

**SUSTAINABLE**

**GROWTH** THROUGH

**MARITIME INNOVATION**



Vessels  
for the  
**FUTURE**

## VESSELS FOR THE FUTURE

Vessels for the Future brings together a leading group of maritime stakeholders with a common interest to ensure that the maritime industry has a strong and vibrant future and remains competitive through maritime research. This will be achieved by reaching agreements on collaborative research and with the support of public and private financing.

### WHAT WILL THE FUTURE LOOK LIKE?

What vessels, equipment and systems will Europe need in the decades to come? Imagine automated ships arriving in our ports with zero emissions. Will ferries with diesel engines be a relic of our past? Can we rely on high-tech construction vessels to grow our blue economy while protecting our ocean?

This is the vision that the European Commission (EC) has for our future, but it is only achievable if our best engineers and researchers focus on the necessary maritime technologies. The approach to innovation that we choose today will shape our ocean space and business tomorrow.

The European research association Vessels for the Future will capitalize on the European strengths in research and development (R&D) and leading position in high value ship segments while also recognizing opportunities for growth through the deployment of new and developing technologies across the maritime sector.

### WHAT IS AT STAKE?

#### JOBS AND INNOVATION

The maritime technology sector is a strong strategic partner for the EC, solving societal challenges while growing the blue economy. Cutting-edge research directly benefits Europe's maritime industry cluster and supports essential trading arteries for the European Union (EU) while generating €270 billion per year and sustaining 1.5m jobs. Europe is the global leader in high added-value vessels, high-tech systems and specialist equipment. This sector in turn facilitates the EU's blue economy, which supports 5.4m European jobs and represents a gross added value of just under €500 billion per year covering a wide range of shipping operations, ports facilities, a host of coastal industries, off-shore operations, inland and seagoing passenger and cargo trades and European security.

However, the prevailing approach to private and public funding has created a fragmented maritime research, development and innovation (RDI) landscape across Member States. Without more collaborative research specifically aligned with EU priorities, we cannot improve the profitability of industrial innovation. Plus, the narrowing knowledge gap with other parts of the world sees research opportunities and investment shifting away from the EU. That is why we are committed to world class RDI in partnership with the EU. In Vessels for the Future, we believe we have the right combination of stakeholders - technology suppliers, engine manufacturers, shipyards, classification societies, research centres, universities, maritime industry associations and ship operators - to make a significant impact on the EU's policies for job creation, development of the digital market and energy union.

#### SAFE, EFFICIENT AND CLEAN TRANSPORT

We live in a fast-moving era when systems and services are changing at a rapid pace. Transport is no exception, and all modes of transport are under scrutiny to reduce loss of life, both directly by reducing accidents and indirectly through the effects that emissions have on our environment and consequently on human life.

Looking at a longer time frame, the volume of seaborne trade is expected to at least double by 2030 with a corresponding increase in the world shipping fleet. This will create an unprecedented demand for new technology to reduce overall emissions and increased levels of safety that will only be met through the increased collaboration and funding provided by the envisaged Vessels for the Future contractual public-private partnership (cPPP) with the EU. Thus, safer, more efficient, cleaner shipping brings a double benefit: It not only makes for a safer world, but it also produces economic benefits for business.

Like other industries, tapping into the digital economy will be crucial in the maritime industry's endeavour to improve safety, protect the environment and meet the expectations of the EU and society at large. We foresee smart ships of the future operating in our waters, delivering cargo without delay and at reduced cost to industry and society.

In addition to this, ships are major producers and consumers of energy. A major part of the work envisaged within the partnership will therefore target improving the use of energy. And when considering long-term horizons, managing the connections to the grid in port could provide benefits for both ship emission reduction or, in reverse, supplying emergency power to the grid in times of crisis.



## SOLUTIONS IN PARTNERSHIP

To maintain Europe's market leadership and deliver on Europe's flagship policies, the maritime community believes there is a strong case for the EC to establish a cPPP to promote, coordinate and facilitate pre-competitive RDI in waterborne technologies.

Through this partnership, the Vessels for the Future research association aims to facilitate joint industry projects. These projects bring together the multi-disciplinary consortia needed to develop key maritime technologies and to demonstrate the benefits to investors, speed up introduction to market and provide cross-sectoral solutions. The multi-annual RDI roadmap of Vessels for the Future also aligns with the strategic research agenda developed through the Waterborne Technology Platform.

### PRIORITIZE RDI

Through the partnership, the industry will have more influence on the RDI priorities being set and the EC can ensure that RDI topics are relevant for the industry, which in turn means faster technology uptake. With long-term commitment from the maritime industry and the EC, the envisaged partnership facilitates addressing larger societal and industrial challenges through assembling a critical mass of research resources.

### INNOVATE WITH TRANSPARENCY

The partnership will not only facilitate more cross-border collaboration, it will also provide transparency and promote wider consortia, with more participation from the long and articulated chain of maritime transport stakeholders, including larger representation of the sector's many small and medium-sized enterprises.

### LEVERAGE THE EFFECT OF PUBLIC AND INDUSTRY FUNDING

Particularly given the shortage of technical skills, it makes sense for the maritime community to pool together specific competences into consortia to research effective solutions, addressing business targets and fulfilling policy objectives as well as promoting lasting industrial cooperation.

### DEMONSTRATE INNOVATION TO INVESTORS

The partnership will deploy a large-scale industry-wide demonstrator to test and showcase new system technologies at ship level, applicable to a variety of seagoing ships and vessels for coastal trades as well as inland waterways. This will accelerate the market uptake of technologies of both breakthrough and incremental RDI.

## ECONOMIC IMPACT

Investment in R&D is essential for the long-term future of any area of business, especially in the maritime sector, where the challenges and competition are high. For Europe it is critical to protect and grow a thriving sector. Looking at the maritime market segmentation, Europe produces the highest value technology rich ships. These rely on a strong pipeline of technological ideas. Investing in front-end R&D has the potential to deliver significant impact when the output is translated downstream into new market-leading products. The impact in development of new equipment, ship types and sophisticated systems linked to the needs of the blue-growth economy could be several orders of magnitude higher than what could be achieved through direct investment in manufacturing. The European maritime industry cannot hope to stay competitive with other parts of the world if it fails to invest in future vessels and the infrastructure that supports trade. R&D investment provides strong leverage in protecting this industry. Even a 1% increase in R&D would create 50,000 new jobs in the maritime sector and protect a substantial European workforce.

## SOCIETAL AND INDUSTRIAL CHALLENGES AND TECHNOLOGY FOCUS AREAS

Planned development activities address the societal challenges of creating safer and more efficient maritime transport as well as sustaining a competitive industry able to create new high-tech jobs for Europe. The following target technology areas have been identified for the period between today and 2020:

- Safer maritime transport through better accident avoidance, more resilient ships and systems, and by improving lifesaving and rescue.
- More efficient and environmentally friendly maritime transport by reducing ship resistance, using cleaner fuels, energy storage and improved propulsion systems as well as advanced energy management to optimize the mix of available power sources and consumers.
- A more competitive industry through integration of advanced materials, automated production, novel vessel concepts addressing new transport and blue-growth-related services, a virtual vessel demonstrator and by embracing big data in the maritime industry.



## BUSINESS GROWTH OPPORTUNITIES AND CHALLENGES

### BLUE GROWTH

Europeans use their ocean space for more than transport. Further opportunities for blue growth exist in food and energy production, mineral exploitation, manufacturing, urban dwelling, leisure and tourism. The partnership focuses RDI on developing the technology to make Europe's blue-growth ambitions technically and economically viable by developing the required vessels.

### INCREASED GLOBAL COMPETITIVENESS

There is fierce competition in the shipbuilding sector from the Far East. However, it is important to recognize European strengths in some leading market segments. These include a global share of 90% in cruise shipbuilding, 80% in mega yachts, around 50% in the marine equipment and systems manufacturing sector, 35% in military construction, the whole business of inland waterways vessels and a wealth of expertise in the building and equipping of technology-rich specialist vessels.

None of this is possible without significant investment in RDI. In Europe this comes from a strong maritime heritage and investment in universities, world-renowned research establishments and leading maritime industries.

Increased investment in coordinated maritime R&D will not only create additional technology-based jobs, but will also encourage maritime stakeholders to pool their resources, creating a critical mass that will enable a more focused and coordinated approach to the use of EC funding. Having shared initiatives will enable the European maritime industry to present a strong, coherent front and enhance its competitive position on the world stage. With appropriate targeting of funds, the research will directly impact European shipbuilding and the marine supply chain's competitiveness and alignment with the European priorities. Without a coherent approach, there is a concrete risk that in such a fragmented sector, with restricted financing, stakeholders will pursue independent initiatives and miss the opportunity to grow the economy and jobs across the maritime sector.

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## PROPOSED STRUCTURE

The Vessels for the Future research association aims to establish a cPPP with the EU under Article 187. The following elements characterize the envisaged cPPP:

- The industry proposes a multi-annual RDI roadmap outlining research topics and consulting with the EC on the future Horizon 2020 work programme's contents, further supplementing the R&D initiatives included in the 2016-17 work programme of Horizon 2020 with new coherent ideas for the 2018-20 WP.
- The EC continues managing the Horizon 2020 work programmes and publishes calls.
- The Horizon 2020 framework programme rules for participation apply.
- An indicative budget is reserved for the implementation of the Vessels for the Future RDI roadmap.
- The industry commitment is secured through a partnership agreement.

## VESSEL FOR THE FUTURE MEMBERSHIP

The Vessels for the Future European research association was launched in November 2014 and has 59 members in 14 EU Member States (as of May 2015). It represents the interests of all stakeholders in the maritime cluster.

The work programme planned by the association is far-reaching and will be felt in all areas of the European maritime cluster, having an impact on shipbuilders, marine equipment manufacturers, classification societies, shipowners and operators, design and consultancy firms, technology companies, research institutes and university faculties.