LICT (Leuven Information and Communication Technology Centre)

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LICT DESCRIPTION

LICT, the Leuven ICT Centre, is a cross-departmental, multidisciplinary centre within K.U.Leuven that bundles the complementary expertise of electronic engineers, computer scientists, sociologists and law experts from the K.U.Leuven and its association partners who are active in the area of ICT.

The mission of the LICT centre is to "coordinate and promote top-level research on the design and application of ICT systems, both hardware and software, to address societal and industrial needs, to make human life more comfortable and more secure, to improve health and to conserve energy and the environment."
This includes coordinating and conducting basic and applied research in the SW and HW aspects of ICT and its applications, serving as a centre of excellence for the industry and the society, providing state-of-the-art laboratory facilities for ICT research, contributing to education programs in ICT and stimulating information exchange in ICT.

The LICT centre, currently representing about 50 professors and over 350 researchers, focuses on intelligent embedded and autonomous systems with applications in several domains like “Health & Ambient Assisted Living”, “Multimedia”, “Transportation & Logistics” and “Environment” (including both “ICT for Greening” and “Green ICT”), and is organised around seven research lines: “wireless communication systems”, “mixed-signal interface systems”, “embedded systems and software”, “distributed software”, “ICT security”, “human-machine interaction” and “knowledge technologies”.

COMPETITIVE STRENGTHS

A very broad spectrum of (state-of-the-art) ICT expertise is made available via a single point of contact, the valorisation coordinator Greet Bilsen, which makes the LICT centre an ideal partner for multidisciplinary research. Especially when multiple aspects of ICT systems (such as for instance system design in addition to security or usability aspects) are needed, the LICT centre is the best contact point. The participating research groups also have a lot of experience when it concerns the execution of (international) projects often in combination with Industry.

WHAT ARE WE OFFERING

Through the participating research groups, LICT is offering a lot of ICT-related expertise both on the level of hardware and software development, as well as on user experience and legal aspects. The different expertises can easily be combined into multidisciplinary projects.

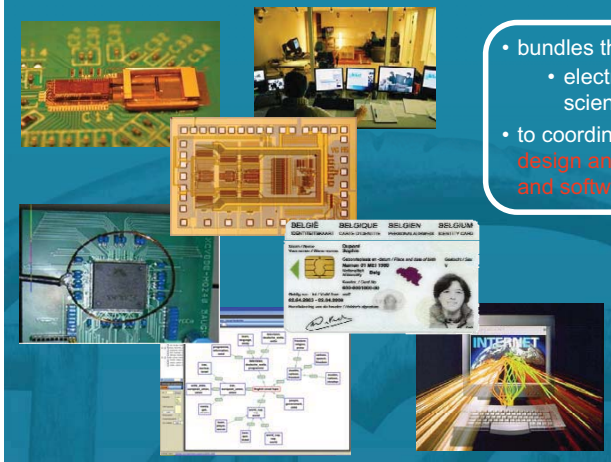
The LICT expertise and research interest includes the following topics :

- modelling and measurement of micro- and mm-wave devices and circuits and related propagation aspects
- (adaptive, intelligent) antenna design, modelling and measurement
- digital signal processing for audio and telecommunications
- Integrated Circuit development:
  - design, realisation and testing of analogue, mixed-signal, RF, millimetre-wave and digital circuits (e.g. for wideband and reconfigurable wireless communication systems, embedded systems, ...) and with a strong focus on low-power design
  - (analogue & mixed-signal) design tools and methodologies
  - sensors and sensor interface design
  - circuits in post-CMOS nanotechnologies
- security:
  - design, evaluation and implementation of cryptographic algorithms and protocols
  - security solutions for state-of-the-art systems ((federated) embedded systems, networks, clouds, ...)
  - software development process for secure software
  - programming languages and models for secure software
  - embedded security
  - anonymity, privacy and identity management
  - legal and regulatory aspects of ICT
- distributed and embedded software:
  - architectures for distributed software (service oriented archit., archit. for wireless sensor networks, multi-agent systems, archit. for context-aware SW systems, multi-tier archit. ...)
  - support platforms for distributed (and embedded) software (component platforms, middleware for web services & embedded systems, management platforms, cloud computing platforms)
  - software engineering of distributed software (aspect oriented, model driven, programming languages, ...)
- computer vision:
  - (active & passive) 3D acquisition & modelling, object recognition (specific objects & object classes), tracking and gesture analysis + (embedded) implementations hereof
- computer graphics:
  - image based re-lighting, global illumination, point based graphics, texture synthesis & procedural textures
- speech, speaker and dialect recognition
- human-information interaction:
  - (user-friendly) access to large scale (structured) data collections
  - information and knowledge visualisation (attention metadata, interactive visualisation, visual analytics, ...)
  - (multimodal) information retrieval/search (text, images, video, ...)
- user experience research and user-oriented design with focus on accessibility, functionality, usability, likeability, sociability, playability, ...
- (therapeutic) computer games with rich user interaction
- knowledge technologies:
  - data mining and machine learning
  - (semantic) web mining
  - knowledge representation and reasoning
  - declarative languages
  - artificial intelligence

KATHOLIEKE UNIVERSITEIT
LEUVEN

Leuven Center on ICT (LICT)

K.U.Leuven research center focusing on Information & Communication Technology



- bundles the ICT expertise of:
  - electronic engineers, computer scientists, social science, law school, etc.
- to coordinate and promote top-level research on the design and application of ICT-systems, both hardware and software, in support of industry and society

Research center goals

- build up and spread knowledge
- facilitate 'interdisciplinary' curiosity-driven and application-oriented research
- organise thematic workshops and seminars
- one-stop contact point for industry and government
- attract top-quality (foreign) students

Benefits for members

- "Single-point-of-contact" towards the outer world
  - Representation of member interests
    - during brokerage events, program call information days, networking events, company contacts, …
    - in different (international) initiatives (e.g. GreenTouch, FI PPP, FET Flagships, JTI's like ENIAC, DSP Valley, TTC, …)
    - in Strategic Research Agenda's, (annual) workplans, …
  - Focused and actual information transfer
    open calls for projects, events, (funding) initiatives, questions for expertise, project leads, …
  - Possibility to publish in the LICT NewsFlash
  - "Dissemination/distribution" of information concerning member events via LICT communication channels
- Participation to different events organized by LICT
  seminars, workshops, distinguished lecture sessions, …
- Participation to annual Industrial Affiliation Day
- Project proposal support
  - coordination of interdisciplinary projects
  - assistance with the elaboration of the valorization part
  - finding of industrial contacts
  - proofreadings, …

Benefits for industry

- "Single-point-of-contact" for ICT related research questions
- Collaboration in multidisciplinary research projects
  Baekeland, IWT, IBBT-ICON, EU projects, bilateral, ...
- State-of-the-art info/workshops/seminars
- Access to long-term ICT research roadmaps (EIT, ENIAC, ARTEMIS, FP7, etc.)
- Industry Affiliation Program

LICT LEUVEN ICT

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KATHOLIEKE UNIVERSITEIT
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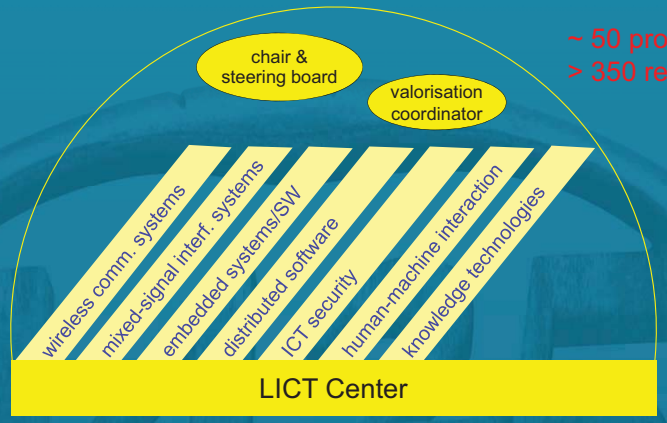
Leuven Center on ICT (LICT)

research lines and application domains

~ 50 professors
> 350 researchers



Participating research groups

- Dept. Electrical Engineering – ESAT (MICAS, TELEMIC, SCD/SISTA/DSP & Bioinformatics, SCD/COSIC, PSI/VISICS, PSI/SPEECH)
- Dept. Computer Sciences (DistriNet, DTAI, HCI)
- Faculty of Social Sciences (CUO)
- Faculty of Law (ICRI)
- Dept. Architecture, Urban & planning – ASRO (CAAD)
- University Colleges (Groep T – eMedia Lab)

7 research lines

application domains

- ICT for health & AAL
- ICT for greening
- Greener ICT
- Content/ Media
- ICT for logistics/transport
- ...

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