



# CIRM/BIMCO Pilot Project on Shipboard Software Maintenance

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# Introduction

- Ship systems increasingly depend on SW of increasing complexity
- Improving the shipboard SW updating process is critical to ensuring safe and efficient navigation of the ship
- The ship-side infrastructure supporting e-navigation depends on effective software maintenance



The problem

CRM

# Real life example

SERVICE REPORT	
Date (fecha): <u>NOV. 17, 2016</u>	W/O.Nº (orden de trabajo):
Place (Lugar): <u>CRISTOBAL, ANCHORAGE AGENT</u>	Type of equipment (equipo): <u>X-BAND RADAR</u>
Vessel (barco):	Model (modelo):
Flag (bandera): <u>ISLE OF MAN</u>	GRT (tonelaje): <u>29,335</u>
Serial Nº (serie):	Customer P.O.:
REASON FOR CALL (daño reportado): <u>RADAR NOT GET POWER ON.</u>	
WORK PERFORMED (trabajo efectuado): <u>ON BOARD I FOUND THE RADAR OFF, WHEN I SWITCH ON THE RADAR NOT START. I REMOVED THE HV CABLE ON THE TB BOARD AND NOW THE RADAR IS ON. I PROCEED TO CHECK THE MODULATOR BOARD AND I FOUND ONE TRANSISTOR DEFECTIVE. I REPLACE THE MD BOARD FOR A NEW MD BOARD 03P9244H. NOW THE RADAR IS WORKING. THEN I PROCEED TO UPDATE THE RFC SOFTWARE TO NEW SOFTWARE D-1.41,</u>	

Engineer comes aboard to fix dead radar.

Replaces transistor on modulation board, system starts working.

Then he updates system software to latest version...

...radar stops working, requiring new magnetron.

# Shipowner's reaction



# Summary of current problems

## **Lack of awareness / visibility about situation on board**

- Which software versions are installed? Are they appropriate?
- Are SW updates available?
- Are available updates compulsory or voluntary?
- What were the outcomes of previous service visits?
- *How to obtain/monitor this information in a convenient way?*

# Summary of current problems

## Competencies of service personnel

- How to ensure that qualified people are coming on board to perform maintenance?
- How to ensure service personnel are adequately trained and supported by makers?
- How to ensure consistency & continuity of service between different service companies?

# Summary of current problems

## Cyber security threats

- How to secure internal networks / equipment against potential attacks during software maintenance performed on board?
- How to secure internal networks against potential attacks during remote connection?



# Summary of current problems

## Other concerns

- How can Shipowner effectively communicate SW problem so maintenance can be properly planned?
- What to do if SW update fails, so that system can continue to be used?
- As systems become increasingly interdependent, how to understand the effects of updating one system on the functionality on another?



The solution

**CRM**

# Draft Standard on Software Maintenance of Shipboard Equipment

## Draft Standard Software Maintenance of Shipboard Equipment

Prepared by the CIRM/BIMCO Joint Working Group

### Revision History

V#	Descrip
1.0	First live
1.1	Draft up

### Terms of Use

This Draft Standard on Software Maintenance of Shipboard Equipment (the Draft Standard) has been prepared by the Comité International Radio-Maritime (CIRM) and BIMCO Joint Working Group (JWG). Advice and information given in the Draft Standard is intended purely as guidance to be used at the user's own risk. No warranties or representations are given, nor is any duty of care or responsibility accepted by the Authors, their membership or employees of any person, firm, corporation or organisation (who or which has been in any way concerned with the furnishing of information or data, or the compilation or any translation, publishing, or supply of the Draft Standard) for the accuracy of any information or advice given in the Draft Standard or any omission from the Draft Standard or for any consequence whatsoever resulting directly or indirectly from compliance with, adoption of or reliance on guidance contained in the Draft Standard even if caused by a failure to exercise reasonable care on the part of any of the aforementioned parties.

CIRM/BIMCO Working Group est. 2014

Goal: develop standard before we are given one by the regulators

Work of the JWG has been transparent, IMO has been informed/updated

Group developed 14 drafts before producing "Version 1.1"

# How will the standard improve the situation?

- Identifies stakeholders in SW maintenance, groups into Roles:

Producer	(e.g. company that manufacturers the ECDIS)
System Integrator	(e.g. company that installs the integrated bridge)
Data Provider	(e.g. company that produces the ENC's)
Service	(e.g. company responsible for servicing the ECDIS)
Shipowner	(e.g. shipping company that owns the ship)

- Assigns requirements to each of these Roles
- Fulfilling the requirements of this standard will take a major change in thinking by all stakeholders

The background of the slide is a dark blue, high-angle photograph of a ship's bridge. It features several large, illuminated monitors displaying various data and charts, a central control console with a keypad, and other navigation equipment. The overall atmosphere is technical and professional.

# Pilot Project on Shipboard Software Maintenance



# Purpose

- Pilot Project will undertake a trial implementation of the Draft Standard to evaluate its ***practicality*** and ***efficacy***
- Different stakeholders will perform software maintenance under real circumstances, in accordance with the Draft Standard
- Trial implementation dates: 1<sup>st</sup> January - 30<sup>th</sup> June 2017

# Participating companies

## Shipowner Role

BP Shipping

Maersk Line

Emarat Marine

## Producer Role

Furuno

Danelec Marine

Sperry Marine

Kongsberg Maritime

MAN Diesel & Turbo

## Service Role

Radio Holland

# Future work

- Results of the Pilot will be analysed and the standard amended accordingly
- Ultimate aim is to convert the Draft Standard into an international standard
- Should not require IMO regulation – instead adoption will be driven by commercial pressure





Thank you

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