



Welcome NSRP!

Seaspan Shipyards



# Seaspan Shipyards Today

**3**  
Full-service shipyards  
in Vancouver and  
Victoria, British  
Columbia



**~3,000**  
Employees



**100+**  
years of history as pioneer  
of shipbuilding and ship  
repair on Canada's west  
coast

Management team with  
**400+** & **450**  
**years** & **ships**  
building ships and subs delivered and serviced

**1st**  
First class of large  
vessels delivered  
under the NSS



**1**  
Ship per week  
commercial  
repair &  
overhaul



**1st** LNG conversion  
in North  
America



**660** Canadian suppliers

**\$2.6B** contribution to Canada's  
GDP, 2012-2021

*Seaspan is delivering ships, economic growth and jobs, and rebuilding a sustainable industry*



# Three Shipyards, One Company

- Largest shipbuilding and repair company on Canada's west coast
- Through-life capability: design, construction, repair, conversion, in-service support



**Vancouver Shipyards**

New construction projects



**Victoria Shipyards**

International centre of excellence for ship repair and conversions



**Vancouver Drydock**

Large and complex ship repair



# Vancouver Shipyards - One of the Most Modern Shipyards in North America

- \$200M+ of private investment to date, including major modernization project completed in 2014
- 300 MT Gantry Crane
- Continuing to modernize and invest in infrastructure, technology, innovation and people



 seaspan



# Proudly Building Canada's Next Generation of Non-Combat Vessels



## 3 Offshore Fisheries Science Vessels

63m fisheries research vessel, deployed on Canada's East and West Coasts, to understand the health of fish stocks, and their ocean environment.



## 2 Joint Support Ships

174m Naval Support Ship, providing fuel, ammunition, provisions, and other material to Canada's Navy, to be deployed around the world in any theatre and threat environment.



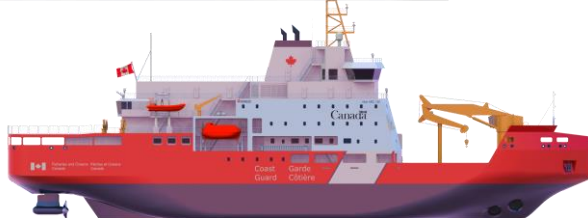
## 1 Offshore Oceanographic Science Vessel

88m oceanographic research vessel, to be deployed on Canada's East Coast, to develop hydrographic charts and understand our ocean's physical environment, including impact of climate change.



## 1 Heavy Polar Icebreaker

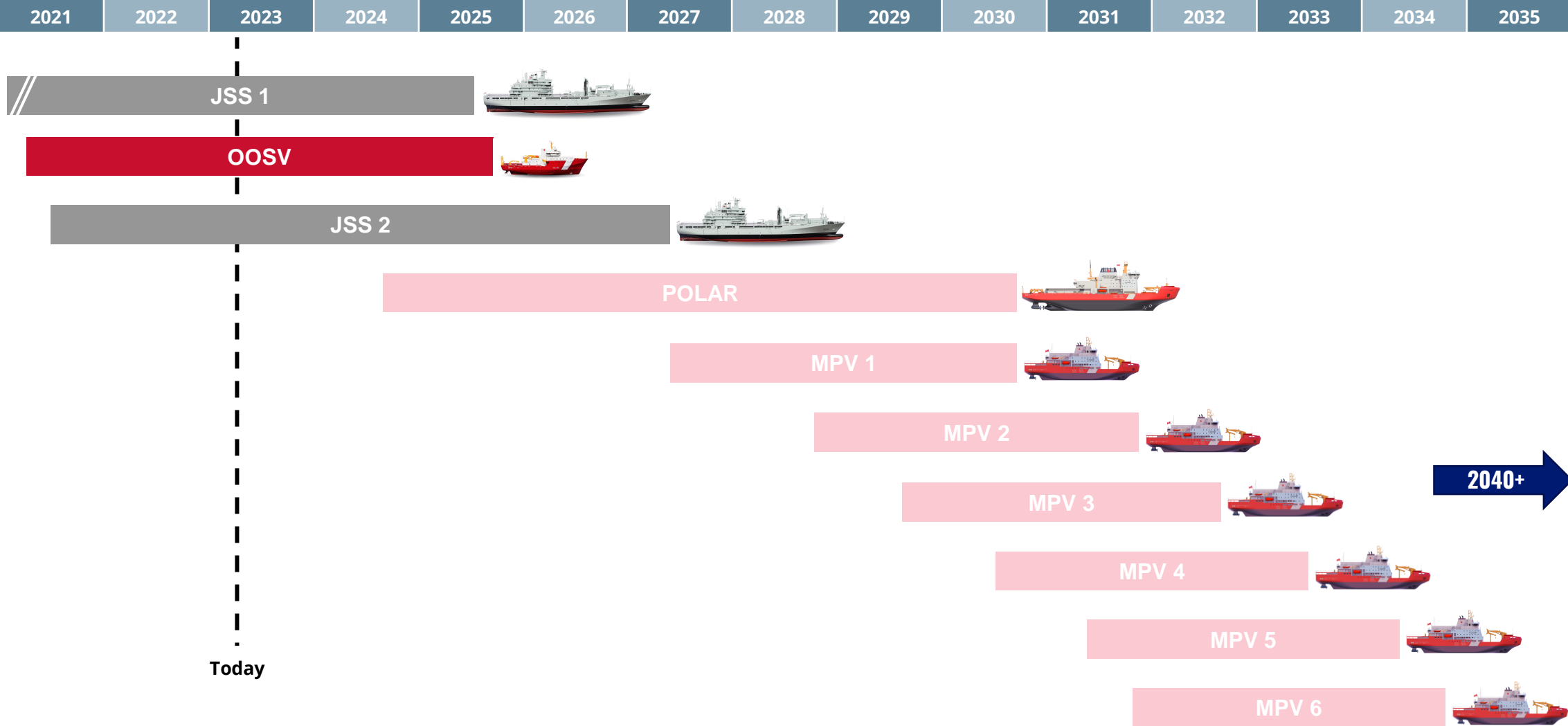
Largest ship and flagship of the Canadian Coast Guard icebreaking fleet, with a critical role in protecting Canada's Arctic sovereignty.



## 16 Multi-Purpose Vessels

A next-generation class of MPVs to support a variety of missions, including aids to navigation, icebreaking, and offshore search and rescue.

# Long-term Order Book of New Construction Programs



# Offshore Fisheries Science Vessels

*In-Service with the Canadian Coast Guard*

First Class of vessels designed and built in Canada under NSS

Vessels conducting fisheries protection and science missions

Recently won Engineering In-Service Support Contract





# Joint Support Ships

*Largest ships (by length) ever built in Canada*

JSS 1 achieved structural completion in Q1 2023

JSS 2 cut steel in May 2022 with keel laying ceremony planned for Q4 2023

Focus in 2023 ramp-up cable pull for Main Switchboard light off and set to work

Focus in 2023 incorporating lessons learned from ship 1 in baseline plans



# Offshore Oceanographic Science Vessel

*Canada's most Advanced Science Vessel*

Official Keel Laying Ceremony  
held in Q4 2022

Realizing the benefits of  
re-sequencing and  
optimization work  
= mature design

Focus in 2023 on structural  
consolidation, outfitting and  
commencing main cable pull



# Polar Icebreaker

*The flagship of the Canadian Coast Guard's icebreaking fleet*

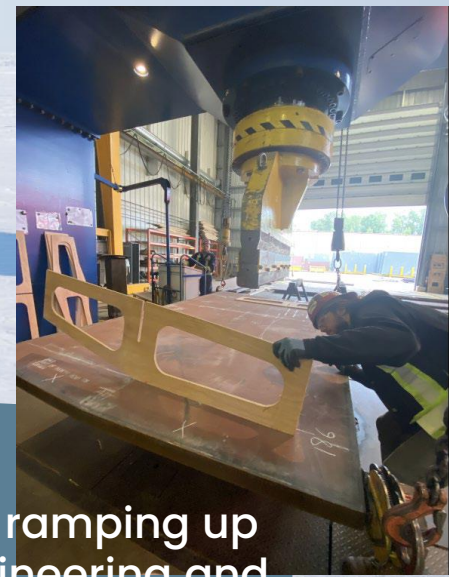


Length Overall	150.1 m
Breadth	28.0 m
Design Waterline	
Design Displacement	
Max Speed	18 knots
Range	
Complement	
Light Ship Weight	
Classification	Lloyd's Ice Class PC2

Partnership with industry-leading design agents, with deep expertise in heavy icebreaking vessels to transfer technology and knowledge to Canada

Design Optimization work completed including new propulsion configuration and other design changes to enhance efficiency in construction and through-life

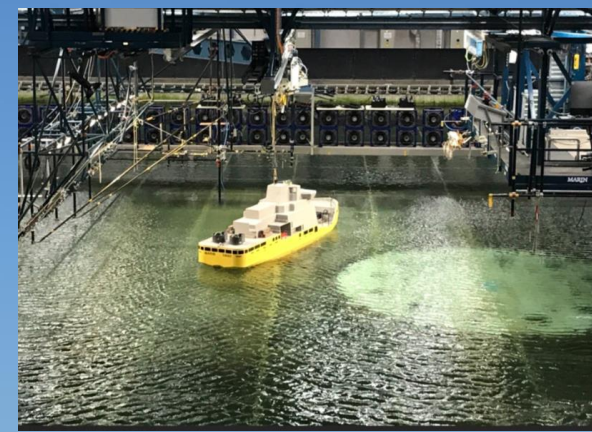
Focus in 2023 on ramping up Construction Engineering and acquisition of Long Lead Item materials, and construction of a structural prototype





# Multi Purpose Vessels

*The backbone of the Canadian Coast Guard's future maritime capability*



Length Overall	99.9 m
Breadth (Moulded)	20.3 m
Design Waterline	6.2 m
Design Displacement	8,518 t
Cruising Speed	10.5 knots
Top Speed	15 knots
Range	12,000 NM
Complement	50 Persons
Light Ship Weight (EOSL)	6,888 t
Classification	Lloyd's Register 100A1, Icebreaker(+), Ice Class PC4, *IWS, Winterisation D(-30) LMC, UMS, LFPP(GF,NG), DP (AM), NAV1, IBS, PSMR, CAC3

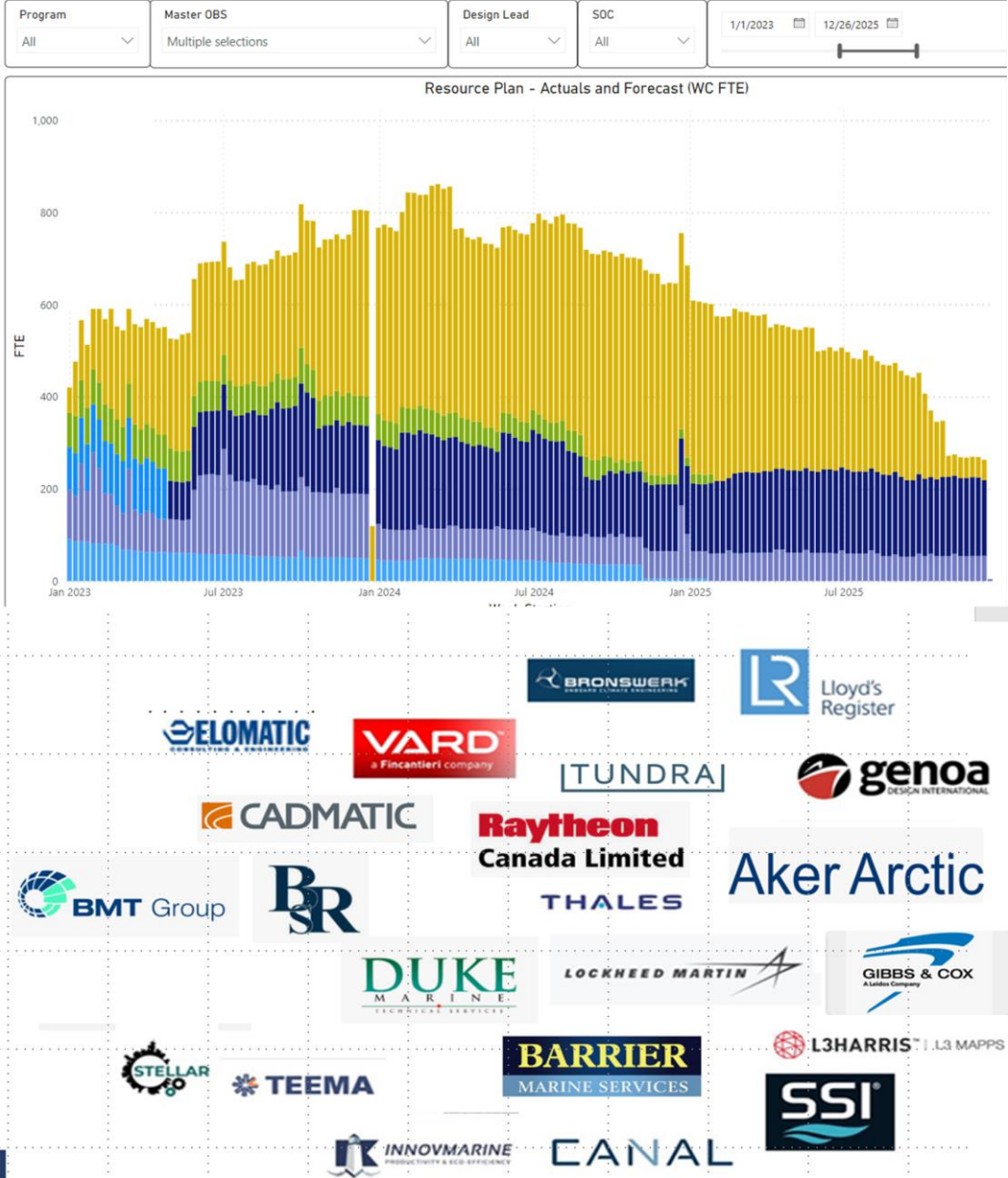
Basic Design work underway for initial flight of six (6) vessels

Strategy agreed to maximize commonality across CCG Fleet to standardize parts and reduce through-life costs

Focus in 2023 on completing Basic Design and commencing Construction Engineering

# The Design & Engineering Team

- More than 800 staff and technical network
- Team represented by 15 Engineering partners
- 350 core staff and embedded contractors
- ~50 additional British Columbia based team members
- ~200 broader Canada based
- 200 International based





# Seaspan Digital approach & Key Capabilities

## Engineering Data Challenges

- Diverse vessel design portfolio (Navy, Coastguard, Icebreaker)
- Rapidly growing shipyard with multiple clean-sheet designs executed in parallel
- Significant Engineering Change volumes early in design lifecycle for new designs
- Heavy reliance on manual data entry and transfer
- Future series production on **MPV** requiring drive towards data reusability

## Key digital Capabilities

Strategy is focused on pulling together all design information into a central managed location, with a standardized format and revision control

- Standardized Single Source within PLM for downstream processes & systems (“CAD Agnostic”)
- Integrations to move data (automated repeatable processes)
- Configuration Controlled dataset streamlining change implementation
- “Digital Thread” traceable & linked data structure & objects, enabling data re-packaging

SSI



3 - OFSV



1 - OOSV



2 - JSS



1 - POLAR

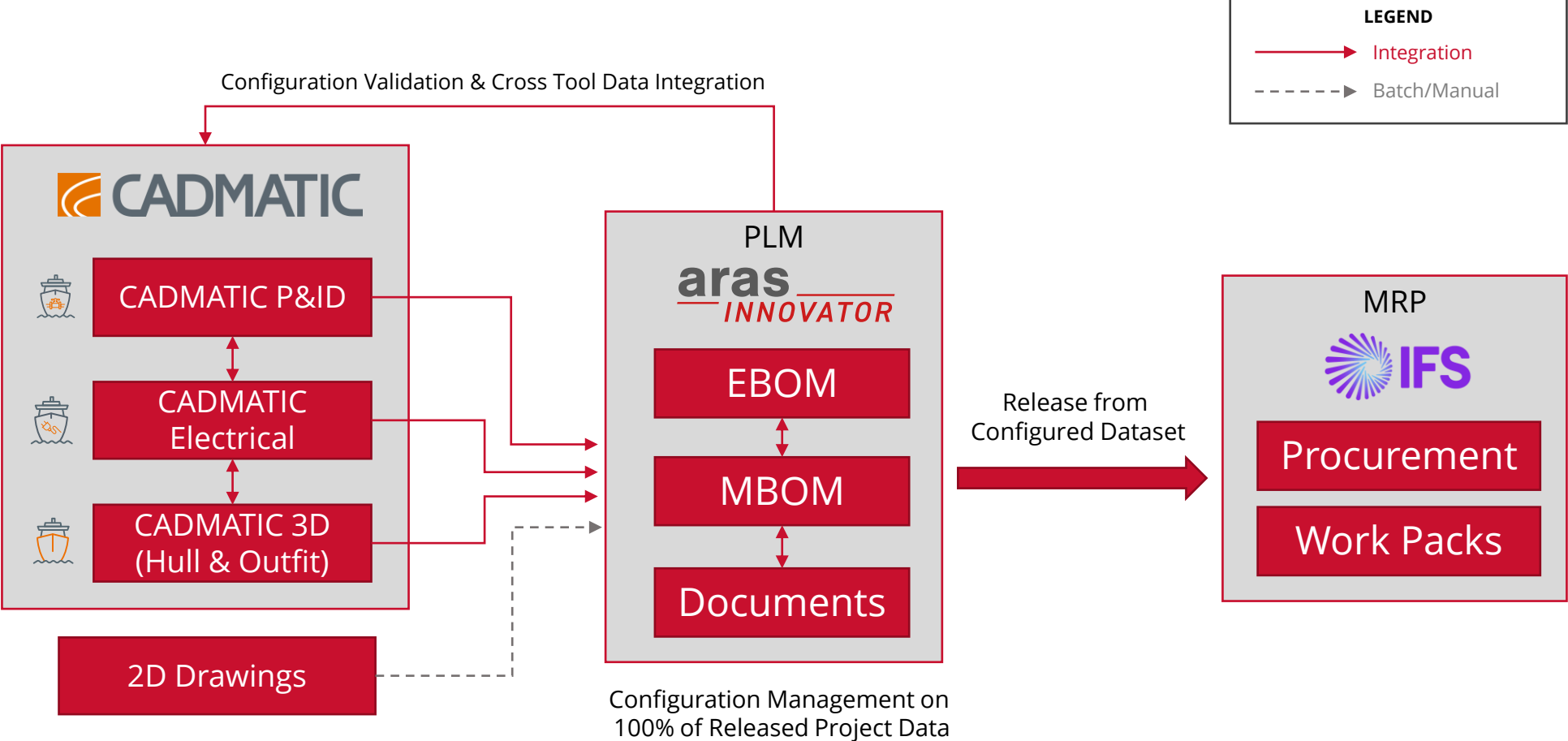


16 - MPV

CADMATIC

seaspan  
SHIPYARDS

# Simplified System Architecture (POLAR/MPV)





# Polar and MPV benefiting from Innovation and Transformation of Engineering & Design Processes or Tools integration

- Commonality of major systems and equipment across the Canadian Coast Guard fleet, reducing total cost of ownership
- Virtual and augmented reality to identify and resolve design issues early, and support production teams
- 3D design and planning to enable efficient shipbuilding
- Creation of a digital twin to transform in-service support
- Seaspan taking on role of Propulsion and Electronic Systems Integrator

