



● ● Tugs escort the Royal Navy Type 45 destroyer HMS DUNCAN out of harbour. Photo courtesy Kevin Shipp/Shutterstock

How LEO services can provide the boost needed for recruitment and welfare ● ●

Seafarers face many challenges to their physical and mental health due to working in a risky occupation with high job demands, long working hours, poor social support, and prolonged periods of time out at sea. While this applies to both civilian and military seafarers, naval personnel face further stresses. These include additional limitations on their ability to communicate with loved ones for operational purposes and the changes in operational tempo faced by many NATO nations over the last few years.

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The stresses facing seafarers are only likely to increase.

The 2021 Integrated Review underscored the need for an “expanding [Royal] Navy, armed with the latest weaponry, equipped with the latest tech, deployed more around the world to meet the UK’s expanding horizons”. Further, with the Indo-Pacific tilt, the pacing threat of China, and a resurgent Russia – as mentioned in the 2023 Integrated Review Refresh – it is clear that the Royal Navy, the Royal Fleet Auxiliary and the Commando Force, as well as their equivalents across NATO, are going to spend increasing time deployed at sea.

These changes are happening at a time when personal freedoms and associated digital access are expected by younger generations. As a result, many navies and commercial shipping companies are looking for ways to improve welfare communications and provide more support for crew mental health. For example, the Royal Navy’s offline mental health platform, HeadFIT, was launched so crew could access self-help even when technically “disconnected” for operational reasons.

The challenges associated with mental health issues onboard extend beyond the military to all maritime organizations

around the world. This has led the UK Government to allocate £2.4 million for projects supporting the maritime sector, and specifically seafarers’ mental wellbeing.

The Sailors’ Society’s recent 2022 Cadet Report, which provided insights into Generation Z cadets—those born between 1996-2010— from around the world, showed that 57 percent already had scores suggesting anxiety. Most believed loneliness would be the main cause of any mental health issues they faced, and 79.5 percent said their choice of shipping company depended on how it treats seafarers.

Equally, commercial maritime and naval crews at sea need a way to continue with education and training programs for technical and leadership courses while at sea. Many of these now have a good deal of online content available, which benefit from crew, shore-based mentors, and teachers all being able to regularly access the material.

The value of a LEO hybrid network service

Communications at sea have been provided by satellite for over 50 years. They have been key for both operational and welfare services, in addition to positioning and navigation. Generally, communications for major maritime platforms have been provided by Geosynchronous Orbit (GEO) satellites, delivering a broadband style service from a few Kbps to multiple Mbps. However, Low Earth Orbit (LEO) satellites are not a new proposition.

In fact, the first LEO satellite was the Soviet Sputnik 1 launched over 65 years ago in 1957, and Iridium launched its first LEO constellation 26 years ago in 1997. While earlier LEO satellites provided low single-digit Kbps, more recent Iridium NEXT satellites provide hundreds of Kbps of resilient service to a user.

Newer services are now available thanks to significant investments in broadband high throughput LEO satellites, which offer fibre-like high-speed low-latency connectivity of about 100 Mbps.

These services can enable high throughput at a reasonable



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cost and, if configured appropriately as part of a hybrid solution, allow for operational and welfare services to be separated. This protects welfare services for crew members, enabling more contact with their loved ones back home, via messaging and video services. In addition, crew members can enjoy more home comforts, like catching up on their favourite shows and movies, online gaming, or using social media.

What is driving recent demands for LEO connectivity?

The surge in demand for LEO connectivity reflects growing expectations from crew members and better awareness from employers about the importance of mental health. Naval jobs can take a significant toll on mental health, with long periods of separation from families and friends. The work is often dangerous, involving high-risk situations that can lead to high stress levels and anxiety. This combination of stress, isolation, and lack of access to mental health support services can contribute to depression and increases seafarers' risk of poor and unhealthy coping strategies. Ultimately, this can then lead to serious personnel issues and retention difficulties.

The importance of on-board connectivity has been demonstrated across military and commercial maritime as far back as 2017, when the seafarers' trade union, Nautilus International, published a survey showing that 80 percent of its 22,000 members considered communications an integral collective bargaining issue, second only to improved pay. It also highlighted that almost two-thirds (63 percent) would consider moving to another shipping company that offered better connectivity.

These demands were exacerbated during the height of the COVID-19 pandemic, which shone a light on the importance of prioritizing crew wellbeing, as many faced longer periods of isolation due to imposed restrictions and extended contracts. Many had concerns over the health of family and friends at home, which were made worse for those unable to call, message, or even just enjoy being distracted by the entertainment of a show, film, or online game.

Generation Z crews have grown up accustomed to having instant access to technology and connectivity, and following the pandemic they feel more empowered to articulate their needs.

Together, these forces have pushed the need for LEO services to the forefront of maritime considerations as a viable solution that meets welfare and operational needs and supports the retention of personnel.

How does LEO support mental health and operational outputs?

Although ships have long provided some form of crew welfare services, including phone calls and television content, access has been limited. LEO services provide a step change in high throughput connectivity combined with low latency, which means crew members can access Wi-Fi and download speeds like those provided by home broadband. This can be done affordably by the company, the individual, or a blend of the two. This, in turn, provides numerous benefits to the physical and mental welfare of those on-board. For example:

- **Real-time communication:** Personnel have more options for staying in touch with their loved ones and support networks while at sea, which can help reduce feelings of marginalization, isolation, and loneliness.
- **Mental health support:** Improved access to mental health support services, such as telemedicine and tele-counselling, enables crew members to connect with mental health professionals and receive support for issues like depression, anxiety, and PTSD.
- **Enhanced safety:** Better connectivity means physical wellbeing can be further safeguarded through real-time tracking and the monitoring of ships, weather data, and emergency response services. This can help prevent accidents and ensure quick response times in the event of an emergency. Remote monitoring of seafarers' health and well-being through wearable technology and sensors can be used to monitor vital signs and detect early indications of health issues. This helps seafarers receive timely medical attention and prevent any health issues from escalating.
- **Training:** LEO services provide potential for crews to engage in virtual training – especially useful in cases where members are out to sea for extended periods of time. On-demand access to training resources allow crew members to maintain or advance their skills and knowledge at sea, supporting their development and encouraging career advancement. It can also be used to help establish best practices that promote crew and crewmates' safety.

Why LEO service capabilities should be part of a hybrid network solution

There's no doubt that LEO services can provide value, but relying solely on LEO satellites is a risky strategy that puts operational priorities in conflict with crew welfare, as data-use for one negatively impacts the other. That is why it is best to separate these systems by pairing LEO services with a guaranteed VSAT solution that can offer a committed information rate (CIR), ensuring mission critical operations are not compromised, while also protecting the high-throughput connectivity most suited to provide well-being support services.

By combining LEO and VSAT services, large quantities of data can be exchanged at broadband speeds, real-time communications are enabled, and remote monitoring is made possible for operational matters – all without affecting crew services. In the past, vessels have had to return to port for this level of connectivity, costing time and, subsequently, money.

Not all LEO satellites are created equal

Before committing to a solution, the vessel and its crew members' needs must be considered to ensure that the chosen service is fit for purpose. For example, while most network operators manage regulatory access into ports – not all do. Maritime operators need to consider whether they need a solution with built-in access, as using these solutions in ports without pre-approval can lead to significant issues down the line.

They also need to think about the operational conditions that their solutions will be used in, ensuring the equipment in place has been built to withstand such environments. Additionally, a CIR is crucial for most professional-grade

operations, making sure connectivity for both operational and welfare purposes is never compromised.

LEO services have the potential to mitigate the growing recruitment and retention issues faced by many in the maritime industry, including naval forces. They can help address the welfare problems that have arisen because of challenging working conditions and a hazardous job that often requires long periods away from home. But this is not a standalone service; to be implemented correctly it needs to be fused with a network service that guarantees connectivity for mission-critical operations.

Delivered with the right resilience, support and assurance, emerging LEO constellations are providing options for maritime

operators that enable operational efficiencies, increased safety, and security, greatly improved on-board morale, and longer-term retention. This means they can invest in both their crew and long-term planning.

Officers and crew for both commercial maritime and defense organizations will be able to see that they are working for an employer that cares for their welfare. Contact with home will only be restricted when operational tasks dictate, rather than because the vessel simply doesn't have the bandwidth. Crew and officers will also have the ability, where practical and affordable, to catch up on sports and movies, play online games, access social media, video and voice calling, and even get remote training to promote safety and career advancement.

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