

Better Ships, Blue Oceans!

MARIN's new Strategy and Technology Plan

The next few years are essential for the future of the maritime sector and MARIN. We are facing the challenge of clean (zero emission) transport over water. The drive for sustainable use of the seas as a source of energy, food and raw material requires maritime knowledge and innovation. Floating mega islands may provide solutions as sea levels rise and cities become overpopulated. Increased computer power and a large amount of operational data provide opportunities for simulation and digitalisation.

In many ways we see a transition. That is why MARIN worked on a new strategy with input from the maritime sector. In this Report we share our mission and vision with you: 'Better Ships, Blue Oceans!'

Blue growth One thing is certain: our future is at sea. With more than 70 percent of our Blue Planet covered with water and 90 percent of all transportation over the seas, there are enormous opportunities for us as a maritime sector. 'Blue growth' can become reality when we combine knowledge with innovation and economy with ecology. As a knowledge institute, we therefore see our mission as follows:

MARIN wants to make ships cleaner, smarter and safer and to contribute to a sustainable use of the seas. To make this concrete, we developed a 'vision', presenting a picture of the future sea as we see it. A sea with:

- zero-emission ships using natural propulsion/nature inspired solutions
- safer and autonomous shipping
- effective navy ships providing safety and security
- solutions for sustainable energy and food at sea
- floating cities and ports to provide working and living space.

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New markets Therefore we will also explore new markets. Besides our traditional fields (Transport & Shipping, Passengers & Yachting, Defence, Marine Systems, Oil & Gas, Authorities & Regulators) MARIN will also be active in new developing fields, such as Renewables, Life at Sea and innovative Infrastructure.

And how do we get there? With a strengthened knowledge base, reliable tools and modern facilities. With these tools, we will optimise the complete maritime operation, the ship as a system and the human element herein. We will assist the maritime sector from concept to operation with all our tools: CFD / simulations, model testing, simulators and monitoring on board.

With our knowledge and ideas we want to stimulate open innovation for sustainable solutions, by coming with innovative ideas based on our knowledge, which is sometimes 'inspired by nature'.

Advanced numerical tools & measurement equipment We want to make a successful transition to less - but more complex - model tests and a growth in simulations and digitisation. Now that computational techniques are becoming more mature, and results are becoming more accurate, some of the traditional model testing will be replaced by desk studies. This implies that we will perform more desk studies using advanced numerical tools, and that our model

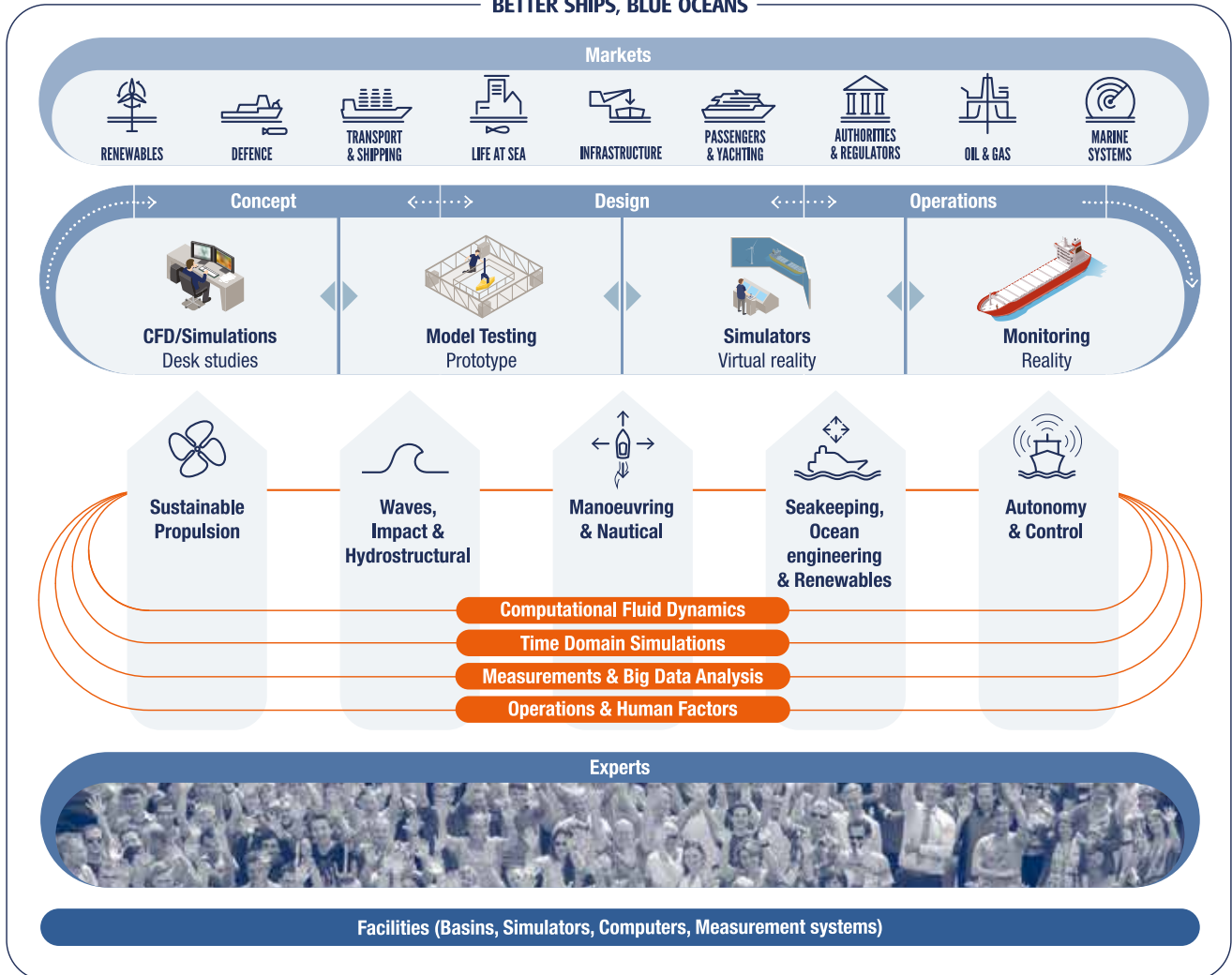
tests will shift towards more complex experiments. Apart from the strong investment in numerical tools, MARIN will therefore also invest in the development of its advanced measurement equipment.

As said, the basis for all this is our knowledge. That is why we also updated our Technology Plan based on the objectives of our new Strategy. We identified four generic 'enabling' research fields that are vital for MARIN's future:

- Computational Fluid Dynamics
- Time Domain Simulations
- Measurements & Big Data Analysis
- Operations & Human Factors

MARIN

BETTER SHIPS, BLUE OCEANS



They support our specific maritime research themes:

- Sustainable Propulsion
- Waves, Impact & Hydrostructural
- Manoeuvring & Nautical
- Seakeeping, Ocean engineering & Renewables
- Autonomy & Control

But we do not develop knowledge just to become more knowledgeable. No, knowledge should focus on our final goal: making ships cleaner, smarter and safer and contributing to a sustainable use of the seas.

In summary, MARIN wants to be an organisation:

- With a clear goal that connects societal and economical challenges
- That is involved from concept to operation through effective use of all its activities
- That is aimed at innovation for the future of the maritime industry
- That is a knowledge partner for its clients in industry and government
- With a strengthened knowledge base that is essential for its future
- With modern facilities and a new Seven Oceans Simulator Centre
- That successfully performs the transition to less but more complex model tests and a growth in simulations and digitisation
- With a motivated and well trained staff, that work in close cooperation with our clients.

Better Ships and Blue Oceans start 51° 58' 16.1" N and 5° 39' 16.7" E!