

Innovation type:
Methods and tools

TRL: 7

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Target group:

Actor/ purpose	X
DSO, TSO	X
Technology provider	X
Member organisation	X
Market operator	
Research/ Consultancy	X
Teaching	X

Method for cybersecurity risk analysis customized to smart grids

Smart power grids are complex cyber-physical systems which host both legacy and modern technologies. Digital transformation of the power grids has significantly changed the risk picture, thus challenging the state-of-the-art.

Challenge

- Smart grids are characterized by complexity, interdisciplinarity, and dynamics.
- A risk analysis of such socio-technical systems needs to be efficient and useful in the context of decision making.
- There is, however, a very limited experience with the effects of digitalization of the power grids. A presentation of the risk picture therefore also needs to address a high degree of uncertainty.
- Relevant, correct and sufficiently detailed information has to be collected, presented, and maintained throughout a risk analysis. The process needs to be engaging and cost-efficient. An easy-to-understand risk picture is crucial.
- The state-of-the-art on cybersecurity risk management has to be accommodated in order to meet these specific challenges.

Solution

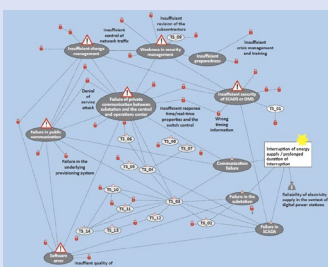
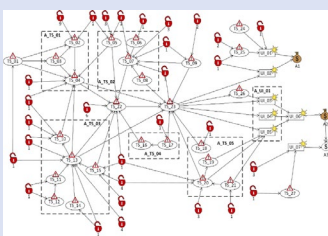
- A customized approach to identification and modelling of cybersecurity risks in the context of smart power grids. The approach is based on parts of the "CORAS" method for risk analysis.
- Trial and evaluation of the approach through comprehensive real-life case studies with three CINELDI DSO partners, as well as a post-mortem evaluation.
- Improved understanding of the effects of power grid digitalization on cybersecurity, as well as impacts of cybersecurity on reliability of supply.

Potential

- Decision support for management of reliability of power supply and cybersecurity – enabled through domain-customized risk management.
- Improved security of supply enabled by improved risk understanding and management.

References in CINELDI

- Omerovic, A. et Al.: "[An Industrial Trial of an Approach to Identification and Modelling of Cybersecurity Risks in the Context of Digital Secondary Substations](#)". CRISIS 2019
- Omerovic, A. et Al.: "[A Feasibility Study of a Method for Identification and Modelling of Cybersecurity Risks in the Context of Smart Power Grids](#)". COMPLEXIS 2019



The graphical risk models presented in the two referenced publications.