CREW

Cognitive Radio Experimentation World

www.crew-project.eu

Scope of the CREW project

The main target of FP7-CREW is to establish an **open federated test platform**, which facilitates **experimentally-driven research** on advanced **spectrum sensing, cognitive radio and cognitive networking** strategies in view of horizontal and vertical spectrum sharing in licensed and unlicensed bands.

The CREW platform elaborates on the experience of eight core partners and incorporates **5 wireless testbeds**.

LOG-a-TEC testbed

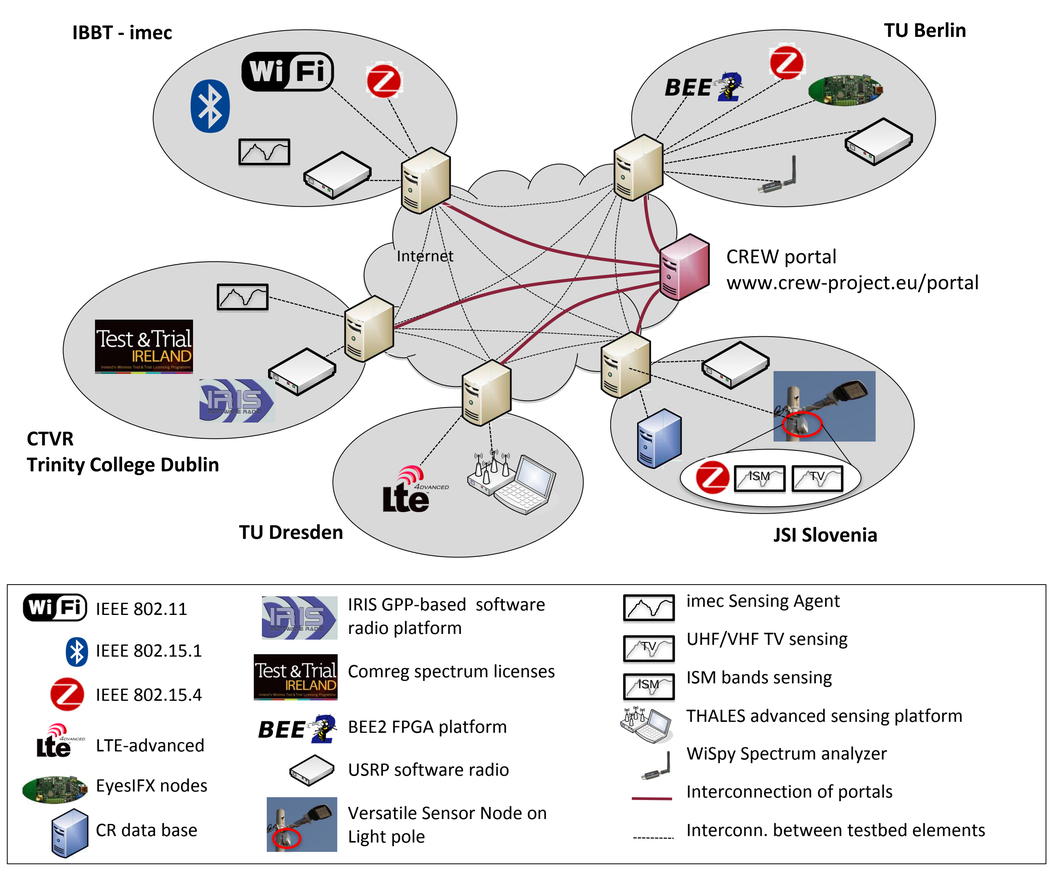
Logatec outdoor site:

- Over-the-air reprogrammable sensor nodes mounted on street lights in the municipality of Logatec, Slovenia.
- Industrial zone and city center clusters.
- Spectrum sensing and cognitive radio applications in wireless sensor networks and low-cost devices.

Jožef Stefan Institute campus indoor and outdoor sites:

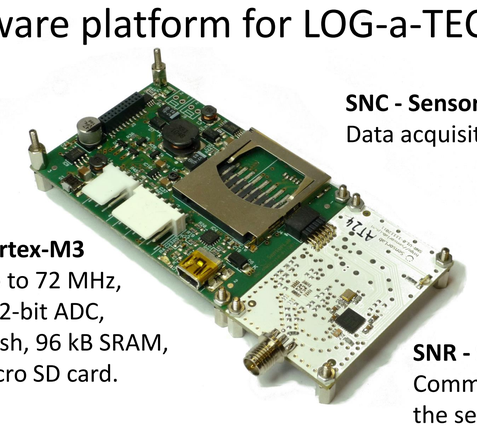
- Sensor nodes installed at JSI campus in Ljubljana, Slovenia.
- Cognitive networking with reconfigurable protocol stacks.
- Staging environment for software running at Logatec site.

CREW federation



VESNA sensor node

Hardware platform for LOG-a-TEC testbed

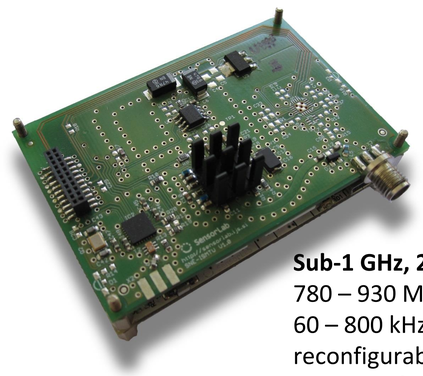


SNC - Sensor Node Core
Data acquisition and processing.

ARM Cortex-M3
Clock up to 72 MHz,
1 MHz 12-bit ADC,
1 MB flash, 96 kB SRAM,
2 GB micro SD card.

SNR - Sensor Node Radio
Communication within the sensor network.

SNE-ISMTV – Sensor Node Expansion
Reconfigurable radio hardware for cognitive radio experiments.



UHF wide-band receiver
470 – 870 MHz central freq.
1.7 – 10 MHz channel filter,
energy detection up to 1 MS/s

Sub-1 GHz, 2.4 GHz narrow-band transceivers
780 – 930 MHz, 2.40 – 2.48 GHz central freq.
60 – 800 kHz channel filters,
reconfigurable modem and packet handling,
up to 800 kBaud, analog signal simulation

Experiments on the LOG-a-TEC testbed

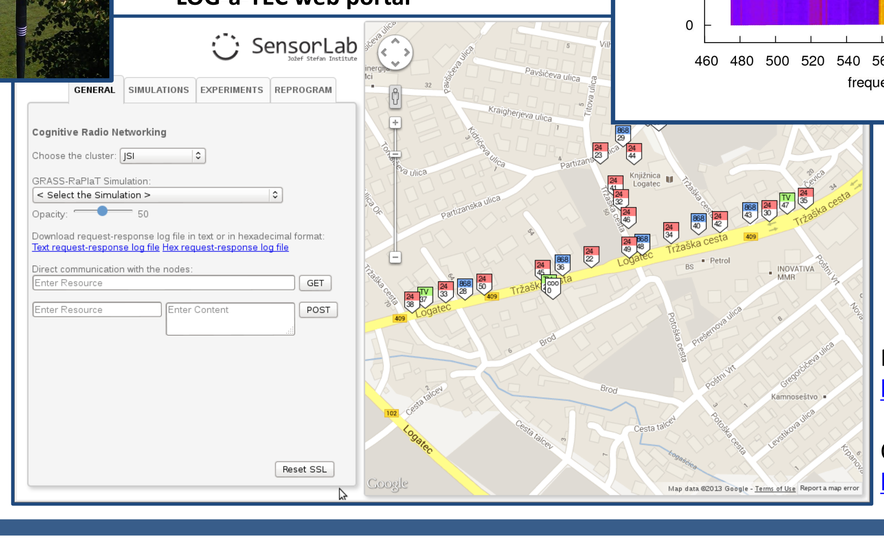
Spectrum sensing

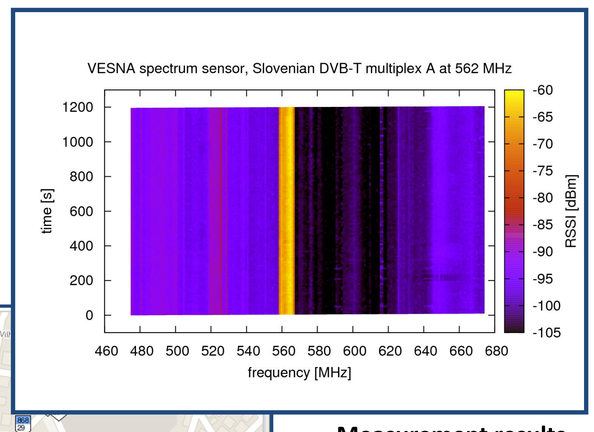
Sensor nodes on street lights

spectrum sensing settings, interferer simulation program

spectrum sensing data

LOG-a-TEC web portal



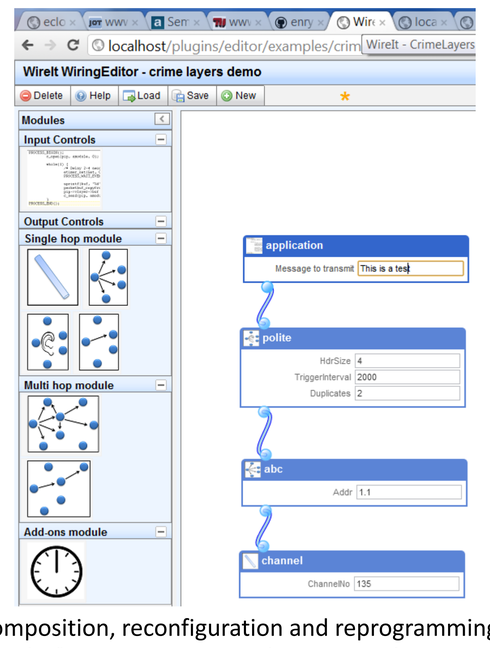


Measurement results

More on the web:
http://sensorlab.ijs.si

Open source software:
https://github.com/sensorlab

Cognitive networking



Remote composition, reconfiguration and reprogramming of protocol stacks for cognitive networking research.

- Contiki OS with Configurable RIME (C-RIME) stack
- Custom reprogramming protocol
- Sesame store for storing consistency rules
- Java server side (Jetty + VESNA server) and WireIt (Javascript/HTML5) user interface

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