Intelsat-33e rendering. Photo Intelsat

Changing the world we live in

Intelsat was established in 1964 as the International Telecommunications Satellite Organization (ITSO), an intergovernmental consortium operating a constellation of communications satellites providing broadcasting services. The company has come a long way since then, and today operates more than 50 satellites, providing services to commercial, enterprise and defence forces all over the world. Amy Saunders met with Terry Bleakley, Regional Vice President, Asia, for Intelsat, to find out more about the company's current focus, recent market developments, and its assessment of the satellite industry today and into the future.

Question: As one of the top satellite operators in the world, Intelsat has invested considerable funds in recent years on its next-generation Intelsat Epic^{NG} **satellites. What can you tell us about the development of this programme so far?**
Terry Bleakley: The satellite industry is going through a real renaissance period. Things hadn't changed a lot in the last 30 years, but now there are a lot of new innovations that are hitting us. Intelsat is playing a big role in the coming change.

Our Epic^{NG} high throughput satellite (HTS) platform is an important element

of this transformation. Intelsat 29e, the first satellite of the series which operates from the 50 degrees' West position, targets the Americas, the North Atlantic and the trans-Atlantic regions. It's got great coverage, and it's performing better than expected. We're getting about 2.5 times the efficiency of a normal Ku-band beam. Our customers have been very pleased with their experience.

Our second Intelsat Epic^{NG} satellite – and the first one for Asia - Intelsat 33e, has operated since January from the 60 degrees' East position and provides coverage over the Indian

Ocean, South Asia, Southeast Asia, even reaching into Europe, the Middle East and Africa.

Completing our global coverage at the end of 2018 will be Horizons 3e, which is a joint venture with SKY Perfect JSAT Corporation. The satellite will give us coverage from the West coast of the United States to Asia, where there's a lot of maritime traffic. Horizons 3e is being manufactured based on the Epic^{NG} architecture. Most of the regional operators haven't committed to HTS in Asia, but our relationship and synergy with SKY Perfect JSAT Corporation in that part of the world makes a lot of sense.

Once we've completed our current satellite programme in 2019, we'll have seven Epic^{NG} satellites in orbit, which will double our fleet capacity.

Question: What makes the Epic^{NG} **satellites such a great investment for Intelsat?**
Terry Bleakley: First and foremost, Intelsat's backward compatible design and open architecture means that our customers have the option to choose their ground equipment. For example, our customers have the choice to maintain their current ground infrastructure or if they choose, can upgrade to the latest technology without having to change out the entire infrastructure. It has been estimated that the ground network equipment makes up about 30 percent of the total cost of ownership of a satellite network, so when people have invested that much already, it's important they have the flexibility to choose the ground/antenna technology that works best for the applications and customers they are serving in the most cost efficient manner. Our customers are seeing how they can use that flexibility to their advantage, optimize the spectral efficiency of the Epic^{NG} satellites, and we're very excited about that.

Secondly, the Epic^{NG} satellites have the most advanced commercial digital payload, which gives us a lot more flexibility in how we can move traffic around between beams. This is a critical component for interference mitigation. Interference, whether intentional or accidental, is one of the major challenges faced by our industry today. If someone broadcasts a rogue signal, either maliciously or due to a poor install method or faulty equipment, it can be very difficult to locate, and it affects other customers. However, with the

Terry Bleakley, Regional Vice President, Asia, for Intelsat

much smaller beams of the Epic^NG satellites, we can find sources of interference and shut them down much faster. Government customers in particular, which require always-on connectivity, find that very important.

Question: With the ongoing build-out of the Epic^NG satellites, which new markets will Intelsat be targeting to make the most of its new capabilities?

Terry Bleakley: Intelsat Epic^NG was designed to accelerate growth in existing vertical applications, adjacent vertical applications and new growth sectors.

We see Intelsat Epic^NG playing a critical role in terms of broadband infrastructure-from cellular backhaul applications to enterprise networks. Right now, that may be helping customers bring 2G and 3G connectivity to remote areas, but in the future, we see Intelsat Epic^NG playing a role in accelerating the adoption of 4G and 5G. With a 5G network, there are more cellular base stations (BST) in smaller areas, which are known as 'the densification of cells.' You can't add new fibre to a lot of the BSTs, so cellular backhaul continues to be a high demand driver for HTS capacity.

Our mobility customers are also already leveraging Intelsat Epic^NG in the maritime and aviation sectors. In terms of maritime, customers are leveraging Intelsat Epic^NG to meet the increasing demands of cruise ships, ship-to-shore communications for maritime vessels. With advances in antenna technology, we can move into serving new applications for fishing vessels and superyachts. In terms of aero mobility,

we are working with Panasonic, Gogo and Global Eagle to deliver in-flight entertainment and Wi-Fi to planes. Going forward, there is a real opportunity for Intelsat Epic^NG, with its enterprise grade connectivity, to expand into providing connectivity to the cockpit.

Lastly, the Internet of Things (IoT) and connected car present a real opportunity for HTS, and Intelsat Epic^NG is strongly positioned to capitalize on that sector's growth.

Question: Intelsat has invested substantially in next-generation antenna companies Kymeta and Phasor. Can you tell us a bit more about how these investments will benefit Intelsat?

Terry Bleakley: Part of the evolution that's taking place in the satellite world today is within the ecosystem itself. Manufacturers are developing smarter, simpler and smaller antennas that will optimize the Intelsat Epic^NG satellites and simplify access to satellite technology.

For example, Kymeta is developing a flat panel array system that can be used for multiple applications. Their 70cm flat panel antenna is scheduled to go into production this year, and will be critical for a variety of applications in the maritime sector.

In addition, their smaller 20cm antenna will be perfect for the connected car. In 2016, Toyota was looking at ways to simplify and more cost-effectively update the software in connected cars. For example, a car has a hundred million lines of code, while an aircraft has just six million lines of code. Cars have a much more complex system, which means that a simple software upgrade could be approximately 500Mb. The update might also need to be distributed to hundreds of millions of cars; thus, for customer convenience and cost-efficiency purposes, it makes more sense to opt for satellite instead of a global mobile phone network. Kymeta's 20cm antennas combined with the higher performance of Intelsat Epic^NG satellite technology offers car manufacturers such as Toyota a secure, highly efficient and more cost-effective solution for software upgrades.

Of course, even with today's satellites we don't have complete coverage. In major cities, such as New York or Tokyo, there are 'urban canyons' in which the high-rise buildings block

line-of-sight satellite connectivity. This was part of our original investment thesis when we decided to be a founding investment in OneWeb, the low Earth orbit (LEO) constellation set for completion in 2020, and with which we announced a conditional combination on 28 February. The OneWeb satellites will complement our broadcast capabilities by providing better look angle into the urban canyons, ensuring ubiquitous delivery of software updates.

Phasor is another company developing innovative new antenna technology. They're focusing more on business and narrow-bodied jets that can gain in-flight connectivity over HTS. With Phasor, we believe we can enable high-speed connectivity on-board aircraft a lot better than what's available today.

Question: In February 2017, it was announced that Intelsat and OneWeb were to merge into a single entity, reportedly a win-win for both companies. What were the motivations behind this move, and how will it improve Intelsat's capabilities going forwards?

Terry Bleakley: As an early equity investor in OneWeb, we had already recognized a network that was a complement to our next-generation Intelsat Epic^NG fleet and a fit with our long-term strategy. Delivering reliable broadband is a key objective for both Intelsat and OneWeb and, assuming we are able to achieve the conditions needed to close the deal, combining both companies will give us the unique ability to provide affordable broadband anywhere in the world - creating the world's first global broadband provider.

The combination of OneWeb's LEO satellite constellation and innovative technology with Intelsat's global scale, terrestrial infrastructure and GEO satellite network, will create advanced solutions that address the need for broadband, even in rural and remote locations unserved by traditional Internet service providers.

The new company will also enable us to seek growth opportunities in meeting the global demand for connectivity and unlock new applications. Intelsat's fully integrated Ku-band infrastructure, coupled with the combined companies' managed services, has the potential to support the development of an entirely new and extensive set of traditional and mass-market applications, including

consumer broadband, mobility wireless infrastructure and small cell connectivity, the IoT including connected cars, and machine-to-machine communications.

This includes advanced solutions for new and current commercial and government applications including enterprise networks, telecommunications infrastructure for wireless operators and broadband services for the aeronautical and maritime sectors. Advanced services will be introduced for media industry customers seeking to complement traditional content broadcasting with over-the-top delivery digital media to fixed and mobile audiences.

Question: Several parties have raised concerns over increased adjacent satellite interference (ASI) resulting from the use of these small flat panel antennas. What's your assessment?

Terry Bleakley: Adjacent satellite interference (ASI) is certainly going to present a problem with satellite antennas becoming smaller and smaller, and this is a challenge that our engineers perfectly understand and are working to mitigate. Interference is an issue that is affecting the whole industry. We work closely with satellite operators, industry groups, customers and equipment manufacturers on reducing interference, as part of the Intelsat Interference Management Initiative (I3),

which aims to foster an interference-free space environment.

We also designed Intelsat Epic^{NG} with this in mind. Its advanced digital payload technology provides more options for protecting satellite communications. The platform possesses inherent anti-jam capabil- ities. It supports Protected Tactical Waveforms in multiple frequency bands – C, Ku, and Ka-band. This delivers broader protection, more resiliency, throughput and efficient utilization of satellite bandwidth.

Question: Overcapacity has been a pressing concern for a couple of years now, but it's not a popular topic for discussion. Do you think that it remains a significant challenge to the industry?

Terry Bleakley: The challenge to our industry is absolutely one of supply, but it's not what you think.

There is practically limitless demand for connectivity. Frankly, the satellite sector must not be providing the RIGHT supply to capture this demand.

This is why we began the Intelsat Epic^{NG} journey. If we do not bring higher performing services, with enhanced economic models and simplified access, we will miss this once in a generation opportunity to garner a larger share of the overall telecommunications landscape.

The applications that we're serving as an entire industry are changing a lot,

and we adapted to those changes with the introduction of Intelsat Epic^{NG} and our investments in ground and antenna technology advancements.

As a result of our performance, economics and simplified access focus, we are better positioned to support our customers as they address their changing business models and end-user demands. As we look ahead, we believe that the differentiated satellite technology we're bringing to market via Intelsat Epic^{NG} along with advancements on the ground will enable us to capitalize on US$2.8 billion in new revenue coming from several market segments in 2016 to 2021: Enterprise, IoT, cellular backhaul, aeronautical, maritime and government. We're the market leader in each of these sectors of growth, so we expect to see great benefits from this upswing in the coming years.

Question: What's on the horizon for Intelsat in the rest of 2017 and beyond?

Terry Bleakley: Intelsat has set a new benchmark for satellite broadband delivery in the region with Intelsat 33e. The second Epic^{NG} satellite, but the first to serve Asia, in service since January, responds to the growing requirements of Asian telecom providers, enterprise networks, mobility operators and media organizations with higher performance, better economics and simplified access to satellite bandwidth.

The launch of Intelsat 32e in February has confirmed Intelsat as the only satellite operator with HTS resiliency over the world's busiest air route. Intelsat 32e increases the throughput available in the highly-trafficked Caribbean and North Atlantic routes and provides resiliency for mobility network service providers servicing those shipping and air routes.

Another four Epic^{NG} satellites are expected to launch by 2019, including Intelsat 35e in the second quarter of 2017. Horizons 3e will complete, when launched in the second half of 2018, the global footprint of Epic^{NG}. The satellite will satisfy the growing mobility and broadband connectivity demands in the Asia-Pacific region.

More importantly, Intelsat plans to continue working on providing telecom operators, mobility services providers and media organisations with innovative satellite solutions that respond to their growing requirements, relying on its Globalized Network and Intelsat Epic^{NG}. ∎
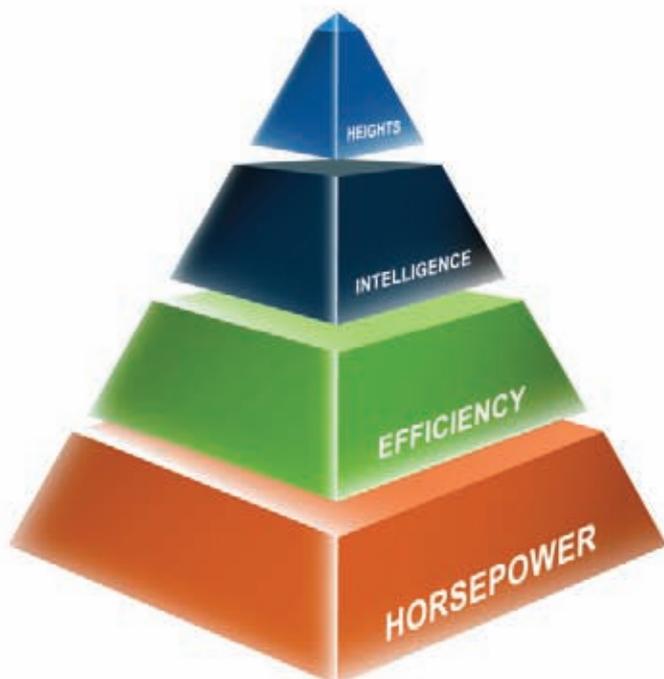

Intelsat 33e. Phot Intelsat