

GOVERNMENT NETWORK SERVICES

Global Government



SES | Networks

As governments become more and more data-driven, they rely on the reliable, robust, secure and ubiquitous network services provided by SES Networks.



THE CONNECTED GOVERNMENT

Providing the critical communications governments need for military, civilian, and humanitarian missions around the globe.

Governments around the world increasingly rely on data; the Intelligence, Surveillance, and Reconnaissance (ISR) platforms that capture and relay sensor data—including real-time high-definition video; command and control systems that disseminate the information; and the cloud-based systems that make everything work efficiently. As they become more and more data-driven, they rely on the reliable, robust, secure, and ubiquitous network services provided by SES Networks.

Despite budget pressures, demand for global government and military satellite communications is spreading. Defence expenditures are expected to grow at a rate of 3.3% in 2018, compared to just under 1.5% in 2017, with spending shifting significantly towards the Middle East and Asia Pacific regions.¹ Without the ability to predict where the next conflict will take place, governments need solutions that allow flexible demand allocation in terms of coverage, bandwidth, and frequency configurations.

As governments move from traditional point-to-point SatCom connectivity to relying on global data networks, they increasingly look for managed end-to-end solutions. Global service revenues demonstrate this, and are expected to reach more than \$8.1 billion by 2025, versus capacity revenues of \$1 billion.² They need greater throughputs across all verticals, particularly for ISR platforms and tactical systems where throughput will more than double to reach over 100Mbps by 2025 to support live streaming and full-motion video for enhanced safety and situational awareness.³ And they are increasingly adopting cloud applications, with government use of public cloud services expected to grow an average of 17.1% per year through 2021, and use of private cloud at twice that rate through 2021.⁴

Powered by the world's only multi-orbit, multi-band satellite fleet, our government solutions provide the robust connectivity and secure, end-to-end managed network services governments need to rapidly provision military, intelligence, and civilian missions with resilient communications infrastructure. Our footprint covers 99% of the globe, enabling rapid-deploy connectivity for critical communications on land, at sea, and in the air—as well as for humanitarian and disaster response operations where terrestrial networks may be unavailable, overloaded, or compromised. Our unique O3b MEO constellation provides fibre-like connectivity that supports full-scale cloud-enabled government operations around the globe.

1. IHS Janes Global Defense Budget Annual Report, 2018.
2. NSR 2017.
3. Avascent 2017.
4. "Understanding Cloud Adoption in Government," Gartner, April 2018.

SECURE GOVERNMENT SOLUTIONS

Our Signature Government Solutions improve coordination, collaboration, and response.

Scalable and customisable solutions

Powered by the industry's only multi-orbit fleet with satellite assets in both GEO and MEO orbits, our solutions provide reliable and secure connectivity to geographically dispersed users, or missions with extremely high throughputs—anywhere in the world. With more than 70 satellites in service, and the ability to transmit across the full range of frequency bands—including X-band and Military Ka-band on the GovSat-1* satellite—we have the scale and flexibility to tailor a solution to the specific needs of your mission, including cloud capabilities. Our solutions support the full range of humanitarian response needs, from the small initial response team through to the restoration of communications for the entire disaster-affected community. This enables thousands of people to take ownership of their own humanitarian response.

Instant access and global reach

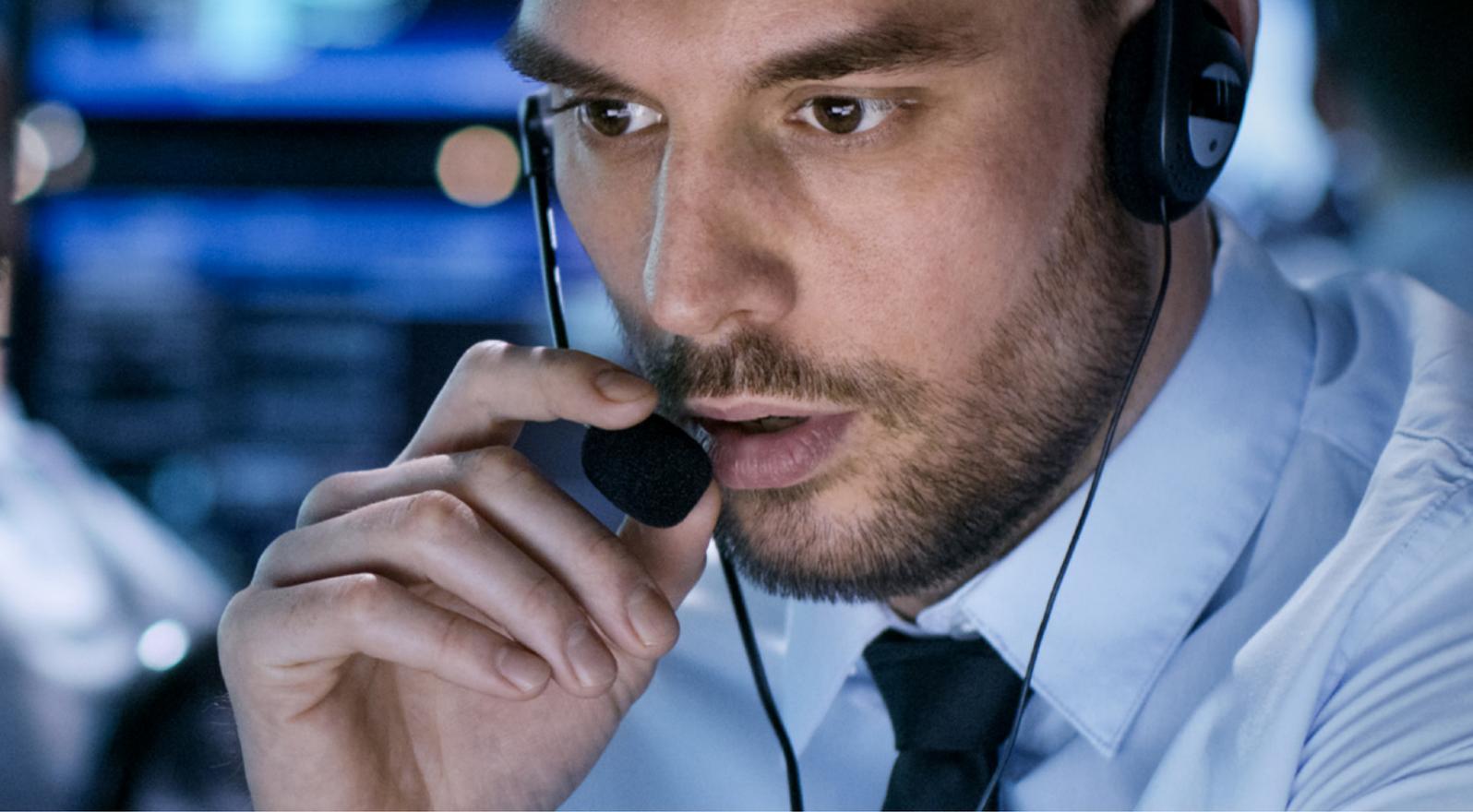
Our local teams in key markets around the world ensure you can gain instant access to secure network services anywhere on the globe. Combining worldwide coverage, a comprehensive terrestrial network, managed services, technical consulting, and end-to-end integration, we ensure communications for your mission are up and running whenever and wherever you need them.

Deep expertise and established partnerships

Our specialised knowledge and regional expertise ensure we are at the ready to meet your evolving needs—today and in the future. We work in close collaboration with government partners to understand their requirements for a successful mission. Our focus on steady planning of new launches provides fleet renewal and capacity expansion. This includes developing the world's first ultra-low-latency satellite network with fibre-like speeds, and building an ecosystem of partners to deliver:

- Dedicated go-to-market solutions tailored to individual country requirements
- Operational support for secure cloud services, data analytics and high-grade security
- Innovative service models to provide instant and guaranteed access with less risk
- Technology and solutions that cater to your needs for throughput, latency, coverage, flexibility, and resiliency.

* GovSat-1 is operated by GovSat, a public-private partnership between the Government of Luxembourg and SES.



Focus on innovation

Innovation is at the heart of what we do, and ensures we can provide progressively more resilient and ubiquitous communications for governments. As an industry-leading company, we have a long track record of pioneering new technologies, being the first to adopt new advancements, and delivering innovative products and services. And beyond technology, we develop new and creative business models and procurement vehicles to enable collaboration, and provide quick and affordable access to space. From launching the first commercial satellite on a flight-tested SpaceX rocket, to facilitating the GovSat public-private partnership to provide direct access to government satellite communications services, our aim is to connect our customers with better and more cost-effective services while delivering a premium experience to their end users.

Integral approach to security

Government, diplomatic and military networks need to maintain the highest levels of security. The companies that provide network services must take particular measures to protect against growing cyber-security threats, which can disrupt communication channels, deny service, and collect sensitive data. Designed with the right features, ground infrastructures, and security standards, satellite provides one of the most secure communication platforms available. With more than 30 years of experience serving government customers, SES Networks now has 58 government agencies in 29 countries that rely on our scalable and flexible network solutions to help them adapt to challenging and unpredictable requirements. Our networks apply best practices in cyber-security, aligned to industry-leading standards such as ISO 27001 and NIST SP800 series, and with the necessary security clearances to work with international government bodies.

30

years of experience

58

government agencies

29

countries

SHARING OUR EXPERTISE

As a true partner, we take a leadership role across the industry to support space programmes, and work with governments on programmes that support social and economic development.

Commercially hosted payloads provide consistent, reliable, and affordable access to space on an accelerated timeline.

Space programmes

Around the world, the need for high-performance, secure, and cost-efficient government connectivity continues to grow. The development of sovereign national space-based capabilities and programmes is often challenged by the accelerated pace of these growing demands—designing, building, and launching a satellite is a long and costly process. Many national satellite programs are experiencing delays, cancellations, and budgetary challenges. Commercially hosted payloads provide consistent, reliable, and affordable access to space on an accelerated timeline. With a shorter planning cycle, construction cycle of 24 to 36 months, and frequent launch opportunities, hosted payloads offer the flexibility to accommodate a wide range of missions, filling gaps in operational and proof-of-concept activities. Partnering through the planning, launch, and operations of the satellite enables a spacecraft infrastructure developed with your payload in mind, custom-designed transponders, and shared costs to reduce your overall expenditure. Diversifying your space assets creates a more resilient space architecture by distributing assets across multiple platforms and locations.

Our satellites currently play host to five government payloads, including NASA's Global-Scale Observations of the Limb and Disk (GOLD), the European Geostationary Navigation Overlay Service (EGNOS), and the US Air Force's Commercially Hosted Infrared Payload (CHIRP) flight demonstration programme. We also consult with governments on their plans for national space programmes, and play a leadership role in space technology development programmes, including projects driven by the European Space Agency (ESA), the German Aerospace Centre (DLR), and organisations focused on research and development.

Development programmes

Governments and institutions work tirelessly to reach challenging goals for national security, and social and economic development. These include improving the standard of healthcare, providing access to quality education, building national infrastructure and improving its security, and boosting local economies.

Our secure, globally managed networks and diverse satellite fleet have proven key to achieving these objectives. We have collaborated on both national projects, such as Burkina Faso's hybrid communications network to extend and reinforce the country's administrative services, and programmes that require multinational cooperation, such as Galileo in-orbit testing (IOT), and the Galileo Data Dissemination Network (GDDN). Our position as an industry-leading partner is secured by our ability to provision high-performance connectivity to any location, a clear schedule of new launches, our satellite procurement and service development roadmap, and our leadership role in establishing industry standards and best practices. Our partnership approach brings our specific expertise to managing these complex projects, including certified project and risk management with a focus on our anticipation competency, experience working within the European Cooperation for Space Standardisation (ECSS), adoption of the Information Technology Infrastructure Library (ITIL) framework, and ISO9001:2015 and AQAP 2110 certifications for quality assurance.



SUPPORTING SATELLITE NAVIGATION

From operations support and mission-critical networks to hosted payloads and tracking, telemetry, and command ground stations, our solutions support navigation systems around the globe.



The Global Navigation Satellite System is expected to reach

\$200
billion by
2025

The Global Navigation Satellite System (GNSS) market continues to grow, and is expected to reach US \$200 billion by 2025.⁵ Satellite navigation and communication are ubiquitous elements of our daily lives, but also represent fundamental components or enablers for many other sectors, including IoT, Big Data, smart cities, and logistics.

Our dedicated GNSS team has experience and expertise in upstream infrastructure, and the provision of services such as In-Orbit Testing (IOT) and deployment of Tracking, Telemetry, and Command (TT&C) antennas for Galileo; and hosted payloads for EGNOS and the Wide Area Augmentation System (WAAS). Downstream applications include precise Position, Navigation, and Timing (PNT) for emerging location-based safety and security applications—for example, re-allocating under-used Galileo and Global Positioning System (GPS) signals to transmit public safety warnings or other critical data.

⁵ GNSS Market Report, Issue 5. European Global Navigation Satellites Systems Agency, 2017.

RELIABLE NETWORK SOLUTIONS FOR EVERY NEED

Enabling critical communications for civilian and military applications, including border security, diplomatic and operational missions, and morale and welfare for deployed forces.

Government agencies rely on high-quality, real-time data from the field to make informed decisions. They need high-performance networks to support critical communications between locations around the globe and their headquarters at home. Whether it's to enable secure operations of the national public administration network and protect critical infrastructure, coordinate a humanitarian response after a natural disaster, or connect deployed military personnel to share intelligence and provide tactical information, our secure networks provide the connectivity governments need. As bandwidth demands increase for applications such as enterprise resource planning (ERP),

logistics, data collection from sensors, government cloud services, and uncompressed video for ISR, so does the need for high-throughput, low-latency connectivity. Current demand is already straining existing narrowband communication links, restricting access to critical data for improved awareness of government and military missions. Our point-to-point and meshed communications systems connect deployed users to their commands. This keeps teams on the ground connected with forward deployed task force headquarters and operational headquarters, so everyone has the latest information. Powered by our multi-orbit fleet, our

O3b MEO network solutions are ready and optimised for cloud services—strengthened by our partnerships with the world's leading cloud service providers, including Amazon Web Services, Microsoft, IBM, and Google. The high-throughput, low-latency connectivity provided by our O3b MEO constellation is complemented by the global coverage and flexibility of our GEO fleet—and all network services are available on a contract basis or Occasional Use bookings from 15 minutes to three months, and backed by an extensive portfolio of Ascent Lifecycle Services.



SECURE GOVERNMENT NETWORKS

With missions and embassies around the world, government activities are no longer confined to traditional boundaries.

Complex military missions require inter-service chain of command for joint coordination, while the ability to use cloud-based applications increases security and resiliency. Powered by our multi-orbit fleet, our network services provide critical communications for governments around the globe.

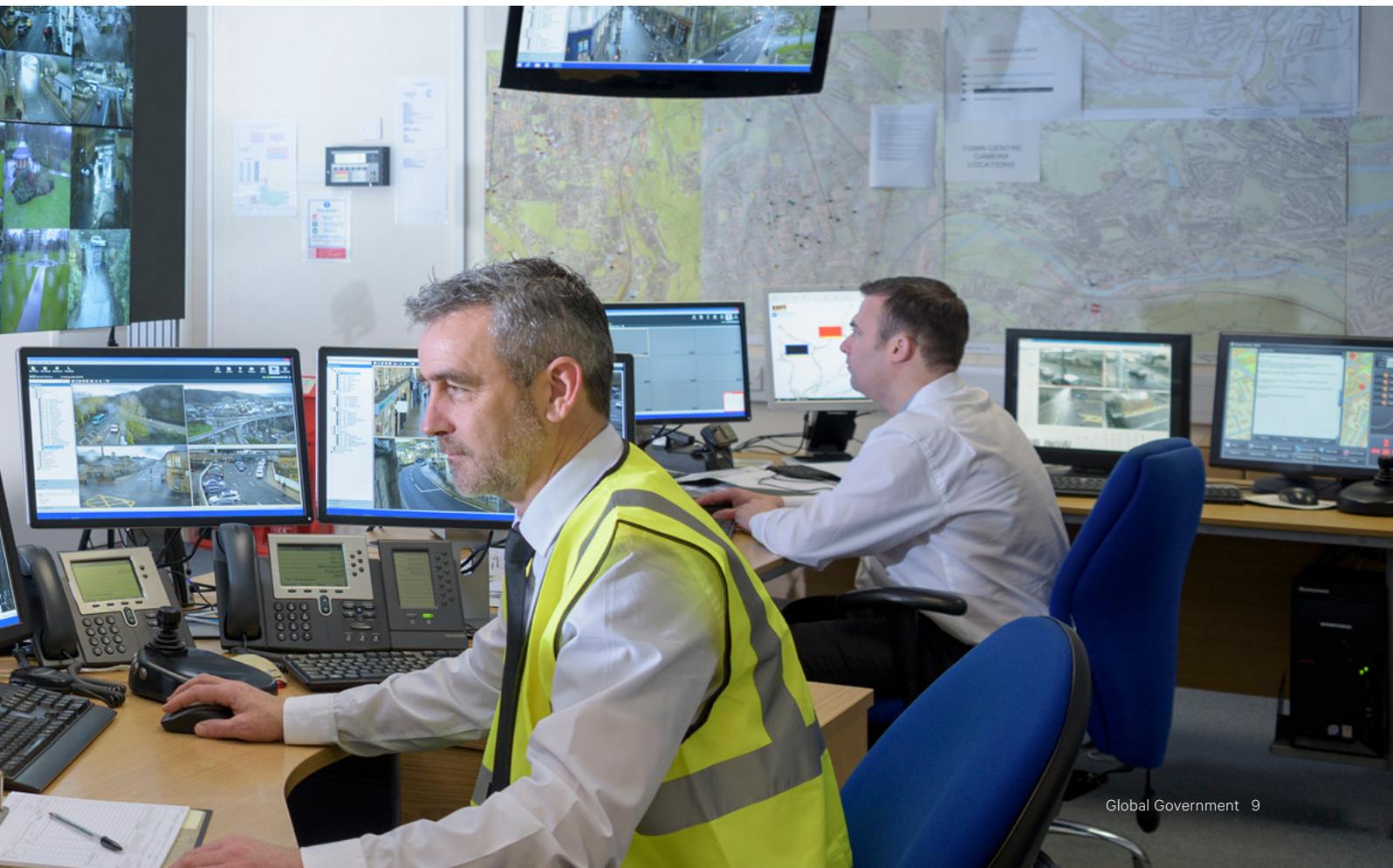
Connecting government networks to the cloud

Security is crucial for embassy communications, whether for diplomatic, strategic or trade purposes. It translates into a need for a high-grade link encryption and secure video calling, but there is now greater focus on the

increasing value of a near-zero footprint on the ground with the ability to store and access documents and critical data in the cloud—especially in high-risk areas. Cloud storage avoids scenarios like the 2015 evacuation of the US embassy in Yemen, when staff spent hours destroying tens of thousands of documents—a procedure fraught with risk, and the potential for assault by hostile forces. Cloud storage also increases the demand for bandwidth, and secure servers with solid encryption. Our O3b MEO constellation provides instant and secure access to cloud-based applications for governments around the world, while our network

services provide more than 5Gbps of capacity to 18 different US government sites worldwide—with the capacity set to double by 2019.

Our network services provide instant and secure access to cloud based applications for governments around the world



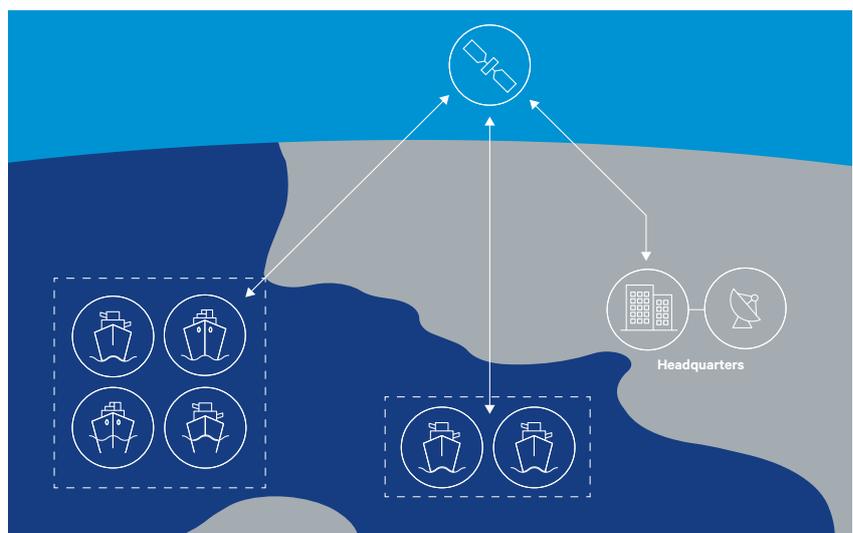
EYE ON THE MISSION

Scalable and secure connectivity enables a full suite of managed network services to support seamless security and defence operations at sea, on land, and in the air.

AT SEA



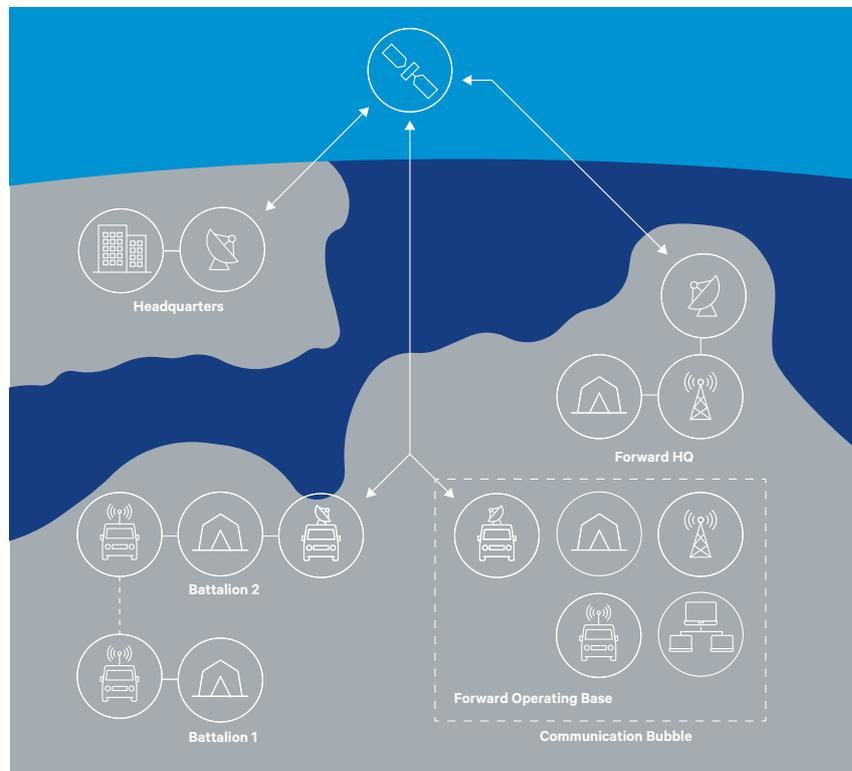
Connecting navy assets requires the ability to provide on-demand networks to multiple mission areas, with various classes of ship, and increasing bandwidth requirements for new applications. Our scalable connectivity ranges from a few Mbps to over 1Gbps for seamless and secure ship-to-ship and ship-to-shore networks that span regions and continents. Naval Communications Services connect vessels traversing the oceans, for collaboration and intelligence sharing to improve mission effectiveness and resource allocation.



ON LAND



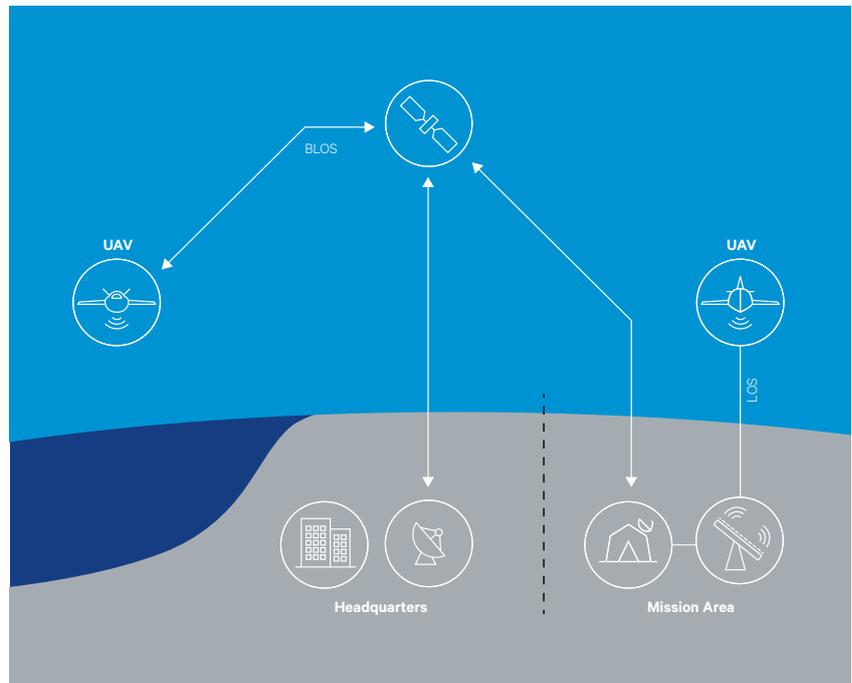
Security and defence teams face complex situations on the ground. They rely on secure bi-directional and meshed connectivity to ensure shared intelligence for the mission. Our field-proven solutions can rapidly deploy communications to connect command centres and essential support systems. Deployed teams are linked with headquarters via mobile terminals, enabling IP applications such as Voice over IP (VoIP), email, secure messaging, ISR backhaul, uncompressed video, and large file transfer capabilities that move terabytes of data in minutes instead of hours. This ensures decisions are based on real-time situational awareness.



IN THE AIR



Remotely Piloted Aircraft Systems (RPAS) have transformed the way military forces conduct ISR missions. Valued at US\$ 18.14 billion in 2017, the UAV market is projected to grow at a Compound Annual Growth Rate (CAGR) of 14.15% through 2025.⁶ As these systems become smaller, extend their range to hundreds of kilometres, and have the capability to capture and share live video at high resolution, they need fibre-equivalent connectivity to points around the globe. Our combined fleet of GEO and MEO satellites enables high-speed, high-resolution air-to-ground data repatriation, providing real-time situational awareness for non-line-of-sight operations far beyond the perspective of naval and ground forces. Deployed teams on ISR missions can use our O3b MEO constellation to share simultaneous access to multiple cross-domain intelligence, ground and air sensor and communications data, several real-time HD-quality video feeds, and cloud-based applications that leverage real-time monitoring and predictive analytics. Our engagement in the development of new Unmanned Aerial Vehicle (UAV) technologies is driving greater spectral efficiencies, reduction in interference from adjacent satellites, and operations on multi-beam satellites.



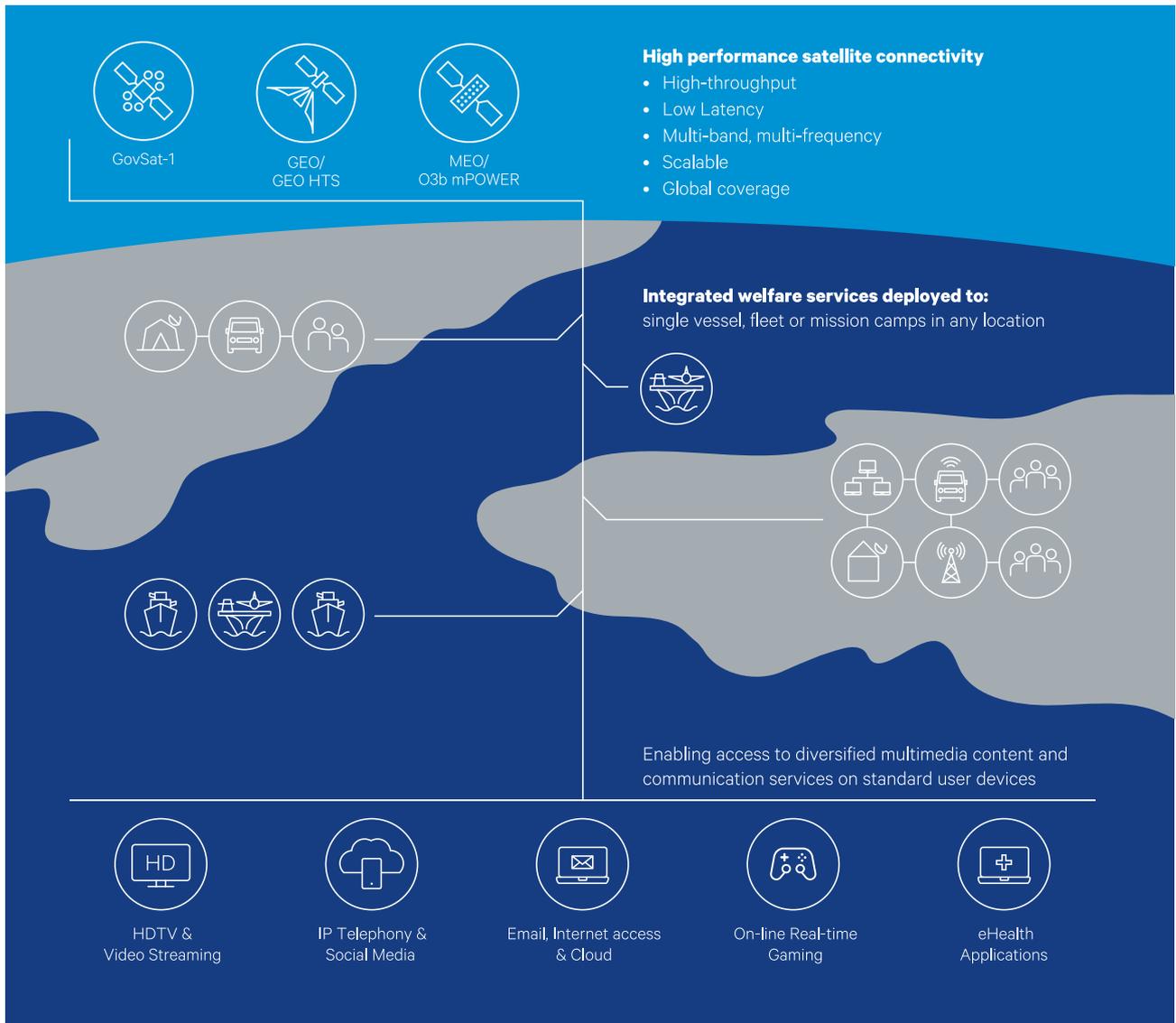
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MORALE, WELFARE AND RECREATION

Keeping troops engaged and entertained while deployed far from home.

One of the greatest challenges for military service personnel is being separated from their loved ones. They want to keep in touch with their family, friends and social networks—even while deployed on a remote mission or patrolling distant corners of the ocean. Providing MWR connectivity has become essential to recruiting and retaining land troops and naval forces. Our always-on connectivity solutions keep personnel engaged and entertained, with a fibre-equivalent experience that allows them to use their own devices to connect to a wide range of online and multimedia streaming services, as well as real-time gaming platforms—no matter how far from land they sail, or how remote their mission camp.

Integrated welfare enabling access to reach multimedia content and communication services





CRISIS CONNECTIVITY

Speeding recovery efforts for first responders, local businesses, and the community via rapid-deploy emergency communications.

Each year, natural disasters and premeditated incidents cost the world billions of dollars in economic losses, and uncountable loss of life. Communication is key to coordinating an effective response—even while communications infrastructure may be damaged, overloaded, or non-existent. Governments and humanitarian organisations need access to rapid-deploy communications services for first responders to collaborate in the field, exchange information to assess the situation, and identify real-time needs. At the same time, local governments and businesses need to ensure operational continuity, so they can continue to serve their customers.

Our end-to-end managed crisis solutions are field-proven with leading emergency communication platforms, providing seamless communication across emergency and telephone services anywhere in the world. Emergency.lu, a public-private partnership with the Luxembourg Government that supports the UN World Food Programme in its role as head of the UN's emergency telecoms cluster, provides a range of solutions for different humanitarian requirements, including:

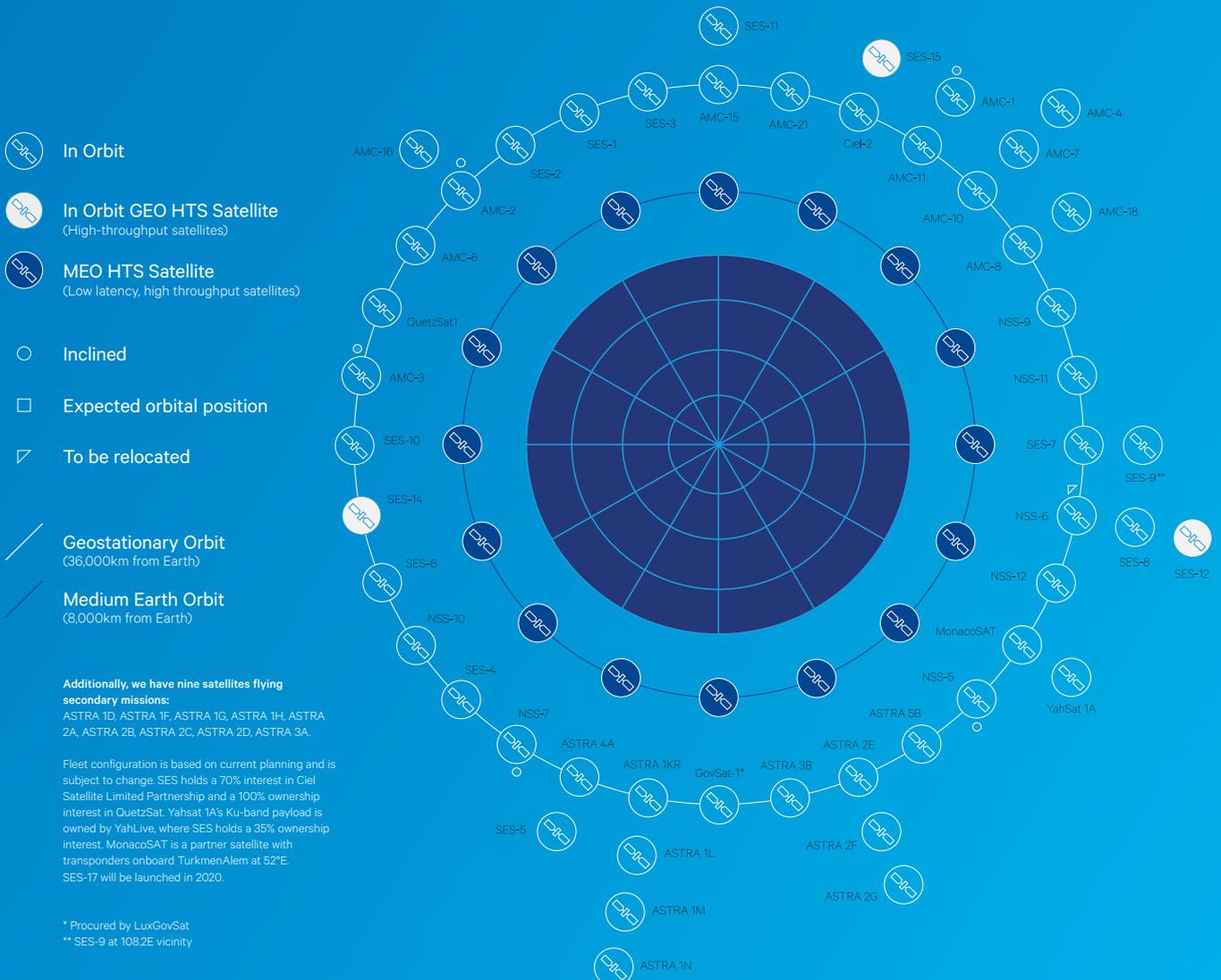
- Business continuity offerings in MEO and GEO to minimise the impact of disaster outages
- Quick-deploy VSATs to get teams on the ground connected quickly
- Unique MEO capabilities to enable full network restoration for thousands of people via a single terminal.

SES NETWORKS— AN EXPERIENCED PARTNER

Bringing more than 30 years' expertise to government and institutional network services

With a deep understanding of the needs of governments and humanitarian organisations, SES Networks provides end-to-end managed network and application services for security, defence, disaster response, and humanitarian operations. As part of the SES Group, we have the infrastructure and global support to empower governments around the world to meet the increasingly challenging requirements for secure communications networks.

Powered by the industry's only multi-orbit, multi-band fleet, our Signature Government Solutions enable governments and institutions to provision critical communications for missions all over the world—even in the most remote locations. Our Global Government division—together with our dedicated affiliates, Redu Space Services, SES Government Solutions, and GovSat—offers a full suite of managed network services for missions on land, at sea, and in the air. Our portfolio includes tailored solutions for a wide variety of government applications, including border control, ISR, civil protection and disaster response, and e-government applications.



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SES NETWORKS

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REGIONAL OFFICES

Accra | Ghana
Bucharest | Romania
The Hague | The Netherlands
Istanbul | Turkey
Kiev | Ukraine
London | UK
Madrid | Spain
Mexico City | Mexico
Moscow | Russia
Munich | Germany
Paris | France
Princeton | USA
Rīga | Latvia
São Paulo | Brazil
Singapore | Singapore
Stockholm | Sweden
Warsaw | Poland
Washington DC | USA

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