

The background of the slide features a tall, black and white striped lighthouse on the left side, set against a dark, moody sky. The lighthouse has a spiral pattern of black and white bands. The overall color palette is dominated by dark blues and greys, with a bright blue diagonal shape that cuts across the middle of the slide, serving as a backdrop for the text.

Maritime Reporting Model

Automated information exchange between
ship and shore

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What is an administrative burden?

- An administrative requirements imposed by rules and regulation
- High focus over the past 10 years on how to reduce the administrative burdens in shipping
- IMO has concluding an inventory aiming to identify those administrative requirements that are – or have become – unnecessary, disproportionate or even obsolete within its instruments
- The EU-funded project, EfficienSea2 has focus on the administrative burdens

E2 project scope – four solution areas



- End-user services – smart navigation and administration



- Platforms for services – web and onboard equipment



- Communication – The maritime connectivity platform



- Communication channels – smart roaming and VDES

EfficienSea2 project has 15 end-user services

Navigation

- Navigational Warnings and Notices to Mariners
- Weather on Route
- Nautical Charts based on S100 Standards
- Smart Buoy Interaction
- Route Optimisation
- Ice Charts
- Crowd Sourcing of Ice Information
- Route Exchange
- No-go Areas and Comfort Zones

Arctic

- Arctic Live Position Sharing
- Arctic SAR Tool
- Space Weather Forecast

Administration

- Automated VTS/SRS reporting
- **Automated exchange of port information**

Emissions

- Sulphur emission monitoring

Exchange of information, today.....

- Complex and diversified picture
 - Pre-arrival documents are sent in advance
 - Pre-arrival documents very often have different deadlines for submitting; 72-48-24 hours before arrival,
 - Port documents for the Authority are handed over on arrival
 - Information exchanged between many stakeholders
- The receiving entity, type and template differs from port to port – even within same country and region

E2 use case on reporting obligations

En route from Port of Gdansk, Poland calling Port of Aarhus, Denmark						
1		Great Belt PreTransit	VTS			
2	72 hours before arrival	Port State Control information	Notification for ships eligible to expanded inspections		EU-SSN form C3	
3		VTS	Notification			
4	As early as possible		Garbage removal form			
5	24 hrs before arrival	ETA-24 hours to ETA	Notification for ships arriving in and departing from ports of the EU		EU-NSW form A1	
6	24 hrs Pre-Arrival documents	Border Control	Border checks on persons		EU-NSW form A2	
7		Dangerous Goods	Notification of dangerous or polluting goods carried on board		EU-NSW form A3	
8		Dangerous Goods	Notification of dangerous or polluting goods carried on board		IMO FAL form B7	
9		Waste	Notification of waste and residues		EU-NSW form A4	1
10		Security	Notification of security information including ISPS Certificates		EU-NSW form A5	2
11		Environmental	Annex 1/2 declaration		EU-NSW form A6	
12		International Oil Pollution Prevention (IOPP) Certificate				1
13			Cargo Manifest			1
17	Before entering 12 miles zone Immigration	General	General declaration		IMO FAL form B1	
18		Health	Health Documents or Certificate		IMO FAL form B8	1
19		Customs	New arrival list		IMO FAL form B5	2
20			New arrival list		IMO FAL form B4	2
21			Passenger arrival list	(if pax)	IMO FAL form B6	2
22			Passenger effects declaration	(if pax)		2
23			Stowaways list			1
24			List of visitors during the port of call			1
25			Detailed list of companies which are subject to other communities and/or services during the ship's stay			1
26		Goods which will not be cleared, to be stored in a s	Ship's stores list	(bonded and provision)	IMO FAL form B3	2
27			Ship's stores list	(deck and engine)	IMO FAL form B3	2
28			Temporage storage list		EU-NSW form C5	
29			Narcotics and weapons list			2
30			Ship's cash list			1
31			Crew change information			1

The E2 use case identified 150+ reporting requirements! for 4 ports

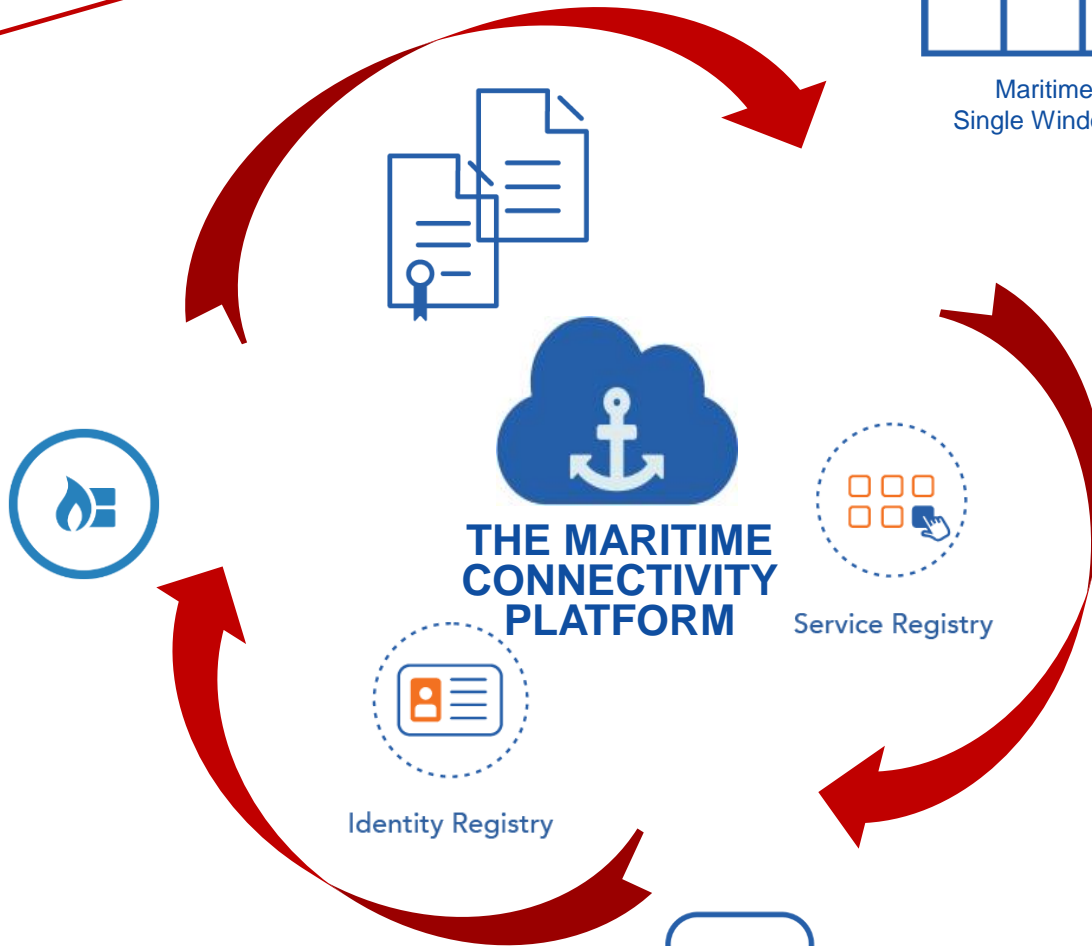
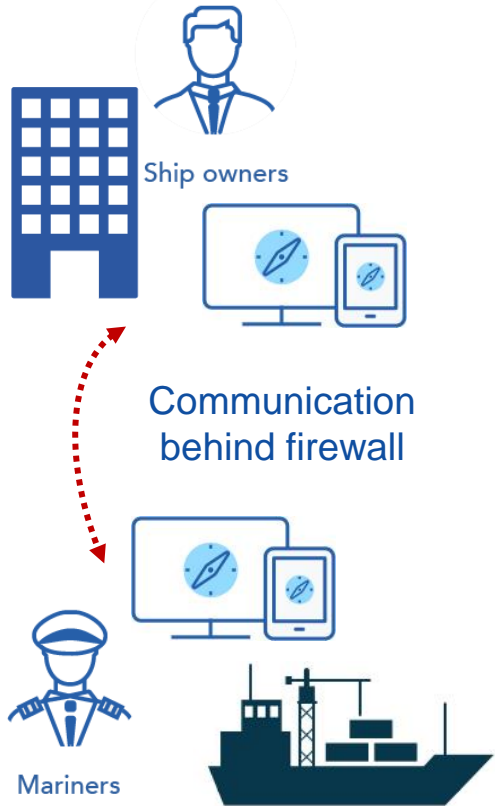
International regulation on reporting

- IMO Facilitation Committee (FAL) adopted in 2016 new requirements for electronic data exchange
- New mandatory regulation requires public authorities to establish systems to assist ship clearance processes by April 2019
- For international shipping, a unified, global approach to facilitation of international maritime traffic is vital

The E2 solution on information exchange

- End-user focused e-solution
- Based on realistic use cases
- Open source, platform to platform solution (M2M)
- Harmonized data model (UN/CEFACT, WCO, ISO28005, ...)
- Safe and (cyber) secure transfer of data
- Transparent and measurable solution (admin burden)

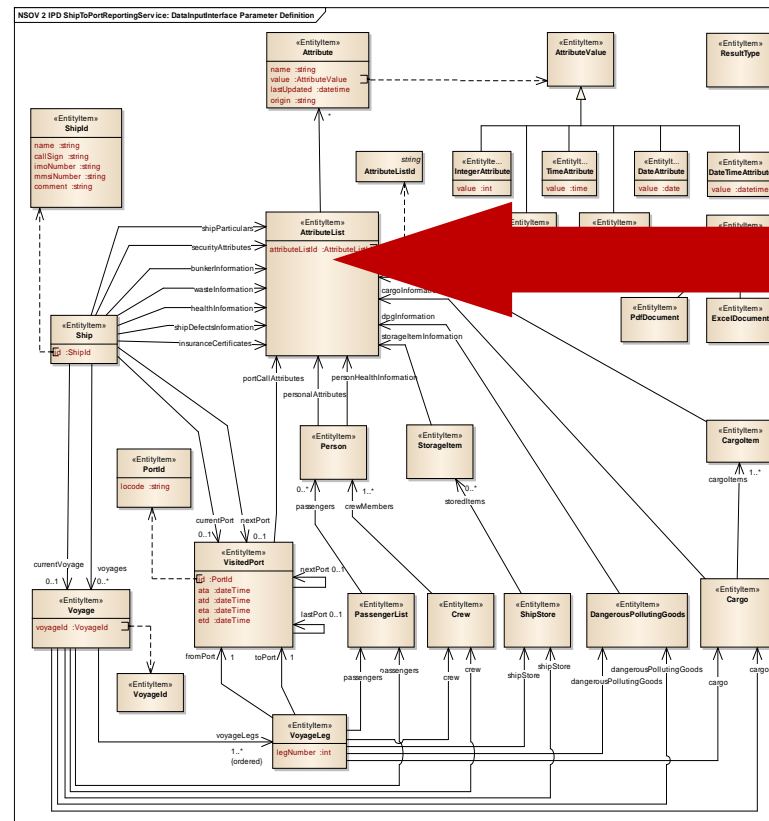
A SCENARIO COULD BE...



- Authority:**
 - Immigrations
 - Customs
 - Police
 - Maritime Authority
 - Port State Control
 - Health
 - Ports
 - ...
- Information:**
 - Cargo formalities
 - Waste delivery
 - Bunkers
 - Pre-arrival/departure
 - Dangerous goods
 - Crew/Passenger lists
 - Ten last ports of call
 - Certificates
 - ...
- Authority:**
 - Ports
 - Service providers
 - ...
- Information:**
 - Reception facilities
 - Contact points
 - Holiday Calendar
 - Taxes & Tariffs
 - ...

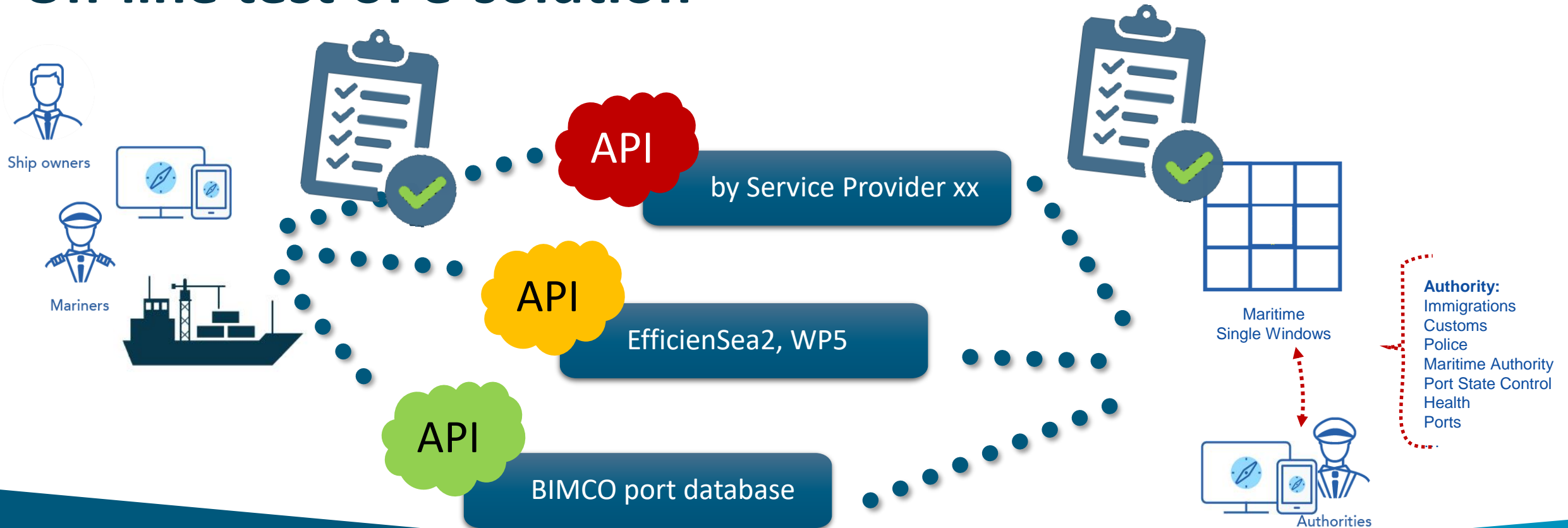
E2 – solution where 1 + 1 = 3

- a flexible “micro” service specification, combined with
- an international maritime data element model



Group/Element Name	Definition	Type	Draft proposed attributes (subject to change) (Not exhaustive)
Location of the port	Port name Free text	Text	(subject to change)
	Location Position - see geo reference Numerical	Numerical	LOCATION_NUMBER
	Time zone Standard Time, UTC (+/-) vs hrs Time	Time	PORT_TIME_ZONE
	Position Always expressed in degrees but representation Numerical	Numerical	POSITION_LAT
	Longitude Numerical	Numerical	POSITION_LONG
	Datum Vertical datums listed in sheet. Horizontal datums Numerical	Numerical	DATUM
General contact information	Legal disclaimer Free text	Text	PORT_LEGAL_DISCLAIMER
	General contact information Free text	Text	PORT_GENERAL_CONTACT_INFORMATION
	Point of contact Individual name 0 - free text Free text	Text	PORT_POINT_OF_CONTACT
	Website Free text	Text	PORT_WEBSITE
	near-ship communication VHF usage - free text Free text	Text	PORT_INTERSHIP_COMMUNICATION
	Cargo Weight of goods per calendar year in tons Numerical	Numerical	PORT_SUM_CARGO
	Charts Name of the chart - free text Free text	Text	PORT_CHARTS
	Shipping announcements Free text or reference to a port website Free text	Text	PORT_SHIPPING_ANNOUNCEMENTS
	ISL sheet Level 1, 2 or 3 Numerical	Numerical	PORT_ISL_LEVEL
	Load line Free text	Text	SHIP_LOAD_LINE
	Local holidays Name of the holiday Text	Text	PORT_LOCAL_HOLIDAYS
	Working hours Start day Text	Text	PORT_WORKING_HOURS
Depth information per section of	Berth Spatial area or point	Spatial	BERTH_STATUS
	Berth status "ready", "not ready", "operations", "closed", Spatial area or point	Spatial	ANCHOR_BERTH
	Anchor berth Spatial area or point	Spatial	ANCHOR_BERTH
	Sounding Decimal Meters, referred to a Chart Datum Numerical	Numerical	SOUNDING
	Dredged area Spatial Area, depth - meters, referred to a Chart Spatial	Spatial	DREDGED_AREA
	Dredging regime Free text	Text	DREDGING_REGIME
	Overbridge Decimal Meters, referred to a Chart Datum Numerical	Numerical	OVERBRIDGE
	Maintained depth Decimal Meters, referred to a Chart Datum Numerical	Numerical	MAINTAINED_DEPTH
	Sounding Minimum Decimal Meters, referred to a Chart Datum Numerical	Numerical	SOUNDING_MIN
	Sounding Maximum Decimal Meters, referred to a Chart Datum Numerical	Numerical	SOUNDING_MAX
	Nature of sea bottom Formatted text. Options in line with BA chart 5011 Text	Text	NATURE_SEA_BOTTOM
	Water density Numeric. (kg/m3) (kilograms per cubic metre) Numerical	Numerical	WATER_DENSITY
	Minimum Water density kg/m3 Numerical	Numerical	WATER_DENSITY_MIN
Reel information	Anchorage Spatial - area or point	Spatial	ANCHORAGE
	Traffic Separation Scheme Spatial - (Multi polygon or line - split into multiple Spatial	Spatial	TRAFFIC_SEPARATION_SCHEME
	Deep Water Route Spatial - line	Spatial	DEEP_WATER_ROUTE

On-line test of e-solution



System architecture

- Low impact integration with existing infrastructure and architecture
- Requirement of an “open” and harmonized architecture
- Open Source software and interfaces
- High cyber security considerations



THE SHIPBOARD SYSTEM



Ship management system

- Collect and maintain ship report data
- Release report data when ready

Measurement Information Continued

Load Line Information	34 500,00 MT	Summer Freeboard	00 MT
Summer Deadweight	00 MT	Summer Draft	12,00 MT
Winter Deadweight	00 MT	Winter Freeboard	00 MT
Winter Displacement	00 MT	Winter Draft	00 MT
Tropical Deadweight	00 MT	Tropical Freeboard	00 MT
Tropical Displacement	00 MT	Tropical Draft	12,00 MT
Normal Ballast Deadweight	45 000,00 MT	Normal Ballast Freeboard	00 MT
Normal Ballast Displacement	00 MT	Normal Ballast Draft	00 MT
Lightship Displacement	00 MT	Lightship Freeboard	00 MT
Fresh Water Allowance	12,00 mm	TPC, Tons Per Centimeter (Immersion)	12,00 Tons

Basic Information and Communication

Ship Number: 0001
 Ship Name: SeaSolution I
 Ship Register: DIS _DIS/SIN/_)
 Nationality: Danish
 Call Sign: OY12345
 Built at: Lindoe
 Port of Registry: Svendborg
 Panama ID:
 Company: SEA
 Security Level (ISPS): 1
 Registry Number: 1232454
 IMO Number: 9785645
 SE Number: 23444
 MMSI Number: 563543700
 Date of Registry: 02.10.2010
 Suez ID:
 Voice 1 (Bridge): 2343
 Voice 2 (Master): 7658675
 Telex:
 Fax:
 Data:
 HSD:
 V-Sat (Switchboard / Bridge):
 V-Sat (Master):
 V-Sat (Ch'ng):
 Iidium:
 Mobile 1:
 Mobile 2:

Crew Management

Status: Signed on Signed off Imported/New Archived All

Search Criteria: ID - No. Name Cap.

ID - No.	Name	Cap.
220396-1235	Ole A. Jensen	CPT
280867-7888	Jan Olsen	C/O
221178-7799	Leif Nielsen	C/E
210464-1233	Ole Petersen	Z/E
121178-7887	Jens Gonzales	BSN
030278-0000	Labor Olando	AB

Personal Information

Date Of Birth: 22-03-1956 No: 1235 Employee No.: 05674
 Firstname: Ole
 Middlename: A
 Surname: Jensen
 Nationality: Danish
 Place of birth: Odense
 Country of birth: Denmark
 E-Mail: OA@seaspay.dk
 Home Airport: Odense
 Civilian status: Married Sex: Male
 Crew type: Officer
 Union:
 Agreement: SEA Sea Manager US Agreement
 Team code: SEA Sea Manager US Agreement
 Employment type: CDM Company Employed
 Agreement type: CBA Collective Bargaining Agreement
 Current signon/off:
 Capacity: CPT Master
 Post list capacity: CPT Master
 Status code: 0100 Signed on
 Planned Signoff: 26-06-2013
 Resthour Sch.: Master
 Muster Number: 2B - Bridge
 Cabin Details: Cabin 100 Phone 12 Muster Role

SEA MANAGER (Sea Manager Aps), 0001, Seapay SEA MANAGER (Sea Manager Aps), 0001, Seapay i, Version: (3.20.0/3.21) - Port Section

File Function Action Window Help

Requesting Lists

Double-click to select a report:

- Australia
- Brazil
- Canada
- China
- Denmark
- Ecuador
- Egypt
- Germany
- Greece
- Hong Kong
- Germany
 - Bremen - Departure
 - Bremen - Arrival
 - Prearrival Report (Hamburg/Brem)
 - Maritime Declaration of Health - G
 - EU Single Window
- Greece
 - Honn Kona

Rows 1 to 53 of 118

Requesting Lists

Double-click to select a report:

- Canada
- China
- Denmark
- Ecuador
- Egypt
- Germany
- Greece
- Hong Kong
- IMO Documents
 - IMO - General declaration
 - IMO - Stores list (provision)
 - IMO - Cargo Declaration
 - IMO - Stores list (deck- & en)
 - IMO - Crew list
 - IMO - Crew list xls
 - IMO - Crew's effects declaration

Rows 22 to 64 of 118

Sea Manager Aps

IMO CREW LIST
(IMO FAL Form 5)

Arrival Departure Page Number 1 / 1

1. Name of ship SeaSolution I		1.2 IMO number 9785645	
1.3 Call sign OY12345		1.4 Voyage number	
2. Port of arrival / departure		3. Date of arrival / departure 04.11.2016 , 10:56	
4. Flag State of ship Danish		5. Last port of call / Next port of call	
6. No.	7. Family name, given names	8. Rank or rating	9. Nationality
10. Date and place of birth	11. Nature and No. of identity document	Passport / Exp. date	Dischargebook / Exp. date
1	Jensen , Ole A	Master	Danish
			22.03.1956
			Odense
			23432451
			10-10-2020
2	Olsen , Jan	Ch. Off.	Danish
			28.08.1967
			Skagen
			2222
			31-01-2020

Examples – information's from the SafeSeaNet.DK

The screenshot displays the SafeSeaNet.DK web application interface. It features a top navigation bar with a search function and user profile information. The main content area is divided into several panels:

- Left Panel:** Contains navigation icons and sections for 'Voyage' and 'Port State Control'. Under 'Voyage', it lists 'Last Port:', 'ETD from Last Port:', 'ETA to Port of Call:', and 'ETD from Port of Call:'. Under 'Port State Control', it shows 'Date of last expanded inspection in Paris MoU region:'.
- Top Panel:** Shows '24 HOUR PREARRIVAL Arrival Notification REF-000TEO' for 'Organisation: Martins Agentur'. It includes a search bar, 'Advanced Search' button, and user profile 'Trafik'.
- Security Panel:** Contains 'Security' information, including 'Does the ship have a valid ISSC issuer type:' and 'Current ship security level:'. It also has a 'Company Se' section with 'CSO Given name:', 'Phone:', and 'Email:'.
- History Panel:** Titled 'History', it lists 'Last 10 calls at Port Fa' with columns for 'Date of arrival' and 'Port'.
- Waste Information Panel:** Contains 'Waste Information' for 'Organisation: Martins Agentur'. It includes 'Last port delivered:', 'Last port delivered date:', 'Waste delivery status:', and 'Do you confirm that the below details are a' and 'Do you confirm that there is sufficient dedic'. It also has a 'Waste Items' section with 'Waste type' options: 'Garbage (Food waste)', 'Waste Oils (Other)', and 'Garbage (Plastic)'.
- Arrival and Departure Notifications Table:** A central table listing ship arrivals and departures. The table has columns for 'Type', 'IMO', 'Ship', 'Port Of Call', 'ETA/ETD', and 'Status'. The status column includes 'DRAFT', '24 HOUR PREARRIVAL', and 'COMPLETED'.
- Right Panel:** Contains filter sections: 'Basic filters' (Arrival Notifications, Departure Notifications, Cargo Transfer Notifications), 'Havne filters', and 'Aalborg Havn A/S filters'.

Type	IMO	Ship	Port Of Call	ETA/ETD	Status
Departure	9297591	BIANCA RAMBOW	Alborg	2017-10-07 10:12	DRAFT
Arrival	9297591	BIANCA RAMBOW	Alborg	2017-10-06 21:12	DRAFT
Arrival	9006277	RIX STAR	Aalborg	2017-10-03 22:00	24 HOUR PREARRIVAL
Arrival	9100231	NUKA ARCTICA	Aalborg	2017-10-03 07:00	24 HOUR PREARRIVAL
Arrival	9545039	PEAK BORDEAUX	Aalborg	2017-10-02 16:00	24 HOUR PREARRIVAL
Arrival	9151890	TARNDAL	Aalborg	2017-10-02 07:30	COMPLETED
Arrival	9281786	CIMBRIS	Aalborg	2017-10-01 17:00	COMPLETED
Arrival	8015879	SCAN FJORD	Aalborg	2017-10-01 08:00	COMPLETED
Arrival	9100229	NAJA ARCTICA	Aalborg	2017-09-30 07:00	COMPLETED
Arrival	9297591	BIANCA RAMBOW	Alborg	2017-09-29 21:12	COMPLETED
Departure	9297591	BIANCA RAMBOW	Alborg	2017-09-30 10:12	COMPLETED
Arrival	9190200	THUN GLORY	Aalborg	2017-09-28 18:00	COMPLETED
Arrival	9407419	LAGANBORG	Aalborg	2017-09-28 02:30	COMPLETED
Arrival	9381433	EVITA	Aalborg	2017-09-27 20:00	COMPLETED
Arrival	8417259	EIKEFJORD	Aalborg	2017-09-27 09:00	COMPLETED

Reduction of the administrative burden

- E2 project have issued a questionnaire asking navigators about time spend to prepare, perform and finish 32 mandatory administrative tasks
 - The average total time to complete the most time consuming tasks is 62 minutes
 - The average total time to complete the least time consuming tasks is 16 minutes

- E2 solution estimate a reduction between 67-79% of this time

STANDARDS – STANDARDS – STANDARDS.....

- Harmonisation is critical, use of international standards is key and leads to interoperability
- Use of a suitable data model, mapped across main models (e.g. UN/CEFACT Multimodal Reference Data Model, WCO Data Model and ISO)
- The e-solution shall be **technology neutral**, and provide the ability to adapt to new technologies (backwards and forwards compatible)
- M2M solution, no need for additional systems/equipment

What are the obstacles....

- Need for common data element's ID standard

Data element	Description	Data element ID's			
		ISO 28005	UN/EDIFACT	WCO ID	IACS R.75
Ship name	Given name of the ship in the ship registry	ShipID.ShipName	C222:8212 (Name of ship)	T005	SHIP_Name
Call sign	Call sign for the ship. Sequence of letters and numbers, unique to each ship by which ships can be identified usually in radio communications.	ShipID.CallSign	C076:3148 (call sign)	Type (253)	SHIP_Call_Sign
IMO number	Unique ship identification number assigned by Lloyd's Register – Fairplay in accordance with IMO resolution A.600(15).	ShipID.IMONumber	C222:8213 (IMO Number)	T006	SHIP_IMO_Number
MMSI number	Identifier used by maritime digital selective calling (DSC), automatic identification systems (AIS) and certain other equipment to uniquely identify a ship or a coast radio station.	ShipID.MMSINumber	-	Type (253)	-
Comments	Any other information related to ship identity	ShipID.Comment	-	-	-
....					

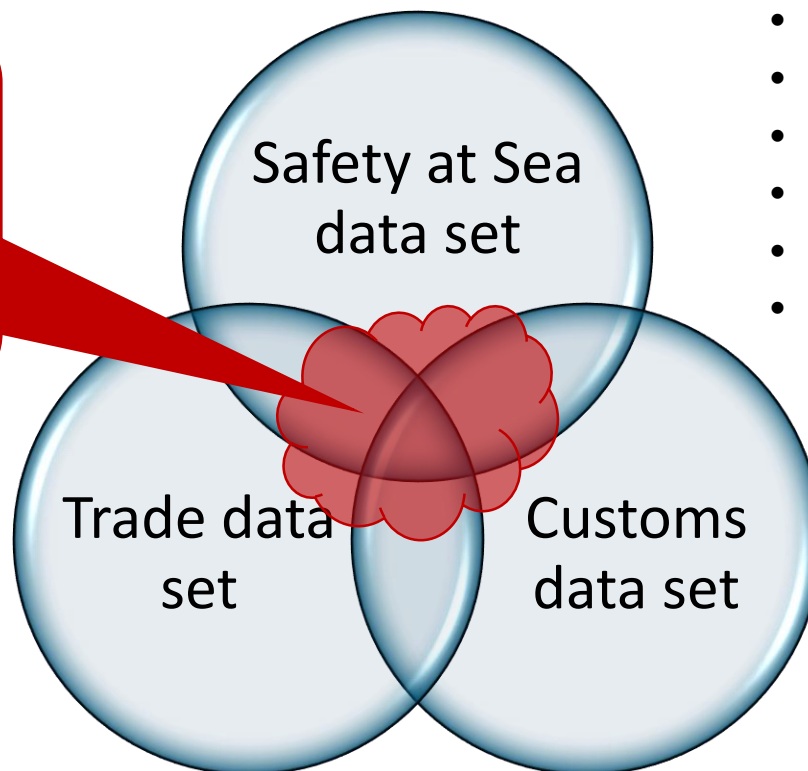
Harmonizing standards for ID's

- IMO / IHO HGDM 1 – Harmonization group on data modelling
- IMO / NCSR 5 - Harmonized data element ID structure
- IMO / FAL 42 - Extension of the existing output "Review and Revision of the IMO Compendium on Facilitation and Electronic Business"
 - harmonization of data models
 - establishment of a **maritime data element register**



Common maritime data model

Where overlap between the data models exists, there is a need for associating the data definition with multiple data element IDs



Key sources

- IHO S-100 framework data set
- IMO FAL compendium data set
- IALA defined AtoN and VTS related data sets
- IHMA nautical port information data set
- IACS Rec No.75, formats for electronic exchange
- ISO 28005-2 data set, comprises also:
 - WHO maritime health declaration
 - IMO data on safety and environmental matters
- ...

Key source

- WCO data model
- UN/EDIFACT (GOVCBR)
- ...

Key source

- UN CCL-MMT RDM
- UN/EDIFACT (BERMAN, IFTDGN, INVRPT, CUSCAR, CUSREP, PAXLST)
- UN XML
- ...

BIMCO proposal...

Establishment of a **maritime data element register**

- group name, name of data element, definition/description of data element, data type, data element ID/attribute ID, remarks, and parent source

If there is an overlap between different data sets, the alternative element ID(s) and the associated source should also be listed.

- alternative data element ID(s), and alternative source(s).

Thank you!

Contact BIMCO at
www.bimco.org

For further information, contact
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