Digital Ship

www.thedigitalship.com

90-vessel software deal for Van Oord

Norwegian software provider Star Information Systems (SIS) has agreed a major new contract whereby the company's package of applications will be installed across the 90-strong fleet operated by Dutch company Van Oord – the biggest contract in SIS' history

Dutch dredging and marine contractor Van Oord has agreed a contract with Star Information Systems (SIS) of Norway for the supply of software systems to Van Oord's fleet of more than 90 vessels.

Under the terms of the contract, SIS will provide a package of software systems to manage all aspects of the technical management of the fleet, including maintenance, purchasing, logistics and asset management.

In another addition to the software and standard service package, which includes quality assurance and product management, SIS will also provide Van Oord with process mapping services.

The process mapping work will be carried out to help establish interfaces between legacy and operational systems, and develop conversion tools to facilitate a smooth transition of data from old to new systems.

The agreement of this contract is the result of more than two years of discussions and trials as Van Oord searched for a system that would best suit its requirements, according to Henk Jan van Dijk, project manager for business development at Van Oord.

"In 2008, we put out a tender to a number of fleet management software providers," he said.

"We ran a pilot programme on two vessels with SIS, and got a lot of positive feedback from onboard personnel about the quality of their solution."

"In addition to meeting our software demands, we found that SIS software was more user-friendly and easier to upgrade than competing systems, which is critical for a project of this scale."

Ruud Lendfers, Van Oord's IT project manager responsible for the implementation, notes that Van Oord was particularly keen to implement a system that could improve efficiency in its maintenance, purchasing and

Van Oord has agreed to install the system on its vessels after two years of discussions and trials

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"SIS software has good backward compatibility and is easy to integrate with some of our existing systems," he said.

"It's a big job, but because SIS systems are intuitive, we expect training will go smoothly."

Mr Lendfers says that while it will take time to implement the system over the whole fleet, the process has run well so far.

"We congratulate SIS for winning the contact, but for us in the IT department, the contract represents the beginning of a long relationship with SIS to help Van Oord reduce costs and improve efficiency across our fleet," he said.

"We look forward to the next phase of the project."

Major deal

According to SIS CEO Per Anders Koien, the contract with Van Oord is the largest ever won by the company and is among the biggest ever awarded in the fleet management software industry, measured by value.

"We welcome the opportunity to work with Van Oord, a company with extensive experience managing big, complex projects," he said.

"The scope of the project represents a great opportunity for us to develop new services and software enhancements, and we are confident that by working in partnership with Van Oord, we can deliver on expectations."

Due to the number of vessels involved in the fleet-wide installation SIS says that it will modify its usual approach to the implementation process, and will establish an on-site team of four senior personnel for assistance early in the cycle.

After the first four vessels have been successfully fitted with the software, efforts will turn to training Van Oord's own implementation teams so they can complete the implementation process for the rest of their fleet.

As an additional component of the agreed contract Van Oord has also contracted SIS to develop additional software functionalities, which will be integrated into the SIS software and made available to other customers in the future.

Martin Karlstad, chief commercial officer at SIS, notes that the two companies will work together to develop these new enhancements.

"While developed in cooperation with Van Oord, these are not intended as bespoke solutions," he said.

"These new features will become a part of SIS' standard software package, so Van Oord and our other customers will have access to improved functionalities, upgrades and support over time."

"The project enables SIS to expand our service offering, giving us critical experience to manage larger, more complex projects in the future. It is a great opportunity for us to show what we can do."

Legal issues

The announcement of this new contract has been joined by a further 'win' for SIS as it reports the conclusion of a long-running legal wrangle over a minority shareholding in the company held by maritime software competitor BASS.

SIS says that, following the resolution of a lawsuit involving the parties concerned, the shares held by BASS have now been bought by original SIS shareholders and their various companies.

"We are delighted with the legal outcome and now have full control over our own destiny," said Mr Koien.

"We have continued to operate in very trying circumstances, because the BASS shareholding constituted a direct conflict of interests. However, we have never stopped in our constant drive to fine-tune existing product lines and develop new ones. Now we are in a position to advance to the next stage of our development without further interference."

The anomalous situation arose as a result of Barber International's shareholding in SIS, originally established in 1999.

Barber's shares in SIS were subsequently transferred to its IT subsidiary, BASS, in the hope that the two companies could work together to mutual benefit – however, competition between the software providers resulted in termination of the co-operation agreement in 2003.

The dispute was further complicated in 2005 when Barber divested itself of its IT subsidiary, which was subsequently bought out by BASS management. This sale included the Barber-held shares in SIS, and coincidentally took place just one day after a court settlement between the two software companies concerning a breach of intellectual property rights.

"In spite of the BASS shareholding which has been a hindrance to our corporate activities recently, we have developed a first-class suite of software products targeting both the maritime and oil rig management sectors, both on- and offshore and on- and off-line," said Mr Koien.

"Our success can be gauged by the number of blue-chip names amongst our clients in both the shipping and energy sectors. The divestment of the BASS shareholding is a key watershed for us ." **DS**

Globalstar satellite up and running

www.globalstar.com

Globalstar has announced that it has completed pre-operational testing of its first new second-generation satellite, and that the spacecraft has successfully processed its first commercial telephone call.

The new satellite is the first of six that were launched in Autumn 2010 to come online, and Globalstar says that it is now ready to fully support voice and duplex data services.

Four of the satellites are planned to be made operational up to the end of January 2011, with the remaining two expected to be deployed near the end of the first quarter of 2011.

Globalstar has also announced that it is making final preparations to accept delivery of two additional new second-generation satellites from manufacturer Thales Alenia Space, with the deliveries scheduled to take place around the turn of the year.

The second batch of six Globalstar satellites is due to be launched from the Baikonur Cosmodrome in Kazakhstan, using the Soyuz launch vehicle, similar to the company's other recent launch.

"Following successful intensive testing of the new spacecraft by our satellite operations control centre and engineering personnel, we are pleased to announce that the first Globalstar commercial call using our new second-generation satellite was processed for a customer calling in Korea and we are proceeding with testing and deployment of the remaining five satellites," said Tony Navarra, president of global operations for Globalstar.

"(This) announcement and the anticipated deliveries of our new spacecraft for our second satellite launch represent further milestone achievements for our second-generation satellite operations."

"Once more I applaud our highly skilled global operations employees as well as those at Thales Alenia Space, who helped make (this) possible."

Globalstar plans to integrate its 24 new second-generation satellites with eight first-generation satellites that were launched in 2007, to form a 32 satellite constellation.

As each new Globalstar satellite becomes operational, the company says that service availability and reliability will improve for users of its voice and duplex data services.

The new constellation and ground network, expected to be installed by 2012, is designed to provide increased data speeds of up to 256 kbps in an internet protocol multimedia subsystem (IMS) configuration.

Globalstar's second generation satellites have been constructed by Thales Alenia Space

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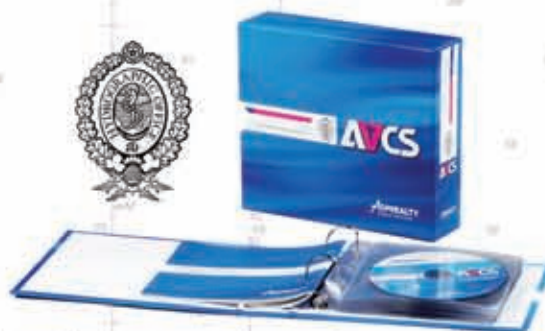
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Admiralty Digital Publication updates
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Updates via Web service or Email
No special equipment required
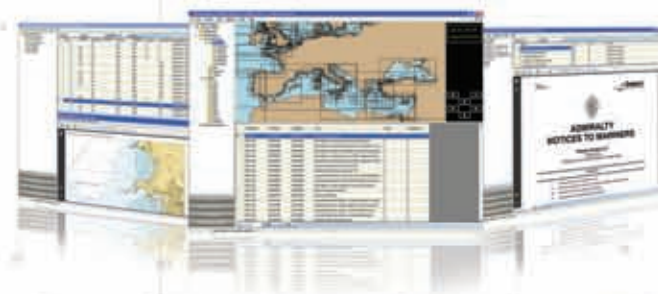
ECDIS Mandation Timeline

Vessel type	Tonnage
New Passenger Ships	>500gt
New Tankers	>3000gt
New Cargo Ships	>10000gt
New Cargo Ships	>3000gt
Existing Passenger Ships	>500gt
Existing Tankers	>3000gt
Existing Cargo	>50000gt
Existing Cargo	>20000gt
Existing Cargo	>10000gt

JULY 2009 — JULY 2010 — JULY 2011 — JULY 2012 — JULY 2013 — JULY 2014 — JULY 2015 — JULY 2016 — JULY 2017 — JULY 2018
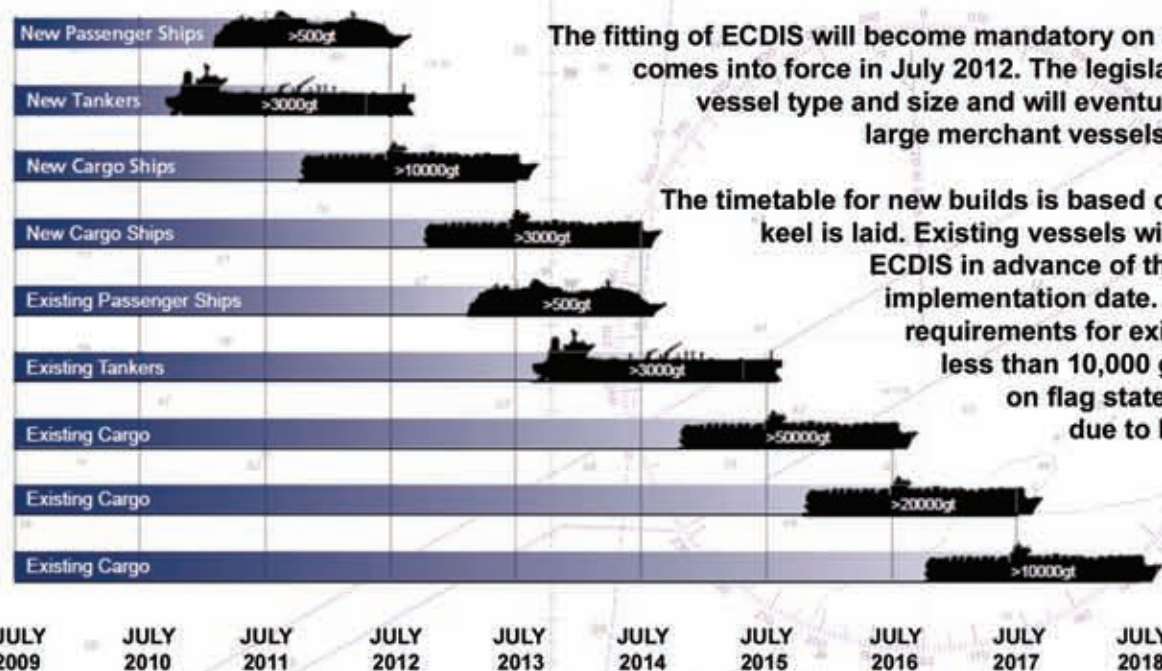
The fitting of ECDIS will become mandatory on a rolling timetable that comes into force in July 2012. The legislation will be phased by vessel type and size and will eventually apply to almost all large merchant vessels and passenger ships.

The timetable for new builds is based on the date the vessels keel is laid. Existing vessels will be required to install ECDIS in advance of the first survey after the implementation date. There are currently no requirements for existing cargo vessels of less than 10,000 gross tons. Depending on flag state requirements vessels due to be taken out of service within 2 years of the implementation date maybe exempt.

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GC Rieber to install dual C- and Ku-band VSAT

www.marlink.com

Marlink reports that it is to provide dual C-band and Ku-band VSAT services to GC Rieber Shipping, a global operator of vessels within the subsea, polar expedition and marine seismic segments.

As part of the new three-year contract, Marlink will deliver and install its dual 9797 C/Ku-band Sealink antennas onboard five existing vessels and five newbuild vessels, ensuring both C-band and Ku-band coverage is available to GC Rieber Shipping's ships.

"The availability of a robust satellite communications solution is critical for us to efficiently relay customer data ashore," said Tom Christian Tveita, ICT consultant, GC Rieber AS.

"The flexibility of Marlink's Sealink VSAT ensures that we are able to swiftly switch from C-band to Ku-band to satisfy our customers' demands, allowing us to offer the optimal solution for cost, coverage and stability."

This new contract is an extension of an existing relationship between the two companies, as Tore Morten Olsen, CEO, Marlink, notes.

"(We have) provided VSAT services to the company for several years, but this is the first formal contract for its fleet," he said.

"Operating in a wide range of ocean environments requires a flexible and reliable system to maintain continuous communication. I am delighted we have been able to satisfy GC Rieber Shipping's requirements with the provision of the Sealink C/Ku- band dual antenna solution."

GC Rieber will enjoy global VSAT coverage with its dual antennas

Iridium handheld software updated

www.iridium.com

Iridium Communications has introduced the latest version of its Direct Internet software package, making it easier and faster to connect to the internet using its handheld phones and L-band Transceiver (LBT).

Direct Internet 3 takes advantage of new data compression, caching and network optimisation techniques to enhance internet connectivity through the Iridium satellite network.

Powered by SlipStream SP6.0 with Now!Imaging compression technology, the new version of the software uses concurrent object delivery functionality to accelerate page download speeds for image-rich websites.

Iridium says that this makes internet browsing up to 5.4 times faster than with no acceleration or internet optimisation technology installed, or 20 per cent faster than the previous software version, Direct Internet 2.

These figures are based on independent testing conducted by appLabs

Technologies, commissioned by SlipStream Data Inc.

Direct Internet 3 supports Windows XP, Windows Vista, Windows 7 and any 64-bit version of the Windows operating system, as well as Mac OS. The new Direct Internet 3 installer guides the user step-by-step through the installation and configuration of the software.

"Iridium subscribers are increasingly looking to use their Iridium devices to connect their laptops to the internet from remote locations to send and receive e-mails, upload and download data files, transmit text to blogs and social media sites, and browse websites," said Joel Thompson, vice president of product management, Iridium.

"Direct Internet 3 will greatly improve user experience by speeding page download times and data transmission through the Iridium network. It's now easier and faster than ever to connect to the internet from our Iridium 9555 and Iridium 9505A phones, along with the LBT – everywhere."

Greek carrier agrees fleet-wide VSAT installation

www.caprock.com

CapRock Communications has secured a fleet-wide contract with Atlantic Bulk Carriers Management for 15 C-band SeaAccess VSAT solutions, in cooperation with its Greek partner Setel Hellas.

The companies report that this is the sixth VSAT contract they have agreed in the Greek market over the last year.

CapRock notes that it has placed specific emphasis on growth in the Greek market over the last twelve months, which it sees as holding "significant opportunities" for VSAT penetration as an operator of one of the largest shipping fleets in the world.

CapRock began the first installation under the contract onboard the bulk carrier MV Desert Melody, at a shipyard in Tuzla, Turkey. The next two vessels in the installation schedule were expected to have the VSAT system installed by end of 2010.

Atlantic Bulk Carriers Management, with offices in Piraeus, Greece, is an operator of Handymax, Supermax and Panamax size bulk carriers.

New VSAT service for Asia Pacific

www.bluemarblenetwork.net

Blue Marble Network has launched a new maritime VSAT service for deep sea commercial vessels, initially serving the Pacific Ocean Region.

The service will cover shipping routes and major ports between North America, Asia and Australia, via Blue Marble Network's wholly owned and operated satellite-based communications network, supporting data traffic, file transfers, voice and other IP applications.

The company says it will be offering a turnkey communications equipment package, including above and below decks equipment, VoIP phones, installation and training.

"For the past 30 years, the VSAT industry has focused on communications solutions for the third of the planet covered by land," said James Grandahl, CEO Blue Marble Network.

"Great advances have been made in that time, allowing people and businesses to communicate more effectively. Blue Marble Network has created a purpose-built, next generation VSAT designed to address the other two-thirds of our 'blue' planet."

"We are extending the power of VSAT communications and tools to deep sea vessels and their crews, so they can effectively work and live while at sea."

John G Smith, VP of sales and marketing with Blue Marble Network, noted that the company has completed beta testing and is now working on marketing the service in the US and Asia.

"We're open for business," he said. "We have leveraged best-in-class vendors and built a wholly-owned maritime-specific network, designed to meet the demanding needs of deep-sea shipping customers."

Ship Equip's new office in Rotterdam will be operational from February 2011

Ship Equip has announced the opening of two new Network Operations Centre (NOC) facilities in Houston and Singapore, which will support the company's primary NOC in Alesund, Norway. These facilities will provide 24/7 network monitoring and management for vessels operating with the company's VSAT technology.

Ship Equip also reports that it has opened a new office in Rotterdam, The Netherlands, which will be fully operational from the 1st of February, 2011. The Rotterdam office will primarily handle service issues, and will be run by service manager Kenneth Borgen and on-site station manager Roger Sandnes.

SatCom Global reports that it has reached a milestone of 1,000 activations of **Inmarsat's** IsatPhone Pro, one of only two Inmarsat Distribution Partners to reach this number in the first six months of the system's commercial availability.

Thuraya has expanded its partnership with telecom service provider **Etisalat**, appointing the company as a distributor of Thuraya IP and Thuraya Marine in the UAE. Etisalat will be marketing and distributing Thuraya's satellite data and maritime services to vertical markets throughout the country.

KVH has appointed Linda Riggs to the position of marine marketing coordinator. In this new role Ms Riggs, who was previously employed by the company as a marketing specialist, will be working with the KVH marketing team in the US and internationally on a range of projects.

www.satcomglobal.com
www.inmarsat.com
www.thuraya.com
www.ship-equip.com
www.kvh.com

Innovation at Beluga Shipping – the SEMICS project

Initiated by Beluga Shipping, and supported by the German Federal government and a host of technology partners, the SEMICS project aims to create an integrated electronic information and communication system that will improve operation at sea through the application of technology. Peter Wramling, head of ICT with Beluga Shipping, told *Digital Ship* about this exciting initiative

Beluga Shipping is closing in on the final phase of a comprehensive technology infrastructure project that aims to revolutionise the way it uses information across the company by the end of 2011.

SEMICS (Smart Electronic Maritime Information and Communication System) is a research project initiated by the Beluga Research & Innovation Department and co-funded by the German Federal Ministry of Education and Research.

Specifically, this project allowed for the development of what Beluga calls a 'holistic' electronic information and communication system, reducing administrative work for officers, creating transparent and partially automated processes, and enabling significantly improved communication between shore and sea.

Over the course of 2011 Beluga Shipping will implement the prototype SEMICS system onboard two test vessels, both multipurpose heavy lift project carriers from the new P2 series, to ensure that the system can be integrated into the ship infrastructure without any problem, structurally and equipment-wise.

As Peter Wramling, head of ICT with Beluga Shipping, describes it, this is essentially a project to "make it easier to operate at sea through the use of technology, and support crew welfare".

"We are connected around the world by our global network, and support all of the IT from our headquarters in Bremen," he told us.

"We started this project at the end of 2008 with the analysis, and then came up with the requirements. Then we had to develop a concept and process sets model, and now we are in the middle of designing a portal for the project. We plan to finalise the project at the end of 2011, hopefully everything will be done by then."

"It's a project we are working on with several different partners, such as Germanischer Lloyd, Interschalt, which is doing the automation onboard for us, and Lufthansa Flight Training, which is working on training for the seafarers."

Other partners include Itemis and Merentis, which will work on software aspects of the project, the Jade University of Applied Sciences and Institut für Interaktive Medien, which will also be working on training, and design company Nikdin & Partner.

Further associate partners include Verband Deutscher Reeder (the German Shipowners' Association), and The German Naval Command and Control Systems Command based in Wilhelmshaven.

Project steps

Six distinct steps are involved, designated as 'work packages', with the first beginning in 2008 as mentioned, and the last scheduled to be completed in the autumn of 2011.

Work package 1 involved analysis of existing business and communication processes (at Beluga headquarters, on the vessels, and between the headquarters and ships), with emphasis on the challenges of managing the various business units (offices and vessels) at a distance.

Work package 2 included the creation of a list of requirements, taking into account the impact of current and potential future regulations, such as the International Safety Management (ISM) code. A requirements management software tool by Polarion was used as part of this process.

The creation of a SEMICS concept and process model was work package 3, including an examination of the needs of future business and communication processes, such as loading, discharging, bunkering, and ship delivery.

Development of a maritime SEMICS portal as a central communication platform for the system was also part of this work package, followed by the development of an electronic communication portal to optimise workflows under work package 4.

The project partners are currently working on the development of this portal ahead of the commencement of work package 5, which will see the SEMICS prototype implemented at Beluga's headquarters and onboard the test vessels in the coming months.

The final work package will then test and evaluate the performance of the SEMICS portal with its modules on board of the Beluga P2-Series test vessels.

Development work is split between various teams, to make use of the particular competencies of the project partners. The project teams of the individual work packages perform the operational project work.

"There's a technology team, which is made of the different partners and includes programmers and automation specialists," Mr Wramling explained.

"We have a team for process development as well, that will go to the vessels and document the procedures and see what can be done."

"We have a team for training, which is a big area, that will look at online training that can be assessed both on site and on shore. Other partners will support us in the process and offer guidance."

A Steering Group, headed by Beluga and composed of representatives of the network partners, is responsible for decisions taken on the specific direction of the project. The heads of the project teams report to the Steering Group on progress of work in the individual work packages.

Beluga also heads up an Advisory Board, composed of representatives of the German Shipowners' Association (VDR), the Naval Command & Control Systems Command and, if applicable, other interested organisations, which is able to offer suggestions and criticisms from experts and interested members of the public.

Centralised data

One of the main areas of work under SEMICS has been centred on the creation of an intranet platform for the digital processing of administrative tasks and documents on board, with centralised data administration to increase data availability both on shore and on ship.

Up until now most of the communication with the ships has typically been by e-mail or by phone, but as Mr Wramling notes, sending an e-mail is still manual work, with those in the office having to manually send requests to ask for information before they can get information back.

Centralising the required information in a way that would be accessible as required, increasing automation in the typical multi-step process, was therefore a key requirement. Overhauling the communications systems onboard the vessels played a major part in this process, with Beluga investigating what kind of traffic would be necessary to run the SEMICS infrastructure.

"This was not even part of the project in the beginning, but one way or the other we are going to have to have some kind of communications, though we might not have understood all we would need when we started," said Mr Wramling.

"There's a lot of information that will need to move between the vessels and the land side, so that's the puzzle we have to put together in terms of the infrastructure with the satellites, the systems on the vessels and the systems in the office."

With this in mind, the team proceeded to implement VSAT technology on the two vessels earmarked for testing under the SEMICS project, getting the communications systems up and running in the second half of last year.

"We started with the first vessel in August 2010, the MV 'Beluga Shanghai'," said Mr Wramling.
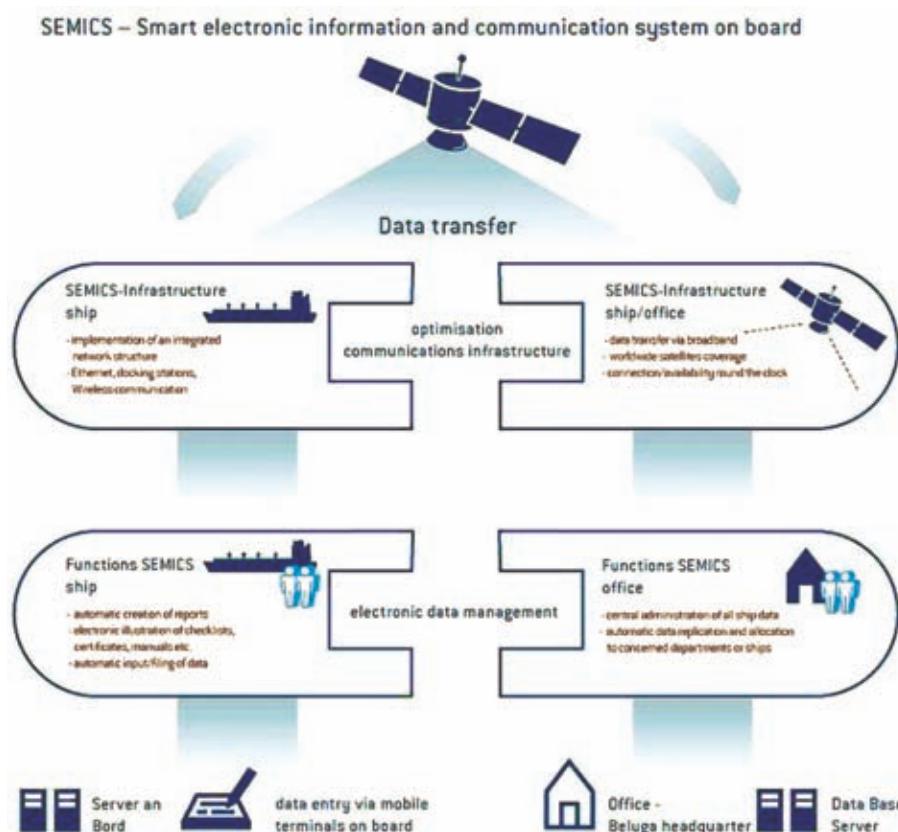
The SEMICS project aims to create an electronic information system linking people and networks on ship and on shore
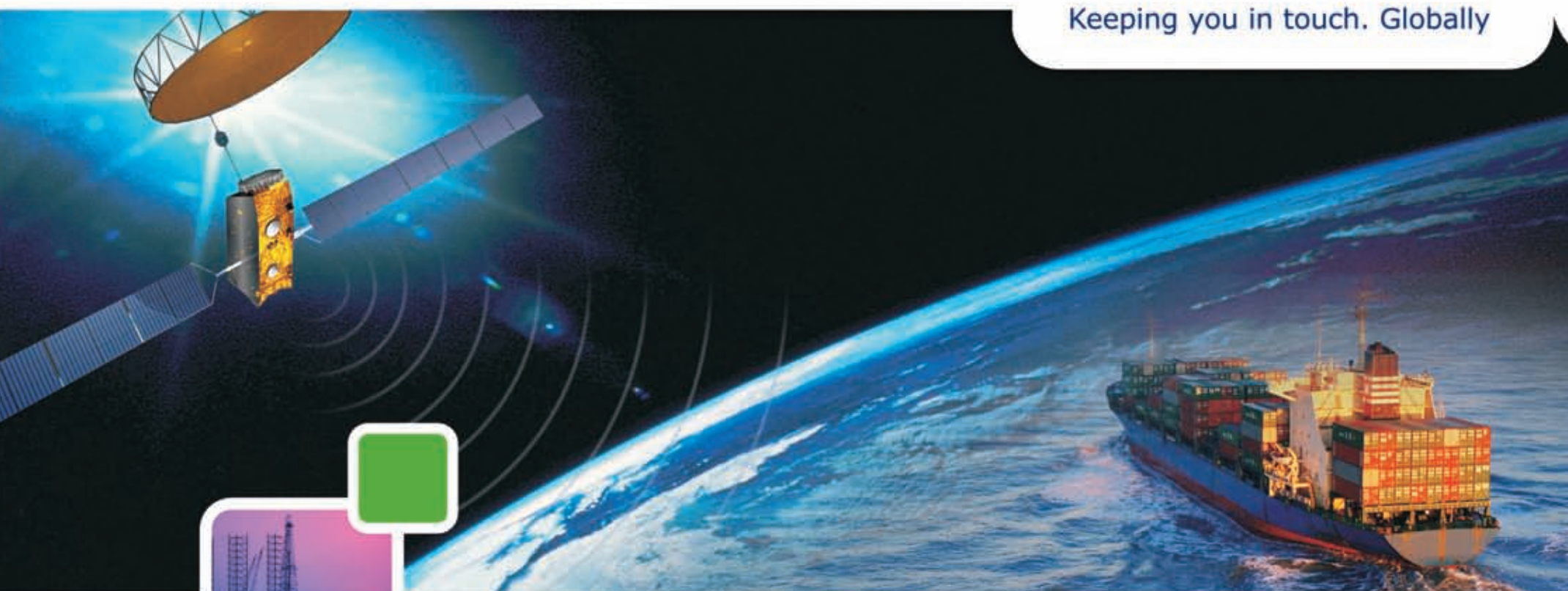
"This was a newly built P2 class multi-purpose heavy lift project carrier, and we supplied a first communication solution, which was a VSAT system from MTN. Shortly after that, in November, the next vessel was under-way, the MV 'Beluga London'."

"As a primary system we used Ku-band VSAT, with a Sea Tel 4009 antenna on the MV 'Beluga Shanghai' and a 4010 antenna on the MV 'Beluga London'. We wanted to have some difference between them to see how they would compare."

Beluga has contracted with MTN for a CIR (committed information rate) of 128 kbps on the VSAT service, burstable up to a maximum rate of 384 kbps.

"That was a place to start, with bandwidth we know that it's a difficult area to

decide what you really need, you can always have a lot of theory behind it but many things will only really show up when you start to use it," said Mr Wramling.

"As a back-up we are using Inmarsat FleetBroadband, the (Thrane & Thrane) Sailor 500. As we know, there are going to be moments where we don't have full coverage so we'll always need some kind of back-up."

"We chose the FB 500 over the FB 250 as it is a research project, it's difficult to estimate the true bandwidth needed in the beginning and we wanted to have some power behind it. What we do for the rest of the vessels later on, now we have experience with it, might be different. It's all about collecting information, learning

The SEMICS set-up will see two separate networks run on the vessels – one for business use and one for the crew

from it and deciding how to proceed."

Beluga has split its communications to run to over two different kinds of networks, with an admin network to do everything that is relevant for the vessel's business running side by side with a separate crew network.

The crew network is typically used to offer internet access or e-mail, and has lower priority on the channel so it will only be able to use the bandwidth that is available above the admin network requirements.

"We have a complete VPN connection from the vessel admin network so that it has a constant connection to the land side," Mr Wramling explains.

"That's one way in which we want to have the vessels just like the land offices, where we know we can always get a connection and always get onboard and send something over there, do updates, and allow support to check for problems."

Voice calls are managed via a VoIP interconnection with the vessel's PBX that is connected directly with Beluga's central PBX in Bremen. A Siemens Hipath system is used in Bremen with an IP-Gateway on board.

"This means that onboard the vessel we have a separate phone network that communicates directly with us on the land side, and you can just dial an extension directly on the ship," said Mr Wramling.

"They could actually make external phone calls from the vessel as well, which are routed by the satellite to our land office, and goes out as from a land-line phone."

The VPN over which these systems run is constantly connected, whether the vessel is operating with VSAT or FleetBroadband. While it could potentially start to become expensive to maintain a constant connection with the Inmarsat service, Mr Wramling says that this has not been the case in his experience so far.

"This is within the research project, and we may decide to do it another way later on, but for the moment we keep the VPN up all the time," he said. "For the time we've been running with the VSAT the uptime has been 90-95 per cent, so it's only been a very short time that we've been running FleetBroadband."

"It was important to have two ways of doing this, with the VSAT and the FleetBroadband back-up, but both of them needed to be able to provide the type of service we wanted them to provide. As we have a flat rate on the VSAT connection we don't care that much about how it's used, but the FleetBroadband costs more to use so we needed limitations on that."

"If the FleetBroadband is connected it has to be 'sorry crew, you can't surf the internet, you have to wait until we get a VSAT connection again'. The people with access to the admin network, like the captain, can still use the internet, but not the crew."

Beluga uses the Riverbed communications management system for traffic optimisation onboard the vessels, provided as part of MTN's VSAT package, and has automatic switching between different VSAT beams, as well as between the VSAT

and the FleetBroadband system when out of Ku-band coverage.

"We have a complete failover system working, with separate VPN connections for voice and data, it works seamlessly - you really wouldn't notice the point where it switches over," said Mr Wramling.

"It takes just a few seconds as it recognises that one system isn't available anymore and goes over to the other system, and the same to switch back. The automatic beam switching is also an advantage, no one has to bother about where you are, what footprint, what satellite – no manual adjustments need to be made."

"Since we are doing the VPN tunnels ourselves at the back end, we go via MTN's land station in the States, and then back to us on the land side. This means that we have everything in our own hands with the traffic, and there's security in there."

Reduced burden

The development of the SEMICS system and the stronger connection between ship and shore are expected to result in an enhancement of ship safety and security, by freeing up more time for the seafarers to concentrate on their nautical duties rather than paperwork, Mr Wramling explains.

"As we see from looking at other sectors, like the medical sector let's say, doctors nowadays hardly have any time for their patients because they have so much paperwork to do," he said.

"Sometimes it's similar with seafarers,

there are always new products coming out, new regulations, and everyone needs to fill out a form or use a program somewhere. We'd like to reduce that burden onboard the vessels, making it more transparent and using some automated processes."

"Some of that might be to transfer data over to the vessel or back to the land side so we can compare the vessels with each other in areas like fuel consumption or how they operate. We could look at information from the engine and diagnose problems before anybody else knows about it on the vessel itself. If we can have people dedicated to that on the land side and leave less for them to do on the ships it will help them to work better."

The SEMICS partners estimate that effective implementation of the system could contribute to a reduction, simplification and digitalisation of the administrative process that could save three to four hours of administrative work daily.

It is envisioned that crews will be able to order in needed supplies like fuel, spare parts and catering online directly at the Bremen headquarters, while checklists and documents for ordering procedures, maintenance checks and signatures at interfaces can be entered and recorded via PC on a touchscreen.

Portable PCs are also planned to be introduced, connected to the shipboard network via a WLAN link for use across the entire ship.

Support teams on shore can connect directly to PCs on the vessels via the VPN,

'We now have the ability to completely replace what's on the computers on the vessels without anybody being there, we can do it all remotely'
– Peter Wramling, Beluga Shipping

which offers another option in reducing the crew's burden in relation to maintenance of the IT networks.

"We now have the ability to completely replace what's on the computers on the vessels without anybody being there, we can do it all remotely," said Mr Wramling.

"With a new computer we just get someone to connect the cables and then we can handle the rest. Windows updates,

virus updates, or anything else that needs to be done can go via the tunnel, and we can also verify that it's really there and it's really working. Support teams can look directly at the desktop of a PC, move things around, and find any kind of problem and solve things directly."

"So do we really need the bandwidth? I could probably say that we don't really need it for surviving, but since we have it we've saved quite a lot of money on saved travelling and not replacing equipment as we can access it right away from shore."

As the SEMICS project enters its final phase, Mr Wramling is hopeful that the introduction of the prototype system onboard Beluga's two multipurpose vessels will produce some definitive answers as to the potential impact of these technologies, and reward the hard work that the partners have put in over the preceding years.

"With all of these types of projects problems can always occur, and on board the ships they are normally more difficult to solve" he said. "There are things that are new in the beginning and you get some surprises."

"But you never give up. There's always a solution and you can always find a way around it, change things and make it better. That's the only way forward."

"The dream would be to be able to handle all of our vessels exactly in the same way as we handle land offices. That would be the ideal solution – we're not really there yet, but we're definitely working towards getting there." **DS**

Managing an IT infrastructure migration

Gulf Marine Management of Greece is close to the end of a major migration of its technological infrastructure, moving from an outsourced support model to full in-house responsibility for the network and introducing a completely new infrastructure that is bringing the ships closer to shore. Efstratios Arvanitidis, Gulf Marine, told _Digital Ship_ about how his team managed this complex operation

Greek shipping company Gulf Marine Management, which owns and has the commercial management of 12 VLCC's, together with two to be delivered during 2011 and two more scheduled for 2014, has spent the last 18 months working on a radical overhaul of its IT infrastructure, moving from an outsourced support model to full in-house management of its network.

Assigned to manage this project was Efstratios Arvanitidis, chosen to head up the IT department at Gulf Marine at the beginning of the process and asked to design and implement a programme that would introduce new technologies in areas like satellite communications, e-mail, and remote maintenance.

As Mr Arvanitidis recalls, Gulf Marine was, at that time, making changes to its overall way of working, and was looking to update the process by which its land based offices in Athens and Hamburg were integrated with its fleet of vessels.

"At that period the company was performing some complicated internal reorganisation, and this needed a lot of IT related tasks to be performed in a really short period of time – as happens to a lot of people, the deadline was 'yesterday'," he told us.

One of the first tasks involved in this process was to initiate a handover of the IT management from the external company that Gulf had been using for support, a job that required a careful examination of the systems and workflows currently in use to avoid complications in the handover.

"There was another company already providing support for both the offices and the vessels, so we had to arrange a proper portfolio handover from that company to us," said Mr Arvanitidis.

"We had to go on board to perform a detailed audit and take any urgent action that might be needed, which also included upgrades or providing service to the IT infrastructure in some cases."

"We had to design and install the whole infrastructure for our new buildings being built in DSME in South Korea. Three VLCCs have been included in this project, which currently have been sold."

Changing satcoms

The new infrastructure installed on these VLCCs and to be introduced to the existing ships, developed over the course of the 18 month project, is based around an updated satellite communication set up which could handle the vast increase in data traffic that Gulf Marine was anticipating.

With that in mind the company decided that it would look at installing VSAT on its vessels, and initiated a trial retrofit installation of the SEVSAT 128 kbps Ku-band system offered by Ship Equip.

"The three-month trial period, which we ran before we decided to proceed with installing the whole fleet with VSAT, was completed successfully. After analysing the results, financial and technical, the company decided to proceed with the retrofit installations," said Mr Arvanitidis.

"Why VSAT? This is a question that all of us, or most of us, have already answered or need to answer in the near future. For us, the owners want to keep their 'good' officers happy in order to keep them in the company and working for them for a long period of time. One way we saw to make that happen would be to provide them internet access while sailing."

"We still use a combination of communications though, as the vessels range from one to seven years old and the technologies have changed over the years. Some have FleetBroadband and some have Inmarsat-B, and even mini-M as a third back-up whenever the first or second failover system fails."

While the company was not looking to open up every conceivable website to those onboard, Gulf Marine saw this increased internet availability as offering access to a blend of social connectivity and operational data.

"The internet is, for all of us, the biggest free information database, you can find information ranging from the nearest pizza delivery telephone number to the most confidential documents of the US government," said Mr Arvanitidis.

"Our fleet's needs lay in between these two – they didn't need pizzas delivered on board or to read Wikileaks, but they needed to have the ability to download the latest weather updates or route corrections on demand. Why shouldn't they be able to find machinery spare part numbers and exact details if needed, whenever they are needed?"

Mr Arvanitidis notes that installation of the system for the retrofit vessels after the trial had been completed was not quite as straightforward as the subsequent new-build installations, particularly when it came to integration of existing computer networks, though the team's earlier preparatory work paid off in this respect.

"Most times this meant that we had to run cables, and had to send information to the vessels on how to run a new hard-wired network in order to extend or replace the existing one," he said.

"We faced vessels with two or three switches in the same network, but only to support ten computers. This was not acceptable so in many cases we had to reconstruct the whole network."

"Our audit documentation was very helpful for this, and provided a lot of information to us while building and sending the pre-installation list of tasks to be performed to the vessel."

Once the network is in place Gulf Marine has also been able to manage some of the further configuration of the onboard systems from its offices by remotely accessing the network from shore, in contrast to the non-VSAT enabled vessels.

"For the vessels getting VSAT we make a few initial adjustments to the server to prepare, and then when the VSAT is live we do all the rest remotely," said Mr Arvanitidis.

"This can be done easily after installing VSAT to the vessels. For the others we had to follow strict schedules and attend vessels when loading or discharging at ports, and work many hours a day."

"Now we are trying to implement WSUS (Windows Server Update Services) from Microsoft, so the updates will be downloaded once and then distributed across the network offline. This is the same as what we do for the anti-virus. For the vessels that don't have VSAT we try to follow a strict schedule of about one day or a day and a half when the vessel is loading or discharging to update the computers."

Management of the communications link and access to and from the onboard networks is managed by the CommBox system from Virtek (now part of KVH).

"If we say that the VSAT service is the lungs of our project, then the heart is definitely the CommBox," said Mr Arvanitidis. "When we started designing our solution we needed an appliance that could deliver secure ship-to-shore connections, fast and reliable data transfer, and trouble free cooperation with all the types of satellite carriers and their devices."

"We proposed to test the CommBox, as it was covering all of these needs, and I was happy with the fact that it was a Linux box since this meant that it could be tailor made to follow our exact needs if any would pop up while testing it. This was done once when Virtek built a custom driver to connect to our JRC FleetBroadband 500 and 250 devices."

"We also needed to have reliable firewalling policy enforcement, based on the type of carrier being used. And, of course, the internal mail server and the roaming crew mail option, which we haven't used yet but are now designing a system to use it, were good features for us. As an additional task currently we are running a project installing CommBoxes on the rest of our vessels in order to start using the embedded e-mail server option, through the use of a Private Hub."

New infrastructure

With this new satcom system in place as the basis of the new infrastructure, the Gulf Marine team then set about updating the way in which it communicated with the vessels, starting with telephone voice calling.

"By installing VSAT we were able to reduce the communication costs of the vessels in two ways," said Mr Arvanitidis.

Gulf Marine Management is currently implementing the Windows Server Update Services system from Microsoft, so updates will be downloaded once to the ship's server and then distributed across the network offline

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"The first was with VoIP telephone lines, with the vessel able to perform business calls from two dedicated business VoIP lines to the shore with low rates. Our offices can also call the vessels on two UK (for us) land line numbers, that are basically free of charge, eliminating the call cost to the vessels."

"At the same time we added two additional dedicated phone lines for the crew attached to the vessel PBX, they could call their families from the privacy of their cabins and didn't have to be on the bridge using the mini-M phone with all the others. These lines have low rates using scratch cards."

The second method through which the company cut its communications costs was in its ship-to-shore e-mail and data exchange services.

"(For e-mail) we had been asked to move from Rydex and choose a new system that would be easy to distribute to all of the vessels and easy to install, while at the same time being reliable and cost effective," said Mr Arvanitidis. "For this we have chosen AND's RapidoMail solution."

"The entire vessel's correspondence and data synchronisation of PMS (planned maintenance system) and purchasing platform data won't add a single cent to the vessel's communications costs."

Remote access

One area where Mr Arvanitidis believes there has been a significant cost saving has been in remote maintenance of the onboard systems, which has dramatically reduced the amount of time and effort required to keep the ships up and running.

"There has always been a need for the company to reduce the actual cost of the fleet's IT maintenance related tasks, each time there was a need for support we had to give them a phone call and spend a long time talking, or even arrange to go on-site, which would cost a lot of money," he explains.

"Now we have got that down to one visit per year to the vessels, with everything else done remotely. To do that we had to establish a system that would provide the ability to provide remote support and at the same time help the IT department monitor the vessels' networks on a daily basis, and keep the system up to date. For that I'm talking about operating system patches and anti-virus updates, things most people will be doing."

"We also wanted to be able to monitor backup tasks and any other server-side running services without bothering the crew. With the VSAT we were able to do this at no additional cost above the fixed monthly fee we pay for the service."

The IT team has additionally tried to upgrade the information resources available both to those on shore and to the crews on board, to help the remote maintenance process to run as smoothly as possible.

"When visiting each of our vessels we had to update the existing documentation on some, but in most of the cases we had to create it from scratch," Mr Arvanitidis explained.

"However, a thorough systems audit and creating that documentation has now provided us with the ability to find support information about any of the equipment and software installed on our vessels in less than five minutes."

"For example, if a hard disk fails on a vessel and needs to be replaced we don't have to send e-mails to the captain and ask him to pull out the disk to find the serial number, and then wait for the reply, we can check the documentation. This is the alpha and the omega for our job."

Annual vessel visits are now much more focused and straightforward to schedule, with Mr Arvanitidis estimating that 90 per cent of support jobs can be handled from shore.

"Each engineer is dedicated to a number of vessels and follows the vessels' schedule, attending the vessels once per year. This is an additional way to keep the IT infrastructure in its best working condition," he said.

"We also do this to make sure that the crews are following our IT policies, as well as our support there are also tasks that need to be done onboard and the vessel has to do it following certain rules."

> **"The entire vessel's correspondence and data synchronisation of PMS (planned maintenance system) and purchasing platform data won't add a single cent to the vessel's communications costs,"**
>
> **- Efstratios Arvanitidis, Gulf Marine**

"Over the last year and a half of our project a lot of tasks needed written information to be delivered, and we are now in a position where we can provide a full 'how-to' manuals database to the ships. In a case where they need a written procedure to follow they can refer to the How-To manuals and don't even have to send us an e-mail."

These advances in IT maintenance capabilities have been welcomed on both the shore and the ship side – though the office-based IT department of four people is now tasked with offering instant support to the ships via the communications network.

"We have six vessels per engineer, and one dedicated to the office side," said Mr Arvanitidis.

"We had to create a 24/7 IT support team that would cover and support the vessels at any time, over the phone or remotely wherever available. We had to find well qualified IT engineers and train them on the specific business."

"They have their BlackBerrys and their mobile phones and have to use them! Hopefully the vessels can think about where Athens is and the time zone so they don't call during the night, but in cases where they do we always reply."

Ship Equip has also provided Gulf Marine with a ship tracking tool as part of its service, which it can use to monitor the status of the communications system from the office and be instantly notified of any problems.

"With this you can see that a vessel is under coverage but appears offline - this is not good and we don't want this to happen," said Mr Arvanitidis.

"When the vessel is under coverage it should be online, so we know that this specific vessel has an issue. One of the best things about having this tool and the remote access is that we can start troubleshooting and often resolve an issue before the vessel even realises that there is a problem."

Into the future

Having seen the benefits of some of the wide ranging changes Gulf Marine has made in the way the company supports and communicates with its vessels over the last eighteen months, Mr Arvanitidis and his team is keen to leverage the new infrastructure to introduce new and different applications to the ships that were not available to the company previously.

"There are many times in different companies, and I'm sure this is a fact for most people, when new systems are installed on board without the crew having been trained on how to use them first, because of time pressure - being able to perform training sessions over video conferencing with officers on board has been another positive aspect," he said.

"We have a saying in Greece that a picture equals 1,000 words, but we don't have a saying for streaming video! Sometimes we need to send live video about something that happened on the vessel in order
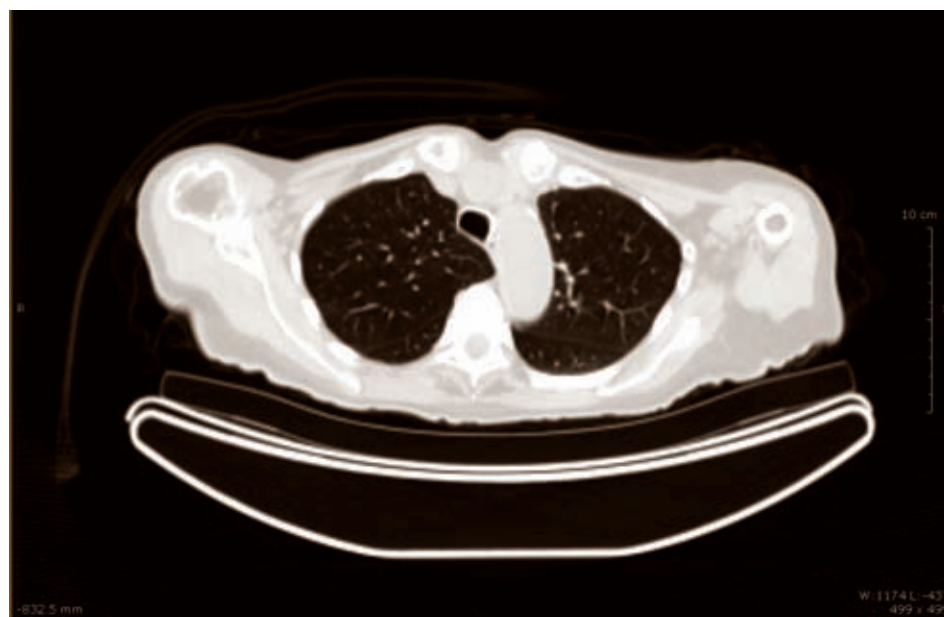
Though the company hopes never to need it, telemedicine technology could allow scans and other medical data to be transmitted from the vessel to shore

to get immediate action from our service companies. This will be something we can run on the VSAT as well."

"Then there's telemedicine – we haven't used it yet and hopefully we will not have to use it either in the future. But the ability to perform telemedicine sessions gave added value to the project."

As the project draws to a close, Mr Arvanitidis is satisfied that he and his team have met the challenges put to them by the management and delivered a better way of working to the company.

"We couldn't predict the amount of data that would be transferred to and from

the vessel over VSAT, but looking at our usage statistics we are talking about 20 gigabytes being downloaded (per month), with 10 gigabytes uploaded," he said.

"We couldn't do that on a vessel that didn't have VSAT, and would not have allowed it to happen."

"We have seen some results that we wanted to see, we've had captains tell us we've done a great job, some are saying they've seen benefits from the new infrastructure on a day to day basis on board the vessels. I like this, this is what we wanted to happen and this is what we got." **DS**

Online freight rate exchange launched

www.linescape.com

Linescape has launched FRESCOTM, an online Freight Rate Exchange for shipping containers used for purchasing and sales in the freight forwarding sector, and for buyers of freight services.

The company has previously run an online search engine for container sailing schedules, hosting schedules from more than 120 shipping lines, and will supplement that service with this new offering.

FRESCOTM connects the two main groups of visitors in Linescape's user base, giving both sides access to each other for the purpose of initiating bookings and creating business relationships.

"We bring together shippers and forwarders requesting and offering freight rate quotations, all seamlessly tied in to our sailing schedule search engine," says Linescape's co-founder, Dimitrios Sogas.

"Users can now leverage the huge user base Linescape has assembled, and simplify the task of gathering quotes or finding new customers."

"With just a few simple steps, a shipper can request quotes from a much larger group of forwarders than would previously have been feasible. And similarly, forwarders can reach a much wider customer base, all made possible by the broad appeal of Linescape's simple and powerful sailing schedules search engine."

FRESCOTM users seeking to book a shipment on a specific route can seek a quotation from a number of logistics providers at one time with a single request, which Linescape says should help users to get the most competitive prices.

"Since FRESCOTM does not represent either party, users can be sure that they are getting the best possible offer, directly from the logistics provider," said Mr Sogas.

Prospective users need to establish a FRESCOTM membership, select the countries from which they wish to offer quotations, and can then start receiving rate requests by e-mail.

For forwarders, their company contact details are included in Linescape's directory and appear in Linescape search results.
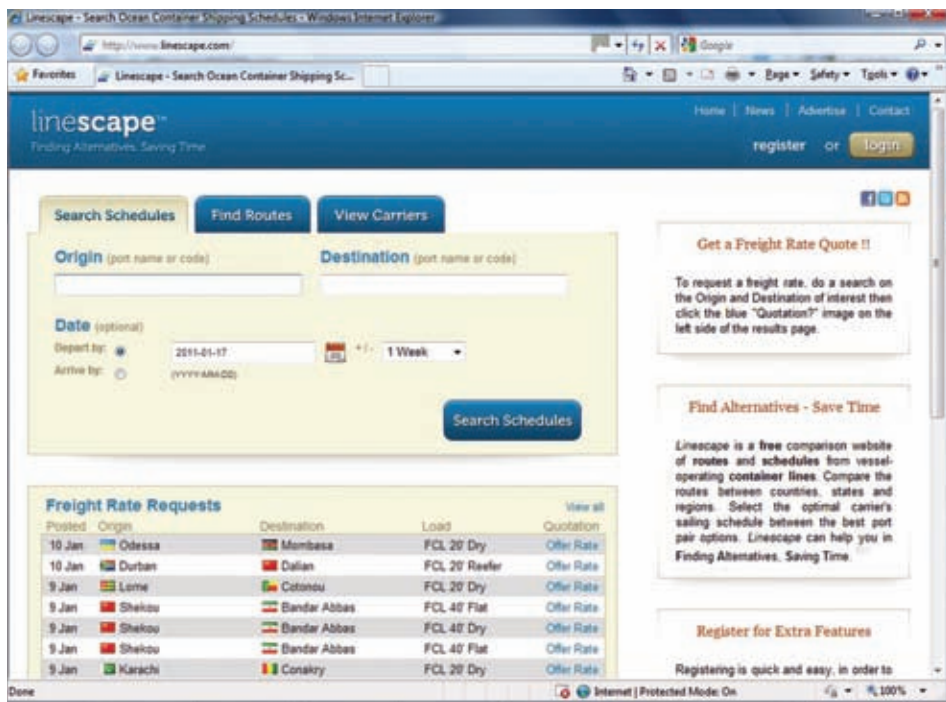
Linescape aims to bring together shippers and forwarders requesting and offering freight rate quotations

E-commerce for ABC

www.shipserv.com

ShipServ has announced the signing of ABCmaritime to its marine and offshore electronic purchasing system, ShipServ TradeNet.

Headquartered in Nyon, just outside Geneva, ABCmaritime is the second Swiss shipping company to sign up to ShipServ, and will use TradeNet to source spares and supplies for its fleet of chemical, oil and bitumen tankers and offshore vessels.

The company manages around 30 vessels, with part of the fleet owned by the ABC Group and part under management for third party owners.

ABCmaritime vessels are already equipped with BASSnet purchasing software, which is directly integrated to TradeNet.

Using the BASS system, the ABC vessels can connect to the ShipServ Pages supplier directory, raise requests for quotations and place orders via TradeNet in co-ordination with shoreside offices.

"ABCmaritime operates in specialised niches but with a global scope," said Daniel Wolf, CEO of ABCmaritime Group.

"We like to work with partners like ShipServ who understand our business and have a track record of delivery to high standards. We foresee considerable potential for our fleet and management operations from this partnership with ShipServ."

BASS agrees contract in Swedish cluster

www.bassnet.no

BASS reports that it has won a new software contract with a company in the cluster of tanker managers on the island of Donsö in Sweden, its first contract in the area.

BASS has agreed to deliver its BASSnet Fleet Management Systems software to Rederi AB Veritas Tankers, a Swedish family-based business, under a contract which BASS hopes will pave the way for further deals within the cluster.

Implementation of the software across Veritas Tankers' fleet and at its shore-based organisation is scheduled to take place in January 2011.

"This software will help us further improve the safety on our vessels and facilitate the work for the crew," said Joakim Franzén, safety and vetting manager at Veritas Tankers. "It will also improve verification control ahead of inspections."

Mr Franzén notes that the company will also examine the possibility of expanding its use of the software following the installations, should it see further opportunities for operational improvement.

"If we need additional software for our office and vessels, then additional modules from BASSnet will be considered," he said.

The small island of Donsö outside of Gothenburg, with a population of about 1,500, hosts 12 shipowners, who between them own a total of 47 vessels, mostly chemical and product tankers. In addition, there are eight small supply vessels that operate out of Donsö.

Electronic documents trial at Russian terminal

www.essdocs.com

Balt-Forward LLC has agreed a deal to trial the CargoDocs eBill of lading service from e-documents provider Electronic Shipping Solutions.

The system will be used to facilitate the transport of Russian Export Blend Crude Oil (REBCO) crude and refined product shipments by tanker out of Primorsk.

The CargoDocs system aims to allow forwarders, shippers, carriers, surveyors and agents to replace all paper shipping documents such as the Bill of Lading, Certificates of Quality, Certificates of Quantity, Time sheets and Ullage Reports, with original electronic documents.

These 'eDocs' are originated, reviewed, signed, endorsed and produced back to the carrier online, through the Electronic Shipping Solutions eDocs Exchange.

Primorsk Oil Terminal and Primorsk Petroleum Product Terminal are together the largest hubs for exports of REBCO and Russian petroleum products, with Primorsk reporting throughput in excess of 79m tonnes of crude oil and products servicing 935 vessel calls in 2009.

"We are very enthusiastic about CargoDocs," commented Lolita Savchenko, operations director of Balt-Forward.

"We estimate that using eDocs will eliminate up to six hours per voyage which are currently wasted on printing, signing, stamping and distributing paper originals."

North West Customs Point for Energy Cargoes, which services Primorsk, has officially informed Balt-Forward that it has no objections to accepting CargoDocs-originated Bills of Lading and Cargo Manifests for customs purposes.

Electronic Shipping Solutions says that it is also currently in the process of rolling out its electronic documents service at other crude and gas terminals across the North, Black, Baltic, Norwegian and Mediterranean Seas.
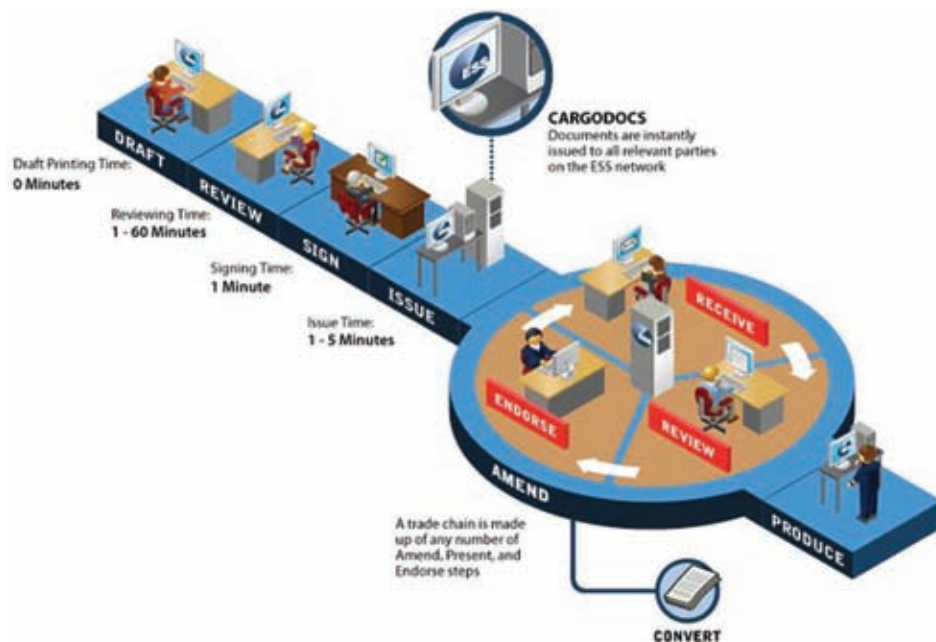
Balt-Forward estimates that eDocs will reduce the document management process by hours on each voyage

Maritime electronic purchasing portal comes online

www.onemaritime.com

A new electronic ship supply procurement portal, backed by the International Shipsuppliers & Services Association (ISSA), has come online as of January 1st 2011 with the aim of allowing ship owners, ship managers and ship suppliers to select and order ship stores from both onboard ship and ashore.

The One Maritime initiative will allow maritime stakeholders to access the ISSA Ship Stores Catalogue and other information sources, online or on CD, in their search for provisions, bonded stores, pantry and deck and engine stores worldwide.

Catalogues immediately available for access from the time of the launch include the ISSA Catalogue and the One Maritime Provisions and Bonded Stores Catalogue, as well as other catalogues detailing cargo access equipment, engine spare parts and medicines.

The ISSA Catalogue forms a major part of the One Maritime offering, though other main-line industry catalogues are also included which the companies say makes One Maritime "the most comprehensive maritime catalogue search engine available on the market today".

Users of the system will be able to issue requests for quotations (RFQs), order goods and deal with invoices, directly from the application. Further computer plug-ins are also planned to allow the user to track goods, draw up supply contracts and return items should they need to.

Ship owners, managers and suppliers will also be able to search for vessels, by name and vessel position, by accessing a Vessel Master database, incorporating AIS information and information on ports and agencies.

Ships' stores and provisions supplies can be searched generically or by product type, or through the individual port of delivery.

The One Maritime initiative has a number of project partners, including ISSA and ShipCentric, and will offer e-commerce connectivity via specific maritime e-commerce systems such as MarineLink from EDB ErgoGroup.

Under an arrangement with One Maritime, MarineLink will connect its e-commerce system to the application to allow access to the catalogue service from the MarineLink trading platform.

The partners are expecting that different types of users will be able to take advantage of a variety of available services relevant to their own needs.

Ship owners and managers will be able to access an overview of their own ships' ordering details, search by part or manufacturer, see service equipment due for survey and upload relevant service reports.

Suppliers will have an overview of ships in their own ports with estimated times of arrival and departure, and will be able to search for particular owners or vessels.

Suppliers can also upload their own catalogues, as well as service items on certain vessels and customers, prioritising equipment due for survey. These features are in addition to the basic ordering, order confirmation and e-invoicing functions.

Equipment manufacturers will also be able to upload their catalogues for access by marine purchasers, which they can update as required along with their profile and contact information.

Torben Brammer, One Maritime co-founder and CEO, believes that the company's mix of multiple information sources and the latest technology will prove to be beneficial to those involved in the process of managing ship supplies.

"Our technology products have allowed us to think of data sources and the use of data in a much different way than ever before," he said. "With its unique search engines and data migration technology, One Maritime has managed to build an online platform that gives its users access to a mix of data from multiple data sources at the same time."

"It changes the way that catalogues, for example, will be used in the future. It will allow users to search across multiple information sources faster than just opening one printed catalogue and then to start browsing the pages one by one for the right information."

"It ensures updated information at your fingertips, something that the current printed catalogues cannot deliver, and it gives subscribers access to download updated data into their back office systems in a much simpler way. We have mixed the different catalogue data with specific data for vessel, supplier, owners, managers, vessel locations, industry KPIs and much more."

Swedish cargo vessels get PMS

www.marinesoftware.co.uk

Swedish based Rederi AB Uman is to install Marine Software's MPM (Marine Planned Maintenance) system on three Gibraltar flagged self-discharging general cargo vessels, which operate mainly in the Baltic and North Sea regions.

A central OPM (Office Planned Maintenance) system has also been delivered for Rederi AB Uman's Karlshamn office, which provides all shore side technical staff with the ability to monitor fleet maintenance status ashore.

"For us, the choice of planned mainte-nance system was simple; a user-friendly program with a lot of module functions that can be built on to fit just our organisation, and a great support function as well," said Björn Holm, fleet manager at Rederi AB Uman.

"The main reason for us to go from a file based maintenance system to computer based was flag requirements, but that is a step that we don't regret. Next step for us is to implement this system in our Swedish flagged vessels as well."

Reederei AB Uman says that it was particularly interested in the 'PM Job Lock' module available with the system, used to ensure that, once the MPM database was operational on-board, no crew member would be able to make Job Card amendments to job instructions or interval periods, even as the system administrator.

The central office OPM users can control these changes ashore and submit simple job card update files to the vessels for the reflective changes to be made, as required.

Marine Software says that this type of control feature is becoming increasingly popular across its client base, as it ensures on-going database integrity, especially for same-class sister vessels.

ABS Nautical Systems has opened offices in Vancouver, Canada and Shanghai, China as part of the company's efforts to expand its global footprint. The Vancouver office will serve local clients including Teekay, Seaspan Ship Management, and Valles, and handle all Pacific Northwest operations. Both offices' operations will be overseen by Tom Blenk, VP of global operations.

www.abs-ns.com

The planned maintenance system will operate on the ships as well as in the office

AVEVA increases security options

www.aveva.com

AVEVA, a producer of design software used by shipyards, reports that it has increased the choice of security options available to its AVEVA Global customers through the implementation of Microsoft's Windows Communication Foundation (WCF) standard.

AVEVA Global is integrated with other AVEVA software systems to enable companies to workshare and to collaborate on projects with their partners, suppliers and contractors, wherever they are in the world.

WCF is a security standard that will give users an interoperable platform for securely exchanging data. This improvement is configurable, with different parameters that can be adjusted to the user's unique security requirements.

Options such as authentication, encryption and a selection of suitable transport mechanisms for data are all included, while combination with Microsoft .NET compatible security features makes it possible to adapt the configuration to the company's IT policies, whether this is LAN, WAN, internet, or a combination.

In addition, AVEVA says that using WCF can help reduce costs for global communication by replacing the need for connections such as VPNs.

"Effective workshare and collaboration is dependent on the ability to keep the system agile, by transmitting only changes, rather than large and cumbersome datasets," said Thierry Vermeersch, product strategy manager at AVEVA.

"This demands an equally agile security strategy, and one that is flexible enough to meet the changing needs of the customers' evolving environments. We have listened to our customers and included the flexible security of WCF into AVEVA Global in order to take the benefits that it offers to the next level."

Seagull updates online system

www.seagull.no

Seagull reports that it has updated its CES Online service, a Crew Evaluation System used to measures a seafarer's knowledge during the recruitment and promotion process.

CES consists of a knowledge database with over 5,000 multiple choice questions specific to seafarer knowledge, as defined by STCW.

The system is structured to use pre-defined test types, with a built in question randomisation feature to maintain test integrity.

Own company-specific questions can be created using the CES Test Editor tool, drawing on the entire CES library of questions and allowing them to be edited as per the company's own requirements.

Access is available via the internet, with no special software needed. Users can have test results stored in their own central training database, can pre-schedule the start of a CES test in advance or start it on demand, and can print test certificates and reports.

Managing purchasing with ERP data

Enterprise Resource Planning (ERP) technology helps companies to integrate operations and share data more easily. The Costamare Group has introduced such a system, and has used its capabilities to improve its management of purchasing expenses, as Haris Antoniadis, CIO with Costamare, explains

One of the most common goals when implementing a new IT system is to try and reduce the operational costs within an organisation, whether through increased automation or improved efficiency.

The Costamare Group, a company specialising in container shipping, has attempted to gain these kinds of benefits by using Enterprise Resource Planning (ERP) technology to create value from information gathered in the operation of its fleet of 43 vessels, managed from its two management companies located in Athens and one in Shanghai.

One area that the company has particularly focused on in this regard has been managing its purchasing, where Haris Antoniadis, CIO with the Costamare Group, says that investment in technology has helped in controlling costs by allowing a greater level of analysis of real time spending.

"In general, items for which a company does not have an inventory in its books are considered as an expense as soon as the company takes possession of the item – meaning when the spare part is delivered to the vessel, or the service is completed," he said.

Using its ERP system Costamare has been able to eliminate the grey area of missing information, where goods have been received but the invoice has not been processed

"So it is the delivery date that actually defines when the expense is recognised by the company."

"These are expenses that, although they have already occurred, for things like spare parts or consumables that have been delivered onboard the vessels and services that have already been completed, do not occur in the books of the accounting department as no invoice has yet been processed."

This discrepancy between the actual status of the company's purchasing and what appears in the accounts is something that Costamare wanted to eliminate, to ensure that its management of costs could be as accurate as possible.

According to Mr Antoniadis, approximately 25 per cent of invoices related to deliveries in the preceding two months at any particular point would typically not have been processed by the accounts department, and up to 50 per cent of invoices relating to the last 30 days.

"The general practice as everyone knows is that, after the delivery of an item, the supplier issues an invoice and sends it to the customer," he said.

"It takes some time for the document to be delivered to the customer and then, according to the company's practices, some more time is needed for the document to be processed and recorded by the accounts department. It usually has a life cycle through the departments for approvals, and in a typical scenario it takes a couple of weeks or even more from the delivery date of an expense for it to be recorded in the accounts department based on that document."

"There are also expenses that are originally covered by agents, and then forwarded to the shipping company through disbursement accounts. These expenses take a lot more time to be processed by the shipping company. So at any given moment there is a part of the expenses for which an invoice has not yet been processed by the accounts department, and these expenses do not appear in your accounting software package as invoices."

Costamare's solution to the issue was to change its focus from the data available from the accounts department to the purchasing module of the ERP system, where the data from actual deliveries would give a more complete picture of the expenses accrued for any given period at any moment in time

"The ERP can be updated with a delivery event, either the same day if the vessels are equipped to do that, or after a couple of days by the office personnel," said Mr Antoniadis.

"This means that, at any time, the full picture of the expenses can be present in the ERP. This picture will change very little when the invoice comes, and will only have to be updated with minor changes and charges that might not have been included in the delivery record."

"If the ERP users have the discipline to record the expenses accurately and in a timely way the company will have in their ERP system a lot of information that can help in managing costs in a more efficient way. This information is very rich because it can show the expenses that occur in the primary cost elements like spare parts, consumables, and services, and can deliver this information in a timely manner to the person in charge."

Monitoring expenses

Mr Antoniadis says that the benefits that a company can achieve from a more precise and timely analysis of its expenses can be significant.

"The ERP company gets an idea of the performance for Q1 sooner than in other cases, when it might be too late to react," he said.

"Another major advantage from monitoring costs with ERP data is that the level of analysis of an expense category expands in a natural way relative to the primary cost elements. ERP information relates the cost data to the actual items, the cost elements, which is then linked to operational data like running hours, maintenance actions, and all of these things."

"The data stored in the accounts department software is not structured in the same way, so it cannot be analysed to the same depth."

As an example, Mr Antoniadis illustrates how a hypothetical set of quarterly expenses would appear in both sets of reports, with the ERP system providing additional layers of metadata that can be applied to cost analyses.

"For example, for the first quarter you might have main engine spare parts expenses of $10,000," he said.

"This $10,000 would be recorded in the accounts software as a series of invoices 123 or ABC, but in the ERP they correspond to real life spare parts. So the analysis is far more meaningful when we are using the ERP."

"The secret is to make the total expenses in the two systems coincide – this is the difficult part."

Mr Antoniadis notes that the IT department can play an important role in this respect by providing a way of reconciling the data entered in each area and creating a workable system.

"One has to be sure that the picture of the expenses in the two systems is accurate, otherwise the accounts department's

data will be the winner and the rest will not be very useful," he said.

"The cost element of the purchase must be recorded with the accounts department's coding standard, it must be categorised correctly and everyone has to respect the accounts department's rules for recognising the cost of the delivery, and so on."

"Usually it can be hard to convince the users and the different departments of the importance of having that discipline when they record expenses."

In this sense, one of the biggest challenges to using ERP in this way is in the management of the human element of the system, as Mr Antoniadis explains.

"There are a couple of difficulties, one is that the ERP must be updated on time to reflect the actual status of purchases. In some cases this means extra work for the people who will be the users of the ERP," he said.

"To ask the ERP users to maintain the required discipline to justify the use of the ERP, the company must take advantage of the richness of the information stored in the ERP system. In my view there have to be reports, financial and operational reports, bringing in all this information and reflecting the analytical power of the ERP data."

Mr Antoniadis notes that Costamare has been fortunate enough not to have had many problems in getting its people on board with the system, and says that the accounts department has even welcomed the changes once it had seen how it could benefit.
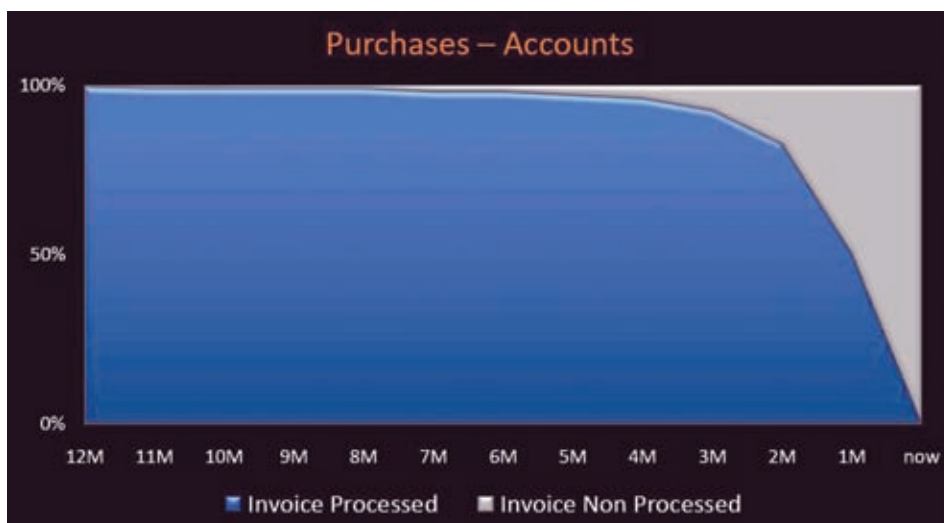
"If you give the tools to the accounts department to verify the figures and make sure that they are going to publish the correct results, then usually it will be welcome," he explained.

"And when the guy in the accounts department has the ability to verify his figures against the ones produced in the ERP by the different departments, then he is assured that he has the correct figures and it is good for everybody."

"Another thing that is very helpful in this kind of situation is not to have any pressure from the management on the accounts department to produce more and more reports and Excel spreadsheets, and compile more figures. The management has to, as far as the operational expenses are concerned, make use of the data in the ERP so the accounts department can see that they benefit from the situation and are not just pressed into even more reports."

With these results, Costamare believes that its investment in this technology and the changes in its way of operation have been vindicated. With faster access to its purchasing data and a more accurate picture of its spending, the company will continue its efforts to improve its efficiency and drive down operational costs. **DS**

Adonis launches release 3:

Web or Windows? – Both, please!

Adonis recently launched release 3.0 of its maritime Human Resource Suite. At the same time, the company announced that it plans to increase its focus on web development based on the .net technology. A Web Recruitment service, integrated with the Crew Management System, is already on the market and has been introduced by a number of customers. Customers administer a register of vacant positions linked to job requirements on their websites.

An applicant can create an account and apply for a specific position or just upload his or her CV. This is standard procedure for most web recruitment services. What is unique about Adonis, however, is that, once an applicant is accepted for further processing, it is possible to seamlessly upload all the information from the applicant's account, including enclosures, to the Human Resource system. This cuts out manual work and saves having to retype information, which means that the recruitment process is to a large extent rationalized and streamlined.

- A Web Crew Portal will be launched later this year, says Product Director Erick Meijer of Adonis AS. This is a new service that will enable employees to administer their own accounts relating to the Human Resource system. They will also be able to read their own data and upload information to the core system. One of the many features of this portal is electronic registration of working hours by swipe card or PIN code, with an automatic alert when the regulations relating to rest hours are about to be violated. It is also possible for employees to upload travel expense claims for reimbursement, register overtime and have read and write access to parts of their own data such as personal and family information etc.

"It is very challenging to tie together a protected in-house database containing very sensitive crew information with web-based services that by nature are vulnerable," says Erick Meijer. Adonis has found a way of doing this that satisfies the most stringent requirements for data security. Only the least sensitive tables of information are replicated to the services that are available via the internet. In this way, we can combine the availability and flexibility of a web-based service with protection of sensitive information such as payroll data, social security and account numbers and similar information you do not want to risk being hacked and misused.

- We foresee that our Windows-based main HR and Payroll system will co-exist and interact with new web-based services for many years to come. But Adonis is committed to innovation and front-end technology. As we continue to develop our .net solutions, we naturally keep in mind that Windows-based applications will one day be history, says Product Director Erick Meijer.

From offshore to cruise
One of the major improvements in release 3 is the possibility of tailoring the Human Resource solution to suit different industries. Adonis provides solutions for a range of sectors in the maritime industry, from crew management companies and traditional shipping to cruise companies, the offshore sector and oil rigs. The portfolio consists of modules for office use as well as a range of modules for shipboard use, such as Crew Station Bill, Cabin Allocation, Crew Effects, Masters Cash Account and Timecards Registration. The central database ashore is kept in sync through a powerful built-in database replicator.

The solutions are also very scalable, and they are suitable for small and medium sized companies as well. This enables customizing of the user interface to match the various roles in a global organization, such as crewing agents, branch offices, inspectors etc. As companies grow, they can be sure that Adonis has the capacity to grow along with them.

Another of Adonis's distinctive characteristics is its philosophy of interfacing with other systems.

- Our willingness to provide interfaces and interaction with other systems has been one of the success factors behind our growth. We may have the best Payroll or the best Crew Rotation module, but that doesn't mean that the customer needs to replace his whole Human Resource system to use some of our modules. Instead it can be interfaced with the Adonis modules of the customer's choice, says Product Director Erick Meijer.

In-house and ASP

Adonis AS is a Norwegian Software house that has specialized in complete integrated Human Resource and Payroll software and related services for the maritime industry. Its solutions are delivered worldwide. Customers can choose between traditional in-house installations or utilize the software as an ASP service over the internet.

Headquartered in Norway and with a large development unit in the Ukraine, the company has built up an impressive list of references. See **http://www.adonis.no**

Product Director Erick Meijer, Adonis AS

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the human touch

New moves in regulatory reporting
- the European Advance Cargo Declaration

The European Community Shipowners' Associations has issued an explanatory note to assist its members in complying with the new regulations of the European Advance Cargo Declaration, which have come into force as of the start of this year – *Digital Ship* examines some of the key provisions that will affect vessel operators

The new European Advance Cargo Declaration has taken effect as of 1 January 2011, a regulation which requires ships carrying goods in and out of the EU, Switzerland and Norway to alert customs authorities prior to their arrival by submitting an Advance Cargo Declaration (ACD).

Inspired by similar requirements introduced in the US following the terrorist attacks of 9/11, the EU regime aims to give Member States a clearer picture of the movement of goods in its surrounding areas.

This will be facilitated by the introduction of an electronic system to which shipping companies will be obliged to connect and submit information on their cargo when approaching EU waters.

To assist its members in identifying the relevant sections of these rules as they will apply to their own companies, the European Community Shipowners' Associations (ECSA) has issued an explanatory note that outlines a number of the key provisions.

One point to note is that the rules apply to the import and export of goods to and from third countries to one or more EU Member States, with shipping companies needing to submit cargo information in advance to the relevant customs office.

This applies solely in the case of import or export of goods, so consequently the advance cargo declaration is not relevant for shipping in the case of transit of goods.

In the case of import of goods, a ship operator will also have the additional obligations of having to submit an Arrival Notification (AN) and a 'summary declaration for temporary storage'. In some cases of diversion of the ship, a ship operator will have to submit a diversion request.

The EU rules also differ from the US version in respect of their application to the short sea shipping sector. While US rules apply to deep sea container carriers, in the EU short sea shipping companies will also be subject to new regulations, though these will vary among the sectors, particularly in relation to the time-frames involved.

In its explanatory note ECSA identifies the specific sector requirements for the submission of information as follows.

- Deep sea container shipping: 24 hours before loading of the cargo onboard a ship in a foreign (non-EU) port in case of import; or 24 hours before loading of the cargo onboard a ship at the EU port of departure. In case of import, the declaration obligation applies to each foreign (non-EU) port of loading and not just to the last foreign (non-EU) port of loading before entering the EU.
- Deep sea bulk shipping: 4 hours before arrival of the ship in the first EU port of arrival in case of import; and 4 hours before departure of the ship in an EU port in case of export.
- Shortsea shipping and combined transport: 2 hours before arrival of the ship in the first EU port of arrival in case of import; and 2 hours before departure of the ship in an EU port in case of export.

The distinction between 'deep sea' and 'short sea' is a geographical one, with ECSA describing ships coming from or going to neighbouring countries of EU Member States located either in the Baltic Sea or in the Mediterranean Sea as being qualified as short sea shipping.

Information requirements

Information requirements for entry (with the Entry Summary Declaration or ENS) and exit (with the Exit Summary Declaration or EXS) vary, as one might expect, with entry requirements being decidedly more comprehensive.

In both instances numbers of items carried and all applicable product and consignment codes are requested, with details of numbers, volumes and weights of goods carried, as well as information on various parties involved with the cargo.

Entry requirements include specific questions on the when and where arrival is expected, and the names of parties at the receiving port for notification.

A full outline of the required information is laid down in Annex 30 A of the Regulation 1875/2006 (link available below).

The ENS is used by the relevant customs office to carry out a risk assessment of the cargo to be imported in the EU.

ECSA's explanatory notes point out that the ENS does not replace the traditional manifest in each port of discharge, however it is possible that the traditional manifest will include all relevant information for an advance cargo declaration.

Nonetheless, the manifest must also include further specific information as determined in the national transport/customs legislation of each EU Member State that the ship is calling at.

For maritime transport, an ENS is only required if originating from a port outside the EU, and does not have to be submitted for intra-EU shipping services.

The EXS is also used by customs for risk assessment purposes, and is subject to a number of rules and exemptions apart from normal customs declarations (outlined in the regulation and ECSA's notes).

For example, where a customs declaration for export, re-export or outward processing does not have to be submitted in accordance with the normal customs rules an EXS may still have to be submitted to the customs office of exit in advance.

Computer systems

ECSA notes that the obligation to declare the required cargo information electronically to the customs office is one major change resulting from the EU legislation on advance cargo declaration.

As it points out, the result of this move is that all economic operators (e.g. shipping companies) that are importing goods to or exporting goods from the EU are obliged to establish a computer system to allow them to interface or connect with the computer system of that customs office to which they have to submit the required cargo information in advance.

In its notes ECSA is critical of the lack of standardisation between the systems being used by the customs authorities in the implementation of the new system, and regrets that the EU "did not have the competence to establish one single EU-wide computer system that would apply for all 27 EU Member States."

Instead, the computer systems that will apply in all 27 EU Member States to manage electronic advance cargo declarations will differ in each individual country, a situation which compares poorly with the single system used for similar purposes by the United States.

ECSA describes three different levels of electronic information exchange for the advance cargo declaration, as follows.

- A 'common domain', which will allow information exchanges between EU Member States and the European Commission;
- A 'national domain', which is made up of the different national customs computer systems, and will allow customs offices to exchange the results of their risk assessments with each other;
- An 'external domain', which will enable the interface/connection between the economic operator (e.g. shipping company) and the relevant customs office, which is needed for the submission of the relevant cargo information within the required timelimits.

ECSA suggests that, in order to establish which electronic system a shipping company (or its representative) needs to devel-

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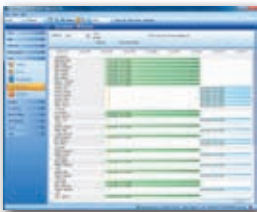
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Shipping companies importing or exporting goods at European ports such as Rotterdam will be subject to the new declaration regulations. Photo: Quistnix

op in order to be able to have a working interface/connection with the computer system at the customs office, the company should contact the relevant IT manager at that office.

Each individual Member State has appointed an IT manager under the new regime who will act as a contact person with external shipping companies and their representatives. For reference, lists of these IT Managers per EU Member State (for import and for export) is available from ECSA, via a link in its explanatory notes.

Responsibilities

Under the terms of the new regime the carrier or his representative carries the responsibility to declare the required cargo information in advance to the customs office – in maritime this is the ship operator, or typically the ship's agent as its representative (though exemptions are in place for combined transport and vessel sharing scenarios).

ECSA also notes that third party filing of information is likely to occur frequently in container shipping, both deep sea and short sea. In shipping, the third party that will file will typically be the freight forwarder or NVOCC (non vessel operating common carrier).

The involvement of third parties can muddy the waters a little when it comes to correctly determining allocation of responsibility, which can also have serious liability repercussions, so ECSA has attempted to clarify the situation for its members in the following outline.

"A third party can only do advance cargo declaration provided that he has advised the carrier (ship operator) thereof beforehand (knowledge) and the carrier (ship operator) has agreed thereto (consent)."

"The 'knowledge and consent' are cumulative requirements in order to proceed with a third party filing. How the carrier's (ship operator) knowledge and consent to a third party is to be evidenced and under which conditions and terms, are subject to contractual arrangement between the carrier and the third party."

"The customs office may assume, except where there is evidence to the contrary, that the carrier (or ship operator) has given his consent and that the declaration by the third party was made with the carrier's knowledge."

"However, in case of third party filing, the carrier (ship operator) remains the ultimate liable person. This means that the carrier (ship operator) will have to be sure that an advance cargo declaration was made."

"It is for this very reason that he must be advised beforehand of and have agreed to a third party filing. Indeed, in case a third party would have failed to submit the relevant cargo information in advance, the carrier (ship operator) will be held liable and a penalty will be imposed upon him and not upon the third party."

"For this very reason, it is suggested that a carrier (ship operator), if he agrees to advance cargo declaration done by a third party, he has evidence (be it in electronic or paper form) of the fact that that third party has eventually done the necessary declaration in advance and in time."

"In case of an unintentional double filing, i.e. the carrier (ship operator) and third party file together but separately cargo information in advance to the customs office, the computer system of this office will only be able to handle one of the two declarations. The declaration by the carrier (or ship operator) will prevail."

When the cargo information (ENS or EXS) has been successfully declared in advance to the customs office the submitting party will receive a confirmation receipt containing a unique 18-digit Movement Reference Number or MRN.

The MRN is automatically allocated by the customs office immediately after receipt and validation of the declaration. **DS**

References
Shortlinks to:
EU Regulation 1875/2006 - http://bit.ly/fHrCRh
Amended regulation 312/2009 - http://bit.ly/hHAIJH
ECSA explanatory note - http://bit.ly/dQ2Drn

The ECSA Secretariat notes that it is happy to answer any additional questions that members may have on this issue by contacting Christophe Tytgat at the Association. Contact details are provided in the explanatory note.

Electronic documents – the end of paper?

Shipowners and operators need to understand the forces driving the adoption of electronic shipping documents and accept that the use of paper for a wide range of shipping documents bills of lading, safety data sheets and documents for customs forms is drawing to a close, *writes Alex Goulandris, ESS*

To the readers of a magazine dedicated to information technology in the maritime industry, the opportunities offered by electronic shipping documents (eDocs) must be obvious. The fact that eDocs have been available for some time in most business sectors raises questions on why the shipping industry appears so traditional and resistant to change.

In fact, *Digital Ship* readers know shipping is far from being the luddite it is sometimes portrayed as. It employs ever faster and more sophisticated satellite, Wi-Fi and terrestrial communications as well as high-powered monitoring and operations hardware and software.

Computer networks onboard ships are becoming commonplace and the need for commercial advantage is driving ever more sophisticated fleet management, procurement and tracking solutions. Even in shipping within a limited arena, eDocs have been widespread for over a decade in the form of e-mail charter party recaps.

So why, when there is such progress in adopting new technology in these areas, does the industry persist with an outmoded, inefficient, error-prone and expensive means of sharing shipping documentation?

Shipping documents comprise some of the most important data required to move cargo – bills of lading, safety data sheets, customs declarations to name just three – data which cargo owners, traders, shipowners, agents and inspection companies alike rely on for contract performance and regulatory compliance.

Clinging to paper-based processes is more than inefficient and old-fashioned, it's both irresponsible and highly risky given the value of the cargoes and potential legal exposure when things go wrong.

Granted, there has been some progress. Container lines have been among the earliest adopters of shipping eDocs and a number of shipping and trading companies are evaluating their use, but the shipping industry continues to create and move mountains of paper during the course of a single voyage.

Wider adoption of eDocs is far from a zero-sum game. It is a process that can benefit the whole supply chain, not just the terminals, shipowners and agents but charterers, banks, cargo owners, customs and forwarders too.

It is clear there are structural problems with sticking with paper at a time when everything else is already digital. Indeed, using paper in shipping actually increases costs due to printing and couriers, time lost in shifting physical documents, problems due to illegibility of copies or loss of originals.

Often the data on shipping documents is entered separately into distinct IT systems run by multiple parties involved in the shipping process or trade chain. This means that up to 90 per cent of the information which overlaps between documents needs to be retyped, resulting in delays, duplication of work and a high likelihood of errors and variances.

Research by Forrester estimates that importing a single cargo using traditional paper means will require an average of 36 original paper documents and 240 copies from up to 27 parties. That is a significant amount of documentation to create and handle per shipment.

Digital benefits

Using eDocs offers a number of immediate advantages. Some are purely administrative but most have the potential to improve the bottom line for trading partners, their suppliers and service providers.

Taking bills of lading as a single example, the benefits of eDocs are numerous.

For shipowners, eB/Ls (electronic bills of lading) offer faster vessel turnover thanks to improved document processing, minimising time spent at the load port dealing with documentation or any delays at discharge port while awaiting documentation. They offer reduced outstanding freight payments because freight is settled on receipt of documentation by the shipper/charterer.

eDocs also offer the ability to discharge cargo against an original eB/L rather than a letter of indemnity (LOI), thereby enabling the carrier to remain within its P&I cover.

For ship agents and cargo inspectors, eB/Ls offer faster document review and handling and reduce travel time due to the ability to review eDocs remotely from the vessel.

For traders and cargo owners, they offer a reduction of the costs associated with purchasing a bank guarantee for an LOI. The time that trade credit facilities are tied up as collateral is reduced, through the receipt of original documentation which in turn allows the cancellation of LOIs and the turnover of credit lines more quickly.

Valuable time spent on managing paperwork is regained and can be used for more productive endeavours.

For terminals, eB/Ls mean improved document creation processes, reducing the time and effort involved in preparing original documentation and handling amendments, as well as eliminating the need to attend the vessel to distribute and sign documentation.

For all these parties, the potential risk of cargo fraud is eliminated because signing eDocs is limited to authorised users only, and digital signatures ensure that the content of these eDocs has not been tampered with.

Regulatory movement

So why the resistance to change? Broadly opposition can be characterised as arguments against the use of new technology and the issue of legal equivalence to paper. But in both cases, the wind has changed.

The most recent revision to the World Customs Organization's Kyoto Convention requires signatories to apply IT solutions to support their customs operations. New or revised national legislation increasingly provides for e-commerce methods as an alternative to paper-based documentary requirements and employ electronic as well as paper-based authentication.

Under REACH rules for hazardous cargoes, trading counterparts are required to send pre-registered SDSs and track them, ensuring receipt by receiving parties. If changes to the SDS details are needed, the sender must resend originals to all previous recipients within the last year, a process ideally suited to an electronic solution.

In the maritime sphere, the International Maritime Organization's FAL Committee is shadowing these developments and working towards the 'single window' concept. This is broadly defined as a facility that allows all parties to lodge standardised information and documents at a single entry point to fulfil all trade and transit-related regulatory requirements.

Both the IMO's work and the WCO convention have also been helped by growing international recognition of the legal equivalence of electronic signatures and electronic documents by governments worldwide.

Perhaps the most obvious progress for shipping companies is the recognition in the Rotterdam Rules of electronic bills of lading. The new standard for contracts for the international carriage of goods wholly or partly by sea, the Rotterdam Rules make it clear that electronic bills of lading are the legal and functional equivalent of paper bills.

The methodology has gained further acceptance with the recognition by the International Group of P&I Clubs that electronic bills of lading issued on an approved system are covered under members' P&I insurance and that risks associated with cargoes shipped under eDocs are covered within members' standard terms of cover.

There is further impetus as the supposed vulnerability of the maritime supply chain continues to occupy the minds of regulators keen to tighten ship and port security. Regulatory pressure can be expected to continue, mainly through increased demand for pre-filing of ship and cargo information for security.

The 10+2 Rule introduced in 2009 already requires importers and vessel operators to file advance notification for all ocean vessel shipments inbound to the United States.

The European Union 24 hour advanced manifest rule came into effect on January 1, 2011, requiring ocean carriers to electronically submit an Entry Summary Declaration (ENS) for all ocean container shipments from outside the EU to be discharged in an EU port including transhipment cargo and foreign cargo remaining on board (see page 20 of this issue). Carriers must also file a pre-departure Exit Summary Declaration (EXS).

Finally, it must be remembered that arguments against new technology disappear over time and when properly understood, this is more likely to happen sooner rather than later. A clear example of this is the IATA led project to rollout eTickets for passenger flights, which leaped from 0 per cent use in 2004 to 84 per cent in 2009.

The ubiquity of e-mails and the steady march of always-on broadband on vessels today means that it is hard to defend the use of paper when an electronic alternative is available.

Often these arguments are not against the technology itself, but rather the fear that a third party provider is attempting to re-shape the process to their convenience instead of moving paper processes into collaborative working online.

In fact, development of eDocs in shipping has frequently been industry-led, with leaders like Heidenreich Innovations working with both Intertanko and the Baltic Exchange to deliver its Q88 and B99 solutions and Chinsay developing a system for electronic recaps with major shippers.

This approach overcomes concerns of process-reorganisation as parties concerned, from vessel's master to cargo interests, can be satisfied that eDocs were evolved from existing best practices.

And like most technological improvements, when users have worked with eDocs, they do not want to revert to piles of paper. After all, when was the last time you bought an airline ticket and had to go to the travel agent's office to pick it up? **DS**

Alexander Goulandris co-founded Electronic Shipping Solutions (ESS) while studying a MBA at Wharton School of Business, and has been CEO since it was established in 2003. ESS offers services to enable trading partners to use electronic documents including Bills of Lading, Safety Data Sheets and Customs Documentation for operations and compliance purposes. www.essdocs.com

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IT security - beating the hackers

One of the downsides of IT evolution and the digital age is the consequent upsurge in hackers' ability to use your own technology against you and profit from your private information. Asterios Voulanas, from the PriceWaterhouseCoopers' technology governance and security division, offers some advice on managing IT security

Computer-based digital information technology systems have helped to transform the modern company's ability to store and transmit business and operational data over the course of the last couple of decades, with employees in offices around the world able to share documents and information instantly and at a negligible cost.

However, taking advantage of these growing opportunities means that companies also have to live with a growing number of threats to the precious business data that lies at the core of their operations.

In an increasingly connected world, making sure that those connections are only made with people you can trust is a constant battle, and as Asterios Voulanas, partner at PriceWaterhouseCoopers' technology governance and security division in Greece, notes, this is a battle you should not be too confident about winning.

"I don't like to be pessimistic, but things aren't good from an IT security perspective," he said.

"Incidents are occurring on a minute-by-minute basis, and IT departments are struggling to keep up with the challenge."

Worryingly, the threat landscape that businesses are working in and trying to protect themselves against is constantly evolving, making that task all the more difficult.

Mr Voulanas points to recent research from Forrester, an independent technology and market research company, as an example, which claims that the gap between hacker threats and security defences are widening, while other available statistics do not offer any more cause for optimism.

"Symantec's Intelligence Quarterly report (for July – September 2010) said that, just for that quarter, there were 14.6 trillion spam messages," he said.

"This represented 91 per cent of all e-mail messages observed – so only about 9 per cent of e-mails were real, legitimate e-mails. Then there are phishing attacks, with attackers using brands in the financial sector for 73 per cent of these (according to the Symantec report)."

"Another important source is the 2010 Data Breach Investigations report by Verizon Business, which tells us that there has actually been a slight decrease in external threats, things like hacking, but there's been a significant increase in security incidents caused by insiders – employees, other third parties, and service providers. (The Verizon report shows) that 48 per cent occurred from 'involved privilege misuse' – that means that it's usually from the IT department somewhere. IT guys have the keys to the castle."

Emerging trends

Some of the other interesting statistics from the Verizon report have showed that, while there has been an apparent decrease in traditional computer hacking, there has been a marked increase in the use of 'social tactics'.

This includes the use of social networks to harvest data, with hackers working among groups to steal identities and information about the users.

"We see this ourselves in our company, the techno-generation or Generation Y. They're entering the workplace, or are already in the workplace, and they have a different view of how they use data systems," said Mr Voulanas.

"There's a blurring of work and personal lives, there are a lot of people working from home now for instance – that can cause a lot of security issues. Social networking causes a lot of problems for companies with data leakage and identity theft."

PWC conducted its own research on information security breaches in April 2010, commissioned by Infosecurity Europe, which also found that staff misuse of the web and e-mail remain the most common occurrences.

There has also been a noticeable increase in staff data loss incidents, where employees lose or misplace laptops or USB sticks containing company data.

These changes in the threat landscape pose a problem for IT departments in their quest to protect the company network. Recognising how these threats are evolving will be a key key factor in devising a successful security strategy.

"We see hackers, and even novices now, moving away from being motivated by ego and being able to boast how they've hacked into so-and-so organisation and sharing those exploits in forums and usergroups – now profit is becoming the new motivator," said Mr Voulanas.

"Organised crime has started to hire some of these hackers, and are really focusing attacks on high ranking targets – intellectual property, financial data, security credentials and access to e-mail accounts, those sorts of things."

"The attacks are becoming more sophisticated, and the attackers are becoming more patient – they could hack in and leave malicious code in your business and let it sit there for a month, two months, or a year just harvesting information. To put this in some perspective, they're saying in the US that cyber crime costs the economy up to $8 billion (per year)."

Other emerging trends include a growing movement from manual attacks to more automated system-based actions, and an increasing threat-base where even people with basic computer skills can use the internet to develop hacking capabilities.

"The tools are now much better, there are crimeware kits that allow people to customise a piece of malicious code designed for stealing, which are freely available to novices," said Mr Voulanas.

"One of these is the ZeuS tool kit, which you can get online, that helps you to create a trojan to steal passwords, credentials, those sorts of things. This, together with the creation of 'botnets', so-called compromised computers or zombie computers, are used by organised groups to launch distributed attacks. You might even have a botnet in your business and you don't even know it."

Mr Voulanas notes that even the onset of the global economic downturn of the last few years has changed the IT security landscape, with recession driving an increased insider threat in organisations.

"With the downturn it's affecting employees pay, promotion prospects, job security, and in many places morale is certainly not the best," he said.

"Personal debt problems can also motivate an employee and lead them to insider crime, theft or sabotage where there is some financial gain for himself. These are trends that we are seeing that have increased as the recession has taken hold."

"Another thing that has not helped in this regard is a reduced investment in security in the downturn, and cost-driven outsourcing, where you give connections to external service providers – those connections could be exploited by hackers or even by the third party service providers themselves."

The evolution of the technology in use also poses another issue, as new types of equipment or innovation in business applications will change the infrastructure that the IT department is trying to defend and may require a strategy rethink.

"Mobile platforms are starting to domi-

nate – iPads, iPhones, BlackBerrys, these things have web 2.0 functionality built in and can be targeted by hostile groups, while mobile storage devices are becoming cheaper and smaller and easier to move – they're not encrypted and they don't have anti-virus in most cases," Mr Voulanas explained.

"The proliferation of wireless and mobile networks is not helping the situation, you have employees going to cyber cafes and using wireless networks. They are not very secure but people are sending business information over these networks."

"Then there are other emerging technologies like cloud computing, embedded chips, quantum computing – the list goes on. The way technologies are converging everyone will be connected to everything, and from a security perspective that will cause a big headache."

Implications for shipping

While most of these threats will apply across all industries, Mr Voulanas notes that in the shipping industry there are particular areas of focus that should be considered when assessing IT security.

"We all know that data is being sent, stored and processed across various networks, both onboard and on shore. There's a lot of communication going over and back – how much of that is sensitive and how much of it poses a risk?" he said.

"In shipping companies, often by default, it seems that the IT department usually has responsibility for IT security. If a breach occurs the owner or the board will be looking at the IT department for explanations."

"Shipping company security requirements have also primarily been driven by the sensitivity of the owners to protection of their privacy, and perhaps also by the 'pro-activeness' of the IT department itself or as a result of past security incidents."

Mr Voulanas says that, on the shore side in particular, potential threat agents will asses a particular company as either a target of choice, or a target of opportunity. It is advisable that the company looks at its systems from both of these perspectives to try and anticipate potential problem areas.

"As a target of choice there is something of value in your business which will lead you to be targeted at some stage and someone will try and break into your systems – so ask yourself what do you have that someone might want to

Malware tools, such as trojans, have become increasingly available in recent years

steal from you," he said.

"As a target of opportunity someone may just be scanning the network and find that there is a response, maybe you've left the default passwords on, and in they go. It's important to distinguish those two, as they will be different threats."

IT security threats on board ship have not, up until the last few years, been an area that has traditionally been of great concern for shipping companies, due to the limited communications available. However, Mr Voulanas notes that the evolution of onboard technology is likely to lead to increasing interest from potential attackers.

"There'll be more IP connections, and so there will be greater risk of attack," he said.

"I haven't found any instances myself where there has been a report of a shipboard network being hacked, but unfortunately I think it might be just a matter of time."

"What does the future hold? I don't know. Taking over the system – what could that mean? One thing is for sure, we want to keep the computers out of the control of the pirates, that combination could be lethal. If they could start hacking routing information and know exactly where the ship will be it will make it much easier to attack."

Response strategies

So what are the key steps to take to ensure that your business is as prepared as possible to protect its valuable data sources? Mr Voulanas suggests that the first thing to do is to conduct a realistic risk assessment to see exactly what state the company's IT security is currently in before looking at what can be done about it.

"A lot of companies, maybe most companies in shipping, have never sat down and actually looked at their credible threats and what could go wrong from a systems perspective, both in the office and on board the ships, and the potential effects on the business if something goes wrong," he said.

"You need to understand the level of security you already have and see what is the likelihood that these events or threats could happen and what would be the impact on the business."

"If there's an event where the likelihood of it happening is high and the impact on the business would be high, that's where you need to focus your attention and focus your response."

That response might be to accept the risk and continue, try and transfer the risk to a third party through managed services or outsourcing, or look to take internal steps to mitigate the risk.

One simple set of steps that Mr Voulanas suggests can be taken internally is to concentrate on building 'defence in depth'.

"Basically you take all of the layers of your IT systems, starting with the external network perimeter, and you make sure that you are securing each of those layers," he explained.

"Some layers will be more secure than others, depending on your people, your processes, and your budgets, but it's very important to get a balance between the risks, the costs and the performance."

"For instance, operating systems – it's easy and cost effective to harden them and remove unnecessary services and communication ports, to make sure that you are communicating more securely. Make sure your servers are patched. These are easy and effective ways of increasing your defences."

Once any defences are put in place they should also be continuously tested in light of the changing threat landscape, with Mr Voulanas suggesting that such tests should be performed annually at the very minimum.

"Particularly you need to be looking at your 'internet facing' external network perimeter, where you have exposure to untrusted networks. Hire vulnerability scanners or employ someone to do penetration tests, and see how your IT defences as they stand today would stand up to a malicious attack," he said.

"Social engineering is another area for

testing, focusing on the human elements in the network. For instance, we do tests where we will send an e-mail to your end users with malware attachments, and find out who has responded and could theoretically have infected their computers."

"This kind of testing is a good demonstration of proof of concept. When you go to the management or owner of the business and can say 'here is all your e-mail which I took from your e-mail server, and all your payroll data', then it's a good way of showing the weaknesses in the security."

In conjunction with this testing of security defences it is also important to educate the end users of the company's computer systems about where potential attacks can come from, to help them become aware of how their actions can unintentionally compromise the security of the company network.

"Humans are often considered as the weak link in the chain, but if they are educated properly they can become your first line of defence. If the staff are trained and concious of security it's one of the greatest weapons you can have against a threat materialising," said Mr Voulanas.

"It's then important to supplement this with more intensive training for your IT staff. They have to be more concious than the end users, as they're at the forefront of any attack."

However, even with a firm strategy and the greatest will in the world thwarting a determined attacker is an incredibly difficult task. The most important piece of advice that should be taken, in Mr Voulanas' mind, is to never take your eye off the issue.

"Information security requires vigilance, you need to be watchful for the threats and following the trends, and understand how they are applicable in the context of your business," he said.

"Focus on preventative measures rather than detection, and regularly test all of the measures you have taken."

"Most importantly, you need to sustain these efforts and continually adapt to the changing threat landscape – because unfortunately it is only going to get worse before it gets better." **DS**

*This article is based on a presentation at the **Digital Ship** Athens conference in December 2010.*

New sims for Australian Maritime College

A new Dynamic Positioning (DP) Operator Training Facility has opened in Northbridge, Western Australia, owned and run by the Australian Maritime College (AMC)

The facility features a simulator suite developed by Kongsberg Maritime, which includes the K-POS Basic DP Trainer for classroom arrangement, with four DP Models, and the K-POS Advanced DP Trainer with instructor station.

A dual redundant DP control system, complete with four DP models, is also included.

All equipment has been designed and delivered in accordance with Nautical Institute requirements. The Basic and Advanced Trainers can be used to practise DP operations on four DP models: Generic Supply Vessel, Generic Drill Ship, Generic Semi Submersible and Generic Tanker.

The availability of this new facility and another recent simulation centre should make training for vessel operators in the region much more convenient than was previously possible, notes John Foster, AMC Search CEO.

"Prior to opening our first DP Operator Training Facility in Tasmania last year, which is also based on Kongsberg Maritime DP simulators, Australian trainees would have to travel to Europe or the US for DP courses, so we are delighted to be expanding our capacity for DP training already," he said.

"The new facility strengthens our ability to support the demand for skilled DP operators by providing high quality training using serving DP officers as instructors and sophisticated simulators able to exactly mimic the operation and maintenance of complex DP systems."

Expanding the simulation capacity at AMC has removed the need for students to travel abroad for DP courses

Multifunction display unit launched by Offshore Systems

Offshore Systems has introduced a new multifunction display, a 95mm sq screen unit with a high resolution sunlight readable colour display for showing data from all ships' tanks, DC sources and AC sources.

The 3340 MultiFunction Display unit can connect to an NMEA2000 network with a single cable, with flexible function selection controlled by user selectable screen layouts.

The unit can accommodate up to 16 each of fuel tanks, fresh water tanks, grey water tanks, black water tanks and oil tanks, and can also provide information for up to 16 DC sources such as battery banks and wind generators, and up to 16 AC sources including shore power generators and distribution bus bars.

The user can set the tank sender display to suit individual requirements, by choosing different tank types on each page of a multipage tank display, for example. Each tank, AC or DC source can have a user selectable descriptive name to aid identification.

The display is rugged and waterproof to IP67 for marine environments, and is suitable for monitoring resources on commercial vessels.

"This new product adds to our core business of manufacturing tank sensors and displays," said Offshore Systems managing director, Bruce Coward.

"The 3340 MultiFunction Display is the first in a rapidly growing new range that will provide full digital monitoring of all the essential services of a vessel."

Tech development centre to open in Southampton

www.lr.org

Lloyd's Register and the University of Southampton are to move forward with the £116 million first phase of a technology and training campus at the UK university, designed to create new technologies for maritime and other industries.

Among the new facilities to be built on the university's old Boldrewood campus will be the Lloyd's Register Group Technology Centre, a purpose-built building which will be the cornerstone of the organisation's global research and development network.

Technical staff from across the Group's marine division will be among the first to transfer to Southampton from Lloyd's Register's offices in the City of London, followed over time by experts from the organisation's other business streams.

Research activities at the centre, which has been secured by Lloyd's Register EMEA through a 20-year lease with an option for another 30 years, will be co-ordinated with other projects undertaken by the Group at academic institutions in cities such as Singapore, Seoul, London and Beijing.

Many of these facilities are sponsored by the Lloyd's Register Educational Trust, with the Group currently sponsoring research and development and scholarships at 17 universities worldwide.

"This marks the beginning of a ground-breaking collaboration between the University of Southampton and one of the world's leading knowledge-based organisations," said Prof Don Nutbeam, vice-chancellor of the University of Southampton.

"By locating the cornerstone of Lloyd's Register global research and development network alongside the university's internationally renowned engineering scientists, we will create a research and innovation hub that is unique in scale and ambition for the UK. Building on our history of collaboration in marine and energy-related projects, we will extend our cooperation to create new technologies."

"Research and innovation are key drivers for building a strong knowledge economy, and we know that governments around the world are looking to collaborations such as ours to help secure a strong economic future."

Initial research activities at the group technology centre are expected to centre on marine and energy-related projects, initially those which could improve environmental and safety performance and operational efficiency.

"We plan to expand into one or two more commercial sectors and we know that Southampton will be able to support us with any technology we require," said Richard Sadler, chief executive, Lloyd's Register.

"This is a long-term collaboration and we look forward to developing this unique concept into a programme that others in the marine and energy industries will want to join, and one which other countries will be tempted to copy."

The new centre in Southampton aims to develop new technologies for use in maritime and other industries

Northport Systems bought out by president

www.fugawi.com

Canadian software manufacturer Northport Systems has been bought out by its existing president, Robin Martel, who has acquired the company with immediate effect.

Mr Martel will succeed chairman Sam Rea as owner of the Fugawi desktop and mobile software manufacturer and the X-Traverse.com online chart subscription service.

Mr Martel has worked on Northport Systems' GPS-related land and marine navigation software brands and online services for the past six years.

"Purchasing Northport Systems is a thrill and the realisation of a long-time goal," said Mr Martel.

"I have a fresh vision with exciting new directions for the company that will elevate us from a software producer to a true solutions provider. I look forward to introducing our stakeholders, partners and customers to the new Northport Systems."

Prior to joining Northport Systems, Mr. Martel co-founded and led New Zealand-based GPS Control Ltd., and held positions with Pico Data, Expressway Group, and Geo-Systems.

Northport Systems began operations fifteen years ago. Its first product was a Fugawi-brand mapping software for GPS receivers, which allowed customers to scan and calibrate their own map images for use with early GPS handheld devices.

The company has since expanded to offer a selection of GPS-related software products, digital maps and charts.

Jeppesen makes chart software donation

www.jeppesen.com

Jeppesen has donated a classroom supply of its C-MAP OceanView office chart and route planning systems to AEN Makedonias (the Merchant Marine Academy of Makedonia) in Thessaloniki, Greece.

The academy trains more than 100 officers yearly, and students will now be able to use the C-MAP systems on their PCs for familiarisation and route planning.

Planning routes using electronic charts will help the students to improve their skills in determining optimal routings, taking into account depth, speed and navigational aids, as well as overlaying weather data into their plans.

"We have close ties to the Greek shipping community and this donation is further evidence of our commitment to the next generation of high-quality Greek deck officers," said Willy Zeiler, marketing manager – commercial marine at Jeppesen.

"With the mandatory ECDIS deadline and associated training requirements fast approaching, Greek shipowners need to get more and more key staff trained in handling ECDIS and planning and navigating routes in an electronic context."

New version of Liquid Cargo Handling Sim

www.mpri.com

L-3 MPRI has announced the release of version 5.0 of its Liquid Cargo Handling Simulator (LCHS) software, Safe Cargo.

The company says that this new release incorporates improvements to the performance, instructor features and configuration options currently available in the software package.

The release is compliant with the latest Windows operating systems and incorporates a new network communications infrastructure to improve the speed and stability of the simulator, as well as system diagnostics and recovery.

"Version 5.0 of our Safe Cargo software capitalises on L-3's extensive experience in liquid cargo simulation and feedback from our valued customers," said Dennis Corrigan, senior vice president and general manager of L-3 MPRI's training systems group.

"This latest release provides our customers with the broadest, most flexible and effective system available, and includes all the tools required to meet the training and assessment requirements of the forthcoming revision to the Standards of Training, Certification and Watchkeeping and other specialised training applications."

L-3 MPRI says that the redesigned instructor interface should ensure that the amount of training required before instructors can use the system effectively is kept to a minimum, with a 'configuration wizard' which allows an instructor to quickly define the required simulator configuration for the training exercise.

This includes the ability to select from multiple ship types, and assign the student stations to be operated independently or in groups. Once defined, configurations can be saved and reloaded in the future with a single click.

New tools are included to simplify the monitoring of each of the student stations and the recording of student actions, with integration into the company's WISE Virtual Instructor and Competence Assessment tools.

The new software additionally features the option to incorporate real hardware consoles or virtual panels with the appropriate gauges and controls, allowing simulation of a fully operational Cargo Control Room environment.

The new software release provides more flexibility for training students in the particulars of handling liquid cargo

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Collaboration continues on e-Navigator

Navigation technology company TODD, a major distributor for the UKHO, says it is working with the Hydrographic Office on the release of a Fleet Manager module for the new Admiralty e-Navigator product.

The Admiralty e-Navigator Fleet Manager will allow TODD to view and order all of the digital products required onboard the vessels to which it supplies Admiralty Digital Products (ADP), Admiralty Vector Chart Service (AVCS) and ARCS.

The UKHO says that it is also working with a number of its approved distributors, as well as a selection of shipping companies, in rolling-out the new software product to a variety of shore-based and seaborne environments before general release early in 2011. Belfast-based TODD is the first to be involved in this phase of the implementation.

The e-Navigator is designed to be a computer-based navigation information system that will enable mariners to view, select and order all the charts and publications needed to plan voyages from within the software, while also calculating the most cost effective way to get from port to port.

It includes access to all Admiralty navigation tools and data, as well as other maritime products including paper chart updating modules, ENC updating, the Maris Weather Manager, Lloyds Register Fairplay's World Ports Guide, and the DNV Navigator.

"Admiralty e-Navigator is set to make life easier and simpler for our marine customers – both at sea and ashore in the office," said Capt William Todd from TODD.

"It also aims to assist shipowners in getting their fleets ready for implementation of the ECDIS mandate beginning in 2012. At TODD we are committed to assisting our customers in the move towards electronic navigation, and we are extremely pleased to be part of this product development."

Comark launches new display

Comark Corporation has announced the availability of its new Victory-HD Series of large screen displays.

Available in 37-inch and 47-inch sizes, the Victory-HD line is designed to meet a variety of IEC marine specifications, and is ECDIS compliant.

The large screen displays feature machined aluminium bezels, conformal coating on all electronics, and are available with an integrated computer and touchscreen option. They are serviceable from the front and can be either wall or panel mounted.

"The Victory-HD large screen displays are perfect for integrating information from multiple dials, gauges and smaller displays onto a single display or for displaying information to a large group of people," said Steve Schott, president, Comark.

"The optional integrated computer saves space, simplifies installation and serviceability."

Contract agreed for Indian coastal surveillance system

Saab has been awarded a SEK 116 million (approximately USD$17 million) contract by the India Directorate General of Lighthouses and Lightships (DGLL), to deploy a coastal surveillance system covering the entire Indian mainland coast.

The national coastal surveillance system will encompass 74 sensor locations, six regional control centres and three national control centres, most of which will be connected by broadband satellite links.

The contract also includes further options to add another 12 sensor sites in the future.

The sensor sites will be equipped with redundant AIS base stations that will identify and track the movements of ships sailing in India's coastal waters. Saab will also deliver network servers and CoastWatch operator software systems for the control centres, which will be used to integrate radars being supplied by another contractor.

As the prime contractor for the project Saab will also manage installation, integration, commissioning, training and technical support for the new infrastructure, with the work scheduled to be completed in mid-2012.

Saab's sales and service partner in India, Elcome Marine Services, will assist in these activities.

"This will be one of the largest national AIS-based coastal surveillance systems ever to be deployed," said Gunnar Mangs, vice president, sales and marketing of Saab business area security and defence solutions.

"Winning this contract, which was competitively bid, is an important validation of Saab's position as the technology leader in AIS base stations and networks worldwide."

New Inspection Regime
to target poor performers

A New Inspection Regime for port State control in all Paris MoU countries has come into effect as of the the beginning of this year. As part of the initiative a new Targeting and Information System, operated by EMSA, will be used to monitor vessel movements in affected areas - where failure to report the required information could lead to penalties

Significant changes in the port State control system have taken effect as of 1 January 2011 in the European Union, and by extension the Paris MoU region.

This new initiative is aimed at rewarding ships that are performing well, and targeting poor-performing ships, as part of the 'third maritime safety package' adopted by the European Parliament in March 2009.

The legislation behind the New Inspection Regime (NIR) of the Paris Memorandum of Understanding (PMoU), Directive 2009/16/EC on port State control, entered into force on 17 June 2009, and applies to all Member States of the European Union, plus Norway and Iceland as part of the European Free Trade Agreement.

The text of the Memorandum has been revised accordingly, allowing the same Regime to be applied by all members of the Paris MoU.

So why was this New Inspection Regime required?

The existing regime on Port State Control allows the Member State considerable freedom in selecting ships for inspection. This causes ships to be 'over-inspected' without any clear reason, while other ships can end up slipping the net.

The new Directive makes the application of the NIR legally binding on all the EU Member States, including a new commitment to cyclically inspect all the ships visiting the ports and anchorage areas in the Paris MoU region. Retaining a harmonised and fair approach was seen as essential when drafting the Directive.

The European Maritime Safety Agency (EMSA), representing the European Commission, played the role of task force leader within the Paris MoU in charge of developing the NIR. EMSA's involvement in the day-to-day practicalities of port State control, in providing technical assistance to the European Commission, made it possible for most provisions in the NIR and in the Directive to be identical - in short introducing common standards, Paris MoU-wide.

The main rationale behind the initiative is to adequately target poor performing operators. While the majority of shipping is carried out in a professional, safe and secure manner, EMSA notes that problems can be caused by a minority which may seek to cut corners, and disrespect standards.

The Agency is looking to maintain a balance between ensuring safety while subjecting ships to an appropriate level of inspections, which can be time-consuming and costly. As such, the NIR contains improved mechanisms for targeting such substandard ships - while all ships visiting the region will be inspected, the inspection frequency depends on a 'risk profile' assigned to each ship.

While this is bad news for poor-performers, there is good news for the majority who perform well as the NIR also recognises the need to pose a lesser burden on good operators who, under the new regime (and provided that a number of other conditions are met), can enjoy a time window of up to 36 months without inspections.

Conversely, it imposes tougher enforcement on substandard ships that, in the worst case scenario, may be forced to leave the region. A ship's risk profile will be based on criteria such as its type, age, flag, class society, inspection history and notably, managing company (the ISM manager).

Information systems

In addition to the development of the NIR, EMSA is also engaged in facilitating the regime's correct introduction and smooth functioning.

In particular, the Agency has developed a new supporting information system, and is providing training to users in the national administrations and the PMoU Secretariat. It is also developing other tools to support the daily work of the port State control officers (PSCOs) across the PMoU region.

The PSC Targeting and Information System (THETIS) is the new information system that will be used to support the NIR. The system, currently in the final stages of development, contains all the functionalities necessary to implement the NIR requirements.

EMSA is the project manager of THETIS, and the Agency says it has made a substantial investment in the tool.

THETIS is capable of calculating and attributing to each ship in the database a risk profile which is continuously updated. Furthermore, it calculates the 'achievement level' of the inspection commitment of each Member State (i.e. ensuring that promises to inspect are kept).

The system also monitors missed inspections, and at the same time allows for recording of the reasons for missed inspections.

An important new feature of THETIS is the direct processing of ship call information. The system receives ship arrival and departure information from Member States through SafeSeaNet, the EU's vessel traffic monitoring and information system.

THETIS will use this ship call information to automatically indicate the ships due for inspection in all ports and anchorage areas of the PMoU region.

All EU Member States are required through the Directive to have in place the necessary arrangements to facilitate the collection and reporting of ship arrival and departure information through their own national systems. Shipowners, masters, agents or operators of ships calling at ports of members of the PMoU will have a role to play in this regard, as initiators of ship call information.

Required information

The NIR requires the following information for any ship arriving and leaving ports or anchorages in the PMoU region to be made available to THETIS:
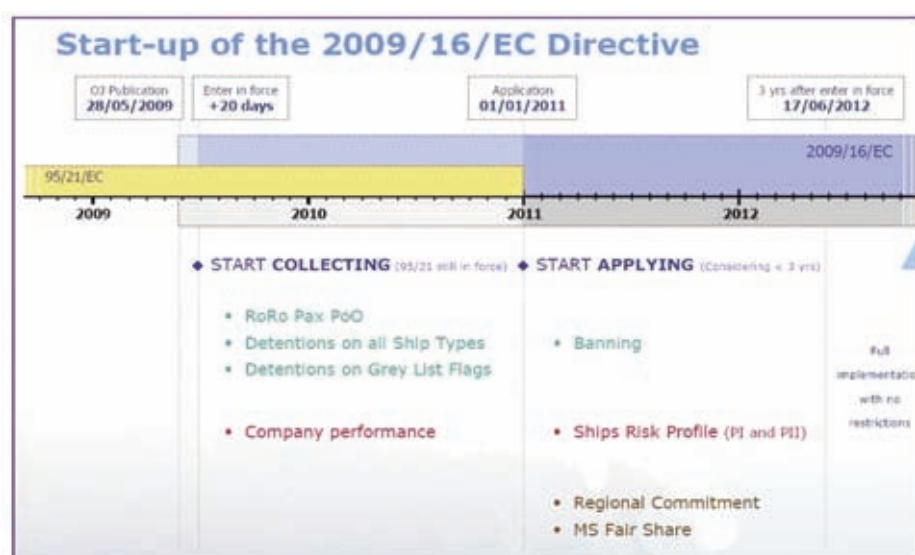
- Pre-arrival notification, at least 72 hours in advance for ships eligible for expanded inspection
- Pre-arrival notification at least 24 hours in advance
- Actual Time of Arrival
- Actual Time of Departure

Failing to report the above information may cause a ship to be targeted for inspection or be subject to the imposition of penalties.

It is also important to note that, although the Directive's transposition period expired on 1 January 2011, the Directive officially entered into force on 17 June 2009. Therefore, application of the new Directive's provisions will take account of any deficiencies or detentions imposed on board ships during PMoU inspections as from this earlier date.

This will particularly have an effect in the calculation of the ship risk profiles and also in the application of the new banning provisions.

As mentioned above, the ship risk profile includes a company performance criterion as a new parameter. The company is defined as the organisation taking the responsibilities resulting from the International Safety Management Code, or simply the 'ISM manager'. The company

With the New inspection Regime, a vessel's Ship Risk profile is continuously updated, based on inspection results. PSCOs are alerted about when to inspect a vessel based on ship call information

The collection of information for the NIR began in June 2010, while application of the rules began in January 2011

performance calculation will take only inspection results in the Paris MoU region into account.

Company performance will also have consequences for publications. In the EU context, under Commission regulations EMSA is required to publish, through its website, the list of companies having a low or very low performance on the basis of the preceding 36 months.

Publication will commence on 17 June 2012, when complete data will be available for a continuous period of the preceding three years. However EMSA points out that the company performance criterion will be used as a parameter in the ship risk profiles from 1 January 2011, on the basis of the available data.

As regards the new refusal of access (banning) provisions within the NIR, these will now apply to all ship types and may be imposed on ships flying flags on both the black and grey lists.

Furthermore, the provisions introduce a minimum ban period before a refusal of access order can be lifted. This minimum period increases with any subsequent ban, and could eventually be permanent after the third or fourth ban, depending on the case.

The practical implementation of these provisions means that, as from 1 January 2011, any ship flying a black or grey listed flag and having two or more detentions since 17 June 2009, will be particularly susceptible to banning; if such ship is detained again after 1 January 2011, the ship will be banned from all ports in the PMoU region and for a period of at least three months.

Although the Directive introduces new port State control requirements, it maintains and reinforces some of the requirements of the current regime. In particular, the Directive recognises the need for mechanisms allowing ship owners to appeal against a detention or a refusal of access issued by a Member State. The respective competent authorities are required to establish and maintain appropriate procedures for this purpose.

An appeal does not suspend a detention or a refusal of access. Should the appeal result in the competent authority upholding a ship owner or operator's appeal, this will mean an automatic rectification, including any necessary amendments in the information recorded in THETIS.

EMSA believes that this will provide a more solid alternative to the existing remedy of the PMoU Review Panel, which, although probably quicker and easier as a process, is still limited to an essentially advisory function vis-à-vis the sanctioning port State.

Training and preparation

The need for appropriate professional competency and training of the port State control officers (PSCOs) carrying inspections in the PMoU region is reflected in the Directive. These qualifications and training should be harmonised as much as possible, a goal which EMSA says it will support.

The development of harmonised training tools for PSCOs is an important element of the programme, and a harmonised training scheme is being offered for the training and qualification of PSCOs of all member States participating in the PMoU.

In particular, EMSA says that it is organising a number of training weeks each year, dedicated to sessions focusing separately on new or experienced PSCOs.

With the introduction of the new initiative and the new information system, the Agency says that it has now had to double its efforts by delivering additional 'train-the-trainer' courses covering the NIR and THETIS, with the aim of ensuring a smooth introduction of the new regime.

The Agency says it is furthermore committed to the long-term goal of making the port State control system increasingly more efficient and robust. In this regard it developed Rulecheck, in 2009, a database that facilitates access to relevant regulations and port State control procedures.

This system can allow PSCOs to, for example, identify Convention references related to the deficiencies found on board and thereby deliver to the master a complete inspection report.

The Agency says it is also developing a distance learning package for PSCOs, which it claims will be the largest ever e-learning development project in the area of port State control.

EMSA says that all of these initiatives form part of its goal of ensuring "a level playing field for shipping", stating that "we need to ensure that everyone has access to the rules, and that the PSCOs enforce them in an even-handed manner."

"In short - fair play from ship operators and crew, with fair treatment from maritime authorities." **DS**

Radar and ARPA – ignore them at your peril

Two cases in MAIB's recent investigation reports have highlighted incidents where vessel navigators failed to make proper use of their onboard radar and ARPA equipment in maintaining their situational awareness. In both cases the results were costly

Regular readers of *Digital Ship* will be aware of the excellent work done by the UK's Marine Accident Investigation Branch in highlighting the causes and consequences of maritime incidents aboard UK ships or in the country's territorial waters, with the organisation's regular reports often carrying important lessons on how the improper use of onboard technology, particularly in relation to navigation, can have disastrous effects.

These reports serve as a constant reminder as to the importance of proper training, competent operation and adequate situational awareness in all situations – no matter how advanced the systems onboard, failure to adhere to the fundamentals of good watchkeeping is a recipe for trouble.

Two more recent investigations included in MAIB's reports have looked at the issue of radar and ARPA, and how a failure to make proper use of the technology resulted in damage to a number of vessels. In both cases navigators preferred to rely on their own senses and judgement rather than seek assistance from their equipment – an unfortunate decision in both cases.

The first case involves a general cargo ship, travelling at a speed of 11.4 knots, on loaded passage in coastal waters.

The report states: "The bridge watch consisted of the lookout and the chief officer, who was sitting on the starboard chair in front of a radar which had ARPA and guard zone facilities."

"The visibility was good, the wind was force 4 from the south-west and the sea state was slight. There was a tidal stream of 0.1 knot setting to the south-west."

Damage sustained to gallows and trawl block of fishing vessel. Photo: MAIB

"The lookout reported the lights of a vessel ahead to the chief officer, who interpreted them to be of a power-driven vessel heading in a north-westerly direction. Shortly afterwards the lookout went below, leaving the chief officer alone on the bridge."

"The lights were those of a fishing vessel, which was trawling in a northerly direction. The skipper had seen the lights of a ship ahead and was concentrating on maintaining a steady speed of 2.6 knots to optimise the spread of the net. When the ship's echo appeared on his radar at 3 miles, he interpreted it to be an end-on situation, and expected her to keep out of the way."

"However, as it became apparent that the ship was not taking avoiding action, he altered course to starboard to show her his port sidelight. Shortly afterwards, he turned on the deck lights and shone a large bright torch at the ship. Finally, he put the helm hard to starboard. But this was too late to prevent a collision."

In its conclusions on the case, MAIB suggests that the chief officer made an erroneous assumption that the vessel ahead was on a north-westerly heading and would pass clear, and should have paid more attention to his equipment to constantly update his awareness.

It states: "After his initial observation, he was complacent in that he did not monitor (the other vessel's) movement by visual or radar bearings, and made no use of the available ARPA or radar guard zone facilities. Therefore, he did not appreciate that there was a risk of collision."

"It is likely that the chief officer's apparent lethargic approach to collision avoidance was due to a lack of stimuli: he was seated; the lookout was absent from the bridge; the watch alarm was not operational; the radar guard zone was not set, and an onboard practice of infrequent and rudimentary position monitoring was permitted."

"Although the fishing vessel was a stand on vessel, the skipper could have taken earlier avoiding action as permitted by Rule 17(a)(ii) of the COLREGs. In this case, delay was influenced by his experience of ships normally altering course at the last minute and passing at a close distance."

By eyes alone

The importance of using all available bridge navigational aids to create adequate situational awareness is also highlighted in a separate investigation case, where a pilot negotiating a winding river neglected to make use of the onboard radar and relied on his eyes alone – the following is the MAIB's description of the incident as stated in the report:
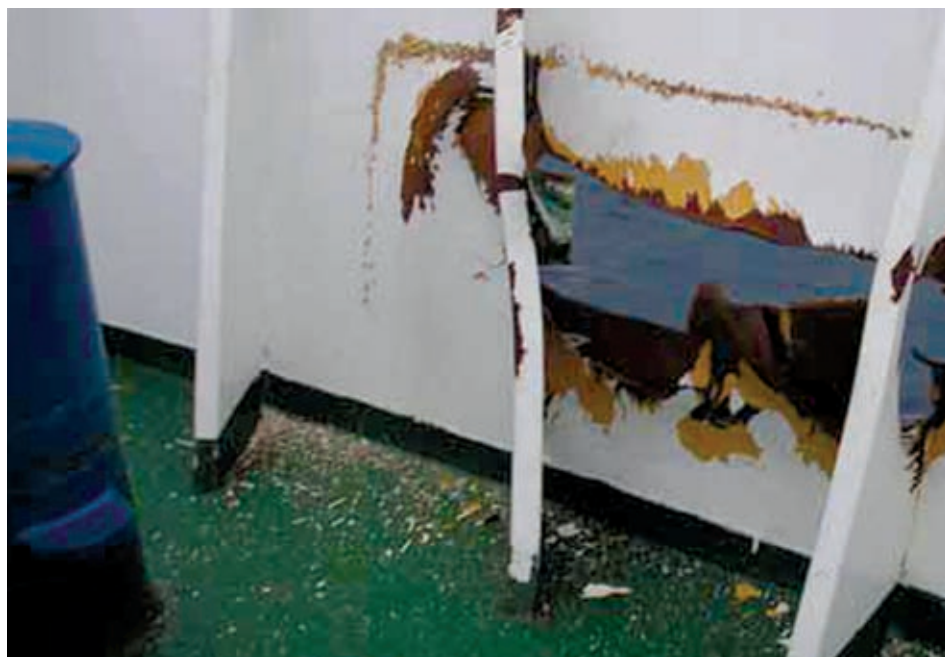
Damage to port bow bulwark on cargo vessel after collision with fishing vessel. Photo: MAIB

"A 10,000 tonne vehicle carrier grounded while departing from a port in poor visibility when the pilot incorrectly ordered the helm to starboard after the vessel had rounded a right-handed bend in the river."

"As the vessel cleared the bend the pilot, who was navigating by eye and without reference to the radar, gave an initial order of 'starboard 10'. When this failed to stop the turn as expected, he ordered hard to starboard and full ahead."

"The vessel's rate of turn now accelerated to starboard and, by the time the pilot realised his error, the vessel was swinging rapidly towards the right-hand bank of the river."

"The engine was then put astern and both anchors were let go. However, in the narrow river there was insufficient room to prevent the vessel from grounding."

"Checks were made of the vessel's spaces which confirmed that, fortunately, she had not been damaged by the grounding. Harbour tugs later assisted her to refloat and she was able to resume her passage to sea."

The MAIB report pays particular attention to the role of bridge team management and communication between personnel in such situations, and stresses that the fundamental requirements of planning and executing a safe navigational passage must be clearly and fully understood and implemented by all bridge officers, including pilots.

The conclusions of the investigation team, as published in the report, note that: "SOLAS Chapter V, Regulation 34 and Annexes 24 & 25 to the MCA's relevant guidance clearly define the requirements for the planning and conduct of a safe navigational passage, the key elements of which are: Appraising, Planning, Executing and Monitoring."

"In poor visibility, the pilot struggled to identify visual marks, and in concentrating on this failed to realise that he had ordered the helm to be placed in the wrong direction. The allocated roles and responsibilities of the vessel's bridge team should have been such that an order to place the helm in the wrong direction was immediately questioned."

"This would have enabled the pilot to realise and correct his mistake in sufficient time to prevent the grounding."

"The International Chamber of Shipping's Bridge Procedures Guide states, inter alia, that: effective bridge resource and team management should eliminate the risk that an error on the part of one person could result in a dangerous situation."

"Bridge officers have a duty to support the pilot and to monitor his actions. This should include querying any actions or omissions by the pilot (or any other member of the bridge management team) if inconsistent with the passage plan or if the safety of the ship is otherwise in any doubt."

While the use of the radar in this instance may not have been the most important factor in causing the accident, onboard technologies of these kinds are there to fulfil a purpose as an 'aid to navigation' – and that helping hand can be significant in preventing a navigator from making the small mistakes that can have more significant consequences.
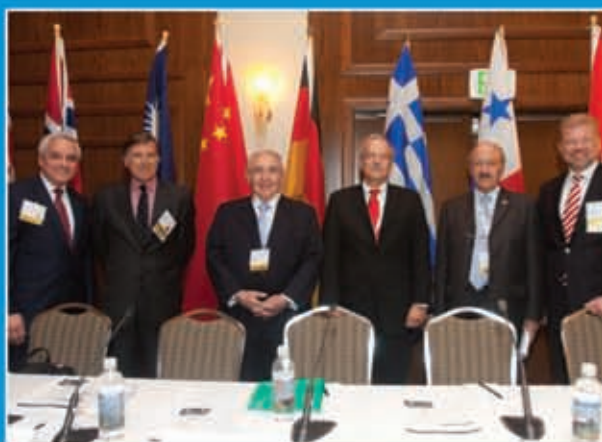
The navigator is, and will remain, responsible for monitoring the safe passage of the vessel at all times, and must rely on his or her own judgement in doing so. However, making use of all available information is essential in ensuring that the judgements that are made are the safest and most effective possible. **DS**

Satellite positioning – a revolution underway

GPS has been the mainstay of global positioning since it first came online more than 15 years ago – however new developments in complementary systems and technologies are hoping to reduce global reliance on the US system and play a major part in in the next generation of enhanced position fixing, *writes Dr Andy Norris*

GPS has been the mainstay of position fixing on ships since around the mid 1990s, transforming the practice of navigation.

In essence the system works by accurately determining the distance from the ship to the known positions of satellites orbiting the Earth and then establishing the ship's position through 3D triangulation.

Major developments in satellite positioning are currently underway that will eventually result in a fundamental difference to the way we navigate ships.

Several things are contributing to this, including the advent of more sophisticated satellites, the steadily increasing number of non-GPS positioning satellites and the gradual introduction of more sophisticated receivers.

In particular, new receivers will be able to use all position-fix satellites publicly available, whatever the system.

It is not a matter of developing a GPS fix and comparing it to a fix from another satellite system – all available satellites can be potentially used to determine a single fix to the highest possible accuracy, integrity and availability.

The huge consumer market, which desperately needs improvements for systems to work better in 'urban canyons', is fortunately funding the majority of the development costs for the new receiver technology.

GPS and GLONASS

In 1995 GPS was declared to have full operational capability. Its consistently good performance since then has made it the backbone of positioning around the world, although it continues to exhibit some performance drop-off at very high latitudes.

As existing satellites become unserviceable they are being replaced by next generation, higher functionality systems. Unfortunately, the current financial situation prevents all older technology satellites being replaced in a shorter timescale.

The Russian system, GLONASS, was initially developed in parallel with GPS and briefly had a full constellation of 24 satellites in 1996. Unfortunately, it was down to around 10 in 2002 but since then has been steadily increasing, and now stands at 20 fully operational satellites.

Four more operational satellites are needed for a full constellation, with completion expected during 2011. Unfortunately, the satellite business is a very risky one, with failures of satellites and launch delays a continual problem. This makes any predictions, not just for GLONASS, very uncertain.

The Russians have recently been addressing GLONASS accuracy, with good improvements being made and convergence to that of GPS accuracy is fully underway, not least resulting from improvements already made to the base stations of the system.

The GLONASS orbits have been specifically chosen to provide reasonable accuracy at very high latitudes – originally a more important defence concern for Russia but now a useful factor to consider when undertaking ice-free Northwest passages.

Emerging systems

For a long time there has been much talk about the proposed European system, Galileo, but accompanied by comparatively little actual movement.

At the moment there are just two test satellites in orbit. However, four validation satellites are planned to be launched in 2011 as a precursor to 18 fully operational satellites to be available by 2015.

In practice, these dates will probably remain fluid, although the funding appears to be secure. However, the plan to have a full constellation of 30 satellites is severely in doubt.
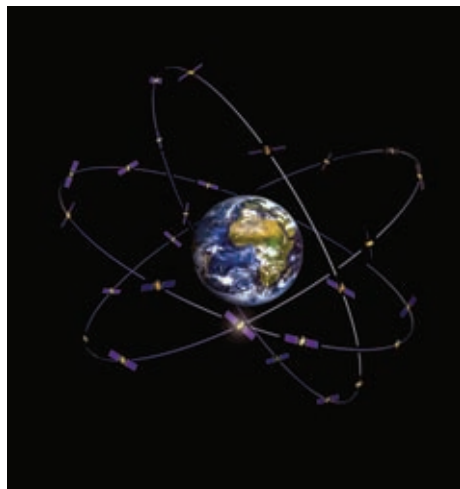
The Galileo constellation is expected to have 18 operational satellites available by 2015. Photo: ESA

Although funding lies at the heart of the problem there is the growing realisation that navigational accuracy, availability and integrity will not be particularly enhanced by employing a full constellation, simply because satellite receivers are becoming multi-service.

Also, because of the strong political ties that Europe has with the US a 'standalone' Galileo constellation is perhaps not of primary concern. An 18 satellite European-owned constellation would benefit all users of positioning systems, including US defence interests, and so remains politically attractive.

Total independence from GPS, and other systems in general, is obviously more important for GLONASS and also for the emerging Chinese system, known as Compass.

Compass is planned to be operational across China and adjacent areas in 2012 using a constellation of 12 satellites. The first satellite was launched in 2007 and the present plan is to make the system global by 2020, with 30 satellites.

As a stated supplement to full operability with GPS, Japan has launched the first of 3 positioning satellites, known as QZSS – Quasi Zenith Satellite System – that are in geosynchronous orbit over Japan.

The system is designed to give high angle signals, greater than 60° elevation, that will be easier to receive in urban canyons, enhancing the operation of GPS – and, in principle, all other positioning satellite systems.

Also, India has planned a regional system known as IRNSS – the Indian Regional Navigation Satellite System, with 7 satellites due to be launched from 2011 to 2014.

Technology improvements

Dual frequency operation for all users is the norm for positioning satellites being launched this decade, even though defence users have had its benefits since the early days of GPS and GLONASS.

It enables a receiver to estimate the variable ionospheric delays that otherwise contribute to positional inaccuracies.

Although single frequency use generally gives better than 10 metres (GPS) accuracy, anomalous ionospheric conditions cause unpredictable excursions out to much larger inaccuracies – 20 metres and potentially rather more.

However, with dual frequency operation, better overall accuracies are achieved and maintained. For GPS, around 5 metres can be expected, at least in conditions of low multipath.

For the last few years there has been increasing evidence that low level jamming is a threat to satellite positioning systems. It can therefore be expected that new designs of receivers will shortly emerge that lessen their vulnerability to jamming and, very importantly, alert the user if interference is detected.

This will greatly add to the integrity of satellite positioning systems.

Another development that will eventually impact maritime users is the increased availability of SBAS – Satellite Based Augmentation Systems. Such systems are reliant on, but have system independence of conventional satellite based positioning systems.

SBAS has been around for a number of years, and includes some very effective commercial systems for specialised markets needing high precision.

Freely available government-based systems have been initially directed towards the needs of commercial aircraft but actually have a much larger potential use. It is the greatly improved positional integrity that SBAS gives that makes it attractive for the aviation – and maritime – industries.

SBAS principles

The basic principles behind SBAS are very similar to standard differential services, such as DGPS. In fact the latter are now sometimes called Ground Based Augmentation Systems – GBAS.

SBAS relies on ground stations monitoring the quality of satellite positioning system signals. Monitored information is relayed by satellite directly into the user's satellite positioning receiver, improving the integrity and accuracy of the position fix.

The main advantages of SBAS over GBAS is that it provides a wider coverage area and the more integrated approach gives it a higher integrity.

WAAS – the Wide Area Augmentation System – is the North American based SBAS. EGNOS – the European Geostationary Overlay Service – is the European equivalent and gives about 2 metres accuracy.

Both system are currently being extended in geographical coverage. For instance, EGNOS is planned to extend to parts of Africa.

There are also other systems in use or under development in various parts of the world.

In the future such systems are likely to replace many conventional ground based differential systems currently used extensively by ships in coastal areas. However, this needs IMO to formally adopt specific SBAS systems as meeting maritime requirements.

The revolution

All developments occurring in satellite positioning bode well for the next decade – and nicely tie up with the timescales for the implementation of e-navigation.

It looks as if new satellite receivers will be able to give consistently good position, perhaps within 5 metres without SBAS and 2 metres with.

More importantly, with an extremely high level of confidence, using sophisticated RAIM and interference detection processes, the receiver will be able to alert the user if its accuracy has degraded, perhaps with a good estimate of the level of degradation.

It is likely to mean that formal checking of satellite receiver position as part of the navigational routine will become unnecessary, which will greatly change current procedures – this will be the real revolution.

However, it certainly does not remove the requirement for backup positioning techniques when the satellite receiver formally hands in the towel ... **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

KNS Provides Exceptional Quality Maritime Communications Equipment Worldwide

KNS Inc. is a worldwide designer, manufacturer, and integrator in the marine communications industry. KNS has been serving customers worldwide providing high quality service, VSAT antennas, equipment and parts for the marine communications industry. Originally starting as a venture of KT-Korea Telecom, KNS obtained its first contract with the South Korean Coast Guard before moving into the private commercial sector. To accommodate its rapid growth, KNS Inc. has opened a larger R&D facility in the Daeduk Techno Valley, the research and development capital of South Korea. KNS is committed to innovation and providing the highest quality maritime communications equipment at competitive prices. Currently KNS provides maritime antenna systems for satellite communications and satellite television to approximately thirty countries worldwide.

In support of its entry into the European market, KNS recently obtained EutelSat approvals for their 60cm and 85cm antennas and are in the approval process for the 1.0m and 1.2m Z-Series VSAT antennas. Reflecting its serious commitment to the European market KNS will open a new facility in Rotterdam in the 1st quarter of 2011, Europe's largest port, to service their maritime antenna products. The new Europe distribution and service center will provide KNS clients with a centrally located office for easy access to a full inventory with hundreds of antennas and spare parts in stock. As part of its commitment to customer service, KNS will send an engineer anywhere in the world within seventy-two hours of client request. With the Rotterdam facility KNS aims to provide the highest quality maritime antenna products and services for the European market.

The opening of the Rotterdam facility coincides with the launching of the K-Series antennas, developed specifically for the TVRO market. K-Series antennas are based on the Attitude Heading Reference System (AHRS) using IMU sensors (3 axis gyro scope, 2 axis acceleration). The 3 axis platform is a stabilized skew system that guarantees precise searching and tracking. The affordable TVRO K-Series antennas are compatible with DVB-S2 and the DiSEqc 1.2 function allows automatic switching between four satellites. The K-Series is a competitively priced antenna that is based on the same technology as the Z-Series, providing exceptional tracking ability, and is ideal for private and smaller shipping vessels.

The K-Series antennas join an already impressive list of KNS designed and manufactured maritime communication equipment. According to Chun Woo Lee, the Korean Coast Guard Superintendent of Satellite Communications, the KNS Z-Series VSAT antennas are the most reliable communications antenna on the market and nearly a hundred units have been installed on South Korean Coast Guard ships. KNS also manufactures the S-Series 3 Axis TVRO antennas. The S-Series antennas allow users to watch satellite television at sea. All S-Series antennas have received CE Conformity and the EMC Directive 2004/108/EC, based on the EN60945 2002 Maritime Navigation and Radio Communication equipment requirements, have been met. KNS also manufactures the competitively priced A-Series VSAT antennas that are built in conjunction with Astra Broadband Services and provide private and commercial vessels the technology to access the internet anywhere in Europe. The competitively priced A-Series VSAT antennas for Europe have been approved by SES ASTRA.

All KNS antennas are developed specifically to stabilize broadband connection during volatile at-sea weather conditions and KNS is working to put together airtime packages for their antennas. The antennas are built on the proven 3-Axis platform that allows them to constantly track and lock in on satellite sources. With the 3-Axis platform KNS antennas are able to gyrate along the X, Y, and Z axes and move 90 degrees per second. "With the 3-Axis platform the motion of ships will not matter because the antenna will move and track on its own. This means that no matter what the conditions at sea our antenna will constantly track and lock on to a satellite. There will be no disruption of service anywhere in the world in any condition," said Noah Chung, International Marketing Manager at KNS. One KNS VSAT customer noted that during a lightning storm, "The KNS A9 antenna was only five meters from the lightning site and still appeared to be fully functional! This proved to be the contrary to other nearby equipment like AIS, Gyro, and Fleetbroadband which were all severely damaged and needed replacements."

KNS will significantly increase their development and production capabilities when they move into their new facilities in Daeduk Techno Valley in July 2011. The new campus includes a 5,500m2 three story building and will house a full Research and Development facility for the A, S, K, and Z series antennas and up to 3-meter C-Band antennas. The new campus will also house facilities that utilize state of the art equipment to run simulation tests including 24hour security checks for maritime communications technology used by the South Korean Ministry of Defense. In addition, a new fully equipped laboratory will provide hands on training and an installation workshop that can simulate technical issues that may arise on vessels. KNS plans to integrate a Near Field Scanner to the laboratory shortly.

KNS works directly with other companies on various satellite communication defense projects as well as with all major dock yards in South Korea including DSME, Hyundai Heavy Industries, Hyundai Mipo Dockyard, HanJin Heavy Industries and Samsung Heavy Industries. In addition, KNS is branching into new global markets including Europe, North America, Central and South America. Recently, KNS received the CE 0678 Certificate from German authorities for the Supertrack Z6Mk2, Z8Mk2, Z10Mk2 and Z12Mk2 antennas and the Anatel approval is currently in progress which will allow KNS products to be sold in South America.