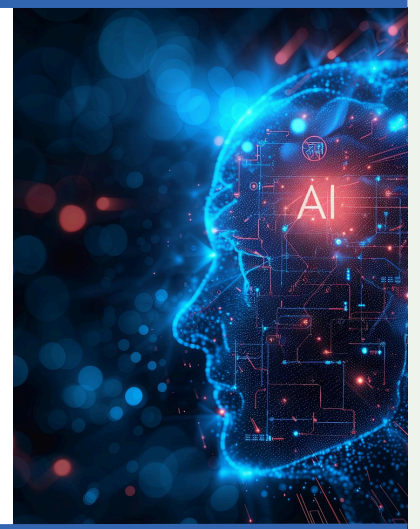


15th BES Seminar: Realistic use of Artificial Intelligence in power system

WHY AI?

The Challenge

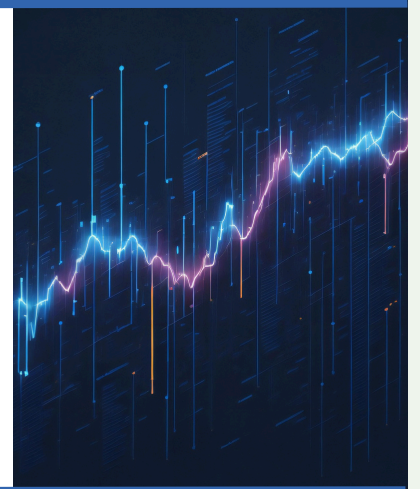
- System complexity: Managing millions of decentralized renewable sources and bidirectional power flows
- Grid stability: Preventing blackouts (like 2021-2024 incidents) through split-second, data-driven decisions
- Operator support: Providing humans with "digital co-pilots" to manage massive real-time data



CORE PILLARS

The Strategy

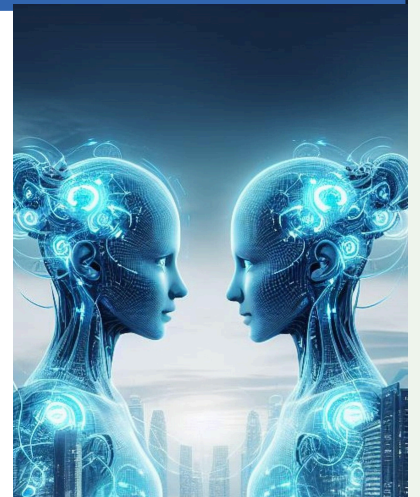
- Energy for AI: Ensuring data centers are sustainable and energy-efficient
- Digitalization: Using smart grid indicators and AI to boost grid flexibility
- Data Space: Creating a common European energy data space (CEEDS) for secure info exchange



KEY TOOLS

The Innovation

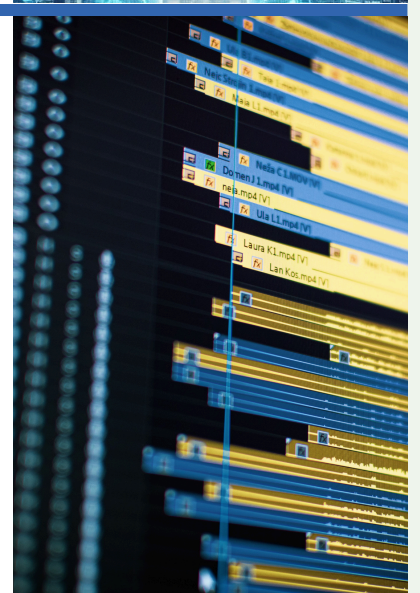
- Digital twin: A virtual EU grid replica for testing crisis scenarios and resilience
- Smart assets: Using drones and sensors for predictive maintenance and fault detection
- Automation: Moving from manual control toward self-healing, autonomous grid actions



ROADMAP

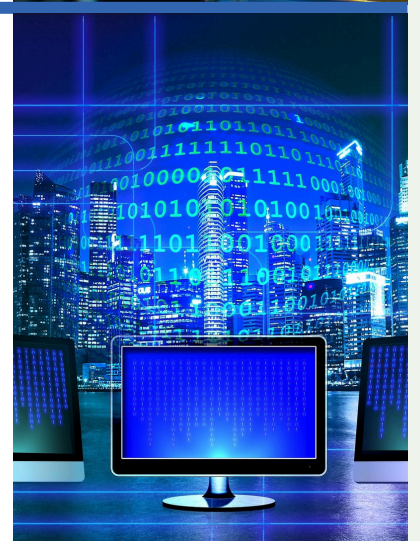
The Timeline

- 2026: Launch of the Cloud & AI development act to secure digital sovereignty
- 2030: Targets for advanced digital infrastructure and specialized workforce skills
- 2035: Goal for a fully digitalized and AI-powered EU energy system



MAIN BENEFITS

- **Higher Security**: Faster reaction to equipment failures and extreme weather risks
- **Lower costs**: Faster renewable integration and optimized maintenance cycles
- **Human oversight**: AI complements rather than replaces human control



MAJOR HURDLES

Cybersecurity: Defending critical infrastructure from digital threats.

Skills gap: Addressing the shortage of experts in both energy and digital tech.

Governance: Establishing EU-wide standards for data interoperability

