Space@Sea: multi use floating offshore structures

Contents

Background

- Majority of population in coastal area's
  - Lack of space at the coast
  - Increasing sea levels
- Increasing activity at sea
  - Green energy
  - Transport hubs
  - Living and tourism
  - Aquaculture and farming

Need for affordable and flexible space at sea for increasing activities

EU Hor

BG-04-2017 - Multi-use of the oceans marine space, offshore and near-shore: Enabling technologies

Specific Challenge:
Combining several activities such as renewable energy, aquaculture, maritime transport and related services in the same marine space, including in multi-use platforms, can serve to divide and reduce the costs of offshore operations and the demand on the space needed for different activities. Research on multi-use platforms funded under the FP7 call 'The Oceans of Tomorrow' has already provided promising designs, technological solutions and models for combining activities in terms of economic potential and environmental impact. However, before reaching a demonstration pilot stage, further technological research and innovations are needed to reduce risks for operators and investors.

Scope:
Proposals should develop combinations of innovative, cost-effective technologies and methods including automation and remote monitoring technologies, flexible structures and facilities in order to test concepts of multi-use platforms leading to pilot demonstration phases. They should test the sustainable operability of co-located maritime activities around coastal or deep sea environments. They should also address health and safety issues associated with multi-use marine platforms. Environmental and economic viability as well as societal acceptance should also be investigated, especially by involving local communities. Proposals should capitalise on the results of EU and national projects including those testing business models developed for multi-use platforms for their economic feasibility and environmental sustainability.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 8 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Expected Impact:
To reinforce European competitiveness in the Blue Economy, proposals will:

- Bring technologies and selected designs of multi-use facilities at least to technology readiness level (TRL) 5, ensuring validation of technology in the relevant environment.
- Reduce costs of implementation and increase economic viability of multi-use platforms for the European maritime industry.
- Improve health and safety in multi-use marine platforms.
- Secure acceptance of these new developments by local communities and society-at-large.
- Contribute to the implementation of the Integrated Maritime Strategy and its environmental pillar, the Marine Strategy Framework Directive, and take due account of the Marine Spatial Planning Directive.
- Improve the professional skills and competences of those working and being trained to work within the blue economy.

EU Horizon 2020 call

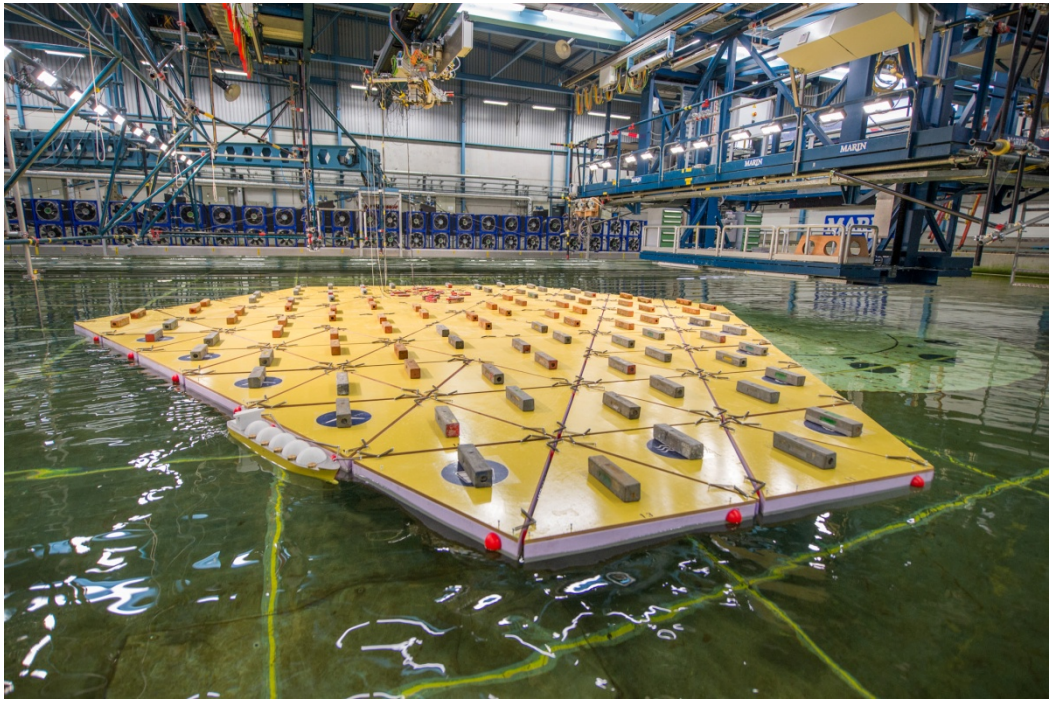
- Challenges
  - Combining activities
  - Reduce costs
  - Reduce risks
- Scope
  - Flexible structures and facility
  - Leading to pilot demonstration
  - Test co-located maritime activities
  - Address health and safety
  - Environmental and economic viability

EU Horizon 2020 call

- Impact
  - Bring technology to TRL 5
  - Increase economic viability
  - Improve H&S for marine platforms
  - Secure acceptance

Space@Sea response

Provide suistainable and afordable workspace at sea by developing standardised and cost efficient modular island with low ecological impact



Space@Sea project

MARIN

deltasync
WATERBASED URBAN DEVELOPMENT

DST

NEMOS

TU Delft

mocean
ADVANCED OFFSHORE TECHNOLOGY

TUHH
Technische Universität Hamburg-Harburg

bluewater

Universität Rostock
Traditio et Innovatio

GICON®

WAGENINGEN
UNIVERSITY & RESEARCH

UNIVERSITÄT DUISBURG ESSEN

TU Graz

Waterstudio.NL

ICE
MARINE DESIGN

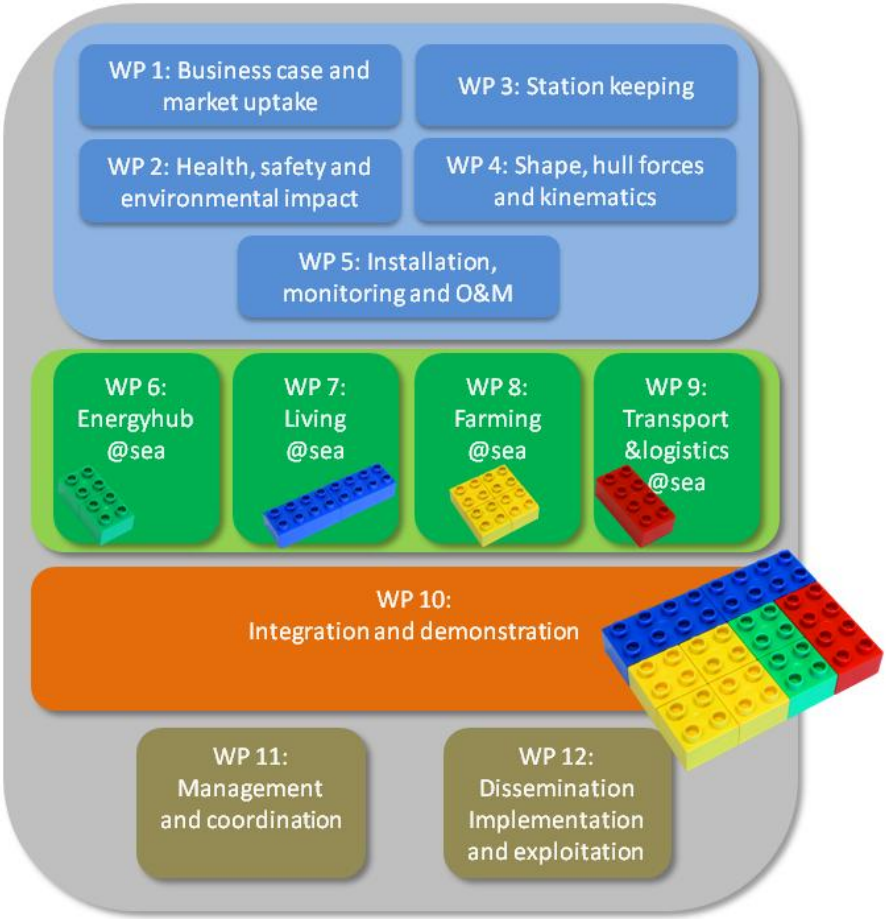
VAL
FoU

GeoSea
Geotechnical & Offshore Solutions

SPACE@SEA

Structure

- Work clusters
  - Generic issues / modular island
  - Application design
  - Demonstration
  - Management & Coordination

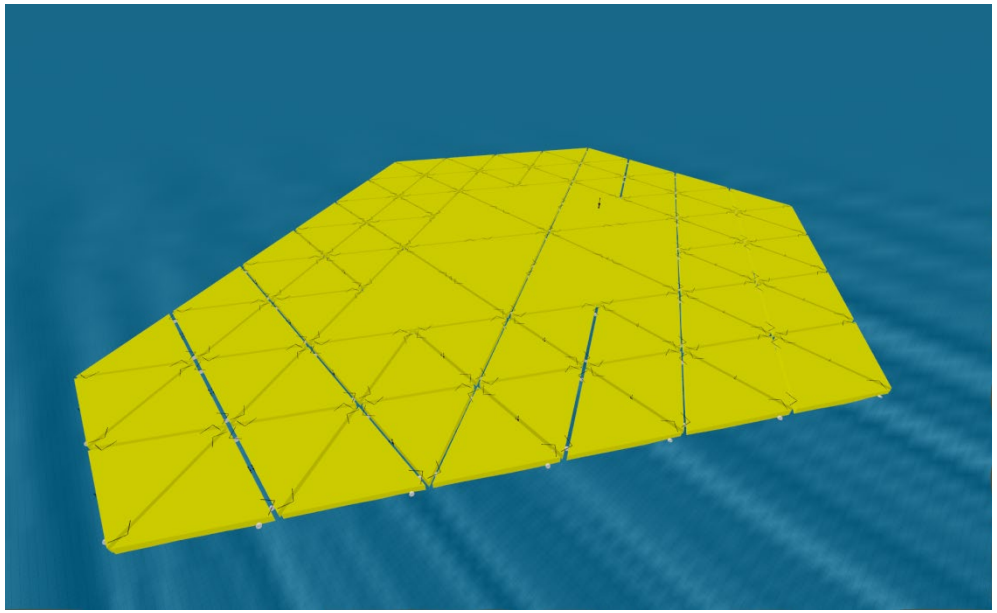


Modular Island

- Health, Safety and Environmental issues
- Mooring design
- Modular floater design
- Installation, Monitoring and O&M

Hydrodynamics

- Design of optimal shape
  - Numerical models
  - Validation model tests

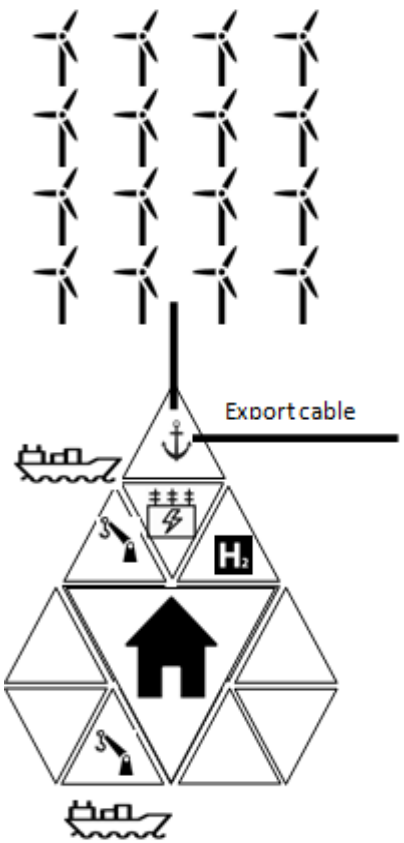


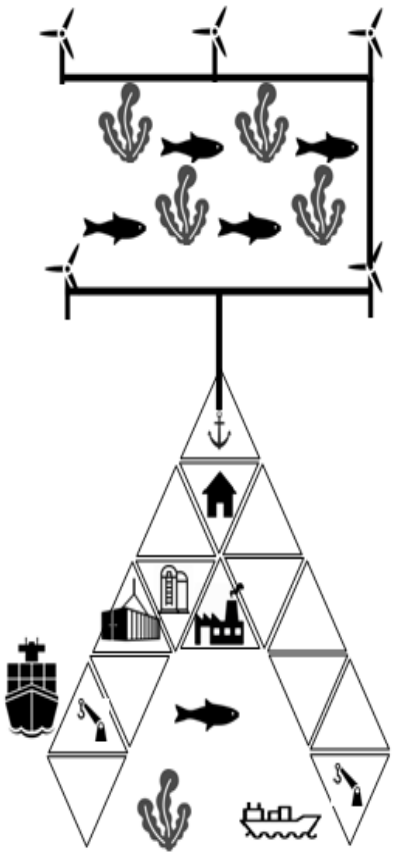
- Combined mooring
- Floater connections (rigid and flexible)
- Limiting criteria

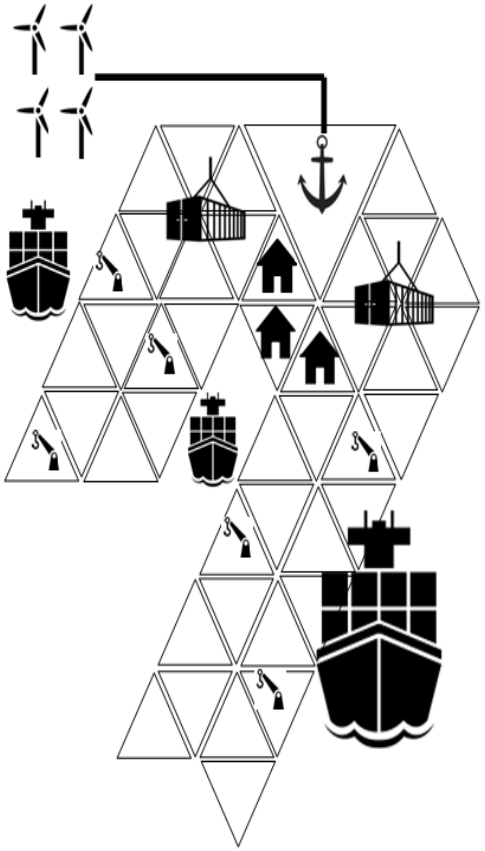
Installation, O&M and H&S

- Transport and installation of modules
- Operation and maintenance
- Remote monitoring of critical components
- Health and safety regulations

Application design







Demonstrator

SPACE@SEA

Business case

- Per application:
  - Viability
  - Location
  - Costs vs revenues

- Possible combinations of applications
  - Viability
  - Location
  - Costs vs revenues
  - Potential growth

Space@Sea expected results

- Concept floater and connector design
- Demonstration of floater concept
- Demonstration of applications
- Business plan for further exploiting the concept

Space@Sea and beyond

- At the end of Space@Sea
  - De-risked concept of floater
  - Demonstration of some applications
  - Plan for further development

- Exploit floating island concept with relevant stakeholders.

- Advisory board includes partners who can put this in the water

Questions?

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