

Novel integration of prosumers and hybrid energy systems

Challenges

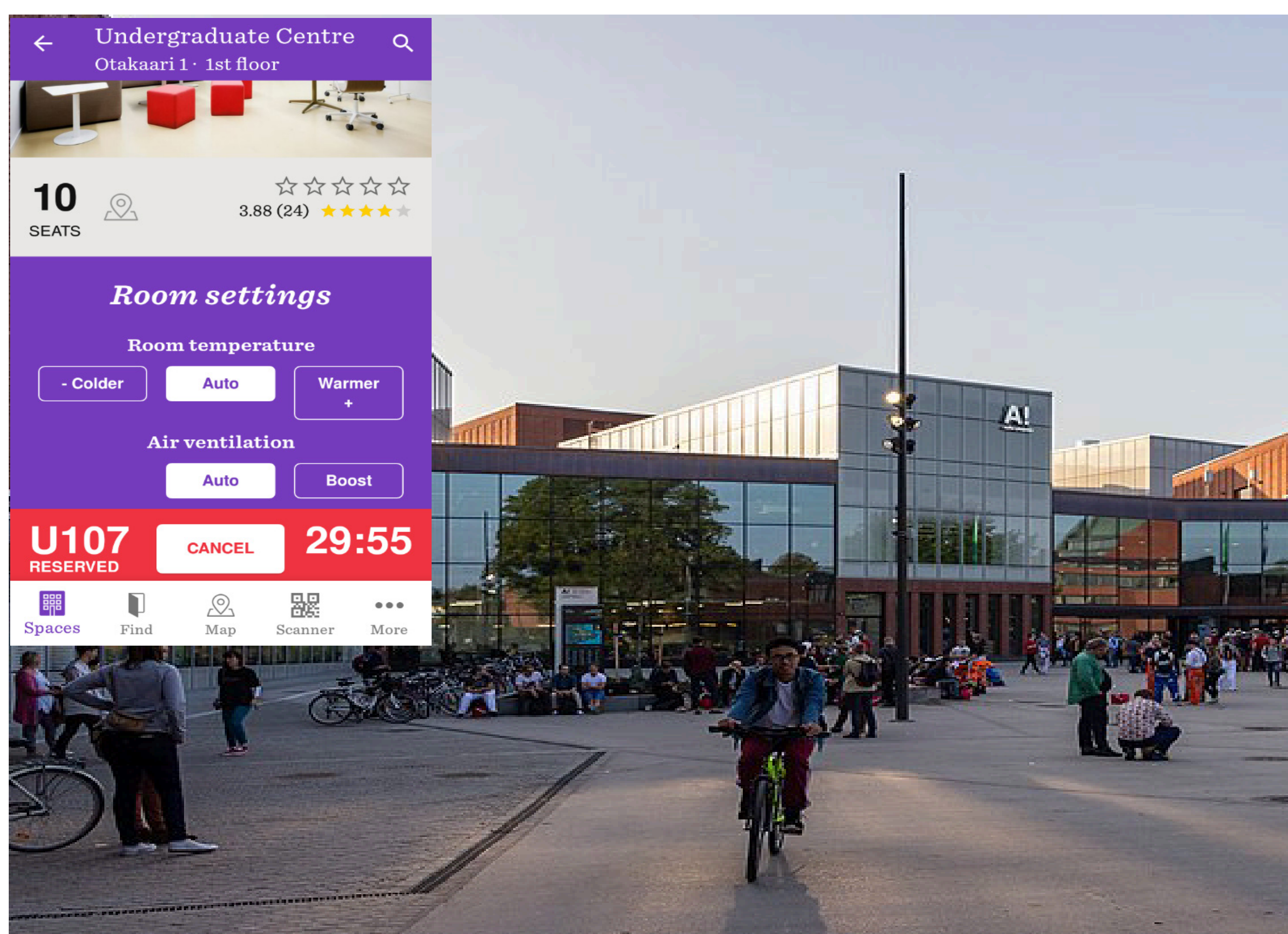
The digitalization of the energy system is quickly changing the energy landscape from the integration of renewables to smart energy systems and smart-ready buildings.

Therefore, there is need to develop and demonstrate high-potential applications in real estates and neighbourhood energy solutions leading towards zero emission RES and storages. These have to be done in a feasible way to promote human-centric indoor climate and energy flexibility.

Results

The expected results include:

- Individual control of indoor climate with cloud service applications.
- Cost-optimal control algorithms for hybrid energy units.
- Simulation assisted and machine-learning based control algorithms for whole building systems.
- Heat transfer solutions for borehole applications of different depths.
- Prototype of reversible fuel cell (production of power and production of hydrogen).
- Low temperature hybrid energy system solutions for neighbourhood cases in pre-planning phase

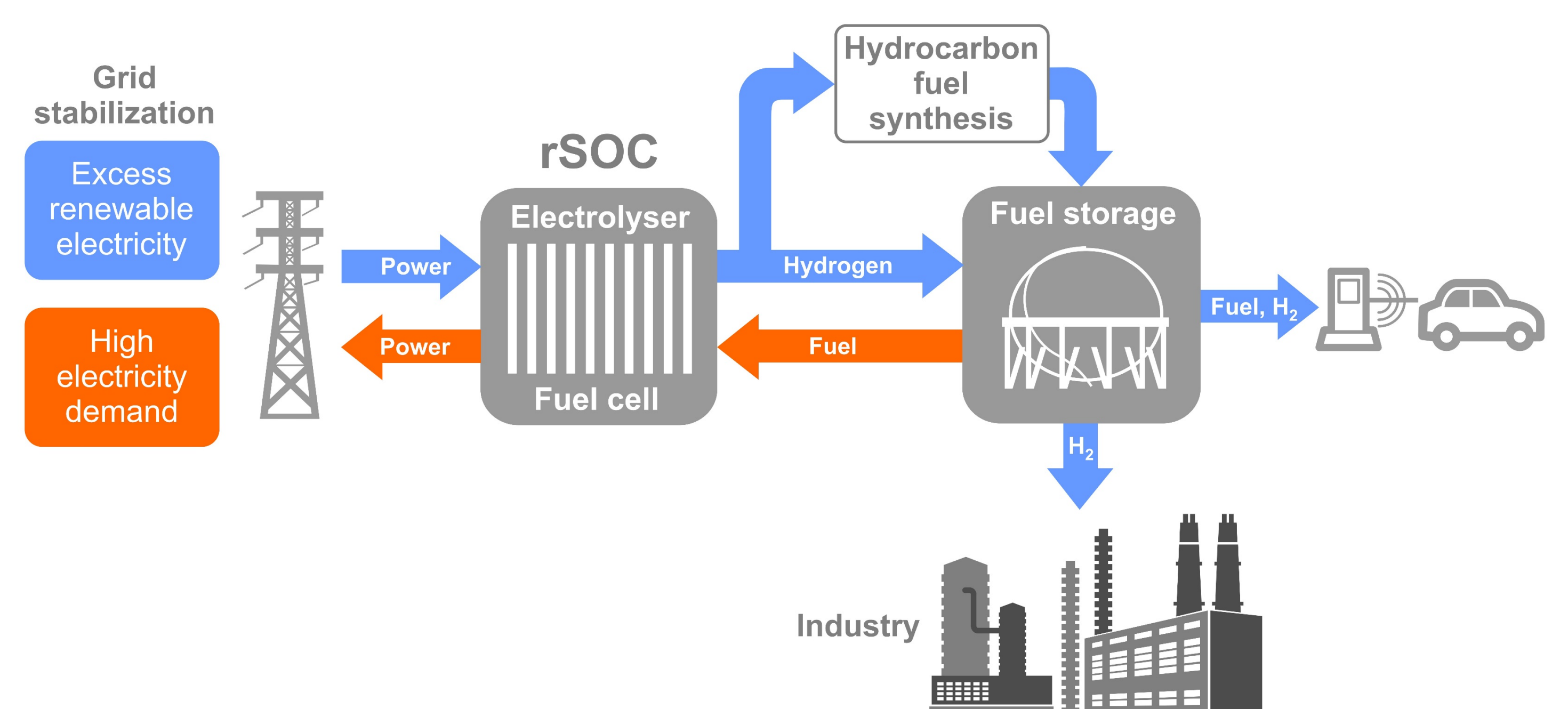
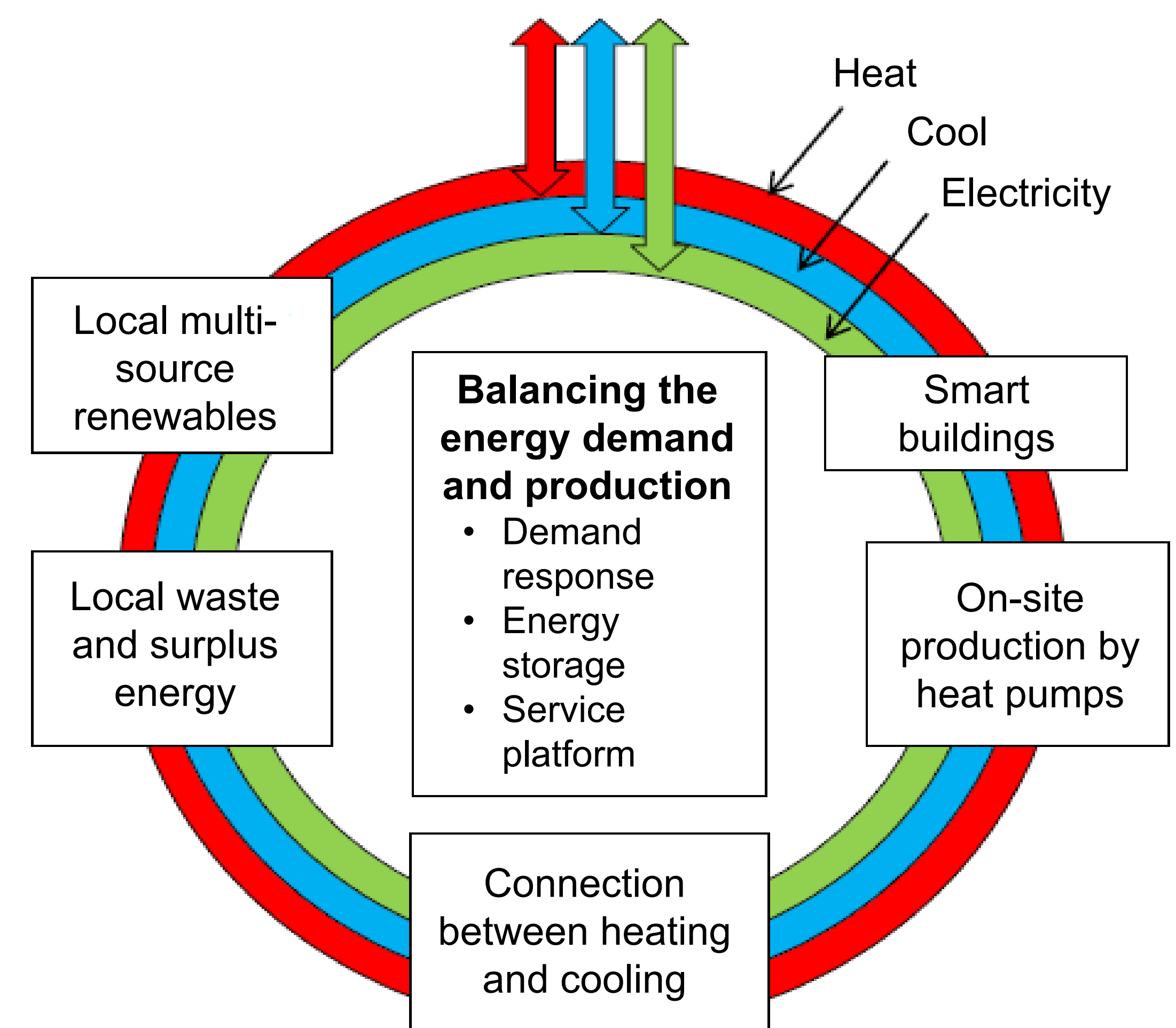


Goals

The project aims at introducing and demonstrating:

- Innovative approaches on human-centric individual mobile control of indoor climate and advanced demand response control strategies for building systems.
- Favourable solutions for local energy systems including hybrid renewable energy production/conversion, fuel cell (reversible Solid Oxide Cell, rSOC) integration, low temperature heating/cooling networks, excess heat recycling and energy storage.

Integration of local solutions to large-scale systems (back-up)



Pilot partners



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