Platforms in the CREW federation of cognitive radio testbeds

Tomaž Šolc, Jožef Stefan Institute

Cognitive Platform Day, 21 June 2013, Athens

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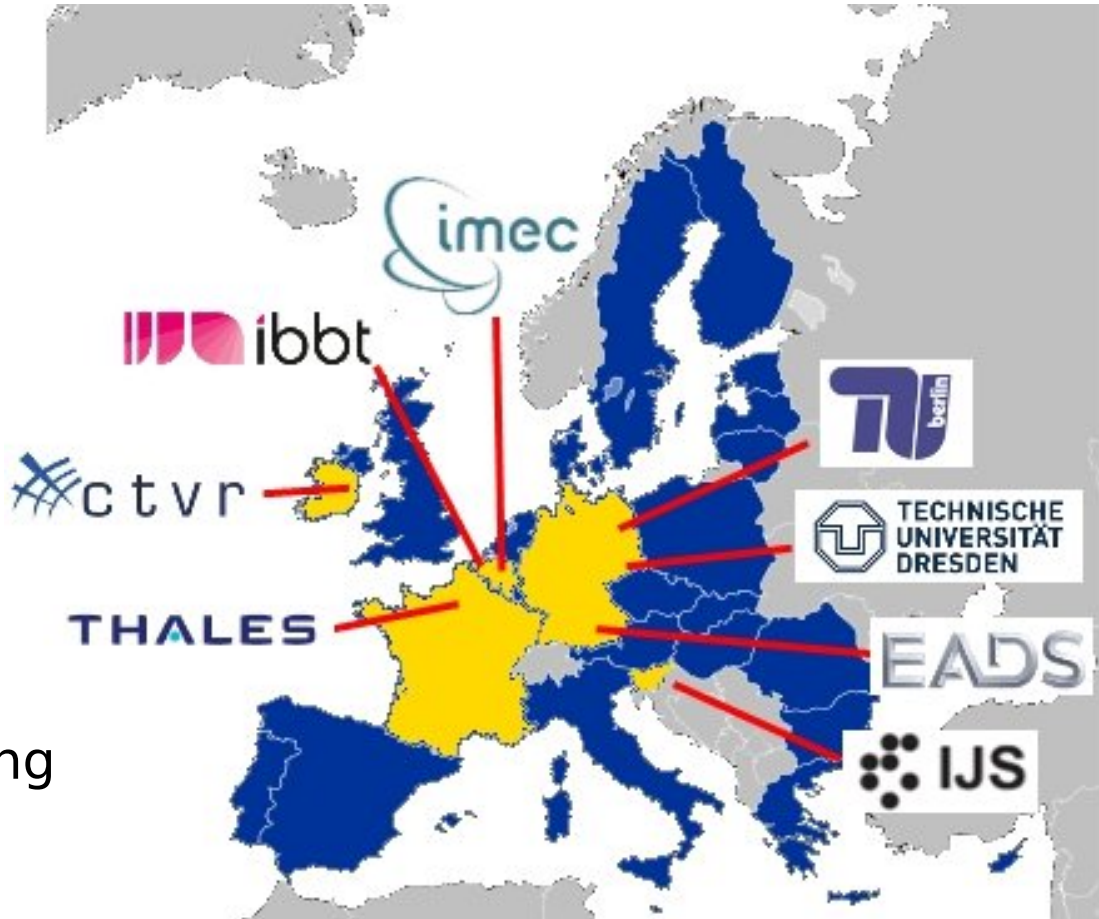
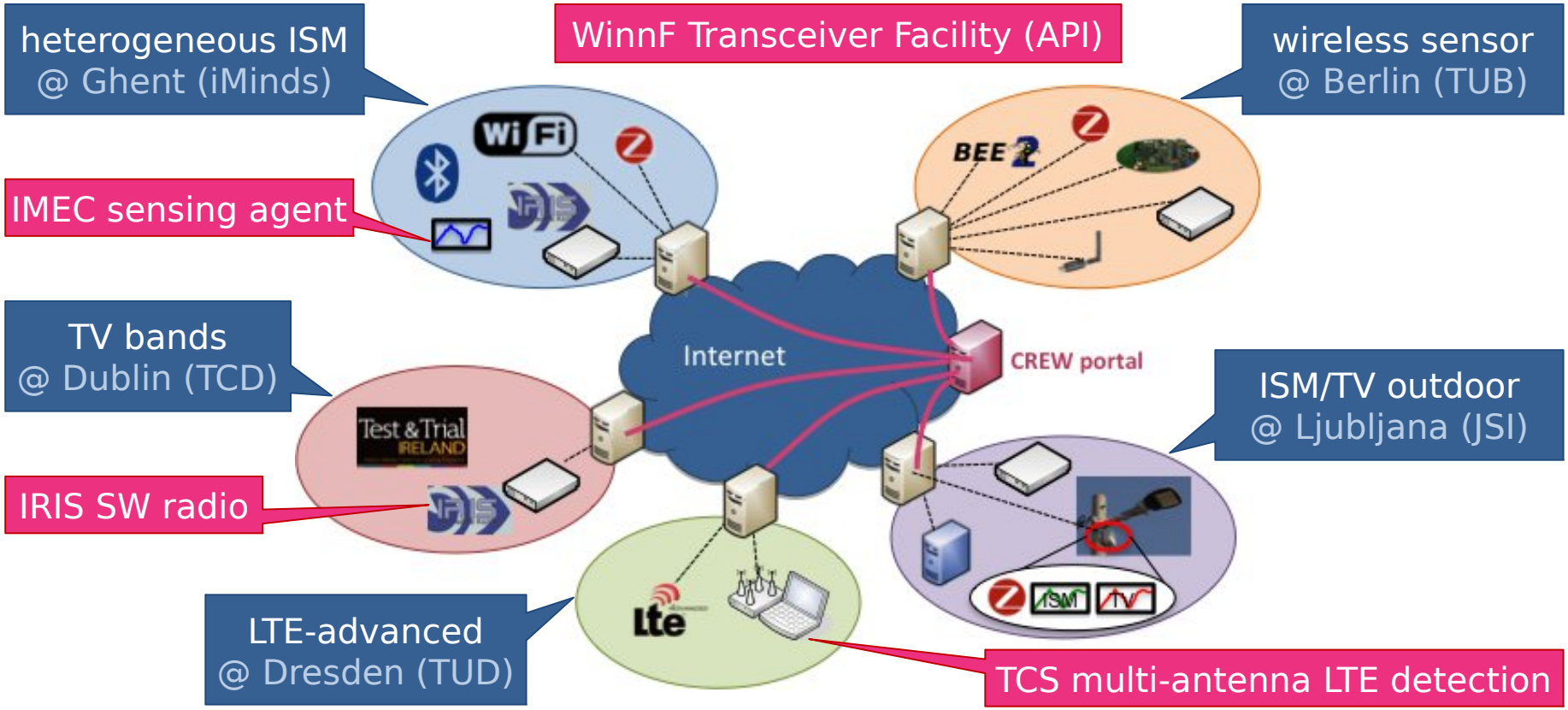
CREW Project

- **Cognitive Radio Experimentation World**
  - Facilitate research into cognitive radio by establishing an open federated test platform.
  - FP7 call 5 (FIRE Initiative), 8 core, 9 open call partners
  - **NOT** doing research nor developing new algorithms
  - Developing facilities for supporting research
  - Augmenting existing facilities
  - Bringing together experise
  - Offering better methodologies, validating solutions



CREW federated platform



	IEEE 802.11		IRIS GPP-based software radio platform		IMEC Sensing Agent
	IEEE 802.15.1		Comreg spectrum licenses		UHF/VHF TV sensing
	IEEE 802.15.4		BEE2 FPGA platform		ISM bands sensing
	LTE-advanced		USRP software radio		TCS Multi-antenna LTE detection
	EyesIFX nodes		VESNA platform on light pole		WiSpy Spectrum analyzer
	CR database				Interconnection of portals
					Interconn. between testbed elements

w-iLab.t, iMinds, Ghent

Office environment

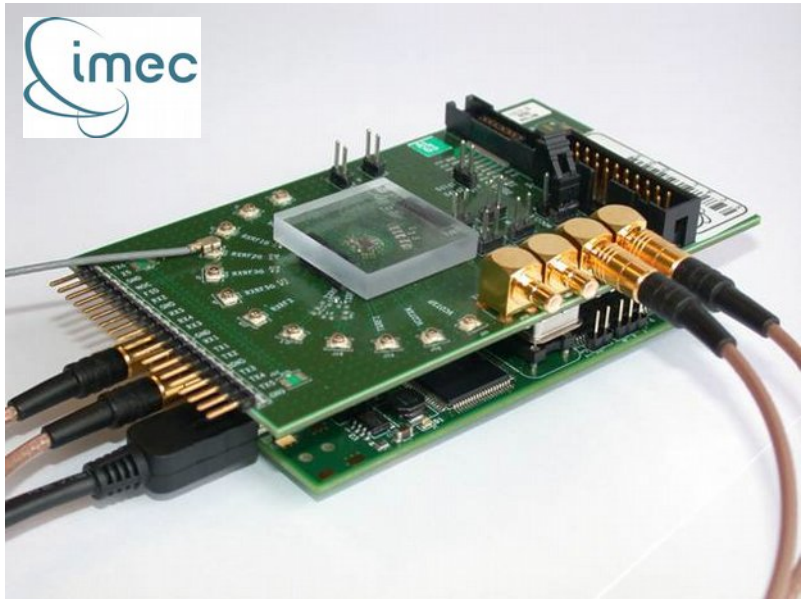
Zwijnaarde environment

- Focus on heterogeneous networks in ISM bands (WiFi, ZigBee, Bluetooth)
- 200 + 60 wireless nodes
- USRP, IMEC sensing agent, AirMagnet

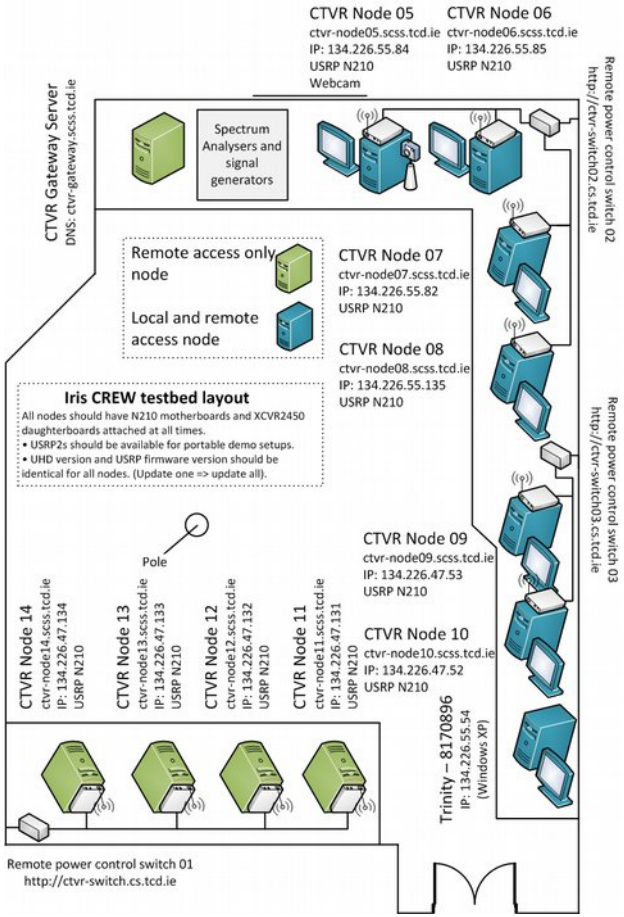
Imec sensing agent

- **Compact low-power sensing solution**
  - Energy detection to advanced feature detection algorithms.
- **Analog frontends**
  - Imec's Scaldio2b (100 MHz – 6 GHz tunable)
  - Rice University's WARP (2.4 GHz and 5 GHz bands)

- **Digital frontend**
  - Imec's DIFFS (DIgital Front-end For Spectrum Sensing)
- **Host PC software**
  - Configuration of Sensing Agent and frontends,
  - raw data handling.

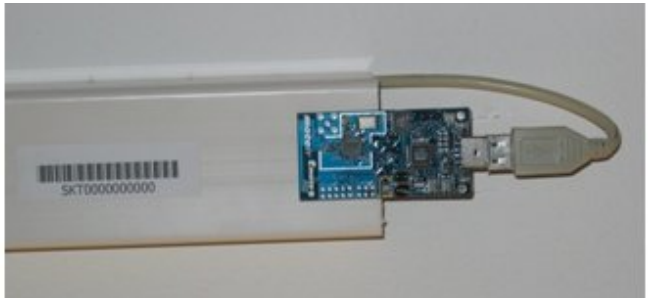


IRIS testbed, CTVR, Dublin



- **Focus on TV bands (secondary use, whitespaces)**
- **17 IRIS nodes with USRP devices**
- **Test and trial license for broadcast frequencies**

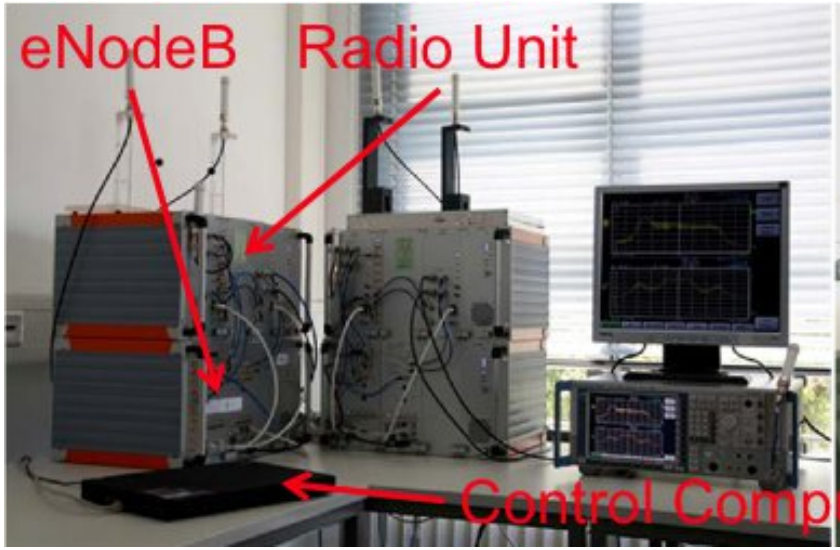
TWIST, TU Berlin

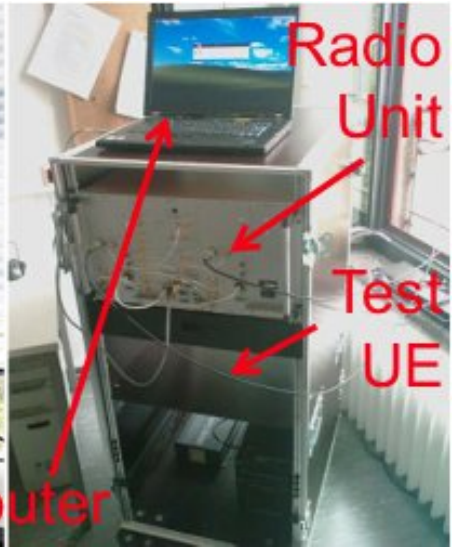


- **Focus on ISM band wireless sensors, body area networks.**
- **102 Tmote Sky, 102 EyesIFXv2 sensor nodes with dedicated out-of-band signaling.**
- **Shimmer2 wearable sensor nodes.**
- **Wi-Spy spectrum sensors for 2.4 GHz ISM band**
- **Remotely-controllable mobile robot with various devices**

LTE Advanced, TU Dresden

TECHNISCHE UNIVERSITÄT DRESDEN

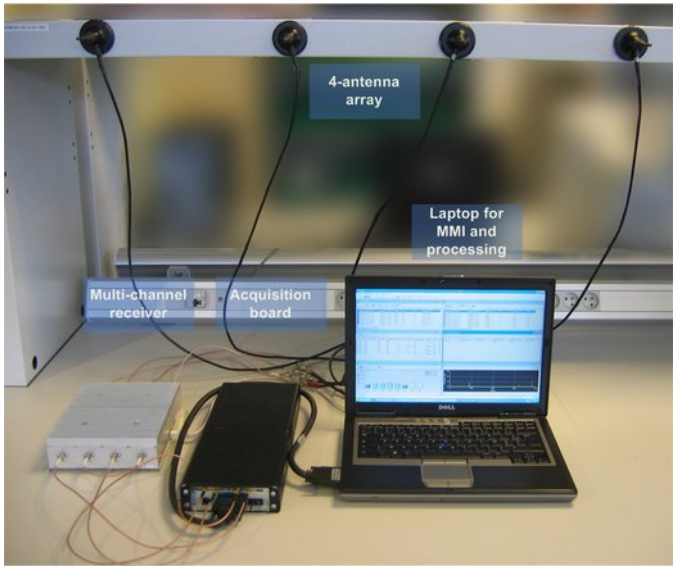


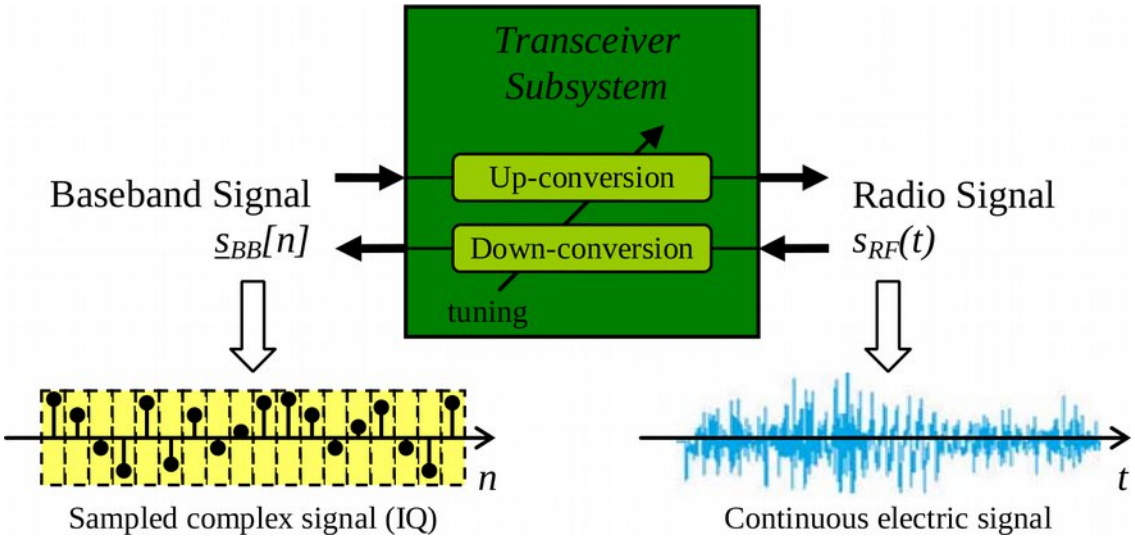


- **Focus on LTE / LTE advanced, indoor and outdoor**
- **LTE license**
- **Signalion SORBAS (3 eNodeB + 3 UE)**
- **Signalion HALO 430 SDR equipment**

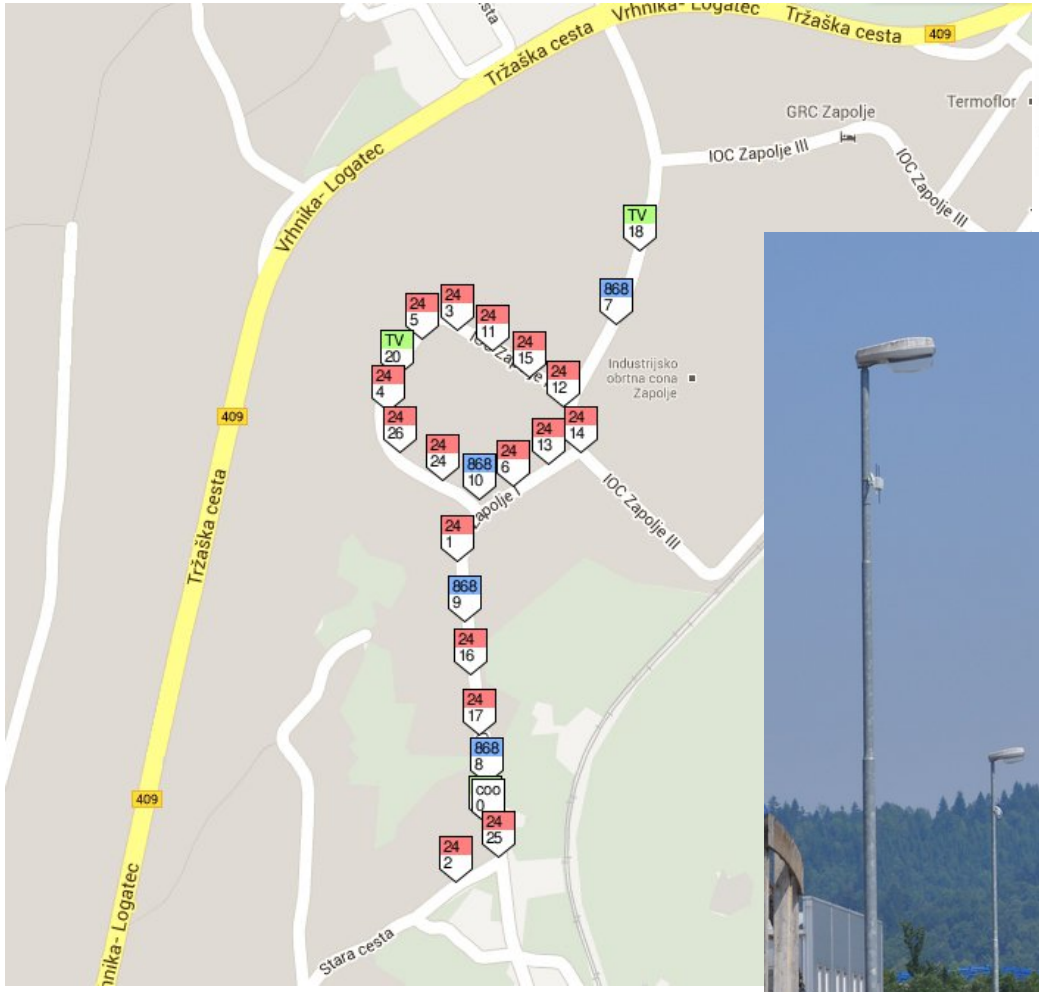
Transceiver facility

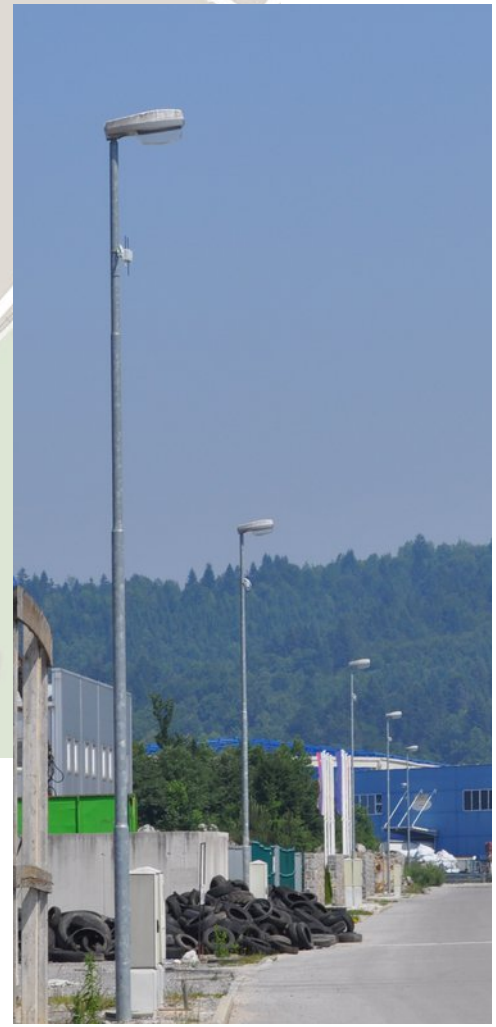
- **Standardized radio transceiver API**
  - Hardware abstraction for software radio applications.
  - Increased interoperability between subsystems.
  - Open specification developed by Wireless Innovation Forum, reference implementation for Ettus research USRP platform
  - Covers programming interfaces and real-time issues
- **Thales multi-antenna LTE detection**





LOG-a-TEC, JSI, Ljubljana





- **Focus on spectrum sensing in ISM and TV bands, cognitive radio applications in wireless sensor networks.**
- **53 VESNA nodes on street lights.**
- **Integration GRASS RaPlaT radio planning tool.**

EADS aeronautics environment

- **Mock-up of radio environment in A340 passenger cabin.**
- **Experiments using equipment from different CREW testbeds.**

More info on CREW

Contact

- Ingrid Moerman – iMinds
- Phone: +32 9 33 14 925
- Mail: ingrid.moerman@intec.ugent.be

Website

- www.crew-project.eu

Newsletter

- http://www.crew-project.eu/subscribe

Info on open call 3

- CREW website (http://www.crew-project.eu/opencall3)
- CREW newsletter
- Official announcement at Future Networks & Mobile Summit (July 3-5, 2013, Lisbon, Portugal)

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