



Photo courtesy SES

Planning for the future

SES was established in 1985 as Europe's first private satellite operator, and it has come a long way since then. Today, it operates more than 50 geostationary Earth orbit (GEO) satellites and 12 medium Earth orbit (MEO) satellites. SES's satellite fleet covers more than 99 percent of the world's population, and provides services to video and data customers through its two newly-formed business units; SES Video and SES Networks. Amy Saunders spoke with Deepak Mathur, Executive Vice President, Global Sales, SES Video, to find out more about the company's market assessment and plans for the future.

Question: History was made in March 2017 when SES-10 was successfully launched on board a flight-proven SpaceX Falcon 9 rocket. How important do you think reusable launchers are for the industry?

Deepak Mathur: From the technology standpoint, we've worked with SpaceX on some exciting developments. The importance of the launch of SES-10 on SpaceX's first flight-proven rocket cannot be understated.

With what SpaceX and Blue Origin are doing, and the pressure it's creating on the other launch vehicle providers, the entire industry is changing. There is a very real possibility that Blue Origin will achieve its 100 rocket re-uses goal,

and SpaceX is going to drastically shorten their refuelling cycle.

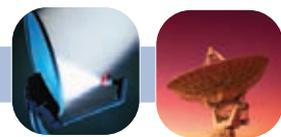
There are going to be huge implications because of the number of LEO systems that are scheduled to go up. We have to achieve super low-cost and very frequent access to space to send LEO satellite constellations – consisting of thousands of satellites – into orbit. If you need to launch 24,000 satellites, you will need a lot of rockets. Reusable rockets are the only way we're going to get there.

Question: In April 2017, SES announced the creation of two new business units: SES Video and SES Networks. Can you describe the roles

of the new units, the benefits they will deliver to SES, and how your own role will be changed?

Deepak Mathur: The creation of SES Networks and SES Video was driven by the fact that beyond bandwidth, our customers are seeking more specialised solutions. We're organising ourselves to be the most responsive we can be.

With so much innovation happening in the value chain; from the launch vehicle side, the satellite perspective, and ground infrastructure, it has become more important for us to have deeper expertise in each of these verticals. Besides providing capacity, we also offer comprehensive



knowledge across the overall ecosystem for customers that require specialised and deeper solutions.

Traditionally, satellite operators tended to provide satellite capacity, while customers built the networks. When high throughput satellites (HTS) are involved, it becomes more complicated as it is difficult for a single customer to build a network that covers the entire globe. This involves extensive teleport infrastructure and stitching satellite capacity together.

Certain customers want purely bandwidth, and we'll continue to support them with the latest bandwidth that we can put up in the sky. There are also customers who are much more interested in buying bandwidth in one market, as well as buying a fully-managed service in other markets. For example, if you have a cruise ship that operates primarily in the Caribbean, you'd buy bandwidth in the Caribbean and build your own infrastructure. When the ship picks up passengers in Europe, you don't necessarily want to put up infrastructure across the entire chain; many customers want a fully-managed service when ships go into different markets. Driven by our customers' needs, we're starting to move deeper into the solutions sector.

We've found that many customers want the best of all three worlds; using a shaped beam to send the same information across a wide region, using high throughput spot beams to receive information from specific areas, and very large low-latency bandwidth in another area.

More of our customers are leveraging this combination of widebeam GEO satellites, HTS GEO satellites, and MEO satellites. Each

capacity type caters to a slightly different customer need. That is the genesis of SES Networks – to be far more internally integrated to provide that combined solution set.

On the video side, we have created MX1, which has now been integrated with SES to create SES Video. The rationale is that customer needs are changing. Traditionally, a customer would have just required a transponder for distribution over a certain area. Today, customers want to time shift content, encode it differently, implement local advertising, dub the content, and play the same content at the same time everywhere. MX1 adds on all these service capabilities to SES's infrastructure to provide a really compelling proposition to the end customers.

My position is changing at the same time as this reorganisation. So far, I've been responsible for Asia and the Middle East for video and data, as well as for data for Europe. In my new role, I am responsible for video on a global scale. It's exciting as SES has an incredibly mature ecosystem in Europe and North America and Latin America, very deep customers relationships, and a fantastic team. We are looking at better integrating with MX1 to provide

much more compelling future-proof video solutions for our customers.

Question: We're hearing a lot about the possibilities of virtual reality from all across the satellite and broadcasting sectors, and SES has been active in performing demonstrations at key events. What's your outlook on this fledgling technology, and what are the opportunities for satellite operators?

Deepak Mathur: SES always aims to be on the leading edge of technology solutions that are relevant to our customers. In a sports context, virtual reality can be incredibly compelling. If you're watching a baseball or soccer game, it offers a completely different viewing, life-like experience, as though you are actually physically on the field. Will it be ubiquitous for all types of content? Perhaps not, but it could be an important niche for some customers. It is an incredibly compelling proposition for certain genres.

We were a part of the standard setting body for the roll out of HD, and we're now accelerating the delivery of Ultra HD through trials with our partners and customers. Not all technologies will have massive market successes, but it's incumbent on us to explore them and

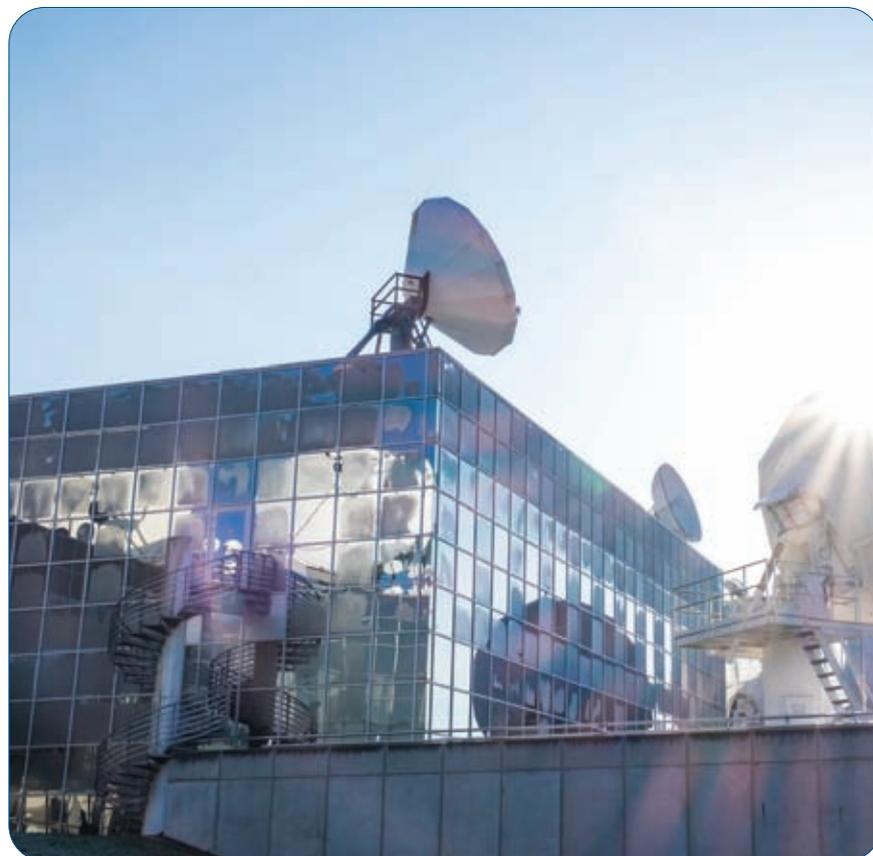


Photo courtesy SES



provide relevant answers to our customers.

There is great Ultra HD content being produced today for the sports, nature or travel genres; it will be exciting to see how these translate into a virtual reality environment.

Question: SES made big news last year with the acquisition of O3b Networks, but it is not the only major traditional satellite operator to expand its reach into non-GEO systems. What do you think of this trend of combining GEO with MEO and LEO systems?

Deepak Mathur: There are significant advantages to moving closer to the Earth. Fundamentally, you're reducing latency. However, there's a limit to how close to the Earth you want to be; the further up satellites go, the more of the Earth they see.

Actual population centres comprise between five and seven percent of the Earth's land mass. A LEO constellation essentially covers 100 percent of the Earth and would be used about seven percent of the time. The second issue is that, because you see a lot less of the Earth from LEO, you need an extensive number of gateways on the ground to feed the satellites. The uplink and downlink must also be in the same satellite beam. That becomes an issue

if you're trying to provide connectivity in a sparsely-populated or remote area. There needs to be good fibre connectivity to uplink to the satellite.

We have achieved a certain sweet spot with our O3b MEO fleet, as many of our customers across different industries and markets are undergoing a massive shift from local storage towards cloud-based, network-centric operations.

To meet this trend, we announced O3b mPOWER in September, a revolutionary satellite-based network that will redefine the boundaries of what satellite connectivity can achieve. The new satellite system can deliver multiple terabits of data throughput globally and complement our existing O3b MEO fleet to connect exponentially more people, communities and businesses.

Question: The Asia-Pacific region is considered one of the fastest-growing geographical markets for satellite communications. How is SES addressing this demand, and how does it expect this area to develop?

Deepak Mathur: Several customers have transitioned to SES-9 satellite, our latest satellite for the region, and are using it to grow their DTH offerings in India, Southeast Asia, and the Philippines. Since 2013, we've pretty

much been launching a new satellite every year for that region. We are keeping the rate forward with SES-12 and another four MEO satellites going up next year.

Our satellites over Asia have been largely widebeam satellites and MEO satellites, and will add on SES-12, our hybrid GEO HTS satellite which combines both shaped beam and spot beams, in the next year.

Video still leverages the maximum reach with the broadcast nature of traditional widebeam satellites; viewers in a large region can see the same content without any change in cost. In the data space, in order to have a cost-competitive solution, spot beam satellites such as SES-12 can help reduce the cost per Megabit.

In Asia, it is also incredibly important to provide backhaul to 3G, 4G and 5G networks as they come online. A lot of governments and telecom operators have deployed these high bandwidth networks, but they don't always have the appropriate backhaul capability.

When the O3b mPOWER system is launched, it will provide unprecedented high-power satellite capacity to support the roll-out of better 4G networks and the migration towards 5G. O3b mPOWER will also deliver a virtual fibre experience to more routes, smaller vessels, and commercial fleets in the region, as well as low-latency MEO-based services to the mass aero market, serving the needs of the region's fast-growing maritime and inflight connectivity markets.

Question: What do you expect SES to achieve in 2018?

Deepak Mathur: We expect our video business to continue to grow with customers needing more bandwidth to grow their DTH offerings. We will also expand and deepen our services part of the video offering, with the integration of MX1, and help customers deliver content around the world in a more seamless fashion.

We will also have SES-12 and four more MEO satellites in orbit next year. On the data side, we are looking to bring on board new customers that traditionally have not leveraged satellites, such as airlines that have not had connectivity in Asia. It's important that we're able to provide more solutions to our data customers.

Finally, we want to achieve a much stronger marriage between GEO widebeam, GEO HTS, and MEO. ■



Photo courtesy SES

YOU HAVE CHOICES

Choose the right technology for your network: GaN or GaAs.

IBUC **R**

High output GaAs IBUCs

IBUC **2**

Smaller and lighter

Now with a
Three-Year
Warranty!

IBUC **G**

Higher power with
GaN technology



IBUC **2G**

Compact high power
GaN IBUC

The new **IBUC 2G**, Terrasat's latest addition to the IBUC family. It's 1/4 the size and 1/3 the weight but with all of the IBUC features you rely on.

ALL MODELS INCLUDE:

- Outdoor RJ45 connector
- The industry's most complete M&C suite
- Web interface — "GUI-free"
- SNMP compatibility



ENGINEERED TO ENDURE

Contact us:
+1 408.782.5911
www.terrasatinc.com

