DIONYSOS
Digital intelligent operational network using hybrid sensors / simulations approach

**DURATION: 36 months | LAUNCH: 2021 | Total budget: €1,302K**

CONTEXT

Within the context of floating wind development, there will be at least 10 operational floating wind turbines in French waters by 2023. They will provide a valuable learning center to achieve operational excellence and design optimisation in floating wind sector which is crucial to drive the levelised cost of energy down. **Being able to implement lessons learnt from field experiments into their own digital twin system would allow industry to be fully prepared when farm deployments come along.**

OBJECTIVE

To develop and test a fatigue monitoring system for floater and mooring lines of a floating wind turbine

EXPECTED RESULTS

- Integrated system of sensors, methodology and post-processing software platform for mooring lines and floater monitoring, tested in offshore context

- Recommendations for derisking the deployments of monitoring systems for floating offshore wind turbines mooring lines based on lessons learned from the field

- Review of sensor limitations and numerical model coupling options in order to help project owner to specify monitoring systems aligned with their floater and/or mooring technology and operation & maintenance philosophy
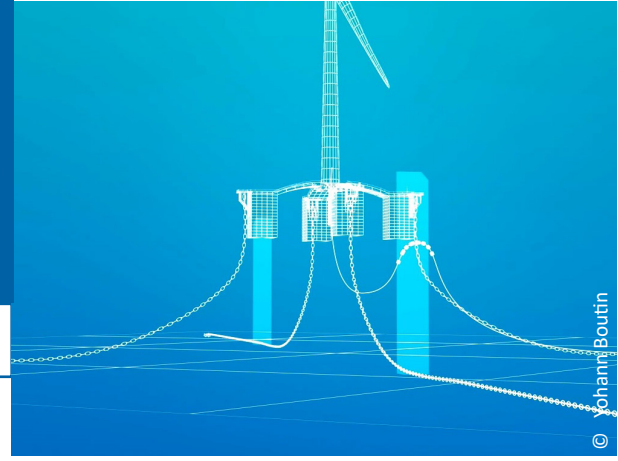
TECHNOLOGIES

STAGES OF THE VALUE CHAIN

Design   O&M

SCIENTIFIC CONTENTS

- Review of the structural health methodology usefull for fatigue life of floater parts
- At sea testing of functionalities thanks to the deployment of sensors on a real offshore wind turbine
- Assimilation of data from field observations in the floating wind turbine digital twin with a machine learning methodology to improve integration between sensors (wave, wind, motions, structural health monitoring) and numerical models of floating wind turbine
- Web platform developmment
- Construction of the digital twin: sensors calibration and deployment, numerical tool development, default detection, analysis of outputs, meta-model learning assessment, multi-level analysis

PARTNERS

FRANCE ENERGIES MARINES

Université Gustave Eiffel | INNOSEA AqualisBraemar LOC Group | MORPHOSENSE

EOLFI A member of the Shell Group | IMT Atlantique Bretagne-Pays de la Loire École Mines-Télécom | IFP Energies nouvelles | BUREAU VERITAS | SAIPEM

With the financial support of Pôle Mer Bretagne Atlantique.