Intelligent Asset Management
for Sustainable Energy Infrastructure

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Horizon Europe Matchmaking Event

Energy Research

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Research group

- 6 academic members and 20 PhD students
- Experimental and theoretical studies of the physics of switching arcs
- Development of condition monitoring tools and methodologies
- Control of power electronics and renewable generation integration

Laboratories

- High-power test laboratory for switching arc research
- Smaller high voltage test facilities
- Diagnostic and measurement systems

Access to world-leading facilities

- Sensor City
- Centre for AI Solutions
- Materials Innovation Factory

Intelligent Asset Management
for Sustainable Energy Infrastructure

Transformation of energy systems creates new challenges
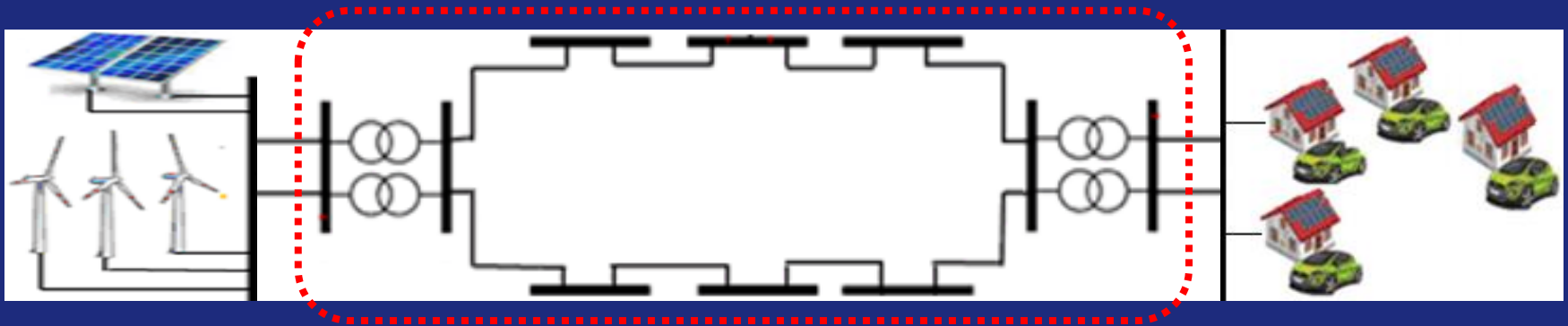
Need to consider the entire pipeline

- Homogenous to diverse supply resources
- Synchronous to non-synchronous generation
- Centralised to decentralised system

- Ageing infrastructure
- Life extension or replacement and modernisation
- Effects of power electronic converters
- New or unpredictable failure modes
- Additional equipment, closer to end-users

- Changing energy-consuming equipment
- Transition to environmentally friendly alternatives
- Passive to active consumers

Automation of condition monitoring and diagnostics

- Leverage advances in new technologies such (A.I., IoT, 5G)
- Development of high-fidelity models for power system assets
- New methods for real-time processing and interpretation of data
- Prognosis of asset condition based on previous states and/or future utilisation scenarios

Impact

- Accurate estimation of asset health indices, identification of incipient faults, timely and effective intervention
- Formulation of predictive maintenance plans and procedures tailored to the needs of individual assets
- Ensure the continuity of electricity supply, help to avoid partial or complete blackouts, enhance network resilience, assist in planning for future network needs, and result in improved investment plans

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