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
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?
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 ENCs)
  - 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
Pilot Project on Shipboard Software Maintenance
• 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\textsuperscript{st} January - 30\textsuperscript{th} June 2017
<table>
<thead>
<tr>
<th>Shipowner Role</th>
<th>Producer Role</th>
<th>Service Role</th>
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</thead>
<tbody>
<tr>
<td>BP Shipping</td>
<td>Furuno</td>
<td>Radio Holland</td>
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<tr>
<td>Maersk Line</td>
<td>Danelec Marine</td>
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<td>Emarat Marine</td>
<td>Sperry Marine</td>
<td>Kongsberg Maritime</td>
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<td>MAN Diesel &amp; Turbo</td>
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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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