

Shipdex grows to 27 members

The Shipdex protocol for electronic technical data, which aims to remove the need for paper-based technical manuals through the use of an electronic standard, recently celebrated its one year anniversary and expansion to include 27 members at a conference in Hamburg hosted by *Digital Ship*. Discussions on the latest developments with the initiative suggested 'cautious optimism' in the growth of the technology

Shipdex, the organisation which has developed a standard for maritime technical data to enable the end of paper manuals, reports that it now has 27 members (not including companies which are a subsidiary of another one), who have all shown their support by agreeing to pay a €2,500 registration fee.

Recent companies joining include United Arab Shipping Company (UASC), shipowner Rederi AB Transatlantic, shipyard TKMS Blohm - Voss, Minoan Lines (Greece), Germanischer Lloyd, KJ Radio Co Ltd (South Korea), Elomatic and Kongsberg Maritime.

Giancarlo Coletta, purchasing director of Grimaldi Naples, one of the two shipowners (along with Intership) that started the initiative, says that his company has included Shipdex documentation in a specification for a vessel newbuild - in other words, it is requiring that the shipyard supplies all technical documentation for the vessel in accordance with Shipdex, rather than on paper. The shipyard is currently evaluating this, he said.

The requirement will include documentation for all of the equipment included on the vessel provided by sub-suppliers to the shipyard.

The first version of Shipdex, Version 1.1, is now finished; the first full trial will be held in La Spezia, Italy, on 23rd June, validating and importing data sets from MAN Diesel and MacGREGOR onboard new Intership vessels, using SpecTec's

AMOS software.

The Shipdex Protocol Maintenance Group, which manages updates of the protocol (and includes all of the founder members) is keen to expand to include representation from a shipyard and a classification society, and will be doing this shortly.

Shipdex currently has over 100 subscriptions to its e-mail newsletter, and gets 380 visits per month on its website.

Geographically the biggest interest is in Scandinavia, Germany, the Mediterranean, and also Canada and the US, with a recent growth in interest from India, South Korea and China.

Maritime software company SpecTec has already completed its first Shipdex software modules, which can be used to create, verify, view and import / export Shipdex data.

The first Shipdex training courses, provided by SpecTec and its partner company Corena, a specialist on S1000D, will be held in June this year at SpecTec's offices in La Spezia, Italy, (see page 19) in conjunction with the first full trial of the system.

There is one course on June 17-18, titled 'Introduction to S1000D', with a second, 'Introduction to Shipdex', on June 19.

Shipdex is a simplified version of the S1000D electronic technical data standard developed for the aviation and navy industry, modified into a format suitable for the maritime industry. It was formally launched at *Digital Ship Cyprus* in February 2008, and at that time had just 7 members -

Grimaldi, Intership, SpecTec, and four equipment suppliers; MacGREGOR, Alfa Laval, MAN Diesel and Yanmar.

Shipdex was launched as an open standard, which could be used by everybody and would be fully expandable in future.

Problems with paper

Giancarlo Coletta explained to the conference how efforts to establish Shipdex grew from a deepening frustration with paper manuals.

"A new ship comes with half a ton of manuals," he said.

"It's very difficult for us to understand how, when it is so easy to get electronic data, we are still dealing with a huge amount of paper which is difficult to manage and store. We have 95 vessels - we don't know where to put all this technical library."

With paper data, it takes a long time to retrieve information and there's a big risk involved in not having the latest information.

Shipowners are given manuals which come from many different manufacturers, all on paper or in different electronic formats such as PDF, Word, or HTML - but not with retrievable or manageable data. Mr Grimaldi notes that sometimes Grimaldi only has 1 copy of the documents - and they are needed both onboard and in the office.

It is very difficult to integrate the systems with maintenance management or enterprise resource planning systems. It is also hard to archive and manage the original manuals, let alone the updates and service letters; there is no easy way to send comments back to manufacturers, he said.

This ultimately means it takes a long time to do vessel maintenance tasks, a long time to purchase the right spare parts, and it results in high management costs.

Meanwhile the shipowner has various different requirements to comply with - from customers, class, port authorities and vetting, to name but a few - all wanting to see evidence that the ship has the most up to date manuals all readily available.

"How can you manage all these tasks without having an electronic system?" asked Mr Coletta.

More than a PDF

A common misunderstanding about Shipdex is that it is like a PDF.

Certainly electronic documents (such as PDFs) have many advantages over paper, in being easier to communicate, store and update. But Shipdex data sets can do much more than that - because the data can easily be imported or used in different ways, by the supplier, shipowner, and anyone else who is working with it.



'Forget the concept of manuals - we are exchanging only information' - Marco Vatteroni, Shipdex technical director

For example, you can import the data from the equipment manufacturer automatically into your maintenance or purchasing software - which means you no longer have to send manuals to some far-away land to be typed into a computer.

The seafarer can automatically be given a list of parts which need maintenance, according to the manufacturer's recommended schedule. The software system can automatically provide instructions about how to do the maintenance, and update the purchasing system to ensure that the exact spare parts are ordered. If the spare part numbers change, the software system can be updated automatically, with no effort from the seafarer at all.

Many shipping companies have made big investments in their purchasing and maintenance software, but are let down by the quality of data within, which is very expensive and tedious to improve. Being able to do this automatically would be of great benefit.

From the suppliers' side, if they produce Shipdex data, they don't have to think about structuring, formatting or organising the manuals at all - because it is all handled by the shipowner's software.

As the products change, they don't need to put together a completely new manual - they can still re-use data for the components which haven't changed.

Falk Aupers, consultant and leader of training courses with S1000D specialist Corena, spoke at the conference about one manufacturer of defence systems the company had worked with, which had been



'When it is so easy to get electronic data, why are we still dealing with a huge amount of paper?' - Giancarlo Coletta, Grimaldi Naples

creating documentation with Adobe FrameMaker for many years, but was finding it hard to control all of the different configurations, and re-use pieces of information in different documents.

After moving to creating data in S1000D, it found it could focus much more on creating the content (rather than its presentation); and re-use different information units. It managed to reduce costs by 48 per cent, reduce its revision cycles from 6 weeks to 4 days, and improve quality, he said.

"Forget the concept of manuals - we are exchanging only information," said Shipdex technical director Marco Vatteroni.

Big plans

There are plenty of big ideas about how Shipdex could be expanded - such as for the exchange of data about ship operations, hydrographic data and hull condition.

It could be used to improve communications between equipment suppliers and the vessel, to monitor how the equipment is performing and receive direct feedback from the people using it, something suppliers have always found it very hard to achieve.

"We should see Shipdex as a new methodology to improve the quality of relationships among all shipping actors," said Mr Vatteroni.

However, Till Braun, head of sales projects with Germanischer Lloyd and chairman of the conference, suggested that it might be sensible to keep ambitions limited and achievable for the moment.

"I believe it might be wise to start with little things like parts manuals," he said. "Let's slowly establish the standard - we will all see in a few years."

Class

Mr Coletta says he believes that classification societies will gain a lot from Shipdex - if it makes it easier for them to control and check the vessel and its equipment. "Acceptance from class has been good," he said.

So far, Shipdex conferences have been attended by ABS, DNV, RINA, Bureau Veritas and Germanischer Lloyd.

Christian Cabos, head of department - computer aided engineering with Germanischer Lloyd, said that his company is happy to receive electronic information today. "We have a large project in our company to enable electronic drawings

approval and we encourage XML data transfer," he said.

Eva-Lisa Martinsson of MacGREGOR said that the company has not yet informed its class society that it would like to submit data in Shipdex format, "but we will do."

Mr Vatteroni said he held a 4 hour meeting at DNV's offices in Oslo talking

about technical aspects of Shipdex, and that DNV is evaluating its interest and ability to contribute to the development of the protocol.

Seafarers

The question was raised about whether companies should involve their seafarers in these discussions, since they will be

using the electronic data at the end of the day.

"My thoughts are - yes you should. They are the real users," said Steve Mulvaney of Rolls Royce.

Mr Vatteroni suggested that seafarers might not notice any difference - they will still use the same software - but the data quality will be much better. "They'll be



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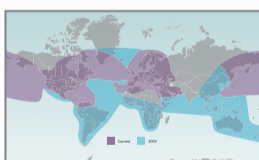
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able to find the information always in the same place, with the same layout," he said.

Giancarlo Coletta pointed out that seafarers might appreciate the consistency. "Everything will be the same from one vessel to the next," he said.

Yards

The biggest weakness so far seems to be shipyards. "Shipyards have not yet understood the potentiality of the protocol," Mr Coletta said.

"But we have more interest from the small ones than the big ones. They are looking at the protocol as a real advantage."

Shipowners might be successful in persuading shipyards to provide Shipdex documentation for ship orders they are placing at the moment – they are in a stronger position than they were last year, suggested conference chairman Mr Braun.

"One year back, shipowners went to the yards like beggars – now there's lot of yards and few shipowners placing orders," he said.

Mr Mulvaney pointed out that a lot of the benefit of electronic documentation is the ease of managing the updates. If shipyards do not update the documentation they provide with a new ship, then their interest will be limited.

"Why would shipyards get involved if they don't help with updating data?" he said.

IMO

Jan Spilleth of electronic charts company Jeppesen suggested that the Shipdex group might like to approach the International Hydrographic Office (IHO) or International Maritime Organization to try to start a discussion about whether Shipdex could be used to manage nautical publications, or included as part of regulations.

Electronic chart data is very closely regulated, and the rules about data are very strictly defined – who can create it, how it makes its way to the vessel, and what format it is in – sensibly so, as the consequences of incorrect data in electronic charts can be much more severe than incorrect data in a purchasing system.

Shipdex can be used to support all kinds of data types and files – so it could be used to manage the delivery of chart files and updates to the vessel, and ensure seafarers always had the right charts, without interfering in the actual chart data itself.

Other delegates said it should not be necessary to involve regulators in Shipdex – since they usually only decide what data should be on a vessel and how updates should be made or recorded, but don't get involved in the actual format of it.

"Authorities have only a need to state which technical information should be

onboard," Mr Coletta said. "So the best is for the user to comply with the requirements and respond in the most economic way."

It is far better to quietly convince the industry of the benefits of Shipdex rather than encourage regulators to force people to adopt it, he said. "The revolution from the base is much more effective than the revolution coming from the top."

While regulators could make the point that paper documentation is required for safety reasons, this issue has already been thoroughly thrashed through for documentation for submarines, said John Nicholson, manager, support engineering, information, training and service solutions with Rolls Royce Naval.

"We produce documents for submarines that's electronic only," he said. "There is only a very minimal requirement for paper documents driven by the safety case."

Shipdex developments continue at Rolls Royce

Rolls Royce's civil aviation engine business has itself been involved in moves to transition from paper manuals to electronic technical data in line with the Shipdex protocol – and is now starting work on a project to facilitate Rolls Royce's marine engine business to move in the same direction.

Its aviation technical data is issued in S1000D format, which is now an international standard used in the civil and defence aviation industries, which Shipdex is based on.

Steve Mulvaney, customer support specialist with civil large engines technical data, Rolls Royce, has been heavily involved in this process, and says that S1000D should prove to be very helpful to the company in harmonising the data standards everybody used or expected to receive.

"Now the marine industry is looking at it, that's extremely good news for us," he said. "It has the potential to save us a lot of work."

Mr Mulvaney and John Nicholson, manager, support engineering, information, training and service solutions with Rolls Royce Naval, are currently working to commonise technical data production and delivery processes across the marine and civil aerospace sectors, and adoption of the Shipdex standard for marine data will help facilitate this.

They are looking to make a formal proposal in the 4th quarter of this year, according to Mr Mulvaney.

"I shall certainly make a recommendation that Rolls Royce marine support Shipdex," he said.

Cutting out paper

It took Rolls Royce from 1998 to 2007 to progressively remove paper documentation from its civil (non military) aviation engine business, but in doing so, it reduced the amount of money it spends on internal documents production by a staggering 92 per cent, and increased revenue from the sale of technical data by 800 per cent.

Meanwhile, the number of printed

pages decreased from 11 million in 2001 to 500,000 in 2006, and was down to zero in 2007. If you can create 80,000 sheets of paper from a tree, this means that the 22 million paper impressions in 2001 equates to 136 trees every year which the company has saved.

Rolls Royce started sending documentation out on CDs in 1996, and the number of CDs being distributed rose from 24,000 per year in 2000 to a peak of 96,400 in 2006.

Since then, CD production has also declined – due to customers increasingly hosting documentation on intranets which are accessible from multiple PCs (rather than having individual users with their own CDs) – and some users choosing to download documentation directly from the Rolls Royce website whenever they need it.

The initial decline in requests for CDs "was driven more by the customers than us," said Mr Mulvaney.

"In corporate jets – often you have 1-2 people maintaining the jets. They said 'don't send me CDs, I just get it by Wi-Fi from your website'. These were the kind of people who got mobile phones and wireless before everyone else, and they can be more reactive to changes in technology."

Rolls Royce currently provides documentation for 13 engines in civil aviation, the earliest of which went into service in 1953. It supports over 520 different publications, supplied on 70 different CDs, which are revised at intervals of between 30 days and a year.

The documentation is used by customers and also internally by Rolls Royce's large Aero-Repair and Overhaul (AR&O) network.

In the paper world, a typical suite of publications included over 30 manuals, each 3 inches thick, with each customer holding multiple suites.

When updates were issued, it could take a library up to 2 weeks to update all of the copies – and during those 2 weeks, there were two separate versions of the manuals in use. Also, with so many

changes over time and pages being lost, "the chance of a suite of manuals being perfect is remote," said Mr Mulvaney.

Changing culture

As people get more used to electronic documentation and computers in general, the expectations customers have and the relationships they have with suppliers evolve.

"In the past it was OK to take 15 minutes to find a manual," said Mr Mulvaney. "Now people want a hyperlink to work in 3 seconds."

"Customers are starting to ask about the level of technical data support they will get from Rolls Royce. For the Dreamliner (new Boeing aircraft), every single customer has asked questions about it during the marketing campaign."

"We are pleased about that – it shows that the importance of technical data along with good delivery and support methodologies is being recognised and gaining momentum within the customer base."

Rolls Royce is starting to look at its technical data support differently, seeing it as a service opportunity, not a necessary evil.

"We are pleased to see it is now part of the support services we offer and has become more integrated in our customers' operations," said Mr Mulvaney.

Online

At one time, Rolls Royce considered making the data only available online. Whilst it would be an easy way to ensure that only fully updated data was being used, customers had many legitimate concerns about it.

Not all users have internet accounts (such as in countries where companies have to pay a tax for every internet user in the company, or in the Middle East, where companies are worried about what employees might find there). Also, companies can't back-up or archive data from a website very easily, and they might need paper copies in certain offices to comply with local rules.

The solution reached was that Rolls

Royce will always supply documentation for a new engine on a CD or data stick. It will provide updates over the web, but customers can always request a CD with the latest documentation on it any time they want.

The website documentation updates are very small, so they can be easily downloaded with people using dial-up modems.

This gives customers the flexibility to save a copy of all the data on their intranets if they want (so individual employees don't have to access it from the internet) – and if they have to have paper copies in different locations, they can just print it out themselves.

The system enables Rolls Royce to make sure that all its updates have been received and incorporated into the copies of the documentation stored on different computers – much better than it could before.

"Before, we'd just get a signature of someone in the gatehouse," said Mr Mulvaney.

"All customers get the new data at the same time. We can take a workload off our customers by helping them manage their vendor data."

Advice

Mr Mulvaney ended with a few words of advice for the shipping industry based on his experience with electronic documentation.

"Please use industry standards – do not get driven to a bespoke solution," he urged. "Work with your [software] supplier, and always send back suggested improvements."

"It is important that the project is driven by people who are going to use the system, not manufacturers or – even worse – software companies. It's good that the 2 people driving Shipdex are users."

"You should also make sure that the system is designed for the number of people who will need to use it. It is easy to forget that a 30 manual library can be used by 30 people at once – but a single computer can only be used by one person." ■



'Now the marine industry is looking at it, that's extremely good news for us'
 – Steve Mulvaney, Rolls Royce

MacGREGOR

Eva-Lisa Martinsson, manager, technical documentations services, competence centre cranes, MacGREGOR, said that her company believes that Shipdex will help reduce the costs of creating new documentation, if it has all of its data in Shipdex format.

MacGREGOR expects to be able re-use information developed for one manual in another one quite easily.

It also likes the improved connection it will have with its end users due to this system. "A big problem for us has been to update the information [we have on

ships]," she said.

However, one of the biggest reasons for choosing Shipdex was that "we wish to contribute to the development within shipping and to have an influence on the new standard," she said. "We want to be in the frontline of developing the technical documentation."

As it moves to Shipdex, MacGREGOR is restructuring all of its manuals from scratch.

It is also connecting the data system to other internal software applications, including its product lifecycle management (PLM) system for its cranes. The documentation system will also connect directly with its 2D and 3D drawing software and imaging tools. "This is really powerful," she said.

Additionally, MacGREGOR's service organisation will have access to the system, with service staff able to retrieve the information via a web browser to help answer spare parts enquiries and provide technical support.

Shipdex technical structure

Shipdex is a simplified version of S1000D, an international standard system for technical data in the aviation and navy industry, reducing its thousands of pages down to just 170. The work was done by Marco Vatteroni, now technical director of Shipdex and ILS manager of SpecTec.

There are 5 different types of information which can be carried in Shipdex: (i) Item description and operation instructions (ii) maintenance procedures (iii) troubleshooting advice (iv) parts data and

(v) service bulletins (updates).

For each one of these, an XML schema has been devised, which shows exactly what format the data should be in so it can be easily passed from one piece of software to another.

The 'dataset' can include any kind of document or multimedia with it – including text files, drawings, illustrations, or even 3D models – and the XML data will indicate how that item should be displayed or accessed.

Every Shipdex data module has an issue number, an issue date (when the

manufacturer finished work on it), and when it was verified – first by the manufacturer (to say that the data is ready to be issued) and secondly by the customer (to say it has been accepted and can be imported into the customer's system).

Shipdex data will follow the same structure no matter which manufacturer it comes from – and the way it is displayed by the customer depends on the software the customer is using. In this way, data from different manufacturers will all look the same in the user's system, displayed as specified by the customer

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Mikael Andersson, UpTime Solutions, and Eva-Lisa Martinsson, MacGREGOR, discuss the potential benefits of Shipdex

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