EULER Dissemination and Standardization activities

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Vision

• The EULER project will shape and clarify the European vision for interoperability in joint emergency and security services in close cooperation with E.U. stakeholders in the field of security forces management.
Project structure

WP1: Project Management

WP2: End-users involvement

WP3: Systems architecture

WP5: SRD waveforms and related components

WP6: Integrated demonstrator setup

WP7: Demonstration

WP8: Dissemination and standardisation

WP4: SDR standard and platforms
Drivers - Mobile broadband for Public Safety Communications

- EULER provides wireless broadband networking capabilities for security and rescue personnel.
- Operational requirements for the proposed waveform must come from end-users.
- Statement by ETSI: “While TETRA has proofed to provide Interoperability and a competitive multi/vendor environment for narrowband services, the demand of Public Safety organizations for sophisticated data services requiring wide-band and or broad-band technology is growing.”
Drivers - New capabilities with SDR

Operational requirements

Joint Operations with different agencies (possibly from different Countries)

Public safety organizations operate in unpredictable conditions also from the point of view of spectrum availability (interferences)

Public safety operations are usually unplanned and communications infrastructures may not be available.

Public Safety operators may not have the interoperable terminals with the wireless networks existing in the emergency area.

Evolving Technologies and standards may cause the existing wireless equipment to become obsolete.

Limited budget for infrastructure/equipment upgrade

Different levels of security among agencies

Required capabilities

Interoperability

Flexible Spectrum Management

Reconfigurability

Backward compatibility with legacy equipment

Software upgrade vs. hardware upgrade.

Support for multilevel security.
SDR
Software Defined Radio

• Traditional hardware based radio devices limit cross-functionality and can only be modified through physical intervention. This results in higher production costs and minimal flexibility in supporting multiple waveform standards.

• By contrast, software defined radio technology provides an efficient and comparatively inexpensive solution to this problem, allowing multi-mode, multi-band and/or multi-functional wireless devices that can be enhanced using software upgrades.

Source: SDR Forum
SDR
Software Defined Radio

• SDR defines a collection of hardware and software technologies where some or all of the radio’s operating functions (also referred to as physical layer processing) are implemented through modifiable software or firmware operating on programmable processing technologies.

  – These devices include field programmable gate arrays (FPGA), digital signal processors (DSP), general purpose processors (GPP), programmable System on Chip (SoC) or other application specific programmable processors.

• The use of these technologies allows new wireless features and capabilities to be added to existing radio systems without requiring new hardware.
Use of SDR in civilian security

• Critical issues to be addressed players and their roles
  – Standardisation issue
    • ETSI: EMTEL/MESA, TC-RSS; SDR Forum
  – Communication requirements (incl. security)
    • EU & EDA Ongoing projects
  – Harmonization of procedures and standards
    • SCA, ESSOR, ESRA (WintSec)

• SDR technology has its roots in military organizations due to strong interoperability requirements during joint operations.
Euler standardization roadmap

- 2009
  - E.U SDR Community gathered
  - Agreement on technical scope of standard
  - WintSEC ESRA
  - Standardisation strategies

- 2010
  - ETSI SDR
  - RRS
  - SDR Forum
  - Existing specifications (SCA, OMG-SDR)

- 2011
  - Proposed Standard drafts
  - Validation of std drafts via implementation of SDR platforms
  - EULER standardization

- 2012
  - Proposed Standard
  - Industrial solutions implementing the standard
  - 3GPP, IEEE ITU CEN

- EULER standardization strategies

- Agreement on standardisation strategies
Euler contributions for standardization

- Two standardization tracks are actively followed in Euler:
  - SDR platform related standardization and harmonization
    - SDR Forum
    - ETSI TC-RRS WG
  - Novel waveform for future public safety services
    - Security aspects from Euler
    - Flexible Spectrum Use issue related to PSC

- Existing major specifications are followed
  - SCA being the most important
ETSI TC-RRS

• Technical Committee group, TC RRS - Reconfigurable Radio Systems
  – The target of this committee is to look at development and standardization issues related to Software Defined Radio.
  – EULER consortium has established connections to ETSI RSS WG4 (Public Safety) to further discuss standardization opportunities in the scope of public safety SDR.
    • Euler representative from JRC
ETSI TC-RRS WG4

- WG4 for Public Safety and Defense
- The main focus of ETSI RRS WG4 is on the standardization of the external interfaces to the SDR nodes mainly for Cognitive Control channels and security aspects like Secure software and profiles download.
- Two work items have been created in ETSI RRS WG4.
  - User Requirements for Public Safety
  - System Aspects for Public Safety
EULER: Implementations and *SDR Forum*

- Euler activity of implementing WiMAX physical layer technology will provide input for SDR-Forum for further development of the standardization of transceiver technologies
Euler Dissemination activities

• Demonstrations
  – Waveform portability and system interoperability

• Three phases of providing the communications to the site
Euler Demo scenario: Phase 1
Euler Demo scenario: Phase 2

Telemedicine: Data and live video

WiMAX COTS
Telemmedicine video

TETRA COTS
Communications
Euler Demo scenario: Phase 3
Euler Dissemination activities

• Workshops
  – Yearly events for status update and open collaboration
  – E.g. in connection with PSCE and/or CPF events

• Scientific activities
  – Conferences, forums, journal articles etc.
  – New innovations and research results will be published

• Other channels of dissemination
  – Project web-site (www.euler-project.eu) including news section and possibility to download deliverables and presentations
  – Flyers, posters, news articles in national/european level magazines, journals etc…
Thank You for your attention!