MIDAS

Multimodal Interfaces for Disabled and Ageing Society

Project number: ITEA 2 - 07008

ITEA Roadmap application domains: Me
Major: Home
Minor: Nomadic

ITEA Roadmap technology categories: Interaction
Major: Human-Computer Interface
Minor: Data and Content Representation

WP4
Deliverable D4.3 v2:
Demonstrator v2

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Contributors:

Editor: François Perreal **Revision:** 1.0

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0. Executive Summary

The deliverable D4.3 V2 is the second version of a demonstrator which is an operational implementation of use cases proposed in the deliverable D4.1 and D4.2.
These two deliverables describe the specifications of implementation for use cases defined within the framework of the WP1.

A first version regarding demonstrator deliverable for WP4 has provided in D4.3 V1 (March 2011)

Some features not developed in V1 demonstrator and improvements coming from end-users test are proposed in this V2 demonstrator.

Seven scenarios have been merged in three areas.

- Communication adapted to the elderly profile.
- Cognitive and physical training for elderly
- Health monitoring and assistance in daily life

These three demonstrators will be presented during the final review of the Midas project and show significant results from about 10 partners.

The unifying element of the three demonstrators is a web portal developed in the WP3 for managing journal activity of elderly.

1. Introduction

1.1. Purpose of this document

A first version of demonstrator has been provided by all partners in March 2011; the explanation of this demonstrator was the objective of a D 4.3 V1 document.

Some parts of the V1 demonstrator have been used for end users test during first semester of 2011.

Taking into account the end-users remarks, some demonstrators have been improved either with an objective of a new end-user test, either with an objective of a reliable and full functionality for the final review.

These changes have lead to a new version demonstrator: V2 version.
This D 4.3 V2 document reflects of these changes.
Some pictures or videos could be added to this document after final review.

1.2. Document Overview

This document contains a summary description of the demonstrator D4.3 V2. It is composed of three parts:

- Demonstrator 1: Communication adapted to the elderly profile
- Demonstrator 2: Cognitive and physical training for elderly
- Demonstrator 3: Health monitoring and assistance in daily life

1.3. Editors

Orange Labs is the responsible for Demonstrator D4.3.

1.4. Change History

Date	Author	Update description	Doc. Version	
30/08/2011	François Perreal	Description of the Demonstrator D4.3 v2	V1.0	

2. Description of the demonstrators

2.1. Context of the demonstrator V2

It has been decided (in the D4.3V1 document) that the implementation of seven scenarios proposed in D4.2 document for home scenarios, have been merged together in three demonstrators reflecting more general use cases:

- Communication adapted to the elderly profile.
- Cognitive and physical training for elderly
- Health monitoring and assistance in daily life

This proposition of 3 demonstrators was maintained in V2 demonstrator.

Demonstrators are based on hardware and software provided by all the partners.
Therefore, it was very difficult to collect all these contributions in a single place for the demonstrator D4.3 V2.
Only the Midas review and later in October 2011 ITEA2 Summit in Helsinki will join together all the production of partners.

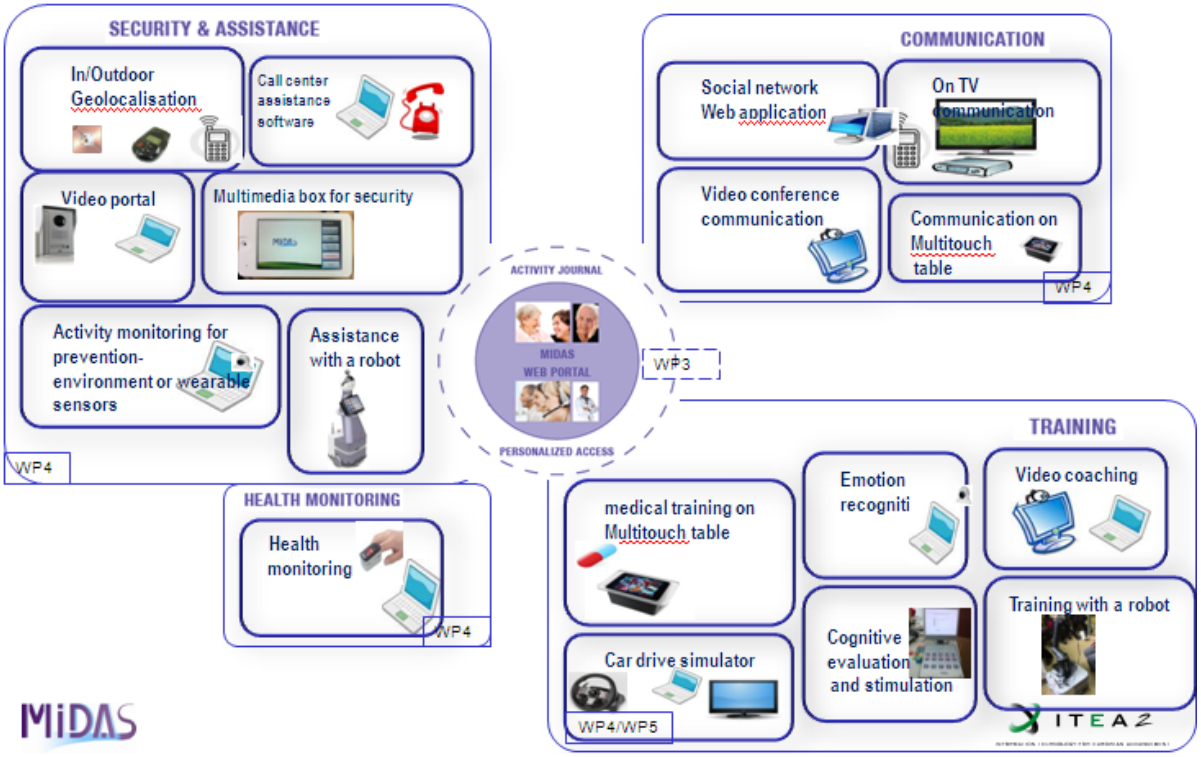
As explained before, the end user test have been done only with six pieces of demonstrators in different places in France (Paris, Grenoble)

An other very important element of the changes provided in the V2 demonstrator is the role of a web portal platform designed in WP3 to gather the activity journals of the all the elementary demonstrators proposed in WP4.
The main component of all these activity journals are data/time - identification of the person – action realized, score …
For that purpose, each elementary demonstrator has to send its own activity journal in a predefined format, at a defined scheduling, to the platform.
Quite all the demonstrators have integrated this new feature.

The Midas Web portal allows

- The elderly to subscribe some services, access to information, agenda, results of his daily live activity.
- The care giver or care assistant to display the activities of the elderly, receives alerts.

2.2. General architecture of V2 demonstrator



3. Demonstrator 1: Communication adapted to the elderly profil

3.1. General architecture of the Demonstrator "Communication"

3.2. Details of components

- Access messages and multimedia documents on two modalities:

On a multitouch table (Microsoft Surface), writing messages without keyboard, selecting contacts by photos

On an IP TV set and thanks to an innovative user interface. Possibility of:

- Being notified of an incoming call on its IP phone line while looking the TV set.
- Being warned of a SMS incomeon its IP line and this without addition of equipment or software in the box or setopbox. With these constraints, all the developments are realized in the core network: storing, announcement, consultation
- Accessing to the stored SMS, to read them again, to deleted them

- Replying with the remote control only (just a simple aknowlege for in this first version)
- Coming back to the video channel
- To receiving an warning message from calendar setup from the social network interface either by the elderly nor by the general practitioner

➢ Share information with the social environment:

Thanks to a Web application turning on PC, elderly keep a local social link using secure and very simplified social network portal. Main functions are:

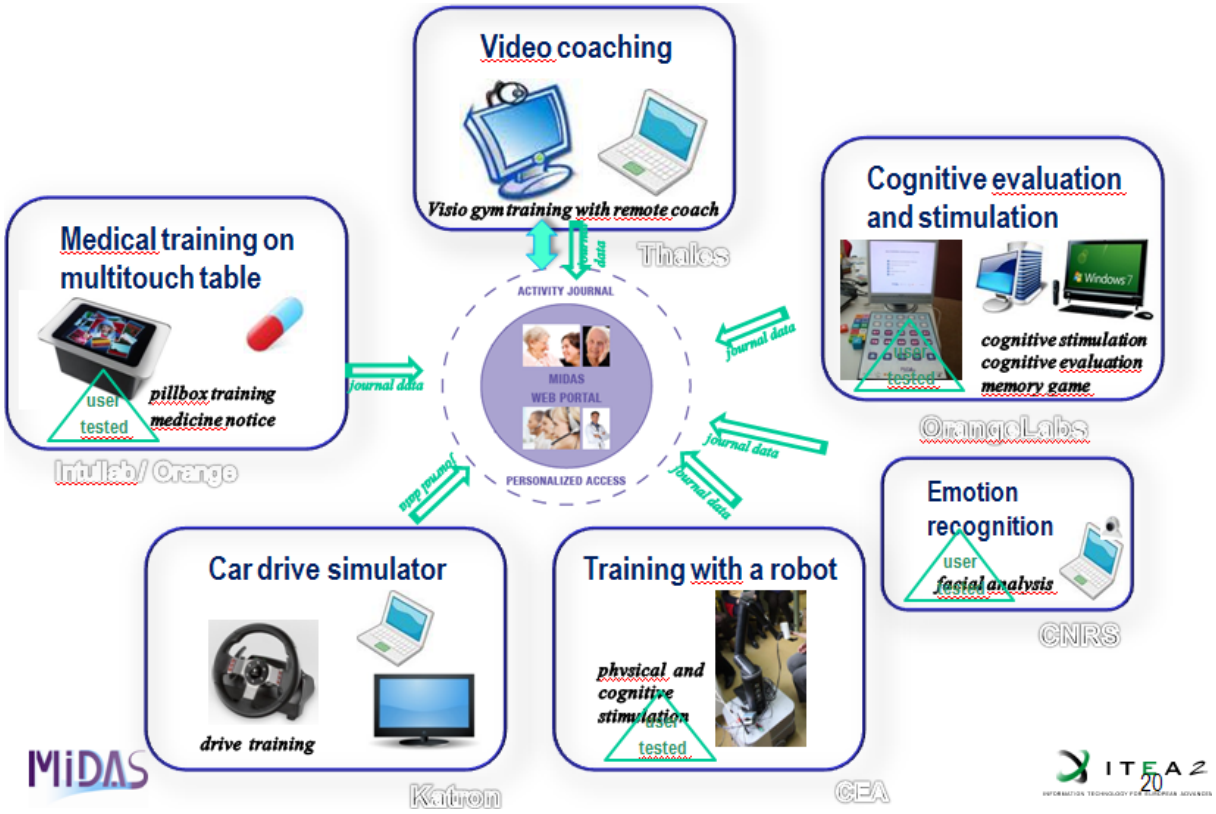
- Definition of the profile and centers of interests
- Personal and specific health network
- Community of interest: consultation, subscription, events
- Proposition and demand of services (teacher, specific home task…) by member of the network.
- Visualizations on a map of nearest contacts round home or at others places.

➢ Visio-communication with relatives, social or medical contacts

Dedicated software installed on a laptop allows elderly to have visio communication with relatives, or to have training session with a registered coach session videos.

4. Demonstrator 2: Cognitive and physical training for elderly

4.1. General architecture of Demonstrator 2 "Training"



4.2. Details of features

- On a Multitouch table (Microsoft Surface type)
  - Training in the weekly filling a manual pillbox, associated with tag recognition on each prescribed medicine box
  - Read notice of medicines by putting medicine on the table

- On a smart board use tangible objects easy to manipulate
  - Answer to questions allowing the geriatrician to estimate the cognitive level of the elderly
  - Realize trainings on games associating figures and images
  - Send score of the evaluation to the Midas platform

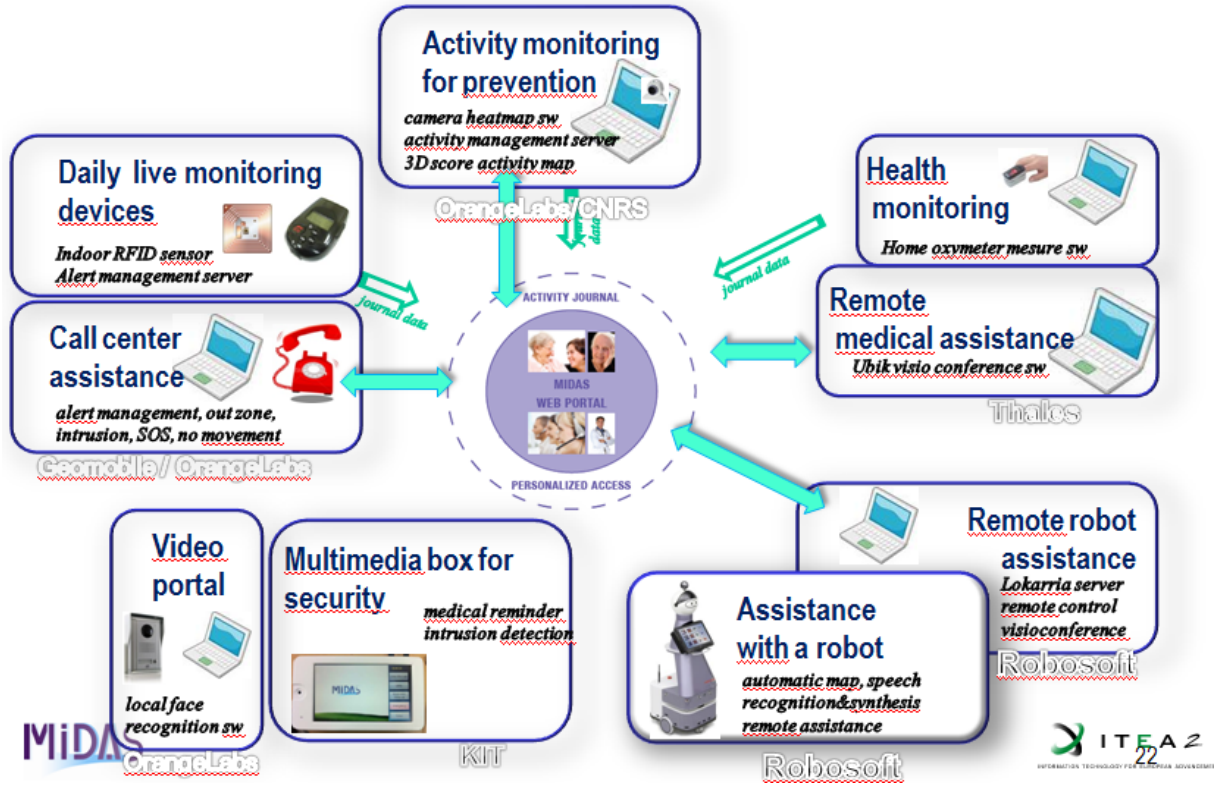
- In front of a PC, physical training exercises are proposed by a video, and also with a visio conference managed by a coach.

- With a robot equipped of an arm, a physical stimulation exercise is proposed; a robot which is able to locate the user in the space, and to have a dialogue with this same user accordingly. The robot can propose cognitive training use a sophisticated video recognition of objects software.

- A drive training environment allows testing the elderly capability to react in front of a drive simulation. All results of each session are registered on Web portal.

5. Demonstrator 3: Health monitoring and assistance in daily life

5.1. General architecture of Demonstrator 3



5.2. Details of features implemented

- A special emphasis can be done in this demonstrator about the Midas Web Portal:
  On a laptop, the general practitioner can access to a Web interface of the Midas portal; he can access all the registered activity journal of each senior, in a structured way:
  - Select patient, access his calendar, consult the alerts, propose or acknowledge appointments, follow social and medical activity, launch visio conference.

- Long term activities monitoring of elderly for prevention purposes in order to evaluate the level of dependence and its evolutions.
  - Use of a wearable sensor (Shake prototype), allowing the evaluation of occupation rate per room, weeks after weeks.
  - Use of a mobile phone for the localization based on Wifi reception level, combined with the use of an accelerometer to identify gestures.

- Use of room localization at home (RFID tags placed over each door) to determine the time spend each day in each room; each day, a score is calculated and compared with a routine live style score.

- Short term monitoring for daily activities observation
  - Physiological measurements (blood pressure, SPO2) to store them, share them during a visio conference consultation.
  - GPS outdoor measurement, send it periodically and automatically towards a call center verifying the localization outside a predefined zone.

- Security management

  Use of a multimedia box, a kind of touch-pad, to monitor home activity and inform elderly if a door is open, if a Infra Red Detector has detected an invader, if it's time to take pills (video reminder)

  Use of a companion robot to assist the elderly in case of fall detection; the robot has registered the map of the flat; it is remotely controlled by the call center to have a video diagnostic of the event. The robot can talk to elderly, via an video communication with call center.

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