smart living lab

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a research and development center for the built environment of the future

www.smartlivinglab.ch

Haute école d'ingénierie et d'architecture Fribourg
Hochschule für Technik und Architektur Freiburg

UNI FR
UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Who we are

The smart living lab is a center for research and development dedicated to the built environment of the future not only on a technical but also on a societal level. It leads interdisciplinary and interinstitutional projects.

Its goal is to imagine living spaces while focusing on users' well-being and environmental issues. It draws on the combined expertise of the Ecole Polytechnique Fédérale de Lausanne (EPFL), the School of engineering and architecture of Fribourg (HEIA-FR / HES-SO) and the University of Fribourg (UNIFR) in the areas of **sustainable architecture, technology and materials, comfort, as well as law and social sciences**.

The smart living lab will eventually house about a hundred researchers and collaborators.

Academic partners

of the smart living lab

The **EPFL** will eventually open four chairs and a guest professor chair for the following subjects:

- Structure, construction and material sciences within the built environment,
- Energy systems at the building and neighborhood scales,
- Buildings' users behavior, health and comfort.

The **HEIA-FR** / HES-SO has two institutes involved in the smart living lab: TRANSFORM and ENERGY. They focus on the following fields:

- Systemic modelling at the building and neighborhood scales,
- Adaptation - flexibility - interactivity,
- Performance measurement and improvement.

The **UNIFR** provides three research groups: the international institute of management in technology, the Human Centered Interaction Science and Technology research center and the Institute for Swiss and international construction law. They work on:

- Economic and sociological impacts in the field of energy turnaround,
- Human-building interaction,
- Construction law and regulations.

Research domains

Comfort and perceptions:

buildings' influence on users' comfort and health, especially thermal, visual and acoustic comfort, as well as air quality.

Interactions and behaviors:

understanding the factors that influence users' behaviors and their social interactions.

Buildings' and neighborhoods' adaptability:

design methods and processes ensuring the capability of the building and of the neighborhood to adapt to the needs of users and to environmental fluctuations.

Research domains

Energy networks and economics:

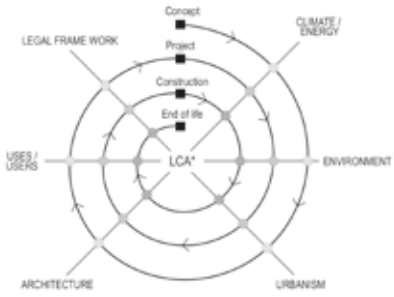
interactions between building and neighborhood energy systems and related economic issues.

Active systems and controls:

new technologies in heating, ventilation and lighting integrated to the building. Control and automation methods which account for changing needs and climatic fluctuations.

Integrated design and construction process:

consideration of climatic and environmental issues during design and construction. Consideration of regulatory and legal processes.



The smart living building

In the future, **the smart living lab will have its own building**, which will house its research and technology transfer activities.

Ahead of its time, this building should satisfy environmental goals set for the symbolic date of 2050. Its construction should be completed by 2020. Around 80-100 workstations are scheduled to be installed. It will also include spaces for carrying out experiments on prototypes and housing: around 1'000 m² are planned for flats, which will be designed with a focus on the well-being of its future inhabitants.

Designed to adapt to evolving needs, usages and innovations, the smart living lab building will be a gigantic lab for carrying out hands-on and real-time tests for certain specific uses and technologies.

Participation in the Solar Decathlon

The Solar Decathlon is a student-driven contest, in which **student teams design and build a high-performance and fully functional housing unit that uses the Sun as its sole energy source.**

In 2017, students from the EPFL, the HEIA-FR / HES-SO, the UNIFR and the Geneva School of Art and Design (HEAD / HES-SO) will fly to the United States where their pavillon will be exhibited and operate as a regular, pleasant-to-live-in place.

Through their participation in such an ambitious and interdisciplinary co-creation project, students will acquire the competences needed to work towards concrete deliverables relevant to some of **today's most pressing challenges.**

Contact

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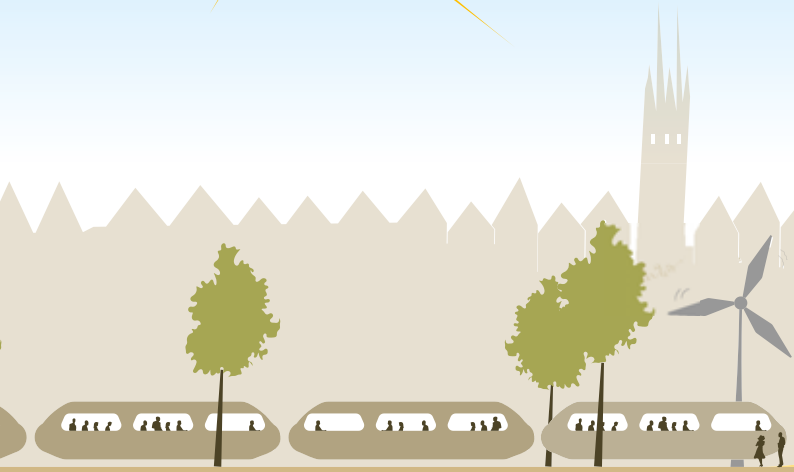
asphalte-design.ch



All illustrations designed by Amélie Poncetry.

Where to find us:

The teams of the smart living lab work in the Blue Hall in the blueFACTORY site, innovation district in Fribourg.

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