



SEVENTH FRAMEWORK PROGRAMME THEME 7: Transport (including Aeronautics)

TTG4 e-Maritime: Innovation Show Cases



Project Acronym:	MESA
Project Full Title:	Maritime Europe Strategy Action
Grant agreement n°:	604857
Work Package	4
Deliverable	4.4 - Issue March 2016
Responsible Beneficiary	BMT
Other Beneficiaries Involved in the Preparation	Danaos, Inlecom Systems, Valenciaport Foundation, Marintek
Authors	Tony Morrall, David Griffiths, Takis Varelas, Takis Katsoulakos, Ioannis Koliouisis, Salvador Furió, Gabriel Ferrús, Ørnulf Jan Rødseth.
Release	1
Date	19 12 2014 revised 14 03 2016
Description of the Task: Identification of show cases and successful demonstration activities achieved in e-Maritime research projects	
Task 4.4: Show Case Descriptions	
<p>This task will help improve the visibility of the research activities and the dissemination of the results achieved in the technology area, “show cases” will be identified where scientific results have been achieved according to expectations, where demonstration activities have been successfully completed and where the potential of an innovation activity is likely to be - or has been - taken up by industry or government.</p> <p>A description of these show cases, with clear identification of the R&D achievements implemented in the market and the impact assessment of the relevant innovation, will be used as an input for the WP7 collection and dissemination as well. The above data will be the objective of the deliverable D.4.4: the search and examination of the success cases will continue during the project period and three issues of this deliverable are foreseen, addressing and adding new cases to the list.</p>	



CONTENTS

1	EXECUTIVE SUMMARY	1
2	INTRODUCTION	2
3	INNOVATION SHOW CASES	3
3.1	EMAR E-MARITIME STRATEGIC FRAMEWORK AND SIMULATION BASED VALIDATION	3
3.1.1	<i>Background and Objectives</i>	3
3.1.1.1	<i>Background</i>	3
3.1.1.2	<i>Project Objectives</i>	4
3.1.2	<i>Description of Activities</i>	4
3.1.3	<i>The Results Obtained</i>	5
3.1.3.1	<i>e-Maritime Strategic Framework (EMSF)</i>	5
3.1.3.2	<i>Show Case 1: i-Ship Intelligent Ship Reporting Gateway</i>	6
3.1.3.3	<i>Show Case 2: DANAOS Collaboration Platform</i>	9
3.1.3.4	<i>eMAR Ecosystems</i>	11
3.1.3.5	<i>InleMar Ecosystem</i>	12
3.1.3.6	<i>Common Reporting Schema (CRS) Harmonising Reporting Formalities</i>	12
3.1.4	<i>Impact of Results Achieved</i>	12
3.1.4.1	<i>Principal impacts of i-Ship:</i>	13
3.1.4.2	<i>Principal impacts of Danaos Collaboration Platform:</i>	13
3.1.5	<i>eMAR website and videos</i>	13

Figures:

FIGURE 1:	EMSF INTERLINKS SHIPPING PROCESSES WITH LOGISTICS AND PORT OPERATIONS.....	5
FIGURE 2:	I-SHIP: A COMPLETE SOLUTION FOR SHIP FORMALITIES AND COMPLIANCE MANAGEMENT.....	7
FIGURE 3:	THE DANAOS COLLABORATIVE PLATFORM WITHIN THE E-MARITIME NETWORK.....	9
FIGURE 4:	THE DANAOS COLLABORATION E-SERVICING PLATFORM	10

Tables:

TABLE 1:	EU SHIP REPORTING REQUIREMENTS FULFILLED BY I-SHIP	7
----------	--	---

1 Executive Summary

This Deliverable D4.4 describes two particular show cases and successful demonstration activities that have been identified from the completed e-Maritime project eMAR: *e-Maritime strategic Framework and Simulation based Validation*, where the potential of an innovation activity is likely, or has been, taken up by industry or by government.

The eMAR project successfully developed, tested and assessed tools to further streamline maritime operations. These applications will help transmit information to all relevant stakeholders (authorities, agents, ship masters, of/onshore shipping company facilities) in an automated and smart manner. The transmitted information includes legally required information such as the IMO FAL Forms, as well as business related information, e.g. Estimated Time of Arrival or Port of next call or availability, and these will significantly improve shipping related operations and the entire upstream and downstream supply chain operations.

The two particular show cases identified are the iShip, the Intelligent Ship Reporting Gateway, and the Danaos Collaboration Platform, which were developed within in the context of the e-Maritime Strategic Framework (EMSF) and the new version of the Common Reporting Schema (CRS) Harmonising Reporting Formalities.

The intelligent Ship Reporting Gateway (i-Ship) is an innovative software application, enabling ship representatives to fulfil their reporting obligations to European and International maritime and custom authorities. i-Ship can be used to automate reporting formalities in a timely and correct manner taking into account the type of ship and the voyage. i-Ship ensures full compliance with the EU legal requirements on ship and cargo reporting, taking into account exceptions for regular shipping and reduces the reporting burden from hours to minutes.

The DANAOS Collaboration platform provides a place to publish and use software services related to shipping. It acts as a node in the e-Maritime Network and offers a directory of e-Maritime services that are already used by a number of shipping companies in their day to day operations. The Danaos Platform enables integration between the various in-house systems that shipping companies currently use, links business activities with other business partners and third parties, live, through an active shipping directory, and significantly reduces IT complexities and costs.

These two show cases and successful demonstration activities cover the areas of Ship Operation, Port operations, Logistic Chain, and Regulatory Management. Many common elements were found to exist within these demonstration activities and most were built on the results of earlier projects.

The descriptions of these Show Cases will be used as an input for WP7. This deliverable updates the earlier issues of July and December 2014.

2 Introduction

The objective of Task 4.4: *Innovation Show Cases* is to improve the visibility of the research activities and the dissemination of the results achieved in e-Maritime and to identify show cases and successful demonstration activities.

In order to help improve the visibility of the research activities and the dissemination of the results achieved in the technology area of e-Maritime, “show cases” will be identified where scientific results have been achieved according to expectations, where demonstration activities have been successfully completed and where the potential of an innovation activity is likely to be – or has been - taken up by industry or government.

The description of the show cases, or successful demonstration activity, together with a clear identification of the R&D achievements implemented and the impact assessment of the relevant innovation, will be used as an input for the collection and dissemination of show cases that will be undertaken in WP7. The collection of the above information is the main objective of Task 4.4. The search for and examination of successful show cases will continue during the project period.

Two show cases and successful demonstration activities have been identified from the completed e-Maritime project eMAR: *e-Maritime strategic Framework and Simulation based Validation*, where the potential of an innovation activity is likely, or has been, taken up by industry or by government.

The two particular show cases identified are the iShip, the Intelligent Ship Reporting Gateway, and the Danaos Collaboration Platform, which were developed within in the context of the e-Maritime Strategic Framework (EMSF) and the new version of the Common Reporting Schema (CRS) Harmonising Reporting Formalities.

Europe's e-Maritime initiative focuses primarily on the shore-based facilitation and on the development of electronic technology, processes and services to facilitate the flow of goods over sea, and consequently the ships that carry these goods to and from and around Europe. The European Commission supports the development of applications for administrations, ship operations, ports/terminals, transport logistics and improving life at sea and promoting seafaring.

The eMAR project successfully delivered an e-Maritime Strategic Framework (EMSF) bringing together processes, standards and technologies that will enable IT-based co-operation between the principal maritime transport stakeholder groups. The framework consolidates processes and messages exchanged in ship operations including interactions with ports and logistic chains, with a focus on compliance with the Directive 2010/65/EU on ship Reporting Formalities, which involves establishing and using Maritime Single Windows.

eMAR has provided solutions and infrastructure that support interoperability and cooperation for improved collaboration and business relationships. eMAR's Ecosystems transform Business processes to eMAR software services, which are accessible through the Internet. These tools included an eMAR Ecosystem, the Inlecom i-Ship Intelligent Ship Reporting Gateway, and two specific interoperable platforms: the DANAOS Collaboration Platform and the InleMar Ecosystem. These applications will help transmit information to all relevant stakeholders (authorities, agents, ship masters, of/onshore shipping company facilities) in an automated and smart manner.

3 Innovation Show Cases

3.1 eMAR e-Maritime strategic Framework and Simulation based Validation



3.1.1 Background and Objectives

3.1.1.1 Background

eMAR was a 33 month, part EU-funded FP7 project focussing on empowering the European maritime sector by offering efficient quality shipping services fully integrated in the overall European transport system over an upgraded information management information infrastructure.

The objective of eMAR was to support upgraded information management for maritime transport, in order 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.

Maritime transport is a major economic contributor in the EU as well as a necessary component for the facilitation of international and interregional trade on which the European economy is strongly dependent. The EU Maritime Transport Strategy² actively supports the efforts of the European maritime sector in offering quality shipping services which in turn shapes the requirements for upgraded maritime transport information management.

Therefore what is needed is a strategic European framework to bring together into a coherent whole concepts, processes, standards and technologies that will enable networking and computer supported co-operation between the principal maritime transport stakeholder groups involved in:

- i. Improving the safety and security of maritime transport services and assets and environmental protection.
- ii. Increasing the competitiveness of the EU maritime transport industry and strengthening the EU presence on the international scene.
- iii. Integrating sustainable waterborne transport services into efficient and secure door-to-door transport services in Europe and beyond.
- iv. Reinforcing the human factor particularly supporting competence development and welfare for seafarers.

The above represent core objectives of the EU e-Maritime initiative, which is seen as a cornerstone for the achievement of the strategic goals of the EU Maritime Transport Strategy.

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

² On the 21st January 2009, the Commission adopted the EU Maritime Transport Strategy 2018, COM(2009) 8; and the establishment of the European Maritime Space without barriers, COM(2009) 11. In addition COM(2005) 589 amending Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system of the 3rd maritime safety package was adopted by the European Parliament - 11th March 2009. http://ec.europa.eu/transport/maritime/index_en.htm.

Utilising research outputs from key FP7 projects:

- Freight: Deliverables related to CRS (work related to cargo data elements); prototype intermodal Next Generation Single Window and e-freight platform.
- COMCIS: Integration of ENS messages to ICS Customs systems using CRS.
- SUPPORT, CONTAIN and iCargo: Connectivity infrastructure, semantic integration technologies, cloud and smart systems.
- eCompliance: Rules Engine.

Related work:

- DG TAXUD on ENS-related messages.
- eMS Group on data elements definition/ business rules and specifically on data mapping-related reports.
- AnNA project on data elements/ messages definition and specifically on B2MSW reports and relevant messages.
- EMSA on IMP demonstrator project and SSN (documents published on the EMSA web site).
- Testing programme by masters and shipping experts.

3.1.1.2 Project Objectives

The objectives of eMAR were to develop an e-Maritime Strategic Framework - a target operational model for Maritime Transport (i.e. a description of processes, actors, rules, information flows and other domain entities) pertaining to common industry interests (positioning, innovation, sustainability performance) and business benefits (efficiency and quality) for realising in the short or long-term; to develop an e-Maritime Platform to provide a comprehensive software infrastructure to support the management and implementation of the e-Maritime Strategic Framework; and to provide a broad range of typical e-Maritime services such as security and safety management, legislation and regulation compliance, shipping, port operations, and transport logistics.

3.1.2 Description of Activities

The main activities of eMAR included the development of an e-Maritime Strategic Framework, e-Maritime Platforms, and a broad range of typical e-Maritime services:

- i. An e-Maritime Strategic Framework - a target operational model for Maritime Transport (i.e. a description of processes, actors, rules, information flows and other domain entities) pertaining to common industry interests (positioning, innovation, sustainability performance and business benefits (efficiency and quality) to be realized in the short or long term.
- ii. An e-Maritime Platform: a comprehensive software infrastructure to support the management and implementation of the e-Maritime Strategic Framework by providing:
 - a repository (a storeroom) from where e-Maritime Applications and Services may be downloaded,
 - a 'run-time' environment that supports operation and interaction of the e-Maritime Applications
 - a software development environment for production of additional e-Freight Applications and to integrate them with existing one
- iii. A broad range of typical e-Maritime services such as security and safety management, legislation and regulation compliance, shipping, port operations, and transport logistics.

The above activities will be part of and evolve into the next generation e-Maritime infrastructure aimed at maintaining cohesion between EU Policy and Business Processes (represented by the e-Maritime Framework) and e-Maritime Applications.

3.1.3 The Results Obtained

eMAR, a part EU-funded maritime transport project has successfully delivered an e-Maritime Strategic Framework (EMSf) bringing together processes, standards and technologies that will enable IT-based co-operation between the principal maritime transport stakeholder groups. The framework consolidates processes and messages exchanged in ship operations including interactions with ports and logistic chains, with a focus on compliance with the Directive 2010/65/EU about Reporting Formalities for Ships, which comes into force on 1st June 2015 and involves establishing and using Maritime Single Windows.

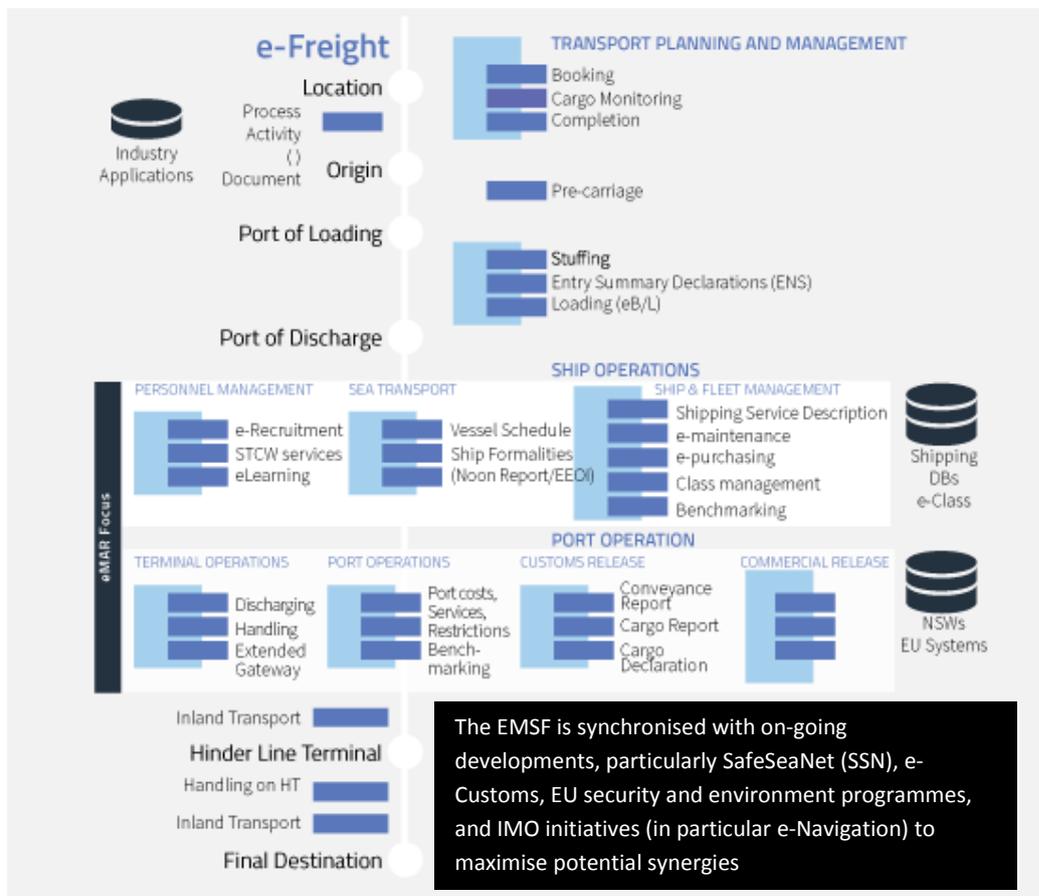


Figure 1: EMSf interlinks shipping processes with logistics and port operations

The main results for enhanced collaboration in maritime transport included: the e-Maritime Strategic Framework (EMSf), eMAR Ecosystems, the DANAOS Collaboration Platform, InleMar Ecosystem, i-Ship Intelligent Ship Reporting Gateway, and a new version of the Common Reporting Schema (CRS) Harmonising Reporting Formalities:

3.1.3.1 e-Maritime Strategic Framework (EMSf)

The e-Maritime Strategic Framework (EMSf) is aimed at supporting better regulation and improved communications in the EU maritime transport sector, further fostering transparency and market function effectiveness. The EMSf is a reference domain model that describes

information exchange requirements for different user-communities, for example the EMSF interlinks shipping processes with logistics and port operations.

The EMSF is driven by the need to enhance regulations, promote standardisation and improve communications in the EU Maritime Transport Sector. The EMSF plays an important role in the development of model driven digital ecosystem environments, addressing contemporary challenges in the maritime transport sector.

The EMSF models were created in an open and collaborative way, integrating existing models in the maritime and logistics sector, to support solutions for efficient and sustainable waterborne transportation, integrated in the overall EU transport system.

3.1.3.2 Show Case 1: i-Ship Intelligent Ship Reporting Gateway

The intelligent Ship Reporting Gateway (i-Ship) is an innovative software application, enabling ship representatives to fulfil their reporting obligations to European and International maritime and custom authorities, in accordance to the European Commission Directives listed below. i-Ship can be used to automate reporting formalities in a timely and correct manner taking into account the type of ship and the voyage.

- 2009/17/EC: 24h pre-arrival notice, Hazmat, notices to maritime reporting systems and vessel traffic services.
- 2009/16/EC: 72h pre-arrival notice, actual arrival / departure notifications
- 2010/65/EC: ship reporting formalities such as waste, security, FAL forms, maritime declaration of health, entry summary declaration, passenger list, crew effects, cargo manifests, etc.

i-Ship facilitates the interconnection of ships with operational stakeholders and reporting authorities can be used to automate reporting formalities needed for entry and departure from ports and sailing through controlled waters according to the specific needs of a shipping company. All the related tasks are carried out in a timely and correct manner taking into account the type of ship and applicable regulations to a voyage.

i-Ship is a collaborative web-based reporting environment, designed to meet the needs of ship managers and their business associates. It acts as a common gateway to all reporting nodes (Port Systems, Single Windows, Customs), providing a single link for shipping companies to submit their reporting formalities.

i-Ship applications of the new technologies include:

- i. **Ship Managers:** Ship managers introduce voyage information directly using i-ship web application or via connection to the company's applications. The data introduced may include cargo information.
- ii. **Cargo Consignors:** Cargo consignors introduce cargo consignment data being aware -or not- of the specific cargo movements, which are decided by the ship operator. Example of the application of the new technologies/processes based on a real case study, quoting users' reactions if possible and with multiple pictures
- iii. **Ship Representatives:** Ship masters, agents at a specific port or other authorised users submit port clearance related formalities to maritime Single Windows or related authority systems.

- iv. **Cargo Representatives:** Cargo representatives submit cargo clearance formalities to maritime Single Windows such as ENS, eManifest etc., to Port Systems or to Custom Authorities (e.g. ICS, ECS).

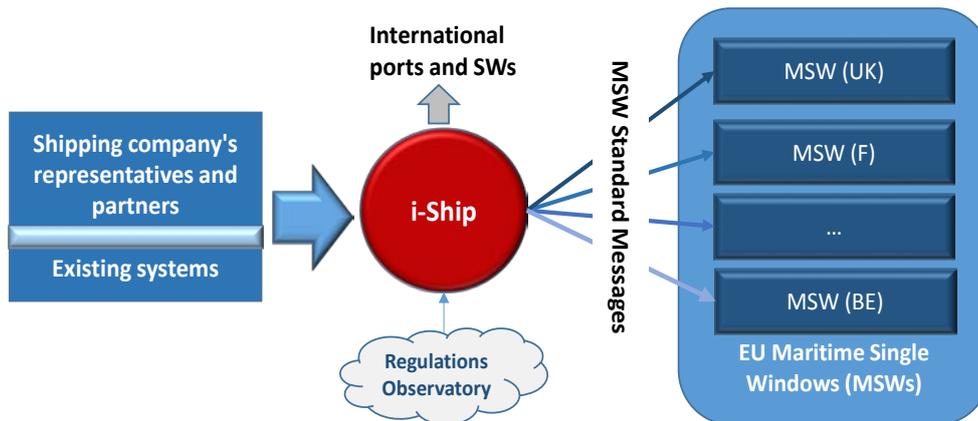


Figure 2: i-Ship: a complete solution for ship formalities and compliance management

i-Ship dashboard facilitates choice of actions in three areas: ships, voyages and notifications:

- i. **Ships:** The “ships” area presents a list of all the vessels that the user is authorised to handle; mostly used for creating future voyages.
- ii. **Voyages:** The “voyages” area presents a list of all voyages that the logged-in user can manage. This list may be filtered through text search or by a specific ship name. Users may choose to update the details of a specific voyage or create a notification.
- iii. **Notifications:** The “notifications” area presents a list of the reporting obligations and their status (pending submission, having been submitted or authorized, etc.). Users can produce and submit notifications.

Users configure time thresholds and applicable formalities according to national legislation, as well as modify these settings to accommodate port level requirements. The set of formalities from which a ship is exempted are specified.

Table 1: EU Ship reporting requirements fulfilled by i-Ship

Reporting requirement	Legal Basis	Potential Submission Formats
Pre-arrival notice	According to EU legal Acts (Article 4 of Directive 2002/59/EC) and similar regulations adopted by Norway and Iceland, a notification for ships arriving in ports of the Member States is required (submitted at least 24 hours before arrival and including ETA and person on board information).	
Passenger and crew list	According to EU legal Acts (Article 7 of Regulation (EC) No 562/2006) passenger and crew and stowaways information for border checks on persons, is notified	

	to border control Authorities	
Notification of dangerous or polluting goods carried on board	According to EU legal Acts (Article 13 of Directive 2002/59/EC) and similar regulations adopted by Norway and Iceland, a notification of dangerous or polluting goods carried on board is required	
Notification of waste and residues	According to EU legal Acts (Article 6 of Directive 2000/59/EC) and similar regulations adopted by Norway and Iceland a notification of waste and residues are required (submitted at least 24 hours before arrival).	National regulations may require the electronic submission of berth allocation
Information on ship security level & on last 10 calls at port facilities	According to EU legal Acts (Article 6 of Regulation (EC) No 725/2004) and similar regulations adopted by Norway and Iceland a notification of security information (including e.g. the information on ship security level and on last 10 calls at port facilities) is required (submitted at least 24 hours before arrival).	
Entry summary declaration (ENS)	According to EU Custom regulations an Entry summary declaration (ENS) for cargo consignments loaded at non Union ports has to be lodged at the Custom Office of first entry in the Union or at an ENS office of lodgement at least 24h before the departure of the ship from the port where the consignment was originally loaded	<i>XML-based (ISO 28005/ EMSA epc xsd edition) XML-based (WCO-based AnNA format)</i>
Cargo Manifest	According to specific Customs regulations applicable in European countries a cargo manifest is to be lodged for ships arriving and/ or leaving EU ports. Furthermore a declaration of goods unloaded for temporary storage might be required.	<i>XML-based (eMAR CRS) XML-based DDNIA format (DG TAXUD)</i>
FAL Forms	National regulations may require the submission of individual FAL forms for ships arriving or departing	<i>EDIFACT XML-based (ISO 28005) XML-based (eMAR CRS)</i>
Berth Requests	National regulations may require the electronic submission of berth allocation	<i>EDIFACT (BERMAN) XML-based (eMAR CRS)</i>

3.1.3.3 Show Case 2: DANAOS Collaboration Platform

The Danaos platform provides a place to publish and use software services related to shipping. It acts as a node in the e-Maritime Network and offers a directory of e-Maritime services that are already used by a number of shipping companies in their day to day operations.

This platform has been developed to:

- i. Promote collaboration amongst Shipping Companies
- ii. Enable integration between the various in-house systems that shipping companies currently use
- iii. Link business activities with other business partners and third parties, live, through an active shipping directory
- iv. Socialise professionally via messages, forum postings, conferencing, etc.

The DANAOS Platform offers a unique architecture that gives to a company full control over interaction. Ecosystem participants can choose the right mixture of cloud-based or office-based tasks, in order to tailor their processes according to their needs, from start to finish.

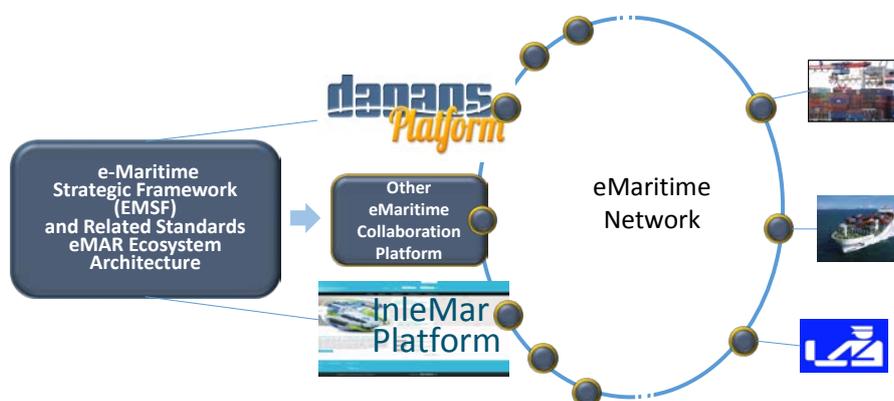


Figure 3: The Danaos Collaborative Platform within the e-Maritime Network

The DANAOS Collaboration Platform was developed within the EMAR project, which aimed to empower the European maritime sector by offering efficient quality shipping services fully integrated in the overall European transport system.

The e-Maritime ecosystem developed within the eMAR project enables advanced business applications for the maritime and port sectors to be made available to potential users over an upgraded information management infrastructure. It facilitates information exchanges which give a user full control over interaction, and allows participants to choose the right mixture of cloud-based or office-based tasks, in order to tailor their processes according to their needs.

The DANAOS Collaboration Platform is a fully interoperable solution for enhanced collaboration in maritime transport that has been driven by market needs, and is in line with the overall e-Maritime objective of making maritime transport safer, more secure, more competitive and more environmentally friendly. The DANAOS Platform will allow companies in the maritime sector to progress faster into the new era of shipping, where teamwork, outsourcing, transparency, and visibility drive improvements in performance, quality, and profitability.

The DANAOS Collaboration Platform is already being used by a number of shipping companies in their day to day operations, and already features published information services, such as:

- i. Port arrival and departure reporting
- ii. Class Status information services
- iii. Manifest related services
- iv. e-crewing, e-Statement of Fact (Electronic version of the SoF and a standard data model for communicating statement of fact information)
- v. Energy Efficiency Operational Indicator service requirements
- vi. Port formalities reporting and CO2 calculations

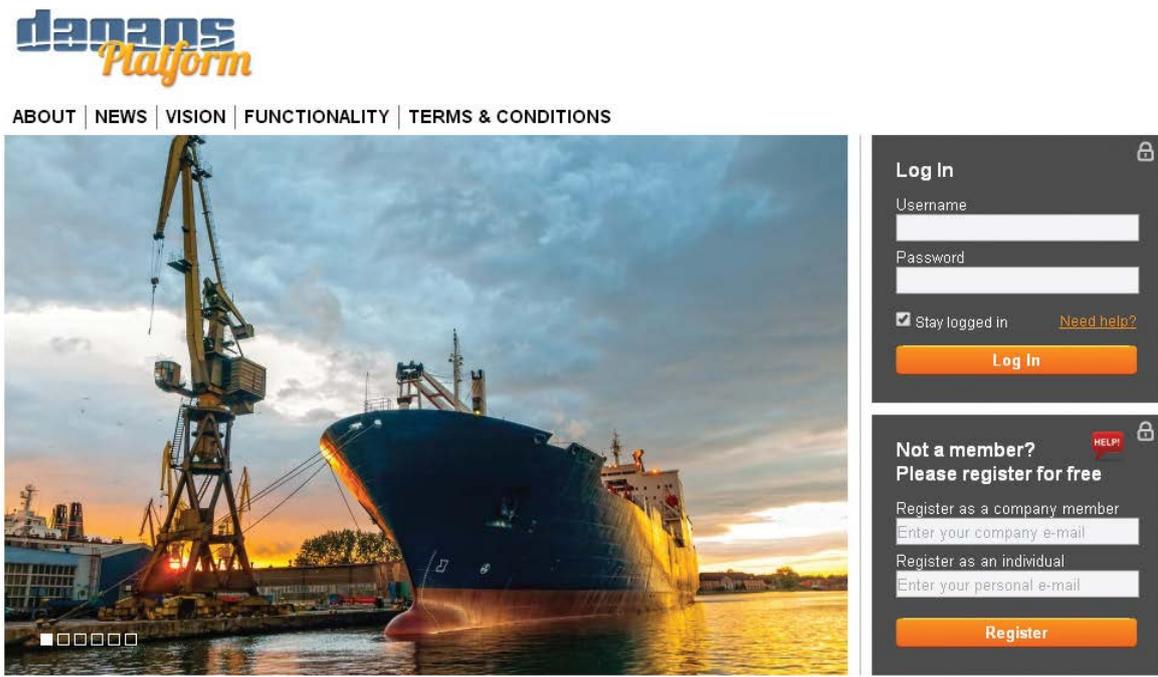


Figure 4: The Danaos Collaboration e-servicing platform

DanaosONE™ is the first complete e-servicing platform for the shipping industry, based on the European Maritime Strategic Framework (EMSF). It is a professional B2B versatile e-servicing Platform that seamlessly integrates a company's internal operational, safety systems and compliance policies, securely. The DanaosONE™ Platform is also based on the principle of Single Window, a One-Stop-Shop for all shipping and oil and gas industries. This provides a Portal where diffusion of e-services leverages team work, outsourcing, and transparency, as well as visibility whilst enhancing performance, quality, and profitability.

Either in an Intranet Network, shared within a Company's personnel or in an Extranet Network, operated between each Company's trusted partners (e.g. suppliers, agents, brokers and affiliates), DanaosONE™ saves time and money whilst assuring high Quality of Service (QoS) by transforming traditional transactions to securely offered e-services. DanaosONE™ uses web plugins that bridge existing in-house back office systems with the platform, without retaining any sensitive corporate information locally, providing advanced security and real-time interoperability.

The DANAOS Collaboration Platform (DanaosONE™) offers a suite of services and can "bridge" any functionality provided by users' in-house back office systems within a network of trusted stakeholders of their selection. Users can start exchanging information accurately and securely with their suppliers, partners, agents, brokers and affiliates, while avoiding the cumbersome drawbacks of traditional information exchange.

Services offered include:-

- Crew Management
- e-Sourcing
- RFQ
- Invoice Reconciliation
- Protocol/Registrar
- e-Drawings

The platform also enables users to launch and make available on demand certain in-house system functionalities as services to their internal users (intra net). This set of services can facilitate two-way secure remote access to corporate information and assure compliance with regulatory and statutory operational and safety processes.

Examples of these services and functionalities are:-

- Task Management
- Project Management
- Leave/holiday Management
- Support Tickets
- Collaboration
- Communication

DanaosONE™ provides a set of bundled services that facilitate the Shipping Industry's essential everyday activities, whilst allowing exposure of products and services, creating new business opportunities. Members gain international exposure and endless possibilities to connect with other trusted members.

Examples of these products and services are:-

- Directory Services
- Information for Ports
- Formalities for Ports
- e-Sea Weather
- e-Currencies
- Maritime News
- Classifieds
- Virtual Exhibitions
- Forums

3.1.3.4 eMAR Ecosystems

eMAR has provided solutions and infrastructure that support interoperability and cooperation for improved collaboration and business relationships. eMAR's Ecosystems transform Business processes to eMAR software services, which are accessible through the Internet and they consist of two pylons:

- i. The Business ecosystem involving the business communities producing and consuming services and exchanging information compliant with the EMSF messages, and

- ii. The Technology ecosystem utilising semantically enhanced ICT infrastructure that supports interoperability and cooperation between software services, enterprise systems and intelligent objects. Business ecosystems are integrated value chains formed by the business relationships between participating organisations. Digital Business Ecosystems (DBE) comprise of the business participants both providers and consumers of information and services, as well as the ecosystem assets used in their interactions and collaboration such as applications, services, business models, training and support.

3.1.3.5 InleMar Ecosystem

The InleMar Ecosystem supports shipping organisations to creating their own corporate ecosystems compatible with the e-Maritime Strategic Framework. This allows fast connection to various sources of online data, interoperability with other compliant ecosystems and applications, and agile development of application portals for their users, unifying internal and external content.

InleMar connectivity technologies enable shipping companies to upgrade their existing IT systems in a fast and cost effective manner. They can then use their new collaboration platforms to streamline existing business relationships, create new collaborative models of work, and set up new services.

This Ecosystem offers a convergence of enterprise portals and cloud management environments from a user centric perspective, creating new horizons for collaboration in shipping and bringing the goals of e-Maritime a step closer to reality. As new cloud applications and services in a particular domain emerge, the users can access them seamlessly while maintaining a consistent interface.

3.1.3.6 Common Reporting Schema (CRS) Harmonising Reporting Formalities

A new version of the Common Reporting Schema was developed in the eMAR Project. It provides compatibility with NSW models and remains simple and extensible.

Trade and Transport Single Windows provide significant advantages to both businesses and regulatory authorities. As European member states prepare National Single Windows in accordance with the Directive 2010/65/EU, it is recognized that the key to successful implementation is a unifying ship reporting model.

The Common Reporting Schema (CRS), as the name implies, supports a unified solution for regulatory information management associated with trade and transport at both national, EU and international levels. CRS was developed in eMAR to provide the data model and messages for Directive 2010/65/EU compliant NSWs with knowledge of current standards and international e-reporting systems such as e-NOA US and e-PANS Singapore. It is harmonised with EU initiatives such as the AnNA project and data mapping activities carried out by the European Commission.

A major advantage of CRS is that it is structured to represent accurately both cargo and ship/voyage perspectives. It has been constructed taking into account the main international standards, particularly WCO and EPC. CRS is part of the eMAR Strategic Framework (EMSF) and therefore supports interoperability with e-Maritime applications.

3.1.4 Impact of Results Achieved

The e-Maritime Strategic Framework (EMSF) will support better regulation and improved communications in the EU maritime transport sector, further fostering transparency and market

function effectiveness. In this respect, the EMSF will play an important role in creating future digital eco-system environments where models can fully represent the complexity of interactions within the maritime transport sector. The EMSF models were created in an open and collaborative way, integrating existing models in the maritime and logistics sector, to support solutions for efficient and sustainable waterborne transportation integrated in the overall EU transport system.

The EMSF is synchronised with on-going developments, particularly SafeSeaNet (SSN), eCustoms, EU security and environment programmes, and IMO initiatives (in particular e-Navigation) to maximise potential synergies.

In addition to the EMSF the other main results have delivered lasting solutions for enhanced collaboration in maritime transport, and these include: eMAR Ecosystems, DANAOS Collaboration Platform, InleMar Ecosystem, i-Ship Intelligent Ship Reporting Gateway, and a new version of the Common Reporting Schema (CRS) Harmonising Reporting Formalities.

3.1.4.1 Principal impacts of i-Ship:

- Reduction of the overall cost of reporting by eliminating non-adding value activities.
- Reduction of the reporting burden -from hours to minutes- allowing ship personnel to focus on efficiency and safety of operations.
- Synchronisation for optimised berthing times.
- Reduced clearance uncertainties leading to improved planning.
- Shorter lead times
- As European member states prepare National Single Windows in accordance with the Directive 2010/65/EU, i-Ship ensures full compliance with the EU legal requirements on ship and cargo reporting, taking into account exceptions for regular shipping.
- Compliance with international standards (e.g. ISO 28005, WCO, EDIFACT) and EU specific formats and requirements.

3.1.4.2 Principal impacts of Danaos Collaboration Platform:

- Promotes collaboration among shipping companies
- Enables integration between the various in-house systems that shipping companies currently use
- Links business activities with other business partners and third parties, live, through an active shipping directory
- Significantly reduces IT complexities and costs
- Accelerates wider adoption of advanced information and communication technologies by different users in the maritime and supply chain sectors
- Facilitates professional socialising via messages, forum postings, conferencing, etc.

3.1.5 eMAR website and videos

The eMAR website provides a good overview of the main results and can be viewed as well as videos on Facilitating Information Exchange and on the Development Guide to the Single Window: <http://www.emarproject.eu/>