KIOS Center of Excellence: Advanced Digital Solutions for Modern Power Systems

Markos Asprou, Ph.D.

Research Lecturer

KIOS Center of Excellence, University of Cyprus

asprou.markos@ucy.ac.cy

GREENET Brokerage Event for HE Cluster 5

May 6, 2025

KIOS Center of Excellence (KIOS CoE)

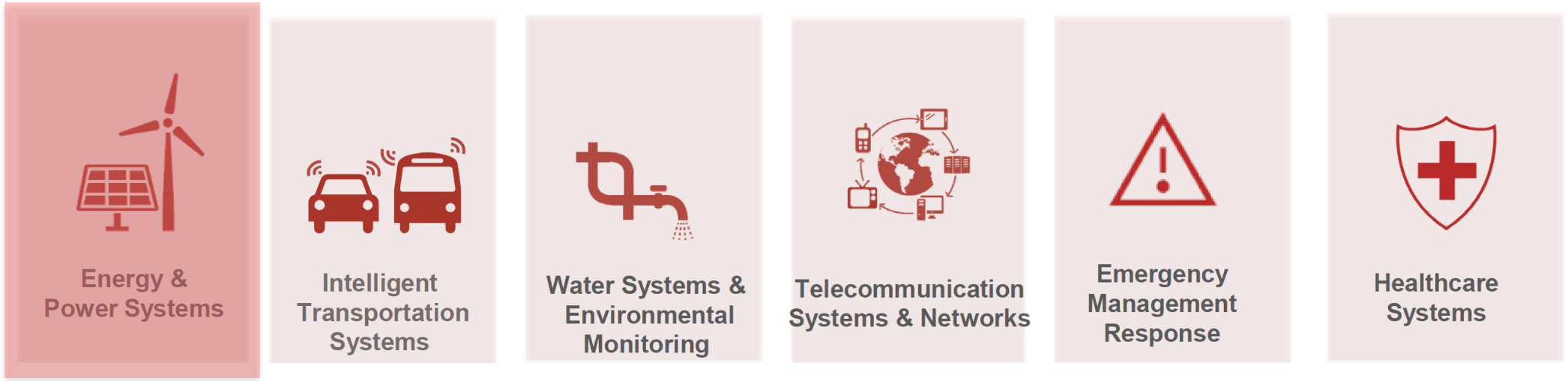
- **KIOS founded in 2008 as a research center and upgraded in 2017 into a Center of Excellence** (through KIOS CoE TEAMING project in collaboration with Imperial)
- **KIOS CoE operates under the University of Cyprus**
- **Employing more than 180 researchers**
- **Led more than 140 projects**

KIOS Center of Excellence (KIOS CoE)

- **Specialization:** Intelligent monitoring, control, management and security of complex, large-scale dynamic systems

KIOS
Research and Innovation Center of Excellence

- **Application Areas:** Critical infrastructure systems (power, water, transportation, etc.)



KIOS CoE – Power and Energy Group

- Areas of expertise

Monitoring and control of power systems (transmission & distribution)

Power electronics for Renewable Energy Sources (RES)

Energy management and optimization

Power systems reliability and resilience assessment

Cybersecurity of power and energy domain

KIOS Power System Testbed for advancing solutions TRL
https://www.kios.ucy.ac.cy/power-systems-testbed/

Interested in Destination 3 Topics

- Destination 3. Sustainable, secure and competitive energy supply
  - HORIZON-CL5-2025-02-D3-04: Development of hydropower technologies and water management schemes allowing for win-win situation of flexible hydropower and biodiversity improvement – Societal Readiness Pilot
  - **HORIZON-CL5-2025-02-D3-11: Novel inverter technologies and flexibility in PV systems (EUPI-PV Partnership)**
  - HORIZON-CL5-2025-02-D3-15: Building a Long-Term Africa Union (AU) and European Union (EU) Research and Innovation joint collaboration on Sustainable Renewable Energies
  - HORIZON-CL5-2025-02-D3-17: Control and operation tools for a RES-based energy systemHORIZON-CL5-2025-02-D3-21: Cross-regional network and market model for optimisation of long duration storage
  - HORIZON-CL5-2025-01-Two-Stage-D3-23: Critical elements for energy security of grid and storage technologies

Interested in Leading Proposal Writting

- **HORIZON-CL5-2025-02-D3-11: Novel inverter technologies and flexibility in PV systems (EUPI-PV Partnership)**
- **Project title:** Enabling next-gen intelligent inverters to deliver grid flexibility in PV systems
- **Project Acronym:** FLEX-INV

Key Innovations
• AI-based inverter control • Optimization for frequency support & voltage balancing • Fairness in energy communities • Digital twin testing environment

Seeking Partners
• Inverter Manufacturers • R&D institutions with expertise in inverter control • ICT companies • Energy community pilots • Cybersecurity

Thank you for your attention

www.kios.ucy.ac.cy