



# eltic-Plus<sup>+</sup>

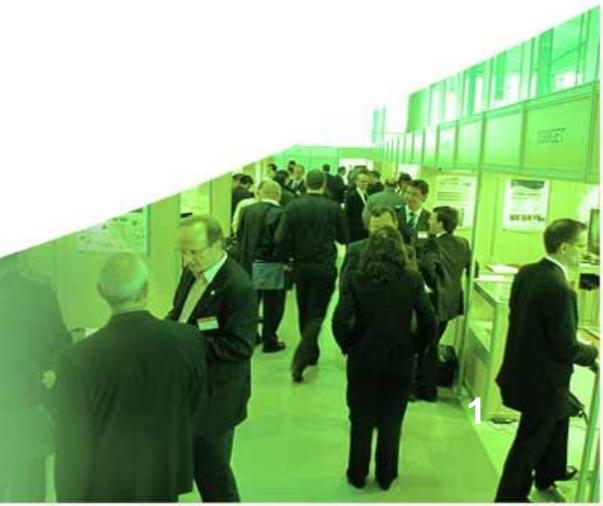
Smart Connected World



Celtic-Plus Event  
28 April 2015, Vienna

## IoT for Emergency Management

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- Leading mobile operator in Turkey w/ 35M subscribers
- Active partner of 5G activities of NGMN (Next Generation Mobile Networks)

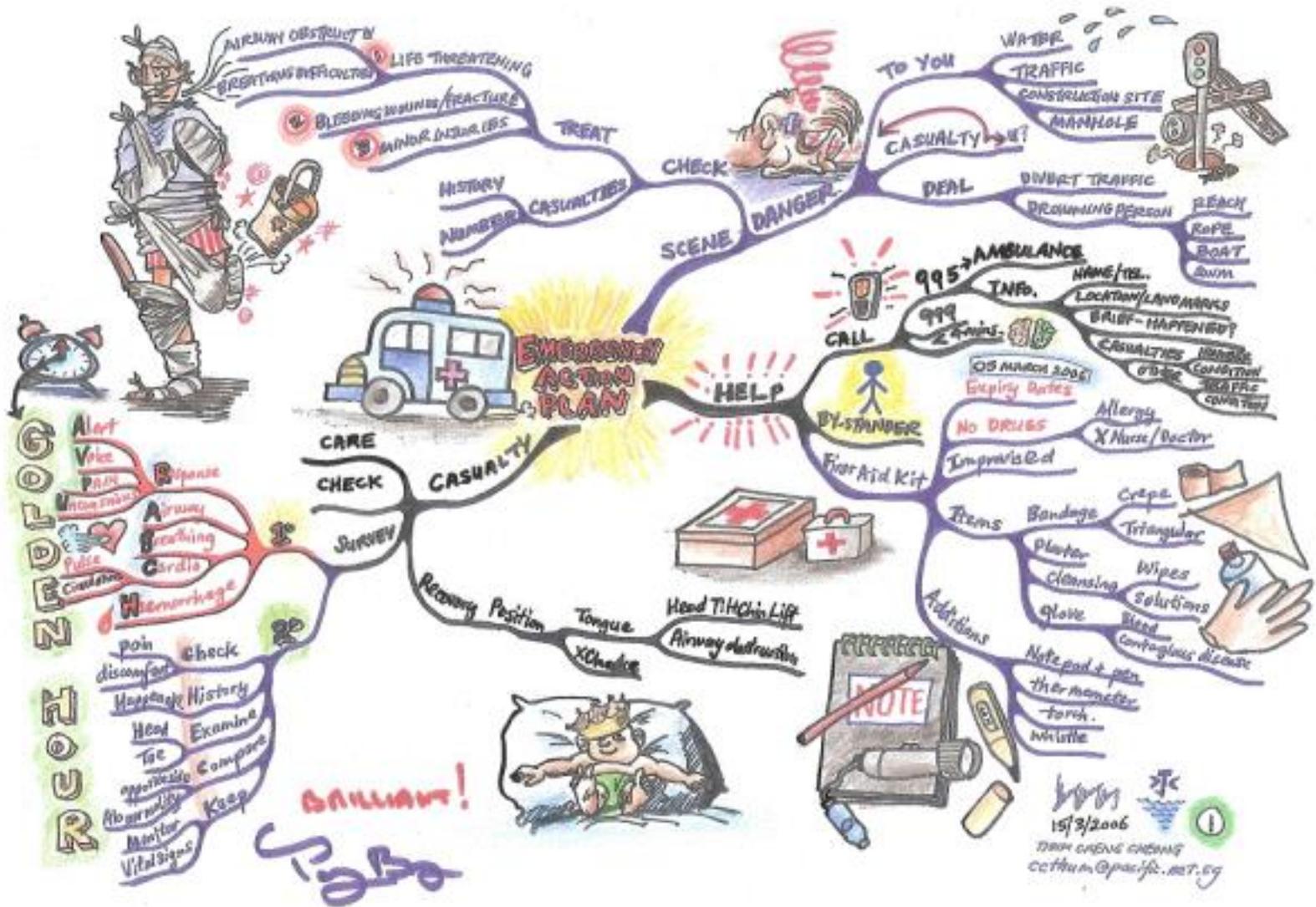


- Founded: 2007
- Ranked 6th Entrepreneurial and Innovative University in Turkey
- Ranked 3rd in terms of projects by faculty members for FP7 programs
- Research volume: 12M €
- 28 Successful EU Projects

# Motivation

- Small or large scale emergency situations such as heart attacks or disasters can cause injury, death, and serious losses.
- These losses can be minimized by taking the right action at the right time.
- Goal: use IoT for emergency management

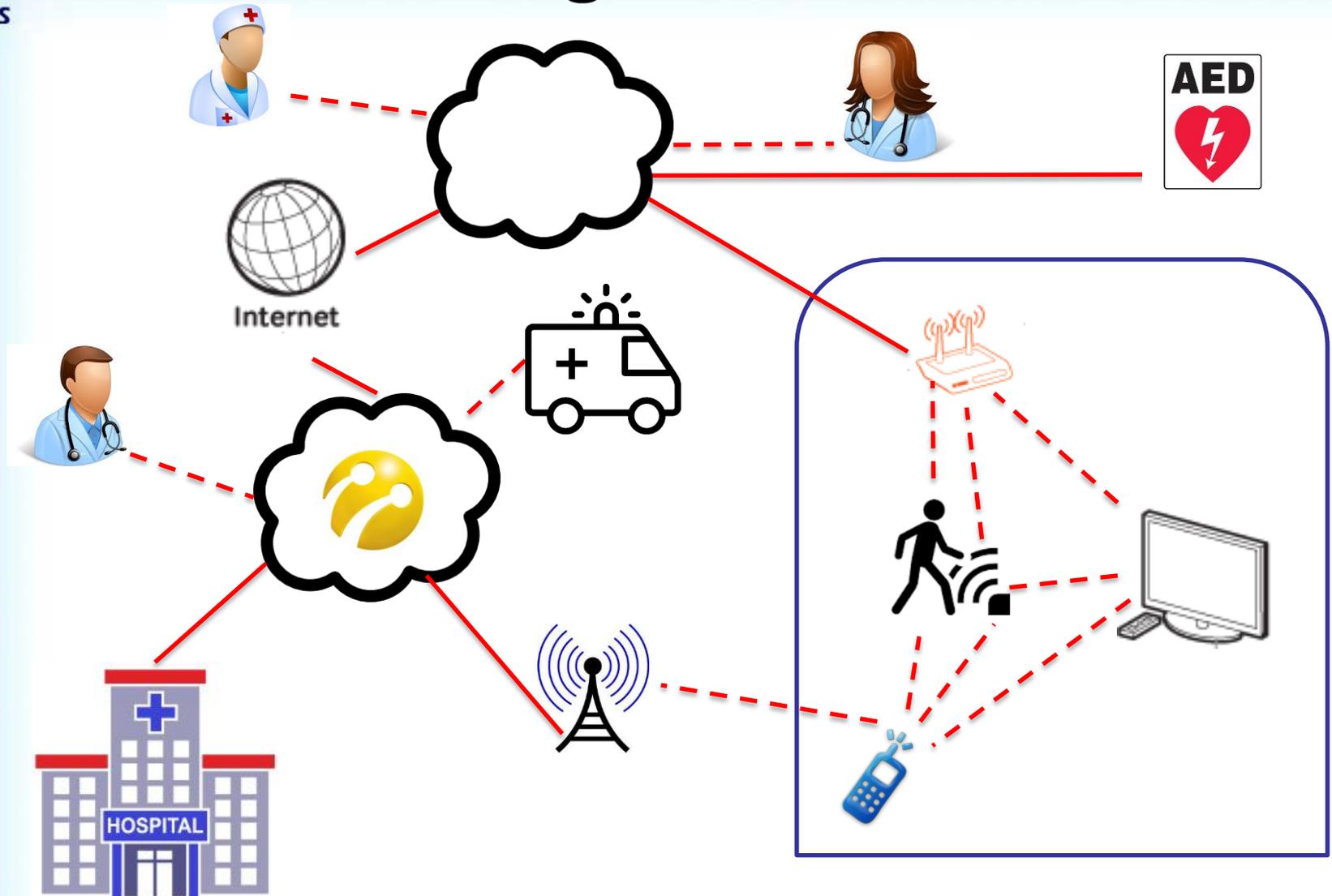
# Right action by right team at right time



GALLIANT!  
Lobo

15/3/2006  
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# Right action by right team at right time



# Proposed Approach

- Situation awareness
  - Reasoning about the emergency
  - Effective usage of sensors
- Resource management
  - Mobile resources (e.g., human, vehicles etc.)
  - Static resources (e.g., MRI, tomography, etc.),
  - Capabilities of resources (e.g., expertise of medical staff, etc.)

# Proposed Approach

- Planning
  - Determine possible ways of relieving the situation
- Team Formation and Resource Allocation
  - Determine the best ad-hoc team to execute the plan

# Proposed Approach

- Plan Execution and Re-assessment
  - Adaptation to situational changes
  - Responding to the unexpected
  - Situation reevaluation and agile re-planning
- Mitigation
  - Learn from experience

# Four Phases of Emergency Management



# Required Technologies

- Big data analytics and cloud computing
- Machine learning
- Wearable sensors
- Sensor fusion
- Localization
- Mobile computing and communication
- Statistical planning and matchmaking
- Multi-objective optimization and game theory
- Risk estimation

# Challenges

- Fault-tolerance
- High level control and adaptive planning
- High level configurability
- Plug-and-play capabilities
- Adaptation to situation changes
- Flexibility and reusability of resources

# Contact Info

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