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SKEMA e-Maritime Periodic Study

e-Maritime Policy options

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3 e-Maritime Policy

3.1 Introduction

Central authorities at national and regional level play a major role in the workings of the economy. The nature and amount of intervention differs from country to country. However, it is recognised that even in a free market economy, some regulation and control are needed and controlled in the interests of efficiency, equity and growth.

The role of the 'state' in shipping and ports effectively concentrates on two main themes. Firstly the promotion of the shipping sector to create employment, and maintain a competitive market environment. Secondly, the protection of what can be termed 'public' goods which the markets tend to ignore. These public goods include maintenance of safety in shipping and ports, security for people and goods within the industry; and protection of the environment from the harmful effects of all types of pollution.

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"¹. The e-maritime initiatives are therefore mostly concerned with increasing efficiency in that they are improving knowledge, ensuring adequate standards, and dealing with externalities.

Task 3 focuses on policy options which will fulfil the e-maritime objectives. It builds on the work done in Task 1 which provided the context and explored existing EU policy relating to this area. The European Commission has already introduced a number of policy measures and initiatives which facilitate a move towards an e-Maritime Policy. Some of these initiatives are concerned with creating an environment which is conducive to e-Maritime systems, namely a common approach to policy and decision making and the reduction of barriers. Other direct policy is already exploring electronic systems, specifically in navigation and vessel tracking, the collection of maritime data, and customs documentation. Task 2 analysed the extent of standardisation and the forms that this may take, often seen as a prerequisite for the development of regional policy and in particular when discussing e systems. However, Task 2 recognised that e-Maritime is to a large degree about process improvements and that standards alone would not be sufficient to make the necessary changes. It suggested that although legislation and directives may help achieve the goals, active user buy-in should be a principal aim.

This task first examines the rationale behind intervention and the form that this may take on a general level. It then examines the specific characteristics of the maritime industry which present opportunities and threats in the policy making process. Finally there is a consideration of the various policy delivery mechanisms for e maritime policy relating to the specific areas of:

¹ European Commission (EC) Green Paper "Towards a future Maritime Policy for the Union"

- Safety and security
- Increasing the competitiveness of the EU maritime transport industry by better administration
- Creating a better environment for ship operators
- Supporting the development of European Ports as key logistics hubs
- Improving seafaring and promoting the profession

The policy options in each area are considered based on the three basic criteria of effectiveness and efficiency in achieving e maritime objectives and potential negative side effects.

3.2 Policy options

Market intervention may be necessary for reasons of efficiency, and increasing competitiveness. At EU level, intervention is required when the objectives of the Treaties cannot be met by Member States acting alone or when a collective EU-action would add value. The Commission has identified three types of situation where intervention at the EU level may be required².

1. A discrepancy between the goals of the EU and an existing situation, usually in areas such as upholding citizens' rights and consumer protection, preventing discrimination, protecting the environment, promoting competitiveness and the sustainable development of economic activities and growth.
2. Where the outcome of market forces does not meet society's needs. This could be dealing with pollution, where market prices do not reflect the real costs to society, where there is insufficient supply of public goods, where competition is weak or missing, where markets are incomplete or where a lack of information is affecting the market.
3. Where there is regulatory failure, including poorly-defined legal frameworks, unintended consequences resulting from previous actions or failures with implementation or enforcement.

Intervention at EU level may also be required to break down trade barriers as well as to ensure that the EU meets its international obligations, for example in meeting environmental targets. However, any action taken must take account of the principles of subsidiarity and proportionality. Subsidiarity is the principle whereby the EU does not take action, except in those areas which fall within its exclusive competence, unless such action is more effective than action taken at national, regional or local level. Action should be left to Member States whenever possible. Indeed the EU should be cognisant of any action is already being taken at Member State level whether it would be better to spread existing best practice rather than introduce new EU regulation.

The principle of proportionality sets out how the EU should exercise its powers. Any action should be as simple as possible to minimise the financial or administrative burdens on governments, economic operators and citizens. So, in some cases, the appropriate choice might be to take no action at EU level. Any action that is taken should then be implemented in the lightest possible fashion.

² European Commission Impact Assessment Guidelines SEC (2005) 791- Annex (section 2).

In terms of policy options there is a whole range of possibilities which fall short of imposed regulations and directives. These have been explained and summarized in 'Routes to Better Regulation - a guide to alternatives to classic regulation' produced by the Better Regulation Task Force, December 2005. They are:

- Taking no action
- Providing information or guidance
- Using market based instruments
- Co-regulation
- Self-regulation
- Issuing recommendations
- Flexible Directives

In the report it is argued that:

'all too often European regulatory action comes in the form of 'classic' prescriptive rules and regulations that stipulate both the objectives and how they should be achieved. This approach can stifle innovation and impose unnecessary burdens and costs. Although 'classic regulation' such as traditional Directives and Regulations can work well and is often necessary, it should not be the automatic choice and other approaches should be considered first.' (p.3)

Alternatives can sometimes be more flexible, cheaper, quicker and more effective. The policy development process should therefore systematically compare all the delivery options (regulatory and non-regulatory) at an early stage and choose the one that will successfully implement the policy in the most efficient and least burdensome way.

It should be noted that **all** forms of intervention, from 'classic regulation' to voluntary agreements, should adhere to the principles of proportionality, accountability, consistency, transparency and targeting. But consultation is key to effective delivery of policy goals regardless of delivery. Consulting at the right people at the right times will result in a better policy with more stakeholder buy-in and wider take up.

3.2.1 EU Regulation and Directives

This type of policy response is often appropriate where there is a serious risk to health or security. In such situations there can be no ambiguity and this might be the only way to get a market to respond in the required way.

Compliance rates can be better, often because directives have a higher profile. Traditionally, more publicity and focus is given to formal legal provisions than to alternatives, which are often implemented by less conventional means channels. If properly enforced such measures can lead to action even if there is a general reluctance to comply.

A major advantage of this policy approach is the security it provides for markets, consumers, and citizens, together with clear legal means of redress if the law is broken. Much of the regulation introduced by the EU is designed to provide this protection and security.

3.2.2 No action

The other extreme is to take no action. It is recognised that intervention can take up additional time and resource for those having to comply. In some cases, 'no action' can mean no new requirements or regulations but, instead, taking other non-regulatory steps such as clarifying the existing law, improving its enforcement or highlighting requirements already in place which are not being respected.

The Commission can publish interpretative communications to clarify existing provisions and so avoid the need for new laws. This use of existing laws is also a benefit to the Commission in terms of time and effort and reducing the rate of growth of legislation and the future need to simplify and consolidate it.

In its Impact Assessment Guidelines the Commission has recognised that an 'open method of co-ordination' can help achieve policy objectives without the need for legislative action. For example, Member States can co-operate by sharing best practice, peer reviews or agreeing common targets.

3.2.3 Providing information and guidance

Behaviour can be influenced by providing information or guidance. This information can be provided either by the EU itself or by industry or other bodies. This approach often works well for publicity campaigns, training, or guidance and can often be used in conjunction with other regulatory and non-regulatory options, so that stakeholders know what is expected of them.

This 'light-touch' approach is designed to provide information which enables the industry actors to make an informed decision. In order for information campaigns to be effective, it is vital that the right message reaches the target audience.

3.2.4 Market based instruments (MBIs)

MBIs seek to influence the behaviour of a market by using either positive or negative incentives. The potential of MBIs at EU level is restricted given that the usual incentives such as tax breaks and subsidies are dealt with at a national level. Sometimes, flexible EU level legislation allows and encourages MBIs to be implemented at Member State level, recognising that Member States are in a good position to decide what works best for their markets and jurisdictions.

3.2.5 Co regulation

Co regulation has been defined as *"...the mechanism whereby a Community legislative act entrusts the attainment of the objectives defined by the legislative authority to parties which are recognised in the field (such as economic operators, the social partners, non-governmental organisations, or*

associations)".³ Co-regulation usually involves some sort of legal underpinning and can therefore be described as self-regulation with a legislative 'back-stop'.

An important advantage of co-regulation is that it provides a degree of certainty due to the legal provisions whilst also encouraging innovation by allowing a flexible approach to implementation. The legislation can set out the framework - objective and relevant deadlines, together with the conditions for monitoring and enforcement, whilst the detailed means to achieve the objective is decided upon by the stakeholders.

3.2.6 Self regulation

Self regulation can be defined as "*...the possibility for economic operators, the social partners, non-governmental organisations or associations to adopt amongst themselves and for themselves common guidelines at European level (particularly codes of practice or sectoral agreements)*".⁴

Self-regulation requires markets to regulate their own activities, without any legal underpinning. EU involvement is usually limited to encouraging or facilitating this self regulatory process and usually involves voluntary agreements, codes of practice and codes of conduct.

This approach raises the issues about how to ensure implementation and consistency across Member States especially in fragmented markets. There is also a problem as to legal redress can be sought for any regulatory failure.

Self-regulation at Member State level can sometimes restrict markets and sometimes result in the need for more formal regulation to free up these markets.

3.2.7 Recommendations

Recommendations are official instruments produced by the Commission or Council that do not have legal force but set out suggested courses of action. They are commonly used by the Commission to encourage action in a particular sector and can be used as part of self-regulatory schemes.

Issuing a Recommendation can signal that the EU thinks action should be taken in an area and is often a warning to industry that it needs to act or face the likelihood of future legislation.

3.2.8 Flexible Directives

Traditional Directives are often criticised for being over-prescriptive and inflexible, creating complex requirements and compliance difficulties. However, Directives can be made more flexible by creating an overall framework that clearly sets out the objectives, then leaving open the means of achieving them. This gives Member States and operators the flexibility to implement provisions in ways suited to their markets and avoids the rigidity of a 'one size fits all' approach. In some respects this is like the co-regulation approach but with a more formal framework.

³ Inter-Institutional Agreement on Better Law-Making

⁴ Inter-Institutional Agreement on Better Law-Making

Whilst it can be difficult to measure and compare levels of implementation if Member States take different approaches, it also allows scope to compare them and test out new ideas. Sharing experience and good practice may eventually lead to the most appropriate solution being adopted more widely. Indeed, different approaches may be the only means of achieving the desired objectives in different markets.

The Commission is encouraging the use of more flexible methods of implementation in its Directives. The Impact Assessment Guidelines state that content of a Directive should be limited to the essential aspects of legislation.

“...directives should, as far as possible, be general in nature and cover the objectives, periods of validity and essential aspects of legislation, while technicalities and details should be a matter of executive measures or be left to Member States.”⁵

3.3 Factors which influence policy type

Having set out the different types of intervention it is important to consider the factors which influence the effectiveness and efficiency in achieving the desired objectives. These are:

3.3.1 Risk

Where there is a serious risk to health and safety, there a need for certainty. Prescriptive regulation is often the most appropriate choice but it is important to assess the level of risk so that any measure is proportionate to the threat posed. Even in high risk cases, existing legislation should be assessed to determine whether it is sufficient before introducing the burden of additional legislation.

3.3.2 Technical complexity

For complex or technical areas of policy, better results are often achieved by the close involvement of experts, on the basis that they will have a greater understanding of their own market and can advise on the best means of achieving policy objectives.

3.3.3 Market characteristics

Markets that are innovative and dynamic are best suited to a flexible policy approach. Such flexibility is often desirable in markets with a small number of operators as it is easier to reach a consensus and to monitor compliance. Indeed, smaller markets in which the various actors know what one another are doing are often police themselves well.

3.3.4 Transparency and monitoring

A more flexible and less prescriptive approach requires a good level of transparency in order to monitor progress and success. Such transparency tends to instil confidence.

⁵ “Simplifying and improving the regulatory environment” COM (2002) 278.

3.3.5 Stakeholder buy-in and cooperation

The level of stakeholders support is a factor which influences the policy type. If operators need to be coerced, then prescriptive legislation may be a better necessary in order to meet the required objective.

3.3.6 PR Potential and Consumer interest

Policies and initiatives which have good PR potential or consumer interest may lead to a market solution in that businesses will address the issue themselves rather than wait for legislation or regulation. This has happened to an extent in the environmental arena.

3.3.7 Representative bodies

The existence and effective operation of trade associations can render regulation and legislation unnecessary. The trade associations can police the market. Where sanctions are already in place through trade bodies and associations, there is an incentive for industry to adhere to certain practices. However, where non compliance could have very serious repercussions than legislation may be necessary

3.4 Maritime Industry Characteristics

The maritime industry displays a number of interesting characteristics and issues which have to be taken into account when considering policy options for e-maritime.

3.4.1 Existing regulation

Whilst the industry is heavily regulated with respect to safety, security, environmental protection, competition, customs and labour laws, international and national regulations co-exist with inconsistencies and overlapping requirements. In addition the industry is not very proactive when it comes to self regulation.

3.4.2 Monitoring and Compliance

The compliance enforcement agencies are organised differently from country to country which hampers efforts to harmonise and simplify applicable laws and regulations and compliance procedures.

3.4.3 Industry Fragmentation

The maritime transport sector is heterogeneous and fragmented. The two main players, ship operators and ports, operate separately (with their own strategies and operational plans) and in isolation from other modes preventing proper integration of shipping services in the end to end logistic chains. Part of the problem in this area stems from the long historical development of the

sector which relies on many intermediaries to carry out tasks which can be easily automated today with modern ICT technologies. The fragmentation and competitiveness of the maritime industry has created a lack of transparency which often leads to inefficiencies stemming from a poor level of information sharing, lack of systems integration

3.4.4 Lack of ICT investment

EU maritime transport industry is lagging behind other sectors in adopting modern ICT technologies. Maritime authorities and 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, the financial and even the retail sector. More than half of EU ports have no dedicated system for communicating with administration or the transport operators. The few port information systems that are fully developed in Europe have produced considerable quality and efficiency gains.

This lack of investment also applies to the maritime education and training sector where current practices are inflexible and time consuming. This is coupled that with the fact that there are likely to be increasing requirements for CPD and monitoring. Existing training methods impose too great a burden in terms of cost and time which can also prove a deterrent for prospective industry entrants.

3.4.5 Lack of transparency

The maritime industry by its very nature is highly competitive particularly in a number of segments. Consequently, information is often not freely available due to commercial sensitivities, or because the cost of making it available is prohibitive. Even when information is made available, it is often not in a usable format and is not harmonised particularly from the regulator's viewpoint. These traditional, fragmentary features could be seen as a way that the industry and hence the States protect confidential information creating barriers that cannot easily be broken down.

3.4.6 Lack of Standardisation

Standards are required to make higher degrees of integration possible. As a minimum one needs to look at interface standards between ship and port and from port onto other transport modes. There is in general a lack of information in the maritime domain today.

3.4.7 Lack of integration

The maritime transport functions mostly in isolation from the rest of the transport modes. Yet, the growth of maritime services is dependent on their integration in the complete transport chain (i.e. door to door services). There is therefore a need of interoperability between the relevant information systems across transport modes for common scheduling of deliveries and transshipments, for example.

3.4.8 Traditional Practices

The sector operates with traditions and practices established over its long history. As a result of these old practices, the retrieval or production of the information requested is a burden that distracts the operators from their main duties and at the same time it becomes a cause for mistakes or casualties, when done manually.

3.4.9 Lack of innovation

Application of modern electronic communication and information systems in other transport sectors, i.e. air transport, have provided efficient tools in meeting challenges, such as fragmentation of services that hinders progress towards efficiency and quality improvements and prevents long term benefit to be realized.

In the seaborne transport, more than half of EU ports have no dedicated system for communicating with administration or the transport operators. The few port information systems that are fully developed in Europe have produced considerable quality and efficiency gains. However, commonly valuable information exists in isolated pockets of single groups of users or within the confines of single Administrations; such information needs to be integrated if the vision of a European transport system is to be realised.

But most important is a structural problem of the existing practices that are not allowing new, more efficient methods of working based on efficient and effective exchange of information. Such an objective can be achieved with the support offered by modern electronic systems including internet based services and networking capabilities.

3.5 Policy Making for Maritime and IT

3.5.1 Maritime Policy

Maritime policy-making derives from an institutional framework with jurisdictions at international, supra-national, national, regional and local level. Its global reach calls for an international overview, but at the same time policies have to be effectively applied at a variety of lower jurisdictions.

At international level, the International Maritime Organisation (IMO) focuses on safety, the environment and security, the Organisation for Economic Cooperation and Development (OECD) and the World Trade Organisation (WTO) much more on economic competitiveness. Maritime supra-national policy-making is affected by the European Union (EU), the North American Free Trade Agreement (NAFTA) and the Association of South East Asian Nations (ASEAN).

In the EU policies are often formulated from an interpretation of higher, international jurisdiction (for example the IMO) and then adopted for application to the EU member states. The rationale here is that the general international maritime principles are applied by the supra-national authority, at member state (national) level in a way most appropriate to each jurisdiction. This can present problems in a maritime sector which is almost always operating within an *internationally* competitive environment, be it vessel and port ownership, labour supply, finance, legal regime, or insurance.

Traditional governance frameworks rely on a formal hierarchical and state centric set of rules, regulations, conventions and institutions which is no longer adequate with the increased globalization of the maritime sector. A new governance framework is needed that can accommodate these changes. Roe, M., (2009)⁶ suggests the adoption of polycentric and multi-level governance approaches for effective policy making. He maintains that the problem does not lie primarily with the policing of the shipping industry, but with the mechanisms that underlie maritime policy-making. In particular he points to the failure to understand the relationships between the different jurisdictional levels and the inadequate incorporation of stakeholder interests into the process.⁷

A multi-level governance approach is characterized by the jurisdictional framework but focuses more on multi-negotiated policies between all jurisdictional levels and also encouraging the active involvement of a full range of stakeholders—interest groups, the private sector, politicians, the media and individuals. Polycentric governance is a more complex policy-making framework encompassing a variety of policy-generating origins across all types of institution— private and public; government and non-government; interest group; individual and constituency based; political parties and commercial companies, etc. Policies emerge from all types of institution, from combinations of interests across all jurisdictions reflecting the complexity of the maritime sector.

Whilst polycentric governance systems seem complex, they are sensitive to the complexities of the maritime industry and its associated political structure. In particular, they focus on the role of the stakeholder in designing their application and measuring their success. Adopting this approach for the generation of shipping policies and in the process of analysing the needs and priorities of those with an interest in its outcome has considerable potential for the improvement of maritime governance.

On this note it is encouraging that global representative bodies, the International Chamber of Shipping and International Shipping Federation are recognising a more healthy dialogue between them and the EU:

*'Following a decade of sometimes very difficult discussions, the possibility now exists of a period of more cordial relations between the global industry and the EU.'*⁸

3.5.2 IT Policy

The IT revolution has led to information and communications which can cross jurisdictional boundaries with ease and has meant that information on market activity for shipping services and products is available almost universally. IT flexibility enables all interested parties to communicate

⁶ Roe, M (2009) Multi-level and polycentric governance: effective policymaking for shipping, *Maritime Policy and Management*, 36(1), 39-56

⁷ Roe, M., (2008), Safety, security, the environment and shipping—the problem of making effective policies. *WMU Journal of Maritime Affairs*, 7(1), 263–279.

⁸ Annual Report of ICS and ISF 2008

across all jurisdictional, relational and sectoral boundaries. It presents a massively increased opportunity for communication between all players.

Whilst presenting such great opportunities in communication and information flow, this revolution is not without its own challenges from a policy perspective. The 'Internet of Things — An action plan for Europe COM (2009) 278 Final', addresses many of the issues relating to an electronic environment. 'Simply leaving the development of IoT to the private sector, and possibly to other world regions is not a sensible option in view of the deep societal changes that IoT will bring about. Many of these changes will have to be addressed by European policy-makers and public authorities to ensure that the use of IoT technologies and applications will stimulate economic growth, improve individuals' well-being and address some of today's societal problems.' In particular, the governance of the IoT must be designed and exercised in a coherent manner with all public policy activities related to Internet Governance.' (p4)

As new technologies and communications systems become a reality there are many unresolved issues which could constitute a potential barrier to its wide use.

Privacy and protection of data

A prerequisite for trust and acceptance of these systems is that appropriate data protection measures are put in place against possible misuse and other data related risks. At the same time it is accepted that as different technologies do become the norm it affects the way in which understand privacy. In this respect there must be continuous monitoring of the privacy and the data protection through consultation and dialogue, and provision of guidance

Trust, Acceptance and Security

Information security is a major concern for most stakeholders. The security question is closely linked to that of trust and privacy mentioned above. It is recognised that such issues are often neglected at the design phase, and that integrating such features at a later stage is often costly and features to safeguard them at a later stage creates difficulties, is costly and can compromise the quality of the system. It is therefore essential that IT based components are designed from their inception with a privacy- and security-by-design mindset and comprehensively include user requirements.

Giving users a sufficient level of control improves their level of trust and plays an important role in the uptake of the technology.

There is therefore a need to provide a policy framework that enables new technologies to meet the challenges related to trust, acceptance and security.

Standardisation

Standardisation will play an important role in the uptake of new technologies. It is generally accepted that standardisation lowers barriers to entry into an industry and operational costs for users. This can mean that the industry is better able to compete at international level. The development of standards in Europe and at an international level should be monitored to ensure that they are developed in an open, transparent and consensual manner with adequate participation of stakeholders.

International dialogue

Many IT systems and applications will be borderless by nature and therefore require a sustained international dialogue, notably on matters of architecture, standards and governance. Dialogue with international partners, aiming to agree on relevant joint actions, and sharing best practices is an essential part of IT policy.

Sharing of best practice

By adopting a proactive approach, Europe could play a leading role in shaping how e-maritime works and reap the associated benefits in terms of economic growth and individual well-being. Failing to do so would mean missing an important opportunity and could place Europe into a position where it is forced to adopt technologies that have not been designed with its core values in mind.

3.6 Policy delivery options to meet e-maritime objectives

The policy delivery options for e-maritime take account of the industry characteristics (Section 3.4), influencing factors (Section 3.3), and existing policy (see Task 1). In addition, any action must recognize the principles of subsidiarity and proportionality which dictate where and how action should be taken.

The following discussion focuses on the specific areas which e maritime aims to address namely safety and security, increasing the competitiveness of the EU maritime transport industry by better administration, creating a better environment for ship operators, supporting the development of European Ports as key logistics hubs, and Improving seafaring and promoting the profession. Each section discusses the appropriateness of policy type in context before considering the impact of acceptability and take up.

3.6.1 Safety and security

The safety and security elements of e-maritime relate to achieving:

- Accelerated development and take up across EU member states of SafeSeaNet, EU LRIT, and e-navigation
- Improved utilisation of the European global satellite navigation system (GALILEO) and its integration with traffic monitoring processes
- Integration and fusion of data from heterogeneous sensors and other information sources for safety and security risk management at EU, regional and organisational levels.

Efficient port and ship security and safety increasingly requires integrated surveillance/monitoring systems, incorporating adequate 'intelligence' for proactive and remedial operations spanning across collaborating authorities and transport stakeholders and regions. As yet, only a few Member States have a national single window approach. The exchange of electronic messages between ports is practically non-existent.

SKEMA Periodic Study: e-Maritime Task 3 Report

Influencing Factor		Comments
Risk (to health and safety)	Medium to High	It is generally recognised that in issues of safety, regulation is needed to address the important area of risk. This suggests the need for formal regulation. However, current surveillance procedures have to date not highlighted any real areas of high risk
Technical complexity	High	The complexity calls for close involvement of experts with good understanding of the market which could lead to greater buy in and the need for less formal regulation
Transparency and monitoring What level currently operates?	Low	Lack of transparency suggests a more prescriptive approach or some regulatory underpinning.
Market characteristics Size, fragmentation innovation, dynamism	Small, not innovative	Market is not very innovative. Here we are focusing on the take up of new technology by administrations.
Level of stakeholder buy in and cooperation	Medium	SafeSeaNet (SSN) is already operational and is already demonstrating its potential to be a trusted and secure system for the management of information in the safety, counter pollution and security fields. Recent developments of SafeSeaNet (SSN) proved that the integration of AIS and LRIT into SSN is technically feasibly.
PR Potential and consumer interest	Low	Whilst there is public interest in safety it is only highlighted when there is evidence of poor safety. Maritime generally has a low public profile
Representative Bodies Ability of such bodies to monitor and enforce	Low	Fragmentation and proliferation of representative bodies makes this quite difficult.
Existing policy or policy framework	Yes	Integrated Maritime Policy which addresses maritime surveillance (see below) The carriage of an Automatic Identification System

		<p>(AIS) is mandatory for almost all categories of ships.⁹</p> <p>EU adoption in January 2009 of the IMO SOLAS Convention to make Long Range Identification and Tracking of Ships of 300 GT and upwards (LRIT) has improved vessel tracking.</p> <p>EU Supply Chain Security Regime</p> <p>IMO Regulation to make ECDIS mandatory</p> <p>IMO overseeing the take up of LRIT</p>
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The policy objective here is to achieve greater utilisation of standard surveillance and traffic monitoring systems. Analysis of the factors in Table 1 tends towards a more prescriptive approach to e-maritime safety policy. However there is **existing policy** which addresses many of the issues together with a Integrated Maritime Policy Framework which specifically addresses maritime surveillance. The Integrated Maritime Policy indicates the Commission’s commitment to:

- 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;

To allow for integration in the field of maritime surveillance, the Commission has set out **guiding principles** to help EU Member States establish a common information sharing environment for their numerous surveillance authorities. Currently, it is still standard practice in Member States for each sectoral authority that monitors and surveys actions at sea to gather operational data independently of its counterparts. If these data were shared, surveillance activities would become more efficient and cost-effective. However, data-sharing and the interoperability of surveillance systems pose certain technological, legal and security challenges. These challenges are identified in the Commission’s proposal, and solutions to them are put forward.

The SafeSeaNet system will be the sole medium for all electronic exchanges of maritime data between the Member States. SSN V1 is now being introduced in all the 22 maritime MS of the EU plus Norway and Iceland; by October 2007, 17 of the 24 states were on-line, with a total of 224 users registered¹⁰.

⁹ Directive 2002/59/EC

¹⁰ Integrated Maritime Policy For The EU Working Document III On Maritime Surveillance Systems European Commission / Joint Research Centre Ispra, Italy 14 June 2008

In terms of navigational safety, a regulation mandating ECDIS (Electronic Chart Display Information Systems) was adopted by IMO in December 2008. In December 2008, the IMO Maritime Safety Committee also approved an E-Navigation strategy to ensure that the future development of marine navigation systems will not be hampered by a lack of standardisation, onboard or ashore, or by incompatibility between vessels.

The International Mobile Satellite Organization (IMSO), which is the intergovernmental body that oversees public safety and security communication services provided via INMARSAT satellites including the Global Maritime Distress and Safety System (GMDSS) has been appointed by IMO as the international coordinator of LRIT.¹¹

Where is intervention needed and what is appropriate?

Given the existing policy in place at EU and international level, additional policy to ensure the greater utilisation of traffic monitoring and surveillance should be focussed on providing information and guidance to demonstrate the benefits of the new system, addressing concerns of data protection, ensuring a standardised approach, and a healthy dialogue with international partners.

- **Policy 1: Information, guidance and promotion**

Promote the benefits of the electronic surveillance and monitoring systems using various means. Here it is noted that two pilot projects to test the integration of maritime surveillance in practice are in the process of being launched – one in the Mediterranean and its Atlantic approaches and another in a Northern sea basin. This will promote the idea as well as provide information and guidance to facilitate a wider take up.

Efficiency	Yes - in that there is no need to develop formal regulation but may take time (see below)
Effectiveness	Very - if the right message is conveyed to the right target audience.
Negative effects	Time scale may be too great

- **Policy 2: Co-regulation to address challenges of trust, acceptance and security**

An important advantage of co-regulation is that it provides a degree of certainty due to the legal provisions whilst also encouraging innovation by allowing a flexible approach to implementation. The legislation can set out the framework to address the challenges relating to trust, acceptance and security - setting objectives and conditions for monitoring and enforcement, whilst the detailed means to achieve the objective is decided upon by the stakeholders. Allowing this level of control to stakeholders help build trust and buy –in.

¹¹ Annual Report of International Chamber of Shipping and International Shipping Federation 2008

Efficiency	Yes particularly if there is already some legislative framework relating to IT in place
Effectiveness	Yes since there is high level of stakeholder involvement
Negative effects	Dealing with divergent opinion

▪ **Policy 4: Recommendations on Standards**

Standardisation will play an important role in the uptake of new technologies. Standards need to be monitored to ensure that they are developed in an open, transparent and consensual manner with adequate participation of stakeholders. Recommendations could be issued to achieve the required level of standardisation in consultation with stakeholders. These are commonly used by the Commission to encourage action in a particular sector and can signal that the EU thinks action should be taken in an area and provide a ‘warning’ to industry that it needs to act or face the likelihood of future legislation.

Efficiency	More efficient and flexible than more formal regulation e.g. Directive
Effectiveness	Yes if stakeholder involvement
Negative effects	Recommendations may not be followed. Divergent opinions

▪ **Policy 5: International dialogue and Sharing of Best Practices**

Many IT systems and applications will be borderless by nature and therefore require a sustained international dialogue, notably on matters of architecture, standards and governance. The existing dialogue with international partners must form an integral part of policy development, aiming to agree on relevant joint actions, share best practices.

The Commission has also published a strategy document which sets out the way to ensure that the EU exert stronger influence in the international arena on maritime affairs in order to strengthen the global governance of the oceans and seas. The Commission pinpoints a number of areas that clearly require international solutions, including maritime safety and security.

Efficiency	Yes since there are already many mechanisms for dialogue but objectives must be clear
Effectiveness	Essential to ensure consistency
Negative effects	Reaching consensus may be difficult through divergent interests and

	objectives
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3.6.2 Increasing the competitiveness of the EU maritime transport industry by better administration

- Simplifying administrative procedures through Next Generation National Single Windows for Co-modality providing interoperability between EU Single Windows / platforms and regulatory compliance reporting systems.
- Improving the utilisation of maritime transport resources by supporting maritime transport stakeholders to establish and manage competitive business networks

Currently, vessels need to interface with several parties in ports in order to carry out all the administrative procedures. This has a substantial effect on costs, the speed of goods handling and the system’s overall reliability. Establishing a single desk, where all paperwork will be dealt with, will be highly beneficial. Indeed, administrative formalities will be processed electronically or in coordination between entities. Only 55% of ports use electronic systems for handling ship and cargo information. Furthermore, only a few Member States have a national single window approach with the linkage between vessel and port networks very limited. Data exchange happens when the national authorities ask for it and the exchange of electronic messages between ports is practically non-existent.

Influencing Factor		Comments
Risk (to health and safety)	Low	This is concerned with efficiency not safety which indicates a need for less formal regulation
Technical complexity	High	The complexity calls for close involvement of experts with good understanding of the market which could lead to greater buy-in and the need for less formal regulation
Transparency and monitoring What level currently operates?	Low	Lack of transparency suggest the need for a more prescriptive approach
Market characteristics Size, fragmentation innovation, dynamism	Small, but fragmented	Each State is developing its own standard. It is therefore difficult to achieve consensus.
Level of stakeholder buy in	Low	Only a few Member States have a national single

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and cooperation		<p>window approach. There are concerns in terms of transparency, data protection, competitiveness</p> <p>But Guidelines have been issued to Member States encouraging steps towards adopting an integrated approach to sea-related affairs within their governance frameworks.</p>
PR Potential and consumer interest	Low	Consumer has no direct interest
Representative Bodies Ability of such bodies to monitor and enforce	Low	Fragmentation and proliferation of representative bodies makes this quite difficult.
Existing policy or policy framework	Yes	<p>Integrated Maritime Policy and European Maritime Space Without Barriers</p> <p>Directive 2002/6/EC on reporting formalities for ships arriving in and/or departing from ports.</p>

The factors indicate a less prescriptive approach to the simplification of administrative procedures. The single window approach is one that is best dealt with in close cooperation with the industry actors. There is already a policy framework in place to create the right environment for this to take place. The aspiration of an EU Integrated Maritime Policy¹² is to change the way in which policy is made and decisions taken to create the necessary interaction between the various sectors and to ensure that common tools are developed. Integrated Maritime Policy guidelines have been issued to Member States which include recommendations for setting up a maritime governance system based on international good practice. Member States have, in turn, made a commitment to make information available on a website which detail the way in which maritime strategies have been developed and the dialogue with stakeholders.¹³

In addition, the European Maritime Transport Space without Barriers¹⁴ recognizes that Europe's shipping industry is at a disadvantage compared with the other modes in terms of Intra EU services. More specifically it looks to simplify the administrative and customs formalities for intra-EU maritime services. The complexity of procedures imposes an administrative burden on maritime transport making it less attractive than other modes for the movement of Internal Market goods.

¹² COM 2007 575 Final : An Integrated Maritime Policy for the European Union

¹³ COM(2008) 395 final Guidelines for an Integrated Approach to Maritime Policy: Towards best practice in integrated maritime governance and stakeholder consultation

¹⁴ Communication and action plan with a view to establishing a European maritime transport space without barriers {COM(2009) 11 final}

A first step has been accomplished with Decision No 70/2008/CE introducing a single window for goods-related formalities. Measures aimed at ensuring that all information necessary for port authorities are lodged once will be developed in cooperation with the various stakeholders. This measure will be coupled with the electronic data transmission one, whereby information will, as far as possible, be exchanged between vessels and authorities in an electronic format.

Another measure for simplifying administrative procedures will be to clarify the use of IMO/FAL harmonized forms through a proposal to the European Parliament and the Council for a directive replacing Directive 2002/6/EC on reporting formalities for ships arriving in and/or departing from ports. The proposal will require the use of electronic data transmission systems for data exchange and paper-based documents will be abandoned at the latest in 2013. It will pave the way for a single window arrangement, whereby all administrative procedures will be processed in a co-ordinated fashion amongst the various entities, using electronic data transmission.

Where is intervention needed and what is appropriate?

In the area of increasing competitiveness by better administration, the existing policy framework is facilitating this process but more needs to be done to speed up the process and ensure a higher level of take up. Again communication of the benefits would assist the process. In addition there is a need for intervention to ensure that safety is not compromised and that a common standard is established. Continued dialogue with international partners and member states forms an essential part of policy in this area.

- **Policy 1: Promotion, information and guidance**

Member States that have not established a national single window or still need to achieve better integration between data systems need to be persuaded of the competitive advantage that will ensue. Sharing experiences and best practice together with active promotion could be facilitated by the EU.

Efficiency	Yes - in that there is no need to develop formal regulation but may take time (see below)
Effectiveness	Very - if the right message is conveyed to the right target audience.
Negative effects	Time scale may be too great

- **Policy 2: Recommendation of single window**

A stronger call to action would be provided by a recommendation to establish a single window and integrate data systems. This could become necessary if the take up is slow.

Efficiency	More efficient and flexible than more formal regulation e.g. Directive
Effectiveness	Yes if stakeholder involvement
Negative effects	Recommendations may not be followed. Divergent opinions

▪ **Policy 2: Addressing Safety Issues using Directives**

Eliminating or reducing the administrative procedures may have negative impacts. It is important that no risk should be taken on health and safety issues. Some stakeholders pointed out that some procedures (such as the ones for Dangerous Goods) should not be reduced too much. Moreover, the reduction of border controls may impose security risks (drugs, smuggling, arms, etc.)¹⁵. The EU has a role to play in ensuring that new technologies do not compromise safety. These issues may already be addressed by existing Directives or by adaptation of existing regulation.

Efficiency	May take time if no Directive already in place
Effectiveness	Very - as formal regulation more likely to be followed
Negative effects	Time and resource if new directive is needed

▪ **Policy 3: Recommendations of Standards**

Task 2 ‘e-Maritime Standardisation Requirements and Strategies’ revealed that although the National single windows are already being established in Europe, they are unfortunately not in any standard fashion. IMO FAL¹⁶ has created an inter-sessional correspondence group to create draft guidelines for such single windows, but the work seems to be lacking support from IMO member states. Thus, standards in this area are urgently needed.

Efficiency	More efficient and flexible than more formal regulation e.g. Directive
Effectiveness	Yes if stakeholder involvement
Negative effects	Recommendations may not be followed. Divergent opinions

¹⁵ The Commission launched an open consultation on a "European maritime space without Barriers" reinforcing the internal market for intra-European maritime transport.

¹⁶ IMO Facilitation Committee

3.6.3 Creating a better environment for ship operators and supporting the development of European Ports as key logistics hubs

- 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;
- through advanced Port Single Windows and Port Community systems;
- Creating framework conditions for the development of a competitive technology supplier industry in this field.

Influencing Factor		Comments
Risk (to health and safety)	Low	This is about efficiency and competitiveness
Technical complexity	High	Complexity of systems requires stakeholder/expert involvement
Transparency and monitoring What level currently operates?	Very Low	The competitive and fragmented market with rather traditional attitudes has lead to a low level of transparency. Equally the monitoring function is very dispersed between actors
Market characteristics Size, fragmentation innovation, dynamism	Fragmented	
Level of stakeholder buy in and cooperation	Low	Due to competitive nature of the industry and the number of operators.
PR Potential and consumer interest	Low	Low public profile
Representative Bodies Ability of such bodies to monitor and enforce	Low	High number of representative bodies with few powers of enforcement
Existing policy or policy framework		E-freight initiative

The European Commission in line with one of the main measures of the 2007 Freight Transport Logistics Action Plan, wants to establish a roadmap for the development of an integrated electronic application that is capable of following the movement of goods into, out-of and around the European Union. This concept 'e-Freight' and will operate within and across all freight transport modes. Through e-Freight there will be a paper-free, electronic flow of information associated with the physical flow of goods. The system will allow tracking of freight along its journey across transport modes and automate the exchange of content-related data for regulatory and commercial purposes. A necessary condition for this is that standard interfaces within the various transport modes are in place and their interoperability across modes is assured.

Where is intervention required and what is appropriate?

- **Policy 1: Promotion, information and guidance to increase stakeholder 'buy in'**

Industry actors are focussed on commercial considerations.¹⁷ It is therefore important to make the benefits of e-Maritime very visible to companies. Reassurance about confidentiality of certain information may be required (see below).

Pilot schemes, guidance and recommendations, sharing of good practice are all required to ensure stakeholders 'buy' into the e-maritime idea and understand its benefits.

Efficiency	Yes - in that there is no need to develop formal regulation but may take time (see below)
Effectiveness	Very - if the right message is conveyed to the right target audience.
Negative effects	Time scale may be too great

- **Policy 2: Recommendation on Standards**

As stated above, a necessary condition for e-freight is that standard interfaces within the various transport modes are in place and their interoperability across modes is assured. The EU has a role to be play in establishing these standards in cooperation with stakeholders. This could be done with recommendations.

Efficiency	More efficient and flexible than more formal regulation e.g. Directive
Effectiveness	Yes if stakeholder involvement

¹⁷ SKEMA Stakeholder workshop November 2008

Negative effects	Recommendations may not be followed. Divergent opinions
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▪ **Policy 3: Policy Framework to address confidentiality of information issues**

Legal requirements may also hamper the use of ICT. In addition, data security and privacy issues must be taken into account. A policy framework could be developed to address these concerns.

Efficiency	Yes particularly if there is already some legislative framework relating to IT in place
Effectiveness	Yes since there is a good stakeholder involvement
Negative effects	Dealing with divergent opinion

3.6.4. Improving seafaring and promoting the profession

- Supporting e-learning for maritime transport industry professionals focusing on seafarers
- Developing e-maritime transport knowledge sharing facilities and regional centres of maritime excellence.

Influencing Factor		Comments
Risk (to health and safety)	Low to medium	Potential safety risk if the skills base is diminished and fewer quality seafarers
Technical complexity	Low	Technologies are available and are widely used in many other sectors
Transparency and monitoring What level currently operates?	High	Education and training is an area where transparency is high and monitoring good
Market characteristics Size, fragmentation innovation, dynamism	Not innovative but large number of providers	Large number of existing providers using traditional education and training methods

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Level of stakeholder buy in and cooperation	High	The wider industry would support more efficient learning programmes and also the existing providers should support it as they could even increase revenues if the take up were higher.
PR Potential and consumer interest	Low	Again general public and consumer have no direct interest
Representative Bodies Ability of such bodies to monitor and enforce	Good	Already good level of enforcement of training standards
Existing policy or policy framework	Few	eLearning initiative of the European Commission

‘The eLearning initiative of the European Commission seeks to mobilise the educational and cultural communities, as well as the economic and social players in Europe, in order to speed up changes in the education and training systems for Europe’s move to a knowledge-based society’.¹⁸

E-learning has gained momentum as a medium for education and training. In the US some 4 million people enrolled on at least one on line course in 2008, representing a 60% growth since 2003.¹⁹ According to the Sloan Consortium/ Babson Survey Research Group in 2006 62% of Chief Academic officers rated on line equal or superior to face to face provision.

E learning has the advantage of catering for almost unlimited numbers of students, accommodating totally flexible schedules, and reducing the need for costly travel. Furthermore, participants can proceed at their own pace based on ability, prior knowledge and experience within their own time constraints. However, the major challenge is in achieving interaction between participants and in building person to person relationships. This has been made much easier with the increasing popularity of social networking such as Facebook and Twitter which have created a culture of effective internet communication. Other issues such as the direct observation and monitoring of students are more difficult to overcome.

It is recognized that e-learning is well suited to certain types of subjects and courses. At the 2009 International Maritime E Learning Conference Calhoun MEBA Engineering School July 2009-10-19, it was suggested that it works particularly well for courses with large geographically diverse populations which are essentially knowledge based topics (such as administrative and legal subjects) or where there is an approved doctrine or procedure. Subjects which require discussion and interaction are more difficult.

¹⁸ http://ec.europa.eu/education/archive/elearning/index_en.html

¹⁹ US News and World Report 27 May 2009

Many maritime subjects lend themselves to an e learning approach and there are numerous examples where this is working effectively. As satellites, broadband, E-mail and Internet access become more and more common – and affordable – aboard ships, much of the training required by mariners will necessarily revert to eLearning platforms.

While the maritime industry in general has lagged behind other business disciplines in terms of utilizing distance learning concepts, there are some excellent examples

- U.S. Merchant Marine Academy's on-line Master of Science in Marine Engineering programme.
- MARPOL Training Institute teaching MARPOL compliance through computer based training.
- CMES an STCW-Approved Distance Learning System. CMES is the only institution at this time to have developed Coast Guard approved STCW training courses that are taught using a eLearning platform. What CMES has pioneered in the maritime disciplines will very soon become commonplace in the face of the changing regulatory schemes that are at this very moment being formulated by the Coast Guard, IMO, EPA and others.
- Anglo Eastern has developed its own E- Learning Management System which recognises that seafarers who are not at sea would prefer to spend time with their families rather than have to attend courses at designated centres.
- MBA Shipping and Logistics Lloyds Maritime Academy and Middlesex University recognises that balancing professional, study, family and other commitments can be a struggle, particularly in times of high pressure. This MBA is offered solely by distance learning but at the same time establishing networks through online forums which facilitates group work, access to tutors and attendance at optional seminars.
- The eLearning Centre developed by the Maritime Competence Centre MARIKO.RIS at the University of Applied Sciences Oldenburg/ Ostfriesland/Wilhelmshaven, Germany in cooperation with European partners in maritime business provides a comprehensive knowledge platform for short sea shipping business. The eLearning Centre can be integrated into educational programmes in universities, business academies or management trainings as well as in the form of single-user accounts in companies who are interested in short sea shipping matters.

With future IMO training requirements now looming large training requirements are likely to get tougher together with proposals to ramp up the requirement for shipping companies to more closely monitor the certifications of their mariners, the industry must be more proactive in achieving more efficient and effective forms of education and training. Issues under review include flag state recognition procedures for foreign seafarers, quality standards reporting procedures for governments approving training, and revalidation of basic training. Other issues include environmental training, the development of new competence standards for Able Seafarers, medical standards, and possible competences for "electro-technical" personnel and for service on offshore support vessels. Text for amendments to STCW will be discussed further in 2009, and is scheduled to be adopted by a Diplomatic Conference in the Philippines in 2010.²⁰

Examples of E Learning initiative in the maritime sector include a system for Global Maritime Distress and Safety System and the Self Learning Integrated Methodology - Virtual Reality Tool (SLIM-VRT) that wants to realise an integrated maritime self learning onboard and ashore, using interactive

²⁰ Annual Report International Chamber of Shipping and International Shipping Federation 2008

multimedia and virtual reality technology. This will enable the existing and potential students, employees, employers and authorities to access SLIM-VRT Information System wherever and whenever they are and in a way that is user-friendly flexible, and learning effective. While directly targeting the improvement of quality of maritime training and the effectiveness of personal (and organisational) productivity, the project is expected to add value not only to trainee's expectations but also to the European shipping sector's competitiveness as well as to the European Union's vision.

SLIM-VRT aims at empowering the European Shipping Workforce to adapt to rapidly changing requirements and skills. It supports continuous interaction between theory and practice and it is fully integrated into the user's environment.

Where is intervention required and what is appropriate?

Education and training is an area where monitoring of existing regulations is already good and international standards are already in place. The challenge here is to find more efficient, cost effective ways of learning whilst maintaining those high standards. Maritime lends itself to an e-learning approach and some private sector schemes are already in operation. The EU has a role to play in encouraging the development of e learning initiatives through research, promotion and guidance.

- **Policy 1: Promotion, information and Guidance**

E learning in the maritime area can be actively promoted by the EU by distribution of relevant information and courses available. Encourage Networks of Centres of Excellence to enrich maritime and logistics training across Europe. The Networks of Centres of Excellence will help to broaden the perspectives and knowledge base of college staff; make specialized training available to maritime students, which otherwise they may not obtain; help integrate maritime training with the greater logistics industry.

Efficiency	Yes - in that there is no need to develop formal regulation but may take time (see below)
Effectiveness	Very - if the right message is conveyed to the right target audience. There is already some good practice to highlight.
Negative effects	Time scale may be too great

- **Policy 2: International dialogue and sharing of best practice**

Given that initiatives in this area are international, this is an area where much can be gained from a dialogue with international partners and sharing of best practice.

Efficiency	Yes since there are already many mechanisms for dialogue but
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	objectives must be clear
Effectiveness	Essential to ensure consistency
Negative effects	Reaching consensus may be difficult through divergent interests and objectives

▪ **Policy 3: Support for e learning development through Research Programmes**

There are already some examples where funding has been provided for pilot programmes. These could be extended to cover a wider area of maritime learning through EU research and consultancy projects. Within the remit of current European projects, these themes could be included in scheduled workshops / conferences relating to the purposes, advantages and catalytic effects of e-learning. It would also be useful to establish life-long learning / continuous professional development structures to encourage new entrants into the industry using e-learning.

Efficiency	Could be done quickly through existing programmes.
Effectiveness	Yes – with the right message and target audience
Negative effects	CPD structure may take time

3.7 Conclusion

Task 3 discusses policy relating to e-maritime by considering industry characteristics, the merits of the various policy options and the adequacy of existing policy. The objective of the 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”²¹. The e-maritime initiatives are mostly concerned with increasing efficiency in that they are improving knowledge, ensuring adequate standards, and dealing with externalities.

Maritime is an international industry but policy has to be implemented at a national level. Consequently international and national regulations often co-exist with inconsistencies and overlapping requirements. Compliance is often a matter for national agencies which hinders efforts to harmonise and simplify applicable laws and regulations. The fragmentation and competitiveness of the industry has created a lack of transparency which often leads to inefficiencies – poor level of information sharing, lack of systems integration and a need for standardisation. It could also be

²¹ European Commission (EC) Green Paper “Towards a future Maritime Policy for the Union”

argued that the maritime transport industry is lagging behind other sectors in adopting modern ICT technologies.

Policy development must take account of these issues of transparency, monitoring, technical complexity, stakeholder buy-in as well as potential risk and existing policy.

The discussion and analysis reveals that policy already in place or in development provides the essential framework for e-maritime. The Integrated Maritime Policy and the Common Maritime Space without Barriers address many of the issues that are relevant to e-maritime in the encouragement of integrated and simplified electronic systems. However, there are 3 main areas where policy is still needed:

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

Areas of concern mainly relate to security of information and confidentiality issues. Some formal regulation is required to ensure that these issues are taken seriously and that there is some element of legal redress. It is possible that existing Directives relating to IT may cover the e-maritime issue. Alternatively, co-regulation would be that it provides a degree of certainty due to the legal provisions whilst also encouraging a flexible approach to implementation. The legislation can set out the framework to address the challenges relating to trust, acceptance and security - setting objectives and conditions for monitoring and enforcement, whilst the detailed means to achieve the objective is decided upon by the stakeholders. Allowing this level of control to stakeholders help build trust and buy –in.

Standardisation will play an important role in the uptake of new technologies. Standards need to be monitored to ensure that they are developed in an open, transparent and consensual manner with adequate participation of stakeholders. Recommendations could be issued to achieve the required level of standardisation in consultation with stakeholders. These are commonly used by the Commission to encourage action in a particular sector and can signal that the EU thinks action should be taken in an area and provide a ‘warning’ to industry that it needs to act or face the likelihood of future legislation.

A recommendation to establish a single window with integrated data systems may also provide the strong call to action on this aspect of e-maritime if take up continues at its current pace.

Many other aspects of e-maritime could be achieved effectively by promotion, information and guidance. This ‘light-touch’ approach is designed to provide the information which enables the industry actors to make an informed decision. In order for information campaigns to be effective, it is vital that the right message reaches the target audience. This approach could take a number of forms such as pilot studies, conferences and seminars and other promotional material. Industry actors are focussed on commercial considerations. It is therefore important to make the benefits of e-Maritime very visible to companies.

In the case of e-learning for maritime, support could be provided through research and consultancy programmes There are already some examples where funding has been provided for pilot

programmes. These could be extended to cover a wider area of maritime learning through EU research and consultancy projects. Within the remit of current European projects, these themes could be included in scheduled workshops / conferences relating to the purposes, advantages and catalytic effects of e-learning. It would also be useful to establish life-long learning / continuous professional development structures to encourage new entrants into the industry using e-learning.

In all policy deliberations, the international nature of the industry has to be recognised and policy formulated with sufficient consultation with international partners and with sufficient regard to the existing international standards. To this end, it is noted that The Commission has also published a strategy document which sets out the way to ensure that the EU exert stronger influence in the international arena on maritime affairs in order to strengthen the global governance of the oceans and seas.