

Press release

SES Networks Announces Partnerships for Groundbreaking O3b mPOWER Customer Edge Terminals

ALCAN, Isotropic Systems and Viasat to develop cost-effective, high-performance, application-specific antennas to serve O3b mPOWER Customer Edge Terminals

Luxembourg, 8 March 2018 – SES today introduced ALCAN, Isotropic Systems and Viasat as new technology partners for O3b mPOWER, SES Networks' groundbreaking satellite-based communications system. The three companies have been contracted by SES to develop smart, high-throughput terminal solutions, a building block in the system's ground infrastructure innovation roadmap.

Developed with leading technology partners, O3b mPOWER Customer Edge Terminals (CET) will combine innovative steerable antenna technology with functionality spanning modem, networking and edge compute capabilities. The O3b mPOWER CET will deliver advanced network capability in form factors optimized for market specific cost, performance and power that are quick and simple to install, a key part of the strategy to scale SES Networks' proven Medium Earth Orbit (MEO) system for mass connectivity.

ALCAN, Isotropic Systems and Viasat each have unique, innovative and alternative approaches for the antenna technology, enabling SES Networks and its O3b mPOWER ecosystem with the best possible solutions for its customer market needs. This development strategy plays a critical role in making it faster, easier and more affordable to expand service reach for both SES Networks and its customers in the dynamic mobility, fixed data and government markets.

"O3b mPOWER is designed to provide cloud-scale connectivity through a 'virtual fibre' network for application-aware services on a global scale," said John-Paul Hemingway, Executive Vice President of Product, Marketing and Strategy for SES Networks. "We believe that working closely with partners like ALCAN, Isotropic Systems and Viasat in a robust development ecosystem will enable us to introduce the latest innovations and greatest cost-efficiencies across multiple market segments at great scale."

O3b mPOWER ecosystem of partners

O3b mPOWER creates a unique ecosystem of technology partners in space segment, ground infrastructure and software innovation. In addition to accelerating time to market for new technologies that bring scale to SES Networks, this approach to working together with industry

partners in an open, collaborative, standards-based ecosystem will help make satellite a more seamless and mainstream part of global, cloud-scale data networking.

The O3b mPOWER technology partners each bring a differentiated approach to providing innovative technology for SES Networks' CET:

- ALCAN is working to develop a smart antenna that is flat, low power, and has no mechanical moving parts. The antenna has electronic beam steering capability, which is implemented using liquid crystal (LC) panels that can be manufactured at low cost in LC display assembly lines;
- Isotropic Systems is developing a low-cost, low power, unlimited instantaneous bandwidth, optical-based, multi-beam electronically steered terminal that can transmit and receive high bandwidth signals in the same modular and scalable aperture;
- Viasat is designing and building an all-electronic dual-beam flat panel antenna system to meet the requirements of the O3b mPOWER next-generation MEO satellite fleet. The Viasat antenna is based on proprietary flat panel core technology, a new radio frequency (RF) integrated circuit and a modular approach that will enable multiple types of user terminals to keep pace with growing broadband connectivity demands.

"We are delighted to have achieved this milestone and are looking forward to working with SES to develop a low-cost and low-power flat panel antenna for SES and its MEO constellation", said Dr. Onur Karabey, CEO at ALCAN. "At ALCAN, we are excited to be developing our ground-breaking smart antennas and are ideally positioned to meet the demands of an increasingly mobile and connected world."

"Users and service providers worldwide are demanding greater access to broadband, and satellite-based network providers like SES have the opportunity to deliver ubiquitous connectivity services to these potential customers with new and existing HTS capacity at all orbits," said John Finney, founder and CEO of Isotropic Systems. "Our partnership with SES Networks will help us further develop and deploy our terminal technology. Their new Customer Edge Terminals aim to dramatically change satellite communications by providing cost-effective, high-throughput capacity for global users who lack much-needed connectivity."

"As part of Viasat's commitment to broadband satellite services we have made some significant advancements in ground infrastructure and terminal technologies," said Kevin Harkenrider, president, Commercial Networks at Viasat. "We look forward to being an integral part of SES' O3b mPOWER ecosystem and believe our flat panel technology will help create compelling end-to-end experiences for SES Networks and its end-users."

At the heart of the unique O3b mPOWER system will be seven super-powered MEO satellites, with more than 30,000 dynamic, electronically-generated fully-shapeable and steerable beams that can be shifted and switched in real time. The fleet, built by Boeing, is scheduled for launch in 2021 and is scalable to multiple terabits of throughput globally, providing coverage to an area of nearly 400 million square kilometres.



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About SES

SES is the world-leading satellite operator and the first to deliver a differentiated and scalable GEO-MEO offering worldwide, with more than 50 satellites in Geostationary Earth Orbit (GEO) and 12 in Medium Earth Orbit (MEO). SES focuses on value-added, end-to-end solutions in two key business units: SES Video and SES Networks. The company provides satellite communications services to broadcasters, content and internet service providers, mobile and fixed network operators, governments and institutions. SES's portfolio includes ASTRA, O3b and MX1, a leading media service provider that offers a full suite of innovative digital video and media services. SES is listed on the Euronext Paris and Luxembourg Stock Exchange (ticker: SESG). Further information available at: www.ses.com

About ALCAN Systems

ALCAN Systems is a German-based smart antenna technology start-up which has developed the revolutionary new liquid crystal (LC) enabled phased array technology. The technology is based on the work of ALCAN co-Founder and CEO Dr. Onur Karabey who proved the viability of LC based phased array antennas in 2011. The company also received seed funding of EUR 650,000 in 2014 from the EXIST Transfer of Research Program of German Federal Ministry of Economic Affairs and Energy (BMWi) to commercialise the research and accelerate the development of a working prototype. ALCAN raised a further EUR 7.5 million Series A funding in 2017 from a consortium of leading global companies and is now focused on bringing its first product to market in 2018. For more information, please contact Esat Sibay, CFO at ALCAN Systems, E-mail: press@alcansystems.com www.alcansystems.com

About Isotropic Systems

Isotropic Systems is developing the world's first multi-service, high-bandwidth, low power, fully integrated high throughput terminal designed to support the satellite industry to 'reach beyond' traditional markets and acquire new customers with a full suite of high throughput services. The company's team of industry experts and scientists has pioneered several firsts in satellite terminal design. For more information visit www.isotropicsystems.com.



About Viasat

Viasat is a global communications company that believes everyone and everything in the world can be connected. For more than 30 years, Viasat has helped shape how consumers, businesses, governments and militaries around the world communicate. Today, the Company is developing the ultimate global communications network to power high-quality, secure, affordable, fast connections to impact people's lives anywhere they are—on the ground, in the air or at sea. To learn more about Viasat, visit: www.viasat.com, go to [Viasat's Corporate Blog](#), or follow the Company on social media at: [Facebook](#), [Instagram](#), [LinkedIn](#), [Twitter](#) or [YouTube](#).