

Łukasiewicz-EMAG: potential for cooperation

Mateusz Skowroński

Łukasiewicz Research Network - Institute
of Innovative Technologies EMAG

Horizon Europe Matchmaking Event
Energy Research

19 October, 2021.

Short introduction of the institution

Łukasiewicz Research Network - Institute of Innovative Technologies EMAG is a network institute specializing in applied computer science, technical information technology and information technologies. The Institute deals with, among others broadly understood cybersecurity, artificial intelligence, data analysis (decision support systems), IoT (Industry 4.0, Smart Cities), digital public services and laboratory research. The unit carries out tasks affecting the computerization and IT security of the country.

Participates in creating the National Scheme for Assessing and Certifying the Security and Privacy of IT Products and Systems in accordance with Common Criteria. The Institute is also implementing a project involving the launch of the Cyber Security Center. Strong relationships with the industry, especially mining and energy, allowed to build a strong potential with experience, knowledge, implementation facilities, and a laboratory infrastructure in the field of testing equipment, systems and machines.

Short introduction of the institution

The Łukasiewicz - EMAG Institute is particularly involved in areas where modern IT solutions can be used. High qualifications and good experience of our employees, combined with well equipped laboratories, enable to solve even the most difficult issues in industry, administration and the defence sector. In addition, we can provide expert opinions and assessments for state institutions and individual customers.

Achievements, implementations and numerous awards granted to Łukasiewicz - EMAG speak for constantly increasing research potential and our position on the market. Our experts and the results of their research are widely recognized and invited to participate in international congresses and conferences.



Expertise

Running/completed projects

- ▶ **ROCD** - Reducing risks from Occupational exposure to Coal Dust
- ▶ **CIRAS** - Critical Infrastructure Risk Assessment Support
- ▶ **VALUESEC** - Mastering the Value Function of Security Measures
- ▶ **OSCAD** - Computer-aided business continuity management
- ▶ Storage-battery locomotive (weight 12t and drive power 40 kW)
- ▶ Hardware-software platform of the intelligent PLC network for multi-meter applications in systems that measure and settle consumed energy automatically
- ▶ **CRZ** (Central Register of Risks) - system for the management of expert knowledge and information on security risks in rail transport
- ▶ **CCMODE** - Common Criteria compliant, Modular, Open IT security Development Environment
- ▶ Increased consumption of energy from renewable sources in the building industry
- ▶ **INDIRES** - Information Driven Incident Response
- ▶ **BSHC** - a new type of hybrid wireless sensors network for traffic monitoring of vehicles and pedestrians with data transmission and objects localization algorithms

Expertise

Running/completed projects

- ▶ **BSHC** - a new type of hybrid wireless sensors network for traffic monitoring of vehicles and pedestrians with data transmission and objects localization algorithms
- ▶ **POM-PY** - Developing a prototype of the system for current measurement of the degree of pulverized coal dust in pulverized coal boilers
- ▶ **INGEO** - Passive low-frequency seismic tomography system for monitoring surface geological layers.
- ▶ **MPI** - Development of mobile inspection platform (M1 category) with electric drives for zones with explosion hazards
- ▶ Development of solutions and measuring apparatus for measuring and diagnosing wires and electrical power ducts in excavations with high methane and/or coal dust explosion hazards
- ▶ **SUMAD** - Sustainable Use of Mining Waste Dumps
- ▶ **EXPRO** - Prediction and mitigation of methane explosions effects for improved protection of mine infrastructure and critical equipment.
- ▶ **AVENTO** - Advanced tools for ventilation and methane emissions
- ▶ **VALUESEC** - Mastering the Value Function of Security Measures
- ▶ **MINFIREX** - Minimising risk for and reducing impact of fire and explosion hazards in underground coal mining
- ▶ **KSO3C** A national scheme for assessing and certifying the security and privacy of IT products and systems according to Common Criteria.

Topic and project idea

- ▶ Improvement of energy efficiency
- ▶ Intelligent buildings
- ▶ Improvement of combustion processes in the power industry
- ▶ Proprietary measurement and management systems
- ▶ Expert and decision support systems
- ▶ Raw materials for sustainable development and circular economy.
- ▶ Safe, resilient transportation and intelligent mobility services for passengers and goods
- ▶ Intelligent sensors
- ▶ Artificial intelligence
- ▶ Cybersecurity

Łukasiewicz - EMAG is a member of Łukasiewicz Research Network Third largest research network in Europe



12 cities



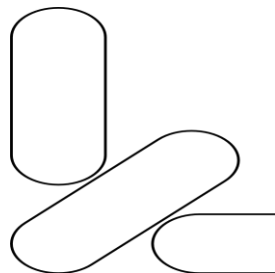
32 Institutes



Around 8 000 employees



4500 scientists



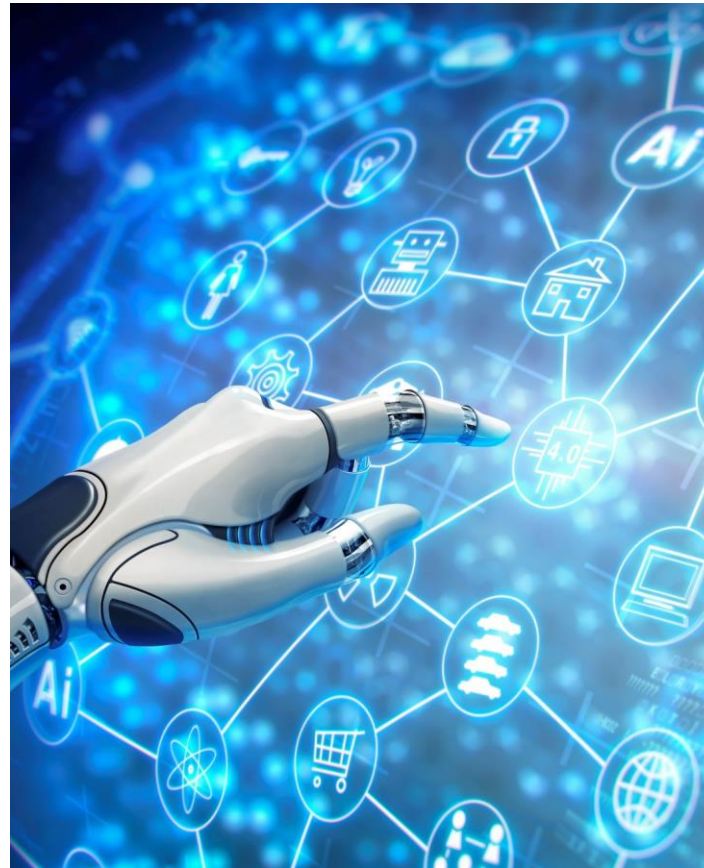
1. Smart mobility
2. Digital transformation
3. Health
4. Sustainable economy and energy



350 milion EUR revenue

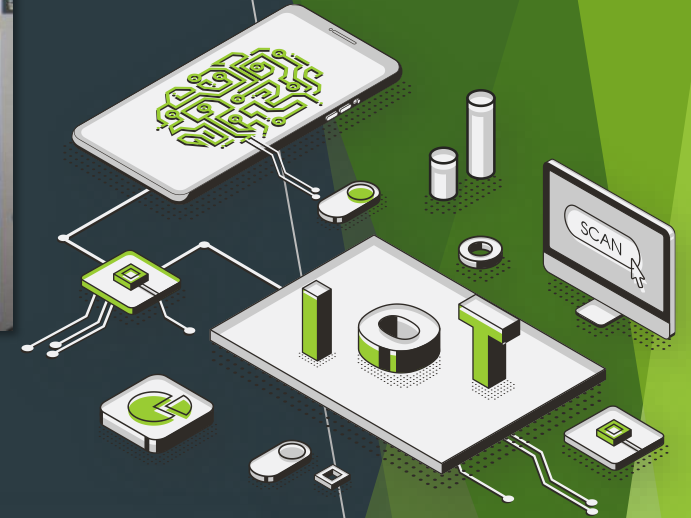
Main areas of activity of Łukasiewicz-EMAG

- ▶ Cybersecurity
- ▶ AI, Prediction, Decision support systems
- ▶ Digital Public Services
- ▶ IoT, Industry 4.0
- ▶ Research and certification
- ▶ Counteracting social exclusion
- ▶ Availability +
- ▶ Digital Education Center



Areas of ŁUKASIEWICZ - EMAG competence

- ▶ Cybersecurity laboratory - ITSEF
- ▶ IoT + 5G
- ▶ Electromagnetic compatibility (EMC) testing laboratory
- ▶ Chemical analysis laboratory (solid fuels),
- ▶ Calibration Laboratory



Efficient, sustainable and inclusive energy use (including energy efficient buildings)

Łukasiewicz - EMAG carries out research projects related to improving the energy efficiency, but also the improvement of combustion processes in the power industry. Proprietary measurement and management systems as well as expert systems help in this.



Contact details

Lukasiewicz Research Network - Institute of Innovative Technologies EMAG

40-189 Katowice

ul. Leopolda 31

www.ibemag.pl

ibemag@emag.lukasiewicz.gov.pl

mateusz.skowronski@emag.lukasiewicz.gov.pl