



Foreword

This voyage started during the coronavirus pandemic. Sailing through the mist, with stationary ships dotting the horizon and our view limited to a flat screen. The fact that we've succeeded in setting out a strategy for the future says a great deal about the resilience of those who work at MARIN and our strong connection to the maritime sector. Our work continued even as the coronavirus crisis raged. We carried on providing assistance to our clients and came up with new ideas. We created models and conducted tests. We sought out new digital means of staying in touch with each other and with the maritime industry. We initiated ground-breaking JIPs and developed a new simulator centre.

The maritime sector also refused to be thrown off course. Within Maritime by Holland (NML) we developed the Maritime Masterplan for achieving a zero-emission maritime sector. The aim is to innovate our way out of the crisis together and make a difference in terms of sustainability, with the goal of achieving 30 zero-emission and digital ships in 2030. The development of offshore sustainable energy solutions continued unabated as well, with new concepts for the installation of even larger wind turbines, floating wind turbines and floating solar panels.

This resilience and connection with an innovative maritime sector form the basis for our new strategy: 'Beyond the horizon'. That's where new perspectives and oceans of opportunities for 'Better Ships' and 'Blue Oceans' are to be found. The exceptional thing about perspectives beyond the horizon is that they only become reality as you sail towards them. That's why this strategy is a voyage of discovery. It takes daring because we don't know exactly what we'll encounter along the way. It demands cooperation, both internally and with the maritime sector.

This strategy is therefore an invitation to come aboard.
And cast off!

Bas Buchner, president





1. Advancing further on the same course

'Better Ships, Blue Oceans'

Under this motto, at MARIN we selected a new course with a more clearly delineated mission for our 2018-2021 strategy: to make ships cleaner, smarter and safer and to contribute to sustainable use of the seas.

More than 70 percent of the surface of our blue planet is covered with water. The Netherlands lies on a river delta and is inextricably linked to the sea. The Dutch discovered the world by voyaging across the oceans and Rotterdam continues to be the largest port in Europe. Ninety percent of all goods are transported by sea. Dutch innovations sail and operate on and in the world's oceans. Water also provides new sources of energy, raw materials and food. Floating solutions offer space at a time of rising sea levels and overpopulated cities. To achieve all this we need to understand, use and protect the seas better and combine economics with ecology.

That is why our motto is 'Better Ships, Blue Oceans'.

'Better Ships': our expertise is only really relevant if it results in improved ships that are cleaner, smarter and safer. Our predictions don't need to be precise so much as accurate. Targeted. A solution to the problem.

'Blue Oceans': we want to contribute to sustainability, to the future of our blue planet. We want to combine social and economic challenges and be relevant to the maritime sector, government and society. We are focusing on new sustainable developments, such as 'Renewables' and 'Life at Sea'. Social challenges and economic opportunities intersect here and generate 'Blue Growth'.

To this end, risk-bearing research (RVO) is needed at low Technology Readiness Level (TRL). We will also continue to offer free test periods to innovative small and medium-sized businesses and start-ups, so that they can take their innovations a step further.

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A refined mission

We have refined our mission, shortened it, prioritised maritime operations and stressed the essential role played by our colleagues:

MARIN stands for clean, smart and safe shipping and sustainable use of the seas.

We do this in our capacity as an independent knowledge partner for the maritime sector, government and society. We offer integral solutions, from concept development and design to operation. In developing, applying and sharing our expertise we stimulate innovation and global cooperation. Our strength lies in the expertise and dedication of our employees.

A vision of the future: free, safe and clean seas

Our vision of the future therefore continues to be free, safe and clean seas. With zero-emission ships, solutions for sustainable energy and food at sea, safe ships for the crew, cargo and environment, smart digital ships and an innovative infrastructure.



Reliable services for our markets, from concept to operation

Through this mission and vision, we will set to work in our nine markets:



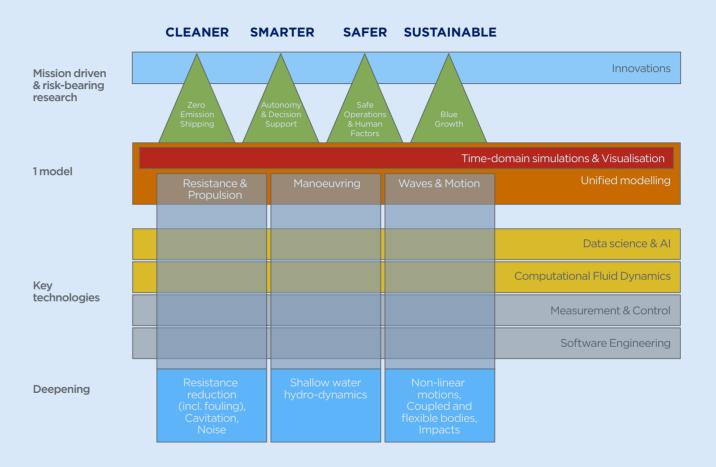
In doing so, we will offer reliable results and advice for our clients, based on our four distinguishing methods:

- Calculations in the form of Computational Fluid Dynamics (CFD) and time-domain simulations, often on our large compute-cluster (MarClus5);
- Experiments in our six unique test facilities and new Zero Emission Lab (ZEL), as an upgrade of the cavitation tunnel:
- Simulator use for studying and training of complex nautical and offshore operations; we are building the Seven Oceans Simulator centre (SOSc) to this end:
- Monitoring of actual offshore operations and data science in order to analyse these properly.

We continue to do this from concept development to operation, through the combined use of all these methods. Our methods can be deployed at any stage:

	CONCEPT	DESIGN	OPERATION
CALCULATIONS (Simulations / CFD)	\leftarrow		\rightarrow
EXPERIMENTS (Model tests)	\leftarrow		\rightarrow
SIMULATORS (Virtual Reality)	\leftarrow		\rightarrow
MONITORING (Data science)	\leftarrow		\rightarrow

MARIN's knowledge base development is essential to achieve our goal for government, society and the maritime sector:



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2. Nine perspectives beyond the horizon

We want to advance even further along this course. Offer new perspectives, broaden our horizons. Really set to work using data. Examine everything from an operational perspective. Place people at the heart of scenarios involving smart ships. This is why in this strategy we have adopted nine challenging perspectives for the future of the maritime sector and of MARIN:

In 2025 ...



We offer solutions, together with the sector, for zero-emission ships and operations.



2. We aim to achieve zero maritime accidents internationally.



3. We accelerate sustainability and climate adaptation at sea.



4. We focus our integral solutions on operations.



5. We are global leader in maritime Al, with the sea as a digital lab.



6. We simulate maritime operations within MARIN on a single, integral digital platform.



7. We accelerate client innovations using our facilities as innovation labs



8. We actively share our knowledge and expertise.



9. We will work sustainably, flexibly, safely and above all, together.



Together with the maritime sector, in 2025 we will have solutions for zero-emission ships and operations. As an independent party we will conduct research for this, link our in-house expertise to the expertise of partners and initiate cooperation within the sector. This will enable us to explore all possible solutions together, with something is only being considered a solution if it offers optimum performance under operational conditions. In doing so, all those involved will be given reliable insight into the options for zero-emission transport. As an independent advisor we will help the manufacturing industry to develop integral zero-emission solutions and ensure that they can validate these under realistic conditions. Together with ship owners we will create a clear overview of their operational energy and emissions performance, from individual ships to the entire fleet. We will subsequently use this data as a benchmark for their new ships or modified operations. We will develop models of their ships of the future and be able to monitor these throughout their life cycle. These models can then be used to train crews in new technology and provide support on board ship.



MARIN will work to achieve zero accidents at sea, in ports and on rivers and to be a world leader in this. This is ambitious but necessary, as every incident or accident is one too many. Moreover, the damage can be enormous, not just in material terms but also for people, the environment and economy. We see safety as a team issue, whether on board or on shore. That is why we place people at the heart of our goal to achieve safe operations and focus on preventing accidents from an integral safety perspective. As an independent advisor we will actively brainstorm - before and after - and offer sound tools and facilities for analysing, designing, simulating, testing, enhancing and acquiring all aspects of safety. The new Seven Oceans Simulator centre (SOSc) will play a key role here. Based on our research, we will also put forward proposals for improvements, both with respect to ships and installations and to spatial planning, operations, traffic flows and autonomy.



Land-based solutions for future energy and food needs are finite. The seas offer space and we want to make use of this in a responsible manner. This is why in 2025 we will accelerate sustainability and climate adaptation at sea. In doing so, we aim to generate energy and food from the oceans with minimal impact on ecology and the climate. Our tools and services have kept pace with and expanded to accommodate these modern transition challenges. We will broaden our expertise and external networks and explore new concepts and systems that can accelerate or upscale these transitions. And we will examine how we can apply climate-adaptive offshore construction for cities, ports, energy islands and floating eco-reefs.



In everything we do, we will focus on the end operation. Our goal is not a theoretical design condition but actual clean, smart and safe use at sea, in ports and on waterways, under realistic operational conditions. The key here is always the mission of the ship (or construction): what do you want to achieve with it? For this reason, in 2025 MARIN will be the knowledge network that provides the maritime sector with integral solutions that work in practice. We will deploy all our expertise and methods here, from concept to operation, while always taking the operational context into account. Clients will consequently involve us in their projects at an increasingly early stage, as they also know that 80% of life cycle costs are determined in the concept phase. Yet we also come aboard. Sometimes literally, but also often figuratively with our decision-support solutions. This is because support and autonomous systems will play an increasingly prominent role on board in the future. MARIN will incorporate this interaction between technology, people and surroundings into its advice. At our unique Seven Oceans Simulator centre (SOSc), our clients will be offered a preview of how new ships, solutions and operations perform in practice.



In 2025, MARIN will be a world leader when it comes to maritime artificial intelligence (AI). Not because we intend to create a maritime future full of emotionless robots but because we recognise how powerfully AI can support human decisions, from design to operations. Our position in this is unique. We possess crucial domain expertise and powerful environments for developing AI: our simulation and test environments, as well as the sea as a digital development and test lab. As a result, our AI algorithms can combine simulation, test and operational data into predictive models. Together with the maritime sector we will be a leader in formulating standards for analysing the safety and reliability of AI algorithms. We will coach the sector's players to share operational data on their ships and constructions with each other in a responsible manner for developing and testing AI. We also pledge to rapidly share our expertise on AI with the sector.



Complex challenges, such as safe operations in storms at sea or actual zero-emission propulsion under operational conditions, require integrated answers. For this reason, in 2025 MARIN will be able to simulate and visualise complete maritime operations on a single integral digital platform in the concept, design and operational phases. This will, for instance, enable clients to experience how their ships respond under real conditions as early as in the concept phase. To make this possible, our data, measurement technologies, systems and models will 'communicate' with each other, and with those of our knowledge partners and clients, via a single integral digital platform containing our standardised frameworks. We will be able to switch smoothly between time scales and our simulations will be valid in every resolution. Only then can we realistically focus on our clients' actual operations and enable them to quickly reap the rewards of our combined expertise.



In 2025, MARIN will form an indispensable link in the innovation trajectory of our clients. Thanks to our professional approach to innovation, in which we use our facilities as innovation labs, we will help our clients by means of early demonstrators. These innovative workshops will enable us to map out technical pitfalls and opportunities much faster. As a result, we will immediately be able to convince innovators, small and medium-sized businesses and start-ups, as well as existing clients, of the feasibility of their new concepts in sustainable transitions. This matches up seamlessly with our mission, in which we aim to contribute to making the seas more sustainable for the market and society. Moreover, this will bring us in contact with new target groups and keep us relevant to those clients we support in their transition.



In 2025, MARIN will be a valued and inspiring knowledge partner for the maritime sector, business, knowledge institutions, government and society based on its relevant, reliable and innovative expertise. We will actively seek out cooperation under the motto 'sharing is the new replicating'. We will share our insights, data and software wherever possible, disseminate knowledge via online and offline training courses and enrich societal debate with results and explanations of our research. Not only because this is our mission but also because it connects us to our clients and knowledge partners and accelerates our own innovative power. Furthermore, it will create broader support among politicians and society and make us more attractive on the job market.



In order to stay relevant to the maritime sector and remain vital ourselves at this time of transition, MARIN will evolve as an organisation. We will operate on a climate-neutral and circular basis and will achieve zero emissions ourselves in 2030. We will connect different people, knowledge domains and perspectives for surprising insights and targeted solutions. We will do this with each other, whether we are at home or at MARIN. This can be achieved by digitisation, and it works because our meetings with each other are meaningful. We have learned to be agile both as an organisation and as colleagues. We work efficiently by being just as targeted in our processes as in our projects. Our goal is to achieve zero accidents and a score of 8 in the Employee Satisfaction Survey. Above all, we will achieve all of these things by working together in a safe, healthy and enjoyable manner, with respect for one another.



Beyond the horizon

SUMMARY MARIN STRATEGY PLAN 2022-2025



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