

e-navigation, e-maritime: Do these initiatives lead to e-frustration among Harbour Masters?

by

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1 Introduction

This paper is intending to draw the attention to developments and activities presently underway with intention to improve safety and security as well as business processes in the shipping and port industry by means of information technology (IT). A short time ago it was left to the user or participant of a business or administrative process to support his activities by computer based technology. Recently we have the fact that intergovernmental institutions like IMO¹ and the European Commission (COM) are fostering the implementation of integrated technologies in the shipping and port industry.

This new political activity might have considerable implications to our industry as it is not internationally standardized, very heterogeneous and as it shows different levels of applying what partly is described as technological progress.

2 Historic Background of electronic business processes in the ports

On May 5, 1966, 44 years ago, the first container was discharged at the port of Bremen. This was done without any problems. The success story of the container in transport is known and as a matter of fact – the extent to which this mode of transport is governing the industry today was only possible with computer support. So containerization went and still goes hand in hand with computerization.

On November 22, 1973 shareholders signed a contractual agreement to form the DBH (Datenbank Bremische Häfen) which was enrolled in the public registry on 5th of December 1973.

The shareholders, being the associations for expeditors or forwarders, terminal operators, ship agents, stevedoring

companies and cargo control companies were representing about 100 companies engaged in the local port and transport industry.

The main objective of this company was to develop an electronic documentation and information system called COMPASS. Which stands for Computer oriented Management of Port and Shipping Services.

Interesting enough the aim was not to improve safety and control but to improve business processes. Nevertheless tax payers money was subsidising the introduction of the system.

Realisation of the objective was done together with the port of Hamburg. The federal minister for research and technology supported the development by taking over 50% of development costs. The first module was working in 1976 and at the end of 1977 about 20 forwarding companies, 16 terminal operating units and 4 authorities were connected to the system.

After further improvements in 1978 the year 1979 posed a challenge to the management. The technical and organisational feasibility was proven and hence the business aim was to achieve economical operation by gaining more participants. From 189 users in 1978 the number increased to 480 users in 1985, system reliability was at about 98%.

Only in 1987 the port authorities contracted a dangerous cargo management system. Meanwhile the implementation of IT in the port community has reached a high standard and is well advanced last but not least due to new and more flexible computer equipment.

In November 2009 Felixstowe celebrated the 25th anniversary of 'the groundbreaking Felixstowe Cargo Processing System'². It is to assume that the majority of ports have introduced electronic support in their

¹ IMO – International Maritime Organisation

² Port Strategy, Nov. 2009, p. 24

port processes in the late 1970's and early 1980's. Linking the cargo and the port stakeholders through effective community systems was considered to be essential. Nowadays effective port operations cannot be imagined without the support of so-called port community systems.

Hand in hand with the introduction of IT support were standardized data protocols in order to achieve interoperability of the different systems.

3 Standards

3.1 SMDG³

SMDG is a non-profit foundation, run by and on behalf of companies and organizations working in the maritime industry, like container terminals, ocean carriers and related companies and organizations. Members are coming from all parts of the world and cover ship as well as port operations. SMDG develops and promotes UN/EDIFACT⁴ EDI-messages for the Maritime Industry and is an official Pan European User Group, recognised by the UN/EDIFACT Board. Since its inception the group has held numerous meetings across the globe. The first was held in London in 1987, since then other locations have included Bremen, Rotterdam, Hamburg, Felixstowe, Antwerp, Genoa, Malmo, Cardiff, New York, Southampton, Helsinki, Salerno, Dubai, and Singapore.

The original objective of the group was to agree a standard format for the exchange of ship stowage planning information. This became known as the BAPLIE⁵ message

³ From: <http://www.smdg.org>

⁴ United Nations/Electronic Data Interchange For Administration, Commerce and Transport; see also chapter 3.3

⁵ BAPLIE -Bayplan/stowage plan occupied and empty locations message

A message to transmit information about equipment and goods on a means of transport, including their location on the means of transport. The message can be exchanged between (liner's) agents, tonnage centers, stevedores and ships masters/operators

which defines the position of containers in a vessel. The initial development process was slow, reflecting the wide range of interests involved as well as their geographical spread. However, since implementation of the first version of BAPLIE its use has grown rapidly across the world. Most carriers and deep-sea container terminals are now dependent on its use for accurate and timely information. Experience has brought refinement and further development with the latest BAPLIE version 2.0 now coming into use.

The development of UN/EDIFACT messages in the Transport sector in the late 1980s initiated the formation of a global EDI standards organisation and this development has continued to progress from the inception of the UN/EDIFACT standard to the present time. Message structures essential to the use of electronic commerce in the transport sector have been agreed and approved by the relevant United Nations and local authorities, have been implemented by various communities around the world over the past ten years.

*In 1995 the **International Transport Implementation Guidelines Group (ITIGG)** was established. ITIGG realised its major objective of compiling and issuing a document which provides the principles and rules for the international implementation of electronic messages in the transport industry. ITIGG has thus produced harmonised guidelines for all modes of transport (maritime, air, road, rail and other means of inland transport) through consistent recommendations which apply across all modes. Through TBG3 ITIGG is actively participating in the UN/CEFACT⁶ process of comparing and harmonising segment usage between different industry sectors.*

⁶ United Nations Centre for Trade Facilitation and Electronic Business

3.2 PROTECT⁷

In the PROTECT Group the following port or national competent authorities and their Port EDI Service Providers (Port community systems) are participating:

- Port Authority of Antwerp - PORTHUS
- Port Authority of Bremen – DBH
- Port Authority of Felixstowe – MCP
- Port Authority of Hamburg – DAKOSY
- Port Authority of Le Havre – SOGET
- Port Authority of London – CNS
- Port Authority of Rotterdam and Amsterdam- Portbase
- National Competent Authority of Spain - PORTEL.

In view of the recent developments resulting from new legislation from IMO (Dec 2002) and EU (March 2004) as regards ship and port security (SOLAS/ISPS) and from EU as regards Waste management (2000) and Vessel monitoring (2002), the PROTECT Group recognised the need for harmonisation of the reporting requirements to minimise implementation differences for vessel operators/agents between the participating ports. The newly developed version of the PROTECT Guide aims to:

- *Support the new legislation from IMO and EU pertaining to vessel security when vessels berth or transit through a port. The Guide contains the new message BERMAN⁸.*
- *Support the new legislation from the EU pertaining to port reception facilities for ship-generate waste, cargo*

residues and sewage. The Guide contains the new message WASDIS⁹.

- *Take into account the evolving business requirements since the previous version of this Guide, in the areas of vessel monitoring and port handling activities with respect to dangerous goods and polluting and noxious substances). The Guide contains an update of the IFTDGN¹⁰ message.*
- *Support the possibilities for appropriate replies to these messages. The Guide contains an update of the APERAK¹¹ message.*

In the global context of vessel reporting the new PROTECT Guide further aims to:

⁹ WASDIS, Waste disposal information message
A message to convey information on last inspection and/or on waste and cargo residues on board of a means of transport (e.g. vessel) and/or equipment related to a means of transport - and still to be disposed in the next place or port of call of the means of transport. The message supports the implementation (by means of EDI) of the notification requirements as laid down in the Waste directive 2000/59/EC

¹⁰ IFTDGN, Dangerous goods notification message
The International Forwarding and Transport Dangerous Goods Notification message is a message from the party responsible to declare the dangerous goods (e.g. carrier's agent, freight forwarder) to the party acting on behalf of the local authority performing the checks on conformance with the legal requirements on the control of dangerous goods, normally Port Authority, conveying the information relating to one conveyance/voyage of a means of transport such as a vessel, train, truck or barge, on the dangerous goods being loaded, unloaded, and/or in transit. The message supports the implementation (by means of EDI) of the notification requirements as laid down in IMO Dangerous Goods Manifest (IMO FAL Form 7), the vessel monitoring directive 2002/59/EC (Annex I, Cargo Information)

¹¹ APERAK, Application error and acknowledgement message.

The function of this message is: a) to inform a message issuer that his message has been received by the addressee's application and has been rejected due to errors encountered during its processing in the application. b) to acknowledge to a message issuer the receipt of his message by the addressee's application. Application Error and Acknowledgement message containing a reply from the authority pertaining to the processing of the received messages IFTDGN, WASDIS and BERMAN.

⁷ From: "Protect" on <http://www.smdg.org>

⁸ BERMAN Berth management message.

The Berth management message is a message from a carrier, its agent or means of transport to the authority responsible for port and waterway management, requesting a berth, giving details of the call, vessel, berth requirements and expected operations. The message supports the implementation (by means of EDI) of the notification requirements as laid down in the IMO General Declaration (IMO FAL Form 1), the ISPS code and the vessel monitoring directive 2002/59/EC (Annex I, General Information)

- *Present an up-to-date harmonised user guide to the world-wide shipping industry for these messages based on the available international UN/EDIFACT standards for Directories and aligned with the General Recommendations and with the Principles and Rules for the implementation of the IFTDGN and APERAK, as published by ITIGG (International Transport Messages Implementation Guidelines Group) after consultation with PROTECT.*
- *Fulfil the wish of IMO's Facilitation Committee to enable global use of these messages based on common implementation guides in line with IMO standards and agreements.*

3.3 UN/EDIFACT¹²

UN/EDIFACT is the international EDI standard developed under the United Nations. The work of maintenance and further development of this standard is done through the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) under the UN Economic Commission for Europe.

At its meeting 1990-03, Working Party 4 agreed on the following definition of UN/EDIFACT:

- *They comprise a set of internationally agreed standards, directories and guidelines for the electronic interchange of structured data, and in particular that related to trade in goods and services between independent, computerized information systems.*
- *Recommended within the framework of the United Nations, the rules are approved and published by UN/ECE in the (this) United Nations Trade Data Interchange Directory (UNTDID) and are maintained under agreed procedures.*

The EDIFACT standard provides

- *a set of syntax rules to structure data,*
- *an interactive exchange protocol (I-EDI),*
- *standard messages which allow multi-country and multi-industry exchange.*

Thus it is a standard for the data format, but not for the data transmission.

3.4 XML Origin and Goals¹³

XML¹⁴ was developed by an XML Working Group (originally known as the SGML Editorial Review Board) formed under the auspices of the World Wide Web Consortium (W3C) in 1996. It was chaired by Jon Bosak of Sun Microsystems with the active participation of an XML Special Interest Group (previously known as the SGML Working Group) also organized by the W3C. The membership of the XML Working Group is given in an appendix. Dan Connolly served as the Working Group's contact with the W3C.

The design goals for XML are:

- *XML shall be straightforwardly usable over the Internet.*
- *XML shall support a wide variety of applications.*
- *XML shall be compatible with SGML.*
- *It shall be easy to write programs which process XML documents.*
- *The number of optional features in XML is to be kept to the absolute minimum, ideally zero.*
- *XML documents should be human-legible and reasonably clear.*
- *The XML design should be prepared quickly.*
- *The design of XML shall be formal and concise.*
- *XML documents shall be easy to create.*

¹² United Nations/Electronic Data Interchange For Administration, Commerce and Transport

¹³ <http://www.stylusstudio.com/w3c/xml11/sec-origin-goals.htm>

¹⁴ XML - Extensible Markup Language

- *Terseness in XML markup is of minimal importance.*

This specification, together with associated standards (Unicode and ISO/IEC 10646 for characters, Internet RFC 3066 for language identification tags, ISO 639 for language name codes, and ISO 3166 for country name codes), provides all the information necessary to understand XML Version 1.1 and construct computer programs to process it.

This version of the XML specification may be distributed freely, as long as all text and legal notices remain intact.

3.5 Current state of EDIFACT¹⁵

There is an apparent battle between XML and EDIFACT. An equivalent XML message has a larger file size than an EDIFACT message, but it is easier for users to read (although this is not necessary because the contents are created to be read by computers). Another possible explanation is that compatibility is being favored over performance, since more tools exist to work with XML data than with EDIFACT. EDIFACT-messages can be as much as one tenth the size of XML-messages. That makes XML less attractive for very high volume applications.

An advantage of EDIFACT is the availability of agreed message-contents, which XML must leverage to develop its own similar agreed contents. RosettaNet is one of the emerging XML standards and is widely used in semiconductors and high tech industries.

UBL is another currently being adopted by Scandinavian governments as a legally required standard for sending invoices to governments, and was enforced in February 2005 that all invoices to the Danish government must be sent in an electronic format.

ebXML is another XML standard built by UN/CEFACT (along with EDIFACT), and is

often seen as a standard best suited for small and medium enterprises.

However, EDIFACT is likely to remain the most widely used in high tech, civil aviation, retail and tourism industries, due to the amount of software that leverages the standard, and the need for integration between new systems and legacy systems.

Europe has a large EDIFACT installed base because it adopted the technology early, while the Asian region adopted B2B in later implementations and is therefore using more XML standards.

3.6 XML/EDIFACT¹⁶

XML/EDIFACT is an Electronic Data Interchange format used in Business-to-business transactions. It allows EDIFACT message types to be used by XML systems.

EDIFACT is a formal language for machine readable description of electronic business documents. It uses a syntax close to delimiter separated files. This syntax was invented in the 1980s to keep files as small as possible. Because of the Internet boom around 2000, XML started to become the most widely supported file syntax. But for example, an invoice is still an invoice, containing information about buyer, seller, product, due amount. EDIFACT works perfectly from the content viewpoint, but many software systems struggle to handle its syntax. So combining EDIFACT vocabulary and grammar with XML syntax makes XML/EDIFACT.

The rules for XML/EDIFACT are defined by ISO TS 20625.

¹⁵ From Wikipedia, the free encyclopaedia

¹⁶ From Wikipedia, the free encyclopaedia

3.7 ISO/PAS 28005-2:2009 Security management systems for the supply chain -- Electronic port clearance (EPC) -- Part 2: Core data elements¹⁷

ISO/PAS 28005-2:2009 contains technical specifications that facilitate efficient exchange of electronic information between ships and shore for coastal transit or port calls. It is intended to cover safety and security information requirements related mainly to the relationships between the ship and the port and coastal state authorities as defined below.

ISO/PAS 28005-2:2009 contains the definition of core data elements for use in electronic port clearance (EPC) messages. It contains definitions of core data elements for electronic messaging between ships and shore in the areas of safety, security and marine operations. It does not define any structuring of messages or provide any guidance on what information is required for a particular purpose; it is rather a general data dictionary for safety, security or operation-related maritime information.

It is intended for use in XML messages and will for that reason differ somewhat from the similar trade data elements directory (TDED) International Standard (ISO 7372).

The core data elements defined in ISO/PAS 28005-2:2009 are specified so that their meaning and interpretation in general shall be independent of the context they are used in.

ISO/PAS 28005-2:2009 does not define the message formats required to exchange information.

ISO/PAS 28005-2:2009 contains definitions of core data elements for electronic port clearance. These elements cover all requirements for ship-to-shore

and shore-to-ship reporting as defined in the following:

- *All FAL standard declarations (FAL 1 to 7) as defined in the FAL Convention.*
- *ISPS reporting requirements as defined in ISPS and MSC 1130.*
- *All general ship reporting requirements as defined in IMO A.851]*
- *Recommended reporting on ship generated waste as defined in MEPC 644 (mandatory within the European Union, as described in EU/2000/59).*
- *Required reporting as defined in the bulk loading and unloading code IMO A.862.*
- *ETA reporting to pilot station as defined in IMO A.960.*

ISO/PAS 28005-2:2009 can also be used for information exchanges between the ship and the ship agent, the port as well as ship operator or manager. It will not necessarily cover issues such as customs clearance of imported or exported goods or transport service provisions to goods owners.

4 Definition and scope of e-navigation¹⁸

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 intended to meet present and future user needs through harmonization of marine navigation systems and supporting shore services.

IMO has started to develop this concept in 2006 and is now busy in implementing it.

¹⁷

http://www.iso.org/iso/catalogue_detail.htm?csnumber=54501, Abstract

¹⁸ IMO, MSC 85/26/Add.1, ANNEX 20, STRATEGY FOR THE DEVELOPMENT AND IMPLEMENTATION OF E-NAVIGATION

IALA plays an important role in the implementation process.

5 Development of e-maritime

On Oct. 10, 2007 the European Commission (COM) communicated and issued to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions after quite a long consultation process a paper titled 'An Integrated Maritime Policy for the European Union'¹⁹

In this paper - commonly known as the Blue Book - the following projects are stated to be of particular importance²⁰:

- *A European Maritime Transport Space without barriers*
- *A European Strategy for Marine Research*
- *National integrated maritime policies to be developed by Member States*
- *An European network for maritime surveillance*
- *A Roadmap towards maritime spatial planning by Member States*
- *A Strategy to mitigate the effects of Climate Change on coastal regions*
- *Reduction of CO₂ emissions and pollution by shipping*
- *Elimination of pirate fishing and destructive high seas bottom trawling*
- *An European network of maritime clusters*
- *A review of EU labour law exemptions for the shipping and fishing sectors*

The tools for integrated policy-making are mentioned as well²¹.

An integrated governance framework for maritime affairs requires horizontal planning tools that cut across sea-related sectoral policies and support joined up policy making. The following three are of major importance:

- *maritime surveillance which is critical for the safe and secure use of marine space;*
- *maritime spatial planning which is a key planning tool for sustainable decision-making; and*
- *a comprehensive and accessible source of data and information.*

With regards to a European network for maritime surveillance following was stated²²:

Maritime surveillance is of the highest importance in ensuring the safe use of the sea and in securing Europe's maritime borders. The improvement and optimisation of maritime surveillance activities, and interoperability at the European level, are important for Europe to meet the challenges and threats relating to safety of navigation, marine pollution, law enforcement, and overall security. Surveillance activities are carried out by Member States but most of the activities and threats that they address are transnational in nature. Within most Member States surveillance activities concerning fisheries, the environment, policing of the seas or immigration fall under the responsibility of several different enforcement agencies operating independently from each other. This often results in sub-optimal use of scarce resources.

The Commission, therefore, advocates the need for a higher degree of coordination on maritime surveillance through deeper cooperation within and among the Member States' coastguards and other appropriate agencies.

The gradual achievement of an integrated network of vessel tracking and e-navigation systems for European coastal waters and the high seas, including satellite monitoring and long range identification and tracking (LRIT), would also provide an invaluable tool to public agencies.

¹⁹ COM(2007) 575 final, An Integrated Maritime Policy for the European Union

²⁰ COM(2007) 575 final, p. 3

²¹ COM(2007) 575 final, p. 5

²² COM(2007) 575 final, p. 5

The Commission will:

- *promote improved cooperation between Member States' Coastguards and appropriate agencies;*
- *take steps towards a more interoperable surveillance system to bring together existing monitoring and tracking systems used for maritime safety and security, protection of the marine environment, fisheries control, control of external borders and other law enforcement activities.*

In 2009 the political aims were defined further and a number of communications issued²³. Although not being a direct subject of the communications some statements were made:

- *Part of the e-maritime initiative to improve maritime surveillance until 2018 and to enable an integrated management system is to monitor, identify, track and report all vessels at sea and on inland waterways. This system should then develop into an integrated system providing e-services at the different levels of the transport chain and interface with e-freight, e-customs.²⁴*
- *The COM on their end should establish a framework enabling the deployment of e-maritime services at European and global level.²⁵*

Parts of the political aims were deriving from the so-called OPTIMAR Study, which should be read in conjunction with COM(2009)8.

With regards to e-maritime nothing is mentioned in the OPTIMAR study, except a statement with regards to a lack of global ICT²⁶ standards and a proposal to

develop same. For SSS²⁷ the development of a European standard is expected to be launched.²⁸ In the study it is mentioned²⁹:

ICT Standards.

In order to promote the development and utilisation of safe digital navigation, improved communication between ship and shore-based administrations, the EU27 (...) should actively work for the establishment of global standards. A sub-objective is to work for the establishment of a European standard.

5.1 Status of e-maritime³⁰

Since beginning of 2009 a number of activities took place regarding e-maritime. The responsible unit at the EU Commission and its project officer have been busy in introducing the initiative and invite stakeholders to participate in the transposition of the e-maritime initiative. Workshops took place i.e. with ESPO³¹. A detailed communication³² was published named: A common information sharing environment for the EU maritime domain. The research project SKEMA has conducted a number of surveys and published them on their website³³.

At present the COM by its a.m. communication intends "to set out guiding principles for the development of a common information sharing environment for the EU maritime domain"³⁴.

Furthermore it is stated³⁵:

Use of a Community based system:

²³ COM(2009)8 final, 21.01.2009, Strategic Goals and recommendations for the EU's Maritime Transport Policy until 2018; COM(2009)10 final, 21.01.2009, Communication and action plan with a view to establishing a European maritime transport space without barriers

²⁴ COM(2009)8, 21.01.2009, page 8, 9

²⁵ COM(2009)8, 21.01.2009, p. 12

²⁶ Information and Communication Technology

²⁷ SSS - Short Sea Shipping

²⁸ OPTIMAR Study, Introduction and Summary, Sept. 2008, p. 13

²⁹ OPTIMAR Study, Introduction and Summary, p. 16, Sept. 2008.

³⁰ The EU e-Maritime Initiative, Presentation at Short Sea Shipping (SSS) and Motorways of the Sea (MoS) Focal Points meeting, Brussels, 18 March 2010

³¹ ESPO – European Sea Ports Organisation
³² COM(2009)538 final, 15 Oct. 2009

³³ <http://www.eskema.eu>

³⁴ COM(2009)538, p. 3

³⁵ COM(2009)538, p. 7

For certain categories of information, it is easier and more cost-efficient to collect and disseminate the data in a centralised manner. The Community system SafeSeaNet should be used by all relevant user communities and be developed further to function as the main platform for information exchange in the EU maritime domain with regard to port arrival and departure notifications, notifications on dangerous goods, maritime security notifications, incident and accident information, AIS, LRIT and pollution monitoring. The management and future evolution of this system is carried out by the Commission, assisted by the SafeSeaNet High Level Steering Group, as defined by Directive 2002/59/EC.

The COM aims:

“to trigger a reflection process at EU and Member State level. This work will need to encompass all user communities so that their needs, and the policy options necessary to meet such needs, are clearly identified. Towards this end, the Commission's services cooperate with the European Defence Agency's Wise Pen Team in the framework of their mandate to issue a report on maritime surveillance.”

At the same time COM leaves some flexibility for own information systems:

The building up of the common information sharing environment should not in any way hinder the development of existing and planned sectoral information systems, including their evolution, as long as the need for interoperability enabling an information exchange with other relevant systems is taken into account.

COM intends to implement 'e-maritime' through a Framework Directive³⁶, which provides a coherent view of the way Maritime Transport could operate at a future date. This framework directive shall set:

- *scope, context, definitions and minimum requirements*
- *general rules seeking the active encouragement of best ICT practices throughout the industry.*
- *key application domains where safety, security and environmental risk management as well as competitiveness and performance can be strengthened and enhanced*
- *objectives, structure and mandate for policy and technical bodies that would facilitate or undertake the development of solutions and the regulatory/enabling framework to support them (through subsequent Directives).*

“Daughter” Directives will follow with implementation roadmaps of e-Maritime applications in:

- *administration and compliance management;*
- *ship operations;*
- *port-terminal operations;*
- *integration in the transport chain;*
- *seafaring promotion*

Pilot implementations (possibly utilising a common platform linked to SSN) will facilitate evaluation and determination of specific future policy, standardisation, research and development needs.

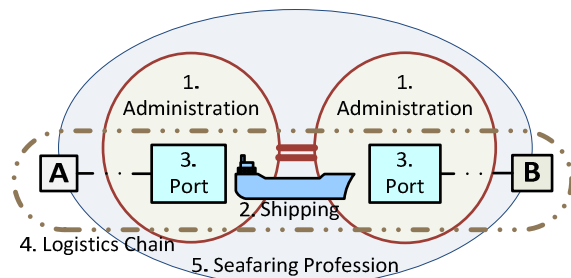
However, there are 3 main areas where policy is still needed³⁷:

- *To address areas of concern particularly over data security and protection.*
- *To achieve the necessary level of standardisation*
- *To persuade stakeholders of the benefits and thus ensure wide adoption of the e-maritime approach.*

³⁶ Christos Pipitsoulis, at Short Sea Shipping (SSS) and Motorways of the Sea (MoS) Focal Points meeting Brussels, 18 March 2010

³⁷ SKEMA e-Maritime Periodic Study: Summary, March 5, 2010

The final aim³⁸:

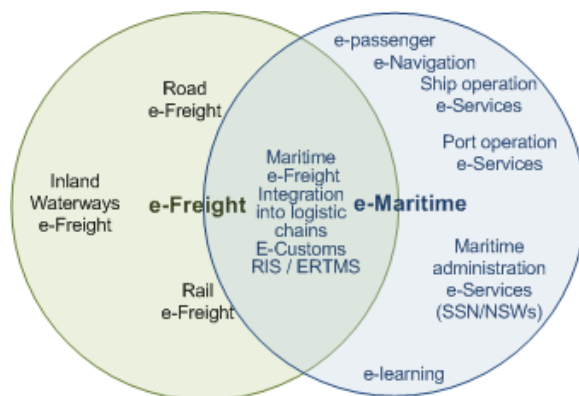


6 Accompanying activities

What can be extracted from the SKEMA website is that at present following exists on EU level:

- 8 action plans
- 13 directives for transportation
- 4 directives for ports and
- 5 directives for labour

As shown in the illustration below³⁹ quite a number of so-called e-activities are underway.



With regards to the improvement of surveillance obvious progress has already been achieved. On March 10, 2010

³⁸ Christos Pipitsoulis, at Short Sea Shipping (SSS) and Motorways of the Sea (MoS) Focal Points meeting Brussels, 18 March 2010

³⁹ Christos Pipitsoulis, at Short Sea Shipping (SSS) and Motorways of the Sea (MoS) Focal Points meeting Brussels, 18 March 2010

EMSA⁴⁰ has launched a 'map-based ship surveillance system' and states:

For the first time, EMSA's new SafeSeaNet tracking module — called STIRES — allows authorities to see all commercial vessels in and around EU waters in a single view. This will be closely followed by the picture for the whole world. The information has been available to Member States in the SafeSeaNet system for some time, but this is the first time that users will be able to see it in a fully interactive, multi-functional display.

In a wider context one also has to look at trends like e-government and e-governance.

7 Comments

At UN level and voluntarily on a port and shipping industry level as well as in the maritime industry IT standards are already available and in use. The most recent development is ISO 28005. Insofar the statement in the OPTIMAR study that standards are missing is to be further evaluated.

The authors of the SKEMA e-Maritime Periodic Study of March 5, 2010 state in their summary:

Maritime shipping companies as well as ports have not traditionally invested in information systems primarily because ICT is not viewed as a bottom line item as in other industries such as air transport, road transport, the financial and even the retail sector.

The maritime transport sector is heavily regulated with respect to safety, security, environmental protection, competition, customs and labour laws. Complexities arise from the fact that international and national regulations co-exist with inconsistencies and overlapping requirements. The compliance enforcement agencies are also organised in different ways from country to country

⁴⁰ EMSA – European Maritime Safety Agency

which hampers efforts to harmonise and simplify applicable laws and regulations and compliance procedures...

I cannot agree with the statement that ports and shipping have not traditionally invested in ICT.

Ports and the shipping industry have invested in an IT structure since years. The big challenges for ship owners definitely are the international dimension and the different regional standards. As there is hardly any port of significance without a port community system, I believe that the e-maritime initiative of the EU may create or may have created fears that the investments made so far probably are redundant.

So it is already now possible to make customs declarations in the Netherlands from Germany by IT.

Legislation requires different reporting formats and different information to be passed on to authorities. Thus it shall take some time to have a uniform reporting even within one country. The outcome of this is the requirement to have a harmonized legislation at least for a country or a region.

In general I consider IT to be a tool to support, improve, accelerate, standardise and make easier business processes. Unfortunately IT became a business process in itself and very often the actual benefit is not really obvious. Business processes in the port and shipping industry are quite complex: Although one can establish generic business processes the different legislative requirements demand specific answers.

It is also a fact that ships only have limited or expensive access to the information structure available ashore. With the diminishing seafaring experience in company headquarters also the knowledge about the environment ships are working in seems to be lost. It has to be doubted if this brain drain can be compensated by ICT.

In COM(2009)8 COM states the surveillance system envisaged (new SSN) shall lead to a system providing other e-services. Although information necessary for surveillance can be used for other purposes as well, I believe that surveillance and commercial application shall stay separate.

In connection with IT and its use the demand for so-called single windows is regularly coming up. A definition of a single window is still missing. Is it a 'central' computer' or 'address', which is quite often the demand, or is it a standardized procedure for a process in a region or nation?

It has to be kept in mind that at the end information are transmitted to make possible and support planning, surveillance or other operational issues. These information have to arrive at the parties or persons that are responsible for this process. So distribution of the information received in a single window to the responsible stakeholder is of utmost priority. Whether a European central computer can cope with this challenge has to be researched. Looking at the number of ships calling European ports during a 24 hour period and looking at the changes that can occur in the normal conduct of a port call, it is to assume that the port community systems have to be the basis of an e-maritime network in Europe.

As a first step interoperability of government agencies on national and regional level has to be achieved. Looking at the fact that a truck loaded in Portugal with e.g. spare parts for cars destined for Poland can cross the European continent without any routine checks and comparing this with the burden put on a ship transporting the same commodity, it can easily be imagined that the legislative and administrative simplification is quite challenging and emphasis shall be put on this.

EHMC⁴¹ participated in the MarNIS⁴² research project. To ascertain the

⁴¹ European Harbour Masters' Council

information needs and to advice on the best way forward following was ascertained and delivered by the work group⁴³:

It is recommended that widely accepted standards of IT are used in the further facilitation of the ship reporting system. The system should be so flexible that it can communicate with already developed and existing port systems. The system should not interfere with the existing practices of notifications to the Harbourmaster. From 750 ports, a number of 100 may have IT systems to communicate with an electronic system, the rest has not and might not have it in future. ∅ For information provision it might be advisable to divide between bigger and small and medium sized ports (SMP's). SMP's do not always have the same number of intervention powers Neither might they foresee large investments in IT systems.

The bigger ports advise their information to be kept within the port, not (only) within a central system.

Dependence on one central system is considered to be unwanted. This is different for SMP's; they are content having access to one central system if at least this system provides the information and information quality they need.

A two-way system may result from this; notifications are provided to one central system and at the same time directly to (bigger) ports. In this structure all ports have access to the central system while at the same time bigger ports still have their own information. From the point of view formal competencies and intervention powers, more 'single windows' might thus be advisable and attention should in that case be directed to realising interfaces between 'windows' as well as between existing information sources.

National governments thus have the freedom to arrange their port systems as fits the needs of their ports and countries.

⁴² EU research project <http://www.marnis.org>

⁴³ Roles, statutory powers, responsibilities, decision processes, information needs by Harbourmasters & Port Entrance profiles, Version 0.5; 1-11-2006
Deliverable code: Sub-WP 1.1

One of the worries of HM's of bigger ports, as for the dependency on one central system, is that direct communication links risk to be cut of, when using one central system. Also the reliability of data needs to be a proven fact. Another issue are huge investment that many ports have already done in developing port systems.

As the ship reporting system has a role to play in safety information, accident abatement and combating and preventing oil pollution, and these are not the only processes that play a role in ports, worries also exist that a lot of necessary information is not stored and transferred if the system would become to be the ONLY single window.

Another risk of one central system is that new developments might be blocked, developments that take place easier when organised at smaller scales. Also in huge complicated IT systems, a lot of attention necessarily will need to be addressed to solving problems related to the large scale and scope.

It is further recommended for the market to be considered as one of the partners in the future European ship reporting system, thus not only to consider authorities' needs when developing the reporting system.

From a market point of view standardisation of information requested by different parties is of main importance.

8 Conclusion

At present the e-maritime process is still developing. COM is seeking advice, comments and views from stakeholders in the industry. Unfortunately the participation is not on a high level. Although the initiative in general can be seen positive, certain facts have to be considered and are probably slowing down the implementation process or do not allow to exploit the full potential of e-maritime.

To be mentioned are:

- Digital divide
- Access of vessels to electronic communication facilities
- Unclear standards
- International aspect of shipping

The e-maritime initiative has a lot of potential but necessitates:

- Int. accepted functional framework;
- Collaboration between all EU Directorates
- A clear legal framework for data protection and sharing within EU;
- Public-private collaboration, allowing public-private funding;
- compliance with UN Conventions and IMO regulations.

The steps taken towards an e-maritime environment should be:

- Simplified and coherent legislation and administrative requirements
- Definition of business processes
- Implementation of IT or e-maritime

It is to assume that EU in order to achieve these aims will

- launch more stakeholder survey
- allocate funds for the implementation of e-maritime

A lot of institutions and organisations are in favour of and promote e-initiatives. If ports and Harbour Masters are not trying to get involved in the e-maritime and e-

navigation process, they will at one stage face an unsuitable application.

Aim of Harbour Masters should be to maintain the direct flow of information to their offices in order to fulfil the legislative and operational tasks. Our aim should be to get support from IT in present and future business processes.

It cannot be our aim to have an additional business process called 'e-maritime'. SKEMA for the periodic survey has conducted stakeholder workshops and surveys⁴⁴.

40 participants contributed, out of these only 4 were coming from port or terminal operations.

EHMC members therefore should:

- actively work on increasing the awareness for e-maritime on their port and national level
- participate in the stakeholder surveys and
- participate in research or other projects.

In my opinion this active contribution will avoid frustration and can make e-maritime a valuable and user friendly instrument

⁴⁴ SKEMA e-Maritime Initiative Periodic Study, Task 4 Report: Stakeholder Workshops and Surveys