Project idea: Developing an interactive simulation of a Crowd Energy system; acting as a testbed for static and dynamic experiments on the sharing behaviour of energy prosumers within the crowd. The experiments will focus on i) investment decisions and ii) trade of energy/electricity within the crowd.

Research question
What are the characteristics of cooperative and non-cooperative humans in the context of community-based energy production?

Approach:
- Developing two software-based experiments
- Design and development of the physical model
- Implementation of experiments with UniFR actors and at selected exhibitions

The experiments:
The model will focus on the following two elements of user (prosumer) behavior, represented as experiments through gamification:

1. An investment decision, depicted by an adapted public-good-game (2,3)
2. The trade of electricity /energy within the crowd (the market mechanism), depicted by variants of a dynamic double auction mechanism experiment (4,5)

After a given experiment, each participant will be asked on sociodemographic and other characteristics (e.g., political views). This strategy allows the researchers to identify individual characteristics of cooperative and non-cooperative humans in a realistic and strategic action situation.

Outputs:
- Database on prosumer behaviour
- Working paper detailing the theoretical concepts behind the simulation
- Journal paper based on the results of the experiments
- Physical Crowd Energy model

List of references