



The research project domOS financed by the Horizon 2020 programme of the European Union (EU) aims at developing and prototyping technologies for the digitalization of existing buildings. Digitalized buildings will implement a series of smart services, mostly related to energy:

- **energy dashboard for occupants,**
- **smart control for heating and cooling,**
- **energy management to integrate buildings into energy grids and markets.**

Collectively, buildings in the EU are responsible for 40% of the European energy consumption. Hence, the building sector is a major actor for the energy turnaround. Energy efficiency can and should be improved through upgrade of the energy infrastructure (hardening the envelope thermal insulation, installing PV, ...) but smart technologies can increase the efficiency and the flexibility of buildings in a shorter term and with much less investments. *“Making the best out of what is already in operation is an excellent approach for more sustainability.”* says Dominique Gabioud, the Project coordinator from the [University of Applied Sciences, Western Switzerland \(HES-SO\)](#).

The domOS project addresses the smart building sector through two axes:

In the first axis, technology and guidelines for an open, secure, multi-service Internet of Things (IoT) ecosystem are defined: in-building gateways, which connect to local smart devices and smart appliance of any type, IoT platforms and applications operated by different parties can be integrated seamlessly.

The second axis deals with the development of smart services. They increase energy efficiency of space heating (heat pumps, district heating, gas boilers) thanks to innovative control algorithms making use of smart sensors and smart heating appliances. Automated advice services provide concise and sound information on the building energy. Through controlled time-shifting of consumption, buildings become active nodes of an electricity grid or a District Heating grid.

These two axes are present in each of the five demonstration sites of the domOS project:

- The Sion (CH) and Paris (F) pilots test smart services related to electricity.
- In Aalborg (DK), control techniques applied to space heating for buildings connected to a Distributed Heating grid reduces consumption and lower costs, CO2 emissions and system load.
- In the Neuchâtel (CH) and Skive (DK) demonstrators, closed-loop control minimises temperature at the output of the heating system, thus increasing efficiency and reducing losses.

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