International Taskforce

Port Call Optimization

Content – update 07/01/21

Who is International Taskforce Port Call Optimization?

The Taskforce:

- Comprises subject matter experts with hands on expertise in shipping, ports and standards
- Works together with NGO's to make submissions to robust standardization bodies to formalize existing industry practices
- Provides input to Chainport, DCSA, IAPH Data project, IMO GIA low carbon shipping, Navelink, STM, WorldBank, WPCAP
- As a neutral body, consults but does not promote solution providers

Why did we start?

Initiator:

- Request from shipping to improve port call data quality and availability to IHMA

Followed by:

- IMO MEPC 323/74: call for action to improve quality and availability of data in ship-port interface
- World Bank / IAPH request to prioritize 10 data elements in ship-port interface

International Harbour Masters Association

RESOLUTION MEPC.323(74)
(adopted on 17 May 2019)

INVITATION TO MEMBER STATES TO ENCOURAGE VOLUNTARY COOPERATION BETWEEN THE PORT AND SHIPPING SECTORS TO CONTRIBUTE TO REDUCING GHG EMISSIONS FROM SHIPS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

HAVING ADOPTED resolution MEPC.304(72) on the *Initial IMO Strategy on reduction of GHG emissions from ships* (hereinafter the Initial Strategy),

NOTING that the Initial Strategy calls for the encouragement of port developments and activities globally to facilitate reduction of GHG emissions from shipping, including provision of ship and shoreside/onshore power supply from renewable sources, infrastructure to support supply of alternative low-carbon and zero-carbon fuels, and to further optimize the logistic chain and its planning, including ports,

WORLD BANK GROUP

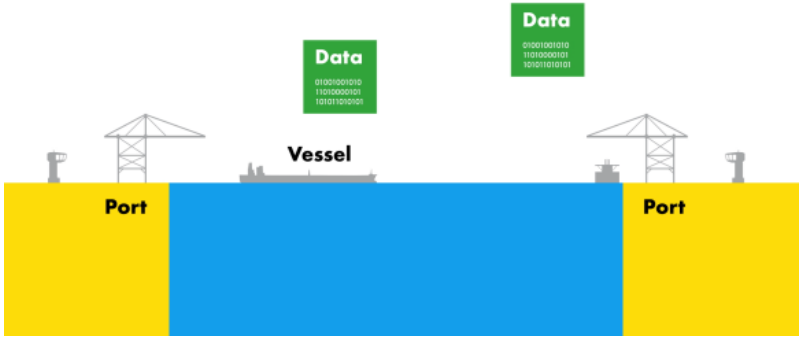
Why is port call data important?

- To improve safety, security and environmental performance to address financial concerns, and encourage innovation and efficiency (IMO)
- Most cost-efficient way to do it

What is the scope of port call data?

Focus: vessel movement from Pilot Boarding Place to Berth:

- Realizing safe and sustainable navigation: where is my Pilot Boarding Place and berth, when are they safe and available?
- Important for shipping, shippers, terminals and ports



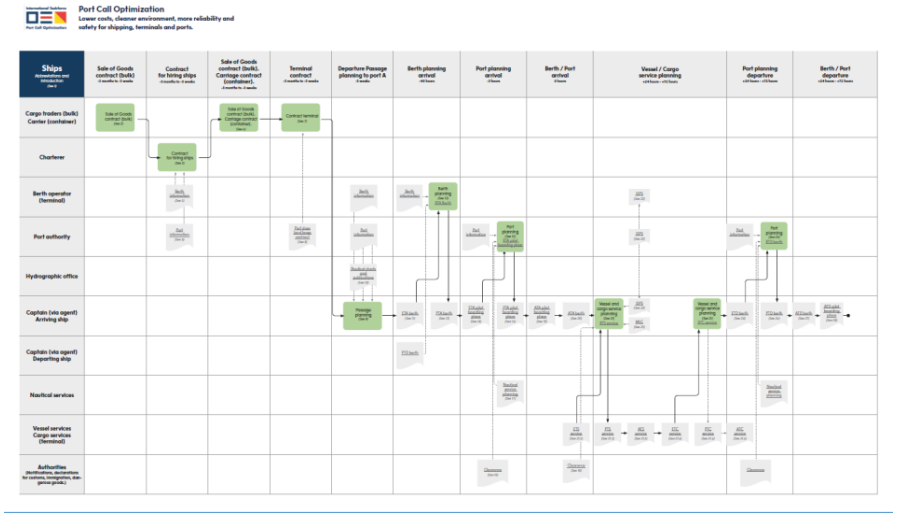
Related: vessel's cargo movement:

- Realizing sustainable end to end supply chain: where are my goods?
- Important for shippers

What are the data sets of port call data?

First understand complete scope of data, data owner ship and how actors work together, based on trade and port agnostic approach:

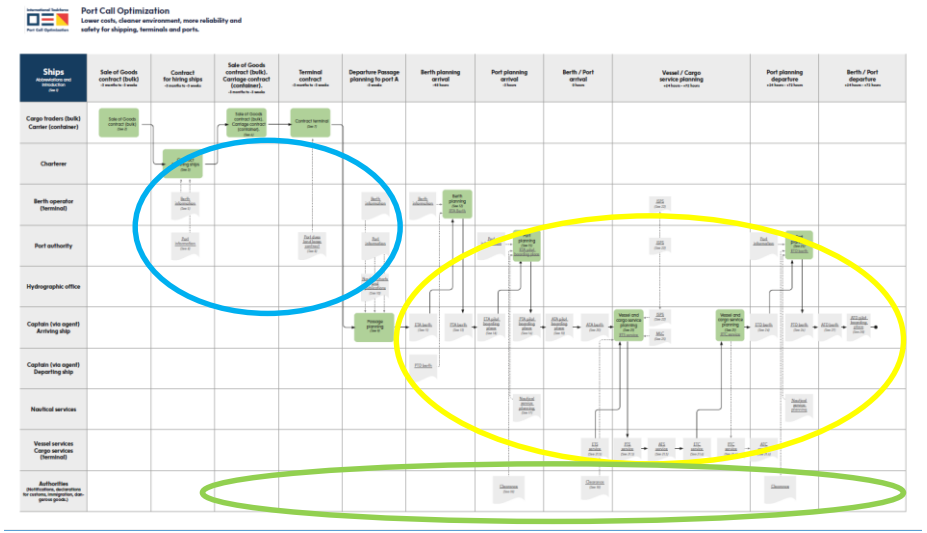
- IMO regulations
- BIMCO contracts
- Authorities



International Taskforce Port Call Optimization

What are the data sets of port call data?

1) Nautical data
2) Administrative data
3) Operational data



Why is data sharing by data owner important?

If data is not from data owner:

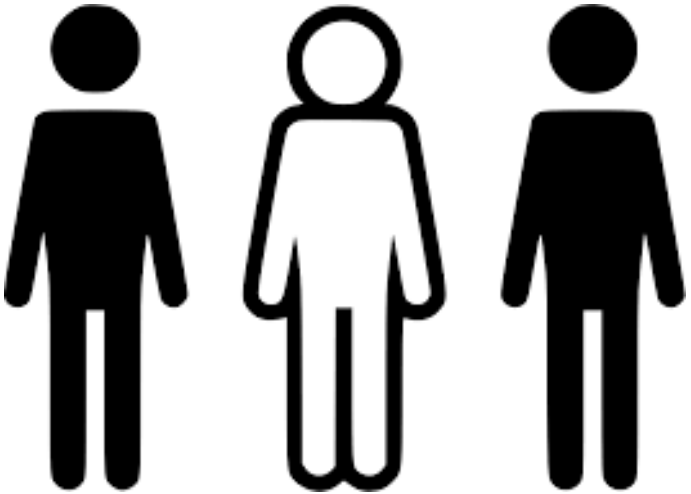
- Data becomes corrupt
- Data is not unique and often contradictory
- Data is not binding
- Parties take extra margins – buffer and suffer

Why is this difficult to organize?

There may be different owners for one data element.

E.g., for depths or planning:

- Deep water route: national authority
- Fair ways / harbor basins: local authority
- Berths: terminal



What is needed?

Data owners like to share data one to many:

- To minimize administrative burden
- To avoid errors
- To avoid delays in update
- To increase the value of data

This applies especially to data that changes frequently (e.g., updates of times, depths, etc.)

One to many data sharing requires global standardization

Many different parties per vessel per port call:

- Shipping operates in a network of up to 8.000 (1) different ports
- Each port has many different suppliers of cargo and ship services
- Ports can receive up to 98.000 (2) different ships
- Each ship can have many different cargo owners, especially containers ships with 24.000 TEU

(1) Lloyds Maritime Atlas (2) UNCTAD report ship of more than 100 GT

Standardization requires investments

- Investments in IT: change data to fit format and standards, change management of related data bases
- Investments in people: culture change

Investments require scoping

Scoping to justify investments, based on basics first:

- To be compliant with IMO, BIMCO contracts, authorities
- To have impact on IMO objectives

Investments require robust standardization bodies

To ensure return on investments, only use standardization bodies for the road map which:

- Have commitment from shipping and ports: it is common sense and imperative that both use the same standardization bodies ensuring ships do not need converters for all ports and ports need only one converter for all ships
- Are robust: to avoid incompatibility between standards and systems, and ultimately futile investments into implementing standards that are not fit-for-purpose, not future proof or not viable for all stakeholders across the supply chain
- Ensure standards are being developed alongside existing standards and ensuring an overarching hierarchy

Investments require a road map per data set

For planning of investments and ensuring full interoperability for any API instance:

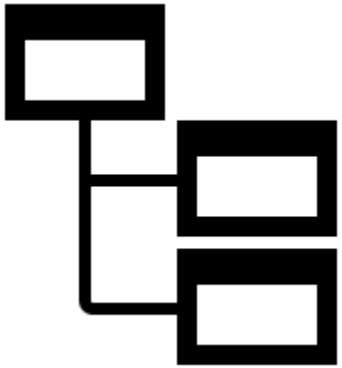
Non-technical standards:

- Data element definition; are we talking about same object
- Logical data model: what is the relation between data elements
  - Require strict definitions but need little to no maintenance

Technical standards:

- API specifications: how can we push data from system to system
- Technical performance requirements: latency, security, confidentiality, availability, integrity
- Business performance requirements: accuracy, completeness and timeliness
  - Require less strict definitions but needs lot s of maintenance, as technology evolves

Both are commonly shared infrastructures; parties can develop initiatives on top of it which are compatible and ensure interoperability



1) Nautical data – minimum scope

Data sets:

a) General port data (e.g., contact info, tides, services)

b) Maintained depths and/or soundings

c) ID and location of terminals, berths and berth positions

Use case per data set:

a) To be compliant with IMO Resolution A.862(20)

b) To be compliant with IMO Resolution A.893(21)

c) To be compliant with IMO Resolution A.893(21)

For all data elements:

- To demonstrate due diligence / absolute warranty re. safe port clause
- To demonstrate due diligence that Hydrographic Office and Port Authority have worked together to discharge their collective SOLAS responsibilities

1) Nautical data – example

Terminal	Port	Nautical chart
APMTR	APM WZ & APM OZ EUROPAHAVN ZOZ	APM Terminal Rotterdam
Bollard 101 – 178	8179 – 8203 Bollard 101-178	8178 - 8203

1) Nautical data – robust standardization body

Non-technical standards: IHO

- From the start working with national hydrographic offices to create standards for nautical charts
- Being robust party for both shipping and port sector; has 93 Member States

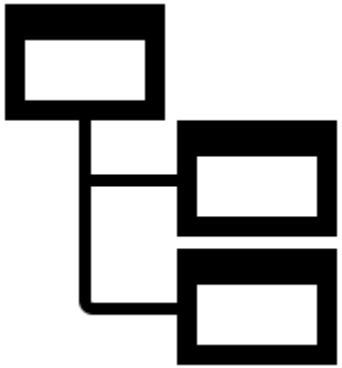
Technical standards: IHO together with Industry

- IHO: for ensuring nonprofit, neutral, trade agnostic and accepted standards
- Industry: for development, maintenance, testing and implementation

1) Nautical data – non-technical standards

IHO:

- ✓ Submission marine harbor infrastructure product specs
- ✓ Submission UKC based on PIANC/NP100/Industry
- ➢ Submission definition berth operator / user
- ➢ Submission definition heights of quay walls/ manifolds/mooring facilities



1) Nautical data – technical standards

IHO together with Industry:

- Development alongside existing IHO standards to exchange data between port, national hydrographic office and other stakeholders
- E.g., with Esri, Wärtsilä, Kongsberg, Saab

1) Nautical data – accomplishments

Q1/14 Start ITPCO
Q1/15 Economic value paper ITPCO
Q1/15 Depth terminology for NP100
Q2/16 Publication NP100 Edition 11 with depth terminology
Q2/17 First edition Standards for nautical port information
Q1/18 Publication Standards for nautical port information
Q3/18 Business process validated by IMO GIA
Q3/18 Business process appendix validated by IMO GIA
Q2/19 Port Information Manual 1.0
Q4/19 Submission IHO NIPWG
Q2/20 Publication NP100 Edition 12 and Port Information Manual 2.0
Q2/20 Start Marine Harbor Infrastructure IHO NIWPG
Q4/20 Nautical data part of World Bank development
Q4/20 Publication Port Information Manual 3.01
Q4/20 Submission IHO UKC definitions with IHMA

1) Nautical data – to do

Q1/21 Port Information Guide 100% aligned with BLU Code

Q1/21 Paper for use of AIS data on terminal/berth level for global coverage

Q2/21 Maintained depths and soundings ready for one port as POC

Q2/21 Terminals, berths and berth position data ready for one port as POC

Q2/21 Data exchange POC ready between port GIS and Hydrographic Office

QX/XX S-131 completed – focus first on data scope BLU Code

QX/XX S-421 to include port passage plan

2) Administrative data – minimum scope

Data sets:

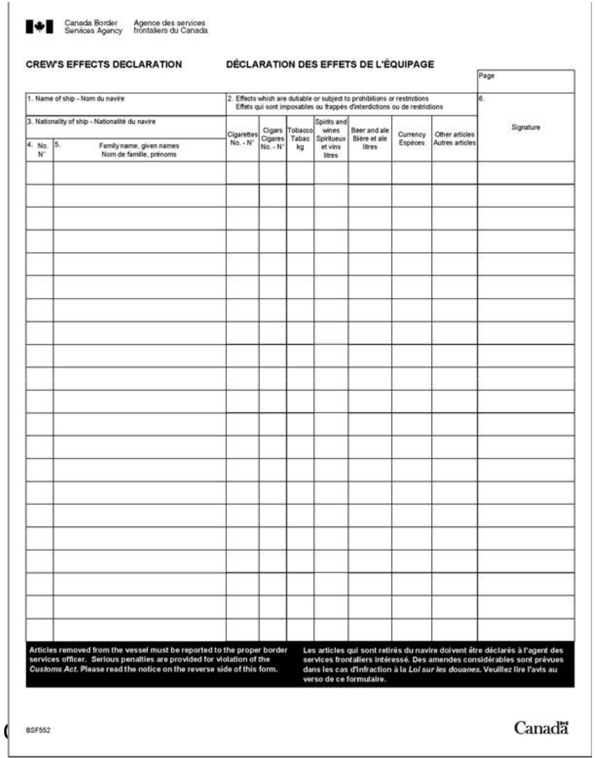
a) IMO GISIS data base up to date for ID port facility
b) IMO FAL Compendium implementation
c) Planning of boarding and clearances

Use case per data set:

a) To be compliant with IMO SOLAS Regulation XI-2/13.4
b) To be compliant IMO FAL Convention to introduce electronic information exchange between ships and ports; and with regional, national and local authorities
c) To be compliant with MLC, having impact on planning cargo operations, rest hours and shore leave

2) Administrative data – example

Port A	Port B	Port C



Canada Border Services Agency / Agence des services frontaliers du Canada

CREW'S EFFECTS DECLARATION **DÉCLARATION DES EFFETS DE L'ÉQUIPAGE**

Page

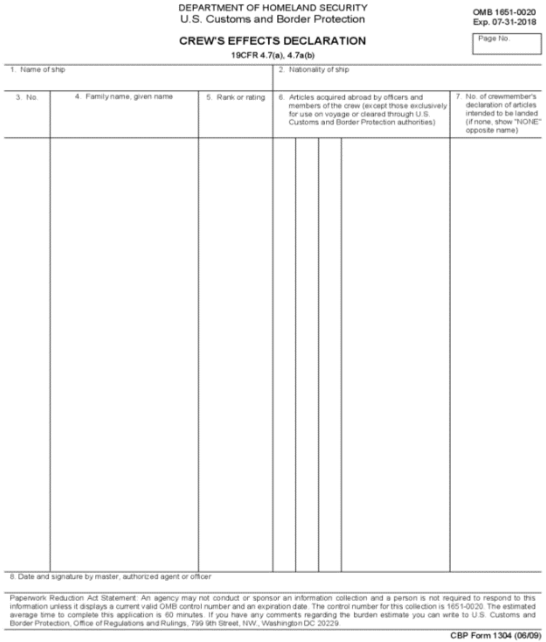
1. Name of ship - Nom du navire
2. Effects which are dutiable or subject to prohibitions or restrictions / Effets qui sont imposables ou frappés d'interdictions ou de restrictions
3. Nationality of ship - Nationalité du navire
6. Signature

4. No. N°	5. Family name, given names / Nom de famille, prénoms	Cigarettes No. - N°	Cigars Cigares No. - N°	Tobacco Tabac kg	Spirits and wines Spiritueux et vins litres	Beer and ale Bière et ale litres	Currency Espèces	Other articles Autres articles	Signature

Articles removed from the vessel must be reported to the proper border services officer. Serious penalties are provided for violation of the *Customs Act*. Please read the notice on the reverse side of this form.

Les articles qui sont retirés du navire doivent être déclarés à l'agent des services frontaliers intéressé. Des amendes considérables sont prévues dans les cas d'infraction à la *Loi sur les douanes*. Veuillez lire l'avis au verso de ce formulaire.

BSF552 Canada



DEPARTMENT OF HOMELAND SECURITY
U.S. Customs and Border Protection

OMB 1651-0020
Exp. 07-31-2018

Page No.

CREW'S EFFECTS DECLARATION
19CFR 4.7(a), 4.7a(b)

1. Name of ship
2. Nationality of ship

3. No.	4. Family name, given name	5. Rank or rating	6. Articles acquired abroad by officers and members of the crew (except those exclusively for use on voyage or cleared through U.S. Customs and Border Protection authorities)	7. No. of crewmember's declaration of articles intended to be landed (if none, show "NONE" opposite name)

8. Date and signature by master, authorized agent or officer

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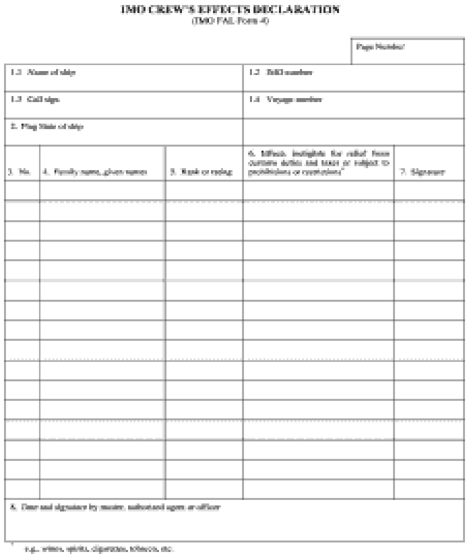
CBP Form 1304 (06/09)



IMO CREW'S EFFECTS DECLARATION
(IMO FAL Form 4)

Page Number

1.1 Name of ship
1.2 IMO number
1.3 Call sign
1.4 Voyage number
2. Flag State of ship

3. No.	4. Family name, given names	5. Rank or rating	6. Effects, ineligible for relief from customs duties and taxes or subject to prohibitions or restrictions*	7. Signature

8. Date and signature by master, authorized agent or officer

* e.g. wines, spirits, cigarettes, tobacco, etc.

2) Administrative data – robust standardization body

Non-technical standards:

IMO/WCO/UNECE/ISO

- From the start assigned to set standards for notifications and declarations
- Being robust party for both shipping and ports; IMO has 174 Member States

Technical standards:

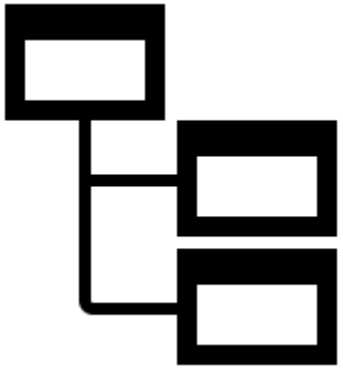
Today many isolated developments not resulting in adoption of and standard or return of investments. The most promising and robust way forward is IMO together with ISO, Industry, Governments:

- IMO: ensuring nonprofit, neutral, trade agnostic and accepted standard for ports and shipping, not for development
- ISO: ensuring standards are being developed alongside existing standards
- Industry and governments: for development, maintenance, testing and implementation

2) Administrative data – non-technical standards

IMO FAL Compendium

- ✓ Submission for arrival/departure times
- ➢ Submission for definitions for boarding / clearances



2) Administrative data – technical standards

IMO together with ISO, Industry, Governments Development alongside existing IMO standards to exchange data between shipping and authorities

- Invitation by existing neutral bodies (taking out the commercial angel) to existing industry bodies (using momentum) to develop standards E.g.: EMSW, Digital Oceans, DCSA, IPCSA
- Same invitation to organize sustainable maintenance and common infrastructure

2) Administrative data – accomplishments

Q1/14 Start ITPCO
Q2/17 First edition Standards for nautical port information
Q1/18 Publication Standards for nautical port information
Q1/19 Submission IMO FAL arrival/departure times (FAL 43/7/1)
Q2/19 Port Information Manual 1.0
Q2/20 Publication NP100 Edition 12 and Port Information Manual 2.0
Q4/20 Administrative data part of World Bank development
Q4/20 Publication Port Information Manual 3.01
Q4/20 Draft invite to develop technical standards

2) Administrative data – to do

M1/21 Submit invite to NGO’s and Industry

Q1/21 Develop definitions for boarding / clearances

3) Operational data – minimum scope

Data sets:

a) Arrival/departure times at berth and pilot boarding place
b) Starting/completion times of cargo and ship services
c) Notifications of ISPS clearances for cargo and ship services, and for crew changes and crew visitors

Use case per data set:

a) To be compliant with IMO Resolution A.893(21), MLC
b) Same
c) Same

3) Operational data – example

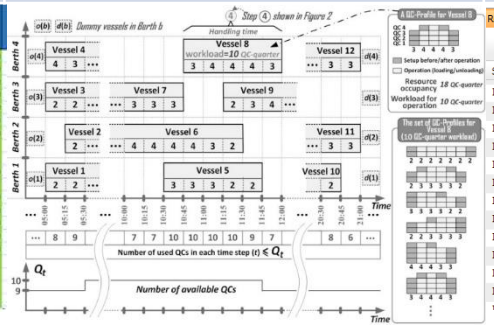
Shipper	Shipping	Terminal	Port

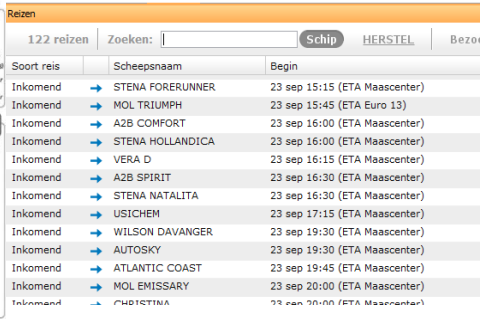
Booking confirmation:

```
   Vessel                  : MOL TRADITION
   Voyage Code             : JOTD012E
   Pre B/L No.:
   Estimated Sailing Date  : 23/11/2020
   Estimated Berthing Date : 21/11/2020
   Estimated E.T,A. (PVY)  : 23/12/2020

 Voyage  Details ;
   Place of Receipt        : ROTTERDAM, NETHERLANDS
   Port of Loading         : ROTTERDAM, NETHERLANDS
   Port of Discharge       : SINGAPORE
   Place of Delivery       : JAKARTA, INDONESIA JAKARTA INTL
   Container Service       : CY/CY
```

Arrival at pilot station	All fast	First lift	Last lift	Last line
21-09-2020 14:00	21-09-2020 20:00	21-09-2020 21:00	22-09-2020 18:00	22-09-2020 19:00
21-09-2020 15:00	21-09-2020 17:30	21-09-2020 18:30	22-09-2020 18:00	22-09-2020 19:00
22-09-2020 05:00	22-09-2020 07:30	22-09-2020 08:30	23-09-2020 02:00	23-09-2020 03:00
22-09-2020 09:00	22-09-2020 11:30	22-09-2020 12:30	22-09-2020 22:00	22-09-2020 23:00
19-09-2020 18:00	19-09-2020 20:00	19-09-2020 21:00	22-09-2020 22:59	22-09-2020 23:00
22-09-2020 01:00	22-09-2020 03:00	22-09-2020 04:00	22-09-2020 22:59	22-09-2020 23:59
21-09-2020 09:30	21-09-2020 13:00	21-09-2020 14:00	23-09-2020 01:00	23-09-2020 02:00
22-09-2020 19:30	22-09-2020 23:00	23-09-2020 00:00	25-09-2020 02:15	25-09-2020 03:00
23-09-2020 04:30	23-09-2020 07:00	23-09-2020 08:00	23-09-2020 18:00	23-09-2020 19:00
23-09-2020 07:00	23-09-2020 09:00	23-09-2020 10:00	24-09-2020 22:00	24-09-2020 23:00
23-09-2020 09:00	23-09-2020 12:30	23-09-2020 14:00	24-09-2020 13:00	24-09-2020 14:00
23-09-2020 06:00	23-09-2020 14:00	23-09-2020 15:00	24-09-2020 13:00	24-09-2020 14:00
23-09-2020 07:00	23-09-2020 14:00	23-09-2020 15:00	24-09-2020 04:30	24-09-2020 05:30





3) Operational data – robust standardization body

Non-technical standards: IMO Compendium

- Time stamps serve both administrative and operational data, it is common sense to develop them under the same body and build on existing work

Technical standards:

Today many isolated developments not resulting in adoption of and standard or return of investments. The most promising and robust way forward is IMO together with ISO and Industry:

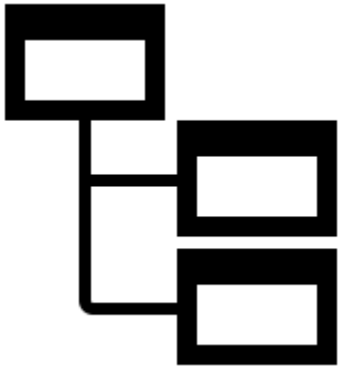
- IMO: ensuring nonprofit, neutral, trade agnostic and accepted standard for ports and shipping, not for development
- ISO: ensuring standards are being developed alongside existing standards
- Industry: ensuring development, maintenance, testing and implementation

- UN/CEFACT: different standard but vessel planning should be compatible with cargo movement (edi3.0)
- S-100 standards for E-navigation: different standard but vessel planning should be compatible with ECDIS

3) Operational data – non-technical standards

IMO FAL Compendium

- ✓ Submission for arrival/departure times FAL 43/7/1
- ✓ Submission for including operational data FAL 44/18/2
- ✓ Submission for starting/completion times FAL EGDH 2/7
- ➢ Definitions for ISPS clearances



3) Operational data – technical standards

IMO together with ISO and Industry:

- Development alongside existing IMO standards to exchange data between shipping and ports
- Invitation by existing neutral bodies (taking out the commercial angel) to existing industry bodies (using momentum) to develop standards E.g.: HVCC/Port Xchange/Valencia/Navelink/Navis&Cargotec/Chainport / DCSA
- Same invitation to organize sustainable maintenance and common infrastructure

3) Operational data – accomplishments

Q1/14 Start ITPCO
Q1/15 Economic value paper ITPCO
Q1/17 BIC code part of supply chain standards
Q2/17 First edition Standards for nautical port information
Q1/18 Publication Standards for nautical port information
Q3/18 Business process validated by IMO GIA
Q3/18 Business process appendix validated by IMO GIA
Q2/19 Port Information Manual 1.0
Q3/19 IMO vessel number part of supply chain standards
Q1/20 Submission to include operational data (FAL 44/18/2)
Q1/20 Submission starting/completion times (EGDH 2/7)
Q2/20 Publication NP100 Edition 12 and Port Information Manual 2.0
Q3/20 Proposal to IPCDMC to align with IMO FAL
Q3/20 Publication of Just In Time Arrival Guide
Q4/20 Operational data part of World Bank development
Q4/20 Publication Port Information Manual 3.01
Q4/20 Endorsement of FAL 44/18/2 as urgent matter
Q4/20 Endorsement of EGDH 2/7
Q4/20 Endorsement by DCSA
Q4/20 Draft invite to develop technical standards

3) Operational data - to do

Q1/21 Definitions for ISPS clearances of ships/terminals

Q1/21 Finalize invite and send to industry

Q1/21 Submission to include IHO locations in IMO FAL

Q1/21 Join IMO FAL CG for operational data

Q1/21 Mapping the overlap between standardization bodies

Develop incentives for data owners

- IMO and Industry can promote together implementation of standards
- IMO by publication on their social media
- Industry by agreeing on certification of implementation

- ➢ Submission to IMO to realize incentives for first movers
- ➢ Industry to pull together group of first movers from shipping, ports and shippers willing to invest in global standards

Develop guidance for data owners

- Most shipping lines and ports have limited IT resources
- More calls from ports for a step-by-step guide to digitize

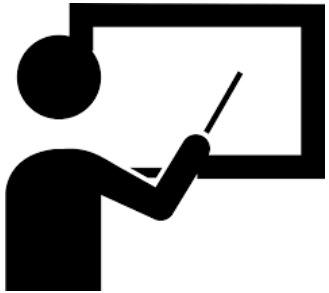
✓ Submission to IMO to develop guidance

➢ Develop guidance for nautical data

➢ Develop guidance for administrative data

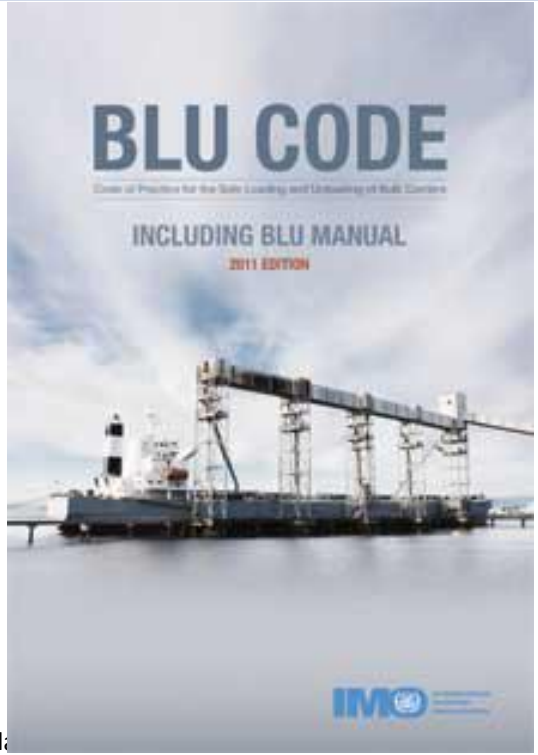
➢ Develop guidance for operational data

➢ Submission to update MS4 Port Support Service with IHMA/IAPH/BIMCO



Guidance for data owners - examples

BLU CODE	Port Information Manual	Just In Time Arrival Guide



PORT INFORMATION

MANUAL ©

For ship-port interface data

Version 3.01

International Taskforce

Port Call Optimization

International Harbour Masters Association

IAPH

International Association of Ports and Harbors

ADMIRALTY

Cl

Proposal to study together with IMO:

1. Can IMO together with their NGO's invite existing bodies to implement standards together, taking into consideration:
   - IMO cannot enforce the use of standards in national waters
   - IMO cannot identify standardization bodies – check versus e.g., IHO
   - IMO can adopt performance standards through resolutions
   - IMO can make conventions (e.g., electronic reporting)
   - IMO can provide non mandatory instrumental guidance
   - IMO can refer to industry standards (A.911(22))
   - IMO can provide capacity building to implement standards

2. Can we copy existing resolutions for the implementation of nautical standards?

3. Can we copy existing common infrastructure: how to organize a sustainable business model, management and operation?

Develop Incentives and Guidance – accomplishments

Q1/14 Start ITPCO

Q1/15 Economic value paper ITPCO

Q2/19 Port Information Manual 1.0

Q2/20 Publication NP100 Edition 12 and Port Information Manual 2.0

Q3/20 Publication of Just In Time Arrival Guide

Q4/20 Part of data priority in World Bank development

Q4/20 Publication Port Information Manual 3.01

Guidance & Incentives - to do

Q4/21 IMO Guidance – Aligning with Green Voyage IMO GIA / IAPH

Q4/21 IMO Implementation paper in line with nautical data

Q4/21 Implementation in existing port community systems

Summary

- Ship–port interface data is fundamental for safe and sustainable shipping
- Data quality and availability requires sharing by data owners
- Data owners like to share one to many
- Development plan:
    1) Agree on business process of port calls
    2) Agree on minimum scope of data
    3) Agree on robust standardization bodies
    4) Agree on non-technical standards
    5) Agree on technical standards
    6) Develop incentives for data owners
    7) Develop guidance for data owners
    8) Implementation
- This requires collaboration between IMO, NGO's, Industry and governmental stakeholders as the most promising and sustainable way forward

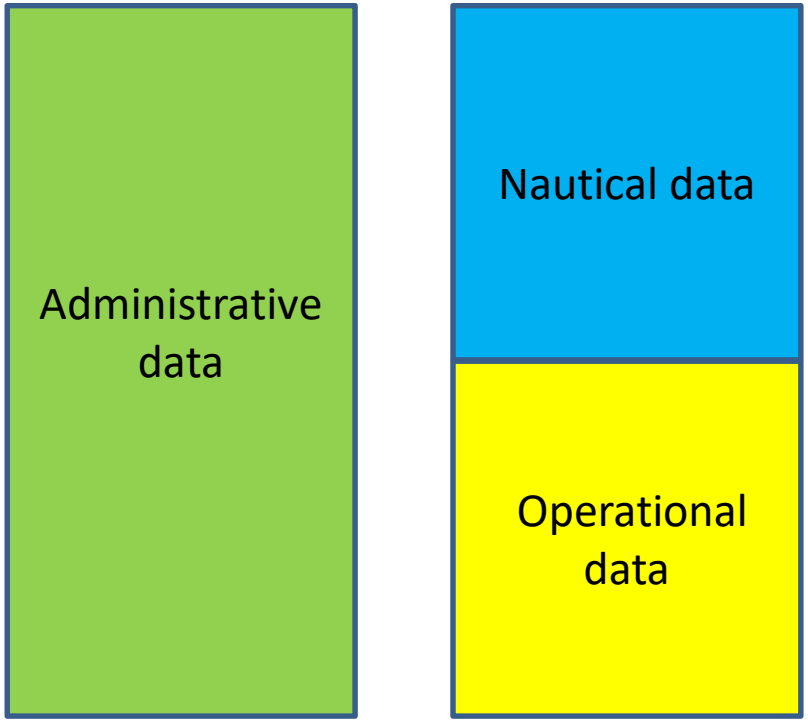
Progress report

Green: 100% completed

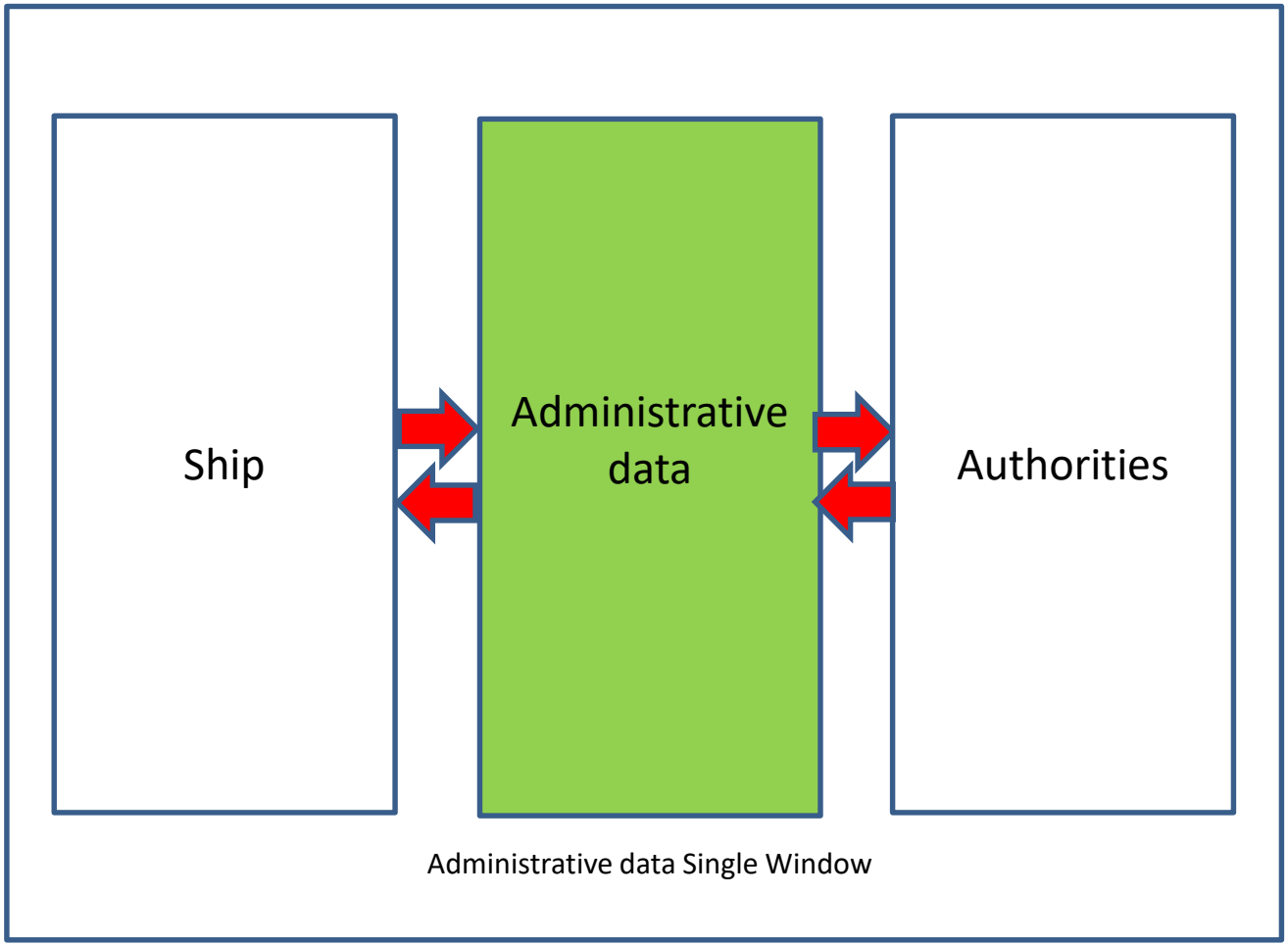
Yellow: 50-100% completed

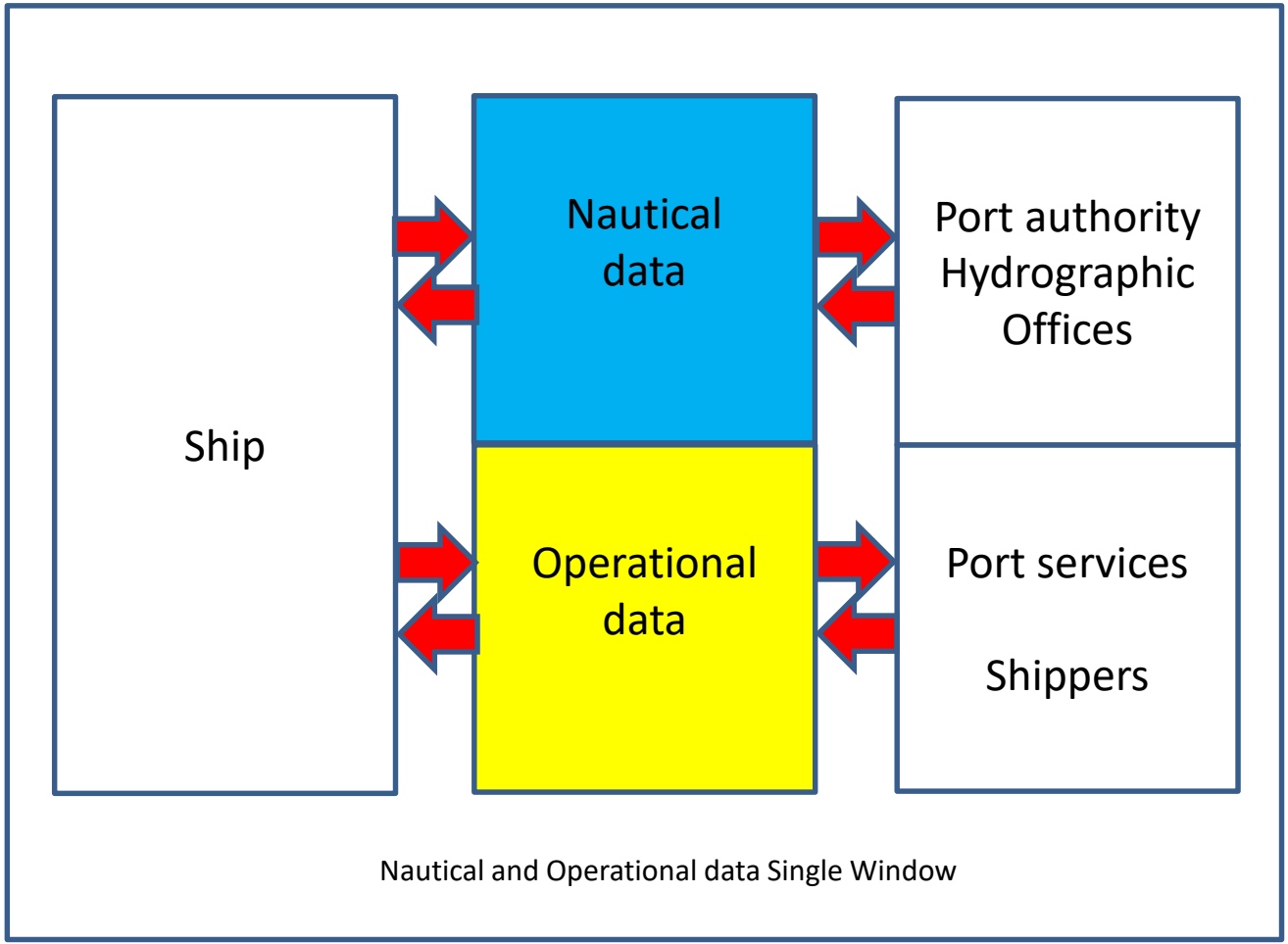
Orange: 0-50% completed

	Nautical data	Administrative data	Operational data
Agree on business process of port calls	Completed process and appendix Evaluated by IMO GIA WG	Completed and evaluated by IMO GIA Industry WG	Completed and evaluated by IMO GIA Industry WG
Agree on data scope	• General port data • Maintained depths and/or soundings • ID and location of terminals, berths and berth positions	• IMO GISIS data base up to date • IMO FAL Compendium implementation • Planning of clearances	• Arrival/departure times at berth and pilot boarding place • Starting/completion times of services • Notifications of ISPS clearances
Agree on robust standardisation body for non-technical standards	International Hydrographic Organization (IHO)	IMO Facilitation (FAL), with ISO, WCO, UNECE	IMO Facilitation (FAL) – with ISO, WCO, UNECE
Agree on robust standardisation body for technical standards	IHO with Industry	IMO with ISO and Industry	IMO with ISO and Industry
Agree on non-technical standards	Submission to IHO NIPWG Q4/20 Start IHO S-131 Q4/18	Submission FAL43 Endorsed Q4/18	Submission EGDH 2/7 Endorsed by EGDH, not yet by FAL Q4/20
Agree on technical standards	POC to exchange terminal, berth, berth position and berthing pocket Q2/20	Invite to develop technical standards from IMO NGO's Q1/20	Invite to develop technical standards from IMO NGO's Q1/20
Develop; incentives for data owners	SOLAS for member states, not yet for ports	IMO FAL for member states, however slow uptake, no benchmark	Call for action MEPC 323/74
Develop guidance for data owners	Port Information Manual Q4/20 Green Voyage manual?	IMO Compendium Green Voyage manual?	Just In Time Arrival Guide Port Information Manual Green Voyage manual?
Implementation	General port data Q1/17 Soundings Q2/20 Tidal Heights Q2/20 Terminal, Berth, Berth position Q2/20	European Maritime Single Window?	Port of Algeciras Port of Felixstowe Port of Houston Port of Rotterdam Port of Singapore Port of Valencia

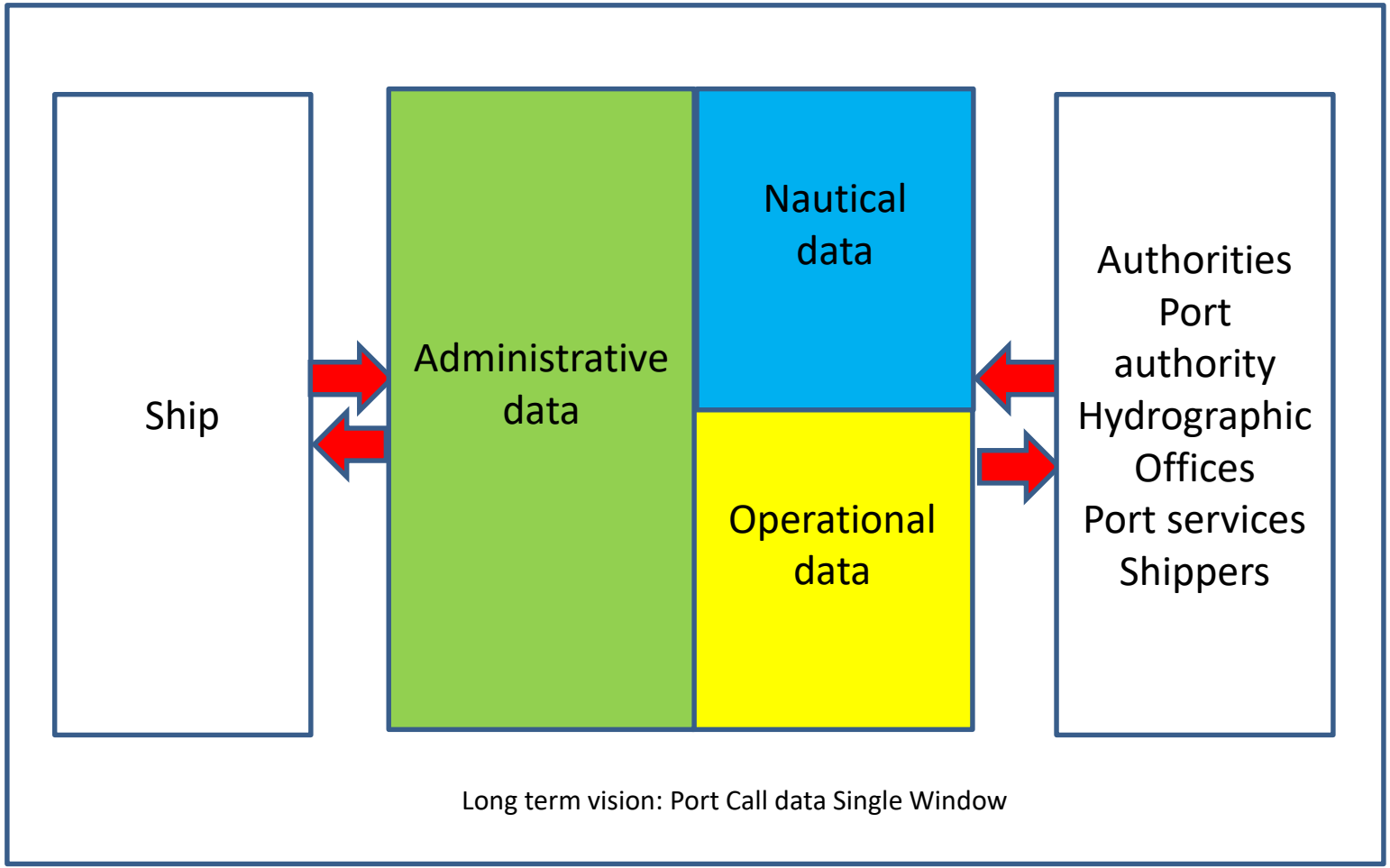


Port Call data
For now 2 separate eco systems due to technical and legal issues





Nautical and Operational data Single Window



Long term vision: Port Call data Single Window

FAQ

Current situation:

- Shipping is 5000 years old
- Roughly 80% of goods is transported by sea

Question:

- Why is the use of standards not more implemented?
- Why is shipping not connected to supply chain?

Answer:

- Old and fragmented industry, no big players able to push
- Also in supply chain no big players to push
- Shipping, ports and supply chain had limited collaboration

International Taskforce

Port Call Optimization