Theme 10: Security FP 7 – SEC 2009-1 **Collaborative project**

TITLE :

Nuclear Biological Chemical Terroristic attack and multiple casualty disasters emergency and security.
Hospital management and planning using a "Simulated Di er Plan" and "Security Support System"

ACRONYM:
OMEC (Optimized Management of Emergency and Crisis)

COLLABORATIVE PROJECT :

Capability project

Areas :

10.4.1-4.3 Restoring security and safety in case of crisis
10.1.1-1.3 Security of citizens
10.2.3 Security of infrastructures and utilities

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Proposal

1 Scientific and/or technical quality, relevant to the topics addressed by the call

1.1 Concepts and objectives

a) Concepts

The Emergency Tri-modal distribution of casualty death compute the 45% of the patients die between 10 minutes and 35% between 1-2 hours.
The "mortality data" are highest if a war or NBC terroristic attack has happened.
The immediate intervention and the optimising of hospi l management is the best reply to the emergency .
Some medical team think, that the best response is the "scoop and run".
We think that this is a good approach in some countries and in some war areas only.
Now, the modern military triage is orientated to treat immediately the highest numbers of patients .
The "stay and play" procedure is preferred to save the highest numbers of patients called of "first" or second emergency" when the surgical treatment is fundamental immediately or within six hours.
We think this is a correct approach in our country and in the most European civil hospitals.
This approach must be controlled and "an anticipated simulating plan" can be helpful to optimise the hospital management.
The "multiple casualty disaster "is a particularly eve who requires extraordinary management resources because of numbers, types and gravity of patients.
The "natural disaster" and "NBC terroristic attack" c many deaths and many specialistic diseases.
Our comprehensive plan is the key to minimize the disruption of patient care and services during and after "natural" or "man-made" disaster.
The disasters and emergencies of the other countries , have validated the need to extend the emergency preparedness plan to a more comprehensive ap to emergency management interesting various hospitals, health agencies, military and civil organizations.
We think that we can use the same plan to face either the "multiple casualty disasters" or to "War or NBC terroristic attack" at best.
Fundamental precepts in hospital-based planning for bio terrorists events include having a comprehensive well-rehearsed disaster plan that is based on threat and vu nerability analysis.
In USA, the J.C.A.H.O (Joint Commission Accrediting Hospital Organization Environment of Care Standards) and "all-hazards" approach to disaster planning and management form the basis for a solid bioterrorism response plan.
During preparation, education and training are imperative. Clinicians must maintain a high index of suspicion for use of bioterrorism agents be able to make a rapid diagnosis, and promptly initiate empiric treatment. Other personnel from administration, security, public relations, laboratory, pharmacy and facilities management should be familiar th the plan, know when and how to activate it, and understand their roles in the response. A recognized incident comma d system should be used.
Hospital leadership must be aware of the facility's capabilities and capacities , and should have plans for expansion of services to meet the surgeon i the demand. The command center should coordinate emergency personnel teams, decontamination, security, acquisition of supplies and notification of public and other authorities and the media. If the plan is ever implemented, stress management with psychological support will play an important role in recovery.
The readiness of healthcare facilities to respond to acts or naturally occurring epidemics and disasters has been at the centre of public attention since September 11/2001.
The many other tragic events that have occurred throughout the world since then further reinforce the need for all healthcare facilities and medical personnel to increase their level of preparedness if they wish to optimize outcomes.
Maximizing survival rates and minimizing disability during any MCI (Mass Casualty Incident) hinges on rapid, seamless, and coordinate response between first responders and first receivers.

Previous efforts at disaster preparedness have focused predominantly on the pre-hospital and rescue phase of the disaster response, but a complete and coordinated community response requires creation of integrated disaster plans.
True readiness can only be achieved by testing and modifying these plans through integrated simulation drills and table top exercises. Hospital-wide drills are essential to educate all staff members as to their institutional plan and serve as the only substitute at present to first hand experience.
At present .there is no evidence-based literature to define what constitutes the best medical response by medical personnel within a disaster setting.
This information will likely evolve over the next several decades as we now recognize Disaster Medicine as a separate scientific and medical entity.
In the interim, we can develop and modify our response plans based on the" lessons learned" from past experience.
Prior events have demonstrated that general surgeons and surgical subspecialists are critical components to a successful hospital response for the vast majority of all mass casualty incidents.
Thus the surgeons must take responsibility for increasing their knowle and understanding of basic disaster management principles and must play an role in developing their institutional disaster plans.
For this reason ,we propose our project based on simulating plain and others security support systems.
Chemical warfare agents are toxic weapons and emergency pre-hospital medical care providers should be well prepared, trained and equipped to give response.
Personnel need to be aware of the following medical issues regarding pre-hospital management of a chemical attack, event recognition, incident medical command and control, safety and protection, decontamination, isolation of the incident area (Hot zone,
Warm zone and Cold zone), sampling and detection, psychological management, communication, triage, treatment, transportation, recovery activities and fatality management.
During pre-hospital response, healthcare responders should provide self protection by wearing proper protective equipment and ensuring that the casualty is thoroughly decontaminated.
Medical first responders are also responsible for performing triage in each zone of the incident area.

AMP can be used as a fully functional surgery room too. We think that a AMP (advanced medical post) should be built in specific material to treat immediately the war-NBC terroristic victims or infected patients by biological or chemical agents too. The AMP is positioned near the areas of the disaster or near an important road or in the hospital's parking to facilitate the cross of ambulance or of the helicopters.

This is connected with "Reserved Communications System" to the Hospital (Hub) and is protected by a "Security Support System" as the Hospital (Hub).

b) Objectives :

Our Goals are:

- to simulate the best plan to reply to mass casualty disasters or NBC Terroristic attack
- to extend the emergency preparedness plan to a more comprehensive approach to emergency management interesting various hospitals , health agencies , military and civil organizations. We think that the complete and community response requires creation of integrated disaster plan
- to minimize the disruption of patient care and services during and after disaster
- to re-establish speedily the normal activity
- to compile a "Procedure's Hand book" to assure the best response for the future.

These Objectives are provided for the areas:

10.4.1-4.3; (Restoring security and safety in case of crisis/After match-crisis management-Simulation, planning and training tools and methods for management of crisis and complex emergencies-First responder for the future)

- to build “the Security Support System” based on logistic and supply chain security, surveillance and communications system to assure the citizens, disaster’s place , AMP (Advanced Medical Posting) and hospital’s security
- to re-establish speedily the normal activity.

These Objectives are provided for the areas:

10.1-1; 1.3 (Security of citizens)
10.2.3 (Security of infrastructures and utilies)

1.2 Progress beyond the state-of-the-art

The readiness of healthcare to respond to Terroristic cts or naturally occurring epidemic and disasters has been at the centre of public attention since September 11, 2001.The many other tragic events that have occurred throughout the world then further reinforced the need for all healthcare facilities and medical personnel to increase their level of preparedness if they wish to optimise outcomes.
The disasters and emergencies of other countries have lidated the need to extend the emergency preparedness plan to a more comprehensive approach to emergency management interesting various hospitals, health agencies, military and civil organization.
In USA the JCAHO (Joint Commission Accrediting Hospital Organization Environment of Care Standard) are forcing hospitals to revisit their disaster planning process. Emergency management, a process that is familiar to USA municipal and industry planners is now part of hospital planning.
In EUROPE, at present, there is no evidence – based literature to define what constitutes the best medical response by European hospitals within a disaster setting.
At present, there is no evidence –based literature on the need to extend the emergency preparedness plan to a more comprehensive approach to gency management interesting various European hospitals, European health agencies, European military and civil organizations.
We think that our European Comprehensive Emergency Pla is an original plan to minimize the disruption of patient care and services during and after a natural or man-made disaster.

Our European original proposal project propose the original objectives

1) to simulate the best plan to reply to disasters
2) to extend the emergency preparedness plan to a more comprehensive approach to emergency management interesting various European hospitals, European health agencies, European military and civil organizations
3) to restore security and safety in case of crisis
4) to guarantee the security of European citizens
5) to guarantee the security of European infrastructures
6) to re-establish speedily the normal activity.

1.3 S/T methodology and associated work plan

Our proposal project is based on construction of a :

1) **AMP (Advanced Medical Post)**
2) **Simulator**
3) **Security Support System.**
4) **NBC Sensors or other technologies to identify NBC agents**
5) **Integrated Sensors**
6) **Network Sensors**
7) **Wireless MESH –TETRA Network or other similar technology**

1) AMP (Advanced Medical Post)

The **AMP** is necessary to treat immediately the highest numbers of victims and don't block the normal activity of the hospital.
Moreover, we think that our AMP, positioned near the disaster's area or in the hospital's parking or where it is more useful, must be protected as the Hospital (Hub).
The protection is based on "Security support system".

2) Simulator

The **Simulator** is necessary to obtain best simulating plan to emerge management and save the highest numbers of patients.

The Simulator will evaluate all input to identify the pe of the disaster , the infected area , the extension of the damage In case of a CBRN event ,the simulator will also forecast the expansion of a known agent. The simulator plan is the best way face emergency and save the highest number of individuals.
There are many types of disasters and events .The Simulator processes the specific event.
It will use all the information collected from medical and scientific Knowledge .The Simulator is the core of the modelling plan of the emergency. The Simulator analyses the details of the event ,the victims and everything useful to obtain the best reply to the disaster.
The AMP sends non stop symptoms ,signs and conditions the patients .The Command Centre also gets information from National Health System. It be useful a medical computerized history database of citizens. These information are combined ther to decide the proper treatment.
The simulator provides instant on line analysis of important symptoms too and estimates probabilities of diseases or conditions according to given information and specific internal logic .It does not make diagnosis .It is not a substitute to a medical doctor it is just an assistant tool.

RI0000 System requirements shall be generated
RI0001 The System architectural design shall be develo .
RI0002 The simulation shall evaluate input data and forecast near future infection (possibly with agent known)
RI0003 The ability of identification of the principal l (hub) and other actors for a disaster shall be developed

RI0004 The ability to response and assignment for a disaster shall be developed (Resource planning)
RI0005 Possible Agents shall be identified based on reported symptoms.
RI0006 Report generation to evaluate efficiency

The Simulator can be developed using an artificial intelligence on the evaluation of the events.

We will elaborate reports in order to check the efficiency of the Simulator. These reports will be used to evaluate and further improve the performance the system. The model simulated plan will obtain the improvement of the total reply to the disaster.
Our partners will study and implement specific technical solutions in accordance with operating requirements.

The first step aims to identify the perimeter of the individuated area, its extension and the numbers and the typology of the involved people.
It is most important to identify the sensitive objectives such as : airports, industrial areas, supermarkets, business-political-religious centres, seismic areas, important roads, parks, historical places ,aqueducts, gas station, jails, underground, railway stations, schools.....
Then it is necessary to identify the principal hospital (Hub) and the secondary near hospitals with their medical and management specific characteristic's to replay to emergency .

The second step aims to find all the possible causes of the disaster to simulate a realistic plan to obtain the best total human and resources response to he event occurred in the previous identified area.

The third step aims to produce the evaluation of the efficacy of the model simulated plan and to obtain the improvement of the total reply to the event.
The main hospital called Hub coordinates all the civi and military actors involved in the emergency, therefore the Hub must be protected as a sensitive objective.

DISAT will develop a CBRN engine for calculating the effects of weapons of mass destructions, estimating the area exposed to danger, and simulating the CBRN Event. DISAT will provide two main aspects of CBRN:

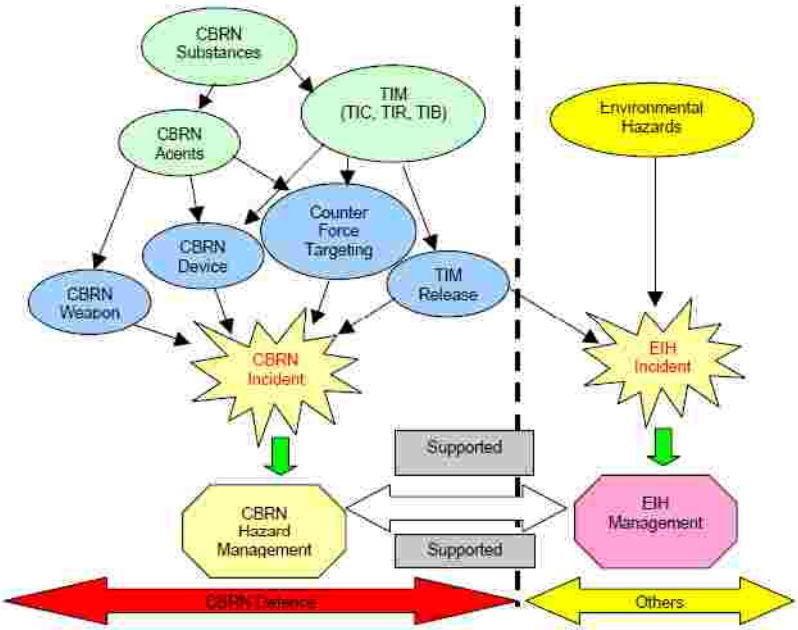
1. CBRN Engine: Provides core functionality for calculating contaminated areas after CBRN hazard and offers solution alternatives to minimize the effects.
2. CBRN Client/Server and Standalone Applications: These applications are bridges between user and CBRN Engines. Applications may take the advantage of various technologies and information stores such as GIS, logistic information stores, meteorology, formatted messages from other sources (e.g. NATO, WMO Standards).

CBRN Engine will be used for calculation of:

- Chemical Incidents
- Biological Incidents
- Radiological Incidents
- Nuclear Incidents

The engine will be based on:

- NATO Standards.
  - ATP 3.8.1
  - ATP 45
  - AEP 45
  - AdatP-3
- Atmospheric Models for Meteorology
  - MM5 or ECMWF (or a better model)
- The models developed by DISAT



CBRN Event

Note:
TIC – Toxic Industrial Chemical
TIB - Toxic Industrial Biological
TIR – Toxic indiustrial Radiological
EIH – Environmental Industrial Hazard

3) The Security Support System

The Security Support System is based on logistic and supply chain security, surveillance and communication system to assure the citizens , disaster's place and hospital's security to assure the best reply to event in the highest security and to re-establish speedily the normal activity.

The "Security Support System" is based on :

a) Security System
b) Support System.

a) The Security System must guarantee the security to he citizens and to the rooms where are dislocated human resources, specific technologies, communications systems and all databases and computerized information, in the Hub and AMP.
Our partners will develop the modern technological systems to obtain the best security.

b) The Support System is based on "Command and Contro Center". This Centre must guarantee the coordination of all actors involved.
The Security Support System will be based on a TETRA Network that will provide a safe voice communication and an iter – connected wireless MESH Network to allow for easy data transmission of Sensor signals and data, Graphics, Ima dical tests.

The system architecture will be defined according to its usage and the scenario (i.e AMP and Hub hospitals) with Servers, Nodes and Gateways.
The Security of the information transmission will be a maim issue.
The authentication and authorization processes via TETRA interfaces are described and how the data that is transmitted via the wireless MESH network is protected.
Quality of Service mechanisms shall be defined which start in the authentication and authorization phase and include the definition of different routing depending and types of traffics similar to Differentiated Services (Diff Serv) approach.
Different link quality metrics will be defined in the routing protocol in order to dimension for the different traffic types that could be present in the network (mainly three ,real time ,non real time and background).
Furthermore bandwidth limitation mechanisms and admission control have to be performed in order to guarantee that fairness between same types of users is provided and also a gateway assignment protocol is proposed in order to perform load balancing using the QoS requirements from incoming connections.
The different routing protocols suitable for the network shall be analysed.
The mobility mechanism will be similar to that of mobi IP that can solve handoff between MESH nodes without losing connection and active sessions.
A brief description shall be included about different mechanisms that should be mplemented in order to extend the reference scenario to non 100 % coverage of TETRA NETWORK scenarios.
Finally a prototype shall be implemented to be integrated in the Simulator for testing the whole system.

4) NBC Sensors or new technologies to identify NBC agents

Chromo – fluorogenic chemosensors :
One of the early detector systems for chemical detector systems for chemical warfare agents , in concrete for nerve agents was a kit with a colorimetric reagent (DB3) that changes its in the presence of mustard gases . Also paints , paper strips and crayons with embedded chromogenic reagents have been used for the detection of certain
Vesicant and nerve agents by colour changes . More recently he range of the field detector kits were updated to V-agents, cyanogen chloride and phosgene oxime . However most of these systems are affected of cross reactivity and false positives by other much less

dangerous liquids or gases .In the last years there has been a revival of the development of chromogenic and fluorogenic reagents for the detection of nerve agents based on the use of new state - of –the art "colorimetric and fluorimetric" concepts.

Our goals will be :

- To research and to develop more selective systems and arrays of chromogenic sensors reagents using selective chromogenic reagent for nerve gases
- To research and to develop new technologies to identify more unkno n Nuclear – Biological - Chemical agents (used as weapons)

5) Integrated Sensors

Our goal is to guarantee the security of citizens and of the infrastructures too.
We have the need to build, at first, the NBC Sensors or new technologies reveal dangerous Nuclear-Biological –Chemical agents used as weapons.
These Sensors will be positioned in the AMP and in the Emergency Department in the Hub. We think to integrate these Sensors with others Sensors in the garments of the patients and in the ones of the emergency team in order to monitor air parameters and vital functions too.
Emergency response teams are sometimes at personal risk because of the unpredictable situations they have to deal with. The main issues to ensure the personal security of the members of a rescue team are their position on the disaster ar and theirs vital functions. It is possible to develop sensors that allow in real time monitoring of vital functions and give some data to calculate the position for indoor activities. All the of the team will be connected through a robust wireless MESH-TETRA Network or others similar effective technology (reserved communication system) to the Command Control Centre.
Our objective will be the design and implementation of a global communication system that can be used by unskilled people in extreme environmental conditions.

6) Network Sensors and 7) Wireless MESH – TETRA Network or other similar technology

Wireless mesh networks.
Today, public safety and first-responder networks demand solutions based on open standards that perform better than existing emergency networks. Wireless Mesh Networks (WMNs) constitute a promising technology for these environments. The communications solutions in emergency scenarios are based on Private Mobile Radio (PMR) systems. These systems use low-frequency signals, which provide good coverage and penetrate wal easily. At low frequencies, channels are narrowband. As a result, they can only offer analogue or digital voice capabilities and very limited data services suitable for status messages or short messages. Nevertheless, nearly all communications are currently voice-based. Today's PMR systems are based on the digital technologies of Terrestrial Trunked Radio (TETRA) [1] and the Association of Public Safety Communications Officials (APCO P25) [2].

The TETRA system offers direct mode operation, which allows direct communication between terminals without network infrastructure. TETRA can on y be used to transmit voice messages and short messages, due to the very limited data rates available (around 2.4 kbps, with the highest protection level). Other new broadband services that may further improve the efficiency of emergency tasks include robotics, remote control and data collection from a large number of monitoring sensors.

The U.S. Federal Communications Commission (FCC) allocated 50 MHz in the frequency band from 4940 to 4990 MHz to enable the provision of broad d services for emergencies [3]. This should enable IEEE 802.11a/j and Digital Short Radio Communications (DSRC) products to be adapted. Other U.S. government actions aimed at improving the efficiency of public safety response are led by the SAFECOM program [4].

This program has produced a State of Requirements (SoR) document, which contains a set of requirements for an interoperable public safety communications system. The SoR defines an operational organization with different models of Public Safety Communications (PSC) networks. The following PSC networks are considered.

- Personal Area Network (PAN): a network for connecting devices carried by dividuals.
- PSC User Group Network (PUGN): an ad-hoc network made up of network nodes carried by different individuals.
- Incident Area Network (IAN): a temporary network created to support communications during an incident.
- Jurisdictional Area Network (JAN): a permanent infrastructure covering a wide area (e.g. a city) for supporting communications in emergency situations.
- Extended Area Network (EAN): a network that provides communication between regional or national public safety networks.

Communication between the entities deployed in an emer is provided by an IAN. IANs should be easy to deploy and should support a certain of user mobility. Communication with remote locations such as other IANs or dispatch centers is supported by a JAN. JANs ld offer backbone capacity. Both IANs and JANs should be ust to any link or node suppression by offering sufficient path redundancy in the event of catastrophe. In view of the features of PUGNs, IANs and JANs, together with the demand for broadband pplications from the public safety community, Wireless Mesh Networks (WMNs) appear to be promising solution for these kinds of PSC networks due to their inherent robustness in terms of available paths, self-configurability and self-healing properties.

802.11 based WMN

A WMN can use IEEE 802.11abgn/j-like radio interfaces and thus offer broadband capacity in emergency scenarios. These technologies have range limitations due to restrictions on the power transmission allowed. Unfortunately, the channel delay spread may still introduce coverage restrictions, especially in the case of outdoor use [5]. The multi-hop approach of a WMN makes it possible to overcome the aforementioned limitations.

One key factor that may determine the success of WMN technology is interoperability, which is another major problem, identified in emergency response operations [4]. Standard technologies must therefore be used. Gateways to interconnect devices using different protocols, such a TETRA network, can be only developed when such protocols have public specifications. WLAN technology makes it possible to build WMNs based on Commercial Off-The-Shelf (COTS) technology. However, the medium access control (MAC) layer of the 802.11 standard was not initially designed to provide either multi-hop or QoS capabilities [6]. Several well-known problems, such as throughput degradation, occur due to the lack of a WMN-level medium access mechanism [7]. Furthermore, radio propagation uncertainty adds to the challenge of offering QoS in these environments.

IEEE 802.11s

Task Group IEEE 802.11s was created to amend the IEEE base standard, in order to enable mesh capabilities [8]. Despite the enhancements included in IEEE 802.11s, mandatory functionalities, such as path selection and link metrics, still do not consider interference due to the WMN nodes. The current IEEE 802.11s draft specification provides a MAC layer extension in which the mandatory coordination function is the Enhanced Distributed Coordination Access (EDCA) defined in the IEEE 802.11e specifications. Since EDCA is defined in a single-hop environment only, Mesh Deterministic Access (MDA) [9] is specified as an optional feature for resolving current MAC layer limitations in multi-hop networks. IEEE 802.11s defines the link path selection as the routing functionality at layer two. The Hybrid Wireless Mesh Protocol (HWMP) [10], an adaptation of the Ad hoc On-demand Distance Vector (AODV) routing protocol [11] developed by the IETF MANET working Group, has been adopted as mandatory path selection. HWMP

uses the Airtime Link Metric (ALM) to quantify the cost of transmitting a packet through a link as the total time the channel is occupied.

Routing metrics

One approach that may mitigate the limitations of IEEE 802.11-based WMNs is the routing of flows through appropriate paths according to i) the QoS requirements of the flows, ii) the quality of the WMN links, iii) the load of nodes and iv) the interference suffered by the nodes. Considerable research effort has been devoted to enhancing the metrics of multi-hop routing protocols, to take into account at least some of the aforementioned aspects [12]. Hence, several routing metrics in WMNs have been proposed that can be divided in load-unaware and load-aware metrics. Load-unaware metrics use physical layer features such as transmission bit rate, link error rate and network topology. Load-aware metrics consider the transmission activity of nodes of the network.

Load-unaware metrics, the expected transmission count (ETX) [13]metric was one of the first attempts to increase performance in WMNs, as an alternative to the hop count metric. ETX estimates the expected number of transmissions of a packet through a link. The Expected Transmission Time (ETT) [14] is an improvement on the ETX metric as it aims to take into account the link bandwidth, thus favouring fast links. In order to achieve this goal, ETT estimates the time required for the transmission of a packet through a li . ETT builds on the basis of ETX, the transmission bit rate used and the length of the probe messages. The Airtime Link Metric (ALM) used in IEEE 802.11s estimates the channel time required for packet transmission through a link [8]. The Weighted Cumulative ETT (WCETT) metric [14] extends the ETT metric in WMNs with multiple radio interfaces.

Regarding to load-aware metrics, the initial proposals of load-aware routing metrics for ad hoc networks defined very simple load models. Authors in [15] propose a metric that estimates the node load as the number of queued packets of the node. In addition, several load-aware routing metrics assume usage of an IEEE 802.11-based MAC protocol and aim to include its characteristics in the metric computation. The interference aware routing (IAR) metric [16] uses MAC-level measurements to estimate link congestion due to interference from other nodes. The interference aware (iAWARE) routing metric, defined in [17] as part of a multi- radio based AODV routing protocol, considers both inter- and intra-flow interference by modifying the WCETT metric.

Multi-channel WMN

In order to enhance the performance of the wireless mesh network, multi-radio multi-channel networks are also focus of research in WMNs [18]. As 802.11 based networks work in an unlicensed-frequency band, channel assignment with interference minimization is a technique that allows network auto-configuration in order to optimize overall WMN through t. Multiple proposals of protocols for allocate channels in a WMN exist in the current scientific literature [19][20][21][22]. Channel distribution in a WMN could be based on node usage statics, using graphs technique, or by means of centralized or distributed signalling protocols. Also, routing protocols must be aware of that multiple channel diversity, as self-interference in the network is created via transmitting packets through different paths [14]. Finally, channel switching strategies could also be lized in security aspects. For instance, the system can be capable of changing its working frequency when an attack is detected.

IEEE 802.16 mesh networks

Currently, Wireless Metropolitan Area Networks (WMANs) networks based on the IEEE 802.16 standard (WiMAX) are a point-to-multipoint radio transmission system. Although the mesh mode is specified in the standard, there are no implementations of the WiMAX mesh mode on commercial equipment. Nevertheless, the IEEE 802.16e extension ad mobility to the user terminal equipment, allowing communication from users to Base Station (BS). A relay station or mobile terminal cannot multicast or directly communicate to the other nodes attached to the same base station, which limits performance. Therefore, the IEEE 802.16 Relay task group [23] enhances coverage, throughput and system capacity of IEEE 802.16 [24] by specifying multi-hop relay capabilities. Relay stations will extend coverage more efficiently as the highly functional base

stations. The IETF IP over IEEE 802.16 Networks [25] targets efficient support for IPv6 packet transmission for WMAN.

IEEE 802.15 sensor networks

The IEEE 802.15.4 standard is expected to enable a wide variety of envisaged low-cost control and monitoring applications with relaxed throughput requirements and a strong emphasis on power conservation. A routing protocol is needed for the mesh topology approach, which must take into account the very limited features of the network. MANET routing protocols are also applicable on Wireless Sensor Networks (WSN), although additional tuning should be performed in order to scale well in these types of networks with limited resources and battery lifetime [26]. The 6LowPAN group charter from the IETF is working on the standardization for transmitting IPv6 datagrams over IEEE 802.15.4. In addition, focusing on sensor networks applications, specific tunings for routing and transport protocols are also needed, as not all the applications have the same requirements [27].

In addition, the IEEE 802.15 Wireless Personal Area Network (WPAN) working group also specifies IEEE 802.15 WPAN Mesh Networking (802.15.5) [28] by determining necessary mechanisms in the physical and data-link layers to enable mesh networking. In a WPAN mesh network, all nodes have equal roles and each node acts as a router forwarding data. Normally, a WPAN mesh network is autonomous and has no connectivity to the Internet.

Localization technologies

The information about the position of the users in an mergency response scenario becomes critical in order to realize optimum group coordination and to keep control of emergency personal safety. Although the GPS system (Global Positioning System) provides the terminals location in exteriors, its coverage in interiors results null. Therefore, it becomes necessary to other location systems for interior spaces based on radio-frequency (RF) using trilateration. As 802.11 networks are widely available, it is possible to implement a localization system based on this type of networks [29][30]. Distance in a 802.11 based WMN could be measured in different ways, delay based or RSSI (Received Signal Strength Indications) based. In the MAC layer from 802.11 networks, all the transmitted information frames must acknowledged via ACK frame in order to confirm its reception. Therefore, propagation time cou d be obtained via nodes synchronization and inserting a timestamp field in data and management frames. Most equipment allows access to the timestamp field inserted in the WLAN chipset, but in some case additional hardware is needed.

RSSI based localization consists in calculate the distance from measured signal strength level. The calculation is performed using an appropriate propagation model. However, signal propagation effects in indoor environments (multipath, reflection, diffraction, etc.) result in high variability from the reported measures. Hence, propagation model becomes difficult to predict accurately. A more precise mechanism in interiors of obtaining the distance of a terminal using RSSI is known as fingerprinting matching [31][32][33]. This methodology consists of two phases: learning or calibration and positioning. In the first one, several measurements are in reference points, whose results keep in a database in the including coordinates and levels of potency received from the different AP in the field of coverage. This way, t second phase (i.e. to obtain the position of a terminal), consists in measuring the received signal strength from the previously selected reference points and send the information to the location server, which realizes the matching with the most probable position or directly calculates the terminal canonical position. However, this approach needs to previously deploy reference points and realize the measurements in an appropriate number of points of reference in order to minimize the error [34].

As the 2,4 GHz frequency band is the same for IEEE 802.15.4 networks, equivalent localization techniques could be used in the ambit of sensor networks. Moreover, Ultra Wide Band (UWB) radio interfaces of ultra sounds could improve location accuracy in WSN. UWB radios have a wide frequency spectrum that results in narrow signal in ti With UWB it is possible to measure delays of propagation, giving more accuracy to distance measurements [35][36]. Using ultrasounds, it is possible to obtain distance by means of the time of flight (ToF) measurement ant the sound velocity constant. However, line of sight (LOS) is needed in order to apply this technique [37][38].

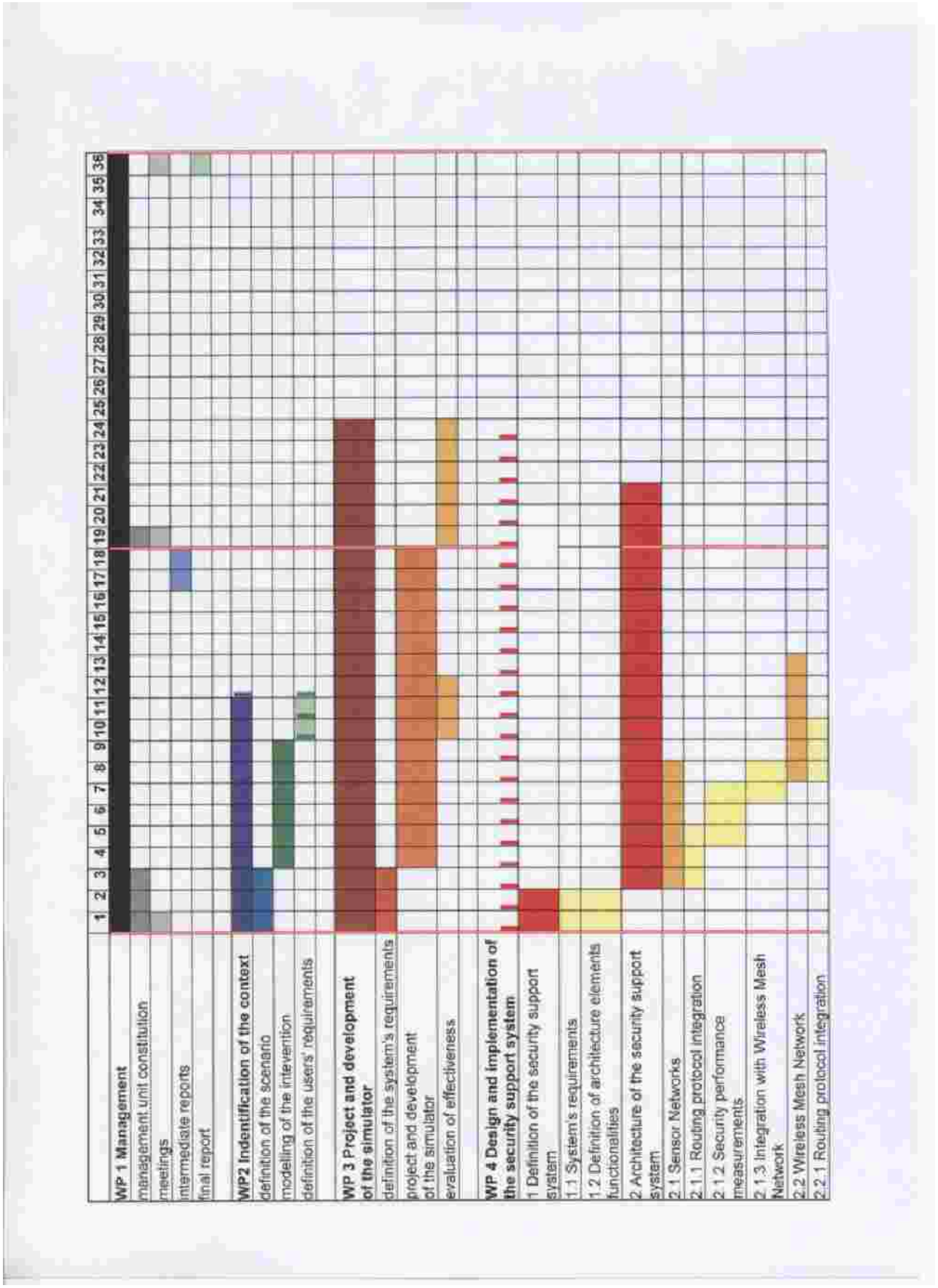
Link communication security

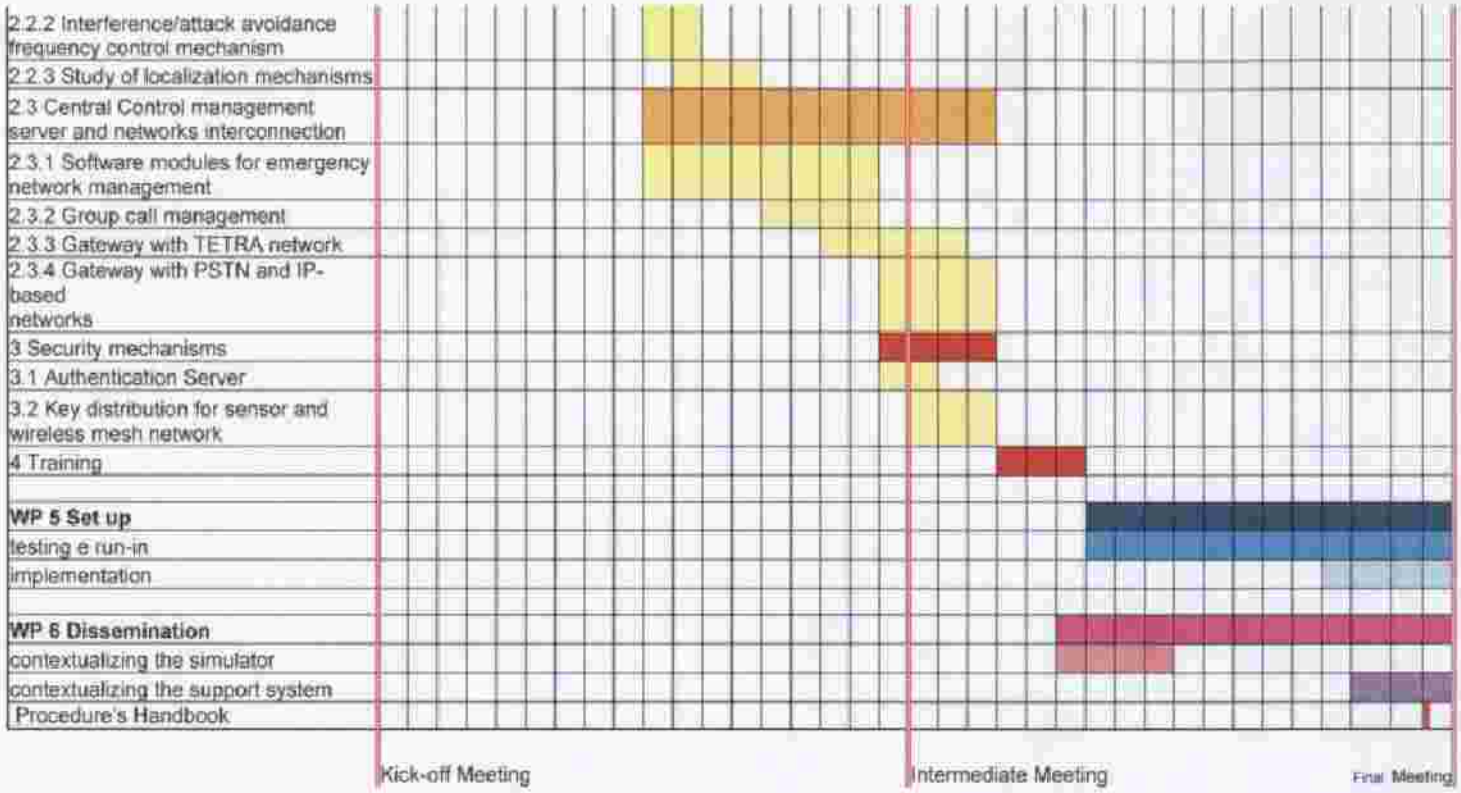
Current standards for wireless mesh networks include security mechanisms at layer 2 in order to provide data privacy, integrity and node authentication. IEEE 802.15.4 standard defines the Advanced Encryption Standard (AES) with a 128 bit encryption key as the default encryption method. However, it is necessary to implement secure key distribution architecture in order to guarantee data privacy and node authentication. Encryption methods available for traditional WLAN defined in IEEE 802.11i extension have been adopted in the IEEE 802.11s draft specification for mesh capabilities. All the same, the current draft specifies hierarchical key distribution mechanisms in order to distribute the encryption keys among nodes that have been authenticated using the IEEE 802.11i framework.

On the other hand, in order to build a secure mesh net traditional security mechanism could be used in upper layers. RADIUS, DIAMETER and COPS are usually utilized for Authentication, Authorisation and Accounting (AAA), as message exchange protocols between devices in order to establish or update/remove state information. DIAMETER is peer-to-peer based and consists of a base protocol [39] and a set of extensions. It features hop-by-hop security, end-to-end security and includes congestion control mechanisms. IPsec can be used as a layer-3 security mechanism. In addition, Extensible Authentication Protocol (EAP) is authentication framework supporting multiple authentication methods. It is used to select specific authentication method, once the authenticator requests more information. EAP does not uire IP as it operates over data link layers such as the Point-to-Point Protocol. Protocol for carrying Authentication for Access Network (PANA) is designed to transport EAP as payload making suitable for carrying EAP over IP-based networks. A PANA client communicates with a PANA agent to perform authentication nd authorization for network access.

(In order to fulfil The Guide for Applicants see the References at the end of Part B)

Gantt chart


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
WP 1 Management
management unit constitution
meetings
intermediate reports
final report
WP2 Indentification of the context
definition of the scenario
modelling of the intervention
definition of the users' requirements
WP 3 Project and development of the simulator
definition of the system's requirements
project and development of the simulator
evaluation of effectiveness
WP 4 Design and implementation of the security support system
1 Definition of the security support system
1.1 System's requirements
1.2 Definition of architecture elements functionalities
2 Architecture of the security support system
2.1 Sensor Networks
2.1.1 Routing protocol integration
2.1.2 Security performance measurements
2.1.3 Integration with Wireless Mesh Network
2.2 Wireless Mesh Network
2.2.1 Routing protocol integration


2.2.2 Interference/attack avoidance frequency control mechanism
2.2.3 Study of localization mechanisms
2.3 Central Control management server and networks interconnection
2.3.1 Software modules for emergency network management
2.3.2 Group call management
2.3.3 Gateway with TETRA network
2.3.4 Gateway with PSTN and IP-based networks
3 Security mechanisms
3.1 Authentication Server
3.2 Key distribution for sensor and wireless mesh network
4 Training
WP 5 Set up
testing e run-in
implementation
WP 6 Dissemination
contextualizing the simulator
contextualizing the support system
Procedure's Handbook
Kick-off Meeting
Intermediate Meeting
Final Meeting

Pert diagram

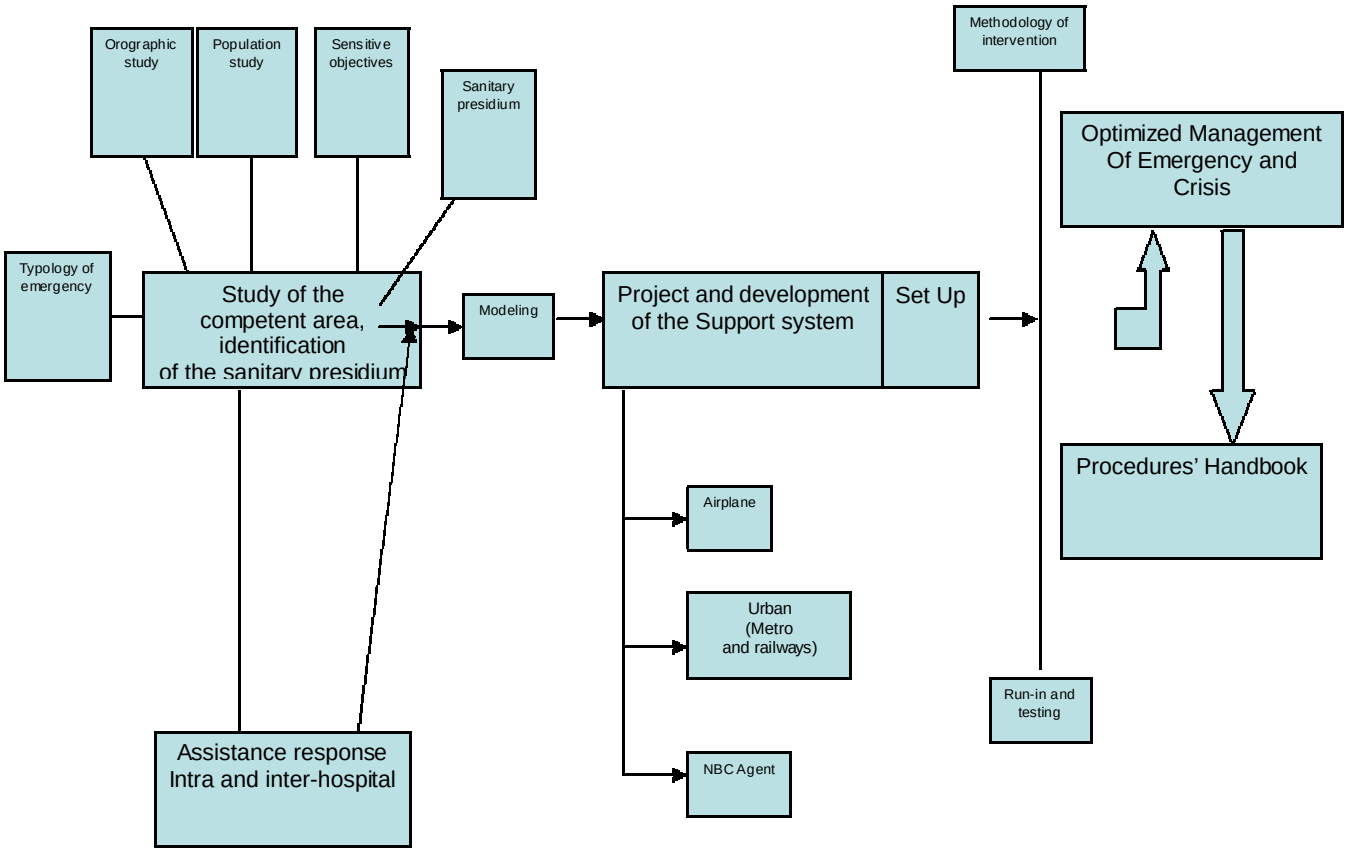


Table 1.3 a: Work package list

Work package No19	Work package title	Type of activity	Lead participant No	Lead participant short name	Person months	Start month	End month
1	Management	MGT	1	UTV	49	0	36
2	Identification of the context	RTD	1	UTV	30	0	12
3	Project and development of the simulator	RTD	7	DISAT	41	0	24
4	Project and development of the support system	RTD	4	AD	69	24	36
5	Set up	DEM	5	UPC	23	25	36
6	Dissemination	OTHER	1	UTV	61	24	36
TOTAL					273		

Table 1.3 b: Deliverables List

Del . n.	Deliverable name	WP n.	Nature	Dissemination level	Delivery date
D1WP1	Web site for documents exchange	1	O	PU	Monthly
D2WP1	Intermediate Reports	1	R	PU	3
D3WP1	Security Committee meetings	1	O	PU	3
D4WP1	Consortium meeting			PU	6
D5WP1	Integrated Final Reports	1	O	PU	12
D6WP1	Proceeding of meetings	1	R	PU	12
		1	R		
D7WP1	1st Draft procedure's handbook	1	R	PU	24th
D8WP1	2nd Draft procedure's handbook	1	R	PU	30th
D9WP1	3rd Draft procedure's handbook	1	R	PU	36th

D1WP2	Report on current chromofluorogenic sensors used for detection of chemical warfare agents	2	R	PU	3
D2WP2	Analysis of emergency management in a localised area of the countries participating to the project	2	R	PU	6
D3aWP2	Comparison of system of emergency events solution within the countries participating	2	R	PU	8
D3bWP2	Report on the individual and combined chromofluorogenic dyes preparated in the project and preliminary results with chemical warfare agents simulants	2	R	PU	8
D4WP2	Report on the preparation of arrays of chromogenic sensors for the selective naked – eye detection of individual chemical warfare agents with low false posities	2	R	PU	11
D1WP3	System Requirements Specification	3	R	CL restricted	3
D2WP3	System Archictectural Design	3	R	CL restricted	5
D3WP3	Simulator First Beta	3	P	CL restricted	11
D4WP3	Report on the exploration of data from sensors (WP2)	3	R	CL restricted	13
D5WP3	Symulator Second Beta	3	P	CL restricted	14
D6WP3	Report on the definition of features for each sensor type	3	R	CL restricted	15
D7aWP3	Simulator Final	3	P	CL restricted	18
D7bWP3	Full predictive model for sensors under standard test condition	3	R	CL restricted	18
D8WP3	Report on models for real world application of chemical warfare agent sensors	3	R	CL restricted	24
D1WP4	System Requirements and Definition	4	R	CL restricted	15

D2.1WP4	Sensor Network Design	4	R	CL restricted	21
S2.1WP4	Sensor Node Software	4	P	CL restricted	21
D2.2WP4	Wireless Mesh Network Design	4	R	CL restricted	26
S2.2WP4	Wireless Mesh Node Software	4	P	CL restricted	26
D2.3WP4	Central Control Software	4	R	CL restricted	30
S2.3WP4	Management Server Software	4	P	CL restricted	30
D2.4WP4	Architecture Integration	4	R	CL restricted	34
S2.4WP4	GW Software	4	P	CL restricted	34
D3WP4	Security Mechanism Design	4	R	CL restricted	34
D4WP4	Security Support System Performance	4	R	CL restricted	34
D1.1WP5	Security Support System Prototype (D5.1)	5	D	CL restricted	33
D1.2WP5	Final System Performance	5	R	CL restricted	36
D1WP6	Project Web Site	6	R	PU	11
D2WP6	Scientific papers submitted to international peer-reviewed	6	R	PU	34
D3WP6	Final Meeting Proceedings	6	R	PU	36
D4WP6	Presentation at the Universities involved by way of lessons, seminaries and conferences	6	O	PU	36
D5WP6	Presentation at Public by way television, radio – communication, conferences	6	O	PU	36
D6WP6	Publishing Final Procedure's Hand Book to optimise the hospital mass –casualty NBCR emergency management in the countries involved in the project	6	R	PU	36

Table 1.3 c List of milestones

Milestones are control points where decisions are needed with regard to the next stage of the project. For example, a milestone may occur when a major result has been achieved, if its successful attainment is required for the next phase of work. Another example would be a point when the consortium must decide which of several technologies to adopt for further development.

MILESTONES	Expected date
MILESTONE 1 : M1WP2 New chromo – fluorogenic probes for the selective detection of individual chemical warfare agents	**11**
MILESTONE 2 : M2WP2 Modelling of the intervention	**12**
MILESTONE 3 : M3WP3 Design of one or several hybrid models combining the best of different sensors technologies able to a superior performance than standard portable units from EU manufactures	**24**
MILESTONE 4 : M4WP3 Developing fully functional prototypes	**24**
MILESTONE 5: M4WP5 Assessing the operational functioning of Simulator and Security Support System in the countries partners	**36**

Work package number 1 **Start date or starting event: 0-36**

Work package title:	**Management**								
Activity Type:	**MGT**								
Participant number:	**1**	**5**	**7**	**4**	**2**	**9**	**8**	**3**	**6**
Participant short name:	**UTV**	**UZ**	**DISAT**	**AD**	**CSSM**	**UPC**	**UPVLC**	**EDY**	**AITEX**
Person-month for participant:	**36**	**6**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Objectives:

- Solving problem in Project Management
- Guarantee a decision-making process shared among the Partners
- Regular Update of the Consortium Agreement for IPR issues
- Assure an internal (Partners) and external communication (UE e stakeholders)

Description of work (possibly broken down into tasks), and role of participants

- management unit constitution
- meetings
- intermediate reports
- final report

The Project Management is under the control of UTV: l the Partners will participate to the meetings and the communication flow.
The Coordinator will designate a staff who will work on administrative, economic and legal issues and keeps the relations between the Partners and the p blic. Even the Specialists that do not belong to the Consortium can be members of the Coordinator's staff.
An Internal Security Board is defined and directed by UTV, coordinated by CSSM. This Board will organize, control, and direct any information that could be security-sensible. Only the leaders of WP3, WP4, WP5 will participate to its work. The I ternal Security Board will be summoned 3 months and any time the Coordinator feel it necessary the place indicated by the Coordinator according to the member's proposals.
Cooperation and information flow among the members of Consortium will be through e-mail and possibly by virtual meetings via the internet. Every mont each partner will write a report addressed the WP Leader. This will inform the Coordinator with a summarizing report (intermediate Reports) about the state-of-art of the project every 3 months.
Meetings are summoned every 6 months among the partners.
Final integrated Reports will be elaborated every 12 months in order to produce the Final Report in order to write the drafts and then the final Procedure Handbook.

The Coordinator will summon the Internal Security Committee in case of defaulting of agreed target from a partner. The Committee will decide the possible sanctions.

Deliverables (brief description and month of delivery)

1)	**D1WP1** Website for documents exchange	Reports e CA		monthly
2)	**D2WP1** Intermediate reports	Reports	every	month 3
3)	**D3WP1** Security Committee meetings	Meeti	every	month 3
4)	**D4WP1** Consortium meetings	Meetings	every	month 6
5)	**D5WP1** Integrated final reports	Reports	every	month 12
6)	**D6WP1** Proceedings of meetings	Meetings	every	month 12

7) **D7WP1** 1st Draft procedure's handbook Report month 24th
8) **D8WP1** 2nd Draft procedure's handbook Report month 30th
9) **D9WP1** 3rd Final procedure handbook Report month 36th

Work package number 2 **Start date or starting event: 0-12**

Work package title:	**Identification of the context**							
Activity Type:	**RTD**							
Participant number:	**1**	**3**	**4**	**6**	**8**	**9**	**5**	**7**
Participant short name:	**UTV**	**EDY**	**AD**	**AITEX**	**UPVLC**	**UPC**	**UZ**	**DISAT**
Person-months per participant:	**8**	**1**	**6**	**2**	**9**	**9**	**3**	**5**

Objectives:

- Definition of the scenery
- Modelling of the intervention
- Definition of the users' requirements

Description of work (possibly broken down into tasks), and role of participants

The definition of the boundary line of the individuated area, its extension and the numbers and the typology of the involved people is essential.
It is very important to define the sensitive objecti Then is necessary to identify the principal hospital (Hub) and the secondary satellite hospitals with their medical and management specific characteristics to reply to emergency.
Then we identify all the possible causes of disaster and agents involved in terroristic attack to simulate a realistic plan. The Emergency Command Centre broadcasts information about disaster and sent it to the Simulator to be elaborated. The Simulator elaborates data and creates the Modelling of Intervention and send it back to the mand Centre that choose the appropriate intervention teams to the disaster area
The user's requirements are :

- **AMP**
- **NBCR sensors/kit; new technologies to define NBCR weapons**
- **Health parameters sensors**
- **Wireless MESH-TETRA Network.**

AMP will be built by specific material to treat immediate y the war-NBCR terroristic victims or infected patients by B-C agents .It is placed near the areas of the disaster near an important road or in the hospital's parking. AMP can be used as a fully functional surgery room too and can enclose :

- Hi-tech tents for medical aid
- Shelter
- permanent accommodation
- Equipped systems to manage immediate responses to various types of accidents.

The partner EDY Group will be responsible to built t AMP . The goal is study and implement integrated and specific technical solutions in accordance with operating requirements.

NBCR sensors and NBC-kit or other technologies to identify NBCR agents
The object of the partner UPVLC in this WP is to research and to develop more selective systems and arrays of chromogenic sensors reagents using selective chromogenic reagents for nerve gases and their degradation products . Optical sensing (especially colorimetric sensing) require very low cost and widely used instrumentation and offers the possibility of the so-called "naked eye detection " for a very rapid detection of chemical warfare agents and alarm systems.
The goal will be to identify more unknown NBCR agen weapons)

Health parameters sensors will be produced by our partners. We think some sensors will be integrated in the infrastructures and some will integrated in the garments of the patients and of emergency team to monitor some parameters in the air and vital functions too.
This will be the goal of the AITEX. The AITEX Group will study to integrate all possible sensors in textile handwork.(emergency team / patients)

Wireless MESH-TETRA Network will connect all the sensors to the Command Centre.
Our partners (AD , UPC) will study and implement specific technical solutions in accordance with operating requirements.

Deliverables (brief description and month of delivery)

1) **D1WP2** Report on current chromofluorogenic sensors used
   For the detection of chemical warfare agents Report month 3
2) **D2WP2** Analysis of emergency management in
   a localised area of the countries participating he project Report month 6
3) **D3aWP2** Comparison of system of emergency events Solution within the countries participating in the project
   Report month 8
4) **D3bWP2** Report on the individual and combined
   chromo – fluorogenic dyes prepared in the project and
   preliminary results with chemical warfare agents simulants Report month 8
5) **D4WP2** Report on the preparation of arrays of chromogenic
   sensors for the selective naked –eye detection of individual
   chemical warfare agents with low false positives Report month 11

MILESTONE 1: New chromo – fluorogenic probes for the selective detection of individual chemical warfare agents to the naked eye .

MILESTONE 2:
Modelling of the intervention
Identification of the area and of the need requirements where place “the Simulator” and the ”Security Support System”. Its comparison and Modelling of the intervention in the countries partners.

Work package number 3 **Start date or starting event: 0 – 24**

Work package title:	**Project and development of the simulator**
Activity Type:	**RTD**
Participant number:	**7 4 5 2 1 9 8**
Participant short name:	**DISAT AD UZ CSSM UTV UPC UPVLC**
Person-months for participant:	**22 5 6 1 1 5 3**

Objectives:

- Definition of the system' s requirements
- Project and development of the simulator
- Evaluation of effectiveness

Description of work (possibly broken down into tasks), and role of participants

The "Simulator" is necessary to obtain best simulating plain to emergency management to save the highest numbers of individuals. The simulator will e uate all input to identify the type of the disaster , the infected area , the extension of the damage . In case of a CBRN event , simulator will also forecast the expansion of a know agent. Simulator plan the best emergency management to save the highest number of individuals.
There are many types of disasters and events .The Simu will process the specific event. It will use all the information collected from medical and scientific Knowledge .The simulator is the hearth of the modelling plain to the emergency. The si lator analyses the details of the event, the victims and all is useful to obtain the best reply to the disaster. The AMP sends non stop information about symptoms ,signs and conditions of the patients. The Com nd Centre also gets information from National Health System. It can be useful a medical computerized history database of citizens. These information are combined together to decide the proper treatment. The simulator provides instant on line analysis of important symptoms too and estimates probabilities of diseases or conditions according to given information and specific internal logic .It does not make diagnosis .It is not a substitute to a medical doctor it is just an assistant tool.

RI0000 System requirements shall be generated
RI0001 The System architectural design shall be developed . Note that this design is not the detailed design of individual tasks
RI0002 The simulation shall evaluate input data and forecast near future infection (possibly with agent known)
RI0003 The ability of identification of the principal l (hub) and other actors for a disaster shall be developed
RI0004 The ability to response and assignment for a disaster shall be developed (Resource planning)
RI0005 Possible Agents shall be identified based on reported symptoms.
RI0006 Report generation to evaluate efficiency

The simulator can be developed using an artificial intelligence on the evaluation of the events.

DISAT will develop a CBRN engine for calculating the effects of weapons of mass destructions, estimating the area exposed to danger, and simulating the CBRN Event. DISA will provide two main aspects of CBRN:

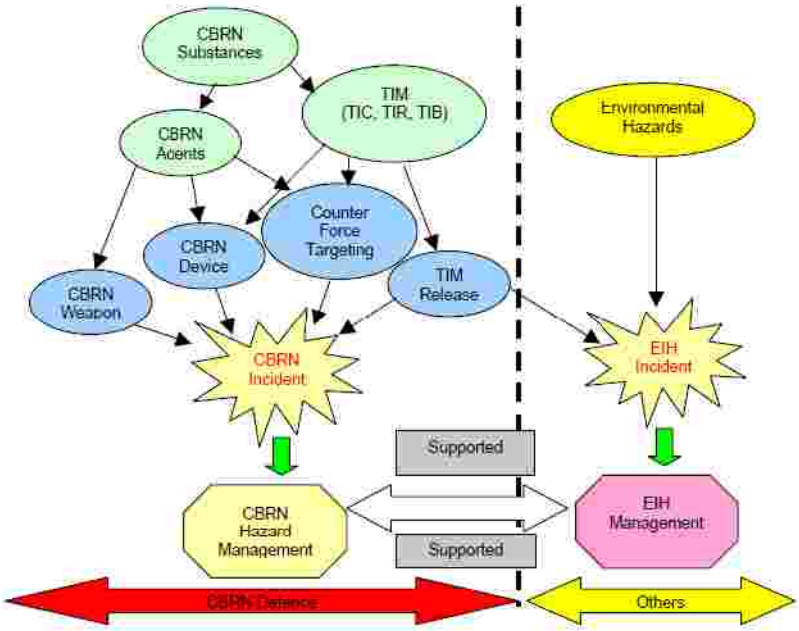
1. CBRN Engine: Provides core functionality for calculating contaminated areas after CBRN hazard and offers solution alternatives to minimize the effects.
2. CBRN Client/Server and Standalone Applications: These ications are bridges between user and CBRN Engines. Applications may take the advantage of various technologies and information stores such as IS, logistic information stores, meteorology, formatted messages from other sources (e.g. NATO, WMO Standards).

CBRN Engine will be used for calculation of:

- Chemical Incidents
- Biological Incidents
- Radiological Incidents
- Nuclear Incidents

The engine will be based on:

- NATO Standards.
  - ATP 3.8.1
  - ATP 45
  - AEP 45
  - AdatP-3
- Atmospheric Models for Meteorology
  - MM5 or ECMWF (or a better model)
- The models developed by DISAT



CBRN Event

Note:
TIC – Toxic Industrial Chemical
TIB - Toxic Industrial Biological
TIR – Toxic indiustrial Radiological
EIH – Environmental Industrial Hazard

The Simulator shall produce reports to evaluate the efficiency .These reports will be used to evaluate and further improve the performance of the system. The model simulated plain will obtain the improvement of the total reply to the disaster.
Our partners (DISAT, AD, UZ,UPC,) will study and implement specific technical solutions in accordance with operating requirements.
UZ will study the methodology to define the simulator's manufacture and develop fully the functional of the prototypes.
The Simulator will done by DISAT that is the leader in this WP .
AD and UPC will study the integration of the communication and all security support system.
CSSM will check sensible data and security.

-The Pattern Recognition Techniques for Biomimetics Sensing will be the object of the partner UPVLC.
The subject matter of biomimetics is to take ideas from nature and implementing them in another technology such as engineering, design, comp ng , etc. The concept is very old but the implementation is gathering momentum only. In re n to the sensors , one branch consists of the concept of artificial senses, usi arrays of sensors (sometimes called electronic noses and electronic tongues). The principles of these are analogous to the sense of smell : a signal pattern from a sensor array with different selectivities (yet poorly selective systems) is processed with multivariate data analysis for recognition . Electronic "noses" and "tongues" have already become an established techni ue for enhanced sensing but as far as we know have not been fully applied to the development of advanced "sensors" for the selective detection of chemical warfare agents.
The purpose of this WP is develop a component the simulator able to analyse the data obtained from chemosensors and design better signa and data processing algorithms to predict the presence of chemical warfare agents . The response of the different sensing systems in WP2 , will be explored and the key features extracted using a variety of methods (linear filters , discrete wavelet transforms , neural networks , etc.) These features will then be used by different classifiers (Bayesan , radial basis function , probabilistic neuron) to predict the presence and concentration of the nerve agents. Having explored the data for each sensor type and identified the key features sets it is possible to build the best models for use in real applications.

Deliverables (brief description and month of delivery)

1)	**D1WP3**	System Requirements Specification	Report	month 3
2)	**D2WP3**	System Architectural Design	Report	month 5
3)	**D3WP3**	Simulator , First Beta	Prototype	month 11
4)	**D4WP3**	Report on the exploration of data from sensors (WP2)	Report	month 13
5)	**D5WP3**	Simulator, Second Beta	Prototype	month 14
6)	**D6WP3**	Report on the definition of features for each sensor type	Report	month 15
7)	**D7aWP3**	Simulator, Final	Prototype	month 18
8)	**D7bWP3**	Full predictive model for sensors under standard test condition	Report	month 18
9)	**D8WP3**	Report on models for real world application of chemical warfare agent sensors.	Report	month 24

MILESTONE 3 : M3WP3 Design of one or several hybrid models combining t best of different sensors technologies able to a superior performance than standard portable units from EU manufactures

MILESTONE 4 : M4WP3 Developing fully functional prototypes

Work package number 4 **Start date or starting event: 24 – 36**

Work package title:	**Project and development of the security support system**						
Activity Type30: RTD							
Participant number:	**7**	**4**	**5**	**2**	**8**	**1**	**9**
Participant short name:	**DISAT**	**AD**	**UZ**	**CSSM**	**UPVLC**	**UTV**	**UPC**
Person - month for participant:	**5**	**24**	**10**	**6**	**3**	**1**	**18**

Objectives:

1 Definition of the security support system
- 1.1 System requirements
- 1.2 Definition of architecture elements functiona ties

2 Architecture of the security support system
- 2.1 Sensor Network
- 2.1.1 Routing protocol integration
- 2.1.2 Security performance measurements
- 2.1.3 Integration with Wireless Mesh Network

- 2.2 Wireless Mesh Network
- 2.2.1 Routing protocol integration
- 2.2.2 Interference / attack avoidance frequency control mechanism
- 2.2.3 Study of localization mechanisms
- 2.3 Central Control management server and networks interconnection
- 2.3.1 Software modules for emergency network management
- 2.3.2 Group call management
- 2.3.3 Gateway with TETRA network
- 2.3.4 Gateway with PSTN and IP – based networks

3 Security mechanisms
- 3.1 Authentication Server
- 3.2 Key distribution for sensor and wireless mesh network

4 Training

This work package defines and implements the security port system network. The security support system allows interconnecting TETRA network with the management center and coordinating the different emergency responders. The main objective of the WP4 is to provide a system able to manage all the data from sensors , voice coordination calls, data transmission and localization of emergency personal / instrumentation w h secure and reliable communications . In the scenario , a recollection of data from different kind of sensors is required , therefore , the system should provide a data aggregation mechanism . Data aggregation is done in the Wireless Sensor Network (WSN) via the Wireless Mesh Network (WMN) to the Control Management System (CSM).Voice communications and data transmission can be realized via TETRA network or the WMN present in the system . Also , applications that help emergency management , sensor and users localization are present in the CSM.

Summary

-development of disaster medical response plans, policies and procedures
-integration of possible sensors
-designing the sensor module ,communication module and pression algorithms
-integration of the electronic circuitry on the Sensor Communication Module
-designing the graphical user interface

-development of unit process
-development fully functional prototypes
-to define the Security Support System's manufactures
-to guarantee "reserved communications" and the best organization between the actors involved in the event
-to guarantee "the security" to the infrastructures, citizens, emergency teams
-training
-reports on the efficacy

Description of work (possibly broken down into tasks), and role of participants

The WP4 can be divided into four main tasks , which are divided in to subtasks when necessary . Below is described the work efforts and results from each task in WP4.

Task WP4.1 Definition of the Security Support System

The first task provides the system definition via analyzing the system requirements and the requirements of the applications involved in a first r emergency scenario. The task is divided in two parts:
Sub Task WP4.1.1 System requirements.
This subtask consists in the definition of the global requirement
Sub Task WP4.1.2 Definition of the architecture ele nts functionalities .
Identification of all the functionalities to be implemented in the security support system based on the requirements.

Task WP4.2 Architecture of the security support system

Once established the system requirements and the architecture of the security support system , this task will implement in each network element the desired functionalities . The task WP 4.2 is divided in to three parts , each of one considering the different networks involved in the architecture : Wireless Sensor Network, Wireless Mesh work and Security Support System Management.
Sub Task WP 4.2.1 Wireless Sensor Networks
This Sub task involves the following topics to imple the WSN s :

1) WP 4.2.1.1 Routing protocol integration . Definition and implementation of the routing protocol for receiving the data in the control centre .
2) WP 4.2.1.2 Security performance . Evaluate in terms of CPU and battery consumption different encryption mechanisms in WSN .
3) WP 4.2.1.3 Integration with wireless mesh network . Providing gateway (GW) functionalities to aggregate sensor data to other works .

Sub Task WP 4.2.2 Wireless Mesh Network. The WMN im lies the following tasks :

4) WP 4.2.2.1 Routing protocol integration . Definition of routing protocol to accomplish with applications requirements.
5) WP 4.2.2.2 Interference / Attack avoidance frequency control mechanism . Implementation of frequency management mechanisms.
6) WP 4.2.2.3 Study of localization mechanisms . uation of localization techniques and its precision in an emergency scenario

Sub Task WP 4.2.3 Central Control management server and networks interconnection
The Control Centre aggregates data from sensor and mesh networks and manages communications between different emergency groups . The topics covered in this task are :

7) WP 4.2.3.1 Software modules for emergency for emergency network management Implementation of different modules in the management server

8) WP 4.2.3.2 Group call management . Call monitoring system

9) WP 4.2.3.3 Gateway with TETRA network . I ty with TETRA network
10) WP 4.2.3.4 Evaluation of interconnect with other networks . Provide GW functionalities to interconnect with other IP based networks.

Task WP 4.3 Security mechanisms
The security mechanisms are divided in two sub tasks :

Sub Task WP 4.3.1 Authentication Server
The Authentication server implements the AAA mechan to allow access to the users in the scenario .
Sub Task WP 4.3.2 Key distribution for sensor and wireless mesh network
The system will provide a mechanism / architecture to distribute the encryption keys among the network elements . Different schemes wi l be analysed in this sub task.

Task WP 4.4 Training
Finally , this task integrates all the elements in t m and analyses its performance in the simulator scenario .

Deliverables (brief description and month of delivery)

D1WP4	System Requirements and Definition	Report	month 15
D2.1 WP4	Sensor Network design	Report	month 21
S2.1 WP4	Sensor node software	Software	month 21
D2.2 WP4	Wireless Mesh Network Design	Report	month 26
S2.2 WP4	Wireless Mesh Node Software	Software	month 26
D2.3 WP4	Central Control Software Design	Report	month 30
S2.3 WP4	Management Server Software	Software	month 30
D2. WP4	Architecture integration	Report	month 34
D3. WP4	Security mechanism design	Report	month 34
S2.4 WP4	GW Software	Software	month 34
D4. WP4	Security Support System performance report	Report	month 36

For this tasks (WP4) is necessary the experience of the AD and UPC Group to stu , to define, to make the Security Support System. UPC Group is the leader .
UZ and DISAT group will help them to integrate the Security Support System and the Simulator.
UPVLC offer technical knowledge and training during the development and planning of the support system.
CSSM will check sensible data and security.

Work package number 5 **Start date or starting event: 25 - 36**

Work package title:	**Set up**						
Activity Type: DEM							
Participant number:	**1**	**7**	**4**	**5**	**3**	**9**	**8**
Participant short name:	**UTV**	**DISAT**	**AD**	**UZ**	**EDY**	**UPC**	**UPVLC**
Person-months per participant:	**1**	**6**	**8**	**4**	**1**	**2**	**3**

Objectives:
WP5 has the main objective to demonstrate the prototypes in a complete Unit System in order to be applied as a sensible system model applied to manage the emergency in the countries involved in the project. To accomplish with those purposes, first the different equipment should be integrated in the security support system in order to rm the test of functional properties and monitoring properties from emergency applications requirements. This WP will assert the operational functionality of the simulator with the security support system and its application to the project context.

Description of work
This WP is divided in two tasks. First task integrates different medical equipment and sensors developed in the project into the security support system defined and implemented in WP4. This integration and testing is done first in the UPC campus local testbed. Second task will proceed with the deployment of the overall system in the simulator context.

Task WP5.1 Integration of sensors & medical equipment the Security Support system (M30-M33)
The first task integrates the developed sensors during the project and implements necessary interfaces for medical equipment into the WNG-UPC testbed of the security support system. The different functionalities of the system will be verified in this task.

Task WP5.2 System deployment in the specified scenario (M33-M36)
In this task all the partners will participate in the ployment of the overall system, simulating an emergency disaster/attack. Operation and deployment of the system will be performed and tested.

Deliverables

D5.1 Security Support System Prototype	Software & Hardware	Month 33
D5.2 Final System performance	Report	Month 36

MILESTONE 5: M4WP5 Assessing the operational functioning of Simulator and Security Support System in the countries partners

Work package number **6** **Start date or starting event: 24 – 36**

Work package title: **Dissemination**
Activity Type: OTHER

Participant number:	**1**	**2**	**5**	**3**	**7**	**4**	**6**	**9**	**8**
Participant short name:	**UTV**	**CSSM**	**UZ**	**EDY**	**DISAT**	**AD**	**AITEX**	**UPC**	**UPVLC**
Person-month participant:	**12**	**1**	**8**	**7**	**8**	**4**	**6**	**12**	**9**

Objectives:

- contextualizing the simulator
- contextualizing the security support system
- Procedure's hand book

Description of work (possibly broken down into tasks), and role of participants

- identification of a very well defined area to test our "Simulator" and "Security support system" (see Milestone 2). At this moment, we know in ls the UTV's area where we can imagine the disaster.
- fast reply organized by the hub.
- possible modifications caused by the identification of scenery and medical resources.
- Suggestion of a system-model adapted to various emergency events and various hospitals of the countries participating to the project
- Organization of a final international conference for the dissemination of the Procedure's Handbook involving every possible stakeholder including: the European Commission, Ministries, Local Entities, Defence and decision-makers. Furthermore all the entities whose activity is addressed to the protection, security and management of the territory will be invited to the final conference.

Deliverables (brief description and month of delivery)

1) final meeting proceedings - M36
2) presentation at the Universities involved by way of seminaries and conferences - 36
3) presentation at public conferences - 36
4) scientific papers submitted to international peer-reviewed magazines - 34
5) publishing final Procedure's Handbook to optimise the l mass casualty-NBCR emergency management in the countries involved in the project - M36
6) project web site - M11

WP summary with person/month

Work package number 1 **Start date or starting event: 0-36**

Work package title:	**Management**								
Activity Type:	**MGT**								
Participant number:	**1**	**5**	**7**	**4**	**2**	**9**	**8**	**3**	**6**
Participant short name:	**UTV**	**UZ**	**DISAT**	**AD**	**CSSM**	**UPC**	**UPVLC**	**EDY**	**AITEX**
Person-month for participant:	**36**	**6**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Total Person/month for WP : 63

Work package number 2 **Start date or starting event: 0-12**

Work package title:	**Identification of the context**							
Activity Type:	**RTD**							
Participant number:	**1**	**3**	**4**	**6**	**8**	**9**	**5**	**7**
Participant short name:	**UTV**	**EDY**	**AD**	**AITEX**	**UPVLC**	**UPC**	**UZ**	**DISAT**
Person-months for participant:	**8**	**6**	**2**	**9**	**9**	**3**	**5**	

Total Person/month for WP : 43

Work package number 3 **Start date or starting event: 0 – 24**

Work package title:	**Project and development of the simulator**						
Activity Type:	**RTD**						
Participant number:	**7**	**4**	**5**	**2**	**1**	**9**	**8**
Participant short name:	**DISAT**	**AD**	**UZ**	**CSSM**	**UTV**	**UPC**	**UPVLC**
Person-months for participant:	**22**	**5**	**6**	**1**	**1**	**5**	**3**

Total Person/month for WP : 43

Work package number 4 **Start date or starting event: 24 – 36**

Work package title:	**Project and development of the security support system**						
Activity Type30: RTD							
Participant number:	**7**	**4**	**5**	**2**	**8**	**1**	**9**
Participant short name:	**DISAT**	**AD**	**UZ**	**CSSM**	**UPVLC**	**UTV**	**UPC**
Person - month for participant:	**5**	**24**	**10**	**6**	**3**	**1**	**18**

Total Person/month for WP : 67

Work package number 5 **Start date or starting event: 25 - 36**

Work package title:	**Set up**						
Activity Type: DEM							
Participant number:	**1**	**7**	**4**	**5**	**3**	**9**	**8**
Participant short name:	**UTV**	**DISAT**	**AD**	**UZ**	**EDY**	**UPC**	**UPVLC**
Person-months for participant	**1**	**6**	**8**	**4**	**1**	**2**	**3**

Total Person/month for WP : 25

Work package number **6** **Start date or starting event: 24 – 36**

Work package title: **Dissemination**
Activity Type: OTHER

Participant number:	**1**	**2**	**5**	**3**	**7**	**4**	**6**	**9**	**8**
Participant short name:	**UTV**	**CSSM**	**UZ**	**EDY**	**DISAT**	**AD**	**AITEX**	**UPC**	**UPVLC**
Person-month for participant	**12**	**1**	**8**	**7**	**8**	**4**	**6**	**12**	**9**

Total Person/month for WP : 67

RISKS:

The used methodology and the analysis of each Work Packages of the "proposal project" will permit an actual test and control about potential risks involving the development of the project.

1) Adaptability of the territory, (e.g. non- adequate accessibility to the territory, impossible Orographic assessment; impossible or too difficult or much time-consuming accessibility);
2) The simulator could not foresee all the possible NBCRAs;
3) Risks in building the simulator and the security support system which could not be able to integrate with the communication and control system built by the company in charge of building the simulator. Trouble or inconsistent developing of the "response-chain to emergency": AMP > Simulator > Central of command and control > Reserved Communications > Feedback to the control Central > Activation of the involved actors in the integrated management of emergency.
4) Non-accessibility (Privacy) of data for sensitiveness concerns (e.g.: data on new NBCRA terroristic agents which could not be spread out because they could be used as weapons).

Table 1.3 e Summary of staff effort

Participant Short Name	WP 1	WP 2	WP 3	WP 4	WP 5	WP 6	Total Person/Month
1 UTV	36	8	1	1	1	12	**59**
2 CSSM	3	0	1	6	0	1	**11**
3 EDY	3	1	0	0	1	7	**12**
4 AD	3	6	5	24	8	4	**50**
5 UZ	6	3	6	10	4	8	**37**
6 AITEX	3	2	0	0	0	6	**11**
7 DISAT	3	5	22	5	6	8	**49**
8 UPVLC	3	9	3	3	3	9	**30**
9 UPC	3	9	5	18	2	12	**47**

2 Implementation

2.1 Management structure and procedures

The project has been conceived by the University Tor Vergata that will be the coordinating entity. The partners has been chosen according to their comple ntary experience necessary for the achievement of the objectives described in the various WPs.

To respect the specific FP7 request of an equal representativeness , the partners has been chosen evaluating also their country of provenance. A person charge has been nominated for each partner: he will actively participate to the project a will be personally responsible of his group's work . Periodic Reports (see WP Management) are forese and they will be issued by the persons in charge in order to inform the Consortium about the work progresses and the achievement of objectives and pre-established deliverables.

Periodical meetings are planned and they will be open all Consortium members to discuss general problems.

The project is considered "high risk" because it deals with security in case of NBCR Terroristic attack . When the discussion will be over this topics, the participant number will be restricted.

An Internal Security Board is defined and directed by UTV, coordinated by CSSM. This Board will organize, control, and direct any information that could be security sensible. Only the leaders of WP3, WP4, WP5 will participate to its works. The Internal Security Board will be summoned 3 months and any time the Coordinator feel it necessary the place indicated by the Coordinator according to the member's proposals. The Board will also orient the single partners in order to control the information about the Security System.

Since the complexity and the extension of the project involved, we assume the possibility to integrate new methodological procedures and new partners to get through the difficulties and the risks impossible to quantify at the present moment.

2.2 Individual participants

1) University of Rome "TOR VERGATA", Italy - UTV www.uniroma2.it

Coordinator and Scientific Responsible

Prof. Dr. Fiorito Roberto fiorito@med.uniroma2.it

The University of Rome "TOR VERGATA" is the second public University of Rome.
UTV is a public institution devoted to higher education and to research and development activities.
The University Campus is extended about 600 ha.
At present, the UTV Academic community included 1.434 teachers , nearly 41.000 pre-graduate students for 6 Faculty (Economics, Law , Engineering Arts and Humanities, Medicine , Science)
27 Departments , 4 single – cycle degree programs, 113 three-years degree courses and graduate courses, 54 Specialization Schools , 138 Masters and Post graduate programs, 492 laboratories , 357 classrooms , 28.419 total sitting capacity , 30 On line enrolment posts ,30 centres , 6 libraries , 676 PhD Student scholarships yearly , 1000 Stages yearly ,780 Erasmus scholars ship yearly , 100 Leonardo scholars ship yearly.

CV of The Key Staff involved
Prof. Dr. Fiorito Roberto is a Researcher at the Faculty of Medicine and Surgery.
He is Specialist Surgeon on General Surgery, Thoracic (Chest) Surgery and Emergency Surgery.
He is also Specialist M.D on Anaesthesia and Resuscitation.
He is Aggregated Professor in General Surgery, Thoracic and Emergency Surgery in the Specialization Schools.
He teach "The hospital emergency management" in Medical Single Degree Cycle.
He is Co-director and member of Scientific Board of various national medical magazines .
He is author of 70 and co-author of 23 research papers and he cooperated to write a pocket medical procedure's hand book.
He is involved in various fields of research and he is actively interested to the " Nuclear-Biological-Chemical-Radiological agents " research and treatment.

Description of the context functional to the possible ion of the intervention:
A quick look at Rome's surroundings draws our attention to its hill and fertile plains, stretching as far as the Tyrrenia Sea and crossed by the Tiber and Aniene rivers.
Tor Vergata is located south east of Rome and is characterized by a gradual uphill denoting the volcanic origin of the area , also called " Colli Albani". A umber of streams originate from these hills which eventually merge in to the Aniene River. T is in indeed an ideal environment for human settlement .
Remains of the Upper Palaeolithic (40.000 – 8.000 B.C) were founded in the area of Tor Vergata by the Archaeological Super Intendancy of Rome . About 81 flint tools and traces of fauna, belonging to the Equidae family (as perhaps the aurochs and bos primigenius) were also found.
At that time , men already lived in caves or huts , were familiar with fire and buried their deads.
Further traces of the Neolithic (7.000- 4.000 B.C.), highlighted by the Archaeological
Super Intendancy of Rome , include fragments of ceramic vessels decorated with segmented, solid bands lacking drawn margins and witch segmented ds with a carved zig-zagged design.
The sample found in Tor Vergata becomes part of History because of its high population density and permanent human settlements , differently from the ghbouring Etruria.
Needless to say the geographic location and physical configuration has, over the centuries allowed the exploitation of a agriculture and communications mainly through
the Tiber and Aniene Rivers.

2) Centro Studi Ricerca Sanità Militare Medical Italia y Research Group - CSSM

florogio.lista@esercito.difesa.it

It is part of the Italian Army. The Scientific Responsible will be Col. Florigio Lista. He is an expert in Biological and terroristic agents.

CSSM will be involved in identification of new biological agents (weapons). Col. F. Lista will be the responsible of the Security Committee which will be created in the partnership whose activities will be devoted to the control of sensible data concerning mulator and concerning the security support system and concerning their possible dissemination.

3) EDY GROUP www.edygroup.com info@edygroup.com
Resp.Dott.ssa Menghini Sabrina s.menghini@edygroup.com

Edy Srl is a company born in 1999.It was founded on the impulse of its patent covering a field tent with an air gap on its entire surface, that is now extremely more lightweight and reduced in its overall volume thanks to constant research and development , to the extent that it is can be easily transported and quickly assembled for almost immediate use. In the last ten years of experience on the field , Edy has developed a strong sense of organisation and competence and , to the aim of being capable of facing any emergency situation at ll times, has selected a network of specialised technical partners with which it can offer integrated solutions that meet all aspect of a crisis. Today, Edy is an ISO 9001:2000 certified company for the design of solutions for emergencies and can be the sole supplier of the instit nal customers to whom it offers a turnkey service.
EDY's operating ambits:
Hitech tents for medical aid, shelter, permanent accommodation
NBCR decontamination systems, IsoArk systems for the isolated treatment and protected transportation of patients having very infective and diffuse pathologies
Equipped and turnkey systems to manage immediate responses to various types of accidents: during mass demonstrations, Industrial, transport, due to terrorism and natural causes (Advanced Medical Posts, Field Hospitals, Emergency Camps, Mobile Out patients Clinics, Equipped Trolley for logistics)
SAT Triage stand alone mobile computer systems that back up rescue operations by constantly plotting the rescues effected and the victims involved n an accident.
Customised products are manufactured on customer's specifications.
Operator's Training
Ordinary and extraordinary assistance and maintenance.
EDY References:
In the past years, Edy has effected important supplies and made its organisation available to constantly work alongside operators on the field in a nuous commitment of correspondence of the features offered with the territory concerned and he requirements of the intervention. The following are some of its main customers; The Italian ncy of the Council of Ministers, The National Civil Protection Department, the Italian Interior Ministry, the Government Police Department, the General Command of the Carabinieri Corps, the Italian Red Cross, the Italian Military Air Forces

For this experience
EDY Group S.r.l will be involved in WP 2-WP4

4) AD TELECOM **www.adtelecom.es**
Resp.Ing.José Maria Silvestre **jmsilvestre@adtelecom.es**

Founded 1993
Activity: Industrial Company with own R+D and equipment
Sectors : RadioCommunications & Broadcast , Security , tics , Space, Instrumentation
Service : R+D for other companies
Turnover : 3 M E
Employees : 30 (21 University graduates)

TECHNOLOGIES :
Radiofrequency and Microwaves (Develop of microwave circuits up to 20 GHz)
Embeded System Microprocessors (hardware and software solutions)
Optics (communications and remote sensing)
Signal Processing (FPGA programmable logic)

PROJECTS vs TECHNOLOGIES and APPLICATION AREA :
Videolinks
Tetra Combiner
Tetra Coverage solutions
Tetra Bluetooth-Helmet
MESH Network

SECURITY :
SENA
Sensor Network
LIDAR for toxis gas identification

AERONAUTICS :
LIDAR for clear air turbulence detection in Air Navigation

SPACE :
INTA Nanosat & Microsat transceivers
Measurement of dryice layers
Deep space optical link

INSTRUMENTATION :
Tv-Sat Signal Meter
Chemical Analysis (using NMR)
Vision (3 D Display)
DVB-T and analog-Tv Monitoring

For this experience
AD TELECOM will be involved in WP 1-WP2-WP3-WP4-WP5-WP6 and leader in WP4

5) UNIVERSITY of Zilina - Faculty of Engineering -Slovakia
Resp. Eng. Dr. Luskova Maria maria.luskova@fsi.uniza.sk

The University of Zilina (UNIZA) is a public educational institution with fully university character. It has more than fifty year's tradition. It was established in 1953 as the University of Railway Transport.
The profile of the University is given by its traditional orientation to all fields of trasport and communications, electrical engineering , mechanical en neering ,civil engineering, and related technical , technological and economic disciplines , natural sciences and informatics. It provides education in all three

Degrees of academic education in internal and external forms . At present , the UNIZA consists of seven faculties and seven research and educational institutes.
The Faculty of Special Engineering of the University of Zilina (further:FSE) has existed for more than 50 years as a part of the University of Zilina . the course of years 1953-1998 the FSE at that time called Military Faculty , served as one of the most important military educational institution. In 1998 the FSE was transformed from military to civil institution. At present the FSE presents educational institution aimed at civil security , crisis management , protection of person and property , rescue services , transport in emergency situations and overall internal security from natural and economical disasters.
The FSE consists of Department of Crisis Management ,Department of Fire Engineering ,Department of Security Management ,Department of Technical Sciences and Informatics and Department for Crisis Management Research.
The main trends in research and science activities are oriented to solving theoretical and fundamental risk and crises management problems; investigation of basic , organizational and structural problems of risk and crisis management in ublic administration, economy and environment, risk analyses and projection of preventive actions ; solving crises situations problems existing in nature , economy and society , fire engineering, mainly fire prevention and fire stopping technology, solving actual tasks in the frame of complex emergency system , innovation of the technology and technical means in fire protection, fire security of road tunnels and road constructions, technical safety and fire protection of buildings and other facilities, solving tasks related to security protection of people , property and equipment, methods and technique of safety management, integrated safety, emergency and rescue systems ,developing the transport infrastructure problems and solving transport problems in emergency and crises situations.

CV of Key Personnel involved
Dipl. Ing. Maria Luskova, graduate of the University of Zilina, Faculty of Mechanical and Electrical Engineering, worked 14 years in manufacturing enterprise at technical, financial and business departments. Since 2003 she has been working at the University of Zilina, Faculty of Special Engineering as the researcher at the Crisis Management Research Department. She is dealing especially with problems of risks and security management in my and society and participates in development and solution of the Facult of Special Engineering European projects. At the same time she continues in her study as the external Ph.D. student in the study programme Crisis Management at the University of Zilina.

For this experience
UZ will be involved in WP 1-WP3-WP4-WP5-WP6

6) AITEX www.aitex.es Resp. Dr .Ing. Rosa Lopez r.lopez@aitex.es

AITEX is a Spanish non-profit making private association formed by textile and related companies, whose main objective is to improve the text le companies competitiveness , promoting modernization activities , new technologies introduction and improvement of the company and products quality . AITEX acts on behalf of the textile and clothing industries in Spain and overseas, having a strong industrial representation . We have more than 750 textile members enterprises. The main objective of AITEX is the development of activities aimed at supporting the textile sector (R&D , training, consultancy, laboratory, services, certifications, quality and environment, ICTs).AITEX organises yearly technical seminars ,conferences, etc. to disseminate project results, new technologies and trends to SMEs. AITEX participates in important annual fairs , issue AITEX technical magazine Annual report of activities. AITEX been participating in many EC, national and regional initiatives supporting the Spanish textile companies in the development a growing number of funded projects and is involved in the European Technology Platform on the future of textiles and clothing. Among the many different tasks the Institute fosters we can point out the Standardization and quality , RTD projects, training a Lab. services for enterprises (including chemical, physical).
Our RTD personnel is structured in 5 research groups :Nanotechnologies, Intelligent Textiles, ICTs, Finishing on technical textiles.

The main objectives are:
Integration of all sensors in to textile
Designing the sensor module , communication module and ta algorithms
Integration of the electronic circuitry on the sensor communication module
Designing the graphical user interface
Development of unit process
Developing fully functional prototypes for all the systems and sensors
Demonstrating prototypes in a complete Unit System
Testing, Exploitation and Disseminations of the project

For this experience
AITEX will be involved in WP 2-WP6

7) DISAT info@disat.com.tr Resp. Prof. Nuri Akkas nuriakkas@nuriakkas.com

Digital Defence Technologies
-DISAT is an SME software company with experienced engineers on Crisis Management CIS and CBRN (Chemical-Biological-Radiological-Nuclear)calculations on hazard estimation.
-The main objective of the company is to develop ICT and security based projects collaboration with EU and Other world wide companies for novel technologies and products
-DISAT has worked cooperatively with Turkish Security Forces
-DISAT experienced on NATO CBRN standards, real time data processing, multisensory/client data gathering and processing this data for alarm and tion management.
-The Company has an engine /library that performs the calculations for contamination of CBRN events. This engine is currently used by military forces to support their national (e.g. Maritime Forces Exercise 2008) and international exercises (e.g. NATO DOGU AKDENIZ 2008)

CV of Key Personnel involved
Prof.Dr. Nuri Akkas: He is a retired professor from the Middle East Technical University, Ankara, with BS and MS degrees in Civil Engineering and PhD in Engineering Sciences. He has a scientific background on biomechanics, bioengineering, and biomed engineering. He is the author of close to two hundred publications, which have received more than three hundred citations over the years. He has carried out many R&D and consultancy activities on post-earthquake damage of buildings especially hospitals, strengthening the infrastructure of public buildings, including hospitals and schools, through World Bank and UNDP pro His previous administrative duties include: Dean of the Graduate School of Natural and Applied Sciences and member of the Senate and of the Administrative Board of the School of Science at Ankara University; Chairman of the Department of Engineering Sciences and member of the Academic Board of the School of Engineering at the Middle East Technical University; member of the Senate at Baskent University. Formerly, he was the National Contact Point and also served as the expert in the Programme Committees of the Food Quality and Safety and of the Life thematic areas in EU FP6. He took part in various FP5 and FP6 projects as a partner and Work leader. Among these, SMESFORFOOD (SSA), ANIMALSCIENCE (SSA), TRAINNETFUTURE (SSA), RURALETINET (SSA), BARLEYBREAD (Collective, 2006-2009) and LOWJUICE (Collective, 2006-2009) can be cited. Moreover, he is currently participating in the following FP7 projects: GMSAFOOD (Small Collaborative, 2008-2011, Work Package Leader) and SKINTREAT (Large Collaborative, 2008-2012).
E-mail: nuriakkas@nuriakkas.com **Mobile:** +90 532 670 6261

For this experience
DISAT will be involved in WP 1-WP4-WP5-WP6 and leader in WP3

8) UNIVERSIDAD POLITECNICA de Valencia.
Institute of Applied Molecular Chemistry - IQMA

Resp.: Prof.re R.Martinez –Manez
Dr. Jose Vivente Ros ciqma@upv.es

The **Universidad Politécnica de Valencia (UPVLC)** founded in 1973 is a public institution devoted to higher education and to research and develo ment (R&D) activities. The main scientific and technological domains are information and communication technologies , electric, electronics, mechanical and chemical engineering , civil engineerin , architecture, food and agricultural technologies , business sciences and fine arts . Today , the UPV academic community included nearly 35.000 pre-graduate students for 63 different careers , 1.033 doctoral students ,2.387 teaching staff , 1.593 administrative and support staff members. UPV budget is over 218 Meu. The UPV runs its R&D policy towards two aims :on one side , as a young University, the UPV needs to foster strategic and pre-competitive R&D to strengthen its basic knowledge base . For such purpose, it moves its research groups towards the major European research priorities , especially within the European R&D Programmes. On the other hand , it has a special vocation to perform R&D of interest to our industrial environment , lookin after being a technological and R&D partner to companies settled in this region.

Institute of Applied Molecular Chemistry (IQMA)
The Institute of Applied Molecular Chemistry at the Universidad Politécnica de Valencia has more than 50 members most of them working in the development of chromo-fluorogenic chemosensors and biosensors and many other aspects in relation to molecular-based chemistry problems. The Institute has a number of fully-equipped laboratories for organic and inorganic synthesis and has access to most of the typical organic and inorganic characterization techniques including NMR, FT-IR, UV-VIS, Fluorescence , GC,GC-MS,HPLC,
Plasma Emission Spectroscopy, Atomic Force Spectroscopy , Electrochemical techniques ,etc.

CVs of key staff in the project
Prof. R. Martínez – Máñez is director of the IQMA since 2004 and leads research groups in the field of chemosensing for more than 15 years. He is currently professor in Inorganic Chemistry .He is co-author of over 140 research papers in SCI journals and has been cited more than 1800 times to papers published in the last ten years. He has participated in more than 40 projects (as project leader) and has a total of 9 patents. He has actively involved in the last years in the development of colorimetric chemosensors of cations, anions and neutral species including chemical warfare agents.

9) WNG WIRELESS NETWORK GROUP – UNIVERSITY of Catalonia - UPC
Departament d'Enginyeria Telematica
Webmaster wng@entel.upc.edu
http://wireless.upc.es/wireless/en/index.html

Resp. Prof. Josep Paradells e-mail: teljpa@entel.upc.edu
Jordi Casademont teljcs@entel.upc.edu

The **Wireless Network Research Group (WNG) from** Telematics Engineering department at Technical University of Catalonia (UPC) has more than 10 years experience on wireless networks research . The Group is located in the two Telecommunications engineering schools from UPC (in Castelldefels and Barcelona). Actually is recognised as emergent research group from Catalonia Government and has received both regional and national financing from its creation . The Group is composed of 9 Professor , 2 PhD students , 5 researches and more than 12 students working on their master thesis . The Group has participated in several projects with partners like Vodafone R&D Spain , Swiss Comm Innovation , Telefonica Spain

Doxsa , Sener , AD Telecom , Micro Art , Futur Link , Tempos 21 , ALSTOM , S21SEC and 12 Cat Foundation. Several years ago , the group i tified multi – hop networks as a future technology and started research on this key area . Actually the Group has relevant results related to key points in that technology (network self-configuration , interfaces reduction , quality of service and security mechanism) on testbeds with implemented solutions .
A relevant result is the participation the 6LowPAN (Ipv6 o Low power Wireless Personal Area Networks) working group from the Internet Engineering Task Force (IETF) working in a RFC draft in the area of mesh routing in wireless sensor networks (Problem Statement and Requirements for 6LoWPAN Mesh Routing).
The Group is provided with software and hardware research laboratories with a testbed for wireless sensor networks unique at national level , with more than 60 nodes. The Group and its members have been involved in several close to the technology used in the proposal. To mention some:

- ü 2004 – 2006 . Studies on the possibilities to build ad –hoc networks. This project has been done in collaboration with Vodafone R&D Spain and was intended to analyse the maturity of ad-hoc networks. The project involves a market ana ysis and experiments with the selected equipment to measure its performance
- ü 2006-2007 UMTS assisted mesh network . This project has been done in collaboration of SwissCom Innovation and Vodafone R&D Spain . The objective of the project has been to build a mesh network able to use a cellular connection to assist the creation of mesh network
- ü 2005-2006 TETRA Network Dimensioning . The Group participated with regional government to dimension the TETRA network utilised by security and emergency bodies from Catalonia
- ü 2004-2006 Ubiquos network based on IP protocols . A research project founded by the Spanish government . The aim of the project was to study the different alternatives (cellular , IEEE802.11 , IEEE802.15.4 ...) to provide connectivity at any place , any time .

Since 1998 , the **WNG Wireless Network Group (WNG)** has carried out consulting , teaching and research activities related with several fields including mobile communications , wireless networks, communications protocols and content adaptation. Some of the aforementioned tasks have been done for leading companies and organizations , such as : Telefonica,Vodafone,Retevision,Alcatel,Sener,Doxa,Unitek,Fecsa,Catalan Institute of Technology ,Catalan Association of Telecommunication Engineers, Telecommunications Centre of the Catalan Government. Etc. The Research activities of the WNG are in many cases undergone through public funded research projects, mainly involving the panish Government and the European Commission. Several WNG members actively participate in project proposal eva uation and reviews within the afore mentioned organizations. The has published a significant number of works in journals and in conference proceedings. On the other hand, several members of the group take an active part in technical program Committees of International Conferences and in review processes of papers submitted to journals and conferences. The **Technical University of Catalonia (UPC)** is a public organization with a will to serve society. It offers a wide education in technical , arts, and human areas. **UPC** is leading many research fields and is related with society interests, specially with productive sectors .Research Capacity of UPC is based in 40 Departments and 3 University Institutes with a growing number of specific research centres and basic centres which collaborate with other organizations.

Research

Topics of interest

The **WNG** develops its research and consulting activities in several areas including mobile communications, heterogeneous network ,mesh and hoc network, sensors networks, etc...The group has participated in a number of national and international projects. The current research interests of the WNG are the following ones: 1)Design nd evaluation of the capacity of mesh networks through a multilayer approach (i.e physical layer ,link layer ,network layer and application

layer) to allow identifying and developing cross-layer mechanisms. 2)To offer solutions to extend traditional networks (either fixed or mobile one) to any place ,in any time. The goal is to provide technical solutions to enable the ubiquitoars internet. From these topics , our current work focuses on the following goals:-Studying and developing adequate mechanism to share the radio channel for mesh networks . In addition, another interest is the development of distributed channel selection for this kind of networks –Studying and developing auto-identification mechanisms and mobility support over Ipv6 Ipv4 networks – Studying auto-configurable and scalable routing protocols for nodes with IEEE 802.11 and IEEE 802.15.4 radio interfaces – Studying and developing scalable service discovery mechanisms for its usage on several of mesh networks.-Studying the usage of end-to-end solutions vs usage of proxies in mesh networks, for the transport layer (TCP,SCTP) session layer and application layer (content adaptation).-Development of a gateway for heterogeneous networks connectivity to offer mechanisms to cope with performance degradation and interoperability issues.-Studying the capacity of the interconnection element a distribution of the capacity among nodes in a mobile access network (GPRS,EGPRS and UMTS).This task includes analyzing capacity distribution among the nodes of a data acquisition network and among nodes in a distribution network. It must be noted that the group's research work is mainly based on the development of real test beds and specific platforms which allow dissemination and technology transfer to the companies.

Projects

The **WNG** has participated in several research and development projects related to mobile communications,wireless networks ,routing protocols an adaptation of contents. During the last ten years,the WNG has always joined an active R+D project from the Ministerio de Educacion Y Ciencia. The following project are the most relevant from the rest of projects.

Current Projects .: -12 Cat - Media Movil

Finished Projects : - ISTELIN -Performance Evaluation of Wireless Proxies –UMTS services and localization advanced techniques –IST RIU 253 -IST WIU 253 -IST EMILY -IST INTERNODE - COMESVA - Wireless I P - TCP Features improvement over GPRS

For this experience

WNG –UPC will be involved in WP1-WP2-WP3-WP4-WP5-WP6 and leader in WP5

CV of key staff

Prof . Dr . Josep Paradells .
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Dr. Josep Paradells is full professor in the Telematics Department of the Technical University of Catalonia (UPC) and leader of the W . His research and teaching tasks are focused to the usage of the Wireless Systems and Internet access Technologies . In particular to the evaluation of protocols over mobile networks (e.g. , GPRS , UMTS , ad – hoc-networks) and their improvement by end to end mechanisms and / or interposed elements (performance enhancing proxies) , evaluation and development of enhancement proposals for ad – hoc networks and sensor networks routing protocols , evaluation and development of enhancement proposal for IEEE802.11 radio resource management (distributed channel assignment and load distribution), evaluation and development of enhancement proposals for IP mobility management and device address self-configuration . He has expertise in performing simulation based studies and building real testbeds . Moreover he has managed many projects in the area on Wireless Internet area.

2.3 Consortium as a whole

The project has been conceived and coordinated by the versity of Rome Tor Vergata endowed by a General Hospital which includes an Emergency Department under construction, an heliport and all the necessary that could be used to face any e ncy.
The aim is to study and implement a simulate plan in order to manage the sanitary emergency at one's best in case of maxi emergency or NBCR weapons attack.
Assuming such event, we even tried to hypothesize an answer possible only if we possess the know-how and the proper tools. Therefore we have chosen partners such as UTV-DISAT that possess the exact knowledge of the territory where we can adapt the event and partners to serve the purpose of the achievement of the goals. Being essentia ly a project of research our work will be directed by University Tor Vergata.
For strategic reasons and Military sensitivity we asked to an Italian Military Institute that deals with sanitary research to collaborate with us: it will control all the high risk information that could arise from the project itself. Such an Institute will be responsible of the "Security Support System".
Consortium is a balanced equal representativeness structure because the partners has been chosen according to their experience necessary for the achievement of the objectives in the various countries concerned in the FP7-Security 2009.
We chose the partner EDY (Italy) for its previous experience in the field. Edy is already concerned with the manufacture of "Hi-tech tents for medical aid, shelter , permanent accommodation , NBCR decontamination systems."
Therefore our project will be concerned in studying an lising the best solutions for the creation of an AMP where the first line treatment for serious injured or contaminated people will be possible This AMP shall be adaptable to various types of territories and needs of the partners members.
DISAT, U.Z Partners will study the production of a Sim lator, and its proven efficiency and installation.
DISAT (Turkish) Partner has been chosen for its specific competence in Simulators and Security Systems building and because of its cooperation with NATO. It is an expert in Simulators building and in the surveying NBCR agents. Therefore this Partner will be the leader in WP3 and will integrate its specific competence in all WPs.
U.Z. Partner (*Faculty of Engineering of* the University of Zilina -*Slovakia) has been chosen to* elaborate the analysis and the method necessary for the building of a new generation Simulators.
AD Telecom-UPC Partner (Spain)will study and accomplish all the "Security Support System', included the" Reserved Communication System". They wil be responsible to check the feasibility and adaptability of the system to the various requirements demanded by the Partners.
Since they are among the main European experts AD Telecom will be the leader of WP4.
UPC-WNG will be the leader of WP5 besides contributing with their experience in all the WP where they are involved.
AITEX Partner (Spain) has the task to assemble all the sensors necessary to monitor all the parameters necessary to protect either the patients or the emergency team and all actors involved in the disaster.
We have involved all our Partners (WP6) in order to obtain the exploitation of the obtained results and the "Dissemination" in the manner the Consortium will believe much useful.
We reserve the possibility to integrate others Partners if those chosen will demonstrate to be unable to reach the goals expected in the agreed timetable.

It will be possible to integrate new Partners non identified yet if their cooperation can be useful to the achievement of the objectives.

Being the Simulator and the Security Support system two of the main Deliverables, the Partnership will discuss about possible patenting and technology transfer both during the development of the project and during the dissemination phase. In the Consortium Agreement all those issues will be assessed. We intend to use the IPCA Consortium Agreement model in order to regulare all the details concerning IPRs.

We point out that DISAT Partner is Turkish and has been chosen for its specific competence in Simulators and Security Systems building and because of its cooperation with NATO. It is an expert in Simulators building.

2.4 Resources to be committed

Budget description

UTV is The Coordinator.
Its budget is required to assure the research activities, to optimise the management and to guarantee the best Dissemination strategy. The key personnel will involve both employed personnel (one full professor and one researcher plus administrative staff, showing a high level of commitment by the University in the project) d contracted staff (one researcher and one PhD fellow for sustainability purposes and one technician specialized in translations in order to assure consistency with documents and web pages and dissemination material produced by the partnership.

CSSM will coordinate an Internal Security Board . CSSM will organise , control and direct any information that could be security – sensible . It will be responsible to identify more gical agents used as weapons.
Its budget is required to assure the research activities and the security assessment. The budget will be therefore devoted to a "consultancy" activity n specific subjects concerning critical security issues.

EDY will be responsible to built the AMP – Advanced Medical Post.
Its budget is required to study, to built and implement integrated and specific technical solutions in accordance with operating requirements. The equipment budget is justified because of infrastructural requirements: hi-tech tents for medical aid and/or shelter, permanent accommodation, NBCR decontamination systems are all very expensive equipment. EDY will buy the most suitable resources and then adapt and customize then in accordance with operating requirements and according to the requests of the involved Hubs (principal hospital which responds to the disaster) and health-care requirements. The equipment will then adapted to he Orographic characteristics in order to respond quickly the management strategy of disasters.

AD will be responsible to develop the Security Support System.
Its budget is required to carry out research activities connected to reserved communication issues. In particular AD will dedicate a lot of effort in terms of man/months in order to identify and optimize the best possible non-decriptable communication tools. Moreover, AD will build the Security Support System which will be located in a Command Central which will be devoted to the coordination of all the actors involved in the disaster management.

UZ will involve employed and contracted personnel in order to study and to define the Simulator's manufacture. It will be involved also in its testing and its implementation. Mathematical analysis and data assessment to be entered in the simulator will be performed in order to elaborate a simulating plan for emergency management. hematical models will help integrate all the data provided by all the actors involved.
Its budget is required from person/month costs to assure the research activities and the Dissemination actions.

AIITEX will study and integrate those sensors manufactured by others in the garment of patients and of emergency team. Those sensors will be able both to identify already-known NBC agents and monitor vital parameters. The feedback received from the sensors will contribute to orientate the response to emergency of the actors involved. The sensors will also be included in the reserved communication system (Security Support System).

DISAT will be responsible to create and develop the prototypes in order to arrive to the final Simulator. It will be able to create a simulated plan both in presence of mass-casualty disaster and in presence of already-known NBCs for responding to emergency caused by a bio-terroristic attack.
Its budget is required to carry out research activities connected to study the conditions of all the variables which could imply a different management of emergency. In particular DISAT will dedicate a lot of effort in terms of man/months in order to identify Orographic, wind, people, military-sensible objectives etc. issues. Moreover, DISAT will build the Simulator which will be located in a Central of Command. The Central will be devoted to the coordination of all the actors involved in the disaster management. The Simulator will be adaptable to different contexts of the countries involved.

UPVLC will be responsible of research activities about more selective systems for identifying the chemical warfare agents and more unknown NBC agents.
The key personnel will involve both employed personnel (full professors and researchers, showing a high level of commitment by the University in the project) and contracted staff (researchers and PhD fellows for sustainability purposes.
The consumables costs are justified by the necessary kits for carrying on experiments in order to identify the above-mentioned toxic agents.

UPC will be responsible of studying, to defining and integrating the following:

- the Security Support System with the Central of Command
- the sensor produced by UPVLC with the Security Support System
- the Simulator with the Security Support System and with the Central of Command.

Its budget is therefore required to assure the research activities, the testing, the implementation and Dissemination of results.
The key personnel will involve both employed personnel (full professors and researchers, showing a high level of commitment by the University in the project) and contracted staff (researchers and PhD fellows for sustainability purposes.

3. Impact

3.1 Expected impacts listed in the work programme

The disasters and emergencies of the other countries , have validated the need to extend the emergency preparedness plan to a more comprehensive ap to emergency management interesting various hospitals, health agencies, military and civil organizations.
We think that the plan is the same to best reply "multiple casualty disasters" and to "War or NBC terroristic attack".

At present, there is no evidence –based literature on the need to extend the emergency preparedness plan to a more comprehensive approach to gency management interesting various European hospitals, European health agencies, European military and civil organizations.

We think that our European Comprehensive Emergency Plain is original plan key to minimizing the disruption of patient care and services during and after a natural or man-made disaster.

It can be useful :

- to simulate the best plan to reply to mass casualty disasters or NBC Terroristic attack
- to extend the emergency preparedness plain to a more comprehensive approach to emergency management interesting various hospitals , health agencies , military and civil organizations. We think that the complete and community response requires creation of integrated disaster plain
- to minimize the disruption of patient care and services during and after disaster
- to re-establish speedily the normal activity
- to compile a "Procedure's hand book" to assure the best response for the future.

These Objectives are provided for the areas:

4.1 – 4.3 (Restoring security and safety in case of crisis/After match crisis management-Simulation, planning and training tools and methods for management of crisis and complex emergencies-First responder for the future)

to build "the Security Support System" based on logistic and supply chain security, surveillance and communications system to assure the citizens, disaster's place , AMP (Advanced Medical Posting) and hospital's security

to re-establish speedily the normal activity.

These Objectives are provided for the areas
1.1 – 1.3 (Security of citizens)
2.3 - (Security of infrastructures and utilities)

The steps will be needed to bring these impacts are :

a) Analysis of approach (scenery) during emergency event within territory u der review
b) Analysis of components of system responsible for solution of emergency events within judged territory
c) Analysis of system of medical support and preparedness of single components of health services for solution of emergency events

d) Analysis of current situation in evacuation in the countries participating to the project
e) Analysis of the best way of evacuation management
f) Analysis of the range and content
g) Identification of weakness of existing system for management of rescue teams during emergency event
h) Identification of need requirements of single subjects participating in emergency event
i) Comparison of system of emergency events solution within the countries participating in the project and their legal aspects
j) Developing fully functional prototypes of simulator and of the security support system's
k) Developing new technology to identify NBCR agents
l) Developing device/tools portable kits to identify NBCR agents
m) Developing Hi-tech tents/NBCR decontamination systems integrated and specific technical solutions in accordance with operating requirements
n) Reports on the Analysis
o) Reports on the specific technology
p) Proposal of methodology for management of evacuation using operation analysis methods
q) Proposal of system model for solution of emergency event
r) Proposal of system model and procedure's hand book to ptimize the hospital mass-casualty and NBCR emergency management in the countries involved in the project

At last , our European original proposal project propose the original objectives:

1) to simulate the best plain to reply to disaster
2) to extend the emergency preparedness plain to a more comprehensive approach to emergency management interesting various European hospitals, European health agencies, European military and civil organizations
3) to restore security and safety in case of crisis
4) to guarantee the security of European citizens
5) to guarantee the security of European infrastructures
6) to re-establish speedily the normal activity.

3.2 Dissemination and/or exploitation of project results, and management of intellectual property

The "proposal project" is born at the Faculty of Medicine and Surgery of the University of Rome-Italy-"Tor Vergata".

We propose these measures:
1) exploitation and dissemination of the project within our associated enterprises in order to try to implement the technology and the project's results developed under this program
2) meetings
3) proceeding of meetings
4) presentation at University lessons, seminaries, conferences
5) presentation al Public conference
6) reports on specialists magazines
7) publishing on popular national and foreign magazines
8) publishing final procedure's handbook to optimize t hospital mass-casualty and NBCR emergency management in the countries involved in the project.
9) project web site

We intend to protect the results of the "Intellectual Property" by means of:
0) a Memorandum of Understanding among Partners in order to regulate the protection of IPR.

If the project will get through we shall regulate the IPR according to the Consortium Agreement model IPCA

1) We intend to regulate scientific publications

2) We intend to patent the two devices (simulator and sup system), the Handbook of Procedures.

3) We intend to start an innovation process via technology transfer.

4) We intend to entrust the production and marketing of the device either to an internal society of the partnership or creating one on purpose trough a University spin-off (or again we shall regulate those issues in the Consortium Agreement)

4. Ethical Issues

ETHICAL ISSUES TABLE
(Note: Research involving activities marked with an asterisk * in the left column in the table below will be referred automatically to Ethical Review)

* Does the proposed research involve human Embryos?	no
* Does the proposed research involve human Foetal Tissues/ Cells?	no
* Does the proposed research involve human Embryonic Stem Cells (hESCs)?	no
* Does the proposed research on human Embryonic Stem Cells involve cells in culture?	no
* Does the proposed research on Human Embryonic Stem Cells involve the derivation of cells from Embryos?	no
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes

* Does the proposed research involve children?	no
* Does the proposed research involve patients?	
* Does the proposed research involve persons not able to give consent?	no
* Does the proposed research involve adult healthy volunteers?	no
Does the proposed research involve Human genetic material?	no
Does the proposed research involve Human biological samples?	no
Does the proposed research involve Human data collection?	no
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes

Does the proposed research involve processing of genetic or personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	no
Does the proposed research involve tracking the location or observation of people?	no
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes

Does the proposed research involve research on animals?	no
Are those animals transgenic small laboratory animals?	no
Are those animals transgenic farm animals?	no
* Are those animals non-human primates?	no
Are those animals cloned farm animals?	no
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	yes

ANNEX 4

Does the proposed research involve the use of local resources (genetic, animal, plant, etc)? no
Is the proposed research of benefit to local communities (e.g. capacity building,
access to healthcare, education, etc)? yes

I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL yes

Research having direct military use yes
Research having the potential for terrorist abuse yes

I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL

5. Consideration of gender aspects

Gender issues are not particularly relevant in this project. Three of the Scientific responsible (at AITEX, EDY and at the University of Zilina) in the partnership are women.

6. Security sensitivity Issues

Our “proposal project” can be a security-sensitive project .
In fact, our goals are to obtain the best possible sim lating plain to hospital mass casualty-NBCR disasters management.

We intend to identify the various nuclear-biological –chemical agents using as potential weapons and simulate a disaster to treat the event. Our project is to guarantee the security to citizens, emergency teams, infrastructures and all the actors involved in the disaster.

For this reason we will work together with the Medical Italian Army Research Group.

7 Annex to the Security Aspects Letter (SAL)
Security Classification Guide (SCG) TEMPLATE

Subject / Deliverable	Classification level	Owner *(Name+ country)*	Beneficiaries involved in production or wanting to access Name	Beneficiaries involved in production or wanting to access Clearance	Beneficiaries involved in production or wanting to access Date of production	Comments including purpose of the access and planned use
D1WP3	CL restricted	Joint ownership	[1]		3	
D2WP3	CL restricted	Joint ownership	See note n° 1		5	
D3WP3	CL restricted	Joint ownership	See note n° 1		11	
D4WP3	CL restricted	Joint ownership	See note n° 1		13	
D5WP3	CL restricted	Joint ownership	See note n° 1		14	
D6WP3	CL restricted	Joint ownership	See note n° 1		15	
D7 a WP3	CL restricted	Joint ownership	See note n° 1		18	
D7 b WP3	CL restricted	Joint ownership	See note n° 1		18	
D8WP3	CL restricted	Joint ownership	See note n° 1		24	
D1WP4	CL restricted	Joint ownership	See note n° 1		15	
D2.1WP4	CL restricted	Joint ownership	See note n° 1		21	
S2.1WP4	CL restricted	Joint ownership	See note n° 1		21	
D2.2WP4	CL restricted	Joint ownership	See note n° 1		26	
S2.2WP4	CL restricted	Joint ownership	See note n° 1		26	
D2.3WP4	CL restricted	Joint ownership	See note n° 1		30	
S2.3WP4	CL restricted	Joint ownership	See note n° 1		30	
D2.4WP4	CL restricted	Joint ownership	See note n° 1		34	
S2.4WP4	CL restricted	Joint ownership	See note n° 1		34	
D3WP4	CL restricted	Joint ownership	See note n° 1		34	
D4WP4	CL restricted	Joint ownership	See note n° 1		34	

[1] **All the partners, according to the persons/month involved in a l the WPs.**
The shares will be decided in the Consortium Agreement model IPCA

D1.1WP5	CL restricted	Joint ownership	See note n° 1		33	
D1.2WP5	CL restricted	Joint ownership	See note n° 1		36	

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