Fab-IoT-Lab

How research contributes to technological expertise
... on construction sites
< 10 cm

< 25 €

> 5-year lifetime

< 100 m accuracy, twice a day
Towards Large-Scale, High-Density Indoor Positioning

Ultra Wide Band (UWB)

- Very short pulses; ≥ 500MHz BW
- Resilient to multi-path
- Low power spectral density

PSD

- (+) Precise Time of Flight measurements
- (-) Limited scope ~ 10s of meters
- (-) no Clear Channel Assessment → no CSMA
Low-Power and Lossy Networks (LLN)

- Design, improve and evaluate core IoT components
  - Routing, node-to-node communications, energy efficiency, network stack development, ...
  - Standard IoT protocols: IPv6, 6LoWPAN, RPL, CoAP, IEEE802.15.4, ...
BioCloud 4.0 (IT for human health)
Dimensioning “Wireless Sensor Network” Solutions

Funding: BioWin health cluster (Plan Marshall)

- provide innovative multi-hop wireless communication network to interconnect cleanroom sensors
- investigate use of a radiating cable (placed on the roof) to improve communication reliability, reduce sensor energy consumption and latency
ROAD-STEP
Decision tool network – Monitoring of herds in pasture

- Monitoring of cattle
  - Unattended periods in pasture tend to be longer
  - Autonomous sensing of multiple health parameters
    - $T^\circ C$, drinking frequency, limp, weight, body condition score (camera)

- Evaluate different long-range technologies (WiFi, LoRa/SigFox, 3G/4G, NB-IoT/LTE-M, Iridium satellite network, ...)
- Aggregate measurements locally to reduce bandwidth
- Differentiated service: real-time alarms vs non-urgent traffic
- Ad-hoc M2M protocols
Laser cutter and engraver

Mill

3D printers
FabLab MONS

University of Mons

www.enmieux.be

LE FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL ET LA WALLONIE INVESTISSENT DANS VOTRE Avenir
Business development
Spread the word about research projects
Feed Fab-IoT-Lab from research projects
Tell us about your projects

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Thank you