EU Maritime Research Strategy 2030

4th maritime research policy conference
28 June 2016
EU Maritime Research Strategy 2030

• MESA project objectives:

• To align EU maritime research with the best future strategic and commercial opportunities
• To identify the supporting innovation and technology
• To provide the best possible return on research investment in terms of jobs, wealth creation and regulatory compliance
• To support the creation of the World’s smartest, greenest and safest and most successful maritime industry
The process – spotting the opportunities

What are the global trends?

What opportunities do these create for the EU maritime industry?
The process – identifying the necessary research outcomes

What is the current state of the art?

What new technologies do we need to exploit the opportunities?
The process – detailing the pathways to innovation

Where are the gaps?

What is the research pathway to fill these gaps?
Global trends

DNV GL
Population Growth
Continued population growth and urbanization increases demand for focused waterborne services and upgrading of infrastructure

Food and water supply
Food and water supply demand will increase, as it is closely linked to population growth and economic development
Climate change, environmental damage
Climate change will lead to more flooding, droughts, extreme weather, polar ice melting.

Health, safety and security expectations
Rising expectations of adequate health, safety, security and awareness of industry’s impact on the environment.
Economic growth
Developing countries will significantly increase their share in global economic growth and their middle class will substantially increase.

Waterborne trade growth
Driven by economic growth of developing countries and global growth in demand for food, water and technological products.
Maritime and global trends and impacts

Energy demand and supply
Continuing increase of energy consumption and demand, due to global population growth and GDP growth

Energy consumption by shipping
• Pressure to reduce energy consumption of and emissions to air by ships
ICT developments

Fast development in information and communication technologies will increase digitalization in all waterborne sectors.
The best future EU maritime opportunities

- Smart vessels, smart fleets, smart support
- Automated and autonomous vessels
- Ultra low energy and emission vessels
- Flexible working craft in support of blue growth
- Safe and sophisticated passenger and leisure vessels
Waterborne Vision 2030
Delivering the Vision

• EU maritime research priorities

1. Energy efficiency
2. Safety and security
3. Production technologies
4. Digital maritime connectivity
5. *Green maritime
1. Energy Efficiency

- Resistance & Propulsion
- Engines & Emissions
- Energy Consumption
- Energy Management
- Ship Operations
## 1.1 Minimise resistance & optimise propulsion

<table>
<thead>
<tr>
<th>Key technology</th>
<th>State of the art</th>
<th>Short term</th>
<th>Medium term</th>
<th>Long term</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Friction reduction techniques (I)</strong></td>
<td>FR coatings,</td>
<td>Compliant coatings</td>
<td>Hydrophobic surfaces</td>
<td></td>
<td>Ships, resistance reduction</td>
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<td><strong>Friction reduction techniques (II)</strong></td>
<td>Air lubrication (cavity)</td>
<td>Air bubble techniques</td>
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<td>Ships, resistance reduction</td>
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<td>optimised</td>
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<tr>
<td><strong>Full scale validation of numerical techniques</strong></td>
<td>Limited number of useful (integral) full scale data sets</td>
<td>Definition of a reference case</td>
<td>Data sets for reference cases</td>
<td></td>
<td>Validation of numerical tools</td>
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<tr>
<td><strong>Delivered power in operational conditions</strong></td>
<td>Model tests, numerical simulations, limited range and quality</td>
<td>Advanced numerical methods</td>
<td>Optimisation for operational conditions (wind, waves, shallow or restricted water)</td>
<td>Ship operation</td>
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<tr>
<td><strong>Advanced propulsors</strong></td>
<td>Theoretical background elaborated</td>
<td>Design studies ready and (lab) validated</td>
<td>1st implementations and full scale tests</td>
<td>Ship propulsion</td>
<td></td>
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</tbody>
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2. Safety

- Accident prevention
- Automation
- Survivability
- Fire resistance
- Evacuation
- Working conditions
3. Production

- Design tools
- Preparation & Management
- Materials
- Assembly & Outfitting
- Repair & Retrofitting
4. Digital maritime connectivity

- Smart Ship
- Smart Ports
- European Digital Highway
- Hinterland Connectivity
5. *Green marine*

- Emissions to air
- Emissions to water
- Global impact
- Accidental pollution
Summary

• Aided by the MESA project, the EU Waterborne community has:

  • A clear vision

  • A clear understanding of the opportunities and challenges ahead

  • A clear path forward