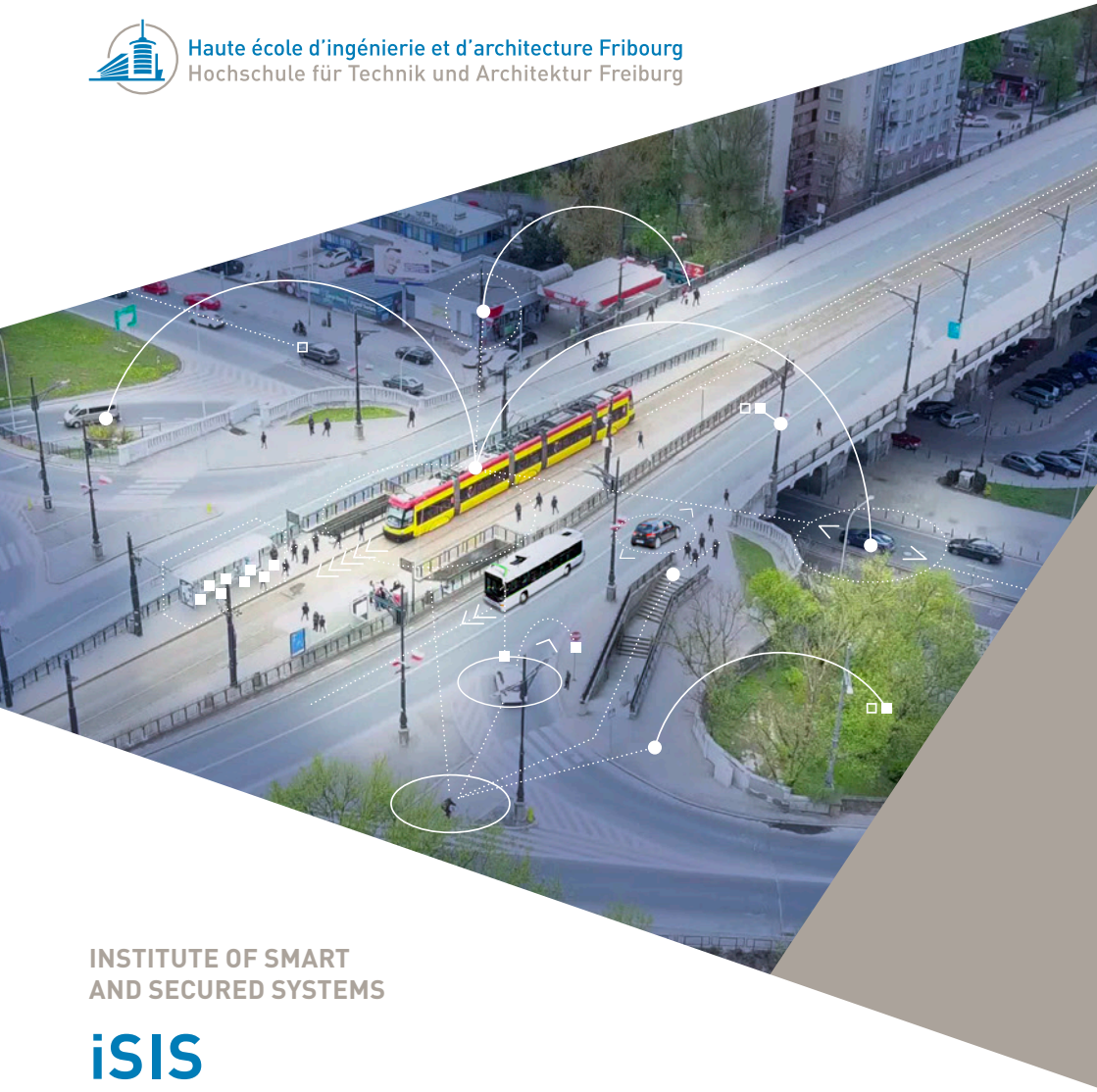
Haute école d'ingénierie et d'architecture Fribourg
Hochschule für Technik und Architektur Freiburg



INSTITUTE OF SMART
AND SECURED SYSTEMS

iSIS

Safety, security and reliability at the service of society

iSIS
Institute of Smart and Secured Systems

Hes·so
Haute Ecole Spécialisée de Suisse occidentale
Fachhochschule Westschweiz
University of Applied Sciences and Arts Western Switzerland

Institute of Smart and Secured Systems (iSIS)

Security and sustainable development require the implementation of intelligent and reliable systems. Our institute of Smart and Secured Systems covers the entire process chain from data acquisition to the complete IT system. Thanks to the close cooperation with the institute's industrial and academic partners on national and international level, we are able to offer a wide range of services such as conducting research projects and mandates, and providing consulting as well as training and further education.

ROSAS
Center Fribourg

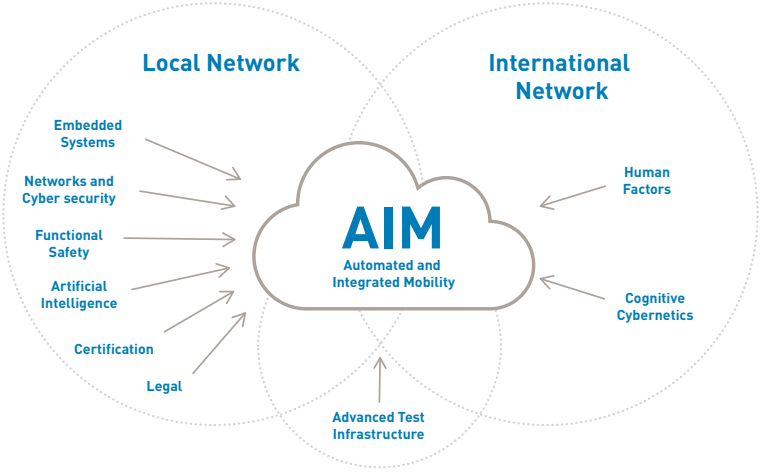
CERTX

With **ROSAS** (Center for Robust and Safe Systems Fribourg), our institute disposes over a unique competence center with a focus on functional safety and certification aspects of complex systems in the fields of vehicle construction, aviation, power generation and railways.

In April 2018, ROSAS founded the spin-off **CertX AG**, which will be the first accredited certification body in Switzerland to certify products according to standards and regulations for functional safety and cyber security.

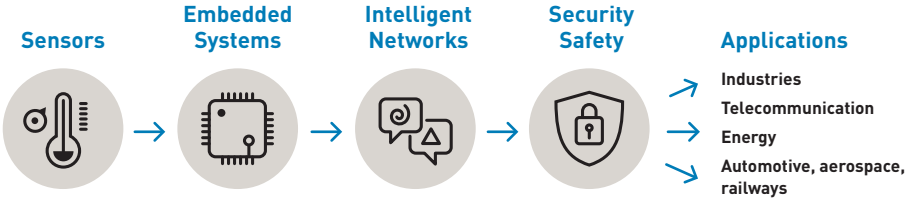
Research Focus Areas

The **iSIS Institute** is the ideal partner for the development of reliable and secure system solutions including acquisition, transformation, communication, data security as well as embedded and mobile applications. Leveraging key competencies of its internal, national and international network, the institute is ideally positioned to meet the new challenges of the mobile society around the innovative topic **AIM** (Automated and Integrated Mobility), which covers the common needs of automated vehicles such as cars, trains and drones.



Core competences

The iSIS Institute has the necessary expertise to offer solutions for reliable and secure systems:



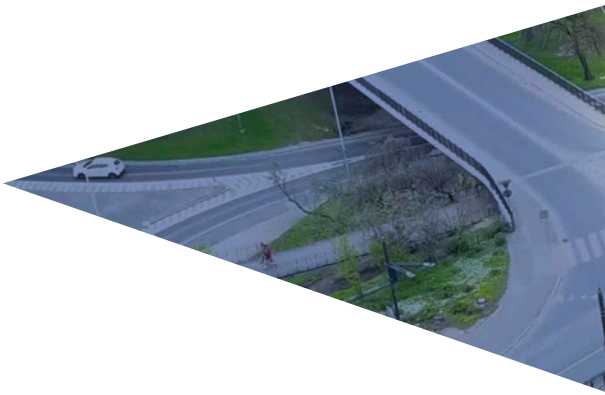
- Blockchain technology for authenticity of transactions
- "In-the-Loop "-Design with Model Based System Engineering (MBSE) and Model Based Safety Analysis (MBSA) including SysML
- Realization and design of Embedded HW/SW, distributed and low power systems
- Reliability of systems in the automotive, energy, mechanical engineering, rail and aviation sectors with the ROSAS competence center
- Single- and multi-core real-time systems (microprocessors, FPGA and SoC)
- Software architectures under Linux and Android for embedded and mobile systems
- Industrial Communication and Networks (LPWAN, IoT, V2x, LoRa, BLE, MQTT, IPvX, 802.11p, 5G, SDN)
- Use of powerful cryptographic algorithms
- Cyber Security Analysis and Audits (OSSTMM)

Specific equipment

The iSIS Institute has access to all the necessary infrastructure to conduct research services and to fulfil mandates in the above-mentioned areas. It disposes over the cyber security tools, the necessary equipment for the analysis and modelling of the latest generation networks, an XIL laboratory and a design office with experience in the development and production of various platforms based on FPGAs and modern processors.

Detailed information you can find under:

→ **ISIS.HEIA-FR.CH**



Information and consultation

Roland Scherwey, Director of institute iSIS

E-mail : roland.scherwey@hefr.ch
Phone : +41 26 429 65 90 / +41 79 834 73 70
Website : http://isis.heia-fr.ch

University of Applied Sciences of Western Switzerland
Institute of Smart and Secured Systems (iSIS)
Boulevard de Pérolles 80
1700 Fribourg

Communication service
February 2019