained on the original dataset," He explains. "However, existing coreset construction algorithms are each tailor-made to a targeted machine-learning model. Multiple coresets need to be generated from the same dataset and transferred to a central location to train multiple models, offsetting the benefit of using coresets for data reduction."

So the team set out to explore different coreset construction algorithms with respect to the ML models they are used to training, with a goal of developing a coreset construction algorithm

whose output can simultaneously support the training of multiple ML models with guaranteed qualities.

"Our study revealed that a clustering-based algorithm has outstanding robustness compared to the other algorithms in supporting both unsupervised and supervised learning," He says.

The team also developed a distributed version of the algorithm with a very low communication overhead. "Compared to training a neural network on the raw data, training it on a coreset generated by our proposed algorithm can reduce the data transfer by more than 99% at only an 8% loss of accuracy," He notes.

This result means that the coreset can enhance the performance of machine-learning algorithms, especially within those tactical environments where bandwidth is scarce.

"Given advanced techniques to increase the rate at which analytics can be updated, soldiers will have access to updated and accurate analytics," says Kevin Chan, an electronics engineer at the Army lab. "This research is crucial to Army networking priorities in support of machine learning that enables multidomain operations, with direct applicability to the Army's network modernization priority."

The new algorithm is straightforward to use with various data-capturing devices – including high-volume, low-entropy devices such as surveillance cameras – to significantly reduce the amount of collected data while ensuring guaranteed near-optimal performance for a broad set of ML applications, according to He.

As a result, soldiers will be able to obtain faster updates and smoother transitions as the situation changes at a competitive accuracy.

Beyond applications within the military domain, coresets and distributed ML in general "are also widely applicable within the commercial setting, where multiple organizations would like to jointly learn a model but cannot share all their data," says Shiqiang Wang, an IBM Research staff member and a collaborator on this work.

Going forward, the team will be exploring various ways of combining coreset construction with other data-reduction techniques to achieve more aggressive data compression at a controllable loss of accuracy.

"We're exploring how to optimally allocate bits between coreset construction (generating more samples) and quantization (having a more accurate representation per sample)," He says. "We're also exploring how to optimally combine two approaches: reducing the number of data records using coreset and reducing the number of features per data record using dimensionality-reduction techniques."

AI and ML "are promising techniques to revolutionize how we operate our networked systems and satisfy users' information needs," He notes.

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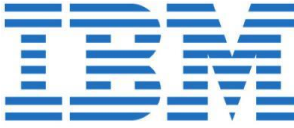
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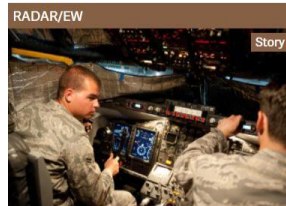
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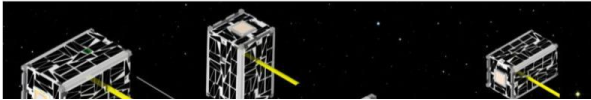
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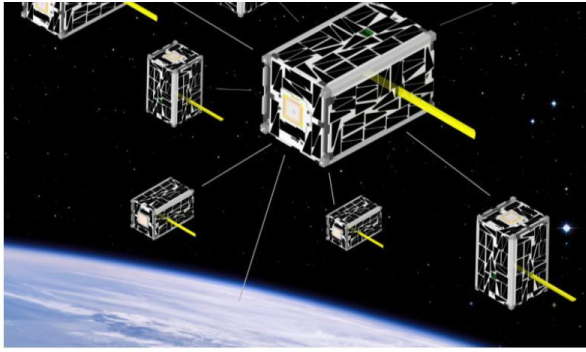
Lockheed Martin studies how to use a cloud of satellites for space missions

BY ALAN BOYLE on June 12, 2019 at 8:30 am

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NASA and Lockheed Martin have been studying how small satellites could be knit together into a distributed swarm. (NASA illustration)

More and more computing is being done in the cloud, but so far, the cloud-based approach hasn't been applied in space.

Lockheed Martin is thinking about changing that.

The aerospace giant has already registered two trademarks for satellite cloud systems — HiveStar and SpaceCloud — and it's considering how the approach can be applied to a range of space missions.

Yvonne Hodge, vice president and chief information officer at Colorado-based Lockheed Martin Space, lifted the curtain on the HiveStar project last week at Amazon's re:MARS conference in Las Vegas.

"It's not just about collecting the data and then sending it back to the ground for processing," Hodge said. "It's about analyzing the information in space ... and then sending the knowledge, the intelligence back to Earth."

One of the keys to the HiveStar architecture is Lockheed Martin's recently announced SmartSat project, which will allow small satellites to be reprogrammed in orbit as easily as adding an app to a smartphone.



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A team of engineers at Lockheed Martin has been working on an arrangement that would knit small satellites like SmartSats into a network for in-space communications and data processing.

NASA has been working on what sounds like a similar technology development program, known as the Swarm Optical Dynamics Adviser or SODA.

Nikita Patel, one of the engineers working on Lockheed Martin's HiveStar project, said her team tested out network configurations using a set of experimental drones. "What we created was a 'hive,' a constellation of heterogeneous nodes that were self-organizing and self-tasking, much like our team," Patel explained.

The network could serve as the basis for a permanent interplanetary information infrastructure. Data from robots and could be processed in the local hive, and the key bits of data could then be passed along through a series of nodes to their intended destinations.

"It would really only require 1-meter-wide mirrors, laser comms and strategically placed devices at various Lagrange points," Patel said. "That's all we would need, and we could ensure a continuous gigabit-per-second connection from Earth to anywhere. But that infrastructure doesn't exist right now."

After the presentation, Hodge told GeekWire that the HiveStar configuration could be used in environments ranging from low Earth orbit to deep space.

"It's a constellation, but it's the software-defined aspect of it that makes it a hive," she said. "It's not like you replicate the mission in every single satellite, but you can distribute the information in such a way so that if something happened to one, then the others can take over."

Hodge said the project is being pushed



Yvonne Hodge is vice president and chief information officer at Lockheed Martin Space. (GeekWire Photo / Alan Boyle)



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Nikita Patel is an engineer at Lockheed Martin.

forward because of customer interest — but declined to get too specific about the potential customers.

"It's important stuff that's classified," she told GeekWire. "The concept is right on in terms of what they were looking for, so we're working that — but now it's broader."

Hodge said HiveStar could see its first deployment within two years, "maybe even sooner." That led me to ask whether the concept could be applied at the moon, which is the focus of a big exploration push on NASA's part.

"Absolutely," she said. "You're good."



GeekWire contributing editor Alan Boyle is an award-winning science writer and veteran space reporter. Formerly of NBCNews.com, he is the author of "The Case for Pluto: How a Little Planet Made a Big Difference." Follow him via CosmicLog.com, on Twitter @Boyle, and on Facebook and MeWe. Reach him via email at alan@geekwire.com.

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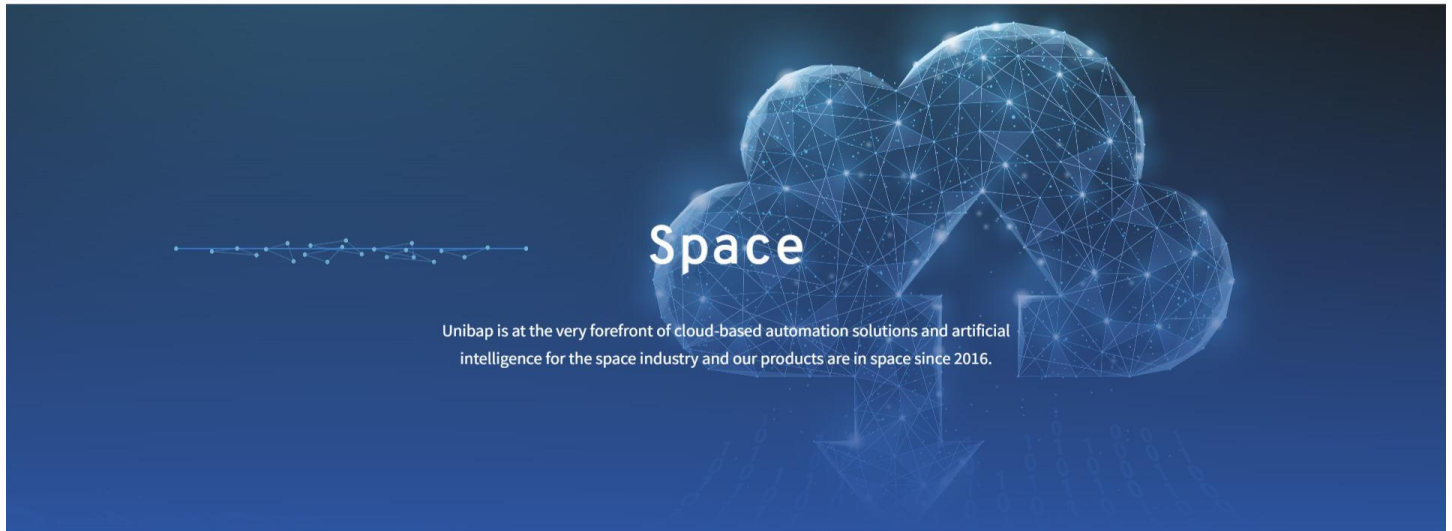
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With our radiation resistant SpaceCloud® Services, we have created a flexible yet powerful infrastructure for artificial intelligence in space. Our software and hardware offer world-leading cloud services, intelligent data processing, sensor management, and storage of data analyses for adapted distribution of relevant information.

Regardless of whether a customer owns, operates or leases workspace in space, we offer a flexible infrastructure for mesh networks, artificial intelligence, application development and frameworks for space adapted IoT systems.

Unibap core space offerings include:

- Radiation tolerant payload computing hardware
- Linux Driver/API & Application Software Development
- AI algorithm development and implementation
- Software for data distribution



The advantage of our space cloud is the possibility of information processing and storage

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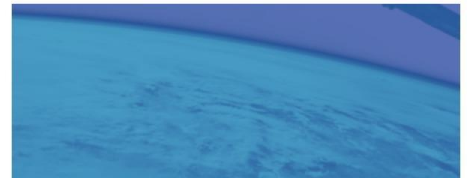
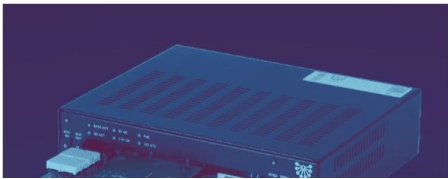
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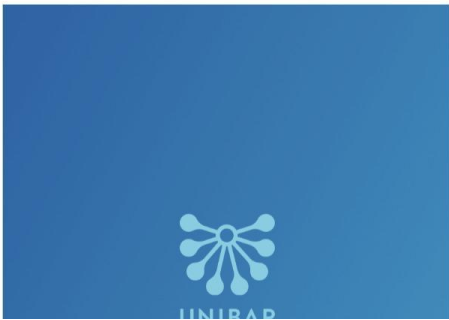
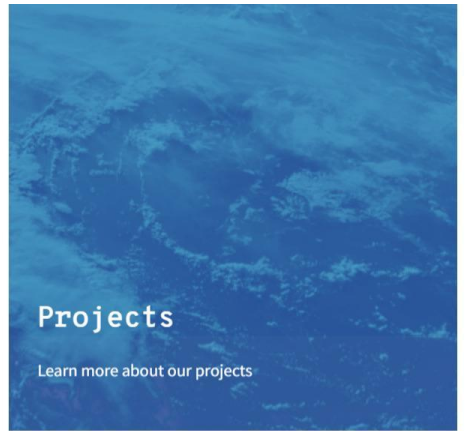
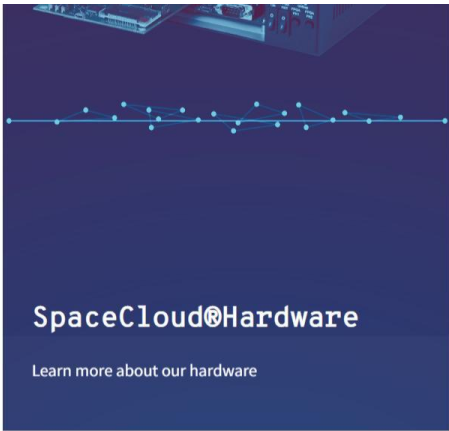


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Contact us for more information on how you can get computer clouds in space or develop applications that are compatible with SpaceCloud®.





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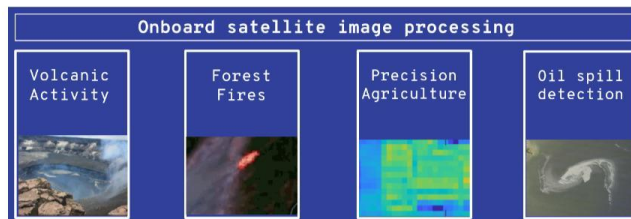
Cloud computing, on Earth and in space

Onboard Apps

SpaceCloud® software can be run on our [solutions](#) and selected products and can easily be integrated into the space vehicles through the solutions. SpaceCloud® offers common types of cloud resources such as processors, GPU or dedicated AI accelerators, and in some cases optimized resources in FPGA technology. For storage, the S3 API is compatible with Amazon Web Services. Machine learning and inference can be done with TensorFlow, TVM, PlaidML, OpenVINO / OneAPI, among others.

Contact us for more information on how you can get computer clouds in space or develop Applications “Apps” that are compatible with the space cloud.

There are endless possibilities with SpaceCloud®, some examples of customer applications that can be placed in SpaceCloud® based on access to sensor data in the thermal area are given here as inspiration:



Examples of SpaceCloud® Apps for onboard information processing.

SpaceCloud® pro development unit

To develop Apps for SpaceCloud®, our SpaceCloud® SDK development environment is needed, which contains software for enhanced radiation tolerance according to the Unibap's SafetyChip and SafetyBoot functionality. SafetyChip and SafetyBoot are supported in Unibap's computer hardware.

Unibap has developed a number of example Apps to show how SpaceCloud® can be used. The development environment is prepared with satellite image examples. Examples of applications can detect vehicles, ships or aircraft based on machine learning.



SpaceCloud® can display the results of Apps in demonstration mode. Unibap's computer hardware has an HDMI output that can be connected to TVs or computer screens with up to full HD (1080p) resolution.

A demo video of three SpaceCloud® reference Apps is shown below. The demos are running on Unibap's [ix5100](#) solution configured with an Intel Movidius Myriad X accelerator in addition to the default CPU and GPU.

- Vehicle detection SpaceCloud® demo App
- Vessel detection SpaceCloud® demo App
- Aircraft detection SpaceCloud® demo App





Visual output of onboard SpaceCloud® App processing.

Unibap offers a high-end development environment (SpaceCloud® -PRO-DEV) that includes a lab variant (EM) of the [iX5100](#) or [iX10100](#). The development environment is a closed box to protect the electronics with the transition from flight contacts to normal computer contacts on the back to reduce wear and facilitate development.

The development environment supports gigabit Ethernet and can easily be connected to continuous integration (Continuous Integration) against e.g. Gitlab for code verification. Unibap provides Docker containers for application development.

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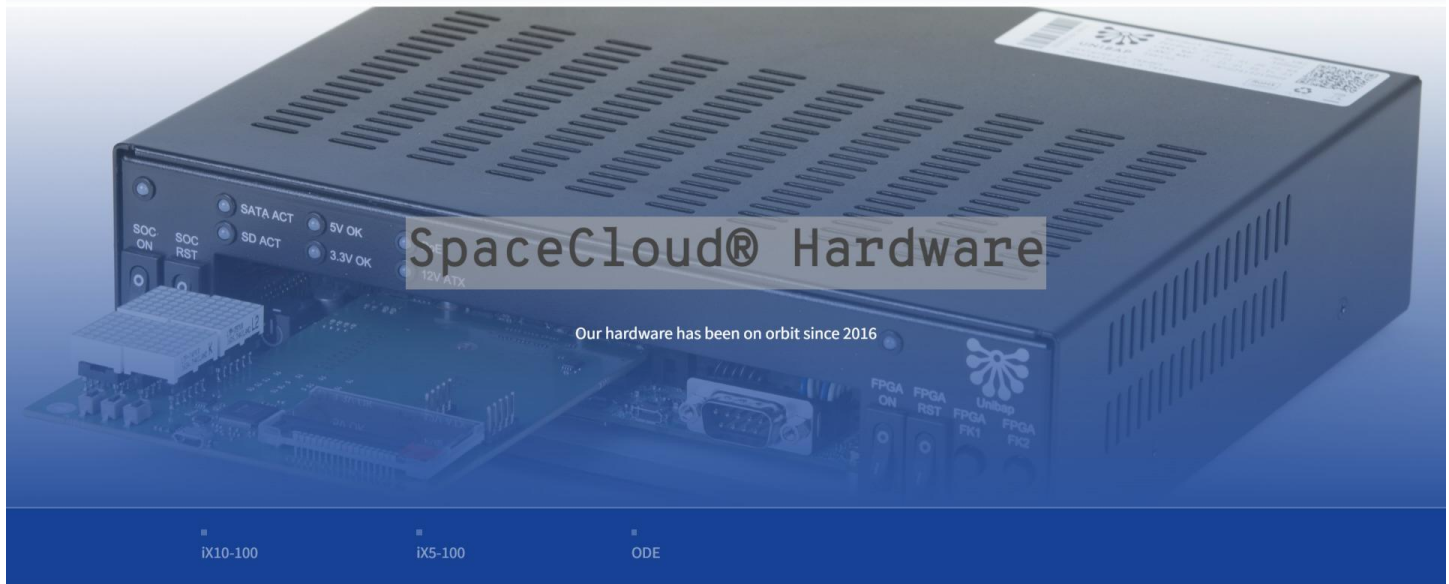


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Hardware for intelligent onboard data processing

Unibap offers space computer solutions for large and small spacecraft. A computer solution contains everything needed in terms of power generation, calculation, data storage, communication interface, etc. Therefore, a computer solution is not comparable to an individual computer card. Our computer solutions are state-of-the-art radiation tolerant intelligent payload processing solutions for applications in space utilizing AMD SoC GPU and CPU in combination with a SmartFusion2 FPGA to provide a powerful computing solution.

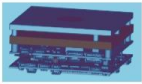
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Since January 2019, Unibap has been collaborating in the US with [Moog Inc](#) for distribution of space and aviation products.

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iX10-100

The iX10100 is the second generation SpaceCloud® computer solution based on the 14 nm AMD x86 Ryzen processor and GPU technology in combination with the Microsemi PolarFire FPGA. The product can be adapted to customers' different input / output (I / O) needs. The solution also has a mini PCIe slot for expansion.

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iX5-100

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Thanks to its open architecture, MOTAC NG can be adapted for use on any type of satellite: Airbus constellation (SPOT6/7, Pléiades and TerraSAR-X) and any other remote sensing satellite. This allows surveillance of large areas up to several times a day, with different resolutions and sensor types (optical and radar). MOTAC NG helps teams to better assess the situation and provides decision makers with relevant and up-to-date information.

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Supply Aero Data

Delivering reliable and complete aeronautical information

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Supply Aero Data

Aeronautical data is an enabler for our EFB and integrated OCC solutions. NAVBLUE delivers **reliable and complete aeronautical information** to increase situational awareness and ensure flight safety.

NAVBLUE works with **200 countries** around the world to gather the data via various sources (AIP, NOTAMs or other proprietary government documents). Our experts receive the data source that we use to update, enrich, and maintain the **master databases** and make them available every 28-day AIRAC cycle.

Quality matters, NAVBLUE holds EASA, and FAA certification and the production processes comply with international standards (ISO 9001/DO-200B). NAVBLUE will make sure that **operational worldwide and regional coverage** is achieved. We **customise our database** to each Customer's specific needs and requirements, and we maintain it. And, NAVBLUE has more than six decades of collecting and providing navigation data to the world's airlines.

Aeronautical Databases

Navigation+

NAVBLUE Navigation Database provides you with the **most relevant aeronautical navigation information** such as enroute, airports including runway characteristics, procedures, tailored records and Grid MORA (minimum off-route altitude).

The Navigation Database is available for the airlines (FMS) and any other aeronautical services providers (ARINC 424 format).

Applicability: **Mixed fleet**

Aircraft Family: **A300 | A310 | A320 | A330 | A340 | A350 | A380 | other**

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Airport+

NAVBLUE Airport Mapping Database is a **collection of relevant aerodrome information** (runways, taxiways, parking slots and buildings, etc...), providing an optimised view of all airport elements, to improve pilot situational awareness and enable Runway Safety functions.

Applicability: **Airbus fleet**

Aircraft Family: **A320 | A330 | A350 | A380**

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Runway Database

NAVBLUE Runway Database is a **validated database**, formatted in ARINC424 format to be loaded in avionics systems. **Dedicated to Runway Safety**, the **database** includes all relevant and critical runway features (name, threshold, length/width, surface type, status, etc.).

Applicability: **Airbus fleet**

Aircraft Family: **A320 | A330** (Note: ROPS TAWS ACSS Thales)

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You may like



Plan and Control

Designed to help manage day-to-day flight operations

NAVBLUE's Plan & Control products and services are designed to assist the OCC user to manage the day-to-day flight operations and cover areas such as network scheduling, crew planning, flight dispatch, crew



Analyze and Optimize

A comprehensive portfolio of fuel and operational efficiency solutions

By considering each stakeholders' needs and challenges, we help you minimise your emissions by reducing fuel consumption and noise. We initiate, enhance, and monitor a robust fuel program and



Manage Risks

Supporting both safety and efficiency

Risk Management is key to support both safety and efficiency. NAVBLUE's Risk Management expertise and solutions are focused on increasing flight safety and efficiency, thereby reducing the risk. NAVBLUE, in close collaboration with Airbus, supports airlines in their

operations

NAVBLUE's Plan & Control products and services are designed to assist the OCC user to manage the day-to-day flight operations and cover areas such as network scheduling, crew planning, flight dispatch, crew scheduling and management, and operations control

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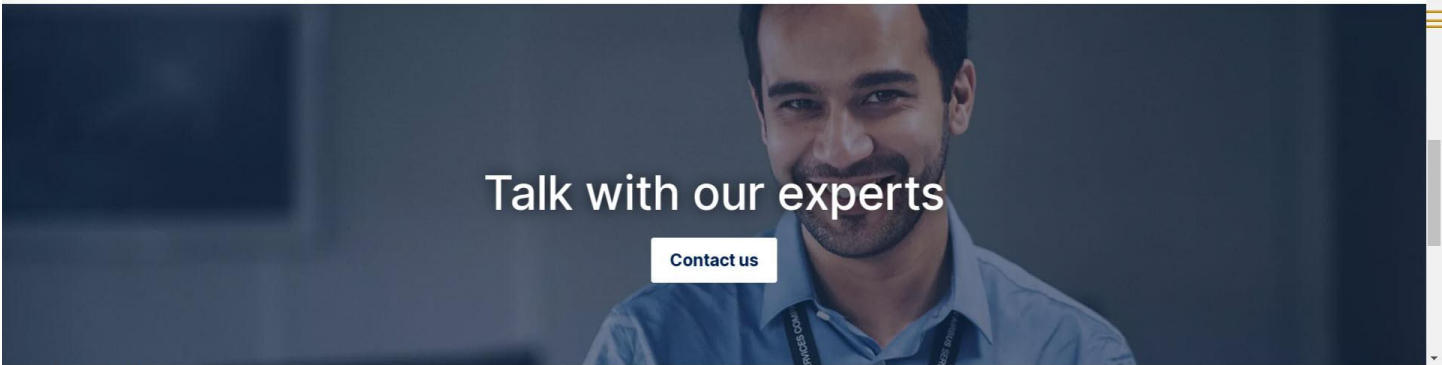
efficiency solutions

By considering each stakeholders' needs and challenges, we help you minimise your emissions by reducing fuel consumption and noise. We initiate, enhance, and monitor a robust fuel program and design, validate, and implement the most efficient performance trajectories.

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Risk Management is key to support both safety and efficiency. NAVBLUE's Risk Management expertise and solutions are focused on increasing flight safety and efficiency, thereby reducing the risk. NAVBLUE, in close collaboration with Airbus, supports airlines in their efforts to put in place a robust Risk Management process within their organisation to enhance safety and efficiency and at the same time comply with authority requirements.

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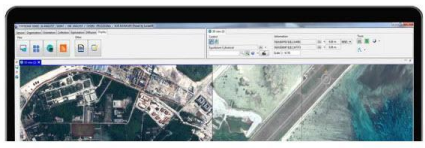
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Fortion® Image Analyst

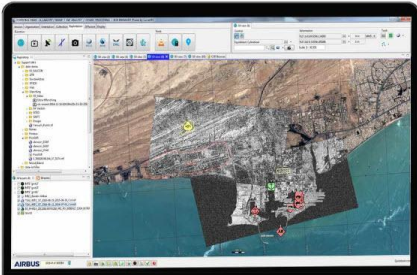
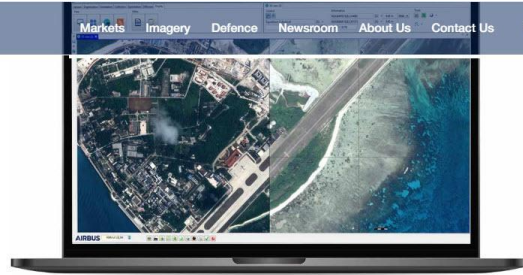
The advanced image and video analysis tool

Fortion® Image Analyst is an efficient analysis tool that creates strategic and tactical reports from multiple image sources and contributes to the Common Intelligence Picture.

Fortion Image Analyst provides a **powerful image and cartographic environment**. It is a modern and **user friendly software for multi-sensors exploitation** (imagery, video and Ground Moving Target Indicator (GMTI)) and the **creation of image intelligence (IMINT)** products. It offers advanced support for detection, recognition and identification of objects by integration of Automatic Target Recognition (ATR) functionality as well as Fortion® RECCE Engine® and Fortion® IMINT KDB® modules for interactive identification support.



a modern and **user friendly software** for **multi-sensors exploitation** (imagery, video **AIRBUS** Moving **DEFENCE AND SPACE**) and the **creation of image intelligence (IMINT)** products. It offers advanced support for detection, recognition and identification of objects by integration of Automatic Target Recognition (ATR) functionality as well as Fortion® RECCE Engine® and Fortion® IMINT KDB® modules for interactive identification support.

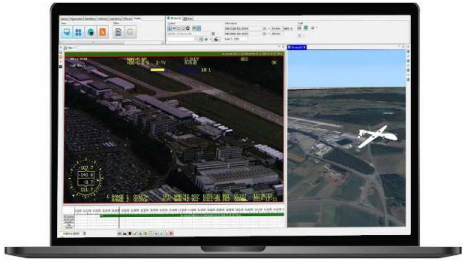
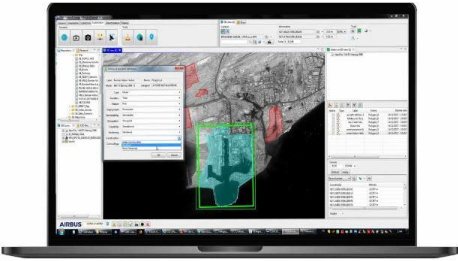


Fortion Image Analyst can operate in **strategic, tactical or surveillance context** for site analysis, targeting, mission planning and damage assessment. It offers a rapid image processing of image and video data, regardless of its size originating from satellites, aircrafts and UAS and can display a geographical 3D location. Fortion Image Analyst is part of the Fortion Intelligence, Surveillance and Reconnaissance (ISR) product family covering the intelligence cycle. Especially through its connection to Fortion® CSD and Fortion® Workflow modules, the system can request various kinds of intelligence data (images, video clips, GMTI plots, tracks, Automatic Identification System (AIS), Link 16 data), receive tasks and disseminate specific added-value images or videos as well as exploitation reports.



Key features

- Display and analyse various types of information (images, vectors, videos and GMTI) with on the fly projection
- Reporting and standard office documents
- Integrated with Fortion® RECCE Engine® and Fortion® IMINT KDB® for infrastructure and mobile targets recognition



Your advantages with Fortion Image Analyst

Your advantages with Fortion Image Analyst



Mature software application for multi-sensor exploitation



Supports all the major satellite image providers



Supports NATO standards for video, GMTI, reporting and symbols and is interoperable with NATO STANAGs



Fully part of the Intelligence Requirement Management and Collection Management (IRM&CM) processes

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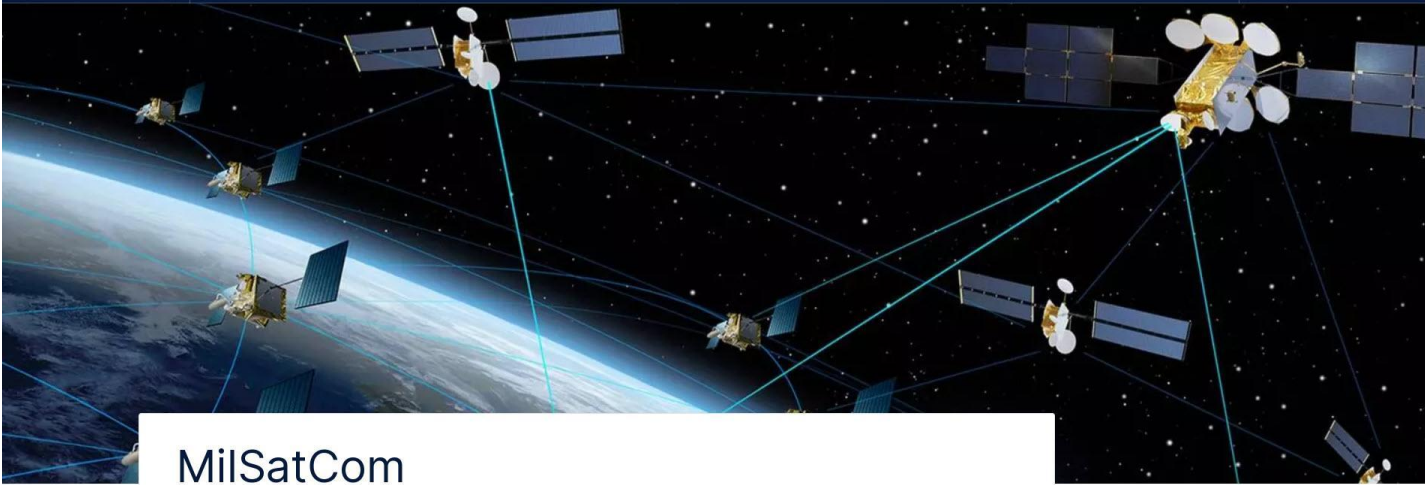
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MilSatCom

As military forces increasingly use space-based assets to fulfil their missions, these technologies have become especially vital for communications networks – ensuring users always are connected and ready for the growing amount of data to be collected and disseminated...on the ground, in the air and in orbit.

Airbus is a world leader in military satellite communication services, providing solutions that benefit from the company's 40+ years of experience delivering and maintaining communication services for military and defence users. It offers the broadest portfolio of services available today for this segment – from mission-specific solutions based on usage needs to the creation of complete end-to-end systems, along with services and support for full operational capability.

Unrivalled solutions for military communications

As a full-service space company, Airbus can design, integrate, launch, and operate communications satellites, as well as provide fixed and mobile ground stations. With these capabilities, it serves as a single-source supplier of long-distance communications with stationary, deployable, and mobile components providing:

- Sovereign capability,



- Sovereign capability,
- International interoperability,
- Robust, powerful and scalable communications,
- High flexibility and innovation through an intelligent mix of resources and services.



To achieve the best performance for military satellite communications, Airbus is committed to utilising the growing range of available spacecraft – from military and civil telecom satellites in geostationary orbit to the new generation of laser-equipped relay platforms.

Space innovation from top to bottom



SATCOMBw

Airbus has been contracted as a long-term operator of the SATCOMBw secure satellite communications system for Germany's Armed Forces, including the in-orbit functioning of the COMSATBw1 and COMSATBw 2 military satellites, as well as the operation of their teleports and associated networks.

COMSATBw-1 and COMSATBw-2 provide UHF and X-band services, with additional capacity in C- and Ku-band, across a coverage area stretching from the Americas to Eastern Asia.

[More on SATCOMBw](#)

Syracuse IV satellite-based telecommunications programme

The Syracuse IV satellite-based telecommunications programme aims to equip the French armed forces with secure means of communication that are accessible in all scenarios (crises, major disasters, etc.).

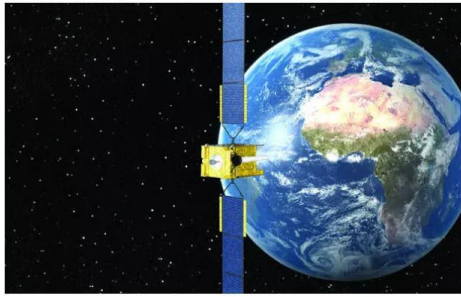
This programme comprises two military satellites, Syracuse 4A and 4B, and ground stations for users in the three services (army, air force and navy), and enables long-range communication between operations areas and decision-making centres in mainland France.

The satellites, operating using X- and Ka-bands, will offer increased performance in terms of communication capacity, flexibility and resistance to jamming in order to meet the future needs of armed forces.

This also includes the execution of the ground control segment and the configuration of these new satellites, the completion of new Ka-band anchor stations, and support for these systems over a 17-year period from the commissioning of the first satellite.



[More on Syracuse IV](#)



Skynet 5

Airbus is the primary contractor, architect, and service provider for Great Britain's Skynet satellite system. Built to military standards, Skynet 5 satellites are the world's most powerful commercial X-band satellites and provide assured communications during critical operations.

The Skynet 5 programme has reduced or removed many of the technical and service risks for the Ministry of Defence, while ensuring unrivalled secure military satellite communications to UK forces. The Airbus teams work hand in hand with the customer to deliver an exceptionally reliable Skynet service that offers significant sovereign capability to the UK.

[More on Skynet 5](#)

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11:39:24 AM 5/23/2023

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Precision Farming

Precision agriculture leaders can now build incomparable farming services in no time at all

Rapidly growing populations, limited farm lands and resources, movement towards greener practices and commodity price impacts on farmers revenues - are all factors calling for increased production and more sustainable agriculture.

Our answer? Precision Farming!

Over the 30 last years, Intelligence has developed expertise in **collecting the required imagery on time**, and in **extracting consistent vegetation indicators, which are robust regardless of the satellite imagery used**. These turn-key analytics, powered by biophysical inversion enables **quantification of biomass** or **nutrient content**, and **monitors fields** with no bias, free of ground measurement. Combined with agro-meteorological models, they can be accurately turned into prescriptions to dose fertilisers, water, growth regulators and pesticides, finally

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We aim at providing **agriculture service providers**, advisors and agronomists with a living reference layer of **high resolution satellite imagery, premium crop analytics** and **field delineation**.

Thanks to our Precision Farming services

- Access the **largest satellite imagery archive** and in-season images from 22m up to 50cm resolution
- Access **data coming from different image sources** to ensure the right image at the right time (SPOT, DMC Constellation, Sentinel 2, Landsat 8, Vision-1, Pleiades, drones).
- Rely on our unique capacity to provide **robust analytics** whatever the viewing angle, the sensor and the light condition
- Easily access the data depending on your need: **Portal, API, download, streaming**

Our services in Precision Farming



Crop Analytics for Precision Farming

First-class Crop Analytics for next level Precision Farming

Crop Analytics provides precision-agriculture leaders and digital start-ups with incomparable **vegetation maps, perfectly clipped to the field and accurately de-clouded**.



Crop Analytics for Precision Farming

First-class Crop Analytics for next level Precision Farming

Crop Analytics provides precision-agriculture leaders and digital start-ups with incomparable **vegetation maps, perfectly clipped to the field** and **accurately de-clouded**.

[Learn more about Crop Analytics](#)

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Farmstar

Supporting your daily farming decision making

Crop management tool providing **farming advice** throughout the growing cycle.

[Learn more about Farmstar](#)



Support your application with on-demand expertise



Basemap, powered by OneAtlas

Mapping fields is now easy

Simple and cost-effective access to satellite imagery no older than 12 months, covering the entire world.

[Learn more about Basemap](#)

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Our Imagery

Quick and easy access to premium satellite data



Our Imagery

Quick and easy access to premium satellite data

Our extensive constellation of satellites ensures you quickly get the **right pixels at the right time with the right resolution** to meet your needs.

[Learn more about our Imagery](#)



What our customers say



DataFarming

"We are looking at expanding our product offering to our 7,500 farm user base who wants more detail about their crops, beyond just NDVI. Having higher resolution on some of the data is a key value proposition. This is where Crop Analytics fits quite nicely. We have already processed 4,000,000 hectares of NDVI to date, and want to leverage our user base to offer this value-added service. Crops such as cotton, rice and sugarcane will certainly benefit."

Tim Neale,
Managing Director,
DataFarming

[DataFarming website](#)

Descartes Labs

"At Descartes Labs, we help companies across the **agricultural supply chain extract insights from geospatial data**. The Airbus SPOT and Pléiades collections power **predictive analytics** into agricultural production, supply chain efficiencies and sustainability that aren't otherwise available. These data sets are a valuable business asset."

Fritz Schlereth,
Head of Product,
Descartes Labs

[Descartes Labs website](#)

Our products in action



Euralis Adopts Farmstar to



Euralis Adopts Farmstar to Optimise Crop Production

Airbus provide regular and reliable agronomic guidelines for 2,100 hectares of wheat and rape fields for the Euralis cooperative. Optimized inputs for higher yields, improved wheat protein levels and reduced costs.

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- > Farmstar Brochure ECO
- > Crop Analytics for Precision Farming: First Class Analytics for Next Level Precision Farming
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Solutions provided by Airbus, Jena-Optronik and TESAT

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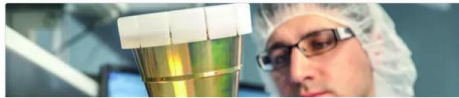
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Airbus' Space Products unit is a preferred supplier of space equipment and services and serves the worldwide market through its own brand as well as the brands Jena-Optronik and TESAT.

Combining our decades-long equipment heritage with an innovative spirit, we focus on helping our customer's missions fly.

Our product portfolio

From high-end missions to "New space" applications:



Our product portfolio

From high-end missions to "New space" applications:

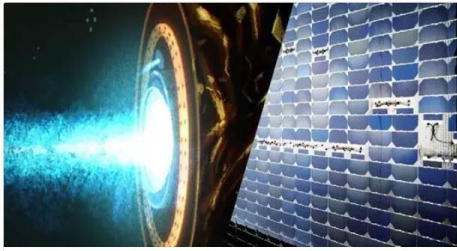


Avionics

The building blocks for space programmes worldwide

Airbus' avionics portfolio covers a complete range of compact and powerful onboard computers, launcher electronics and other world-class platform data handling equipment and interface units. Jena Optronik is the market leader for star sensors and rendezvous & docking light detection and ranging (LIDAR) sensors.

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Power

Airbus empowers customers' missions

As a leading European manufacturer of power solutions, Airbus has vast experience in providing turnkey solar arrays, photovoltaic assemblies and solar cell assemblies for institutional and commercial applications. The company also offers a full range of electronics - including power control units, power processing units for electric propulsion and electric power conditioners.

[Read more >](#)



Payload

Airbus is a trusted global leader in mass memories and solid-state recorders for all types of space missions. The company offers payload data handling units with compression and encryption features; radar and video electronic units; payload instrument control units; high precision, low noise timing solutions for navigation constellations and scientific applications, as well as many other mission-critical products. Airbus also provides unparalleled air quality and greenhouse gas instruments. TESAT is the world leader in RF (radio frequency) payload products and for laser communications. Jena Optronik delivers cutting-edge multi-spectral imagers and building blocks.

[Read more >](#)



New Space equipment

Airbus developed PureLine, a proven family of compact and lightweight electronic products – initially envisioned for constellation applications, paving the way for disruptive unit prices while maintaining high quality. All components are intensively radiation-tested to ensure flawless operation for 10 years in low-Earth orbit. With its cutting-edge Sparkwing design, Airbus is the go-to partner for hassle-free smallsat solar arrays. TESAT offers inter-satellite as well as direct-to-Earth laser communication with disruptive “New space” products. In addition, Jena Optronik developed ASTRO CL, a breakthrough star sensor for smallsat and “New space” applications.


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HiPer

Mechanical and Thermal

Airbus developed HiPeR, a scalable High Performance Radiator product suite (thermal straps, flexible film radiator panels...) that brings disruptive benefits compared to traditional aluminum radiators. The company also provides tailored functional structures and radiator mechanical products where HiPeR's advantages can be exploited.

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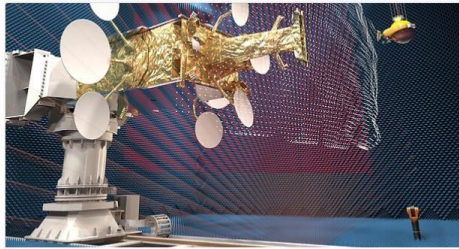
Launcher products

Helping you bringing your mission up!

Benefiting from a strong heritage in equipment for launchers, Airbus contributes to the European success story. With state-of-the-art products and facilities, Airbus has played a key role in electronics and structures for the Ariane 5, Ariane 6 and Vega launchers.

[Read more >](#)

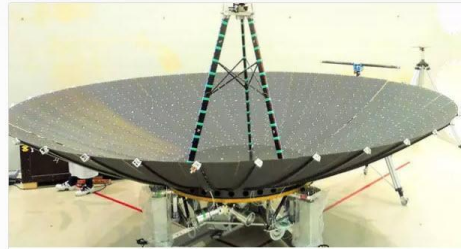




On ground

Do you have testing needs? With 50 years of experience in high-end antenna measurement techniques, Airbus offers Compensated Compact Ranges (CCRs) that represent the world standard in antenna test facilities for the space industry. Our on-ground support also extends to a wide range of test equipment for avionics and TM/TC, as well as interface simulators. In addition, we also act as an EEE parts agency to optimize your parts purchase. Learn more about our "on-ground" support capabilities.

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Mechanisms

Centre of Excellence Mechanisms

Airbus offers a wide range of space mechanism solutions with heritage for

- Earth observation
- Communication
- Deployables
- Mechanism drive electronics

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12 October 2016

Space

Airbus Defense and Space Provides Managed Hosting, Geospatial Streaming Services and GATOR Device to the State of North Carolina for Hurricane Matthew Support





i-cubed, an Airbus Defense and Space company based in Fort Collins, Colorado, is supplying the State of North Carolina with imagery streaming services to help prepare and respond to Hurricane Matthew. Additionally, a Geospatial Appliance Targeted for Operational Response device, also dubbed GATOR, has been sent to North Carolina state officials to help with emergency response efforts.

Share



... Airbus Defense and Space company based in Fort Worth, Colorado, is supplying the State of North Carolina with imagery streaming services to help prepare and respond to Hurricane Matthew. Additionally, a Geospatial Appliance Targeted for Operational Response device, also dubbed GATOR, has been sent to North Carolina state officials to help with emergency response efforts.



The streaming services will provide state officials and emergency responders improved situational awareness by having access to six-inch orthorectified imagery over 27 coastal counties, collected between January and March 2016 as part of the 911 Statewide Orthoimagery Program. The streaming services can be used in applications that are compatible with SOAP, REST, WMS or WMTS services such as: Esri Web or Desktop Applications, open source software, CAD, DataDoors or custom applications.

The GATOR device is an encapsulated and portable geospatial server for disconnected field use. It's a 'grab and go' appliance that provides Humanitarian Relief Workers and Disaster Response Teams with flexible access to streaming raster data within their GIS software environment. While designed for disconnected use, when connectivity is available, GATOR services can be broadcasted over a local area network (LAN). The ability to access six-inch resolution data while being completely disconnected, en-route, or based at a remote location, assists Disaster Response Teams in making informed decisions if life-threatening situations occur. Emergency response personnel would have the ability to see the original location of small electrical utilities or drainage features, which may not be apparent at a location with standing water or covered with debris, for example.

"Thanks to our reliable data management solutions, leveraging on Airbus Defense and Space's optical and radar satellites, we are able to support emergency response efforts when devastating natural disasters happen" says Greg Buckman, Head of Airbus Defense and Space's Intelligence Business Activities in North America. "We are utilizing all of our resources to help increase the response time and dissemination of information for teams involved with the response to Hurricane Matthew."

Airbus Defense and Space offers unique data management solutions, including managed hosting

Natural disasters happen every day, and many heads of Airbus Defense and Space emergency Business Activities in North America. "We are utilizing all of our resources to help increase the response time and dissemination of information for teams involved with the response to Hurricane Matthew."

Airbus Defense and Space offers unique data management solutions, including managed hosting and streaming services to a variety of markets.

To learn more about how North Carolina state officials will supply the information to emergency response officials, please read more here. [↗](#)

Your contact

Fabienne Grazzini

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OPTIACCESS

The complete data compression & emailing software

OptiACCESS is a data compression and emailing software that allows you access to the best web services everywhere: Emailing, Web browsing, Weather, Social Media & Blogging.



MANAGE YOUR EMAILS

OptiACCESS is quick and easy to set up, allowing you access to your emails right away. Single email address per business unit (vessel/ camp/ remote office, etc.) with simple management, via any web enabled device, including read, forward, reply, attachments and filing. With OptiACCESS, you can connect to the internet for only the time required to send and receive data. Moreover, in case you get disconnected, OptiACCESS resumes data transfer



CHOOSE WHAT YOU RECEIVE

OptiACCESS «BigMail» prompts you with the subject and email size so you can decide whether (and when) you want to download a large file from someone. Moreover, OptiACCESS helps you to manage your mail flow with the ability to whitelist or blacklist certain email addresses. Our systems come with multiple virus scanners and spam filters to provide safe and relevant mails to you while ensuring compliance with data protection regulations.

enabled device, including read, forward, reply, attachments and filing. With OptiACCESS, you can connect to the internet for only the time required to send and receive data. Moreover, in case you get disconnected, OptiACCESS resumes data transfer from the exact point of interruption.

**SAVE UP TO 95%
ON YOUR BILLS**

**OPTIACCESS ONLY GENERATES
AN AVERAGE OF 5% OF THE DATA
CREATED BY A STANDARD EMAILING
SOFTWARE**

now with the ability to whitelist or blacklist certain email addresses. Our systems come with multiple virus scanners and spam filters to provide safe and relevant mails to you while ensuring compliance with data protection legislations.




STAY CONNECTED EVERYWHERE

OptiACCESS makes web browsing easy with XWeb (optional). This web portal blocks ads, compresses texts and images, and deletes all wallpapers (too data consuming).

Browse the web pages that load 3 to 5 times faster! Share your experiences on social media and Sailblog (optional) directly with OptiACCESS. A shortcut allows you to set up your accounts and post compressed images and texts via email.



 **YOUR WEATHER FORECAST IN ONE CLICK**

Weather file (GRIB) request, applications are integrated within OptiACCESS allowing you to parameter, compress, and receive multiple GRIB files for your trips by email.

An intuitive interface lets you visualize and directly select the information you need (itinerary, satellite images, weather, forecast.)



- Compatible with:
- Windows
 - iOS
 - Android
- Works with equipment of all major satellite operators:
- Inmarsat
 - Thuraya
 - Telenor
 - Iridium
 - GlobalStar

weather files; social media platforms, and even automatically sends your GPS position to be geolocated.

A powerful firewall blocks all undesired connections to avoid unexpected data consumptions, leaving you the ability to configure your network's access to your preferred devices.



2 / 2 | 150% + |

FOUR WEATHER FORECAST IN ONE CLICK

Weather file (GRIB) request, applications are integrated within OptiACCESS allowing you to parameter, compress, and receive multiple GRIB files for your trips by email.

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Compatible with:


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- iOS
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- Inmarsat
- Thuraya
- Telenor
- Iridium
- GlobalStar

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A powerful firewall blocks all undesired connections to avoid unexpected data consumptions, leaving you the ability to configure your network's access to your preferred devices.





Contact

Become Our Partner


Join Our Team

Write us a message

First Name...
Last Name...
Company...

JOIN OUR GROWING NETWORK

IEC Telecom supports the complete lifecycle of satellite communications solutions. We're empowered by our strong local and regional partnerships with distributors and service providers to provide our customers with communication options when, where, and how they choose to do business. Our

Last Name...
Company...
Email...
Country...
Interest...
Message...
How did you hear about us?
 I'm not a robot 
Send

IEC Telecom supports the complete lifecycle of satellite communications solutions. We're empowered by our strong local and regional partnerships with distributors and service providers to provide our customers with communication options when, where, and how they choose to do business. Our dedicated teams work 24/7/365 to extend technical support, comprehensive account management, pre-sales and sales consultations, marketing services, inventory and asset management, bespoke airtime packages, hardware rentals, tracking solutions, crew training, and more. Join our growing network today.




Country... ▾

Interest... ▾

Message... ✎

How did you hear about us? ▾

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comprehensive account management, pre-sales and sales consultations, marketing services, inventory and asset management, bespoke airtime packages, hardware rentals, tracking solutions, crew training, and more. Join our growing network today.



SATELLITE PRODUCTS | DIGITAL SOLUTIONS | VALUE-ADDED SERVICES

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ONEGATE

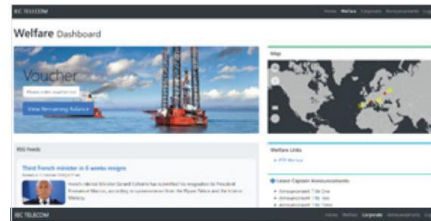
360° network management solution



Agile, lightweight, and easy to install, OneGate is a future-ready network management solution designed to operate in dual GSM/satcom mode. Designed with a customisable dashboard, OneGate allows to remotely manage the traffic, issue crew/guest vouchers, alter access levels as well as add, update or upgrade new applications. In addition, this system comes with an inbuilt Wi-Fi controller and superior cyber security toolkit. Lastly, it optimises the default bandwidth while automatically routing data over the least-cost network available, thus, delivering the best user experience at an optimal fee.

LOCAL DASHBOARD

- Protected access to the corporate dashboard
- Voucher monitoring
- Full visibility over WAN links data and bandwidth usage
- Access to the hotspot management portal



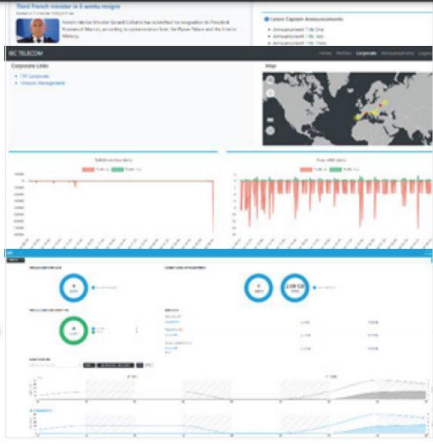
Brochure_OneGate_NEW_A4_GLOBAL_PREVIEW 1 / 2 | - 150% + |

usage

- Access to the hotspot management portal
- Signal strength monitoring and tracking
- Internal announcement feature
- RSS feed from major news networks (Optional)

CREW/GUEST VOUCHERS

- Managed locally or via IEC Telecom customer support
- The captive portal intercepts users on the crew network and requests authentication
- Data distributed via in-built Wi-Fi router, enabling remote teams to stay connected via personal devices



WAN OPTIMISATION

- TCP compression and redundancy elimination

INTEGRATED LTE FAILOVER

- Integrated LTE modem to reduce costs

- TCP compression and redundancy elimination
- TCP Acceleration
- Avoids unnecessary retransmissions
- Maximum line speed
- Link bonding and balancing

FILTRATION AND USAGE CONTROL

- Two-stage filtration possible, onshore and offshore
- Application identification and categories classification (WhatsApp, etc.)
- Advanced usage reports to provide full visibility of the network traffic

- Integrated LTE modem to reduce costs
- Seamless failover between LTE and satellite links

CYBER SECURITY

- Two levels of cyber security: at the gateway and remote
- Advanced intrusion detection and gateway antivirus on board
- Endpoint security with remote configuration
- Advanced Filters designed per WAN link (VSAT, L-Band, LTE) as required
- Full vulnerability monitoring from central shore dashboard

ADD-ONS

The functionality of OneGate can be further expanded with a wide range of IEC Telecom applications geared to operate in a low-bandwidth environment.








Optimised application for videoconferencing



Remote maintenance delivered over hands-free handset

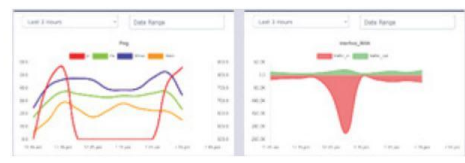


Video surveillance software with advanced remote access

Optimised application for videoconferencing	Remote maintenance delivered over hands-free handset	Video surveillance software with advanced remote access
 ONEHealth <small>powered by Digigene</small> Portable digital telemedicine kit	 Virtual portal for network management and apps administration	 ONEMailLite Cost-effective email service for small vessels
 ONECover Cutting-edge antivirus solution for remote networks	 ONEMailPro Email service for vessels with multiple users	 ONEShare Bi-directional file-transfer service for sea-shore data replication

OPTIVIEW: END-USER PORTAL

- Full visibility over WAN links
- Advanced filtration management
- History of bandwidth usage



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ONECover
Cutting-edge antivirus solution for remote networks

ONEMailPro
Email service for vessels with multiple users

ONEShare
Bi-directional file-transfer service for sea-shore data replication

OPTIVIEW: END-USER PORTAL

- Full visibility over WAN links
- Advanced filtration management
- History of bandwidth usage
- Usage details report
- Credit limit management
- Voucher monitoring
- Tracking & signal monitoring

The screenshot displays the OPTIVIEW portal interface. It features two line graphs at the top showing network performance metrics over a 24-hour period. Below the graphs are two data tables. The first table, titled 'Top Application Categories Bandwidth (MB)', lists various application categories and their bandwidth usage. The second table, titled 'Top 10 Blocked Applications', lists specific applications that have been blocked and their associated bandwidth usage.

Application Category	Bandwidth (MB)
Video Streaming	120000
File Transfer	80000
Web Browsing	60000
Instant Messaging	40000
Cloud Storage	30000
Mobile Apps	20000
Other	10000

#	AppID	Application	Bandwidth
1	10101	WhatsApp	120000
2	10102	Telegram	80000
3	10103	Signal	60000
4	10104	Other	40000
5	10105	Other	30000
6	10106	Other	20000
7	10107	Other	15000
8	10108	Other	10000
9	10109	Other	8000
10	10110	Other	5000

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Focus: IEC Telecom's OneGate

VSAT endpoint protection...

By Alf Stian Mauritz, Group Vice President and Managing Director of Business Development, IEC Telecom

One Gate provides multi-levels of protection by combining multi-layered technology, machine learning and human expertise to provide the best level of protection possible.

The system provides endpoint protection to support all operating systems, including Windows, Mac, Linux and Android, all managed from a single security center.

IEC Telecom's OneGate solution also provides a local proxy to optimize SATCOM and the technology's anti-virus maritime solution comes with an option for automatic updates from a central point inside a vessel's network to avoid redundant data download.

In addition, OneGate protects against the introduction of cyber threats from users by separating the vessel management system from its crew welfare network. Crew are able to access social media networks, internet

Future proofing vessel systems to enable them to adapt to emerging threats and evolve to meet new requirements is essential. OneGate has been built with this facility already in place.

Business contingency planning is crucial and IEC telecom provides GSM and L-band back up to ensure minimal connectivity is secured — even if the VSAT fails while the vessel is at sea. This also enables IEC's support services to remotely access the systems. Under those circumstances, the MSS backup link will be restricted to emails only by default (the IEC home networks only).

OneGate also helps ship operators to overcome logistics problems when it comes to updating onboard systems. Revealing that 90 percent of their technician's time is spent trouble-shooting from remote sites,

Mr. Mauritz explained, "In the past, in order to carry out a system repair or update the vessel operator had to organize for a software engineer to meet the vessel and go on board to configure it. This could take three to four months to arrange. Today, using OneGate, we can access all the ship operating systems from a central dashboard without needed to be present on board. We can do in two minutes what previously took several months to achieve."

The cost savings and greater efficiencies of such a facility are significant.

In addition, OneGate protects against the introduction of cyber threats from users by separating the vessel management system from its crew welfare network. Crew are able to access social media networks, internet services, online training resources, and so on, without impacting on critical vessel functions.

Vessel operators are able to maintain tight control over their communication budgets and usage and can even set credit limits on in-bundle data usage, enabling the link to be automatically disconnected when the limit is reached.

Mr. Mauritz said, "Every time we go on board vessels we discover things like outdated software no longer supported by the provider or protected by anti-virus software. This is why we are now introducing a OneGate machine for Windows that will enable us to host servers and take control of updates. We believe it is important to enable customers to work in a way they are familiar with and the company can help to bring those standardized solutions up to date."

several months to achieve."

The cost savings and greater efficiencies of such a facility are significant. Future proofing vessel systems to enable them to adapt to emerging threats and evolve to meet new requirements is essential. OneGate has been built with this facility already in place.

Mr. Mauritz added, "Greater vessel digitalization may lead eventually to autonomous vessels where the nature of cyber threats will evolve too. Today we need to make sure that we are putting the correct infrastructure in place in order to be able to respond to new cyber threats as they emerge in the future."

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Alf Stian Mauritz has been the Managing Director of IEC Telecom Norway since 2005, when he created the company. IEC Telecom Group undertook a strategic investment by acquiring the Norwegian company Tradee Telecom in 2012. Since then Alf Stian has led IEC Telecoms' expansion into both Sweden and Denmark. Following this successful





expansion, Alf Stian was appointed to the position of Group VP - Business Development. He has a deep understanding of Northern European countries and their need for reliable telecommunications and has substantial experience in providing advanced



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SatMagazine — November 2019

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INMARSAT FLEET ONE

Fleet One is designed to provide reliable and secure telecommunications at sea.

It provides cost effective and competitive pricing for users to access internet, write emails and make phone calls when cellular networks are not available or are unstable.

Fleet One has a 'plug and play' ethernet connection to a computer and can support multiple smartphones, tablets and computers via an optional Wi-Fi router.

FleetXpress coverage

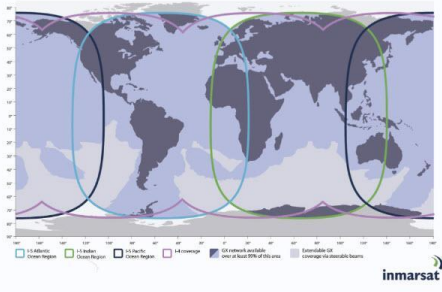


KEY POINTS

Global coverage: Fleet One is designed for voice and data connectivity

Unsurpassed durability: Fleet One provides the same standards as the existing Sailor Fleet Broadband product line

FleetXpress coverage



KEY POINTS

Global coverage: Fleet One is designed for voice and data connectivity

Unsurpassed durability: Fleet One provides the same standards as the existing Sailor Fleet Broadband product line

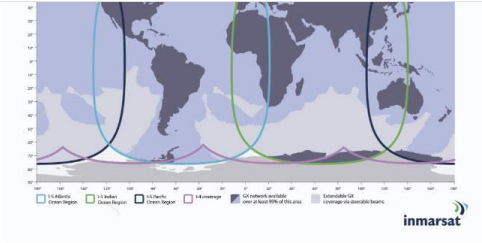
Standard IP data: an always-on connection at up to 150 kbps for applications such as email, internet access or weather reporting

Access safety service: Fleet One supports Inmarsat's unique '505' safety service. In case of emergency you can place a call to the closest rescue service

Ease of use: the compact antenna can be quickly installed on day boats and weighs only 3.9 kg

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- Global coverage: Fleet One is designed for voice and data connectivity
- Unsurpassed durability: Fleet One provides the same standards as the existing Sailor Fleet Broadband product line
- Standard IP data: an always-on connection at up to 150 kbps for applications such as email, internet access or weather reporting
- Access safety service: Fleet One supports Inmarsat's unique '505' safety service. In case of emergency you can place a call to the closest rescue service
- Ease of use: the compact antenna can be quickly installed on day boats and weighs only 3.9 kg

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Products > Iridium Product > Iridium GO!



Iridium GO!®

Manufacturer: Iridium | Model: 9560; PN: AHKTN1901

Services: Voice Calling | Iridium Short Burst Data® (SBD®)

Buy Now

- Truly Global Connectivity on Your Own Mobile Devices
- Pair with Iridium GO! App for Use with iOS and Android Devices
- Connect up to Five (5) Devices Wirelessly
- Prepaid Plans Available
- Dust Proof, Shock Resistant, and Jet-Water Resistant

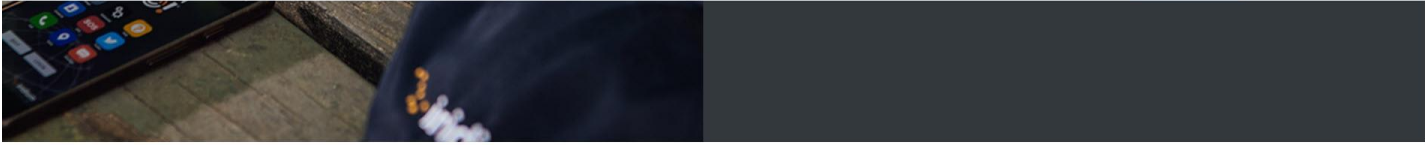


Dust Proof, Shock Resistant, and Jet-water Resistant



Personal Communications Wherever You GO!

Iridium GO! provides global voice calling and text messaging solutions for your smart device, as well as enhanced data capabilities offered through optimized apps to meet your unique needs. No worries. No roaming charges. Just connected and in touch wherever you are, whenever you need, with the devices you rely on everyday.



Transform Your Smart Device - Anywhere

Featuring a compact, portable design, Iridium GO! is easy to carry, stow in your backpack, or mount for mobile applications so you can stay connected everywhere.

Easy to Use

- Stable, lay-flat design with a flip-up antenna and simple user interface.

Extreme Durable

- Dust proof, shock resistant, and jet-water resistant with IP65 and MIL-STD-883C.





Featuring a compact, portable design, Iridium GO! is easy to carry, stow in your backpack, or mount for mobile applications so you can stay connected everywhere.



➤ **Easy to Use**

- Stable, lay-flat design with a flip-up antenna and simple user interface

➤ **Voice Calling**

- Reliable satellite voice calling through your personal device from anywhere in the world

➤ **New Iridium GO! App**

- Compatible with iOS or Android devices for voice calling, SMS text messaging, SOS alerts, GPS, weather forecasts, and more

➤ **Real-Time Connectivity**

- Two-way voice and data

➤ **Extreme Durable**

- Dust proof, shock resistant, and jet-water resistant with IP65 and MIL-STD 810F ratings

➤ **Emergency Ready**

- Programmable one-touch SOS with access to 24/7 emergency assistance

➤ **Installation Kits**

- A range of installation kits available for on-the-move and fixed installation applications





forecasts, and more

- ▶ **Real-Time Connectivity**
 - Two-way voice and data communications and location-based information on your own device in real-time

Related Case Studies

Preet Chandi Sends Updates Throughout Historic South Pole Trek



Keeping An Arctic Expedition Connected



Iridium® Keeps Climate Researchers Connected in the South Pole





Supplied by Global Telesat Communications (GTC), an Iridium GO!® and Iridium Extreme® allowed Preet to share photos and audio blogs from one of earth's most remote locations.



One of Jeff's recent expeditions took him and his team on a course through the Arctic, where only Iridium could provide the coverage and connectivity to stay in touch. Using the Iridium Edge® Solar, his followers tracked his team's expedition in real time from start to finish.



Iridium's tracking and communication devices provide a dynamic toolkit for conducting and relaying critical findings.



Technical Specifications





Technical Specifications

Mechanical

Dimensions (L x W x H)	114mm x 82mm x 32mm
Weight	305 g

Environmental

Operating Temperature Range	10 to 50 °C
Durability Standard	MIL-STD 810F
Ingress Protection	IP65

Battery

Battery Life, Talk Time	5.5 hr
Battery Life, Standby	15.5 hr





Battery Life, Talk Time	5.5 hr
Battery Life, Standby	15.5 hr
Network	
Telephony	Yes
Location Based Services	Yes
User Experience	
GEOS Support	Yes

Certifications

Related Products



- ITU
- CE
- IC
- FCC Parts 15B, 25
- Australia
- Mexico
- ANATEL
- ICASA
- ISO-9001

Related Products





Iridium Extreme®
By: Iridium



Iridium Extreme® in Safety Yellow
By: Iridium



Iridium Extreme® in Sporting Camo
By: Iridium



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Related Services





Related Services



Voice Calling
By: Iridium



Iridium Short Burst Data® (SBD®)
By: Iridium

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Related Accessories

12:22:01 PM 5/23/2023





Related Accessories



Iridium GO!® Vehicular Kit
By: Iridium



Iridium GO!® Fixed Installation Kit
By: Iridium

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Related Apps



Iridium GO!® App
By: Iridium



Iridium Mail App
By: Iridium



PredictWind Offshore App
By: PredictWind Ltd

BY
By: B





Related Developer Technology



Iridium Core 9523
By: Iridium

Setup Details





Setup Details



Iridium GO! Device Setup and Smart Device Apps



Iridium GO! Device Setup



Iridium GO! App Setup



Iridium GO! Device Setup





Awards



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Resources

Advertising	Last Updated	Size	
Be Prepared. Stay Connected. - Checklist	Jun 11, 2020	1.33 MB	  
Iridium GO! - Brochure (EMC)	Jan 17, 2019	550.76 KB	  

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Be Prepared, Stay Connected - Checklist	Jun 11, 2020	1.33 MB			
Brochure					
Iridium GO! - Brochure (ENG)	Jan 17, 2018	580.26 KB			
Iridium GO! - Brochure (RUS)	Jan 17, 2018	4.88 MB			
Iridium GO! - Brochure (SPA)	Jan 17, 2018	1.53 MB			
Iridium GO! - GEOS Brochure	Jan 17, 2018	752.95 KB			
Case Study					
Case Study: Iridium Pilot - Keeping Climate Researchers Connected in the South Pole	Jun 11, 2021	609.44 KB			
Case Study: Keeping An Arctic Expedition Connected	May 24, 2022	1.5 MB			
Case Study: World Traveler Avoids Storms by Utilizing the Power of Iridium GO! and OCENS	Jan 17, 2018	194.42 KB			
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Iridium Australia - Asbestos Declaration	Feb 07, 2022	168.34 KB			
Iridium Edge Solar 9560N - UKCA Declaration of Conformity	Dec 20, 2022	302.68 KB			

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Iridium GO! - ANATEL Certificate of Equipment Authorization (Brazil)	Oct 23, 2019	583.29 KB	
Iridium GO! - ANATEL Certificate of Technical Conformity (Brazil)	May 31, 2021	161.52 KB	
Iridium GO! - EU Declaration of Conformity	Nov 07, 2019	117.2 KB	
Iridium GO! - EU Type Examination Certificate (9560N)	Oct 24, 2019	889.52 KB	
Iridium GO! - Product Regulatory & Safety Card	Dec 17, 2018	1.58 MB	
Iridium GO! - REACH 209 Declaration (ANKTN/9560N)	Aug 15, 2020	166.86 KB	
Iridium GO! - Rechargeable Lithium Ion Battery (BAT1301) - Report for Safe Transport of Goods (by Air) - Battery & Device	Feb 11, 2022	567.93 KB	
Iridium GO! - Rechargeable Lithium Ion Battery (BAT1301) - Report for Safe Transport of Goods (by Air) - Battery Only	Feb 11, 2022	534.1 KB	
Iridium GO! - Rechargeable Lithium Ion Battery (BAT1301) - Report for Safe Transport of Goods (by Sea) - Battery & Device	Feb 11, 2022	659.13 KB	
Iridium GO! - Rechargeable Lithium Ion Battery (BAT1301) - Report for Safe Transport of Goods (by Sea) - Battery Only	Feb 11, 2022	616.15 KB	
Iridium GO! - RoHS Certificate of Compliance (9560)	Jun 11, 2014	918.43 KB	
Iridium GO! - RoHS Certificate of Compliance (AHKTN/9560N)	May 20, 2020	192.4 KB	





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▼ Iridium GO! - RoHS Certificate of Compliance (AHKTN/9560N)	May 20, 2020	192.4 KB	
▼ Iridium REACH 223 Declarations - All Products - February 15, 2022	May 16, 2022	9.24 MB	
▼ Iridium SIM Cards - REACH 219 Declaration	Jun 28, 2021	169.57 KB	
▼ Iridium SIM Cards - RoHS Certificate of Compliance	Jun 28, 2021	195.08 KB	
▼ Iridium Subscriber Equipment - TSCA Declaration	May 21, 2021	241.54 KB	
▼ Iridium Subscriber Products - EU REACH 224 SVHC Declaration	Sep 21, 2022	218.45 KB	
▼ Iridium Subscriber Products - EU RoHS Certification of Compliance	Dec 19, 2022	251.91 KB	
Comparison Chart			
▼ Iridium Land Mobile - Comparison Chart - Products - By Service Class	Oct 14, 2021	456.81 KB	
▼ Iridium Personal Communication Devices - Comparison Chart	May 26, 2022	226.52 KB	
FAQs & Troubleshooting			
▼ Iridium GO! - FAQs	Jan 17, 2018	412.1 KB	





FAQs & Troubleshooting

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Iridium GO! - Firmware Update v2.1.8 - Iridium SBD Upgrade FAQs	Oct 10, 2018	171.55 KB			

Fact Sheet

Iridium GO! - Fixed Installation Kit - Fact Sheet	Dec 31, 2020	1.34 MB			
Iridium GO! Vehicular Kit - Fact Sheet	May 24, 2021	3.23 MB			

Firm/Software Upgrade & Release Note

Iridium GO! - Firmware v1.5.2 (Users)	Jan 17, 2018	48.09 MB			
Iridium GO! - Firmware v2.1.8 (Users)	Oct 03, 2018	47.9 MB			
Iridium GO! - Release Note & Firmware (v2.1.22)	Sep 29, 2021	47.69 MB			
Iridium GO! - Release Note & Upgrade Instructions - Users (Firmware v1.5.2)	Jan 17, 2018	531.77 KB			

Imagery - Lifestyle

Iridium GO! - Lifestyle Imagery - Adventure	Feb 04, 2020	15.09 MB			
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Imagery - Lifestyle

Iridium GO! - Lifestyle Imagery - Adventure	Feb 04, 2020	15.09 MB			
Iridium GO! - Lifestyle Imagery - Winter	Apr 26, 2018	94.6 MB			

Legal Notice

Iridium - Satellite Subscriber - Service Policy	Jan 17, 2018	48.95 KB			
Iridium GO! - Legal Information Booklet	Jan 17, 2018	86.76 KB			
Iridium GO! - Unlimited Fair Access Policy	Jan 17, 2018	61.71 KB			

Product & Service Manuals

Iridium GO! - Captain Crew Calling	Jan 17, 2018	255.27 KB			
Iridium GO! - Pre-Trip Checklist	Jul 17, 2019	591.96 KB			
Iridium GO! - Quick Start Guide (JPN)	Jan 17, 2018	1.95 MB			
Iridium GO! - Quick Start Guide (Multi-Lingual)	Feb 04, 2021	10.15 MB			
Iridium GO! - Quick Start Guide, Advanced Portal	Jan 17, 2018	229.52 KB			





Iridium GO! - User Manual	Nov 29, 2021	3.66 MB			
Iridium GO! - User Manual (IPOR)	Mar 14, 2018	1.04 MB			
Iridium GO! - Wall Mounting Instruction Guide	Jan 17, 2018	851.18 KB			
Iridium GO! Fixed Installation Kit - Quick Start Guide	Jan 17, 2018	1.14 MB			
Iridium GO! Vehicular Kit - Installation Guide	May 21, 2021	1006.74 KB			
Iridium Mail & Web App - User Guide (Android)	Jan 17, 2018	232.92 KB			
Iridium Mail & Web App - User Guide (iOS)	Jan 17, 2018	236 KB			
Product Details					
Iridium GO! - Technical Specifications	Jan 17, 2018	164.62 KB			
Use Cases & Infographics					
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Iridium GO! Vehicular Kit - Use Case - RV Camping	May 07, 2021	3.64 MB			
Test Your Satellite Phone - Infographic - Handset	Jan 17, 2018	73.43 KB			

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Test Your Satellite Phone - Infographic - Iridium GO!	Jan 17, 2018	201.11 KB			
Video					
Iridium GO! - Video - Be Free	Aug 13, 2018	63.28 MB			
Iridium GO! - Video - How to Use the Iridium GO!	Nov 30, 2020	772.46 MB			
Iridium GO! - Video - How to Use the Iridium GO! (SPA)	Dec 15, 2020	767.29 MB			
Iridium Land Mobile - Video - Satellite Solutions (HD)	Sep 08, 2020	32.88 MB			
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No Category					
Iridium Product PFAS Restrictions Declaration	Dec 06, 2022	180.74 KB			



Iridium GO!®

Featuring a compact, portable design, Iridium GO! is easy to carry, stow in your backpack, or mount for mobile.



Iridium GO!®

Featuring a compact, portable design, Iridium GO! is easy to carry, stow in your backpack, or mount for mobile applications so you can stay connected everywhere.

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Iridium GO! exec App

Developer: **Iridium**

Products: Iridium GO! exec: Portable Wireless Access Device

- An Iridium GO! exec™ device & Iridium® service subscription are required to use this app
- Fast, easy setup
- Sync your smartphone's contact list to the app.



Stay In Touch Wherever You GO!

Iridium GO! exec is the world's first portable, touchscreen-enabled satellite access device. It extends satellite connectivity to your smart devices for select e-mail, chat, social media, and weather apps—as well as simultaneous access for up to two high-quality voice lines.

Easy To Use—Where & When You Need It

Start by connecting your smartphone, tablet, or laptop using the app or by scanning the QR code (smartphone and tablet only) on the Iridium GO! exec device. Connect to its Wi-Fi signal and you're ready to GO!

Speak Or Chat

- Iridium GO! exec supports voice calls and chat apps like WhatsApp, WeChat, and iMessage.

Optimized

- Iridium GO! exec comes with several preconfigured firewall settings for popular apps, such as WhatsApp

Connection Manager

- Use the built-in Connection Manager to quickly connect to the Internet and manage airtime usage

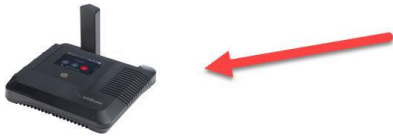
Easy Upgrades

- Use the app to wirelessly update your Iridium GO! exec's firmware





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Iridium GO! exec: Portable Wireless Access Device
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Iridium GO! exec: Portable Wireless Access Device
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Fact Sheet	Last Updated	Size	
Iridium GO! exec - Fact Sheet	Feb 17, 2023	1.47 MB	  

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Broadband

Broadband services are optimized for speed and bandwidth, enabling high-quality voice calls, video streaming, full internet access, and file, photo, and video transfers. With speed classes ranging from 176 Kbps to 704 Kbps, Iridium's broadband services offer significant benefits in safety, efficiency, and reliability.

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All Services



Iridium OpenPort®



Iridium Certus® 700



Iridium Certus® 200



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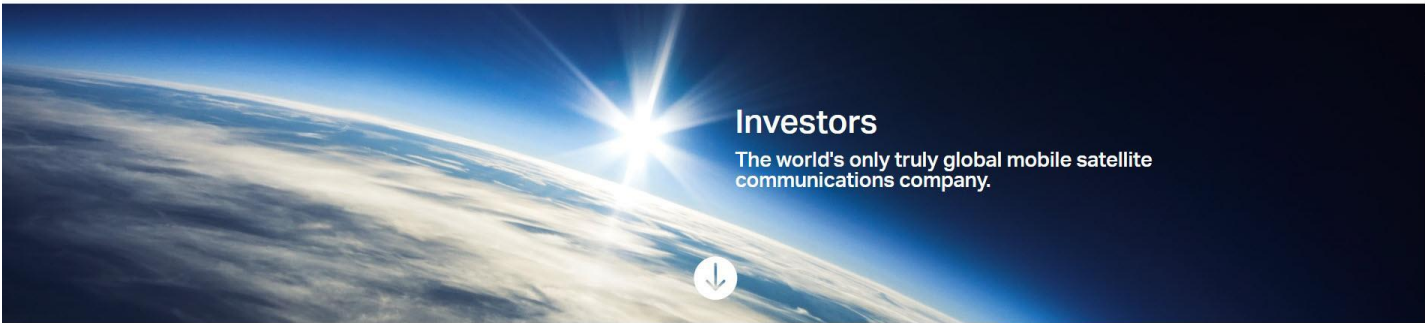
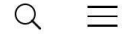
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The world's only truly global mobile satellite communications company.



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Iridium Introduces its Next Generation Satellite IoT Data Service



Iridium Marescauro Transport (IMT) simplifies the development of satellite IoT services

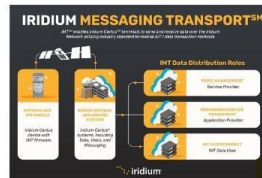


Iridium Introduces its Next Generation Satellite IoT Data Service



Iridium Messaging Transport (IMT) simplifies the development of satellite IoT services

MCLEAN, Va., Dec. 21, 2022 /PRNewswire/ -- Iridium Communications Inc. (Nasdaq: IRDM) today announced the service introduction of Iridium Messaging Transport™ (IMT™), a two-way cloud-native networked data service optimized for use over Iridium Certus® and designed to make it easier to add satellite connections to existing or new IoT solutions. IMT provides an IP data transport service unique to the Iridium® network, designed for small-to-moderate-sized messages supporting satellite IoT applications. Integrated with Iridium CloudConnect and Amazon Web Services (AWS), the new service can reduce development costs and speed time to market for new Iridium Connected® IoT devices. IMT has been highly anticipated by Iridium's partner ecosystem and is currently available for the Iridium Certus 100 service with introduction on Iridium Certus 200, 350 and 700 planned for the first quarter of 2023.



As a connectionless messaging service for Iridium Certus™ modules, IMT aligns with current established server-device message constructs using hubs, Pub/Sub or queues, depending on application platforms. The IMT service can be used by a customer application that is 'store and forward' or has small amounts of data traffic that does not require a persistent connection between servers, utilizing an Iridium Certus terminal. Whether it's machine-to-machine (M2M), e-mails, weather updates, transactions, or group communications, IMT enhances two-way messaging to and from anywhere in the world.



Whether spaces, substations, or group communications, IMT enables the way messaging is sent from anywhere in the world.

IMT is utilized with the Iridium CloudConnect model of server-side message processing, regardless of the underlying over-the-air and ground systems technologies and protocols. The Iridium CloudConnect service combines Iridium IoT capabilities with AWS cloud services extending customers' IoT reach to the more than 85 percent of the earth that lacks terrestrial coverage. IMT utilizes industry-standard protocols and technology for managing and delivering messages in the cloud, including MQTT, HTTPS and WebSocket (WSS). This makes IMT an easier, faster, and less expensive protocol to develop with, supporting users with countless advantages to design applications that are scalable and easier to distribute to other platforms.

Among the first products built with IMT available are the RockREMOTE by Ground Control and STREAM+ by MetOcean Telematics. The RockREMOTE offers a reliable and flexible solution for industrial IoT applications including oil and gas, mining, utilities and renewables, and transport & cargo. It has a built-in MQTT application that allows developers to submit and receive data payloads across the MQTT protocol. Users can send and receive messages, pictures, to and from anywhere in the world utilizing this IMT implementation over the Iridium Certus 100 service.

Also powered by Iridium Certus 100, STREAM+ allows users to send and receive files and messages securely. Designed for field applications with size, weight, and power constraints, STREAM+ offers a range of industry standard protocols, features, and inputs simplifying integration and installation for end users and reducing development costs and overall time to market.

Also currently working on IMT service-based solutions are Iridium partners Beam Communications, Blue Sky Network, CLS Group, Globalsat Group, Lars Thrane A/S and Zunibal.

"The launch of Iridium Messaging Transport adds another powerful capability to the Iridium Certus portfolio and another value-added service for our partners and the growing IoT market," said Bryan Hartin, executive vice president, sales and marketing, Iridium. "Our partners are excited about IMT as it will make it faster and easier for them to add Iridium satellite connectivity to new and existing solutions needed across a number of industries."

Unique in the satellite industry, Iridium Certus is the only broadband service that provides reliable, weather-resilient connectivity for on-the-move internet, high-quality voice, email, live-action video and IoT data transfer. Through its constellation of crosslinked satellites in Low-Earth Orbit (LEO), Iridium is the only communications company that offers truly global coverage and is ideally suited for IoT applications.

For more information about Iridium visit: www.iridium.com

Iridium Communications Inc.



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For more information about Iridium visit: www.iridium.com

Iridium Communications Inc.

Iridium® is the only mobile voice and data satellite communications network that spans the entire globe. Iridium enables connections between people, organizations and assets to and from anywhere, in real time. Together with its ecosystem of partner companies, Iridium delivers an innovative and rich portfolio of reliable solutions for markets that require truly global communications. In 2019, the company completed a generational upgrade of its satellite network and launched its new specialty broadband service, Iridium Certus®. Iridium Communications Inc. is headquartered in McLean, Va., U.S.A., and its common stock trades on the Nasdaq Global Select Market under the ticker symbol IRDM. For more information about Iridium products, services and partner solutions, visit www.iridium.com.

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Stock Quote

NASDAQ: IRDM	
\$60.48 Last Price	-\$1.32 (-2.14%) Change
142.8K Volume	\$7.6B Market Cap

Currency in USD. Quote data delayed by at least 15 minutes.

For More Information

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(703) 287-7570
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What is a Hosted Payload?

Aug 21, 2018 | Aireon, Executive Vision, Innovation, Iridium NEXT, Partner News



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dunch, especially when talking about our recent Iridium NEXT launches. But what exactly does that mean, and why is it so important?

First things first – what is a hosted payload? The Hosted Payload Alliance, a satellite industry alliance designed to bridge government and private industry, defines a hosted payload as: "A portion of a satellite, such as a sensor, instrument or a set of communications transponders that are owned by an organization or agency other than the primary satellite operator [Owner]. The hosted portion of the satellite operates independently of the main spacecraft, but shares the satellite's power supply, transponders, and in some cases, ground systems."

This model is becoming increasingly popular because of its benefits to both the satellite host and the hosted payload owner. The host (like Iridium), benefits from expanded capabilities by upsizing at a lower cost, savings from cost-sharing, and additional revenue opportunities, among many others. Meanwhile, hosted payload owners reap many benefits too. Namely, they can get into space quickly and less expensively since they do not have to develop an entire satellite system.

Here at Iridium, we have a long history with hosted payloads. Our original constellation, known as Block 1, hosted the Active Magnetosphere and Planetary Electrodynamics Response Experiment (AMPERE) program for years. Although Block 1 was not originally designed for hosting payloads, the constellation accommodated secondary missions using existing sensors on the satellites. The AMPERE sensors monitor space weather data in real time, enabling high-quality forecasting of space-based solar storms that can disrupt aviation and terrestrial telecom and satellite systems.

Seeing the benefits of a hosted payload partnership in Block 1, we specifically designed our new, second-generation satellites with a hosted payload opportunity in mind. The satellites currently being launched through our Iridium NEXT mission program were built to host an additional 50 kg payload from the start, a unique accommodation.

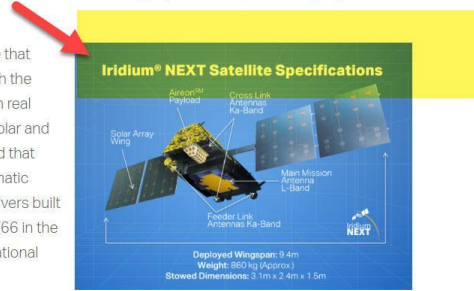




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In 2012, we **announced** [Aireon](#), a joint-venture that would provide air navigation service providers with the capability to track aircraft anywhere in the world in real time, including the only coverage over oceanic, polar and remote regions. This announcement also revealed that Aireon's service would use space-qualified Automatic Dependent Surveillance-Broadcast (ADS-B) receivers built into each of our 81 second-generation satellites (66 in the operational constellation) to deliver its transformational capabilities.



With seven of eight Iridium NEXT launches complete, Aireon has already begun receiving data, delivering impressive **results** [earlier this year](#).

Providing these services is essential to Iridium's business functions. Through strategic partnerships, Iridium has been able to and will continue to provide unparalleled services to people and organizations across the world.





capabilities.

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Providing these services is essential to Iridium's business functions. Through strategic partnerships, Iridium has been able to and will continue to provide unparalleled services to people and organizations across the world. The future is bright for Iridium, Aireon, and all other partners involved with these revolutionary hosted payloads!

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Iridium Partner SKYTRAC Provides Truly Global Connectivity for Offshore Search and Rescue Helicopter



Satellite Communicator Integral to Injured Lone Worker Rescue



Satellite Communicators Assist Helicopter Pilots

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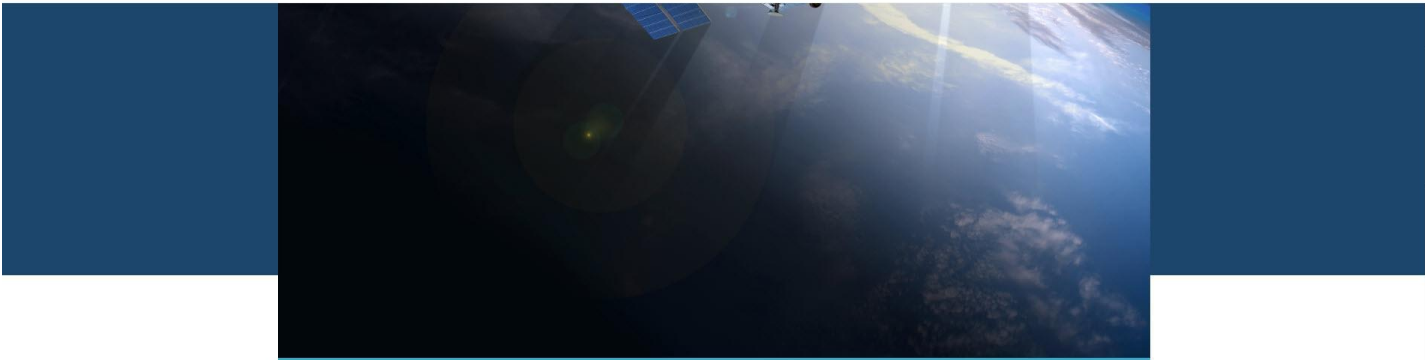
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When reading about Iridium, you may have noticed that the phrase "hosted payload" has been popping up a bunch, especially when talking about our recent Iridium NEXT [launches](#). But what exactly does that mean, and why is it so important?

First things first – what is a hosted payload? The [Hosted Payload Alliance](#), a satellite industry alliance designed to bridge government and private industry, defines a hosted payload as: *"A portion of a satellite, such as a sensor, instrument or a set of communications transponders that are owned by an organization or agency..."*



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OUTER SPACE

KONGSBERG reaches for the stars through cutting-edge technology.

Space innovation has become an important industry on a global level. We at KONGSBERG aim to take part in this as a leading expert in new technology. KONGSBERG is today present in every part of the VALUE chain – from launch, satellites and space probes, to the download and use of satellite data.

A VALUABLE PARTNER IN THE NEW COMMERCIAL SPACE AGE

Commercial space exploration has increased significantly over the last decade.

KONGSBERG is a world leading supplier of on-board electronic equipment and components for satellites and launchers. One of our largest markets is commercial telecommunications satellites. We are specialised in analogue signal processing equipment, including frequency converters, frequency generator modules and related building blocks.

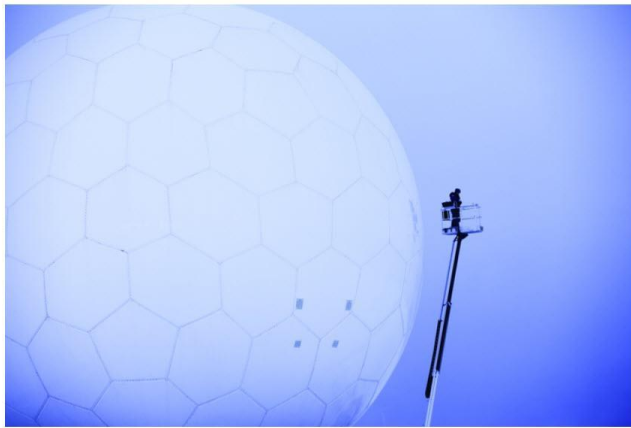
In simple terms, the current space market can be divided into three areas: Scientific programmes and earth observation, commercial telecommunication and navigation. All satellites require equipment and services to control, download and process satellite data. KONGSBERG is a technological leader in all three areas.



three areas.

PRESENCE IN THE ARCTIC WITH POLE-TO-POLE COVERAGE

We are uniquely positioned to provide ground station and earth observation services for polar orbiting satellites. For satellite owners, we provide unique pole-to-pole coverage, including the largest ground station in the world at Svalbard – the only commercial ground station in the world able to provide all-orbit-support to owners and operators of polar-orbiting satellites.



With three interconnected polar ground stations: Tromsø, Svalbard, and Antarctic Station at, and a



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With three interconnected polar ground stations; Tromsø, Svalbard, and Antarctic Station et, and a growing mid-latitude network, we operate about 100 antennas optimally positioned for access to polar orbits. KONGSBERG is a world leader in the supply of ground stations for the download and processing of satellite data, as well as satellite services from our ground stations. With more than 20 sites worldwide, and 150 stations, we provide optimised locations for satellites in polar, inclined and equatorial orbits. In addition, we offer earth observation services with the fastest available delivery times.

Our customers include both public and commercial users who have urgent, time-sensitive, operational requirements, as well as satellite owners and operators.

NAVIGATION AND SURVEILLANCE THROUGH STATE-OF-THE-ART SATELLITES

Our solutions are in-service with the world's leading maritime organisations, most successful port and coastal authorities, and safest offshore operators.

We supply a broad range of equipment, systems and services related to clients within the aerospace and maritime surveillance industries in more than 40 countries. Our maritime domain awareness systems and control centres for maritime surveillance, are an essential component to the integration of ground and satellite data.

We provide high-end, real time situational awareness, decision support, management solutions and services for optimum safety, efficiency and security, within the maritime domain. We believe that the provision of the right information, to the right user, at the right time through an intelligent common operational picture is paramount to timely decision making.

Galileo is Europe's answer to the American Global Positioning System (GPS), developed by the European Space Agency (ESA). Galileo provides global coverage relying on signals received on the ground from a frequency receiver developed and produced by KONGSBERG. The operational support related to the



operational picture is paramount to timely decision making.

Galileo is Europe's answer to the American Global Positioning System (GPS), developed by the European Space Agency (ESA). Galileo provides global coverage relying on signals received on the ground from a frequency generator developed and produced by KONGSBERG. The operational support related to the Sentinel satellites for The Copernicus programme, The European Union and ESA's Earth observation programme, is also handled by KONGSBERG. Our role in these high profile initiatives contribute to KONGSBERG being the biggest space company in the Nordic countries.



KONGSBERG MARITIME

Efficiency and safety throughout the whole maritime technology spectrum.

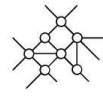
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RENTAL SERVICES IN KONGSBERG MARITIME

OUR RENTAL POOL OFFERS KONGSBERG EQUIPMENT TO KEY MARKETS INCLUDING OFFSHORE OIL AND GAS, SUBSEA AND MERCHANT MARINE.



There are many benefits to renting equipment, and it can often save you both time and money. Through our rental service you can rent for short- or long-term projects and have access to KONGSBERG's expertise and customer support. We will develop a solution that meets your specific requirements.





service you can rent for short- or long-term projects and have access to KONGSBERG's expertise and customer support. We will develop a solution that meets your specific requirements.

Key Benefits


- Rental is an attractive option as it helps to reduce overheads by avoiding capital investments
- Eliminates costs related to equipment maintenance and storage
- Removes the risk of owning obsolete equipment
- Increases operational efficiencies whilst still retaining access to the latest technologies
- Helps to supplement own equipment in support of larger projects
- Gives access to equipment at short notice
- Mitigates the risk of project and vessel downtime during equipment failures or when goods need to be returned for service
- An opportunity to try equipment without commitment to purchase – 'try before you buy'.



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-  Offshore and subsea equipment rental catalogue

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- HIPAP Portable Acoustic Positioning Systems
- μPAP Compact Acoustic Positioning Systems
- ROV LBL Acoustic Positioning System
- Subsea Hydroacoustic Aided Inertial Navigation System
- APOS Survey Operator Station for HIPAP
- cNODE Micro/Mini/MiniS/Midi/Maxi Transponders
- cNODE Maxi/Midi Transponder Sensor Modules



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- µPAP Compact Acoustic Positioning Systems
- ROV LBL Acoustic Positioning System
- Subsea Hydroacoustic Aided Inertial Navigation System
- APOS Survey Operator Station for HiPAP
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- Transponder Floatation Collars

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KONGSBERG DIGITAL > INDUSTRY, NEWS > KONGSBERG DIGITAL TO BECOME THE MAJORITY OWNER OF THE SOFTWARE AS A SERVICE COMPANY FUTUREON



KONGSBERG DIGITAL TO BECOME THE

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KONGSBERG DIGITAL TO BECOME THE MAJORITY OWNER OF THE SOFTWARE AS A SERVICE COMPANY FUTUREON

Kongsberg Digital has significantly increased its investment in FutureOn, a Norwegian software company. FutureOn provides cloud-based digital transformation tools that deliver collaborative working environments with access to distributed data, best-in-class industry software and geospatially accurate data visualisation.

02 May 2023 Industry, News

The value propositions of FutureOn and Kongsberg Digital are highly complementary, as FutureOn is a frontrunner in subsea life-of-field and the project delivery phase of an energy asset life cycle, while Kongsberg Digital focuses on the operational and maintenance phase.

Following the investment, Kongsberg Digital will hold the majority stake of FutureOn, with Bentley Systems (NASDAQ: BSY) and FutureOn's management as other key owners. This will strengthen Kongsberg Digital's position as a leading industrial software as a service (SaaS) company

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Since it was founded in 2016, FutureOn has gained a significant market position within key industry segments by providing engineers and decision-makers with a collaborative common data platform for energy projects and subsea assets through the life of a field. The software optimises cost control, resource management, and project development acceleration. FutureOn's FieldTwin technology provides cutting-edge solutions for the energy industry across FutureOn's strong customer and partner portfolio.

"This is a fantastic milestone and strategically important step in the Kongsberg Digital and FutureOn partnership. FutureOn is a frontrunner in developing technology towards the early phase of an asset life cycle, making its technology a perfect fit for our Industrial Work Surface. Building on an already close partnership, Kongsberg Digital will continue to develop and incorporate new technology to enable a true end-to-end delivery throughout the lifetime of an asset. This partnership also plays a key role in extending our offering into the renewable market. Today we have a strong offering for carbon capture and storage and hydrogen. FutureOn's technology will play a key role in Kongsberg Digital's strategy towards green energy field developments like offshore wind", says Shane McArdle, CEO of Kongsberg Digital.

Before this investment, Kongsberg Digital held a 17 percent ownership of FutureOn. Shane McArdle has been a board member of FutureOn since Kongsberg Digital made its first investment in FutureOn in November 2021. The company has 38 employees located in Oslo, Norway, with further presence in Houston, London, Dubai, Lyon and Perth. The company will continue as a stand-alone company.



HENNING TORP

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2:53:32 PM 5/23/2023



AIS SPACE RECEIVERS

An AIS receiver in a satellite will extend the range considerably and make it easier to monitor ship traffic and fishing in the High North. The altitude of the satellite gives the AIS receiver a long range and the satellite can therefore make observations over large sea areas. The signals are strong enough to be received by a satellite in low Earth orbit.



INNOVATIVE TECHNOLOGY

This generation SAT-AIS receivers from Kongsberg is the latest achievement of years of continuous innovations. Highest decoder performance, multi-antenna support, built-in redundancy, low power, miniaturized housing, large mass memory and improved lifetime. The end-to-end performance exceeds existing SAT-AIS receivers, where the superior sensitivity of the ASRs makes the receivers capable of detecting even AIS class B vessels. Reconfigurable software-defined radio (SDR)



INNOVATIVE TECHNOLOGY

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VESSEL DETECTION PERFORMANCE TO THE NEXT LEVEL

Kongsberg started working with AIS twenty years ago and is the AIS equipment manufacturer with the broadest experience. ASR c50 and x50 are Kongsberg's 4th generation AIS Space Receivers and builds on this foundation of expertise. A multiple set of decollision algorithms is optimised for best possible vessel detection in high-density and medium-density areas. Our ASRs will give the end user a giant leap in vessel detection compared with existing SAT-AIS receivers.

SPACE GRADE USING LATEST TECHNOLOGIES

The eXtended lifetime series from Kongsberg is designed for a lifetime of 7 + years in LEO.

ASR uses the latest generation EEE parts from best-in-class manufacturers. This enables Kongsberg to design for leading capabilities at low power and miniature size. All EEE parts have been carefully selected and extensively tested. Active components have been subject to heavy ion, proton and Co60 test campaigns to ensure radiation tolerant design. The failure rate at 40 °C (±5 °C) is less than 800



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APPLICATIONS

- Primary or secondary payload on nano or micro satellites for LEO
- Secondary payload on SAR and larger earth observation satellites

FEATURES

- eXtended lifetime
- Next generation algorithms and processing capabilities
- Leading vessel detection performance
- In-orbit reconfigurable SDR design with proven heritage
- Simultaneous on-board and sampling modes
- High reliability with built-in redundancy
- Radiation tolerant by design
- Multi antenna support
- Supports existing and future AIS frequencies
- Excellent immunity against unwanted signals
- Multiple serial interfaces



- Supports existing and future AIS frequencies
- Excellent immunity against unwanted signals
- Multiple serial interfaces
- Large on-board mass memory
- Superior dynamic range

WHAT IS AIS

AIS is a short range coastal traffic system used by ships and Vessel Traffic Services around the world. AIS is required to be fitted on every seagoing vessel of 300 gross tons or more. Its purpose is to help ship crews to avoid collision with other vessels as well as to allow maritime

authorities to track and monitor ship movements. Today's AIS allows ships to communicate with other ships and land based base stations through VHF signals. This means that it is not possible to communicate outside the field of vision.



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24/7 TECHNICAL SUPPORT

Our 24/7 technical support team is there to help at any time, day or night, wherever your vessel is.

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CONVERSIONS, RETROFIT AND REFIT

We understand the importance of having the right parts, available in the right place, at the right time.

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TRAINING

Ensure that your crew is properly and thoroughly trained. This will reduce operational risk, downtime and maximise return on asset investment.

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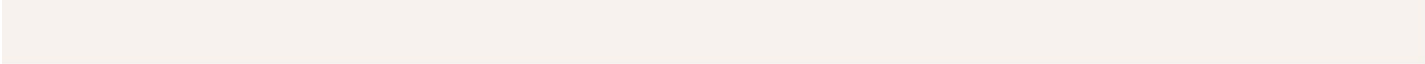
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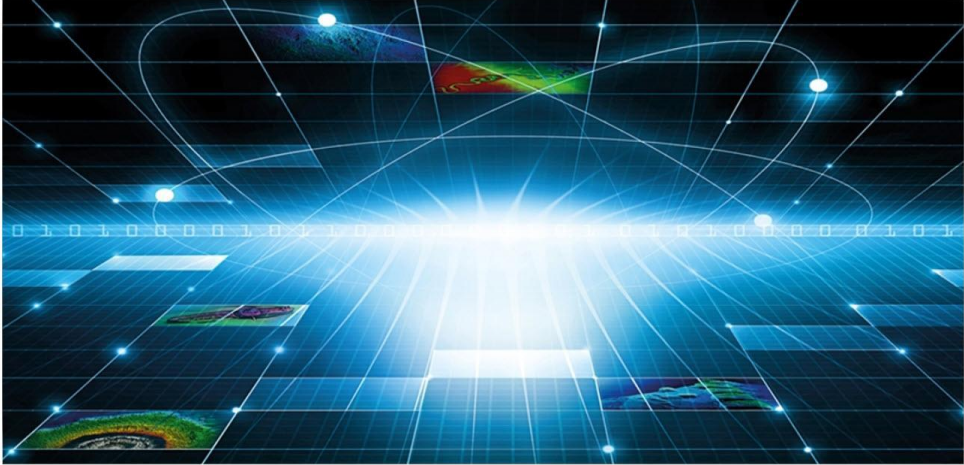




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THE SKY'S THE LIMIT FOR MULTIBEAM DATA VISUALISATION AND SHARING WITH NEW KONGSBERG MAPPING CLOUD SOLUTION

Advanced new cloud-based initiative provides secure platform for revolutionising survey data storage, processing, analysis and sharing

KONGSBERG unveils its new, leading-edge Mapping Cloud data handling solution at FEMME 2018 – the Forum for the Exchange of Mutual Multibeam Experiences – in Bordeaux, France. Mapping Cloud provides easy storage of different types of data within the Cloud, offering an accessible and practical means of uploading and distributing real-time data, which can be subsequently made available to use in diverse applications and products.

Mapping Cloud enables existing PC applications to be run in a Virtual Machine (VM) environment, and



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KONGSBERG unveils its new, leading-edge Mapping Cloud data handling solution at FEMME 2018 – the Forum for the Exchange of Mutual Multibeam Experiences – in Bordeaux, France. Mapping Cloud provides easy storage of different types of data within the Cloud, offering an accessible and practical means of uploading and distributing real-time data, which can be subsequently made available to use in diverse applications and products.

Mapping Cloud enables existing PC applications to be run in a Virtual Machine (VM) environment, and allows users to efficiently manage data processing, archiving and sharing with partners and customers through web browsers. With Mapping Cloud, data uploaded in e.g., Australia could be processed in Paris and the results displayed in San Francisco on a user's favourite application. By sharing secure data that can be worked on simultaneously, colleagues in different locations can share the workload and potentially generate invaluable insights.

This flexible, user-friendly methodology means that real-time or periodic data from KONGSBERG EM® systems can be uploaded and processed from literally any geographical location with internet access, and also saves on office space and expenditure as the only hardware requirement is a small PC.

Mapping Cloud additionally negates the need for local disk storage in the office: data files are securely transferred, managed, shared, processed and archived on servers hosted in KONGSBERG's cloud-based Kognifai open digital platform.

KONGSBERG's partnerships with Geocap and Earth Analytic presents a virtually limitless selection of online mapping, spatial analytics and GIS applications for end users, all directly available from their web browser courtesy of Mapping Cloud's all-purpose functionality.

"Mapping Cloud is an innovative but easily configurable real-time solution which frees up the business of data handling from office-based constraints, while reducing infrastructure expenditure," said **Bjorn Jalvina**, Executive Vice President – Subsea, Kongsberg Maritime. *"As the principles of digitalisation*



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browser courtesy of Mapping Cloud's all-purpose functionality.

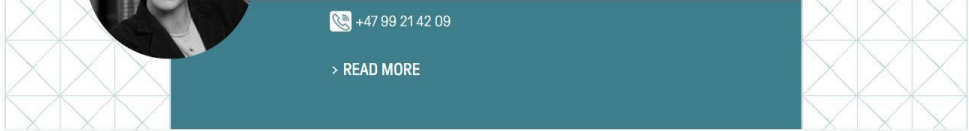
"Mapping Cloud is an innovative but easily configurable real-time solution which frees up the business of data handling from office-based constraints, while reducing infrastructure expenditure," said Bjørn Jalving, Executive Vice President – Subsea, Kongsberg Maritime. "As the principles of digitalisation continue to transform subsea survey operations, with Mapping Cloud we have opened up a whole new world of collaborative possibilities."



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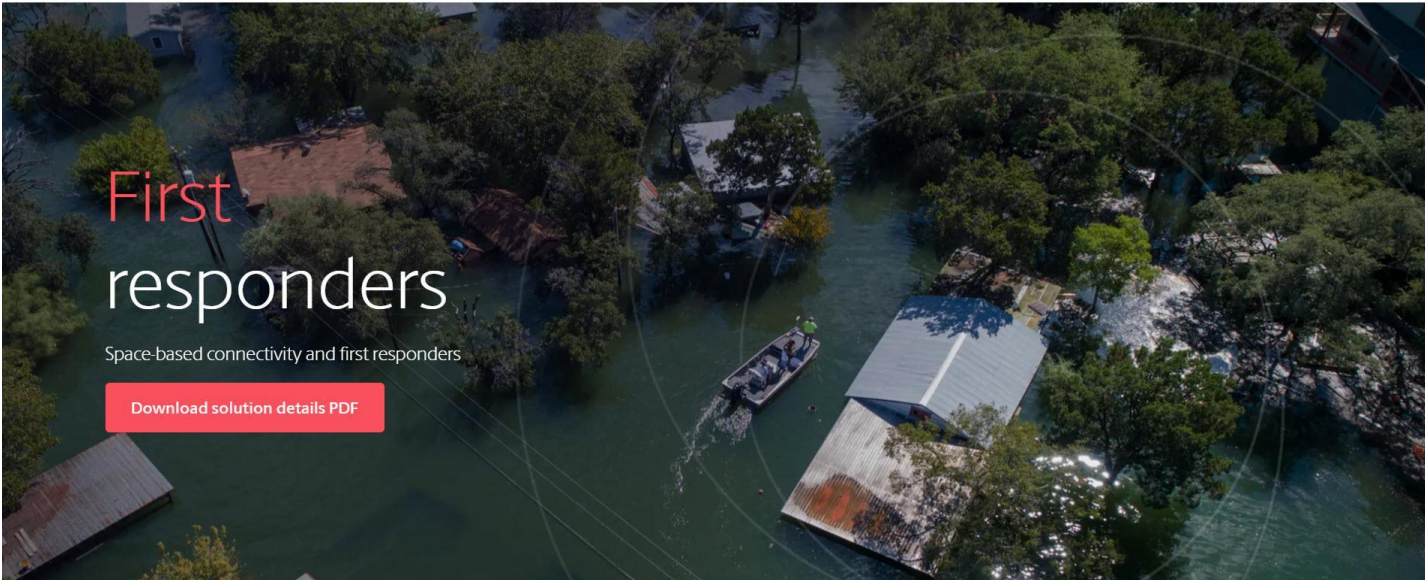




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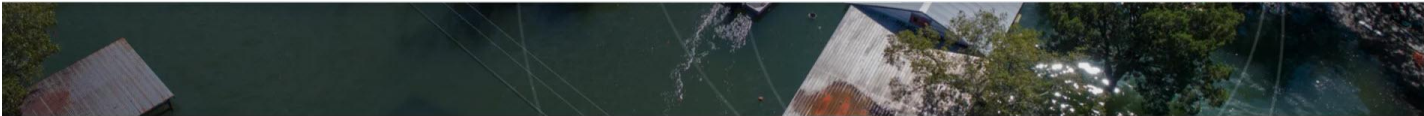
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First responders

Space-based connectivity and first responders

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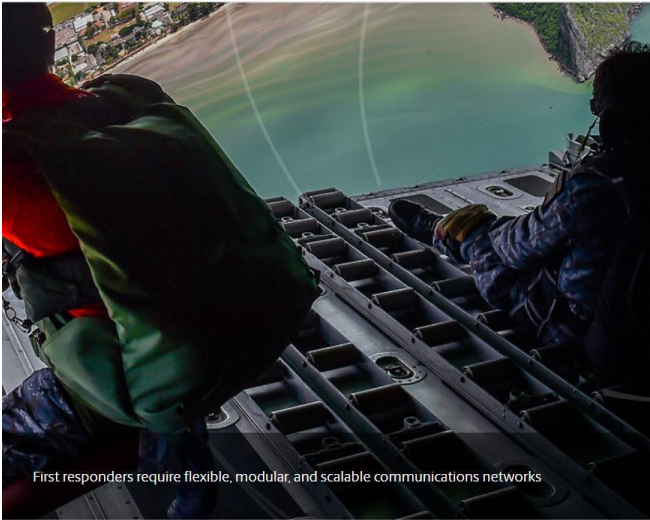
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Supporting first responders in all locations

First responders are deployed at short notice into any type of scenario. Optimal levels of connectivity are critical for fire departments, law enforcement, paramedics, and other emergency services, to react to and manage rapidly evolving incidents.

Emergency calls can include road traffic accidents, forest fires, search and rescue, humanitarian aid, disaster relief, and terrorist incidents. First responders require flexible, modular, and scalable





First responders require flexible, modular, and scalable communications networks

First responders require flexible, modular, and scalable communications networks on the ground, in the air, and at sea to operate effectively in all locations.

To ensure operations are executed as efficiently and safely as possible, first responders require maximum levels of bandwidth with minimal latency. The connectivity needs to support the command and control of ground personnel, vehicles, boats, and aircraft. All of these can be deployed at short notice in response to any situation.

In addition, first responders also work alongside other government agencies, often in areas of the world where fixed communications infrastructure could be damaged or destroyed. As a result, connectivity solutions must also integrate seamlessly into Primary, Alternative, Contingency, Emergency (PACE) communications plans. This ensures that first responders can rely upon a resilient and aggregated communications network.

Connectivity

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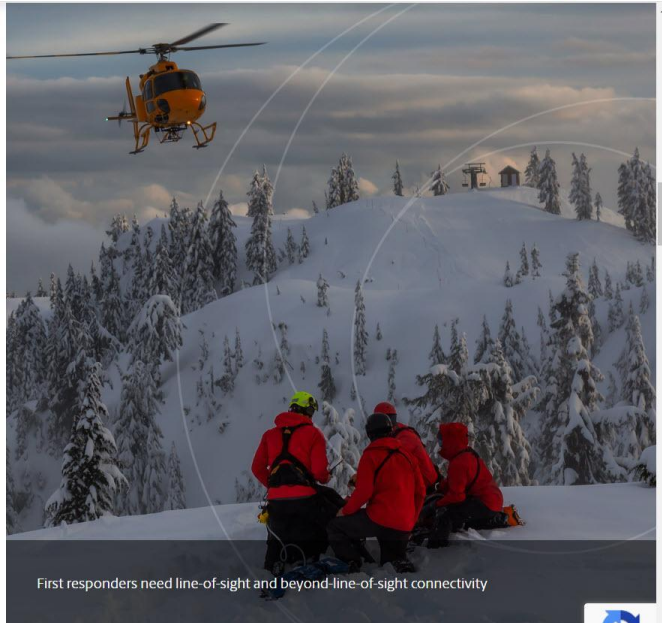


Connectivity challenges

First responders demand assured levels in connectivity, no matter where they are operating in the world. They also need to communicate with other government agencies that might be on the scene in a joint operating environment.

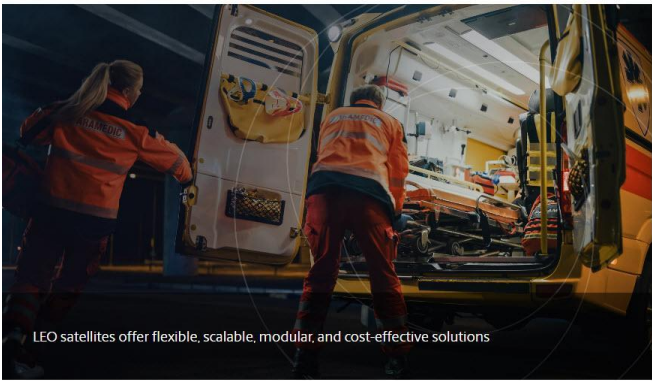
In addition, first responders need line-of-sight and beyond-line-of-sight connectivity to deliver real-time communications on the ground, in the air and at sea. It is essential to support ubiquitous voice and data services on location, and connection back to the command centre, which could be located hundreds of miles away.

This level of connectivity can be challenging to achieve in remote areas of the world where fixed communications infrastructure has yet to be established or has been disrupted by a natural disaster.



First responders need line-of-sight and beyond-line-of-sight connectivity





Connectivity solutions

LEO satellites offer flexible, scalable, modular, and cost-effective solutions that provide government customers with sufficient bandwidth, up to 150Mbps throughput, and latency levels as low as 50ms.

Enhanced opportunities



Real-time data sharing

LEO provides first responders with high bandwidth and low latency on location to ensure real-time sharing of information to enhance situation awareness and shorten decision-making cycles. It also supports high-definition and full-motion video services to gather data across an area of operation.

Connecting multiple services

Connectivity from OneWeb allows air, land, and maritime platforms and sensors to be networked together, feeding intelligence into a Common Operating Picture. Furthermore, it gives ground personnel, vehicles, boats, and aircraft the ability to communicate on the move, often at high speeds.

Wider networks

LEO can be integrated into a wider network of networks, working alongside other line-of-sight and beyond-line-of-sight communications networks to connect front line workers with command centres hundreds of miles away. It also enables access to cloud computing and the internet of things (IoT) solutions.





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Enhanced and new applications



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○ Command and control

Real-time understanding of the first responder environment, including positioning of surface vessels and aircraft to react to emergency situations

○ Surveillance and reconnaissance

Capability to find and fix objects of interest, often at extended range, and feedback intelligence to headquarters in real-time.

○ Improved situation awareness & decision making

Real-time common operating pictures to support joint operations globally and

○ Positioning, navigation, and timing

Allows surface vessels and aircraft to safely navigate their way across oceans and



- Improved situation awareness & decision making

Real-time common operating pictures to support joint operations globally and provide first responders with the most relevant and up-to-date intelligence.

- Mobile communications (ground, air and sea platforms)

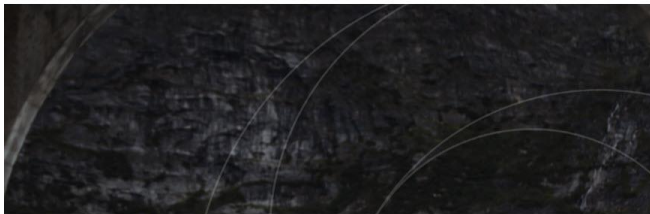
Enables ground vehicles, aircraft and surface vessels to communicate at high speeds on the move

- Positioning, navigation, and timing

Allows surface vessels and aircraft to safely navigate their way across oceans and seas, even in GNSS-denied environments.

- Logistics and supply management

Supports the movement of equipment and personnel across the most remote and arduous operating environments.



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Space-based connectivity



Space-based connectivity made easy

OneWeb supports first responders everywhere with flexible, scalable, and reliable connectivity plans designed to deliver high-speed connectivity to all locations.

OneWeb works with world-leading technology and solutions providers to deliver a growing range of cost-effective LEO User Terminals for fixed, maritime, and mobility solutions that meet our partners' key and future market-specific requirements.

Border security and surveillance solution

Space-based connectivity for border security...

Maritime awareness solution

Space-based connectivity for maritime awareness

...

Peacekeeping solution

Keeping the world safe

Rural police and security

Supporting law enforcement in rural areas

...



Keeping the world safe

Rural police and security

Supporting law enforcement in rural areas

...



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Community Broadband

OneWeb works with governments and trusted Distribution Partners around the world so every community can access and enjoy the benefits of enterprise-grade broadband for people's welfare, health, and education. Our mission is to lift the barriers to connectivity that hold economies and communities back. Close to three billion people are not connected to the internet due to constraints on infrastructure, affordability, speed, usage, and digital literacy.

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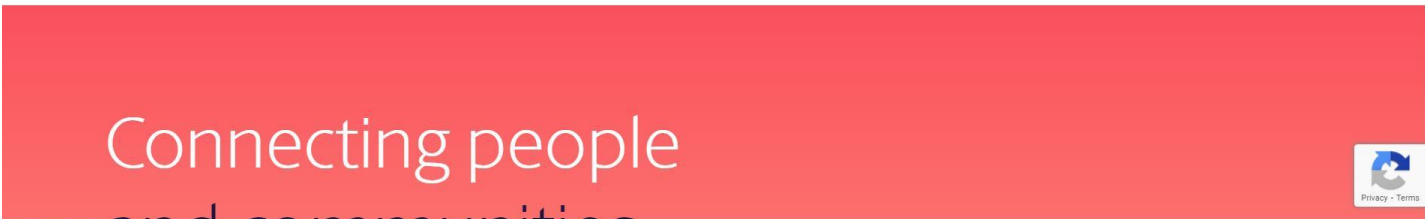


Space-based connectivity made easy

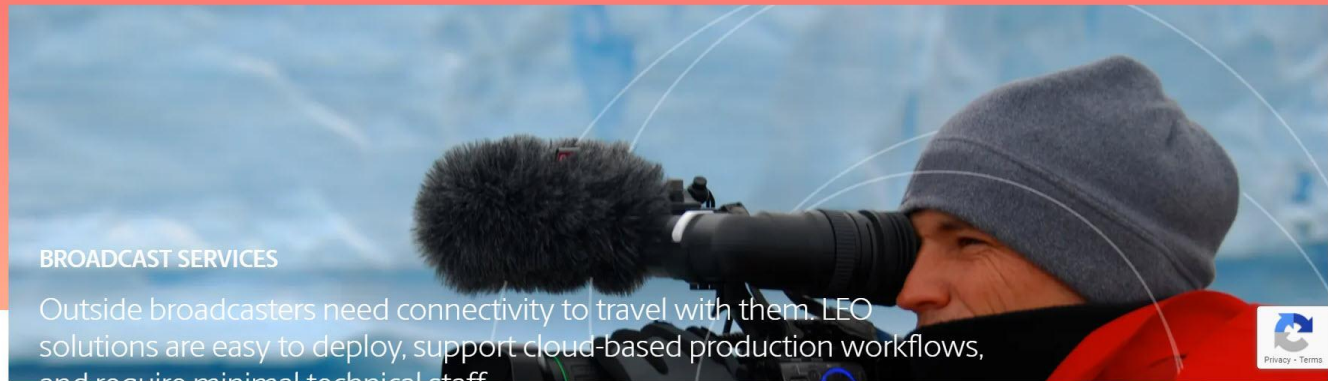
OneWeb is driving a great connectivity roll-out that supports the mobilization of new public wireless solutions. We want to lift the barriers to connectivity that are holding back local economies.



OneWeb is driving a great connectivity roll-out that supports the mobilization of new public wireless solutions. We want to lift the barriers to connectivity that are holding back local economies, services, and communities, offering flexible, scalable products and plans designed to promote growth, meet sustainability goals, and fulfil government obligations towards universal coverage. New low latency solutions will help connect local governments and enterprise, revenue authorities, regional services in health and education: at heart, they bring remote and rural communities closer together. Our plans are easy to buy, deploy, and manage using OneWeb's cloud-based digital products and services, also available as web apps and APIs.




Connecting people and communities



BROADCAST SERVICES

Outside broadcasters need connectivity to travel with them. LEO solutions are easy to deploy, support cloud-based production workflows, and require minimal technical staff.





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Outside broadcasters need connectivity to travel with them. LEO solutions are easy to deploy, support cloud-based production workflows, and require minimal technical staff.

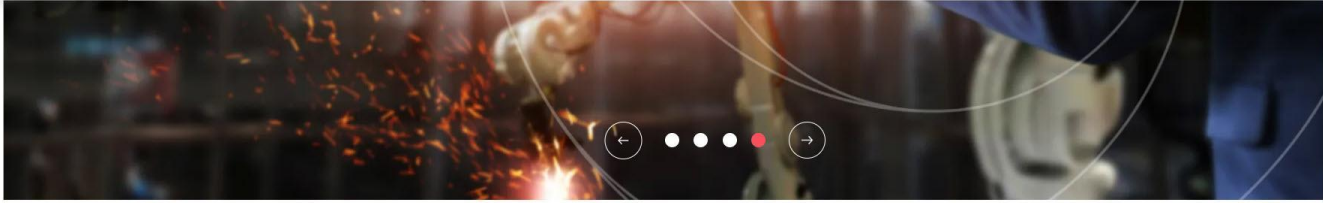
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EDGE COMPUTING

New low latency technology in space-based communications adds more standard off-the-shelf software capabilities to edge computing.

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Experts & Technology





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World leading partners in User Terminal technology



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Innovation & deployment

We have teamed with leading partners around the world to design.
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Range & design

Low Earth orbit connectivity requires a new class of User Terminal (UT). The innovation lies in our essential ground technology and electronics, both for fixed and mobility solutions.



Managing your UTs

OneWeb enables regular monitoring, updates, and maintenance of UTs using remote cloud-based and self-service digital products to facilitate fast, technical assistance for higher priority issues.



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Innovation & deployment

We have teamed with leading partners around the world to design, manufacture, and deliver to partners a growing range of UTs for fixed and mobility hardware solutions.

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Range & design

Low Earth orbit connectivity requires a new class of User Terminal (UT). The innovation lies in our essential ground technology and electronics, both for fixed and mobility solutions.

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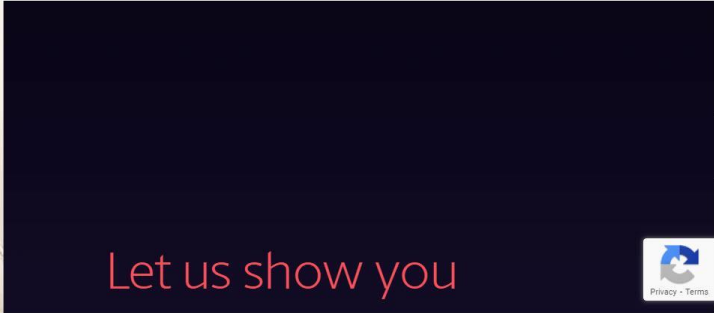
Ready to experience OneWeb For Yourself?

OneWeb's trusted Distribution Partners will help your organisation take the next step towards LEO connectivity. Together we ensure



OneWeb's trusted Distribution Partners will help your organisation take the next step towards LEO connectivity. Together we ensure every detail in this journey is easily managed, controlled, and improved, so you can flex and scale new connectivity for your community's needs.

[Find a service provider](#)



Let us connect you

Join OneWeb's trusted team of Distribution Partners and access the connectivity you and your customers need.

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Let us show you

We recommend you first watch our narrated tour of the orbit visualisation tool. Then go explore the network!

[Satellite tracker](#)

Connect your Business to the world



Connect your Business to the world

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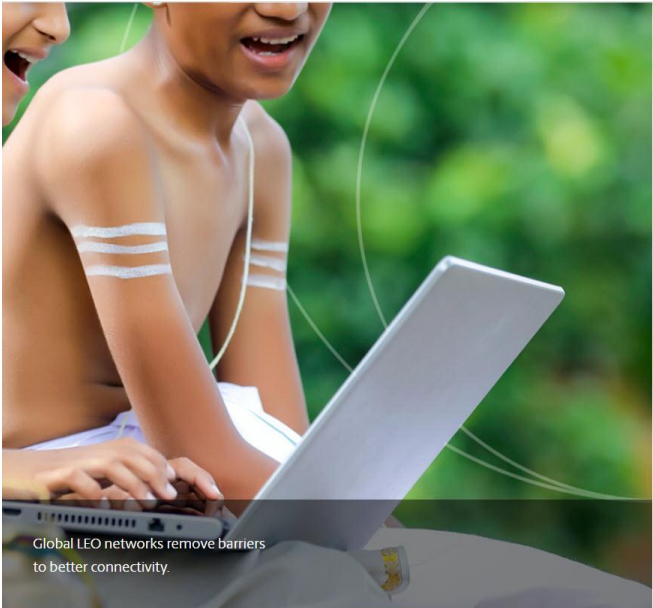
Space-based connectivity

for cellular backhaul

Connectivity that connects people and things to each other, and to applications in the cloud

Even the most remotely-located businesses and organisations rely on connectivity to operate effectively, communicate with partners





Connectivity that connects people and things to each other, and to applications in the cloud

Even the most remotely-located businesses and organisations rely on connectivity to operate effectively, communicate with partners and suppliers, and serve customers. Today, mobile carriers need to connect customers worldwide, across every industry, and in some of the most far-flung places on Earth.

However, mobile internet penetration worldwide remains at about 50%. Around 3 billion adults, located mainly throughout Asia and Africa, are unconnected. These end-users and their organisations typically live outside of 3G or 4G signal range, with high-speed backhaul options.

For mobile carriers, LEO satellite connectivity offers a new way to extend their networks into underserved regions, as well as add capacity to existing networks to meet increasing demand. By providing reliable, flexible backhaul, LEO satellite connectivity can help bridge the digital divide, providing connectivity to remote locations, and delivering greater network resilience in locations where additional capacity is required.

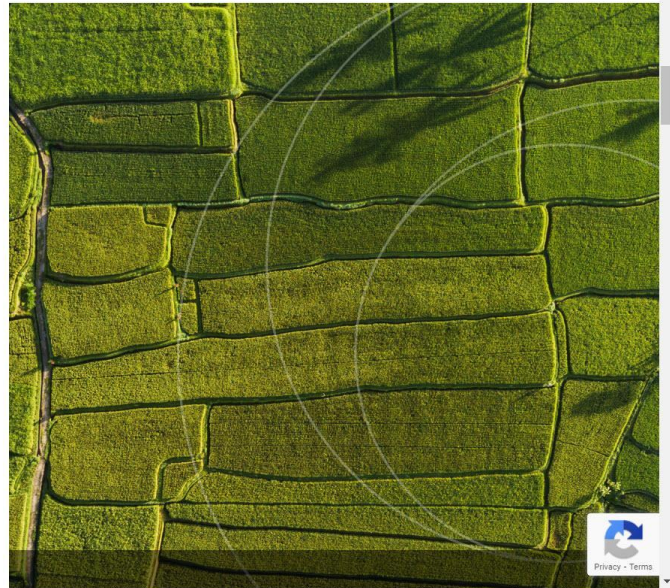




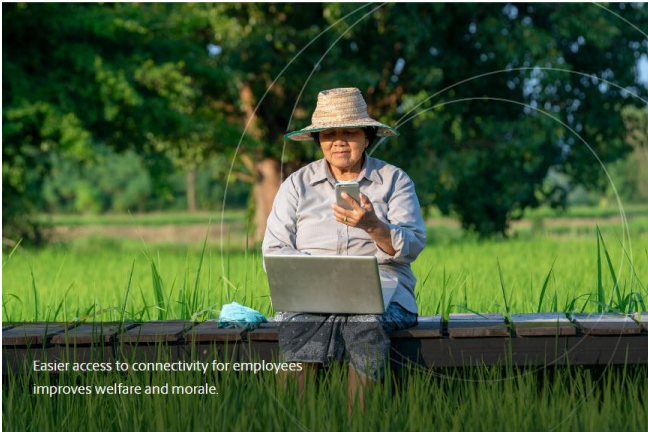
Connectivity challenges

Bringing terrestrial links to remote and rural areas to extend network coverage can often be cost-prohibitive. Compared to urban and suburban locations, remote and rural connectivity faces barriers in the form of large geographical distances between coverage area and nearest service points of presence (PoPs), complex terrain, and obstacles such as forests, mountains, or lakes.

In addition, the low population density of rural locations, and socio-economic factors potentially imply that the average revenue per mobile cell site will be much lower than in urban environments. Backhaul becomes more expensive when it comes to operating rural base stations versus the costs of base stations in urban environments – often around double the price, and amounting to as much as 20% of total cost of ownership (TCO).



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Connectivity solutions

LEO satellite connectivity can lower the financial hurdles that exist for providing rural coverage, by overcoming both geographical and distance factors through the availability of ubiquitous connectivity across all locations at a cost-effective price. This allows base stations in remote locations to have the necessary backhaul to deliver a service that adds value to the lives of end customers.



Enhanced opportunities

Targeting universal coverage

LEO satellite broadband can play a vital role in increasing the reach and resilience of connectivity to improve online access for people in the most far-flung places and drive universal connectivity goals. LEO satellite connectivity now presents a credible alternative for demanding customers, both business and consumer. The possibilities and opportunities for operators to unlock long-term value using LEO satellite connectivity and backhaul are huge.

Driving digital inclusion

LEO satellite connectivity and backhaul can enable networks to reach locations in rural rural America, Latin America, rural Europe, Africa, and Asia currently without easy access to the benefits of connectivity in their lives. It can also improve overall capacity and reliability for places already connected.



Privacy - Terms

reach locations in rural rural America, Latin America, rural Europe, Africa, and Asia currently without easy access to the benefits of connectivity in their lives. It can also improve overall capacity and reliability for places already connected.

Cost-effective primary or back-up connections

OneWeb's architecture for delivering LEO satellite connectivity and backhaul offers the possibility for network sharing, where two or more operators locate their RAN equipment on a single mast, meaning third-party tower companies can spread costs out over multiple operator tenants. This presents significant CAPEX reduction opportunities. Whether as a primary or back-up connection, LEO satellite offers big possibilities.



Enhanced and new applications

12:42:36 PM 5/23/2023



12:42:39 PM 5/23/2023



○ Enhancing user experience

Making access easier to global coverage and low latency from the most remote remote locations.

○ Supporting remote operations

Remote operations far from corporate HQs need back-up, and connectivity to support operations in an emergency.

○ Connecting the unconnected

Bringing the internet and a wealth of opportunities to citizens, businesses, and governments in the most remote locations

○ Augmenting connectivity

Ensure company sites, no matter how remote, can offer a complete range of services to customers.

○ Protecting business and revenues

Gives the power and control to keep businesses operating should primary networks fail.

○ Enabling digital transformation

Providing the connectivity needed to support access to applications hosted in distributed cloud environments.



o Connecting the unconnected

Bringing the internet and a wealth of opportunities to citizens, businesses, and governments in the most remote locations

o Enabling digital transformation

Providing the connectivity needed to support access to applications hosted in distributed cloud environments.

Global space-based connectivity made easy

OneWeb LEO satellite connectivity gives companies across all industries flexible, scalable, and reliable connectivity plans needed



Global space-based connectivity made easy

OneWeb LEO satellite connectivity gives companies across all industries flexible, scalable, and reliable connectivity plans needed to enhance existing communications solutions and support network operators and service providers around the world.

Access OneWeb's connectivity with a new class of user terminals that bring function, design, and easy-to-use LEO technology together, using tools that allow the centralised management of the end-to-end service. Hardware that is simple to order, deliver, install, and maintain, for primary, back-up, and hybrid network solutions, meeting the demands of communication networks and customers everywhere.



everywhere.

applications for autonomous operations,
drone surveying, and data analytics.

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Broadcast services solution

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Keeping business operational

Edge computing solution

Storing, computing, analysing

Mining solution

Mining in a connected world



Mining solution

Mining in a connected world

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Digital Sun Sensor ($\pm 64^\circ$)



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OVERVIEW



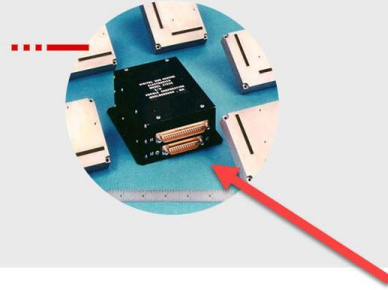
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OVERVIEW

The Redwire Digital Sun Sensor $\pm 64^\circ$ is a two-axis digital sun sensor system. The solution features two measurement axes and five sensors (1 to 8 sensors can also be used).

The Digital Sun Sensor $\pm 64^\circ$ is spaceflight proven, with a rich flight heritage. Applications for the Digital Sun Sensor $\pm 64^\circ$ include attitude determination, sun acquisition, solar array pointing, and fail-safe recovery.



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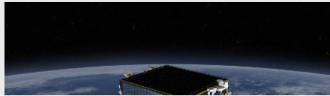
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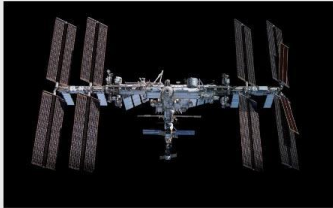
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Capabilities + Technology

Space Commercialization

Advanced manufacturing will yield increased commercial activity in low Earth orbit (LEO) and can create demand for high value industrial products for use on Earth. Redwire is pioneering advanced space manufacturing technologies to revolutionize off-earth manufacturing at scale to grow a robust LEO economy. Redwire technology is expanding economic opportunities in LEO through manufacturing industrial products for space and terrestrial use.

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Redwire Technology Powering NASA's Artemis I Mission

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technologies to revolutionize off-earth manufacturing at scale to grow a robust LEO economy. Redwire technology is expanding economic opportunities in LEO through manufacturing industrial products for space and terrestrial use.

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Redwire Technology Powering NASA's Artemis I Mission

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Digitally Engineered Spacecraft

Redwire specializes in digital engineering technology, which significantly lowers the costs, risks, and lead times associated with traditional spacecraft development.

Alongside several active digital engineering programs, Redwire's first-of-its-kind – digital engineering environment, the Hyperion Operational Space Simulation Laboratory, leverages the full suite of Redwire digital engineering capabilities, including software- and



which significantly lowers the costs, risks, and lead times associated with traditional spacecraft development. Alongside several active digital engineering programs, Redwire's first-of-its-kind – digital engineering environment, the Hyperion Operational Space Simulation Laboratory, leverages the full suite of Redwire digital engineering capabilities, including software- and hardware-in-the-loop configurations, to enable next generation space architectures and solutions, such as advanced artificial intelligence, machine learning and cyber technologies.

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Enabling Cybersecurity in Space With Digital Engineering

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On-Orbit Servicing, Assembly & Manufacturing

On-Orbit Servicing, Assembly, and Manufacturing (OSAM)



On-Orbit Servicing, Assembly & Manufacturing

On-Orbit Servicing, Assembly, and Manufacturing (OSAM) unlocks the possibility of scalable space architectures that cannot currently be stowed and launched from Earth. The ability to construct large, self-assembling structures in space revolutionizes the economics of space infrastructure. Redwire is pioneering these capabilities, as seen through its Archinaut technology platform, which is being utilized for NASA's OSAM-2 mission.

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Redwire's Trailblazing OSAM-2 Mission Passes Critical NASA Milestone

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Advanced Sensors & Components

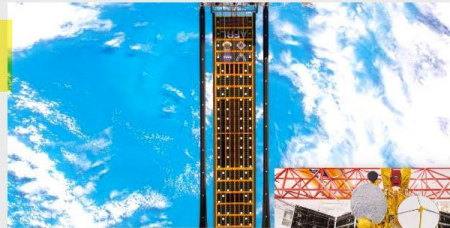


Advanced Sensors & Components

Redwire's advanced sensors and components are enabling unparalleled navigation and power generation capabilities for today's most critical missions. Redwire's sensors and components provide more power and capability on-orbit with more processing power and smaller form factors. By combining new space technologies with a proven heritage in space flight, Redwire is uniquely qualified to meet the complexity and demands of today's growing and evolving space industry.

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Redwire Providing Navigation Technology for First Earth Water-Monitoring Satellite

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Space Domain Awareness



Space Domain Awareness & Resiliency

Redwire technology, from OSAM to digital engineering, provides critical capabilities that make it possible to both detect and intercept the growing number of threats facing global and national security assets, both terrestrially and in space. Specialized, dependable spacecraft components and innovative new capabilities help spacecraft adapt to the rapidly changing national security landscape.

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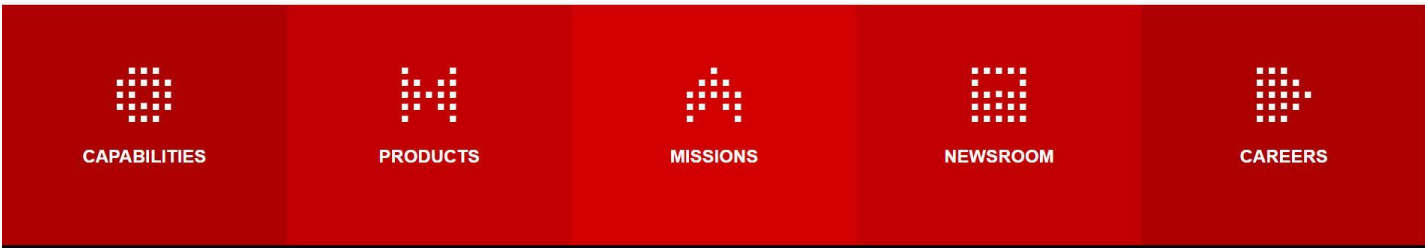
+ Jasper Camera

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- Software
- Solar Arrays



3D BioFabrication Facility (BFF)

3D BioFabrication Facility (BFF) OVERVIEW The 3D BioFabrication Facility (BFF) and the Redwire Advanced Space Experiment Processor (ADSEP), together comprise the first-ever system capable...

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Advanced Plant Habitat (APH)

Advanced Plant Habitat (APH) OVERVIEW The Advanced Plant Habitat (APH), is a fully-automated plant growth facility that is used to conduct plant bioscience research...

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Advanced Space Experiment Processor (ADSEP)

Advanced Space Experiment Processor (ADSEP) OVERVIEW The Redwire Space Advanced Space Experiment Processor (ADSEP) is a fully automated, multi-use...



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Reset Filters

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Advanced Space Experiment Processor (ADSEP)

Advanced Space Experiment Processor (ADSEP) OVERVIEW The Redwire Space Advanced Space Experiment Processor (ADSEP) is a fully automated, multi-use single middeck locker processing facility...

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Bone Densitometer

Bone Densitometer OVERVIEW The Redwire Bone Densitometer measures X-ray absorption by bone and soft tissue and reports bone density in mice. It can also...

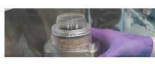
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Multi-Use Variable-Gravity Platform (MVP)

Multi-Use Variable-Gravity Platform (MVP) OVERVIEW Each Multi-use Variable-gravity Platform (MVP) unit accommodates multiple experiment modules, which provide 2-levels of containment with standardized mechanical and...

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Passive Orbital Nutrient Delivery System (PONDS)

Passive Orbital Nutrient Delivery System (PONDS) OVERVIEW PONDS was

provide 2-levels of containment with standardized mechanical and...
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Passive Orbital Nutrient Delivery System (PONDS)
Passive Orbital Nutrient Delivery System (PONDS) OVERVIEW PONDS was developed for flight in NASA's Vegetable Production System (Veggie) facility by Redwire, with collaboration from...
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Advanced Space Experiment Processor (ADSEP)



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OVERVIEW

The Redwire Space Advanced Space Experiment Processor (ADSEP) is a fully automated, multi-use single middeck locker processing facility used to conduct a variety of life and physical-science research and small-batch production. The ADSEP facility contains three independent thermal zones, each accommodating one "mini-laboratory" cassette, and an internal computer that controls the processing of all three cassettes. Each cassette housing is designed to provide up to 2-levels of containment for each experiment, which allows for experiments that are an HRL-2. The facility is agnostic to the content of the cassettes. Therefore, completely independent studies can be run in different cassettes simultaneously. The cassettes are "hot swappable", enabling crews to successfully run disparate experiments back-to-back.



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Redwire Corporation to Report First Quarter 2023 Results on May 9, 2023

MAY 4, 2023

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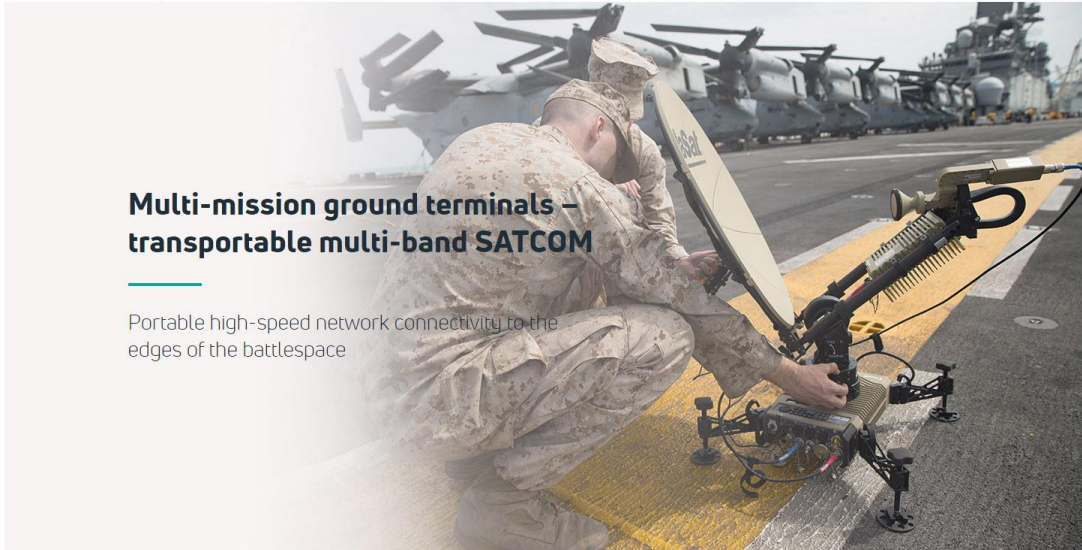
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Multi-mission ground terminals – transportable multi-band SATCOM

Portable high-speed network connectivity to the edges of the battlespace

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Viasat Multi-Mission Terminal (MMT)

Delivering enhanced connectivity with a smaller footprint

The Viasat Multi-Mission Terminal (MMT) provides rapidly deployable broadband for IP communications across the globe. Multi-band and multi-orbital, the Viasat MMT seamlessly adapts to the topology and architecture of your network including mesh, hub/spoke, and point-to-point. Simple, accurate portable SATCOM antenna pointing capabilities is possible with the Viasat CAMP smartphone app. Features include:

- High-capacity satellite service delivered to the portable, flyaway terminal
- Ability to roam across satellite networks to provide anti-access/ area-denied (A2AD) resiliency
- Delivers IP-based voice, video, and data networking
- Set up and point the terminal in 30 minutes or less



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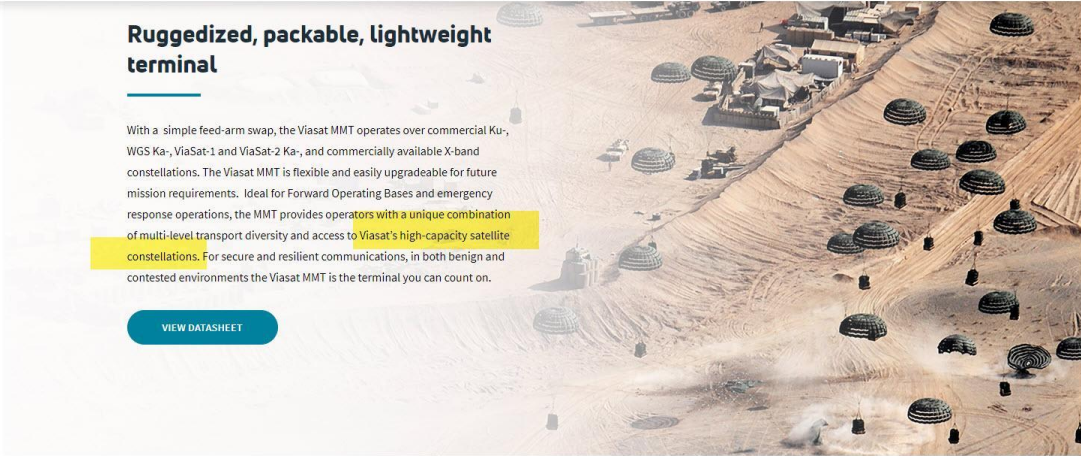
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able lightweight


Ruggedized, packable, lightweight terminal

With a simple feed-arm swap, the Viasat MMT operates over commercial Ku-, WGS Ka-, ViaSat-1 and ViaSat-2 Ka-, and commercially available X-band constellations. The Viasat MMT is flexible and easily upgradeable for future mission requirements. Ideal for Forward Operating Bases and emergency response operations, the MMT provides operators with a unique combination of multi-level transport diversity and access to Viasat's high-capacity satellite constellations. For secure and resilient communications, in both benign and contested environments the Viasat MMT is the terminal you can count on.

[VIEW DATASHEET](#)



Third-party government terminal



Third-party government terminal modification kit

This government-focused ground terminal modification program provides third-party terminals with regional access to Viasat's current high-capacity SATCOM networks. Through this program, Viasat is enabling U.S., DoD and coalition forces to use their large inventory of existing ground SATCOM terminals to roam among commercial and purpose-built defense satellite networks, gaining access to a hybrid, multi-network SATCOM architecture.

Want to learn how your ground terminal can operate on Viasat's high-capacity networks?

[SEND ME INFO](#)

Third party terminals

Ground terminals that operate over Viasat's SATCOM network

Third party terminals

Ground terminals that operate over Viasat's SATCOM network

Viasat High-Capacity
Ka Upgrade Kit

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Taranis AutoAQYR
Terminal

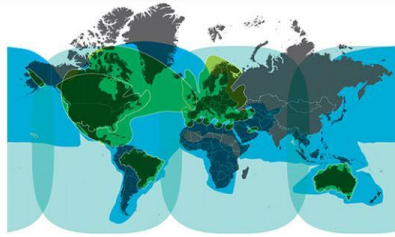
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Amplify terminal capabilities with Viasat's broadband service

The Viasat MMT and other ground SATCOM terminals operating over Viasat's high-capacity satellite service deliver real-time communications for faster



- Current Ka coverage
- Current Ku coverage
- Anticipated future Ka coverage

Amplify terminal capabilities with Viasat's broadband service

The Viasat MMT and other ground SATCOM terminals operating over Viasat's high-capacity satellite service deliver real-time communications for faster decisions across battlespace. Learn more about MMT services and how to power your fixed, nomadic & COTM terminals with Viasat's high-capacity network.

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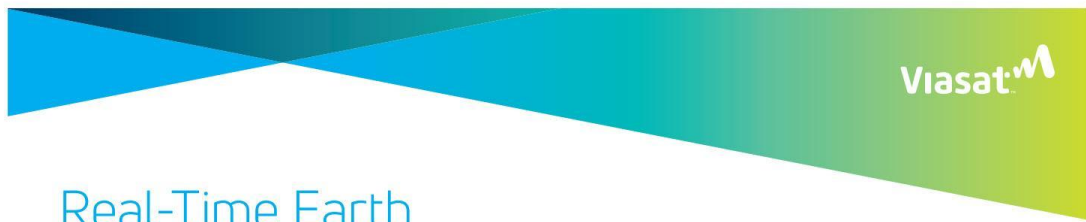
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- Corporate social responsibility
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- University research & partnerships

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Real-Time Earth

Rethinking ground segment as a service

The revolution in data delivery for Low Earth Orbiting (LEO) satellites is here. Imagine a future of virtually zero latency between data collection and dissemination anywhere. That is the world we are building.

Advancing data delivery

While satellite design and launch services have advanced significantly, the ground segment has lagged behind. The inability to command, downlink, and rapidly disseminate valuable earth observation and remote sensing data in a timely and secure manner is a business constraint to operators. Viasat is solving these challenges by leveraging

Features


- > GLOBAL Antenna systems strategically located worldwide to reduce latency; high-capacity continuous global coverage via space LEO-to-Viasat GEO satellite links in the near future.
- > TRUSTED Built on the same

segment has lagged behind. The inability to command, downlink, and rapidly disseminate valuable earth observation and remote sensing data in a timely and secure manner is a business constraint to operators. Viasat is solving these challenges by leveraging our world-class ground antenna systems, unparalleled satellite technology and global network coverage.

This unique service offers satellite-to-ground communications for next-generation and legacy LEO satellites using S-, X-, and Ka-bands. Each customer gains access to their own virtual instance of the most reliable multi-mission modems for payload and TT&C, a monitor and control application trusted throughout the world, and network security backed by Viasat. Scheduling is done over a machine-to-machine interface run over a highly resilient cloud computing platform, available 24/7.

Changing how data is delivered

End users in oil and gas, government, environmental, shipping and many other industries rely on getting their data as quickly as possible for critical decision making, and Viasat is strategically positioned to meet that demand. "Real-Time" satellite-to-satellite transmission is under development to provide a virtually zero latency environment for TT&C and payload data via LEO-to-Viasat-3 GEO satellite link. Real-Time Earth meets the requirements of today and is innovating for tomorrow. Join us in the data revolution.



- links in the near future.
- › TRUSTED Built on the same Viasat technology relied upon by the United States government and countries throughout the world to meet the most rigorous standards for reliability and security.
- › RESILIENT With thoughtful geographic site diversity in low-risk environments, back-up power as required, and spares on site, the RTE network is built for resilience.
- › SCALABLE Viasat's IP-based architecture, downloadable software, and extensive installed base of Viasat antenna systems assures easy expansion of the RTE network with new Viasat ground stations and existing partner ground stations.
- › SECURE Employs (at a minimum) NIST 800-171 network security standards to protect sensitive mission data.



NIST 800-171 network security standards to protect sensitive mission data.

› FAST Larger aperture antennas with state-of-the-art modems mean the highest data rates commercially available. More range, more data, less time.

Real-Time Earth

Ground service

The only ground service completely backed by the world class technology of Viasat. This is a true network of strategically located antenna systems that are securely interconnected. Customers enjoy virtual access to a state-of-the-art multi-mission modem capable of

Coverage Areas¹



ViaSat-3

Antenna Installations



In operation

Real-time Earth

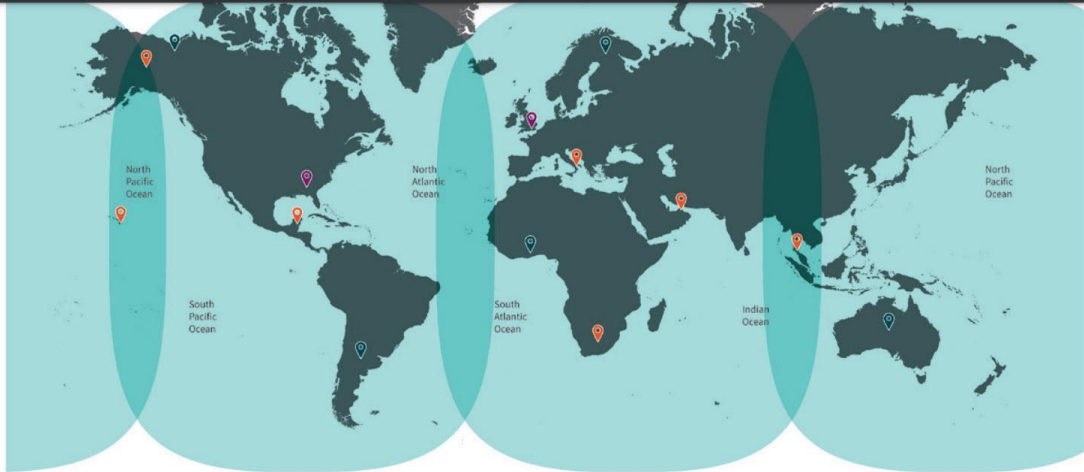
Ground service

The only ground service completely backed by the world class technology of Viasat. This is a true network of strategically located antenna systems that are securely interconnected. Customers enjoy virtual access to a state-of-the-art multi-mission modem capable of downlink rates in the gigabits, with large antenna apertures allowing for closing the link at lower elevation angles. More data down, in less time.

Coverage Areas¹
ViaSat-3

Antenna Installations
In operation
2020
Future planned

North Pacific Ocean
North Atlantic Ocean
North Pacific Ocean



Space service

With over 3 Tbps of capacity and global coverage using Viasat's groundbreaking ViaSat-3 constellation, the space network will enable real-time tasking and data delivery at the economics of broadband. Imagine real-time situational awareness, weather forecasting,



Space service

With over 3 Tbps of capacity and global coverage using Viasat's groundbreaking ViaSat-3 constellation, the space network will enable real-time tasking and data delivery at the economics of broadband. Imagine real-time situational awareness, weather forecasting, environmental monitoring, and endless other applications.

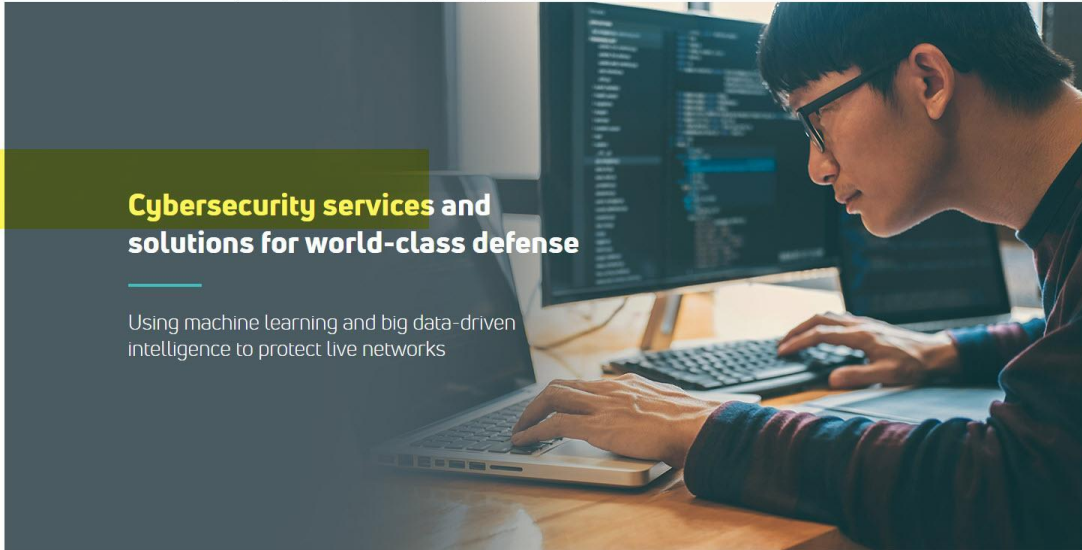
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At the forefront of operational network security

As a worldwide satellite internet service provider (ISP), Viasat protects networks and prevents billions of cyber attacks for our customers every day. Coupled with our over 30-year history as a defense contractor, we have insight into some of the most sophisticated, well-funded attacks and have accumulated petabytes of proprietary cyber threat intelligence. Our cybersecurity portfolio includes:

- Cybersecurity Operations Center (CSOC)
- Managed Detection & Partnered Response (MDPR)
- Enhanced Cybersecurity Services



Using machine learning-based threat intelligence

In delivering 50 terabytes (TB) of metadata and using big data analytics on an average of 150 billion events across our networks every day, we have a deeper



Using machine learning-based threat intelligence

In delivering 50 terabytes (TB) of metadata and using big data analytics on an average of 150 billion events across our networks every day, we have a deeper and more advanced understanding of the threat landscape — enabling us to innovate, maneuver, and better position against ever-evolving adversaries.

Explore our broad portfolio of cybersecurity services



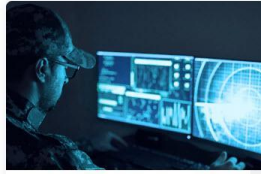
Explore our broad portfolio of cybersecurity services



Cybersecurity Operations Center

Our dedicated team of Cybersecurity Operations Center (CSOC) analysts secure a diverse set of networks ranging from those used by residential and presidential

[EXPLORE OUR CYBERSECURITY OPERATIONS CENTER](#)



Managed Detection and Partnered Response

We are highly invested in your success — your partnership with us provides you with a dedicated team of Managed Detection and Partnered Response (MDPR)

[EXPLORE MANAGED SECURITY SERVICES](#)



Enhanced Cybersecurity Services

Viasat is only one of a few top commercial cybersecurity partners chosen by the Department of Homeland Security (DHS) to create an advanced level of cyber

[EXPLORE ENHANCED CYBERSECURITY SERVICES](#)

Talk to us

Looking for an innovative solution? Talk to us about your needs.

CONTACT VIASAT

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Our company

About us
Events
Careers
Locations

Our commitments

Diversity & inclusion
Corporate sustainability
Quality & certifications
Corporate social

Our support resources

Customer service
Authorized retailers
Supplier information
Contact us



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Our commitments

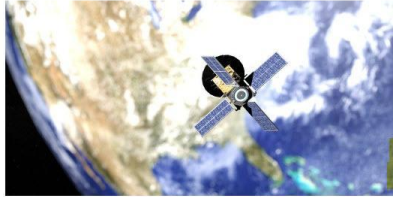
- Diversity & inclusion
- Corporate sustainability
- Quality & certifications
- Corporate social responsibility
- Community & charitable giving
- University research & partnerships

Our support resources

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- Authorized retailers
- Supplier information
- Contact us







Extensive smallsat and LEO flight heritage

From components to smallsats, Viasat has a proven flight heritage in Low Earth Orbit space systems. We are currently operating on-orbit, smallsat-class space vehicles today and have an extensive library of flight-proven technologies including: [intersatellite links](#), RF payload components (transmitters, receivers, frequency converters, and more) and phased array components. We are dedicated to testing and learning, inventing and delivering, and to pioneering state of the art commercial technology for a responsible, sustainable approach to space.

Turnkey design and build

From mission design to scalable production, our turnkey design and build capabilities include:

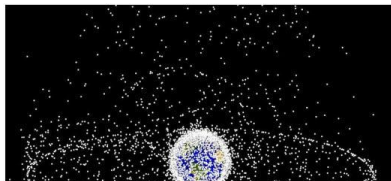
- Mission design/analysis and space vehicle design for commercial and



Turnkey design and build

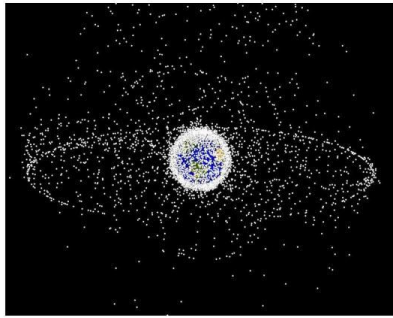
From mission design to scalable production, our turnkey design and build capabilities include:

- Mission design/analysis and space vehicle design for commercial and Department of Defense (DoD) missions
- Network architectures for resilient constellations
- Payload and space vehicle assembly, integration and test (AI&T)
- Low-risk volume production based on processes and capabilities used to build ViaSat-3 class GEO satellites
- On-site production test, environmental test, high bay facilities
- Scalable production capacity for smallsat constellations



Vertical integration and operation for space sustainability

Viasat's approach to small satellites provides a sustainable and responsible avenue to LEO space access. Our focus is not just on the space vehicle. Instead, we take a holistic view and focus on network building, integration, and management. Combined with our expertise in designing and



Vertical integration and operation for space sustainability

Viasat's approach to small satellites provides a sustainable and responsible avenue to LEO space access. Our focus is not just on the space vehicle. Instead, we take a holistic view and focus on network building, integration, and management. Combined with our expertise in designing and manufacturing both commercial and DoD satellites, Viasat's vertical integration in network development and operation helps conserve precious LEO resources by keeping constellation sizes sustainable.

Talk to us

Our team is here to answer your questions or talk about your needs.

Talk to us

Our team is here to answer your questions or talk about your needs.

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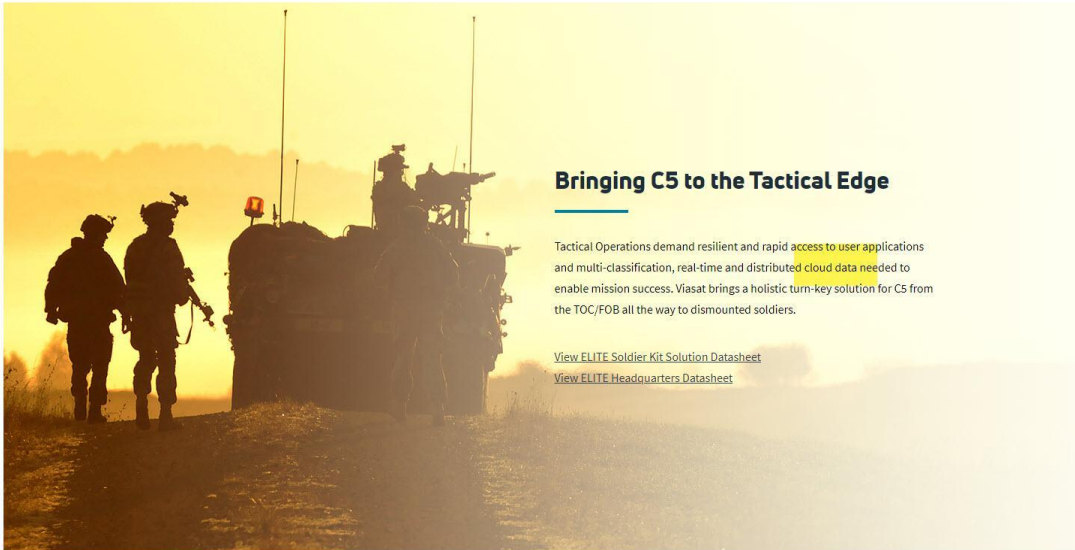
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Expeditionary Lightweight Integrated Tactical Edge (ELITE)

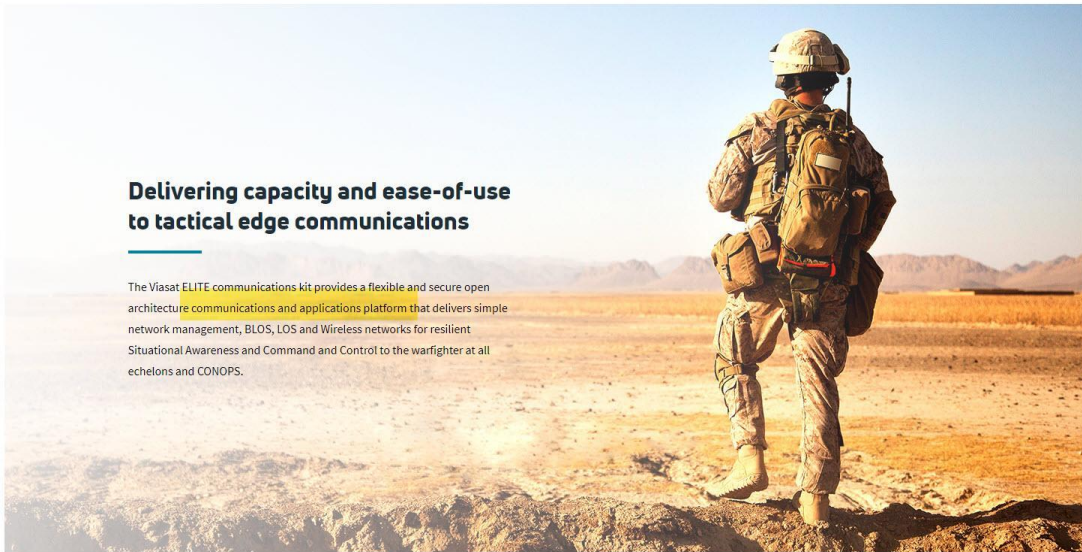
Enhance tactical operations with mobile integrated solutions for C5 to enable mission success



Bringing C5 to the Tactical Edge

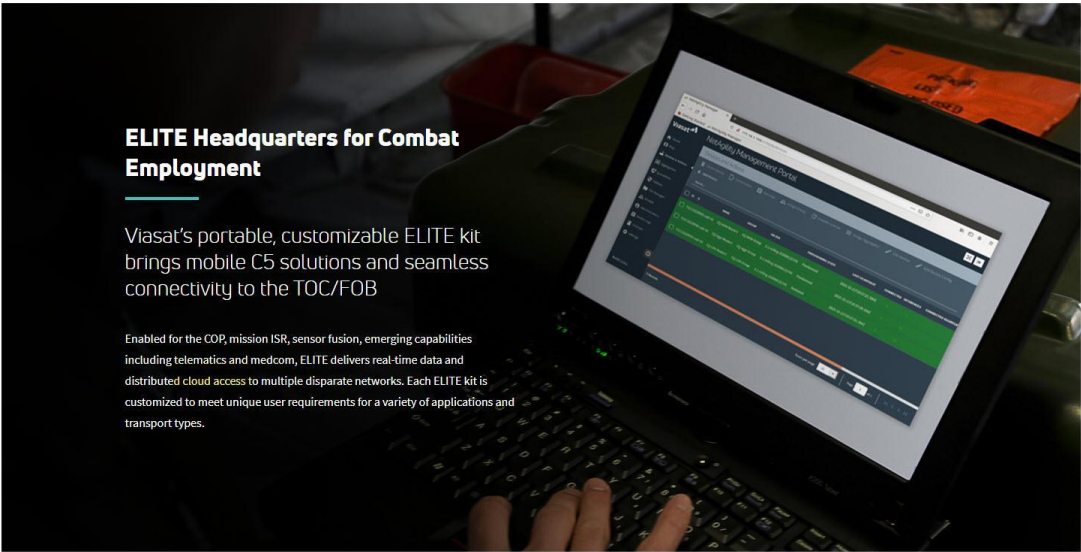
Tactical Operations demand resilient and rapid **access to user applications** and multi-classification, real-time and distributed **cloud data** needed to enable mission success. Viasat brings a holistic turn-key solution for C5 from the TOC/FOB all the way to dismounted soldiers.

[View ELITE Soldier Kit Solution Datasheet](#)
[View ELITE Headquarters Datasheet](#)



Delivering capacity and ease-of-use to tactical edge communications

The Viasat ELITE communications kit provides a flexible and secure open architecture communications and applications platform that delivers simple network management, BLOS, LOS and Wireless networks for resilient Situational Awareness and Command and Control to the warfighter at all echelons and CONOPS.



Typical ELITE Headquarters for Combat Employment Kit Features

Typical ELITE Headquarters for Combat Employment Kit Features

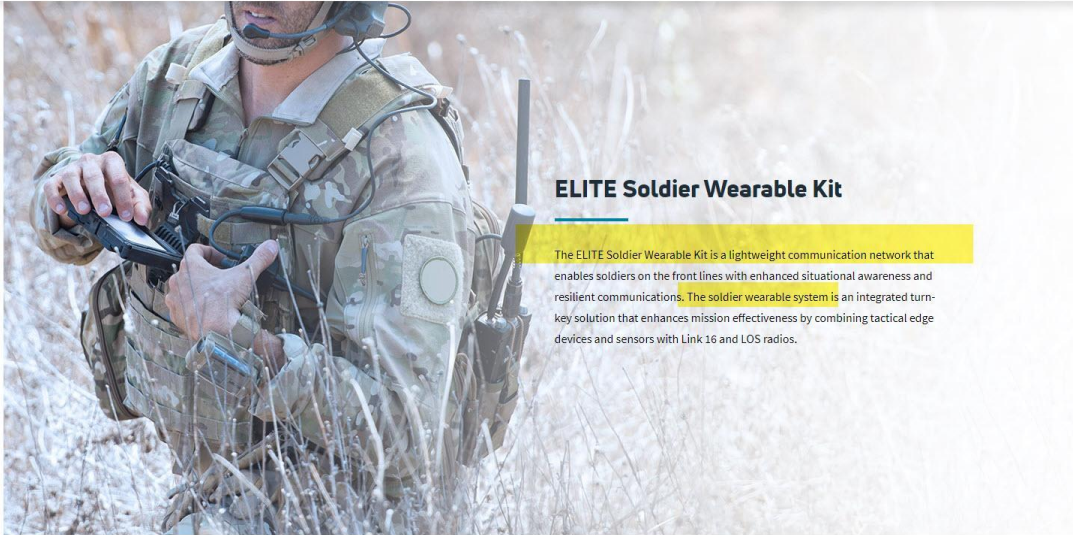
C2 Applications Ground radar and data link integration, data fusion, and Common Operating Picture for real-time Situational Awareness.	Tactical gateway Multi-channel radio communications, including: Link-16, SADL/EPLRS, SINCGARS, ANW2C, IW, DAMA and V/ULOS.	PacStar Gateway PacStar tactical compute for host/bridge/gateway function; KG-250X Type 1 Crypto and GD TACDS Cross-Domain for multi-level networks.
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Typical ELITE Headquarters for Combat Employment Kit Features

BLOS Comms High-capacity SATCOM leverages portable Multi-Mission Terminal (MMT) for Military/Commercial Ku/Ka and X-Band.	SIPRNet Access SIPR/NIPR/JWICS access hosted on portable servers with Type 1 DAR/DIT capability.	Rapid Setup NetAgility enables rapid network routing, management, setup and resilient connectivity.
---	--	---





ELITE Soldier Wearable Kit

The ELITE Soldier Wearable Kit is a lightweight communication network that enables soldiers on the front lines with enhanced situational awareness and resilient communications. The soldier wearable system is an integrated turn-key solution that enhances mission effectiveness by combining tactical edge devices and sensors with Link 16 and LOS radios.

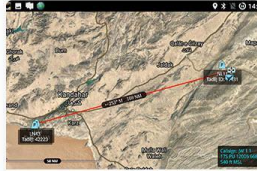
Typical ELITE Solider Kit Features

Typical ELITE Solider Kit Features



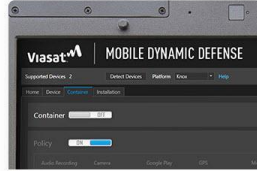
Qualified EUDs

Battlespace-tested EUDs with custom software for integrating with tactical radios and soldier-worn devices.



User tactical apps

Equipped with enhanced commander's situational awareness with C2 capabilities and coalition interoperability.



Secure software

Ready for [remote management of network of devices](#) with ease and flexibility of EUD configuration/security and cybersecurity monitoring.



ELITE Headquarters
for Combat
Employment Data...

-pdf (78 KB)

DOWNLOAD

ELITE Soldier Kit
Datasheet

-pdf (161 KB)

DOWNLOAD

Talk to us

Looking for an innovative solution? Talk to us about your needs.

CONTACT US

1:07:50 PM 5/23/2023



CONTACT US

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XPLORE®

HOME SERVICES PLATFORMS ABOUT CAREERS PRESS INQUIRE

XPLORE REACHES AGREEMENT TO ACQUIRE MAJOR TOM® CLOUD-BASED MISSION OPERATION SOFTWARE AND KUBOS FLIGHT SOFTWARE

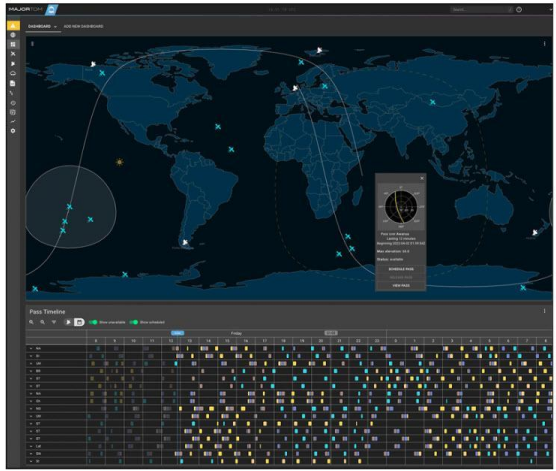
Major Tom cloud-based mission operation software offers a comprehensive satellite operation platform

April 4, 2022

Xplore's unique perspective as a customer and developer will enable us to continually improve Major Tom from the inside out.

— LISA RICH, FOUNDER & COO





Major Tom dashboard showing pass timeline for satellites over ground stations around the world

April 4, 2022 - Redmond, WA - Xplore Inc., a commercial space company providing Space as a Service® today announced it has **acquired the assets of Kubos Corporation** and its Major Tom® mission and flight control **software platform for satellites**. Major Tom enables mission operations for more than a dozen satellites currently on orbit for commercial and government customers. In a seamless transition to Xplore, key Kubos employees joined the Xplore team

2:07:02 PM 5/23/2023

April 4, 2022 - Redmond, WA - Xplore Inc., a commercial space company providing Space as a Service® today announced it has acquired the assets of Kubos Corporation and its Major Tom® mission and flight control software platform for satellites. Major Tom enables mission operations for more than a dozen satellites currently on orbit for commercial and government customers. In a seamless transition to Xplore, key Kubos employees joined the Xplore team and will expand Xplore's offerings to include cloud-based mission operation software.

Major Tom is a scalable platform with powerful satellite mission operations and planning tools. The cloud-based software allows operators to perform ground station scheduling, satellite tasking and telemetry monitoring, saving money and time on planning and design. With Major Tom, users operate their missions on a unified cloud platform. It provides the ability to integrate and control ground segment applications and services, and further de-risks mission operations with features that include out-of-the-box ground network integrations, data analytics, real-time dashboards and a customizable commanding API.

Lisa Rich, Xplore Founder and Chief Operating Officer said, "We are a customer-focused commercial space company that is now both a customer and developer of Major Tom. As users, developers and stakeholders, the ability to easily connect and setup command and control systems for satellites and constellations is essential. Our unique perspective will enable us to continually improve the features and capabilities of our flight-ready mission control system from the inside out."



With Xplore's expert team, we will scale operations and provide enhanced functionality to our customers, old and new.

— TYLER BROWDER, BUSINESS DEVELOPMENT DIRECTOR, MISSION OPERATIONS



Tyler Browder, Business Development Director for Mission Operations

provide enhanced functionality to our customers, old and new.

— TYLER BROWDER, BUSINESS DEVELOPMENT DIRECTOR, MISSION OPERATIONS



Xplore has onboarded key members of Kubos' team including former CEO and co-founder of Kubos, Tyler Browder. "I'm delighted to join the Xplore team as Business Development Director for Mission Operations. In my new role I will continue to build and grow the Major Tom platform into an expanded service offering. With Xplore's support and expert team, I am confident in our ability to scale operations and provide enhanced functionality to our customers," said Browder.

We look forward to using Major Tom for Xplore's first mission launching this fall, and for all future missions.

— JEFF RICH, FOUNDER AND CEO



Kubos and Major Tom fit Xplore's mission to provide customers with low cost, high capability solutions. Jeff Rich, Xplore Founder and CEO said, "Kubos' software platform adds to the foundational layers Xplore has built with our innovative team, spacecraft engineering, facility, radio spectrum and traction with customers. We look forward to using Major Tom for Xplore's first mission launching this fall, and for all future missions."

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We are actively working on new partnerships and invite founders and businesses to share new acquisition opportunities with us that fit our strategic vision.

— LISA RICH, FOUNDER AND CDO

”

As part of this strategic acquisition, Xplore will inherit relationships with an extensive network of ground station operators and cloud providers. Lisa Rich said, "We are actively working on new partnerships and invite founders and businesses to share new acquisition opportunities with us that fit our strategic vision."

ABOUT XPLORE INC.

Xplore provides Space as a Service®, offering data products, sensor tasking, mission operations software and payload hosting as a service to our customers. Xplore uses the Xcube and XCRAFT®, our highly capable ESPA-class spacecraft to provide these services to our customers. The company operates out of its state-of-the-art 22,000 sq ft satellite manufacturing facility in Redmond, Washington. Visit: <https://www.xplore.com>

For more details on Major Tom and to schedule a demo, visit:
<https://www.xplore.com/majortom>

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For more details on Major Tom and to schedule a demo, visit: <https://www.xplore.com/majortom>

Xplore is currently advancing on flight programs and recruiting space professionals. Employees at Xplore enjoy competitive benefits and a friendly work environment. Openings at their Redmond headquarters include operations and engineering roles. Applicants may visit Xplore's career page for details. Visit: <https://www.xplore.com/careers.html>

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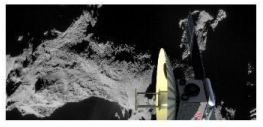


[OVERVIEW](#) [PAYLOADS](#) [LAUNCH](#)

OVERVIEW

Explore Our Solar System

Xplore is flying commercial science missions to our Solar System on our XCRAFT®, and we invite you to join us. Become a leader in this emerging field by designing your own mission to space. Take your space agency, company, university or community to the destination of your



OVERVIEW

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Xplore conducts mission planning, spacecraft engineering, flight financing, payload insurance, communications, data management and spacecraft operations so you don't have to. Let your payloads fly.



SIMPLICITY

You develop the payload, Xplore takes care of the mission, spacecraft and operations.

FREQUENCY

You create the program, we fit your mission into our schedule.

LONGEVITY

Our orbital missions are designed to last years - extending the value of your program.

PAYLOADS

Let your ideas fly.

Become part of history. Use our Custom Xploration™ services to take your country, university or company to space by launching unique payloads to a preferred destination. Xplore extends your influence beyond Earth.



INSTRUMENTS

Your instruments can orbit or flyby your destination of choice and return unique results to further science.



BRANDING

Bring your brand to a whole new world and reach millions with your creativity.



DEPLOYABLES

We can deploy your cubesat at your destination or during the journey.



TECHNOLOGY



TRIBUTES



MEMORIALS - CELESTIS



TECHNOLOGY

Demonstrate key new technologies for future missions or commercial tests.



TRIBUTES

Your organization can take messages, time capsules, data archives, or even genetic databases to space.



MEMORIALS - CELESTIS

Loved ones can travel to a new world and you can share the experience.

LAUNCH

Schedule

If you would like to learn more about how Xplore can help your custom mission, please inquire via the form here, and we can work with you on your mission.



INQUIRE ABOUT CUSTOM XPEDITIONS™

* Indicates required

First Name *

Last Name *

custom mission, please inquire via the form here, and we can work with you on your mission.



Last Name *

Organization

Title

Email Address *

How did you hear about us?

Message

OVERVIEW PAYLOADS **LAUNCH**

How did you hear about us?

Message

Be the first to learn about our latest developments.

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SEND

XPLORE MULTI-SENSOR SATELLITE TO OFFER SPACE DATA PRODUCTS UNDER NOAA IMAGERY LICENSE

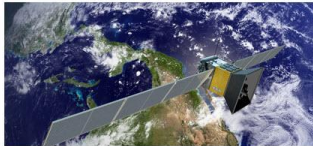
Multi-sensor XCRAFT is first in a constellation to serve Earth observation, space domain awareness and astronomy customers

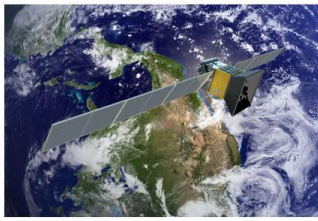
January 31, 2023

Our NOAA license allows Xplore to bring to market powerful multi-sensor capabilities.

— LISA RICH, FOUNDER AND COO

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Xplore's multi-sensor XCRAFT™ will collect advanced data product offerings | Credit: Xplore Inc.

January 31, 2023 Redmond, Wash. - Xplore Inc., a space company providing space data products, data fusion and on-board computing from its multi-sensor XCRAFT™ today announced it has been granted a remote sensing license from the National Oceanic and Atmospheric Administration (NOAA) for the company's first mission to low Earth orbit (LEO) scheduled for launch later this year.

Lisa Rich, Xplore Founder and Chief Operating Officer said, "We're pleased to announce our NOAA license has been granted – it allows us to bring to market powerful multi-sensor capabilities that will let customers observe and understand our planet, the surrounding space environment and the universe in new and comprehensive ways."

Xplore will offer hyperspectral **imaging** data, high-resolution video, and unique ultraviolet data products for Earth observation, space domain awareness and astronomy applications. Advanced data products will be offered by fusing data generated by our diverse sets of **imagers**.

Xplore's hyperspectral **imager** will be offered at 2-meter and 5-meter resolution over dozens

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Xplore's hyperspectral **imagery** will be offered at 2-meter and 5-meter resolution over dozens of contiguous bands, which is higher resolution than any available commercial offering. Xplore has solid demand from customers to deliver the highest resolution hyperspectral products for their applications.

Xplore has appreciated efficiency, expediency and responsiveness during NOAA's licensing process.

– LISA RICH, XPLORE FOUNDER AND COO



The mission is the first launch that will build to a constellation of 12 satellites using Xplore's XCRAFT platform carrying an industry-leading eight primary instruments. The spacecraft is optimized to observe the Earth, collect space domain awareness data **and provide a scientific tool for astronomical discovery**. The XCRAFT platform was designed, developed, and fabricated in-house by Xplore's experienced engineering team, and is controlled using Xplore's Major Tom cloud-based operations platform.

Lisa Rich said, "Xplore has appreciated efficiency, expediency and responsiveness during NOAA's licensing process. We believe the XCRAFT and the constellation to follow will provide a level of versatility and flexibility unmatched in the commercial market today. We expect the

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ABOUT XPLORE

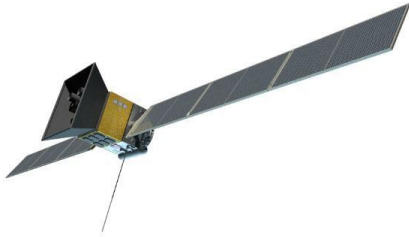
Xplore provides unique data products to our customers with insights, intelligence, inspiration, discovery from their satellite constellation. The XCRAFT satellites carry remote sensing instruments including optical, video, and hyperspectral sensors to produce valuable data and insights for our customers. Additionally, its edge computing capability enables the creation of data fusion products and insights to be extracted on-orbit, reducing latency and data transmission costs. Visit: <https://www.xplore.com>

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XCRAFT®

The XCRAFT® is a multi-mission spacecraft with all the subsystems necessary for missions between Venus and Ceres. Our spacecraft is an advanced payload platform to support any mission.



XCRAFT® FEATURES

The standard XCRAFT® is perfect for Low Earth Orbit, cislunar and interplanetary missions.

With standard propulsion, high-power generation, precision pointing capability, redundant on-board computing and high-bandwidth communication systems the XCRAFT® is built to deliver solutions for our customers.

- Enormous payload bay that can accommodate 30kg - 70kg of payload in 100U or more of volume
- Electric propulsion providing between 500 m/s - 1500 m/s delta-v to fit mission needs



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- Enormous payload bay that can accommodate 30kg - 70kg of payload in 100U or more of volume
- Electric propulsion providing between 500 m/s - 1500 m/s delta-v to fit mission needs
- 550 W of power generation at 1.0 AU, expandable to 1.1 kW
- Large high-gain antenna for high speed communications from interplanetary distances
- Multi-band relay communications from other spacecraft, landers, rovers and ground terminals.
- Optically stable platform with precision pointing for high performance sensors
- Advanced on-board computing and storage capabilities for on-board processing and analytics

The standard XCRAFT® is perfect for most missions. The Xplore team has designed adaptations to our modular spacecraft to fulfill an even larger number of missions for our customers.

DATA AS A SERVICE

SENSOR AS A SERVICE

SATELLITE AS A SERVICE

- Multi-band relay communications from other spacecraft, landers, rovers and ground terminals.
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DATA AS A SERVICE

Customers purchase the exclusive space data collected by Xplore.

SENSOR AS A SERVICE

Customers task Xplore's instrument(s) to collect space data products.

SATELLITE AS A SERVICE

Customers bring us their payloads, and Xplore does the rest.



PAYLOAD HOSTING SERVICES

END-TO-END PAYLOAD SOLUTIONS

- Mission design and analysis
- Payload Integration and Testing
- Launch and Insurance
- **Communications**
- Mission operations



- Payload integration and testing
- Launch and Insurance
- Communications
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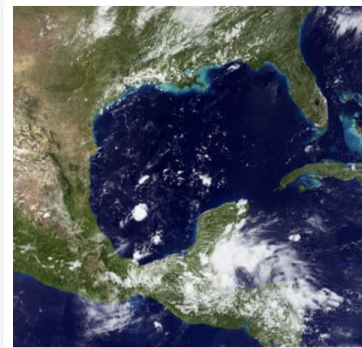
XPLORE'S LOW EARTH ORBIT PAYLOAD HOSTING SERVICE

Using the XCRAFT® platform, Xplore offers an affordable, low Earth orbit service designed to host a wide variety of customer payloads, from 1U to 75U or more. Customers can focus on their primary business goals without the expense of procuring, launching and operating dedicated satellites. Xplore's turnkey service solution aims to reduce the total cost of a cubesat-class mission by as much as a factor of two. Additionally, Xplore offers significantly enhanced performance and flexibility in terms of mission duration, communications, pointing, power and data storage.

CUSTOMER APPLICATIONS

Satellite as a Service will appeal to customers requiring consistent access to space for:

- Remote sensing
- Communication relay or reception (IoT)
- Scientific research (e.g., instruments, sensors, etc.)
- Technology demonstration (e.g., components)



- Remote sensing
- Communication relay or reception (IoT)
- Scientific research (e.g., instruments, sensors, etc.)
- Technology demonstration (e.g., components, processors, mechanisms, etc.)
- Flight heritage and gaining experience (e.g., TRL acceleration).



TYPES OF PAYLOADS

- Optical instruments
- Radar payloads
- Cubesats and deployers

- Technology demonstrations
- Commercial instruments
- Space environment instruments

- Biological experiments
- Impactors and hard landers
- Media and marketing payloads

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