Maritime GSM hotting up

Competition in the maritime GSM market looks set to ramp up with the launch of a new service from Globe Wireless that will allow GSM calling and SMS for crews over Inmarsat, Iridium or VSAT connections – competition which could lead to lower prices for crew calling over GSM

Globe Wireless has launched its new GlobeMobile system, a complete GSM solution for vessels which will allow crews to use personal GSM phones for voice and SMS communications while on deep sea voyages.

GlobeMobile, launched at the *Digital Ship* conference in Oslo on March 10, can operate over VSAT, Iridium OpenPort and Fleet Broadband terminals, controlled by a custom-built Globe Wireless GSM network.

The system will also be compatible with the upcoming FleetBroadband 150, Inmarsat's sub-$5000 antenna expected to be launched in the middle of 2009.

The network provides standard voice calls to and from the ship, full SMS message support, and onboard mobile to mobile calling, while also allowing visitors to the vessel to 'roam' onto the ship. Installation of the system is typically completed in one day.

Working with GSM technology partner Zynetix, Globe Wireless says that this system will provide inexpensive calling rates for GSM users onboard the vessel through its purpose-built hardware and network solution.

GlobeMobile SIMs are provided free to the ship, allowing crews to purchase prepaid minutes and SMS

"GlobeMobile is a relatively straight forward installation," explained Shane Rossbacher, Globe Wireless' vice president product management. "Globe Wireless can handle the install for customers, and it is also customer installable."

"The basic GlobeMobile system is all below decks equipment. This includes a GSM router (which is a standard rack mounted component) and a GSM base station. The key with the installation is to identify the areas in the ship where GSM coverage is required."

"We have developed some guidelines for customers to use, and also can provide additional hardware (such as remote antennas) to extend the coverage."

Costs

All of the equipment needed to create the onboard GSM network is provided for a monthly fee of approximately $200 per month, other than the satellite communications antenna which may be already on board or purchased specifically to run the mobile phone system.

Pre-paid SIMs are used for voice and SMS service while aboard the ship, and can also be used while on shore using standard GSM roaming.

"Our standard GlobeMobile prepaid SIM cards are provided for free to the ship," said Mr Rossbacher. "The captain is then provided with recharge codes for sale to the crew."

"These codes are given to the crew and are keyed into the GSM phone to load the SIMs. SIMs can be topped up at any time with additional recharge codes."

"The crewmember pays for SMS and voice calling. SMS is $0.25 per message

sent from the ship, and free for incoming
SMS."

One interesting feature of the system is
the fact that voice calling costs using a
GlobeMobile SIM on a GSM phone are
determined by the particular costs of the
satellite system that is being used.

"A key difference with the
GlobeMobile system is that the GSM
handset that the crewmember uses is real-
ly just an interface device," Mr
Rossbacher said.

"Really, it acts more like a cordless
phone. Voice calls are not passed
through the GSM network, and therefore
are not subject to GSM roaming fees
or other network surcharges. So, basical-
ly, the crewmember pays standard satel-
lite rates."

"For our VSAT system, VoIP calls are
very inexpensive – generally less than
$0.30 a minute to most popular countries.
OpenPort can be as low as $0.53 per
minute. FleetBroadband is at standard
rates, but keep in mind that crewmembers
can use their GSM phones to access
Inmarsat crew calling services and take
advantage of Super Quiet time rates."

New technology

Zynetix has recently launched an updated
version of its Ocean Linx GSM controller
and added a Managed Core Services
(MCS) offering, which will both be a fea-
ture of the GlobeMobile system.

The Ocean Linx GSM communications
platform includes bandwidth conserva-
tion and enhanced voice and text features
over the satellite link, which the company
says have been designed to meet both the
market-specific and technical-specific

needs of maritime GSM.

The system is available in various con-
figurations including voice over IP (VoIP)
and FXO port, according to the preferred
satellite backhaul mode.

The MCS aspect of the system is used to
manage and run the GSM core infrastruc-
ture for Zynetix Maritime Service Provider
(MSP) partners, allowing functions like
prepaid platforms, alarm monitoring and
multiple GSM partner interconnects to
operate onboard the vessel.

Frank Coles, president and CEO of
Globe Wireless, is excited about the poten-
tial of the technology, and believes it will
offer a really attractive option to seafarers
wishing to stay in touch with home.

"The solution is the result of extensive
research and many months of work and
significant innovation," he said. "The
result is a solution that provides a flexible,
high quality service. It is designed by
mariners for mariners and thus is inex-
pensive and fits their needs."

"Using smart technology developed by
Globe Wireless and Zynetix on the vessel,
as well as shore, we have reduced band-
width and costs. We offer free mobile to
mobile calling on the same vessel, not
something we have seen anywhere else."

"With the downturn in markets and
the economic squeeze that is being felt
globally we needed to release a product
that would be inexpensive to install for
the owner and low cost calling for
the crew."

Ian Taylor, CEO and co-founder of
Zynetix, echoed these sentiments, and
expects that the time when GSM
will become a standard maritime fit is get-
ting closer.

"GlobeMobile truly represents the next
generation of GSM-at-sea services," he
said.

"We're proud to partner with Globe
Wireless and believe the introduction of
GlobeMobile will move GSM-at-sea from
an expensive niche service to a main-
stream service that many more mariners
can benefit from."

"The field of merchant-vessel maritime
GSM is now moving from trials and first
generation systems to the next generation
of highly featured and lower cost
platforms."

Competition

The GlobeMobile system looks set to com-
pete head-to-head with the Blue Ocean
Wireless GSM service, launched in the first
half of 2007, which also operates via
Inmarsat terminals.

Blue Ocean Wireless has seen some
notable success already in its two years of
existence, having agreed GSM deals with
major shipping companies like Bernhard
Schulte Shipmanagement and Wallem in
the last twelve months alone.

The emergence of another competitor
that can offer onboard GSM connectivity
to seafarers at reasonable prices and with a
low level of capital expenditure on sub-
$5000 antennas like Iridium OpenPort and
the FleetBroadband 150, is sure to mean
good news to those working on ocean
going vessels.

If this eventually results in even lower
per-minute pricing for crews, and more
extensive options in how to stay in touch
with friends on family on shore, then the
benefits will be felt by everybody in the
maritime industry. **DS**

---

*William Thompson, umc.global's new vice
president Americas*

William P. Thompson has joined maritime
communications company **umc.global**
as vice president Americas. Mr Thompson
was formerly vice president of sales-
Americas at **MCP**, and also previously
worked for **Connexion by Boeing.**

CapRock has expanded its presence
in Asia Pacific by opening a new regional
office in Singapore, to be headed up by
Charlie Ransford. The new office builds
upon CapRock's existing activities in the
region, where it already owns and oper-
ates an international teleport and support
centre in Jakarta, Indonesia and a co-loca-
tion and support centre in Perth,
Australia.

**Seanet Maritime
Communications** has signed an
agreement with **Eniro 118 118** for the
supply of directory services on Seanet's
maritime GSM network, allowing them to

offer a directory service to passengers in
maritime GSM coverage. All calls to the
European standard number 118 will be
linked to the service.

Otesat-Maritel has advised cus-
tomers that it will have to adjust billing for
Inmarsat services as of May 1st, 2009,
following modifications of Inmarsat's
billing conditions. This will create a mini-
mum call duration of 15 seconds for
Voice, Fax and Data, and of 10 seconds for
ISDN sessions, applying to all Existing
and Evolved services (i.e. Inmarsat B, M,
Mini-M, Fleet).

www.caprock.com
www.seanet.se
www.umcglobal.net
www.otesat-maritel.com

Accelerator added to Stratos FleetBroadband applications

www.stratosglobal.com

Stratos has launched its StratosNet
Accelerator system, a free internet-optimi-
sation application that aims to help cus-
tomers reduce airtime costs over the
FleetBroadband service.

StratosNet Accelerator is the latest
addition to Stratos Advantage, a range of
value-added services for Stratos'
FleetBroadband users.

Once downloaded, StratosNet
Accelerator operates transparently on the
user's personal computer, using data-
compression to reduce the amount of e-
mail, web and FTP data transmitted
between terrestrial and mobile terminals
by more than 80 per cent.

Stratos says that use of the application
should "significantly increase transmis-
sion speeds and reduce airtime costs."

"The introduction of StratosNet

Accelerator demonstrates our commit-
ment to minimise the operating cost and
maximise the effectiveness of our wide
range of mobile satellite services," said
Stratos president and CEO Jim Parm.

"By offering the prepaid-internet fea-
ture of ChatCard Data with the internet-
optimisation capability of StratosNet
Accelerator, we meet end-user demand
for an affordable, highly efficient mobile
broadband solution."

Ship Equip increases VSAT coverage and capacity

www.shipequip.no

Ship Equip has signed a 6 year agreement for the use of 3 transponders on the Telstar T11N satellite, which the company says will increase the capacity of its maritime VSAT service threefold.

The satellite T11N from Telesat was launched on February 26th, and is now being positioned in its final equatorial orbit at 37.5° W.

Ship Equip has secured three full transponders of capacity on this satellite, enough to provide its SEVSAT maritime satcom service to between 1,500 and 2,000 ships.

Ship Equip currently has approximately 600 vessels in operation with its VSAT system, but says that it is aiming to increase this to more than 3000 ships within 5 years, with this Telstar T11N deal representing "an important element in reaching this goal."

In addition to increased capacity with this transponder deal, the agreement will also increase the coverage area available for Ship Equip's Ku-band VSAT services.

Areas in the Mid Atlantic, around the Caribbean and in West Africa will now have considerably enhanced VSAT coverage compared to what was previously available, following the launch and positioning of the Telstar satellite.

The official start of operations of Ship Equip's new services on the T11N satellite is expected to be 1st May 2009.

Ship Equip has secured enough VSAT satellite capacity to service between 1,500 and 2,000 ships

Smyril Line extends GSM deal

www.mcp.com

Smyril Line reports that it has renewed its onboard maritime GSM contract with Maritime Communications Partner, with the new agreement running until April 2013.

MCP has supplied wireless services to Smyril Line since 2005. Under the new contract the North Atlantic vessel operator will also add additional communications services aboard the M/F Norröna, such as GPRS, a CrewSIM service, and WLAN.

"In the modern world of wireless technology, people are accustomed to keeping in touch at all times," said Jákup Sverri Kass, Smyril Line's director of marketing and sales.

"Passengers are eager to share their experiences through mobile phone photos or placing pictures on social networking websites such as Facebook. In order to do this while onboard, the ship must have stable and reliable wireless access."

In addition to mobile phone connectivity, MCP also provides Norröna with CrewSIM, a prepaid mobile phone service offering fixed minute rates for crew.

The system is currently in use by more than 13,000 crew members, representing some 50 nationalities, around the world. It has no connection fee and offers subscribers free incoming voice calls and SMS.

"We are pleased to have been entrusted with continuing to supply our proven line of wireless services and products and look forward to developing further services and technology together with Smyril Line," said Bernt Fanghol, MCP's CMO and vice president of business relations.

Detecon Al Saudia contracts VSAT capacity from Intelsat

www.intelsat.com

Detecon Al Saudia Co has signed a multi-year contract for Ku-band capacity on Intelsat's new satellite, IS-15, which will be located at 85°E when it is launched later this year. Detecon Al Saudia plans to use this capacity to provide VSAT services to maritime and other customers throughout the Middle East.

Detecon Al Saudia, a German-Saudi Arabian joint venture telecommunications

and IT company, became a distributor of Intelsat's Network Broadband Global Maritime service following an agreement between the two companies in June 2008.

"We chose to lease capacity on the IS-15 because, in our view, it will be the highest performing satellite in the Middle East region" said Dr Harald Stange, director, information and communication technology, Detecon Al Saudia.

"This contract will support our strategy to provide our clients satellite services

with the best power and bandwidth solutions, offering flexible, high data rate satellite links using antennas that are as small as possible."

Jean-Philippe Gillet, Intelsat's regional vice president, Europe and Middle East, added: "Our IS-15 satellite will serve a strategic role within our fleet, providing our customers such as Detecon Al Saudia much needed Ku-band transmission services throughout the Middle East, Russia and the Indian ocean region."

Iridium network repaired after collision

www.iridium.com

Iridium has completed the replacement of the operational Iridium satellite lost in a collision with a non-operational Russian satellite at the end of February.

Iridium's inter-connected network of 66 satellites had enabled continuity of service while one of the company's in-orbit spares was prepared and manoeuvred into the constellation, but the replacement means that the constellation is now back to its full complement and operating as normal.

"I am particularly proud of the Iridium and Boeing teams that manage our constellation," said Matt Desch, chairman and chief executive officer, Iridium.

"They moved quickly, efficiently and effectively to limit the minor service degradation caused by the collision and to return our constellation to its full configuration."

Iridium says that it has been engaged with the US government in an effort to improve assessment and warning of satellite movements, but believes that this inci-

dent has demonstrated the need for even more aggressive action.

The company has called for the pursuit of a number of measures, such as greater investment in improving Space Situational Awareness (SSA), improved information sharing between industry and the US government, and more funding and resources to support analysis, assessment, dissemination and warning on timelines and with accuracies that enable action to be taken to avoid collisions.

The company said, in a statement: "Improved SSA is essential to the well being of the global space community. This event certainly points to the importance of SSA to the success of the commercial space industry, including the commercial and government customers served by Iridium."

"Iridium is committed to healthy cooperation between government, industry and the international community to improve the capabilities of SSA and to enhance the security of the space environment for all constituents."

Mini-VSAT coverage now in Persian Gulf

www.minivsat.com

Coverage for KVH's mini-VSAT Broadband service has now been extended to the Persian Gulf, a step facilitated by a recent agreement between KVH and ViaSat and following on from a recent coverage roll-out in the northern Pacific.

The mini-VSAT system offers Ku-band maritime satellite communications over a 60-cm antenna, considerably smaller than traditional VSAT antennas.

Coverage is still only available in specific regions (see: www.kvh.com/ foot-

prints for details) at this time, though KVH has committed to covering more and more of the world's oceanic areas in the future.

"The addition of mini-VSAT Broadband coverage for the Persian Gulf enables us to provide more affordable broadband internet for critical commercial and government maritime operations as well as leisure vessels in the region," said Brent Bruun, KVH's vice president of sales and business development.

"In most cases, we can dramatically reduce a fleet's monthly airtime expenses."

Shore Support Consortium expanded

www.shoresupport.nl

Outsource-IT Management has become a participant in the Shore Support Consortium, established by Wagenborg Shipping and HME B.V. to research possible improvements in engine room tasks onboard vessels, resulting in more efficient crewing.

The consortium hopes to achieve these

efficiencies through the use of modern IT and communication technologies.

Outsource-IT Management's role will involve assisting the shipping lines with their usage of broadband technologies, and examining how this may change work processes onboard.

The company says that this may also involve changes in ICT infrastructure onboard the vessels.

Stay in touch

Connecting you and your business on board

Satlynx is a leading global provider of satellite communications services with over 12,000 VSATs in more than 130 countries and offers broadband satellite connectivity across ocean, sea and inland waterway for small groups of vessels operating regionally to fleets operating on a global basis.

**Meet us at the 4th Maritime Communication
and Technology Conference
4th to 5th March 2009 in Athens, Greece**
info@satlynx.com   www.satlynx.com

SATLYNX

Crew entertainment installation for Solstad Offshore

www.bazetechnology.com
www.intele.com

Solstad Offshore has agreed a contract to install crew entertainment systems from Intelecom Norway and Baze Technology onboard its newest offshore supply vessels, beginning with the Normand Subsea 7 currently under construction at the Palmer Johnson yard in Flekkefjord.

The contract represents the first agreement to equip a seagoing vessel with the entertainment system, with the technology having been previously in use in other industries.

BazePort is a combined hardware and software solution that aims to replace other standalone systems used for enter-

tainment and crew communications. It connects to the onboard satcoms or television antennas to channel the systems into one integrated interface.

The BazePort system to be installed by Solstad is an IP TV solution, which provides TV, video on demand, internet, e-mail, and phone in one integrated system. It is operated primarily via a touchscreen, but wireless keyboards and mice can be supplied as optional peripherals.

The system also includes a portal that allows operators to publish information directly to their crew, with a role based setup that provides the possibility of targeting messages to particular crew members.

It connects to its server with one IP

cable, eliminating the need for additional cabling such as coax or telephone.

"At Solstad Offshore we have a continuous focus on attracting the best crew available," said new build project manager at Solstad Offshore, Geir Ove Olsen.

"The BazePort solution shall provide our crew on board with a modern communication and entertainment platform on this vessel. We believe this to be important for improving life onboard, and an edge towards the competition when recruiting the best new crew available."

Thorstein Rinker, business development manager at Baze Technology, added: "We started marketing BazePort towards the marine and offshore industry less than a year ago. The response the market has

given us has been great, and the number of contracts we are about to sign has proven all our expectations for the product."

Crew entertainment and communications are integrated on the Bazeport touchscreen

Harbinger restates acquisition plan for Inmarsat

www.inmarsat.com

Harbinger Capital Partners has reiterated its intention to make a formal offer to acquire satellite communications company Inmarsat upon the receipt of regulatory approval, with a statement to the London Stock Exchange outlining moves to speed up the regulatory approvals process.

The company has asked US authorities to consider regulatory applications on behalf of two of the businesses in which it has shareholdings, SkyTerra and Inmarsat, to be considered separately, in the hope of accelerating the approvals.

The statement reads: "On 25 July 2008, the board of SkyTerra Communications and the management of Harbinger Capital Partners Funds announced their intention to make an offer to acquire the entire issued and to be issued share capital of Inmarsat plc not already held by (Harbinger) on terms to be announced following a satisfactory outcome to the regulatory approval process."

"This regulatory approval process included: approval from the US Federal Communications Commission (FCC) for the transfer of control of the FCC licences held by subsidiaries of Inmarsat; FCC approval for the transfer of control of the

FCC licences held by SkyTerra Subsidiary LLC, an indirect subsidiary of SkyTerra; and approval under the FCC's foreign ownership limits for Harbinger to own up to 100 per cent of SkyTerra."

"In order to accelerate the regulatory process, Harbinger has submitted a request to the FCC that the SkyTerra Change of Control Application be processed separately from the Inmarsat Change of Control Application."

Despite this attempt to speed up regulatory approval, Harbinger says that it does not expect there to be any material change to the timetable for obtaining approval on the Inmarsat deal as a result of such separate processing.

"The approval process for the Inmarsat Change of Control Application is ongoing, and Harbinger's expectation remains, as stated in the 25 July 2008 announcement, that approval is likely to take approximately 12-18 months from the date of that announcement," the statement said.

"Harbinger's intention remains, as set out in the announcement dated 25 July 2008, to make an offer to acquire the entire issued and to be issued share capital of Inmarsat not already held by (Harbinger) on terms to be announced following a satisfactory outcome to the regulatory approval process."

Inmarsat revenues up 7% in 2008

www.inmarsat.com

Inmarsat has released its financial results for the year 2008, showing an increase of 7.2 per cent in maritime revenues, up to $332.5 million from $310.3 million for 2007.

This was mostly down to growth in data services, which increased 9.7 per cent to $227.8 million compared with a 2 per cent increase in voice services (up to $104.7 million).

The company said: "The increase in revenues from data services primarily reflects greater demand, as a result of the take-up and utilisation of our Fleet services, which was partially offset by the decline in our mature Inmarsat-B service. Inmarsat-B terminals declined due to old ships being decommissioned and new ships being fitted with Fleet terminals, which has been driven by continued growth in the global shipping new-build market."

"Additionally, we experienced increased volume of the low-speed data services, typically used for e-mail. FleetBroadband, introduced in November 2007, continues to gain early customer acceptance and by the end of 2008 had passed 1,500 active terminals. These terminals are predominantly being deployed on refits of existing ships."

Active Inmarsat maritime terminals at

the end of 2008 numbered 155,800, an increase of 5.8 per cent on 2007 and including growth of 36.7 per cent in active Fleet and FleetBroadband terminals.

"During the fourth quarter we continued to see steady activations of our Fleet terminals and an acceleration in the activation of FleetBroadband terminals," the company said. "Average usage levels on our Inmarsat B and Fleet terminals, which are predominately used by the shipping industry, remained strong through the fourth quarter."

Inmarsat's potential takeover of Stratos was also mentioned in its 2008 accounts, with the company stating that: "In April 2009 we expect to exercise a call option to complete the acquisition of Stratos Global and we are optimistic about the prospects for the enlarged group."

"On 16 January 2009, the US (FCC) issued its order approving the transfer of control over Stratos' FCC licenses ... to Inmarsat. Under the terms of the transaction, which closed on 11 December 2007, (Inmarsat) has a call option over 100 per cent of the shares ... exercisable from 15 April 2009 and expiring in December 2010."

"All government and regulatory approvals required for the exercise of the call option have now been obtained and it is expected that the call option will be exercised on or shortly after 15 April 2009."

FleetBroadband licence granted to JSAT MOBILE

www.stratosglobal.com

JSAT MOBILE Communications Inc, a joint venture between Stratos and SKY Perfect JSAT that features JRC and Furuno as shareholders, has been granted a radio licence by the Kanto Bureau of the Japanese Ministry of Internal Affairs and Communications to offer Inmarsat FleetBroadband on Japanese-registered vessels.

Stratos and SKY Perfect JSAT formed the joint venture company JSAT MOBILE in August of 2008 to target the mobile satellite communications market in Japan. SKY Perfect JSAT is a satellite operator in the Asia-Pacific region.

Furuno and JRC (Japan Radio Company) joined the company as shareholders in November of last year.

The grant of this licence by the Ministry of Internal Affairs and Communications means that the company is now positioned to take advantage of the extension of FleetBroadband services in the Pacific Ocean, following the global availability of the Inmarsat service on February 24th.

Stratos president and CEO Jim Parm said: "With the necessary licences in place, JSAT MOBILE can now begin using its strong local team to meet the growing Japanese demand for the very latest mobile satellite services."

Globecomm acquires Mach6

www.globecommsystems.com

Globecomm Systems reports that it has acquired privately held company Mach6, a satellite services provider headquartered in the Netherlands.

The purchase price was $5.9 million in cash, which was funded through Globecomm's existing cash reserves. The shareholders of Mach6 could also receive up to 300,000 shares of Globecomm common stock, subject to an earn-out based on certain net income milestones, which must be achieved within twelve months.

Mach6 is a service provider and teleport operator, with revenues of approximately $10 million in 2008. Previously,

Globecomm had announced a Global Broadband Satellite Maritime Solution in partnership with Mach6.

"We decided to move forward with this transaction due to a strong cultural fit between the organisations, led by the desire to provide seamless global satellite services to the maritime industry and to add high quality managerial and technical bench strength," said David Hershberg, CEO, president and chairman of Globecomm Systems.

"Mach6's access to Globecomm's robust global network footprint and deep technical staff should accelerate their growth in each of the market segments they serve."

Mach6 currently provides maritime broadband services to approximately 140 vessels.

JRC's FleetBroadband power duo.

Surf the web along the waves, and much more – reliable, fast and now globally.

FB250

FB500

The FleetBroadband family is the latest-generation maritime communication solution from JRC. It is compactly designed, easy to install and puts high-speed connectivity right at your fingertips – delivered globally using Inmarsat's highly reliable network.

visit **www.jrceurope.com** and discover all ins and outs

Coverage restrictions for the extreme polar regions apply.

Globe Wireless in Florida acquisition

www.globewireless.com

Globe Wireless reports that it has entered into a Letter of Intent to acquire the assets of Atlantic RadioTelephone (ART), and that it expects to close the acquisition within 30 days.

ART has been operating in Miami for over 35 years, and operates an on-line web store (www.satphonestore.com), selling maritime and land-mobile satellite equipment and airtime, VSAT internet and television systems, radars and a variety of marine electronics.

ART also offers service and support from centres in Miami and Jacksonville, and these offices will be complemented by a newly opened Globe Wireless sales and support office in Ft. Lauderdale, Florida.

"The acquisition of the ART / SatPhoneStore assets is the next step for Globe Wireless, allowing the company to expand the products and services we offer to our current customers," said Frank Coles, Globe Wireless CEO.

Iridium re-launches trade-in programme

www.iridium.com

Iridium is re-launching its 'Trade-Up to Iridium' programme, which provides pricing incentives for customers willing to trade in Globalstar satellite phone handsets to switch to Iridium.

From February 20 to September 30, 2009, any Globalstar satellite phone user will be able to trade in his or her handset for an Iridium satellite phone. The initial 'Trade-Up to Iridium' offer ran from January to September 2008.

Through the programme, participating Iridium Service Providers based in North America will offer a credit of up to $400 on a new Iridium 9505A satellite phone to customers turning in an existing Globalstar handset.

Participating Service Providers will also offer up to $300 in airtime credits when signing a customer for a qualified Iridium calling plan.

Service Providers outside of North America are also expected to offer similar incentives, through regional programmes.

GSM for Classic International Cruises

www.seanet.se

Seanet Maritime Communications is to supply GSM services on board three cruise ships for Classic International Cruises, the *Athena, Princess Danae* and *Princess Daphne.*

The three vessels operate on a worldwide basis, and join the *Funchal* and *Arion* as the five members of the Classic International Cruises fleet contracted to install the Seanet GSM system.

All five vessels are expected to be running live with the technology in April 2009.

"The GSM-service from Seanet gives our passengers a simple communication tool as they can use their ordinary GSM phones out at sea," said Emilios Potamianos, Classic International Cruises.

In a separate development, Seanet has reached an agreement with Belgacom International Carrier Services to act as its international carrier and signalling provider, meaning that Belgacom will terminate all Seanet international voice and signalling traffic over the GSM service.

The company says that this will ensure greater availability of its service to a variety of users.

"One hurdle in Seanet's efforts to establish international roaming has, in many cases, been to conclude the so called IREG (International Roaming Expert Group) tests, because Seanet's roaming partner couldn't reach Seanet's number range (+882 42) via its International Carrier," said Klas Lundgren, CEO of Seanet.

"Partnering with a Tier 1 International Carrier such as Belgacom ICS will eliminate this obstacle to Seanet's progress. With Belgacom ICS as provider of this service and Ericsson as provider of the infrastructure, we are confident we have chosen the market leaders that will guarantee Seanet the most stable maritime service possible, and that it can be reached by operators from any corner of the globe."

Fixed satcom pricing from Wired Ocean

www.wiredocean.com

Wired Ocean has introduced a new fixed pricing scheme designed to enable vessels to accurately predict shore to ship data costs based on pre-determined usage levels, using the Wired Ocean satcom system.

The Wired Ocean system is designed to deliver shore-to-ship data via a vessel's satellite TV antenna, to reduce download costs. The five new fixed price plans, designated Beaufort 1-5, will allow vessels to select the usage profile that best fits their needs, differentiated by the volume of priority data downloaded.

The Wired Ocean system offers fixed price data downloads via maritime TV antennas

These plans start at approximately $300 per month, and the company says that the range spans up to gigabytes of data per month for less than $1,000. All fixed price plans feature a maximum shore-to-ship data rate of 500kbps.

"The new fixed price plans are also available with the cost of the S-Box, the heart of the Wired Ocean system, included," said Victor Barendse, managing director of Wired Ocean.

"So the benefits of Wired Ocean, such as lower broadband usage costs, faster speeds and greatly enhanced management of budgets could be achieved without any capital expenditure whatsoever."

"If a vessel doesn't already have a satellite TV antenna, the savings enabled by Wired Ocean makes fitting one a much more attractive proposition and by bringing the world to the vessel via TV or cost-effective internet Wired Ocean can help to improve operations and crew welfare at the same time."

Asset monitoring technology partnership announced

www.numerex.com
www.savi.com

Numerex Corp and Savi, a Lockheed Martin company, have announced a technology partnership to co-develop what would be the first asset and shipment monitoring device that combines global satellite positioning, active radio frequency identification and satellite communications.

The hybrid ST-694 GlobalTag is being developed to provide continuous monitoring and precise location information of assets for defence, public sector and commercial customers.

The system is aimed at both spot-level and ongoing in-transit visibility of shipments and mobile supply chain assets, such as vessels or container shipments. The satellite-based global RFID (radio frequency identification) device will be designed to provide tracking information in harsh environments on a near global basis.

"We believe that this powerful combination of expertise and automated technologies will advance supply chain monitoring and management capabilities from origin to final destination, resulting in higher levels of value for our customers," said Mike Marett, chief operating officer, Numerex Corp.

David Shannon, Savi Technology's senior vice president of product management, marketing and strategy, added: "Our collaboration will benefit any government agency, department, or supply chain professional in need of a truly transparent, integrated tracking solution than can span across existing RFID networks and into areas where traditional active RFID infrastructure is not practical."

"This will deliver improved, seamless visibility throughout the supply chain regardless of physical location."

Safety and document management over VSAT

Crystal Pool, a shipping company based in Finland, knew it needed a new approach to its IT infrastructure, and set up a small project team to completely change the way the company deals with information. Jouni Salo, Crystal Pool, told *Digital Ship* about how the company has used its new VSAT system to improve information management and increase safety

Finnish chemical tanker operator Crystal Pool recently embarked on a project that aimed to completely overhaul its entire organisational IT structure, including the installation of a new satellite communications system that was to be used to run the vessels as a network of "floating offices."

As part of these changes the company would also introduce a new safety management system, and transfer the ICT management of the vessels to the IT department, from the technical department.

The company has six vessels in technical management and twelve in commercial management, but was working with a very small team to manage the entire restructuring project, explains Jouni Salo, quality and safety superintendent, Crystal Pool.

"We started the project in 2008 and had a budget of €1.2 million for 5 years, including the communications costs," he told us.

"We had the problem of high communication costs and a lot of trouble with the management of the vessel IT systems, and this was aimed at changing that."

"The project was done with one and a half employees – myself and the IT manager. I say one and a half because I don't work in the IT department anymore, I've transferred to the quality department, but was involved during the project."

To begin the process, Crystal Pool specified a list of aims for the project, and outlined the particular operational issues it wanted to overcome with its new IT infrastructure.

"The problems that we were looking at are pretty clear to all shipping companies, you have ships that are sailing around the world and you have to keep in contact with them to get operational data and give them voyage orders, distribute documents and so on," said Mr Salo.

"If you don't manage the IT well you will have problems with viruses and malware, if you have an internet connection someone is going to use it if there are no restrictions on it."

The company's vessels had been operating with a mix of different communications systems up to this point, but Mr Salo notes that their performance was mixed.

"We had a lack of internet and telephony connectivity because we used mostly GSM or GPRS routers, though we also had Inmarsat Fleet and FleetBroadband antennas which had no problems with connections," he said.

"Before the IT department got any of the vessels under their control there was a lack of standardisation of the equipment onboard, nobody knew exactly what was installed and there wasn't very good documentation. So this was the starting point."

"With the FleetBroadband, the speed was okay but the pricing per use for the transfer of megabytes created a bit of a mess, we had some pretty nasty invoices a couple of times. For the GPRS routers, we used a Finnish service provider and it was okay in Finland, it was €12 per month for unlimited access, but when we went to other countries and ended up with the roaming costs, well, everybody knows how much they are."

Knowing some of the problems it wanted to solve, the company also had some further ideas about additional capabilities it hoped to introduce with its investment in its communications.

"Our first targets were to reduce the communication expenses, but we also wanted to centralise the ICT management to the IT department at headquarters, and to offer remote support in things like installing programs and all that stuff," said Mr Salo.

"We wanted to not have to visit the vessels and physically work on the machines there for support, we wanted to do everything electronically and remotely."

"We also wanted to look at the issue of crew welfare, because like all other ship-

'What we wanted to do with the integration was to control and streamline the document flow' – Jouni Salo, Crystal Pool

ping companies we have the problem of getting good people on board the vessels and actually keeping them. Giving them connectivity and calls home and internet, it's a way to do that."

A key feature of centralising the IT management at the shore office was the introduction of a networked document management system, with information across the organisation available anywhere it was required, on land or sea.

"What we wanted to do with the integration was to control and streamline the document flow," said Mr Salo.

"With the normal paper documentsit's quite a mess when you have to archive it to folders or scan them into shared Windows folders, and so on. It's really hard to keep track of the versions and access controls of the different documents."

"Most of our users were using Admin rights too, so with an open system with access rights to everything you get a lot of ICT support calls. It was a problem to know exactly what you have and who has access control. Updating any forms or any documents, that can be really complicated when you have people moving from vessel to vessel and company to company, it becomes unmanageable."

System installation

Having shared its requirements with a number of satellite communications suppliers, and conducted tests to see how dif-
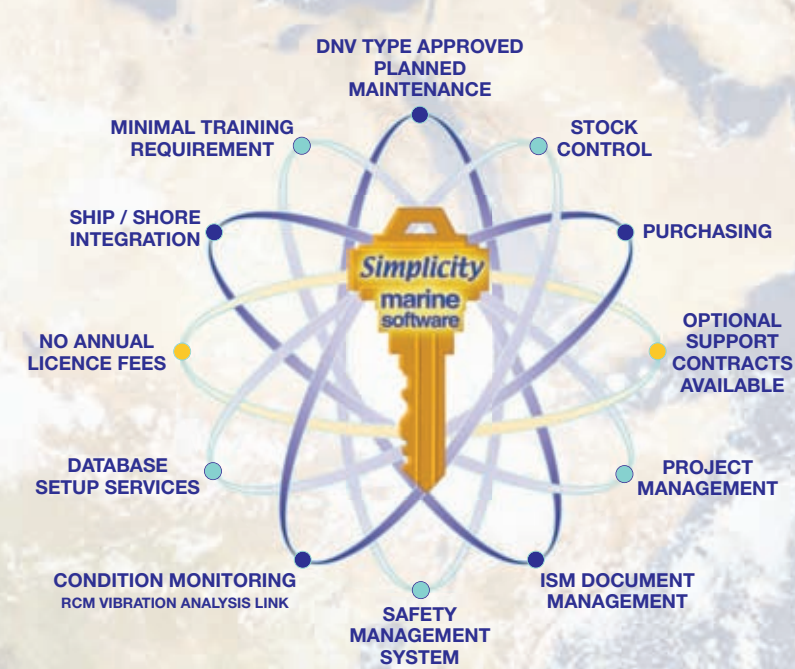
ferent systems would suit its needs, the company opted to fit VSAT as the centre-piece of its IT infrastructure development.

"We decided to go with a VSAT installation instead of upgrading all of the Fleet 77s to FleetBroadband," Mr Salo explained. "We got the system from SatPoint, having asked for a quotation from 23 providers."

"We firstly wanted to have a fixed rate for unlimited data per month, because we saw this as the only way that we could do real integration of the systems. If you have to pay for every bit that you're replicating over the satellite it's going to be pricey."

"IP phones were put on, so we could take off most of the GSM phones and reduce the costs that way. The crew also wanted to have access so we got, for all of the ships, a Linux-based computer so as not to worry about security issues for malware and viruses (that you can get on Windows)."

Crystal Pool agreed a fixed monthly package with SatPoint that would allow its vessels to share data usage across the fleet, depending on what type of functions were being performed, Mr Salo told us.

"We ended up with a pool of bandwidth for the fleet, and for us it was a good solution," he said.

"We have a pretty simple structure on the vessels and not that many large files that we need to send over the satellite link. The only way we really want to be using the bandwidth was pretty much for remote control, and that's possible with the pool."

"When we are only controlling one or two vessels at a time we can draw the bandwidth from the other vessels for remote desktop and remote access use on the vessels which we are working on. This is the same thing with replicating the servers or the documents, when we just schedule the replication to be done at a specific time."

The company also structured its onboard connectivity in such a way as to have separate networks for crew and company use, to more easily control how the satcom system was managed.

"We separated the business and pleasure side of things on the local area networks, with a VPN on the business side from the Earth station to the office, then routing the data out of the office," said Mr Salo.

"That means that those onboard have the same restrictions that people in the office have. Then the crew LAN is sent out to the internet from the Earth station."

Mr Salo admits that the VSAT system does have some issues with structural shadowing and connection downtime, but says that these limitations are acceptable in terms of the overall result the company was trying to achieve.

"For the connection time, we know that the connection is not always-on, there are going to be shaded areas on different headings and it won't be 100 per cent on, but the uptime is going to be better than with our GPRS modems," he said.

"We built our document management system in such a way that having non-connected time is not a problem."

This set-up included a renewed focus on security and control, which had been an issue for the company under its previous IT infrastructure.

"First, we wanted to tackle the Windows active directory problem, to remove the Admin access rights and

downgrade them, giving everybody a user name, that was the first task," said Mr Salo.

"Then we implemented, instead of our client antivirus software, a server-client antivirus software. We use F-secure Policy Manager antivirus software, because we have that in the office, and it's a pretty good software."

"We started the documentation of the installed system, the Admin passwords, the equipment, the software, and so on. This was also done to the IT department's pre-installed computers that were to be delivered to the vessels, it's obviously eas-ier to do when you're at the office with a high-bandwidth internet connection than when you're on the ship."

Document management and replication

One of the features of the infrastructure that Mr Salo has been most pleased with is the introduction of a new document management system that has allowed the company to have all of the information stored on the vessels and in the office centrally accessible, making it easier for people to find what they need exactly when they need it.

"The document managing software that we have is Motivesys M-files," he said.

"We implemented that in 2005 in the office, and we've been really happy with it. It's end-user friendly, it's pretty much like browsing in your normal Windows environment."

The system has now been extended to include the vessels by utilising the VSAT connection, and is used to manage four essential functions - version handling, access control, back-ups and workflow tools.

The document managing system stores all of the documents in a single vault in each location, with everything separated by metafiles and document classes. The back-up is done through the satellite link, with only the changes replicated.

Employees in Crystal Pool headquarters that are looking for documents can use either the document vault that is replicated to the office network, or they can do a meta file search of the vessel vault.

"Version handling is probably the most crucial part of it, to know where you have your documents and which document is the newest version," said Mr Salo. "You also want to have the roll-back option, if someone goes and changes the document he needs to have the 'oops' button."

"The access control is another crucial element in managing documents, and we can control that by just signing into the Windows active directory network, for groups or for individual users."

"Back-up is easier with a management system because everything is in one vault. There is no folder structure to be backed-up, it's just a meta file structure and a bunch of documents, sent over the VSAT link."

Replication of the data vaults in the office and on the vessel is performed gradually, so as not to completely clog the VSAT pipe with the updated information.

"When the ship's vault is replicated over the satellite link it's replicated into the main Crystal Pool servers, and those are backed up every day," said Mr Salo.

"Replication is done on a slow TCP transfer in the background so it doesn't take any peaks in the bandwidth to move the data. It can be set to be once a day, once a week, or whenever they need the documents."

Workflow tools

The 'workflow tools' included in the system are used to make sure that company information is presented to the people that need to know about it as soon as it is made available, with the office able to monitor document access to make sure compliance requirements are being followed.

"The workflow tools work with the documents and objects, we can create documents and assign them to people, for example you could assign to the master the task of reading the newest version of the training manual," said Mr Salo.

"Before the implementation of the document management system, the sending side was based on making copies of physical forms, filling them out, scanning them, storing them, renaming them, e-mailing them, maybe faxing them, and storing copies in physical folders."

"On the receiving side when they got the e-mail they had to process it, usually this means printing it out, stamping it, scanning it, and e-mailing it back to the vessel, while putting a copy in a physical folder."

This process has been significantly improved since the introduction of the replication and management system, both in terms of the time needed to deal with documentation and the effectiveness of the information flow.

"After the implementation we've been able to create the documents from a tem-

plate and fill it in on the computer," Mr Salo said.

"If a stamp is needed they can print it and stamp it, and then scan it back in. Then on the receiving side they'll receive a notice that the documents are there, or sometimes they'll know that the documents will be there at a specific time, so they can search the vessel's vault and find them."

"If it's totally electronic they won't need to stamp it or sign it because it will already have the time and date, and the user and other meta data that can be preset in the creation of the template."

The document management system also has potential safety implications, making it easier for crew members to stay up to date with safety bulletins or equipment manual updates from the office.

"With this system there is a much reduced possibility of human error in processing and storing important documents," said Mr Salo.

"We can use this system for getting verification of work being done, things like NCRs, notifications, circulars, and other important documents."

"We can use it for manuals, when we do an update on a manual we can just put it in the vault and after it's transferred over the satellite we can assign them to print the documents that have changed and then physically change the manual folders. They have to have the physical manuals for the vetting inspections."

Benefits

With the system installed and up and running, Mr Salo has been impressed with how easy it has become to find exact documents or classes of information that the company might require to monitor and improve performance, no matter where that information might be located, on shore or on a seagoing vessel.

"We can see all of the vessels that we manage and all of the vaults, and can make queries easily with Excel or SQL, and pull the information from the vaults, sliced and diced how we want it," he said.

"It could be, for example, how many near misses for the vessel for this year, and that will be stored in the vault so we don't have to go through the manual folders and count how many there are or keep updating the Excel files manually every

time. These kind of snap shots are very easy to export, then you can use the data however you want."

Mr Salo also believes that his company's experience should prove to be encouraging to others, to recognise the potential benefits of these systems and show that, even with a small team working on a project, major improvements are possible.

"Vessels are, nowadays, moving offices or production plants, and the communication solutions should be pretty much the same as in the offices in normal business settings," he said.

"If you're setting up an office in London they'll want to have access to the data in the office in Finland, and vice

versa, in a timely way."

"With this project I think we have achieved a lot of savings in communications costs, and at the same time implemented a system that allows the hard working people on the vessels work less and let the computers do some of it. It's doable for anyone, I would say, since we had just two guys doing it on our side." DS

The future is Orange for Bourbon

The Orange Group, presently well-known for its mobile phone services, is looking to extend its business services to the maritime VSAT sector, and has agreed a deal to install the communications system aboard Bourbon's fleet of ships

French marine services group Bourbon has chosen to install a Ku-band VSAT communications system from Orange Business Services on its fleet of 150 vessels.

The contract includes the integration and operation of the maritime VSAT satellite communication system, which will connect the vessels to the Bourbon network via an IP VPN.

The VSAT space segment will be shared by all Bourbon vessels and is used for accessing the Bourbon network, provided by Orange. The interconnection between the space segment and the ground network is through Orange-managed teleports.

Bourbon says that the goal of the project is to implement new communication services and new business applications for its entire fleet.

The new VSAT system has already been deployed on 45 vessels and at 4 ground bases, and the company says that this has already helped it to cut communication costs by a factor of five.

The service includes an IP telephony solution from Orange Business Services, where the conventional PABX is replaced by a central IPPBX. This allows for additional capabilities such as number portability, flexible billing that can be consolidated or by site, as well as a report generation system.

The 'Talk IP' service from Orange is based on a monthly subscription contract, with the cost of communications between vessels and Bourbon sites included in the plan.

Outbound communication costs are covered by an IP pricing rate that Orange says is eight times cheaper than Bourbon's previous communication system.

In addition, with the IP telephony solution, Bourbon also has a private numbering system which provides access to the Bourbon directory by means of abbreviated dialling.

Bourbon says that it is intending to double its workforce in the next four years, and hopes that the crew welfare options available through the VSAT service will help to attract new crew members.

It is also looking at improving business
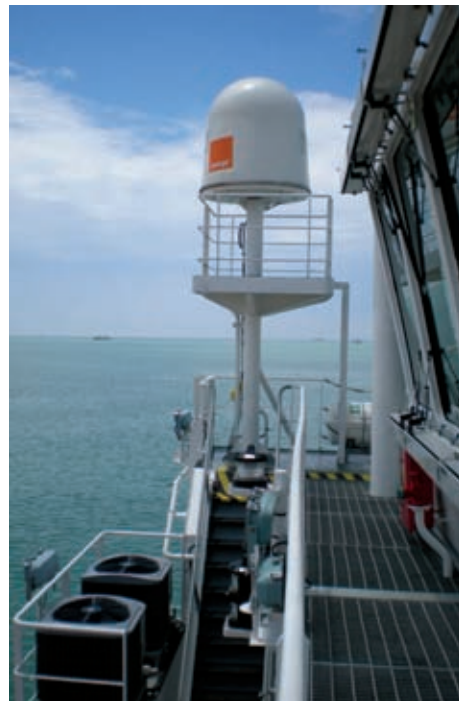
Average installation costs for the Orange VSAT system are €40,000 per vessel

functions through better management of the flow of data sent and received by the vessels, the transmission of real-time status reports on the vessels in an electronic format, and the real-time monitoring of the use of consumables for each vessel.

The company will also be able to access mission critical applications over the VSAT, such as maintenance software packages, and access company databases.

Maritime focus

This deal marks an important step for the Orange Group, most popularly known as a mobile phone operator and a part of France Telecom, as it seeks to expand its presence in the maritime communications sector.

"VSAT offers much better communications between the vessel and offices, but also a lot of benefits for crew members," said Michel Verbist, product manager satellite solutions, Orange Business Services.

"They can email and call their family; they can use online learning tools and so on. The cost of doing this before was prohibitive."

"We expect that the regular Inmarsat high-end customers will migrate to VSAT technology now. Inmarsat has good coverage but supports very limited data speeds. In practice, most customers are only getting 64 or 128Kbps and they have to pay for usage"

Mr Verbist believes that an increase in the use of data hungry applications could require the transmission of multiple gigabytes per month, and will join crew communications as the main drivers of VSAT adoption in the shipping industry.

"In the past, maritime satellite customers would have had to use applications optimised for the low bandwidth offered by Inmarsat," he said. "Now they can run mainstream applications such as Microsoft Exchange or Lotus Notes."

"We can also integrate the vessels into the corporate IP VPN network, which enables free communication between vessels and terrestrial sites and between different ships in a fleet. This is crucial for customers who see their vessels as just another remote office to be connected to the corporate network."

Average installation costs for the Orange Business Services VSAT system are approximately €40,000 per vessel, with annual charges coming to a similar amount.

While acknowledging that these are significant costs for a company with a large fleet, Mr Verbist notes the savings of having voice calls at a cost of 20 cents or less with the VSAT solution, and no further 'pay-per-use' data costs. **DS**

Bourbon is to install Orange VSAT on its fleet of 150 vessels

Technology and crew welfare – the new frontier

Information technology helps to provide for many of the basic needs of the modern seafarer, offering improved safety and training systems that have revolutionised the industry. But the new frontier for ICT is to provide for the social needs of those onboard, *writes Guy Morel, general secretary, International Ship Managers' Association (InterManager)*

Shipmanagement is essentially a service industry. We serve an owner, who can be our own company, or a third party.

But there is a specificity to shipmanagement: The services that a shipmanager delivers are those that would be performed by the owner himself, if he was not using the shipmanager.

In this context, we are different from, let's say, a bank who delivers a service that cannot be performed by its client.

Our main competitor, or, at least, our main benchmark comparison, is our own client. In this sense, our client is judge and party at the same time: he is always asking himself: "Could I do better if I was doing it myself?"

So, the challenge of shipmanagement is to be always on the go and to keep a competitive edge against your own clients in the most critical fields of your business. I would define these critical areas to be: Finding and maintaining quality crews, and the constant use of the latest technologies.

Shipmanagers must maintain a leading position in the provision of quality crews, if they want to survive.

And they have succeeded. Today most shipowners contract the provision of crews to third parties. Be those people called crewing agents, crew managers or shipmanagers, they all provide the same service: they guarantee to the owner the presence of a full, competent and motivated crew onboard their ship 24 hours a day, seven days per week.

This dominant position of managers in the field of crew supply is not random: it has been achieved through efforts, sweat and money.

Shipmanagers have opened offices in all the major crew supply centers; organised large scale recruitment systems; installed sophisticated crew management software systems; created and financed sophisticated training centers; and constantly looked for new sources of quality crews.

These efforts have paid off, as most InterManager members continue to see growth in their crewing activities, notwithstanding the latest crisis.

And in this process, shipmanagers have realised that crews are their most important assets and have deployed great efforts to attract and maintain their quality crews, in a world where the hunt for good seafarers, and in particular competent officers has become ruthless. Who has not heard of the complaints about crew poaching?

Needs

So, crew retention has become a central issue. And, to retain your people in a con-

'The use of modern communications technology has revolutionised crew welfare' – Guy Morel, InterManager

text of intense competition, you must convince them that staying with you is the best for them.

But, as always in these situations, the satisfaction of need has to be preceded by a deep understanding of what are these needs. When you understand the needs, then you can take actions to fulfill them.

So, we dug into theory. An American psychologist, Abraham Maslow, developed some 50 years ago, a theory on the hierarchy of needs. In essence, he theorised that there are levels of growing needs that need to be fulfilled by men in a pyramidal way.

To fulfill human needs at a certain level requires that the fulfillment of needs at a lower level be achieved. This is the pyramid proposed by Maslow (see page 16).

Maslow suggests that the needs are, by order, called basic, safety, social, self-esteem, and self-actualisation.

The basic needs correspond to survival: food, for example. Safety needs represent the search for comfort: money, health insurance, etc.

The stage called love/belonging, and which I prefer to call 'Social', corresponds to the desire to relate and to be accepted by your immediate environment: family, job – i.e. to be part of a group.

The fourth stage, Esteem (or Self esteem), is the need to be recognised in your environment (and by yourself) for your achievements.

The fifth stage, Self Actualisation, is somewhat more theoretical: it represents the state of equilibrium, reached when one

is fully at ease in his environment and when you are trying to achieve the best in your job as a fulfillment of a personal desire.

A bit like the stage when you are happy to go back to work on Monday morning. I told you: this is a bit more theoretical! But each category can be applied to our situation in shipping.

Ship specific

The lower level is associated with simple physiological needs, representing survival requirements.

Except for some rare cases of owners running floating wrecks and maintaining their crews in a state of misery and hunger, I would say that our crews are all having these needs fulfilled. Food and shelter are provided.

In addition, for those reckless substandard owners that are not providing for these basic needs, the imposition of port state controls has limited their ability to go on with their reprehensible business.

Safety needs correspond to a desire of predictability, including job security, financial comfort, and health insurance. This is a level of need that we, managers, are careful to fulfill to the best extent.

Indeed it will be the basis on which decisions are made by the seafarer to join our ranks. He will look at the pay package, the health insurance, the way we propose to treat him and his family, and he will make a decision on all those elements that are providing the safety net that he requires.

Obviously if 'the package' offered is better somewhere else, this is where he will go. And I think that we, shipmanagers, are doing a proper job here.

These actions are directly addressed to the individual: proper recruitment

process; training for career development; competitive salaries and incentive programmes; management of career patterns and promotion; establishing the systems that are guaranteeing safety at sea; assistance in case of emergency; medical supervision and proper health coverage; and prospects of a long career in the group.

Once physiological and safety needs are fulfilled, the next level is social. For Maslow, the three key words are friendship, intimacy, and family.

In the fulfillment of social needs, the key is to create for our crews a sense of belonging. By developing the notion of an environment that cares for them beyond the simple satisfaction of physiological and safety needs, we are giving them a group to which they can identify.

Those groups can be arranged into three specific catagories.

The ship's crew onboard: our crews need to feel that they are part of an organised group, rather than a commodity that has been placed there to do a job for a period before being dumped again.

Careful management, choice of nationalities, organisation of work onboard, organization of non-working life onboard, entertainment, adapted food, etc. are all important aspects that will achieve the sense of belonging to the group onboard the ship.

The company: our crews have to feel that they are part of a larger group, extending beyond the ship, that has regular and substantial interaction with them.

The ship visits every 4 months of a screaming superintendent are history. Now visits are organised and regular: crew visits to shore offices; shore staff visits to ship. But not quick jobs: the visits are made with the intention to align mentalities and to develop the company's culture.

Small things such as acknowledging a birthday date or giving away business cards to the crew with their name and the logo of the company achieve great results because they create the sense of group recognition.

The family: the most important group to whom to relate. Because it is the group where all our crew come from, we must make sure that they maintain this belonging.

Technology and social needs

The use of modern communications technology has revolutionised this aspect of crew welfare: it is, in fact, reproducing the normal conditions of living, onboard a ship.

Which kid, today, would think of living in a word where there is no communication, SMS, mobile telephone, internet, MP3, and other elements of what structures the reality of today's life?

The repeat of this environment onboard a ship is a crying need, and it is difficult to impose technology limitations on the legitimate needs for what we have ourselves created.

The levels of communications are varied – they go from the simple ability to send and receive an email, to SMS exchange, voice communications, web browsing, to video conferencing, and IP video communications.

Communications from the ship are expensive, and we may offer them to our

crews in a limited way, with a limitation of duration and limitation of place to access, limitations on the type of communication.
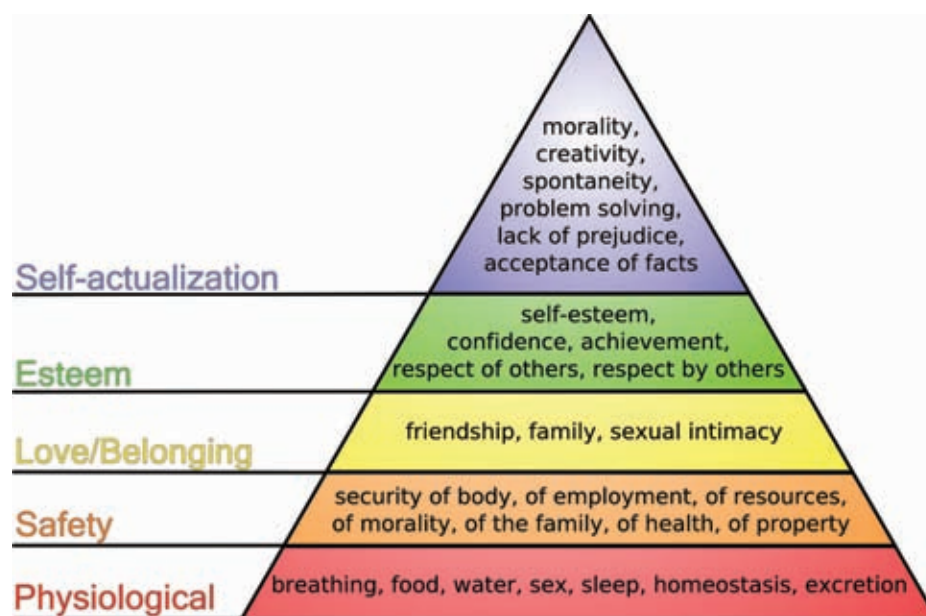
But we have to offer them this ability to communicate or we will lose them. And the closer we are to house life environment, the better it is.

By giving our crews possibilities to communicate in an intimate environment, such as IP communications from their cabin, we are achieving the need for intimacy that they call for. And we will get them to feel at home, thus eliminating the need to escape the ship.

I would say that the fulfilling of social

needs has long been our stumbling block in shipping, and the development of new technologies have achieved outstanding results in our capacity to pass this level of needs.

Respect

The fourth level is self-esteem. It deals with the need to be respected and recognised in its achievements.

And it is about the generation of self-esteem. It is saying to your crew, "not only do you do a good job, but also I recognise it, and I trust that you have the capacities to recognise it yourself."

The need for more efforts at the level of self-esteem need is important, our industry has been very short of thinking in this area.

We agree to pay our crews, to train them, to protect them, to promote them. We integrate them in our groups.

But we have a hard time recognizing their contribution and allowing them to develop their own confidence and their own self respect, because we still consider that the power is ashore, in the management offices, and because we still consider that once disembarked, our crews are no longer part of the group.

I should say that many attitudes of the industry are lately changing this situation in a very encouraging way: the recognition that crew loyalty is not due but must be earned, has contributed greatly to this new, more integrative attitude.

The concept of company culture is important at this level: to give public recognition of achievement of one individual to the group.

I see, for example, some managers that

are acknowledging publicly employees by their name for the period of time that they have been serving in the company. This gives a great feeling of being recognised by your professional family, and it goes a long way to create a need to continue to serve the same company.

But there is also the sense of being together when things are not OK, the sense of not being abandoned. The recent uproar surrounding the unjust criminalisation of the officers of the Hebei Spirit has done more in creating self-esteem for our crews than all concerted efforts before that.

The maritime IT industry has been supporting crew needs at all levels for some time

The magnificent spontaneous arising was a great moment for shipping. For the first time, all members of the shipping world (owners, managers, crews, unions) got united to defend their own people.

No more bickering, no more self interest.Two of our brothers were in need, and we all got together to fight injustice in front of powerful groups. We have not won yet, but Capt Chawla and C/O Chetan are out of jail today, if not yet back at home with their families.

This demonstration of solidarity to help our colleagues-in-need was the act of recognition that crews have been looking for around the world. Time will demonstrate that simple tenacity in fighting injustice has achieved a lot of more for crew welfare than many organised programmes.

Another issue for crew self esteem is the image of shipping. Too often our industry is being mentioned publicly when there is a catastrophe, be it a major accident, a major environmental disaster or a major criminal activity like the attacks on ships in the Gulf of Aden.

Our image is that of an industry which is negligent, or lawless or reckless or dangerous. Not a convincing image for a youngster that would consider going to sea. But not a good story either, for the seafarer going back home - how can we retain him, if he is ashamed of his work?

In this context, we have not been very good. Too many of the people involved in the industry have been selfishly trying to mind their own business in a fiercely competitive environment, which has created a culture of discretion and shade that has

not helped our image.

Let us be proud of our industry, let us be proud of our crews, and our image will improve.

Technology and the new frontier

Let me go back for a moment to the role that ICT has been playing, and is playing now, in the build up of crew welfare. It is substantial – the ICT industry has been supporting crew needs at all levels.

Basic needs require to be protected, and information regarding abuses must be disseminated. Database technology has helped the development of Port State Controls in this field.

Safety needs are the playground of ICT applications, and crew management softwares have allowed us to maintain and manage our databases.

From the first contact with the crew to the management of the crew travel, from the establishment of crew documentation, to the salary and allotment management of the crews, all crew functions have been automated in computer systems.

Crew training activities have been simplified with the use of real time computer based simulators. Computer based training systems, and, lately, the courses on the web, such as the ones offered by Videotel, have allowed for crews to advance in their careers while serving onboard.

GMDSS includes a set of communication systems that are guaranteeing better safety for the crews in the most dramatic cases of distress.

These systems have contributed to the saving of many lives at sea. ICT has been the cement of the fulfilment of safety needs.

Social needs are now the new frontier for ICT. The first application is communication systems. High speed broadband is slowly becoming a standard of modern shipping operations.

We must offer e-mail facilities and internet access onboard ships to our crews. The reaction of some operators, worried that crews will have a reduced productivity because of their access to internet, is unreasonable.

We are not in the situation of choice any longer. The wellbeing of our crews is also our guarantee that ships will continue to move on the seas.

The issue of cost is, of course, serious, but I am sure that the imagination that has been demonstrated in applying ICT to shipping will continue to help us find better, cheaper and more efficient ways for our crews to be happy and to want to work on our ships.

It has taken many years for us to realise to which extent our crews are important to us and to our operations. Today, with the abrupt crisis having invaded our life and our minds, we will be tempted to cut on what is considered to be non-essential: the well-being of our crews.

It would be dramatically wrong to do that because that would be unfair to our crews, and because we would be preparing ourselves for extremely difficult situations when the market moves up again.

So my message today will be: respect your crews in the way that you would like to be respected by them. And they will help you in your endeavours. **DS**

MINIMUM COST, MAXIMUM CONTROL OF YOUR SATELLITE COMMUNICATIONS

AND IPSignature

inmarsat

AND IPSignature
Full Communications Suite

AND RapidoMail
Advanced E-mail Connectivity

RAPIDOMAIL 5.0

- See features on the right

INSTANT MESSAGING

- Context and presence information
  Users can see who is online and available for contact
  Client software available for PC's, laptop, mobile phones, Blackberry's, PDA's
- Real time communication
- Store and forward function to send messages to users not currently online
- Conference / chatroom facilities
- Full conversation history and archive
- File and document transfer facility
- Interface with shore based PDA / Blackberry devices

FAX

- Sends and receives faxes as e.mail
- Each vessel is allocated a unique fax number allowing senders to use standard fax services

SMS

- Simple to use interface
- Send individual and group messages
- Receive SMS replies
- Long text function allows you to type long messages - which are split and sent in sequence
- SMS Delivery notification - be alerted when a message you send has not been received

INTERNET ACCESS

- User profiled secure internet access
- User authentication defines which websites or web pages can be accessed by the user on the post paid account and which on their personal pre paid account
- Caching and pre-fetching
- Content filtering
- Content security
- Full log reporting

COMPANY INTRANET

- Web based access
  File sharing
  Web links
  Active directory synchronisation
  Data import
  FTP file transfers
- Input information directly to shore side servers
  Improves operation efficiency
  No costly daily update files
  Custom designed form templates
- Automatic creation of back up onboard vessel for future reference
- Easy to update – information can be added or removed instantly

BILLING & REPORTING

- Up to the minute access to current vessel costs
- Per-user billing of service use; splits your terminal bill into usage by user account
- Pre-paid and post paid billing
- Quota limits for post-paid service usage
- Real-time updates of session cost
- Full visibility of service use for accounting and cost control
- Pre-paid account top-ups using Virtual PIN or online Credit Card authorisation

REMOTE SUPPORT

- Quickly establish remote control with minimum data cost
- Access for AND Group support personnel and shipping company IT administrators
- Drag and drop two way file transfer
- Service unattended machines
- Extensive system snapshot with remote diagnostics
- Reboot and reconnect

BACK OFFICE

- Service access is controlled by shore-side managers, via our web-portal
- Detailed service usage billing reports available online
- Enterprise class fully hosted email servers
- Email Spam and virus filtering
- Sophisticated email filter rules with whitelist / blacklist and size constraints
- Web filter with virus, spy-ware and mal-ware protection
- Shore-side IP firewall to block unwanted traffic
- Fine grain control of web site access from the server
- Enterprise class private hosted Instant Messenger server

SOFTWARE IS PROVIDED FREE

- IPSIGNATURE & RAPIDOMAIL SOFTWARE is FREE OF CHARGE, there are no monthly fees or licence cost, users only pay for airtime incurred

24/7 TECHNICAL SUPPORT

- AND Group provide full 24/7 support for all of our software products. Our support personnel have a minimum of 5 years experience in satellite communication systems

NEW RAPIDOMAIL 5.0

NEW Advanced features
- Instant automated retrieval of mail received into ships shore-side mailbox
- Auto-sync – synchronises dial up connections and starts moving data within 3 seconds
- Antivirus – with automatic updates, average size 20kb per day
- Crew pre-paid data cards

Other Features
- Automated set up procedure, all settings can be maintained and updated shore side
- Advanced data compression – compresses data by 90%
- Enterprise class antivirus and spam filters
- Full archiving
- Point of failure restart
- Automated file transfer protocol to interface with existing applications
- Split billing capability
- Web based reporting including;
  - Up to the minute vessel costs
  - Connection history – access to Inbox and Outbox records
- News and weather reporting service

For further information e-mail
info@and-group.net

ISO 9001

AND group plc

Tanners Bank • North Shields • Tyne & Wear • NE30 1JH
Tel: +44 (0) 870 444 9679 Sales: +44 (0) 870 444 9681
www.and-group.net

AND group Hellas ЕПЕ

73 Grammou St & 123 Kifissias Ave
Maroussi • GR-15124 • Greece
Tel : +30 2108066975
info@and-hellas.gr   www.and-hellas.gr

Latest Shipdex developments discussed at MAN Diesel

www.shipdex.com

The latest developments in the progress of the Shipdex standard protocol for maritime manuals was the subject of a recent meeting at the offices of MAN Diesel in Copenhagen, where the engine manufacturer and other stakeholders outlined some of their latest work on the project.

MAN Diesel says that it has agreed on a prototype project for the delivery of Shipdex compliant instruction book files, for an order of six vessels equipped with the company's most recent engine type (S40ME-B), for shipping company Intership Navigation.

Equipment manufacturer MacGREGOR also reported that it is currently changing over to a fully XML-based system, enabling production of Shipdex compliant instruction manuals.

SpecTec and Corena, who recently agreed a partnership to jointly develop Shipdex solutions, demonstrated a range of S1000D/Shipdex compliant products under the brand of AMOS Shipdex Suite, that will be released to the maritime industry to aid companies wishing to take advantage to the capabilities of the protocol.

The companies involved in the meeting noted that they have reached an agreement on forming a closer alliance, aimed at future common projects, and are looking at ways to bring other equipment makers into the Shipdex community.

Partners in the Shipdex project discussed the future of the protocol at MAN Diesel in Copenhagen

NCL to install voyage planning software

www.napa.fi

Norwegian Cruise Line (NCL), based in Miami, has completed a fleet installation of the NAPA Power fuel economy system, developed by Onboard-Napa Ltd.

Initial piloting of NAPA Power at NCL yielded positive results, encouraging the company to expand the use of NAPA Power throughout its fleet.

NAPA Power is used in voyage planning to find the optimal way to operate the vessel by optimising the route, speed profile and propulsion mode for each part of the voyage.

The system chosen by NCL will be installed with a Speed Pilot module, which allows automatic control of optimised speed.

"Conserving fuel on our ships sailing around the world is particularly important," said Captain Niklas Peterstam, vice president, nautical operations, NCL.

"NAPA Power has enabled us to optimise speed, and in doing so, we are minimising our fuel consumption."

Condition based monitoring for QM2

www.jmfmimic.co.uk

James Fisher Mimic has completed the installation of a new condition monitoring system for the Queen Mary 2 (QM2), a Cunard vessel (part of the Carnival Group).

This installation marks the tenth such vessel installation, and completes the outfitting of the entire Cunard UK fleet.

The Mimic Condition Monitoring System is integrated with SpecTec's AMOS Computerised Maintenance Management System throughout the fleet of Carnival UK's vessels.

The installation included Mimic's integration into AMOS and an additional vibration monitoring module. Up to 90 assets onboard are currently being monitored with the Mimic system.

Monthly analysis reports are also provided, describing specified machine conditions for all Carnival UK vessels back to company superintendents and chief engineers.

"Carnival UK have recognised this success and as a result JFM were proud to be involved with the installation of this unique development to their latest and world's biggest cruise vessel, Queen Mary 2," said Shaun Rowe, business development manager at JF Mimic.
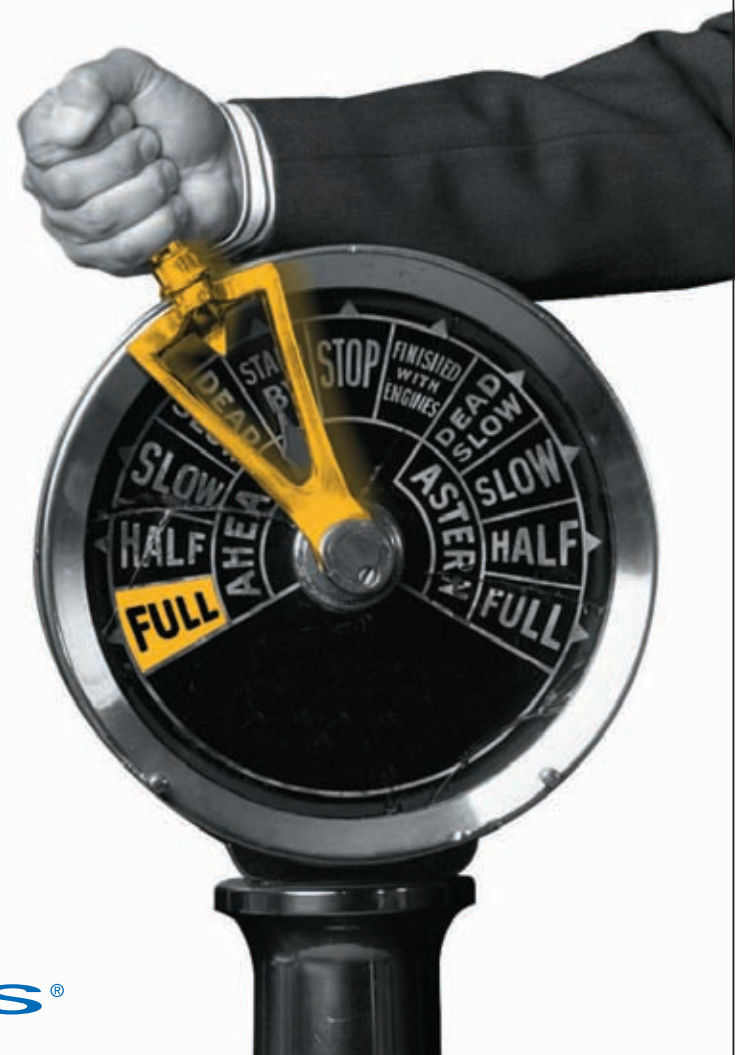
Coracle launches online training

www.coracleonline.com

Coracle has launched an online 'Background to Shipping' certificate to offer computer based training facilities to those working in the maritime industry.

The online course is adapted from the Institute of Chartered Shipbrokers' 'Understanding Shipping' course, and allows students to study the nine sections in a remote location and then submit multiple-choice answers for marking.

Marks and the certificate for the course will then be returned to the student via e-mail. Successful candidates are awarded a Coracle TutorShip certificate, validated by the Institute of Chartered Shipbrokers.

Students can start the course whenever

they like and can take up to nine months to finish it. There are no course pre-requisites, and no need to attend an exam centre.

Coracle founder and managing director, James Tweed said: "It's easy to get caught up in the jargon of our industry, and consequently new entrants often get dumped in the deep end."

"It's not fair to expect back office staff to instantly understand the nuances of our industry; companies should invest in appropriate training for every member of staff and that includes support staff."

"By selecting an entry-level course, staff without a background in shipping can quickly get up to speed, which will ultimately save their employer time and money."

Students can complete their exams online, and receive certificates via e-mail

Seaarland to install ShipNet

www.shipnet.no

Seaarland Management Services Singapore, a Singapore based ship management company operating tankers and bulk carriers, has completed the implementation of ShipNet's Pool Management solution.

Seaarland will use the system to help to manage its newly created Global Tanker Pool in Singapore.

The Pool Management system being implemented by Seaarland is a sub section

of ShipNet's Marine ERP application, which the companies say could be expanded into other parts of the business in the future if the installation proves successful.

Thomas Banas, ShipNet regional manager, said: "Seaarland, like most pool operators, needed to take care to manage their pool of ships and more specifically they needed a robust and detailed pool calculation system."

"Our ShipNet Marine ERP platform provides Seaarland with greater visibility of their transactional fleet information."

Intertanko TOTS goes digital

www.seagull.no

Seagull reports that it has negotiated an agreement with Intertanko to license the content for E-TOTS, an application that aims to assist those working with Intertanko's Tanker Officer Training Standards (TOTS) initiative by providing information in an electronic format.

Seagull hopes that the administration and monitoring tool will allow more companies to adopt the initiative with minimal extra workload.

Intertanko marine director, Captain Howard Snaith, said, "We are very pleased that TOTS is progressing into electronic format, as this will enhance effective monitoring of each officer's progression through the TOTS system and reduce

the workload for participants."

Intertanko says that many major companies are requesting TOTS in electronic format, and that this agreement with Seagull will enable the organisation to deliver the TOTS Record Books and Computer-Based Assessments digitally.

Information is organised within Seagull's Competence Manager software, an integrated part of the Seagull Training System.

"We are confident TOTS will maintain its position as the industry standard and enable us to achieve the ultimate objective of increasing the number of competent tanker officers and provide alternative methods of measuring experience, other than 'time in rank' and 'time in company'," said Seagull, in a statement.

Strategic DataWorks has appointed Steve Woodward as new business sales manager of its London office. Mr Woodward previously worked for Nordic IT, where he was sales executive for new sales.

Telaurus has appointed Gregor Ross as director of European sales and marketing. Mr Ross will be based in London, having previously worked for **EMS Technologies, GN Comtext** and **M.C.T.S. Ltd.**

Hartmann Logistiks has taken delivery of the first of 12 AHT from **Fincantieri** of Italy. The vessel, Atlantis, is the first ship of the **Hartmann Group** which will be equipped with **SpecTec's** Amos2 Quality, Maintenance and Procurement, and will operate in Egyptian waters on behalf of **BP**.

www.strategicdataworks.co.uk
www.telaurus.com
www.spectec.net

Unicom to install AMOS2 Quality system

www.spectec.net

Unicom, part of the of the Sovcomflot group of companies, has ordered 67 licences for SpecTec's AMOS2 Quality software module.

The shipping company has requested that all of the licences for the roll-out are made available for an immediate start.
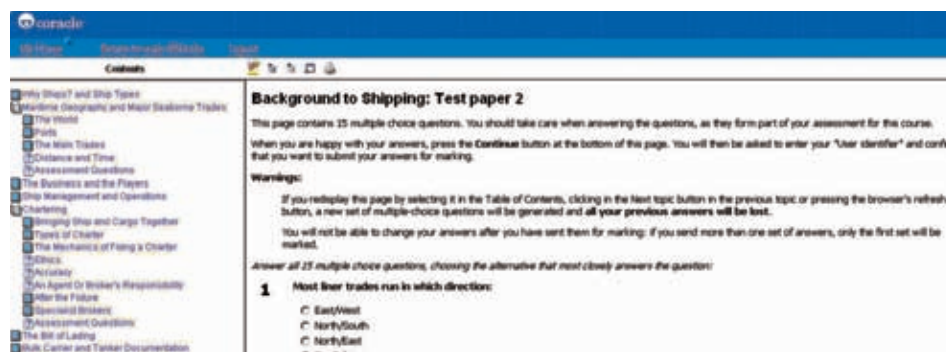
The project that led to this software deal started in late September 2008, with SpecTec having been involved since that time in the implementation of Unicom's

Safety Management System and document distribution, Incident/Accident and Non-Conformity Modules.

Customisation and training tasks have also been undertaken by SpecTec as part of the deal.

Installation of the AMOS2 Quality system was carried out on a pilot vessel in December, with the companies now moving forward to a live fleet roll-out.

Completing this implementation will involve the generation of a large number of databases for deployment to vessels.

Hartmann Logistiks newbuild AHTs will be equipped with AMOS

Information management in a downturn

Is monitoring via software more or less important for shipping company when the market is low and the global economy is suffering? Improved efficiency through the availability of better information and data can be a key element in improving performance and lowering costs, *writes Panteleimon Pantelis, director, Ulysses Systems*

Anyone who has read management books has probably heard about how leading companies manage information so as to accelerate decision-making, preparation, efficiency, and so on.

A low stock market and a low charter market are environments when good theory is found interesting but rarely adopted. In such an environment, why pay now for something hopefully attainable later, when the company is barely overcoming costs today?

In the shipping business, an information-centric organisation could be described as one that pays a lot of attention to how information is internally distributed and disseminated, an organisation that distributes information to the right person at the right time, without spending tremendous conscious effort achieving this.

So what would be the bottom line advantages of better information distribution?

These could be in earlier risk assessment and a better chance of managing risk more cost effectively; better preparation before performing critical operations where sub-optimal procedural variations can cost a lot of money; and the prevention of incidents arising from uninformed areas in the organisation.

You can also lower costs by having less people minding paperwork and putting more attention on optimising spending and operation; have faster vetting approval on tankers and less time with sub-optimal approvals; and have far better internal compliance with new cost and efficiency policies and procedures.

Each of these areas can make a significant impact on the performance of the business.

Using information

To examine the benefits of earlier risk assessment and a how it allows risk to be managed more cost effectively, let's take some examples of risk assessment necessary in day-to-day ship management.

A report of seawater content in the stern tube lubricating oil shows a higher level than usual. Is this information something that remains within the technical department or is it a subject requiring some risk assessment from a commercial as well as technical standpoint?

If this discussion remains within the technical department, is there not a major likelihood that an early opportunity to inspect the stern gland may be lost if the vessel is promptly chartered to an area where stern seal repairs are prohibitively expensive and unreliable?

If the cause is fouling of the gland, such that there is a chance for it to deteriorate fast, could this not soon require immediate intervention and interruption of the vessel's current employment or even salvage? So is this not a situation that needs to be assessed by senior man-

agement and commercial management?

What is the cost of this information laying hidden from the stakeholders such that remedial action is late and costly? How wise is it that the company depends on at least two levels of voluntary reporting for this critical risk?

Then there is the issue of better information distribution before performing critical operations.

Let's assume that all the right people know about the water in the stern tube at the right moment, and therefore, all commercial opportunities in solving the problem are available.

Let's also assume that the stern tube has been fouled by fishing lines and an in-water inspection and seal replacement is required.

Good information management can help to improve efficiency and reduce costs when times are hard

How important is it to co-ordinate this exercise? How clear and transparent must this preparation be in order to minimise downtime and minimise the huge risk of lost employment?

For example, how important is it to be clear and accurate about the recent history of the stern gland, information about on board spares, the availability of standby replacements, the time required to deliver stand-by replacements, customs clearance procedures at the repair location, the decision to supply expensive components machined specially for the vessel despite the stand by requirement, or the use of the downtime for other repairs requiring immobilisation?

The convenience with which this information is managed and co-ordinated plays a major role in the avoidance of a delay, such as, for example, a delay in the delivery of a necessary stand-by spare part.

Furthermore, the ease with which all the stakeholders remain informed ensures that, for example, the commercial department is able to choose the optimal period between spot fixtures. A good choice of idle period makes a tremendous difference to the overall cost of the repair.

So how can good coordination save costs? The lost earnings for a day or two, or the missing of the next employment

and a far greater financial loss, or the loss of an opportunity to perform other downtime work and avoid another several days of downtime.

Efficiency

Information management is needed in the prevention of incidents arising from uninformed areas in the organisation.

Now supposing that the ballast plan for clearing the stern seal from the water line, under the current circumstances, requires the transfer of fuel oil to a forward deep tank. However, when this transfer is made, the master and chief engineer are not in touch with the senior superintendent who remembers that the heating coils in this deep tank are defective.

The result is that upon completion of the stern tube work the fuel cannot be drawn from the forward deep tank resulting in a short cargo lifting for two voyages until measures are taken to bring the oil back to the aft tanks.

What is the cost of this missing information? And what is the cost of hundreds of similar examples?

Savings can also be made by having less people minding paperwork and putting more attention on optimising spending and operation.

Now let's assume that the master and chief engineer, in preparing the vessel for this repair, also have to perform customary port arrival and departure tasks as well as voyage planning tasks, crew replacement paperwork, new security procedures, stores list requirements preparation, spares receipt checks, safety checks for the stern seal repair, etc.

How much time is spent managing unwieldy paperwork versus the time actually planning and optimising the current process?

Furthermore, with the current mandatory rest periods, does the crew not take tremendous risks by taking paperwork to the bridge watch, or spending less time on practical tasks while trying to keep up

with a poorly designed bureaucracy? Would you not expect better results if you could save half the present time spent on information management?

Better information management can also mean faster vetting approval on tankers and less time with sub-optimal approvals.

Suppose that, after a few months, the vessel undergoes a vetting inspection and the inspector wants to see the risk assessment checks made during the stern seal repair.

He finds that a variety of checklists from the company's SMS were omitted during the repair period: the diver co-ordination checklist, the stand by mooring contingency while the vessel was at the repair berth, the weather checks during the repair, etc.

We all know that oil companies view vetting as an assessment of managerial competence. They rely on spot checks and record checks. How can you maintain records if the SMS system is so complicated that it is unclear which item of paperwork pertains to each circumstance? How can you prove managerial competence without a tidy trail of records?

How can the oil company rely on an operator who cannot be expected to be able to prove diligence in an incident? Are oil companies not dependent on operators to give a good account after an inevitable incident? Will this not lead them to pay attention to how consistent the operator appears with respect to records?

Can oil companies afford to suffer the loss of public favour if, during an investigation, an operator appears unable to demonstrate proper procedure?

Internal compliance

Information management produces far better internal compliance with new cost and efficiency policies and procedures. So, in a period of low earnings, let us assume that a manager wishes to implement certain efficiency improvements.

Take, for example, the direct flow of critical information to senior management such as stern tube lube oil analyses, direct checks of spares requirements against imminent repairs and minimum quantities in compliance with risk assessment, or tightening of crew travel procedures.

How does a company implement measures designed to save costs? How can changes be monitored without spending more time monitoring the benefits gained from the improvements?

How can processes be monitored and how can they be altered without a long period of training and monitoring? And how can it be done with the low levels of staff that prevail in the maritime industry?

One significant step is the ability to manage information. Proper information management can ensure that progress in

adopting new processes is transparent.

It can also ensure convenience in gathering, comparing, and making decisions based on adequate information so as to better achieve cost control.

Convenience

Better information management is dependent primarily on convenience.

For example, e-mail has experienced tremendous growth simply by virtue of its convenience. In fact, many will say that e-mail collects more information than they would ideally wish.

This proves a very important fact - convenience is the key to collecting information. Therefore, an information-centric organisation must understand that information management starts with the recognition of the need for convenient systems.

Systems must be proven to be usable and able to collect the information you want. We cannot bully people and train them to report.

This has never worked in the marine industry because ships have high turnover, are remotely located, and are run by multi tasking managers. No senior manager can be expected to learn two or three complicated applications in order to carry out his job. So how do we expect a captain or a chief officer to do so?

E-mail is a success on board due to its intuitive convenience, but of course it has its shortcomings. E-mail does not easily file and disseminate information further than provide somewhat labour-intensive means for personal filing.

Personal filing is definitely not the right tool for information distribution. For example, company staff that are not yet aware of the relevance of a piece of information, such as the heating coil example given above, cannot be expected to look for it in e-mails going back a year.

So how would they be expected to anticipate the existence of this information? The distribution of important corporate information must be as close to automatic as possible and must find the user with the right information at the right time with minimal required dissemination from the end user.

For success in convenience, we have to go beyond e-mail, which alerts the receiver when the sender sends the information. We must be able to put the information in front of the user at the time that the user is like-

ly to need it, even if the user is not consciously looking for it.

We all know that people will not often rummage through records without knowing whether there is anything of value to the current activity. So, critical corporate information is often overlooked because it is difficult to find.

How would the junior superintendent

know anything about the condition of the heating coils in the forward deep tank if he or the on board officer could find no mention of the condition or when the heating coils were last tested? How would the superintendent know how promptly stand by spares can be sent if he does not know the weight and size of each component?

E-mail must be enhanced so as to serve as a tool for dissemination of information and not just distribution.

Consequently, maritime applications must also be converted to tools that are actually used for the recording of information, by adding significant enhancements to their usability and convenience. The final proof is experience in the field. **DS**

Pole Star Space Applications has named the **SkyWave** LRIT system as a 'recommended' technology for Flags and ship owners looking to install long range identification and tracking equipment. The system consists of SkyWave's DMR-800LRIT shipborne terminal, SkyWave's IsatM2M satellite service and the SkyWave Versa Automated Provisioning gateway.

HITT has acquired an order from **China Harbour Engineering Company** for the installation of a Vessel Traffic System (VTS) at the Angolese port of Lobito. Installation of the VTS is expected to be completed this year, at a cost of approximately Euro 1 million.

Solar technology provider **Carmanah Technologies Corporation** has partnered with **Shine Micro Inc**. to add an automatic identification system (AIS) capability to its line of stand-alone solar-powered LED marine lanterns.

McMurdo's FAST FIND personal location beacon has now been approved for sale throughout the member states of the European Union. The approval was given following an independent assessment by BABT (British Approvals Board of Telecommunications).

Kelvin Hughes has opened a new American office, in Alexandria, Virginia. The primary role of the new office is to expand on the existing Kelvin Hughes business and presence in the US, providing local sales and support for US-based customers. The company already has a service centre in New Orleans.

Raytheon Anschütz customers will have access to greater support in South America with the opening if a new **MRC Eletronica Ltda** office in Santos, Brazil. MRC Eletronica, which has operated as a Raytheon Anschütz service station for some time, will now have five technicians available to work in Brazil.

> www.purplefinder.com
> www.skywave.com
> www.hitttraffic.com
> www.carmanah.com
> www.shinemicro.com
> www.mcmurdo.co.uk
> www.kelvinhughes.com
> www.raytheon-anschuetz.com

China plans third maritime satellite

China's Science and Technology Daily newspaper, an official publication of the Ministry of Science and Technology, has reported that the People's Republic intends to launch a third ocean survey satellite in 2010 to improve its maritime weather forecasting capabilities.

A source at the Chinese National Marine Environment Forecast Center was quoted as saying that the satellite will be used 'to monitor ocean wind fields, sea levels and temperatures'.

The first of China's ocean survey satellites was launched in May of 2002, followed by a second spacecraft in April of 2007.

The first satellite monitors ocean pollution and topography using infrared sensors, while the second satellite collects data on ocean surface temperatures and wind fields through the use of microwave technology.

The third satellite is expected to combine features of its two predecessors for a greater level of ocean surveillance.

Fulcrum and SkyWave in LRIT agreement

> www.fulcrum-maritime.com
> www.skywave.com

Fulcrum Maritime Systems has agreed a partnership deal with SkyWave Mobile Communications to support the SkyWave LRIT system.

As part of the LRIT prototype development programme, Fulcrum participated in the initial prototyping process for the International Data Exchange.

Fulcrum's LRIT Master system provides Flag States with a National Data Centre solution, with the company claiming that its was the world's first LRIT system developed expressly to meet the IMO's LRIT requirements.

LRIT regulations, established by the International Maritime Organisation (IMO) for the purpose of improving maritime security, came into force on January 1, 2008.

Test ASPs (application service provider) are responsible for providing information to ship owners and operators, as well as Flag Administrations, and enabling testing to be carried out on ships to ensure compliance before their next radio survey during 2009.

Fulcrum notes that its Bahamas National Data Centre was among the first of the LRIT Data Centres to be online by the IMO's transmission of LRIT data deadline of January 1st, 2009.

"The Flag States we represent depend on us to provide reliable and robust solutions to ensure LRIT compliance," says Tracy Nichols, director for Fulcrum Maritime Systems Ltd.

"After rigorously testing the DMR-800LRIT terminal to ensure it met our explicit technical requirements, we are pleased to partner with SkyWave to enable our customers' full and rapid compliance."

Dan Poirier, senior VP of sales and marketing for SkyWave, added: "SkyWave is very pleased to be working with Fulcrum, the ASP for Barbados which is the third largest Flag state by gross tonnage. This partnership is a further endorsement of SkyWave's globally accepted LRIT solution."

$23m share issue for space-based AIS company

> www.comdevintl.com

COM DEV International, a provider of AIS (automatic identification system) data gathered by satellite, has announced that it has completed a new round of financing through the issue of a number of shares in the company.

The offering of 6,780,000 common shares, together with the issue of an additional 1,017,000 common shares further to the exercise in full by Underwriters of their over-allotment option, was priced at $2.95 per share.

The total issue of 7,797,000 shares created gross proceeds of $23,001,150 for the company.

The offering was completed pursuant to an underwriting agreement between COM DEV and a syndicate of underwriters led by Genuity Capital Markets, and including GMP Securities L.P. and Paradigm Capital Inc.

COM DEV says that the proceeds of the share sale will be used principally to try and further commercialise its space-based AIS technology.

Chart updating from Norwegian Hydrographic Service

> www.sjokart.no

The Norwegian Hydrographic Service (NHS) reports that it is conducting a prototype development project for a service known as Print on Demand, which intends to facilitate chart users in ordering updated nautical charts from the Hydrographic Service.

The Print on Demand service will make charts updated with the most recent Notices to Mariners, normally published every 14 days, available to users on demand.

NHS hopes that this will help to save the user time and remove the need for potentially error-prone manual updating of the printed charts based on the Notices.

Current plans are to have a Print on Demand service available in 2010, phased in on an area-by-area basis.

Provided it is updated with the aid of the Notices to Mariners, NHS says that a chart supplied using such a service will be equivalent to the printed chart in respect of the requirements of the IMO/SOLAS.

The service will be offered to users through authorised Print on Demand suppliers.

"The Hydrographic Service is currently updating its charts at intervals of about two years," said Gerry Larsson-Fedde, Norwegian Hydrographic Service.

"Some charts have shorter, and others longer, intervals between printings. On purchasing a new chart, our customers are thus often faced with a major task updating these with the most recent Notices."

NHS has also launched a new project to allow navigators to 'trace' corrections published in the Notices to Mariners to their nautical charts.

For example, a new subsea cable could be traced onto a transparent overlay under the system, so the navigator can trace the cable onto the chart instead of having to plot a series of coordinates describing the same cable.

"Tracings will not exempt users from reading and appraising all information provided by the Notices to Mariners," said Mr Larsson-Fedde.

"Thus it will still be incumbent on the users to update their own charts with information in the Notices and make their own assessments of what must be taken into consideration. Nor will it be either relevant or appropriate to make tracings of all information provided by the Notices."

The Tracings service will be offered to all users who subscribe to the printed and/or digital versions of the Notices to Mariners.
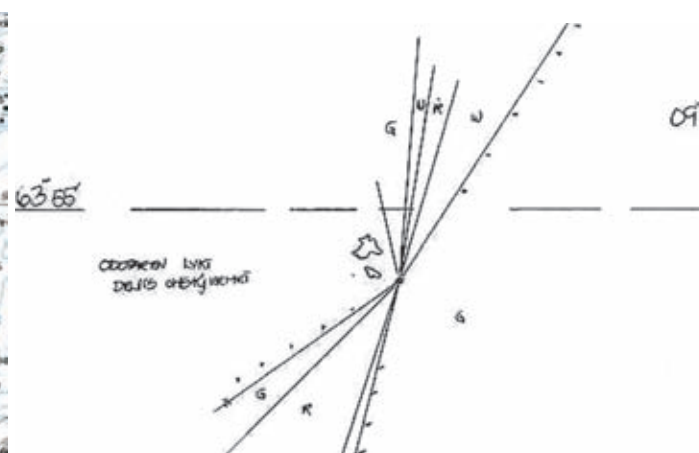
NHS has launched a 'tracing' project for chart updates

EMS dual-mode LRIT system approved

EMS Satamatics has received Type Approval from Germanischer Lloyd and the Korean Register of Shipping for its dual-mode Ocean Alert Ship Security Alert System (SSAS) and Long Range Identification and Tracking (LRIT) technology.

With these approvals, Ocean Alert SSAS/LRIT offers a dual-mode system which is compliant with the mandatory regulations set by the International Maritime Organisation (IMO) for both SSAS and LRIT.

EMS Satamatics says that its system is the only fully compliant SSAS and LRIT Inmarsat D (IsatM2M) solution with maritime Class Society approval on the market today.

EMS Satamatics has also launched an enhanced web-based tracking application, Ocean Alert+, as part of the dual-mode product to provide additional functionality to users, including the ability to determine the LRIT status of each terminal.

For current owners of the Ocean Alert product, a free software upgrade package is provided to allow customers to upgrade any terminal to the dual-mode Ocean Alert LRIT system.

LRIT compliance became mandatory in January for thousands of vessels worldwide and applies to vessel types engaging in international voyages, such as passenger ships and cargo ships at or exceeding 300 gross tonnage.

Proof of conformance of both the ship's LRIT and SSAS obligations is mandatory for the annual vessel radio survey.

EMS Satamatics has also recently received Type Approval from Germanischer Lloyd for its SAT-201i-Long Range Identification and Tracking (LRIT) solution.

This system is sold as a complete solution out of the box, with the terminal pre-configured and all installation components included.

VTS simulation installed at Fleetwood

Blackpool and the Fylde College's Fleetwood Nautical Campus has added a VTS simulation system from Transas to its Navi-Trainer Professional Simulation centre.

The two Navi-Monitor workstations are used to monitor the developing traffic situation in a simulated exercise run on the main navigational bridges on site, part of IALA V103 standard VTS operator training.

A projected visualisation channel also presents the view from the control tower, to offer 'full mission' information.

Transas says that this installation is the first of its kind in the UK, with Fleetwood being one of only two British nautical schools to offer MCA accredited VTS operator training.

Improving the Voyage Data Recorder

The EU-backed European Maritime Data Management (EMDM) project studying the performance of Voyage Data Recorders and potential improvements that might be made on the back of emerging technologies was completed at the end of February 2009. *S Austin and Prof PA Wilson of the University of Southampton* explain some of the project findings

The European Maritime Data Management (EMDM) project aimed to study new applications, functionality and to propose specifications and standards for enhanced Voyage Data Recorders (VDRs) and Electronic Logbooks (ELBs).

This was performed by a consortium of European manufacturers and research institutions and reviewed by an Expert Group comprising senior European representatives from owner/operator, manufacturer, investigation, administration, trade union, legal and insurance.

At the start of the project the argument for consideration of the VDR requirements was that VDRs have existed for over 20 years, thus there is a substantial body of experience, as well as the fact that the IMO VDR requirement has not changed since 1997 and an IMO review was considered imminent.

It was also argued that recent rapid advances in technology have changed vessel instrumentation, which necessitates new functionalities, and the technology advances offer new possibilities for The VDR.

This research is based upon an examination of existing legislation and standards, an industry survey, investigation reports, and the latest technology developments.

The VDR

The primary driver behind the VDR has always been the lessons that may be learned from a study of maritime casualties; if disseminated and heeded the overall level of safety will increase.

Such lessons depend upon accurate information about events, including timing, and an appreciation of the crew perception of situations and the reasoning behind decisions, the human factor.

There are currently two variants of the VDR: VDR and S-VDR.

The S-VDR, being a transitional requirement, will not be installed after 2010 and was not considered by the project. But, the project has considered the functionality of low-cost equipment (UVDR) for vessels which are outside the current mandatory carriage requirements.

A VDR today records information over the last 12 hours such that it is time stamped, tamperproof and is expected to be recoverable even after a fire, explosion or sinking.

The information comprises a number of different types of data:

Primary navigational instrument information – time; position; heading; course and speed over ground (COG/SOG); speed through water (STW); and wind direction and speed.

Vessel status – engine and rudder telegraph; watertight doors; hull openings; and alarms.

External conditions – primary radar; VHF communications; and depth.

Crew perception and actions – judged from bridge audio.

The first VDR was installed in 1988 by Broadgate in response to a number of high profile maritime losses in the 1980s. In 1995 the signatories of the SOLAS convention agreed it was desirable for ships to carry a VDR to support maritime for casualty investigation.

The functional requirements were defined by the International Maritime Organisation (IMO) in 1997, followed by the performance standard defined by the International Electrotechnical Commission (IEC) and installation guidelines defined by the International Standards Organisation (ISO); carriage requirements were defined by SOLAS and extended by the European Commission.

Legislation and standards have changed as problems have been identified; for example, practical problems with connection to navigational equipment found on elderly vessels led to the definition of the S-VDR. The current legislation is shown in Figure 1, below

Industry survey

An industry survey was performed during the project. Approximately 4,000 individuals were contacted and asked about their experience and opinions of aspects of VDRs.

They were asked to identify themselves by industry sector to detect different viewpoints, if any. The sectors were Owner, Manufacturer, Legal, Institutional with sub categories.

From this survey, the most important VDR features are:

Most important information – bridge audio (this was also mentioned as having the most problems); radar; ship manoeuvring; and course.

Most common problems – sensors not working (VDR is not required to alarm this condition); and record overwritten (crew must act to preserve the record).

Respondents in favour of – more navigational data (e.g. ECDIS and more radar); longer records; and open playback standard (this came into force June 2008).

Other comments – include AIS, Ballast Water, Load Monitoring, Logbook data, signal integrity checks, vessel motion; extend record duration; and delete Fire Doors and Internal Alarms.

The survey itself received a relatively poor response from industry. Most replies were received from the institutional category including government employees and investigators, followed by owners and operators.

Figure 1 – Current legislation for VDR and S-VDR

	VDR	S-VDR
Functional requirement	IMO A.816(20)	IMO MSC163(78)
Performance standard	IEC 61996-1:2008	IEC 61996-2:2008
Carriage requirement	SOLAS V EC Directive 2002/59/EC	SOLAS V EC Directive 2002/59/EC New installation permitted until 2010
Installation guidelines	ISO 22472:2006	

Only half the owner/operators who replied make use of the VDR record.

Review of accident investigation reports confirmed the VDR record is extremely useful; it provides a clear and accurate record of events, and also shows elements such as failures in communication between individuals.

Unfortunately, when a VDR is fitted, investigators may have only a partial record due to a malfunction or the record is absent because it has been overwritten.

Although the EU has imposed the strictest carriage requirements, the most common types of vessels, leisure craft and fishing vessels, do not have to carry a VDR.

Without a VDR record a detailed examination of a wreck is often the only way to understand what happened. Survey and recovery of wrecks involves both risk and cost.

It is worthwhile to note that the use of VDR records has evolved, in that records from vessels not directly involved in an incident have been used.

However, new equipment and new technologies are not currently well catered for in the VDR specifications.

There are a number of onboard data sources which are not presently mandated for capture.

These include secondary radar – although vessels are required to carry as many as 3 radars, it is not clear what is the primary radar.

AIS, ECDIS, and radar target tracking data are all presently not a mandatory capture requirement, while task orientated information displays (as available from Integrated Navigation and Integrated Bridge Systems) and Central Alarm Managements Systems are similarly not included.

For the VDR itself, available technology has brought increased processing power, increased storage capacity, all solid state memory, high-speed communication networks, and all at lower unit costs.

Proposed VDR changes

The project proposes changes to the minimum standard, the considerations are detailed below.

It is necessary to state that the descriptions of the problems encountered and the proposed solutions are concerned only with the current minimum standards. Many vessels are presently equipped well beyond this standard and already meet some of these proposals.

Record duration – presently, a VDR record with a minimum duration of 12 hours must be stored in the recoverable final recording medium (FRM), data older than 12 hours may be over-written. Under the type approval the FRM is tamper-proof and must be protected to survive fire, explosive,

impact penetration and immersion to 4000m.

This is unsatisfactory for several reasons. Where an incident occurs, but is not catastrophic, the record must be saved manually. The crew may be too busy or unfamiliar with the procedure; the record is lost.

A longer record permits an investigator greater insight into the general standard of operation and how bridge crew interact.

The crew may also be unaware an incident has occurred. The discovery of a body some 36 hours after a possible incident was the first indication of the loss of the vessel *Ouzo*; thus no record was available from the suspected involved vessel.

The record may contain information about an incident not involving the vessel. In the *Ouzo* incident above, records were obtained from vessels close to the incident only because their VDR records were not minimum standard.

EMDM project proposes an increase in the FRM duration to 24 hours and an additional tamperproof recording medium (TRM) with a duration of 30 days.

The latter does not need the protection against catastrophes since it is to provide recoverable records about non-catastrophic events.

Integrity – failures in the connection between instrument and VDR are not uncommon. Analysis of VDR records from a sample set of vessels showed intermittent faults in 20 per cent of vessels.

This was echoed in the investigation reports and the survey where most respondents reported experience of missing sensors.

Although the basic operation of bridge audio microphones is automatically confirmed daily, the only general check of VDR operation is for annual certification.

It is proposed that the VDR provide a status indication, probably on the bridge, when it is not receiving data as expected from a source. Status and not an alarm is required because the VDR operation does not affect ship safety and because some bridge equipment is switched off as a matter of routine.

Bridge Audio – a good quality Bridge audio record can provide a wealth of information for the forensic investigator.

This includes information about the people on the bridge, their location, procedures followed, levels of stress, perception of situations, distractions, decisions and reasoning, ease of communication, public address announcements, sound signals in poor visibility, and so on.

The project has identified several issues with this.

A VDR installation normally uses multiple microphones to record bridge audio and they may be grouped such that a microphone cannot be isolated on playback.

In this situation, if any one microphone in the group is subject to high levels of noise, say from wind, audible alarm, poor fixing or faults, it will degrade the speech intelligibility for the whole group.

The type approval standard may not adequately test the performance of a microphone; much of the testing appears to be at the electrical interface. A microphone may also be poorly sited for its purpose.

The installation guidelines could be more specific – coverage guidelines from the manufacturer must be used, but how the manufacturer should estimate the coverage is not defined.

The method should account for the directional nature of speech projection. Moving a microphone around we find the

sound level falls 4db above the speaker and 12db behind them and the spectral density changes.

Proximity to other sound sources based upon impact on speech intelligibility, such as alarm sounders or public address must also be considered.

Where several microphone signals are grouped together to produce a single audio the permitted grouping should be defined, similar to the rules for aircraft Cockpit Voice Recorders.

The security of microphone fixing, avoidance of mounting panel resonance, and choice of materials should also be expressed.

It should be possible to isolate each microphone on playback such that the maximum contribution from other microphones under all conditions is limited. Ideally this limit should be quantified in terms of speech intelligibility.

The annual certification of the installation, normally performed by the manufacturer, also creates a logistical problem.

A bridge in port is likely to be very different from the normal underway conditions, in particular for the audio; time may be required to identify and correct problems.

As a solution, recent records from 'normal operation' are used as part of the confirmation of satisfactory performance. The practice appears sensible but the maximum permitted age of a record for this purpose should be defined.

Configuration Files – equipment is most commonly connected via IEC61162 standard interfaces.

These enable manufacturers to transfer data which are not in the approved sentence structures via proprietary messages. Interpretation of these messages may cause difficulty and delay for investigators.

EMDM proposes that a common open format file for a connected source is supplied by the source equipment manufacturer. The file relates the message and a plain language interpretation, such that on playback a message can be displayed as, 'GPS Receiver Autonomous Integrity Monitor status = Caution', rather than a code.

The VDR should also have facility to store the file in the FRM.

Hull Stress Monitoring – hull stress monitoring is an operational tool that provides localised information about stress of the structure.

Currently, only statistical data like mean value, standard deviation, maximal peak to peak value are stored in the VDR. This does not allow for rebuilding the scenario of a structural failure.

EMDM project proposes to record sensors' raw data at a record rate of 20Hz.

Engine/helm controls – many vessels have multiple steering stations, but only one position is active at a time. The VDR record should identify the active station so the procedure and timing can be followed.

Screen images – the most recent standard permits lossless JPEG2000 and PNG standard image compression. The highest compression, and hence lowest cost, is achieved by PNG on an image with a colour palette of less than 256 colours.

Analysis of the existing VDR standard shows that this limited palette can meet the existing measured colour performance requirement, and should be satisfactory for the subjective test as well. It is also necessary to capture the full screen resolution, see radar below.

However the resolving power of the new generation of radar may change this view.

The existing standard defines capture every 15 seconds. EMDM proposes that the average interval is 15 seconds to avoid synchronisation with blinking screen objects that may make them appear in a steady state. A shorter interval between images is foreseen for high speed craft.

Radar Images – digital display technology is only now showing the full limits of resolution of the traditional magnetron radar, the information content with the new solid-state systems promises to be even higher.

If the perception by the crew of a situation is to be understood then the VDR must store images without significant loss.

The existing VDR standard requires the primary radar, but crew will use the radar most suitable to the task; all post-processed radar images should be recorded.

Proposed additions to minimum standard

The VDR should incorporate new functionality to keep pace with the continued evolution of vessel equipment and technology.

Integrated Bridge Systems (IBS) and Integrated Navigation Systems (INS) – the greatest changes on the bridge are the introduction of INS and IBS.

The VDR needs to incorporate new functionality to keep pace with the evolution of vessel equipment

These permit the crew to display combinations of data from different navigational instruments in a task orientated manner. In order to follow the concept of crew perception EMDM proposes that all such navigational screens should be captured.

Radar Target Tracking – IEC61162 messages support target tracking with a target data rate that is much lower than the radar image, but the target information updates much more frequently.

Investigators may find this useful to fill the gaps between radar images and also to clarify the use by the crew.

AIS – AIS provides both IEC 61162 messages and display, but not all messages should be stored.

The Target Vessel and Aid to Navigation messages enhance the information from radar; the Own Vessel allows verification of information sent to others.

The display of an AIS minimum keyboard and display (MKD) should not be stored; it only displays a few lines of text and is of limited use to the navigator. AIS data on graphical displays should be recorded.

ECDIS – ECDIS provides not only the track followed, but also insight into the planning process and the use. The chart source and update history is also important.

Hull Motion – a modern 6 axes motion sensor could fit inside the VDR itself. It can provide valuable information on effects of flooding, crew fatigue and when combined with Hull Stress Monitoring on large vessels can aid assessment of global stress.

Alarms – a Central Alarm Management system (CAM) collects alarms ship-wide and presents them on the bridge. The CAM may process alarms to simplify display, and provide other related monitoring functions such as trending.

Where fitted, the CAM screen image should be captured every 15 seconds.

The Bridge Navigational Watch Alarm (BNWA) system issues an audible local alarm and, if not reset by bridge crew, escalates to remote alarms.

It is expected that the local alarm would be captured by the Bridge Audio microphones, the sequence of later remote alarm actions will not. There is no provision for BNWA outputs to the VDR for this purpose, but these may be captured as digital signals.

Draught – the draught has at least two uses. Where a single sensor and trim are available the record can indicate squat, which has safety implications both in risk of grounding and rudder response.

Where several draught sensors are available the record can show hogging or sagging, which may not be detected by current hull stress monitoring.

Data Safe – logs and other documents that are part of the regulatory compliance record or have other commercial value are carried aboard vessels.

The survival of some of these after a vessel loss may be important legally or commercially, examples are the navigational logbook and cargo records, others must be tamperproof, such as the Ballast Water record.

In most cases the traditional paper document will eventually be superseded by electronic versions, but its storage must be demonstrably tamperproof and ideally time-stamped. The VDR satisfies these requirements and is therefore a suitable archive for such data, provided the record handling is consistent with the legal authentication of electronic documents.

The VDR TRM offers a tamperproof safe; the FRM adds survivability for a recoverable record.

Application and benefits of proposed changes

The proposed technical changes to VDRs will enhance the forensic investigation of maritime incidents and perhaps extend their carriage.

A not unexpected outcome of the project is that further evidence has been gathered to show that safety and financial benefits are available from existing VDR information if steps are taken to regularly analyse the data.

This is not necessarily onerous, as the event and numerical data part of the record is built from standard sentences so it is possible to analyse this data automatically.

With respect to safety, the aviation industry has accepted that catastrophic events are usually caused by a sequence of minor failures and this has led to efforts at their elimination.

Regular examination of flight records to identify such failures followed by corrective action which maybe re-training or a change of procedure is part of the solution.

An owner could, within the limits of the VDR record, automatically identify parts of a voyage where the navigational and other behaviour appears to contravene company, port or collision regulations which needed further investigation.

Further detail can then be obtained from stored instrument display or other sources, although this may require human intervention. Examples are failure to adhere to a specified routing or maximum rates of turn, or to close watertight doors.

By the same processes the proposed additions to VDR record would provide opportunities to detect and eliminate bad practices, such as squat which increases risk of grounding and dramatically affects manoeuvrability and response, or hogging or sagging leading to increased hull stress.

There can also be substantial potential cost reductions.

In the article in *Digital Ship* in March entitled 'Going green and saving money', Peter Bond explored the potential fuel savings. These include optimising speed and trim for load and conditions, but this, as he acknowledged, relies upon a long period of data collection to characterise the vessel.

Some useful data is captured by the existing VDR, such as speed, engine demand, route, wind speed and direction. The proposed addition of draught and hull motion, although primarily for investigation, would be very useful in the characterisation to optimise fuel use since they could be applied to sea-state and wave height estimation as investigated by the EU HULLMON+ project and help characterise the environmental conditions.

A project between Teekay Shipping and BMT Seatech to optimise fuel use was reported in 2005. This included consideration of Propeller, Engine and Hull efficiency and thus hull fouling.

One of the issues identified was unreliability of manually acquired data. If ballast water records and other logs were generated from automatic data acquisition, the proposed storage in the VDR would concentrate the data and could facilitate this characterisation with minimal human intervention.

Finally, intermittent equipment malfunction may be detected before complete failure permitting planned corrective action which should also be more economical.

Process for change

The mandate for the VDR comes from IMO and the IMO NAV sub-committee. Proposals for change are made in the form of submissions to the NAV sub-committee.

Whilst the deliberation and decisions lie solely with the IMO member states, the source of submissions is not restricted to member states; the EU Presidency may submit papers on behalf of the European Commission and the EU Member States.

The EMDM reports concerning the VDR are currently under consideration by a technical consultation group within the EU; it is anticipated that some of the proposals will carry forward in papers submitted to IMO NAV55 in July, where VDR and S-VDR are on the agenda.

About the authors
Steve Austin is a research fellow at the University of Southampton, and has over 30 years experience in design and development of telecommunications and control systems. Mr Austin has worked for many years as a designer and consultant for control and automation systems, including work related to the MOD CVF project.

Philip A Wilson is professor of Ship Dynamics at the University of Southampton, having published more than one hundred and fifty journal articles and conference papers as well as several books. He is editor of the International Journal of Maritime Engineering, the journal of the learned society of the Royal Institution of Naval Architects.

Project members: Consilium(Sweden), Kelvin Hughes(UK), Kongsberg(Norway), Avenca (UK), Euroquality(France), Sodena(France), the European Commission Joint Research Centre(Italy) and the University of Southampton(UK)

More information and reports available at the EMDM website:
www.euroqualityfiles.net/emdm.

Raytheon to deliver first widescreen radar

www.raytheon-anschuetz.com

Raytheon Anschütz has announced that it has agreed a contract to deliver the first of its NSC radar systems with wide-screen capability to an unnamed German shipyard, with delivery scheduled for May 2009.

These new wide screen displays come in a 16:10 format, creating additional display space which allows for an increased, quadratic target area on the radar screen (PPI). The user controls a larger area of the display and needs to change the range less often.

The additional space also allows for a redesigned presentation of the radar screen, displaying all control functions and status indications while reducing submenus and offering direct operation of all important controls.

Andreas Lentfer, sales and marketing director at Raytheon, believes that wide screen displays are certain to become the standard option on the modern vessel bridge.

"In future, a modern bridge will increasingly be equipped with new 16:10 wide-screen displays," he said. "This will result in a radar image with greater size and clearer structure, which will make the use of radar easier. Furthermore, new functions contribute to improved situation awareness."

"The new radar presentation is a further development of the unique user interface of NSC radars - all operator buttons

are used for combined operator and status applications which help to save on space and de-clutter the display. Thus, the radar screen appears simplified and well structured with consistent large visual area buttons, which provides safe operation even under rough conditions such as heavy seas."

"Due to a common operating philosophy, it is possible to operate all radar functions with an ergonomic trackball. An operation panel with rotary knobs and soft keys is still available to directly control important functions such as gain, anti-clutter, bearing and range controls."

The NSC widescreen radar includes an auto-mode for dealing with sea clutter and the Raytheon RainRate function, which is used to provide rain de-blurring.

These features are part of an overall focus on improving situational awareness, says Mr Lentfer, which is aided by the widescreen's ability to show more information.

"For example, SeaScout (an anti-collision assistance system) analyses the traffic situation relative to all plotted targets and displays dangerous areas when the operator presses a single soft-key," he told us.

"Based on a target's position, the closest point of approach (CPA), heading and speed the function continuously calculates 'no-go areas' and shows them graphically on the screen."

"It is obvious that the larger radar screen provides additional intuitive assis-
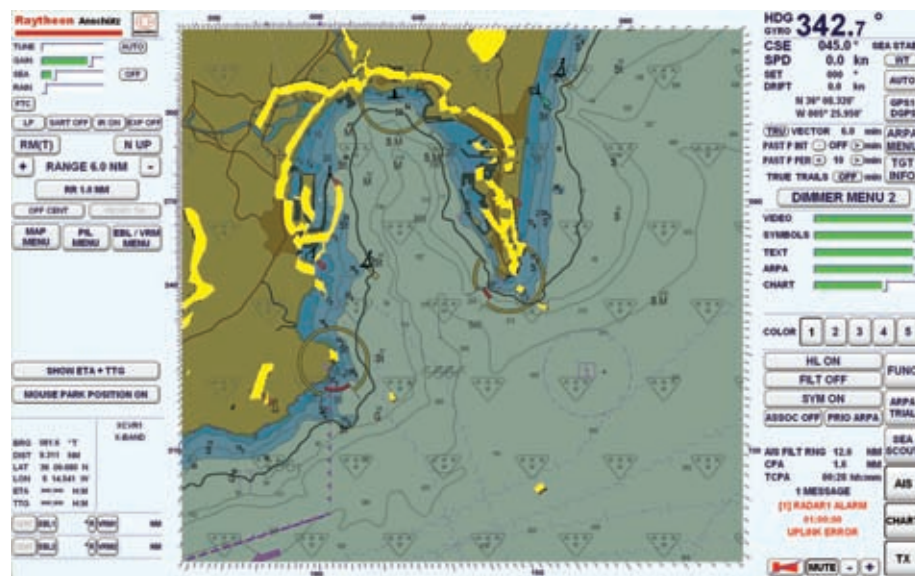
Widescreen radar allows for an increased target area and the addition of new functions to the display

tance to the navigator, to assist him in finding the correct course out of danger based on the specific traffic situation."

Mr Lentfer also points to the integrated autopilot function that has become a feature of many modern radar systems, which enable the user to change the course of the ship while watching the radar screen.

On the screen the course change is displayed as a 'curved heading line', and this function can be especially useful during evasive action, when the navigator has to keep the radar in view.

"During evasive action it is not only important to know if the new course fits into traffic situation, but also whether the water depth is sufficient for the vessel," he said.

"In this situation, chart radar can provide additional sea chart information on the radar screen to simplify the interpretation of the radar image. The chart radar achieves this by presenting ECDIS information in the PPI to indicate where the ship is located with respect to shore lines, shallow water areas and traffic separation zones."

DS

Twelve years, no accidents – the *Superstar Virgo*

Following the installation of a new integrated navigation system onboard and an improved set-up for bridge resource management, the cruise vessel *Superstar Virgo* has seen a significant improvement in navigational safety, writes Capt Gustaf Gronberg, fleet captain and SVP marine operation at Star Cruises

The critical role of safe behaviours in safety is gaining strength around the world. The International Maritime Organization (IMO) is expected to introduce Maritime Resource Management (MRM/BRM) training in the current revision of the STCW Code and Convention.

Star Cruises committed to this approach as early as 1997 when it became the first shipping company to design, own and operate a Full Mission High Fidelity Bridge Simulator to focus on MRM & Human Factors training.

The company has now entered its twelfth year free of navigational accident insurance claims.

The Star Cruises' *Superstar Virgo* operates in the Singapore Straits, an area with a very heavy density of traffic and recognised as one of the most difficult areas in the world for navigation.

Recently, during the last dry-dock of the *Superstar Virgo* in Singapore, there was a complete upgrade of the navigation system, which included the installation of a SAM Electronics NACOS 65-5 integrated navigation command system, consisting of 3 Multipilot-ECDIS integrated with radar overlay.

The new Trackpilot can be operated from five different keyboards, three of them located in the cockpit and one in each bridge wing.

The *Superstar Virgo's* bridge team has been very pleased with the upgrade, particularly with the radar transmitters that improve target detection and the possibility of displaying data from up to 8 targets – compared to only one in the previous version.

The possibility of permanently displaying the Track-pilot settings (Auto-pilot) in the conning displays is also a significant improvement, as the team will always be aware of the Track-pilot sensitivity they are working with.

Bridge communication

As most navigation accidents occur in Pilotage waters with a pilot onboard, ensuring safe navigation, good teamwork, and a clear understanding of task sharing between the pilot and bridge team are of paramount importance.

With the objective of further enhancing teamwork between the Pilot and Bridge team a dedicated working station for the pilot has now been installed in the cockpit

The integrated navigation system on the **Superstar Virgo** *features 3 ECDIS*

as a part of the equipment upgrade.

The pilot now has his own radar and VHF and is seated next to what Star Cruises calls the 'jump-seat'.

In confined waters the 'jump-seat' is the Captain or Staff Captain's workplace, when there is an increase in manning on the bridge as per the procedures.

Today it has become more common for pilots to bring their own laptop with ECDIS and electronic chart capabilities, and connect it to the ship's GPS or bring their own antenna.

They use this technology as their own navigational aid, and we have created space for them to put the laptop at the

working station so that they can still be seated in the cockpit.

With his own work station the pilot now has the same basis for decision making as the rest of the bridge team. That is, the whole team is enabled to have the same mental picture about the present situation and any planned manoeuvres.

The communication between the pilot and bridge team has been greatly improved by this new arrangement. Situations are now assessed by the whole team, which improves safety.

With the closely connected work stations, the Captain and Staff Captain will be able to better follow the pilots' communication with other ships, helping to reduce the risk of misunderstanding.

One of the best examples of the benefits that this has created comes in a statement from the Chief Pilot Captain Teo Soon Huat from the Port of Singapore Authority.

He said: "With the addition of this workstation, Star Cruises has raised the bar of standards of safety and professionalism and the better team performance ensures the overall safety of own ship and other port users." **DS**

Improving positional accuracy – GLONASS

With the Russian GLONASS positioning system set to take a major step towards completion with the launch of its final expected satellites, due in 2009, Dr Andy Norris explores the potential benefits of this alternative to GPS

The Russians are continuing to have success in their efforts to have a complete constellation of GLONASS global navigation satellites. Further satellites were launched in December 2008 and became operational in January.

This means that twenty are now in position, with four more (plus any spares) needed for completion. These are expected to be launched during 2009, with the design coverage being available from 2010.

Even with the present twenty operational satellites there is a good probability that more than four are in view from any position on the Earth, and only a very small probability that there are less than four.

This means that GLONASS is already an effective global positioning system and the marine industry should therefore be seriously considering its dual use with GPS.

Like GPS, GLONASS started as a military system with its first satellite launches in the early 1980s. Unfortunately, after a good start it suffered from financial and technical issues. These lasted until a few years ago, when the decision was made to revamp the system.

All satellites now in use are relatively new, the oldest having been launched in December 2003.

Much of the effort has been directed into making the service useful for international non-military use. In 2004, a detailed GLONASS Interface Control Document was put into the public domain to allow manufacturers to design receivers for civilian applications.

There is an informative website (www.glonass-ianc.rsa.ru) that supplies constantly updated information on the service, including a real-time map of the satellite coverage.

Design features

GPS and the in-development satellite positioning services from the EU (Galileo) and China (Compass) use digital modulation known as code division multiple access – CDMA. It allows different satellites to operate on the same frequency without causing mutual interference.

The GLONASS signal is also digital but does not use CDMA. Instead, the signals from different satellites are transmitted at slightly different frequencies in a method called frequency division multiple access (FDMA), which is really just the historical way of separating radio stations.

The transmissions are centred on two frequencies in the L-Band, 1620.0 MHz and 1246.0 MHz. These are known as L1 and L2. Each of these is comprised of 21 discrete carrier frequencies, although only 15 are used by the present service.

Since a full constellation consists of 24 satellites, some need to operate on the same frequency but these are always positioned on opposite sides of the Earth, avoiding mutual interference.

On older satellites the civilian service is restricted to the L1 frequencies but on newer ones L2 is also available, giving the opportunity for improved ionospheric correction.

After demodulation of the FDMA signals, the determination of position within a GLONASS receiver follows conventional GNSS procedures, based on the determi-

A combined GLONASS/GPS receiver, like this one used by the Russian military, could help to improve positional accuracy

nation of pseudo ranges and applying the necessary corrections.

GLONASS uses a coordinate datum known as PZ-90. Its first version differed from WGS84 by up to about 15 metres but a recent revision, PZ-90.02, has made them closely aligned.

Both WGS84 and PZ-90 are now effectively linked to the International Terrestrial Reference Frame (ITRF), which is being constantly updated to take movements in the Earth's frame into account, such as those caused by plate tectonics.

The accuracy of the GLONASS civilian service is presently inferior to GPS, perhaps of the order of 50 metres.

It appears to be presently hampered by inaccuracies in its predictions of satellite positions. This aspect can probably be improved by the GLONASS authorities with no changes required to receiving equipment.

Integrity

Over the past 15 years the marine world has come to rely heavily on the continuous availability of accurate data from a single system – GPS. In general, this has not been

a problem, as GPS has maintained a most notable record of system availability and overall accuracy.

However, marine accidents continue to occur when there is a problem with the indicated position on ships' equipment.

This is despite the fundamental principle of navigation of never relying on a single source of information. All navigators should therefore be regularly checking the indicated GPS position with other information.

In coastal and harbour areas both visual and radar data are essential for this verification. It takes little time to do and can, in effect, be continuously monitored.

On ocean passages estimated position techniques are usefully used as a check on GPS, maybe calculated once per watch. So is astronavigation, but its availability can be appalling and cannot generally be considered to be anything other than an emergency backup.

The problems that cause loss of indicated position are almost invariably due to faulty equipment on the ship, either being incorrectly installed or a failure that has developed in the electronics or equipment interconnections.

In fact, modern equipment designs are becoming increasingly able to alert users if there is a loss of positioning accuracy or if the equipment has developed a fault. However, there is a limit to which a single system can determine that there is a problem.

Also, some of the regulatory required indications need users to be quite familiar with electronic positioning techniques, which unfortunately is not always the case.

For instance, all marine GPS receivers provide an indication if a user specified HDOP (horizontal dilution of precision) has been exceeded. Is this understood by all users, including how to set it up, what a suitable HDOP limit should be – and what should be the appropriate action when an indication is given?

Receiver Autonomous Integrity Monitoring (RAIM) has a range of indications, such as safe, caution, unsafe, in operation. Is RAIM properly understood and do users look for such indications?

Differential systems also give a variety of indications to the knowledgeable user.

Surely what the user really needs in the first case is a firm indication that the equipment is or is not correctly working, and to be given some indication as to the accuracy of the fix.

This can only be positively achieved by

working with more than a single positioning system. This is the significance of the new availability of GLONASS.

Dual receiver approach

Two integrated GPS/GLONASS receivers would form the basis of an extremely good system. Despite the differences in signal format and frequencies, affordable integrated designs are now possible because of advances in the creation of integrated components.

Each receiver should be fed by its own antenna capable of receiving both services. Within each receiver the software will be able to form several positional estimates.

The best position, which could be based on signals from both satellite systems, would be normally output to the user via an automatic unit that compares the outputs from the two dual receivers.

Each dual receiver would internally compare positions from GPS- and GLONASS-only solutions. If they differed by more than a defined amount the unit would generate an alert to the user – it could indicate a system level problem.

The 'comparison box', ideally part of an IMO compliant Integrated Navigation System, would automatically compare the output positions of the two dual receivers. Again, if differing by more than a defined amount a user alert would be generated identifying that there is a problem.

An automatic system is far more reliable in doing this than a human being. However, like a human it can only indicate that there is a difference between the two systems but not necessarily determine which system is inaccurate. Three or more systems are necessary to do this.

With further legislation a dual GPS/GLONASS set up would allow own ship's position to be shown on an ECDIS with a symbol that immediately signifies the integrity and accuracy of the fix. For instance, green could indicate good accuracy and integrity, orange use with care and red do not use at all.

Even better would be for this colour scheme to be accompanied by an indication around own ship showing the area extent of the likely error.

The use of a dual pair of GPS/GLONASS receivers is highly recommended but suitable type approved equipment is not yet commonly available. Prudent ship managers should carefully assess the advantages of the approach outlined here and then demand solutions from manufacturers. **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