



PROJECT RESULTS

# Secure and transparent mobile Internet access

**The goal of Mobilizing the Internet was to make the Internet and its services available to nomadic users securely and transparently. This involves providing access to the Internet from anywhere while ensuring others can always reach you via Internet even if you are on the move. It also means connections cannot be intercepted by others, even when using the Internet in an insecure public environment. In addition, the underlying technology needs to be hidden to allow the user to focus on people, services and content.**

Advances in wireless technology will enable really ubiquitous access to the Internet within a couple of years. Wherever people are in the world, they will be able to use a variety of devices to access information, communicate, share content, make reservations, etc. In addition to such user-initiated activities, they can also be reached by other Internet users for instant messaging as well as audio or video streaming services. In addition, the connection to the Internet has to be maintained through mobile hosts as users move around.

Many of the technical ingredients are already available – and more are continually being developed:

- Wireless-access networking standards such as GPRS/UMTS, 802.11/WiFi and, soon, WiMAX;

- Access points in places such as airports and hotels, and in mobile environments like cars, trains and planes;
- A huge variety of devices offering digital wireless connectivity and ad-hoc networks of devices; and
- Internet services.

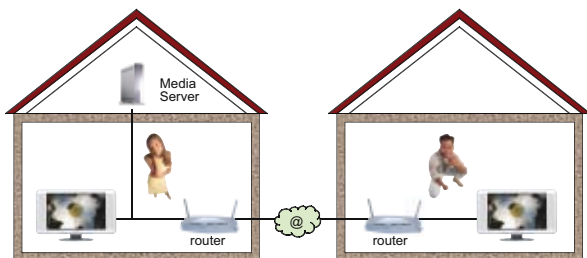
### Coherent security platform

Security is probably the most important requirement for the Internet. Security was studied in ad-hoc multi-hop networks, public wireless access points – hotspots – and office environments. Various solutions exist to make parts of the system secure. However, it is very complex to manage security in a coherent way for the full end-to-end connection, covering public and controlled segments, and supporting data communication as well as streaming voice and video sessions.

Mobilizing the Internet developed a platform to make the system secure in a coherent way through the use of proper security technologies at different levels. This is very important as it is a major criterion of acceptance to allow a large scale deployment of nomadic solutions.

### Extending UPnP

Specific results include extending universal plug and play (UPnP) to multiple homes securely. The UPnP standard allows networked devices of different vendors to work together seamlessly. However, only devices connected to the same home network can work together. Mobilizing the Internet invented and implemented a solution enabling devices in different homes to cooperate. To ensure privacy, users are in full control, explicitly defining which other persons gain access. Work included Internet access in buses, trains and aircraft. This



Home-to-Home UPnP

## MOBILIZING THE INTERNET (ITEA 02020)

### Partners

- Bluepoint
- Borderlight
- EADS
- Euskaltel
- Fagor
- KTH
- Philips
- Robotiker
- Sofnetix
- Teamlog
- Thales Avionics
- Thales Communications
- VTT
- Yanzi

### Countries involved

- Finland
- France
- The Netherlands
- Spain
- Sweden

### Start of the project

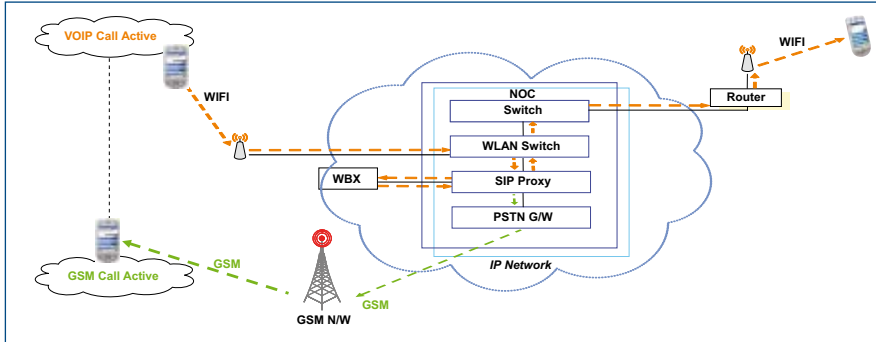
June 2003

### End of the project

December 2005



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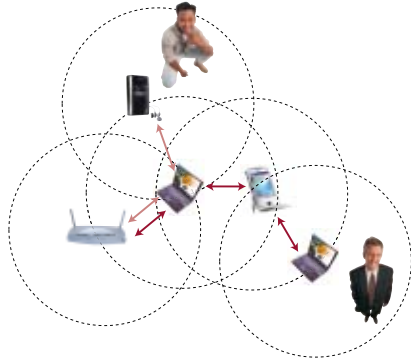


Handover and roaming for voice calls

means it is not only possible to surf the Internet, receive e-mails, and call via the Internet when travelling, but others can also call you when you are on the move. The project developed an innovative approach for controlling which services the passenger may use on board, based on a token – an electronic certificate stored for example on a USB stick. This contains the user's choices, preferences and access rights.

### Intelligent *ad-hoc* networking

Work was also carried out on routing in *ad-hoc* multi-hop networks. This means devices that are too far from an Internet access point can still access the Internet using intermediate devices to



forward their messages. Mobilizing the Internet developed a solution for dynamically dividing traffic over the various devices in the network in an intelligent way. A new route is calculated as soon as devices join or leave the network, preventing overload of any single device.

### Voice call handover and roaming

Implementation of handover and roaming for Internet telephony in wireless networks was also improved as was the security of

wireless Internet access. It is already possible to make mobile phone calls virtually anywhere using GSM networks. However, if a WiFi network with Internet access is available at a particular place, the consumer could save money by using Internet telephony. Mobilizing the Internet built a solution to transfer the call from WiFi to GSM, and back, without disturbing the user.

Other project results include:

- Combining IPv4 and IPv6;
- Development of miniSIP: a secure Internet video call application;
- Extending the Open Mobile Alliance (OMA) standard for digital rights management to fixed devices;
- Developing location-based and on-board services; and
- Building software for remotely controlling devices via the Internet.

### Major project outcomes

#### Dissemination

- 23 papers

#### Exploitation

- One new product
- Two new services of which one is intended for internal use

#### Standardisation

- Contributions to standardisation bodies (UPnP, DLNA, NEMO, Mikey, IPv6)

#### Patents

- Seven patents submitted in the area of Home-to-Home UPnP and IPv4-IPv6

### ITEA Office

Eindhoven University of Technology Campus  
Laplace Building 0.04  
PO box 513  
5600 MB Eindhoven  
The Netherlands  
Tel : +31 40 247 5590  
Fax : +31 40 247 5595  
Email : itea2@itea2.org  
Web : www.itea2.org

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