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WORK PROGRAMME

Extension of the existing output "Review and Revision of the IMO Compendium on Facilitation and Electronic Business"

Submitted by Liberia, the Marshall Islands, Turkey and BIMCO

	SUMMARY
Executive summary:	This document constitutes a proposal to extend the scope of output 5.8, *Review and revision of the IMO Compendium on Facilitation and Electronic Business*, to include additional e-business solutions, which are different to the ones related to the FAL Convention.
	One of these solutions is related to the harmonization of data element identity (ID) for use when providing maritime services as envisaged under IMO's e-navigation Strategy Implementation Plan (SIP).
	The document also proposes to establish a maritime register (database) containing these data element IDs. The register should be harmonized and standardized in order to ensure interoperability between services and to facilitate the direct exchange of information, as well as to enable machine-to-machine (M2M) communication.
	The maritime register should comprise not only IMO data elements required to comply with the FAL Convention/Compendium, but also data sets from other international bodies such as ISO, UNECE and the World Customs Organization (WCO) data model.
Strategic direction, if applicable:	5
Output:	5.8
Action to be taken:	Paragraph 38
Related documents:	FAL 41/14, FAL 41/17; HGDM 1/5/3; NCSR 5/8/2 and NCSR 5/WP.1

Introduction

1   This document proposes to amend the description of the existing output 5.8, "Review and revision of the IMO Compendium on Facilitation and Electronic Business", to include

additional e-business solutions, which are different to the ones related to the FAL Convention. It is submitted in accordance with section 4 of the document on the "Organization and method of work of the Facilitation Committee" (FAL.3/Circ.212).

2   At NCSR 5, held in February 2018, the Sub-Committee considered a proposal by BIMCO (NCSR 5/8/2) on the establishment of a maritime register (database) containing data elements' identity (ID) for maritime services as part of the development of a harmonized e-navigation solution.

3   While considering the request from BIMCO, the Sub-Committee agreed that the establishment of a maritime data element register was not within the scope of the current output "Develop guidance on definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs)".

4   However, recalling the ongoing work at the FAL Committee in relation to the harmonization and standardization of data formats for data elements required by the FAL forms, and recognizing the benefits in establishing a maritime data element register to ensure interoperability between services and to facilitate direct machine-to-machine communication, NCSR 5 invited BIMCO and interested Member States to propose a new output to FAL 42 for the development of a harmonized data model and the establishment of a maritime registry, in close cooperation with MSC, MEPC and their subsidiary bodies, as appropriate.

Background

5   FAL 40 considered document FAL 41/14 (United States, WCO, UNECE and ISO), and approved the output *Review and revision of the IMO Compendium on Facilitation and Electronic Business*. The co-sponsors consider that the scope of this output should include data elements referred to in the FAL Convention and the IMO Compendium (e.g. the ones related to the security report), and in addition, other electronic business solutions.

6   The harmonization of data sets is a key enabler to ensure interoperability between services and to facilitate machine to machine (M2M) communication. This can only be done if the communication uses structured data, with well-defined definitions and data identification (ID).

7   Currently there are several international standards that use different data element IDs for the same data element. This makes it difficult, at times even impossible, to develop a standardized M2M solution based on a global standard.

8   The table below exemplifies the use of different IDs for the same data element by the following selected entities: ISO 28005 on electronic port clearance (EPC), UN/CEFACT Core Component Library – Multi-Modal Transport Reference Data Model (UN CCL-MMT RDM), WCO ID and IACS Recommendation 75.

Data element	Description	Data element ID's			
		ISO 28005	UN CCL-MMT RDM	WCO ID	IACS R.75
Ship name	Given name of the ship in the ship registry	ShipID.ShipName	Logistics Transport Means Name (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	Logistics Transport Means ID [code for 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	Logistics Transport Means ID [code for 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	Logistics Transport Means ID [code for MMSI number]	Type (253)	-
Comments	Any other information related to ship identity	ShipID.Comment	Logistics Transport Means Note	-	-
….					

9   The problems in the use of non-harmonized IDs are significant. The longer we wait to establish a global description of the data elements' ID used for communicating between the ship and the shore, the more difficult it will be to implement a common practice that can support a digitalization of the maritime industry using M2M information exchange. Recently, the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) introduced Maritime Resource Name (MRN), aiming at enabling the use of unique identifiers across this maritime domain.

10   A lack of coordination in the provision of information related to maritime services and among organizations responsible for these services may lead to a duplication of efforts, the development of regional solutions, the use of different communication systems, non-standardized displays on board; and the provision of superfluous or non-interoperable information.

11   Standardization and harmonization of information are important to ensure a common understanding of transferred data. If, for example, data is submitted from a computer, the computer at the receiving stakeholder must recognize the type and format of the data to be able to translate it into information that can be understood by humans.

12   A lack of harmonized use of data elements' ID means that a service used between two stakeholders cannot be forwarded in an understandable format to other stakeholders. It will, therefore, remove the flexibility of automated reporting because the data needs to be translated before it can be sent to a third stakeholder. On the other hand, if the data elements' ID are harmonized according to a specific data set, all service providers can make use of the same framework of common data sets. Standardizing and harmonizing the M2M solutions will enable computers to communicate between multiple stakeholders in a simple and easy way.

13   Under the auspices of the FAL Committee, a voluntary expert group consisting of representatives from WCO, UNECE and ISO have started to develop a common set of data element IDs for the different message standards found in the data sets of WCO, UN CCL-MMT RDM and ISO 28005 (see FAL 42/6). This work seems to cover data elements that are required to implement the reporting requirements set out in the FAL Convention. However, during a recent study carried out in the EU funded project, EfficienSea2 (see NCSR 5/8/2), it became evident that this only represents a fraction of the information that is exchanged between the ship and shore.

14   The study has identified more than 1000 different data elements in the communication between the ship and shore, all of which need to be allocated a harmonized data element ID before being used for M2M communication. The inventory consists primarily of data requested in the IMO Compendium on Facilitation and Electronic Business and data elements contained in the ISO 28005-2 standard. But the inventory also contains data elements related to the port information, which is commonly used by the ship when calling at a port.

IMO objectives

15   Digitalization plays an important role in the strategic directions on which IMO will focus in the period 2018 to 2023. In particular, shipping operations are increasingly dependent on electronics and digital technologies and as such are exposed to cyber risks. The electronic transmission of relevant information, such as documents and certificates, simplifies communications between ships, ports and authorities, and reduces the administrative burden for those on board and ashore.

16   However, as mentioned in the strategic directions, the challenge is to ensure that information is transmitted securely in a universally accepted form and is verifiable. To take full advantage of the electronic exchange of information, closer cooperation is needed, seeking further international consensus on reducing formalities by the simplifying and standardizing of the information.

17   Global solutions are needed to reduce burdens by facilitating electronic information exchange and to balance the needs of authorities ashore with the interests of the shipping industry.

Compelling need

18   At FAL 40 in 2016, amendments to the FAL Convention were adopted. The amendments set out new mandatory requirements for electronic data interchange requiring public authorities to establish systems for the electronic exchange of information to assist ship clearance processes. The amendments will enter into force in the spring of 2019.

19   Following these amendments, FAL 41 discussed how such an interchange system could be developed and implemented, taking into account that some countries have already implemented a maritime single window (MSW).

20   There were questions about whether a prototype of MSW should be established by reusing one of the existing systems and/or parts of such systems, if to develop a completely new prototype taking into account the experience of other MSW systems, or as a third option, not to develop a prototype but to recommend the use of one or various existing systems.

21   The scenario in 2019 when the amendments enter into force (if taken to the extreme), may well be that ships will have to report to more than 100 different MSWs, which may have a similar number of IT platforms. Therefore, it is of utmost importance to ensure a certain level of harmonization and standardization of reporting to the public authority prior to port calls. Though the MSWs may differ, the electronic data interchange should be using the same data models to ensure that all ships can make use of the same interface.

Analysis of the issue

22   At FAL 41, the Committee approved a new output for the review and revision of the IMO Compendium on Facilitation and Electronic Business. However, as the communication between the ship and shore often goes beyond what is required according to the FAL

Compendium, an expanded scope of the existing output, *Review and revision of the IMO Compendium on Facilitation and Electronic Business*, is needed in order to also cover definitions and data elements, which are commonly used by the ship when calling at a port, as well as other e-business solutions.

23   Proper exchange of data is a key element for the completion of the application of the single window concept. Harmonized and precise definitions of the information transmitted by the electronic messages described are crucial to achieving the type of standardization that supports the application of the single window concept.

24   The use of international standards that relate to transport and regulatory border management processes as the underlying data model enhances the interoperability between and among stakeholders involved in the processes, such as shipping industries, maritime authorities, customs and other border management authorities. Often such communication also involves Classification Societies, which should also be considered in the harmonized data model.

25   A harmonized data set and the maritime data register opens new opportunities for the simplification of information exchange. This will help reduce the burden of industries to comply with Administrations' requirements by eliminating the unnecessary duplication of processes and data requirements.

26   The harmonization of data elements aims to provide a clear and consistent overview that serves as a technical specification to help the users of the Maritime Services, such as software designers and suppliers, who currently only rely on the FAL Compendium to develop the tools that administrations and industry use to meet the standards and recommendations in the FAL Convention.

27   This extension of the output would confirm the Committee's commitment to leveraging information and communications technology to meet its facilitation objectives, gain efficiencies in the arrival, stay and departure of ships in ports, and promote the application of the single window concept.

Benefits

28   Harmonizing the data set definitions with those of the data model organizations would help avoid confusion over the meaning of the information in the FAL data set and help avoid errors when mapping the data models to the information required or recommended by the Convention, ship security-related information, advance notification for waste delivery, and other reporting requirements. This should also help broaden the implementation of the Convention, and strengthen transparency in general.

29   Should the Committee wish to establish the proposed mechanism to manage the individual data sets, this can be done through a maritime register. It will function as a maritime data element telephone book. The maritime registry will provide a cross-referencing tool for all relevant maritime data element IDs, which is needed when there are overlaps between various data sets. The establishment of the registry will support the global harmonization of data transfer, and enable interoperability between the different services that are established to ensure the safety of navigation, to protect the marine environment and to warrant efficient shipping.

30   The data register/dictionary can also be a baseline for creating the standard data definitions needed in other applications, such as digital ship certificates, electronic log books, etc.

International standards

31   Currently, the international standards developed by WCO, UNECE and ISO are considered under the FAL 41 proposal. However, the remaining data set, which goes beyond what is required by FAL, are not yet covered nor structured, despite the fact that they are international standards as well. The below overarching data model includes the other data sets often used in shipping.
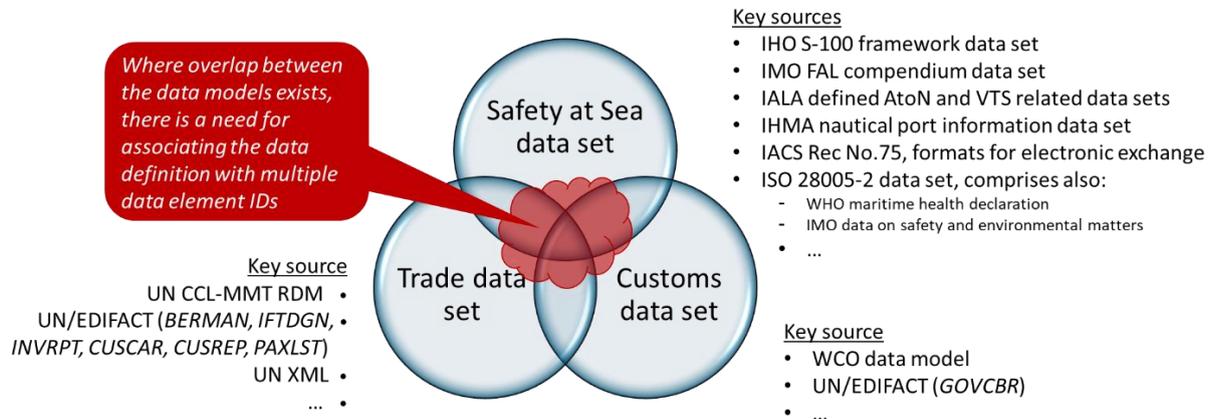
32   A ship's reporting obligation involves many entries to various organizations, some of which are illustrated in the figure above.

Output

33   The proposed output would be: "Review and revision of the IMO Compendium on Facilitation and Electronic Business, including additional e-business solutions" with a view to laying the basis for covering the following aspects:

.1   harmonization of data definitions with the FAL Convention (revised), the WCO, UNECE, ISO and other frequently used maritime data models. This includes the establishment of a harmonized set of data element IDs, covering data elements beyond those required by the FAL Convention;

.2   consideration of the establishment of a maritime register comprising not only IMO data elements, required to comply with the FAL Convention/Compendium, but also data sets from other international bodies, e.g. ISO 28005 data sets on electronic port clearance, etc.;

The database for the maritime registry should, as a minimum, contain the following:

• group name;
• name of data element;
• definition/description of data element;
• data type;
• data element 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 (referring to the red area on the figure above).

- Alternative data element ID(s)
- Alternative source(s)

.3   development of associated guidelines to support the entering and updating of data sets into the maritime register by parent bodies/organizations (e.g. WCO, UNECE and ISO);

.4   support for the establishment of systems for the simple electronic exchange of information and application of the single window in order to streamline the implementation of the amendments of the FAL Convention entering into force in April 2019; and

.5   facilitation of the continued partnerships among the Committee, WCO, UNECE, ISO, and other data model partners.

Human element

34   Seafarers are not the direct target audience for the register. The harmonized data sets, and in particular the registry, give the (software) developers of maritime services the possibility to continuously check their data elements' ID against commonly used data sets. This will make the maritime services fit for purpose, allowing an M2M solution. This will certainly have a positive side-effect for seafarers, as it is likely to reduce administrative burden. The checklist for considering human element issues by IMO bodies is set out in annex 2.

Priority/urgency

35   This initiative should be considered by IMO as soon as possible and be included in the work programme for the 2018-2019 biennium.

36   This work should also be given a high priority because the Committee's success in meeting its objectives on the application of the single window concept also depends on being able to meet the needs of the organizations that manage and maintain the data models that regulate electronic business.

37   It is anticipated that if FAL 42 considers approving this agenda in its work programme, this could possibly be completed in three sessions of the Facilitation Committee.

Action requested of the Committee

38   The Committee is invited to note the above information, to extend the scope of existing output 5.3 and to replace its description *Review and revision of the IMO Compendium on Facilitation and Electronic Business*, with the following: *Review and revision of the IMO Compendium on Facilitation and Electronic Business, including additional e-business solutions,* in the 2018-2019 biennial agenda of the FAL Committee and the provisional agenda for FAL 43, with a target completion year of 2021.

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ANNEX 1

CHECKLIST FOR IDENTIFYING ADMINISTRATIVE REQUIREMENTS

This checklist should be used when preparing the analysis of implications required in submissions of proposals for inclusion of outputs. For the purpose of this analysis, the term "administrative requirement" is defined, in accordance with resolution A.1043(27), as an obligation arising from a mandatory IMO instrument, to provide or retain information or data.

Instructions:

(A)   If the answer to any of the questions below is **YES**, the Member State proposing an output should provide supporting details on whether the requirements are likely to involve start up and/or ongoing costs. The Member State should also give a brief description of the requirement and, if possible, provide recommendations for further work, e.g. would it be possible to combine the activity with an existing requirement.

(B)   If the proposal for the output does not contain such an activity, answer **NR** (Not required).

(C)   For any administrative requirement, full consideration should be given to electronic means of fulfilling the requirement in order to alleviate administrative burdens.

	NR	Yes
1 Notification and reporting? Reporting certain events before or after the event has taken place, e.g. notification of voyage, statistical reporting for IMO Members, etc.	√	❑ Start-up ❑ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes) 		
2 Record keeping? Keeping statutory documents up to date, e.g. records of accidents, records of cargo, records of inspections, records of education, etc.	❑	√ Start-up ❑ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes) The record keeping is not intended for the administrations nor the seafarers, but instead the organization and parent bodies/organizations who will have to manage their individual data sets in the proposed data model. The data sets will have to be applied to the maritime register		
3 Publication and documentation? Producing documents for third parties, e.g. warning signs, registration displays, publication of results of testing, etc.	√	❑ Start-up ❑ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes) 		
4 Permits or applications? Applying for and maintaining permission to operate, e.g. certificates, classification society costs, etc.	√	❑ Start-up ❑ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes) 		
5 Other identified requirements?	❑	√ Start-up ❑ Ongoing
Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes) Possible replacement of paper versions of the FAL forms 1-7 and the Security Report, which is likely to reduce the administrative burdens for the seafarer. Possible costs of updating the individual data elements, if and when amended.		

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ANNEX 2

CHECKLIST CONSIDERATION OF HUMAN ELEMENT ISSUES BY IMO BODIES

Instructions:
If the answer a question below is:
(A) **YES**, the preparing body should provide supporting details and/or recommendation for further work.
(B) **NO**, the preparing body should give proper justification as to why human element issues were not considered.
(C) **NA** (Not Applicable) – the preparing body should give proper justification as to why human element issues were not considered applicable.

Subject being assessed: (e.g. resolution, instrument, circular being considered)	
IMO Compendium on Facilitation and Electronic Business	
Responsible Body: (e.g. committee, sub-committee, working group, correspondence group, Member State)	
FAL Committee	
1. Was the human element considered during development or amendment process related to this subject?	√ Yes ❑ No ❑ NA
2. Has input from seafarers or their proxies been solicited?	√ Yes ❑ No ❑ NA
3. Are the solutions proposed for the subject in agreement with existing instruments?	√ Yes ❑ No ❑ NA
4. Have human element solutions been implemented as an alternative and/or in conjunction with technical solutions?	❑ Yes ❑ No √ NA
5. Has human element guidance on the application and/or implementation of the proposed solution been provided for the following:	
• Administrations?	❑ Yes ❑ No √ NA
• Shipowners/managers?	❑ Yes ❑ No √ NA
• Seafarers?	❑ Yes ❑ No √ NA
• Surveyors?	❑ Yes ❑ No √ NA
6. At some point, before final adoption, was the solution reviewed or considered by a relevant IMO body with relevant human element expertise?	❑ Yes ❑ No √ NA
7. Does the solution address safeguards to avoid single person errors?	√ Yes ❑ No ❑ NA
8. Does the solution address safeguards to avoid organizational errors?	√ Yes ❑ No ❑ NA
9. If the proposal is to be directed at seafarers, is the information in a form that can be presented to and easily understood by the seafarer?	√ Yes ❑ No ❑ NA
10. Were human element experts consulted during development of the solution?	❑ Yes ❑ No √ NA
11. **HUMAN ELEMENT: Has the proposal been assessed against the factors below?**	
❑ CREWING. The number of qualified personnel required and available to safely operate, maintain, support and provide training for system.	❑ Yes ❑ No √ NA
❑ PERSONNEL. The necessary knowledge, skills, abilities and experience levels that are needed to properly perform job tasks.	❑ Yes ❑ No √ NA
❑ TRAINING. The process and tools by which personnel acquire or improve the necessary knowledge, skills and abilities to achieve desired job/task performance.	❑ Yes ❑ No √ NA
❑ OCCUPATIONAL HEALTH AND SAFETY. The management systems, programmes, procedures, policies, training, documentation, equipment, etc. to properly manage risks.	❑ Yes ❑ No √ NA
❑ WORKING ENVIRONMENT. Conditions that have an impact on the safety, health and comfort of those working on board, such as noise, vibration, lighting, climate and other factors that affect crew endurance, fatigue, alertness and morale.	❑ Yes ❑ No √ NA

❑ HUMAN SURVIVABILITY. System features that reduce the risk of illness, injury or death in a catastrophic event such as fire, explosion, spill, collision, flooding or intentional attack. The assessment should consider desired human performance in emergency situations for detection, response, evacuation, survival and rescue and the interface with emergency procedures, systems, facilities and equipment.	❑ Yes ❑ No √ NA
❑ HUMAN FACTORS ENGINEERING. Human/system interface to be consistent with the physical, cognitive and sensory abilities of the user population.	❑ Yes ❑ No √ NA

Comments: (1) Justification if answers are NO or Not Applicable. (2) Recommendations for additional human element assessment needed. (3) Key risk management strategies employed. (4) Other comments. (5) Supporting documentation.

The target audience for the guidelines is not seafarers.

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