Institut
"Jožef Stefan"
Ljubljana, Slovenija

Department of
Communication Systems

Activities in capillary networks and edge computing for 5G

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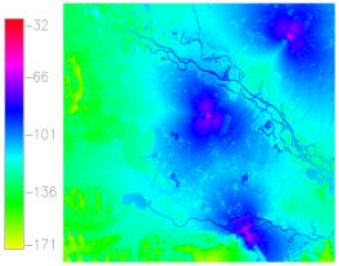
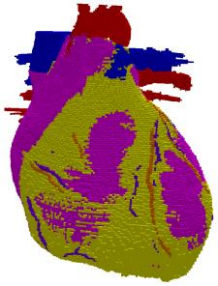
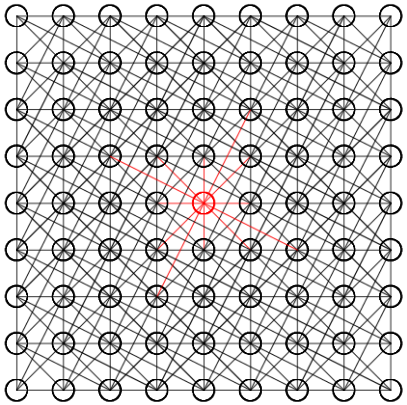
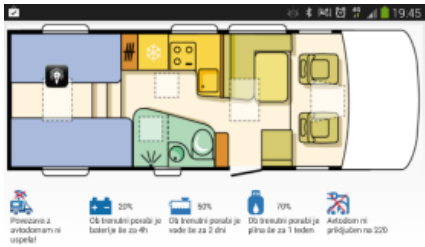
Dept. of Communication Systems

- 3 labs:
  - Communications Technology
  - Parallel and Distributed Systems
  - Networked Embedded Systems
- ~30 researchers
- LOG-a-TEC testbed (FIRE/FIRE+)
- Participation to FP since FP4
- 6 running H2020 projects
  - eWINE – The elastic Wireless Networking Experimentation
  - Fed4FIRE+ – Federation for FIRE PLUS
  - WiSHFUL – Wireless Software and Hardware platforms for Flexible and Unified radio and network controL – TestLAB OC
  - DEFENDER – Defending the European Energy Infrastructures
  - NRG-5 – Enabling Smart Energy as a Service via 5G Mobile Network advances (5G PPP II)
  - SAAM – Supporting active ageing through multimodal coaching



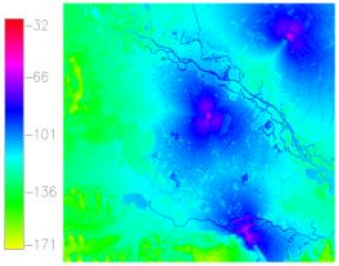


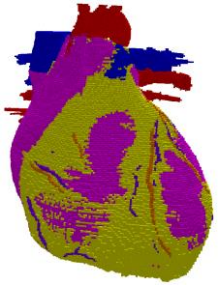


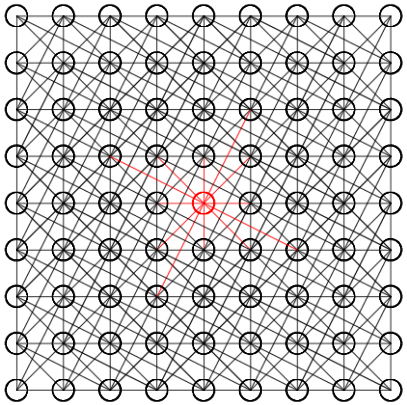


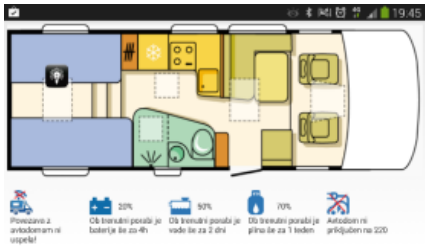
Dept. of Communication Systems

- Competences related to 5G calls:
  - embedded systems design and prototyping
  - optimization of algorithms for embedded system computation, incl. edge computing
  - communication protocols design, communication and computer networks, signal & data processing, interworking
  - wireless communications from channel modeling, localization and network planning to radio and network softwarization
  - distributed and parallel computing from grids and clusters to cores in microprocessors
  - computer and information systems design, device and application programming
  - testbed experimentation, piloting and trials









- Application areas:
  - energy, e/m-health, emergency communications (PPDR), mobility, etc

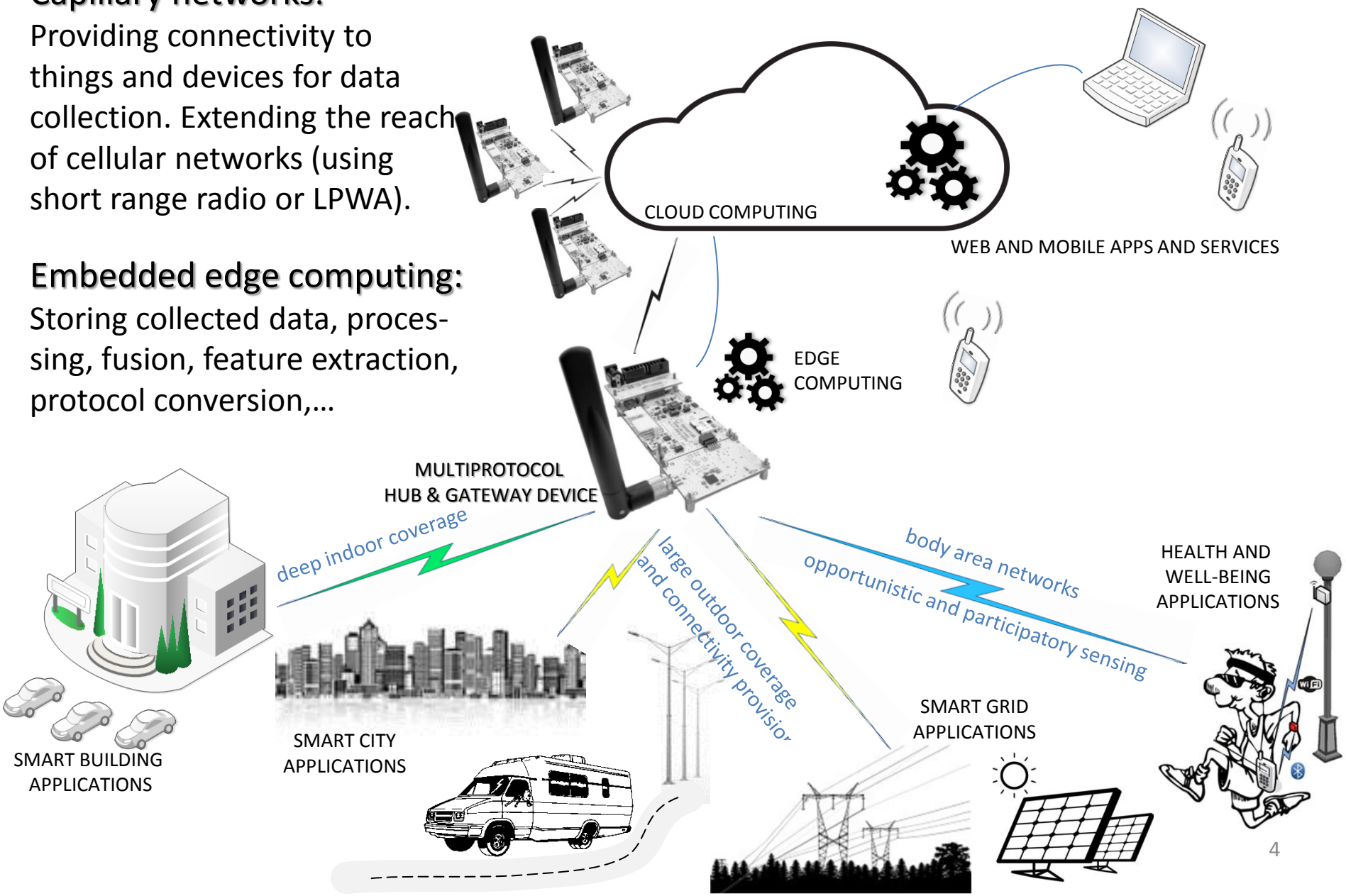
CONNECTING SENSORS, ACTUATORS, DEVICES, MACHINES … INTO THE INTERNET AND WEB

Capillary networks:

Providing connectivity to things and devices for data collection. Extending the reach of cellular networks (using short range radio or LPWA).

Embedded edge computing:

Storing collected data, processing, fusion, feature extraction, protocol conversion,…



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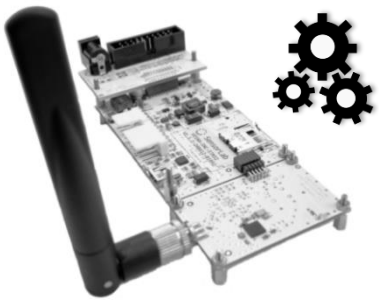
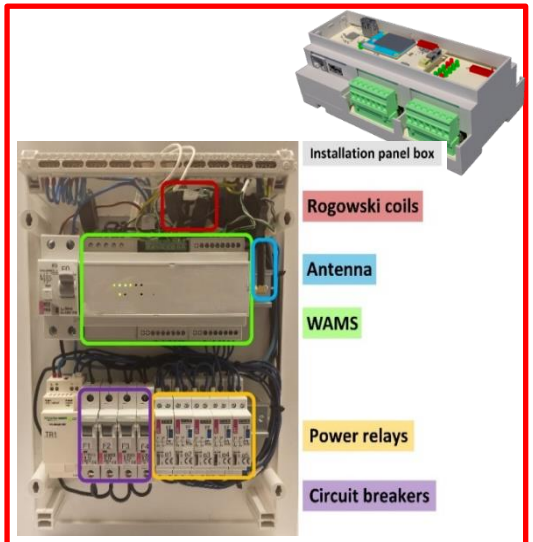


VESNA EMBEDDED SYSTEMS PLATFORM:

- core, radio and application boards
- embedded sensors
- powerful microcontroller
- additional processing power (Intel Edison, Beagle core…) and storage



NON-INVASIVE LOAD AND POWER QUALITY MONITORING

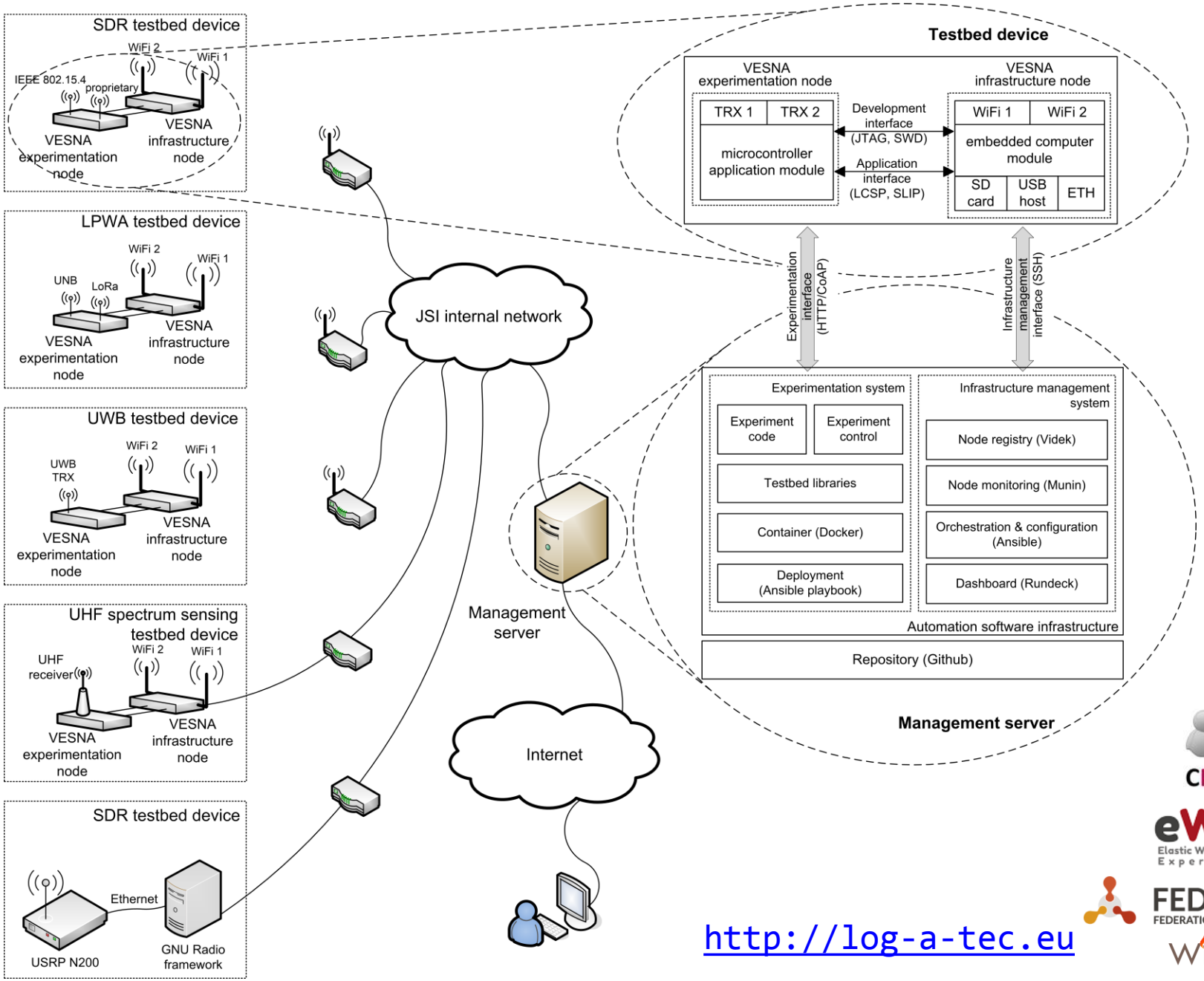
ADVANCED SENSORS SUPPORTING SMART GRID OPERATION

DATA VISUALIZATION AND APPLICATIONS

SENSORS ON PUBLIC INFRASTRUCTURE FOR SMART CITY SERVICES AND APPLICATIONS

WEARABLE SENSORS SUPPORTING HEALTH AND WELL-BEING MONITORING

LOG-a-TEC TESTBED ENVIRONMENT FOR EXPERIMENTATION AND PILOTING



http://log-a-tec.eu

5G Phase 3 interests

- (Pre)validation, piloting and testing (ICT-17-2018)
- 5G URLL for connected mobility and energy efficiency (ICT-18-2018, ICT-19-2019)
- 5G URLL for e/m-health, ambient assisted living, well being (ICT-19-2019)
- Embedded edge computing on resource-constrained devices supporting mM2M (ICT-20-2019-20)

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