

Canadian Network  
Innovative Shipbuilding  
Marine Research and Training  
(CISMaRT)

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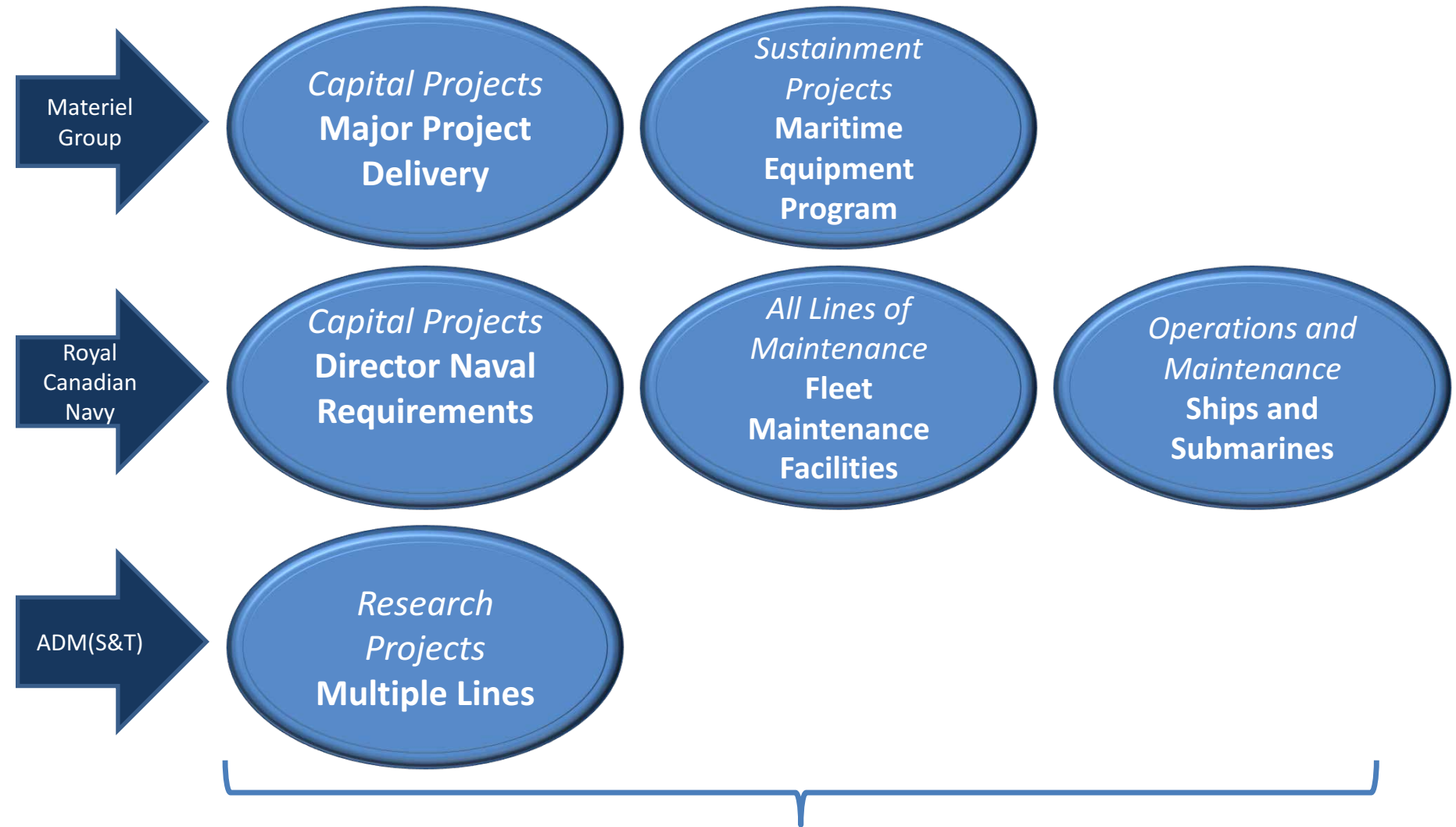
# Aim

- Present and Discuss the needs and challenges of Canada's marine education and training from the perspective of the Royal Canadian Navy and the Materiel Group.
- Specifics:
  - Current strengths and areas for improvement in marine education and training
  - What's needed now and in the future
  - Role of the RCN and Materiel Group (DND) in marine education and training

# Current Environment

- Multiple Capital Projects
  - Arctic and Offshore Patrol Ships
  - Canadian Surface Combatants
  - Joint Support Ships
  - Naval Large Tugs
  - Multi-Role Boats
- Large Sustainment Efforts
  - Halifax Class Modernization
  - Victoria Class Submarines
  - Kingston Class and Orca Class vessels
- Modernization Efforts
  - Victoria Class Submarines
  - Other Capital Projects (Underwater Systems, UAVs, ...)

# Training/Education: Organizations and Audience



- **Public Servants** (Engineers, Technologists, Naval Architects, Procurement Officers,...)
- **RCN Members** (Engineering Officers, Technicians, Naval Architects)

# Needs, Some Examples

Project/  
Program  
Management

Naval  
Architecture

Specifications  
Management

Requirements  
Management

Performance  
Management

Regulatory  
Leadership

Thru Life  
Costing

Material  
Management

Corrosion

Green  
Technologies

Automation  
and Control

Energy  
Efficiency

Equipment  
Health  
Monitoring

Integration  
and AI

Design Intent  
and Margins  
Management

Platform  
Survivability

**The Challenge:** Cover the entire spectrum of requirements across the large audience.

# Strengths and Areas for Improvement

- Strengths
  - Overall foundational education of all involved
  - Post-Graduate Programs
    - Naval Architecture
    - Engineering
    - Telfer Master of Business in Complex Project Leadership
    - Regulatory Leadership Program
  - Certificate Programs
    - Lloyd's Register Training
    - Telfer Certificate in Project Management
  - Project Management Competency Qualification (Materiel Group)
  - Posting cycles for military members
  - Executive Development Program for Public Servants
  - Access to specific areas of expertise (S&T, National Research Council, Naval Engineering Test Establishment)
  - Forums and Seminars Program

# Strengths and Areas for Improvement

- Areas for Improvement
  - Approach to Requirements vs Project vs Innovation vs Supportability
  - Relational Contracting
  - Regulatory Management (Role of Design Authority and Systems Authority)
    - Ship-level Life Cycle Materiel Management
    - Class Program Management
    - Standards Management
  - Design for Supportability
    - Maintainability (Maintenance/Trials Program Development)
    - Systems Engineering
  - Specific Engineering/Marine Areas
    - Corrosion
    - Shock Testing
    - Survivability
    - Green Technologies
    - Energy Efficiency

# What is Needed **Now** and in the Future

- Areas for Improvement

- Approach to Requirements vs Project vs Innovation vs Supportability

- Relational Contracting



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- Corrosion

- Shock Testing

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- Green Technologies

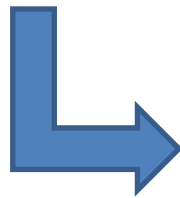


- Energy Efficiency



# What is Needed Now and in the Future

- Areas for Improvement
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- The challenge of the 30-40 year platform design
- Rate of technology improvement and insertion
- Automation and autonomous vehicles

# Discussion and Questions

