Only one in three ECDIS functions as expected - IHB

A check on the performance of data displays on ECDIS systems by the International Hydrographic Bureau (IHB) has produced some alarming results, with the organisation reporting that only one-third of reports it received showed the equipment to be functioning as expected

The International Hydrographic Bureau (IHB) has issued a circular with updated information on the results of an ENC Data Presentation and Performance Check initiated in October 2011 to examine the performance of ECDIS systems, which notes that only one-third of the manufacturers' systems reported were functioning as expected.

According to the circular, by the end of February the IHB had received nearly 500 reports from sea, covering 15 out of approximately 25 recognised manufacturers of type-approved ECDIS. It notes that the 15 manufacturers represent "by far the most popular brands of ECDIS being used at sea today."

Out of these ECDIS installations it is noted that "about a third of the manufacturers' systems reported to the IHB appear to function as expected in the checks."

"A further third of the systems display all significant underwater features, including underwater obstructions, but the isolated danger symbol required to be shown under certain conditions is not always used."

It continues: "This issue is unlikely to have a significant impact on safe navigation. Most of the remaining third of the systems reported to the IHB failed to display some significant underwater features in the 'Standard' display mode."

One issue highlighted by the study was that a significant number of ECDIS did not always show the required isolated danger symbol when expected

"Under various conditions, mostly related to safety depth settings and other variable factors, these underwater features can include some types of wreck and other obstructions. All these features are displayed in the 'Full display' or 'All display' mode."

Recommended checks

As a result of these display issues, and the potentially serious consequences if mariners are not made aware of shortcomings in some ECDIS equipment being used at sea, the IHB Directing Committee is encouraging all Member States to promulgate the information contained in the circular to all seafarers using ECDIS.

All mariners using ECDIS are encouraged to check their ECDIS equipment using the IHO ENC Data Presentation and Performance Check, available at http://bit.ly/wZjzCD.

This will enable them to determine whether their ECDIS requires that the display be operated in 'full display' mode in order to display all important charted features.

The circular particularly notes that users of certain older models of Japan Radio Co. Ltd (JRC) ECDIS equipment should check compatibility of their systems using this Performance Check, after JRC confirmed that earlier versions of its ECDIS were not displaying some types of wreck and underwater obstructions (including stranded wrecks) in any display mode.

For these models of JRC ECDIS, the mariner must navigate in conjunction with paper charts in order to ensure that all wrecks and underwater obstructions can be identified.

JRC has already issued a notice alerting its customers to this problem *continued on page 2*

and has made an upgrade package available. The notice from JRC can be downloaded at: http://bit.ly/Hhb2XW, while the JRC upgrade package can be downloaded from: http://bit.ly/w76VYw.

In all cases where the ECDIS is found not to operate as indicated by the IHO ENC Data Presentation and Performance Check, seafarers are advised to contact the ECDIS manufacturer or their ECDIS maintenance organisation to seek relevant upgrades to their equipment. **DS**

NYK to introduce broadband to container fleet

www.nykline.com

NYK has decided to introduce an onboard broadband communication system on all of its containerships, with the aim of reducing CO2 emissions during ship operations.

Onboard tests of the broadband communication system started in October 2010 on various types of vessels, producing a significant amount of data which NYK has applied to its IBIS (innovative bunker and idle-time saving) project.

The IBIS system has been implemented on NYK containerships with the aim of achieving optimal ship operation and reducing CO2 emissions, through the transfer and analysis of large volumes of real-time data between ship and shore.

The broadband communications systems will be used to facilitate these transfers in the future.

NYK says that, during its tests, the new satcom systems also enabled the acquisition of more specific weather and sea-current forecast information on board, improving the automatic transmission of ship operation data and facilitating ship operation monitoring on land.

The improved connectivity also allowed for greater information-sharing and communication between staff on land and onboard the vessels.

Based on these results NYK has decided to proceed to install the system on all its containerships, in furtherance of the goals of the IBIS project.

The company says it will also introduce the system to car carriers, bulkers, tankers, and LNG carriers.

The IBIS initiative is aimed at putting into practice methods for safe operation and fuel reduction that were initiated under NYK's medium-term management plan 'More Than Shipping 2013', announced in March 2011, which includes plans to share real-time information between ships and shore and pursue optimal ship operation to reduce fuel consumption.

The company says that the introduction of an onboard broadband communication system will not only contribute to a reduction in CO2 emissions during ship operation but will also bring fringe benefits, such as allowing crew members to communicate with their families via the internet.

NYK aims to use broadband communications to improve efficiency and reduce fuel

MTN upgrades maritime TV service

www.mtnsat.com

MTN Satellite Communications (MTN) has announced version 2 of its MTN Worldwide TV service for cruise passengers and crew.

MTN Worldwide TV is a digital, multi-channel television service for the maritime industry delivering programming from eight US and international television networks including BBC World News, CNBC, Fox News, MSNBC, Sky News, Sky Sports News, Sport 24 and E! Entertainment Television, as well as offering special event programming such as Premier League Soccer and onboard events.

It uses MTN's satellite network of three overlapping satellite beams that integrate with a cruise ship's existing Television Receive-Only (TVRO) antenna and onboard video distribution system.

The latest version of the system can deliver entertainment programming and specific cruise content streaming to Wi-Fi enabled devices such as laptops, tablets and smartphones.

Cruise lines equipped with the service will be able to integrate additional video and audio content such as shore excursions, ship and port information and onboard vendor advertising.

"With MTN Worldwide TV, passengers and crew can now access entertainment and news programming, and other content, from anywhere on the ship using personal mobile devices - from lounging by the pool or in the comfort of their room," said Brent Horwitz, senior vice president and general manager of MTN's cruise and ferry services business.

"Further, this new mobile service will keep crew morale high and help increase productivity while at sea."

To date, the service has broadcast 770 sporting events and more than 2,000 hours of live programming to 19 cruise lines around the world.

MTN Satellite Communications (MTN) has added two executives to its management team, with Robert Wise, previously an engineering vice president in **HP's** public cloud computing effort, assuming the newly created position of chief innovation officer, and former head of **Intelsat General,** Susan Miller, becoming executive vice president of strategy & corporate development.

ORBIT Communication Systems has appointed Kevin Zervas to head up its maritime satellite communications sales and business development activities across North America. Mr Zervas has previously worked with maritime VSAT companies **Azimuth Unlimited** and **Sea Tel.**

Thuraya has elected a new board of directors, to serve a three-year term.

Mohammad Hassan Omran of **Etisalat** will act as chairman, with Khalid Ahmed Balkheyour of **Arabsat** appointed as president and CEO. Michael Butler, former COO of **Inmarsat**, and Charles Moore, president of **Lockheed Martin**, have also been added as independent directors.

KVH has opened a new motion testing facility for its satcom antennas, including a custom-made hexapod motion simulator and curved wall of windows offering a clear view of relevant satellites. The new building is adjacent to KVH's world headquarters in the US, and will support all TracPhone and TracVision products.

e3 Systems has announced that it has signed a partner agreement with **Aage Hempel International,** whereby Aage Hempel will offer e3's communication services through its offices in Spain, Gibraltar, Morocco, Portugal, Malta and Panama.

Applied Satellite Technology Ltd (AST) is to open a new VSAT Maritime Broadband Solutions Centre in Singapore on the 1st May 2012, to specifically serve the Asia Pacific Region. Operating from the existing AST Asia PTE Limited Singapore office, the direct arm of AST Singapore, the new Centre will be run by Henrik Jacobsen as managing director.

www.mtnsat.com
www.orbit-cs.com
www.thuraya.com
www.kvh.com
www.e3s.com
www.aagehempel.com
www.satcomms.com

Letter to the Editor – Inmarsat pricing changes

As of May 1, 2012, Inmarsat will be making a number of changes to the pricing structure used to charge for its satellite communications services.

These will affect products across the board, from its existing and evolved services such as Fleet up to its flagship FleetBroadband offering. Depending on the service used and the contract type this could mean increasing or decreasing costs for different types of Inmarsat customers.

Details of the exact pricing changes, and how they will affect vessel operation costs, can be obtained directly from Inmarsat partners.

In response to these pricing changes, AMMITEC, the Association of Maritime Managers of Information Technology and Communications based in Greece, has written an Open Letter to Inmarsat, which it has sent to *Digital Ship*.

This letter is reproduced in full below, and is followed by Inmarsat's direct response.

Letter to Inmarsat

Dear Sirs,

As the association for IT Managers within the Greek Maritime Industry, AMMITEC, on behalf of its members, wishes to raise serious objections regarding the recently announced re-structure of maritime pricing which is due to be implemented as of 1st May 2012 by Inmarsat Plc, and therefore its distribution partners.

Our main objections refer to the following elements, which we expect to be addressed by Inmarsat Plc in the form of an official response which will be placed in the open domain for all AMMITEC members to access.

1. The **~15% increase on Inmarsat-C** (distress capable) Telex communications, which are a legal IMO (flag-state enforced) requirement to be used on all merchant vessels, and for which there is no alternative, is totally unacceptable.

AMMITEC feels this is a blatant abuse of monopoly and should be immediately referred to such intra-national organizations (IMO COMSAR) to be dealt with, should it be implemented. In this regard we will also be bringing this to the attention of the Inmarsat IMO regulator, IMSO.

2. The **~15% increase on Existing and Evolved** communications systems (in particular Fleet F77, launched in 2002) is a blatant push to remove existing users with 'older' equipment from the Inmarsat-3 satellites and force migration onto the Inmarsat-4 platform. This 'economically imposed migration' is approximately 5 years earlier than is normal for such a hardware migration, especially as no end of life for Fleet services has been announced to date. Being GMDSS capable, Inmarsat is obliged to give at least 5 years notice prior to closure – in lieu of this, migration by stealth will not be tolerated by AMMITEC.

Clearly, this action is either to allocate existing spectrum bandwidth to new revenue streams and markets, or it is so that the Customers are forced into unwanted, overpriced and lengthy contracts for the newer products, which, in our view, is both morally questionable and potentially anti-competitive. The argument of moving from older, redundant systems, and the price increases being reflected by the older infrastructure, is mostly invalid, as by this definition the last telephone calls on E&E systems would cost several thousands of dollars per minute.

3. The **drastic alteration of pricing for the new FBB systems** will result in an unsupportable rise in costs in an industry already operating at little, or zero, profit margin on daily rates. The previous implementation of new communication systems, such as switching to F77 from Sat-B, was a stable and sustainable model that led to balanced implementation and cost models. It allowed for the time consuming cost planning and comparison of systems in the market, and projected to be in the market, taking several years to fully implement and expected to have a system life of approximately 10 years. A lot of shipping companies have selected FBB equipment based upon the original pricing model and now the facts are changing. With the model no longer being valid, every IT manager may have to re-evaluate the ROI costs that FBB systems would be, under the newly imposed scheme.

The change in the pricing structure, that is being forcibly pressed upon IT departments and owners, **breaks this 30 year stability** and, at best, leaves the customer base wondering when the ill-wind of change will again herald another price rise straw for the proverbial back. Again, in the current economic climate how can Inmarsat Plc's moves be commercially and morally justified, raising base subscription levels on the Standard FBB plan by some 3 times their current rate, and raising the per MB cost when they clearly know most merchant vessels operate on this plan? Clearly the answer is to raise revenue at the expense of their customer base, which at this time is relatively captive.

Moreover, the **substitution of the money bundles** with data allowances will lead to a further 20% - 30% increase, depending on the amount of voice for each vessel. We all know that most companies spend only 50-60MB out of the 125MB of the previous entry plan, but they could consume the rest of their money bundle in voice minutes. Now that **voice is NOT included in the entry plan,** there will definitely be an increase in monthly invoices, with an approximation of around an extra $150-$200. This gives an increase of almost 30%. There will also be a considerable amount of unused data being charged for, with an average unused amount of between 150 and 140Mb per vessel. We could, therefore, be paying effectively $700 for 50MB – that is $14/MB!

4. The alteration in the billing increments for Fleet, mini-M and other E&E systems, which were forced upon customers last year, led to an increase of approximately 6%. How is a further 20-30% increase justified in retaining customers in a difficult marketplace with alternative communication solutions, whereby FleetBroadband is supposed to be the latest generation and more economic alternative?

In general, AMMITEC and its members find that the handling of the pricing restructuring shows a blatant disregard for the long-term loyalty and trust that, up until a couple of years ago, the majority of the shipping world has had in Inmarsat and its maritime offerings.

We welcome the chance to openly discuss these issues within the Greek Maritime community with a representative of Inmarsat Plc, and the wider Maritime community, who are all equally affected, through *Digital Ship* and its conferences, or through an open web seminar or similar event.

Yours sincerely,

AMMITEC (Association of Maritime Managers in Information Technology and Communications)

Inmarsat's response

Sir,

May I begin by thanking the editor of *Digital Ship* for the opportunity to address these points directly.

I would also like to point out that Inmarsat has never been able to discuss prices in a public forum. Our partners want the ability to set their own retail prices. So we are not avoiding discussing prices; we are contractually bound to not disclose wholesale airtime rates or price changes.

Let me also be clear that we continue to offer safety services for free. We are well advanced with plans to enable FleetBroadband to support GMDSS, and that safety service will also be free. Our competitors do not support GMDSS. Why? Because despite their bluster in the press and social media, our competitors know that they can't match the reliability, quality and global coverage of Inmarsat. We are still the gold standard for safety at sea, and we take great pride in that.

Some time ago we reviewed the pricing for our Existing & Evolved (E&E) services, and chose to end the volume discount scheme, which rewarded a small group of partners over the majority. We replaced this with discounts directed to customers. We believe this is a fairer solution.

We have increased the price of our E&E services. This is not connected with any plans to close the Fleet service – we have always complied with the required notice period for the closing of our services. This is not migration by stealth; we have no need, as record numbers are taking up FleetBroadband. Our customers are driving the speed of transition, not us.

Rather, the price increase for E&E reflects the fact that these are old services. For example, Fleet 77, one of the newest of our E&E services, is already 10 years old. With increasingly fewer users, we must adjust our prices. No business in any other sector would act differently.

When FleetBroadband (FB) was launched, the rates were half those of E&E services. To that extent, shipowners have already benefited from significant savings by switching to FB. The price of our Very Large Allowance package has actually decreased in the recent price change too. New packages are about increasing choice and flexibility; so overall, where FleetBroadband is the primary service, costs are reduced.

Where we have increased the price is for the pay-as-you-go standard plan. This again reflects standard business practice of charging more where a customer requires the flexibility of using an on-demand service. We have asked for a $3 per day commitment, and in return users get access to the world's most reliable and high-quality maritime communications service. This annual fee – $1,095 – is roughly equivalent to 1.5 tonnes of bunker oil. We are confident that effective use of the FleetBroadband system, such as better engine monitoring and weather routing, will save many multiples of that amount of fuel in the course of a year.

The price increase to the standard plan may seem unattractive to a shipowner using FleetBroadband as back-up for a competing VSAT system. But our XpressLink service now offers savings by combining our own VSAT with unlimited back-up via FleetBroadband – all with the guaranteed free upgrade to Global Xpress when it rolls out from the end of 2013.

We have also removed voice communications from the 'money bundle'. The previous arrangement was not good value. It conflated voice communications (primarily driven by crew use) with the use of data communications (primarily operational). This causes uncertainty for shipowners. Changing the money bundle so that it covers data only gives more flexibility for shipowners to handle voice and data separately. It is also industry standard; VSAT operators do not include voice in their money bundle.

Inmarsat is listening to our customers. We recognise that some of these price changes will be difficult for smaller vessels, and so we will be introducing a small boat package to which they can transition.

We are investing in the future; investments that are fully-funded already. Our $1.5bn investment in Inmarsat-4 has brought significant benefits to the global maritime community, and we are certain that our $1.2bn investment in Global Xpress will be a true game-changer in maritime communications. Both investments demonstrate the continuation of our 33-year support for the world's mariners.

We remain committed to our customers in these difficult times and our maritime services will continue to be competitively priced and globally available.

Regards,

Frank Coles
President, Inmarsat Maritime

Optimising the communication solution

German shipping company Reederei Wessels, has, over the last 10 years, migrated from Inmarsat C, to an Iridium solution, and on to Fleet 33 and FleetBroadband in the search for greater efficiency. Arno de Groot, Reederei Wessels, spoke to *Digital Ship* about the ups and downs of this decade of progress

The family owned German shipping company, Reederei Wessels, has a long tradition in maritime shipping. Ever since its founder, Dr Gerhard Wessels, designed the modern cargo liners that form the basis of modern bulk and container coasters, the company has maintained a keen interest in applying the latest in ship design and operation technology throughout the company.

Although the management of Reederei Wessels has changed since, the current personnel have continued to try and maximise efficiency in operations. Energy efficient ship models and novel propulsion support technologies, such as the Skysails Kite System, are among the advances which have been tested and employed by the company in recent years.

Reederei Wessels has also been keen to innovate in its use of information technology, evidenced by a decision first reached in late 2003 to completely overhaul and modernise its communications technology infrastructure.

The predominant drivers of this process were to improve cost effectiveness and maximise the company's operational efficiency.

Reederei Wessels wanted to achieve higher quality in its communication, both under regular circumstances and to support the vessels in an emergency, via voice connection to the office. It was also looking for an improved method of transferring attachments between ship and shore.

Another factor that played a role in Reederei Wessels's decision-making process was crew retention. Reederei Wessels felt the need to move forwards in this respect in order to remain competitive and attractive as an employer.

"Good and experienced crew is hard to come by," notes Arno de Groot, IT manager at Wessels Reederei.

"We, as a shipping company, need to offer them substantial communication benefits in order to attract them, thus, e-mail is not enough anymore. Nowadays, crew want to read their local newspapers, they want to stay in touch with their loved ones at home and to stay more connected to the world outside the vessel."

While providing these services is an important consideration, Mr de Groot admits that they came as a secondary concern compared with the operational requirements.

"Our decision to implement the communication structure that we have on board our vessels nowadays was mainly motivated by business reasons rather than crew welfare and crew retention," he said.

"For us it was most important to find a solution that fits our operational needs, especially with regards to data volume, speed and costs; and that can be implemented easily and maintained without too much trouble."

This process would include the imple-mentation of a variety of new software and hardware components on the company's 45 vessels, as well as in the main office. As such, there were a number of key questions which needed to be answered before work could begin.

"We crucially needed to find out," says Mr de Groot, "which type of our vessels requires what kind of communication system, what amounts of data will need to be transferred in the future, and how can we organise this process most efficiently and most cost effectively."

"In order to achieve this we did some thorough testing on a few selected vessels before deciding to roll out a solution on the entire fleet. Only then did we assess and ensure that the chosen solution also offered a communication solution which would be acceptable and attractive for our crew."

With this plan in place the company set out on a comprehensive overhaul of its satellite communications system, a project covering nearly ten years in maritime satcom development.

From Inmarsat to Iridium

Reederei Wessels had been using Inmarsat-C terminals as its main means of communication prior to the start of the communication solution modernisation in 2004.

As Mr de Groot notes, these solutions had a number of disadvantages, which the company hoped to solve through the implementation of new hardware and software. The most significant of these were the comparatively high costs, which were partly due to the pricing structure.

However, since the system was configured to connect at regular hourly intervals, regardless of whether or not there was data or e-mail to be sent, even without any traffic between ship and shore these 'empty connections' created a monthly minimum cost of US$200.

"The monthly costs of Inmarsat-C terminals were very high, and we wanted to find a cheaper solution," explains Mr de Groot.

During a process that took approximately six months, Reederei Wessels researched a variety of satellite communication possibilities and conducted trials with two alternative systems before deciding to implement a Globe Wireless solution, including the company's Ring Page Service and standard Iridium terminals,

Reederei Wessels ships have used a range of different satcom systems over the last 10 years

across its fleet in 2005.

This move created some initial benefits, particularly with regard to the fact that the Iridium terminals were configured to only connect to the internet if data or an e-mail was waiting to be transferred, which meant that the unnecessary connection fees of the prior solution could be eliminated.

Under the Iridium system, the total costs per vessel could be reduced to under US$200, including the monthly fee and the data transferred.

"Our Iridium contract stipulated a fixed fee of between US$27 and $33, depending on the SIM, with an additional 3 to 5 MB of data. With a reduction of email communication costs by more than 50 per cent, the solution with Iridium terminals turned out to be the most cost-effective solution," says Mr de Groot.

However, the satellite communications system was not the only change at this stage. In order to further reduce communication costs, Reederei Wessels also performed a series of modifications to its standard forms.

Prior to this all standard forms had been in Microsoft Office format, which was comparatively costly, since a standard A4 page of about 47 kb, transferred from shore to vessel or vice versa using the Inmarsat-C technology, would cost around US$5.

To improve on this Reederei Wessels implemented the Globe Forms Template File standard forms that were available from Globe Wireless, under which only the exchangeable data in the standard form is transferred.

The software requires the relevant data to be fed into an MS Word template, an A4 page with 180 data fields which is subsequently compressed to an Adobe PDF document, reducing the 47 kb Word format to a 16 kb PDF.

The software then further optimises the PDF document to create a 2 kb Globe Forms Template file.

"Globe Wireless uses Adobe Acrobat V7 in combination with GlobeForms V2.x to 3.x with the vessels of our fleet. With 2 kb, the transfer of which would only cost US$ 0.21, a standard form A4 page is pretty small," says Mr de Groot.

"Through the implementation of this technology we managed to cut the amount of data transferred down to a fraction of

what it used to be. That was a good product in 2005, and it transferred the most important data smoothly for some time."

Software connections

However, after a number of years of what the shipping company describes as a fruitful partnership with Globe Wireless, Reederei Wessels started to look into further optimising its systems, and this standard forms solution in particular.

As Mr de Groot notes, the fact that all standard forms had to go through two separate compression processes created an associated margin of error, and the shipping company was keen to simplify the process further.

"The individual compression steps require high accuracy to minimise the risk of data loss," he says.

"Under our Globe Wireless setup, we needed three files for each form revision. This opens up room for mistakes. On top, the workload for our staff was quite high and we wanted a simplification. This is why we decided to go a new way."

This 'new way' involved the implementation of a Java coded Adobe solution to simplify compression of the standard forms, developed in-house and using Adobe Reader 10, as a base for the new company standard forms.

The system features a number of Java-based modifications to adapt the software to the company's shipping-specific requirements, and has proven to be a powerful tool according to Mr de Groot.

The simplified compression process required only two transformations and no additional software formats, while the use of Adobe Reader 10 does not incur a licence fee. Mr de Groot also notes that the installation on board the vessels went smoothly.

"On top, the implementation of this Adobe Reader based software has been beneficial for the crew," he explains.

"In order to send off the completed standard form they only need to press one button: 'send to e-mail'. It really is as simple as that."

"We wanted to avoid our crew having to spend a lot of time on additional software, when their actual job is sailing the vessel. It is not necessary for them to be distracted from their task and we really can support them with this new software."

To simplify further, some of the required data is fed into the standard form automatically as soon as the crew chooses their vessel's name in the software.

For example, if a main engine measurement form with integrated data and text fields needs to be sent from the vessel to the office and the crew enters the vessel's name, the main engine type is automatically inserted into the standard form.

Additionally, the software recognises which fields are required to be filled in for this type of engine. Spare fields, on the other hand, will be blocked so that the

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Reederei Wessels has also used Adobe Reader 10 to create a database storage system for the office. Data from the vessel is centralised for the office's technical inspection, where it is automatically converted into a PDF file using a standard template. These documents are used for filtering and analysis purposes in the office.

"Data can, for example, be filtered according to vessels, forms, minimum/maximum values, time from/till," explains Mr de Groot.

"In addition, this tool enables us to send alerts when critical values are reached after a filter has fired."

"This technology has helped us bring down our communication costs and we expect that the simplification for the crew on board will be very well received."

Aside from the changes to its forms usage, the overhaul in Reederei Wessels' communications infrastructure has also included changes in its e-mail system. Previously, the company would send e-mail via Globe Email (GCC), but has now changed to Microsoft Outlook as its e-mail front end, connected to the Dualog communications management software system, on some of the vessels.

"This gives us the possibility to use all available default interfaces," Mr de Groot explains.

"A further benefit is simplification through the Microsoft MAPI default email client. This opens the Outlook Email Client Front End and attaches the standard forms, for example on weather routing, where we use SPOS Weather Routing Software, directly to the e-mail, the master does not have to select a folder or anything. There's nothing else to do for the master."

Back to Inmarsat

As with all types of technology, the passage of time changes the operating landscape and systems that were previously cutting-edge inevitably begin to lose their lustre in comparison with new innovations.

At Reederei Wessels, after a number of years using the Iridium system the company began to reconsider its satellite communications hardware once again. This was partly motivated by the fact that the Iridium terminals, that had been in use for six years, were generally not deemed to be powerful enough for the changing operating environment.

As a result Reederei Wessels decided to move back to Inmarsat and its newer generation of terminals, and over the course of the next three years equipped 13 vessels with Inmarsat Fleet 33.

"The Inmarsat Fleet 33 terminals provided us with active antennas, which was a great development for us," says Mr de Groot.

However, the company soon realised that the implementation of Fleet 33 would not fully live up to its expectations. Instead of achieving a better data transfer rate and a drop in costs by using more powerful hardware, the data transfer rate only amounted to half of the projected value (9600 baud), and the costs increased.

"Our vessels had a lot of e-mails to transfer, especially our 12 new vessels that are still within the guarantee period and the communication costs of the company eventually amounted to between US$600-

US$1100 per month," Mr de Groot explains.

In order to solve the problem of the increased costs the shipping company decided to use the MPDS (Mobile Packet Data Service) available with the satcom system.

"We did not fully believe in this technology and had some doubts," recalls Mr de Groot. "This is why we chose to test the solution carefully."

After carrying out a trial period with two different software suppliers to manage the satcom link, Reederei Wessels decided to implement the Dualog Connection Suite, which would be used to block unwanted traffic and compress data.

As Mr de Groot notes, the Dualog system offered higher data compression than the company had experienced with Globe Wireless' GCC, and helped the company to reach its desired data transfer rate.

"Consequently, the monthly costs were decreased to between US$400-US$500 (including Dualog's monthly software fee)," remembers Mr de Groot.

"The Dualog Connection Suite solved our connection speed problem and the cost issue to our full satisfaction. In addition, the implementation has brought a number of further advantages for us."

Among these benefits is the Dualog.net interface, which allows the shipping company to change settings on board its vessels remotely. This is particularly useful for the synchronisation of folders, for example for the Skysails Fuel Performance Monitor.

"For us it is very important to be able to monitor when the vessel was last connected, for example in order to send or receive e-mails, and whether the task was successfully completed," notes Mr de Groot.

"In addition, we can see all configuration changes and updates, such as modifications of black and white lists."

Through the Dualog.net office interface, staff at Reederei Wessels can monitor pending e-mail messages for all vessels individually, with information such as sender, size of the e-mail and date and time when the message was sent all available.

"This function enables us to identify signal problems from the satellite equipment," explains Mr de Groot.

"We have established a 20-minute turnaround time for Dualog operating vessels to fetch their e-mails. If a message is pending for a longer time than that, we know that something must be wrong and can start looking for the cause."

Next generation

Although satisfied with Fleet 33 at the time of the implementation, Reederei Wessels did not stop looking for further improvements and modernisation, and the latest change in hardware has been to introduce Inmarsat FleetBroadband, which was on two previously used vessels in 2009/2010 and on its new built vessels in 2011.

"We are very happy with this solution and it is working smoothly," says Mr de Groot. "With FleetBroadband we have a better network quality that we used to have with Fleet 33. This is something that is very important for us."

Among the advantages of the FleetBroadband system, from Mr de Groot's point of view, has been the ability to use IP protocols, creating better connectivity to other systems, such as the Skysails Fuel Performance recording

equipment, as well as the possibility of using a public IP address, which is especially important for remote support.

The FleetBroadband solution also offers included data volume contracts, which Reederei Wessels felt was necessary in order to keep the data consumption under control, as well as an option to introduce SIM-card cut off limits to prevent runaway costs.

However, Reederei Wessels has found that the implementation of the FleetBroadband solution has also had certain disadvantages.

Mr de Groot has found that the IP handset blocks one LAN port, necessitating the creation of network groups – a complication that Reederei Wessels would rather have done without. The fact that the connection is always available also requires staff to be disciplined with their internet usage, as there is no internal protection.

"There is no firewall inside the FleetBroadband terminal," explains Mr de Groot. "We wanted a protection that we could configure to block ports and protocols to our exact specifications."

Lastly, the shipping company says that Inmarsat's pricing policy, under which it says it is charged for ¼ MB for every connection that is initiated from a FleetBroadband terminal, has significantly contributed to the company's communication costs.

Flexible hardware firewalls

To mitigate one of the issues it has had since installing the FleetBroadband solution, Reederei Wessels decided to install hardware firewalls, filtering devices that block certain unwanted traffic. There were a number of particular requirements the company had when choosing a system to manage this process.

"The worst example of hardware firewall technology is if the unwanted traffic goes through the satellite before it is blocked," says Mr de Groot.

"This is when we are charged for what we do not want. With the solution that we have now all unwanted traffic is blocked immediately before it even goes up to the satellite and only certain designated communication, for example e-mails to the office, is allowed to pass through."

"For the moment we only want to allow e-mail traffic to be sent from the vessel."

The shipping company chose Lancom and Stonegate devices for the firewall system, despite the fact that they are not maritime-specific technologies.

"Even though shipping business is not their core discipline and thus outside the companies' default setup environment, the support was excellent," says Mr de Groot.

"In addition, these manufacturers give us the option of remote support from the office."

The Lancom model 1751 UMTS combines the hardware firewall with a routing function. The routing unit detects UMTS/GSM networks and automatically switches when coverage is available. This way, the vessel can avail itself of additional network coverage in ports.

The device has an extra slot to connect an additional external antenna, which has proven useful where coverage is patchy in port.

The Lancom unit can also be combined with an additional piece of hardware for

Public Spot support, and is used to provide the crew with wireless connectivity.

"Before, the crew had to stay in one place when communicating with their loved ones," says Mr de Groot.

"Now, they can move about and have more privacy. This option is very well received and we are happy to be able to offer it."

The downside with the Lancom system is the fact that the virtual private network requires remote control, with a direct connection to the firewall and a public IP address, which the shipping company finds costly on FleetBroadband and GSM.

The Stonegate FW315 unit is similar, with the main difference being the support of GSM/UMTS Wi-Fi sticks by default.

"Another huge benefit," explains Mr de Groot, "is that we have very close contact to the manufacturer, Stonegate. If we want to introduce changes or if we need additional hardware sticks the support is always available for us."

Both firewalls are remotely managed centrally, from the Reederei Wessels office.

"This is a huge time saver as it avoids sending IT specialists out to the vessels. Instead, we are able to modify all rules and policies from shore," explains Mr de Groot.

Some smaller vessels, currently 16 of the company's 45 ships, use the Dualog DuacorePro Firewall instead of the two hardware firewalls. This software creates an internal and an external network, which are connected through Dualog IP Control.

The advantage of this completely controlled network is that only selected traffic, for example e-mail, is transferred to certain IP addresses.

"We can choose exactly which traffic we want to allow to be transferred to the external network, where it is sent via Inmarsat FleetBroadband; all the other traffic is automatically blocked," says Mr de Groot.

"The reason for our using Dualog DuacorePro Firewall is that the installation and configuration requires less time than the hardware firewall solutions with integrated router. Another very simple reason is that the smaller vessels that use the Dualog solution, in contrast to our other vessels, very rarely sail close to the office and it was therefore easier and cheaper to simply send out the software rather than to send a technician incurring expensive travelling costs to install a hardware firewall."

Over the course of its modernisation project, which has continued for just under a decade, Reederei Wessels has equipped its vessels with a satellite communications solution that it is functional and sufficient to meet its current needs.

However, as the company's migration through the various satellite systems has shown, the need for shipping companies to keep continually modernising and optimising never ends.

"The data volumes are rising constantly," concludes Mr de Groot.

"If it wasn't for the advanced technology on board and the need to offer a decent communication solution to our crew in order to retain them, we would still need higher data volumes in order to fulfil the numerous regulations that are continuously evolving."

"We will certainly further continue to advance our solutions in the future." DS

V.Ships to promote KVH mini-VSAT to its fleet

Shipmanagement company V.Ships has agreed a deal with KVH that will make mini-VSAT the satcom service of choice for any future installations

V.Ships, the world's independent ship manager with approximately 450 vessels under full technical management and serving a fleet of over 1,000 with various marine services, has selected the mini-VSAT Broadband service from KVH as its preferred satellite communications solution.

V.Ships manages various vessel types including tankers, dry bulk carriers, gas and chemical carriers, containerships, cruise ships, and offshore vessels, and will now promote the use of the KVH service to its customers through SeaCom Electronics, a fellow member of V.Group, V.Ships' parent company.

SeaCom will handle installation and technical support for vessels that decide to implement the service, with support from KVH's key account manager, Niels Reuther, from the KVH EMEA headquarters in Denmark.

"Connecting ships with onshore networks offers exciting new ways to bring ship and shore-based operations closer together, to improve efficiencies, to manage operating expenses, and in general make a better onboard life for officers and crew," said Stephen MacFarlane, information systems director at V.Ships.

"We plan to use the mini-VSAT Broadband network to deliver navigational, safety, and real time weather data, offer internet cafe and VoIP calling to help further enhance crew morale, enable onshore technical experts to collaborate on repairs with their colleagues at sea, and to connect ships to onshore networks using 'ShipSure', our enterprise resource planning software developed by V.Ships."

The KVH system was selected after it was evaluated by SeaCom on more than a dozen of its managed vessels, according to Neil Sayce, SeaCom managing director.

"The small, relatively lightweight antennas are much easier to place, do not require a crane, and can offer a greater choice in finding a clear location to minimise obstructions by the ship's superstructure," he said.

"Freight and installation costs are reduced and experience to date has shown the TracPhone V7 system is quicker and easier to install than traditional VSAT equipment."

"The standard fit would be the V7, but the options offered by the V3 and the new V11, providing global C/Ku-band service on a 1-meter antenna, make KVH an ideal partner to work with given the varied needs of a large, managed fleet."

The mini-VSAT Broadband service operates on a web of 14 Ku-band satellite transponders, which can be extended with overlaid coverage from three global C-band transponders for the V11 service to cover 95 per cent of the Earth's surface.

The system operates using spread spectrum technology on antennas starting from 37 cm for the Ku-band service and from 1 metre for the combined C/Ku-band coverage.

"We have created a truly next generation maritime broadband system, designed from the ground up to deliver fast, high quality VSAT service on a global basis, covering 95 per cent of the Earth, including all of the world's shipping lanes," said Svend Larsen, managing director of KVH's European operations.

"Our spread spectrum technology is fast and reliable, and has very low latency, making it extremely well suited for running networked applications. We are delighted to be working with V.Ships, one of the world's leading and most innovative ship management companies to bring next generation broadband services to their customers' vessels."

Nordic American Tankers is one of the V.Ships customers already using KVH mini-VSAT

Satcom experiences

One of V.Ships' customers already using the KVH service is Nordic American Tankers, which has installed the communications system on thirteen of its tankers, most of which are Suezmax, and with a fourteenth soon to be equipped

The ships are among the 36 vessels provided with technical management by V.Ships Norway, along with other shipping companies across Norway, Greece and Asia like Frontline, Fred Olsen, Mercator Line, Brightoil Shipping, Polyar, and AET (American Eagle Tankers).

V.Ships Norway currently has two different VSAT suppliers providing communications to these ships, specifically those in Norway, as Hans-Petter Jensen, IT manager at the company, explains.

"When it comes to VSAT we have started with the Norwegian clients. They have been more interested in the technology and have seemed to be more adaptable to new systems," he said.

"After our experiences with the systems with our Norwegian clients we will start to introduce it to our other clients as well, in Asia and Greece and everywhere else."

V.Ships Norway has installed KVH's TracPhone V7 Ku-band systems on the Nordic American Tankers vessels, combined with FleetBroadband 250 units as a back-up.

"Today we have a speed of 128/128 kbps," said Mr Jensen. "It's not a lot, so we will increase it to 256/128 kbps in the near future. And we will probably increase it more as we utilise the system more and more."

There have been a number of different drivers that have led the company to install VSAT, and V.Ships to make VSAT its preferred choice, as Mr Jensen recalls.

"The main reason we are doing this is because we want the crew to have the possibility to communicate more with their family and friends, and of course we'd like our maintenance systems, our ECDIS systems to be updated," he said.

"We'd like to have the possibility to increase the amount of data we are transferring back and forth to the vessels without any big surprises to our clients when it comes to costs. To do so we need to have a fixed price."

Other technology drivers included improved access to training, giving seafarers access to materials on demand, and providing greater access to structured courses, including professional distance learning providers.

"We'd like for our crew to be able to do more training online, and things like that," said Mr Jensen.

Installation success

The first installation of the KVH system was completed in October 2010 on the Nordic Hawk, which was followed by approximately one installation per month over the following year.

"Our vessels are doing long voyages, so it can be a little bit difficult to plan it – they are not in port every day, let's put it like that," noted Mr Jensen.

"Sometimes it can take two or three months before the ship is in a good position for installation. So you also need a robust system which doesn't need a lot of maintenance."

"So far we've had a few minor issues with the installations, especially with some of the connectors, which we had some problems with, but these have been solved by KVH quite well, and at the moment all systems are up and running without any hassle."

One of the ways in which V.Ships Norway has been able to minimise any problems in the installation process has been through the creation of a standardised package of equipment, already configured before it arrives at the ship.

"In the beginning we supplied the system as parts that had to be installed onboard. But that's not a very good idea, and today we've changed it so we have this rack, a 19-inch rack, with a UPS installed, an insulation transformer, and the KVH CommBox," said Mr Jensen.

"Everything is inside one rack, pre-configured from KVH and delivered like this onboard. So it's just a matter of connecting the cables and off we go. It's locked with a key, so nobody can fiddle around with it without permission."

Once the physical equipment is in place and the system is properly installed and configured onboard, the next step is to make sure that the security of the network is protected from problems like unauthorised use, viruses, or other malware.

V.Ships Norway uses a firewall system to manage its communications, though this approach has evolved as the company became more experienced with the equipment onboard.

"We started with D-Link firewalls, but they made our lives miserable, because they needed too much maintenance if we wanted to change the configurations, and if we changed the model we'd have to create new config files every time. It was cheap, but it was not the best idea," said Mr Jensen.

"Today we have changed to having the CommBox on the vessels for that. We have different rules in the firewall, for the KVH

KVH says that it is now working with V.Ships in making presentations to V.Ships customers to introduce them to the mini-VSAT Broadband service.

antenna we have some content filtering, but not very much. We let the crew surf and we have Wi-Fi onboard."

"Behind the firewall itself we have a HP managed switch, where we have connected all of our equipment. From the HP switch and out to the rest of the network, everything is similar on the vessels. If we install a VSAT from KVH or if we install a FleetBroadband, the infrastructure behind the firewalls is the same."

Operational benefits

With the VSAT service installed on these vessels, V.Ships has been able to introduce a range of different services and applications onboard which have created a host of benefits, both on the operational side and for the crew, that have helped to con-

vince the company that this type of technology should be promoted throughout the fleet.

"When it comes to VSAT we don't have to worry about any compression of the e-mails, we can allow any size of e-mails. We can do remote support for the computers onboard without any big issues. We can let the crew surf on the internet," said Mr Jensen.

Wi-Fi connectivity has also been introduced onboard to make it easier for the crew to access the communications system, though this is controlled by the Master, who can make the decision as to when it is available.

"The Wi-Fi is not on 24 hours a day, it is up to the Captain. Sometimes when he needs the full speed himself he shuts it

down," said Mr Jensen.

"We give the password to the Wi-Fi to all of the Superintendents, so they can use it when they are visiting when the ship is in port."

The VSAT system has also made the transfer of files from shore to ship, for various operational purposes, a simpler and more cost effective process than was previously possible.

"We use a QuickFile functionality in the CommBox to do file transfers, things like ECDIS files and big reports or whatever we need," said Mr Jensen.

"We update the antivirus system on a daily basis, to the server, and then it is distributed down to all of the client computers."

Voice calling has also been overhauled, with V.Ships Norway having been able to

introduce local phone numbers onboard the Nordic American Tankers ships, thus reducing the cost of phone calls to the ship from land based offices.

"We have Norwegian phone numbers onboard the Nordic vessels, KVH can also deliver UK numbers and Singapore numbers for us too. Since the Nordic ships are for a Norwegian owner, we have Norwegian numbers," said Mr Jensen.

"We also have a crew calling solution onboard that I would say is reasonably priced, and the crew likes it."

Having achieved these results using the KVH service on the Nordic American Tankers fleet, V.Ships will now present the satcom system to other ships in its management pool – and may see a significant number of vessels moving to VSAT technology. **DS**

Maritime satcoms to continue growth

www.euroconsult-ec.com

Consulting firm Euroconsult has forecast that the number of satellite communications terminals in the global maritime market will nearly double over the next decade, with a compound annual growth rate (CAGR) of 7 per cent over the 10-year period.

In the second edition of its 'Maritime Telecom Solutions by Satellite, Global Market Analysis & Forecasts' report the company says that, while MSS terminals are still expected to account for the major-

ity of terminals deployed over the decade, VSAT service providers should gain significant market share in terms of revenue during the period.

"Onboard bandwidth requirements keep growing, driving the maritime market in a direction quite beneficial to satellite communications," said Wei Li, senior consultant at Euroconsult.

"Fully integrated IP applications providing internet access, audio and video streaming, and the integration of ships into corporate networks generate signifi-

cant capacity demand at sea."

Euroconsult says that the number of terminals used for global maritime satellite communications grew at around 6 per cent in 2011, while revenues at the satellite operator level increased by over 7 per cent.

The total size of the market reached about 317,000 active terminals in 2011, generating more than $1.4 billion in revenues at the service provider level.

The report also suggests that the proliferation of new Ka-band services, such as Inmarsat's planned Global Xpress net-

work, could expand the maritime market further. Euroconsult projects that by 2021 the VSAT market will account for the majority of satellite-based maritime communications revenues.

Overall, it is predicted that the maritime satcom market will grow at a healthy rate over the next decade, but not as rapidly as in recent years. The expected slowdown of revenue growth will mainly be due to decreasing airtime unit and equipment prices with the overall improvement of technology.

Cruise lines to install onboard mobile phone service

Norwegian shipboard mobile phone services provider Maritime Communications Partner (MCP) reports that it has agreed a new telecommunications contract with Norwegian Cruise Line, covering the entire existing fleet as well as two new-builds, and an extension of its deal with Princess Cruises.

The MCP service allows passengers to use global roaming capabilities on their mobile phones onboard ship, for voice, text and mobile internet, which is then billed to their home carrier.

The deal with Norwegian Cruise Line includes the provision of cellular telephony and prepaid services to passengers and crew, with the ships to be equipped with a network allowing for future migration to 3G and LTE technologies.

"The mobile communication needs of our guests are changing rapidly," said Ross Henderson, Norwegian's vice president of onboard services.

"We were impressed with MCP's progressive attitude towards innovation - making MCP the best fit for Norwegian moving forward. As part of Telenor, MCP can tap into a wide range of other onboard communications services."

Fred Sorensen, MCP's managing director for the Americas, also expressed his satisfaction that the company was extending its reach in the American market.

"This deal reinforces our position as the industry's most innovative onboard communications provider and adds a fleet of cruise ships to our growing family of vessels," he said.

"This is another step in the right direction for MCP in the US and is a positive development for the cruise operators, their passengers and crew members. Clearly, the major industry players are seeking to meet their customers' demands by providing the best possible modern and future-proof communications systems available on the market today."

Meanwhile, Princess Cruises is extending its use of MCP's wireless communications service by adding the systems to the new vessel Royal Princess and her sister ship being built at Fincantieri shipyard in Italy.

The service has already been implemented on Princess Cruises' 16 other vessels.

The contract also includes the provision of CrewSIM, a service which allows crew members to make and receive voice calls, texts and mobile internet at discounted rates.

The new vessels, due for delivery in 2013 and 2014, will, like Norwegian, be fitted with an antenna network designed to enable an eventual migration to 3G and future technologies.

"We've been working with MCP for

'Major industry players are seeking to meet their customers' demands'
– Fred Sorensen, MCP

over three years now and are very pleased with their level of service and commitment to excellence," says Tony Kaufman, Princess Cruises' senior vice president of commercial affairs.

"It is clear that MCP is focused on future growth and future technologies. Having a partner like MCP that we can trust to handle this aspect of our operations allows us to provide exceptional service to our passenger and crew."

Globe Wireless and Jotron sign VSAT agreement

Globe Wireless has signed a distribution agreement to sell Jotron B120 VSAT antennas to its maritime customers.

The new antenna will be offered as part of the Globe iFusion VSAT system, combined with Inmarsat FleetBroadband.

The Jotron B120 stabilised antenna has completed an extensive series of sea trials, performed in the North Sea during the winter, and can be used in a variety of combinations of satellite frequencies and polarizations, including super extended transmit band.

"Jotron is very pleased with this agreement. It validates our products and solutions we offer to the customer," said Magnus Vold, managing director Jotron AS.

"Globe Wireless has an excellent reputation in the maritime industry providing cost effective, high quality communication solutions. Their extensive customer base, proven sales and installation capabilities means that Jotron products are backed by one of the world's leading maritime communications and IT solution providers."

Thuraya launches dual GSM/satellite phone

www.thuraya.com

Thuraya has launched a dual mode hand-held phone that features both GSM and satellite capabilities.

The XT-DUAL operates as a standard GSM phone within the reach of terrestrial networks, and when out of terrestrial network reach operates as a satellite phone if inside the coverage area of Thuraya's satellites.

The unit has a built-in web browser for internet access directly on the phone, offering data services at 60 kbps, and can be connected to a laptop or PC for internet access. The phone can also be synchronized with the laptop or PC.

Talk time of up to 11 hours and stand-by time of up to 160 hours is available. The phone supports twelve languages, has messaging via SMS, MMS, e-mail and fax, Bluetooth, an organiser, media centre, and supports Java, allowing external programs to be installed on the phone.

The XT-DUAL is splash water, dust and impact protected, with an IP64/IK03 rating

"Today marks yet another milestone for Thuraya as a leader and innovator in the mobile satellite industry," said Thuraya's CEO, Samer Halawi.

"The XT DUAL is certainly a step ahead in satellite telephony and a solution that will transform mobile communications for years to come."

"The new phone ensures reliable and seamless communications in one very sleek unit, enabling consumers to benefit from the best of the two worlds of GSM and satellite."

Connect with GSM or satellite using the XT-DUAL

KNS and LinkScape partner on UltraVSAT

www.linkscape.net
www.kns-kr.com

Korean VSAT antenna manufacturer KNS has announced a strategic partnership with LinkScape, to jointly offer a product called UltraVSAT.

The companies say that the new product offers a fully integrated antenna/modem technology system that allows for simple two-cable installation, with a single below deck unit and no other external components.

Ku- and C-band coverage is available across the Americas, Caribbean, Europe, Asia, as well as other extended coverage areas worldwide.

UltraVSAT will provide both shared and dedicated bandwidth for yachts, commercial vessels, and cruise ships, using antennas from 60cm to 320cm.

"We're constantly finding new ways to improve connectivity at sea. We're delighted to be teaming up with the market leader when it comes to delivering the fastest and most reliable internet service," said Noah Chung, international sales director for KNS.

"With LinkScape's specialist innovation, the 'UltraVSAT' maritime package is simplicity itself and provides connections for everyone, worldwide. It's the perfect combination for our customers, international dealers, and distributors."

"We are also excited to be one of the first antenna manufacturers to be offering VSAT bundled solutions to our extensive dealer network."

C2SAT antenna integrates Comtech LPOD

www.c2sat.com
www.comtechefdata.com

Comtech EF Data Corporation has announced the successful integration of its LPOD Block Up Converter with C2SAT's 2.4m C C-band stabilised VSAT Antenna.

Comtech says that the LPOD eliminates the requirement for the modem to supply a DC power source and a 10 MHz reference to the BUCs and LNBs, while an optional internal reference and LNB bias T are included to simplify multi-carrier operation and provide redundancy.

"The field-proven performance and reliability of Comtech's offering parallels our commitment to providing robust and reliable systems," said Ulf Sundqvist, head of sales at C2SAT.

"We now offer the LPOD as a standard catalogue item."

Cobham makes Thrane acquisition approach

A month of extraordinary corporate manoeuvring has seen Cobham, parent company of Sea Tel, purchase a significant stake in Danish satcom antenna manufacturer Thrane & Thrane, and move to take control of the entire business with an offer to the remaining shareholders

Cobham, parent company of Sea Tel, has made an offer to buy the entire share capital of Thrane & Thrane after a month of extraordinary developments between the two companies.

In March, Thrane & Thrane reported had it had received an unsolicited offer from an unnamed third party to buy the company, which led the board of directors to initiate a strategic review process, to be completed by May 14, 2012.

The proposal, submitted to Thrane & Thrane on 8 February 2012, was at a price of DKK 420 per share in cash, which valued the entire currently issued share capital of the company on a fully diluted basis at approximately DKK 2,418m (approximately US$425m).

Cobham subsequently issued a statement confirming that it was the third party that had made the approach, having been in discussion with the board of Thrane & Thrane over the last year with a view to making a recommended offer, but also stated that it had withdrawn its proposal to acquire the company since Thrane & Thrane's March announcement.

It said that the making of the offer had been conditional only on its recommendation by the majority of the board of Thrane & Thrane and on the board's agreement to provide "customary support in order to implement the tender offer process."

Cobham also noted that "the potential offer would have been subject to the standard terms and conditions for such an offer, but with an acceptance condition of only 50.01 per cent of the shares in Thrane & Thrane."

At the time of its initial offer Cobham identified Thrane & Thrane as a potential target as part of a strategy that it says aimed to "build market leadership positions in its strategic business units by investing in technology, particularly with exposure to commercial market segments."

As such, it foresaw significant potential benefits in the combination of its own satcom business with that of Thrane.

Under the acquisition proposal Thrane & Thrane would have continued to have been run by its current management team in Denmark.

Cobham says it was "disappointed" that the board of Thrane & Thrane was unable to recommend its proposal, and had therefore decided to withdraw its proposal to make an offer for the company, though it also noted that it "reserves the right to reconsider (this) position at any time."

Reconsidered

Despite this announcement, Cobham did not take long to reconsider its position and within a few shorts weeks had proceeded to purchase a substantial stake in Thrane & Thrane, buying 25.59 per cent of the shares and voting rights in the company.

News of this purchase came swiftly after Thrane & Thrane had announced that the chairman of its board of directors since September 2000, Waldemar Schmidt, had resigned and retired from the company's board.

Existing board member Morten Eldrup-Jørgensen was elected as the new chairman, with Jim Hagemann Snabe, co-CEO of SAP AG and also currently a member of the board, acting as deputy chairman.

Cobham says that, after the announcement of the withdrawal of its original proposal and the subsequent resignation of the Thrane & Thrane chairman, a number of institutional investors had expressed interest in selling their shareholdings in Thrane & Thrane to Cobham.

This resulted in the purchase from Jupiter Asset Management Limited and other institutional shareholders of 1,292,110 shares at a price of DKK 420 per share (approximately US$74.07) in cash, representing approximately 22.74 per cent of the issued share capital, as well as other market purchases to bring the total stake to 25.59 per cent.

With this foothold in place Cobham then proceeded to make a final voluntary cash offer for the remaining shares in the company, at the original price of DKK 420.

Cobham says that the offer is final and will not be increased (except potentially in the case that another party comes forward to bid for the company), and that it is seeking to work with the board of Thrane & Thrane to achieve a recommendation for this deal and to facilitate the bringing together of the two businesses.

The offer will be conditional only on customary and routine closing conditions, and acceptances of more than 50 per cent of the issued share capital.

Combined business

The price of DKK420 represents a premium of 43 per cent over the closing price per share as derived from the Nasdaq OMX Copenhagen on the last trading day before the original acquisition announcement, and a multiple of 14.8 times EBIT for the twelve month period up to 31 January 2012.

Cobham has noted that, if it achieves 100 per cent ownership of Thrane & Thrane, management responsibility for the combined maritime satcom business of the two companies, which would include Sea Tel, would be transferred to Thrane & Thrane in Denmark.

"Following our discussions with Thrane & Thrane over the last year, this is an outstanding opportunity to bring together two world-class, highly complementary satcom businesses and represents an attractive offer for shareholders," said John Devaney, executive chairman of Cobham.

"Together, the two businesses could offer more customers a wider range of equipment and increase the support we give to our service providers."

"It would be our intention to invest further in Denmark and, as a mark of our commitment, we would transfer manage-

'We would transfer management responsibility of our largest satcom business to Thrane & Thrane in Denmark on full ownership of the business'
– John Devaney, Cobham

ment responsibility of our largest satcom business to Thrane & Thrane in Denmark on full ownership of the business, and combine our engineering capabilities to bring new products to the market. Thrane & Thrane would have an enhanced future as part of Cobham."

Thrane & Thrane's satcom business has around 600 employees located in Denmark, the USA, Norway, Sweden, China and Singapore, working with a global network of distributors.

For the twelve months to 31 January 2012, Thrane & Thrane generated revenue of DKK 1,092.4 million (approximately US$192.6 million) and profit before tax of DKK 169.4 million (approximately US$29.9 million).

As at 31 January 2012, Thrane & Thrane had net assets of DKK1,003.7 million (approximately US$177 million) and gross assets of DKK1,721.4 million (approximately US$303.5 million).

Cobham employs more than 10,000 people on five continents, and has customers and partners in over 100 countries. It has acquired nearly 50 companies in the last decade, including marine satcom business SeaTel in 2003.

Cobham says that Sea Tel has doubled both its revenue and R&D investment in the years since the acquisition.

The company notes that it anticipates achieving a minimum of £2 million (approximately US$3.2 million) per annum of pre-tax synergies as a result of a takeover, even in the event that a minority holding in Thrane & Thrane remains outstanding. **DS**

Should the acquisition be completed, SAILOR and Sea Tel antennas could be developed side by side by Cobham in Denmark

Marlink deal extends VSAT capacity

www.marlink.com
www.telenor.com

Marlink has announced an agreement with satellite provider Telenor Satellite Broadcasting (TSBc) to renew and increase Marlink's Ku-band satellite capacity for the next three years, as well agreeing an option for Ka-band capacity on an upcoming satellite.

Utilising TSBc's IS 10-02 satellite, located at 1° West, Marlink will use the capacity to service maritime customers in the Nordic, European and Middle Eastern regions.

The contract will allow Marlink to continue to provide Ku-band coverage in these areas, with what it calls "significant" Ku-band capacity on Spot 2 of the satellite and almost 200 MHz Ku-band capacity on Spot 1.

The agreement with TSBc also includes an option for Marlink to use the Ka-band payload of the new THOR 7 satellite, which is planned be operational in early 2014.

The company says that this will provide additional capacity to support the increased demand anticipated from maritime customers in the coming years.

Inmarsat's new I5 satellites for its Global Xpress service will also operate in the Ka-band, though Inmarsat has planned worldwide coverage for its system rather than the regional coverage that will be available from THOR 7.

"We have enjoyed a long standing relationship with Telenor Satellite Broadcasting which has helped us to develop a reliable and trustworthy VSAT service for our customers in these essential regions," said Tore Morten Olsen, CEO of Marlink.

"Coverage extends from the busy sea lanes north of Norway to Northern Africa and the Middle East. Our customers can therefore continue to rely on us to provide exceptional service and continuity. When the new THOR satellite comes online, Marlink will now be one of the first to utilise this new frequency band."

APL deploys iPoP Network technology

www.gentay.co.uk

Singapore based APL, a wholly owned subsidiary of Neptune Orient Line, has successfully deployed the iPoP-Network Solutions for Vessels system from Gentay to expand existing ship networks and extend network coverage.

The iPoP-Network system uses the vessel's existing power grid to transmit network signals around the vessel, allowing network access points to be created at any point on board the vessel that is served by the vessel's power grid.

Gentay says that the installation and commissioning of the equipment can be done by the onboard ship staff in a matter of hours, and that it offers high data throughput speeds over industrial grade BPL (Broadband via Power line) technology.

The company notes that the networking technology can be particularly useful for the installation of Anti-Piracy surveillance CCTV systems, particularly in line with recommendations outlined in the recent BMP4 – Best Management Practices for Protection against Somali Based Piracy.

These systems have already been trialled and successfully deployed on vessels operated by oil major BP.

"The new opportunities presented by the iPoP-Network Solutions for Vessels extend beyond simply creating or extending existing networks on board vessels," said Martin Nygate, director of Gentay.

"We are currently working with companies to substantially reduce the need for wiring data communication links between new equipment installed on the vessel and the bridge by transmitting the required data using our network, as opposed to the disruptive and expensive need to lay new data cables."

Access Controller FB-10 upgraded

www.livewire-connections.com

Livewire Connections has launched its latest software upgrade for the Access Controller FB-10, adding additional functionality to the communications management system.

This is the fourth major firmware upgrade since the unit's initial launch in 2009, and includes changes to Quality of Service (QoS) levels and full auto failover capabilities.

Bandwidth can be prioritised, and monitored to provide real time graphs/logs and data usage, and MAC address reservation has been improved to show leases, to display the current DHCP leases on the network.

Existing customers can upgrade to the new software version without charge, with approximately 400 vessels now equipped with the Access Controller FB-10.

"We are a proactive company, driven by our own technical capabilities and customer demand," said David Walker, sales director for Livewire Connections.

"This latest upgrade is all part of the process Livewire Connections goes through to help keep our customers at the forefront with regards to managing their off-vessel connections."

The software upgrade is now being rolled out and is available for existing customers to download from the Livewire website.

Intellian antenna and Imtech agreement bolster Global Xpress

The last month has seen some new developments for Inmarsat's upcoming Ka-band service Global Xpress, with Intellian launching its Ku- to Ka-band upgradable antenna and Imtech Marine coming on board as the first confirmed reseller for the service

Intellian has launched a new Ku-band VSAT antenna which will be upgradable for use with Inmarsat Global Xpress Ka-Band after that service is launched, while Inmarsat has also announced that it has signed a Memorandum of Understanding with Imtech Marine to become the first Value Added Reseller of Global Xpress.

Intellian's 1 meter, 3-Axis Ku-band v110GX antenna features an optimised Ku-/Ka-band antenna reflector and radome which the company says can be "easily" changed to be used with the Global Xpress service after Inmarsat's I-5 Ka-band satellites are launched and operational in 2014.

The modular GX Conversion Kit includes the GX BUC/LNB assembly, GX Feed Assembly and GX ACU, incorporating the modem.

The pedestal and new mounting architecture have also been designed to support conversion to Ka-band by manually replacing the RF Module and Feedhorn inside the radome.

The GX BUC/LNB assembly is attached to the rear side of the reflector, with no requirement to re-balance the system.

Once the ACU is replaced and power is supplied, the system will be immediately ready and operational for the Global Xpress service. A gyro-free satellite search function enables the v110GX to acquire and lock onto the satellite without requiring separate input from the ship's gyro-compass.

Intellian says that the entire conversion can be done in the field with minimal time and expense.

Intellian has also developed an antenna control program, based on its Antenna Remote Management System (ARMS) and Software Development Kit (SDK), to enable remote monitoring and control of the antenna, for service providers, operators and end users.

In addition, the v110GX is equipped with the Intellian Global PLL LNB as standard, which is capable of receiving all global Ku-band satellite signals by using programmable L.O. frequencies.

The company notes that the technology should help operators to deal with any changes in the future operational regions of their vessels or changes in service providers, as they would no longer need to change the LNB in their Ku-band antenna.

Intellian's new v110GX antenna can be upgraded from Ku-Band to Ka-band by replacing a few components

Users can define the required LO (Local Oscillator) frequency or select from a pre-programmed LO library in the Intellian antenna control unit. The PLL LNB incorporates user programmable support of an unlimited number of LO frequencies.

The set up procedure can be handled using remote IP access, and the unit is also compliant with OpenAMIP to allow control from the iDirect Hub infrastructure.

Designed and manufactured by Intellian specifically for marine VSAT, the Global PLL LNB has a highest frequency stability of + 10KHz as standard, and will operate over the a range of standard LO frequencies, as well as any special dedicated frequencies.

The new LNB is now available as standard for all Intellian Ku-band VSAT series antennas.

"We are extremely pleased to have Intellian as an official Global Xpress equipment manufacturer," said Frank Coles, president of Inmarsat Maritime.

"Their upgradable version of their current 1m Ku-Band antenna, combined with the development of native Ka-Band 60cm and 1m antennas, provides maritime customers with choices today and in the future."

The v110GX will be commercially available from July 2012.

This is the second upgradeable Ku- to Ka-band antenna announced for the Global Xpress service, with Sea Tel's 4012 system, announced in 2011, scheduled to be commercially available by the end of Q1 2012.

Imtech Marine

Intellian has also recently signed a global distribution and service agreement with Imtech Marine, the company which has been named as the first Value Added Reseller of Global Xpress, covering a series of VSAT and TVRO products, including the Intellian v110.

Inmarsat's agreement with the Dutch company builds on Imtech's existing experience of offering FleetBroadband, VSAT and integrated maritime services, in particular through its Radio Holland brand.

It will now also make Inmarsat's XpressLink product available through its network, providing a bundled package of Ku-band VSAT and L-band FleetBroadband that will be automatically upgraded to Global Xpress when the Ka-band network is launched.

"Global Xpress will be a world-first in maritime communications, and we are delighted that Imtech will be a frontrunner in offering this solution to the maritime market," said Eric van den Adel, managing director of Imtech Marine.

"We already enjoy a strong working relationship with Inmarsat, and this MOU is a significant step in bringing our two companies closer."

"The combination of Inmarsat Ka- and L-band with Imtech Marine's remote monitoring solutions and our extensive network of 88 offices in 25 countries will deliver real benefits to our customers."

Outside of its agreements with Inmarsat and Intellian, Imtech has also recently signed global distribution and service agreements for VSAT satellite communication and satellite TV (TVRO) products with antenna manufacturers Jotron and Thrane & Thrane.

Via its Radio Holland subsidiary, Imtech Marine already had existing relationships with these partners, which have now been extended to include VSAT and TVRO.

All of Imtech Marine's 80 worldwide branches will be able to supply, install, commission and service the antenna systems from these manufacturers, and arrange airtime services.

Jotron SatCom of Norway has signed an agreement including its Jotron B120 VSAT antennas, while the agreement with Thrane & Thrane covers the Sailor 900 VSAT and Sat TV antennas.

"Global VSAT gives ship owners a reliable, cost effective maritime broadband communication solution. We will take care of the complete spectrum of this innovative technology worldwide, from supply to service and maintenance," said Mr van den Adel.

"The VSAT connection is part of an integrated service and maintenance infrastructure which enables remote monitoring and maintenance. This service takes place via our 24/7 service desks in Rotterdam, Houston and Singapore."

"In line with our strategy, we are the connectivity and maintenance partner for our clients throughout the total life cycle of their ship, during construction, retrofit and throughout the operational phase by maintenance and repair. We have chosen for a selected number of suppliers with whom we are proud to have a strategic long-term partnership." **DS**

Wi-Fi connectivity for Hurtigruten

www.arubanetworks.com

Hurtigruten, Norway's coastal shipping service and cruise line, has deployed a new mobile network based on the Aruba Mobile Virtual Enterprise (MOVE) architecture from Aruba Networks, to deliver Wi-Fi and internet services to employees and passengers.

"At Hurtigruten we are always looking to enhance the customer experience, and quality wireless connectivity for our passengers and conference users is a clear winner with everyone," said Ragnar Norum, communications manager at Hurtigruten.

"Whether our customers are simply travelling between ports, on a full 12-day voyage, or using our increasingly popular on-ship conference facilities, we believe that our new Aruba infrastructure, complemented by the Aruba ClearPass Guest visitor and guest management system, will deliver the service level our passengers expect."

Hurtigruten has operated regular shipping services along the west coast of Norway for nearly 120 years, and today has 14 custom-designed ships that offer both a regular logistics service from Bergen in the south of Norway to Kirkenes in the north, as well as passenger cruises.

A typical installation on a Hurtigruten ship is comprised of Aruba's Mobility controller and 802.11n wireless access points.

Passengers can self-register for guest access using Aruba's ClearPass Guest visitor management system, which is also installed on each ship.

"Wireless connectivity for laptops, tablets and smartphones is now expected by customers staying in a hotel or on board ship," said Andreas Ferm, regional director, Nordics and Baltics, for Aruba.

"Though not the first cruise line to offer wireless, the approach they have taken, combining high speed internet access with Aruba's Wi-Fi and visitor management, is forward thinking."

The communications package was provided to Hurtigruten by Scandinavian systems integrator, Intelecom Group AS.

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Iridium reaches NEXT phase

Iridium has announced the completion of the satellite preliminary design review phase for its next-generation satellite constellation, Iridium NEXT.

With the planned commencement of launches for the satellites now approximately three years away, this phase concludes the preliminary design and specifications for all elements of the satellite system, including payload, main mission antenna, feeder links and cross links.

"The foundation for Iridium NEXT satellite design is complete," said Scott Smith, executive vice president, Iridium NEXT.

"By successfully finalising the first phase of the programme design process, our engineers and partners, under the direction of our prime contractor Thales Alenia Space, have now begun the detailed design phase, which includes building prototype hardware of all elements, including satellites, antennas and ground infrastructure."

"We have an amazing, innovative group of partners - the Iridium NEXT Mission Team, as we call it - and we are confident in the tremendous progress we have made on the world's most significant commercial space programme."

After completing the preliminary design phase Iridium and its partners will now begin constructing engineering model units that will be used to verify the design and performance of the system prior to the start of full construction in 2013.

Among the prototypes under construction are the constellation's feeder links and cross links, which will be responsible for communicating to ground stations and between satellites, respectively.

Payload and main mission antennas will also be built and tested to ensure reliability, resilience and compatibility.

After the first set of launches in 2015, Iridium hopes to complete the replacement of its current constellation with Iridium NEXT and have the system fully operational in 2017.
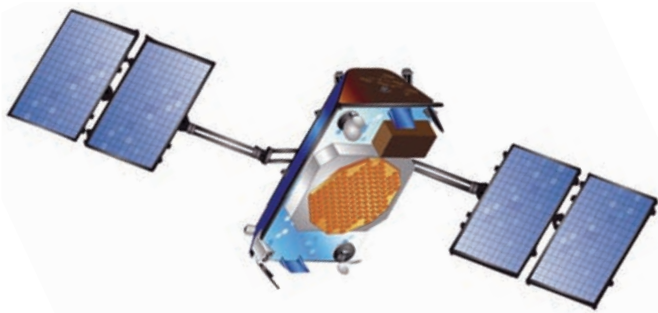
The design stage of the Iridium NEXT satellites is now complete

VoIP to INFINITY

A new Voice over IP service has been added to the INFINITY communications management system offered by Navarino.

The company says that using the VoIP service in conjunction with INFINITY will allow ships to communicate with the office at a minimal cost, or at no cost at all under some conditions.

The VoIP system is set up to allow ship operators to use an office switchboard to call a vessel as if it was a regular office extension number.

Ships can call the office the same way, without dialling any country prefix, and connect directly to the extension of the person in the office they wish to contact.

Navarino says that the VoIP service leverages bandwidth efficiencies created through the use of INFINITY for data exchange.

Through caching, the company says that the INFINITY system can create what it calls a "bandwidth surplus", that can in turn be allocated to the Voice over IP service – allowing both office and vessels to call each other at no additional cost.

"We are very pleased to have the ability to provide VoIP calling to our customers," said Panos Tsikopoulos, commercial director of Navarino with responsibility for distributing INFINITY.

"We know it has taken numerous hours of research and development from the INFINITY team to come up with a solution that not only provides significant value and savings to customers in these difficult times for the shipping industry in general, but also does not sacrifice quality for cost."

"As a matter of fact a unique characteristic of INFINITY's VoIP is that the voice quality of the new service is equal, if not better, to that of the regular FB voice channel."

INFINITY VoIP is available now as a standard free-of-charge upgrade to users of the INFINITY system.

Competency management tool launched by Videotel

www.videotel.com

Videotel has launched a new Continuing Competency Manager (CCM) tool, designed to assist shipping companies in managing training and competence.

The CCM aims to manage competence data at every level, from junior ratings to Master or Chief Engineer, and provides a CPD (continuing professional development) life cycle which moves and progresses with those individuals.

Detailed crew training schedules and reports can be created as companies plan, train, assess, record and report all of their training activity.

The system has been in development for five years, and uses cloud-based technology to provide training and assessment through Videotel's web-based Fleet Training Administrator (webFTA) portal.

"The challenge to the maritime industry is clear," said Nigel Cleave, Videotel CEO.

"The Manila Amendments coming into force are intended to make sure that the highest standards of seafarer competence are maintained globally. The old days of prescriptive learning are gone, replaced by competency based programmes, using continuous assessment against benchmarked standards."

"Videotel's wide range of top quality training material delivered through Videotel on Demand (VOD) and our newly launched secure web-based VOD Online, delivers against that objective, ensuring safe, efficient and cost-effective operation on ships the world over."

In other news, Videotel also reports that the United States Coast Guard (USCG) in Yorktown, Virginia, has taken delivery of three Videotel on Demand (VOD) units to be used in the training of Port State Control Officers.

The units are pre-loaded with marine safety and operational training videos, computer-based training materials (CBT) and instructional courses, and will be used by the USCG to augment existing Port State Control Office training.

"We are delighted to be supporting the USCG's efforts," said Mr Cleave.

"Towards the end of last year we worked with the US Department of Homeland Security's Customs and Border Protection agency to develop a training programme which offered a new and updated approach to US Port State Control."

"We welcome the opportunity to once again contribute to the training needs within this complex and important environment."

Nigel Cleave, Videotel, and Rear Admiral Linda Fagan, USCG, mark USCG's adoption of the VOD system

DNV acquires COEX

www.dnv.com
www.coex.no

DNV has signed an agreement to acquire COEX AS, a company based in Bergen, Norway, offering software systems for the maritime industry.

The move will see DNV's Navigator software system enhanced through integration with COEX's web-based Vessel Information Portal for ship management, providing a range of additional functionalities.

DNV Navigator, recently selected by Wallem to be installed on 190 ships, is used to assist in managing port operations, allowing more than 1,200 port clearance forms to be automatically filled in with ship data, significantly reducing the amount of paperwork required onboard.

COEX and DNV have already worked in close cooperation for a number of years, and share a number of common shipping customers.

"With the acquisition of COEX AS, we aim to radically improve the way we present and deliver our services," says Odd Arne Haueng, managing director of DNV Maritime Partner.

"We see a great potential to increase our offering to the shipping industry by further expanding the DNV Navigator portfolio in terms of both content and functionality."

"We will continue to focus on operational issues and promote integration with other back-office systems. This will allow

'We see a great potential to increase our offering to the shipping industry' – Odd Arne Haueng, DNV Maritime Partner

us to adjust to our customers' needs and to cooperate widely with leading software suppliers in the maritime market."

Karl-Erik Johannessen, CEO and co-owner of COEX, also commented on how he believes the acquisition move will benefit existing COEX customers.

"Our goal has always been to deliver cost-effective solutions that help the maritime industry to be more effective," he said.

"By becoming a part of DNV, we strongly believe that our customers will enjoy the unique competence found in DNV and our enhanced offering to the maritime industry."

Chinese Offshore vessel to install OCTOPUS-Onboard

www.amarcon.com

The newbuild 50,000 dwt vessel HYSY 278, managed by the Dutch heavy cargo transporter Dockwise on behalf of the Chinese Offshore Oil Engineering Co. Ltd (COOEC), is to install the OCTOPUS-Onboard system from Amarcon.

The application will be used for the purpose of motion monitoring, response prediction and heavy-weather decision support during heavy cargo transportations.

This recent appointment is the sixteenth order from Dockwise for an OCTOPUS-Onboard installation, with the first installation performed six years ago on

the semi-submersible heavy transport carrier Transshelf.

In 2011 OCTOPUS-Onboard installations were completed on all fifteen Dockwise vessels. In addition to the onboard decision support application, the HYSY 278 shall be equipped with a motion measurement system based on three motion sensors, to enable real-time measurement and display of motions in multiple locations on the vessel.

All the collected data (measured and forecasted motions) can be made accessible on the internet via the OCTOPUS-Online system, to allow the operations department on shore to continuously monitor the status and location of the fleet.

Teekay goes live on Veson system

www.veson.com

Teekay Corporation has now gone live on the Veslink system from Veson Nautical, the companies report.

Veslink is a web-based service that allows ships to exchange real-time data with onshore offices.

Teekay installed Veson Nautical's Integrated Maritime Operations System (IMOS) in September 2011 and has used the system, which can be combined with Veslink, to standardise vessel reporting and performance analysis for its fleet of more than 75 tanker and LNG vessels.

"The Veson staff has been great to deal with through the integration process. Everyone was very helpful in meeting our needs and timelines," said Greg Davidson, commercial systems manager at Teekay.

"By the time we have completed the integration of IMOS and Veslink in our conventional fleet, we will have approximately 65 vessels using Veslink."

Since Q3 2011, Teekay has used IMOS as its voyage management and accounting system for various ships in its 143-vessel fleet, including Aframaxes, Suezmaxes, LNG Carriers, Product Carriers, and Shuttle Tankers.

The addition of Veslink is aimed to help Teekay to exert more control over the substantial amount of mission-critical information generated by the fleet – using the system, data is entered onboard in a structured way, vetted by voyage operators for accuracy, and then automatically imported into IMOS.

Teekay will use Veslink to transfer data from its ships to its software systems on shore. Photo: Teekay

This data is then used to generate reporting metrics which Teekay sees as crucial for benchmarking fleet performance.

This integration of systems has also improved interaction among the company's chartering, operations, and accounting departments, with Teekay noting that it is already seeing improved vessel and cargo information, reduced manual entry, and minimal data errors.

"As one of our most valued clients and partners, we're very excited that Teekay has added Veslink to enhance its vessel-to-shore communications," said John Veson, president of Veson Nautical.

"Just as IMOS optimises the front-office workflow, Veslink carries that optimisation through to the data collection onboard the vessel."

Activity codes added to FuelTrax

www.fueltrax.com

Nautical Control Solutions (NCS) reports that it has added the ability to enter activity codes for automatic coupling of fuel usage numbers to location, date, and time to its FuelTrax fuel management system.

Wind and sea states are also included in the software's calculations.

FuelTrax monitors fuel flow and fuel tank levels, and provides wheelhouse monitoring to allow for real-time throttle adjustments to help reduce fuel consumption.

"This effort started with our offshore support vessel customers, who have to log various activities each day as part of their charter requirements with petroleum companies," said Anthony George, CEO of NCS.

"The process is manual and can involve different paper-based forms created in-house or provided by the oil company. It is not a difficult task but can be tedious, particularly at the end of a shift."

"Day-to-day work can interfere with the process and the very nature of manual entry can introduce errors that can be compounded when these forms are sent to shore for manual entry into another system."

FuelTrax's activity logging function aims to simplify this by offering drop-down menus and pre-defined information for coding of time slices.

Preloaded activity codes can be applied using a mouse, with the data then automatically offloaded each day during a normal FuelTrax data transmission.

The activity codes are then paired with fuel data by date, time, latitude and longitude for reporting of vessel activities against fuel usage.

"By combining accurate fuel usage with the codes, customers have a clearer picture of how the vessel and crew are using fuel," said Mr George.

"How much fuel do we use during dynamic positioning? Anchor handling? Waiting on weather? Waiting on an asset? Finding slop in the schedule or in the daily work routine that wastes fuel becomes easier."

The software aims to make fuel management more accurate by simplifying data input

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Kongsberg buys software company

www.kongsberg.com
www.jotron.com

Kongsberg Maritime reports that it has acquired 100 per cent of the shares in fleet management software company Jotron Consultas, and will create a new product group consisting of all previous Jotron Consultas employees based at Kongsberg Maritime's premises in Horten, Norway.

The company believes that Jotron's C-Loading software application will complement its K-Gauge cargo control and tank management systems in particular, with C-Loading now set to be integrated into Kongsberg's K-Chief Integrated Automation System and the K-Gauge operating platform.

Kongsberg says that this will result in it being able to offer an enhanced cargo control and monitoring system with a fully integrated load calculator.

The Jotron Consultas Fleet Management software application will also be used to add content to the new Kongsberg Maritime ship@web concept. Ship@web allows a vessel's administrative network, or the operator's on-shore network, to display data from an automation system over the internet via a customisable web browser application.

"Jotron Consultas' C-Loading software and Fleet Management Software, in particular, are both a strategic match for Kongsberg Maritime," says Morten Hasås, executive vice president - merchant marine, Kongsberg Maritime.

"These established products expand our ability to provide 'Full Picture' deliveries, where Kongsberg Maritime is capable of developing and installing ship-wide integrated networks covering all major technical systems."

Morten Hasås, Kongsberg Maritime, and Rune Hagen, Jotron Consultas, mark the acquisition

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Software company **Tero Marine AS** has established its first subsidiary outside Norway, in Newcastle-upon-Tyne in the UK. The offices will be headed up by managing director John Straughan, who has been part of the Tero Marine team for over 15 years.

www.teromarine.no

Star Information Systems (SIS) and **BlueCielo** have entered into a partner agreement which will allow SIS to sell the BlueCielo Meridian Enterprise software to ship and rig managers worldwide, to complement its Star Information & Planning System (Star IPS).

www.sismarine.com

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AET to install energy and emissions management system

www.napa.fi

AET has ordered the NAPA-DSME Power software system for installation on four newbuild 319,000 deadweight tonne (DWT) VLCC vessels.

The systems will be installed at DSME's shipyard in South Korea, with the scheduled delivery of the first of these vessels set for January 2013.

NAPA-DSME Power has been designed as part of a collaboration between software house NAPA and Korean shipbuilder

Daewoo Shipbuilding & Marine Engineering Co. (DSME), with the companies claiming that it can be used to save up to 5 per cent of a tanker's fuel costs.

Using sensors integrated within DSME's latest tanker designs, the system monitors energy efficiency, emissions, fuel consumption and trim.

This data is immediately accessible to officers onboard, along with weather updates, arrival times and other key performance indicators to inform decisions and enable efficiency optimisa-

tion in real-time.

The software can also be used to assist in maintaining compliance with energy and emissions monitoring and reporting regulations, which are anticipated to grow over the next few years, not least through the upcoming Ship Energy Efficiency Management Plan (SEEMP) legislation that takes effect from January 1st 2013.

"With tightening environmental regulations and increasing operational overheads, the maritime industry continues to face an evolving and challenging market,"

said Matti Salo, president, NAPA for Operations.

"At NAPA, we are committed to developing products that deliver tangible benefits to customers, directly supporting their ability to effectively manage this cycle of change."

"In choosing NAPA-DSME Power, AET has selected an innovative approach to operations management that will provide them with the ability to benefit from fuel efficiencies whilst simultaneously managing their environmental impact."

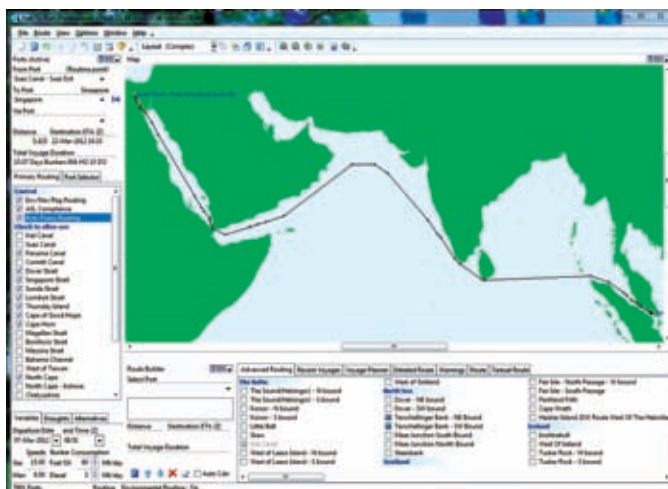# Anti-Piracy tool from AtoBviaC

www.atobviac.com

AtoBviaC Plc reports that it has introduced a new Anti-Piracy Routeing Tool as part of the BP Shipping Marine Distance Tables.

The Anti-Piracy Routeing system is based upon information on piracy activity obtained on a regular basis from Joint War Committee bulletins, and from specific routeings requested by ship operators.

All routes calculated are navigable, taking account of the need to keep suitable distances off shoals, wrecks, coasts and obstructions, and also avoid oil field development areas.

The routes are reviewed weekly and updates are issued at two-monthly intervals, or more frequently if significant changes need to be made.

"The Anti-Piracy Control allows ship operators to make informed decisions on voyages which may need to avoid piracy areas," says Captain Trevor Hall, director of AtoBviaC.

"With the amount of uncertainty in the industry and the depressed freight rates currently being experienced, the implication of avoiding piracy has to be carefully measured."

"The AtoBviaC tool enables the ship operator to select routes based on the most current intelligence, and accurately calculate the time and fuel implications of the voyage. In many cases this can work out to be considerably more accurate than the other available options and provides a level of self-determination that is missing from other solutions."

A journey from Suez to Singapore, with anti-piracy routeing on

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Eniram launches Optimum Speed system

www.eniram.fi

Eniram has launched its new Optimum Speed Assistant (OSA), an onboard decision support tool used to determine a vessel's optimum speed profile for each voyage.

The software builds on Eniram's existing Dynamic Trimming Assistant program, which uses real time data to assist operators in optimising vessel trim.

The company says that the application's ability to combine real-time information about prevailing sea conditions with historical data in determining the optimum speed profile should reduce the need for a crew to build in 'buffer' time and vary engine speed to ensure on-time arrival in port, a practice which is not fuel efficient.

Calculations are displayed via a dashboard with a colour-coded 'traffic light' system.

OSA was developed and tested in cooperation with Eniram's cruise customers, and draws on data collected from 100 vessels, with 200 billion signals collected and analysed from over 60,000 sea days.

The results of these tests showed that there was the potential for a vessel

to make a 2 per cent saving on fuel by adjusting speed alone. Eniram says that, by adding propulsion and trim adjustments, operators could expect to achieve annual fuel-related savings of 3 per cent.

"Optimum Speed Assistant shows quick gains in efficiency," says Eniram CTO, Henrik Dahl.

"For a typical vessel such as a cruise liner, payback time is significantly less than a year. We see that our Optimum Speed Assistant together with Dynamic Trim Assistant will be key elements of any vessel's energy efficiency plan (SEEMP)."

"These tools, coupled with Eniram Performance Management, will guide our customers to achieve best performance and reporting of emissions and follow up of EEOI."

"It is not enough simply to optimise the engine loads for each engine, as the ship ends up consuming more energy. Obtaining the best efficiency on a passenger vessel usually means operating at constant speed and using the engines at less optimal loads than those for which they are designed."

Eniram says it will also release an Engine Optimisation product towards the end of this year.

STX OSV extends use of design software

www.aveva.com/marine

STX OSV is to standardise its engineering and 3D design work across ten of its shipyards on the AVEVA Marine software system, having purchased more than 100 additional software licences.

These shipyards are in various locations in Brazil, Romania, Norway and Vietnam.

"We are pleased to confirm our first project's critical path in the design process was reduced by 30 per cent," said Magne Bakke, chief operating officer, STX OSV AS.

"AVEVA Marine has improved and reduced the time of our engineering design process. At the same time, for instance, we can integrate and work on a 3D model during initial vessel design as

well as engineering tasks. We then reuse and refine this information during the detailed design and production engineering phases."

"With AVEVA Marine we achieve integrated hull-outfitting, global work sharing and it supports late design changes. This was key in our decision to standardise on AVEVA Marine for all engineering, hull 3D and outfitting 3D design work. As a result, we've made the strategic decision to roll AVEVA Marine out across ten shipyards around the world."

AVEVA Marine is a set of integrated applications created specifically for the processes of the engineering and design of ship and offshore structures, design management and the generation of accurate production information.

Magne Bakke, STX OSV, and Richard Longdon, AVEVA, mark the deal with colleagues

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www.harriscaprock.com/maritime-ds

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New contracts for ABS-NS

www.abs-ns.com

ABS Nautical Systems reports that it has signed two new contracts in Greece, with Millenia Maritime Inc. and TMS Tankers Ltd, and a further contract with Otto Candies LLC, a marine transportation and towing company based in Louisiana, for its NS5 Enterprise software.

Both Greek companies will implement the company's applications under the ABS Newbuild Program, which offers free software to ABS-classed vessels built after

1 January 2009.

Millenia Maritime will install the Hull Inspection and Maintenance & Repair modules from the NS5 Enterprise software package on nine of its ABS-classed chemical carriers.

These modules will be used to track the condition of a vessel's structure throughout its service life and generate preventive maintenance plans for the crew on board.

TMS Tankers will use the software to improve its ability to provide information to its crews, as well as generating reports

to allow for better analysis.

TMS will use the Hull Inspection module on 37 of its ABS-classed vessels.

Otto Candies will implement the Maintenance & Repair module on 20 of its offshore supply and diving vessels.

The NS5 package will be used to replace the existing in-house system, as a way to improve audit efficiencies.

The planned maintenance program can also be used to identify ship maintenance trends and plan for future maintenance work.

eBroker added to vessel valuation site

www.vesselsvalue.com

VesselsValue.com has added an 'eBroker' to its online valuation service, which covers tankers, bulkers and containers.

Built over the past four months, eBroker allows users to access information on the world fleet and drill down into real time vessel ownership. The data can be dynamically displayed on graphs and charts.

The company says that, whilst valuations for both individual vessels and fleets remain the core service offering, it aims to expand use of its database to provide sales stats, fleet stats and other market information.

VesselsValue.com was launched in May 2011, and to date the system has performed 115,000 individual ship valuations.

eBroker - now online

3D laser system used for ballast water treatment installation

www.harrispye.com

Harris Pye reports that it has successfully used its 3600 3D scanner to survey the engine room of Neva River (ex Celestine River), a 'K' Line LNG Shipping (UK) Ltd LNG carrier, for pre-ballast water system CAD design, selection and installation.

The project involved a full 3D scan of the engine room in order to ascertain the best system for a ballast water treatment installation. The scan enables Harris Pye engineers to create three-dimensional images of the entire engine room, and create various ballast water

treatment models.

The entire engine room survey reportedly took less than 5 hours.

The scan gathers point cloud data which is then processed by Harris Pye's Naval Architecture team through AutoCAD in order to create multiple walkthrough 3D models from the scans.

Diagram generation, thermal stress analysis and flow designs are all then created to accurately model pipe and steel work, clash-detect new modelled parts and optimise design.

"By being able to create walkthrough 3D models for our clients, we can save them an enormous amount of time and

money, because the modelling allows us to test different options with absolute accuracy," said Harris Pye's new products technical manager, Ben Wise.

"It negates all the usual time consuming survey and design work. And when the best solution has been selected, we know with absolute certainty that the equipment will fit perfectly, down to the last bolt. This is of prime importance on-board vessels, where space is at a premium."

"Ultimately this allows us to do a complete 'virtual test' – to assess the system prior to workshop or site fabrication – which negates the risk of fabrication errors and the ensuing high costs for our clients."

Port information products launched

www.portinfo.co.uk

Shipping Guides Ltd has introduced FindaportCD and FindaportAPI, two new products designed to simplify access to port information.

These products are in addition to the company's Findaport.com service, an online port information resource launched in 2010.

The Findaport series of products combines information contained within the Guide to Tanker Ports, The Ships Atlas and port information publication Guide to Port Entry.

Information on over 9,000 ports, harbours, terminals and marine places around the world is available via the two new

products, as well as over 5,000 port plans, over 1,000 port photos and over 2,500 reports of actual conditions experienced.

FindaportCD provides desktop access to port information where internet access is not available, and is re-issued every three months to registered subscribers. Users can also check for interim updates if a network connection is available.

Up to 26 different search criteria can be combined to enable subscribers to specify their preferred port requirements and generate lists of places meeting those requirements.

FindaportAPI is a software service which can be used to integrate port information from Findaport.com into other information systems or websites.

The information from the Findaport website can now be integrated into other systems

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Integration toolkit targets ECDIS manufacturers

www.cambridgepixel.com

Cambridge Pixel, a developer of sensor processing and display solutions, has introduced its SPx-ECDIS radar kit, which aims to allow systems integrators building Windows-based ECDIS for commercial ships to add a variety of data interfaces

The toolkit can be used by system integrators developing ECDIS

to their equipment.

This includes options to introduce radar interfacing, scan conversion, chart display, target tracking, a Global Positioning System interface and record/replay functionality.

The company says that the launch of this product is a result of IMO's introduction of the mandatory carriage requirement for ECDIS, to be phased in from July 2012.

"The migration of paper chart navigation to ECDIS navigation – as a result of the regulations – has resulted in a frenzy of activity among the big bridge system manufacturers and suppliers of stand-alone ECDIS systems for the retrofit market," said David Johnson, managing director of Cambridge Pixel.

"Our toolkit – which contains many of the components needed to build a total system – is likely to be attractive to system integrators, particularly those developing a truly localised in-country ECDIS offering but also to any new entrant looking for a low risk way into what is a sizeable market."

For radar display, the product includes a radar scan converter, which presents a

configurable Plan Position Indicator (PPI) radar display image. The scan converter provides different options for combining the radar with application graphics, allowing for underlay/overlay graphics from navigational charts.

For chart display, the ECDIS application itself can be used, however SPx-ECDIS does also offer an S57 chart display capability.

A built-in target tracker processes the radar video to extract and follow targets of interest, manually or automatically.

The areas of target acquisition can be programmed as latitude/longitude polygons or the software can use a built-in map database to support acquisition of targets at sea, with video returns over land being automatically suppressed.

"We have already been approached by systems integrators who are keen to use our building blocks as the basis for an in-country ECDIS solution," said Mr Johnson.

"Our SPx-ECDIS toolkit is appealing as they are not locked in to one supplier and so have the freedom and flexibility to build and customise their own local language ECDIS system to meet the needs of local ship owners."

Back-up to GPS back on the agenda

On-air tests are being conducted from the former Loran Support Unit site in New Jersey, as a result of a Cooperative Research and Development Agreement (CRADA) between the US Coast Guard and UrsaNav, which could lead to the system being offered as a potential back-up to the Global Positioning System (GPS).

One of the CRADA's goals is to research, evaluate, and document a wireless technical approach as an alternative to GPS for providing precise time. Additional on-air tests are planned at various sites throughout the United States.

Broadcasts will test several different frequencies, waveforms, and modulation techniques, including advanced methods of LF data delivery, with reception of these broadcasts planned at both on-shore and off-shore locations.

UrsaNav has joined the project as a provider of Low Frequency Alternative Positioning, Navigation, Timing, and Data services, including eLoran Timing Receivers, and has partnered with Symmetricom, a company specialising in precise time synchronisation, and Nautel, a supplier of RF transmitters.

This announcement has been welcomed by the General Lighthouse Authorities of the UK and Ireland (GLA) as an addition to the new set of low-frequency (LF) services being trialled on both sides of the Atlantic.

The GLAs say that a 'sky-free' timing service, like the one UrsaNav will be radiating in the US, is already available in trial mode across the British Isles and some other parts of Europe using the GLAs' prototype enhanced Loran (eLoran) system, plus combined GPS+eLoran timing receivers.

In addition, the GLAs hope that eLoran transmissions may, in the future, support navigation using eLoran as a complement to Global Navigation Satellite Systems (GNSS) such as GPS. eLoran can provide a nation-wide data channel, that will benefit from the techniques being developed to give higher data capacity LF data transmissions.
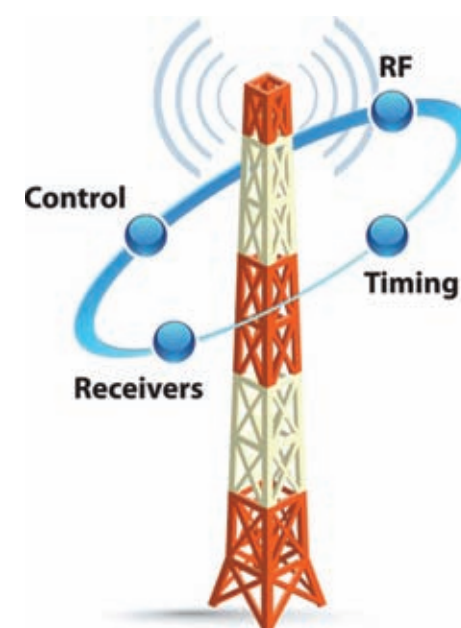
UKHO adds Vietnam ENCs

www.ukho.gov.uk

The United Kingdom Hydrographic Office (UKHO) has announced new ENC (Electronic Navigational Chart) coverage in Vietnam, providing greater navigational detail for the region.

The three new ENCs cover the ports and approaches to Vung Tau, which includes the main container port of Cai Mep, and are only available through the

Admiralty Vector Chart Service.

UKHO says that the new ENCs have been produced in response to increasing demand from shipping companies for chart data for the region.

"Vietnam continues to outperform many economies around the world. Increased shipping trade plays a key role in maintaining that growth so fully compliant digital coverage of this area is an important addition for many shipping

companies," said Guy Edwards, head of Admiralty Asia Pacific, Singapore.

"We worked closely with our colleagues in the Vietnam Maritime Safety Authority to produce these ENCs to cover the key hub of Vung Tau and container port of Cai Mep, which represent a major gateway to trade in southern Vietnam."

The Admiralty Vector Chart Service contains over 11,500 ENCs and coverage of over 2,950 of the world's ports.

Transas launches 'Pay As You Sail' licensing for ENCs

www.transas.com/PAYS

Transas has become the latest company to move into the 'Pay As You Sail' ENC licensing arena with the launch of its new product which will allow vessels to install, view and pre-plan using official ENCs before they have to pay to license the charts.

Approval for the 'Pay As You Sail' (PAYS) service has been granted by PRIMAR and IC-ENC, after the completion of successful sea trials and verification by Det Norske Veritas (DNV).

Traditionally, ship navigators have had to select and purchase charts prior to each voyage using what is commonly called 'pre-licensing', with the licence period beginning as soon as the chart was opened.

With the Transas PAYS solution the vessel will have a licence and access to install, view and pre-plan using official ENCs provided in (S)ENC format, in areas where the necessary PAYS permissions have been obtained, without any additional cost.

Readers of *Digital Ship* may be familiar with other 'Pay As You Sail' type systems

previously launched into the commercial maritime market, from Dutch company Datema and, more recently, Norwegian provider NAVTOR.

One of the major differences between these two products is the method used to track when the vessel has entered a chart area, to begin the licence period. With the Datema product a tracking unit is installed onboard the vessel, while NAVTOR uses AIS data or direct polling by Inmarsat-C to establish the whereabouts of the ship for licensing purposes.

The Transas 'Pay As You Sail' service adopts a third approach, whereby recording and reporting of charts used is done by extraction of data from the Transas Navi-Sailor 4000 ECDIS logbook, and vessels only pay for charts actually used for navigation monitoring.

Using this method, only charts that have been displayed on the screen together with ship's position or generated navigational alarms will be subject to licensing.

In principle, Transas says, this should see a vessel licensing the "best scale charts only", and not all charts and scale bands under the keel.

The service also includes functionality for accessing chart licences and corrections online with the ECDIS.

The 'Pay As You Sail' system communicates via a firewalled Transas Gateway for licensing, corrections and to send chart reports. The Transas Gateway operates via a secure internet connection from the vessel's Navi-Sailor 4000 ECDIS to the Transas Chart Server.

This configuration also allows for remote support and maintenance on the ECDIS from shore.

"With the official Transas Admiralty Data Service (TADS) SENC-service developed in cooperation with the UKHO, Transas 'Pay As You Sail' gives the vessel access to the most cost and time efficient (S)ENC service on the market and the best (S)ENC coverage available for navigation and planning," said Anders Rydlinger, Transas Marine navigation product development director.

"Transas' 'Pay As You Sail' service complies with UKHO requirements. Besides the vessel's internet connection, no extra communication equipment or tracking service is needed."

An artist's rendering of a navigational broadcast tower. Photo: Ursanav

Integrated control system for Olympic Commander

Sea trials testing a new Integrated Control System (ICS) developed by Kongsberg Maritime for Olympic Commander, a new Multi Purpose Supply Vessel (MPVS) built at Kleven Yard in Norway, have been successfully completed.

The ICS aboard Olympic Commander features a one touch control system for Ballast & Cargo tank operations as part of the Kongsberg K-Master workstation on board, which also integrates Dynamic Positioning, thruster control and automation systems to be controlled by a seated operator.

The one touch control can be used for all cargo systems, including drybulk, liquid, oils and others. Other systems under K-Master control aboard Olympic Commander include VHF/UHF and deck lighting.

Olympic Commander is the first of three MPSVs under construction for Olympic Shipping at Kleven Yard that feature the Kongsberg K-Master aft-bridge workstation as the platform for an ICS. Kleven Yard has so far ordered integrated systems based on K-Master for nine vessels.

"Olympic Commander is a significant demonstration of the possibilities of the K-Master aft-bridge workstation, as it features for the first time our new type of integrated operation interface and touch screen based automated Ballast & Cargo system," says Simen Wadd Johansen, project manager, Kongsberg Maritime.

"We have deliveries to over 20 Platform Supply Vessels with automated cargo operations based on K-Master on our books, so Olympic Commander and our work with Olympic Shipping and Kleven Yard is an important foundation for coming projects."

The system installed on the Olympic Commander can be operated by touch screen

exactEarth and GSTS sign vessel monitoring deal

Canadian company Global Spatial Technology Solutions Inc. (GSTS) has agreed a deal with satellite-AIS provider exactEarth to use its global vessel traffic monitoring system.

Under the agreement exactEarth will provide its global shipping data feed, exactAIS, to GSTS to aid in the creation of a maritime vessel management capability for vessels chartered by Resolute Forest Products.

This will include analysis of vessel movements from port to port through the use of the space based vessel tracking data provided by exactEarth.

"The vessel information data provided by exactEarth enables us to provide intel-

ligent solutions for vessels at any point on the globe, including the Arctic regions," said Richard Kolacz, president and co-founder of GSTS.

Funding from the Government of Canada, through the Fed Dev Enterprise programme, has supported the development of this system through an award to GSTS.

"We are delighted to be involved in this important project," added Peter Mabson, president of exactEarth.

"We are beginning to see more and more examples of where the global nature of our unique data products can be applied, and it is particularly pleasing to be able to support this vital work aimed at developing sustainable solutions and reducing environmental impact."

Sensors to shift training focus to 'green' ops

French shiphandling school Port Revel has equipped two of its eleven model ships with sensors for measuring total energy consumption during a given shiphandling operation, as part of a 'Green Shiphandling' initiative.

Trainees at the facility are being challenged to carry out operations with a target level of fuel consumption (and consequent emissions) that is set by the Centre's instructors.

The model ships include the Otello, a model of a 335m, 8,500 TEU container carrier, and the Q-Max, a reproduction of a 345m LNG carrier with a capacity of 266,000m3.

The ships are precisely reproduced to a 1:25 scale and are equipped with indicators giving rudder angle, engine speed, ship speed and heading, wind speed and direction, and other parameters.

Most of the ships are equipped with bow and stern thrusters and operational anchors, to behave like real ships as far as is possible.

The tugs are controlled by the pilot via a remote-control system.

Since Port Revel first opened more than 40 years ago, a large number of American, Canadian and European pilots have passed through its facilities, with more than 6,000 pilots and captains having trained there since 1967.

ECDIS procedures guide published

Witherby Seamanship International has published an 'ECDIS Procedures Guide', containing recommendations regarding the use of ECDIS for navigation for voyage planning and while at sea, designed to accompany a ship's safety management system (SMS).

The company says that the guide contains a framework, with supporting information and checklists, to help companies implement best practice in the use of ECDIS and meet regulations require navigating officers to adopt and adhere to new watchkeeping routines and practices to

support its use.

Information on most aspects of ECDIS operation is included, such as type-specific course content and log examples for manual corrections, spot checks and chart updates.

The guide has been written by Mal Instone, director at ECDIS Ltd, in response to requests from its own customers.

"Many of the ship owners who were early adopters of ECDIS approached ECDIS Ltd directly, requesting our assistance to help them develop and implement robust operating procedures for use onboard their ships and appropriate to the make of ECDIS in use," he said.

Dutch AIS contract for Saab

www.saabgroup.com

Saab has received an order from the Dutch authority Rijkswaterstaat for the delivery of AIS (automatic identification system) services.

Saab will provide the system as part of the DIAMONIS project (Dutch Inland AIS Monitoring System), in partnership with local company Tein Telecom, which will be responsible for implementation and support.

The contract includes the delivery of approximately 40 AIS base stations, a network solution and a web-based presentation system, and is is valued at over SEK 20 million (approximately US$3 million).

This also includes a number of future options, such as a possible expansion of the system.

The implementation of the DIAMONIS project will take place over 18 months.

"Saab is a market leader within the AIS domain and the system will increase safety significantly throughout the extensive Dutch inland waterways," said Lars Bergholtz, managing director for Saab TransponderTech AB.

"Rijkswaterstaat is a highly competent authority that has produced a detailed specification for the project, meaning that our well-established system solution will be enhanced even further in terms of functionality and performance."

US Army school installs simulation training system

www.bcgsim.com

Buffalo Computer Graphics (BCG) reports that it has completed the first phase of a delivery to provide the US Army Transportation School in Virginia with a multi-function classroom capable of running simulations for GMDSS, Radar, ECDIS and AIS training.

The classroom set-up has been designed utilising standard Windows desktop computers running multiple BCG virtual simulation packages.

The initial classroom installation consists of two instructor positions (one connected to a Smart Board / projector) and 15 student workstations all running BCG's Virtual GMDSS training software.

Four tabletop GMDSS simulator consoles have also been delivered, each supporting two students, bringing the total classroom capacity to 23 student training positions.

The GMDSS simulator supports Area 1-Area 4 communication using all virtualised equipment, with voice communication taking place via a VoIP network. Both instructor stations and all student stations are networked together to allow fully interactive operation.

The next phase of this project will involve an upgrade of the classroom to facilitate ship navigation training. BCG will install PCRadar (the company's ARPA radar simulator), an IMO approved ECDIS, and a virtual AIS receiver at the 15 student positions.

Each of these programs will interact, as they do onboard a vessel, allowing students access to a full complement of navigation sub-systems, though still under the control of the instructor.

Bulgarian University to install sims

www.nautissim.com

VSTEP has agreed a contract with the simulation centre of the Technical University in Varna, Bulgaria, for the delivery of two NAUTIS Bridge Simulators and classrooms with desktop Navigation and Engine Room Simulators.

The new simulators will include a NAUTIS 360° full mission bridge (FMB) simulator and a NAUTIS 120° bridge simulator, as well as a simulator classroom with six desktop stations.

Each bridge simulator and desktop station can be employed in common or special training areas including ship-handling, collision avoidance, ECDIS, Radar/ARPA, AIS and other navigational aids.

The FMB simulator can also be turned into an azimuth tug simulator with the ship controls able to be exchanged, allowing the University to conduct training on a variety of ships and propulsion types.

For the University's engineering department, VSTEP will also deliver five desktop Engine Room simulators for engine room operation and procedure training.

"We did a thorough investigation of the state-of-the-art maritime simulators on the market and selected NAUTIS for its high quality, ease of use, flexibility and cost-effectiveness," commented Mitko Aleksandrov, vice rector, Technical University of Varna.

"The user-friendly software tools provided by VSTEP will allow our students and teachers to not just become good sailors, but also ship designers, hydrodynamics engineers and hydrographers."

As part of the project, VSTEP will include exercise areas like the Port of Varna, the Bosporus and the Dardanelle Strait on the simulators.

NAVDAT to be presented to IMO

French company Kenta reports that it will be presenting its new system for maritime data broadcasting – NAVDAT (Navigational Data) – during the 16th session of the Sub-committee on Radiocommunications and Search and Rescue (COMSAR) of the International Maritime Organisation.

NAVDAT aims to introduce a numerical maritime communication system accessible to smaller tonnage vessels worldwide using the universal 500 kHz frequency, and is the result of a collaborative project called IPBC (Internet Protocol for Boat Communications), headed by Kenta.

Kenta says that the data transmission rates offered by NAVDAT extend the service provided by the current global system, NAVTEX, and assumes the same major functions (navigational warnings, weather forecasts and emergency information for shipping).

However, the company claims that NAVDAT offers an increased speed of transmission and improved processing quality by providing access to a range of additional data, in text format but also in the form of images and graphs.

This data is set to include meteo-oceanographic information in the form of charts (e.g. isobaric) or numerical data (e.g. regular updates on the position of the eye of a tropical cyclone), reports showing mapped positioning of ice and icebergs, warning reports relating to piracy, and other information relating to maritime search and rescue.

The NAVDAT system also offers a range of broadcasting options, whether it is to all vessels or to vessels sailing within a specific geographical area, and has an encryption option for transmitting confidential information.

During trials carried out in 2010 on board the Pont Aven, a vessel owned by Brittany Ferries, the signals transmitted from an experimental station near Brest in France were clearly received as far as Cape Finistère and the south of the Irish Sea.

These results prompted discussion within Working Group 5 of the International Telecommunications Union regarding the use of this frequency band.

A joint initiative by the Agence Nationale des Fréquences (ANFR – French National Radio Frequency Agency) and Kenta resulted in an ITU-R-M recommendation in November 2011 and the ITU's recognition of transmission by the system on the 500 kHz radio frequency.

This is the same frequency which was used 100 years ago by the Titanic to transmit its SOS at 23:40 hours on 14 April 1912.

During the 2012 World Radiocommunication Conference (WRC) that followed, 153 countries signed up to the exclusive use worldwide of the 500 kHz band by mobile maritime services.

As a result of these developments, France is now preparing to give a joint presentation to IMO with Germany, Belgium and Romania on the NAVDAT system and will propose the setting up of a dedicated working group.

Online training for Raytheon ECDIS

www.alewijnse.nl

Alewijnse Marine Systems has launched a Raytheon Anschütz Online ECDIS Familiarisation Course, which will enable navigators to complete their official ECDIS training online for this particular brand of ECDIS.

One of the first customers for the service will be Vliet Shipping, which currently has two 3,850 DWT coasters under construction at Damen Bergum which Alewijnse will fit with Raytheon Anschütz bridge systems.

The Alewijnse online package will allow navigators to undertake an eight hour training course remotely, over the internet.

They will be able to log in at any time and then pause whenever they wish, provided that they complete the course within three weeks.

A credit card login is used to check that the person is actually who they claim to be.

Following completion an approved familiarisation certificate for the Raytheon Anschütz ECDIS is issued.

Selex Elsag agrees 90-vessel SVITZER deal

www.selexelsag.com

SELEX Elsag, a Finmeccanica company, has agreed a contract with tug operator SVITZER to carry out annual radio and Automatic Identification System (AIS) surveys on all of its 90 UK-based vessels.

SVITZER operates from sixteen locations around the United Kingdom, many of which align with SELEX Elsag Marine's regional office network.

To comply with statutory regulations, vessels must undergo an annual radio survey and AIS survey to ensure all mandatory radio safety equipment is fully functional and fitted with in-date batteries, to safeguard operations should the vessel encounter difficulties.

The work will be done by SELEX Elsag Marine radio surveyors, with reports and findings sent to Lloyds Register to issue the relevant annual certificate on behalf of the UK authorities.
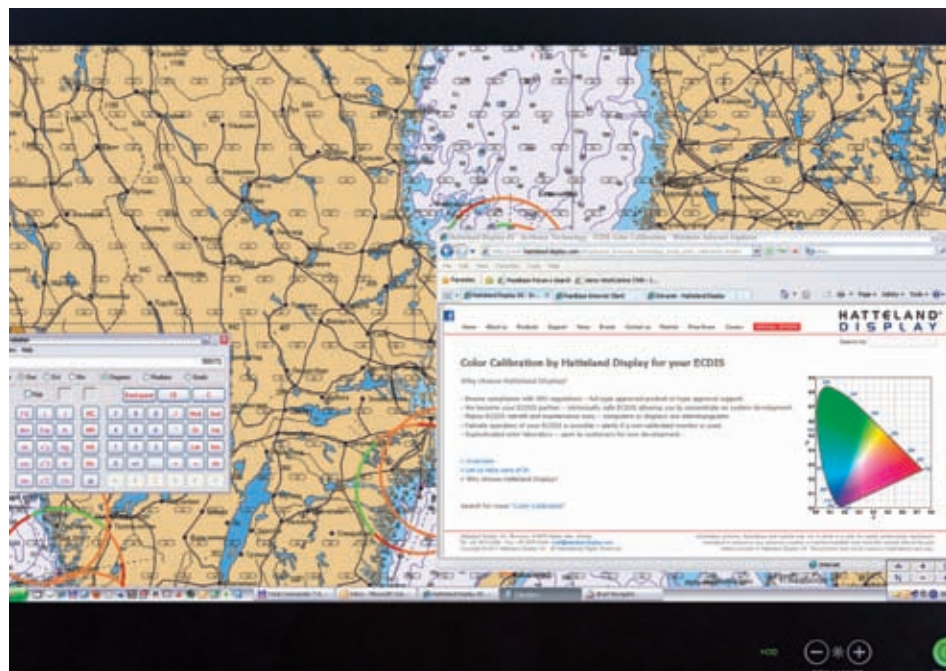
Series X, from Hatteland Display

Hatteland Display is launching its latest product range, Series X, available as a Display or a Panel PC (a computer integrated inside the display casing), in seven sizes. Features include Glass Display Control (GDC), optional optical bonding technology, wide screens, LED displays and multi-touch functionality.

Lilaas AS has agreed its first representation deals for its levers and joysticks in Asia, with a service partnership and agency agreement with **Z-Power Automation**, Singapore, and a separate distribution deal with **Shanghai EJH Group.**

E-navigation company **NAVTOR** has appointed Frode Klepsvik, former director of the **Norwegian**

Frode Klepsvik, new man at NAVTOR

Hydrographic Service, to the company's board of directors. The appointment follows on just two months after the arrival of Tor Svanes, the founder of **C-MAP Norway**, in the position of managing director.

MSG MarineServe has been granted **Liberian Flag State** approval for its STCW compliant generic ECDIS training programme. This is in addition to existing German Flag State approval previously granted by **BSH**.

The **MSG MarineServe** operated **ECDIS Training Consortium (ETC)** has expanded through an agreement with STET Maritime in Singapore to act as its local partner. MSG will provide its ECDIS training courseware, systems and Train-the-Trainer courses to STET Maritime to use for training, as well as certificate authentication and trainee database services.

The **ECDIS Training Consortium (ETC)** has also reached agreement with the **Sir Derek Bibby Maritime Training Center** (part of **Bibby Ship Management Group**) in Mumbai to act as its local partner in that region.

In addition, **MSG MarineServe** has been appointed as official training agent by **Danelec Marine,** to provide ECDIS training services locally and worldwide.

W R Systems has appointed Dave Edwards as president and chief operating officer (COO). Mr Edwards replaces founder Raymond Yu, who retired in November 2011.

Alphatron has opened two offices in Szczecin and Gdynia in Poland. Michael Bytomski will act as manager of Alphatron Marine Poland. Alphatron has incorporated the company formally known as **Epa Comsea** and all its technicians into its organisation as part of this move.

UK based **ECDIS Ltd** has announced a new partnership agreement with **Japan Radio Company (JRC)** to deliver generic and type specific training on JRC ECDIS software. Delivery of courses on JRC ECDIS has begun and ECDIS Ltd says it has already delivered JRC training on several continents.

ECDIS Ltd also reports that it has opened a new purpose-built training facility near Southampton in the UK. The larger facility means that the company will now have greater capacity to provide generic and type specific training on a variety of different ECDIS manufacturers' software.

ECDIS Ltd's new premises in Southampton

Kongsberg Maritime's China division has opened its new premises in Shanghai. The new office includes a new training centre, incorporating a training room, simulator room and instructor room, and is accredited as a DP operator training centre in accordance with Nautical Institute standards.

Kongsberg Maritime also reports that its Neptune Cargo Handling Simulator has been approved to the latest **Det Norske Veritas (DNV)** standards. The Class A approval covers the ship models available within the system and joins recent DNV certification for the company's Engine Room and Navigation simulators.

Kongsberg Maritime's China office in Shanghai
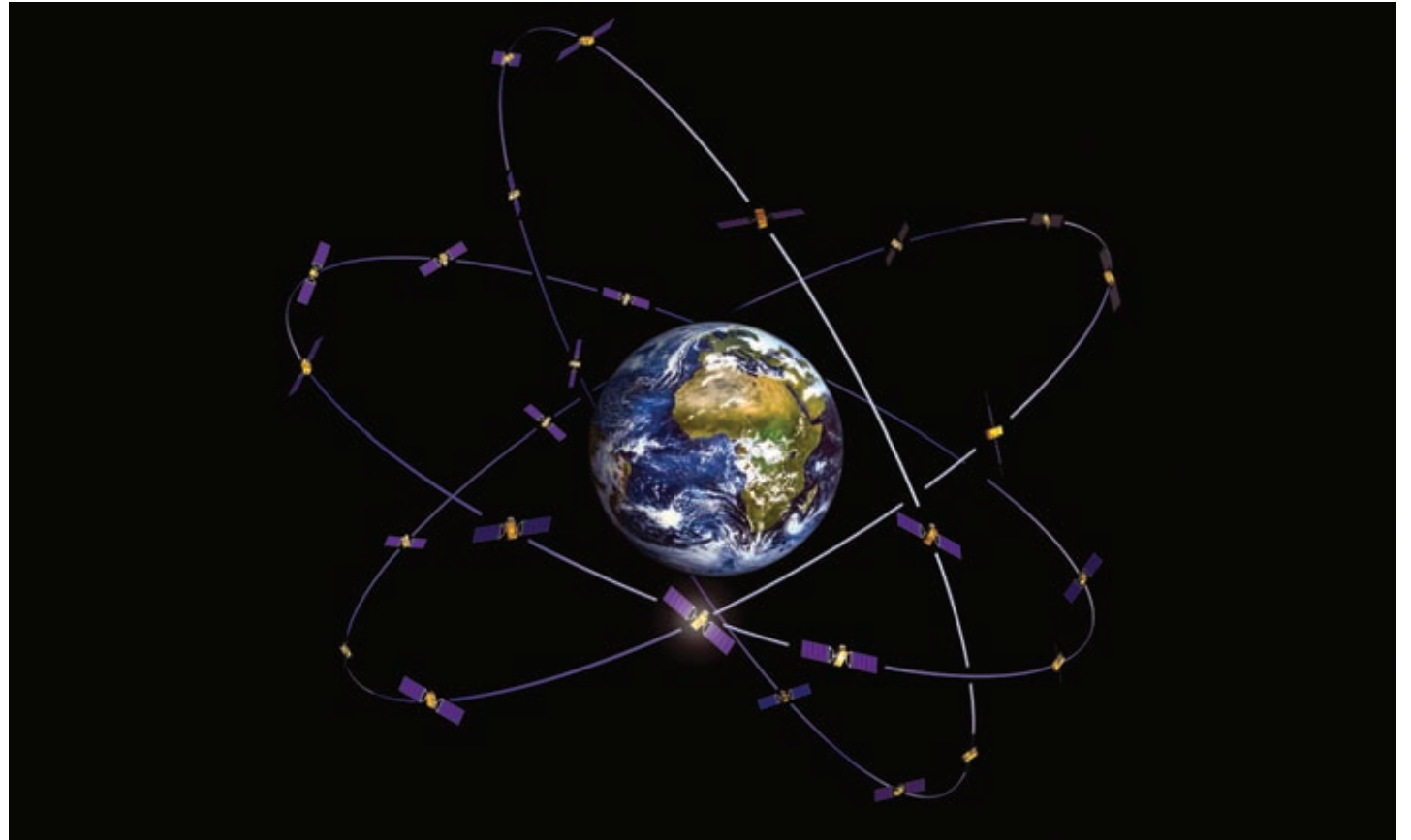
Galileo passes signal milestone

Galileo, the European satellite navigation system, has passed a significant milestone in its development, with the world's first successful reception of the encrypted Galileo Public Regulated Service (PRS) signal from the first Galileo satellites (launched in October 2011).

Septentrio and QinetiQ, working in partnership with the European Space Agency (ESA) and their industrial partners, received the signal on a Galileo PRS Test User Receiver (PRS-TUR) jointly developed by Septentrio and QinetiQ under an ESA contract.

For the reception test, the receiver was installed in the Galileo Control Centre at Telespazio facilities in Fucino, Italy and operated by technical experts from ESA.

This new development builds on previous advancements in the project, from the first laboratory demonstration of the PRS signal acquisition and tracking in 2006 through to the first successful Galileo end-to-end system test, including the Galileo Ground Mission Segment (GMS) and its key management facilities, satellite and PRS-TUR, in 2011.

"This is the most important milestone for Septentrio since the reception of the world's first Galileo signal from space on January 12, 2006 with a Septentrio receiver," said Peter Grognard, founder and

Development of the Galileo navigation system passed a significant milestone as test signals were received from the satellite network. Photo: ESA

CEO of Septentrio Satellite Navigation.

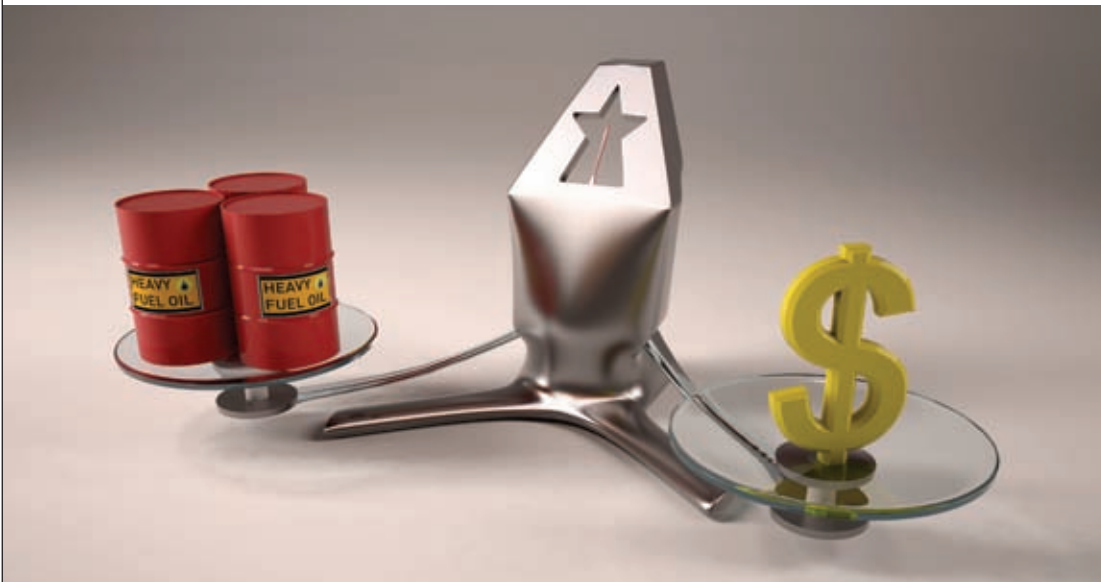"We are honoured and grateful for the excellent collaboration with ESA. Septentrio is marking another industry-first on the Galileo programme, and will continue playing a key role in this exciting and ambitious European project."

"Today, together with our partners, we take a decisive step in the early availability of commercial PRS receivers to foster user acceptance and market success of this Galileo service."

Navigation e-Volution

Electronic navigation systems, and ECDIS in particular, are set to grow in importance and form the standard for vessel navigation over the next few years. How will these changes affect safety and bridge operations at sea? *Digital Ship* spoke to Petter Brandt, Stolt Tankers, about the e-Volution in navigation

With the mandatory carriage requirement for ECDIS set to be phased in from July of 2012, the whole landscape of vessel navigation is set to change over the next few years.

Competence in the use of this electronic equipment has become a prerequisite for modern seafarers with the Manila Amendments to the STCW, and the next few years will see an enormous demand for navigator training to add familiarisation with technology to the traditional skills already learned as a cadet.

Opinion is divided on how the introduction of ECDIS will affect bridge operations – will the systems add to situational awareness and improve safety, or will crews struggle, in the early stages at least, to adapt to a new way or working?

Stolt Tankers operates approximately 80 of its own ships, and a number of others on time charter. The company has been using ECDIS for a number of years on its vessels, as early adopters of the technology, and as such is in a good position to welcome the carriage requirement for the equipment.

However, the company is not treating this change in the regulations as a revolution in navigating – rather, it is seen as an evolution, as Petter Brandt, navigation superintendent, Stolt Tankers, explains.

"The ships we built at the end of the 1990s, already then they were prepared to go fully paperless. They had dual ECDIS onboard," he told us.

"But we didn't do it in those days because, in a way, the world wasn't ready for it. We had all the hardware, we had the software, we had the people, but in some ways we still weren't quite ready. Today we have a growing number of ships operating in worldwide trade using very few paper charts."

"We all know what ECDIS is, there is a lot of buzz and there are discussions going on about ECDIS, and we have the upcoming rules and regulations forcing us to use it. Is it really something new? Why are people so concerned about the introduction of ECDIS?"

The art of navigation

The art of navigating ships on long voyages is not new – humans have been finding their way around the seas for millennia, applying many principles that are still relevant today.

Technology has changed, and the information sources available on ship have expanded, as seafarers strive to improve the accuracy of their positioning and the safety of their passage.

"Way back we had celestial navigation, that's really an old thing going back 2,000, 3,000, 4,000 years. People would lie on the hills drinking wine and would see giraffes and other types of animals up in the stars, and eventually they managed to find their way using these stars," noted Mr Brandt.

"The compass is another one, we don't really know how old it is but it revolutionised the art of navigation. Charts have existed for millennia, but up until quite recently they were a military secret and the property of the one who made the chart. Sharing a chart with somebody else was high treason up until about 200 years ago."

"Determining time and figuring out the concept of longitude was also a significant step forward towards the art of navigation we see today."

Moving forward from these very early navigational methods, the discovery of electricity was an important step in opening up the potential to power the devices we have on modern bridges.

"Electricity hasn't been around forever, and without electricity would we be able to navigate the way we do today? Probably not. Though we had been navigating for a few thousand years without electricity," said Mr Brandt.

"Gyrocompass, radar, GPS, AIS, ECDIS – they're all brand new inventions. But we've been perfectly able to navigate the seas for centuries or even millennia without these things. So how have they changed the way we do things today?"

Mr Brandt argues that most of these electronic innovations, while changing the operational processes on the bridge, have not fundamentally changed the core concepts that underlie competent navigation.

"(ECDIS is) said to be the largest advance in navigation since the radar in the 1950s. What do we do with it?" he said.

"With the charts we all used to use, they were used to see what's out there and get an idea of where you can go. You would also use it to figure out how you will get there, how long it will take, and so on."

"Looking at an electronic chart, it's also showing you what's out there, and you use it to see where you are and where you are going, what's around you and how you are going to get there. The concepts are pretty much the same."

Mr Brandt highlights this by noting how the differences in how a seafarer performs the voyage planning function using an electronic chart or a paper chart are less significant than may be expected.

"The way you do it, practically, is perhaps a little bit different but from a concept point of view there's absolutely no difference," he said.

"Generally speaking, you need to see where you are, where you are going, if it's going to be deep enough or if there are any dangers along the route. Position fixing, plotting, bearings, ranges, distances – you can do it all completely manually on the paper chart as well as on the ECDIS. Nowadays there is compass bearing equipment available that can send your bearings electronically direct into the ECDIS."

"Electronic might be easier, but manual is just as accurate and the result is the same. Either way, you still need to plot the position lines. Whether you do that by 'click and drag' or you do it with a pencil and triangle, the concepts are the same."

Voyage planning is only one of a number of navigational functions that, despite the use of updated technologies in their performance, rely on fundamental concepts that have been familiar to mariners for generations.

"Technology has changed – but the way things work hasn't for a few thousand years. The concepts are all the same," said Mr Brandt.

"You still need to be very suspicious, and maybe you need to be a little more suspicious these days when the machines are doing things for you. You still need to double check position, just because the GPS is plotting your position doesn't mean that's where you are – as little as plotting your position on a paper chart means that's where you are."

"You still need to think ahead and plan ahead, because if you don't do that you will become a passenger on your own ship; instead of you driving the ship around it will drive around with you – and this is a very dangerous situation."

Changes in approach

While the basic concepts of navigation may not change significantly through the use of changing technology, the process of applying those skills will start to shift, and there will be differences in vessel operation that seafarers will need to adapt to.

"Automatic position plotting – that's a major difference," said Mr Brandt.

"It's 'Click and drag' instead of using a pencil and divider – if you have thick, fisherman's fingers then maybe using a computer might be difficult, but being familiar with the concept of computers is a necessity."

"In the old way of doing things you would put your position on the chart and then 20 minutes later you'd start wondering where you have been and where you are now. On an electronic chart system it's a live view, more or less."

Another significant difference is in the chart itself, moving from a large, fold-out piece of paper to an electronic display showing one particular portion of a chart at a time.
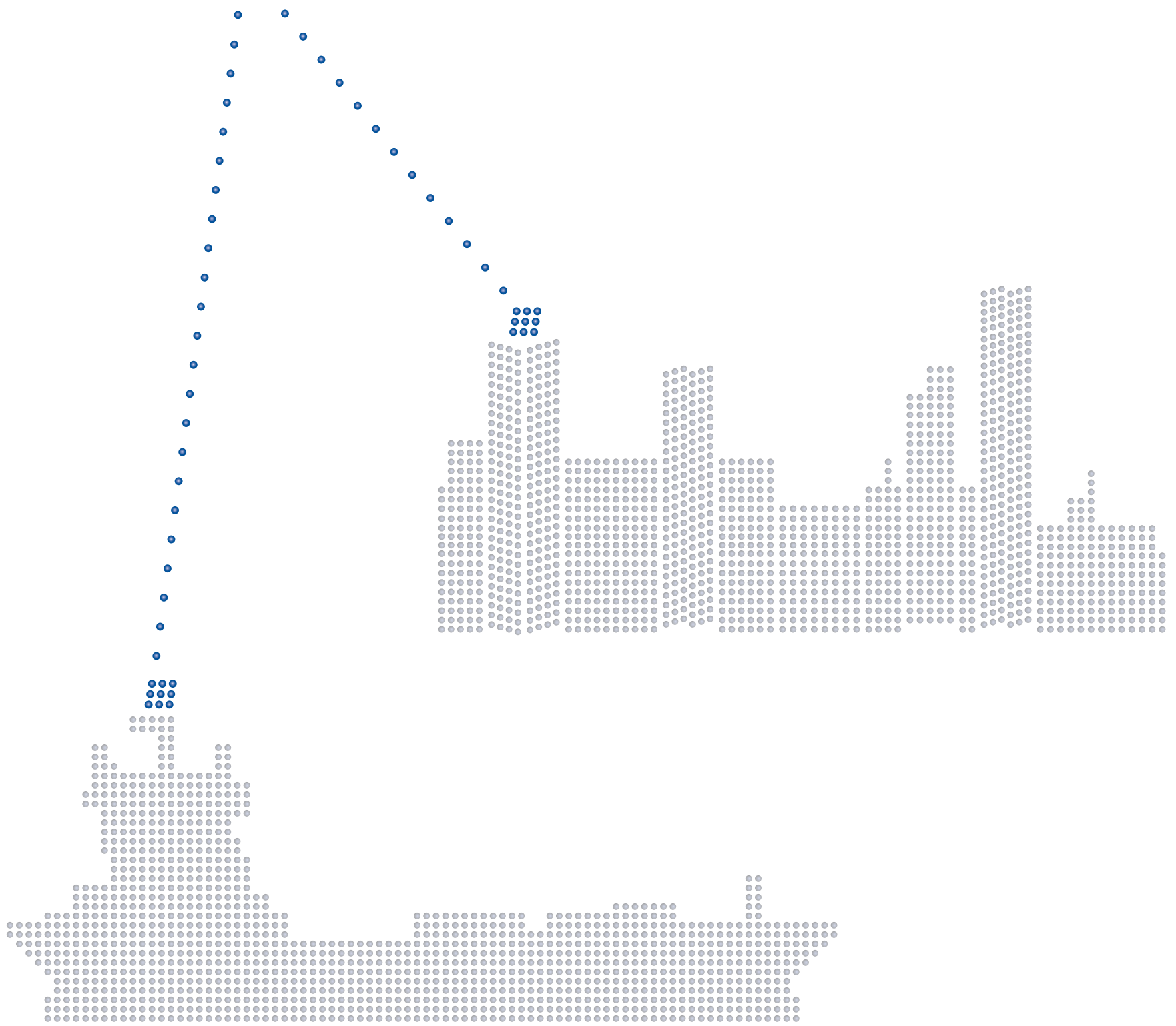
"Instead of having a big pile of paper charts of different scales, you have every-

Electronic navigation may be new – but many of the fundamental concepts of navigation still apply

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thing in one view. But you still need to use different scales of charts, zooming in and zooming out instead of flipping paper charts back and forth," said Mr Brandt.

"A lot of people complain 'you can't look ahead, you can't see 10 or 15 miles in front of you, you only have a small screen'. They want a 60 or 70 inch screen, the same size as a paper chart. But that's wrong thinking."

"You could have an enormous screen on the bridge but that won't change the resolution, the amount of information will still be the same. The resolution will be the same as on a regular sized screen, the information will be the same. So you need to understand the concept of zooming in and zooming out, and how information layers change."

As Mr Brandt notes, changes like these don't require the operator to change the way they think about navigation, but will need them to adapt to performing their tasks in a new way.

"The task of navigation has now changed from trying to figure out where you are now and where you are going, to seeing where you are and figuring out if that is true!" he said.

"It's more about monitoring and looking to see if the machines are trying to cheat you. That requires quite a significant shift in the mindset of the operator, because it's so easy to become complacent and just ride with the ship instead of driving it."

The trade-off for the mariner in having to suffer the pain of change in moving to electronic systems is the significant benefit of reduced effort in chart updating, and the simplified process of voyage planning with a wider array of available information.

"Anybody who has worked onboard and has been correcting charts knows how painful and time consuming and boring it is, and how easy it is to make a mistake. That has effectively been wiped out now," said Mr Brandt.

"We've been studying our own crew, and I've interviewed probably six or seven hundred of them, and the conclusion is that, on average, on a deep sea ship, you spend somewhere around 800 hours per year on chart correction and voyage planning, if you have a folio of, say, 1,000 to 1,200 charts like we carry on our deep sea ships."

"That's a cumbersome task for officers who are nowadays more or less drowning in all the mandatory and otherwise required paper work. So saving time is a major contribution here, which is – if you think about it – a quite unusual effect of a new regulation."

Mr Brandt has also seen that route planning is now performed much quicker onboard, and the technology can assist in avoiding danger – if used correctly.

"You have an automatic checking tool, for example, but there are some tricky aspects, there is some hidden information in the chart," he said.

"On every chart you have information in the margin, but on the ENC a lot of it is hidden as metadata, which means you need to look for it to find it. If you don't know that information exists, you don't know that you need to go looking for it or extract it, and then you will miss it."

That being said, Mr Brandt does believe that the use of electronic navigation sys-

tems has made vessels safer and will continue to enhance the ability of the navigator to become aware of, and avoid, dangers at sea.

"In the old days you had various instruments, and you put the picture together in your head, which is a more demanding and error prone task than most people think or believe," he said.

"On the electronic chart it all comes into one view, which helps you get a much better situational awareness."

"You don't need official ENCs for this, you just need a general chart system (ECS) with some kind of chart data – official or unofficial – as a backdrop. Having your position live, roughly in relation to land masses and to traffic in the areas covered by the radar, helps a lot to tell you where your 'exits' are in case of a difficult traffic situation."

One of the major benefits of using ECDIS is chart updating, which can save hundreds of hours per year when compared with paper charts

Away from the bridge, Mr Brandt has also seen financial benefits for the shipping company as a result of employing ECDIS onboard, with Stolt Tankers now spending less on electronic charts than it did on sailing with paper.

"We've seen a significant improvement on our deep sea ships, we are looking at a cost reduction of about one-third when using only ENCs compared to using paper charts," he said.

"Paper charts are not free, a collection of charts like we have on our deep sea vessels could cost you about $35,000, and that's being replaced every five years. ENCs are also expensive, if you want to buy the same coverage on ENCs you're probably looking at about $200,000, but you don't buy that many ENCs. You buy the ENCs you need for the voyage. That way you can reduce the costs significantly."

"It's also giving you increased flexibili-

ty, because you can go wherever you want. You can have all of the charts onboard but you only pay for the ones you need when you need them. If you need to go somewhere else you buy a licence for where you need to go, and you're up and running. If you don't have the paper charts you need for the new destination you're in trouble – you can't go there. You'd have to fly them out or bring the charts out on a pilot launch."

Electronic challenges

Of course, while any new technology may bring with it a range of benefits, generally there will be a number of challenges that need to be overcome to maximise the benefits of moving from one way of working to another.

Stolt Tankers has had to deal with many of these challenges over the course

of its experience with electronic navigation systems. One of the most pressing of these is the issue of system availability – compared to paper, computer-based technologies are a lot more prone to breaking down.

"On the technical side, how do we keep the system running and what if it fails? We all know what computers are like today, sometimes they just decide that they don't want to work for you anymore and shut down," said Mr Brandt.

"Hardware reliability can be covered in different ways, one simple way is by redundancy, having multiple systems. The regulations say you need two ECDIS systems onboard (to remove paper charts), but if you have three you will be even more safe, from a commercial point of view."

"If you have two systems and one goes down, what do you do then? Do you repair it? Will you be able to get the spare parts?

That depends on where you are. Do you get the paper charts? That also depends on where you are. So having a third unit is, the way I see it, very cheap insurance. From a practical point of view it also makes sense, as you really need three units onboard – one to keep next to each radar and one at the chart table for planning."

Virus protection is another key issue that can seriously affect the electronic navigation systems on the bridge, particularly ECDIS, if precautions are not taken.

"Getting viruses on the systems is more common than most people think. Talking to technicians and service engineers I hear that this is a pretty big problem," said Mr Brandt.

"In most cases it will not affect the system that much, but as it builds up what normally happens is that it steals processor power and the system will be more and more sluggish and slow."

"How do viruses get into the system? Normally not through email, normally they come in via USB devices. When you start transferring data using USB devices, or even people plugging in their own USB devices to install stuff, it can happen."

In this regard Mr Brandt insists that proper anti-virus protection is a necessity – however, introducing anti-virus software then raises the question of whether a system is still type-approved if used together with an anti-virus software that was not part of the original installation.

"Maybe, maybe not," said Mr Brandt. "When you have your system type-approved it's approved with that particular OS, with that hardware. If you install additional software it might make the type approval void."

"So you need to figure this out, find a system that is approved with virus protection or have strict procedures to protect your system from USB devices."

Making sure that the correct charts are available on the ship as ENCs is another issue that needs to be considered – seafarers need to make full use of the software systems that run in conjunction with ECDIS to make sure they are managing their chart folios correctly.

"Whether you're navigating with paper charts or ENCs, you always have to use the charts with the best scale. How do you know which is the best scale available? You need to compare the chart catalogues," said Mr Brandt.

"That's not an easy task unless you have the right tools. There are chart management systems on the market today where you can easily compare the ENC coverage with paper charts, and see if there's a paper chart with a better scale. You need to use that."

"I understand that most of the equipment manufacturers still don't bother too much about this, if they have even thought about it. Most refer back to the chart agent, and the chart agents look a bit puzzled as they don't seem to understand the issue."

Updating

Having the correct charts available is a continuous process – even after the charts are licensed they must be updated as new data is made available to remain in compliance for navigation.

As Mr Brandt previously noted, the effort involved in this process is vastly

Optimum network environment also for the future expansion of convergence

SWAN
Shipboard Wireless Area Network

- Wireless computer network
- VoIP System
- IP CCTV
- Mobile communication
- External Communication System
- IPTV(CAS, VoD, Satellite TV)
- IP Master clock

Converged IP Communication

Data sharing

VoIP Telephone

IP CCTV

Mobile communication

IPTV

Master clock

reduced through the use of electronic charts – however, another challenge still remains in getting the data from the shore to the ship so that this updating facility can be taken advantage of.

"Do I send it by CD or by e-mail? Do I download it? ENCs are heavy loads, each ENC can be 5-6 MB – how much does that cost? Do I need to keep my charts up to date all the time?" said Mr Brandt.

"With paper charts there's a gentlemen's agreement that six, seven, eight weeks lagging is not a problem because you have to allow reasonable time for the mail to reach the ship."

"But now when you have connectivity by satellite you can just download them – why didn't you do that? Because it's going to cost a fortune – $10,000 to $15,000 per month if you're not careful. Do you or your chart agent have mechanisms in place to monitor and control this?"

The applicability of Temporary and Preliminary (T&P) Notices with corrections for charts is another issue that needs to be considered – something that Mr Brandt describes as a 'hot topic' when it comes to ENCs, which he feels requires clarification from authorities.

"T&P Notices apply to paper charts, but do they also apply to ENCs? Do you have to plot your temporary and preliminary notices on ENCs? I think 'No' – because look at it the other way round. Do you have to do your ENC updates on the paper charts? That's ridiculous, so why should you then apply updates the other way round?" he said.

"ENCs are approved, officially recognised charts. Paper charts are officially issued and approved charts. They have exactly the same status. So why should we then be forced to do quality control of what the hydrographic offices are doing – or not doing?"

"SOLAS requires hydrographic offices to provide us with the required updates. If they don't do that then we can't be blamed. They should provide us with the updates in a convenient way. We have to educate the world about that and IHO and IMO need to make sure everyone involved lives up to and follows the set standards; T&P notices do not exist in any of the relevant standards governing ENCs and ECDIS and nor should they – and an

update is an update. People onboard should not have to worry about this – they should only have to load the latest updates and leave it at that."

Training

Another area that is a 'hot topic' is seafarer training in electronic navigation systems, with competence levels a matter of great concern when it comes to ensuring safety at sea.

'We are looking at a cost reduction of about one-third when using only ENCs compared to using paper charts' – Petter Brandt, Stolt Tankers

Mr Brandt highlights the issue by reference to a recent accident investigation report that uncovered a dangerous lack of situational awareness on behalf of the crew on the ship in question.

"A tragic accident happened a few months ago, where a container ship ran down a coastal vessel, at the loss of the entire crew. The OOW on the container ship didn't even notice that something had happened," he said.

"In the MAIB investigation report, an official authority, I found one quite remarkable comment which said that there is no connection between certification and competency. There's no relationship at all."

"So what they're actually saying is to forget about STCW, it's got no connection to reality. And this is not the first time they say this, it can be found in more reports from MAIB."

Another concern that Mr Brandt raises is the issue of continued assessment and assurance of competence after a licence has been issued, to make sure that a watchstander still possess the skills required to safely do their job.

"Unfortunately, regulations typically only permit authorities to revoke a licence in cases of accidents as the ones mentioned above," he noted.

"In a situation where, for example, someone takes an exam to upgrade a licence but fails on e.g. COLREGs, this person will not get the higher licence. However, there is, as far as I know, no legal room to also revoke the current licence, despite the fact this person doesn't know something that should be 'bread and butter'."

"Administrations and the world in general put a lot of pressure on us owners, saying we need to fix this – it's not our fault, it's the shore side establishment who can't train people properly in the first place, why should we suffer from that?"

Navigation future

Looking forward, Mr Brandt believes that there are a number of areas ripe for improvement that would help to make electronic navigation more beneficial to shipping companies, and the industry at large.

"What I would like to see is maybe improved chart coverage, though it has improved significantly over the years, and improved communications to get the charts onboard," he said.

"And of course, HO's need to get their act together and shift their focus from profit towards safe navigation as their top priority by giving us flexible access to charts at a reasonable cost."

"Another thing for developers, and maybe for IMO, extracting 'hidden' information needs to be easier. Today you have to actively look for quite a few things, and I think there must be ways of getting easier access."

Mr Brandt is hopeful that improvements in satellite communications technology will help to make the updating process more cost effective, by bringing per-MB prices down to a lower level.

"The communications cost today is holding us back," he said. "We're still operating successfully, but it would make

life a lot easier having direct connections onboard."

"There are systems out there, but will the infrastructure manage and cope if all of today's fleet go online? I'm not sure – would be interesting to hear what the network owners/operators have to say."

Mr Brandt believes that there is also further room for improvement with regard to the user interfaces currently employed on ECDIS equipment, and the information sources feeding into the navigational display.

"Many are relatively easy to work with but there's still work to do, especially when it comes to traditional navigation," he said.

"All systems today are basically built to work using only GPS. There's so much more we can do with a chart system today than just navigating on it, and there are more factors that can be brought into it."

"That said, I do not believe in the widely discussed 'S-mode'. I think this would only hamper development. Better then to make pilots bring their own laptop or tablet with their own chart system and hook it up to the ship's sensors."

With this new age of ECDIS and electronic navigation set to become a major part of navigation for the next generation of mariners, Mr Brandt suggests that shipping companies take advantage of the opportunities available to then to improve operations and enhance safety.

"Don't be afraid of technology, there's a lot of scepticism out there but there's nothing wrong with the technology, it's been around for decades. I started my career on ships that were more or less ready to go paperless 20 years ago – but we're still almost there," he said.

"The technology is there to help you, figure out how it works and make friends with it. It does help having good connectivity, but it's not necessary. It still works. What is maybe more important is to invest in people."

"We often focus on the hardware but we need to invest in the people as well, especially looking at the general competency problems in the industry today, it's even more critical. The methods have changed, but the concepts are all the same. It's not that much of a revolution, is it? Maybe more like a natural e-Volution." **DS**
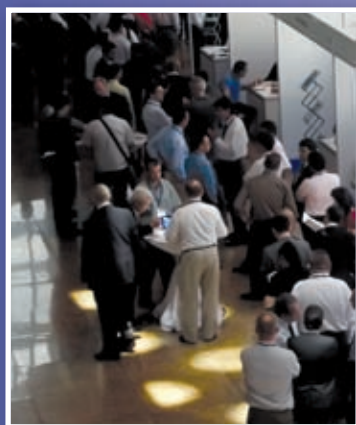
Why e-Navigation?

e-Navigation is coming – though the implications of this initiative, and what it might practically mean for maritime stakeholders, are still not widely understood. *Fred Pot, Marine Management Consulting, examines some of the current and future developments that will form the backbone of this new system*

'Why e-Navigation?' really has meaning only for the few of us who understand what e-Navigation will be. My guess is that less than 500 people in the world today can claim to do so. For everybody else 'What is e-Navigation?' is a far more relevant question.

Why do so few of us understand e-Navigation? I blame part of the problem on the 'e-Navigation' name.

For most 'e-Navigation' conjures up images of on-board electronic navigation instruments. They associate e-Navigation with boxes and miss its much wider scope. To them it seems that, with mandatory carriage of Radar and AIS and soon of ECDIS, e-Navigation is close to reality.

This misconception is a clear threat to implementation of e-Navigation because, for it to be successful, we need broadly-based recognition both of what it is and what its benefits are.

A small step might be to give it a name that better captures it. For example, 'Marconi' might be better because it captures digital communications (albeit primitive) that allow information sharing and collaboration as well as automating administrative tasks. An even better idea might be to appropriate the 'EfficienSea' name, because it conveys e-Navigation's broad impact.

The overall goal of e-Navigation is getting ships safely, securely and efficiently from berth to berth in an environmentally friendly way. The high-level answer to the 'Why e-Navigation?' question is that it will improve our ability reach the overall goal more often.

To understand how e-Navigation will do that we have to dig deeper into the reasons why not all voyages are accomplished safely, securely and in an environmentally friendly way.

Gaps and solutions

Statistics show that human error is the root cause of about 60 per cent of collisions, allisions and groundings.

Incident investigations point to a number of causes of these errors. To get to the bottom of the errors, IMO's e-Navigation Correspondence Group (CG) identified mariners and shore-side users and asked them to enumerate problems they experience in discharging their responsibilities.

The problems ('Gaps') were captured in a (rather large, 47 page) table (Gap Analysis – see note 1). Gaps can be summarised in eight major categories:
1. Bridge lay-out/ergonomics problems
2. User unfriendly and unreliable bridge equipment
3. Lack of task oriented presentation of relevant decision support information on work stations (on-board and ashore)
4. Lack of (position) sensor accuracy indications (on-board and ashore)
5. Alarm handling problems
6. Too much time required to perform administrative tasks
   - Identifying, gathering, searching and updating relevant documents (ENC's, Guides, etc.)
   - Generation of ship reports for Coastal States' Maritime Domain Awareness (MDA) purposes
   - Shore-side processing of ship reports (Security, VTS, Environmental Monitoring, etc.)
7. Incomplete/unreliable information presented on MDA systems
8. Language issues particularly in voice communications

While e-Navigation users are expected to ultimately shape solutions that address these gaps, the CG will assess the costs, benefits and risks of an initial set of 30 high-priority solutions and will include them in the Implementation Plan. Addressing these gaps will pave the way for users to shape solutions that address other gaps.

We don't know yet which solutions the CG is considering but the Chairman of the CG (see note 2) indicates that they will be made public sometime later this year.

If you read the detailed descriptions of the gaps you can make an educated guess on what the actual solutions will look like. A few examples of likely solutions are:
1. Automatic downloading, installing and updating of relevant Electronic Navigation Charts (ENC's) and other (searchable) documents like port guides, VTS guides, light lists, pilotage charts, etc.
2. Task oriented geo-spatial presentation on the navigation screen of:
   a. Relevant Maritime Safety Information (MSI) using intuitive symbols
   b. Safety contours based on a waterway's tide-corrected bathymetry that is received from shore
   c. Weather and sea-state forecasts along with the recommended route
   d. VTS traffic flow plan (sequence, routes and speeds) through congested waterways
3. Close coupling of a Pilot's Portable Unit (PPU) with the ship's navigation systems
4. Close coupling of the ship's navigation systems with VTS for Navigation Assistance Service (NAS)
5. Remote inspection of a ship's navigation systems (position accuracy, make/model and software version)
6. Automatic ship report generation, transmission and processing for Coastal State MDA purposes
7. Manoeuvring and mooring decision support tools based on highly accurate shore-based (position) sensors

e-Navigation displays will integrate more information than is available with ENCs today

Infrastructure

The infrastructure technology required to implement many of these solutions is readily available. In fact some solutions are already available on a few of the more sophisticated ships.

They tend, however, to be vendor specific and proprietary. For e-Navigation to reach its overall goal, solutions will need to be made available to the great majority of ships and share a common, non-proprietary Information Technology (IT) and communications infrastructure that can be used for multiple solutions.

Designing, developing, testing and rolling out this infrastructure is a major undertaking. Even though it clearly is IMO's prerogative to establish standards for the best infrastructure, it probably will rely on others to propose alternative infrastructure designs.

'Others' in this context could well be IT and communications systems vendors (represented by their Member State delegation).

What will the e-Navigation infrastructure look like? What will solutions like the ones mentioned above require?

At minimum they probably will require an on-board (plain vanilla) IT infrastructure (LAN, servers, back-up servers, routers, Integrated Navigation System and other workstations, etc.) and a communications infrastructure that builds on the existing GMDSS, the existing satellite (Inmarsat, Iridium, etc.) and the existing communications network that currently connects sensors (i.e. GPS, AIS, Radar, etc.) with the navigation work station (i.e. Integrated Navigation System or 'INS').

e-Navigation solutions will likely be software applications that run on the on-board servers, and will be accessible (with proper authorisation) from any workstation.

It is likely that existing bridge equipment will need to be upgraded to enable solution applications to address gaps. For instance, INS, at least currently, cannot present MSI in a geo-referenced format and sensors don't generally indicate their accuracy or the results of Built-In Integrity Tests (BIIT).

Shore-side, solution application software will likely run on office and cloud-based servers that are accessible (with proper authorisation) from any connected workstation (i.e. PC, iPad, etc.). On-board solution applications will use the new e-Navigation communications infrastructure to automatically, reliably and securely exchange data with shore-side solution applications.

Standards

The geo- and time-referenced S-100 protocol will be used not only for ENC's but for all navigation related information (MSI, Tides, Currents, Port & VTS Guides, Lights Lists, Weather Forecasts, etc.). This will ensure that ship and shore-based solution applications use a common protocol to exchange data.

By implication, all bridge and shore-side equipment will need to be able to, natively, process S-100 formatted information or use an external gateway that translates the S-100 formatted information to and from the current common communications protocol (IEC 61162) or the equipment's proprietary protocol.

Apart from the S-100 protocol, IMO will have to develop standards for the security, quality, reliability, timeliness, the user interface and the (task oriented) presentation of information that solution serv-

ices will provide. Even though such standards should be common rather than proprietary, vendors will probably need to play a key role in defining them.

IMO will need to establish many more standards before e-Navigation solutions can be implemented. An important one is a single, world-wide standard for ship reports that are acceptable to all Coastal States' MDA authorities and non-governmental organisations.

IMO's efforts in this area (Convention on Facilitation of International Maritime Traffic/Single Window Concept) are a start, but have a long way to go before they become acceptable to every Coastal State without a long list of exceptions.

IMO will also need to publish standards for e-Navigation-compatible equipment.

Such equipment will need to pass a usability test, it will need to be able to communicate with the local e-Navigation IT infrastructure, it will need to share the results of its Built-In-Integrity Test (BIIT), sensors will need to communicate their accuracy, and bridge and shore-side work stations will need to present task oriented geo- and time-referenced (S-100) information using intuitive symbols (much like the current INS standard).

IMO will rely on Member States' participation in (IEC, IALA, IHO, etc.) Work Groups to bring equipment performance standards up to e-Navigation standards, but the current process is too cumbersome and lengthy. Furthermore it is too expensive and time consuming for vendors to certify their equipment.

The process will need to be streamlined to enable vendors to release new versions of equipment software two or three times per year to accommodate new requirements, improve performance and fix bugs.

To ensure that vendors will be able to periodically roll-out software upgrades for their equipment, they will probably need to be included to a greater extent in the standard development process than they have been.

The service life of e-Navigation hardware will probably be shorter than the current norm because eventually software upgrades, that enable the equipment to add more and more features, will reach hardware performance limits (i.e. processing speed, memory, storage, input/output options, etc.).

Funding

Designing, developing and testing the e-Navigation infrastructure is a major undertaking. IT and communications vendors may be interested in funding the development of infrastructure proposals if they can look forward to collecting usage fees once their design has been tested, accepted and implemented.

e-Navigation infrastructure proposals will likely be tested in test beds such as the Marine Electronic Highway (MEH) in the Strait of Malacca, that is partially funded by the World Bank, and the ACCSEAS test bed in the Greater North Sea Region. The latter is currently being designed and is expected to have a budget of about €6 million, funded mainly by North Sea Regional, Coastal State and Port Agencies.

Similarly, if they can look forward to collecting usage fees, ENC publishers and other vendors may be interested in funding the design, development, certification, distribution, training and marketing of e-Navigation solution services that take advantage of the infrastructure.

Once the e-Navigation infrastructure and solution services have been thoroughly tested and new minimum carriage requirements have been adopted by Flag-, Coastal- and Port-States, ship owners and shore-side authorities will be required to install and maintain on-board and shore-based e-Navigation IT infrastructure, or to modify the current infrastructure.

They will, also, be required to upgrade bridge and shore-side equipment (sensors, work stations, etc.) to make it e-Navigation-compatible. Furthermore, they most likely will be required to purchase a minimum set of e-Navigation solution services and will have the option to purchase additional services.

The cost of updating equipment performance standards will probably be funded by IMO-, IALA- and IHO-Member Countries and by other international organisations, as it traditionally has.

Development of e-Navigation-compatible equipment standards differs, however, from development of traditional equipment standards in that they will need to be established for all bridge and shore-side e-Navigation equipment almost simultaneously and that the standard development process needs to be streamlined.

It will be necessary to replace current processes and procedures with a new process that allows for dynamic, rather than the current, basically static, performance standards. The budget for doing so will, therefore, need to be significantly larger than it traditionally has.

Implementation and Roll-out

From the description of e-Navigation above it should be obvious that it will be rolled out over time. Full implementation will take many years; however, it is likely that some e-Navigation solution services will be implemented in the not too distant future.

Roll-out is likely to start with solution services that do not require upgrading of bridge equipment and could be implemented with an early, still incomplete (prototype) version of the e-Navigation IT and communications infrastructure.

An example is automatic downloading, installing and updating of relevant Electronic Navigation Charts (ENC's) and other (searchable) documents like port guides, VTS guides, light lists, pilotage charts, etc.

To roll out this solution, publishers of these documents would need to reformat them to fit the S-100 format, publish their subscription offers, fulfil subscription requests and set up automated processes and procedures to update documents for subscribers.

General awareness of e-Navigation, not only of what it is but particularly what its benefits are, is going to be crucial when key decision makers are approached to contribute time, effort and funds to implement it. If its nature and benefits are widely known then key decision makers are more likely to support its design, development and implementation.

Who are the stakeholders? Apart from those who will directly benefit from it (mariners and shore-based operating personnel) there are many who will benefit in-directly. Completing more voyages in a safe, secure, efficient and environmentally friendly manner will benefit all concerned and should appeal to a wide audience.

The author hopes that this 'Why e-Navigation?' article will contribute in a small way to its awareness but a much wider audience will need to be informed to generate discussions and enthusiasm.

A formal e-Navigation awareness plan should be developed soon to identify the audiences, the appropriate communication channels for each audience, the message to be conveyed and to assess the audience's e-Navigation awareness before and after.

As a first step it might be appropriate to stage a press event around the unveiling of the 30 e-Navigation solutions for which the CG will pursue implementation. **DS**

References
1] The current version of this document is available at http://bit.ly/It5lsv Annex 2, Page 25
2] Mr. John Erik Hagen, Regional Director, Norwegian Coastal Administration

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Approving the Future

When it comes to having electronic equipment on the bridge of a ship, type approval and performance standards are key in making sure that systems are reliable and don't interfere with the working of other technologies. These standards need to keep growing and evolving as e-Navigation develops, *writes Dr Andy Norris*

A primary role of IMO, as stated in Article 1(a) of its Convention, is to "encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships."

Ever since its inception in the late 1950s, IMO has particularly achieved this by its member states formally agreeing Performance Standards for key shipborne equipment.

These typically concentrate on safety and user-centric requirements, rather than being detailed technical specifications. Today they form a very comprehensive set, especially on the bridge, where they cover all navigational and communications equipment, statutorily or optionally fitted.

Even bridge fitted systems that are not of direct interest to IMO, such as ECS, need to meet certain general standards, ensuring that they will operate within defined environmental conditions and, even more importantly, that they will not interfere with other bridge equipment.

IMO relies on specialist international standards organisations, such as the International Electrotechnical Commission (IEC) and the International Standards Organization (ISO) to publish equivalent technical standards that meet each of the Performance Standards of IMO.

These are used by manufacturing companies for designing the equipment and by type approval authorities to test that manufactured equipment fully meets IMO requirements.

This process has worked very well over many years but it is interesting to speculate on the changes that may be necessary as we enter an e-Navigational world.

ECDIS

ECDIS has been leading the way in making people think about type approval into the future, especially with numerous systems now being fitted in anticipation of IMO's 2012-18 programme for its carriage on many classes of ship.

The increased usage of ECDIS is emphasising that advanced software-based electronic equipment is not part of the older 'fit and forget' world of navigation and communications systems.

Typically, other equipment is used until a fault becomes apparent, which initiates a repair and its return to service.

ECDIS is rather different. Its ENC data has to be updated on a weekly basis and it has to be ensured that the system is always running an appropriate version of its operating software.

In particular, ECDIS must be able to display features to the latest IMO/IHO 'portrayal' requirements, not least to continue to meet mandatory chart carriage requirements.

For instance, in 2007 the IMO portrayal requirements changed to include Particularly Sensitive Sea Areas and Archipelagic Sea Lanes. Older ECDIS systems are unable to display these correctly unless the software has been updated.

As a direct result of the issues that arose with these particular additions IMO issued SN.1/Circ.266, which stresses "ECDIS that is not updated for the latest version of IHO Standards may not meet the chart carriage requirements ..."

The Circular particularly underlines the need for manufacturers to provide an update mechanism and for ship owners and operators to put in place suitable measures to ensure proper software maintenance.

The Performance Standards for ECDIS include an explicit requirement for a facility to allow its software to be updated.

This is also important because the overall complexity of ECDIS increases the likelihood for manufacturer instigated software updates, perhaps to correct anomalous behaviour of the equipment in unusual circumstances.

Unfortunately, because of the common practice for other bridge equipment, many think that ECDIS is configured for life and that only newly installed equipment has to meet the latest standards.

The 2006 IMO circular, MSC.1/Circ. 1221, is often quoted where it states that "a product manufactured during the period of validity of the relevant Type Approval Certificate need not be renewed or replaced [on the vessel] due to expiration of such Type Approval Certificate."

For ECDIS, it is clear that SN.1/Circ.266 also has to be taken into account.

Into the future

As bridges properly enter the world of e-Navigation it is essential that bridge systems are able to cope with evolving requirements, especially in their ability to display information correctly.

In such an information-led world we cannot wait 10-15 years for older equipment to be replaced, as we typically do today, very belatedly allowing the receipt of up-to-date information.

Unfortunately, this state of affairs is exactly what is happening as AIS messages evolve and what individual ECDIS, radar and AIS MKDs can display.

To a certain extent improved technology will help the situation. For instance, in the foreseeable future the data standards for ECDIS will be changing from IHO S-57 to S-101.

This gives the major advantage that changes or additions in the portrayal of chart information are effectively embedded within the ENC updates, negating the need for equipment-specific software updates for such changes.

IMO has decided to use the same basic data structure for all e-navigation data, following the IHO principles defined in its standard S-100, on which S-101 is based – S-101 only covers hydrographic data.

In principle, this will mean that after receiving the latest 'IMO' update disc, future e-Navigation bridge equipment will be able to display and correctly use the latest messages, symbols and data, without needing any change in equipment software, which should considerably simplify and speed up the process of change.

However, some future changes will undoubtedly lie outside this simplified process and it is also inevitable that the complex software-based approach of e-Navigation will continue to necessitate updates to correct anomalous operation.

A couple of important issues for the immediate future need to be tackled as they are relevant for today's ECDIS. The first is for manufacturers and shipping companies to agree on a proper business model for the update process – not least, how is it to be funded so that it happens?

The second is putting in formal checks that the process is being adequately handled, which needs to involve both port and flag states.

Some serious consideration is needed for both of these issues.

Type approval

In a future e-Navigational world IMO would perhaps concentrate its Performance Standards on its basic structures and functions.

This would, for instance, include navigational sensors and network requirements, together with the standard operation and display of primary tasks such as collision avoidance, route monitoring and shore reporting.

Perhaps one aim would be to ensure better consistency than today in the basic operation of key bridge equipment. The detailed type approval process for such equipment and applications would perhaps be very similar to present procedures.

At a second level, other official bodies would specify how specialist data should be displayed and used on auxiliary task stations displays – not the basic ones defined by IMO – generally in association with other official data, such as ENCs.

A good example would be the specialist real time information system needed for entering a certain port or a crowded passage. Another might be a display fulfilling specific local pilotage needs, replacing the need for a carry-on portable pilot unit (PPU).

These applications would meet certain minimum IMO requirements geared to the
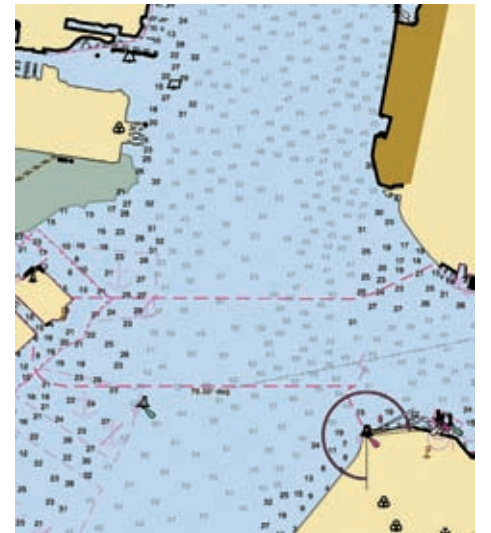
Updates to ENCs could carry changes or additions in the portrayal of chart information, to update onboard equipment – but other systems may require a more complicated updating procedure.
Photo: NOAA

safe use of displayed data but would be mainly driven by the requirements of the particular official body, which would also mandate the approval criteria in accordance with IMO guidelines.

The approval process would perhaps be simpler for such 'Level 2' applications compared to IMO mandated 'Level 1' apps.

A third level of applications would be provided entirely commercially, perhaps typically aimed at the financial efficiency of shipping. Such 'Level 3' apps could include route optimisation software and comprehensive passage planning systems.

Similarly to Level 2 apps, these would also run on auxiliary workstation displays in association with official data, such as ENCs.

They would mandatorily meet minimum IMO requirements to ensure basic safety, perhaps by self certification, but the general lack of detailed requirements would allow innovative and rapid development to meet evolving requirements.

Perhaps the IMO view of such Level 3 apps would be that they can be used with care, provided basic navigational and safety decisions are made with reference to IMO mandated Level 1 apps, supported where necessary by 'other authority' Level 2 apps.

Such a division of apps would result in the relative stability and familiarity of basic IMO-defined functionality, while giving freedom for other authorities to evolve specialist applications and for industry to provide innovative solutions, within defined safety and compatibility constraints. **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