

LIEngineering A/S and Akselos S.A:

Industry pioneers complete Digital Twin System to predictively monitor offshore assets in real time.

Fixed and floating offshore Oil & Gas assets are among the world's largest, most complex structures. They operate under some of the harshest conditions on the planet and are paramountly expensive to operate.

From design to operations and maintenance, the inherent complexity of offshore assets cries out for innovative technologies that can optimize all processes for maximum efficiency and safety, with no delays or downtime.

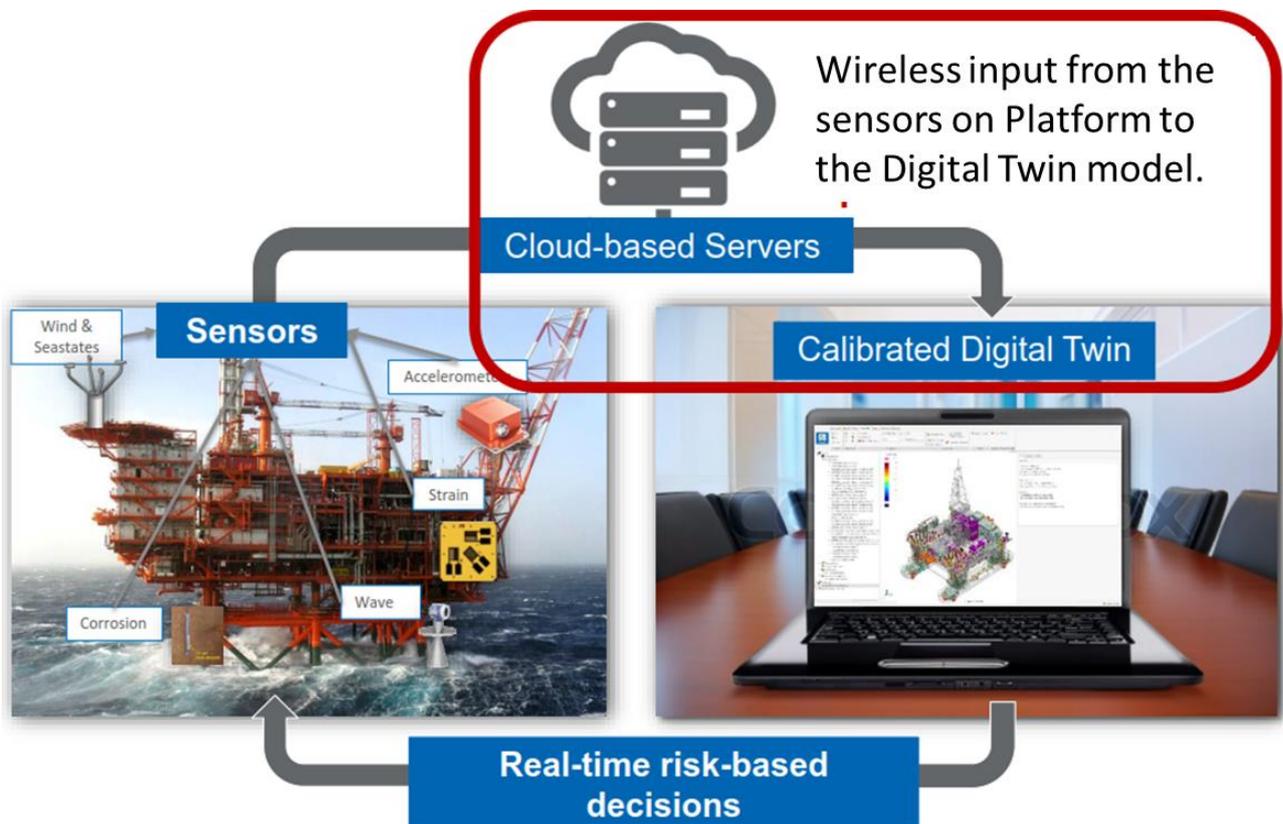
Today, predictive pioneers LICEngineering and Akselos announce the completion of a Digital Twin system that monitors offshore assets in real time, not only addressing these industry challenges, but also the increasing pressure to safely operate aging assets.

"The system is built on an extremely fast Reduced Based Finite Element (FE) methodology and a special monitoring system based on accelerometers and Operational Modal Analysis theory," says Hans Jørgen Riber, Director of Research & Development for LICEngineering.

"This combination enables us to monitor and predict the current state of health for an offshore asset in real time."

Faster and more accurate than the industry standard when modelling large scale assets, the system will offer operators real-time access to the condition of the asset, from anywhere and at any time, and allow a move towards predictive maintenance.

The Digital Twin system was developed in cooperation with Akselos, whose unique and patented FE software code allows the technology to simulate the responses of the offshore structure exposed to the environmental loads, which are measured and applied to the Digital Twin system. And does this 1000 times faster than traditional Finite Element software tools.



The Digital Twin solution is about to be implemented on one of the Super Major oil & gas operators' North Sea platform, a JIP project which will deliver proof of concept and give the operator a significantly more accurate modeling and likely increase the lifetime of the asset.

The project, named ISOS, was developed with support from the Eurostar program, co-funded by Eureka, the European Community, and Innovationsfonden. Eurostars funding is awarded to projects that successfully implement a promising, new and disruptive technology with a clear economic, societal and environmental impact compared to existing solutions.

The next step will be to integrate and develop the system for offshore wind farms. This step has started first of October 2018 in the name of the project GODESS: global Optimization DEsign of Support Structures., which is also supported from the Eurostar Program.



About LICEngineering:

LICEngineering is a leading design and consultancy company, working within the offshore and marine energy sector. The company offers solutions within Oil and Gas Energy, Renewable Energy and Marine Civil Engineering. Combined with a strong effort towards R&D, LICEngineering contributes to future standards of high quality for our industry. LICEngineering offers a wide range of services in all phases of a project ranging from conceptual design, detailed drawings, fabrication & installation, on-site inspection and in-service operations until decommissioning.

LICEngineering is headed by the founder shareholder CEO Niels-Erik Ottesen Hansen, who is the main shareholder together with the rest of the management.

About Akselos:

A top MIT spinoff innovative company with head office in Lausanne. Since Akselos was founded in 2012, it has been actively engaging leading operators in the offshore energy sector, such as the O&G supermajor, Shell, to jointly develop simulation technology for enhanced modelling of critical assets. Akselos software has been deployed for both fixed and floating offshore infrastructure, including a condition-based model of a full compressor, and a digital twin for a 90,000 ton FPSO.

Akselos is headed by CEO Thomas Leurent. The responsibilities at Akselos are clearly divided between software developers on one hand, led by Dr David Knezevic, and production and testing engineers on the other hand, led by Dr. Phuong Huynh (Springer prize winner on Computational Science and engineer).

Further reading:

<http://liceng.dk/news/64-licengineering-and-akselos-first-in-market-to-build-digital-twins-of-full-offshore-structures>

<https://www.businesswire.com/news/home/20180927005503/en/Akselos-Innogy-Ventures-Shell-Ventures-Predictive-Digital>

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