Security tools for smart energy ecosystems

The smart energy ecosystem is the next step of the conventional electrical grid, offering increased reliability, augmented service quality and efficient exploitation of existing infrastructures. However, it generates significant security and privacy problems as it contains a combination of heterogeneous, coexisting smart and legacy technologies. The EU-funded SDN-microSENSE project will provide secure, privacy-enabled and resistant-to-cyberattacks tools to ensure electrical power and energy system (EPES) operation and the integrity and confidentiality of communications. The project will adopt an SDN-based technology and implement risk assessment...
processes to identify the risk level of each EPES component, self-healing abilities to isolate the critical parts of the network, large-scale detection tools, prevention mechanisms and a privacy protection structure.

**Objective**

The smart energy ecosystem constitutes the next technological leap of the conventional electrical grid, providing multiple benefits such as increased reliability, better service quality and efficient utilization of the existing infrastructures. However, despite the fact that it brings beneficial environmental, economic and social changes, it also generates significant security and privacy challenges, as it includes a combination of heterogeneous, co-existing smart and legacy technologies. Based on this reality, the SDN-microSENSE project intends to provide a set of secure, privacy-enabled and resilient to cyberattacks tools, thus ensuring the normal operation of EPES as well as the integrity and the confidentiality of communications. In particular, adopting an SDN-based technology, SDN-microSENSE will develop a three-layer security architecture, by deploying and implementing risk assessment processes, self-healing capabilities, large-scale distributed detection and prevention mechanisms, as well as an overlay privacy protection framework. Firstly, the risk assessment framework will identify the risk level of each component of EPES, identifying the possible threats and vulnerabilities. Accordingly, in the context of self-healing, islanding schemes and energy management processes will be deployed, isolating the critical parts of the network in the case of emergency. Furthermore, collaborative intrusion detection tools will be capable of detecting and preventing possible threats and anomalies timely. Finally, the overlay privacy protection framework will focus on the privacy issues, including homomorphic encryption and anonymity processes.

**Fields of science**

- - -
- - -
- - -
- - -

**Programme(s)**

**Topic(s)**

**Call for proposal**

H2020-SU-DS-2018
Funding Scheme

Coordinator

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ELEKTROENERGIEN SISTEMEN OPERATOR EAD
Bulgaria
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€ 103,250
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Bul Tsar Boris Ili 201
Activity type
Private for-profit entities

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RAVNA HYDRO LTD
Bulgaria
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CHECKWATT AB
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INDEPENDENT POWER TRANSMISSION OPERATOR SA

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