



● ● *Skot Butler, President at Intelsat General*

Based in McLean, VA, Intelsat General (IGC) is a US-incorporated, wholly owned subsidiary of Intelsat, operator of the world's first Globalized Network. IGC provides its government and commercial customers with high-quality, cost-effective, communications solutions via Intelsat's leading satellite backbone and terrestrial infrastructure.

Its customers rely on IGC to provide secure and seamless broadband connectivity, video communications and mobility services for mission-critical operations anywhere on the globe through an open, inter-operable architecture.

GMC Q&A

High-performance network ••

Intelsat General (IGC) is a wholly owned subsidiary of Intelsat, operator of the world's first Globalized Network. IGC provides secure satellite communications services to the world's militaries and the US Government. Skot Butler, President at Intelsat General, discusses the company's latest advances, as well as recent developments in the field of government and military services.

Question: What has the response been to Intelsat Epic^{NG}? How has that changed what you can provide to government customers, particularly now that your fleet is now fully global?

Skot Butler: We've had a positive response to Intelsat Epic^{NG}. In September 2018, we successfully launched the sixth and last of our first-generation Intelsat Epic^{NG} satellites, Horizons 3e. Horizons 3e entered service in January 2019, and with its coverage of Asia-Pacific and the Pacific Ocean region, our global high-throughput fleet is complete. Our government customers are already realizing the benefits of the higher data rates, availability, resiliency and redundancy of the Intelsat Epic^{NG} fleet.

From a performance perspective, the Intelsat Epic^{NG} high throughput satellite (HTS) constellation far surpasses the bandwidth speed and throughput possible with previous, wide-beam satellites. Tests conducted in 2018 on a Gilat 6" flat panel antenna on an Intelsat Epic^{NG} satellite demonstrated throughput rates of 3.9Mbps with an efficiency of 0.26bits/Hz. This compares to an uplink rate of 1.8Mbps and an efficiency of 0.09bits/Hz achieved with a conventional wide-beam satellite. The HTS link was effectively twice the data rate and almost three times more efficient than traditional wide-beam satellites.

So, what does this mean from a customer perspective? It powers new applications and services for government users. For example, the Marine Corps demonstrated the power of Intelsat Epic^{NG} to support their Networking-on-the-Move (NOTM) requirements. And a variety of users can now support high-definition full-motion video (HD-FMV) over small, Class III unmanned aircraft systems (UAS), something never before possible.

It is also important to note that as our Intelsat Epic^{NG} fleet evolved, so has our technology. For example, Intelsat 37e has steerable Ku and Ka-band beams, which can be positioned as needed to increase network access and support high-demand areas for government applications. Horizons 3e is the first Intelsat Epic^{NG} satellite to feature a multiport amplifier that enables power portability across all Ku-band spot beams. With the multiport amplifier, power can be adjusted to



● ● *A Government C-17 FlexAir Fuselage Mount 45cm Antenna. The C17 is in operations today using enroute comms and sometimes, VIP comms mode.*

each beam to meet customer throughput demands. By matching satellite power usage to traffic demands, government customers can leverage the additional efficiency improvements to expand their network and applications across the Asia-Pacific region.

Question: Where do you see the government heading in terms of commercial satcom this year?

Skot Butler: In the 2019 financial year, defense appropriators provided explicit guidance to develop an integrated, interoperable wideband and narrowband architecture and acquisition strategy that should include "government and commercial space systems" and "be based on flexible operations, open standards, and commonality that has communications path diversity."

Congress' years-long concern with the pace, progress and innovation of space mission recapitalization efforts, COMSATCOM investments and development of a flexible, fully-integrated, resilient satellite communications architecture manifested in the creation of a dedicated program element in the FY19 DoD budget for COMSATCOM integration into the future DOD satellite communications architecture.

We are encouraged by Air Force Space Command (AFSPC), tasked in the FY18 NDAA with sole acquisition authority for all COMSATCOM (by integrating DISA's COMSATCOM team), is demonstrating to industry its plans to move forward with a "core-network" acquisition strategy.

Question: What are their most pressing and urgent communications needs?

Skot Butler: Government customers across the board need higher data rates to ever smaller user terminals, availability whenever or wherever it is needed, security and flexibility.

Question: How has that changed your approach? Are you moving toward providing more end-to-end services?

Skot Butler: Our announcement of FlexAir in December 2018 is a great example of how we are responding to the changing needs of our government customers. It is a managed terminal service based on our seamless, multi-layered Ku-band network. It delivers high data rate transmissions; redundancy and security needed for government aviation missions. What is unique about FlexAir is that it allows government users to select from a number of service plans that meet their data and geographic needs; without an upfront commitment.

The service was designed with our government customers in mind. They need services that provide them with on-demand availability whenever and wherever they need it; consistency of service; high performance and the utmost resiliency. It also provides them with a flexible and efficient service package. They are not always on the move and the flexibility enables them to obtain the broadband connectivity that they need on demand;



in a much more efficient and cost-effective manner.

Question: What does the commercial satellite industry need to bring to the table to meet the explosive demands of comms on the move?

Skot Butler: For comms on the move-whether it be on land, sea and air, government customers need high data rate transmissions; on-demand availability wherever and whenever they need it; highest level of security; resiliency and redundancy of the communications network to ensure the consistency and reliability of service. Given the current budgetary constraints, it also needs to be efficient, affordable and have a more predictable cost structure.

Our Intelsat Epic^{NG} and global network delivers higher performance and a total lower cost of ownership today. We expect that only to improve as we bring more software-defined satellites to market which will enable faster time to market, more flexibility and continued improvements in performance.

Question: Do you think there is potential for more public/private partnership to meet those demands? What have been the barriers to date?

Skot Butler: Absolutely. However, one of the barriers playing out right now in Europe is the hardened "European autonomy" stance being taken in the EU Space Programme negotiations. We do not believe that this position will enable the attainment of the objectives of this programme i.e. make available to customers the best technologies at the best price and as such, urge the European Institutions to adopt a policy framework which will enable the achievement of the stated objectives.

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Intelsat, as a global communications company headquartered in Luxembourg, is ready to help and participate in the EU Space Programme notably in the GOVSATCOM program.

Question: As cybersecurity concerns have been a barrier, what has Intelsat done to mitigate your government customers concerns?

Skot Butler: Cybersecurity, or information assurance, is rightly a concern for our government customers, we have found it to be a discriminator for us rather than a barrier. We have a mature

and robust security program that was started over a decade ago; which we continue to invest in and improve. We put uplink command and downlink telemetry encryption on all of our satellites and our ground network is tested regularly by expert third-party auditors to ensure we meet the strictest government and commercial information assurance standards

Furthermore, the security enhancements of Intelsat Epic^{NG}'s advanced digital payload enables us to quickly identify when someone is trying to jam a signal and then quickly switch the user to a different beam, mitigating any impact from the interference attempt.

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