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Wasserstein buys Globecomm

Private equity firm Wasserstein & Co. has agreed a deal to purchase Globecomm Systems, including vessel communications division Globecomm Maritime, for a sum of $340 million

Globecomm Systems has announced that private equity and investment firm Wasserstein & Co. is to acquire the company for approximately $340 million.

Globecomm's maritime division provides a range of communications products for the maritime industry, including VSAT, Inmarsat, Iridium and Thuraya systems as well as a host of value added software products.

An affiliate of Wasserstein has entered into a definitive agreement to acquire Globecomm for $14.15 per share in cash, says the communications solutions provider based in Hauppauge, New York.

The merger is subject to antitrust clearance and Globecomm stockholder approval, but it has been unanimously approved by Globecomm's board of directors and is expected to be completed in the fourth calendar quarter of 2013.

The share price of $14.15 is 21.9 per cent higher than the closing price on January 14th, 2013, the day on which Globecomm announced that it had retained Needham & Company to assist it in a review of potential strategic alternatives to enhance shareholder value.

The transaction is expected to be financed through a combination of cash provided by Wasserstein & Co. affiliates and other co-investors, as well as debt financing.

"We believe that this transaction is in the best interest of our shareholders, customers, partners and employees. Wasserstein & Co. has a proven track record of helping companies build on their success," said David Hershberg, chairman and CEO of Globecomm.

Anup Bagaria, co-managing partner of Wasserstein & Co, also commented that "Globecomm is a leader in developing and managing complex communications solutions with a strong track record of growth and innovative engineering that leverages its global communications network."

"Globecomm has also made successful investments in new product development that we believe will drive future growth in both the company's existing and new markets."

Maritime strategy

Globecomm's reach into the maritime market has grown steadily in the last half decade, particularly following its acquisitions of vessel telecommunications provider Telaurus and, to a lesser extent, Mach6 in 2009.

While Mach6 served shipping among a number of vertical markets, Telaurus revenues were solely derived from maritime. However, at the time of the acquisition Globecomm already had a Global Broadband Satellite Maritime Solution partnership in place with Mach6.

The $12.4 million purchase price for these two companies ($6.5 million for Telaurus and $5.9 million for Mach6) provided Globecomm with a new maritime customer base of more than 2,000 vessels, three quarters of which were former Telaurus customers.

'We believe that this transaction is in the best interest of our shareholders, customers, partners and employees' – David Hershberg, Globecomm

The ultimate conclusion of these strategic manoeuvres was the creation in 2011 of a new entity within Globecomm, called Globecomm Maritime, combining the capabilities of four companies within the corporate stable – Telaurus, Mach6, Evosat, and Carrier2Carrier (the latter two of which were acquired in 2010 for a total of $15 million).

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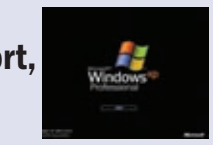

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By the end of December 2012 this new integrated unit was said to be providing connectivity services to approximately 3,500 ships across the globe, via an array of connection platforms, from L-band to GSM and VSAT, as well as a range of value-added software products.

More than half of its customers communicate over Inmarsat platforms, with the remainder divided between Iridium, VSAT, and GSM technology. Whether this private equity takeover of the Globecomm company will affect the way the organisation chooses to serve these 3,500 maritime users in the long run remains to be seen. DS

Imtech Marine extends VSAT coverage to Indian Ocean

http://imtech.com/EN/Marine

Imtech Marine says that it has upgraded and extended its VSAT network to now offer coverage in the Indian Ocean.

The area, which roughly stretches from Tanzania, Madagascar and Ethiopia to India and Indonesia, covers a number of important busy routes for the international maritime industry.

"By extending our Global VSAT coverage map we can offer our customers economical and effective broadband connectivity in an area where a lot of vessels are sailing," said Rob Verkuil, general manager connectivity.

"The VSAT network of Imtech Marine provides reliable communication connections for crew, captain and other users on board. The extension of our VSAT coverage in combination with the recently introduced Imtech Marine portfolio of unique value added services offers our customers the possibility for a total connectivity solution."

Imtech Marine's broadband communication solution utilises the iDirect Evolution platform and includes Service Level Agreements, 24/7 support and automatic beam switching.

Imtech Marine also offers value-added services in the areas of vessel operations, crew welfare, security, crew control and data compression. For instance, the Fuel Management service allows ship managers to monitor fuel consumption and tank levels remotely.

"Imtech Marine has the ability to offer around 30 of such add-on applications," added Mr Verkuil.

"The connectivity solution, combined with our expertise in system integration and maintenance on board, supports our customers during the full lifetime of the vessel."

INTERSCHALT teams up with MTN Communications

www.interschalt.de

German-based software provider INTERSCHALT has announced that it has teamed up with MTN Communications to deliver VSAT communications services to its customers.

MTN will provide the C- and Ku-band satellite and network infrastructure through which INTERSCHALT will provide fleet management and vessel monitoring solutions.

"By combining MTN's redundant and globally accessible network of C- and Ku-band, excellent support available 24/7 on both sides, and our bespoke solutions, we will be able to offer our customers a unique service," said INTERSCHALT CEO Robert Gärtner.

With the MTN service, INTERSCHALT's fleet solution will offer internet access for ships, telephone calls, TV and (internet) radio programmes, e-mail traffic and the transmission of data information from Voyage Data Recorders (VDRs).

The MTN service also enables electronic charts to be transmitted with priority, says INTERSCHALT.

In addition, data from INTERSCHALT's fleet management software Bluefleet and vessel monitoring solution Bluetracker will be made available to shipping companies on shore in real-time via MTN's Ku-band and C-band services. The data gathered enables shipowners to draw up Key Performance Indicators (KPIs) and fleet benchmarks.

INTERSCHALT'S VSAT services will be powered by MTN

Data from the loading computer and INTERSCHALT's trim optimisation module (TROP) can be transmitted to further support performance monitoring.

"Shipowners have full control at all times. They can optimise their fleet's efficiency and hence reduce costs due to the availability of performance information in real time," said Mr Gärtner.

INTERSCHALT also provides a centralised onshore control station. It says that its Fleet Operation Center captures the real-time status of every ship in the fleet, including the actual traffic situation, and can detect hazardous situations early on and take any necessary measures.

INTERSCHALT and MTN's solutions comprise antennae of between 0.80m and 2.40m.

In related news, MTN has also recently announced that Mano Cruises, an Israeli company which operates two cruise ships in the Mediterranean, has increased its connectivity services in conjunction with deploying MTN's internet and crew calling solutions.

The phone service is provided through MTN's OceanPhone prepaid platform, while web access is granted through MTN's iCafe service on board the ship.

MTN shared neither the data allotment nor the expected speeds of the Ku-band VSAT service it is providing Mano with.

It said that its solution allows guests on board the cruise ships to surf the internet in Hebrew or in ten other languages.

"Mano wants to offer a quality communication experience to guests as they explore Europe," said Brent Horwitz, senior vice president, MTN cruise and ferry services.

"We are confident our strategic partnership will help improve customer loyalty and increase repeat cruises, as well as provide crew a reliable means to stay connected while away from home."

Shalabi Gassan, information technology manager at Mano Cruises, also added that "MTN products and services add great value to the Mano Cruise offering for both passengers and crew."

Iridium has appointed two executives to the Board of Directors. Thomas Fitzpatrick expands his current role of Chief Financial Officer to include Chief Administrative Officer, while Scott Smith is promoted to Chief Operating Officer, assuming responsibility for ground and satellite operations including the transition to Iridium NEXT, which is scheduled for launch in early 2015.

Mark Guthrie has joined **KVH** as vice president, global mobile broadband sales to manage the development of the mini-VSAT Broadband network and related products and services. Mr Guthrie has previously worked at **British Telecom, Europe Star, Verestar** and **SES**.

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Flat antenna for yachts to be showcased

www.e3s.com
www.kymetacorp.com

e3 Systems, a Mallorca-based integrator of IT solutions for the superyacht market, has announced a collaboration agreement with Kymeta, an American firm commercialising flat satcom antenna technologies.

The two companies are collaborating in the development of flat panel antennas for the yachting market, says e3.

The yachting market is an early step in a strategy that will see Kymeta target the wider commercial maritime market as potential customers for its flat antenna technology.

Bob McCambridge, Kymeta's president and COO, told *Digital Ship* in July that "merchant ships, cruise ships, and yachts of all sizes are all target markets for us. The technology is incredibly robust."

The new deal with e3 will see the companies focus on the yachting market, with the Spanish firm noting that it hopes that the new flat panel antennas will replace the need for the large domes that today provide internet and HDTV services to yachts.

"Yacht designers and owners will love the Kymeta solution – no longer will unsightly satellite antenna domes ruin yachts' fabulous lines," said Roger Horner, managing director of e3 Systems.

"Sailing yacht owners will also love this technology as they can avoid mounting heavy antennas in the rig."

The Kymeta flat antennas will work with the new High Throughput Satellite (HTS) systems that are currently being deployed, says e3, adding they will provide HDTV and high-speed internet enabling video streaming and video calling.

Kymeta's flat panel satcom antennas are being aimed at the maritime market

New SatSleeve for iPhone

www.thuraya.com

Thuraya has unveiled a new edition of the SatSleeve, a device which allows seafarers to use their own iPhone on the Thuraya satellite network.

The previous version, launched earlier this year, made it possible to make phone calls and send SMS – and to receive both. This new edition now allows users to access e-mails and applications such as Facebook, LinkedIn, Twitter and WhatsApp.

Thuraya says that the SatSleeve is the world's only satellite adaptor for the iPhone. Users can use their own device in satellite mode to not only call or text, but now also to send e-mails, post news updates on social media, or chat with their contacts via instant messaging apps.

"The new release of the SatSleeve, which now includes data, underscores our commitment towards delivering new and innovative mobile satellite products," said Thuraya's CEO Samer Halawi.

"Thuraya is powering ahead of the competition with our strong product innovation strategy focused on making satellite communications more accessible and user-friendly. Users today are increasingly relying on their smartphones to stay connected and we strongly believe in listening to them and to their requirements as we develop new mobile satellite products that align with their needs."

The SatSleeve – now with data

The Dubai-based operator says that the SatSleeve can be used across its satellite network with coverage in over 140 countries. As far as the maritime industry is concerned, Thuraya's satellites cover the busy routes between Asia and Europe, as well as the Middle East, though not transatlantic routes and trade in the Americas.

The Thuraya SatSleeve is available now from all Thuraya Service Partners, which should be contacted for information on pricing and airtime.

Intellian delivers first GX convertible antennas

www.intelliantech.com

Intellian says that it has commenced the first deliveries of its v100GX 3-Axis VSAT communications antenna, a Ku-band antenna that can be converted for use with Inmarsat's Ka-band Global Xpress (GX) service.

Intellian says that its service partner Marlink has ordered a "large number" of the Ku-band antennas and will supply them to an unnamed operator's vessels as part of a communications package that includes Marlink's VSAT service and Intellian hardware.

The Intellian antenna can be changed from Ku- to Ka-band with minimal effort

The 1m v100GX incorporates a dual-band, carbon fibre reflector and tuned radome. It can operate on the existing Ku-band and be converted to Ka- band when GX becomes available, currently expected to be next year.

Intellian says that this adaptation requires "minimal technical intervention". The antenna reflector does not need to be changed as the RF section is mounted on a single modular chassis enabling quick conversion to Ka-band operation without any system re-balancing, says the Seoul-based manufacturer.

Intellian adds that technicians do not need to be specially trained to use the Global Xpress Conversion Kit.

"Our relationship with Marlink has been growing in recent years as operators and ship management recognise the need for well-designed and reliable systems which will maintain on-board communications wherever the vessels sail globally," said Intellian's president and CEO Eric Sung.

"We are delighted to be working with Marlink on major projects such as this recent v100GX installation."

Port of Cork rolls out SeaFi

www.seafi.eu

The Port of Cork has announced that it is rolling out a wireless network for visiting commercial vessels, as well as its own ships.

SeaFi Marine Data Communications, the Ringaskiddy-based company which developed the system, says that data speeds can reach 5 to 10 Mbps both for upload and download transfers at sea. The system provides a dockside service and a harbour connection up to 15-20km from the shore.

For the dockside service, no special equipment is required: the crew members of a ship moored at a quay can use their own smartphone, tablet or laptop to connect to the internet.

For the other service, called SeaFi Horizon, a ship station (a fire-walled antenna with wireless access point on bridge) is required.

The system has been tested over the last six months on board a tug and a workboat belonging to the port of Cork. It has allowed MV Denis Murphy and MV Gerry O'Sullivan to send and receive e-mails, images and work reports from around Cork Harbour.

The port says that it has saved time and money, eliminating the need for the work vessels and crew to go back to base for administrative purposes, as this can now be completed on board.

Following that trial, the port has struck a partnership deal with SeaFi Marine Data Communications to roll out SeaFi for all visiting commercial vessels.

Captain Paul O'Regan, harbour master, said: "Currently many commercial vessels using the Port of Cork use the internet via their on board satcoms. Offering a Wi-Fi service will mean they have a more efficient service when transferring large data and faster download speeds which means cost savings for the ships equipped with a SeaFi Horizon ship station."

"Now with Port of Cork SeaFi Dockside service, crew will be able to access their e-mails, call their family with Voice over IP (VoIP) which will greatly improve crew welfare."

SeaFi Dockside will initially be rolled out at Ringaskiddy Deepwater Berth, Tivoli Container Terminal and Cobh Cruise Terminal.

Crew internet via mobile networks

www.bobz.de

German developer bobz has launched a Crew Solution package for its shipznet near-shore communications system, which offers data rates of up to 20 mbps.

The new crew system aims to provides internet connectivity for seafarers via mobile communications networks.

Shipznet utilises HSPA+/UMTS technology and comprises an antenna unit, a mobile router and a monthly data quota. The hardware can be installed below-deck. Connection and power are ensured via a coax cable.

bobz says that the installation is comparable to setting up a home WLAN and the solution is network provider-independent.

For the Crew Solution, data volume is allocated via a voucher combined with a PIN. The shipping company or ship management decides how much data volume per month each crew member is allocated.

Crew members must register on the shipznet portal and create a user account to use the service. They can view their personal consumption and top up further by buying vouchers.

Respective access points need to be connected to the shipznet Below-Deck Unit, and ideally one access point per ship should be available, notes bobz.

Changes can be made from both ship and shore via a web portal which provides access to individual connection logs and contract options.

The developer says that data-heavy applications such as crew communication, but also downloads of ECDIS data, remote management and other software, can be handled inexpensively via a shipznet near-shore connection. It adds that the system can also be used in territories imposing satellite bans.

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ABC XpressLink roll-out underway

Swiss based vessel operator ABC Maritime embarked on a satcom upgrade project in 2012 that saw the company agree a deal with Navarino to roll out a range of high-usage communications systems across its fleet of vessels – Viktor Poroshyn and Daniel Tanner, ABC Maritime, told *Digital Ship* about the project

ABC Maritime has begun implementing Xpresslink on what it calls "its most modern suitable vessels", having agreed a deal with Navarino to act as the satcom provider for its entire fleet

The Swiss-based operator manages over 30 ships of various types, ranging from oil & chemical tankers and bulk carriers to accommodation barges and utility boats. In the summer of 2012, ABC went to tender asking a number of satcom providers for ways to offer internet to its diverse fleet, and also to expand its possibilities for business communication.

Previously, it had been using a mixture of Inmarsat's Fleet 33, 55 and 77 as well as FleetBroadband terminals on 200MB or 3GB plans.

Following the tender process, ABC opted for Navarino's offer, which consists of installing XpressLink on the ships where possible, and placing the other ships on 2GB to 6GB plans using FleetBroadband.

Navarino's bandwidth optimisation solution, Infinity, will also be fitted on every single vessel.

Viktor Poroshyn, fleet systems coordinator at ABC Maritime, told *Digital Ship* that Infinity was "one of the main reasons for awarding Navarino with the tender."

"It is easy to use, gives anytime access to any required information, allows us to establish easy communication with the vessels as well as branch offices, gives us an almost real time position overview of the fleet, managing in a smooth way access of the crew to internet and telephony, simplifying at the same time our crew's life in avoiding any useless administration," he said.

Infinity has already been installed in ABC's headquarters in Nyon (Switzerland) and in its crewing branch office in Odessa (Ukraine).

The company says that this eases communication between the offices and the ships' crews, particularly as each vessel is fitted with two or three VoIP phones (depending on vessel size) – with direct lines to the master and crew.

Navarino says that calling vessels from the Nyon HQ through this special VoIP channel is cheaper than calling Inmarsat terminals through the local Swiss telecom provider, claiming that costs can be up to 70 times less. The system also provides each vessel with a fixed four digit extension number that can be dialled directly from the telephones in ABC Maritime offices.

In the near future, ABC says that it plans to use the Infinity box for file replication between vessels and office as well as integrating the e-mail solution with its office MS Exchange server.

Roll-out

Meanwhile, the roll-out is on-going. Over half of ABC's fleet is using FB500 terminals under the 6GB plan, while its latest newbuild, the San Pietro, is trialling XpressLink, Inmarsat's integrated Ku-band and L-band solution which requires VSAT and FleetBroadband terminals.

ABC expects that by Q1 2014, 14 of its vessels will be fitted with FB500 under 2GB to 6GB plans while its 16 other vessels will be equipped with XpressLink (some of which will be upgraded from the recently implemented FleetBroadband 6GB tariff).

The idea is that the ships that operate globally will take advantage of available XpressLink coverage for a fixed fee. Infinity will be used to optimise all traffic, whether it is passing through the VSAT or the FleetBroadband antenna.

Each crew member will be given a monthly allowance of 400MB to go online, using their own devices to connect through various Wi-Fi access points on board. Once they have spent all their data allowance they may buy a new PIN from the master.

For the vessels which cannot have both a FleetBroadband and a VSAT antenna, the Navarino solution will comprise a FleetBroadband terminal and a 2GB to 6GB plan, along with Infinity.

On those ships, crew members will be given a monthly 100MB of data. For more, they will need to buy Infinity PINs from the master.

'It allows us to establish easy communication with the vessels as well as branch offices' - Viktor Poroshyn, ABC Maritime

Daniel Tanner, project and tender officer at ABC Maritime, said that the company was very satisfied with what it had seen from the Navarino solution.

"From a vessel management perspective, we were able to set in place much faster and flexible solutions, with large, up to unlimited, data allowances, ending up with a monthly average cost which barely exceeds what we were paying before," he said.

"In real terms (taking into account the savings and benefits), we are even below what we were paying for L-Band solutions (Fleet 33 – 77) while being able to ease the administration of our IT systems and granting access to our on board crew."

"Furthermore, with the implemented units, we have our communication costs under control, which gives us peace of mind." DS

San Pietro is trialling XpressLink

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Simon Møkster - Lyncing ship to shore

The steady increase in bandwidth available to the shipping industry, at ever more affordable prices, has made real time connectivity a more achievable goal than ever before. Terje Gjerde, Simon Møkster, spoke to *Digital Ship* about how his company is using VSAT to turn 23 vessels into remote offices

One of the 'holy grail' missions of maritime technology has always been to create an on board environment that truly makes the ship an extension of the shore-based office – bridging the gap between ship-specific systems and the applications that are used every day by workers on land.

Of course, the major stumbling block in doing this, in the decades gone by and still today, is the radically different communications infrastructure available to an internationally trading ship when compared with an office block in an urban centre.

Try as you might, it's not going to be possible to run a fibre optic cable to an object travelling between Europe and Asia – and so, the maritime ICT manager has to make do with the capabilities of satellite communication, with all of its inherent limitations relative to its shore-based counterparts.

However, while this reality has traditionally constrained the ability of shipping companies to truly make their ships into floating remote offices, the landscape is beginning to change.

In recent years improvement in the choice and affordability of fixed-fee VSAT packages has made the transfer of gigabytes of data on a monthly basis a realistic prospect for some, and even in L-band Inmarsat has added a number of multi-gigabyte plans for its FleetBroadband range, to the extent that the premier plan is sold as being 'unlimited'.

This changing communications landscape has led an ever growing number of shipping companies to explore the possibilities of closing the gap between their ships and offices and introduce new systems that use the latest data transfer capabilities to make real time interaction with the vessels a reality.

Among these maritime companies changing the way they work is Norwegian firm Simon Møkster Shipping, which has recently completed a 'remote office' project that has resulted in the company's 23-strong fleet of offshore supply and specialist vessels becoming fully connected to the Microsoft Lync platform via its installed VSAT systems.

The Norwegian offshore vessel operator is using Marlink's customised VSAT service Sealink to roll-out the Microsoft platform across its organisation, on land and at sea.

Microsoft Lync is a unified communications platform, which connects people on various platforms, including mobile devices, for instant messaging, voice, video and teleconferencing. With this system installed, all of the company's offices, whether at sea or on shore, will be integrated and connected to enable real time communication.

As Terje Gjerde, ICT manager at Simon Møkster, explains, instant communication with all of the ships in the fleet was an important part of the company's drive to improve efficiency in its operations.

In fact, the Lync platform is now such an integral part of the Simon Møkster communications set-up that Mr Gjerde offered to speak to *Digital Ship* via a video conference using the same system installed on the ships.

"The main reason why we put it out to the ships is that we get one more telephone out there, we get a communication system, we can chat (instant messaging), we can talk, we can share data on both sides from the workstation desktop," he told us.

"We can see the status instantly, if they are free to take a call or busy or on the mobile etc."

"We are now up and running with this. The ships have a full Microsoft client installed."

Implementation of the Lync system was carried out as part of an overall IT upgrade project that Simon Møkster had scheduled to conduct new server installations on all of its ships, featuring virtual servers and a backup server system that would take over if the main server should experience downtime.

While the company was doing that it took the opportunity to introduce the Microsoft Office 2013 platform on board, to use all of the standard Office programs as well as the Lync client. There are now two Lync clients on each ship, one for the bridge and one for the engine room.

"I have worked on a lot of these kinds of things before, I've been working on unified communication for a number of years now, so it wasn't much of a problem. But we've worked on this for a year to make sure that it would work from A to Z. We needed to go through that," Mr Gjerde explained.

"One of the first things we worked on with Marlink was getting the bandwidth out to the ship, because, from the beginning, we wouldn't have been able to use this system if we'd used our previous satellite communications. It wouldn't have been possible."

"This implementation period for all 23 ships took approximately three months after a month's trial period on the Strilmøy, with approximately two months for the designing, ordering and delivering period."

The upgrade programme Simon Møkster followed saw all of the software programs on each ship mirroring the rest of the fleet 100 per cent, running the same programs in the same set up.

"Everything is the same," said Mr Gjerde. "The main file structure is even the same, so it's easier to manage the software and obtain full control of all of our ships."

Control is a keyword for Simon Møkster in its vision for its corporate ICT infrastructure, with Mr Gjerde noting that the ability to share data and create live connections to shipboard computer desktops has helped the company to be more precise in how it manages its ships.

"When we are talking to the ship, we can upload a schematic here to headquarters and the guys on shore will see the same drawing. They are able to go in and take over the controls and then they can work with it, they can see this problem or that defect, and then we can order the correct pump and get it out to the ship," he told us.

"We can see the desktop and we can see every program through Lync here. We have Lync here and we have Lync on board the ship, and we can do everything. If I'm giving them control they can go in and change things if they take remote control over the program. We can discuss things, we can confirm things when we're looking at the same desktop on both ends."

"If we have a technical inspector here, for example, if they want they can call up the ship and ask them to show some drawings or some other things, maybe a certificate or whatever else. They can share it on the screen with the chief officer or engineer or whoever, and in that case they can discuss actual data from the screen so they are sure what they are talking about. They can see the desktop picture and are not just relying on a phone call."

Bandwidth

To some extent, these new capabilities are not all that different from what could be achieved previously, using e-mail and any standard satcom system – for example, drawings could be sent from shore to ship, and vice versa, and both sides could discuss the issues while looking at the same image.

However, Mr Gjerde is convinced that the sharing aspect of the system adds a lot to this process, and is ultimately more efficient in terms of satellite bandwidth.

"The good thing here is that both sides are looking at it on essentially the same screen at the same time. So, for example, if you are to order some equipment or something like that, they can be 100 per cent sure that it's the same piece of equipment that they are talking about," he explained.

"We are saving time, that's one thing. But the other thing is that before, to send over schematics and drawings and things like that over satellite, it would take too

The company's 23 vessels have implemented the technology

MARITIME SOLUTIONS AT SEA

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much bandwidth. It's better for us to just look it up on the screen and we can show them on the desktop, discuss it and point to what we want together."

"We don't need to send an e-mail with a large drawing out first so we can discuss it afterwards. It's more of a real time thing – we have it at the headquarters, we don't have to send it out to the ship."

Mr Gjerde notes that some of the schematics in question could create a 5 MB or 10 MB file which would be time consuming to try and transmit, maybe taking an hour to get over to the ship.

"We don't need to send it over, we're just using up to 100 kbps to stay in contact. You don't need much bandwidth to discuss it and see what you're pointing at so we don't misunderstand each other," he said.

"On Lync we use about 32 kbps for a voice call and about 100 kbps for a desktop sharing session. If you put on the video as well, it depends on how much bandwidth you have because it ranges from approximately 128 kbps up to 384 kbps. If you want to have a full HD set up you need much higher bandwidth, but we don't put it up so high."

In fact, to limit the amount of bandwidth used during video conference sessions, Simon Møkster has rolled back the video codec included in the Office 2013 platform and replaced it with the Office 2010 codec – degrading the quality of the video but also reducing the bandwidth required.

"The 2013 one is much higher resolution and takes much more bandwidth, so it was a problem when you're talking and running video. The video should be lower quality rather than losing good speech quality," he explained.

"The most important thing is that the sound is good, if you have good bandwidth you use the video, if not the picture can just be made to disappear. Just sharing a picture on the screen rather than sending a detailed drawing can take about one-third of the bandwidth."

"We can do video presentations and all of these things with lower bandwidth, rather than doing professional video conferencing that might need approximately 384 kbps or 512 kbps. We don't need high definition video from the ship, it's good enough that you can see me and I can see you. It's not so often you will need to see each other at all, it will be more likely you will show the desktop and the things you need to discuss. It more important the details that you are getting from them."

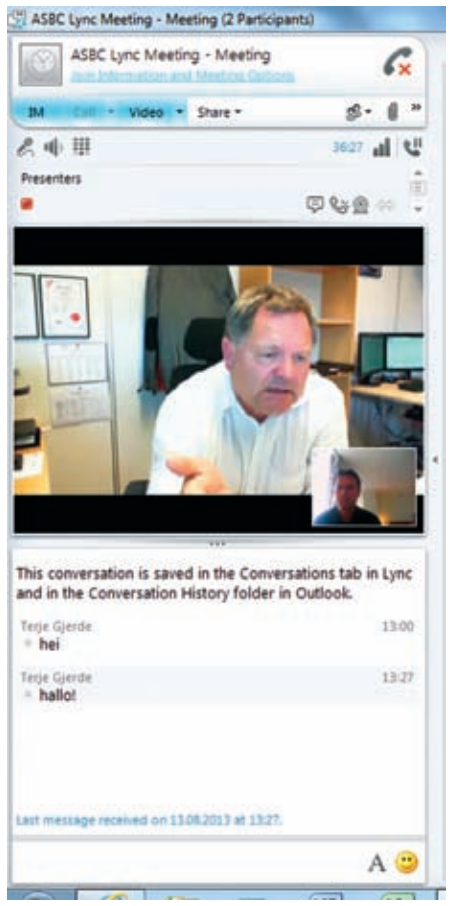
In that regard Mr Gjerde notes that most sessions begin with voice or text only, with video added as and when required.

"We start all the connections just with the phone or with chat, we don't start with the video calling. Then we might say 'let's try video' or 'let's try data sharing'," he told us.

"If (the available bandwidth) is not good enough at that moment we'll wait. But normally it's no problem to use video with the bandwidth we have. I'm satisfied and the ships are satisfied."

One unique aspect of the VSAT service being supplied to Simon Møkster is the fact that the company has a single fleetwide contract for a dedicated amount of bandwidth across two different satellites, that is shared among the ships.

Marlink believes this access to a closed user group across two different satellite beams is particularly rare in the commercial maritime market, when compared with the more normal set-up where a closed user group is established on a single beam.



Digital Ship's interview with Simon Møkster was conducted via Lync

"We've had VSAT for about one year, an iDirect system. We started with that, before moving on to the closed user group on two satellites – so we are in control of our own bandwidth now. We share it among our ships," said Mr Gjerde.

"We've gone from static bandwidth to this dynamic system, where you get more when you're sending e-mail or going online. It's not static anymore."

In addition to using the VSAT system Mr Gjerde notes that Simon Møkster's vessels are also equipped to connect to 3G/4G GSM services when near shore, as well as the ICE wireless internet system available off the coast of Norway.

It is estimated that the ships each download about 40 GB per month on ICE, about 35 GB on the 3G/4G modem and in excess of 10 GB over the Marlink VSAT system – a huge amount of data, far greater than what the company had been using previously.

"It's definitely more. Earlier, when we started this project, we could only share mail and had a small amount of replication on the TM Master software system (from Tero Marine), but it was low bandwidth and it was expensive to do these things the way it was set up. The way we have it now, it's a new world, both for us and for the people on the ship," said Mr Gjerde.

"The crew are very positive. They can also use it ship-to-ship, in case they need to discuss things with another ship that has been through a particular operation, so they can all learn about it from each other."

"We need to put together a plan to teach them a little bit more about how to use it, because we have now implemented it on all the ships and want to get more into using it for sharing, to manage the engines, work with the inspectors and so on. Therefore we are now going to teach them how to use it and how to be efficient in using it."

Simon Møkster has begun to add training in the system to its general education courses, and Mr Gjerde notes that he is also able to personally do training directly online with the ships if necessary.

"We are doing both on board training and some remote training, going through some important program tasks with them so they understand all the ordinary things," he said.

"We are looking into a computer based training program for Microsoft Lync, and will add some officer training at headquarters as well. So we're going to create procedures on how to use this correctly on board."

"Some of the boats have started to use it and see that it works very well, but others have tried it to see that it's working but haven't started using it for work processes."

Benefits

Apart from the obvious time savings created by being able to work in real time with the ships, Mr Gjerde notes that the introduction of the new Lync system has created additional financial benefits as well.

"Support is easier, and I think we've reduced the help desk costs by approximately one third, or something like that. It's a lot of money," he explained.

"We are saving money, the best thing is that we don't buy wrong equipment to send out to the ships, we confirm that these are the correct parts that we need to get out to the boat. We could lose time and lose money and go off-hire if we ended up sending the wrong part or whatever."

"The investment is definitely paying off. We have all of this Lync infrastructure inside our headquarters, so it's only a Lync client on the ship. They just need the VSAT or the ICE or the 3G connection to get on it, and they always have one of them. It's over 99 per cent communication line up time, so it's basically on the whole time."

The Simon Møkster ships even have the capability to connect directly to third party stakeholders, be they oil companies or other relevant parties, to discuss any issues of importance in real time.

"Our ships can also call up other companies on their video system and participate in a meeting in a professional meeting room from the ship (depending on the available bandwidth)," said Mr Gjerde.

"An example could be Statoil putting their information into Lync, from their headquarters, and showing something on the big screen on board. Other companies on Lync are also starting to use these processes."

"Going forward we want to get even better using this with our different vendors and operators and partners that we have. It will give us closer contact with everyone."

From the crew point of view, access to Lync has also created a greater level of access to personal communications services, with the infrastructure built for the business proving beneficial for everyone.

"In the near future you'll be able to do Skype connections via Lync, so the captain can say 'ok, you'll get five to ten minutes with your wife from Lync to Skype', but it won't take all the bandwidth, there's a QoE system on the Lync so you don't take the whole bandwidth," said Mr Gjerde.

"In that case it will be something we are including as a welfare thing. They are 28 days at sea, so they need to be provided the chance to talk to their family."

"That will be provided by the company, so (the savings) will be on the business side, and will mean that it's ok for the person to be at sea. The quality of life will be better, there'll be better welfare on board. Lync is the first main step in that."

Future development

The future for Simon Møkster, now that it has implemented this new system, is to work on perfecting the new processes it has enabled, rather than trying to add a number of new applications too quickly.

"We might have some new challenges to deal with in the future so we might put some other things out there as well, but the next thing we are going to do is just make sure we have it stable, running the new platform," Mr Gjerde told us.

"We already have the platform, with the front end and all the things we need, we have three virtual servers going at our headquarters handling this. Even if we doubled, the number of clients on board we wouldn't need to do anything more than buy the licences and look into the amount of lines needed to the branch network."

"I don't see that many more clients, maybe we could have one more client in the office but we need to see. If it's going to be used a lot and the process seems to be very effective then it might be possible to roll out a few more clients on each ship."

When asked what advice he would give to any other shipping company IT managers thinking about embarking on a similar unified communications project, Mr Gjerde suggests that the most important thing to remember is to walk before you can run.

"I think they should start with just one or two clients, to see if they will get anything out of it on board for their own working processes, and take it from there. There are a lot of different types of ship and different types of systems," he said.

"You need to have the right infrastructure as well, so maybe they will need to look at their infrastructure and data capacity on board before they start looking at Lync or other communications platforms. Preparation is very important. If you don't have the IT system running properly on the ship you could end up off-hire, and that will cost you your daily rate income on your ship."

"Lync is a communications system, it's a phone system, it's a data sharing system, and it's also a welfare system. Get the basic programs you need to run the ship and run your systems, and then put on these other things afterwards."

Should this be achieved successfully, Mr Gjerde believes that the potential benefits are significant – as they have been already for his company.

"We're already saving a lot on the helpdesk, and we are getting closer in bringing the ship and the office together," he said.

"Now we can say that we are working easily and very closely together with the ship. That is worth a lot of money." DS

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Iridium makes its play for GMDSS

In the first half of 2013 Iridium made its wish to become a provider of GMDSS services official, with a submission to IMO signalling its intent to apply to provide safety services via its satellite network – a move which has the potential to cause a significant change in how distress communications are made available to the maritime market

When the RMS Titanic sank after striking an iceberg in April 1912, the scale of the tragedy was such that, even a century later, the name of that fateful vessel would continue to serve as a warning to anyone foolish enough to believe themselves to be 'unsinkable'.

More than 1,500 people died on that fateful day, causing shock and outrage across the world as the public struggled to comprehend how such a disaster could be allowed to happen. The outcry over the Titanic disaster spurred international authorities into action, and led to one of the most significant reviews of maritime safety in history.

Among the changes in policy that occurred as a consequence were new rules governing lifeboats and a requirement for radio communications on passenger ships to be in operations 24 hours a day. These and other provisions were contained in what was presented in 1914 as the first International Convention for the Safety of Life at Sea – or SOLAS, as it would become more commonly referred to.

Though SOLAS was adopted on 20 January 1914, its entry into force in July 1915 was curtailed with the outbreak of the First World War. However, contained within its provisions were requirements for wireless telegraphy on board ship that would begin the process of introducing international communications standards.

A second version of SOLAS finally came into force in 1933, after a conference in London attended by 18 countries in 1929. Chapter IV of this document covered Radiotelegraphy and included a requirement to carry equipment capable of transmitting and receiving on assigned frequencies "for the purpose of distress and safety of navigation to ships compulsorily fitted with radiotelegraph installations."

These requirements proceeded to become a standard component of SOLAS, with upgrades to the latest technical standards being added to the Convention's 1948 version, as well as the 1960 version of SOLAS, considered to be the first major task for the IMO after the Organization's inaugural sitting in 1959.

This continued through until the introduction of the 1974 SOLAS Convention, which entered into force in 1980 and remains the version in force today, though it has been amended several times since.

While the radiotelegraphy requirements of these various versions of SOLAS differed as times and technologies changed, the fundamental basis of the communication system – radio waves – remained the same throughout.

This reliance on radio meant that the related physical limitations of the system would continue to hamper its ability to be used for distress communications over long distances.

It was not until 1979 that IMO decided to investigate the possibility of introducing new technologies to the maritime distress and safety arena, marrying an improved communications system with search and rescue infrastructure on shore.

This initiative would introduce the latest in satellite technology to the merchant fleet, moving away from the limitations of radio and allowing communication across the world in seconds.

The resulting amendment to SOLAS in 1988 was the single greatest change in safety communications at sea since the loss of the Titanic – the introduction of the Global Maritime Distress and Safety System, or GMDSS, on 1 February 1992.

GMDSS expansion

The provisions of the GMDSS require vessel operators to install a range of mandatory safety equipment on board their ships, amended over time to include items such as EPIRB (Emergency position-indicating radio beacons), Digital Selective Calling (DSC) radios, and Navtex for the receipt of maritime safety information (MSI).

However, arguably the most critical component is a mandatory satellite communications terminal, which must be installed on all SOLAS vessels for distress communications purposes.

The introduction of satellite technologies to the maritime safety environment was the main driver underpinning IMO's decision to establish the International Maritime Satellite Organization in 1979, a company better known by the shortened version of its name – Inmarsat.

The purpose of the creation of Inmarsat was to create a self-financing, not-for-profit body which would improve safety of life at sea. As such, Inmarsat satellite equipment became a compulsory fit for SOLAS ships after the introduction of GMDSS.

Inmarsat offers three satellite communications systems designed to provide most of the GMDSS medium- and long-range functions: Inmarsat-B, Inmarsat-C and Fleet 77. All of these systems make use of 2-digit codes for easy access to various types of assistance.

FleetBroadband has not, to date, been approved for GMDSS use, though Inmarsat is currently working towards its introduction.

In the 20-plus years since the introduction of the GMDSS Inmarsat has been the sole satellite provider approved to provide these mandated safety services, which has meant that all SOLAS vessels must carry at least one Inmarsat terminal on board at all times. However, that may now be set to change.

In Resolution A.1001(25), adopted on 29 November 2007, IMO invited "Satellite system providers wishing to participate in the GMDSS (to) apply to the Organization, through a Member State, for recognition as a radio system providing maritime distress and safety satellite communication capabilities for use in the GMDSS."

'No one has ever gone through this process before so we're all sort of ploughing new ground collectively here' – Brian Pemberton, Iridium

This Resolution also laid down the criteria and requirements that would be needed to be met by a provider looking to become part of the GMDSS, including Functional Requirements, Capacity, Priority Access, Coverage Area and Availability, among others.

Despite the adoption of this resolution at the end of 2007 there had not been any significant developments in opening up the safety system to new providers until April of this year, when Iridium, through the US Coast Guard and the US delegation to IMO, submitted a letter of intent to the MSC (Maritime Safety Committee) indicating its desire to begin the formal application process.

This letter of intent requested what was formerly the COMSAR subcommittee (now part of the newly formed Navigation, Communications and Search and Rescue, or NCSR, subcommittee) to evaluate the Iridium application and then make a recommendation back to MSC for recognition.

This April submission was reviewed at MSC 92, and the outcome of the agenda item was that the issue would be moved forward and that MSC technical subcommittee would take up the Iridium application for review when it was submitted, ultimately providing a recommendation back to the MSC for an official decision.

In short, the Iridium quest to join Inmarsat as an approved GMDSS provider is now very much underway, as Brian Pemberton, director, product management at Iridium Communications, explains.

"Step one, going through MSC 92, was largely administrative and political. Now that we're over that hurdle it's about transitioning much more to the technical evaluation," he told *Digital Ship*.

"The expectation is that hopefully that will be rather objective and pretty straightforward, and we'll be able to support claims of network and service performance with statistics etc, and be able to demonstrate that to the delegation and any interested parties. Ultimately we hope that will lead to their recommendation back to MSC, which would probably be MSC 94, possibly MSC 95 depending on how timing works out for all of these committees on the calendar."

"Our hope is that if there's a recommendation from the technical subcommittee to MSC based on their review of Iridium's application, that Iridium should be recognised in the GMDSS, that MSC would indeed adopt that. I would find it to be unusual if the MSC would attempt to go against the recommendation of the technical subcommittee."

Mr Pemberton expects that the process of proving that the technical capabilities of the Iridium network can match the requirements set down by IMO will include a combination of both the company's own statistics and third party verification, though the exact route that will be taken is not prescribed.

It is expected that the International Mobile Satellite Organization (IMSO) will be involved, the intergovernmental organization that has overseen certain public satellite safety and security communication services provided via Inmarsat satellites since Inmarsat became a private company in 1999.

"No one has ever gone through this process before so we're all sort of ploughing new ground collectively here, between the MSC, the technical subcommittee and ourselves," he explained.

"Our expectation, and we've had several conversations with the US delegation and also with IMSO on this, is that we will provide historical data of our network on the services that we provide that we expect to be used as part of the GMDSS. We're also looking to work with IMSO to ask them what tools do they need to be able to

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independently monitor and evaluate the performance of the Iridium network."

"I think it's going to be a combination of the two, certainly we have historical data so we'll make assertions based on that. But we're looking to make sure that IMSO has the tools as well to be able to evaluate that from a third party standpoint. It sounds like that will be a little bit of a first for IMSO as well, they're used to being given data and then trying to validate that the data is accurate, versus actually having the tools to verify that themselves."

Effectively, Mr Pemberton sees this as a collaborative process, where IMSO and Iridium will work together to find the best way to determine the suitability of the Iridium network for GMDSS.

"Absolutely, IMSO will be involved. Effectively there's an arm's length relationship between the two organisations, we're looking to provide the service but ultimately they have a role to play in being able to provide the reports back to the maritime industry and the MSC that GMDSS services are being provided with a quality that the industry expects and needs to operate safely," he said.

"Anything these two organisations can do to help each other in their respective duties is key in what we're trying to support."

2009 to 2013

Iridium's declaration of intent in April of this year was a significant step forward for the company after it pulled back from an earlier attempt at GMDSS inclusion in 2009 with the aim of preparing more thoroughly for a future move.

"In 2009 Iridium had made a presentation to the IMO that it intended to seek GMDSS authorisation recognition, but that effort was never really undertaken," said Mr Pemberton.

"As Iridium explored that with the US delegation and with MSC there were too many uncertainties at the time, but also there were some technical attributes that the MSC viewed as imperative for the network to have, which the Iridium network did not have in 2009."

"So rather than apply when we didn't have the technical abilities they required, we've taken 2012 and 2013 to develop that capability that was missing."

The technical requirements to be reviewed, and which will apply to any prospective GMDSS satellite service providers, are contained in Resolution A.1001(25), and Mr Pemberton notes that Iridium has examined these thoroughly to make sure that its network is able to cope with the demands that will be placed on it.

"We've got our checklist to be able to demonstrate compliance against that, but I think that there are some key ones – maybe not all of the requirements are equal in some people's minds," he said.

"Certainly system availability, to be in the three nines or four nines (i.e. 99.9 per cent or 99.99 per cent) of system availability is critical. Being able to prioritise voice and/or data communication into a vessel is obviously quite critical."

"The broadcast capability to help disseminate Maritime Safety Information is also a key element and we felt it was critical to make sure we had that."

This ability to handle broadcasting marks one of the most significant differences between Iridium's 2009 exploration of entry into GMDSS compared with this year, with the company set to introduce such a capability to its network before the end of 2013.

"We have a data broadcast capability that we will be making available for commercial use before the end of this year, and that's sort of one of the key reasons to restart these activities for recognition at this time, because that one key technical piece we didn't have in 2009, we do have now in 2013," said Mr Pemberton.

"It'll be used both commercially and for safety, but with the intent and expectation that we were going to use that functionality for GMDSS all along. We took the requirements as defined in resolution A.1001 and adopted those in our system functional requirements when we were developing the service. Our intent or expectation is that having built the service it's going to be used for commercial use as well, but it is applicable for GMDSS use."

"In 2009 we explained intent, but we never really followed it up with action, because we understood that there were some things that weren't quite ready yet. In 2013 we've explained intent and we're following that with action, and we believe that we can show 100 per cent compliance – so that makes this effort a little bit different to the 2009 effort."

Coverage

One of the capabilities that the Iridium network does offer, which other operators are not able to match, is the ability of offer services over Polar regions, particularly in the Arctic – an area that has seen rapidly growing ship traffic in recent years.

"At MSC 92, when our intent to apply was being reviewed, that was one of the elements that was highlighted by a number of the delegations," notes Mr Pemberton.

"They recognised the growing volume of maritime traffic in the Arctic, the opening up of new sea passages that allow the shipping industry to save tremendous amounts of money on fuel and time."

"There really is sort of a void in the types of communications that you might desire to have in that region, from a regulatory and a safety perspective. Iridium is uniquely positioned to fill that void. We're not exclusively looking to support communications in the Arctic, we're looking to do it on a global basis, but it's a unique differentiator that our network possesses."

When asked if Iridium saw this Arctic coverage as the 'trump card' in its GMDSS application, Mr Pemberton noted that, while it may not be the deciding factor, it would likely play an important role in demonstrating the attractiveness of the company's proposition.

"If you'd asked me prior to the MSC meeting I would have said that it's interesting but I don't know how critical it will be to people's thinking. Based on a lot of the comments that were made in the gen-

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eral session, as well as to us directly by different delegations, it's clearly something that people are very, very interested in," he said.

"To use your term, will it be the 'trump card'? I don't know, but certainly the understanding of the delegations is that that is something that Iridium can uniquely provide, and that's overlapping with the growing demand for communications and operations in those regions."

"It's a very compelling story, timing has just been very fortunate for us that our application is coming along at the same time that the MSC is struggling with what they can mandate in terms of communications in the Arctic. It's sort of new turf for everyone."

After acceptance

Should Iridium be accepted as an approved provider of GMDSS services in the next few years, there are a number of potentially interesting implications.

From the Iridium point of view it would certainly open up a new path to getting its terminals installed on shipping vessels, something that Mr Pemberton sees as offering two main benefits.

"I think it's twofold, (having terminals on ships that are also generating non-distress revenue) is certainly one of them, to have access to a broader portion of the market and be able to provide a broader breadth of communication solutions for them," he said.

"We've got more than 200 manufacturing and service partners around the globe, many of them in the maritime community, we have relationships with many of the world's largest fleets, and there really has been a growing call from the maritime community itself for Iridium, or for an alternative to effectively the monopoly that exists today."

"So yes, certainly there are some financial opportunities there, but also as we become more experienced and more recognised in the maritime community we look on it as a duty or a service to the industry to try and meet their requirements."

Of course, the potential introduction of competition into the market for safety services could also create concerns that manufacturers and service providers will begin to feel pressure to cut their costs to gain an advantage, which could potentially lead to a degradation in the quality and reliability of distress communications.

Mr Pemberton accepts that this is a valid question, though he believes that other industries have shown that competition can create more positives than negatives.

"The only thing I can share so far is our experience in the aviation sector, we have about four years' of experience there, and Iridium being approved to provide safety services in the aviation sector has certainly stimulated innovation from the competitors to try to close the gap between the capabilities and the price point that Iridium was offering on our new products and services versus what had been there historically," he said.

"To some extent I would say that it looks like it will benefit the industry, because there will be an alternative means of how things can be done. That stimulates innovation from the competitors, which stimulates innovation from an Iridium perspective as well."

"Everyone understands why the requirements are there for the level of safety communications, so there's a potential benefit to the industry."

The introduction of a second provider for GMDSS could also allow ships to carry two satellite terminals to provide redundancy and improve their ability to access distress services.

Such a set up could potentially decrease the required level of availability for the satellite networks – a ship carrying two terminals would be able to have 99.99 per cent availability even if neither one of the networks could reach that figure independently if it was able to switch between the two.

"That's certainly possible, I've been party to some conversations along those lines. I'll liken it a little bit to the conversation that's been had in aviation, today when satellite terminals are being introduced in aviation they're so reliable and work everywhere we fly, they're another piece of equipment on board the aircraft that we no longer need," said Mr Pemberton.

"But I think one of the conversations that will probably play out for years to come, especially if you have two independent providers such as an Iridium and an Inmarsat, could be whether, instead of four nines (99.99 per cent) could we get away with three (99.9 per cent) because between the two of them I'm at more than four nines. Or it could be that I've got Iridium and Inmarsat on my vessel so now there's something else on my vessel that I don't need any more that was more expensive."

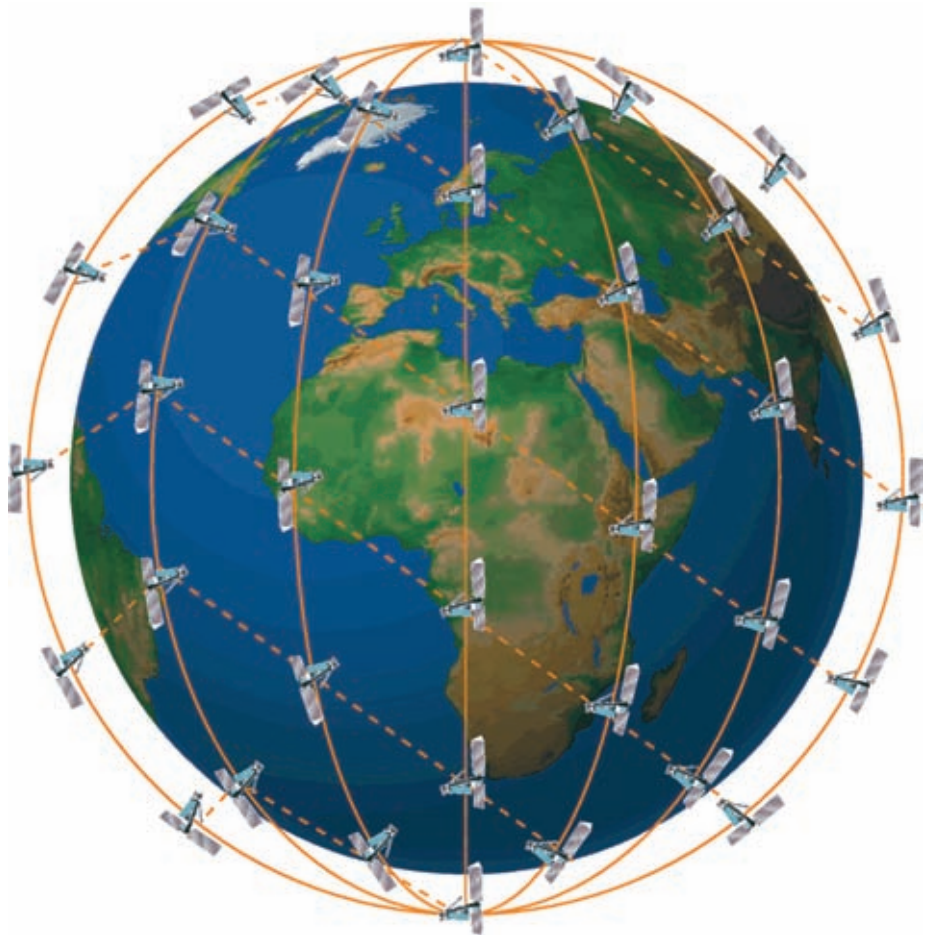
"I'm not sure which direction the conversation will go, maybe it will go to both depending on how much money it costs and how much room they have on their vessels for one versus the other, but I suspect that if and when Iridium is recognised for GMDSS services that kind of conversation would become more active."

The idea of having two terminals on board does also raise the question of whether it would be feasible to have a combined GMDSS terminal able to access the networks of either provider, though Mr Pemberton believes this is a less likely outcome.

"Technically today that would be a fairly challenging engineering solution to make happen," he said.

"It might be a little premature to have that conversation yet, it's hard to understand what technology breakthroughs are around the corner and what the market may want in a few years to come."

"I can certainly understand that a vessel with a finite amount of space might find something like that highly desirable, but if I can buy two independent platforms cheaper than one combined platform then it makes it rather challenging to have a market for that combined platform, and I think that will ultimately be what drives that solution one way or another."



The Iridium network covers the entire globe – including the Poles, which may be a key point in the company's application

Next steps

Despite this talk of two-terminal GMDSS systems and combined antennas, Iridium still has much work to do before it can begin to offer GMDSS services. For the moment, planning and preparation are the keystones of the company's application.

"The big milestone will be when the application is officially submitted by Iridium, through the US delegation, to the NCSR subcommittee next year," Mr Pemberton explains.

"We've got to submit that bill, translated for all the delegations to review, and at that meeting we'll start going through the assessment. That will probably be a multi-day effort."

That NCSR subcommittee meeting will take place starting 30 June 2014, so at least a few months in advance of that date Iridium, through the US delegation, will be submitting the application for review.

The rest of 2013 and the first half of next year will be spent preparing all of the required information for that process.

GMDSS product development will take a back seat, to some extent, until the process is completed, though Mr Pemberton notes that there are longer term plans to introduce a new range of equipment a few years down the line.

"If we stay on the current roadmap we have now for inclusion in the GMDSS in the late 2014 to late 2015 timeframe, it's our expectation that the first GMDSS terminals that would be sold to the market would be based on existing products today, L-band transceivers which have the prioritised voice and data capabilities and would also be capable of the receive capability," he said.

"We also do have new product development underway, which are being developed with the expectation that we would support GMDSS services in the future. Those products would probably be coming to market sometime after 2015, capable of supporting not only GMDSS but also much higher throughout IP services. That will become more of the complete vessel communications solution."

"So there will be near term solutions for people who want to buy a platform just for GMDSS, quite similar to what most vessels are doing with Sat-C or Sat-B terminals today. But in the not too distant future we'd expect to have new platforms that incorporate that capability into a system that does a whole bunch more, available probably in the 2016 timeframe."

That development would also coincide with the planned launch of the Iridium NEXT network, the company's next generation satellite constellation, which Mr Pemberton notes will offer the same capabilities as the existing satellites when it comes to GMDSS requirements, but would have further benefits on the commercial side.

"On the GMDSS side, we can do this on the existing constellation so it really doesn't have much of an effect there. We might see minor changes like improved latency or capacity, something like that, but we don't expect it to be material to providing GMDSS services," he said.

"It's really on the higher throughput on the non-safety communications that it's really compelling. Of course, if you have a platform that is benefitting from the higher throughput of Iridium NEXT in combination with the safety services then that's something that is probably pretty desirable to the market."

For the moment however, Iridium will need to keep working on its application and allow the political wheels at IMO to continue to turn as it waits for its opportunity to join the GMDSS.

We have come a long way in improving maritime safety and distress communication since the sinking of the Titanic over a century ago – perhaps the next stage in the development of the GMDSS will help to make travel at sea safer than ever before.

DS

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Getting the most from GMDSS

The carriage of GMDSS equipment is a mandatory requirement on most seagoing vessels – choosing up to date and integrated technologies can help to keep the system running smoothly while reducing the total cost of ownership, *writes Henrik Dyrholm, Cobham SATCOM*

The Global Maritime Distress and Safety System (GMDSS) concept was established in the late seventies, when IMO begun work on defining a maritime safety standard, incorporating new technology, and establishing a worldwide safety network.

A new standardised system was needed to replace the informal safety and alerting systems in place at the time, which were based on Morse Code and radio; the type of technology relied on for safety communication since the 1920s.

An integrated GMDSS console allows for easier access to information while making maintenance more manageable

Tested during the eighties, GMDSS was finally ratified, and became an amendment to the SOLAS charter in 1988, but has only been mandatory since 1999 for vessels subject to the SOLAS Convention, that is, commercial vessels of 300 Gross Registered Tons (GRT) and above, engaged in international voyages.

So GMDSS has only been mandated for the core maritime transport market for 14 years. Not a long time, considering how ubiquitous the system is today.

Whilst there are certainly vessel owners to whom GMDSS is a regulation simply to be met, a keen sector of the market has embraced the system and taken on board one of the original aims of the initiative; that the technology required to become compliant under GMDSS also becomes an operational tool for more efficient operations.

This approach ensures that any investment made in communications technology for GMDSS compliance can provide operational returns.

A tangible monetary return can be difficult to measure, however if a vessel's GMDSS console can enhance operational communication, thereby supporting crews to do their jobs better or shore teams to manage logistics more efficiently, then resources spent on GMDSS compliance can be viewed as an investment.

GMDSS defines the mandatory demands for vessel communication and alerting, and therefore the level of investment in equipment required, based on the Sea Area that a vessel operates in.

- Sea Area A1: An area where the ship can contact a Coastal Station by VHF radio and be able to send a Distress call by VHF/DSC. VHF range is maximum 60 km (25W) and Line of Sight is required.
- Sea Area A2: An area covered by an MF coastal station with the option of making a DSC Distress call by MF radio, which has an approx. 400 km range and follows the curvature of the earth.
- Sea Area A3: An area covered by satellite operator Inmarsat with the option of alerting using the Inmarsat C network.
- Sea Area A4: An area outside A1, A2 and A3. Outside of Inmarsat coverage (North and South of 70 degrees) so MF/HF communication remains the primary GMDSS carrier.

Future operations

A GMDSS console can contain a range of Inmarsat C, MF/HF and VHF radio products.

In recent years, with the trend of streamlining bridge systems, driven by the development of new navigation systems methodology, the traditional role of the radio officer has all but vanished. A key reason for this has been the introduction of 'watch' functionality within communication systems, so that the need for a dedicated person to monitor the airwaves for emergency communication has disappeared.

Streamlined, even one man bridge operation is especially relevant to the offshore sector, where vessels are in a stand-by position between operations so reducing crew count can introduce considerable cost savings.

With a single officer manning the bridge, critical systems all have to be accessible via far fewer interfaces than is common on a bridge of today. Which means information exchange and seamless integration between disparate systems is of paramount importance for the smooth and safe operation of the vessel.

For the GMDSS aspect of a bridge, communications equipment manufacturers have focused on custom protocols based on Lightweight Ethernet and other networking standards, which enable efficient integration and communication between products.

As it stands, we are not yet at the position where a single access point for operation of all systems in an entire GMDSS solution is available.

The technology is there, but equipment manufacturers will need to negotiate extensive legislation and testing before we see a truly homologated GMDSS console – where all systems can be operated from a single point on board ships or OSVs.

The focus on networking elements has borne considerable fruits in the area of installation, servicing and troubleshooting though. Considering that upkeep of GMDSS can cost as much as the equipment itself, providing cost efficiencies here is becoming very attractive to owners.

The cost of maintaining GMDSS equipment pales in comparison to the potential fines, or impact of loss of vessel and life due to faulty equipment. So as a whole, the industry will ensure surveys, regular and ad-hoc maintenance and replacement of faulty equipment are all priorities as part of their vessel safety programmes. But lower costs and more convenience for equipment service is an important differentiator for equipment manufacturers.

A key benefit of the fully networked GMDSS console is that service personnel can access the entire system from a single point. This alone can save significant amounts of time when, for instance, upgrading software.

For example, a touch screen interface can be used to show the status of all components in the GMDSS network, from the radios to the mini-C. This approach will streamline the engineer's job as he doesn't need to connect to and access every single piece of equipment, which again reduces the amount of time needed per job.

The benefits of networking also extend to the power supply and charger used on the majority of installations.

Operational status can be monitored from the message terminal and values altered if need be. The message terminal effectively can also operate as a GMDSS battery panel (a required GMDSS component) if necessary, eliminating a panel on the console, making it more manageable and streamlined - again, producing servicing cost savings.

This approach to GMDSS network maintenance has recently been extended, with maritime service companies now offering remote connection to GMDSS equipment on board from shore based service centres across the world, with the goal of reducing equipment life-cycle costs and maximizing uptime.

This allows the technology providers to conduct regular health checks on the GMDSS systems from shore, paving the way for preventative maintenance whilst further reducing the time and cost of visiting a vessel for manual servicing.

The set-up enables GMDSS products to be prepared for annual servicing from shore, reducing the time needed on board by up to 75 per cent. This is certainly in line with the lower costs and convenience that on board networking is already delivering.

Launch-pad

At the time of its conception, the idea behind GMDSS was to bring together technology to enhance safety at sea in a single system.

We are only now starting to understand the potential of truly networked bridge and communication systems, but we will have to wait before legislation and the market allows all communications systems to be operated from a single point.

The advances in installation and maintenance that networking has introduced is certainly a good launch-pad for further development in this field.

Today, owners can enjoy simpler logistics and lower costs for maintenance of their GMDSS equipment. Technology companies and product manufacturers will continue to push the potential of networking within GMDSS and communications systems as long as owners understand that GMDSS, though mandated, is actually a hugely positive development for operations, as well as safety. DS

About the Author

Henrik Dyrholm *is product line manager – safety with Cobham SATCOM, the developer of the SAILOR line of GMDSS technologies*

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KR RuleCheck software for EMSA

www.krs.co.kr

The Korean Register (KR) says that it is to supply the European Maritime Safety Agency (EMSA) with a new generation 'RuleCheck' software for port state control inspectors, which will be delivered at the end of this year.

In 2007, the classification society won a competitive tender to develop and supply the initial RuleCheck system to the EU agency. Based on its KR-CON system, RuleCheck is a product that brings together a list of the wide ranging rules and procedures required by port state control officers (PSCOs) in the Paris MoU region (covering the coastal states of geographic Europe and Canada).

KR says that it allows PSCOs to produce a checklist of the relevant rules and procedures applicable to specific vessels, be it for initial or more detailed inspections. The system is aimed at helping inspectors follow the complex elements of EU and international legislation.

The updated version will include a 'My Ship MLC' feature to address the Maritime Labour Convention (MLC), which has just come into force. This new function will identify the relevant MLC regulations that are applicable to a specific vessel.

On signing the contract with KR, EMSA project officer Jaime Gonzalez Gil said: "We have been using RuleCheck for more than five years and it has greatly assisted our PSC officers with their inspections."

"It has improved the quality and consistency of inspections across the Paris MoU region as well as enhancing efficiency."

Status upgrade for Marine Software

www.marinesoftware.co.uk

UK-based Marine Software has launched a new "Status" upgrade for its Marine Planned Maintenance (MPM), Marine Storekeeper (MSK) and Marine Purchasing System (MPS) software products.

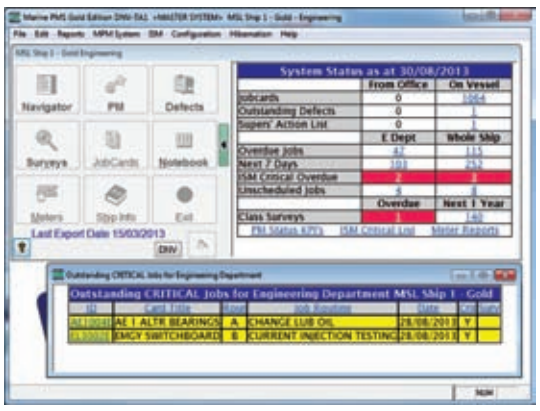
The system status is automatically displayed on screen upon launching the software, where ship/shore users can review it to include hyperlinks.

Marine Planned Maintenance users, for example, can identify any ISM Safety Critical Job Cards that have overdue jobs, and the specific PM jobs in question. The status also displays any outstanding ship defects updated from the office superintendent, highlighting that a change has occurred during the last data import.

In addition, users can sign off outstanding PM jobs directly from the displayed hyperlink results and look ahead seven days to identify all PM Jobs that will be due across all departments.

The Marine Purchasing System displays information to highlight requisitions out for quotation, awaiting approval and outstanding Purchase Orders.

The Marine Storekeeper includes the number of inventory items where stock on hand is zero, in addition to displaying the latest 50 stock issues and receipts with the click of a button.



Maintenance jobs can be more easily managed using the new system

Danish software company **Logimatic** has opened a German branch, located in Hamburg, and nominated Niels Finn as country manager for Sertica, its planned maintenance, fleet management and procurement software.

www.logimatic.com

DFDS chooses Adonis HR & Payroll

www.adonis.no

Norwegian software developer Adonis has announced that DFDS, a shipping company headquartered in Denmark, has chosen its Human Resource and Payroll system.

DFDS, which operates 30 routes with 50 freight and passenger ships, mostly in Northern Europe, will implement the Adonis system for all of its maritime operations.

"Key factors behind our choice were the fact that Adonis offers a seamless database solution which ties together the operators in our offices and onboard all our vessels in one core, central maritime Crewing & Payroll system," said Mikkel Groth-Andersen, IT project portfolio manager at DFDS.

"With Adonis we will be able to lift our maritime crewing procedures and increase our efficiency on many levels. The possibility to secure smooth and efficient integrated payroll processes in the various countries where we are working also counted."

Adonis says that its Crew Management and Payroll software includes modules such as Time & Attendance for work and rest hours control, Crew Rotation, Competence Management, and Crew Station Bill. Its Payroll system supports various countries, including the US, the Philippines, Norway and Denmark.

Per Ove Kviteberg, director of sales at Adonis, said: "The DFDS A/S contract represents a trophy in the Northern European market. We look forward to a long-term relationship with DFDS A/S, whose diversified operations gives us the opportunity to fully demonstrate the flexibility and capacity of our solutions."

DFDS will use the software to increase efficiency

Autoship Crane Module success

www.autoship.com

Autoship Systems Corporation (ASC) has reported that Rolls Royce in Norway and North American Shipbuilding in the USA have signed contracts to install its Autoload software and Crane Module on their new builds.

The Autoload 3D model includes a model of the crane, including all moving components, winches, hooks and falls.

When a user hooks a cargo to a crane, or multiple cranes, and moves it to another position, or moves the crane without a load, the vessel's floating condition, stability, and strength are updated in real time.

Autoship says that the resulting calculations have a high level of accuracy as the weight and COG of every separate part of the crane, plus the weight of wire paid out and the buoyancy of a load when hooked and partially submerged, are taken into account. The 3D model used also allows for the export of moment of inertia data to third party systems.

The module can be used in place of stability books, which Autoship says cover only a limited number of loading conditions, which must be simplified so that the operator is able to re-create the conditions using basic calculations.

"It was clear that the Crane Module was capable of more detailed calculations than most stability books carry out, and so it became necessary to obtain type approval for the Crane Module," the company said.

"With type approval it is necessary only for the class to review the input data for the Crane Module rather than try to compare calculation results to the stability book. This allows the operator to carry out more complex loading scenarios in a quick and easy fashion."

A telephone system for ships is being upgraded in half a century

NET.Co.,Ltd located in Ulsan, Republic of Korea announced that it succeeded in developing VoIP based Automatic Exchange Telephone System for maritime commercially for the first time in the world.

A specialized shipboard internal communications network and equipment small &medium sized company NET.Co.Ltd is known as one of the world's top companies that holds about 2,000 ships system installation performance since 1999.

The world's first commercial marine Automatic Exchange Telephone system organized by the government of the Republic of Korea as part of research and development projects meet the government policy to jointly develop and commercialize by NET.Co.,Ltd and DSME (Daewoo Shipbuilding & Marine Engineering) in that promoting the coexistence between both SMEs and large enterprises for about two years

Joint research and development group photo after the regular meeting

The early stage of the convergence of sea-based wired and wireless internet is underway as the popularization of smart phone and mobile devices have rapidly expanded.

Next-generation Internet-based services emerged as the core of digital convergence, the Internet telephone system with the development of maritime satellite communications is drawing new attention as the standard for voice transmission. The demand in the area of shipbuilding and offshore is steadily increasing due to the relatively low communication cost compared with analog phone system.

However, it hasn't been made localization because of cost, relatively low margins and lack of skill for special product development that can adapt to marine environment.

The difference between Automatic Exchange Telephone System for maritime and Land-use phone system is as follows.

First, it should meet the conditions a link with a broadcasting and alarm system in an emergency. Second, waterproof and explosion-proof featured phone is required to adapt a marine environment. In order to meet the demanding conditions on the sea, the basic equipment for routine calls was developed in appropriate modules for marine environment including an IP-PBX waterproof phone, indoor phone and salinity proof phone

NET.Co.,Ltd also supply development of programs for monitoring and managing these internet-based phone system on land as well as server development in conjunction with analog-based broadcast(ing)system.

An internet-based phone system for maritime has the following differentiated features compared with a conventional analog system. First, ships that are equipped with wireless communications interlocking with smart phone also can be used with corded phone system. This expanded option makes communications possible anywhere on the ship with the land. Second, it can meet communication needs to use message function on land use for crews on the ship. Third, it is (was) difficult for an operating ship to provide unified time information when passing through an international date line. It has a function of notification converting standard time provided by GPS to current local time on LCD monitor and is developed to offer additional functions providing information such as notice and menu guide.

In order to establish a seamless communication system, is prepared for increased traffic that designed data separately by applying dual power device, uninterruptible power supplies, the internet telephone traffic on connection port of PoE (Power over Ethernet) and VLAN (Virtual LAN) technology applied PC data traffic.

Additionally, dual system control enhanced stability via autoswitch mode technique and bypass routing system in order to use an extra network channel in case of network failure disconnects the Internet. In addition to it, a remote maintenance system has also been developed to monitor an IP-PBX and a phone status on land. IP - PBX can be monitoring in conjunction with the backbone network management program.

The system is able to provide uninterrupted service for the new system that has been developed to manage tens of and hundreds of phone status egularly by modifying on-off function and software.

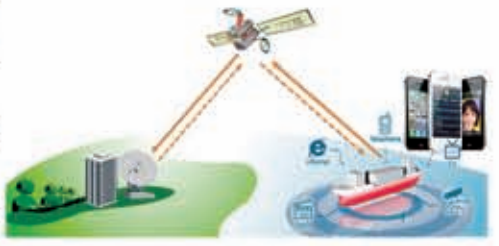
VoIP based Automatic Exchange Telephone System for maritime has been adopted as the standard for ship's design by DSME Ten ships already are being operated equipped with new system among 50 ship's order such as LNGC, container and Pipe Laying Support Vessel (PLSV). Additionally, more than 10 ships are built by Daewoo Romania Mangalia Heavy Industry with DESC design. It will be equipped with the tanker that is scheduled for construction in United States Nassco shipyard.

A Daewoo Mangalia Heavy Industry built container was delivered with new telephone system last June.

A new developed domestic applied domestic technology is accelerating globalization by entering into the shipyard in Europe.

VoIP Automatic Exchange Telephone - SWAN IPT 3000S

A specialized shipboard internal communications network and equipment company Net Co.Ltd is commercializing through ongoing research and development for more than ten years not only an internet-based phone system for maritime but All-IP based CCTV system development for maritime, Wi-Fi-based new concept time information system, a remote maintenance management system for an internet-based equipment. The Net Co.Ltd is pursuing global markets through commercialization based on successful technology development.



The company is continuing its efforts to grow a global player in its own industry, while proceed research and development of new networks for ships and offshore floating units

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www.gl-maritime-software.com

ShipServ signs AET

www.shipserv.com

ShipServ has announced that AET, which operates a fleet of 77 petroleum vessels, has chosen the TradeNet platform for its e-procurement activities.

ShipServ says that it now has over 15 tanker owners and operators trading on its TradeNet platform.

AET is headquartered in Kuala Lumpur but its procurement activities are based in Singapore, responsible for around 60 in-house managed vessels including VLCCs, Suezmax and Aframax tankers.

ShipServ says that AET was attracted to TradeNet by the ability to standardise transactions with all its suppliers and avoid manual duplication. It adds that AET is connected to ShipServ through its current ABS Enterprise system software suite, with the entire implementation process taking less than two weeks.

"We are delighted to welcome such a major tanker owner-operator to the ShipServ community," said Sharon Gill, director of sales for ShipServ.

"To bring such a highly-respected company onto TradeNet really demonstrates that ShipServ is the preferred partner in this sector. We look forward to working with AET as it uses TradeNet in the future."

Tanker owners and operators trading on ShipServ include AP Moller-Maersk, Teekay Shipping, BP Shipping, Chevron Tankers, Nordic Tankers and OSG Shipmanagement, while in Asia shipowners and operators currently using ShipServ include BW Fleet management, Epic Shipmanagement, MSI Shipmanagement, Misuga, K Line Shipmanagement, Prisco and Seacor Marine.

AET will now use TradeNet to manage its e-procurement

Three new Euro contract for ABS-NS

www.eagle.org

American provider ABS Nautical Systems has announced the signing of three new contracts with European companies for use of its NS5 Enterprise software.

Monaco-based C. Transport Maritime S.A.M., as well as Central Mare and Consolidated Marine Management, both from Greece, have all taken advantage of ABS's Newbuild Programme, which offers complimentary software to ABS-classed vessels built after January 1, 2009.

Athens-based Central Mare plans to utilise the Energy & Environmental Manager, Maintenance Manager and Hull Inspection modules on two of its ABS-classed newbuilds.

Consolidated Marine Management, headquartered in Piraeus, will implement the Energy & Environmental Manager and Hull Inspection modules on four of its ABS-classed newbuilds, as well as an additional vessel that transferred its class to ABS.

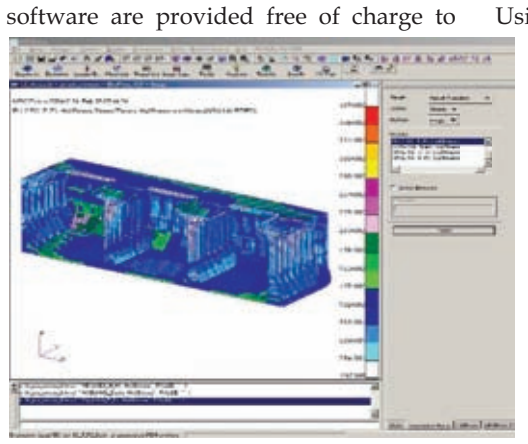
Finally, C. Transport Maritime S.A.M., based in Monte Carlo, will implement the Energy & Environmental Manager and Hull Inspection modules on seven of its ABS-classed ships.

CSR software 7.0.0 released

www.classnk.or.jp

Classification society ClassNK has released the latest versions of its IACS Common Structural Rules (CSR) structural assessment software.

The updated PrimeShip-HULL(Rules)/CSR and PrimeShip-HULL(DSA)/CSR software are provided free of charge to customers planning to perform CSR structural assessments.



The software is provided free to ClassNK customers

The former, which can be used for both bulk carriers and tankers, is designed to perform structural evaluations using the scantling formulae defined in the CSR.

The latter is designed to perform the direct calculations defined in the CSR. Using FE models, users can execute FEM analyses through the use of special features like the automatic identification of structural members and compartments. A function to help users navigate the operation process is also provided.

ClassNK says that both applications have been updated to help make design work more efficient.

Customers planning to perform CSR structural assessments are invited to contact ClassNK's Hull Department or Natural Resources and Energy Department to apply to use these products.

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Using IT for the MLC

The Maritime Labour Convention (MLC) 2006 finally came into force during the summer of 2013, bringing with it a number of guidelines and recommendations pertaining to life on board ship for modern crewmembers – sometimes described as a 'seafarers' bill of rights'. *Digital Ship* examines some of the provisions, and areas where IT may be able to help

On August 20, 2013, the Maritime Labour Convention (MLC) 2006 entered into force and became binding international law for the "first 30" – the 30 countries with registered ratifications on August 20, 2012 – and will enter into force for all other countries that have ratified it 12 months after their ratifications were registered.

Described as the "seafarers' bill of rights", the MLC sets out standards, which are compulsory, and guidelines, which are not binding.

The effects of the new regulations have been almost immediate – in both Canada and Denmark ships were detained within weeks of MLC entering into force, in each case being stopped over a lack of employment contracts.

Following intervention by both Port State Control and the International Transport Workers' Federation (ITF) both vessels are now MLC compliant.

Areas covered by MLC include requirements in terms of work hours and medical care as well as recommendations in terms of communications, entertainment and distance learning – all areas in which IT can play a decisive role.

The limits on **hours of work or rest** come under the 'standards' category, and will be compulsory for applicable shipping companies.

Each country is required to fix either maximum hours of work (not more than 14 hours in a day; and not more than 72 hours in a week) or minimum hours of rest (at least ten hours in a day; and at least 77 hours in a week). Hours of rest may be divided into no more than two periods, and the interval between periods of rest shall not exceed 14 hours.

Designing a crew schedule that complies with those requirements may prove a conundrum.

"It will depend on the size of the crew, the number of people on board," notes Brandt Wagner, maritime specialist at the International Labour Organisation (ILO), the UN agency that initiated the MLC.

"If you have a small number of people, it's not so complicated. If you have a large crew, like in a passenger ship, obviously it's going to be more complicated."

"In order to make it easier on the shipowner because they're trying to figure out how to do this effectively, the International Shipping Federation for example put together a program called Watchkeeper, which is sort of a software program that allows the user to establish schedules and also to keep track of hours of rest or hours of work."

Mr Wagner additionally notes that "these requirements on hours in the MLC are not new. They come almost entirely from a previous convention, Convention No 180, which was adopted in 1996."

In his eyes, the difference lies in that "the MLC is going to be almost universally ratified, universally accepted. And so what you're going to see now is many more countries than before implementing it and trying to keep hours of rest and hours of work and probably turning to technology in order to do it efficiently."

Natalie Shaw, director of Employment Affairs for the International Chamber of Shipping (ICS) and the International Shipping Federation (ISF), describes the ISF Watchkeeper package as "an electronic method allowing to record work and rest hours."

"The ship is still required to hold manual copies as well on board that can actually show the work shift patterns of the crew, but it's a mechanised system to help with the planning," she explains.

Ms Shaw told *Digital Ship* that usage of the software was increasing steadily, "but that's not just due to the MLC," she says.

"It's also due to the tougher requirements as far as the STCW convention compliance is concerned. (And) people want to have a better mechanism of reporting to meet the port state control requirements."

Still, now that the MLC has come into force in the first 30 countries that ratified it, Ms Shaw predicts that more and more shipowners will turn to IT to keep track of work and rest hours. Other maritime software providers, in addition to ISF, have also created programs in this regard, so shipping companies should at least have some options open to them.

Medical care

The Maritime Labour Convention also sets a compulsory standard for **medical care** on board. It states that the seafarer should be provided with "health protection and medical care as comparable as possible to that which is generally available to workers ashore, including prompt access to the necessary medicines, medical equipment and facilities for diagnosis and treatment and to medical information and expertise."

As a guideline for implementation, the ILO suggests that "all ships should carry a complete and up-to-date list of radio stations through which medical advice can be obtained; and, if equipped with a system of satellite communication, carry an up-to-date and complete list of coast earth stations through which medical advice can be obtained."

From Mr Wagner's point of view, the potential methods of complying with this could be broad.

"Basically, you have to have the means of communicating to shore to get medical advice. It doesn't really go too much beyond that," he says.

Despite this limited definition, a number of initiatives are taking place in the field of telemedicine.

'There is a move among the telemedical service authorities to actually use online technology to support this' – Natalie Shaw, ICS and ISF

"In the maritime medical community there is a lot of work going on to provide excellent ways of communicating with doctors ashore," notes the ILO expert.

"What is happening is that shipowners are genuinely trying to figure out how to do this very effectively. I think most shipowners want their crews to have the benefit of good medical advice. So they're facilitating this in order to provide the medical advice."

Mrs Shaw is of the same opinion. "There is going to be clearly an increased use of medical computer linked advice, sometimes by video-conferencing," she says.

"It is not mandated by the convention. The convention merely requires the ability to access medical advice from ship to shore. But certainly there is a move among the telemedical service authorities to actually use online technology to support this."

Video can be used to allow a doctor ashore to examine a patient on board and place a diagnosis, she says. If needed, the doctor can also demonstrate the procedure to apply.

As with work/rest hours management, the maritime telemedicine field contains a number of technology providers offering a range of services to bring medical expertise to vessels at sea, so ship operators looking to apply IT in this area should have no shortage of options.

Inspections

Hours of work or rest and on-board medical care are among the 14 listed elements that port state control officers (PSCOs) must check while carrying out **inspections** under the MLC.

Inspectors must see the table of shipboard working arrangements and verify records of work or rest hours, and are also advised to look at evidence that procedures are in place for radio or satellite com-

MLC facts

The MLC states (in article IV) that:

1. Every seafarer has the right to a safe and secure workplace that complies with safety standards.
2. Every seafarer has a right to fair terms of employment.
3. Every seafarer has a right to decent working and living conditions on board ship.
4. Every seafarer has a right to health protection, medical care, welfare measures and other forms of social protection.

The International Labour Organization's (ILO) Maritime Labour Convention, 2006, (MLC, 2006) entered into force 20 August 2013 in the first 30 States to ratify the Convention: Antigua and Barbuda, Australia, Bahamas, Benin, Bosnia and Herzegovina, Bulgaria, Canada, Croatia, Cyprus, Denmark, Kiribati, Latvia, Liberia, Luxemburg, Marshall Islands, Netherlands, Norway, Pa1au, Panama, Philippines, Poland, Russian Federation, Saint Vincent and the Grenadines, Singapore, Spain, St Kitts and Nevis, Sweden, Switzerland, Togo, Tuvalu.

For all other countries that have ratified, it will enter in force 12 months after their ratifications were registered.

Since August 20, 2013, all commercially operated ships of 500 gross tonnage or over which fly the flag of one of the first 30 countries, if they operate on international voyages, are required to carry two specific documents: a Maritime Labour Certificate (MLC) and Declaration of Maritime Labour Compliance (DMLC).

These documents provide prima facie evidence that the ships are in compliance with the requirements of the Convention, including areas such as minimum age, seafarers' employment agreements, hours of work or rest, payment of wages, on board medical care, the use of licensed private recruitment and placement services, accommodation, food and catering, and health and safety protection and accident prevention.

In addition, ships flying the flag of countries that have not ratified the MLC are also subject to inspection with respect to working and living conditions for seafarers when those ships enter in port of countries where the MLC is in force. This provision, called "no more favourable treatment," aims at helping to ensure fair competition for shipowners who comply with the MLC. ■

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'Good shipowners, the ones who are looking to the future there, they are trying to make their ships attractive places to work' – Brandt Wagner, ILO

munications for medical assistance.

Other areas of inspection include: minimum age, medical certification, qualifications of seafarers, employment agreements, use of recruitment and placement service, manning levels for the ship, accommodation, on-board recreational facilities, food and catering, health and safety and accident prevention, on-board complaint procedures, and payment of wages.

Communications

Communications and entertainment come under the non-binding recommendations set by the MLC. These guidelines state that seafarers should be granted "reasonable access to ship-to-shore telephone communications, and e-mail and internet facilities, where available, with any charges for the use of these services being reasonable in amount."

"It's guidance in this case, it's not so biding," notes Mr Wagner, of the ILO.

"This convention is implemented through national laws so many of these things have to be worked out at the national level."

Mr Wagner does believe, however, that some shipowners are endeavouring to improve their communications facilities "because it's good business and it's the way they're going to attract people on their vessels."

"The idea of going out and being isolated for a long period of time is unacceptable to young people today," he notes.

"Good shipowners, the ones who are looking to the future there, they are trying to make their ships attractive places to work by providing as much internet access as possible, easier access to movies, easier access to calling home. Many ships have direct e-mail and communications so seafarers are really never out of contact with their family."

Natalie Shaw, of the ISF, has noticed another trend.

"A number of companies have started to put that as one of the benefits when they negotiate their collective bargaining agreement," she says.

"As part of the package which they're negotiating on an annual basis, the union side may well put forward a request for these services and products and pay increases. And some companies have chosen to suggest provision of e-mail and computer access on board their vessels as part of that package."

Connectivity at sea comes at a cost to shipowners, but several satcom providers offer solutions to control that cost and/or share it with the seafarers.

For instance, individual crew members can be assigned a data allowance, or a pay-as-you-go account which they can top up when needed. The International Shipping Federation is additionally pushing for free Wi-Fi provision for seafarers in ports.

"There is also certainly an increase to try and encourage ports to provide free Wi-Fi access in port," says Ms Shaw.

She explains that as seafarers move to smartphones, they want to bring their own device to sea and expect to be able to use it to write e-mails and access applications.

Recreation

The MLC guidelines on **recreational facilities** on board suggest that, where practicable, consideration should be given to: television viewing and the reception of radio broadcasts; "showing of films, the stock of which must be adequate for the duration of the voyage and, where necessary, changed at reasonable intervals"; and "electronic equipment such as a radio, television, video recorders, DVD/CD player, personal computer and software and cassette recorder/player".

Although these provisions are not compulsory, several satcom providers obviously see a potential market there, as they are getting ready to launch content packages in addition to their more typical bandwidth and airtime offerings.

Another MLC recommendation is to allow for "correspondence courses in a variety of subjects of interest to seafarers".

There again, several companies are already offering maritime distance learning and computer based training packages, across an almost limitless range of subjects. Shipowners that wish to provide educational content through the use of IT should have no problem doing so, in conjunction with a variety of providers.

Looking ahead

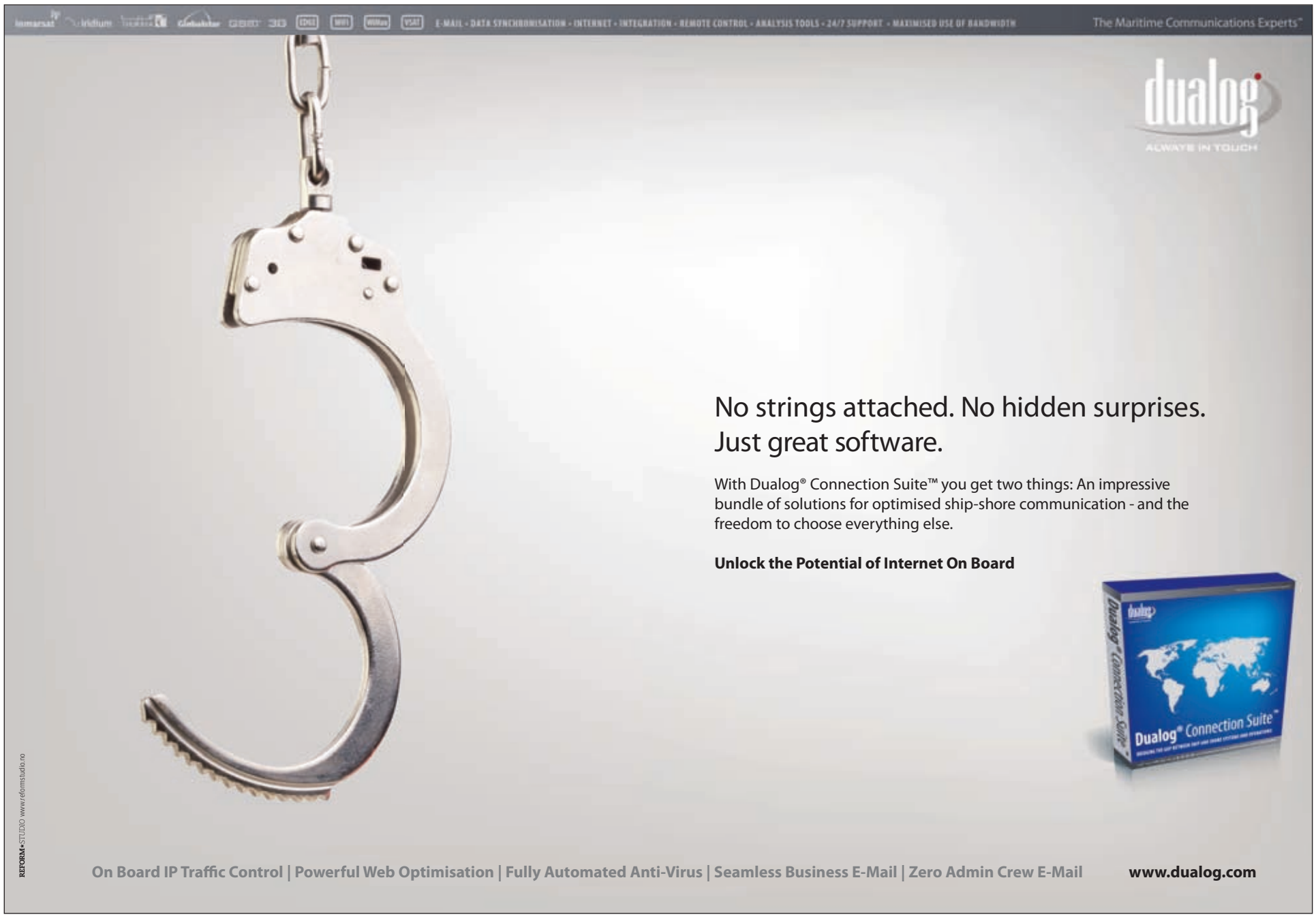
Although those latter two recommendations on communicaiotns and recreation are just that, recommendations, they might become compulsory in the future.

The Seafarers' Welfare Convention, which the MLC has revised, states that "welfare facilities and services shall be reviewed frequently to ensure that they are appropriate in the light of changes in the needs of seafarers resulting from technical, operational and other developments in the shipping industry."

"A convention is a living document," says Mr Wagner, of the ILO.

"In the future, it can be amended. The convention is designed to allow amendments that may actually make some of these things that we're talking about mandatory."

"As the needs come, as people recognise what is possible, the things will happen. So the Maritime Labour Convention isn't something that was just adopted and will stay entirely as it is forever, it will change with the needs of the industry." DS



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Windows XP: End of Support – End of an Era?

Microsoft support for Windows XP is coming to an end, with the operating system having played its part in more than a decade of corporate IT infrastructure development. In the maritime industry XP has been an extremely popular platform, particularly on board ship – so what should users do know, *asks Gary McDonald, IT@Sea*

As many involved in IT will no doubt be aware, support for the popular Microsoft Windows XP operating system ends on 8 April, 2014 (support for Microsoft Office 2003 ends at the same time).

What might this mean for shipping companies and how might ships' IT systems be affected?

Windows XP and, to a slightly lesser extent, Microsoft Office 2003 are still prevalent on ships today. As recently as last month I was requested to downgrade a new computer destined for a ship from Windows 7 to Windows XP, for several reasons – XP was explicitly trusted, the software being installed to run on the system was originally designed for XP and, above all, it was the specific Windows user interface that the ship's users were familiar with.

The version of Microsoft Office selected was 2007 for two reasons: it was the corporate standard for the shipping company as a whole and also the minimum version required for the Microsoft InfoPath-based eNOA/D solution in use on the ship.

The Windows 'eXPerience'

Windows XP, codenamed 'Whistler' prior to release, was originally launched in August 2001 and despite some initial criticism (mainly regarding security) it soon became clear that the operating system was going to be popular.

One fundamental reason was that XP was built using the foundation of Windows NT – a platform previously only used for server versions of Microsoft operating system.

Microsoft released the first major service pack (SP1) for XP in 2002 and the second (SP2) in 2004. It was the second service pack that many believe contributed most to the continued popularity of XP because it contained what were widely acknowledged as significant improvements.

Service pack 3 for XP was released by Microsoft in 2008. It is now highly likely that SP3 will be the last service pack for XP – i.e. it is not believed that Microsoft will 'wrap up' all individual updates issued since SP3 to create SP4 before support for the product ceases.

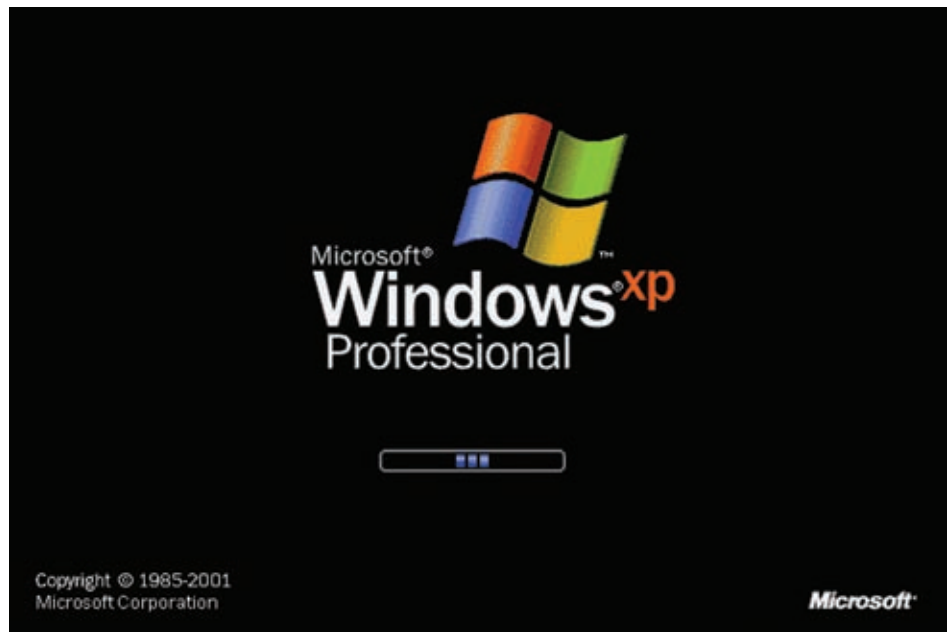
It's not difficult to understand why such 'legacy' operating systems and application suites are still deliberately selected by shipping companies – especially Windows XP, which was Microsoft's latest client-oriented operating system for longer than any of its predecessors. It was not superseded until 2007 when Microsoft launched the Vista operating system.

Unlike XP, Vista was not widely accepted in the maritime industry and this is likely one of the reasons why XP has continued to be prevalent in our industry to this day - some 12+ years after its initial release.

For shipping companies that now accept and deploy Windows 7 it seems that, for them, Vista simply never existed (which is probably subject matter for an entirely separate article!).

So the question is – will the industry be forced to replace XP, for example with Windows 7 or Windows 8?

As much as it makes sense to 'stay current' I envisage seeing computers on ships running XP long after the support from Microsoft ceases. For shipping companies that do not have a specific policy to upgrade the standard environment on their ships (in terms of keeping them current) I'm sure XP will only fade away as ageing hardware is replaced and the replacement system vendors do not provide the option to downgrade to XP.



Windows XP has been a popular choice for shipboard computers, but support for the operating system will shortly be withdrawn

The vast majority of vendors ceased providing the Windows XP downgrade option with the advent of Windows 7 in 2009.

Outlook Express

A related subject sometimes overlooked when considering migration from Windows XP is Microsoft Outlook Express. This is also still used on many ships as the standard e-mail client so the fact that it only exists (by default) as an optional component of Windows XP needs to be considered.

When Microsoft launched the Vista operating systems Outlook Express was superseded by Windows Mail – based on Outlook Express, it was the optional built-in e-mail client of Windows Vista.

When Microsoft subsequently launched Windows 7 many were surprised to discover that it had no such optional / integrated e-mail client.

Some months separated the launch of Windows 7 and the launch of Windows Live Mail, which effectively superseded Windows Mail. However, Windows Live Mail differed from its predecessors in that it was not shipped with the operating system (by then already launched) – i.e. it had (and still has) to be installed separately.

As it seems unlikely that Microsoft will 'wrap up' XP with a fourth service pack there is potentially another problem.

If you have recently installed Windows XP SP3 and then invoked 'Windows Update' you probably know how this story ends. During my last such build (mentioned above) the system downloaded and installed 153 updates (these being mainly security fixes individually issued by Microsoft since 2008 / SP3) over a period of approximately 90 minutes.

Several of these updates were required before approximately 40 more could be detected, downloaded and installed. Ironically, one of the updates caused the Microsoft 'Windows Update' software to cease functioning. After spending far too much time determining which particular update caused the problem it was removed and I was finally able to reach the point where no more updates were required.

I will not be surprised to see unofficial (non-Microsoft) fourth service packs for Windows XP in 2014 – and therein lays another problem. Who knows what these might contain and what they might do to a previously well-functioning operating system?

Destroying an operating system in an office or home computer is one thing – destroying an operating system on a ship is something else entirely, especially in the absence of a 'real' broadband connection.

For Windows XP it seems that the nails might already be going into the coffin.

Migration

When Windows 7 was released most maritime software manufacturers faced only minor problems adjusting their software, originally designed for Windows 2000 and Windows XP, to run correctly with Windows 7.

For example, some only had to consider the impact of the new 'User Access Control' which was initially renowned for displaying what appeared to be 'stern warnings' to users about what software applications were doing and asking those users if the activity should be permitted.

A user electing to 'take the safe option' and prevent the activity (which might be nothing more than the software creating a file to store user preferences for the first time) suddenly found that their choice caused the said application to crash.

Most system builders preparing Windows 7 systems now routinely disable 'User Access Control' in much the same habitual way as they would disable the 'Windows Firewall' when preparing a Windows XP system.

Windows 7 not only provides 'Compatibility Mode' options (such that applications can be specifically run via a built-in real time XP emulator), it also ships with a free licence for 'Virtual Windows XP'. If an application designed specifically for XP refuses to work correctly via real time XP emulation then there is a very good chance that it will work correctly inside the included 'Virtual XP' environment.

For shipping companies considering replacement of systems on ships previously running Windows XP, Windows 7 would seem to be a safe bet, although it is worth considering that the operating system has two distinct variants – 32-bit and 64-bit.

Although the components of the 64-bit operating system should take care of 32-bit applications and, to some extent, drivers, it is well worth checking with individual application vendors.

They might not have created 64-bit versions of their applications (this is very common) but they should have at least verified that their applications work properly on 64-bit operating systems such as Windows 7-64.

We have experienced many issues with older shipping applications which were never designed to run on 64-bit systems. These applications might not be a known entity until you find yourself on the ship and discover that the application just doesn't run.

This is what 'XP Mode' within Windows 7 Professional is intended for but that can also be far from easy to get up and running given that it's also an optional, downloadable add-on.

Windows 8

By default new personal computers are now supplied with Windows 8 and we recommend always trying to buy new computers with Windows 8 Professional edition. This includes downgrade rights to Windows 7 Professional – in our opinion worth the extra expenditure.

I'm often asked about Windows 8 for ship systems and my initial reaction (having already met many of the Captains) has sometimes been "Open the youtube.com website and search for 'using Windows 8 for the first time'."

For many ship staff used to Microsoft's

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'traditional' user interfaces the default user interface of Windows 8 is quite a departure. Conversely, for others it is naturally intuitive – especially on ships equipped with VSAT (or other non pay-as-you-go systems) where ship staff already use touch-screen devices running Windows 8, or non-Windows operating systems, to access the internet.

If you happen to watch any of the youtube.com video clips and recognise the behaviour then fear not – rumour has it that Microsoft are reinstating the infamous 'Start Button' in Windows 8.1, scheduled for release later this year.

If previously running Windows XP, similar considerations apply when moving to Windows 8 as to Windows 7. An important difference is that Windows 8 is considerably younger than Windows 7 so it is even more important to check that software originally designed for Windows XP works properly on a system running Windows 8.

IT Overhaul?

Many ships have peer-to-peer networks comprising computers running Windows XP. Many ships have dedicated Windows Servers, Windows Domains and networked computers running the Professional Edition of Windows XP. Both are perfectly good, stable solutions.

For shipping companies operating fleets predominantly running Windows XP the announcement of its effective 'end of life' has invoked a mixture of responses.

For some it's a case of "it's not broken so don't fix it." For others, having to replace ageing hardware, supplying direct replacement computers running Windows 7 or 8 is the preferred solution.

For those having a total rethink it's not too long before the advantages of 'thin clients' and 'virtualisation' or Linux are being considered.

I am probably not alone in saying that I will miss the 'Windows eXPerience'. When confronted with an on board installation ravaged by viruses and malware it was often quite amazing what could be achieved by re-applying Service Pack 3. Very often it would totally restore a system that was otherwise on the brink of complete reinstallation.

That is not something that can be done with, for example, Windows 7. Once the operating system has detected that a service pack has previously been applied it will not, by default, subsequently allow it to be re-applied – which is shame.

Whilst I will certainly miss the 'old workhorse' I look forward to experiencing the advantages of what I believe could replace it – e.g. 'virtually indestructible', virtual operating systems on the ship's workstation computers.

Perhaps the retirement of Windows XP will result in increased deployment of such platforms which provide major benefits in terms of resilience, security and relative ease of management.

The benefits of thin client platforms (such as Microsoft Desktop Services and VMWare Virtual Desktop Infrastructure, to name but two) are primarily described in contexts relating to remote or branch offices which is why they are equally applicable to ships.

The ship's main server hosts the applications and / or the client's entire interactive user interface (e.g. Microsoft Windows). The client systems can be bespoke terminals or standard computers providing only that they support the remote protocol of the server (e.g. the Remote Desktop Protocol in the case of Microsoft).

A key advantage is that by deploying a single server with a single suite of applications all clients use the same versions of those applications and, perhaps more importantly, each client's individual data is centrally stored.

With hardware redundancy factored into the central storage system, and automatic backups of that centrally stored data being made, data is secure and there is no need to consider which users are storing what and where – and how (or if) that data is being backed up.

Another key advantage of the architecture is that the server systems normally provide powerful remote management and multiple site deployment options. This potentially enables not only remote management of individual ships but also remote management of the fleet, thereby significantly reducing IT administration overheads.

As more of our terrestrial IT environments are 'entering clouds' and maritime bandwidth availability continues to broaden (albeit at a significantly slower rate than terrestrial bandwidth availability) it's not too difficult to imagine a future where terrestrial clouds play host to ship systems, to some extent.

In the meantime, however, a more immediate future with each ship's server effectively acting as a 'remote micro-cloud' would seem to be the favoured option.

As ship system designers and builders still face the inevitable question "How is that scenario affected by the ship losing internet connectivity?", a remotely managed client / server environment seems to be a sensible option – at least for now…

With these new options and improving technologies on the horizon, the transition from XP may in fact be seen as a necessary kick start to move today's ships into tomorrow's IT environment. While the transition might be challenging, the potential benefits should make the effort worthwhile and provide stability in shipboard infrastructure for many years to come. **DS**

About the author

Gary McDonald *is technical director of IT@Sea UK, a company specialising in all aspects of IT and Communications for the shipping and offshore sectors. Mr McDonald has worked with a number of major shipping companies during his more than 15 years in the industry, including BP Shipping, Chevron, BG Energy, Andrew Weir and Bibby Ship Management.*

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Online and on premise – a happy marriage

Office based software systems can be effective in managing vessel operations and the movement of containers – but greater efficiencies are available once this data is moved online and real time information can be exchanged with stakeholders inside and outside the company, *writes Lars Fischer, Softship*

A few years ago we all expected the world-wide-web to descend into the world-wide-wait. Low grade connections coupled with exponential user growth was seriously affecting performance and, for a while, internet use for business was on the brink of becoming a big white elephant.

But technology continued its onward march and has now, in the main, resolved many of the connectivity and access issues. Today, our businesses remain hugely reliant on the web for communication, transactions, processing and many other functions – shipping is no exception.

In recent years, we've seen shipping companies swap allegiance from commissioning and building bespoke software solutions in favour of buying 'off-the-shelf' packaged software.

They've come to realise that packaged software delivers an excellent solution at a fraction of the cost. In addition, it tends to come with a proven performance record and always sits on the most up-to-date technology platform.

Some ship operators worry that packaged software is a 'one size fits all' solution and so will not accommodate company or market peculiarities. But good software providers incorporate 'switching' into their applications which allow users to fully customise their software to the business processes and requirements including the ability to make micro-changes at page and field level.

Web integration

The migration from bespoke to packaged software is being fuelled further by an integration with web services. Since packaged solutions are constantly being updated to take advantage of technology enhancements they have the advantage over bespoke systems which gradually outdate over time.

A good example is a ship operator who has a requirement to communicate regularly with a network of outstations – such as a liner company and its agents.

Information such as tariffs, space availability and schedules are held centrally on an existing application at company headquarters, but agents across the world need real-time access to this information if they are to provide good customer service.

Good software will include a series of web interfaces to allow agents to do just that.

Because the web allows immediate access to a carriers' internal systems, agents can also directly input information such as rate requests, bookings and bills of lading. This allows the carrier to instantly calculate projected revenues and voyage pre-calculations enabling the optimum cargo mix and voyage profitability.

Another great example is using the web to encourage suppliers and vendors to feed information directly and immediately.

At any one time, a containership operator is likely to have between 5-7 per cent of its container stock in maintenance or repair. To ensure a ready supply of boxes, the operator must move its containers through the repair cycle as quickly as possible.

But for a lot of carriers this involves a time consuming and lengthy estimation and approval process over e-mail. Connecting these repair shops and operators by a web portal allows a much faster turnaround for each box.

A carrier's internal system can be set-up to include repair approval limits to speed up the approval process. Estimates are then matched with agreed tariffs, irregularities and duplicates highlighted, and approval, in the form of a work order, given back to the yard – also over the web or based on standardised EDI messages.

If a survey is required, a survey order can be automatically triggered and sent online to the relevant surveyor who will return the survey report directly to the carrier's system. Results are validated against approved limits and automatic approval is then given.

At the end of the process, the yard will submit an online invoice which is automatically reconciled and mismatches highlighted before approval is given.

This entire process is made more efficient and much faster due to the web and EDI linkages created between the carrier's central system and those of its outstations.

Our experience shows that these applications can reduce the amount of container stock tied-up in the repair and maintenance process by around 50 per cent. With a cost to the operator of around $2 per box, per day incurred whilst a container is out-of-service, this is a significant saving. It also allows more boxes to be available to

Online services can integrate the information in various software systems across a company's workflow

customers, thus maximising revenue for the vessel operator.

Customer service

Web access is not only useful for outstations, suppliers and vendors, but it can also deliver an enhanced user experience for customers. Many carriers allow their customers access to their specific data through a dedicated web portal.

Customers can use the portal to request a rate for a particular consignment. The portal will ensure that customer requirements are captured in a standard format which enables the carrier to respond quickly and accurately. It also allows the carrier to analyse the potential profitability of the order before it is accepted.

Customers can search vessel schedules directly from the carrier's own database ensuring the information they receive is up-to-date. It also eliminates the need to re-key data. The customer can then make an immediate booking for a preferred voyage.

Web interfaces may also be used to create and finalise a bill of lading. Good portals will include pre-set templates pre-populated with as much information as possible leaving the customer to complete just a few fields. Draft bills can be viewed and amended quickly and easily before being submitted automatically to the relevant documentation department.

Giving secure web access to a carrier's internal systems is also a good way of reducing the number of routine calls made to staff. Although retaining direct customer contact is good, customers and carriers alike will benefit from being able to obtain routine data with the minimum of fuss.

Cargo tracking is a good example where any cargo-related event could be made visible to customers. Cargos can be tracked online by a variety of parameters such as booking reference, bill of lading, container reference, vehicle or cargo item number through a web browser.

Cashflow can also be improved through linking web access to internal client-server systems.

Taking again the example of a containership operator and its global network of agents – a browser based application can easily be implemented to allow agents to view their own tailored Statement of Account.

Agents can log-on through the browser to view their current balance, showing collected freight and agency commissions for all relevant voyages as well as a record of disbursements.

By allowing agents direct access to a carrier's internal systems, timely information is received, anomalies and disputes can be settled quickly and the period of time between reconciling an agent's account and receiving the payments can be appreciably shortened.

Security

Of course, security is an issue. Opening internal databases, operational systems and other software to the world-wide-web is a big step.

But intelligent software packages will contain sophisticated facilities allowing the carrier to set the rules and parameters for individual and group users, including access and retrieval rights. It will also control the sharing of data between multiple companies, their subsidiaries and their outstations based on defined user privileges.

Installing packaged software allows shipping companies of all sizes to compete alongside those with deeper pockets who've taken the decision to invest in bespoke applications. But linking these internal systems with web services to allow data sharing brings a range of additional and valuable benefits.

Process efficiencies, cost savings, cashflow improvements and enhanced customer service can all be achieved through an intelligent marriage of web and existing technology. DS

About the author

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Kongsberg to upgrade Dutch training facility

www.km.kongsberg.com

Kongsberg Maritime has announced that it has won the tender to upgrade the bridge and engine room simulators at a maritime training facility in Delfzil, The Netherlands.

Starting autumn 2013, the Norwegian provider will deliver the latest versions of its Polaris and Neptune simulators to Noorderpoort Eemsdollard – Energy & Maritime.

The contract includes an upgrade of simulators which Kongsberg had installed at Noorderpoort Eemsdollard's Abel Tasman College in 2006, which have now been moved to the new facility in Delfzil.

In addition to updating the simulators with the latest models, the upgrade will enhance the existing instructor stations.

"This extensive upgrade to our facilities will help us to enhance the quality of our simulation training through the use of standardised simulators and improved functionality for our instructors," said Wim van de Pol, member of the board.

"The new suite of cutting-edge simulators will also support our ability to attract more students for our already highly regarded courses, so the upgrade will play an important part in our future growth and success."

The new Polaris bridge simulator system will feature: full mission bridge (DNV Class A), including 270° horizontal field of view, six full mission bridges (DNV Class B) with 60° to 120° field of view, and seven GMDSS stations integrated with each bridge.

The training facility in Delfzil will have its simulator systems upgraded

The Neptune engine room simulator will include an instructor station and 15 student stations. Kongsberg Maritime will also deliver a Neptune Full Mission ERS Class B simulator with engine control room console, main switchboard and engine room equipment, in addition to a Neptune Power Plant Simulator including an instructor station and 15 student stations.

"We have a strong footprint in The Netherlands, with simulators installed at several leading training organisations so we are pleased to have been selected for the upgrade at Noorderpoort Eemsdollard - Energy & Maritime," said Harald Kluken, area sales manager, Kongsberg Maritime.

"We're confident that our current ship's bridge and engine room simulation technology will enhance instructor capabilities and student satisfaction."

MarineMTS to provide software to ECDIS manufacturer

www.marinemts.com
www.intermarine.gr

Aberdeen-based MarineMTS has said that it has signed a deal to supply software to Greek ECDIS manufacturer Intermarine Electronics.

The contract will see Intermarine use Microplot 7, MarineMTS' proprietary software, in its own-label ECDIS products. The Scottish developer will also provide support and maintenance services to the Greek manufacturer over the next 10 years.

"This deal will see our products, developed in Scotland, used in a global context," said Wynne Edwards, managing director of MarineMTS.

"As a maritime nation with an illustrious shipping history, around one in five of the world's tankers is from Greece. Because of this, Greece has always been at the centre of marine product development, and it's great that our own product will now be a part of that."

MarineMTS says that through provision of Electronic Chart Systems and SIS Radar marine simulation systems, it can offer bespoke ECS and monitoring systems and on-going updates.

It adds that it is currently working on an enhanced version of its software: Microplot 8 is due to launch to market in 2014.

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Sweden testing new Arctic monitoring system

www.sjofartsverket.se

The Swedish Maritime Administration is testing a new tracking system for Arctic maritime traffic as part of the icebreaker Oden's Arctic expedition.

Maritime traffic in the Arctic is rising dramatically, it notes, adding that the aim of the project is to improve the potential for sea rescue, icebreaker assistance and environmental protection.

The solution is based on using vessels as base stations to communicate information regarding the surrounding traffic, as well as the vessel's own course, speed position and other relevant data.

The information is interchanged with a shore-based coordination centre via a satellite link. The same satellite link is used for the interchange of navigation routes and other necessary communications between the vessel and the shore-based centre.

MICE (MONALISA Ice) is an R&D project conducted by the Swedish Maritime Administration and the Chalmers University of Technology in Gothenburg. It builds on the work of the existing MONALISA project, which permits the global monitoring of maritime traffic without the need for shore-based infrastructure, such as AIS base stations or radio communications.

"Sweden has lengthy experience of winter navigation in the northern areas of the Baltic and Gulf of Bothnia. Our expertise is a valuable resource for safety and environmental protection now that new traffic patterns are emerging in the Arctic," says Per Setterberg at the Swedish Maritime Administration, who is project manager for MICE.

"We are capitalising on the Sea Traffic Management (STM) concept developed within the framework of the MONALISA project by adapting it for the Artic environment."

According to the IMO, 2013 seems set to be a record year for maritime activity on the Northern Sea Route. There has been a ten-fold increase in the number of vessels using the route during recent years. In 2012, 46 vessels sailed the whole route, compared to 34 in 2011 and only four in 2010.

In related news, the Swedish coastal radio network is also set to benefit from a SEK 50 million (approximately $7.6 million) modernisation programme, following an announcement by the Swedish Maritime Administration.

"The coastal radio network is a fundamental part of our maritime infrastructure. The planned investment will improve its stability and increase maritime safety even further," said Jon Granstedt, the Administration's president of construction and engineering.

The Swedish coastal radio network is owned and operated by the Swedish Maritime Administration and is mainly designed for search and rescue activities at sea, but is also used for piloting and navigation.

In emergency situations, both commercial and recreational shipping use the radio network to alert the SMA's Joint Rescue Coordination Centre in Gothenburg, which in turn uses the same system to lead rescue efforts.

The SMA decided on a modernisation programme because the current technology has become outdated and expensive to maintain.

The improvements will be carried out in cooperation with Frequentis, an Austrian company specialising in communication and information solutions for safety-critical applications.

The new Sweden-wide communications solution will draw on the Frequentis MCS 3020 IP system. This fully IP-based, open-architecture system will be supplied with 55 operator working positions for 12 control rooms across Sweden, as well as more than 300 IP-based VHF radios from JOTRON.

"The investment is about SEK 50 million. However, the IP technology will reduce transmission costs, so the annual costs of the system will remain the same as today," said Mr Granstedt.

The Swedish coastal radio system was originally built by Swedish Telegrafverket and consisted of a number of independent coastal radio stations. In 1994, these were amalgamated into a nationwide network of core switches.

SMA has owned the system since 2003 and the radio network is also used by the Swedish Coast Guard, Stockholm Radio and the Swedish Armed Forces.

Swedish coastal surveillance will be boosted by investments in both Arctic monitoring and a new radio infrastructure

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Xenemetrix testing fuel monitoring system

www.eurocontrol.ca

Xenemetrix is field-testing its new Petro-Marine XRF TM monitoring system, with its Canadian parent company Eurocontrol Technics Group announcing that it has started a pilot project with a shipping company headquartered in Israel.

Petro-Marine XRF TM is an onboard or hub-based X-Ray Fluorescence analysis system. It monitors sulphur levels in marine fuels, Cat Fines during bunkering of the ship and before actual fuel usage, sea water contamination in fuels, and wear metals and additives in lubricant oils.

Eurocontrol says that this facilitates regulatory compliance and preventive maintenance, as well as helping prevent engine failure.

The shipping company currently testing the system has not been named, though Eurocontrol describes it as "one of the largest container shipping companies in the world with headquarters in Israel," managing in excess of 100 vessels and associated with The Clean Cargo Working Group.

This would seem to suggest that the company in question is ZIM, though Eurocontrol did not wish to confirm or deny this to *Digital Ship* when asked.

Under the pilot project, Xenemetrix is installing the Petro-Marine XRF TM monitoring system at the shipping company's hub in its main port. Once the tests are completed, Eurocontrol says that the shipping company will consider implementing the system at seven of its shipping hubs worldwide.

For comparison, ZIM has 10 hubs around the world.

With Eurocontrol estimating that there are about 55,000 merchant ships in service, it says that the available market for its Petro-Marine XRF TM system approximates to $1.6 billion.

Space AIS satellite ready for launch

www.comdev.ca
www.exactearth.com

Canadian manufacturer COM DEV has announced that it has completed final testing of a new satellite to receive AIS signals in space at a Canadian Space Agency (CSA) laboratory in Ottawa, Ontario.

The low-earth orbit (LEO) Maritime Monitoring and Messaging Microsatellite (M3MSat) is now being prepared for shipment to the Russian Cosmodrome in Baikonur, in Kazakhstan, for a planned launch in December 2013.

The M3MSat is an R&D project of the CSA and Defence Research and Development Canada (DRDC), an agency of the Department of National Defence (DND). As the mission prime contractor, COM DEV designed, developed and built the satellite bus and its two payloads.

The primary payload is an advanced Automatic Identification System (AIS) for detecting vessels at sea. The secondary payload is a Low Data Rate (LDR) communications package that will receive and retransmit data from isolated earth-based transmitters.

DND has granted a licence to COM DEV's subsidiary exactEarth to commercialise the AIS data collected from M3MSat and integrate it with the data collected from the rest of the exactEarth constellation.

"We are very pleased that the M3MSat satellite has passed this crucial stage of testing," said Michael Pley, CEO of COM DEV International.

"The micro-satellite bus that we used has a great deal of potential for future space missions and it supports the most capable payload ever built for detecting ships through satellite-AIS."

"DRDC and the CSA are very important clients for the company and we are grateful for the opportunity to be their mission prime contractor on this significant research and development project."

Fuel monitoring system launched

www.auramarine.com

Auramarine, a Finnish manufacturer of fuel oil supply systems, has released an automatic system that controls the change-over procedure between Heavy Fuel Oil (HFO) and Marine Gas Oil (MGO) as well as allowing data reporting.

The Fuel Selector saves the data on the PLC Unit and converts it into a report for the use of the shipping company and relevant authorities. It allows the ship's crew to monitor the process data in real time.

While automatic change-over processes are supported, the system can also be controlled manually.

Auramarine notes that with new tightened sulphur emission rules coming into effect in the Baltic Sea, the North Sea, the English Channel and North America in 2015, switching to MGO, which only contains 0.1 per cent sulphur, is an easy and fast way to meet these rules – but the switch must be done in such a manner that the lubrication of the ship's engines is ensured in every phase.

Auramarine has released three equipment units, which it says can be integrated with any heavy fuel oil feeding system, whether newbuild or retrofit: FO Supply unit, MGO Cooling System, and Fuel Selector.

The cooling system reduces MGO's temperature and increases viscosity to a level that meets the requirements set by the engine manufacturer, while the Fuel Selector makes it possible to programme the change-over procedure from one fuel to another to take place fully automatically.

Auramarine says that the system also ensures that the temperature change process is slow enough. The temperature of the fuel entering the engine must not change by more than about 2°C per minute.

Integrated bridges for Stena

www.northropgrumman.com

Northrop Grumman's Sperry Marine business unit has completed an integrated bridge system retrofit for several RoPax ferries operated by Stena Line.

Stena Line operates ferries on 22 routes in Scandinavia, around the U.K. and to the Baltic countries. The company has a fleet of 38 vessels, including fast ferries, traditional combi-ferries, RoPax ferries for freight and passengers, and pure cargo ships.

Sperry provided a fully networked suite of scalable navigation products from its VisionMaster FT series to four of these vessels, used to form the core of a ship's integrated bridge.

The Stena Superfast VII and Stena Superfast VIII vessels were installed with VisionMaster FT navigation radars, a voyage data recorder, and an ECDIS that provides full control on both bridge wings. The Stena Europe and Stena Adventurer meanwhile were outfitted with the VisionMaster FT ECDIS.

"Our highly reliable, flexible navigation solution provides leading edge situational awareness capabilities and improvements in radar performance to enhance the ships' safety at sea," said Alan Dix, managing director of Sperry Marine.

"Additionally, it ensures compliance with new carriage requirements for greater navigational safety standards as set out by the IMO."

In addition to equipment, Northrop Grumman also provided installation and training on the VisionMaster FT products for Stena Line.

The **Alphatron** Training Centre in Rotterdam is now certified to perform ECDIS IMO Model course 1.27 for STCW (including Manila Amendments) and vessels under the Dutch flag, upon receiving an official 'Letter of Recognition' from the Netherlands Shipping Inspectorate.

Adlard Coles Nautical has published 'Electronics, Navigational Aids and Radio Theory for Electrotechnical Officers', a textbook covering the syllabus for electrotechnical officers specified by the Association of Marine Electronic and Radio Colleges (AMERC). It includes fault finding to component and sub system level, along with a series of worked examples.

Frances Baskerville has been appointed Secretary-General of **Comité International Radio Maritime (CIRM)** with immediate effect in replacement of Michael Rambaut, who is due to retire later this year. After careers in marketing, PR, architecture, music and investment companies, Mrs Baskerville joined CIRM in 2004, becoming Deputy Secretary-General three years later.

The Technical University training centre in Varna has now received official certification

The **Technical University of Varna (TU Varna)**, in Bulgaria, has announced that its simulation centre has been officially certified by the European Maritime Administration to provide training in compliance with the STCW and IMO regulations. The facility is equipped with NAUTIS FMB and NAUTIS Desktop Simulators as well as Engine Room Simulators, all delivered by VSTEP.

www.alphatronmarine.com/training
www.bloomsbury.com
www.nautissim.com
www.tu-varna.bg/tu-varna
www.cirm.org

22 JRC ECDIS for Misje Rederi

www.pronav.no

ProNav, the Norwegian distributor for JRC, has announced that it has been awarded a contract for the supply of 22 ECDIS systems to the entire fleet of Norwegian shipowner Misje Rederi.

All eleven dual-systems will be commissioned by Brommeland Elektronikk, which is a part of ProNav's professional sales and service network.

The JRC ECDIS systems are supplied through a leasing programme, which covers Dual JRC JAN-2000 ECDIS including Hatteland Displays, UPS, JRC JLR-7500 GPS Navigator, JRC JLR-21 GPS Compass and GPS Navigator.

The contract will be part of a leasing arrangement, which ProNav notes enables a shipping company to have the latest technology on the complete fleet at the same time, which can prove cost-effective when it comes to type-specific training.

NGM Energy chooses Thomas Gunn's Voyager

www.globalnavigationsolutions.com
www.thomasgunn.com

Thomas Gunn has announced that Greek shipping company NGM Energy has decided to use the Voyager software system to manage chart updating on all 16 vessels in its fleet.

Voyager is an automated onboard chart management system. It provides the mariner with a personalised database of charts, publications and Notices to Mariners (NMs) organised in a folio system.

NGM Energy, which is part of the Moundreas family shipping business, has also chosen Thomas Gunn's Outfit Management Service (OMS) for the automated supply of paper charts.

"NGM Energy is committed to improving efficiency on board," said Captain Sergey Martynenko.

"Our business prides itself on offering the industry a highly professional service, and we are confident that our decision to roll out Voyager across the fleet will enable us to maintain this commitment in the future."

Voyager will be used to manage charts for the NGM fleet

Thomas Gunn says that the latest version of Voyager, released in May, enables bridge personnel to manage all their navigational information through a single service that, for the first time, includes NAVAREA warnings.

Voyager 4 is available for trial and to buy from Global Navigation Solutions companies and distributors.

Fugro wins Angolan contract with Total

www.fugro.com

Fugro has announced that it has been awarded a three-year survey contract by Total E&P Angola.

With an estimated value of $26 million, the deal covers the provision of offshore positioning services and navigation systems for Total E&P Angola's drilling units, vessels and structures, together with onshore and offshore survey services.

The contract is a continuation of services supplied to Total E&P Angola under a similar contract since 2008.

Transas ECDIS for aid ship

www.transas.com

Transas Marine says that it will supply and install its Navi-Sailor ECDIS Multifunction Display on the Logos Hope, a vessel operated by German charity GBA Ships.

GBA started in the 1970s around the idea of "good books for all". The Logos Hope is the fourth ship operated by the organisation, and the only one currently in service.

The vessel visits ports around the world, bringing with it books and aid. It remains in each port for about two weeks, welcoming visitors on board.

Under the agreement, Transas will deliver its Dual Navi-Sailor ECDIS 4000 Multifunction Display 26'' in Premium Plus configuration, including Navi-Planner voyage planning software, Radar overlay, and firewall protector. The deal is partly financed by a donation from Transas Marine.

"When we were contacted by senior management of the GBA Ships to support their humanitarian mission, it was immediately clear that Transas wants to support the provision of knowledge and help around the world," said Ralf Lehnert, managing director of Transas Marine International.

"We are very delighted and proud to help GBA and that they will use our product to conduct their navigation around the world, where such help is demanded."

The Logos Hope delivers books and aid around the world

GBA Ships' operational costs are met by sponsorship of onboard personnel, general donations and gifts, reductions and waivers of fees by civic and port authorities, book sales, and corporate support from suppliers and companies in each port of call.

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www.furuno.com

The difficulties of promoting electronic navigation

Research has shown that, used correctly, ECDIS and other electronic aids can significantly improve the safety of navigation at sea – so why is it still such a struggle to convince the industry as a whole of the potential benefits, ***asks Bentley Strafford-Stephenson, Martek Marine***

In 2008, DNV claimed that ECDIS, if used correctly, could reduce groundings by about 38 per cent. The third most frequent accident involving ships larger than 100GT, grounding is the fourth highest contributor to marine casualties, at 12 per cent.

The question then is why, in 2013, is ECDIS not only experiencing such resistance from shipowners and mariners but also being blamed for an increasing number of incidents, including groundings?

Electronic navigation is the story of an idea with incredible potential being implemented in the wrong way at the wrong time. Unfortunately, the damage done to the perception of ECDIS is considerable and will likely take years to recover, with many of the current generation of navigators perhaps never feeling fully comfortable with it.

Despite its potential, electronic navigation was on a rocky path from the very beginning for three key reasons: there was not enough consultation with key stakeholders; the extensive benefits have never been clearly explained; and ECDIS is being implemented in the middle of other expensive requirements like ballast water and emissions reduction, when freight rates are into their fifth year scraping along the floor and ship finance is virtually non-existent.

While many owners can see the benefits of electronic navigation, many of them feel angry at what they consider to be unnecessarily short and ill-timed implementation deadlines.

Progress vs conservatism

Below the owners and operators and with different reasons, mariners ask why they should change from the charts they were taught with and have been using successfully for years. Implemented from land with too little consultation, early ECDIS models and electronic charts were inaccessible and standards varied widely.

Technology has seen huge changes in the ten or fifteen years since the average second officer started a career at sea, so it is no surprise that touch screen devices seem unintuitive to many mariners since they don't have the same exposure to smartphones, tablets or touchscreen PCs as the average person based ashore, who may still struggle with this technology!

While a fundamental wariness of new technology is not unusual in the conservative shipping industry (radars and GPS, now utterly invaluable, once gathered dust while navigators favoured the sextants they understood and trusted), concern about electronic navigation is not entirely unfounded.

Evidence shows that groundings and incidents still occur on ships navigating electronically. There is actually some argument that, taking into account the ship's age and quality, more incidents occur on ships using ECDIS.

The most expensive shipping incident in history, the Costa Concordia grounding, occurred with an ECDIS installed, while stories abound of navigators watching their ship on screen while an unaccounted-for island sits clearly in view out of the window.

The trouble with ECDIS

In an article on freight rates at the end of June 2013, Lloyd's Loading List wrote: "Container shipping costs are as low as they are ever likely to be, having sunk to the level they were at the depths of the last freight rate trough at the end of 2011."

The story is much the same for the dry bulk and tanker markets too. Meanwhile, global ship finance has been very badly hit by the worldwide slowdown and European debt crisis.

Combined with low freight rates, high bunker prices and declining trade against capacity it seems inevitable that many owners will struggle to raise new debt.

The world economy shows little sign of recovery and it is of real concern that the economies previously driving global trade – China, India, Brazil and Russia – are slowing. In China's case, there is evidence that it is not a brief dip but a planned shift toward a less expansive economy, which could be of real concern to the industry.

Many shipowners simply cannot understand why ECDIS implementation was given such a short and inconveniently timed deadline when they consider paper charts to be perfectly suitable and economic conditions make the implementation so difficult.

Alongside other targets for expensive equipment such as ballast water and emissions reduction, the ECDIS deadline causes many shipowners to feel that that legislators do not recognise the practical difficulties they face, an issue which has led to resentment.

Some owners who are accepting of the implementation deadlines and supportive of ECDIS question what they see as the haphazard implementation of the ECDIS legislation itself. This seems to be the fundamental basis for the mistrust of ECDIS and, unfortunately, there is some truth to this.

For example, there was originally no requirement for manufacturers to use universal symbols across their ECDIS, so they each initially chose their own symbols. This created a situation where even a navigator experienced in electronic navigation could move to a new vessel and a different ECDIS and find that the blue circle with a vertical line in the middle no longer indicates a buoy but now shows a significant hazard.

The biggest issue of inconsistency across the market is in chart standards and the use of vector charts, raster charts, SENCs and ENCs.

This was partly driven by mariners who initially saw raster charts as being closer to the paper charts they were so comfortable with, despite raster charts simply being slightly more awkward paper charts with none of the benefits of electronic navigation, the worst of both worlds.

Manufacturers and hydrographic offices (HO) must too shoulder some of the blame for largely failing to bring vector charts up to a sufficient standard so that, after years of development, there are still issues with conflicting symbols and information disappearing from one level of zoom to the next (though fortunately this problem is increasingly rare).

ECDIS can reduce groundings by 38 per cent if used properly – but its implementation has been mandated without enough consultation

Matters are complicated further by the way in which most fleets or vessels purchase an ECDIS, with one superintendent buying the hardware, another sourcing the kernel which acts as the interface between the chart and hardware and a third in charge of purchasing the charts.

This means that none of the three key elements of the ECDIS have necessarily been produced with compatibility with the other parts in mind.

Political issues also dominate the ECDIS market – there are strong arguments that hydrographic offices should allow approved third parties to purchase the rights to access and overlay charts, so that they can improve on the HO's offering.

However, most HOs copyright their charts and information on safety grounds, which arguably maintains a certain level of safety, especially since they are so heavily incentivised to avert incidents in their national waters, but some say that it limits progression and innovation in the chart market.

ECDIS recovery

Despite the considerable issues electronic navigation has faced and continues to deal with, it is certainly not too late for ECDIS to be wholeheartedly embraced by the industry, since the potential is there for considerable safety gains and operational improvements.

For this to happen, it needs to start now, with more interaction between the four key stakeholders – navigators, manufacturers, authorities and shipowners. There needs to be more consultation from all sides, followed by a better explanation for every action – why this deadline? Why this screen size?

More and stricter regulation is required to rebuild confidence in electronic navigation and pull together the disparate but good work already done by individual agencies so that the charts, hardware and software are all compatible.

Regulation should be in place at the very beginning of the manufacturing process, with more of the burden placed on HOs, manufacturers and training providers to make implementation simpler and safer for owners.

Official bodies must make more effort to explain ECDIS and its significant advantages, including flexible pricing structures for charts such as pay as you sail, and the Pro+ charts, which are not legal as the primary navigation tool but can be used in conjunction with official charts, right up until implementation at very little cost.

The sheer potential of ECDIS to make life easier for mariners, safer for vessels and operationally more effective in terms of route planning surely mean that it will join the list of marine technology which overcame great scepticism to become utterly invaluable. DS

About the Author

Bentley Strafford-Stephenson *is ECDIS product specialist at Martek Marine, a UK headquartered manufacturer of marine electronics and safety equipment which will launch its own ECDIS later this year, named the iECDIS*

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Time is right for condition monitoring

Condition monitoring technology is not a new phenomenon, but changes in the shipping industry, from financial pressures to emissions legislation, may help to make this technology more attractive than ever before, *writes Dr Steve Dye, Parker Kittiwake*

Financial pressures are often influential drivers for change and the current financial climate is forcing the shipping industry to look inwards and find ways of reducing costs and maximising existing assets.

However, in an effort to cut down on spending and comply with ever increasing environmental legislation, ship operators have adopted practices that can have detrimental effects on various parts of a vessel, including engines, such as variable steaming. This can lead to damage that is difficult to detect.

Condition monitoring (CM) provides real-time updates that can prevent this damage and enable ship operators and engineers to correct problems before costly unplanned downtime occurs.

Traditionally, CM has not held a position of priority in shipping, but recent patterns suggest that this is changing.

Whilst CM systems have historically had a very narrow focus, industry changes such as the shift to sustainable fuels, new engine designs and rising bunker prices have made it necessary for CM systems to expand and encompass increasing elements of a ship.

Instead of protecting individual components, modern CM analyses the entire system, the environment in which it works and specific machinery requirements.

Today's modern ships have many systems, from machinery controls to cargo systems and fuel systems; the list can be extensive. At the same time, this increasing number of systems on-board is coupled with a desire to cut costs without compromising efficiency or safety.

Shipowners and operators have realised that a holistic approach and higher level of automation is needed to ensure all these systems are properly maintained.

One of the main benefits of adopting a holistic approach to asset analysis is that it combines not just data on individual pieces of equipment, but also information about the operating environment and developments that can affect the lifecycle and fuel consumption of the installation.

Improved operations

CM is no longer just about stopping equipment before catastrophic failure, but rather spotting problems at an early stage and implementing efficient preventative maintenance scheduling.

With budgets being constantly reduced, extending asset life is key to achieving streamlined operations and protecting precious resources.

In addition, regulatory, legislative and environmental bodies are also putting pressure on the shipping industry to address the continuing challenge of delivering against fuel emission regulations.

As Emission Control Areas (ECAs) continue to widen, the regulatory timetable and targets to reduce SOx and NOx are becoming increasingly daunting – not just from a cost perspective due to the high price of distillates or alternative means of achieving compliance, but also due to technical issues, such as engine and fuel system damage that can arise when using low sulphur products.

It is here that CM is increasingly playing a key role.

Recent reports show that catalyst fine damage to cylinder liners is on the rise. Cat fine damage occurs mainly in large, slow-speed crosshead main engines.

Large abrasive particles can pass through fuel injection equipment and into the cylinder liners, where they embed themselves onto the cylinder wall surfaces.

Damage to the cylinder liner can happen for various reasons but the rise in damage has coincided with the growth in demand for the use of low-sulphur fuel.

Damage to engines can be very costly – ranging up to $1 million. Photo: Brinki

Engine damage claims can be very expensive, costing anything up to $1m – which is one of the reasons that existing technology to monitor and prevent cat fine damage is making its way higher up the list of priorities.

The liner is one of the most crucial and costly components of a ship's engine. Monitoring wear and uncovering problems at an early stage not only extends its life, but can also mean the difference between minimal damage control and considerable financial loss.

Technology advancements

Advancements in CM systems allow online diagnostic equipment to continuously and automatically provide complete sets of trend data showing levels of wear in all critical equipment, including cylinder liners.

Technology is available on the market that uses magnetometry to quantify the iron in used cylinder oil, reporting changes caused by abrasive wear and highlighting periods of increased physical or thermal stress.

As part of a CM plan, sensors can be fitted to each cylinder of the vessel engine to continually monitor the scrapedown oil for ferrous wear.

Integrated software systems can provide onboard engineers with actionable readings that can be used to minimise liner wear, optimise lubricant feed rate and detect ingress of catalyst fines.

Incompatibility of fuel mixtures is another related issue that will rapidly clog fuel filters and separators and cause fuel injection pumps to stick. Compatibility should be tested when bunkering heavy fuel oil and low sulphur fuel to give early warning of impending problems.

Switching between different fuel types can compromise a vessel's fuel systems and power, and it is essential to check the suitability of each component in the fuel combustion system of each engine and boiler against the range of fuels that you expect to use.

Preparing fuel changeover and operating procedures will protect against damage to auxiliary machinery, engines, boilers and their components, and loss of power. The worst-case scenario is a loss of propulsion and therefore being unable to generate power at critical times while manoeuvring the vessel can place the ship and environment at risk.

Maintaining systems, particularly seals and gaskets, will prevent leakage from low viscosity fuel and consulting your fuel suppliers to ensure the quality of products being used should all be considered as standard.

Finally, for safety reasons, any fuel switching should be completed before entering ports or ECAs.

Damage to pumps is another avoidable cost. To maximise effectiveness, onboard condition monitoring is a prerequisite and central to identifying problems at a very early stage.

Modern, onboard testing equipment is quick to operate and will provide very accurate results for water, density, viscosity, salt, compatibility, as well as stability.

An advantage of onboard testing is that results are available immediately and before the fuel has to be used. In the event of problems it is therefore possible to mitigate the eventual cost, a very good position in instances of legal actions and liability.

Market acceptance

Technologies that enable condition monitoring are being more often applied in the market, but this is essential to ensure that system performance targets are being met.

Certain technologies can detect negative trends but are often too late. Even if no catastrophic failure has occurred, the end user can be confronted with high maintenance costs for replacement parts.

It is important to detect, at a very early stage, accelerated damage to components including aging oil, leakage of seals, bearings, water in oil or deviations from the target fluid cleanliness levels.

Prevention is a key element of a holistic CM approach. It is about using foresight and employing a good selection of tools to prevent system damage and component wear and tear due to contamination.

It comes together with techniques and equipment ideally suited for direct, in-time reporting and enhancing system performance.

Using filtration and monitoring equipment that provide continuous and real-time updates of system activity will ensure that maintenance staff are alerted to any abnormalities in performance.

Put simply, unplanned downtime caused by equipment failure costs money. Combining best practice with effective monitoring techniques is central to ensuring you are ahead when it comes to maintaining equipment as well as fuel and oil, particularly in the current regulatory climate.

Complying with emissions regulations is a minimum standard to adopt, but monitoring and fuel testing is becoming key to operational – as well as regulatory – success.

CM is not a new phenomenon, but in recent years the mechanisms for achieving results have become infinitely more advanced, whilst at the same time remaining almost as simple for engineers to use.

The latest generation of CM tools and technologies are enabling maintenance engineers to make fast and informed 'on the ground' decisions in an industry where there is an increasing onus on operational efficiency and performance.

Moreover, it is providing the knowledge and understanding required to make far-reaching decisions that have the potential to reap significant financial rewards.

Safeguarding equipment durability and reliability by taking preventative measures can significantly improve profitability and the industry recognises that it can no longer afford to ignore that. DS

About the Author

***Dr Steve Dye** is business development manager at Parker Kittiwake, working in R&D, whilst also focusing on unearthing new market channels. His remit also covers development opportunities across the Procal and Holroyd business, which specialises in emissions monitoring and Acoustic emissions technology that has been integrated into the Kittiwake family.*

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The future of navigation displays

The potential improvements in vessel operation offered by modern integrated navigation systems, in line with IMO's performance standards for Integrated Navigation Systems, are significant – but perhaps we can do even better, *writes Dr Andy Norris*

The bridge display philosophy on today's vessels, even for new builds, is highly influenced by past technology limitations and their continuing effect on legislation and design practices.

Displays tend to be dedicated for a particular sensor or function and are often physically embodied or co-located with the special electronics needed for that purpose. Also, they are constrained to be able to fit into the standard 'kitchen-unit' layout and dimensions of many bridge designs.

In fact, IMO's performance standards for Integrated Navigation Systems have given us more options, not least in allowing the use of multifunction displays, but it is really only a first step into more modern thinking.

Technology is no longer the major weakness in improving display effectiveness for better safety and efficiency – we just need better ideas.

On talking to users and to bridge equipment specialists you get a huge range of concepts for improvement, including the extremes of gaining complete situational awareness from virtually a smartphone-sized display, through to replacing the bridge windows with huge flat panels showing enhanced visual views overlaid with navigational data.

Many users of good Portable Pilot Units extol the virtues of their compact displays. This has led to the conjecture of a similar unit situated at the conning position, perhaps ideally showing an integrated ECDIS/radar picture to give total situational awareness.

Others also favour the combined situational display but using one of rather larger dimensions.

Separately, there is a growing interest in showing navigational data in different ways, such as by displaying the way ahead in a three-dimensional format, not least increasing the awareness of underwater hazards.

Others are promoting 'heads-up' displays, overlaying navigational data onto the bridge windows to minimise the diversion of attention from the visually observed situation.

Perhaps of major significance for the immediate future is that tablet computers running apps designed to assist the navigation of ships have recently started to appear.

Situational displays

Although there is an understandably strong desire to go towards integrated situational displays showing appropriate ENC, radar, AIS and other information, there are some very real issues that appear to be difficult to resolve.

ECDIS has already taught us the potential pitfalls of greater integration from displays and these are very real.

A major problem is that overlaying detailed information on an area-mapped screen from different sources can rapidly become confusing, potentially hiding what is really important at any one time.

This is partly because the instantaneous information, such as from radar and AIS, generally has equal safety priority to the display of charted information. If images coincide – how do you show both without confusion?

Current legislation allows additional data to be shown on both radar and ECDIS displays. However, it recognises the potential problems of confusing images and information overload and so there are important restrictions.

Integrated Navigation Systems today offer a range of benefits – but the future might see information displayed in all sorts of innovative ways

For instance, the regulations effectively require that no chart data overlaid onto a radar display can obscure any radar data – and that any overlaid data on ECDIS cannot degrade the display of ENC data.

It means that on a chart radar, displayed ENC information could be degraded by the primary radar data and vice versa on an ECDIS

In the more distant future it may become possible to be able to design a combined situational display that would make safe decisions as to which information at any point on the screen should take priority, ensuring that no situation-important information would ever be obscured.

To avoid information overload, it would also take decisions on what excessive information could be safely left off in any particular situation.

Unfortunately, we appear to be a long way from being able to achieve this – and when it becomes safely possible, the inbuilt intelligence would probably be such that we should leave all navigational decisions and actions to such a machine...

This reasoning apparently suggests that a single situational display showing both radar and ECDIS is not a near-future replacement for the current need to have separate ECDIS and radar displays.

Small and large displays

Experience from the use of smaller ECDIS displays tend to indicate that they can over-focus users' attention to the local scene, purely because of the amount of scrolling needed to access an appropriately detailed wide-area picture.

Zooming-out gives some help to user awareness but it also results in more detailed information being removed or becoming illegible.

The problem with scrolling is that it can create confusion in the operator's mind of the precise geographical relationships, particularly when scrolled to positions that do not include either the intended route or the past track.

In contrast, the large display area of a paper chart rapidly gives a skilled user an appropriately detailed awareness of both the local and a wider area.

In effect, the human brain and eyes provide an impressive scrolling function, gaining an integrated picture and quickly ascertaining the critical issues. The brain also generally filters out any information superfluous to immediate requirements.

Of course, problems occur when working near the edge of a paper chart – hence the major advantage of using effectively seamless data on an ECDIS.

Such thinking generally points to maximising the size of the display but not to an extent that excludes it from being easily accessible at or close to the conning position, although the resolution of the screen is also an important factor.

As proven by tablet computer and smartphone displays, technology with very high resolution is now mainstream and very affordable on such smaller displays.

They are capable of showing an image that effectively matches the quality of a paper chart – and potentially allow easy scrolling and zooming by using touch screen technology.

Unfortunately, the displays on mainstream devices are far too small to give the immediate and detailed area awareness that is necessary for safe vessel navigation.

On the other hand, tablet computers do appear to be highly useful when needing to assist tasks away from the main conning position, such as showing relevant ECDIS and radar information to assist a visual lookout on the bridge wings.

But since current ECDIS use is highlighting the potential issues when not maintaining appropriate area awareness there is a strong argument that there should always be ready access from the conning position to an appropriately large ECDIS display.

The future

In the reasonably near future we can certainly expect to see large very high resolution displays becoming affordably available for bridge use, not least for showing ECDIS.

According to circumstances such displays could also be readily set up to give an enlarged image to allow viewing from a distance or by several viewers, albeit with reduced area awareness.

Touch screen control would ease their use, especially for scrolling and zooming and, if a very large display is used, some thinking is needed to assess options on the angling of the display – ranging from near horizontal to near vertical.

In principle, radar displays will also benefit from becoming high resolution, although there are no really demanding reasons to maximise their size, apart from that of being viewable from a reasonable distance.

In association with these main displays there should be ways of producing auxiliary images that will suit the immediate circumstances of the vessel.

These, for example, could be on auxiliary displays, as sub-images on a large main display or on portable displays.

It is these sub-images that are particularly open to innovative solutions that assist situational awareness, without trying to be a single focus for navigational decisions.

For instance, the potential use of a three dimensional format for showing relatively immediate hazards along the route is increasingly being discussed and appears to be a highly useful optional display.

Such a 3D portrayal appears to be able to give a very easily assimilated concept of the immediate issues, not least taking into account the actual depth of water.

Heads-up displays are also in this category, giving a secondary or perhaps even a primary way of being able to assimilate critical data while fully concentrating on the visual scene through the bridge windows.

In particular, radars and ECDIS of the near future could feasibly come complete with associated tablets that would enable portable viewing when away from the conning position. DS

Dr Andy Norris has been well-known in the maritime navigation industry for a number of years. He has spent much of his time managing high-tech navigation companies but now he is working on broader issues within the navigational world, providing both technical and business consultancy to the industry, governmental bodies and maritime organizations. Email: apnorris@globalnet.co.uk

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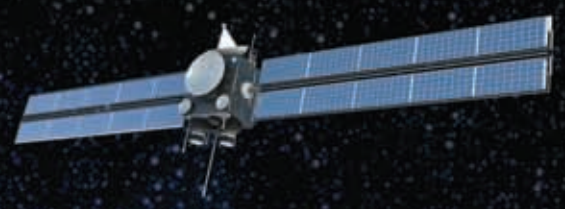

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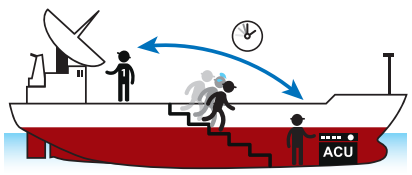

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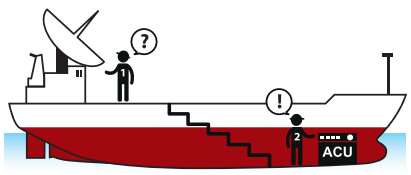

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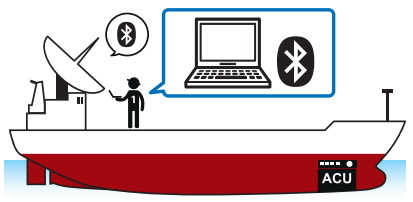

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