WindEurope welcomes the opportunity to provide feedback on the European Commission's roadmap on Artificial Intelligence and Digitalisation for Energy.

We commend the Commission's initiative to shape a forward-looking strategy that leverages digital and AI technologies to accelerate the energy transition. We offer the following insights and recommendations:

1. Priorities for Digital & AI Deployment

We support emphasis on deploying AI and digital tools in three critical areas: power grid management, renewable energy integration, and demand-side flexibility. However, progress is hindered by persistent barriers such as:

- Cybersecurity and data privacy concerns
- Regulatory fragmentation and gaps
- Lack of cohesive governance across Member States

Addressing these challenges is essential to unlock the full potential of digitalisation in the energy sector.

2. Energy Data Space

We strongly support the European Commission's role as the central governing body for the Energy Data Space. This is vital to ensure:

- Harmonised compliance with EU legislation
- Robust data security and privacy
- Trust and transparency among stakeholders

3. AI Foundation Models

We urge the Commission to promote real-world testing and pilot projects for AI foundation models before their widespread deployment. Practical examples and sector-specific validation are crucial to ensure reliability, safety, and relevance in energy applications.

4. Smart Grids & Innovation

Smart grid innovation is a cornerstone of the digital energy transition. However, financial constraints and the absence of direct incentives are stalling progress. We call for:

- Targeted funding mechanisms
- Innovation-friendly regulation
- Incentives for utilities and grid operators to adopt smart technologies

5. Data Centres Integration

The integration of data centres into the energy ecosystem presents both opportunities and challenges. We identify key bottlenecks in infrastructure and permitting. To address these, we recommend:

- Coordinated spatial planning and streamlined permitting
- Location-based incentives and sustainability-linked permitting
- Support for Power Purchase Agreements (PPAs) for clean energy
- Hybrid grid connections and minimum energy performance standards

6. AI Risk Oversight

We advocate for a clear and coherent regulatory framework that addresses the unique risks of AI in the energy sector. This includes:

- Guidance on the interplay between the AI Act, GDPR, and the Data Act
- Clear liability frameworks for AI-driven decisions
- Coordinated safeguards to ensure sectoral resilience and accountability

7. Governance Framework

We support the harmonisation of national regulations and the establishment of formal EU-level governance structures. We support the creation of a dedicated expert group under the Smart Energy Expert Group (SEEG) to focus on AI in the energy sector.

8. Digital Solutions as Innovation Boosters

Digitalisation is a catalyst for innovation across the energy value chain—from engineering to operations and maintenance (O&M). Key enablers include:

- Digital twins and advanced analytics for project and bill of materials management in the wind industry
- Data science applications for predictive maintenance and operational optimisation
- Innovation workstreams that guide industrial transformation

9. Opportunities and Risks of AI Integration

Opportunities:

- **Design Optimisation:** AI can enhance blade, turbine, and wind farm design by replacing compute-intensive models with general-purpose models trained on large simulation or historical datasets.

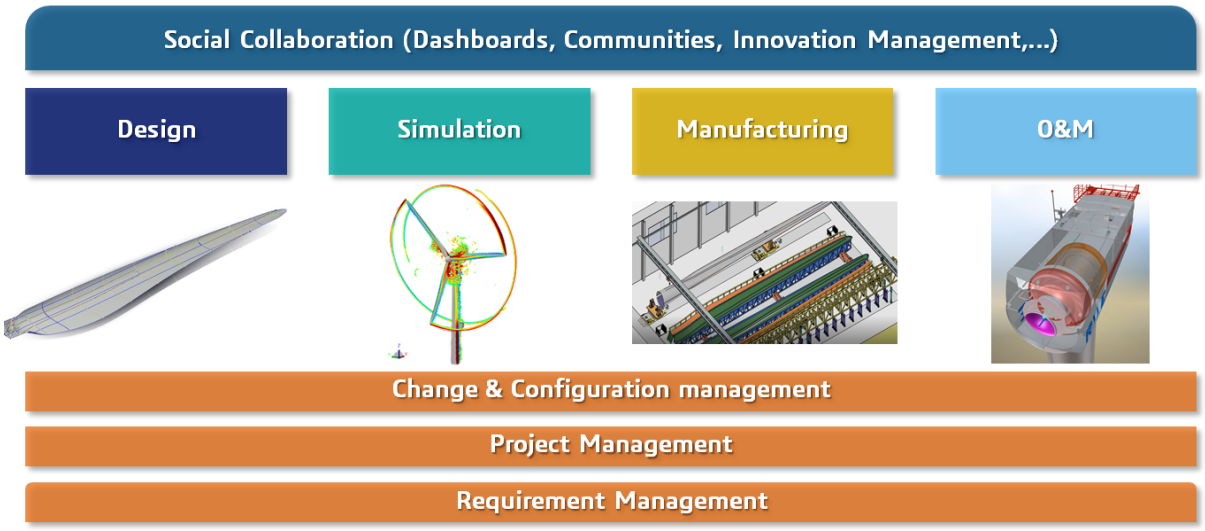
- **Predictive Maintenance:** AI-powered anomaly detection systems can proactively identify and mitigate potential failures in energy infrastructure.
- **Demand and Pricing Optimisation:** AI can improve energy distribution, reduce peak loads, and stabilise power delivery through dynamic pricing and demand forecasting.

Risks:

- **Limited Generalisation:** Machine learning models often struggle to extrapolate beyond their training data, posing risks in novel or edge-case scenarios.
- **Adversarial Vulnerabilities:** AI systems are susceptible to attacks such as data poisoning, evasion, and data extraction, which could compromise system integrity and privacy.

Digital Offshore Wind

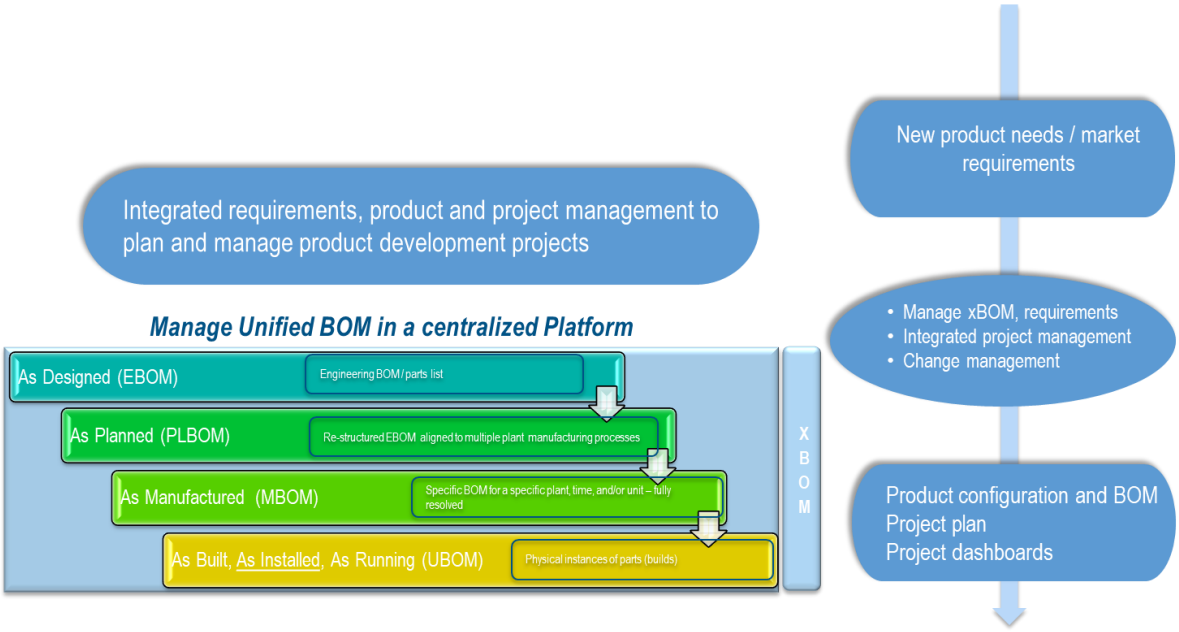
Digital solutions: innovation booster



Change for innovation: business transformation

Project and Bill of Materials Management

Wind EUROPE



Data Sciences