Tripartite 2019 – Tokyo

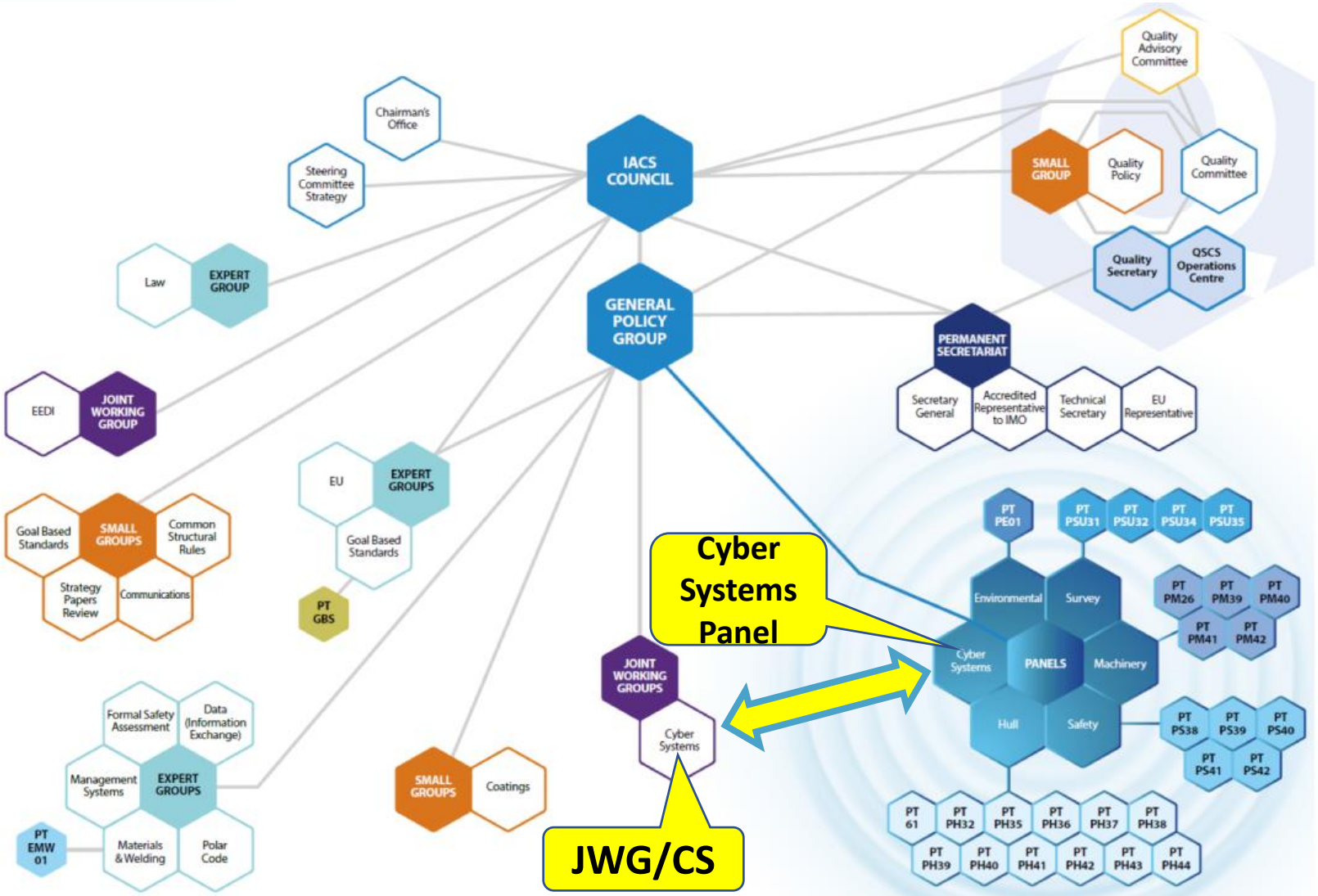
Session 3 ‘Digitalisation’

George Reilly

IACS Cyber Systems Panel Chairman

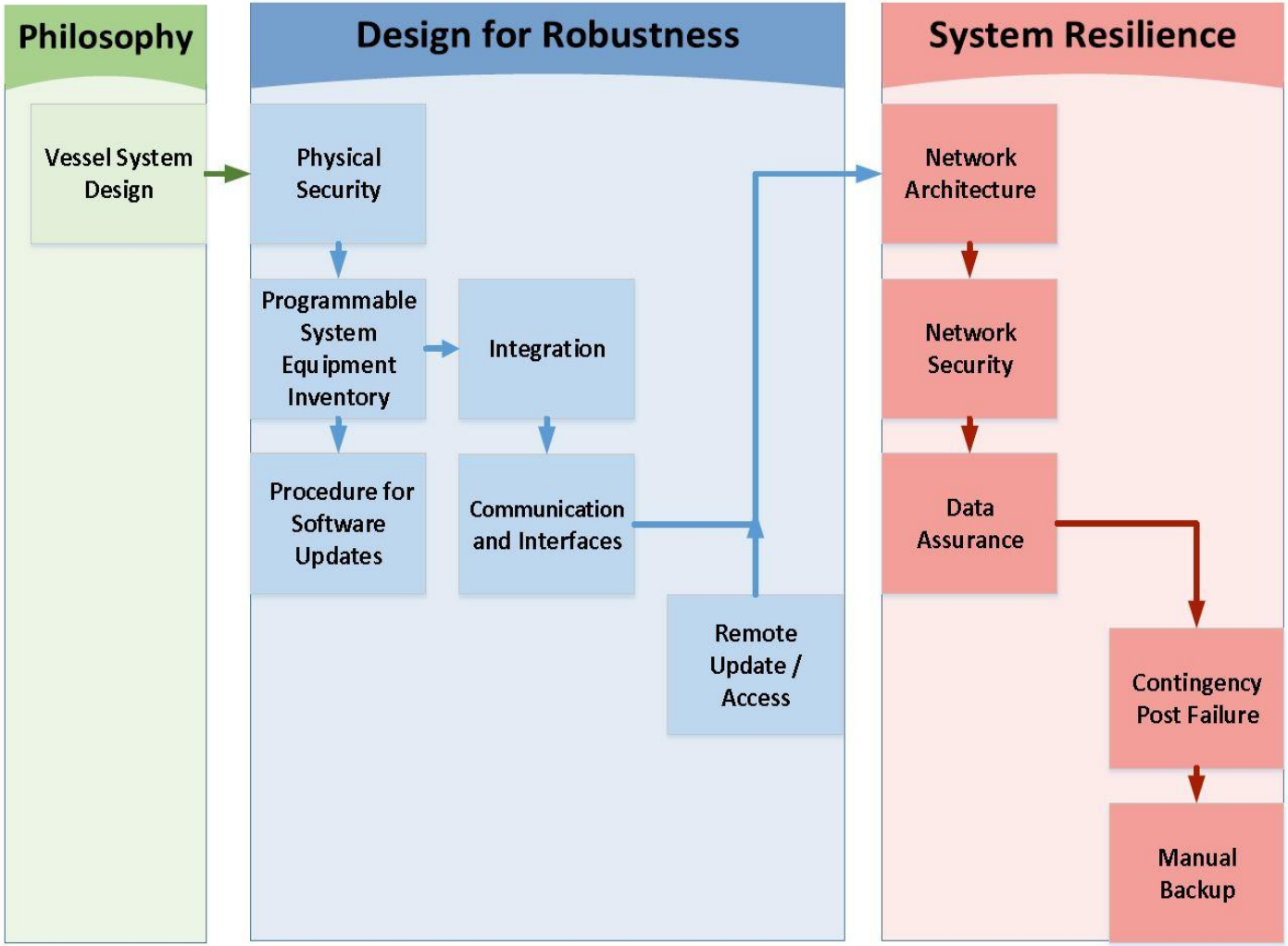
Coordination of IACS Role

Recognition within IACS

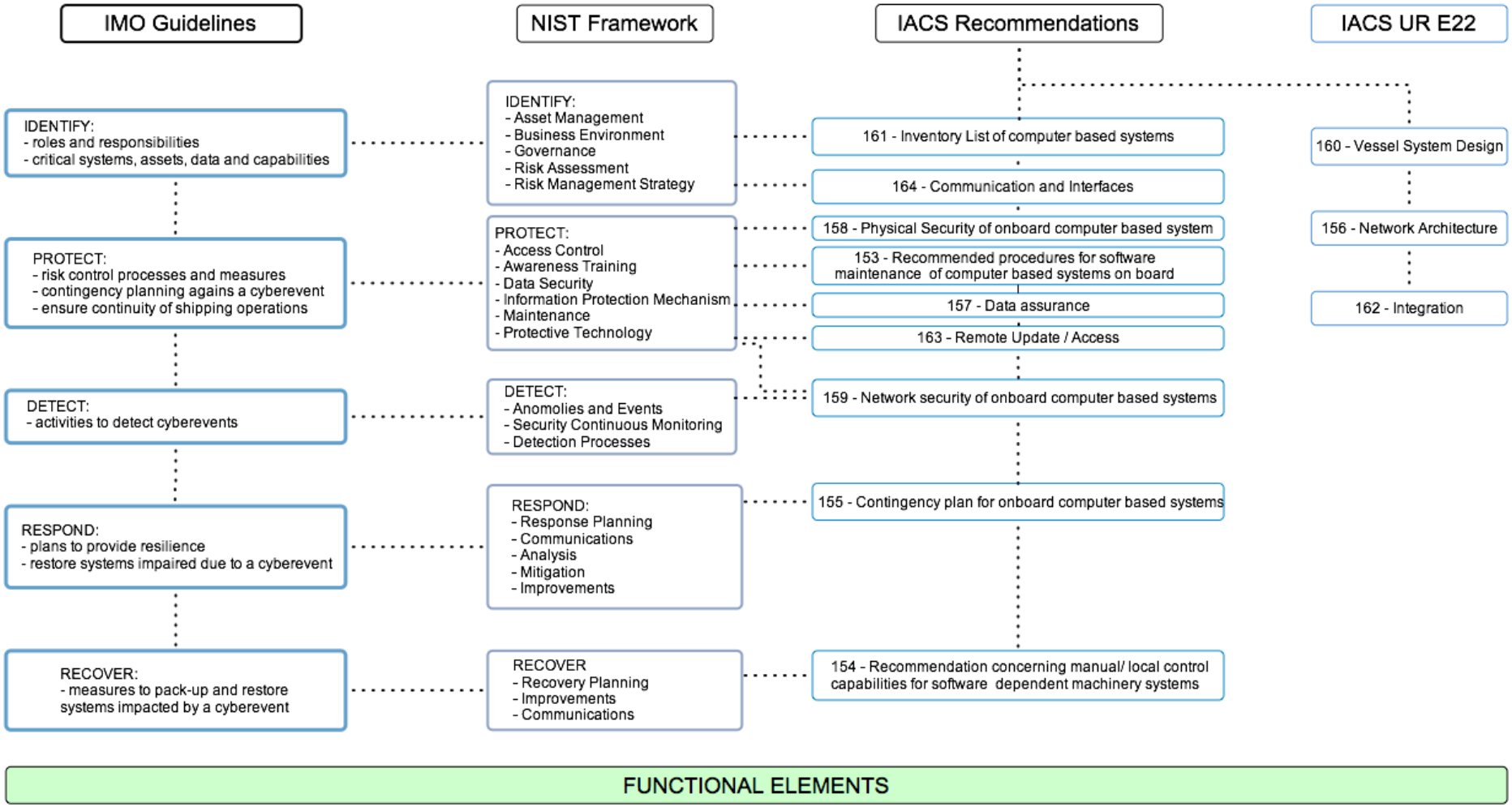


Developing Recommendations

Functionally Arranged



IACS Recommendations Relationship with IMO and the NIST Framework



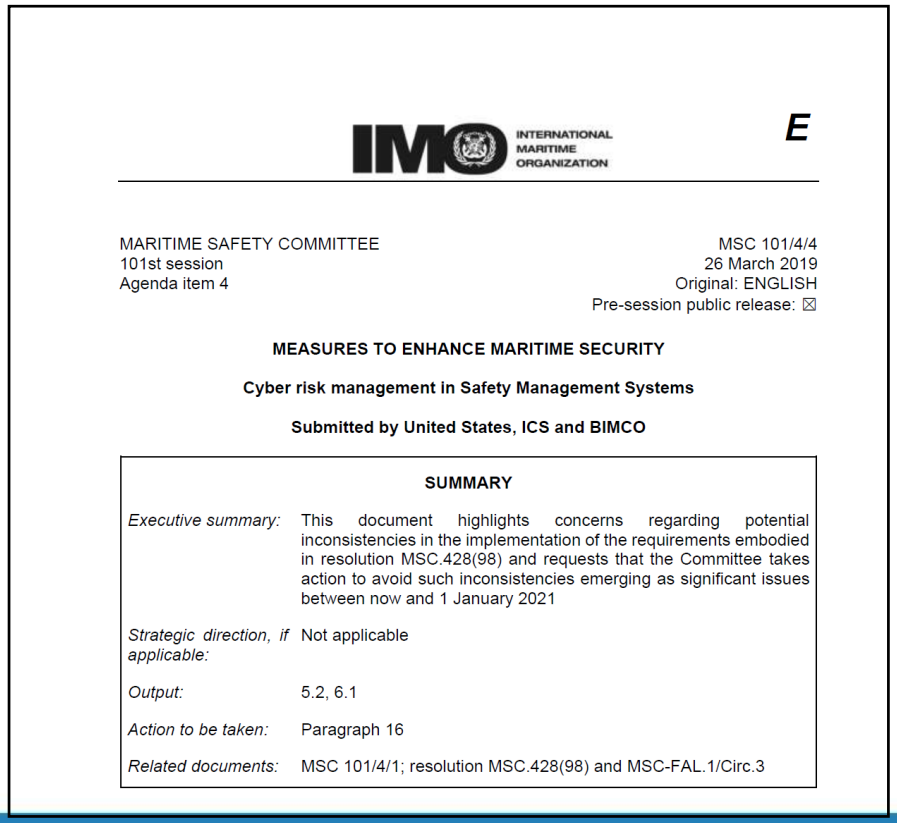
Cyber risks addressed in safety management systems (SMS)

Regulatory Background - IMO

- **MSC.1/Circ.1526 was superseded by (MSC-FAL. 1/Circ.3) in 5 July 2017.**
- **This now has more prominence due to IMO Resolution MSC.428(98) which *'encourages Administrations to ensure that cyber risks are appropriately addressed in safety management systems (SMS) no later than the first annual verification of the company's Document of Compliance* after *1 January 2021.'***

MSC.101/4/4 United States *et al* . .

. . . paragraph 11 highlights that some agencies appear focusing their approach to Cyber Risk Management through the ISPS Code



E

IMO INTERNATIONAL MARITIME ORGANIZATION

MARITIME SAFETY COMMITTEE
101st session
Agenda item 4

MSC 101/4/4
26 March 2019
Original: ENGLISH
Pre-session public release: ☒

MEASURES TO ENHANCE MARITIME SECURITY

Cyber risk management in Safety Management Systems

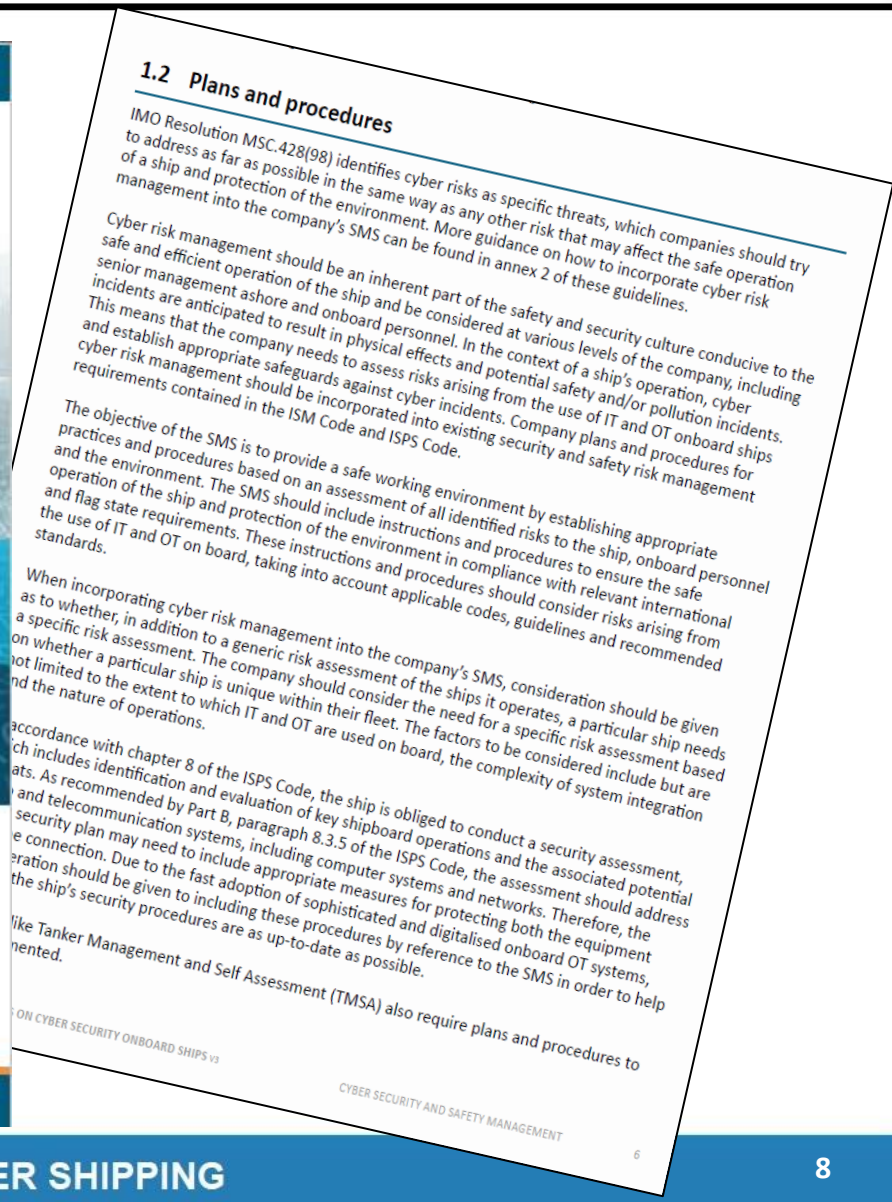
Submitted by United States, ICS and BIMCO

SUMMARY

Executive summary:	This document highlights concerns regarding potential inconsistencies in the implementation of the requirements embodied in resolution MSC.428(98) and requests that the Committee takes action to avoid such inconsistencies emerging as significant issues between now and 1 January 2021
Strategic direction, if applicable:	Not applicable
Output:	5.2, 6.1
Action to be taken:	Paragraph 16
Related documents:	MSC 101/4/1; resolution MSC.428(98) and MSC-FAL.1/Circ.3

Committee agreed physical security aspects of cyber security, should be addressed in Ship Security Plans under the ISPS Code. However, the Committee also agreed that this should **not** be considered as requiring a company to establish a separate cyber security management system operating in parallel with the company SMS

Industry Guidelines - Version 3



1.2 Plans and procedures

IMO Resolution MSC.428(98) identifies cyber risks as specific threats, which companies should try to address as far as possible in the same way as any other risk that may affect the safe operation of a ship and protection of the environment. More guidance on how to incorporate cyber risk management into the company's SMS can be found in annex 2 of these guidelines.

Cyber risk management should be an inherent part of the safety and security culture conducive to the safe and efficient operation of the ship and be considered at various levels of the company, including senior management ashore and onboard personnel. In the context of a ship's operation, cyber incidents are anticipated to result in physical effects and potential safety and/or pollution incidents. This means that the company needs to assess risks arising from the use of IT and OT onboard ships and establish appropriate safeguards against cyber incidents. Company plans and procedures for cyber risk management should be incorporated into existing security and safety risk management requirements contained in the ISM Code and ISPS Code.

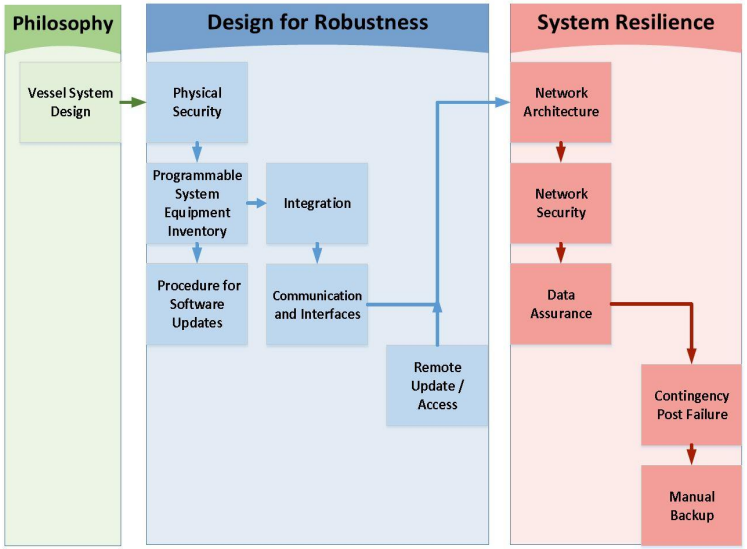
The objective of the SMS is to provide a safe working environment by establishing appropriate practices and procedures based on an assessment of all identified risks to the ship, onboard personnel and the environment. The SMS should include instructions and procedures to ensure the safe operation of the ship and protection of the environment in compliance with relevant international and flag state requirements. These instructions and procedures should consider risks arising from the use of IT and OT on board, taking into account applicable codes, guidelines and recommended standards.

When incorporating cyber risk management into the company's SMS, consideration should be given as to whether, in addition to a generic risk assessment of the ships it operates, a particular ship needs a specific risk assessment. The company should consider the need for a specific risk assessment based on whether a particular ship is unique within their fleet. The factors to be considered include but are not limited to the extent to which IT and OT are used on board, the complexity of system integration and the nature of operations.

ccordance with chapter 8 of the ISPS Code, the ship is obliged to conduct a security assessment, ch includes identification and evaluation of key shipboard operations and the associated potential ats. As recommended by Part B, paragraph 8.3.5 of the ISPS Code, the assessment should address and telecommunication systems, including computer systems and networks. Therefore, the security plan may need to include appropriate measures for protecting both the equipment e connection. Due to the fast adoption of sophisticated and digitalised onboard OT systems, eration should be given to including these procedures by reference to the SMS in order to help the ship's security procedures are as up-to-date as possible.

ike Tanker Management and Self Assessment (TMSA) also require plans and procedures to nented.

Consolidation



Stakeholder Needs & Expectations

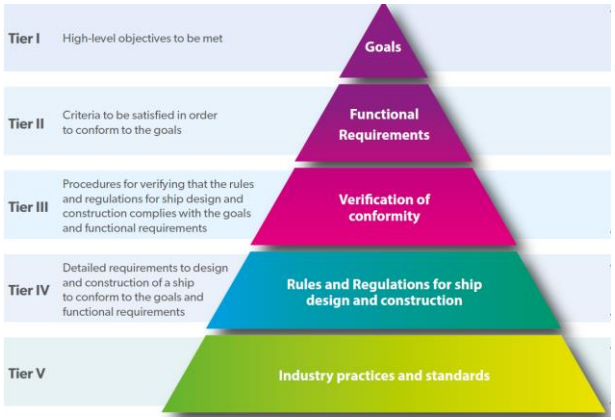
Consolidation of the Recommendations into one Document

Consolidation through the **Goal Based Standards** format

A format that is familiar to IACS and many stakeholders

Starting with a declared GOAL:

Ships should be designed, built, operated and maintained to be cyber-resilient



Using elements that are familiar to the stakeholders that are familiar to IACS and the Joint Working Group

Consolidation Steps

- Agreement of the defined goal and a set of Functional Requirements
- Review of existing (Recommendation) material and the feedback that has been received
- Consolidated document will address the criteria for technical elements relating to construction and not cover operational elements
- Industry Standards to be referenced for operational aspects
- Only new construction ships considered
- Identify how consolidated document address the 5 NIST Functional Elements (Identify, Protect, Detect, Respond, Recover)

Other activities

While the most intense activity within IACS will revolve around the consolidation of the Recommendations, Cyber Systems Panel will be available to identify, prioritize and progress other related areas that will themselves become priorities that need to be in place before the January 2021 Deadline arrives.

IACS

Thank you for your attention!

References

Maritime cyber risk

Maritime cyber risk refers to a measure of the extent to which a technology asset could be threatened by a potential circumstance or event, which may result in shipping-related operational, safety or security failures as a consequence of information or systems being corrupted, lost or compromised.
Cyber risk management means the process of identifying, analysing, assessing and communicating a cyber-related risk and accepting, avoiding, transferring or mitigating it to an acceptable level, considering costs and benefits of actions taken to stakeholders
The overall goal is to support safe and secure shipping, which is operationally resilient to cyber risks.

IMO guidance
IMO has issued MSC-FAL.1/Circ.3 *Guidelines on maritime cyber risk management.*
The guidelines provide high-level recommendations on maritime cyber risk management to safeguard shipping from current and emerging cyber threats and vulnerabilities and include functional elements that support effective cyber risk management. The recommendations can be incorporated into existing risk management processes and are complementary to the safety and security management practices already established by IMO.
The Maritime Safety Committee, at its 98th session in June 2017, also adopted Resolution MSC.428(98) - Maritime Cyber Risk Management in Safety Management Systems. The resolution encourages administrations to ensure that cyber risks are appropriately addressed in existing safety management systems (as defined in the ISM Code) no later than the first annual verification of the company's Document of Compliance after 1 January 2021.

Other guidance and standards
Guidelines on Cyber Security on board Ships issued by BIMCO, CLIA, ICS, INTERCARGO, INTERMANAGER, INTERTANKO, OCIMF, IUMI and WORLD SHIPPING COUNCIL.
ISO/IEC 27001 standard on Information technology – Security techniques – Information security management systems – Requirements. Published jointly by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC).
United States National Institute of Standards and Technology's Framework for Improving Critical Infrastructure Cybersecurity (the NIST Framework).

MSC-FAL.1/Circ.3 Guidelines on maritime cyber risk management (94 KB)

Resolution MSC.428(98) - Maritime Cyber Risk Management in Safety Management Systems (12 KB)