

Panel Discussion | *Scaling Grid Innovation: Lessons from Europe's Largest Energy Demonstrators*

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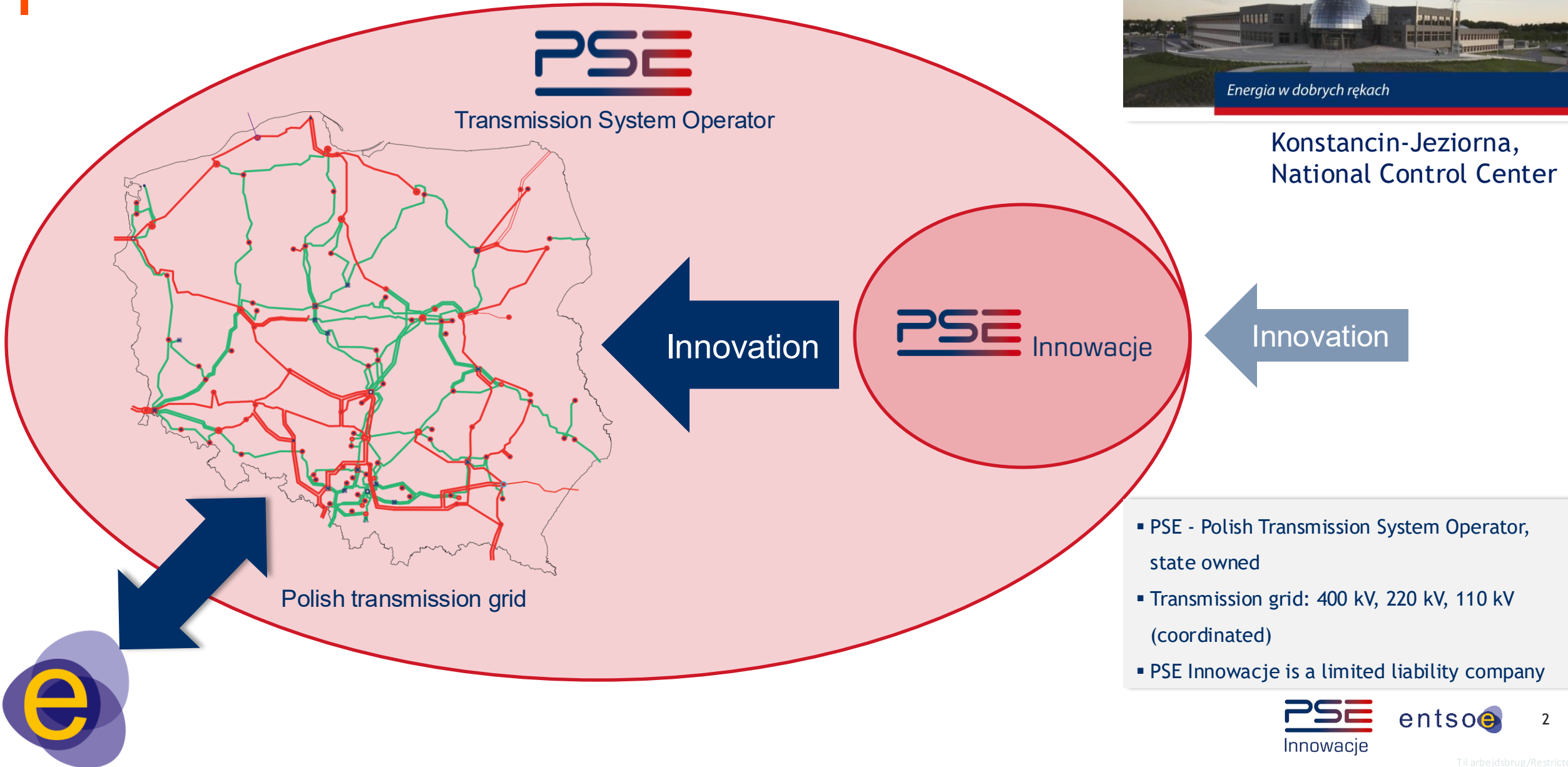
PSE Innowacje, our mission

PSE Polskie Sieci Elektroenergetyczne



Energia w dobrych rękach

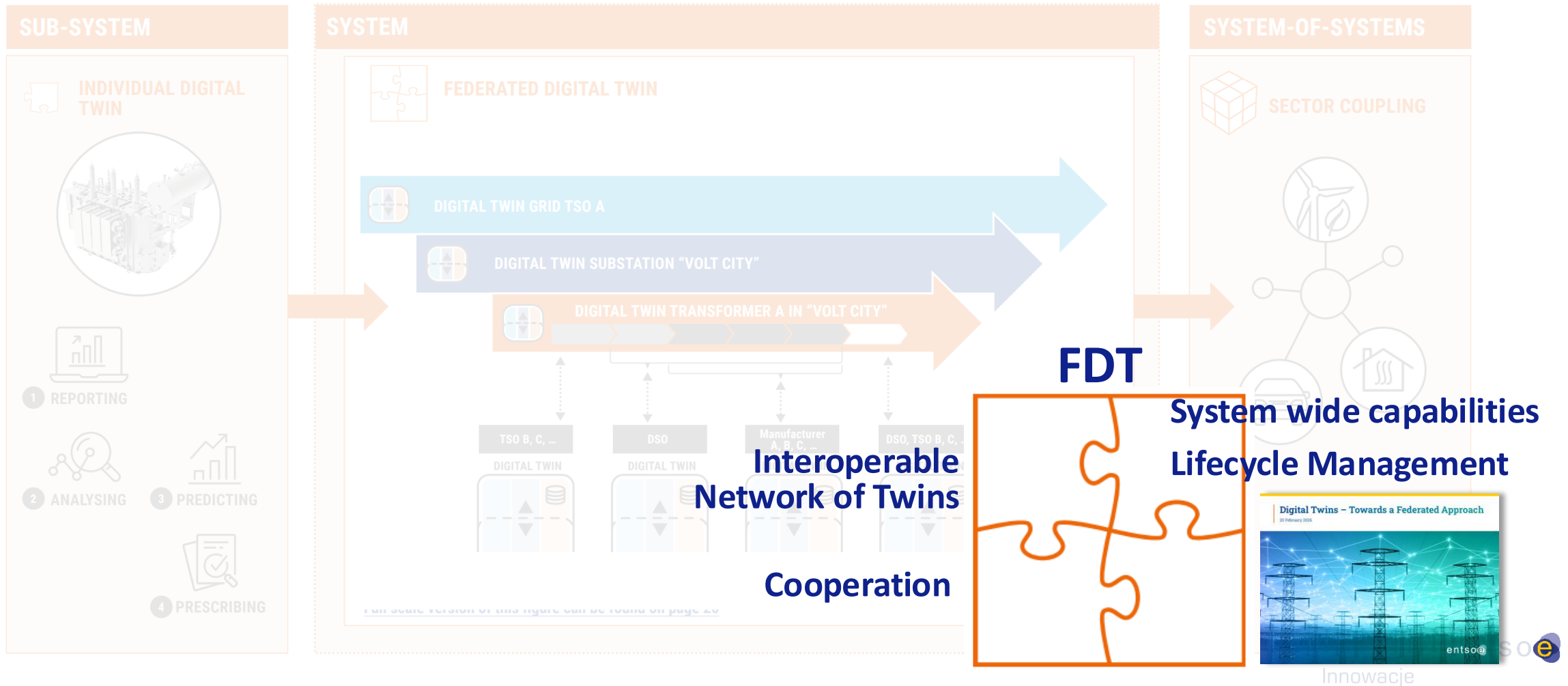
Konstancin-Jeziorna,
National Control Center



Digital Twin of the Power System – scaling from siloed use cases towards federated digital twin

Federated Digital Twin

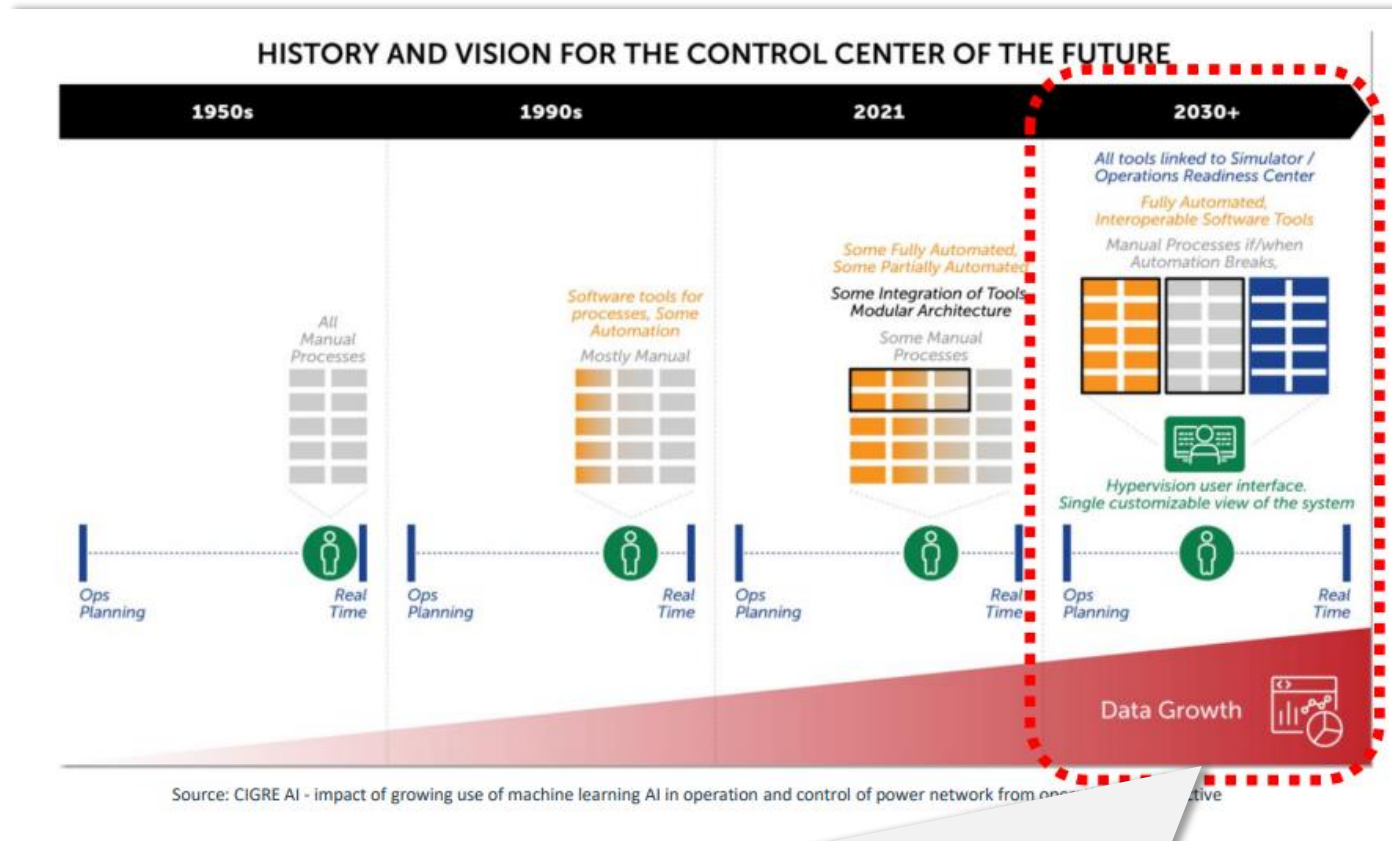
Individual Digital Twins are lifecycle spanning, from planning and design through construction and operation to decommissioning. Federated Digital Twins consist of a network of individual Digital Twins, which create a lifecycle view over coupled sectors.



AI for Grid Operations – TSOs journey to be AI-ready by 2035

Evolution of the control center of the future

From Operator driven decisions towards autonomous grid actions



New Role of System Operator

Operators evolve to collaborate with AI-driven tools, focusing on oversight, validation, and exception handling.



Shift of Complexity

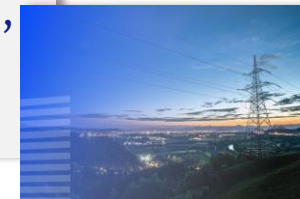
Automation reduces manual control, moving complexity into architecture, integration, and resilience design.



Organizational Transformation

Building robust frameworks for testing, interoperability, and governance becomes critical for future grid operations.

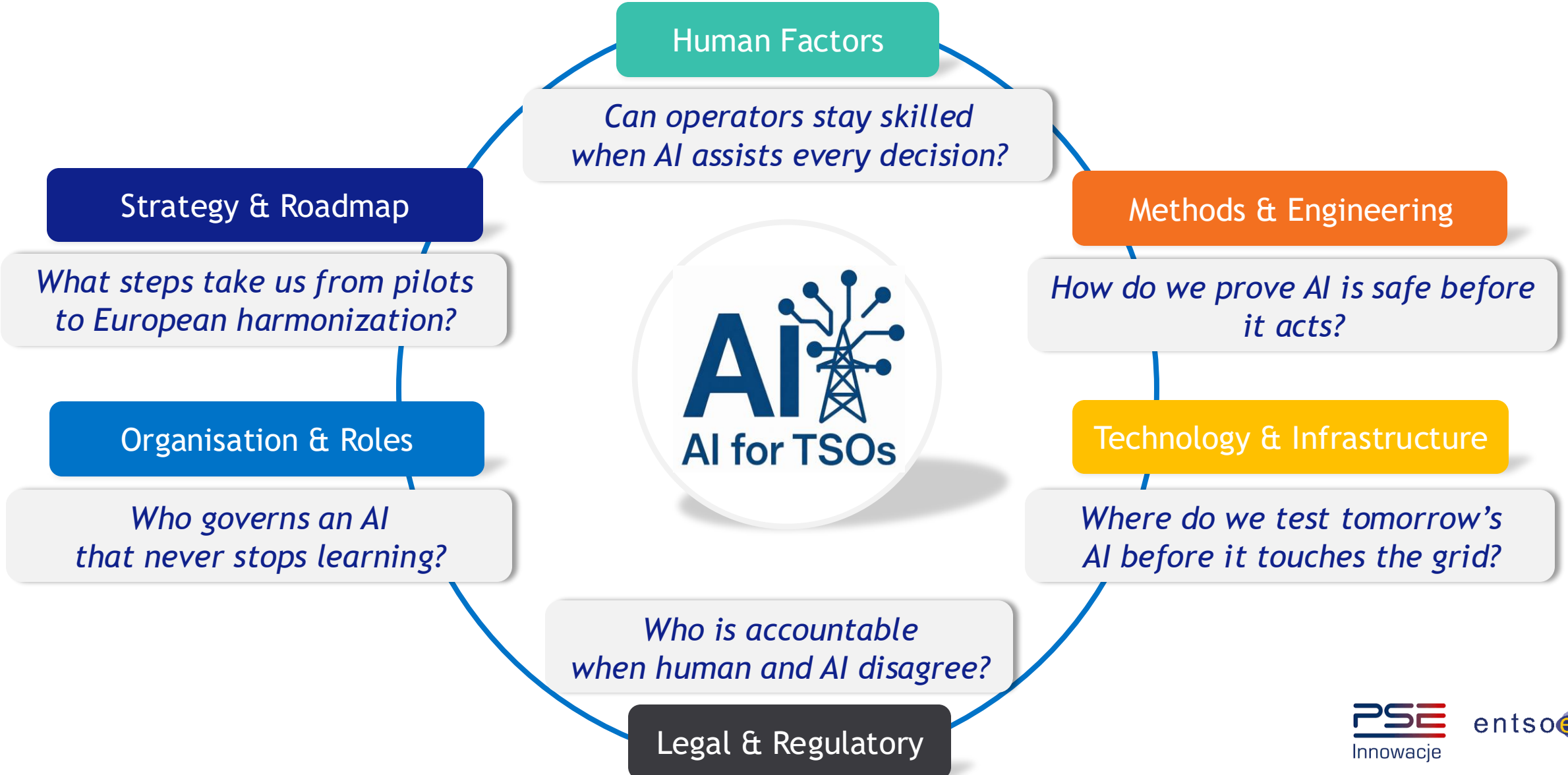
Leverage the potential of digital and AI technologies for the energy system, while mitigating the associated risks, with the goal of making the EU energy system fully digitalised and AI-enabled by 2035



Strategic roadmap for digitalisation and AI in Energy - publication May'26

Foundations of Responsible AI in Grid Operations

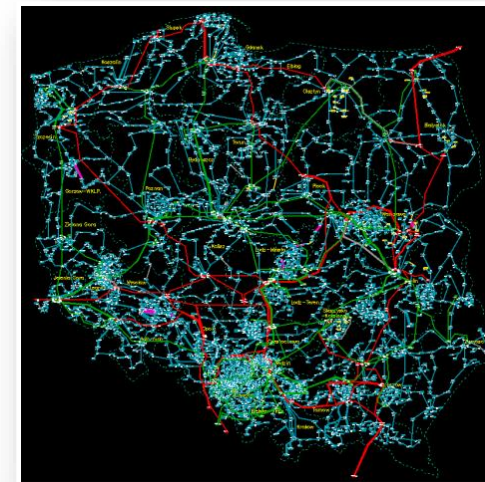
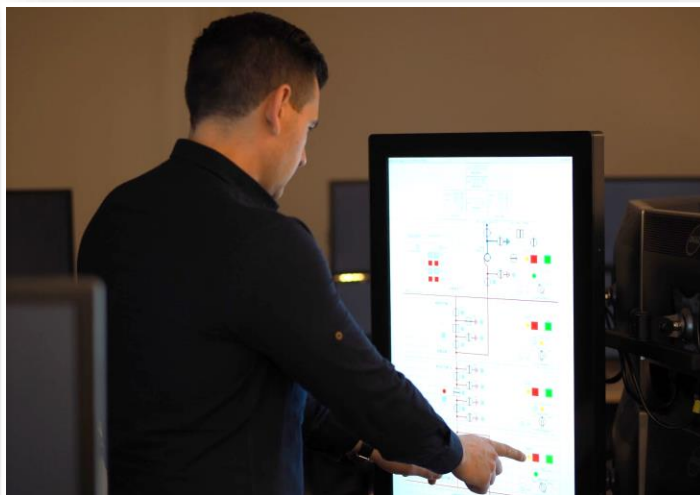
To responsibly achieve high maturity of AI, foundations in key areas must be laid



PSE Dispatcher Training Simulator – a Digital Twin

Digital Twin of the power grid in PSE

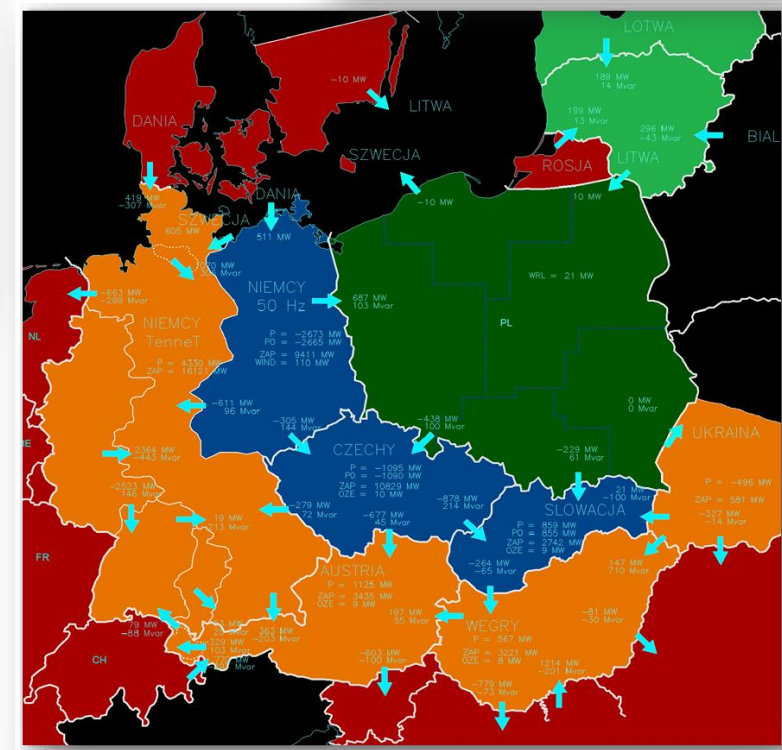
To ensure dispatchers' capabilities, an advanced training environment is needed



We can simulate:

- Short-term and long-term stability
- Voltage problems and cascading failures
- Island operation and reconnection
- Full system recovery (black-start)

All in real time



Digital Twin in PSE

To ensure safe and efficient substation operations, immersive training using Google VR is essential



Thank you for your interest in our presentation!

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EXCELLENCE

We deliver to the highest standards.
We provide an environment in which people can develop to their full potential.



TRUST

We trust each other, we are transparent and we empower people.
We respect diversity.



INTEGRITY

We act in the interest of
ENTSO-E



TEAM

We care about people. We work transversal and we support each other.
We celebrate success.



FUTURE THINKING

We are a learning organisation.
We explore new paths and solutions.

We are ENTSO-E