O3b mPOWER: CONNECTIVITY SOLUTIONS FOR ISR MISSIONS

> "Empowering [airmen] with next-generation technologies to repurpose, retool, and automate is crucial to evolving our capabilities and our culture."
>
> *Mark Allen, advisor to the Deputy Chief of Staff for ISR, US Air Force 2018*

- Throughputs per UAV are expected to exceed 100Mbps by 2025

- There are set to be a further 5,000 ISR UAVs in operation globally by 2028

- At least 95 countries now maintain active military drone programmes

THE ISR DATA CHALLENGE

Multi-sensor airborne platforms, both manned and unmanned, are vital to today's intelligence, surveillance, and reconnaissance missions, accomplishing a wide range of operational objectives ideally in a single sortie. With sensors ranging from SIGINT and 4K video, to radar, thermal imaging, and WAMI, ISR assets gather a massive range and volume of data on each flight. The capabilities of the comms systems supporting these missions are constantly challenged to meet the growing demands of modern ISR platforms, including:

- Reducing the number of passes per sortie with complex onboard sensors—drives the need for high-throughput return-link data streams
- Maintaining quick pilot reaction times and providing real-time cloud data analysis throughout the intelligence chain—calls for a low end-to-end latency network
- Staying in contact during dynamic long-range missions—requires superior coverage
- Preventing jamming and data interception—entails ensuring that the network is robust and secure

Yet these prerequisites are beyond the reach of many of the traditional commercial satellite architectures, driving the requirement for new breeds of services and systems.

THE O3b mPOWER SOLUTION

O3b mPOWER represents a transformative opportunity for the ISR community. As an exponential evolution of our well-established O3b MEO satcom service, O3b mPOWER uses innovative satellite and terminal technologies to deliver secure beam-tracking network connections to remote command and analysis centres. Fibre-like data rates and reduced latency, together with the flexible allocation of forward and return link data ratios, provide a high-performance cornerstone for enhanced intelligence capabilities and vastly improved mission success rates.

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KEY BENEFITS

- Low-latency, high-throughput MEO connectivity supports real-time data distribution from multi-sensor airborne missions
- Combination of narrow beams, multiple ground stations, beam following, and changeable frequencies ensures supreme levels of network security and resilience
- ISR data multi-cast directly from the satellite to numerous data processing and command centres significantly shortens decision making and OODA-Loop time
- Sovereign deployable Government gateways augment commercial gateways for security and QRC mission direct cloud access
- Complementary multi-orbit GEO HTS system provides added resilience and roaming coverage
- Future facing open-architecture interface maintains compatibility with current and planned small UAV terminals
- Scalable network topologies allow for system growth and changes in architecture

SYSTEM SPECIFICATIONS

- Return Link throughputs of over 100Mbps with small airborne terminals
- Frequency allocations across 2.5GHz of Ka spectrum
- Return link latency 150ms terminal to terminal
- 250km beam diameter with obfuscation capabilities
- Thousands of secure steerable beams per satellite
- Dynamic control of frequency, bandwidth, and terminal location
- Global equatorial coverage to +/- 50° latitude, broader roaming capabilities with GEO
- Secure portal access for service visibility and operational configuration management
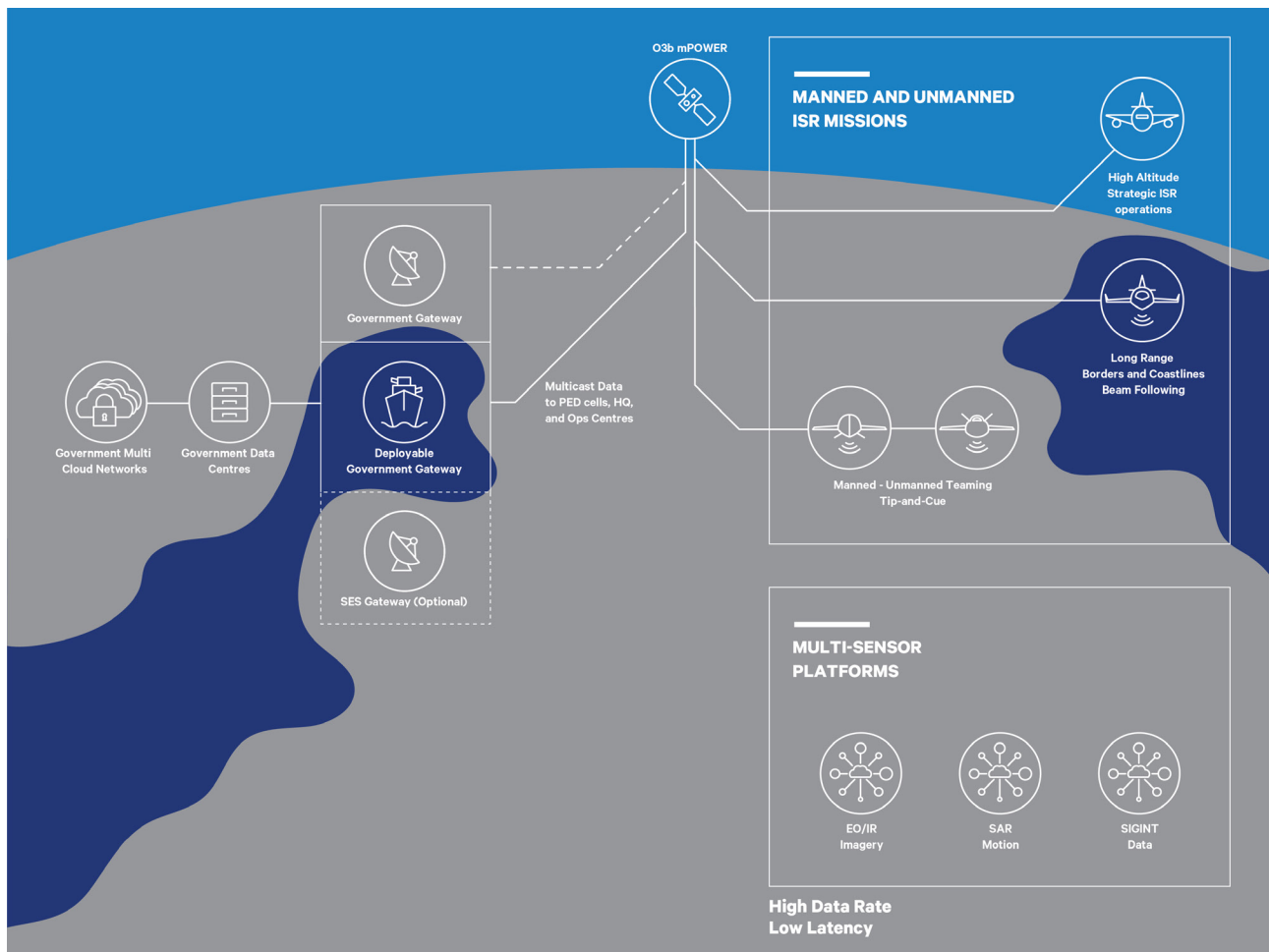
O3b mPOWER Solutions for ISR Missions

External sources

Euroconsult and Avascent 2020

The Drone Databook, Center for the Study of the Drone at Bard College 2019

Learn more about SES Networks' full portfolio of services and solutions.
Website: **ses.com/networks**