

# SHIP



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# MANAGEMENT

I N T E R N A T I O N A L



Who will be  
the ship  
owner of the  
future?

# V.Group

## Round Table Debate

In the latest in our series of Round Table Debates, SMI in conjunction with V.Group has brought together nine of the industry's leading technical experts to debate the key issue of **Digitalisation and Big Data: Is it the paradigm shift shipping has been waiting for?** The round table debate was moderated by **Sean Moloney**, Editorial Director of Ship Management International. Panellists included: **Jérôme Faivre**, Digital Transformation Manager, Bureau Veritas; **Lars Robert Pedersen**, Deputy Secretary General, BIMCO; **Don Stephen**, Vice President, De Nora Water Technology; **Eero Lehtovaara**, Senior Vice President, BU Marine and Ports, Process Automation Division at ABB; **Christian Ludwig**, Senior Manager, MAN Diesel & Turbo; **Andrea Zito**, Group Director, Technical, V.Group; **Brent Bruun**, Chief Operating Officer, KVH Industries; **Bernd Bertram**, Managing Director of Wärtsilä Denmark; and **Matteo Di Maio**, Director of Technical Services, V.Group.

### Sean Moloney

The topic today is digitalisation and big data and whether it represents the paradigm shift shipping has been waiting for. I talk about a paradigm shift because there is a view within ship owning and shipmanagement that maybe the time has come for shipping to be paid adequately and profitably for the job it does, as opposed to a price determined by market forces driven purely by tonnage supply and demand. This whole move towards big data and efficiency within shipmanagement and ship ownership is propelling the shipping industry to a new era of cost saving, but how rapid and embracing will the drive for digital efficiency for the shipping industry be? And how realistic a journey will it end up being?

### Jérôme Faivre

To answer your question, I think the drive for digital efficiency has already started and the journey could be a very quick one. We have started asking our clients – ship owners, ship operators and manufacturers – about their own digital journeys and what we could do, as a class society, to improve the services and digital

opportunities we offer them. Drawing on the results of a number of interviews we have had, we have built a vision for the next few years which is to develop a digital twin for each unit, or asset. Clients will have access to data held on this digital twin which, in turn, would be constantly updated by the physical vessel's own onboard sensors as well as via any vessel surveys undertaken by Bureau Veritas surveyors. We also propose launching a mobile app so a ship owner can access a vessel's data from his mobile phone. It's not only data, it is active data, or smart data, where the application can push out customised notifications to class or the owner so those involved can be aware of the need to act, such as undertake a survey in one or two months' time, for example.

### Sean Moloney

Will this data come from the twin or from the vessel itself?

### Jérôme Faivre

This data comes from our database and, as yet, is not coming directly from the asset itself. We have formed a partnership with

Dassault Systèmes to build a digital twin which can be updated during a survey of the asset itself.

### **Sean Moloney**

And is this something that Class in general is doing, because I know DNV is looking at developing digital vessel twins as well.

### **Jérôme Faivre**

Yes. We think the digital twin concept will be a very important tool in the future for the ship owner because he will need an up-to-date vessel database and the digital twin would be a smart way to access this database.

### **Sean Moloney**

Lars Robert, do you have a digital twin at all?

### **Lars Robert Pedersen**

I might have! But seriously, we see a number of issues that need to be dealt with. I'm very happy there are so many equipment providers around the table today because what we realised at BIMCO over the last few years, was that cyber security is an even bigger issue. But the more we look into this, the more we are convinced that we haven't even started to address this problem from the equipment manufacturers' side. When we look at a ship in totality, cyber security is absent as a design feature and this needs to be addressed. We also have no real class rule for this.

The yards assemble stuff, but they don't care about how it works after they have built the ship. So we have this very 'virgin' situation in the industry where we don't really know how vulnerable the ship is. We see trends coming from the regulators; for example, IMO is now requiring new bulkers and tankers to be built to a goal-based standard, and class societies are now setting up archive centres ashore where ships and operators can access drawings etc. But this actually raises an issue about digital trust in this industry. How do we trust each other? How do we know that the person who is actually trying to communicate with you, or the system that is communicating with you onboard the ship, or from the ship-to-the-shore, is actually a genuine connection trying to be established? So this whole issue of digital trust is largely unaddressed in the industry. If you look at a ship, we have a financial owner as well as a registered owner; we have a ship or crew manager; and we have commercial parties that charter the ship and sometimes sub-charter the ship. So how on earth do we know who is in this chain of inter-communication in a digital world. I think this is the huge challenge and one that needs to be addressed, probably as a priority.

### **Sean Moloney**

I want to bring in the equipment manufacturers here. ABB, you've also developed technology where the shore is talking to the ship when trying to detect problems onboard. This is effective because it removes the need for a ship to divert to port

and for an engineer to be flown out to isolate and fix the technical problem. The point Lars is making is who can you trust digitally? How much of a concern is it for a company like ABB, when you are actively passing data to and from ship?

### **Eero Lehtovaara**

Before we learn to trust, we need to learn how to share information and how to make business out of it. We work a lot with connectivity and the passing of information from the ships' internal systems to the shore. Even when we are looking at combining the information we have ashore and in the port, we have information about the cargo and about the ship. But before we can make all of this work together, we need to figure out how to share this information. We all create our own systems and we are all extremely jealous of our information but everyone agrees we need to share. But if we have invested \$50m in something, why should we share it?

So we need to see the business model that explains how investing in something makes sense if we are going to share the results. I think this is one of the biggest hurdles we are currently facing in the timeframe available. The situation is also fuelled by renewal of the fleet, which is somewhat slow. Within the next couple of months, we will not see anything that we won't be speaking about in the coming decades. I hope it will be faster. We talk about big data, but I think that we are slowly getting close to better interfacing.

### **Brent Bruun**

Give me an example of when someone would object to data sharing. I come from the satellite communications side, so I'm sure it's not surprising that some data would be considered highly sensitive.

### **Eero Lehtovaara**

Well, this year it became mandatory to have the real weight of a container verified, so what do we do with this information? Even internally we have a problem, because if the crane lifting the box knows the weight of the container, how is that information passed on? It's hardly used at all today because we don't trust each other; we don't embrace the business model and we don't share this information. We don't share this data with the ship, or the receiving port or even within the port system itself. If we did, then ships could benefit from maximum trim calculations, enjoy the benefits of a fully optimised logistics systems as well as decide whether or not to accept the last 200 containers onboard.

### **Sean Moloney**

Christian, can I bring you in on this?

### **Christian Ludwig**

Some interesting topics here and to elaborate on what both Lars Robert and Eero said, the security side is extremely important. But until we get a common platform on how to collect, send and

receive data then there is a risk we will end up running in lots of different directions. As an industry we are wasting money and at the end of it there will be one premium way of doing things. So there is actually a need for this common approach in order to achieve the transparency that Lars is talking about.

#### Sean Moloney

Do you feel comfortable with the trust element?

#### Christian Ludwig

Well, yes and no. Yes, in the sense that if we don't move faster we won't have the trust element and no, in the sense that the process just doesn't move fast enough. So we are facing a paradigm in data sharing. At the end of the day, the ship owner or operator has a clear interest in connecting all this data but how do we implement this when people are scared about what will happen to their investment. I recently met with a ship owner and his vision was to use all this data slowly but build a system to improve how he deployed his ships. But if he knew how efficient a ship was at certain speeds, and in certain seas states, he could use this data in deciding which ships should go on certain routes. I see newbuilds as a front runner where the owner has the possibility of specifying his requirements, then the equipment manufacturers have to comply.

#### Don Stephen

Where I pick up the conversations is really around environmental compliance. This area is driving costs up but there are clearly ways we can contain those costs. Looking forward, big data does have a role to play in the determination of what compliances we actually need to meet. Ballast water is an example: we had unrealistic objectives in terms of the compliance and the setting up of those standards? But do we have enough data? Do we understand the water and organisms we are picking up during the ballasting process? Can we use data we have in understanding the water quality to make our systems more efficient? And are we really sure the money we are investing into ballast water systems is going to give us the desired result? Because there is no direct measure; indeed, there may be longer-term measures.

But this is really one of the areas where I think understanding marine conditions is lending itself to the need for very large sets of data. We know that the fishing sector, are doing more and more work in terms of algae. So I think this is where we might be in a number of years' time. To

truly understand whether what we are trying to achieve in terms of compliance, is actually going to be able to be achieved and starting to use that data to make sure that the system can become more efficient. I think that applies not just to ballast water but to almost all of the environmental regulations which are getting increasingly tight, and are costing more money.

#### Sean Moloney

Let's bring in Andrea at this point.

#### Andrea Zito

There is a lot of emphasis on the high end users such as cruise vessels and offshore units where the assets cost billions and margins in operations normally allow for substantial investments. Then there is a large number of ships trading out there which do not even have broadband communications. All the

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**Bernd Bertram,**  
Managing Director  
of Wärtsilä Denmark

**Andrea Zito,**  
Group Director,  
Technical,  
V.Group

L to R: **Don Stephen,**  
Vice President, De Nora  
Water Technology;  
**Christian Ludwig,**  
Senior Manager,  
MAN Diesel & Turbo

manufacturers and the industry at large are concentrating their effort in developing packages for the high end market. Not the thousands of bulk carriers which, in today's market, are losing money day-by-day. However, there is a shift happening because the industry is not like it was 10 to 20 years ago. There was a time when a ship left port and the next communication you received was when it docked at its destination.

The big change is that the Master is not alone anymore. There is more transparency in data exchange, and we need to provide, leveraging on the 'big data', decision support systems to the people onboard and to the shore-based staff to secure safer operations in more complex environments. The environment isn't getting any easier because of regulation and also because of the equipment. The equipment onboard is very far removed from a hammer and spanner: it is like opening the bonnet of your car and not seeing the engine layout you would have seen two decades ago. Of course we, as an operator and manager, have thousands of seafarers per day every day onboard our ships and we also see the quality of these seafarers changing and more remote support is needed.

#### **Sean Moloney**

Brent, we have a number of issues here with trust. But how geared up is shipping towards this? And is the future of the seafarer going to be as an IT operator?

#### **Brent Bruun**

I think there are many things at play here. As Andrea said, broadband is a significant component in providing the data links in order to analyse the systems. But if we can't get the data off the vessel in a cost-effective manner, you're not going to have much to analyse. With regards to broadband, you look back 10 years ago and Inmarsat was the only game in town and you'd be paying £30 per megabyte for data. In today's environment, data prices can be as low as 10 cents a megabyte.

But where is that going with the advent of High Throughput Satellite (HTS) systems? The amount of broadband that's going to be available over the oceans 10 years from now will be in an order of magnitude greater than today. So if you had 10 times the amount of access and at a tenth of the cost what could you do with it?

I would argue that if you look at what is going on with land-based applications, we have a leading indicator of what to expect when it comes to ocean usage. The crew you just mentioned are using Facebook now – something that was being used seven, eight years ago on land. So let's look at what is going on today apropos the sharing of information in land-based applications, and I would think trust is a critical component.

I also think that a lot of things are going to be forced upon us such as regulations. We talked about the newbuilds and how the data gathering, analysis and transmission systems should be built into these vessels. If you go and buy a car and it doesn't have

leather seats, you're not going to go and have it retrofitted with leather seats. I think digitalisation will take hold, and I think it will happen more quickly than any of us predict. Over the last two or three years digitalisation has been a really focused component of the industry, and with more and more bandwidth coming on line, it will continue to be more cost-effective.

#### **Andrea Zito**

Sean, allow me to interject. We are all discussing data, but the data without the analysing tools is useless because there is no value. We are talking about automatic and possibly self-learning analysing/diagnostic/decision support tools. This to me is the biggest challenge to the industry.

#### **Brent Bruun**

From providing the information in a compact way, whether it's onboard the vessel or on shore, you need to be able to quickly recognise the number of different things you are dealing with.

#### **Sean Moloney**

Let me bring you in on this Bernd. In response to a number of things going on here, is the shipping industry ready for this advance? We are talking about embracing a completely new era of connectivity and data analysis.

#### **Bernd Bertram**

I think the industry had better be ready. We asked ourselves 10 years ago whether a smart phone would be convenient. None of us would have said, yes or no - we wouldn't have had a clue. I think this is all about software and data analytics, not about the turbo charger, engines or ballast water systems. It's about something completely different. But we need a different platform for dialogue. For us at Wärtsilä, we want to co-create and develop new solutions for our customers. But co-create means co-create with our colleagues in this room. No one can rise to this challenge on their own and, inevitably, unless there is a clear customer benefit there is no business case.

#### **Sean Moloney**

But who is going to drive it? Who are going to be the leaders in all of this? Everyone has a stake in this.

#### **Bernd Bertram**

I think a combination of a number of things. For example, our recent acquisition of Eniram, will, for us, drive this development. I'm sure my colleagues from ABB also have a vision about this as it's about creating an eco-system. It's like the iOS on the iPhone, or the Android system: I don't think there will only be one system that will do everything. It will require an open architecture, so we can inter-play amongst each other. Maybe there is an expert who has a strong application towards offshore drilling activities or another for cruise vessels or another for different applications.



**Eero Lehtovaara,**  
Senior Vice President,  
BU Marine and Ports,  
Process Automation  
Division at ABB

Who knows? It is about driving the value out of the data and simplifying operations by means of the data, just like Brent said. To have digitalisation assists us in our everyday life whether onboard or onshore.

#### **Sean Moloney**

I want to come on to this whole idea of open architecture. Matteo, give your views on what has been said so far. I want to then go onto this whole issue of this common platform and how the industry can work together.

#### **Matteo Di Maio**

Using the data is the challenge; we don't really have enough time to digest it. We need to find the right tools to make sure we make the right use of this data. For instance, we are investing a lot in condition monitoring and performance management. We need to find solutions which are good for all segments of the industry. So today, you have the dry market and the tanker operators, cruise ships and oil and gas sectors. Not all of them are ready to invest greatly in CapEx, so the challenge is to find a CapEx solution that fits all. For a few dollars per day, you can have a decision support tool that will help the Master. That is what we are working on – digitalising the products that can be easily digitalised.

For instance, we are investing in e-learning products that we are developing in-house – it's bringing in training from the mentoring component of operating the vessel efficiently and safely, into a digital platform. Next is condition monitoring where we don't need a lot of sensors to predict maintenance so we can rely more on the data that we have.

#### **Sean Moloney**

One of the questions here is who is going to be forcing the need for cooperation, we are talking about here? Lars, you raised this whole idea of trust. If we yearn for an open architecture, an Android-style scenario, then the industry has to share information. How are we going to get it off the ground?



**Jérôme Faivre,**  
Digital  
Transformation  
Manager,  
Bureau Veritas

#### **Lars Robert Pedersen**

As I think I mentioned, the e-navigation prototyping that is taking place at the moment is about creating the infrastructures that you need, because you need to be able to positively identify a ship from all sides. As soon as machines start to communicate with each other it is crucial we make sure they are communicating with the right machine. We are actually partners in an EU-sponsored project which is called 'Efficiensea2', where we are trying to build protocols which can facilitate data exchange between, for example, our own systems and with ships that belong to our members so we can have some direct data transfer with no human interaction at all. I think this is crucially important because as long as we have these silos of proprietary solutions, yes they can add value, but it is way too costly to do it that way. This is because the next ship you attract to your third party managed fleet, could have come from another ship manager who developed and used another system which was quite different to yours and, guess what, the sensors don't fit. It can become a mess.

#### **Sean Moloney**

Let me open it up to the floor here.

#### **Don Stephen**

I would just like to step in. One of the things we shouldn't underestimate is exactly where big data will take us in the future and also where the commercial interests in shipping will lie. If you look at the drive towards driverless cars. There are a lot of the large players, like Google, who have never made a car in their life but will transform the entire automobile industry in one sweep. They will be making money out of cars in a completely different way to which traditional manufacturers like BMW and Volvo perceive

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they have to make money. So it will be interesting. The open architecture is the most pragmatic way to do it.

I don't think anybody in the industry can really steer where this transition will come from. It will probably be more of an evolution than a revolution. We need to break down the rigid constraints we've got because if they start to disappear then new players may start to come in. Turning data into information is another good example. While we're sitting around this table, I'm sure it's in everyone's mind that they will collect the data but there are only a few people who can turn it into information. That may not be true: you may just sell the huge amount of data to other people that would be a lot better doing the analysis, and they can feed it back as information.

#### **Brent Bruun**

The big question is who owns the data and who is able to sell it? Because there is a trust factor. If the data is anonymised for the benefit of all contributors, that can help deal with the trust factor. It all needs to be worked out, who's going to pay for what, and who's going to be the recipient.

#### **Don Stephen**

But then looking at it, is that going to prevent us from progressing and keep us in a deadlock because we can't get commercial understanding of who owns the data?

#### **Eero Lehtovaara**

We talk about a platform but what do we mean by platform? Do we mean that every ship is only going to have MAN engines or Wärtsilä engines? No. The idea as discussed is that we are looking at everyone creating their own platform. I think that is a better comparison would be like the Amadeus flight travel system where the aviation industry agreed to share their flight tickets and prices as well as how many tickets they have. They all own it together and they share the information that they want to.

#### **Andrea Zito**

There are different pieces of information which are relevant to

other people and there are different packages that would be developed. Take, for example, the issue about the weight of a container. This will be appealing from a commercial perspective but not necessarily from other aspects. I don't think that the digital evolution will progress at the same speed across all sectors. However, a platform collecting the data from the ship and serving as a platform for the various specific applications is definitely the way forward; V.Group is already working in developing this backbone and now we are updating it for the next challenges.

#### **Eero Lehtovaara**

The main hurdle is how do we make money; how do we benefit; and how do we add value? It sounds harsh but we are companies and we exist to make money.

#### **Brent Bruun**

It's making money or saving money – either way, you're generating additional profit.

#### **Andrea Zito**

There are no owners around the table but in today's market further investments and discretionary capital expenses having in mind future possible savings is a difficult subject.

#### **Sean Moloney**

They see it as a cost rather than an investment.

#### **Andrea Zito**

You have 50,000 vessels like this across the world but they will be impacted from big data in other ways. I'm sure that in the near future there will be some inevitable situation where you have a vessel entering the Channel being taken care of, not by a pilot, but by a traffic control centre giving decision support to the Master. Rather than fully automated ships, I see in the near future the development of management support tools for the onboard managers analysing real-time data with the contribution of Subject Matter Experts for the most challenging situations.



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**Sean Moloney**

Going back to the point and the need for this platform. What about the role of the regulator? Because the European Commission, for instance, has already said that next year it will focus on the digitalisation in shipping.

**Lars Robert Pedersen**

I think the European Commission should focus on creating a single window and not 28 single windows within the EU. When they get that right then we can start to digitalise the ships because as long as all the member states are different it's just a huge mess. They need to clean up their own house. That should be the message from our industry to them.

**Andrea Zito**

The biggest paradigm is that currently, as heritage of the "pre-digital era", the master is in 100% control of the decisions he makes on board and this is the basis of the common maritime law. But is this something still acceptable in the future?

**Lars Robert Pedersen**

That's a paradigm shift.

**Andrea Zito**

For sure this will require a lot of changes in future legislation to fill the gap of who is really responsible.

**Sean Moloney**

What are your concerns when you look at the regulator? Because how he acts will affect the way you own your ships and build your engines; the way you operate and manage them. You need to consider how the market is demanding connectivity and how you can respond to that.

**Lars Robert Pedersen**

You're right when you say it's outside our industry where we will feel the impact. In terms of making trends and how things will be running. It's about what is regarded as value but we need to save

costs and we need to operate smoothly and faster. We need to ensure that whatever the component is on the ship which needs maintaining, it can be done predictively.

**Eero Lehtovaara**

I might be a bit cynical but if the ship owner doesn't increase his profits then that's the only driver that is measurable

**Christian Ludwig**

If the equipment manufacturers are able to extend times to run the ships more efficiently, and ensure more availability, then it is up to the ship manager to apply that.

**Andrea Zito**

That shift has to happen within the business. And I don't see this coming from outside, because it's such a complicated industry. Until a few years ago, engine manufacturers were making money out of selling spare parts and hardware in general, now they are rapidly shifting toward lifecycle efficiency support. Let's look forward.

**Bernd Bertram**

I think one aspect is also clear, when we speak about digitalisation I have my definition and you have yours. And we talk around four different dimensions, one being technology, which is analysis. With that comes new business models where we can drive value to our customers. And with that comes a new user experience such as having a technical manager in the office managing twice as many vessels because data is presented seamlessly in real time. But if the human aspect is not able to follow and embrace these changes then we will get nowhere.

**Lars Robert Pedersen**

If the liability is not capable of embracing these changes then forget it. The first thing I learnt when I went to work ashore was never ever tell a ship what to do. You can make all the suggestions you want but you never tell the Captain what to do. This is such an important part of the industry, because who is liable for what?

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**Lars Robert Pedersen,**  
Deputy Secretary  
General, BIMCO

L to R: **Brent Bruun,**  
Chief Operating  
Officer, KVH  
Industries;  
**Matteo Di Maio,**  
Director of Technical  
Services, V.Group

### **Eero Lehtovaara**

Is it a shift we are experiencing or that we could see coming in, in 20 to 30 years? You remember 10 years ago we were talking about vessel trim. It is easy, because if you trimmed your ship correctly you saved yourself \$400,000 a year in fuel costs. We still do it today. But now more and more companies are popping up offering similar products but it is still a challenge to sell it to customers because ship owners only see costs.

### **Matteo Di Maio**

Operators in the cruise market have digitalised part of their value proposition, and as a result have boosted their efficiency drastically by 20%. So the same would apply to other segments like the dry market or tankers. We could see bigger savings of up to 15%. So digitalisation in some segments is already very well advanced and we are seeing the results.

### **Sean Moloney**

Talk to me about liability and about the Master who is being claimed will not be in charge of the ship any more.

### **Matteo Di Maio**

It's a groundswell approach because we will never be able to take away the liability entirely but if we provide tools he will be less liable and would be able to make better decisions.

### **Sean Moloney**

Jerome, bringing you back in here, what are your views on how development progression will happen? Going back to that original question about the need for shipping to make a profit, whether digitalisation in all its forms is the silver bullet in helping it happen, what are your views on this?

### **Jérôme Faivre**

I don't think that digitalisation will be the silver bullet. We have to think about the services we deliver to the client, to the ship owner and technology is moving very fast. Two years ago, a car without a driver wasn't even a thought. Now you can get a taxi in Singapore without a driver. I think we will have new owners

in the market and if Amazon decides to be an owner it will have enough capital to make it a reality.

### **Sean Moloney**

Amazon being a ship owner?

### **Don Stephen**

I think the analogy we've got is that the global taxi industry would never have invented Uber. We could sit around this table as taxi drivers but we would never leave this room inventing Uber and thinking this is the way forward. It would be left to someone outside the door to do it. To the point where a ship owner won't invest to get the data, that's because we haven't been able to price the data. What is the data worth, not to the ship owner but maybe to someone else?

Weather data coming from fishing vessels may not be of value to that small vessel but could be of value to someone else. The power industry could use it to adjust output from the grid for instance. So I do think the main driving force is most likely going to be a new player who brings in either a disruptive commercial model or a technical model. Maybe we should look outside the box.

### **Eero Lehtovaara**

I think this industry is quite capital intensive and there is a high barrier to entry. It's sure that Amazon has the means to enter this industry.

### **Christian Ludwig**

This is where people lose track of what to talk about in terms of disruption. Amazon and Uber etc. are all services, but the shipping industry is about moving heavy things around the world. I mean actually handling these heavy things which requires heavy duty equipment and people who know what they are doing. I think it's probably a bit too easy to talk about disruption because our present dilemma is all about too little cargo and too many ships. Partnerships are what works in many other industries. Look to the LNG trade and how they have worked together over the years through long-term partnership agreements and long term charters against which they can build some very capital intensive assets. ●