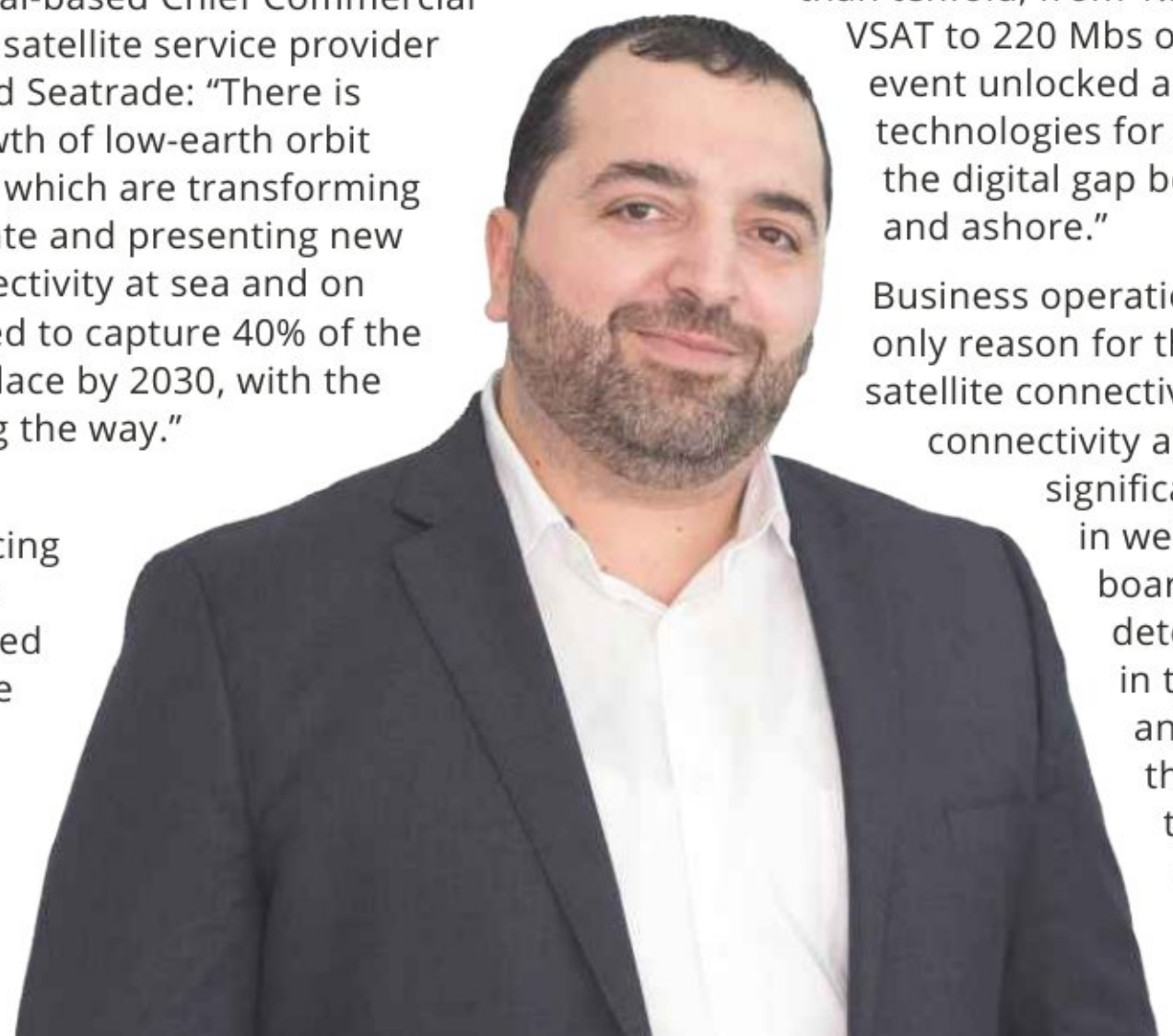
LEO shaping the new reality at sea: opportunities and challenges of marine communications

As Low Earth Orbit (LEO) satellite connections revolutionise life and work at sea, IEC Telecom is making business continuity a priority to maximise the benefits of digitalisation in a low-bandwidth environment

We're experiencing rapid change in the satcoms sector. Low-earth orbit (LEO) satellite constellations are transforming business connectivity on land and at sea, enabling greater levels of digitalisation while significantly reducing costs.

Nabil Ben Soussia, Dubai-based Chief Commercial Officer of international satellite service provider IEC Telecom Group, told Seatrade: "There is a continuing rapid growth of low-earth orbit satellite constellations, which are transforming the way we communicate and presenting new opportunities for connectivity at sea and on shore. LEO is anticipated to capture 40% of the global satcom marketplace by 2030, with the maritime sector leading the way."



Cost-effective LEO connectivity affects pricing across the market. Ben Soussia advises that fixed satellite service fees are set to drop by more than 20% by 2028. In fact, with more LEO satellite providers entering the market, he warns that there is likely to be an oversupply of airtime in the coming years, leading to fierce competition.

"No industry felt a more drastic change upon LEO introduction than the maritime sector," he notes. "Overnight, the possible speed limits increased more than tenfold, from 1.5-2 Mbs typical for VSAT to 220 Mbs over Starlink. This event unlocked a myriad of new technologies for seafarers, closing the digital gap between life at sea and ashore."

Business operations aren't the only reason for the escalation in satellite connectivity use. Affordable connectivity allowed for a significant improvement in well-being on board, becoming the determining factor in talent attraction and retention. "With this fast-paced transition, we can no longer set up

crew welfare with a top-to-bottom mentality," says Ben Soussia. "Mariners deserve a choice with a proper two-way ecosystem to support that."

IEC Telecom stresses the importance of crew voucher systems as a means to achieve online flexibility for crew members. Today, crew members can monitor their own consumption and request extra credits via a dedicated captive portal. Some settings can be enrolled across the fleet and further customisation is possible to address the specific requirements of each vessel.

While the LEO networks are designed to cater globally, and some already have coverage across the planet, it will take a while before service availability will be equally inclusive. For now, networks of the new generation can be accessed within international waters, but browsing within territorial waters remains restricted to licensed satellite operators. Eventually, all countries will have to make a choice in favour of a certain LEO network. Yet, IEC Telecom expects that VSAT and L-band solutions will remain in demand in the territorial waters of many seafarer nations for a while.

Ben Soussia comments: "To ensure the sustainability of the ICT ecosystem on board, in terms of operational efficacy and associated costs, investing in network management is no longer an option, but a critical need."

While streaming Netflix poses no threats over LEO, it will halt all vessel operations over legacy satellite networks, with a single user exhausting the capacity of the internet available to the whole vessel. Utilising a comprehensive network management solution, the ICT manager can authorise nearly unlimited access to digital resources over LEO while limiting the list of applications for VSAT and further narrowing it down for L-band.

But here comes the catch: once the vessel sets its course for digital transformation, it operates differently. Technologies expand the notion of the crew beyond the team based on the vessel. New job functions, whether on board or in the HQ, are dependent on continuous sea-to-shore video connectivity with remote maintenance, video surveillance, and telemedicine, to name just a few.

"Understanding the challenges of digital vessels, IEC Telecom made business continuity one of the key priorities of our research and development," explains Ben Soussia. "Opportunities over the L-band are much broader than they are commonly seen. With the right set of optimised applications, a vessel can continue its digital course, even in a low bandwidth environment."

As of today, the market is slowly moving towards a certain power balance, with LEO, VSAT, and L-band each taking its niche. That said, IEC Telecom takes precautions when it comes to long-term forecasts.

LEO satellites are not designed for longevity, with five-year lifecycles, as opposed to 15 years in the GEO league. This is a catalyst for the industry's continued high-speed transformation. Starlink is already deploying the next generation, and OneWeb is planning to start the process in 2025.

As a result, long-term strategising is now obsolete. Ben Soussia concludes: "Technology is developing more swiftly than ever, and business planning needs to mirror this pace. We must embrace a more agile approach, focusing on forecasting trends over the next five years, rather than trying to model scenarios for two or three decades down the line."

Whichever route we take, LEO has transformed the reality of maritime communications. To have a competitive edge, vessel owners should be ready to adapt to operating in multi-network mode, with smart solutions to manage the transition and optimise the gains.