Content and context-aware delivery for interactive multimedia healthcare applications

**CONCERTO objectives**

- Increase the efficiency and effectiveness of medical intervention through new multimedia applications
- Guarantee high Quality of Experience (QoE) for medical doctors also on the move and in emergency scenarios
- Foster telemedicine applications through development of new ICT solutions

**Major accident location:**
- Important Multimedia User generated content over the wireless network

**Doctors perform remote analysis**

- **Signalling**
- **Content-aware networking**
- **Encoding & protection**
- **Content adaptation**
- **Data base**
**Key topics addressed**

- Compression and protection of medical images and videos
- Cross-layer optimized adaptation and QoS provisioning
- Content-aware wireless delivery

**Use cases**

- Ambulance and emergency areas
- Emergency areas with multiple casualties
- Emergency rooms
- Ubiquitous tele-consultations
- Surgical assistance
- In-hospital scenarios
- Medical education

**Work Breakdown Structure**

- WP1: Project management
- WP2: Requirements and system architecture
  - WP3: Secure QoE-aware image/video coding
  - WP4: Context awareness: media adaptation, fusion, and protection
  - WP5: Content-awareness: wireless network support for media transmission
- WP6: Implementation, integration, and end-user trials
- WP7: Exploitation and dissemination

**Hospital premises**

- Hospital #1 & Data Center
- LTE, WiMAX, HSPA
- IPv6 network
- EKG, CT, MRI, Ultrasound
- Video conference

**Ambulance**

- Scanning networks
- LTE, WiMAX, HSPA
- Medical data download
- Patient examination
- Mobile examination

**Information Service**

- Diagnosis & workstation
- Medical image database
- Hospital LAN
- WLAN AP

**Emergency Room**

- Image/video coding
- Content adaptation
- Mobile specialist consultation
- Signal quality

**Hospital #2**
Main studies and results

• New QoE metrics for medical domain
• Image and video compression algorithms for both medical and standard contents
• Multi-view and multi-camera video acquisition campaign
• Dynamic adaptation strategies for multimedia encoding and transmission
• Fine-grained distributed and dynamic mobility management
• New selective encryption algorithms
• Content- and context- aware network solutions
• OMNET based system simulator
• Validation of project technical results by medical staff
• Collaboration with two hospitals
• Proof of concept demonstrator

The CONCERTO demonstration scenario
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