



**HEARTFAID**

**D48 – 13<sup>th</sup> Quarterly Managerial  
Report**

**(MB and STAB meeting minutes)**

**Submission date: 15/06/09**

**Due date of document: 30/04/09**



# HEARTFAID

## A KNOWLEDGE BASED PLATFORM OF SERVICES FOR SUPPORTING MEDICAL-CLINICAL MANAGEMENT OF THE HEART FAILURE WITHIN THE ELDERLY POPULATION

<b>Project summary</b>	
<b>Project acronym:</b>	HEARTFAID
<b>Project identifier:</b>	IST – 2005 – 027107
<b>Duration of the Project:</b>	01/02/2006 – 30/04/2009
<b>Project Co-ordinator Name:</b>	Domenico Conforti
<b>Project Co-ordinator Organisation:</b>	UNICAL University of Calabria (Italy)
<b>Thematic Priority:</b>	Information Society Technology-ICT for Health
<b>Instrument:</b>	Specific Targeted Research Project

<b>Consortium</b>	
<ul style="list-style-type: none"> <li>➤ UNICAL- Università della Calabria (Italy)</li> <li>➤ UNICZ- Università degli studi Magna Graecia di Catanzaro (Italy)</li> <li>➤ UNIMIB- Università degli studi di Milano Bicocca (Italy)</li> <li>➤ JUMC- Jagiellonian University Medical College (Poland)</li> <li>➤ VMWS- Virtual Medical World Solutions Ltd (United Kingdom)</li> <li>➤ FORTHNET S. A.- Hellenic Telecommunications and Telematic Applications Company S. A. (Greece)</li> <li>➤ SYNAP- Synapsis s.r.l. (Italy)</li> <li>➤ CNR- Consiglio Nazionale delle Ricerche (Italy)</li> <li>➤ FORTH-Foundation for Research and Technology Hellas (Greece)</li> <li>➤ RBI- Rudjer Boskovic Institute (Croatia)</li> <li>➤ AUXOL- Istituto Auxologico Italiano (Italy)</li> </ul>	

## D48 – 13<sup>th</sup> Quarterly Managerial Report MB and STAB meeting minutes

<b>Document summary</b>	
<b>Document Title:</b>	13 <sup>th</sup> Quarterly Managerial Report
<b>Document Classification:</b>	Deliverable D48
<b>Dissemination level:</b>	CO
<b>Period covered:</b>	From 1 February 2009 to 30 April 2009
<b>Submission date:</b>	
<b>Due date:</b>	30 April 2009
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<b>Work package:</b>	WP0 – Management
<b>Report Version:</b>	1.2

<b>Short Description</b>
This document describes the activities of the Consortium during the 13 <sup>th</sup> and last quarterly of HEARTFAID project.

<b>Change Record</b>		
Version Number	Changes	Release date
1.0	First draft of the Document	20/04/09
1.1	Further contributions	29/05/09
1.2	Final version	15/06/09

## Table of contents

Executive Summary .....	2
Ongoing workpackages progress: WP0 .....	3
Ongoing workpackages progress: WP7 .....	5
Ongoing workpackages progress: WP8 .....	8

## **Executive Summary**

The 13th Quarterly Managerial Report describes the activities and the objectives reached by Heartfaid Consortium during the period February 1 - April 30 2009.

In short the following WPs have been involved in the work:

- WP0: Management
- WP7: Testing and validation
- WP8: Dissemination and Exploitation

In particular, the following activities have been carried out:

- WP0: coordination of the technical and administrative activities. Organization of the final MB meeting.
- WP7: clinical testing of the services provided by the platform, assessment and validation of the results.
- WP8: dissemination of the project results and definition of exploitation strategies.

## Ongoing workpackages progress: WP0

<b>WORK PACKAGE: 0</b>
<b>TITLE: MANAGEMENT</b>
<b>START DATE: MONTH 1</b>
<b>WORK PACKAGE LEADER: UNICAL</b>
<b>PARTNERS INVOLVED: ALL</b>

### STATUS OF DELIVERABLES DUE IN THIS PERIOD

DELIVERABLE	N°	DATE DUE	COMMENTS
3 <sup>rd</sup> Periodic Report (activity and management)	D43	30/04/09	On time
3 <sup>rd</sup> periodic Report on the distribution of the Community contribution among contractors	D44	30/04/09	On time
13 <sup>th</sup> Quarterly Managerial Report	D48	30/04/09	On time
Final Report	D49	30/04/09	On time

### FINAL QUESTIONNAIRES

QUESTIONNAIRES	DATE DUE	COMMENTS
Science and Society Reporting Questionnaire	30/04/09	On time
Reporting Questionnaire on Workforce statistics	30/04/09	On time
Socio-economic Reporting Questionnaire	30/04/09	On time

### STATUS OF THE MILESTONES OF THIS PERIOD

MS	TITLE	COMMENTS
3.0	Final Report	

### MB & STAB MEETINGS

ACTIVITY	ATTENDANTS	DATE/PLACE
MB & STAB Final Project meeting	Coordinated and hosted by UNICAL/UNICZ Attendants: Representatives from MB & STAB	Catanzaro April 6/8
Final Review Meeting	MB & STAB PO REVIEWERS	Catanzaro, July 2

### **Description of Activities**

During the final quarter, management activities have been focussed on the co-organisation of Heartfaid final MB/STAB meeting and of the final review meeting.

A strong interaction with the organising partner UNICZ has been developed, with each partner and with the PO, giving the necessary support and information.

Finally, particular effort has been devoted to the production of all final reports and questionnaires listed in the previous page.

### **Deviation from the plan**

Again some delay in the submission of D38 and D40 has to be reported. The related material has been already produced and it needs to be finalized in the final version of the documents. However, this delay has not impaired the overall activities of the project. The D38 and D40 will be issued by month 39.

## Ongoing workpackages progress: WP7

<b>WORK PACKAGE: 7</b>
<b>TITLE: TESTING AND VALIDATION</b>
START DATE: MONTH 25
WORK PACKAGE LEADER: UNIMIB/AUXOL
PARTNERS INVOLVED: UNICAL, UNICZ, UNIMIB, JUMC, VMWS, FORTHNET, SYNAP

### STATUS OF TASKS DUE IN THIS PERIOD

TASK	TITLE	COMMENTS
T 7.2	Clinical Validation	Final assessment and validation of the results obtained from the clinical testing of the platform services

### STATUS OF DELIVERABLES DUE IN THIS PERIOD

DELIVERABLE	N°	DATE DUE	COMMENTS
Clinical Testing Protocol and Validation results	D45	30/04/09	On time

### STATUS OF THE MILESTONES OF THIS PERIOD

MS	TITLE	COMMENTS
7.1	Validate Final Prototype	Achieved

## Description of activities

### UNICAL

UNICAL has provided technical support for the tuning of the platform services and their clinical testing and validation at UNICZ.

### UNICZ

According to the proposal accepted by all clinical partners, UNICZ activities have been focused to test and validate the home and hospital services of HEARTFAID platform.

#### Home care

The first phase of testing and validation has been focused on the evaluation of the patient's condition by Home Care telemonitoring, during which data by Minnesota questionnaire, to evaluate NYHA class, by blood pressure, in particular systolic, diastolic blood pressure and heart rate in first and second measure, body weight, body temperature, have been acquired. All data are acquired by the same patients or with the help of their relatives, using Nurse@Home application. For testing platform in the University of Catanzaro, 10 elderly patients, 9 male and 1 female, have been enrolled, if they have available internet at home, possibility to use PCs (patient or patient's relatives), if they have given informed consent for the study. These 10 patients have been selected with a CHF severity ranging from NYHA class II and NYHA class III. All patients manually acquired Minnesota questionnaire, body temperature and respiratory rate, 7 patients manually acquired blood pressure, heart rate and bod weight, but for three patients the acquisition



was automatic by appropriate bluetooth devices. The installation and setting, manual or using bluetooth devices, of the application on the patient's notebook has been made in UNICZ, and successively has been explained how to send data. To explain the functionalities of nurse@home application, a manual (in Italian) has been realized. The control of data from Nurse@Home application was made by the doctor using the front-end of the platform daily.

Because the system allowed an every-day monitoring of clinical patient's status, it was possible to monitor the evolution of the prognosis of the disease. In particular, the evaluation of data coming from Nurse@Home has permitted to check possible cases of decompensation. Moreover, we observed improvement at patient's care through an easier and better management of the disease. In addition the HEARTFAID platform increased interest and awareness of the disease within CHF patients improving self control.

### **Hospital care:**

The second phase of testing and validation has been focused on evaluation of the Hospital Care services of Heartfaid platform. In particular among decision support services UNIZ has been tested "Hospital Care" and "EchoCardio Lab", based on features of CDSS. For Hospital care we have tested and controlled the considerations suggested by the Heartfaid Platform, through the knowledge base, for patients enrolled in eCRF. For EchocardiLab service we have sent the echocardiographic data, patient's images and report, using the functionalities of our echocardiograph (VIVID 7/Pro VIVID 7) that we have activated and integrated in the platform. This concerns the HL7 transmission of echo measurements and it allows to test the suggestions of CDSS on each patient enrolled. Also echocardiographic images can be automatically sent from the echocardiograph to DICOM server, allowing to evaluate the automatically detection of measurements by integrated "EchocardiLab" service through the use of the front-end of the platform. The evaluation of the CDSS results was evaluated and confirmed by the clinician.

### **UNIMIB/AUXOL**

In this period at AUXOL/UNIMIB both the clinical and the technical components of the team have continued working on the activities connected with WP7 i.e. activities regarding implementation of testing and validation of the platform. Out of the 7 patients selected by the clinicians (respecting the clinical protocol inclusion and exclusion criteria), a subgroup of 3 has completed the testing phase of the NURSE@HOME application by means of home self collected biological parameters in combination with parameters collected by a special vest developed by AUXOL and UNIMIB focussing on ECG (and the derived heart rate signal) and respiratory activity. Another subgroup of 4 patients have completed the data collection in the home setting by means of either the "Manual" acquisition procedures, or "Automatic" acquisition devices (using the blood pressure recorders and scales). The technical components of our team, that had worked on installing the HEARTFAID software on the PC located in the medical environment and on the PCs used at home by the patients, have continued verifying the correct functioning of data transmission from the home environment which was successfully completed.

Finally, both the clinical and technical components have performed the validation of the DSS of the platform with respect to both the Hospital and Home environments.

## **JUMC**

A prototype plan of the HEARTFAID platform testing and validation proposed by UNIMIB/AUXOL have been agreed and accepted by all clinical partners. According to the proposal, JUMC has selected a group of CHF patients in NYHA class II- III who have been enrolled into the platform and followed the plan of clinical validation. The patients were at elderly age (> 65yr), with available internet at home, ability to operate PCs and have agreed to participate the study. The Nurse@Home application software developed for the clinical validation and testing have been installed at patients' home PCs and patients have been trained to use the software (manual insertion of the data) and appropriate perform the measurements. The following measurements have been daily performed: blood pressure, heart rate, respiratory rate, body weight, temperature, Minnesota questionnaire. The consecutive collected parameters have been used by the HEARTFAID system to predict the early CHF decompensation. Within the clinical validation phase we observed improvement at patient's care through better monitoring and prevention of CHF decompensation as the system allowed on available every-day monitoring of clinical patient's status. Moreover the HEARTFAID platform increased interest and awareness of the disease within CHF patients improving self control and independency status.

## **FORTH**

The main activities performed in this WP are related to the technical support provided to each validation site in order to have a smooth start of the validation and an effective support for any problem should have been arisen.

Technical support was provided by email, phone or Skype conference.

### **Deviation from the plan:**

Delay in delivering D40: Integration and Configuration of the Prototype.

## Ongoing workpackages progress: WP8

<b>WORK PACKAGE: 8</b>
<b>TITLE: DISSEMINATION AND EXPLOITATION</b>
START DATE: MONTH 1
WORK PACKAGE LEADER: UNICAL
PARTNERS INVOLVED: ALL

### STATUS OF TASKS DUE IN THIS PERIOD

TASK	TITLE	COMMENTS
T 8.2.3	Exploitation plan	Final development of the exploitation plan

### STATUS OF DELIVERABLES DUE IN THIS PERIOD

DELIVERABLE	N°	DATE DUE	COMMENTS
Report on Dissemination activities and Exploitation Activities Plan	D46	30/04/09	On time
Report on Raising Public Participation and Awareness	D47	30/04/09	On time

### STATUS OF THE MILESTONES OF THIS PERIOD

MS	TITLE	COMMENTS
8.2	Exploitation Plan	Achieved

## Description of the activities

### UNICZ

UNICZ has carried out its own internal dissemination activities, by increasing the awareness of Heartfaid activities and current results within its own institution. Moreover, UNICZ has consolidated the interactions with the following health care professional associations with the aim to keep informed about the Heartfaid activities: ANMCO (Italian Association of Hospital Cardiologists), SIC (Italian Society of Cardiology), SIMI (Italian Society of Internal Medicine). Other Societies are involved, so as the Italian Society of General Practitioners (SIMG). In particular, an oral presentation, about Heartfaid platform prototype and our personnel experience with heart failure patients enrolled for home and hospital care, has been prepared for Calabria and Sicily Italian Society of Internal Medicine Meeting, an important scientific event involving a lot of specialized internal medicine doctors of South Italy. Moreover in the Cardiovascular Disease Unit several meetings with cardiologists and other specialized doctors have been performed involving also specialized nurse personnel for illustrating the Heartfaid platform functionalities. The experience gathered with HEARTFAID has also supported the design of future studies planned on the management of patients with CHF involving also other hospital and cardiovascular operative units.

### FORTH

In WP8 FORTH has carried out dissemination activities according to the general plans defined in the deliverable D6. In particular FORTH has carried out its own internal dissemination activities, by increasing the awareness of HEARTFAID activities and results within its own institution.

A special session in cooperation ISTI-CNR and other EU projects like ACGT and ContraCancrum has been organized at ISDA 2009 (Pisa, Italy, November 2009). This special session titled “Intelligent Systems Design and Applications in the Health Domain“ will aim to present, analyze and discuss new research trends about the design and application of intelligent advanced systems for medical ontologies, medical knowledge discovery, representation and management, signal and image processing, efficient clinical decision support systems, multilevel modelling of pathologies, therapy simulation and virtualization of the human physiology.

Dissemination activities performed by FORTH in this period were:

- Submission of a paper at EMBC 2009 (Minneapolis, MN, USA) (acceptance has not been notified yet):
  - J.D. Trigo, F. Chiarugi, A. Alesanco, M. Martinez-Espronedada, C.E. Chronaki, J. Escayoal, I. Martinez, J. Garcia. “Standard-Compliant Real-Time Transmission of ECGs: Harmonization of ISO/IEEE 11073-PHD and SCP-ECG”
- Submission of a paper at JITEL 2009 (Cartagena, Spain) (acceptance has not been notified yet):
  - J.D. Trigo, F. Chiarugi, A. Alesanco, M. Martinez-Espronedada, C.E. Chronaki, J. Escayoal, I. Martinez, J. Garcia. “Transmisión de ECGs en tiempo real basada en estándares: Armonización de ISO/IEEE 11073-PHD y SCP-ECG”
- Submission of 3 abstracts to Computers in Cardiology 2009 (Park City, UT, USA):
  - F. Chiarugi, I. Karatzanis, V. Sakkalis, I. Tsamardinos, M. Foukarakis, A. Dermitzakis, G. Vrouchos. “Predicting the Occurrence of Acute Hypotensive Episodes, the PhysioNet Challenge”
  - A. Sciacqua, A. Gualtieri, F. Perticone, M. Valentini, A. Faini, G. Parati, G. Zacharioudakis, F. Chiarugi, C. Assimakopoulou, M. Stratakis, P. Meriggi, M. Di Rienzo. “Validation of a Flexible and Innovative Home Platform for the Monitoring of heart Failure Patients: First Results”
  - P.Meriggi, F.Rizzo, A.Faini, F.Chiarugi, I.Karatzanis, G. Zacharioudakis, M.Valentini, G.Parati, P.Castiglioni, M. Di Rienzo. “A New Simple Multimodal Platform for Home Monitoring of Cardiac Patients through Textile Technology”
- Preparation of a paper to be submitted to “Physiological Measurements”:
  - F. Chiarugi, D. Emmanouilidou, I. Tsamardinos. “Morphological Classification of Heartbeats to Dominant and Non-Dominant in ECG Signals”

## JUMC

JUMC has carried out internal dissemination activities, by increasing the awareness of Heartfaid project and its current results within medical personnel in our institution, and CHF patients/their relatives visiting hospital and ambulatory unit. Moreover, we have kept informed about the progress within the project the following professional health care associations with their units in Krakow: Polish Cardiac Society and Polish Society of Hypertension. The information on HEARTFAID is placed on the web pages of the I Cardiac Department at JUMC (<http://www.kardiologia1.cm-uj.krakow.pl/>) and official JUMC [www.cm-uj.krakow.pl/](http://www.cm-uj.krakow.pl/)

uj.krakow.pl websites as dissemination knowledge channel. The experience gathered with HEARTFAID has also supported the design of future studies planned on the management of patients with CHF.

### UNIMIB/AUXOL

The HEARTFAID project was presented at local seminars and at the time of University lectures. Presentation of HEARTFAID project was made at an international seminar supported by the European Society of Cardiology held in Cannes in May 2009.

### Deviation from the plan:

Delay in delivering D38: Investigation on new models for health care delivery

### Dissemination activities of the period

Date	Channel	Event	Place/ Country	Partner responsibl e	Nature and size of audience
<b>5. February 2009.</b>	Invited talk	Professional meeting at Clinic of Cardiovascular Diseases, Clinical Medical Centre Rebro	Zagreb, Croatia	RBI	30 medical doctors working in the hospital
<b>2.-4. March 2009.</b>	Oral presentation	Sixth International Ljubljana-Zagreb Workshop on Knowledge Technologies	Bohinj, Slovenia	RBI	50 scientists in computer science mainly from Slovenia
<b>3. April 2009.</b>	Oral presentation	RBI seminar	Zagreb, Croatia	RBI	20 scientists mainly from RBI
<b>13.02.2009</b>	<i>Scientific event</i>	<i>Meeting of Department's staff and Cracow Division of Polish Hypertension Society Scientific event</i>	<b>Cracow, PL</b>	<i>JUMC</i>	<i>Physicians , about 20 persons</i>
<b>02.05.09</b>	<i>Scientific Event</i>	<i>Scientific Seminar endorsed by ESC</i>	<b>Cannes, F</b>	<b>UNIMIB, AUXOL</b>	<i>International Opinion Leaders, 30 persons</i>