TWINVEST

Digital Twin for Informed Wind Energy Investment

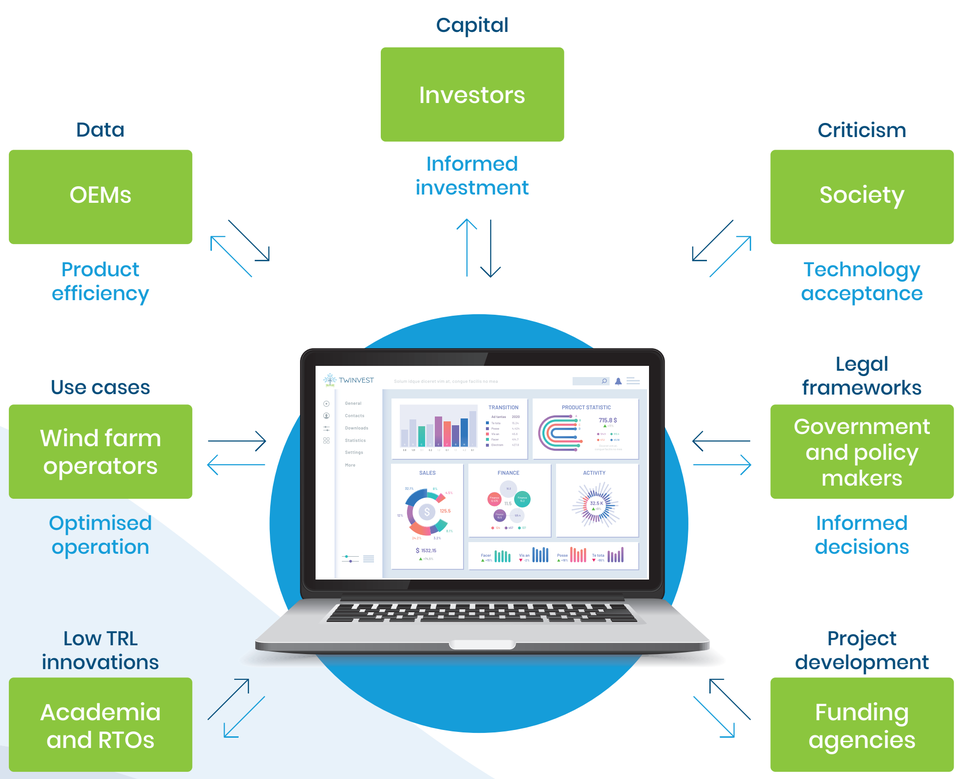
TRANSFORMING ONSHORE WIND OPERATIONS

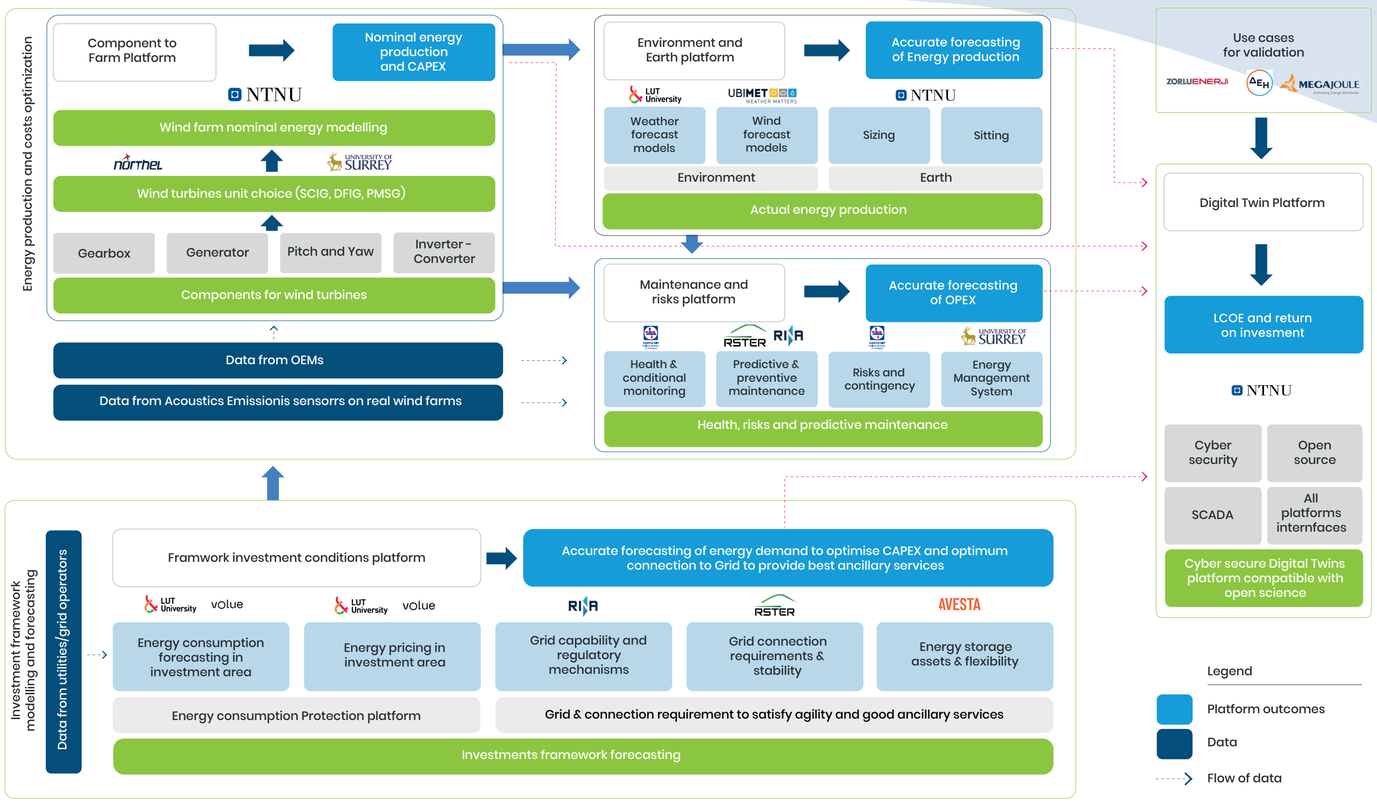
The TWINVEST project aims to develop a universal, open-source, and cybersecure Digital Twin to provide investors in onshore wind farms with valuable insights into both current performance and future investment potential. It will revolutionise the energy sector by modelling the complete wind farm system, encompassing its components and environmental dynamics. Incorporating advanced analytics, AI, and machine learning, it will enable operators to forecast, oversee, and enhance wind farm performance, facilitating the growth of new wind farms.

OBJECTIVE

- Develop an **Investment Framework Platform** to forecast conditions across EU regions.
- Develop a **Farm Platform Component** to model energy production and forecast investment costs from design to operation.
- Develop an **Environment and Earth Platform** using hybrid AI algorithms to forecast wind energy production.
- Develop a **Maintenance and Risk platform** using AI-driven diagnostics to analyse monitoring data, optimise energy production, guide predictive maintenance, and reduce downtime, operational costs, and LCOE.
- **Validation and optimisation of the digital twin's output** on physical and virtual use cases
- **Digital twin exploitation roadmap** beyond the lifetime of the project.
- Effective **communicating and disseminating** toward industrial and scientific communities.

CONNECTING STAKEHOLDERS





IMPACTS

- Expected increase in energy production.
- Potential optimisation of grid imbalance.
- Empowering OEMs to research and develop new components with enhanced performance.
- Deliver more cost-effective and competitive energy solutions to society.
- Enhancing the research and investment in the wind energy sector.

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