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Digital SHIPPING

Seatrans will always strive to be in the forefront of the development.

Seatrans will always strive to be in the forefront of the development. We therefore put a lot of efforts into monitoring and analyze the latest development in the industry. This being digitalization, new fuels, battery and propulsion technology or autonomous/ unmanned ships. There is a lot going on, and for sure these developments give new opportunities for us.

We already see great benefits in utilizing our data warehouse in ways that can improve our operations. We have a practical approach and prefer to take one step at a time. Gaining experience and learning for each step is important for further developments. There will always be a cost/benefit analysis before any decision to implement new things, and we concentrate on the easy targets first.

Autonomous or unmanned ships in some scale is still years ahead. However, the technology is developing fast, and it is areas here that can be useful for Seatrans. Real time monitoring and e-navigation are examples that can increase our safety and give more efficient operations.

We will continue to evaluate the trends and developments and gradually move towards a more digital environment in a safe and viable way.

Kind Regards
Lars Helge Kyrkjebø

Content

Cover photo:
The Pacific Ocean. It can be calm. It can be quiet. In fact, the Nordic name for the Pacific translates as the quiet ocean. The sunsets remind us of shorter days and longer nights. Safe voyage – to everyone!

Captain Joachim Rubin, Trans Catalonia, took this picture while crossing the Pacific Ocean north of Hawaii, reaching South Korea via the Japanese island Kanmon, a total journey of some 8,700 nautical miles.

RS(+)

SEATRANS SUPPORTS SAFETY AT SEA

Seatrans has prolonged its sponsorship of Redningsselskapet for a period of five years. "Safety at sea is mandatory for all our work. By supporting Redningsselskapet and their rescue boat RS Bjarne Kyrkjebø, we are displaying our strong commitment to safety at sea to our local communities. In addition, our office staff can take advantage of the courses provided by Redningsselskapet for owners of sail boats and cabin cruisers, who aim to get a licence to use these kinds of vessels – and who want to learn how to handle their boats safely and help ensure safety at sea for themselves and other boaters."

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Eleven vessels have completed an intense docking programme:

OUR GUYS have delivered more than can be expected

Purchasing: The comprehensive docking program was a challenge for the Purchasing Department who had to find spare parts in record time. They delivered, says Helge Steinsund. (From left) Wenche Swahn, Tom Breistein og Vibecke Skogstrand.

It was a "once in a lifetime" experience and it will not be repeated. However, the five superintendents in the Seatrans Ship Management Technical Department have proven that they manage what others regard to be close to impossible.

In addition to planned work, dockings always lead to surprises and unexpected issues to be solved there and then. Helge Steinsund, Head of the Technical Department says the team probably spend all the autumn and winter months on updating all internal reporting and additional paper work.

"As we speak, we still have one vessel left, but all in all we have made it. Extremely hard work was the only way we could complete this, and the superintendents who faced the challenges in dry dock and along the dockside have demonstrated a unique capacity to perform with quality and their ability to improvise. There is one other group that has to be mentioned: the three wonderful members in our purchasing department. First they had to find out what was needed of spare parts and equipment, and then they had to find them on the market or even have spare parts made by specifications. This is not a job for novices. Thanks to their skills and experience, they have done an excellent job and helped us succeed," Helge Steinsund comments.

One of the learnings points is that by utilising the team of superintendents for dockings, you no longer have the resources to handle the unexpected. And certainly, the unexpected happens. "We have had one vessel with main engine breakdown and two other vessels that needed immediate attention. We had to hire some external help for a while, but again, you need the knowledge of the superintendents who have the day-to-day responsibility for the vessels. External help is a relief to some extent, but it can't replace in-house experience collected over the years."

"This docking operation really made us stretch our capacity as far as it can go. We made it, we gained a lot of experience, and we will probably never have to do it this way again," Steinsund concludes.

New requirements under implementation to reduce environmental footprint from maritime sector

CO_2 emissions to be monitored, reported and verified

"We are now ready to forward the ship-specific monitoring plans for the upcoming MRV regulation. These will be reviewed by our verifier and hopefully approved during the autumn, and then reporting starts from 1st of January 2018," says Henning Rebnord in Seatrans Ship Management.

All vessels calling at EU ports must report their CO_2 emissions on a per-voyage basis (see fact sheet). "We have been informed about this for quite a while. However, the extent of the reporting has only recently become clear and the guidelines from the EU are still being debated, even as the deadline for submitting plans approaches," Henning Rebnord continues.

"We have chosen to cooperate with DNVGL both as a verifier and software provider. They have good knowledge of the latest developments from the EU, and we can be sure that we are in compliance with all requirements. In addition, IMO will probably come up with their own CO_2 reporting scheme in 2019. By cooperating with DNVGL, we are confident that we will be on top of that as well in due time."

As for the software, it was decided a year ago to choose the DNVGL Navigator Insight as a replacement for the old VIP software for chemical tankers. No software is perfect, but it gives us a good balance when it comes to requirements for operations, performance and MRV. The tanker vessels have used it for some time, and some dry-cargo vessels have tried it as well. During the autumn, the software will officially be launched for the dry-cargo fleet as soon as the requirements for reporting have been worked out.

Measuring points

In order to get the information required, a lot of data has to be reported on every arrival and departure, as well as the noon reports.

"We are fully aware that this does increase the reporting workload onboard. We are looking at ways to automate the reporting somewhere down the line, but for now it is a manual job," says Henning Rebnord.

"One positive outcome is that we are able to take all the data from the Navigator Insight into the company data warehouse. This means that we will have this data available across departments, so at least vessels do not have to report the same data in multiple ways. Increased reporting also generates more data for performance analysis and optimisation."

The early days will be a learning process for all parties involved. The reporting may seem "overwhelming" at first, but it seems to work out well once the vessels get going. Henning Rebnord notes: "What's more, I really appreciate the constructive feedback I have got from the users onboard. It helps us make the small tweaks which improve the process."

A beginning

While the EU is working on getting reports in order to place a focus on the issue of emissions, many believe that the ship owners will have to pay the "external cost" caused by the emissions from their vessels. As the CO_2 figures will be published, low emissions could also be a selling point when charterers are looking for cargo. Henning Rebnord continues: "This can be the case in a few years' time. The EU has very ambitious targets for CO_2 reductions, and by adding actual costs to the emissions from the maritime industry, it will be a clear incentive to save fuel and even invest in alternative technologies for propulsion some years down the line."

Initial experiences

"Compared to the old software, VIP, the new DNVGL Navigator Insight is far more demanding. We have to assign three to four persons to provide me with updated information every time we sail, anchor or call in to a port. This is rather complicated and time-consuming. For the time being, we are using VIP in addition, but I guess we will get used to the new DNVGL application as well," says Captain Zarko Orlic on Trans Sea, who measures three different elements. Onboard Copernicus, Captain Arek Popik describes their experiences so far: "We have used the new DNVGL Navigator Insight for a couple of months, and we think it is all right. On Copernicus, we only use gas oil and reporting is easy. We had some problems in the beginning, but with good manual instructions from Henning Rebnord, we became familiar with the new application quite quickly."

The MRV
regulation in a nutshell

The European Commission (EC) is bringing emissions from shipping into its 2009 climate and energy package. The Monitor, Report and Verify requirements (MRV) are designed to progressively integrate maritime emissions into the EU's policy for reducing domestic greenhouse gas emissions (EU regulation 2015/757). MRV requires ship owners and operators to annually monitor, report and verify CO_2 emissions for vessels larger than 5,000 GT and which call at any EU port. The results will be published on a regular basis. Entered into force on 1 July 2015, the regulation will become fully effective on 1 January 2018. Shipping companies will need to prepare a monitoring plan by 31 August 2017 at the latest for each of their ships that falls under the jurisdiction of the regulation. They will have to monitor and report the verified amount of CO_2 emitted by their vessels on voyages to, from and between EU ports and will also be required to provide information on energy efficiency parameters (see below). Data collection on a per-voyage basis will commence on 1 January 2018. Once the data is verified by a third-party organisation and sent to a central database, presumably managed by the European Maritime Safety Agency (EMSA), the aggregated ship emission and efficiency data will be published by the European Commission by 30 June 2019 and then every consecutive year.

Monitoring and reporting
Ship owners will have to monitor the following parameters on a per-voyage basis:

- Port of departure and port of arrival, including the date and hour of departure and arrival
- Amount and emission factor for each type of fuel consumed in total
- CO_2 emitted
- Distance travelled
- Time spent at sea
- Cargo carried
- Transport work

In addition to the companies reporting annually aggregated figures for the parameters, the data is to be used to calculate and report average energy efficiency.

The basis for the calculation of CO_2 emissions will be the fuel consumption for voyages starting or terminating at any EU port.

Source: https://www.dnvgl.com/news/preparing-for-the-mrv-regulation-revised-version--75297

Future shipping **– trends and possibilities**

By Torbjørn Wilhelmsen

Looking back, the shipping industry has always been interested in taking part in new technology whenever it is ready for safe and profitable implementation.

The first fundamental shift came as steam relieved the sail from 1800 and upwards. The next fundamental step came when the steam engine systems were replaced by combustion engines. For many years, the shipping industry used both technologies, but the development of the maritime combustion engines has been more like an evolution than a technological revolution. Simultaneously, the maritime industry has taken advantage of a number of innovations from shore – not least within communication between vessel and shore.

However, these days we seem to be witnessing a new paradigm shift in the shipping industry. "Digitalisation" is not just a new buzz-word but a new window of opportunity with seemingly infinite possibilities. The only thing we do know is that it will be a driving force in the development of future shipping.

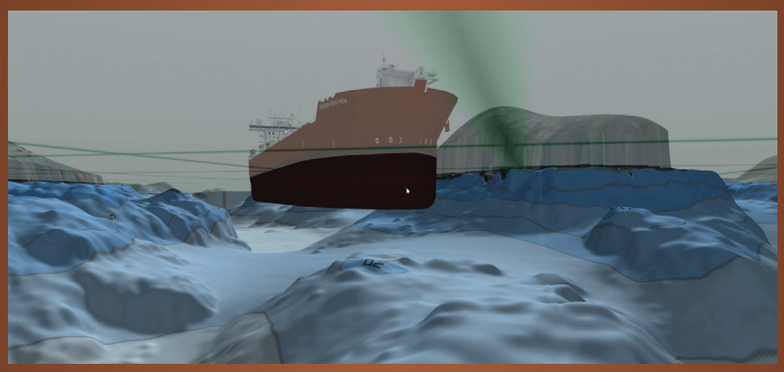
Experts are talking about three areas for significant innovation: Construction (design), engine power systems and navigation. With the latter, the new generation of navigation systems are more or less ready for sale on the shelves. However, it will still take years to achieve approved industry standards on a global scale.

" Digitalisation" is **not** just **a** new **buzz-word**

What are e-navigation?

In MSC 85 (from 2008) the ILO committee defined e-navigation as follows:

e-navigation is the harmonized collection, integration, exchange, presentation and analysis of marine information on board and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment.



e-navigation is on the agenda for the many parts involved in the shipping industry. Map suppliers are among these. New map technology opens for better navigation. (Illustration from Kongsberg Digital)

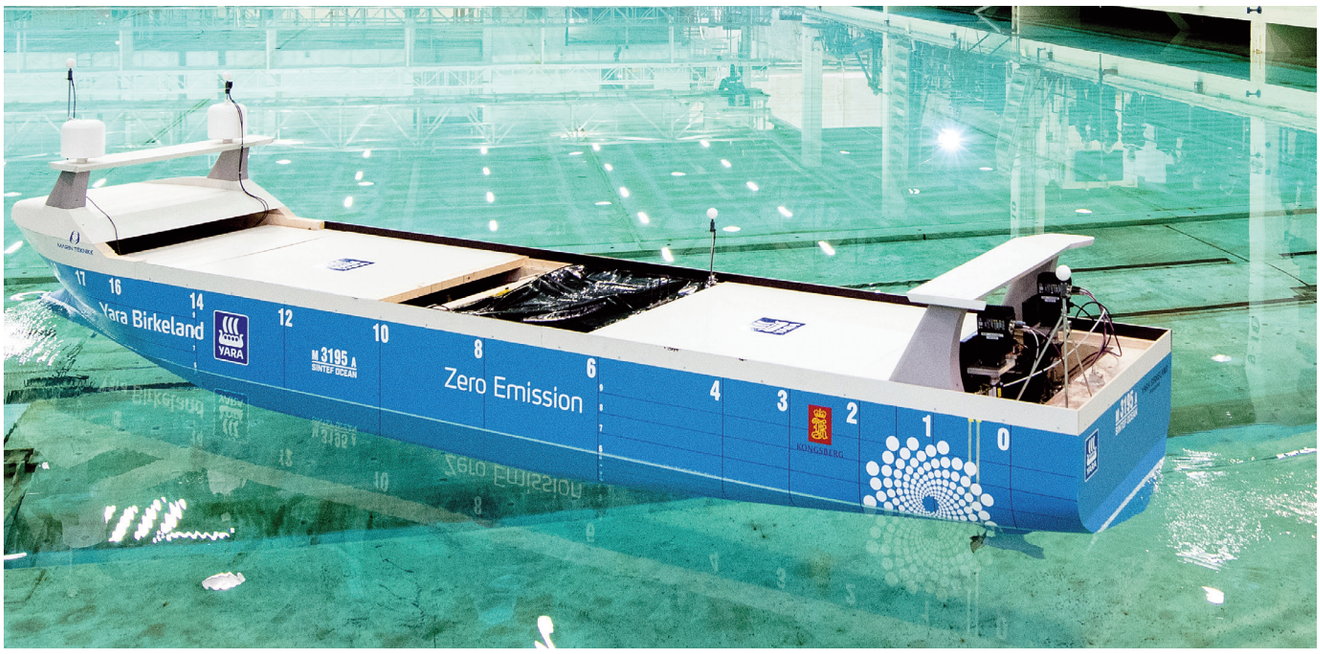
This includes integration of many of today's proprietary or "standalone" systems, such as

- Automatic Identification System (AIS),
- Electronic Chart Display and Information System (ECDIS),
- Integrated Bridge Systems/Integrated Navigation Systems (IBS/INS),
- Automatic Radar Plotting Aids (ARPA),
- Radio navigation,
- Long Range Identification and Tracking (LRIT) systems,
- Vessel Traffic Service (VTS)
- Global Maritime Distress Safety System (GMDSS)
- Radiocommunications and Search and Rescue (COMSAR)

What are the benefits e-navigation?

Navigational errors and failures, including those caused by the human element, are significant in over half of incidents on vessels. Increased safety and minimised risk are important drivers for the development of e-navigation. On a global level, e-navigation will:

IN THE TEST BASIN: Late September, a model of the Yara Birkeland was tested in the SINTEF test basin in Trondheim. (Photo: Ole Martin Wold, Kongsberg Maritime)



- Standardise bridge design, which globally enhances the opportunity to work cross-border, improves training efficiency and reduces material cost. Similarities between nations and vessels would also increase efficiency and improve safety.
- Reduce trade barriers through reduction of local solutions and bureaucracy
- Reduce the risk of accidents and incidents

For coastal states, flag states and port states, e-navigation will:

- Improve training efficiency, certification and supervision
- Improve situational awareness by providing easy access to standard and reliable information
- Improve efficiency within supervision, control, as well as coordination and information
- Reduce the risk of accidents and incidents through efficient use of VTS services.

For branches, organisations and industry, e-navigation will:

- Provide flexibility with regards to training and rotation as standardisation would lead to a more efficient market for standardised bridge products
- Simplify reporting thereby reducing the workload for operations
- Improve safety for own fleet
- Improve situational awareness for bridge personnel thereby improving the speed and efficiency of decision-making
- Increase navigational safety in VTS regulated areas
- Provide a direction for product development to a wide market
- Provide the opportunity for new products and solutions.

For shipborne users, e-navigation will:

- Simplify daily work and training
- Improve human-machine interface, usability, familiarity and navigational safety
- Improve time-saving and efficiency on board by providing easier access to information, thereby improving the response time/problem-solving abilities of bridge personnel
- Improve navigational safety by reducing the administrative workload
- Improve confidence in the use of navigational equipment
- Enhance the quality, accuracy and reliability of information, thereby improving situational awareness and navigational safety
- Provide easy access to need-to-know information in a user-friendly, single window
- Improve familiarity with systems through standardisation
- Improve service and safety in VTS-regulated areas by providing easy access to available services and warnings
- Reduce bureaucracy and thereby support more efficient use of bridge resources
- Reduce the risk of accidents.

Source: Wikipedia.org

SeaQ Horizon Bridge - from concept to reality: Vard Elektro's new design concept is already in use, and many more will come.

e-navigation:

When the Captain controls the vessel

from an office onshore

"Shipping will always require manpower, but some of the crew may be able to work from home". This was one of the statements announced during a conference about e-navigation in Oslo in September. It might be true, but no one would say anything about when this could become reality. Meanwhile, the technology evolves very quickly as do the challenges that have to be overcome.

Autonomous vessels seem to be a reality in a few years. This summer, the Kongsberg Group launched a concept they have developed for Hydro, the global fertiliser company. Their main production plant is located on Herøya, close to Porsgrunn. Every day, countess vehicles transport the fertiliser by road to Brevik where the goods are loaded onboard vessels for further transport at sea. The road transport is a headache. It causes a lot of heavy load traffic (20,000 containers annually) on a road system not built for this kind of traffic; it pollutes and is expensive, and it may cause accidents along the way. Meanwhile, the production plant is located along the fjord. Why not use the water for transport to the cargo port?

With and without crew

Kongsberg decided to design a totally new vessel with automated loading and unloading, a battery-based engine and propulsion system, and a completely autonomous navigation setup. The animation video showed a perfect operation, apart from one glaring discrepancy. Would there be absolutely no staff on board? The answer was no,

not until the national (or international) framework is in place. Before that time, there will be a crew on board, and the vessel may have diesel engines as well. The plan is to start construction of the new vessel in 2018 and start operations by 2020.

So, what is the situation?
e-navigation is meant to increase navigational safety and increase efficiency. The idea is to make access to ports and restricted waters easier, and the vision is to achieve global standards for e-navigation in order to improve the sustainability factor for the shipping industry. e-navigation includes vessels and on shore operational facilities, ports and traffic administration and governmental reporting. It is all "within reach" but the integration of onboard and onshore systems with supporting information required and the need for standardisation will take time.

Free data flow
The Norwegian Coastal Administration is an important facilitator for the development and they are pushing IMO to speed up the efforts needed to get the standards defined and set. There are groups working with this, such as the IMO-IGO Harmonisation Group on Data Modelling (HGDM). The aim is to "develop the technical basis by defining the format and structure of data that are to be used by all Maritime Service Portfolio (MSP) providers, regardless of the nature of the MSP." No one knows when this will be available. Some talked about ten years from now. But the will is there – and it will happen.

The digital pilot
"The world is in change." Yes, that is true. Even the landscape is changing, and the majority of it lies under the sea surface. We still have much to learn about the seabed. Most of the water depths noted on sea charts are up to 100 years old, and there are very few measuring spots. The reasons for this are both lack of priority and military unwillingness to provide more detailed information. This is now changing. In Norway, the Norwegian Mapping Authority is working on new and updated maps with graded depths. Along the coast and in the fjords and around Svalbard, the depths vary quite a lot, and especially close to larger rivers you may find the seabed changes during seasons. With new maps, it will be possible to provide far more detailed information to the navigator. Here too, international standards are requested by the industry. As an add-on, the "Norwegian pilot" which is available in a PDF format, can be connected to the map and thereby provide important information on the screen as you sail. Standard routes can be stored thereby reducing the need for online communication. Additionally, you may provide feedback to the authority and of course, the application will have an English version.

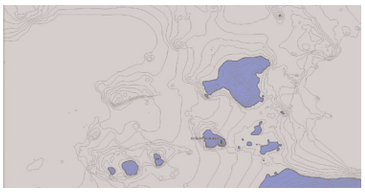
The digital bridge
Today's bridges reflect an evolutionary development as modern technology has occurred. One of the consequences is that there are a rich flora of screens, knots, levers and systems which hardly communicate with each other. The bridge contains many devices; devices that can also break down. In some cases, the numerous screens make the temperature in the wheel house uncomfortably high. "There are a lot of very good products on the market, and certainly the clients have their preferences, too. As bridge designer and producer, this is a challenge. We asked ourselves: "How can we improve the working environment for the navigator?" We concluded that we had to re-innovate the bridge design. We spent one year on developing a device that translated all the data flow and made the different systems talk with each other and then we built a prototype," Vice President Ove Bjørneseth in Vard Electro explains. "We call the concept SeaQ Horizon Bridge and it provides system integration, a remarkable reduction of knots and levers and an improved overview for the navigator. In 2015, we made a prototype and this year we had our first delivery. We recognised a lack of common guidelines and regulations in this field, but we had a good and close cooperation with DNVGL who assessed documentation of the robustness and safety of the design. The client who received our first delivery asked: "Why do we have such a large bridge?" Today, we work closely on development with suppliers of equipment to the bridge, and we look forward to making more improvements," Bjørneseth sums up.

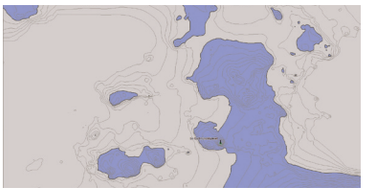
ON THE PUSH: Norwegian authorities are eager to open the door to new technology, says Svein David Medhaug. International organisations, however, are not working at the same speed.

NEW DIMENSIONS: The navigator needs better maps and will soon have them. Gudmund Jønsson illustrated how you can plot various depths into a map and see how safe the waters are for the vessel you operate (See illustration, next page).

A change of focus

What is left then, for the navigator? One of the "intelligent truths" is that autonomous navigation will turn the navigator's focus from where to avoid, to where to sail. The navigator will be directed to corridors dedicated for the vessel. In the Kongsberg/Hydro Birkeland-case, the autonomous ship probably will have a corridor of its own, separated from other vessels. Certainly, this will be a great challenge in narrow waters. However, the idea is to focus on where to position the vessel, and not use mind craft or artificial intelligence capacity on all the reasons why (or why not). This will challenge coastal administration, map providers and providers of navigation systems. In the longer run, we may well see 100 percent automated vessels. In the shorter term, we have the option where from sensors and combined IT technology run a vessel without bridge manpower when at open sea. This will simplify jobs on board. The path towards autonomous vessels seems to be long and will require overcoming or even eliminating threats from hackers, pirates and "in vessel failures." Some day in the future though, skilled seamen may run their vessels with a joystick. From home.



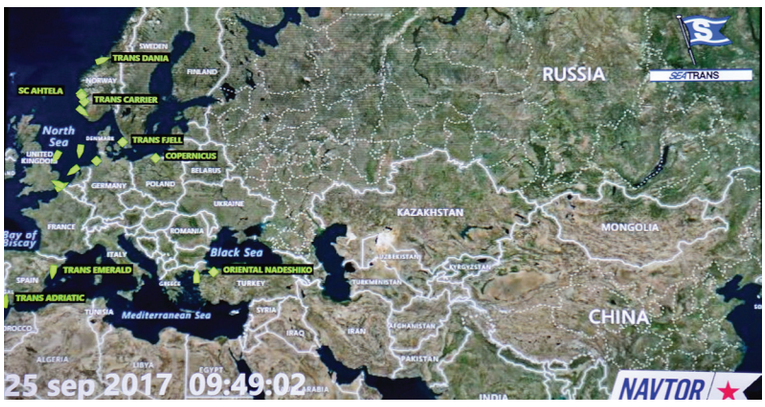


Seatrans pioneers in maritime digitalisation

"Nornews Express was the first vessel to implement digital maps on the bridge. We are talking about the early 1990s before NAVTOR was established. However, this installation was one of the success stories that created this leading company within digitalisation at sea. We still cooperate very closely with NAVTOR and they still refer to good old Nornews Express," says Captain Knut Havn who is QHSE and Marine Manager in Seatrans Ship Management.

The Nornews Express installation became a reference for the industry. These days, digital maps are an obvious element, similar to ADP – Admiralty Digital Publishing. The advantages are remarkable. "In earlier days, every vessel had to have a library of navigation books. I was the 1st officer and had to correct all the books by clipping and pasting all the corrections we received on a weekly basis. It was quite a job, and the books became...not very nice at the end of the year. The next year, new books arrived and it was quite a job for the people on shore to get the books out to all the vessels. DHL and other such companies earned a lot form this. With digital devices on board, all the maps and navigation books are updated automatically. The navigation officer has reliable maps and physical distribution is just a memory. And not least, our best qualified men on board now have the time to deal with more challenging tasks. Vetting comments from the bridge decreased significantly after this element of the digital age reached the ships. Today, every vessel has a double set of the digital mapping system with individual power supply. Over the years, we have had only two cases where the navigation system has forced us to stay in port with one map system down. All in all, these systems are very reliable," Knut Havn concludes.

Seatrans has always been known for its innovative attitude. Knut Havn recently signed a contract to participate in a project introducing augmented reality to vessels. (Ref. article on page 11) "We have not started yet, but we will take part in the project, which aims to increase awareness and information availability for the navigator on the bridge. It is a fascinating technology, and Seatrans is interested to see if we can benefit from it in terms of safety and efficiency on the bridge."



AUGMENTED: The future captain may see more than the eye can see. With glasses with a screen inside, the navigator has more information available, illustrated by Svein Olav Tørresdal.

Augmented reality on the bridge

"The plan is to start testing the hardware and software next year. In the meantime, we are finishing the software and adjusting the visualisation in close cooperation with our clients," says Vice President Svein Olav Tørresdal in North Invent.

"We are talking about virtual reality, or augmented reality to be more precise. In the future, you will be able to look through the walls of your wheelhouse. Fascinating, isn't it?"

"I got the idea back in 2011 but the technology needed was not developed at that time. Over the last few years, 3D technology really has taken off, but we are still at the very beginning of a new era," Tørresdal continues. "My background is from maritime service engineering, and I recognised the navigators' need for accurate and real-time information. We know that a few seconds spent looking at the radar or ECDIS may be enough to cause grounding and disaster. With the new augmented reality, the navigator will not only have access, but real-time visual information based on the ECDIS and Radar information on top of reality. The navigator does not need to visually relate the information from the monitors on the bridge to the reality outside."

Seatrans has decided to take part in the development by allowing testing on board. The time schedule is tight, but sometime late in 2018 or in 2019, the "new reality" will be available on a Seatrans vessel. The arguments are obvious. "This is all about improving safety at sea. For high speed vessels or vessels trafficking narrow waters with heavy traffic such as the English Channel, the new equipment will improve the conditions for the navigator on the bridge. For larger vessels or vessels on DP missions, the augmented reality glasses can give you important information while you are looking outside the windows in critical operations, or when the men on deck are performing critical operations in open sea. In the glasses you have a monitor, camera, loudspeaker, microphone and ordinary vision. You can decide what kind of information you want. Crew on deck can for example have a radio transmitter sending actual positions to the computer, and this data is visualised for the navigator or crane operator. The options are many," Tørresdal explains.

The augmented reality headset trial version is made by Microsoft, but it is said that similar equipment from other suppliers will soon be launched on the market. It is too early to say, but by creating the software on an open platform, the market will expand and the prices will go down. "Our aim is to provide the shipping industry with reliable software. There are no standards yet, but we cooperate close with NTNU in Trondheim, Sjøkrigsskolen, classification societies and NAVTOR and their NAV-station. We are looking forward to taking bridge information systems into an augmented reality," Svein Olav Tørresdal concludes.

New options – better insight

Data warehouse

gives value to existing information

"Until recently, data warehousing was reserved for very large and rich companies. They spent millions of dollars on developing their own systems that took them miles ahead of small and medium-sized companies. New data technology has put an end to this. Nowadays, every company can afford to enter a data warehouse without being ruined. This is what Seatrans has decided to do, and I am convinced that we in common will find benefits and areas for improvement on many levels in the company," says CEO Endre Markussen in Firstpoint BTC, the provider of software and systems for the new Seatrans Data Warehouse.

The numerous operations, systems and engines in the Seatrans companies create tremendous amounts of data. Data is information. Information is knowledge. However, it is impossible to get a hold on the bigger picture by studying one piece of knowledge at a time. You can use various IT tools to create tables and compare aggregated data, for example day by day, week by week and so on. The challenge is to combine data from various sources to provide a bigger picture and to enrich the information and relevance for the reader – or end user. This is where a data warehouse comes in.

"New IT technology has made it possible to easily customise both the processing and presenting of complex information. The tools have become less expensive, and by using cloud computing everyone has access to highly sophisticated software everywhere. You can, for example, download the information you need on your smartphone," Endre Markussen explains.

By entering a data warehouse, you no longer need to copy and paste tables from sources and process it in Excel, for example. You identify in advance what information or data you need from the

sources available, and you can save days of work in one single report. And by using new presentation software, (such as the ones you recognise in PowerPoint and Excel) the standard reports you request will have an attractive layout. Visualisation is an important part of the options in the cloud.

"The first standard reports are already installed and available, ready to be used, but we will progress week by week by making more relevant standard reports available to the Seatrans staff. Our goal is also to provide access for the Captains while at sea. Seatrans is in the forefront in this field, and I am sure, as our creative counterparts in Seatrans are, that this will provide decision-makers in Seatrans with business intelligence that provides improved competitive strengths. We have only seen the beginning of this, and I am very happy to say that we have been challenged by various parts of the IT team at Seatrans and their IT infrastructure from the very beginning for Firstpoint back in 2007. We have had a long journey together already, and data warehousing represents new areas to explore for both of us," says Endre Markussen.

FACT BOX

What is a data warehouse?

- A necessary tool for reporting and data analysis
- A core component of business intelligence
- Extract, transform and load gathered information from various operating sources
- Creating analytical reports for knowledge workers and leaders
- The warehouse carries out data cleansing (if necessary) and then transforms, catalogues and stores the data
- This makes it possible to combine data from various sources in order to give new insight into the processes and capacities in the company
- It was invented in the late 1980s by IBM. However, data flow was a huge problem at that time. This is now solved and is a key to data warehousing itself.

CHEMISTRY

Polyols

History
The discovery of polyurethane dates back to the year 1937 by Otto Bayer and his co-workers at the laboratories of I.G. Farben in Leverkusen, Germany. The initial works focused on PU products obtained from aliphatic diisocyanate and diamine forming polyurea, until the interesting properties of PU obtained from an aliphatic diisocyanate and glycol were realised. Polyisocyanates became commercially available in the year 1952, soon after the commercial-scale production of PU was witnessed (after World War II) from toluene diisocyanate (TDI) and polyester polyols. In the years that followed (1952-1954), different polyester-polyisocyanate systems were developed

Uses
Polyols are one of the components used to make polyurethanes, the other being an isocyanate. There are two main types of polyols: polyether polyols and polyester polyols. Polyether polyols are the most widely used with the main applications being rigid and flexible polyurethane foams. Rigid foams are used mainly in insulation, refrigeration, packing and construction while flexible foams have applications such as upholstery, mattresses and seats. Polyols can also be used in elastomers, adhesives, coating and fibres

Safety
Transport of hazardous products such as MDI – TDI requiring procedures and instructions for safe handling and protection of the environment. These activities shall be properly planned and implemented onboard by owner management of the vessel. All crew members involved shall be briefed on the potential hazards and the requirement for use of safety and PPE must be known by all crew involved in cargo operations.

The market
The opening of Sadara Chemical Company's plant in Jubail, Saudi Arabia will add new capacity to the global polyols market. Sadara is a joint venture between the US's Dow Chemical and Saudi Arabia's Saudi Aramco.
There will be approximately 400,000 tonne/year polyether polyols unit at the plant with a 390,000 tonne/year capacity for feedstock propylene oxide at the facility too. Propylene oxide output at the Sadara site is, however, expected to only be used for captive use. Sources are saying that any polyols material from the Sadara facility will not arrive in Europe, but instead will leave regions such as Middle East, Africa and Asia. Less exports will leave Europe resulting in increased domestic supply. The polyols unit was originally expected to open mid-2017.
In Europe, Dow are the biggest producers of polyols with a production capacity in Terneuzen of approximately 530,000 mts/year. Shell are the second largest producers with a capacity of 300,000 mts/year at their facility in Rotterdam. Covestro are producing 270,000 mts/year in Dormagen, Germany and another 250,000 mts in Antwerp, Belgium. Also, Basf, Repsol Quimica and Huntsman are producers of polyols in Europe.

Using a PC?

YOU are a target for cyber-crime

The benefits of a PC and distributed connections to the internal and external net are obvious. However, this makes employees and their families possible victims of cyber-crime. Two threats are very “popular” these days. Read below and see how you can avoid them.

On the Internet
If you have been scrolling through our company website, you might have seen an incredibly irritating warning, popping up in the right-hand corner. The reason for this is very clear, however. Seafarers who still do not know us have experienced that they have been charged for sending us application forms and more. They have been advised to send money to a bank account. Except for one, we do not know how many have been cheated by this nasty trap. Seatrans would never charge anyone for sending applications or questions to us. So, for the time being, we must get this message across to potential colleagues and others wanting to get in touch with Seatrans.

Encryption fraud
The other trend is known as "crypto-crime". The criminal's plan is to gain access to your files and encrypt them. The "only way" to get them back, is to pay money to an account. This is a multi-billion-dollar industry. It is not an industry worth any support. Even if you pay, you have no guarantee of getting the key needed to unlock your files.

You may have received a pleasant email telling you about a package in the post to be delivered or a prosperous proposal. When your personal "guard" is down (you may be working with something on the computer or are distressed for other reasons) you click on the link in order to trace the package or something else you have been asked to check. If you see an email like this, make sure your mental "guard" is on high alarm:

DO NOT OPEN THESE KINDS OF EMAILS or ATTACHMENTS.

There are good reasons to find out more first.

1) Are you really expecting something from this email address?
2) Move the mouse over the address from the sender: Does it correspond with what it says it is?
3) If you are in no doubt that this is fake, delete the email immediately.
4) If you do not know what to think, you can forward the email to support@lois.no for a quality check.

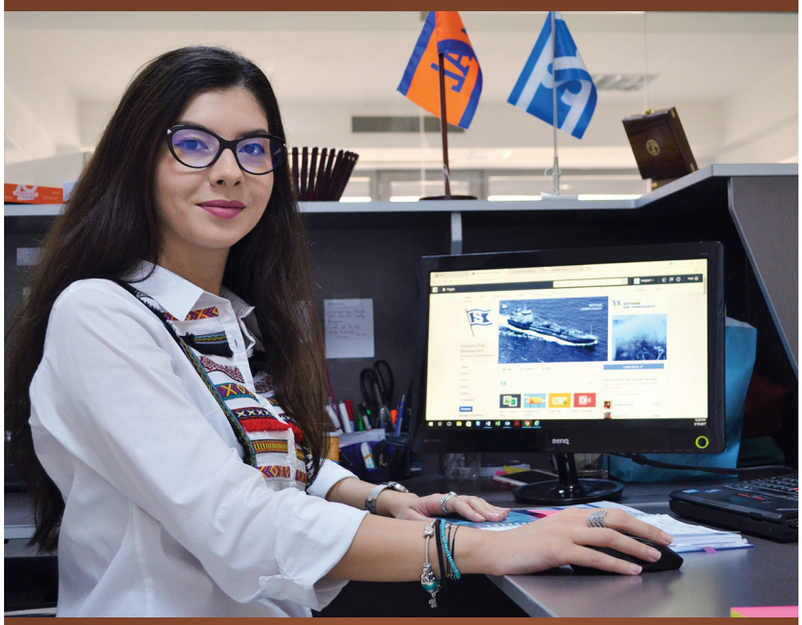
How to avoid

- As mentioned: Be aware if you get emails from unknown senders, or if you get an email from someone you know but where the content looks a bit strange.
- Don't leave your email address on web sites if it isn't necessary. Never leave your password or numbers to your bank account on the open net.
- Keep your PC updated. Both Microsoft and Apple (Mac) update their operating systems regularly.
- Use anti-virus programs.
- Take backup of your files on a regular basis.
- Remove connected USB sticks after downloading from or storing on them.

If you are hit
Anyone can fall into a cyber trap. If you do, please

- Disconnect the network cable
- Turn the computer OFF
- Disconnect all USB sticks
- Call support

Please remember this, but we hope you never have to use this advice :)



Promotion in Constanta

Irina-Ioana Ulmeanu (25) has recently been promoted from Secretary to Crew Officer. Seafarers already know her very well, as she is taking care of crew for Trans Dania, Trans Fighter and SC Express at Seatrans Ship Management Romania office, located in Constanta on Mamaia Boulevard.

Andreas Breivik, trainee superintendent

Andreas Breivik (23) joined the Seatrans Ship Management team of superintendents on 1 August 2017. As trainee, he will be working together with the famous team under the leadership of Helge Steinsund. Andreas has a Bachelor in maritime engineering from Bergen University College. Andreas comes from Øygarden, west of Bergen. "Since childhood, I have been interested in technology, trying to find out how things work. In the field of maritime engineering, I got the chance to combine my interesats and experience. I feel privileged and I am looking forward to learning more as a trainee in Seatrans over the next two years," says Andreas Breivik.

SHIP OF THE YEAR 2016

SC Astrea

On Tuesday October 3rd, the "Ship of the Year 2016" award was finally handed over to the proud crew on SC Astrea.

The committee pointed out many good reasons for the nomination:

- The vessel's technical and maintenance standards are very good. The improvements made since take over in 2011 are remarkable.
- There is a positive working environment onboard.
- The Ship Management Team is solution-oriented.
- The operational performance of the ship has been very good for a long time. This includes both working for Sea Cargo Wind and now in the liner system for Sea Cargo. The ability to adopt to new trades is exemplary.
- The vessel's performance on PSC, flag state and class inspections is excellent.
- The crew onboard have demonstrated a great ability to change and improve.

Other remarkable statistics are that SC Astrea has had zero personnel injuries, zero environmental spills and zero unplanned off-hire.

"The SHIP OF THE YEAR award is established to motivate and give credit to those vessels with distinguished performance. Like always, several vessels have been considered. The fleet performance in 2016 was very good. However, for 2016 the committee was sure that SC Astrea deserved the prize," the press release explains.
"You have done a fantastic job. Astrea has been nominated many times. People have mentioned the fact that once again, a chemical tanker has won the award, and they are right. Astrea has been among the top candidates. We've been around the vessel today, and I will say we are impressed. If you can remember what she looked like when we took her over and the way she looks today: It is amazing!" Managing Director Gisle Rong in Seatrans Ship Management confirmed the above in his speech to the crew. Nodding towards the crew, Captain Zbigniew Stypula emphasised that: "this award is down to your hard work! We have had great teamwork for many years. And yes, we hoped that is was Astrea's turn to win the Ship of the Year award this time, "he concluded with a smile.

After receiving the plaque, all the crew members got a cap with the Ship of the Year embroidered on it. Celebrating with coffee and a wonderful homemade cream cake on the bridge afterwards, there is only one thing to say: They deserved it!

SC Astrea

- Built in Norway, 1991
- Length is 129 metres
- Main engine Wärtsilä VASA 12V32E 4856 kW
- Service speed 13.5 knots
- Crew of 13 from Poland and Romania

CREW OCTOBER 3RD:

Stypula, Zbigniew	Captain
Konfederak, Dariusz	Ch Off
Dudu, Alexandru	2 Off
Bernard, Pawel	3 Off
Szostek, Wojciech	Ch Eng
Szymanski, Krzysztof Marian	2 Eng
Cop, Jan	Fitter
Szynkiewicz, Zbigniew Antoni	Chief Cook
Wierzbowski, Janusz	Bosun
Paczkowski, Piotr	AB 1
Pricop, Catalin	AB 2
Zamficu, Ilie	AB 3
Ziolkowski, Wojciech	OS

Don't meet your **troubles halfway**

Politics, pizza, pigs wandering free and a positive attitude. These are a few but far from all of the subjects discussed with Captain Helge Hals. The words flow freely when talking with Helge Hals, a man with a lot of positive energy, inspiration and broad-based knowledge,

The first time I met Helge Hals was in 2015 when SC Connector was under renovation at the shipyard in Lithuania. Captain Hals was about to create a brand-new team with his crew and Captain Gisle Ernstsen. They succeeded and these days Connector is doing very well in the Sea-Cargo fleet. It seemed natural therefore to start our discussion with leadership and some important issues related to the Captains' role.

"As leader, you have to acknowledge the other person with eye contact and by establishing a personal relationship. Really see him or her. It is a general rule in all human relations, but when you are a leader it is more important. It is the only way you will be able to include and motivate others to do their best to make the team succeed," says Captain Helge Hals. He has sailed for Seatrans for ten years and still has a few years left before leaving the bridge for good. We met in the wheelhouse on SC Connector. The vessel is in ordinary trade between Odda, Husnes, Haugesund and Tananger in Norway to Immingham, UK and Rotterdam, the Netherlands. Despite such a long career, Helge Hals is still inquisitive about leadership and behaviour.

Positive social behaviour

"We have a very good cook, so this is not about him. But if we use him as an example and think about his position all his colleagues' positions on board. He is the only person on board with his profession and has to make meals that suit three, four, maybe five different national tastes among the crew. That is a hard job on an everyday basis. If you sit together and invite the crew to talk it through, we may find good solutions for the menus together. Talking to other seafarers about the food and dishes does not help. And don't forget to say "thank you for the meal" when leaving the table or dining room. It is all about natural behaviour, but can easily be forgotten by some. The cook is a very important man on board, and we all benefit from helping him thrive on board. This is a general point: We have to encourage each other and express our appreciation for what others do."

Pizza for all

While we are on the subject of food: Helge Hals loves to cook himself, he admits, and that is how we got on to the subject of pizza.

"Well, the thing is that I found a wood-fired pizza oven in Denmark, and I was totally lost. I got it delivered to Esbjerg, and brought it to Tananger with Trans Carrier, where my wife was waiting with her car and a trailer. When she got it home, I got a forklift to pick it up and lift it right to where it stands today. We're not afraid that it will blow away. It weighs some 850 kilos. We have had so much fun and flavour with our family and friends from what we can make in an original pizza oven. Bread baked in it is amazing."

Making good pizza seems to be very easy when you look at a professional. In reality, you have to exercise for quite a while to get it right. Helge Hals has some advice. "You have to use a special pizza flour, the finer the grain the better dough you get. I use my hands to knead and do not make the pizzas too large. Smaller pizzas are easier to handle. And use some flour to manoeuvre the pizza into the oven, which can be as hot as 400 degrees centigrade. A few minutes there, and you have a wonderful pizza!"

Pigs and politics

Helge Hals' interest in food is far more extensive than the pizza oven in his garden. A good pizza can be topped with ham and rocket. However, ham is not just ham. Helge Hals and some friends have bought ten pigs from a farm near Stavanger. The pigs are allowed to roam free and live a natural life, compared to the industrial farming style where the pigs see no daylight as long as they live. which is not long. "We prefer pigs that have not suffered infections and have not required antibiotics. We have the pigs slaughtered by a man we know and trust. The ham is then prepared for maturing for one, maybe two years. The taste is wonderful," says Helge Hals.

As we talk with Helge, his friends in politics are campaigning for the general election. For many years, Helge Hals was an active politician in Farsund. His sympathies are well known, but the lessons he learned from his political career are notable. "I wanted to get more done, but on the other hand we succeeded in getting quite a number of various issues through. I wanted to work in the harbour committee but ended up on the committee for agriculture. I learned a lot. It was a privilege to work with well-educated staff in the administration, and we developed the framework for the farmers in our municipality."

Positive driving force

We still haven't gotten round to talking about the sailing club, his 44-foot sail boat, the restauration of an old wooden galleon, his wife and his son and daughter. Maybe some other time. But what is it that makes him able to pursue all these interests and activities?

"I am an optimist by nature. I prefer to look for the positive sides of an issue. And I have learned that it does not help to take meet your trouble halfway. Disappointments occur, but they do not decrease by waiting for them. It is far better to meet them with a positive attitude and see what they may turn it into," says Helge Hals.

The UCI Road World Championships were held in Bergen from 17 to 24 September

The city was almost unrecognisable. One new feature was the fences everywhere, but far more important was the epidemic and highly infectious enthusiasm from the 250,000 inhabitants. The city centre was even more crowded than on a great 17 May or Constitution Day. Peter Sagan made history by winning his third consecutive world championship. However, the people of Bergen won the hearts of the international road cycling community.

(Photo: Eirik Hagesæter, ba.no)