

u-2010 project

# Final Demonstration

Luxembourg, 22 October 2009

“Fire in a Tunnel”





## Final Demo at Grouft Tunnel

The 'Grouft' Tunnel is the masterpiece of the motorway linking the city of Luxembourg to the North of the Grand Duchy. It is composed of two parallel tubes, of 2 966m each, with a maximum inclination of 4,63% from the 'Alzette Valley'.



Ubiquitous IP Centric Government & Enterprise Next Generation Networks  
Vision 2010

Integrated Project funded by the European Commission 6<sup>th</sup> Research Framework Program  
15 partners from 7 European countries

Led by the University of Luxembourg

Four 'live' demonstrations in Luxembourg ('Fire in a tunnel' in 2007), in Slovakia ('Terrorist nuclear attack' in 2007 and 2008) and in Slovenia ('Mountain Rescue' in 2009)

**U-2010 stands for "ubiquitous IP centric Government & Enterprise Next Generation Networks Vision 2010"** and its overall objective is to provide the most capable means of communication and the most effective access to information to everybody required to act in case of accident, incident, catastrophe or crisis, while using existing or future telecommunication infrastructures.

Recent large catastrophes and crisis situations like the Tsunami at the end of 2004 and the Katrina hurricane of September 2005 dramatically showed the importance of communication to prevent the deaths of thousands of people. The u-2010 project addresses the public safety issues by researching new emergency and crisis management solutions investigating on innovative and state-of-the-art communication technologies based on the current and new Internet technologies (i.e. Internet Protocol version 6 – IPv6) that could be put to use and realize this vision.

The integrated research project is coordinated by the University of Luxembourg and constitutes the first ever integrated research project awarded to the young Luxembourg academic institution. This project shows the interest of the Information and Communications Technology (ICT) community outside of Luxembourg to team up with Luxembourg based public and private ICT actors for joining them in an international research project.

U-2010 demonstrates well the potential for public private partnerships in Europe and in Luxembourg in a growing economic sector, namely the ICT sector and confirms the strategic priorities of the University of Luxembourg over the next years.



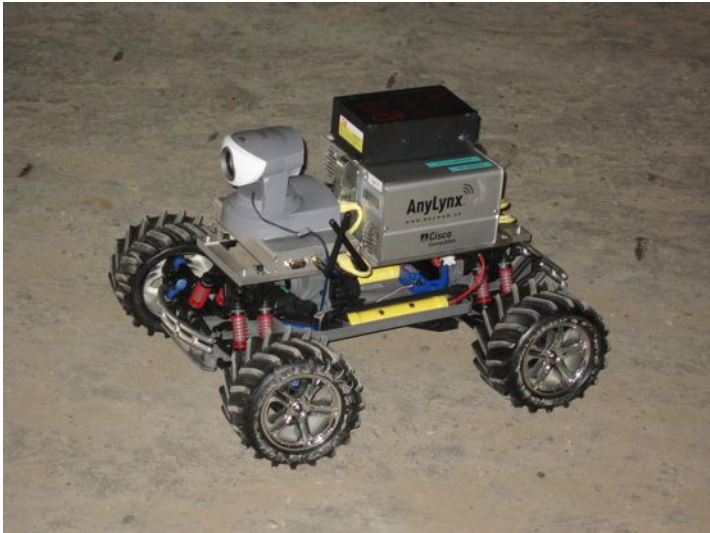
## The demonstration “Fire in a Tunnel” on 22 October 2009

This final demonstration shows the solutions developed by the u-2010 project in a real emergency scenario, supported by the Luxembourg emergency services.

The demonstration simulates an accident in a tunnel and shows how the new technologies developed in u-2010 will help first responders to resolve the problems that arise because of the remote location and the resulting unavailability of legacy communications infrastructure.

The demonstration shows:

- 1) A car accident, followed by a fire, in the middle of a three-kilometre long two-tube highway tunnel.
- 2) How Luxembourg’s first responders support the rescue operation using the advanced technologies of the u-2010 project.
- 3) Ad hoc broadband voice communication in the tunnel over long distances and between the two tubes (North and South) using:
  - Wi-Fi
  - Ad hoc networking
  - TETRA
- 4) The transmission of important information to Headquarters (HQ), via a nomadic satellite communication system and UMTS connection that includes:
  - Wireless sensor technology for transmitting sensor and video information.
  - Body sensors for monitoring rescue staff and victims.
  - Localisation services of people and equipment.
- 5) The increased response capacity of rescue forces by the use of:
  - Communication between the rescue team in the tunnel, the Mobile Command Centre outside the tunnel and the HQs of the various rescue agencies.
  - Tactical devices and a web portal for access to the video and sensor information on-site and in the HQs.
  - An alarm application to manage the alerting as well as the global behaviour of the crisis procedure.



The u-2010 final demo involves the 15 project partners and also the Luxembourg Police, the Luxembourg Civil Protection, and the Administration des Ponts-et-Chaussées Grand-Duché du Luxembourg.

Their support was crucial in the organization of this event.



## About the u-2010 project

Modern society has reached a high dependability on ubiquitous services and networks. Especially in crisis or emergency situations the availability of these services is crucial. Today, governmental and rescue entity communication services are characterized by a strong technical compartmentalization; the interworking and availability of crisis communication resources is not assured.

This project highlights and deploys concepts to enhance the availability of these services and the existing networks by leveraging redundant communication channels wherever possible and using automatic redirection in the case of network failures. In crisis situations, rescue teams have to be assembled fast and flexibly; mobile and ad-hoc networks are one possible solution. Additional research on these networks has been conducted in this project to fulfill the requirements of crisis intervention teams.

The problem of identification will be resolved using new research results in wireless and ad-hoc networks, where especially the integration of distributed knowledge of the current network environment (location information, RFID messages, recommended trust relations, etc.) into the protocols is a key issue for context adaptable recognition. The project takes advantage of IPv6 features for many of the ICT aspects related to crisis scenarios.

With Luxembourg as the first test bed and the Luxembourg Government as a partner in the project, u-2010 provides the ideal possibility to show the feasibility and usability of the results in a real environment and provide the basis for all European countries.

The results of this project will be usable not only for governments' risk- and crisis- management but will also become an integral part of enterprise and public networks, thereby fulfilling the vision of the consortium regarding a next generation for ubiquitous networks in 2010 - "u-2010".

The institutions and enterprises participating in the u-2010 project are:

- Université du Luxembourg (L)
- Ministère d'Etat – Centre de Communications du Gouvernement (L)
- HITEC Luxembourg S.A (L)
- Telindus S.A. (L)
- University College London (UK)
- Cisco Systems International BV (B)
- France Telecom (F)
- IABG (D)
- SES ASTRA S.A. (L)
- M-PLIFY (L)
- Entreprise des Postes et Télécommunications (L)
- KORAK (SK)
- Siemens NV/SA (L)
- Lancaster University (UK)
- Administration for Civil Protection and Disaster Relief of the Republic of Slovenia – Ministry of Defense (SLO)

The project started May 1st, 2006 and ends October 31st, 2009.

More info on:

<http://www.u2010.eu>

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