

# **VESSELS for the FUTURE**

## **Sustainable Growth through Maritime Innovation**

A European Research Association  
and an initiative towards a private public partnership

*F&E Aktionstag, VSM, Hamburg, 2015-09-28*

Pierre C Sames, DNV GL

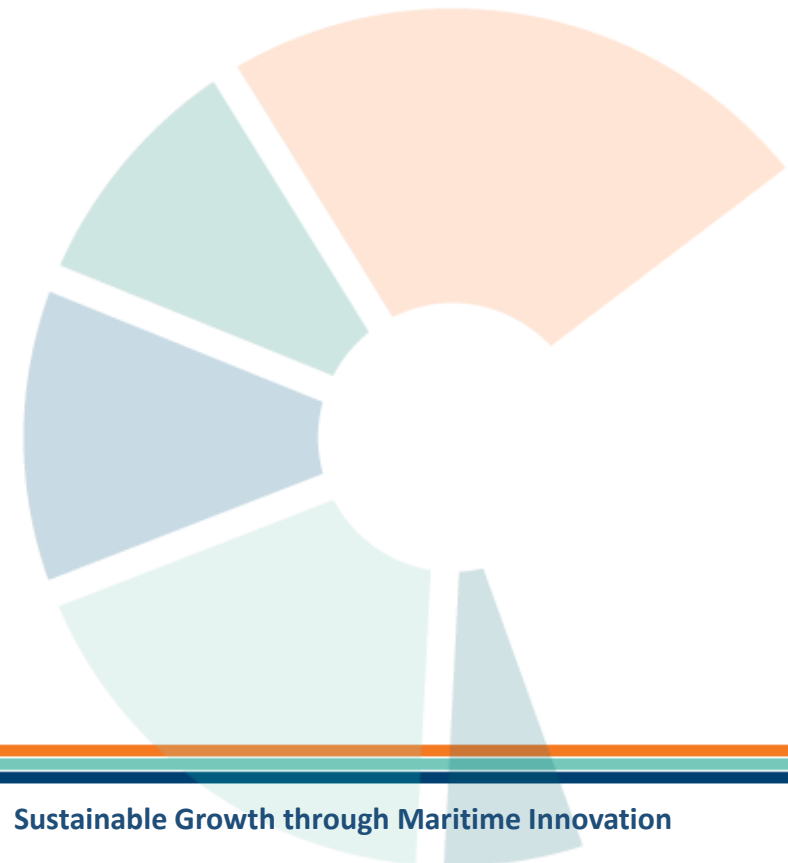
- **Context**
- **Our vision 2050**
- **Societal and industrial challenges**

Thomas Witolla, MEYER WERFT

- **Our key objectives**
- **Our planned technology developments**
- **Expected impacts**

Paul Greaves, Rolls Royce

- **A strong partnership**
- **The envisaged private public partnership**



**Sustainable Growth through Maritime Innovation**

The 'Vessels for the Future' Research Association has the objective to promote, coordinate and facilitate pre-competitive research, development and innovation of **waterborne technologies** within the European Research Area.

Objectives address the **societal challenges** for safer, cleaner and efficient transport and the **industrial challenge** to increase competitiveness.

Technical developments focus on **implementation** early in the next decade. Application areas are passenger **vessels**, cargo carrying ships and complex special vessels which in turn support growing the Blue Economy.

Vessels for the Future members are committed to sustainable **growth** and are convinced that with ambitious targets and public support maritime **innovation** can be successfully launched into the global market.

To reach the objective, the Association works towards the establishment of a **Public Private Partnership** with the EU.

## - our vision 2050

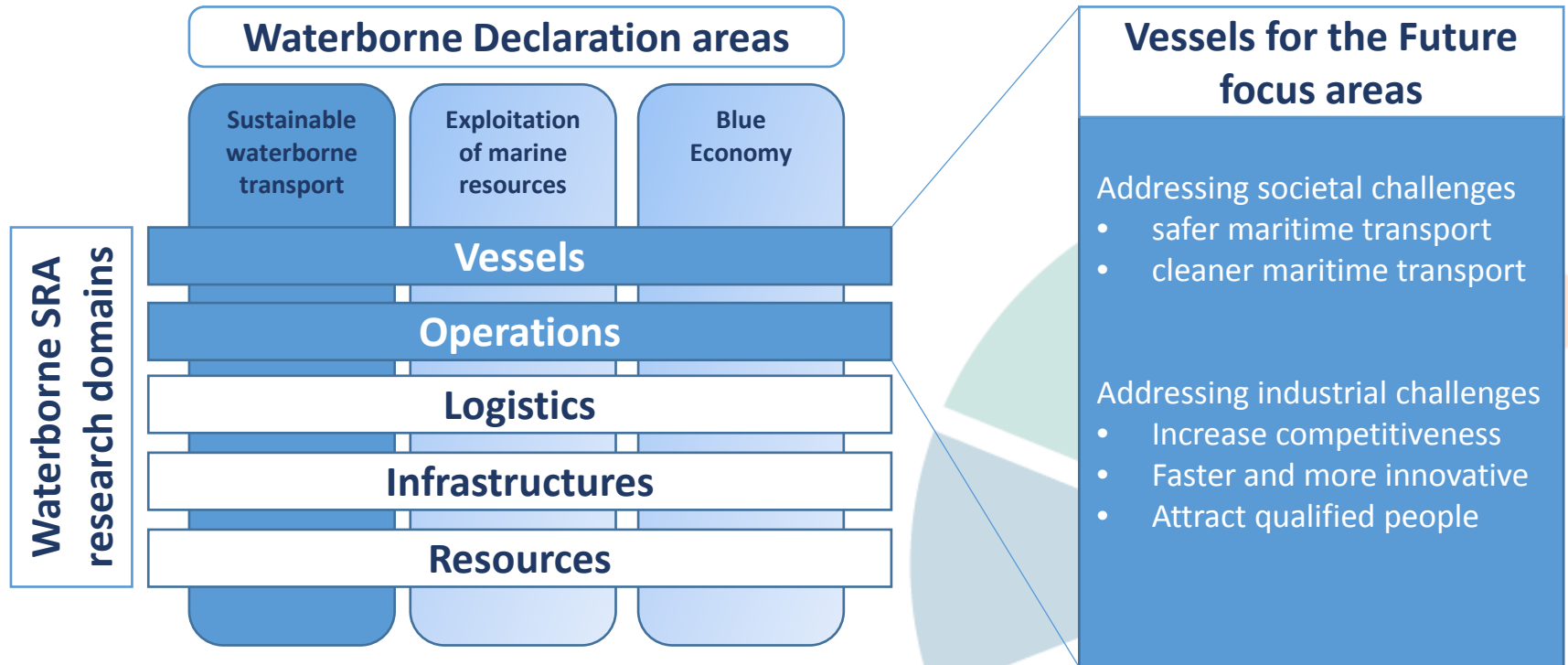
By 2050, Europeans will be using their **maritime and inland waterways** space for transport, offshore food production, energy generation and mineral exploitation, and as alternative to urban dwelling, leisure, tourism and manufacturing.

The expected increased use of this **ocean space** requires that it is well organized, secure and supported by **safe and clean vessels**. As a response, the maritime industry will need to **evolve and adapt** to the ever faster changing environment.

The challenges relate to

- Vessels able to operate with **drastically reduced emissions** and meeting strict **safety requirements**
- Industry able to **rapidly implement** new technologies, build advanced vessels and operate more complex vessels
- Industry able to **train highly specialized** manufacturing and operating personnel
- Industry able to provide **innovative and digital services** in a more competitive waterborne environment

## - Vessels for the Future as part of Waterborne



## - societal and industrial challenges

### **Safer maritime transport**

- EU built and EU operated ships becoming as safe as equivalent onshore operations

### **Cleaner and efficient maritime transport**

- Meeting required IMO and proposed EU emission reductions
- Supporting modal shift and blue growth
- Delivering more fuel-efficient vessels

### **A competitive industry to create new jobs**

- Sustaining leadership in ship and ship system development and production
- Using the innovation potential of SMEs
- Embracing digital business opportunities

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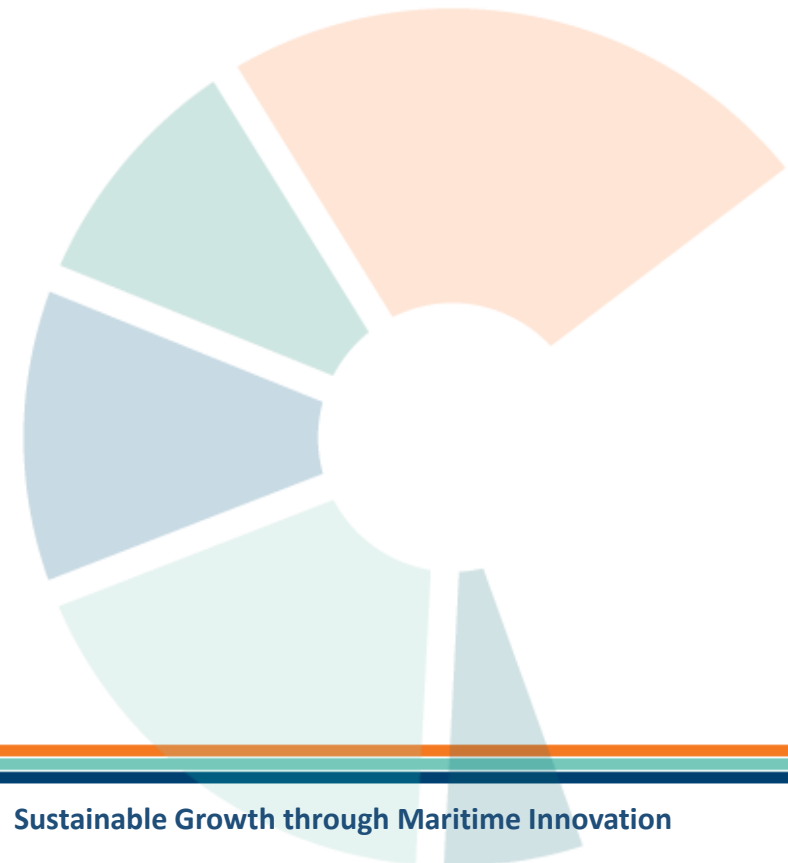
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## - key objectives towards 2050

### **Safer maritime transport**

- reduce potential loss of life for crew members on board new ships by up to 90%

### **Cleaner and efficient maritime transport**

- reduce ship CO<sub>2</sub> emissions by up to 80%
- reduce ship NO<sub>x</sub> and SO<sub>x</sub> emissions by 100%
- reduce underwater noise levels by 10 db

### **More competitive**

- reduce ship life-cycle cost by up to 80%
- sustain attracting qualified people

## - technology development targets

### Reduce risk

- reduce accident probability
- improve damage robustness of ships and systems
- improve success of life saving
- contribute to modernize the regulatory framework

### Reduce ship emissions

- improve energy storage, distribution on-board management
- reduce hull water resistance and ship motions
- improve propulsion systems and reduce underwater noise
- reduce emissions from traditional power generation
- improve flexibility of main engine plants

### Reduce ship life-cycle costs

- simulate and automate ship assembly and outfitting
- utilize novel materials
- utilize integrated tools for fast optimization of ship design concepts
- utilize virtual vessel demonstrator to test new systems at ship level
- embrace digitalization in ship production, operation and maintenance

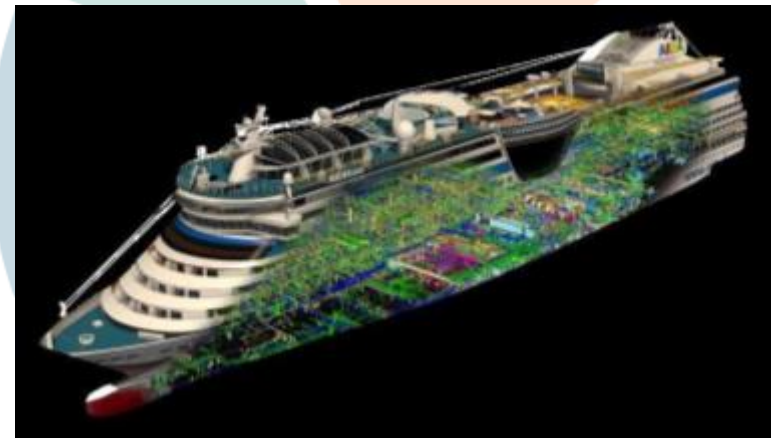
## - the virtual vessel demonstrator

Vessels of today are **high value** and **complex** products delivering specialized services, based on dedicated technologies on system level.

Vessels for the Future will develop and demonstrate a range of such **technologies** to advance towards the ambitious technical targets.

Only an approach on ship-level can assess the **performance** in terms of safety, environmental and economics of the ship and its systems over the life cycle of a vessel.

The **industry-wide demonstrator** will facilitate an effective integration of research results and demonstration of new technologies' benefits.



## - expected impacts

Technology development results and their contribution towards meeting the objectives will be presented using demonstrators.

| Demonstrator (selected)                   | Impact                            |
|-------------------------------------------|-----------------------------------|
| Model-based assessment of complex systems | Reduced accident probability      |
| Automation of safety critical operations  | Reduced potential loss of life    |
| New energy storage system                 | Reduced CO <sub>2</sub> emissions |
| Next generation SCR for big engines       | Reduced NOx emissions             |
| Simulation of automated assembly          | Reduced production costs          |
| Design concepts for advanced vessels      | Reduced ship life-cycle costs     |
| Connected ship – on-board data network    | Reduced fuel and operating costs  |

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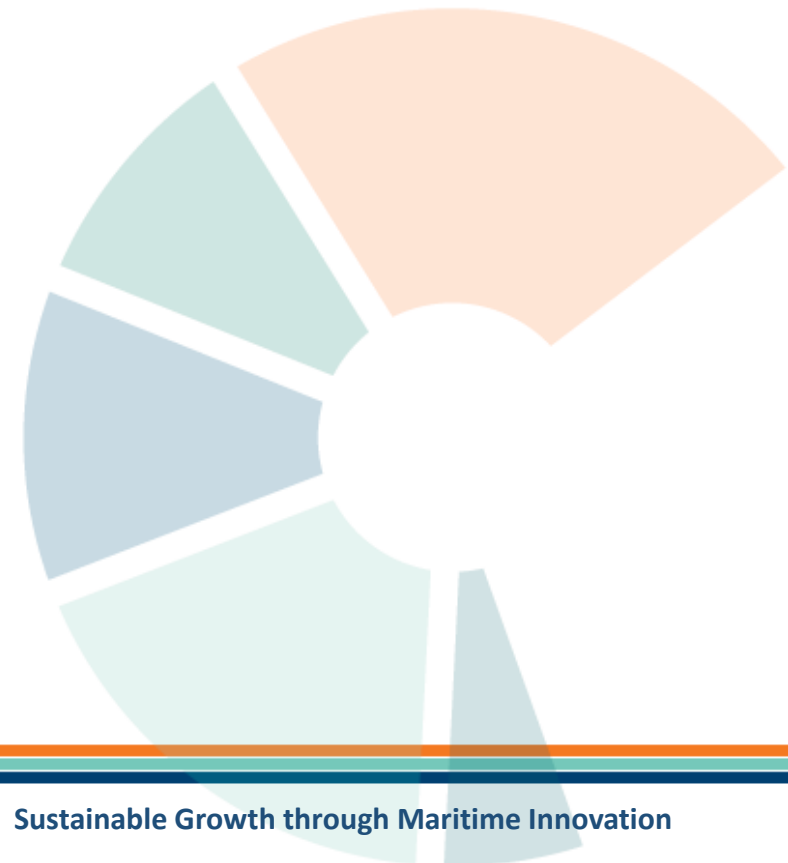
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Vessels for the Future represents **all stakeholders** of the maritime value chain: ship owners, ship yards, system suppliers, classification societies, research institutes and academia.

Today, **59 members from 14 EU Member States** have joined - Almost half of the members are representing industry.

The members, led by the larger companies, are willing to invest in organising the maritime sector for long-term **profitable growth** based on joint research and development.

The larger industry members have a track-record of involving **SMEs** in research, development, innovation and production.



WEGEMT

...and many others...

Sustainable Growth through Maritime Innovation

## - what is a cPPP

Horizon 2020 Regulation Article 19 - Public-Private Partnerships states:  
'Horizon 2020 may be implemented through public-private partnerships where **all** the partners concerned **commit** to support the development and implementation of research and innovation activities of **strategic importance** to the Union's **competitiveness** and industrial leadership or to address specific **societal challenges**'.

There are two types of PPP:

- '**contractual**' PPPs: annual ring-fenced budget for participation in normal calls, based on an industry developed Strategic Research Agenda eg. Factories of the Future & Green Vehicles
- **Joint Technology Initiatives**: like the 'contractual PPPs' but ring-fenced budget over 7 years and a strong commitment of industry inserted in legislation eg. Clean Sky

## - how will the Vessels for the Future cPPP work?

The VESSELS for the FUTURE Research Association aims to establish a cPPP with the European Union under Article 19

The following elements characterise the foreseen cPPP:

- the industry **proposes** a multi-annual RDI roadmap (the SRA) broken down to topics and **advises** the EU Commission on the future Horizon 2020 Work Programmes' contents
- the EU Commission **manages** the Horizon 2020 Work Programmes and **publishes** calls
- the **Horizon 2020 framework programme rules** for participation are applied
- an **indicative budget** is reserved for the implementation of the RDI roadmap
- the Industry commitment is secured through a Partnership Agreement

## - why do we need a cPPP?

Bringing together a **critical mass** of research resources and relevant actors to address the specific **societal challenges**

Building **long term commitment** from the maritime industry and EU to meet shared objectives and to deliver effectively the research results

**Involving** industrial, research and academic organisations, from the entire maritime value chain, in defining homogeneous R&D priorities in a widely heterogeneous industry sector

Stimulating **private investment** by focused use of public funds to strengthen the maritime industrial base

**Accelerating** the uptake of technologies towards solutions for the market

Supporting industrial **leadership** in the maritime sector to create new high-value jobs

## - why join Vessels for the Future?

The Association represents the **widest possible group** across the European Maritime Sector with members from shipbuilders, owners/operators, equipment manufacturers, class societies, research institutes, universities and maritime associations

It is working towards a **contractual** Public Private Partnership (cPPP) with the European Commission to implement its **ambitious** multi-annual RDI roadmap and by joining the Association, you will be **strengthening the case** for this initiative

Members enjoy the following principal benefits:

- **Influence** public R&D call contents
- **Exploit** knowledge on public R&D calls
- **Understand** maritime R&D priorities

**Thank you for your kind attention.**

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