



**Technical and Policy
Proposal for a
MSW Prototype and
Its
Cyber Risk
Management
Guideline**

Team Linchpin



Red-Tape in Maritime Transport



Administrative
Burden
(Red-Tape)

Duplication
of
Information

Cost
Inefficiency

**Diminution of Competitiveness
of Maritime Transport**

Solution: Maritime Single Window

Maritime Single Window

enables all the information required by public authorities in connection with the arrival, stay and departure of ships, persons and cargo, to be submitted via a single portal without duplication.

International Effort to Combat Red4 Tape in Maritime Transport



- **Facilitation Committee**

FAL 35, 39, 40th Session

- **Technical Co-operation Committee**

TC 65th Session

ITCP 2016-2017

- **Council**

Council 114th Meeting

ANNEX 1

RESOLUTION FAL.12(40)

(Adopted on 8 April 2016)

FAL.12/(40)

TC 65/3(a)/Add.1

14 May 2015

Original: ENGLISH

TC 65/3(a)/Add.1

C 114/D

14 July 2015

Original: ENGLISH

C 114/D 10.4

Majority agreed to reuse one of the systems offered by the donors and/or parts of different systems for the IMO's MSW prototype.

Current Progress of MSW Prototype⁵ Development

Currently, MARINTEK research institute based in Norway has completed the first two phases of IMO's Maritime Single Window Project.

Norway also pledged IMO's free use of the structure and the modules of Norway's Single Window System Safe Sea Net for the development of the prototype.

IMO the Secretariat had established a series of consultation meetings with other international organizations and with Chile, Norway, the Republic of Korea and the European Commission in order to establish the scope and management of the assistance offered by the donors.



Current Progress of MSW Prototype Development

The last third phase of the project remains—which is to design and implement the MSW prototype based on the systematic information garnered throughout the previous two phases.

But the debate over which systems to be integrated based on the rationale of the first alternative still remains controversial.

We propose IMO, for the facilitation of integration, the followings:

- three core systems that need to be integrated;
- A draft information paper based on that integration model; and
- revision of MSC's Interim Guideline on Cyber Risk Management.

What to Integrate

Norway's National Single Window Safe Sea Net will serve the role as the most fundamental foundation for the MSW Prototype.

Safe Sea Net is also internationally acknowledged in its simplifying and harmonizing cargo-related data and information regarding crew, passengers, security, and health.

But IMO also wants the prototype that can efficiently harmonize data in regard to customs. We propose the integration of Luxembourg-based Intrasoftware's CUSTDEV and Korea's Uni-Pass by CUPIA will do just that.

**Cargo and other
physical data**

**eCustom
Platforms**



EMSA's National Single Window



SafeSeaNet
Norway 

C 114/D
14 July 2015
Original: ENGLISH

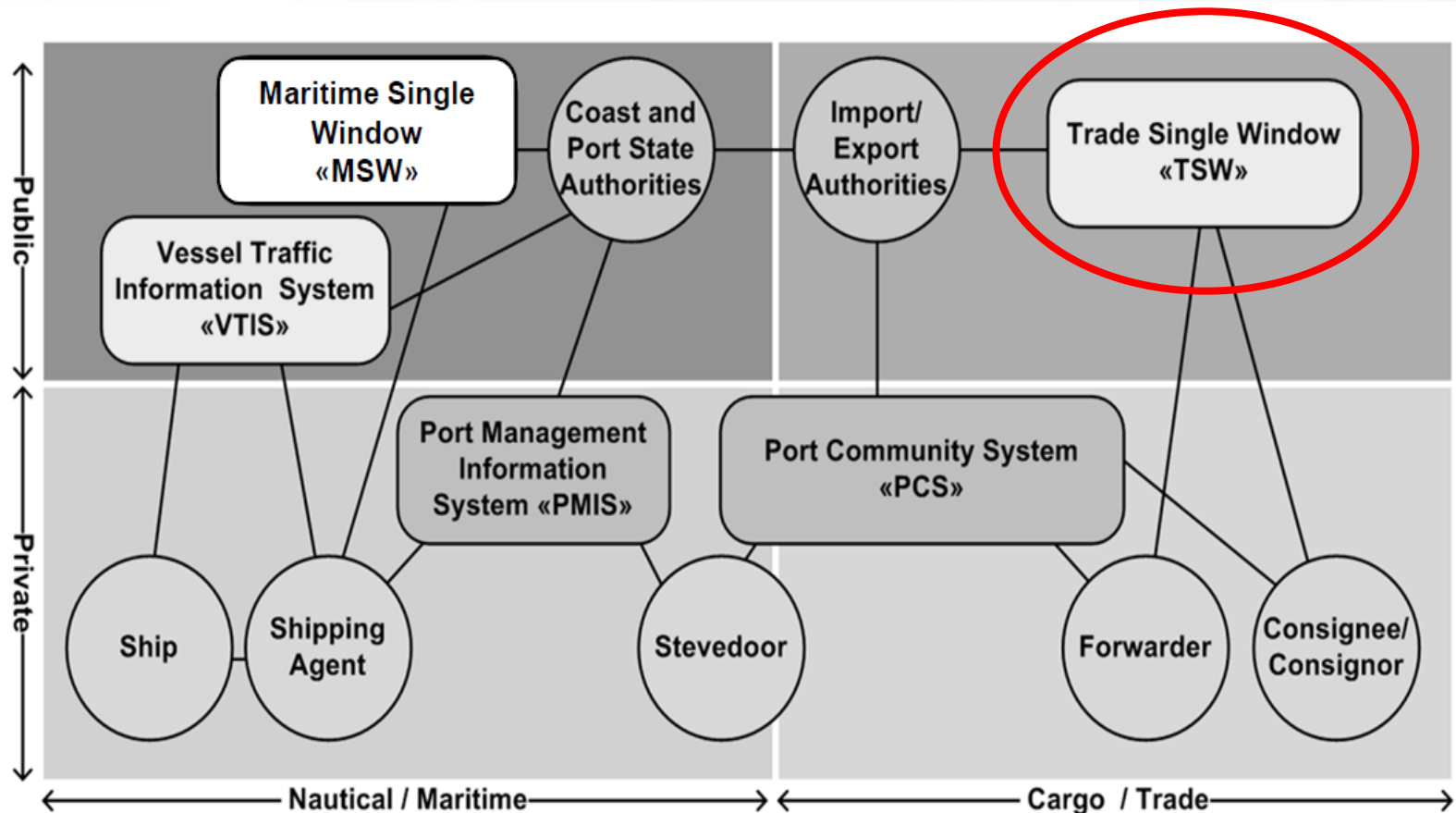
C 114/D 10.4

C 114

6 The Council also welcomed the offer from the European Commission (EC), the European Maritime Safety Agency (EMSA) and the Government of Chile to assist IMO in the development of a maritime single window prototype by providing the software of the National Single Window prototype they had developed and which was designed to be installed on an open source environment.

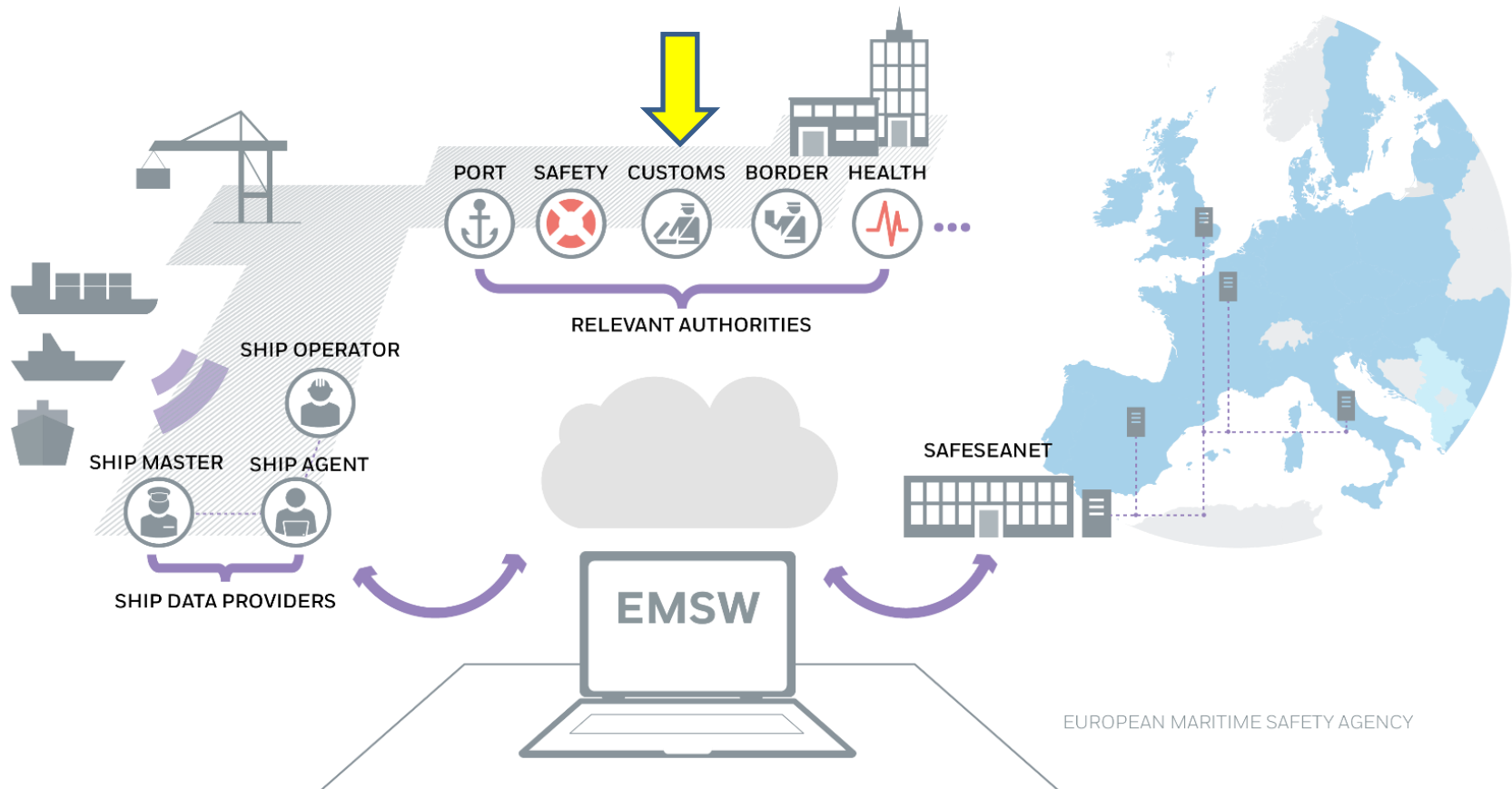
Current Single Window Environment

9



TC 65/Inf.6 Annex

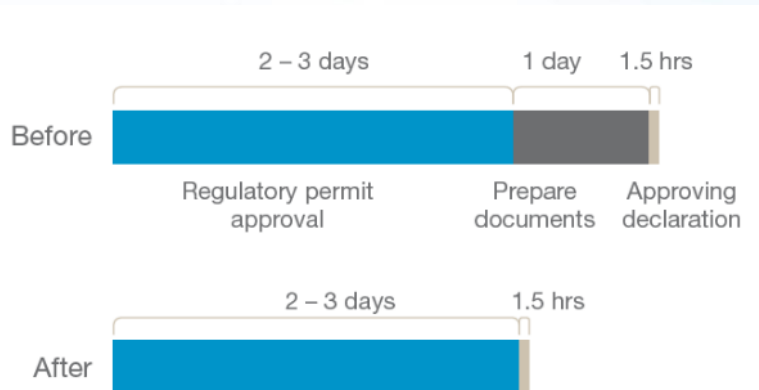
EMSA's Maritime Single Window



European Maritime Single Window prototype-EMSA.2015

Importance of Efficient eCustom System in MSW

11



Decrease of time consumption after eCustoms single window adoption

Cupia.2013



WORLD CUSTOMS ORGANIZATION



Joint convention Regarding eCustoms standardization

Two Globally Competitive e-Custom Technologies

12

Korea Customs e-Clearance System



Korean eCustoms single window



Global eCustoms single window company, Luxemburg

UNI-PASS

- One of the most advanced/fastest import/export clearance systems for customs procedures in the world.
- Having been mentioned as **Best Practice by the World Bank/** contributed to Korea's fastest clearance time
- **Best practice of WCO** Customs Risk management
- Blueprint for Global Single window

Korea Customs e-Clearance System



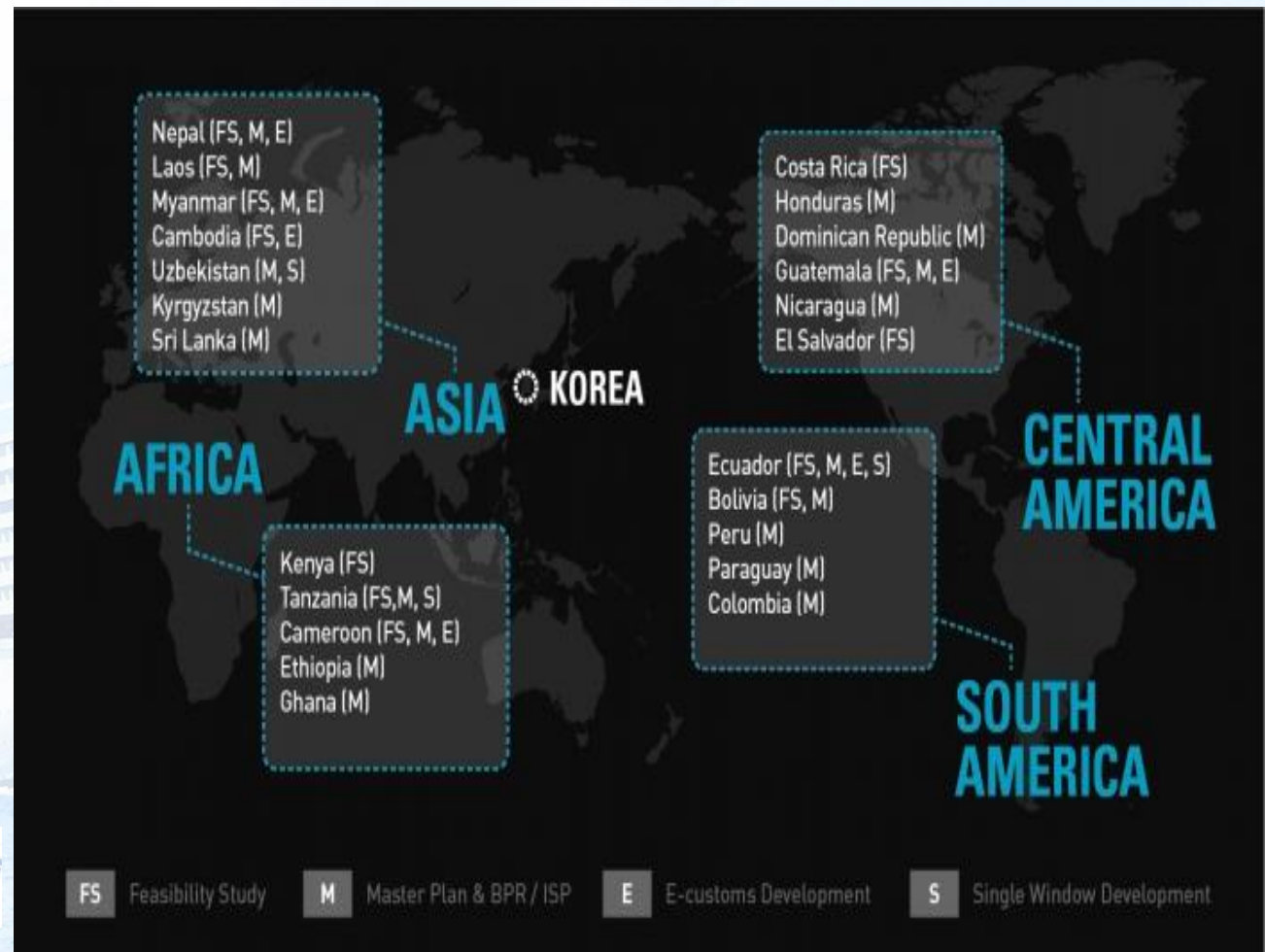
Intrasoft's eCustoms

- IT company located in Luxembourg
- Develop several Single window systems including eCustoms
- In market competition with Unipass
- Exported to Europe & Asean



UNI-PASS's Regional Strength

UNI-PASS's Global
export map/Cupia



Korea Customs e-Clearance System

UNI-PASS

Intrasoft's Regional Strength



Intrasoft's Global
export
Map/Intrasoft

Providing eCustoms to IMO



IMO

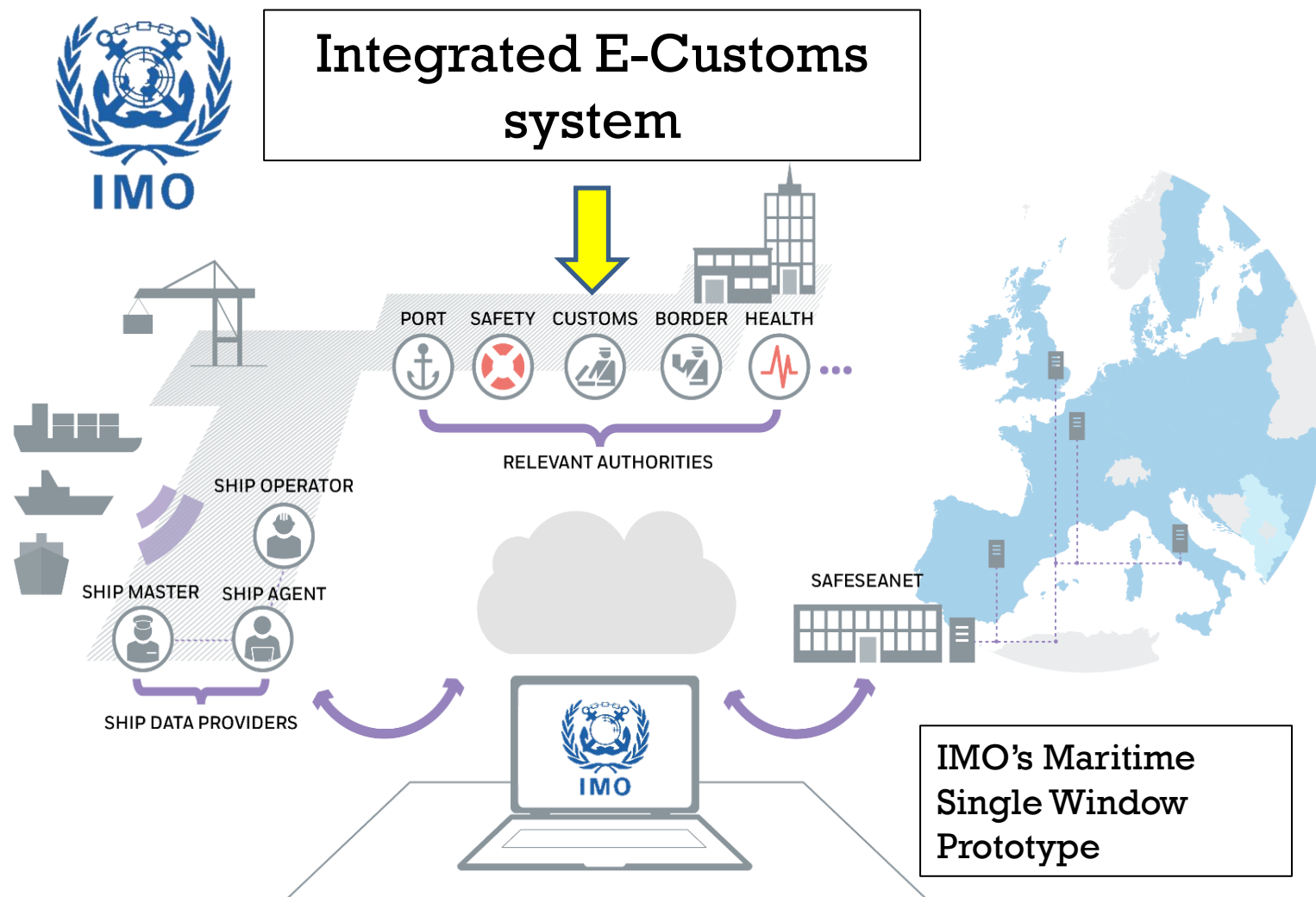
E-Customs system



Korea Customs e-Clearance System



IMO's MSW Prototype





IMO's Efforts to Strengthen MSW Cyber Security

MSC & FAL said:

<http://www.imo.org/en/MediaCentre/MeetingSummaries/FAL/Pages/FAL-40th-session.aspx>

“The Maritime Safety Committee (MSC) (...) was suggested that any future guidance on cyber security risk management should be developed as a joint FAL/MSC guidelines.”

MSC.1/Circ.1526
1 June 2016



Interim Guidelines on
Maritime Cyber Risk
Management (MCRM)

Facilitation
Committee





The Importance of MSW's Level of Cyber Security

- No countries will concur to the MSW prototype **which is not proven to be safe and not having post-hacking guidelines.**
- There exists each nations' autonomously developed single window security technology. However, its **policies should be integrated for convenient and secure MSW system.**
- MSW can be **alternative route for hacking other ship systems.**





Our MSW Cyber Security Suggestion



MSC.1/Circ.1526
1 June 2016

Interim Guidelines on
Maritime Cyber Risk
Management (MCRM)

- **Needs Amplification**
- **Not adequately address the special circumstances that apply to MSW**



Problems in MCRM



3.5 ELEMENTS OF CYBER RISK MANAGEMENT

MSC.1/Circ.1526 Annex 1, page 3

These (...) present the **functional elements** that support effective cyber risk management. These functional elements (...) **all should be concurrent** (...) in a risk management framework.

1. Identify
2. Protect
3. Detect
4. Respond
5. Recover

- Strict order and sequence in following security elements are crucial in cyber risk management.
- Terminologies are greatly vague and repetitive.
- Absence of cyber risk prevention measure





Refining Approach for MSC's CRM Guideline 3.5

Further Specify the 3.5 for MSW-specific situation

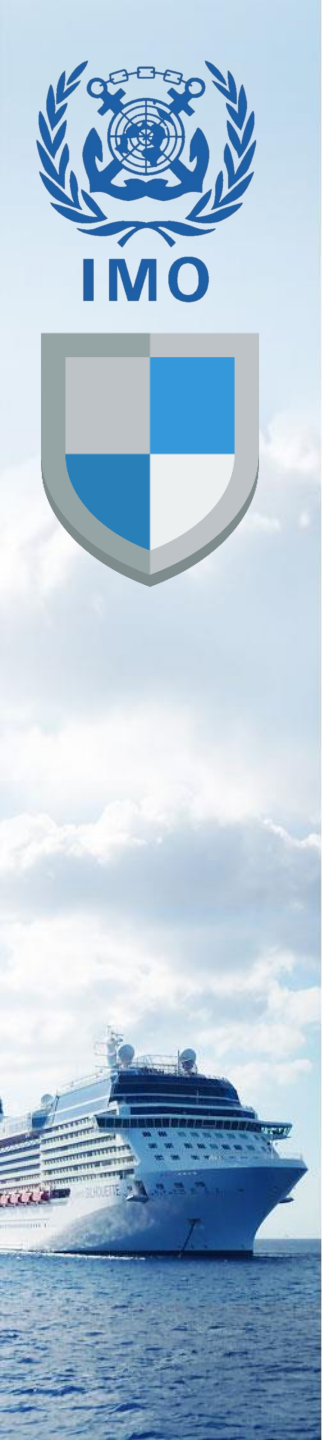
Prevention
Measure



Post-
hacking
Sequential
Measure



**Stronger
CRM Guideline**





3.5-1 (a) Prevention Measure for Maritime Single Window



* All networks that connected to each other should be under the **IDS**(Intrusion Detection System).

* **MSW Portal**, which offers security functions such as digital signature, should be implemented in order to check data integrity.

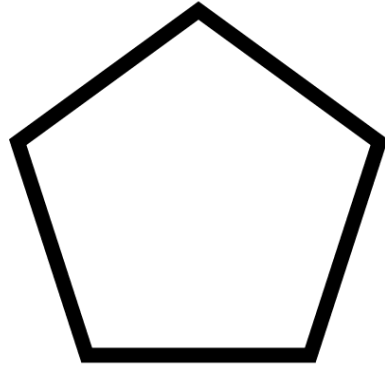
* Cyber security expert should keep their eyes on Maritime Single Window.



3.5-1 (b) Post-hacking Sequential Corresponding Measure (DAART Manual) for MSW



IMO



Elements of CRM
Guideline



**DAART
Manual**

with a better security





IMO



Detection:

- MSW control system manager, information security manager detect abnormal symptoms and distinguish whether it is simple system failure or cyber attack.

First **A**ction:

- Determines the scope of seriousness of the incident and the way to cope with the problem in order to elicit the most suitable response maneuver

Analysis:

- Incident: Who, when, where, what, how, why

Restoration:

- Erasing malicious code and program and get back to original network

Tightening Security:

- Prevent MSW server from being attacked with the hacking scenario identical to that of the past.





Why DAART?

Who's duty

Practical

Tightening
Security

Clear /
Easy to
follow



Amendment Strategy



IMO



3.5-1 Specialized Sequential for the Cyber Risk Management of Maritime Single Window

3.5-1 (a) Prevention Measures

- i) All networks that connected to each other should be under the **IDS**(Intrusion Detection System).
- ii) **MSW Portal**, which offers security functions such as digital signature, should be implemented in order to check data integrity.
- iii) Cyber security expert should keep their eyes on Maritime Single Window.

3.5-2 (b) Post-hacking Sequential Corresponding Measure

When it comes to MSW, Member States are strongly encouraged to follow those functional elements in a sequential manner.

1. **Detection**
2. **First Action**
3. **Analysis**
4. **Restoration**
5. **Tightening Security**

Conclusion

We propose IMO, for the facilitation of integration, the followings:

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