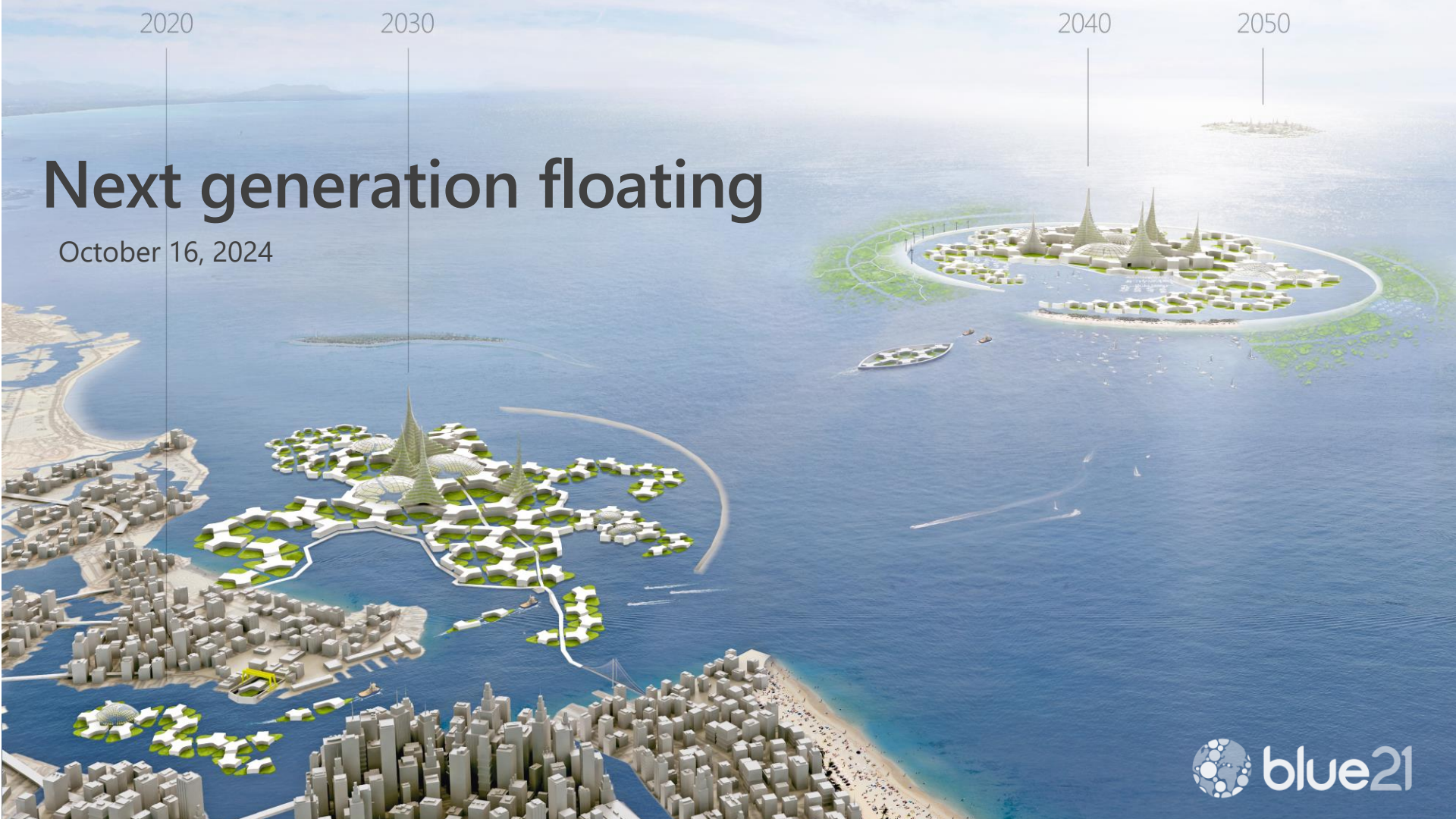

Next generation floating

October 16, 2024

blue21

The team

Board

Rutger de Graaf
Vision & External

Bart Roeffen,
Technology &
Innovation

Karina Czapiewska
Strategy & Team

Non-executive board

Ellen Lastdrager
Legal,
investments

Peter Ros
Finance

Staff

Barbara Dal Bo
Zanon Architect
& PHD candidate

Rui Gomes Senior
Maritime engineer
(PhD)

Fen-Yu (Vicky) Lin
Business
Development &
internal affairs

Lindert van Tongeren
Martime engineer &
product development

Anna Louka
Hydraulic engineer
& communications

Roeland de Bruijn
Sales & marketing

Ivan van der Veld
mechanical
engineer &
product
development

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Blue21: global frontrunner in floating solutions

Largest open-access knowledge base on floating solutions in the world

Expertise requested all over the world: Japan, South Korea, Singapore, China, USA, French Polynesia and Europe

Floating Pavilion Rotterdam mentioned climate adaptation example project by IPCC (2022)


2010


2013


2016

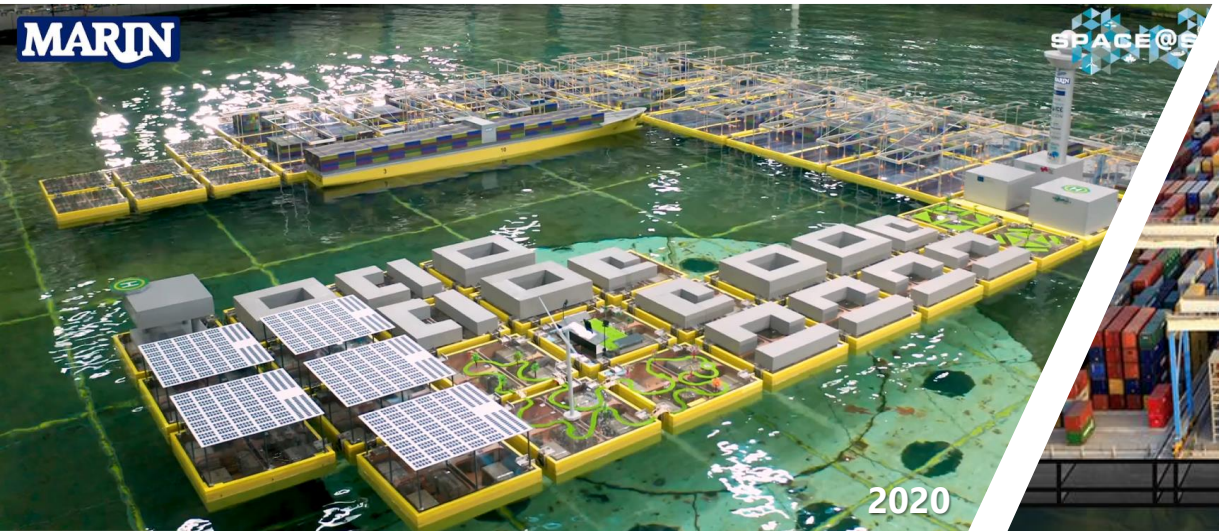

2020

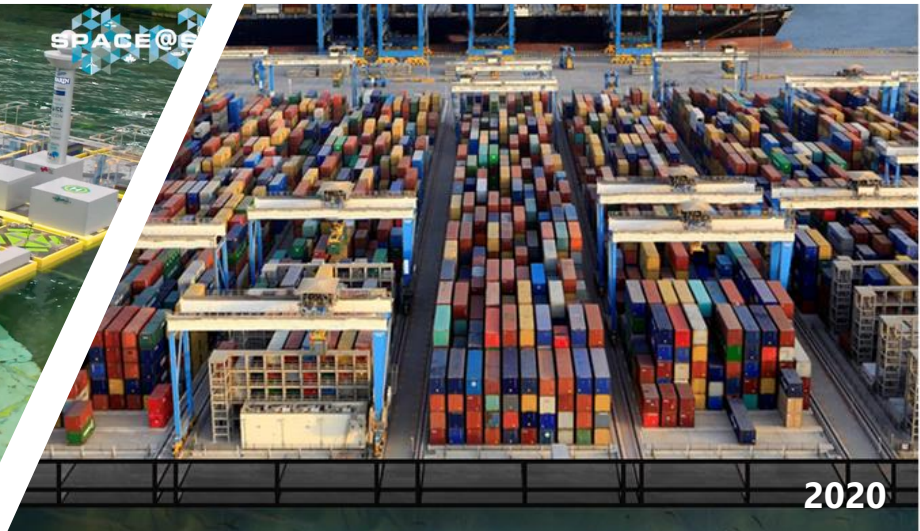

2022


2024


Zeesluis IJmuiden
Floating 'SMART' City
Artificial Reefs
Floating Airport
Energy Island
Wind op Zee + Aquatic Biomass
Wave Energy
Healthy Eco Living!
2018

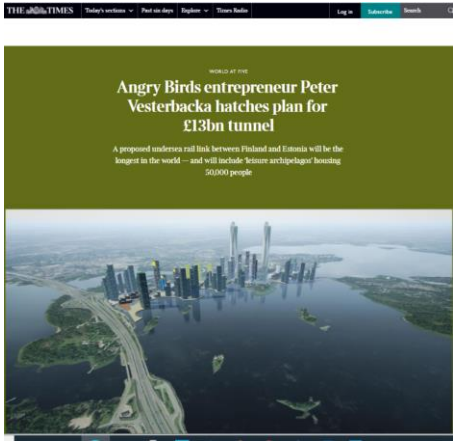

2019

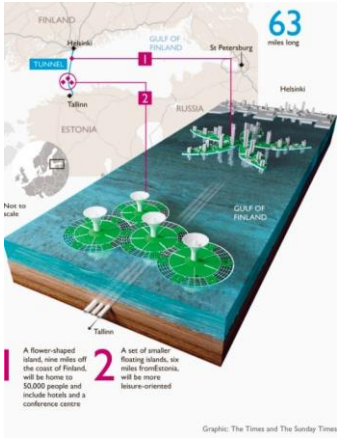

MARIN
2020


2020

Current initiatives and opportunities


Floating Apartment Complex



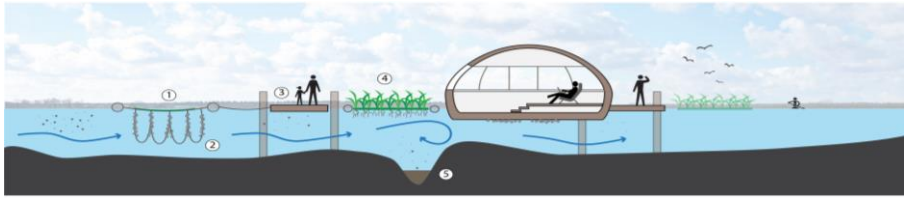



Floating Houses and Commercial Buildings


Floating Area Development

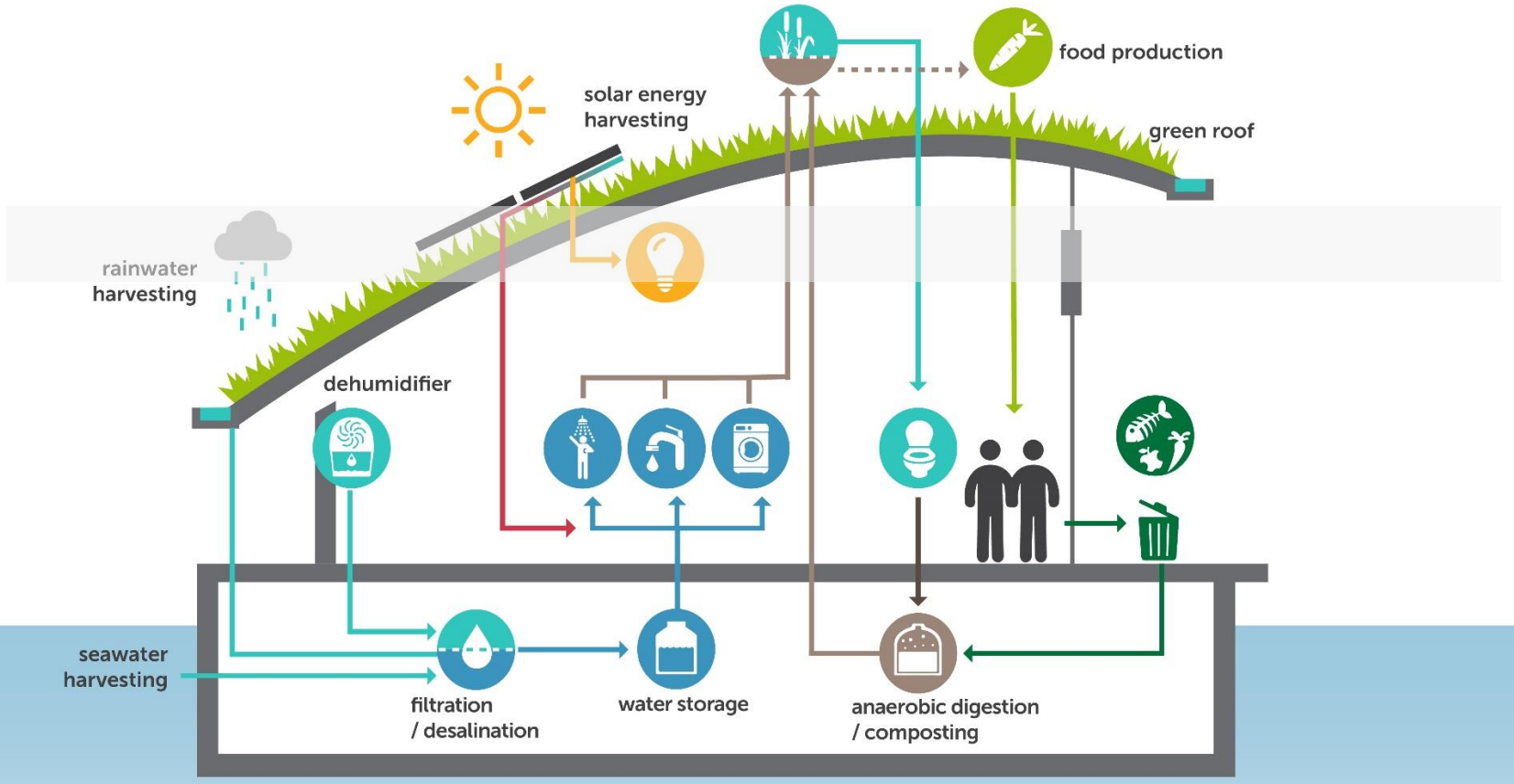
How to do it right way?
From sustainability to regeneration

- Floating projects that improve the water quality and provide habitat
- Environmental services rather than land ownership or rent
- Permanent building permits → Conditional permits based on environmental impacts
- Continuously monitoring impacts with dynamic monitoring equipment



blue21

Floating Island in French Polynesia: circular systems



Floating solutions, why the time is now

URBAN: Required urban space needs to almost double in 2010-2050

CLIMATE: Coastal flooding, extreme weather and sealevel rise accelerating

LAND RECLAMATION: Traditional method is reaching its limits

Scaling up for housing, logistics and energy

Engineering| Wave basin tests

Blue21| Our unique technical innovations

HYDROMEC+

Unique and highly efficient 3D simulation and engineering software for floating structures

BLUELANDS

Patented floating platform technology making floating construction easy anywhere in the world

FCB

Our global solution for highly automated coastal city expansion, building a district of 1 km2 for 30,000 people in less than 6 years

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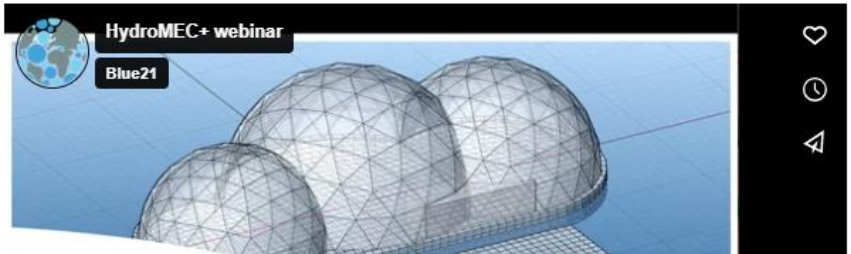
BOOK A CALL

HydroMec+ makes your floating project financially and technically feasible

Your top choice to engineer stable, safe and cost-competitive floating structures

✓ Save Time on Engineering ✓ Create the best Floating Foundation ✓ Optimize your Floating Designs

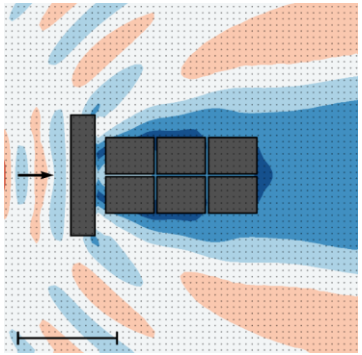


HydroMEC+

Welcome to Blue21, where we proudly present HydroMEC+, the world's first comprehensive toolkit for maritime engineering and 3D simulation designed specifically for floating

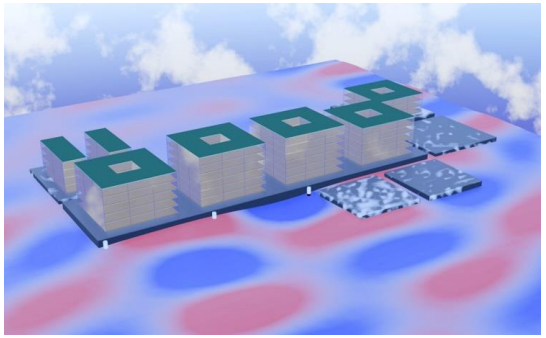
Who can benefit?

Architects, developers, engineers and urban planners: to test if their design will perform well in the water (right buoyancy, no tilt, limited movements in different sea conditions



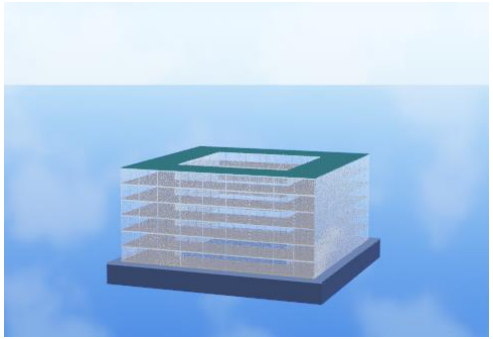
Design

- Platform/buildings
- Floating breakwaters
- Mooring systems
- Connectors



Safety

- Stability assessment
- Comfort evaluation
- Load scenarios definition
- Regulatory Compliance



Applicability

- Technical feasibility
- Cost estimates

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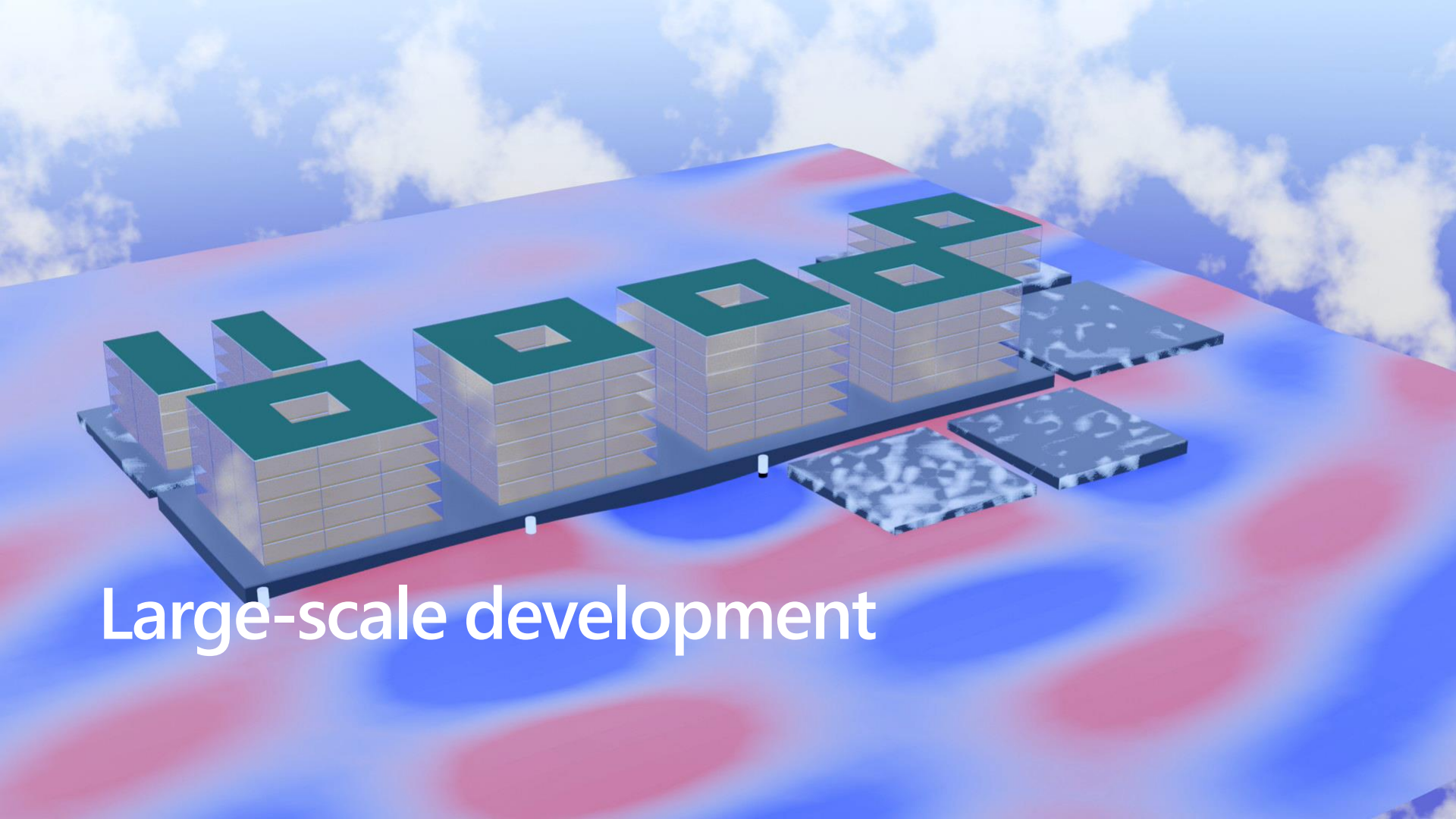

Large-scale development

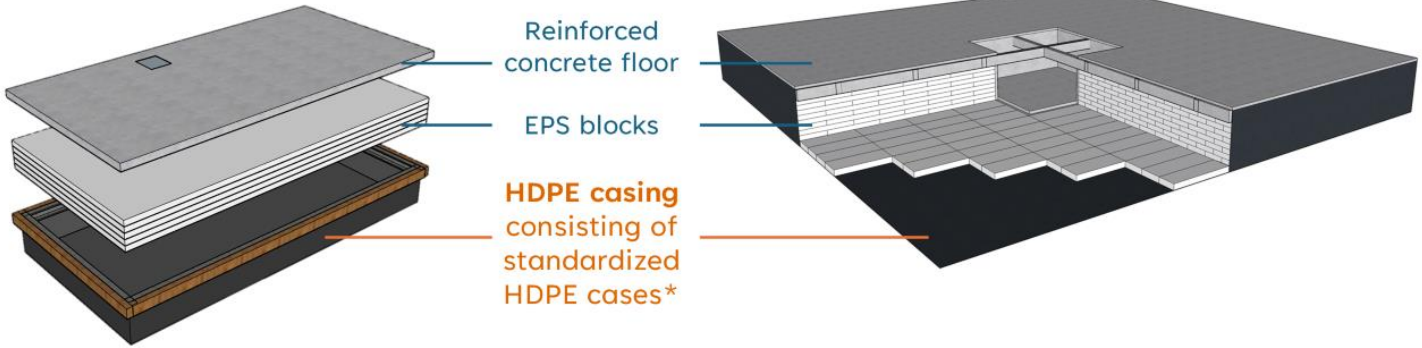

Bluelands
Foundational to life on water

BLUELANDS SYSTEM

Key components of the simple and modular floating foundation

Patented No.
B63B35/44 (2023)

Provided by
you / local contractor(s)



Provided by
Bluelands B.V.

*dimension per case:
1.2 x 1 x 0.2 m

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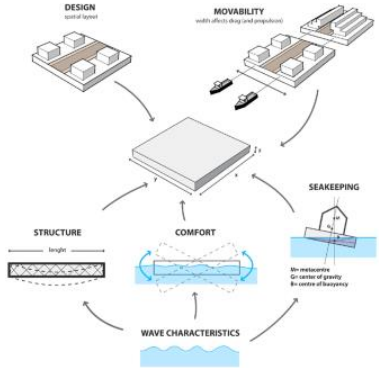
EVOLUTION OF BLUELANDS

From paper to proof of concept, paving the way to commercialization

RESEARCH

TRL 1-3

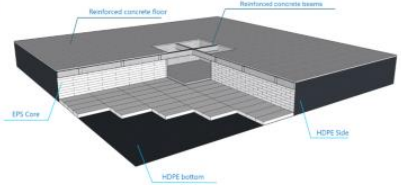


15,000+ hours invested in

- ✓ Production/manufacturing strategy
- ✓ Engineering, seaworthiness and comfort
- ✓ Connection designs
- ✓ Financial modeling/pricing
- ✓ Regulations/classification/building codes

DEVELOPMENT

TRL 4-6



- ✓ Construction strategy
- ✓ Transport and logistics

DEPLOYMENT

TRL 7-9

- ✓ The 1st pilot floating office realized in Delft (2023)

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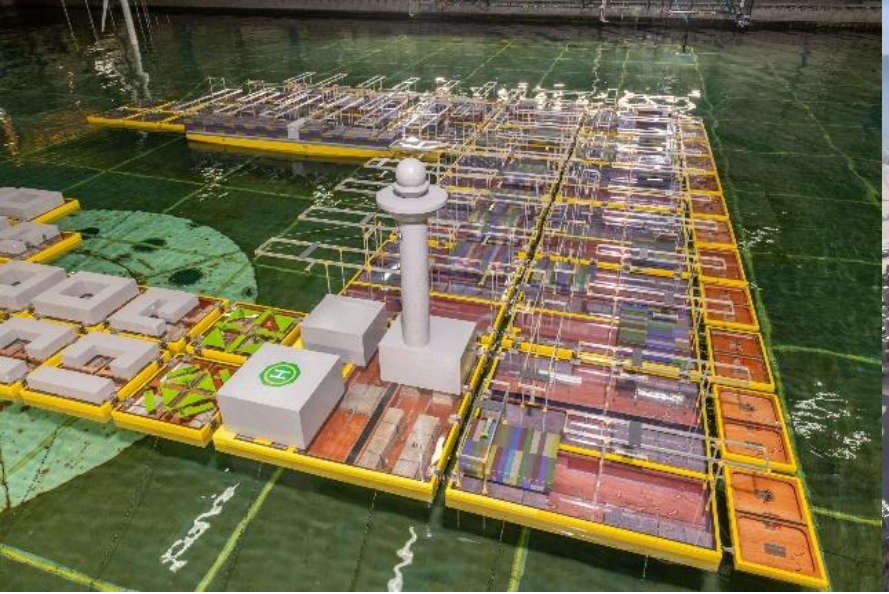
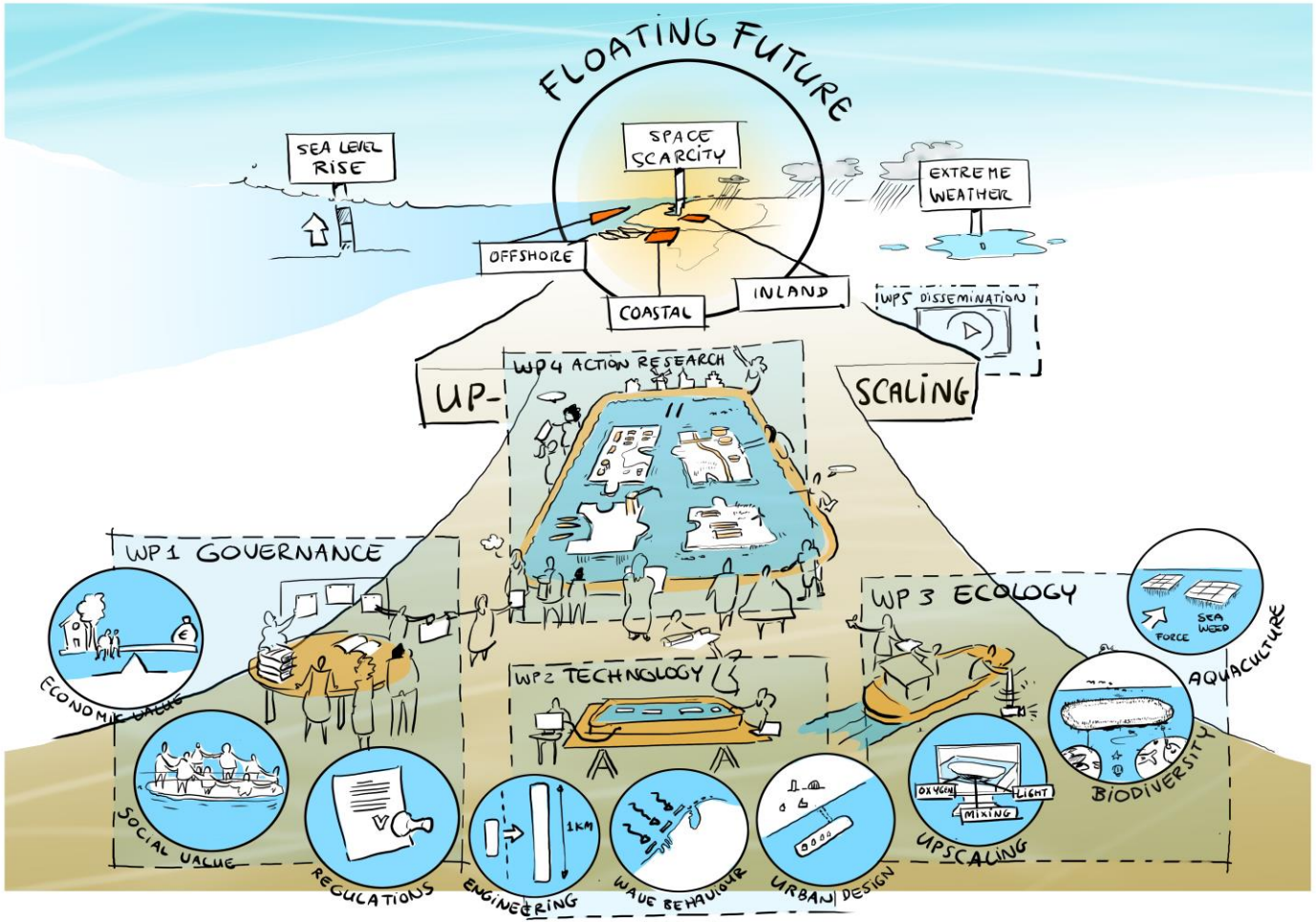
Bluelands
Foundational to life on water
DDK
DE DRIJVENDE KRACHT



"Floating Future" Research Project

"Luctor, Emergo et Supernato" (I struggle, emerge and float)

Olaf Waals, Rutger de Graaf, Margo van den Brink, Tjeerd Bouma, Pernille van der Plank, Jeroen Rijke, Klaas Timmermans, Luca van Duren, Sebastian Schreier, Robert Jan Labeur, Bas Hofland, Fransje Hooimeijer, Floris Boogaard, Wouter Spekkink, Harry Geerlings en Ron van Duin


FLOATING FUTURE
SEA LEVEL RISE
SPACE SCARCITY
EXTREME WEATHER
OFFSHORE
COASTAL
INLAND
WP5 DISSEMINATION
UP-
WP4 ACTION RESEARCH
SCALING
WP1 GOVERNANCE
WP2 TECHNOLOGY
WP3 ECOLOGY
ECONOMIC VALUE
SEA WEED
FORCE
AQUACULTURE
SOCIAL VALUE
REGULATIONS
1KM
ENGINEERING
WAVE BEHAVIOUR
URBAN DESIGN
OXYGEN
LIGHT
MIXING
UPSCALING
BIODIVERSITY

What is Floating Future?

- **Interdisciplinary and Applied Research project funded by Dutch Science Council (NWO)**
  - Total funding 5.3 M€ for 5 years
  - Largest research project on floating developments in the Netherlands Granted in the call for National Science Agenda
  - Societal impact equally important as scientific impact
- **5 universities, 3 research institutes involved**
  - Main applicant is MARIN (Maritime Research Institute the Netherlands)
  - 10 PhD projects, 1 postdoc project
- **30+ societal partners: 0.8M in kind contributions**
  - Companies
  - Government agencies
  - NGO/Network organisations

BLUEREVOLUTION.org

Floating Future Consortium

FLOATING FUTURE PARTICIPATORY ACTION RESEARCH

AGENDA

2024-2025 ITERATION #1

Details of this agenda may change. For questions please contact the Blue Revolution Foundation

TUE 3 SEPT 16:30-17:30 WEB-SESSION CASE #1

Offshore multipurpose hub

"This multi-stakeholder offshore project requires strong collaboration with a common focus on safety in operations." Marin, De Rijke Noordzee and others will clarify the potential of this case that combines energy, food and nature on the Northsea.

online register here:

recorded published REC

TUE 10 SEPT 16:30-17:30 WEB-SESSION CASE #2

Amsterdam Growing Island

"A floating infrastructure can be the answer to urgent quai maintenance issues and offer conditions for upscale housing capacity on medium and long term" Amsterdam Municipality, Waardenburg and AMS Institute will offer their perspectives on this exciting hybrid case.

online register here:

recorded published REC

TUE 17 SEPT 16:30-17:30 WEB-SESSION CASE #3

Rotterdam Merve Vierhaven

"The continuity of the urban fabric and amenities, on land and water, makes a future proof urban development." Rotterdam Municipality, Port of Rotterdam and PGGM will talk about what this case represents and what it needs in terms of research.

online register here:

recorded published REC

TUE 24 SEPT 16:30-17:30 WEB-SESSION CASE #4

Rotterdam Energy Transition

"Room for energy infrastructure could be found on the water." Port of Rotterdam, Rotterdam Municipality and Smartport will present their perspectives on this case, where the local stakeholders need to know what investments to anticipate for the energy transition.

online register here:

recorded published REC

TUE 1 OCT 16:30-17:30 WEB-SESSION CASE #5

Groene Hart Veenetië

"The combination of floating housing developments in the peat area must be harmonized with aquifer management and co2 storage." Groene Hart Coord. Office, Waterboard HDSR and Proptech4good will discuss what's at stake in this exemplary low-density case.

online register here:

recorded published REC

2020

2030

2040

2050

ir. Bart Roeffen	ir. Karina Czapiewska	Dr. ir. Rutger De Graaf
Architecture	Sustainable urban development	Civil Engineering
-0.1 m MSL	-4.5 m MSL	+3.8 m MSL