i-Ship
Intelligent Ship Reporting
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Takes care of all reporting formalities for your shipping company in Europe and globally, in a dependable and cost effective manner.


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A new way to interconnect ships with operational stakeholders & reporting authorities

The intelligent Ship Reporting Gateway (i-Ship) is an innovative software application, enabling ship representatives to fulfill 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.

**Ship Managers**
Ship managers introduce voyage information directly using the i-ship web application or via connection to the company’s applications. The data introduced may include cargo information.

**Cargo Consignors**
Cargo consignors introduce cargo consignment data being aware -or not- of the specific cargo movements, which are decided by the ship operator.

**Ship Representatives**
Ship masters, agents at a specific port or other authorized users submit port clearance related formalities to maritime Single Windows or related authority systems.

**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).
Advanced reporting features and key benefits

FLEXIBILITY & EASE OF USE

• A highly flexible and user-friendly tool for linking voyage/ship cargo information with port formalities reporting.
• Easy configuration of the communication with the Maritime, Custom and Border Control Authorities’ systems in a variety of electronic formats and according to regulations applicable per country and/or port for specific ship service.
• Easy preloading and change of data repeated frequently in notifications (e.g. ship particulars, port codes).

STREAMLINED REPORTING PROCESS

• Streamlined reporting work-flows for the exchange of ship and cargo information among all involved actors, respecting their access rights.
• Harmonisation with international standards (e.g. ISO 28005, WCO, EDIFACT) and EU specific formats and requirements.
• Work-flows for dealing with exceptional circumstances and deviations.
• Monitoring reporting process KPIs.

INTEGRATION WITH FLEET SYSTEMS

• Reduction of IT complexity through SAAS (software as a service).
• Easy integration / sharing of information with other company “in-house” and external partner systems.
• Interfacing to existing ship applications and other information sources for automated extraction of reporting data.
• Support for planning and implementing phased development of compliance automation across the fleet.
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.

**EXTENSIBILITY & CUSTOMISATION**

- Extensible rule engine that can be adjusted to the user needs and extended to conform to the latest legislation, without technical complexity.
- Customisable user profiles and access rights.
- Easy customisation of specific company practices ashore and onboard.
- Customisable voyage based business notifications.
- Automated updating of data models to adhere to new regulations.

**COMPLIANCE QUALITY VISIBILITY**

- Visibility of the reporting/compliance status of the fleet by the shipping management team.
- Improved collaboration with authorities, enhanced compliance quality and associated reputation benefits.
- Generation of warning alerts when sailing into Emission Control Areas (ECA) and management of related records.
- Creation of reporting documents for world-wide shipping.

**TIME - COST EFFICIENCY**

- Reduction of the reporting burden - from hours to minutes - allowing ship personnel to focus on efficiency and safety of operations.
- Reduction of the overall cost of reporting by eliminating non-adding value activities.
- Synchronisation for optimised berthing times.
- Reduced clearance uncertainties leading to improved planning.
- Shorter lead times.
Common Reporting Schema (CRS)
Harmonising Reporting Formalities

A unifying ship reporting domain model for Maritime Single Windows

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.

CRS has been extensively tested under various scenarios, including submissions:

- To Customs ICS systems,
- To SafeSeaNet via multiple National SSN applications,
- To an eMAR NSW prototype,
- To a NSW prototype produced by EMSA (IMP),
- By the DNV Navigator,
- By DANAOS shipping company,
- By masters and experts.

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.
EU Ship reporting requirements fulfilled by i-Ship

<table>
<thead>
<tr>
<th>Reporting Requirement</th>
<th>Legal Basis</th>
<th>Potential Submission Formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-arrival notice</td>
<td>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).</td>
<td>XML-based (ISO 28005/ EMSA epc xsd edition)</td>
</tr>
<tr>
<td>Passenger and crew lists</td>
<td>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.</td>
<td>XML-based (WCO-based AnNA format)</td>
</tr>
<tr>
<td>Notification of dangerous or polluting goods carried on board</td>
<td>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.</td>
<td>XML-based (eMAR CRS)</td>
</tr>
<tr>
<td>Notification of waste and residues</td>
<td>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 is required (submitted at least 24 hours before arrival).</td>
<td>XML-based (DDNIA format (DG TAXUD))</td>
</tr>
<tr>
<td>Information on ship security level &amp; on last 10 calls at port facilities</td>
<td>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).</td>
<td>XML-based (ISO 28005/ EMSA epc xsd edition) XML-based (WCO-based AnNA format) XML-based (eMAR CRS)</td>
</tr>
<tr>
<td>Entry summary declaration (ENS)</td>
<td>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 lodgment at least 24h before the departure of the ship from the port where the consignment was originally loaded.</td>
<td>EDIFACT (ISO 28005) EDIFACT (eMAR CRS)</td>
</tr>
<tr>
<td>Cargo Manifest</td>
<td>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.</td>
<td>EDIFACT (ISO 28005) EDIFACT (eMAR CRS)</td>
</tr>
<tr>
<td>FAL Forms</td>
<td>National regulations may require the submission of individual FAL forms for ships arriving or departing.</td>
<td>EDIFACT (ISO 28005) EDIFACT (eMAR CRS)</td>
</tr>
<tr>
<td>Berth Requests</td>
<td>National regulations may require the electronic submission of berth allocation</td>
<td>EDIFACT (BERMAN) EDIFACT (eMAR CRS)</td>
</tr>
</tbody>
</table>
The i-Ship dashboard facilitates choice of actions in three areas: ships, voyages and notifications.

**Ships**
The “ships” area presents a list of all the vessels that the user is authorized to handle; mostly used for creating future voyages.

**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.

**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.

Dashboard overview
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.

**Design and Deployment Details**

*i-Ship is offered as a SAAS (software as service), but can also be available on private clouds or on premise.*

Currently it is deployed in Microsoft’s Azure WebSites infrastructure. It is monitored and can be auto-scaled to meet demand and SLA terms.

The application is configured to use SSL and RSA encryption for securing data exchange. *i-Ship has its own user management module which provides authentication and identity control. Access control is done with roles, permissions, and attribute filtering which are all configurable by application administrators.*

Access from the application to the database is made with an additional security layer. The service can be hosted by a ship operator or a service broker providing services to several shipping actors (managers or agents).
**i-Ship innovation**

**Technological advantages**

The i-Ship prototype has been developed as part of the eMAR project, building on FP7 projects in the period 2008-2014.

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**Utilising research outputs from key FP7 projects**

- **eFreight**: 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.

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[i-Ship is Directive 2010/65/EU compliant; it ensures full compliance with the EU legal requirements on ship and cargo reporting, taking into account exceptions for regular shipping.]
i-Ship is powered by the model driven engineering platform zAppDev®

1. **Service-oriented Distributed Architecture**
   i-Ship reporting is based on a model driven architecture, utilising the e-Maritime Strategic Framework (EMSF). As business information is captured in models, i-Ship is highly adaptive to operational or regulation changes.

2. **Security**
   i-Ship’s reporting provides integrated security that guarantees data integrity and privacy, and supports teamwork and collaboration as well as efficient data access.

3. **API-driven Integration**
   Tools are available utilizing semantic technologies for integrating with company specific IT systems. API’s become the digital glue between i-Ship and existing systems.

4. **Flexibility**
   The domain model of the application can be available in various platforms (JAVA, .NET, etc.) and formats (e.g. binary, XSD, RDF).

5. **Resilience**
   Easy, low-cost maintenance and extensibility both to company and regulatory changes. Data models are also automatically updated to adhere to new regulations.

**Partnerships**
Inlecom offers i-Ship with partners including BMT, CLMS, DANAOS, EBOS and MarineTraffic.
Inlecom is dedicated to research and innovation in transport and logistics covering policy, strategy, operational processes, and ICT solutions. We have built extensive knowledge on Single Windows produced by numerous projects over the past six years and developed workable solutions for the industry. i-Ship is backed by a range of Inlecom consultancy services for e-Maritime and Single Windows and the InleMar Ecosystem.