



OPTIMISING ISR EFFECTIVENESS WITH INMARSAT



INMARSAT GLOBAL GOVERNMENT
COMMUNICATIONS MADE CERTAIN



GLOBAL, MULTI- INTELLIGENCE GATHERING OPERATIONS FROM AIRBORNE PLATFORMS

Effectively employing manned and unmanned aerial ISR assets requires globally-portable, fully connected and efficient beyond line of sight (BLOS) connectivity for Processing, Exploitation and Dissemination (PED).

As governments around the world are evaluating their future data and communication technology to support these missions, Ka-band has emerged as the preferred path forward for the Airborne Intelligence, Surveillance and Reconnaissance (AISR) community.

The data driven nature of these AISR missions greatly benefits from smaller apertures to maximize platform range and reduce signature. Meeting the requirements of communication certainty, security and BLOS flexibility, Inmarsat's Global Xpress network enables an efficient platform installation using low-

size, weight and power (SWaP) user terminals. These terminals provide access to commercial and military Ka-band services worldwide with return link data rates that are efficiently delivered and support user-specified data rates at much lower total cost to operate than other solutions.

Using the standard Global Xpress commercial subscription service, small AISR terminals (30cm and 46cm apertures) support return link (platform to gateway) connectivity at rates of up to 10+Mbps*. These same terminals support return link connectivity at rates up to 100+Mbps using Inmarsat High Capacity Cross Strap (HCX) military Ka-band beams*.





COST EFFICIENCIES

For missions operating over vast coastlines, the ability to transfer live data and BLOS communications, as well as quicker access to mission command has resulted in an increase in operational efficiency and mission success.

CALCULATION BASED ON BOMBARDIER DASH 8 PATROL AIRCRAFT

Average operating cost per hour:

\$2490.00

Flying hours per year:

20 000 HOURS

5% flying hour reduction

1000 HOURS

Cost saving per annum:

\$2.49M



THE ROLE OF SATELLITE COMMUNICATIONS IN THE BROADER ISR ECOSYSTEM

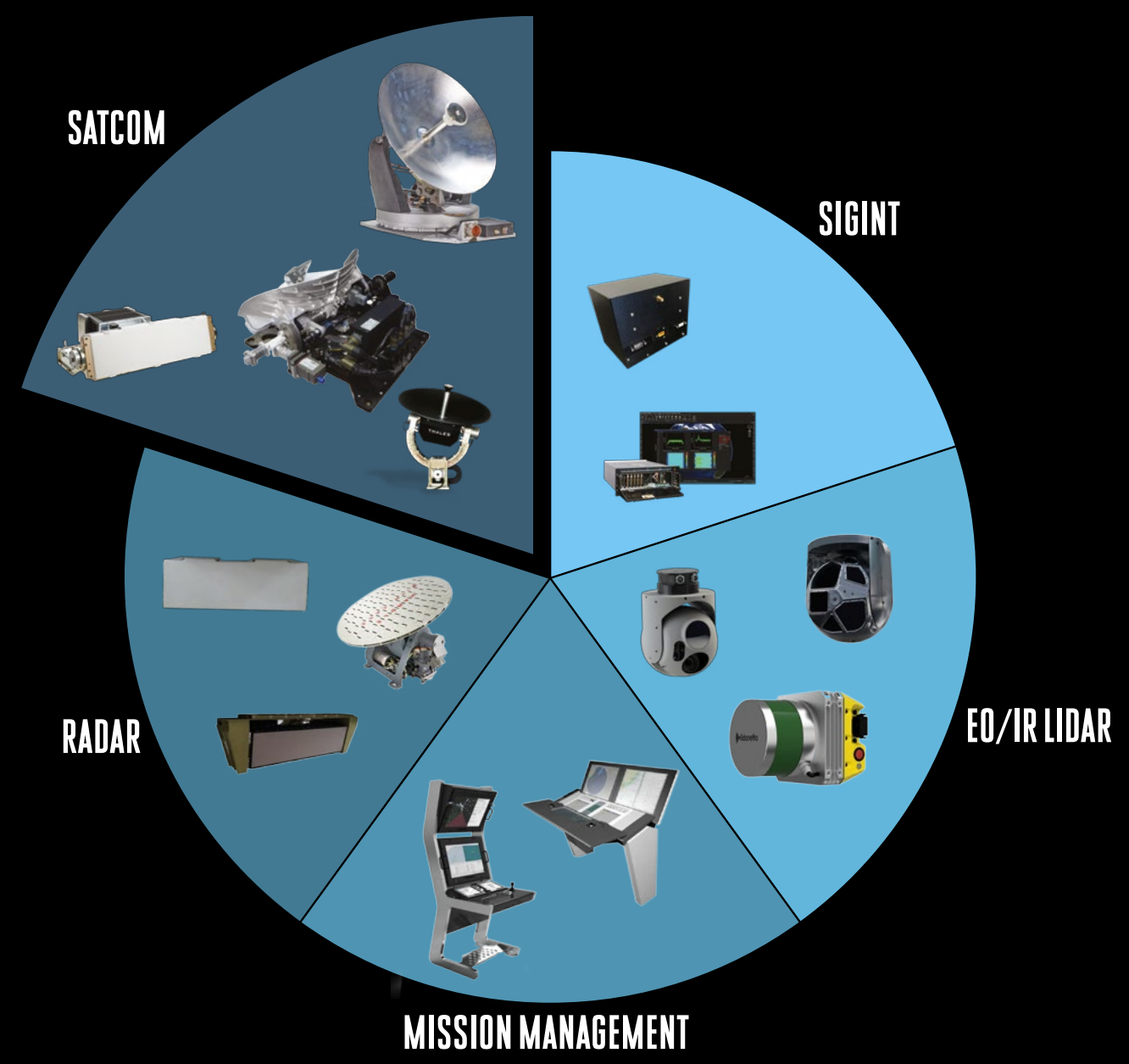
When equipping special ISR mission platforms, you can have the best sensors, mission management and EO/IR on the market but without an effective communications link to deliver the mission data, the availability of all this equipment and applications becomes redundant due to the inability in being able to transfer the situational awareness data gathered in a timely manner.

Many platforms are equipped with microwave links providing a robust LoS connectivity pipe. However, as the target area

becomes broader, SATCOM provides a reliable and cost effective* BLOS solution to ensure seamless connectivity across the entire mission, no matter the location.

*When compared to the cost of expanding or building out a microwave network.

NATO E3, E7 and other AEW platforms have played a significantly increased role in providing advanced ISR capability. SATCOM is now viewed as an essential and integral connectivity solution amongst radar, UHF, VHF and link16.





SECURITY

Designed from the ground up for government users, Global Xpress traffic lands in NATO/Five-Eyes countries, providing a high level of mission assurance. Inmarsat controlled gateways are outfitted with secure facilities and are highly resilient, fully redundant backup connectivity to every satellite. Provisions

have been made to provide TYPE-1 secure operations at inmarsat facilities. Inmarsat's Ka-band Global Xpress services feature a unique, focused feeder architecture. This provides customers with significant operational security and protection from adversarial attempts to identify geolocation.

YOUR EYE IN THE SKY REQUIRES MUCH LESS BANDWIDTH THAN YOU THINK

Inmarsat have a number of partners that can deliver video optimization and encoding solutions to provide high resolution video and imagery even across limited bandwidth. The ability to share mission data in real-time provides stakeholders with the critical information

to make informed decisions in theatre. Whilst BLOS does have bandwidth limitations the trade of is typically resolution vs frame rate. Image below shows high resolution, low bandwidth streaming achieved using Ansur technology: 100kbps at 1920x1080 (3fps).



**SELECT REGION OF INTEREST
USE FULL CAPACITY FOR THIS PART OF IMAGE**

1920x1080, 3fps, 107kbps

NO GNSS FIX

SENDER SETTINGS
Streaming Control: Manual / Adaptive
Resolution: 1080 / 720 / 480 / 360 / 240 / 180 / 144 / 108 / 72 / 48 / 36 / 24 / 18 / 12 / 9 / 6 / 3 / 2 / 1 / 0.5 / 0.25 / 0.125 / 0.0625 / 0.03125 / 0.015625 / 0.0078125 / 0.00390625 / 0.001953125 / 0.0009765625 / 0.00048828125 / 0.000244140625 / 0.0001220703125 / 0.00006103515625 / 0.000030517578125 / 0.0000152587890625 / 0.00000762939453125 / 0.000003814697265625 / 0.0000019073486328125 / 0.00000095367431640625 / 0.000000476837158203125 / 0.0000002384185791015625 / 0.00000011920928955078125 / 0.000000059604644775390625 / 0.0000000298023223876953125 / 0.00000001490116119384765625 / 0.000000007450580596923828125 / 0.0000000037252902984619140625 / 0.00000000186264514923095703125 / 0.000000000931322574615478515625 / 0.00000000046566128730773928125 / 0.000000000232830643653869640625 / 0.0000000001164153218269348203125 / 0.00000000005820766091346741015625 / 0.000000000029103830456733705078125 / 0.0000000000145519152283668525390625 / 0.00000000000727595761418342626953125 / 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BUT... WHEN YOU DO NEED MORE BANDWIDTH L-MAX

L-MAX: the high bandwidth leasing solution that bridges the gap between SwiftBroadband and Global Xpress, providing high bandwidth for even the smallest of reconnaissance platforms.

L-MAX reserves bandwidth and power over a geographic region for a specified duration, using higher order modulation and coding (MODCOD) to deliver Internet Protocol (IP) data efficiently. This provides a high data-rate, cost effective, end-to-end communication solution over a secure, highly resilient, and reliable Inmarsat private network using the SWAP features of ELERA terminals.



FEATURES

L-MAX is a standardized end-to-end solution, and utilizes:

- Highly reliant terrestrial network.
- Network infrastructure diversity
- Government specific, dedicated SCPC modems (Q-Flex) at EMEA & APAC Satellite Access Stations (SAS)
- Inmarsat Global Government Network Management System (NMS).
- In conjunction with Inmarsat aviation partner specialists, remote terminal integration with a certified SCPC modem
- Multiple standard narrow spot beams (NSB) can be connected to create a contiguous highly customized area of coverage.
- Allows user terminals to move through the Inmarsat network, i.e. beam to beam and satellite to satellite.
- Leases are typically allotted in 200 kHz blocks of frequencies, but can be dropped to 100 kHz for forward link.
- Minimal aircraft modification while achieving significant throughputs.

NO TWO MISSIONS ARE THE SAME

Bespoke offerings are often required to cater to the individual needs of the airborne ISR operator. Inmarsat works closely with our government partners and end users to deliver the optimal and most cost-effective solution to meet your ISR needs.

NETWORK OF SPECIALIST PARTNERS



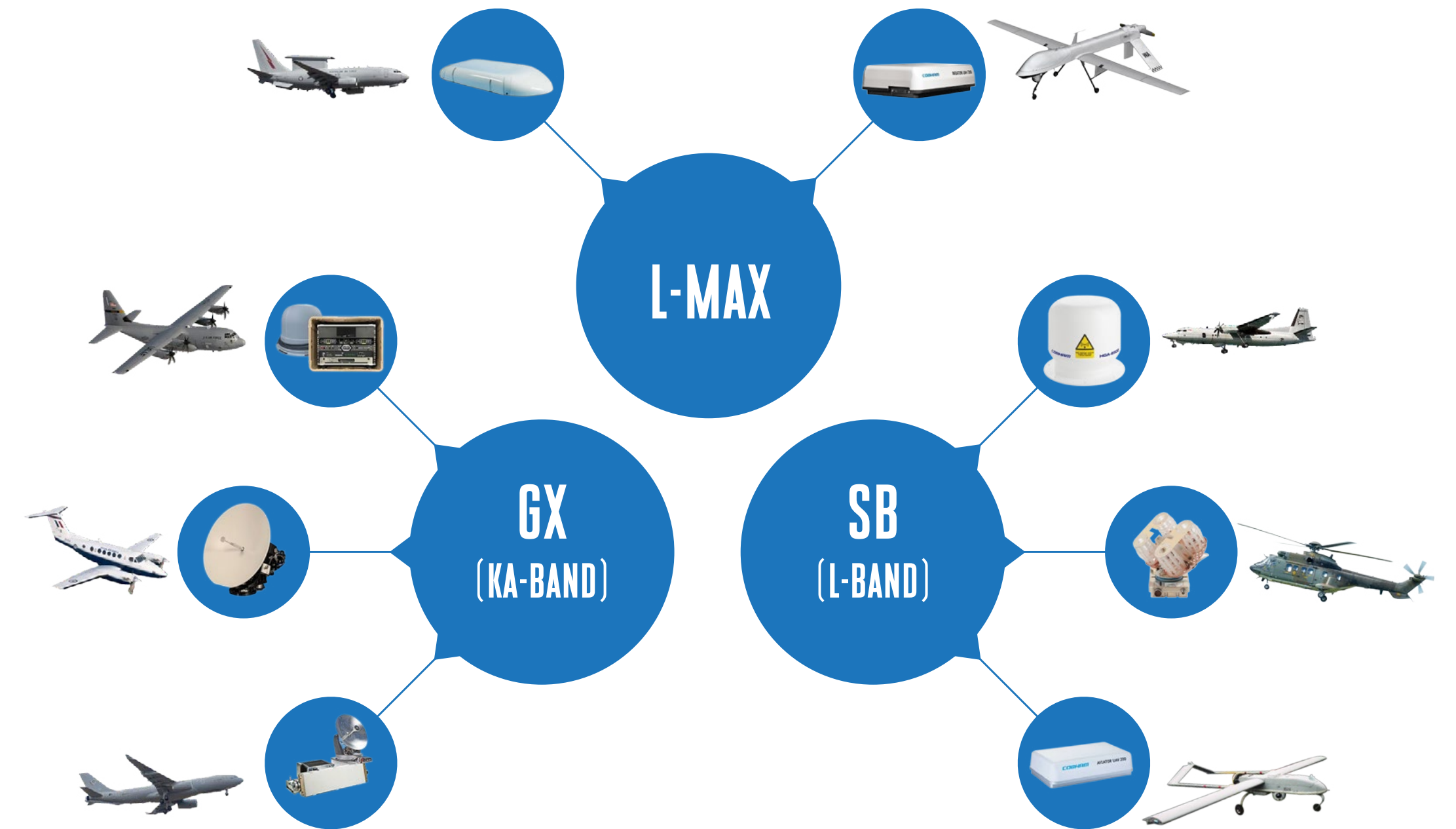
This modular mission management console is part of a bespoke King Air Solution delivered by turnkey partner Eclipse Global Connectivity.



This Orbit-46 GX solution for KA-350 was delivered by Inmarsat Global Government aviation specialist partner, Satcom Direct.



SOLUTION PORTFOLIO



As a multi-generational, multi-band network provider with over 40 years' experience working with governments, Inmarsat provides critical SATCOM solutions to cater for all platforms and missions. Inmarsat is a platform agnostic organization. By engaging with Inmarsat and our

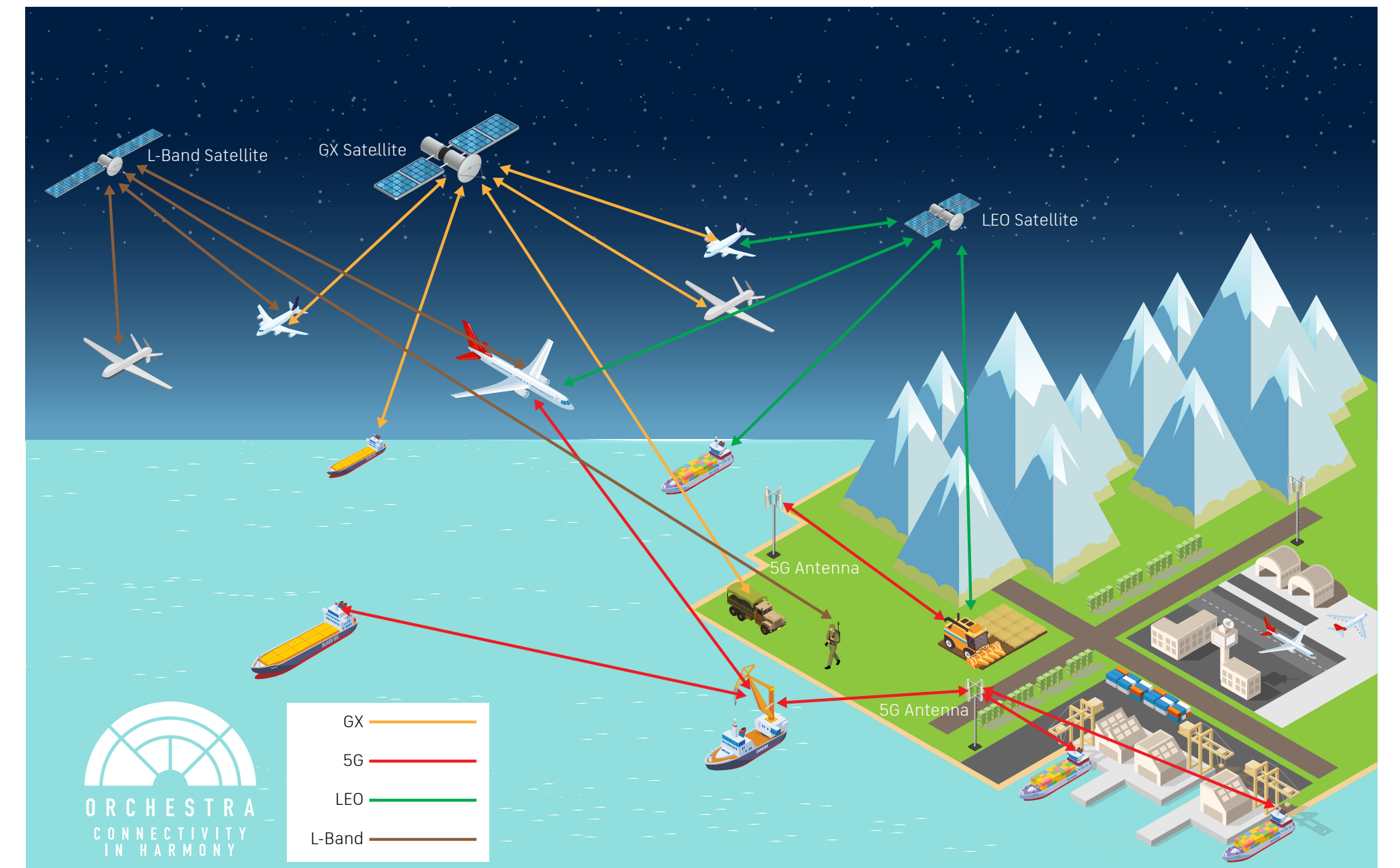
specialist partner network to discuss operational requirements, you can rest assured that we will use our extensive combined industry experience to deliver the optimum solution for your airborne ISR needs.



SPACE 2.0 INTEGRATED ISR CAPABILITY IN THE SPACE AGE

Militaries around the world are now increasingly looking to incorporate space into their ISR and overall defense strategies. Leveraging existing space based assets can deliver

immediate access to broader capability, whilst Inmarsat can take government users on a journey to self managed space capability through our network of networks, ORCHESTRA.

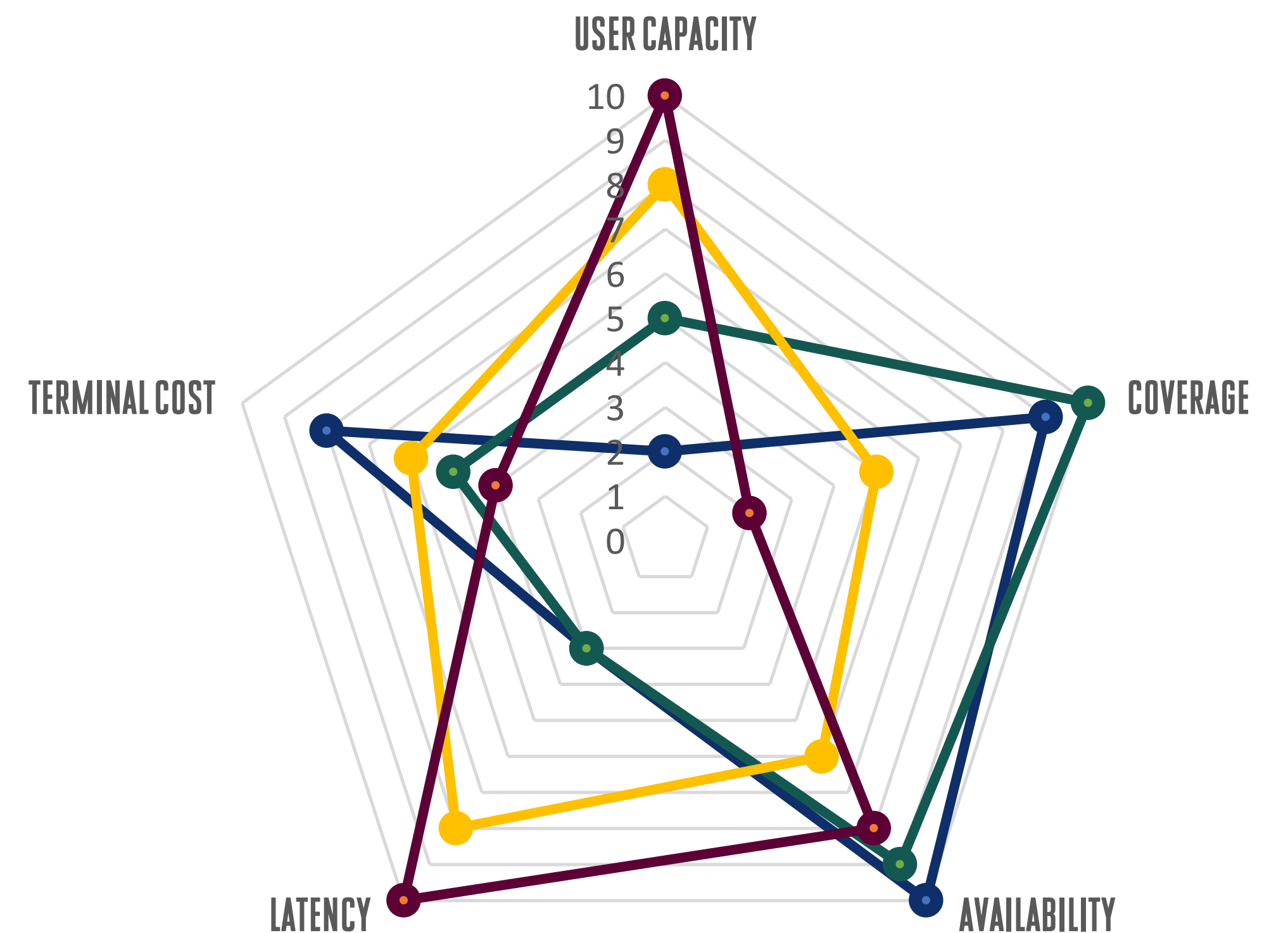


RELIABLE GLOBAL PERFORMANCE

Needs independent and complimentary layers



	Meshed Terrestrial Super Wideband	Super Capacity hotspot fill
	LEO Super Wideband (GX 3.0)	High Capacity, low latency GX overlay
	Global Commercial and Government Wideband (GX, GX2.0, Ka Band)	High availability global broadband
	Global Narrowband (BGAN, L-band) (GX, GX2.0, Ka Band)	Resilient fallback and network management





HOW TO BUY

Inmarsat products and services are available through select Inmarsat distribution partners and service providers.

Visit our website to find the right partner for you.

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