DMEPM(MSC) Maritech 2019 Presentation

Presented by :
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DMEPM (MSC)

Major Surface Combatant (MSC)

- Continuing Investment
- Maintenance Challenge
- Embracing Innovation
- Evolving the Support Enterprise

Halifax Class Modernization

National Defence / Défense nationale

ROYAL CANADIAN NAVY

FACT SHEET

HALIFAX-CLASS CANADIAN PATROL FRIGATE

The 12 Canadian-built Halifax-class multi-role patrol frigates are considered the backbone of the Royal Canadian Navy (RCN). They can deploy anywhere in the world in support of the Government of Canada. Under the Halifax-class Modernization / Frigate Life Extension project, the frigates are undergoing a mid-life refit to ensure they have the capabilities to meet the new threats and changing operating environments of today. Enhanced capabilities include:

- new Combat Management System
- new radar capability
- new communications and missile system upgrades
- new Integrated Platform Management System

The first modernized Halifax-class frigates were delivered in late 2014, with the last ship scheduled for delivery in spring 2018.

HALIFAX-CLASS SPECIFICATIONS

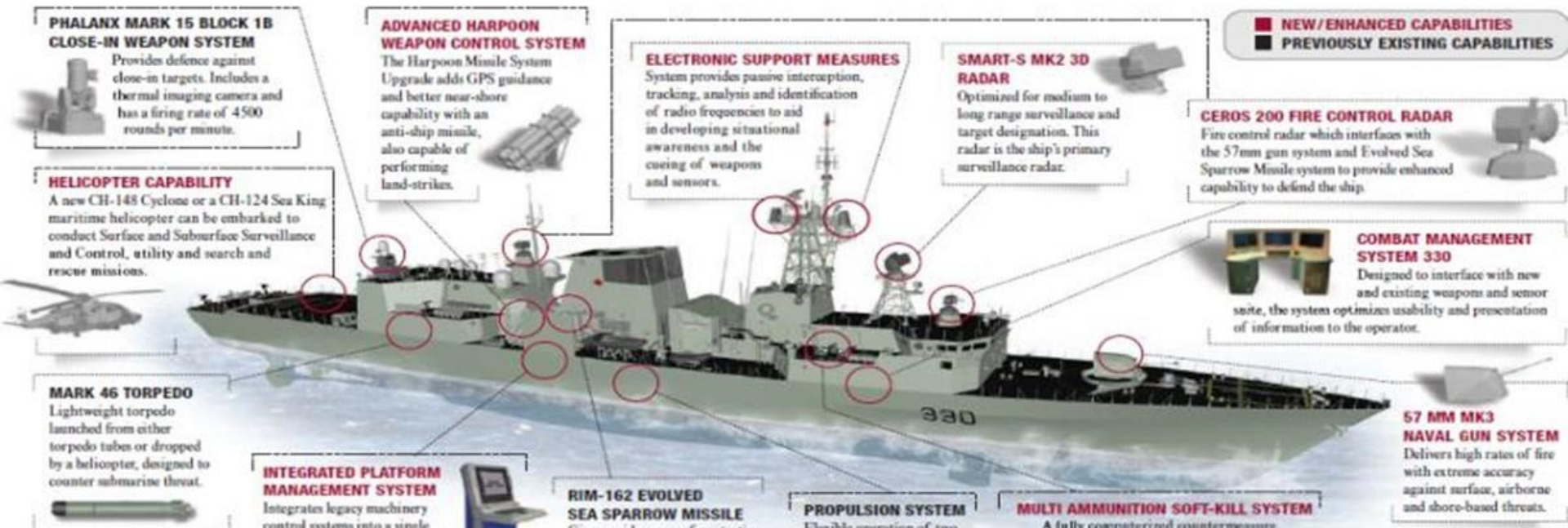
Length:	134 metres
Beam:	16 metres
Complement:	225 personnel

To scale

Halifax-class Canadian Patrol Frigate
Displacement: 4,770 tonnes

Harry DeWolf-class Arctic/ Offshore Patrol Ship
Displacement: 6,440 tonnes

Kingston-class Maritime Coastal Defence Vessel
Displacement: 970 tonnes



PHALANX MARK 15 BLOCK 1B CLOSE-IN WEAPON SYSTEM
Provides defence against close-in targets. Includes a thermal imaging camera and has a firing rate of 4500 rounds per minute.

ADVANCED HARPOON WEAPON CONTROL SYSTEM
The Harpoon Missile System Upgrade adds GPS guidance and better near-shore capability with an anti-ship missile, also capable of performing land-strikes.

ELECTRONIC SUPPORT MEASURES
System provides passive interception, tracking, analysis and identification of radio frequencies to aid in developing situational awareness and the cueing of weapons and sensors.

SMART-S MK2 3D RADAR
Optimized for medium to long range surveillance and target designation. This radar is the ship's primary surveillance radar.

NEW/ENHANCED CAPABILITIES
PREVIOUSLY EXISTING CAPABILITIES

CEROS 200 FIRE CONTROL RADAR
Fire control radar which interfaces with the 57mm gun system and Evolved Sea Sparrow Missile system to provide enhanced capability to defend the ship.

HELICOPTER CAPABILITY
A new CH-148 Cyclone or a CH-124 Sea King maritime helicopter can be embarked to conduct Surface and Subsurface Surveillance and Control, utility and search and rescue missions.

COMBAT MANAGEMENT SYSTEM 330
Designed to interface with new and existing weapons and sensor suite, the system optimizes usability and presentation of information to the operator.

MARK 46 TORPEDO
Lightweight torpedo launched from either torpedo tubes or dropped by a helicopter, designed to counter submarine threat.

INTEGRATED PLATFORM MANAGEMENT SYSTEM
Integrates legacy machinery control systems into a single platform, including additional Battle Damage Control Systems functionality to provide better information flow during an onboard emergency.

RIM-162 EVOLVED SEA SPARROW MISSILE
Gives a wide range of protection against missiles, aircraft and surface threats.

PROPULSION SYSTEM
Flexible operation of two 17.7 MW gas turbine or one 6.5 MW diesel engine to permit speeds up to 30 + knots.

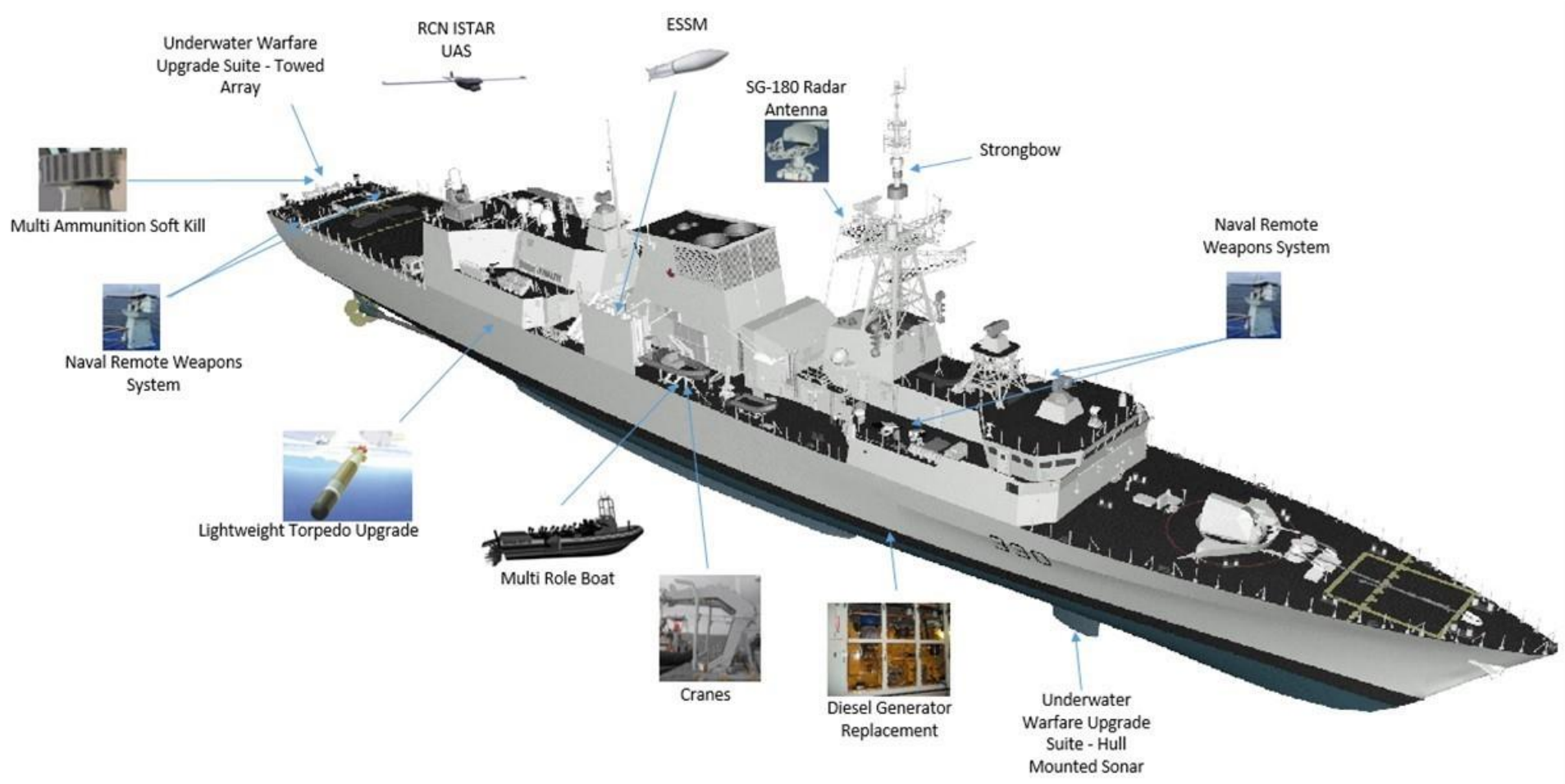
MULTI AMMUNITION SOFT-KILL SYSTEM
A fully computerized countermeasure, it is interfaced to the ship's sensors and protects against attacks by advanced, sensor-guided missiles by launching airborne decoys.

57 MM MK3 NAVAL GUN SYSTEM
Delivers high rates of fire with extreme accuracy against surface, airborne and shore-based threats.

DGM-24215-NMJ
Royal Canadian Navy
Public Affairs – March 2015
www.forces.gc.ca

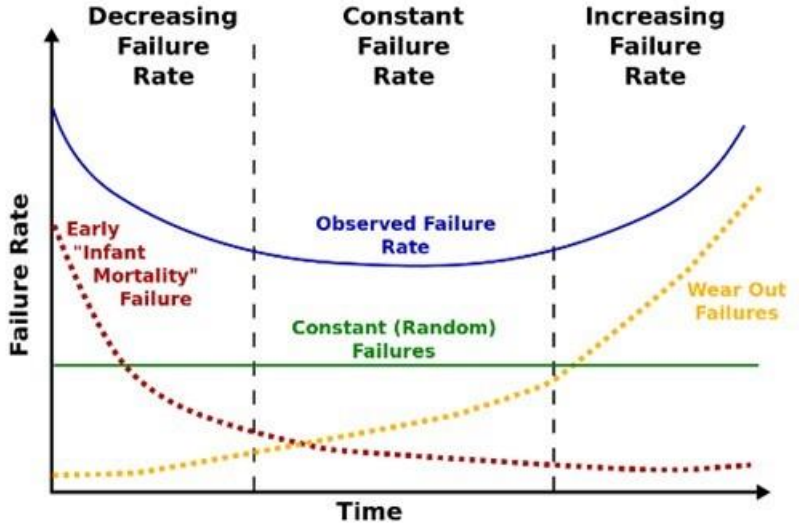
Canada

Continuing Investment



Continuing Investment – Maintaining Operational Relevancy
Avoiding Obsolescence Supportability Challenges

Halifax-class 1st, 2nd Line PM & CM Demand



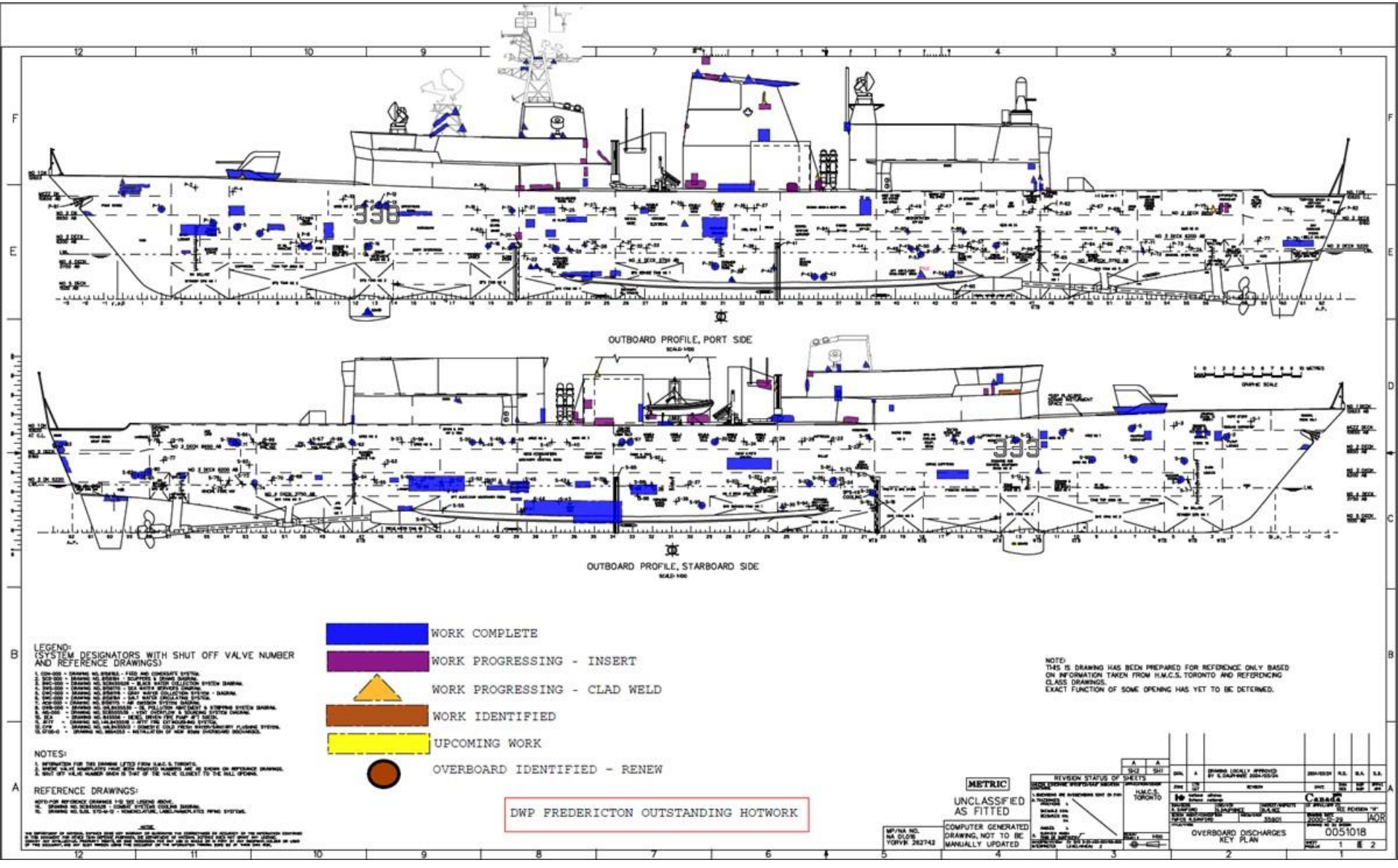
PM and CM demand consistently exceeds capacity.

Lack of maintenance reduces availability.

Demand will continue to grow as platform and equipment ages.

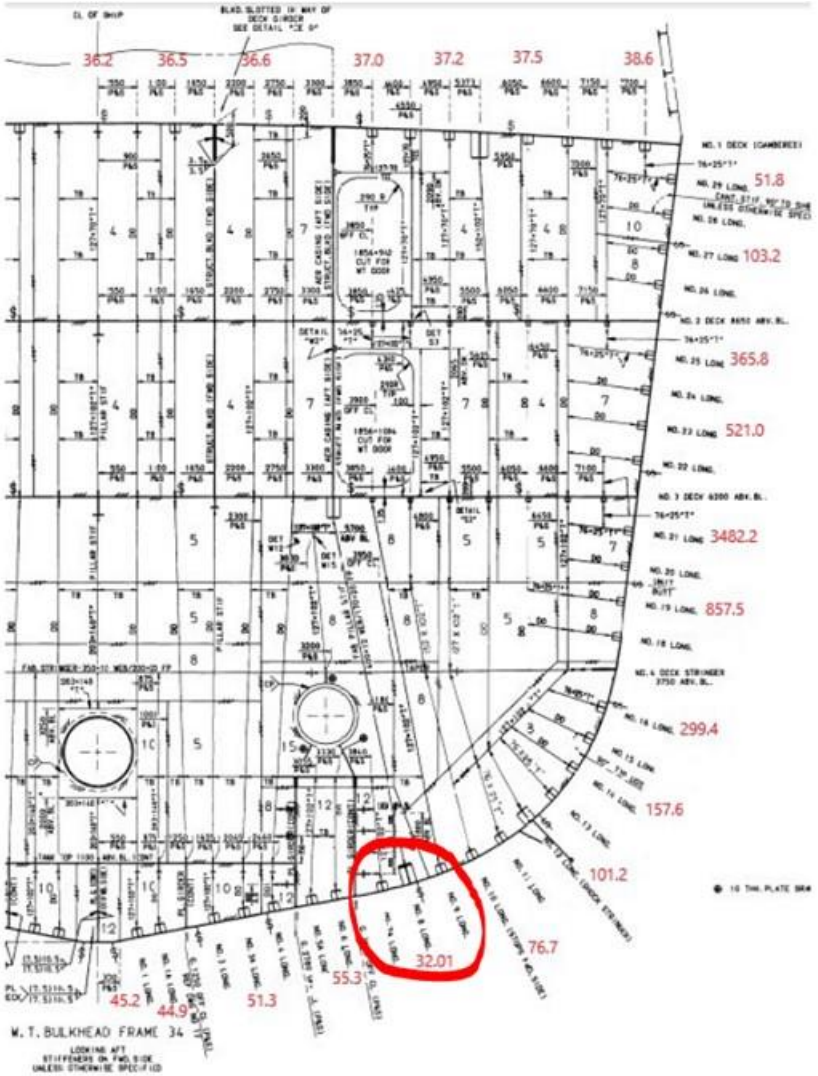
Class Corrosion Overview

Fredericton Shell Plating Replacement



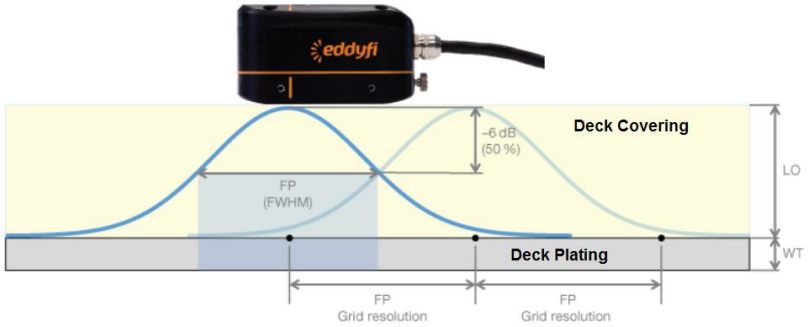
Lloyds End of Life Study

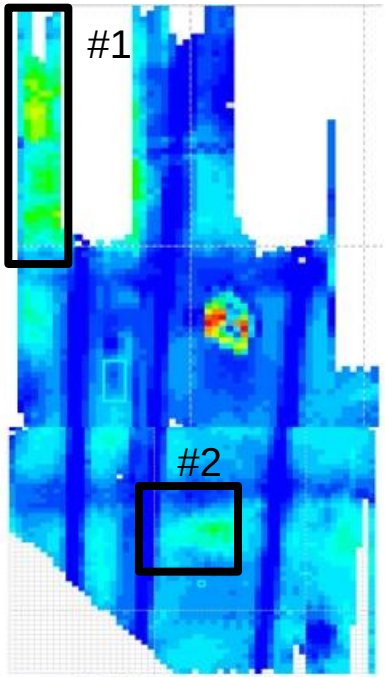
- Provide MSC with a model of the HAL Class hull life based on:
  - Original design scantlings of all structure at 5 bulkheads in the midships area
  - Current condition of the hull
  - Past, weighted areas of operation
  - Historical sea state information
- Aim is to provide areas that require further attention
- Understand future maintenance demand
- Revise Halifax Maintenance Program

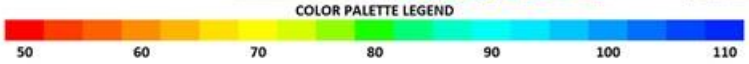


Innovation - Non-Invasive Survey Technology

- Pulsed Eddy Current:
  - Probe emits magnetic field that passes through deck covering;
  - Sensors measure decay rate of component's magnetic response; and
  - Decay rate indicates the VOLUME in the probes measurement volume (Cylinder of Diameter FP)





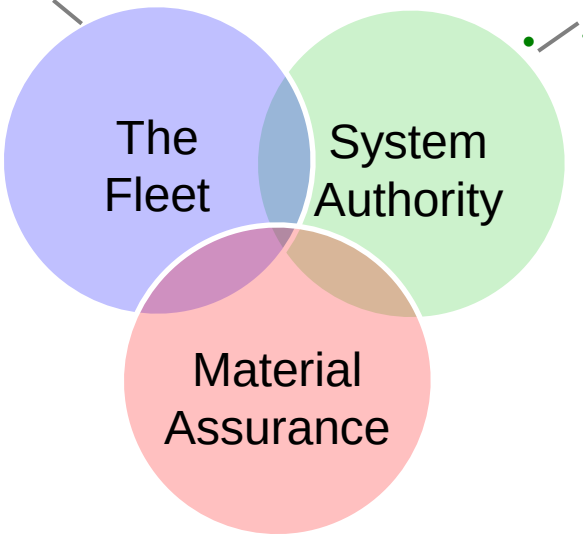


Innovation - Digital Twinning

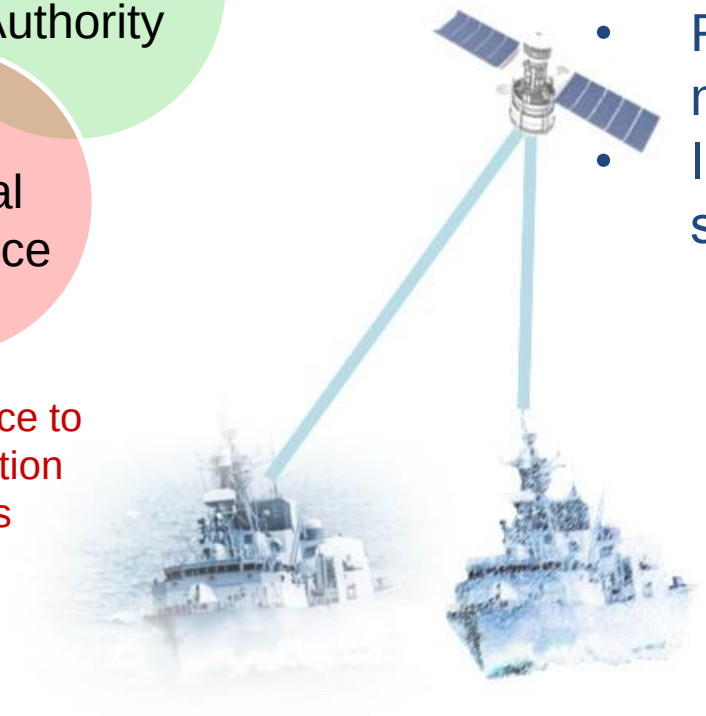
Digital Twinning

- maintenance
- operation
- investigations

- maintenance & policy
- research
- future posturing



- compliance to classification standards



- Evidence based operational and maintenance decisions
- Improved platform availability
- Reduced operational and maintenance costs
- Improved understanding of ship's material state

Shaping Future Support contracts

Tailored & Optimized Support Solutions

- Economic Benefits
- Performance
- Value for $$
- Flexibility

5. **Industry Assistance:**
Help us to evolve & shape supportability solutions
   - Efficiencies/Value for $$
   - Effective Partnerships
   - Performance Measures
   - Basis of Payment

4. Industry Assistance:
Help us with some of our challenges
   - **Corrosion**
   - **Cyber resiliency**
   - **Digital Navy / Innovation**

3. **New Concepts for Consideration:**
   - Performance Based
   - Longer Term
   - Innovative and data driven solutions
   - Strategic Partnerships

2. **Naval In-Service Support and Sustainment Initiative Maritime-Team:** Supporting Equipment Management Teams to find greater efficiencies to current support plans

1. Considerable amount of the enterprise still employing transactional time and material based support solutions

Discussion