TECHNOLOGICKÁ PLATFORMA
ENERGETICKÁ BEZPEČNOST ČR

Technological Platform Energy Security
Czech Republic

Tomas Bata University in Zlín
Faculty of Applied Informatics

# R&D and Innovation Policies to Enhance Energy Security

2017/18 Korea-Visegrad Group Knowledge Sharing Program (KSP)
**Final Reporting Workshop and Senior Policy Dialogue**

**Date: March 27th~29th, 2018**
**Venue: Budapest, Hungary**

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# Agenda

- Research, Development, and Expertise
- Education and Training
- Another Specific Capabilities
- Selected specific areas of interest
  - Blackout
  - Urban traffic management, incident handling and crisis situations in city
  - Information and Cyber Security

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# Research, Development, and Expertise

- Research, development, and design of the crisis and recovery plans and risk analysis and management
- Research, development, and deployment of simulators for internal training of operation staff
- Simulation of critical events in energy networks and proposing way of handling of such events
- Security testing and forensic expertize
- Other R&D (internal or external on demand)

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# Education and Training

- Qualification improvement,
- Training – critical situation awareness and preparedness (cyber-attacks, social engineering, penetration testing)
- Specialists´ testing (simulator-based)
- On-site  and table top exercises and testing
- Formulation and verification of crisis and recovery plans
- Legal and normative environment (national/EU)

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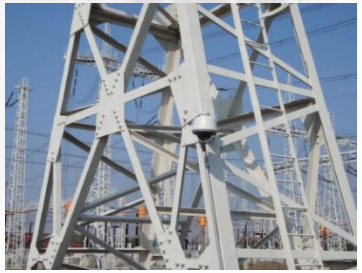
# Education and Training

- Security Liaison Officer education and training program
- Training – critical situation awareness and preparedness (cyber-attacks, social engineering, penetration testing, system overload etc.)
- Practical cases and incidents management (Scenarios)
  - Adversary in protected area,
  - Cyber-security incident,
  - Prevention and Detection of Insider Threats,
  - Competitive Intelligence,



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# Education and Training

- Physical attack / Adversary in protected area


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# Education and Training

KYPO – CYBER EXERCISE & RESEARCH PLATFORM

- Cyber Research & Development
- Forensics Analysis & Network Simulations
- Security Training & Exercises


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# Another Specific Capabilities

- Simulation of energy networks / network balance – stability /crisis situations,
- Monitoring of energy distribution networks / last mile, prediction/,
- Monitoring of critical infrastructure in general (roads, corridors),
- Prevention, detection, response to the impact of the combined threats of energy infrastructure physical and cyber security,
- Protection of energy/critical infrastructure against airborne threats,
- Building a highly secure communication among different entities of energy/critical infrastructure,
- Research of energy critical infrastructure correlation within the influent and dependent factors,
- Research into the factors shaping and affecting the resilience of critical infrastructure,

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# Another Specific Capabilities

- Research into the use of distributed resources as a factor for increasing safety and security of supply,
- Research of the power accumulation influence on system stability,
- The influence and switching possibility research of the on-grid and off-grid operation to the stability and security of the energy/critical infrastructure,
- Optimization methods research for the energy infrastructure management with the support of artificial intelligence,
- Relevant input and output variables definition for controlling energy infrastructure,
- Prevention, detection, response and minimizing the influence of the combined threats of physical and cyber security, energy infrastructure,
- Specification of physical security solutions principles to energy resources, substations and elements of transmission and distribution systems,
- Addressing cyber security for various types of communication networks within the energy distribution networks linked to the physical security of controlled devices and access to them.

# Selected specific areas of interest

**Blackout**

**Prevention and subsequent reaction during blackout situation**

a) The development of scenarios and use cases for events with a negative impact
b) Development of Business Continuity Plans
c) System support for creating and maintaining plans
d) The DRP development of systems supporting rapid recovery (eg. automated overhead deployment configurations)
e) Construction of backup locations based on e.g. cloud solutions

# Selected specific areas of interest

**Urban traffic management, incident handling and crisis situations in city**

Smart City development covering

- the information collection on the state of intersections,
- the location of specific vehicles and location,
- deployment of V2V and V2I technologies,
- supplementary system development for situational management,

# Selected specific areas of interest

**Urban traffic management, incident handling and crisis situations in city**

Smart City development covering

- Integration of existing sensor systems using ESB and the central data processing
- Distribution of the process results and solution design scenarios preparation
- The development of these scenarios and use cases
- The central crisis management system (variety of systems are used that are not compatible)

# Selected specific areas of interest

**Information and Cyber Security**

- Cyber and physical security Interconnection
- Interconnection of SIEM systems, overarching cyber security and physical security systems management PSIM
- Effective integration of information systems from cyber and physical security, allowing, for example, advanced detection abuse adversary identity, monitoring, access to technology, or shut down their connections, preventing theft and so on.

# Selected specific areas of interest

Information and Cyber Security

- Developing of use cases covering a combination of physical and information security and defined correlation rules
- Proposal communication protocol logs from the sensors of various purpose (entrance systems generate logs differently than, for example. IPS) respectively. methods for logs processing normalization
- Visualization of anomalous situations and physical intrusion detection correlation with the results of behavioral analysis
- Intrusion prevention systems (IPS), also known as intrusion detection and prevention systems (IDPS), are network security appliances that monitor network and/or system activities for malicious activity.

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