Background to the EU e-Maritime initiative

The Commission announced in its Mid-term Review White paper on Transport Policy[1] that will propose measures for the implementation of e-Maritime systems in 2009. This announcement was repeated in the European Agenda for Freight Logistics of 18 October 2007[2]. *This introductory paper to e-Maritime is based on presentations and papers presented on this subject by DGTREN officers.*

The objective of European e-Maritime initiative is to promote "coherent, transparent, efficient and simplified solutions in support of cooperation, interoperability and consistency between member States, sectors, business and systems involved in the European Transport System"[3]. This objective is fully compatible with the Lisbon Agenda, the mid-term review of the Transport White Paper, the Blue Book on an integrated maritime policy, the information society and a range of other policies inspired from electronic means of communication.

The e-Maritime objectives are particularly relevant to the "Maritime transport strategy for 2008-2018"[4], through supporting improved efficiency and quality of maritime transportation services to meet European economic, social and environmental needs in line with the Integrated Maritime Policy.

In the broader context of the Lisbon Strategy, e-Maritime is closely related to the European e-business initiative which was set up in response to the Lisbon objective that the EU should become the most competitive knowledge-based society in the world by 2010. The EU i2010 Strategic Framework stresses the critical role of ICT for productivity and innovation, and anticipates a new era of e-business solutions, based on integrated ICT systems and tools. In this context e-Maritime can be seen as an initiative to promote e-government[5] and e-business[6] developments in the maritime transport sector.

e-Maritime is also closely related to:

- the "e-freight" initiative of the EU Freight Logistics Action Plan which denotes the vision of a paper-free, electronic flow of information associating the physical flow of goods with a paperless trail built by ICT.
- the e-Customs initiative[7] aimed at providing a paperless environment for customs and trade by making Member States' electronic customs systems compatible with each other and creating *a* single, shared computer portal.

[1] the European Commission's 2001 Transport White Paper" (COM (2006)314 final of 22 June 2006)

[2] The EU's freight transport agenda: Boosting the efficiency, integration and sustainability of freight transport in Europe COM(2007) 606 final

[3] European Commission (EC) Green Paper "Towards a future Maritime Policy for the Union"

[4] As specified in the Blue Book which is the evolution of the Green Paper on "A Future Maritime Policy for the Union: a European Vision of the Oceans and Seas". COM (2006) 275

[5] e-Government also known as e-gov, digital government, online government refers to the use of internet technology as a platform for Administrations to exchange information, providing services and transacting with citizens, Businesses (A2B), and other Administrations (A2A).

[6] eBusiness (electronic business) is, in its simplest form, the conduct of business on the Internet. It is a more generic term than eCommerce because it refers to not only buying and selling but also servicing customers and collaborating with business partners (B2B) and administrations (B2A).

[7] communication COM/2003/452 of 24/07/2003

Problem definition

Maritime transport is the prominent mode for trade between EU and third-countries carrying approximately 40% of internal market freight flows and 90% of EU external trade. Its importance in the development of a sustainable European transport system is placing increased pressure on transport operators particularly EU ports as well as on administrations in charge of various controls (safety, security customs, immigration, etc) to increase the efficiency and quality of their services.

However, the EU maritime transport industry is lagging behind other sectors in adopting modern ICT technologies which hinders progress towards efficiency and quality improvements and prevents its development into a knowledge-based economic sector. In the rail and inland navigation sectors, the deployment of a coherent EU framework for information flows in an interoperable manner is supported by the European Rail Traffic Management Systems (ERTMS)[8], and the River Information Services (RIS)[9] respectively. In contrast, the maritime transport is served by a limited range communication technologies and by fragmented applications including SafeSeaNet, Automatic Identification System (AIS), Long-Range Tracking and Tracing (LRIT) and proprietary Port Information Systems.

Specific e-Maritime challenges include the fact that:

1. Administrative procedures in the maritime transport are complex and time-consuming. They are still today often carried out on paper. When carried out electronically, the systems differ from region to region.
2. Improvements in port and ship security and safety increasingly relies on integrating 'intelligent' surveillance / monitoring systems in proactive and remedial safety and security management processes spanning across collaborating authorities and transport stakeholders. Cross regional or Pan-European operational systems are therefore needed with 'optimised' electronic interfaces between different organizations and their security or safety systems.
3. Maritime transport is insufficiently integrated in the logistics chain and in particular electronic exchange of messages and data is not well developed which hampers the development of Motorways of the Sea[10] as part of Trans-European Networks.
4. Lack of interoperability results in increased costs because several different systems co-exist without real economies of scale. Consequently, ship, port and logistics operators and

[8] One component of ERTMS, the European Train Control System (ETCS), guarantees a common standard that enables trains to cross national borders and enhances safety. **The Commission has adopted on 23 April 2008 the Decision modifying Annex A** to Decision 2006/679/EC of 28 March 2006 concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European conventional rail system and Annex A to Decision 2006/860/EC of 7 November 2006 concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European high speed rail system

[9] The River Information Services (RIS) provides harmonised information services to support traffic and transport management in inland navigation, including interfaces to other transport modes and is progressing under a master plan agreement

[10] The European Commission defines Motorways of the Sea as an 'existing or new sea-based transport services that are integrated in door-to-door logistic chains and concentrate flows of freight on viable, regular, frequent, high-quality and reliable Short Sea Shipping links. The deployment of the Motorways of the Sea network should absorb a significant part of the expected increase in road freight traffic, improve the accessibility of peripheral and island regions and states and reduce road congestion'.

national administrations have to develop several adaptors (often with limited useful life) to integrate with a plethora of different systems they encounter in their day to day operations. Integration cost penalties affect SMEs in particular because they need access to information systems that are often closed and which vary from company to company or port to port.

5. Lack of interoperability creates barriers to utilising ICT applications to increase the operational efficiency of ports and ships and to enable innovative solutions to increase sustainability performance. There is a need for supports to strategically manage maritime transport networks, plan shipments effectively and control the implementation of such strategies and plans to maintain optimum performance.
6. The European shipping industry is concerned by the short supply of qualified personnel. Continued education offered to the shipping industry supported by distance learning is currently insufficiently utilised.

In summary e-Maritime will address the above issues which are summarised in Figure 1.

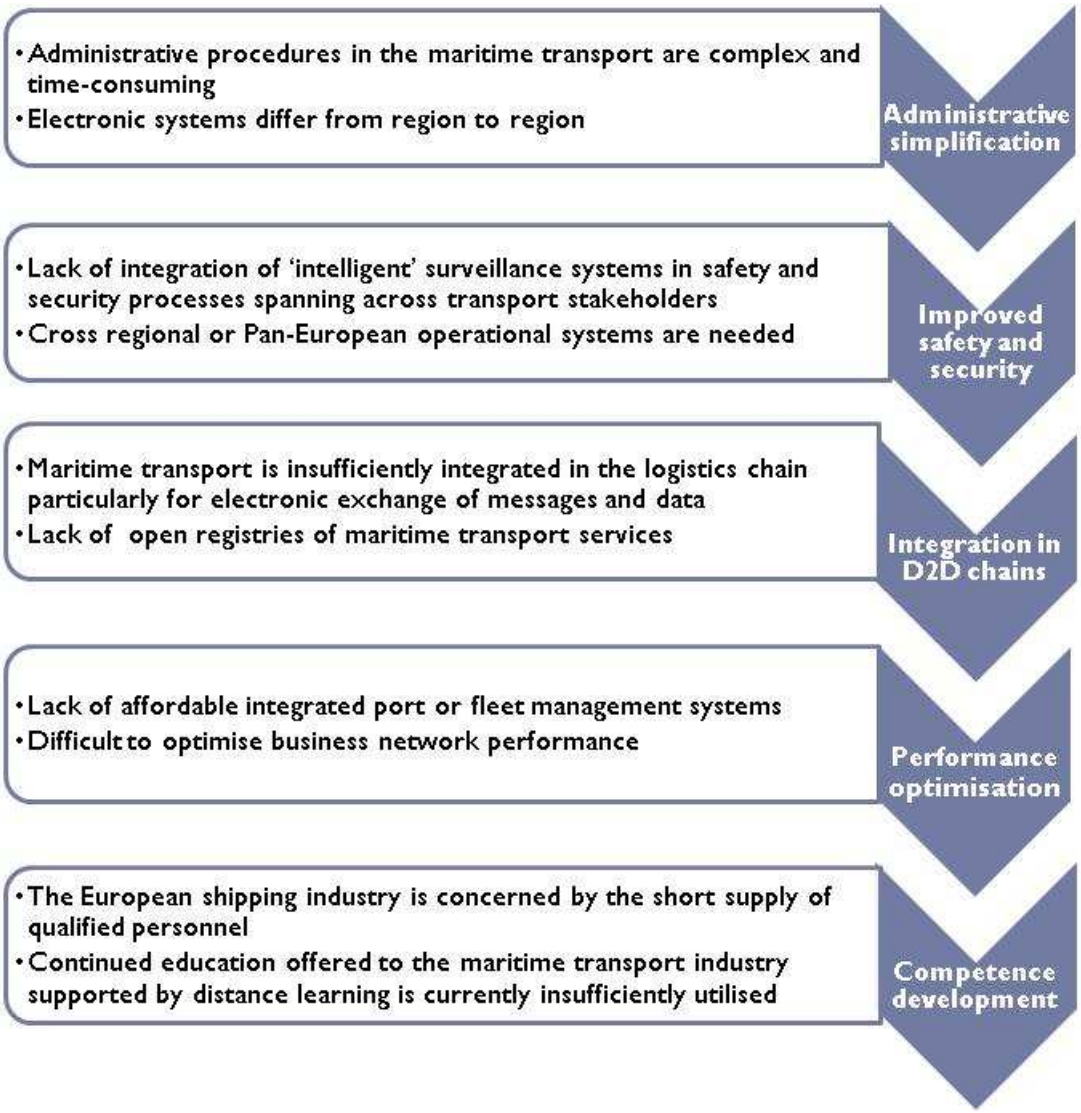

Figure 1: Key challenges for e-Maritime

Objectives

In general, e-Maritime is aimed at supporting the development of sustainable transport in Europe through the development and application of systems based on the latest information, communication, and surveillance technologies; all in line with the EU transport policy objectives summarised in Annex 1.

Specific objectives include:

1. Improving the safety and security of maritime transport services and assets and environmental protection with specific focus on:
    a. Accelerated development and take up across EU member states of SafeSeaNet, EU LRIT, and e-navigation
    b. Improved utilisation of the European global satellite navigation system (GALILEO) and its integration with traffic monitoring processes
    c. Integration and intelligent processing of data from heterogeneous sensors and other information sources for safety, security and environmental risk management at EU, regional and organisational levels.
2. Increasing the competitiveness of the EU maritime transport industry by:
    a. Simplifying administrative procedures through Next Generation National Single Windows for Co-modality providing interoperability between EU Single Windows / platforms and regulatory compliance reporting systems.
    b. Improving the utilisation of maritime transport resources by supporting maritime transport stakeholders to establish and manage competitive business networks
    c. Supporting improved efficiency of shipping services (cost/ton-km) and enhancing the attractiveness of short sea shipping for efficient door-to-door supply chains (improved service reliability, environmental impact and ease of use) particularly through integrated fleet management systems;
    d. Supporting the development of European Ports as key logistics hubs particularly through advanced Port Single Windows and Port Community systems;
    e. Creating framework conditions for the development of a competitive technology supplier industry in this field.
3. Supporting competence development and working conditions for seafarers by:
    a. Supporting e-learning for maritime transport industry professionals focusing on seafarers
    b. Supporting the development of maritime transport knowledge by sharing digital libraries and interconnecting regional centres of maritime excellence.

Costs in relation to benefits would need to be assessed and special efforts will be made on strategies to increase willingness and motivation for change.

The main objectives for e-Maritime are summarised in Figure 2

Figure2: e-Maritime objectives

The beneficiaries of the e-Maritime capabilities

A list of the transport stakeholders and potential benefits that e-Maritime could deliver for each group is given below.

1. *Transport users (shippers, freight forwarders, transport integrators, etc*) will benefit from:
   - support to identify and use transport services most suited for their purpose;
   - easy access to clear explanations on regulatory requirements and compliance supports;
   - ability to establish strategic alliances with other stakeholders to match trade patterns with improved utilisation of maritime transport resources;
   - web based tools for setting up or joining networks to achieve co-modal goals and support for structuring and monitoring service level agreements on line;
   - improved transparency on shipment plans including the estimated carbon footprint;
   - efficient on-line services for financial and contractual transactions for D2D services;
   - ability to exchange experiences on e-maritime developments with other shippers and to voice improvement requirements.
2. *Ship operators and agents* will benefit from:
   - Facilities to provide information on their service offerings and exchange information electronically with all participants in planning, executing and completing transport operations;

- services to support regulatory compliance utilising efficiently the latest e-Government offerings at regional, national and EU levels;
- supports for interoperability in intermodal / co-modal networks;
- access on the evaluation of emerging technologies (e.g. Internet of Things, semantic web technologies, ITS, etc) and innovative applications ;
- easy web based access to specialist services that will enable the European industry to achieve best-in-class in co-modal transport.
- access on e-training services specifically designed for EU shipping crews.

3. *European port authorities* will benefit from:
   - supports to facilitate the best possible use of the complete port infrastructure and to provide transport users with information on available infrastructure and how to use it*;*
   - supports for compliance and collaboration with authorities on security management;
   - facilities, particularly for Small to Medium Ports, to assess potential benefits from Single Window solutions and port community systems
   - supports for e-training of port community people and knowledge sharing with other ports.
4. *Research and Educational / Training organisations* will benefit from:
   - Co-ordinating offerings on maritime transport courses and e-learning services;
   - Managing requirements surveys and establishing collaborative networks with policy makers.
5. *Seafarers* will benefit from:
   - Improved access to professional development e-training services
   - Improved communication facilities
   - Improved information, education and entertainment services
6. *Systems Developers and Consultants* will benefit from:
   - publishing their services so that could be used on demand
   - using interoperability facilities to integrate their platforms / applications to match integrated IT solutions to market potentials;
   - Develop new innovative products for e-Maritime
7. *Transport and Trade Administrations* will benefit from:
   - automating compliance reporting;
   - exchange information with other authorities for safety, security and environment risk management;
8. The *European Commission and national transport ministries* will benefit on a number of counts, principally from an ability to assess the potential impact of policies on European transport competitiveness and sustainability.
9. *European Statistical Services* will benefit from potentially receiving automatically information on maritime based trade and provide services for the benefit of all the above.

Annex 1: EU Maritime Transport Policy Objectives

The *Mid-term review* of the White Paper on Transport[11] sets out the objectives of the transport policy to be addressed at a pan-European level with the maritime component forming an integral part of it. Emphasis is given to principles of co-modality described as the efficient use of different modes of transport on their own and in combination - to optimise Europe's transport system, while acknowledging that shift to more environmentally-friendly transport modes must continue to be pursued.

The transport policy is reflected in the FP7 overall objective to *progress sustainable growth by responding to the societal challenges of the transport system as a whole* which can be summarised from a maritime perspective as follows:

1. Strengthening competitiveness; improved efficiency and quality of maritime services and improved regulatory conditions;
2. Increased mobility "without" negative effects including improved accessibility to remote European regions;
3. Encouraging co-modality and optimum integration of maritime services into logistic chains;
4. Improved safety and security for passengers and citizens;
5. Environment protection, decongestion and reduction of emissions to provide "Green" freight corridors;
6. Maintaining a leading position in transport technologies;
7. Stimulating a wide-ranging debate on transport scenarios with a 20 to 40 year time horizon.

In the Green Paper on Maritime Policy[12] the European Commission declared the need for an all-embracing maritime policy aimed at developing a thriving maritime economy, in an environmentally sustainable manner supported by continued investments in knowledge and skills as key factors for maintaining competitiveness and environmental sustainability. These principles are also emphasised in Commission's Communication, presented to the European Council and Parliament on the 10th October 2007, for an Integrated Maritime Policy[13] for the European Union, which consists of "A Vision Paper and an Action Plan". The "Blue Book"[14] outlines the objectives, principles and framework of the future maritime policy.

[11] Mid-term review of the European Commission's 2001 Transport White Paper - Keep Europe moving - Sustainable mobility for our continent (COM (2006) 314)

[12] GREEN PAPER Towards a future Maritime Policy for the Union: A European vision for the oceans and seas COM(2006) 275 final http://ec.europa.eu/maritimeaffairs

[13] The idea of the Integrated Maritime Policy approach is that all sea-related policies such as on Transport, Environment, Research, Fisheries, Security, Safety, Employment etc, must be developed in an integrated way in order to promote growth and more benefits for each sector with the minimum negative impacts to the other sectors

[14] The new Communication is known as the Blue Book and it is the evolution of the Green Paper on "A Future Maritime Policy for the Union: a European Vision of the Oceans and Seas". COM (2006) 275

Blue Book Index

T1. Maritime Governance
   a. Action towards integration of Maritime Affairs across the EU
   b. Regulatory obstacles
   c. Collective learning – exchange of best practice

T2. Tools for Integrated Policy-Making.
   a. Surveillance Activities
   b. Maritime Spatial Planning and integrated coastal zone management
   c. European Marine Observation and Data Network

T3. Maximising the sustainable use of the oceans and seas
   a. Development of multi-sectoral clusters and regional centres of maritime excellence
   b. Maritime Transport
   c. Strengthening careers and employment in the maritime sectors
   d. Ports policy
   e. Air Pollution by Ships
   f. Ship dismantling
   g. Action on marine-based energy infrastructures and resources
   h. Action on developing the situation of fishermen at sea
   i. Implementation of the Eco-System Approach in European Fisheries
   j. Proposals on the protection of fisheries resources in international waters

T4. Building a knowledge and innovation base for the maritime policy
   a. European Maritime Research

T5. Delivering the Highest Quality of Life in Coastal Regions
   a. Provision of information on Community projects in coastal regions and their funding
   b. Europe's Outermost Regions and Islands
   c. Action on Mitigation and Adaptation to Climate Change
   d. Sustainable Maritime Tourism
   e. Improving Socio-Economic Data for maritime sectors and maritime regions

T6. Promoting Europe's Leadership in International Maritime Affairs
   a. The EU's profile in international fora and relations with partners
   b. Inclusion of Maritime Policy objectives in dialogue with third countries sharing
   c. regional seas
   d. Report on strategic issues for the EU relating to the Arctic Ocean
   e. Action for the Protection of the High Seas

8. Raising the Visibility of Maritime Europe
   f. European Maritime Day, Annual Report, Awards and awareness campaigns
   g. European Atlas of the Seas
   h. Making information publicly available on Commission proposals on Maritime Affairs