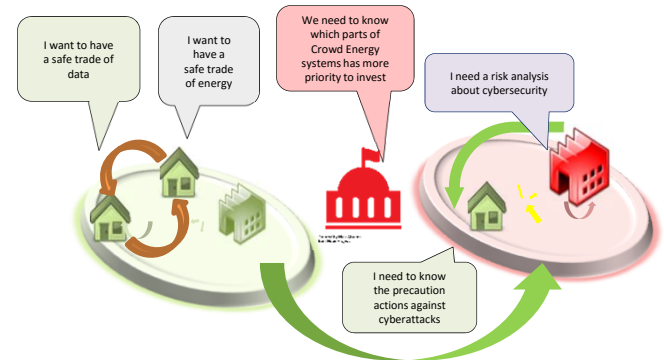


Research Focus

- Establishing a cybersecurity framework for Crowd Energy communities
- Defining risk management for cybersecurity in Crowd Energy systems
 - Evaluating proposed framework by simulation experiment

Background

- Cybersecurity quality
 - Cybersecurity quality of Crowd Energy systems is defined as the level of safety and liability in exchange of energy, data and money in Crowd Energy Communities.
 - Some research was already done in the area of cybersecurity [1,2]. However, these findings do not include an evaluation of cybersecurity in Crowd Energy communities.
 - Besides, there are suggestions to improve information security in energy market [3]. Nevertheless, so far no one measured the cybersecurity quality of already existing infrastructure in Crowd Energy systems [4].
- Cybersecurity risk management
 - There is a gap in research to define a framework in which most priority cybersecurity issues identified and listed [5].



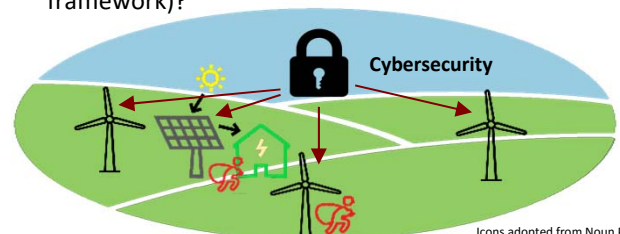
Research Questions

- Cybersecurity quality
 - How could the cybersecurity quality of Crowd Energy communities be measured?
 - To which degree are already existing cybersecurity infrastructure in Crowd Energy environments reliable?
 - How should a Crowd Energy Community be designed in order to be secure against cyberattacks?
- Cybersecurity risk management
 - Which area of Crowd Energy environment have more potential to be attacked?
- Simulation
 - How to simulate cyberattacks in Crowd Energy systems (as part of evaluating the proposed framework)?



Research Outcomes

- A framework to measure the cybersecurity quality of Crowd Energy environment.
- Ranking possible threats related to cybersecurity in Crowd Energy systems and identifying priorities for precautionary actions.
- A simulation for evaluating the exchange of data and energy.



Icons adopted from Noun Project

Research Methods

- Experimental methods for defining the concept of a cybersecurity framework in Crowd Energy systems.
- Simulation of data and energy flows in a Crowd Energy system.

1. Rahimi, M. and P.D.S. Teufel, The necessity of considering cybersecurity in designing smart buildings. 2017: ICTkommunikation.
 2. Teufel, S., R. Burri, and B. Teufel, Cybersecurity Guideline for the Utility Business, in 2018 International Conference on Smart Grid and Clean Energy Technologies. 2018.
 3. Teufel, S. and B. Teufel, Crowd Energy Information Security Culture - Security Guidelines for Smart Environments, in IEEE International Conference on Smart City/SocialCom/SustainCom together with DataCom. 2015.
 4. Lia, Z. and Q. Liaob, Economic solutions to improve cybersecurity of governments and smart cities via vulnerability markets. Government Information Quarterly, 2017.
 5. Vernez, G. Der Aktionsplan Cyber-Defence der VBS (PACD). in ASUT. 2018.