
AI4
REALNET
AI FOR REAL-WORLD
NETWORK OPERATION
brochure
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# DOMAIN HIGHLIGHTS –
# AI meets the real world

ELECTRICITY NETWORK

The AINETUS open-source platform brings human-centric AI to power grid operations, enhancing situational awareness, anticipating system risks, and providing explainable recommendations to support human operator decision-making.

**AINETUS Platform**

LFENERGY AINETUS

**Grid2Op Platform**

LFENERGY grid2op

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RAILWAY NETWORK

Unexpected disruptions can happen in cascade when dense rail networks are in place. AI4REALNET AI-assisted re-scheduling can reduce delays in real time, always keeping the dispatcher in command.

**Flatland Environment**

**AI Agents**

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AIR TRAFFIC MANAGEMENT

Supports human-centric air traffic management by combining interactive visualization and AI-assisted sectorization algorithms. It helps operators design and evaluate dynamic airspace sectors, improving workload balancing, situational awareness, and decision-making in complex air traffic environments.

**Bluesky Environment**

**AI Agents**

# SUCCESS STORY –
# AI for France's power grid, by

Le réseau de transport d'électricité

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| **Scenario** | Dispatchers must prioritize a limited set of curative actions to ensure secure power grid operations, as exhaustively evaluating all possible actions is computationally infeasible. |
| **Challenge** | How to select relevant curative actions from thousands of candidates in real-time? |
| **Solution** | AI4REALNET introduced an AI assistant trained on historical grid scenarios, where each action receives a performance score, and recommends the most relevant topological actions across the grid, without running exhaustive simulations. |

## The value of explainable AI in AI4REALNET

**Takeaway 1** Trustworthy AI requires transparency, not only performance.

AI4REALNET highlighted that high-performing AI must also be understandable, auditable, and aligned with operator expectations to support adoption in critical infrastructure environments.

**Takeaway 2** Human-centric explainable AI improves the adoption of operational AI systems.

AI4REALNET showed that combining explainability, domain knowledge, and operator interaction increases confidence, usability, and acceptance of AI-assisted control room applications.

**Takeaway 3** Explainable AI turns recommendations into operational evidence.

AI4REALNET showed that AI outputs become more valuable when operators can trace the reasoning behind recommendations and assess their relevance before acting.

| Interactive AI | Co-learning HMI | GridExplainer | HMI for ATM sectorization | Surveys for human-AI interaction |
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# INESC TEC


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