HNPS

PROJECT INFORMATION

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Project ID: CP5-010
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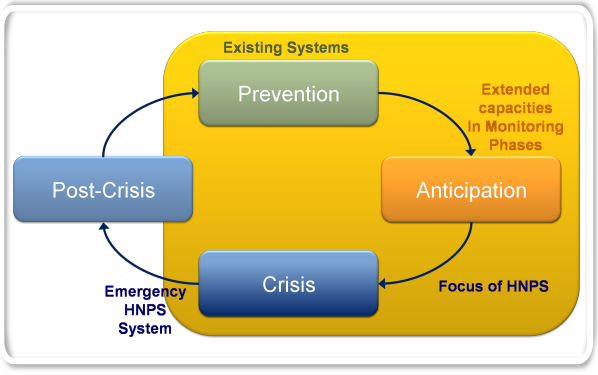
MOTIVATION

Public Safety organisations throughout Europe strive to achieve an optimisation of the communication technologies when dealing with emergencies and disasters. The recent adoption of the Lisbon treaty reinforces the statement introduced in the Shengen agreement to prepare technically interoperable solutions. A heterogeneous network concept for future European public safety communications can help the community to attain this objective. The project HNPS, Heterogeneous network for European public safety, focuses on the integration of existing communication systems including private mobile radio systems such as TETRA and TETRAPOL and broadband services via fixed or deployed networks.

OBJECTIVES

The heterogeneous network concept will allow for the rapid integration of available communication resources in the event of crisis or disaster. It will allow the optimisation of resource allocation to support the daily operations of public safety agencies. Furthermore it will provide those agencies with a set of advanced digital services that are required for their daily operations. The heterogeneous network concept will permit public safety authorities to use public networks for emergency communications more efficiently and with a higher level of reliability.
The project will continue to consolidate the work and results of several other international projects in the area of public safety communications and ambient networking. The project focuses on three main areas:

- Scenarios and associated field trials with user participation,
- Heterogeneous network integration and management, and
- Applications and services.



CELTIC Telecommunication Solutions
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APPROACH

The project's approach is based on the concept of an integrated heterogeneous wireless communication system for rapidly deployable networks. The project will integrate a number of communication systems such as GSM/GPRS, UMTS, TETRA, TETRAPOL, WiMAX and WLAN including wireless sensor networks and an experimental wireless mesh network based on the OpenAirInterface platform.
The project will establish an evolutionary approach: the gradual integration of different systems will take into consideration the complexity and compatibility of different standards and protocols. Likewise the system approach will be used in application integration and test bed design. This test bed will be developed in the project and is intended to create a platform for:

- System compatibility tests which might be carried out by different research and industrial organisations,
- Application integration and interoperability testing,
- Usability studies and field trials, with the participation of public safety users, and
- Training and educational activities interoperability testing

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These activities will foster collaboration between different European industrials as well as research players and users in the area of public safety communications and will promote the concept of a Pan-European Laboratory. The HNPS project will follow an approach starting with user requirements and the analysis of how existing applications can be integrated into the framework. The development of the Heterogeneous Network Architecture is one core aspect of this project. The testbed design and field trial will provide more than only a proof of concept, but a valuable basis for future tests of new applications.

MAIN RESULTS

One main visible result from HNPS will be the integration of the different heterogeneous communication networks for emergency services. This integration is based on a requirement analysis for increasing availability and interoperability as well as the development of concepts to "bridge" between the different networks/services footing on reference scenarios of needed networks and applications bridging technologies.
HPNS will provide innovative solutions for heterogeneous interworking architectures, adaptive network control and management, interoperable middleware, network cross-layer protocols, ad hoc broadband wireless network protocols, and adaptive applications. Furthermore, HPNS will achieve the development of an integrated system for public safety communication. This will include the open interoperable test bed platform development. The project will look at the new system concept of heterogeneous networks and will facilitate the introduction of new services for public safety.

CHALLENGES

Communication networks of all kinds are available nearly everywhere, but nonetheless public safety organisations struggle with interoperability issues. In case of a large emergency with many participating organisations and units it is very likely that these organisations use different communication technologies as well as services and are, in a worst case scenario, not able to communicate and inter-work.

PROJECT WEB SITES

www.hnps.eu

www.celtic-initiative.org/projects/hnps

APPLIED TECHNOLOGIES

To answer these challenges the HNPS project has implemented and will continue to further develop innovative solutions. To name only some, the systems rely on the following applied technologies:

- **Fast deployable networks**
  - **WiMAX** – on-site broadband network
  - **Wireless Meshed Network (WMN)** – deployed in areas where no other NW is available i.e. underground
  - **Wireless Sensor Network (WSN)** – deployed on demand to connect sensors
- **Fixed wireless networks**
  - TETRAPOL
  - TETRA
  - WiFi
  - WiMAX
  - UMTS
  - SATCom
- **Applications & Services**
  - Crisis Management / Command & Control applications
  - Video analysis solutions
  - Localisation

PROJECT CONSORTIUM