



# eltic-Plus<sup>+</sup>

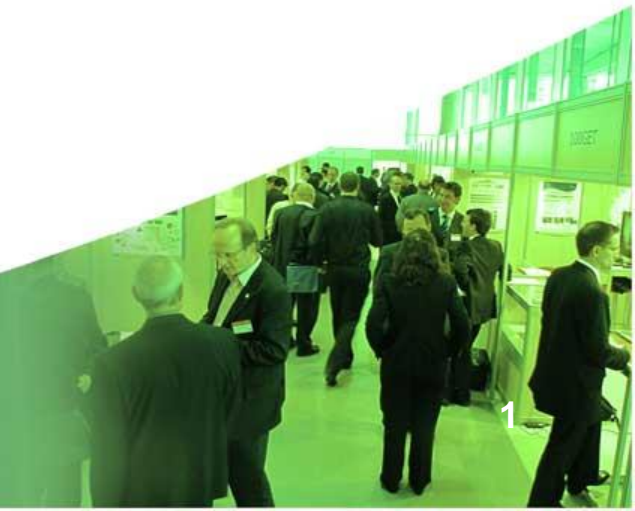
Smart Connected World



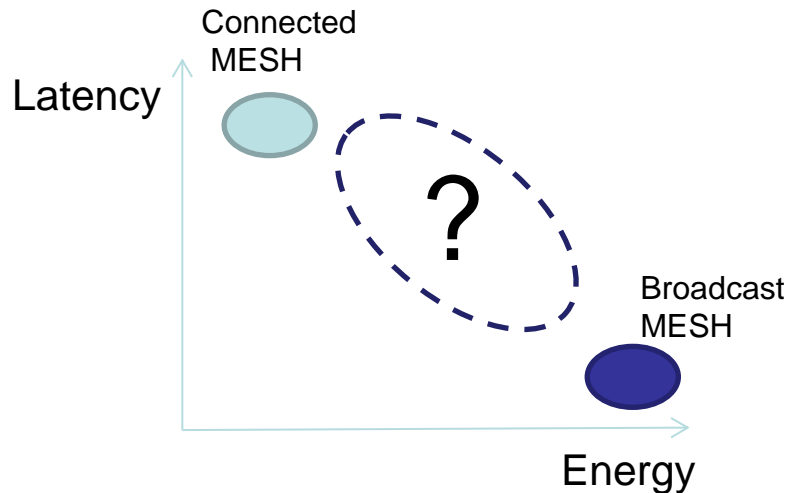
Celtic-Plus Event  
Project Ideas and Networking  
19<sup>st</sup> May 2017, Barcelona

## **URelCom : Ultra-reliable communication for the Internet of Urgent Things**

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- Guarantee on a continuous basis the connectivity needed at the lowest energy possible

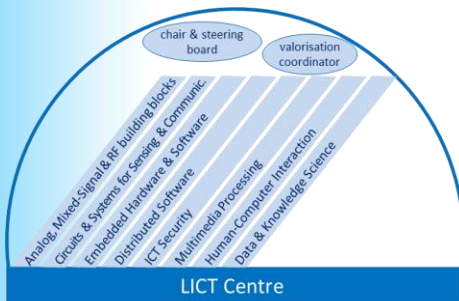


- Added value: increased reliability of remote monitoring & steering



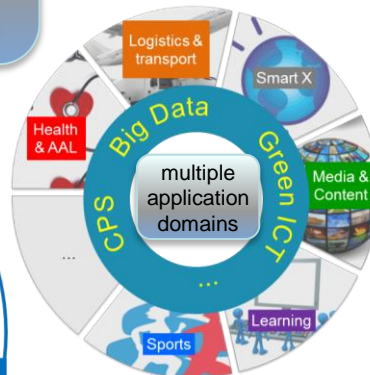
Cross-departmental multi-disciplinary research centre on ICT@KU Leuven  
**hardware & software**, as well as **user & legal** issues

14 research groups  
 ~ 80 professors, ~ 500 researchers



8 research lines

large expertise in national & international research collaboration



## Team:

5 professors; ± 40 researchers

## Research domains:

Networked systems: wireless communications, solving challenges at the interplay between system and hardware research

EM Theory & Antennas: design, fabrication, measurements

Propagation: coverage calculations

Devices & Circuits: microwaves for life sciences (microfluidics, Lab-on-Chip), microwave device modelling & characterisation, wireless medical applications

# Proposal Introduction (1)

## Vision

Provide a constant and robust link between mobile nodes and available infrastructure, indoor and outdoor.

## Motivation:

- Enabling assisted living independent of public infrastructure by facilitating continuous monitoring.
- Enable quick localization of connected devices
- Also applicable outside home-care context

## Scope:

- Intelligent self-managing networks
- Priority differentiation based on message's importance
- Heterogeneous Networks Integration of BLE, WiFi, LoRA, NBN-IoT, LTE

## Technical goals:

### Dynamic and scalable network management

- Distributed network management with cloud support
  - Nodes decide on local behaviour based on global policies
- Data compression and aggregation to maximise efficiency
  - Data is compressed on-route
- Probabilistic routing based on network inference to adapt to varying environmental conditions
  - Interactions between network variables are modelled over time
- Inherent robustness to node mobility due to probabilistic modelling of the interaction between nodes
  - Interaction between nodes are modelled as probabilistic game

### Heterogeneous Network Integration

- Multiple wireless technologies (BLE, WiFi, LoRa, NB-IoT, LTE) running under the same IP networking protocol
- Hybrid connection based and broadcast BLE network to allow fast MESH build up, ultra fast and reliable message distribution and scalable energy consumption

## Available key partners and capabilities:

research institute: KU Leuven-LICT  
(efficient) wireless communications

## Missing capabilities and/or partners:

- SMEs, large companies, research institutes, ...
- 'people' in need of this kind of reliable networks, integrators, ...
- (*project coordinator*)

# Contact Info

For more information and for interest to participate please contact:



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