IST Programme

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Acronym: MobiHealth

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Management Report on Dissemination and Exploitation (D 6.3)

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1 MobiHealth project summary

MobiHealth has developed innovative value-added mobile health services, based on 2.5 (GPRS) and 3G (UMTS). This is achieved with the integration of sensors to a Wireless Body Area Network (BAN). The BAN connected sensors continuously measure and transmit vital constants, audio, images or positioning information to physicians, health service providers and brokers. This way the BAN facilitates remote monitoring of patients’ vital signs and therefore enables proactive disease prevention and management by continuous monitoring of patients’ health condition ‘anytime and anywhere’.

The MobiHealth project

Since May 2002, Ericsson is coordinating and managing the EU-funded MobiHealth project

Goal: MobiHealth aims at developing and trialing new mobile value-added services in the area of healthcare, thus promoting the use of GPRS and UMTS

The project unites 14 partners from 5 European countries:

- Ericsson, D
- University of Twente, NL
- Twente Medical Systems International, NL
- Medisch Spectrum Twente, NL
- LogicaCMG, NL
- Lulea University of Technology, SW
- TeliaSonera, SW
- GesundheitScout 24, D
- Yucat Mobile Solutions, NL
- Hewlett Packard, NL
- Philips Research, UK
- Corporacio Sanitaria Clinic, E
- Universitat Pompeu Fabra, E
- Telefonica Moviles, E

The use of health BANs together with advanced wireless communication enables remote management of chronic conditions and detection of health emergencies whilst maximizing patient mobility. MobiHealth has developed a generic Body Area Network (BAN) for healthcare and an m-health service platform. The BAN incorporates a set of body-worn devices and handles communication amongst those devices. It also handles external communication with a remote location. During the MobiHealth project the main devices used are medical sensors and positioning (GPS) devices, and the remote healthcare location is a healthcare provider (a hospital or medical call center). Bio-signals measured by sensors connected to the BAN are transmitted to the remote healthcare location over wireless telephony services.
The MobiHealth project outcome: a mobile application platform for healthcare

- The platform can monitor body values anytime and anywhere, but needs further refinement and validation before being commercialized.

The results of the project include an architecture for - and a prototype of - a generic service platform for provision of ubiquitous healthcare services based on Body Area Networks. The MobiHealth BAN and service platform have been trialed in four European countries with a variety of patient groups. The MobiHealth System can support not only sensors, but potentially any body worn device, hence the system is prone to have very many applications in healthcare that allow healthcare services to be delivered in the community.

The project has started on May 01, 2002 and ended on February 29, 2004. The total eligible costs amounted to € 8,410,167, total Community funding was to a maximum of € 4,949,966.

The total budget that was available for dissemination activities amounted to € 77,000.

2 Summary of dissemination and exploitation goals, approaches and market target specifications

The two major MobiHealth project results suitable for commercial dissemination as well as for exploitation and use are: the release of the MobiHealth Body Area Network (BAN) and the MobiHealth service applications (these two make up the MobiHealth system).

A full-scale demo of the MobiHealth system has been available since September 2003 and has been sued during a number of industry exhibitions.

Dissemination and communication of project results has always been targeted towards academia and science on the one hand and business players on the other hand. The relevant business players in this context can be found within the healthcare and telecommunications sector (please see following slide).
Dissemination & Exploitation

- Business and market target segments
  - Public Healthcare: mobile patient management (e.g. for chronic diseases)
  - Pharmaceutical industry: mobile clinical trials (fast and high-quality clinical data)
  - Hospitals: mobile patient monitoring and emergency handling (e.g. early discharged patients)
  - Care organizations: mobile patient management and monitoring (e.g. disabled or elderly people)
  - Medical service providers: mobile patient management / monitoring service offer
  - Mobile network operators: highly sophisticated mobile service offer

Communicating and disseminating results to the business players has always been pursued with the highest priority as this is of course key when it comes to deploying and commercializing the MobiHealth application platform and services.

A variety of dissemination vehicles have been used to accomplish this task (please see following slide).
One of the big challenges of the MobiHealth dissemination & exploitation activities has always been that it is by far not be enough to show and prove the technical functioning of the mobile healthcare applications and services, but to properly address or solve issues like: elaboration of lucrative business cases and health-economical outcomes, sophisticated user benefits to ensure user acceptance and social and data security issues.

In this context and based on the Dissemination Plan (D6.2), a concept for market exploitation and commercialization has been created (available to the Commission since December 2003 and attached to this report as Annex I). This concept has been - and is going to be - used by the consortium to approach and prepare the market and commercially implement the MobiHealth system. The concept details and analyses the following issues:

- Target market segments (potentials, structures, processes, market entry and marketing strategies)
- Key factors of success for commercialization
- Barriers of entry
- Further steps and activities towards commercialization
- Roles, responsibilities and timelines
- Resources needed

A large part of the dissemination and exploitation activities has been targeted at establishing contact with relevant market players, at defining their specific business, organizational and structural requirements, thus preparing the commercialization of the MobiHealth system.

On the basis of this and in addition to the general concept for exploitation and commercialization described above, detailed business cases have been created for pharmaceutical applications (clinical R&D), hospital applications (early discharge of patients), public healthcare applications (disease management) and care applications (patient monitoring). These business cases also include network operators, medical service providers and technical solution providers. The business case presentation is enclosed as Annex II.

3 Dissemination activities

The following chapter describes the various international or high-profile dissemination activities that have been carried out by the two managing partners of the project - Ericsson and the University of Twente. In addition to these, participation in a number of national activities has been organized by the different project partners. These are detailed in chapter 5 of this report.

3.1 Conferences, seminars, workshops

The following table provides an overview of international or large-scale events during which the project has been presented. In addition to these, the individual project partners have been engaged in a number of smaller, national events.

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Other information</th>
</tr>
</thead>
</table>

MobiHealth_WP6_EDD_D6.3_v2.0_250404 Confidential 7
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 29, 2002</td>
<td>Seminar on underwater applications of BANs, Inter University Institute, Eilat, Israel</td>
<td>Oral presentation.  Attendance: 1.</td>
</tr>
<tr>
<td>May 15, 2002</td>
<td>Seminar on health BANs, Ben Gurion University of the Negev, Israel</td>
<td>Oral presentation.  Attendance: 1.</td>
</tr>
<tr>
<td>September 22-25, 2002</td>
<td>International Conference on Telemedicine, Regensburg, Germany</td>
<td>Oral presentation of the project.  Attendance: 1.</td>
</tr>
<tr>
<td>December 08-11, 2002</td>
<td>TEHRE 2002, international m-health and bioinformatics congress, London, UK</td>
<td>Oral presentation of the project and round-table discussion.  Participation: 1</td>
</tr>
<tr>
<td>February 27, 2003</td>
<td>FP5 Concertation Meeting, Brussels, Belgium</td>
<td>Presentation of project work and status of results.  Participation: 2.</td>
</tr>
<tr>
<td>June 19-20, 2003</td>
<td>International Congress on Telemedicine (TMED), Genova, Italy</td>
<td>Presentation of project and potential future activities.  Participation: 1</td>
</tr>
<tr>
<td>September 04-05, 2003</td>
<td>ICT Congress, Den Haag, Netherlands</td>
<td>Presentation of the project, demo of the MobiHealth System and booth.  Participation: 5</td>
</tr>
<tr>
<td>September 14-17, 2003</td>
<td>Telemedicine Congress, Tromso, Norway</td>
<td>Project paper and presentation.  Participation: 1</td>
</tr>
<tr>
<td>September 17-21, 2003</td>
<td>Annual Internat. Conference of the IEEE, Cancun, Mexico</td>
<td>Participation during an EC organized workshop on wearable healthcare systems.</td>
</tr>
<tr>
<td>Date</td>
<td>Event Description</td>
<td>Participation</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>September 22-24, 2003</td>
<td>Congress on emerging technologies and healthcare innovations (TETHIC), Washington, USA</td>
<td>1</td>
</tr>
<tr>
<td>September 30, 2003</td>
<td>Workshop on mobile applications in healthcare (German Industry Association), Berlin, Germany</td>
<td>3</td>
</tr>
<tr>
<td>October 05-07, 2003</td>
<td>Tele-health 2003 (congress of the Canadian Society of Tele-health), Halifax, Canada</td>
<td>1</td>
</tr>
<tr>
<td>November 19-22, 2003</td>
<td>Medica 2003, Duesseldorf, Germany</td>
<td>7</td>
</tr>
<tr>
<td>November 24-25, 2003</td>
<td>National Health Congress, Berlin, Germany</td>
<td>2</td>
</tr>
<tr>
<td>December 12-14, 2003</td>
<td>Workshop on wearable health monitoring systems, Pisa, Italy</td>
<td>1</td>
</tr>
<tr>
<td>March 18-24, 2004</td>
<td>CeBit Exhibition, Hannover, Germany</td>
<td>2</td>
</tr>
<tr>
<td>April 16, 2004</td>
<td>Mobile Solutions Commercial Conference, Rotterdam, The Netherlands</td>
<td>1</td>
</tr>
</tbody>
</table>

### 3.2 Publications

**Book Chapters:**


- Val Jones, Nadav Shashar, Oded Ben Shaphrut, Kevin Lavigne, Rienk Rienks, Richard Bults, Dimitri Konstantas, Pieter Vierhout, Jan Peuscher, Aart van Halteren, Rainer Herzog and Ing Widya, Remote monitoring for healthcare and for safety in extreme environments,
I. Widya, P. Vierhout, V. Jones, R. Bults, A. van Halteren, J. Peuscher, and D. Konstantas, Telematics Support for Disaster Situations

Val Jones, Aart van Halteren, Nikolai Dokovsky, George Koprinkov, Jan Peuscher, Richard Bults, Dimitri Konstantas, Ing Widya and Rainer Herzog, MobiHealth : Mobile Services for Health Professionals


Paper publications (conferences):


Media Coverage:

- Articles in important, national print and online media (de telegraf, Spiegel, Handelsblatt, Wirtschaftswoche, Ärztezeitung, Computer News) during the start-up phase of the project, May 2002 - September 2002

- Arzt Online (Germany) , Nr. 6/2002, November 2002, “Wird UMTS Hochrisiko-Patienten einmal das Leben erleichtern?”

- Medica Aktuell (Germany), Ausgabe 2, November 02, 2002, “Lebenserleichterung durch UMTS Technologie”

- ZDF Online (Germany), November 15, 2002, “Funkende Sensoren überwachen chronisch kranke Menschen”
3.3 Web presence

A project website has been developed and is available to the public since the beginning of the project: http://www.mobihealth.org.

The project website has been updated continuously. It contains all relevant information on the project and on the status of the activities. The website also has an internal part that is only accessible with password and ID.

3.4 Standardization

Existing technical standards have been incorporated. Should the need arise, new technical standards will be targeted after the project. Regarding standards for the performance of healthcare related issues (e.g. guidelines for implementing and performing mobile patient management), contacts have been established with health insurers and health politics. It is planned to initiate further discussions within the near future.

UPF has initiated relevant standardization work in the new CEN/ETSI Joint Group on Network Information Security (NIS), established on July 2002. The objective of this group is to address EC Communication COM (2001)298 on “Network and Information Security: Proposal for A European Policy Approach” and prepare a Report with recommendations for standardization in this area. UPF has contributed by including in the Report security aspects specific to e-health (e.g. anonymity) and mobility (e.g. confidentiality of location).

3.5 Other

Educational activities:
A number of students (on bachelor and master level) participate at the University of Twente (UT) in the development of the MobiHealth system. Moreover, MobiHealth became part of the UT’s International Telematics Masters Program as a successful Master Course within that Program.

The research carried out in MobiHealth has also been integrated into the Security Ph. D. courses in the UPF as research work, as well as in lectures for the Ph.D. students.

Ericsson has given lectures at UT’s Telematics Master Program on business and exploitation aspects of mobile healthcare solutions such as MobiHealth.

**Government involvement:**

The University of Twente has present the project in December 2003 to the ministry of Health of the Netherlands, in the frame of the presentation of the e-health national planning press conference.

**Press releases:**

National and international press releases at significant project stages by various partners (Ericsson, UT, LTU, LogicaCMG, TME, GSCOUT):

- For the project start in May and June 2002
- In preparation of the Medica 2002 exhibition in October / November 2002
- For the start of the field (pre) trials during August and September 2003
- In preparation of the Medica 2003 exhibition in October / November 2003
- Planned: to announce final project results and further activities (April /May 2004)
- In December 2003 Vodafone (NL) announced the UMTS commercial networks, referencing the MobiHealth project as an example of interesting application for UMTS services

**Project print material:**

- A project brochure has been prepared and updated (in September 2003). For this, an own project branding and graphical appearance has been prepared in cooperation with a graphics agency.
- Reprint of an article in the Ericsson internal newspaper “Contact” has been prepared (“Health care meets mobile networks”) and made available to all partners for use in dissemination (October 2003).
- Overview posters have been developed for booth activities (since October 2002).

### 4 Exploitation activities and concepts

As already mentioned before, the market players that have been targeted for further validating, deploying and/or commercializing the MobiHealth solution, are the following:

- Public Healthcare / Health Insurers
- Pharmaceutical industry
- Hospitals
- Care Organizations
- Medical Service Providers
- Mobile Network Operators

A further description of the different segments, the involved players, their wants and needs, the underlying market assumptions and the resulting value proposition, has been elaborated in Annex I to this report.

Quite a number of these relevant players have been contacted during the course of the project and – especially in the later stages of the project – have been involved in putting together scenarios and approaches that form the basis for marketing the MobiHealth solution. Their input has also been vital for the business cases that have been created. The business cases are of course crucial when it comes to deploying the MobiHealth solution, as it is clear that unless one can show benefits to all parties in the healthcare value chain, a sustainable use of mobile solutions cannot be achieved.

It is important to mention in this context that the major result of the project – the MobiHealth system – is a functioning prototype platform that needs further validation and upgrading (especially with respect to user-friendliness and stability) before it can be fully commercialized. This is also reflected in the business cases.

It is the clear intention of Ericsson and the University of Twente as the two coordinating organizations - and together with some of the key project partners -, to identify needed resources and drive the technology further towards sustainable market deployment.

4.1 Contacts to industry and healthcare players

The following provides an overview of the most relevant organizations and companies that have been contacted during the course of the project and with which discussions have been initiated regarding their potential active role in deploying or commercializing mobile healthcare solutions. Some of these have already stated their interest when it comes to validating the platform in larger scale trials.

**Health insurers:**
- Techniker Krankenkasse, Hamburg, Germany
- Deutsche Angestellten Krankenkasse, Hamburg, Germany
- Kaufmännische Krankenkasse, Hannover, Germany
- AOK Rheinland, Duesseldorf, Germany
- Barmer Ersatzkasse, Wuppertal, Germany

**Pharmaceutical companies:**
- Pfizer GmbH, Karlsruhe, Germany
- Schwarz Pharma GmbH, Monheim, Germany
- AstraZeneca, Macclesfield, UK
- Roche and Roche Diagnostics, Mannheim and Basel, Germany/Switzerland
- Novartis, Basel, Switzerland
Hospitals:
- Deutsches Rotes Kreuz, Schwesternschaft München, Munich, Germany
- From the project consortium: Medisch Spectrum Twente, Enschede, The Netherlands; Corporacio Sanitario Clinic, Barcelona, Spain

Care Organizations:
- Malteser Hilfsdienst, Cologne, Germany

Medical service providers:
- From the project consortium: GesundheitScout 24 GmbH, Duisburg, Germany

Mobile Network Operators:
- T-Mobile International, London, UK
- T-Mobile Austria, Vienna, Austria (MobiHealth Demo has been permanently installed in their UMTS showcase location in Vienna)
- Vodafone Netherlands, Maastricht, The Netherlands
- TIM, Rome, Italy
- WIND, Rome, Italy
- From the project consortium: TeliaSonera, Stockholm, Sweden; Telefonica Moviles Espana, Madrid, Spain

4.2 Exploitation concepts and business cases
Detailed business cases have been elaborated by Ericsson to be able to successfully approach the healthcare industry and network operators. Please see Annex II.

5 Individual partner reports

5.1 Ericsson (EDD)
Please refer to chapter 3.

5.2 GesundheitScout 24 (GSCOUT)
Conferences, seminars and workshops
20th –23th November 2002; Medica 2002, Duesseldorf: one employee attended the MobiHealth-booth and demonstrated a Demo-version of the MobiHealth-system.

10th October 2003: Workshop in Duisburg with five visitors from Waseda University (Japan) about the MobiHealth system and strategies of introducing such technologies to western health care systems.

12th –16th October 2003; ITU Telecom World 2003, Geneva: one employee attended the Ericsson booth and demonstrated the MobiHealth system.
18th November 2003: Workshop in Duesseldorf (together with Ericsson) that addressed to interested specialists in pharmaceutical industry, health insurance companies and nursing services.


25th-26th November 2003: Health 2004, Berlin: one employee attended the Ericsson booth and demonstrated the MobiHealth-system.

Publications

This article was published in a health management book that addresses to specialists and executive staff in health insurance companies. It contains a chapter that describes the MobiHealth-project in general and shows the opportunities for the implementation of telemedical services in the german health care system.

Press work and releases:

Joint work with Ericsson on an article about the MobiHealth field trial in Germany that was published in the internal Ericsson journal “Contact” on October 30th 2003.

5.3 TeliaSonera (Telia)
Presentations
2003-03-26 Presentation for West Sweden health care district.
2003-05-23 Presentation for West Sweden health care district.
2003-09-18 Presentation for Falun and Mora municipalities and county councils

Publications
June 2002 Article in 'Teknik och vetenskap’ (scientific magazine)

5.4 Lulea University (LTU)
Conferences, seminars, workshops
15-17/9 Telemedicine conference Tromsø international, about 1000 persons

1-2/10 Social service Conference Luleå Northern Sweden (Socialtjänststämman), about 1000 persons
6-7/11 Cyber O Science Luleå National, about 1000 persons

26 -27/11 Physician conference Stockholm nationally (Läkarstämman), attendance of several thousand people

18-23/11 Medica Duesseldorf, attendance of several thousand people

3-4/12 E-health in Healthcare Piteå Northern Sweden, about 75 persons

22/1 National help appliance institute in Sweden national conference, 100 persons

January and February: 2 times in local TV

1 report in national TV

Publications
In process one article in Vård I Norden/ Healthcare in Northern Scandinavia

And we have also been talking to many people in the Municipality and County Council and private companies here in Luleå and Boden.

5.5 University of Twente (UT)
Please refer to chapter 3.

5.6 Twente Medical Systems International (TMSI)

1: All the requests we have received for information concerning the TMS-I products we have answered with the TMS-I product brochures including the MobiHealth brochure. About 50

2: All the quotations we have prepared this last year were accompanied by a MobiHealth brochure.
Numbers: 57

3: We have been with our booth to 4 conferences:
    ISPRM in Prague
    Ergonomics in Munich
    Telemedicine in Enschede
    EMG and neurology in Maastricht
The MobiHealth brochure was on the booth and we had about 80 visitors in total.

4: 3 presentations were performed based on telemedicine:
    Enschede       Telemedicine
    Munster       medical technology and telematics
    Berlin       telemedicine in epilepsy monitoring

5:
During all the demonstrations we performed last year, the Mobi was demonstrated, including the BlueTooth telemetry, and PortiLab software. The MobiHealth brochure was handed out (to about 70 people).

6:
Partly based on the MobiHealth concept, some new projects were, or are carried out:
- Obesity project with MST Enschede
- COPD project MST, Health4all, AI
- Parkinson MST

We plan to continue the pregnancy trial together with MST, Oxford telemedicine center and university of Utrecht.

We are involved in a project in Munster on remote monitoring of diabetic patients. (starting soon)

We are partner of a multi center project concerning remote monitoring of epilepsy patients.

7:
We prepared a quotation based on a part of the MobiHealth project for monitoring of epilepsy patients.

We received an order from a big US company for the development of a BAN type of monitoring device for congestive heart failure patients. The next phase of this project will be the remote monitoring of these patients and this device will probably be based on the UMTS mobile telecommunication.

8:
The front-end, being part of the BAN is brought to the market by TMSI. This device includes the BlueTooth communication.
Up to now, about 80 devices were ordered.

### 5.7 Yucat

As an SME targeted to mobile (PDA) solutions in which data collection, representation and back-end storage & synchronization is the main focus, MobiHealth is an integral part of all Yucat communication and activities, with a varying extent into which the project is addressed and positioned, depending on the target audience. The following table illustrates (only) the quantifiable efforts related to MH dissemination and exploitation.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
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<th>TYPE</th>
<th># PEOPLE</th>
<th>PARTNER</th>
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<tbody>
<tr>
<td>ICT Kennis Congres (Den Haag)</td>
<td>5-6 sept. 2002</td>
<td>Booth</td>
<td>200 / day</td>
<td>UT / CTIT</td>
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<tr>
<td>ICT Kennis Congres (Den Haag)</td>
<td>4-5 sept. 2003</td>
<td>Booth</td>
<td>200 / day</td>
<td>UT / CTIT</td>
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<td>Event</td>
<td>Date</td>
<td>Format / Description</td>
<td>Duration</td>
<td>Place</td>
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<tr>
<td>Zorg &amp; Technology (Enschede)</td>
<td>5 feb. 2004</td>
<td>Booth / Presentation</td>
<td>300</td>
<td>UT</td>
</tr>
<tr>
<td>Medica (DusselDorf, Germany)</td>
<td>19-22 nov. 2003</td>
<td>Booth</td>
<td>&gt; 500</td>
<td>MH partners</td>
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**WORKSHOPS / SYMPOSIA / PRESENTATIONS**

<table>
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<th>Duration</th>
<th>Format / Description</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syntens (SME enabler)</td>
<td>10, throughout 2003 &amp; 2004</td>
<td>Avg. 2 hrs–2 days</td>
<td>Workshop</td>
<td>10 – 20</td>
</tr>
<tr>
<td>Various, e.g. AMC (Amsterdam Medical Centre), Homecare Utrecht, Technical Medicine Faculty (2x), Saint Antonius Hospital, PocketPC member day, Roessing R&amp;D, Focus Cura, NETLAB, SkillCity, BioMed cluster, Best Medical Systems, Mobile Solutions Congress, Mobile Plaza conference</td>
<td></td>
<td></td>
<td>Presentation / Demonstration</td>
<td>5 – 25</td>
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</table>

**OTHER**

<table>
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<tr>
<th>Event</th>
<th>Date</th>
<th>Format / Description</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twente TV coverage</td>
<td>Late 2002</td>
<td>Demonstration video</td>
<td>UT</td>
</tr>
<tr>
<td>Dutch press (Telegraaf)</td>
<td>Aug. 2003</td>
<td>Article</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Dissemination of MH brochure to Yucat relations</td>
<td></td>
<td>Brochure</td>
<td>&gt; 200</td>
</tr>
<tr>
<td>Mobility Event (MH inclusion in conference brochure)</td>
<td>Sept. 2003</td>
<td>Brochure</td>
<td>&gt; 200</td>
</tr>
<tr>
<td>Yucat website coverage</td>
<td></td>
<td>Website</td>
<td></td>
</tr>
</tbody>
</table>

### 5.8 Hewlett Packard (HP)

HP has not performed dissemination activities.

### 5.9 Medisch Spectrum Twente (MST)

In October 2002 we started the project “home-monitoring of high-risk pregnant women” a precursor of the MobiHealth project “monitoring pregnant women at a distance”. We officially started the MobiHealth project in July 2003. From October 2002 until now we had a lot of publicity of both projects and particular the MobiHealth project. Below I summarize the publicity of the MobiHealth project “monitoring pregnant women at a distance”.

**Radio and television**
From July 2003 until now there was/is a lot of media interest for this project. When we started the first measurements in July 2003 the following broadcasting corporations gave attention to the subject: NOS TV and Radio, SBS 6 TV, Nederland I and II (radio), TV-Oost, Wereldomroep (Worldbroacastingcompany), Belga Television. We gave radio-interviews and the television made an item that showed a pregnant patient at home with the BAN and a gynaecologist in the hospital looking at the incoming data on the computer. The NOS television called us some weeks ago because they know the project has stopped. They will give attention to the subject at the end of the project and they will summarize our experiences in the project.

Newspapers and magazines
All the major newspapers gave and continue to give attention to the pregnancy project. It started in July 2003 when we released our first press note and it continues until now. Two weeks ago the Volkskrant, one of the largest newspapers, wrote an article after an interview of R. Quarterso. The following newspapers wrote about the project: Volkskrant, Telegraaf, Trouw, Nederlands Dagblad and Tubantia.

Also magazines gave attention to the project: Ouders van Nu (a large magazine for parents with young children), Nederlands Tijdschrift voor Verloskunde (a magazine for midwives), Medisch News, Facilitair Nieuws, Zorgvisie (a magazine for the hospitals).

Interested companies
We gave information to several companies who were interested in the project. The most important are Siemens Nederland and a large health insurance company Zilveren Kruis/Achmea.

Lectures
We gave information of our project to students from the UT Twente, a group of Japanese scientists and residents in the field of obstetric care.

5.10 Telefónica Moviles España (TME)
TME has carried out an intense effort of communication and dissemination of MobiHealth project. TME has delivered press releases, participated in technical and health events and installed the project in TME Demo Center for presenting it to our main customers.

Besides, TME has maintained the WP3 section in MobiHealth website regularly updated with the latest news of WP3 activities.

Among the events where TME has presented the MobiHealth project are:

- MovilForum Fair 2002 (December 2002), the most important annual technological event organized by Telefónica Movistar. There were a presentation session and an exhibition area where people were informed about the project. Approx. 1600 visitors.
- Informed 2002, a relevant annual Spanish medical event where the most innovative applications related to e-health are shown. The project brochures were delivered.
In March 2003, TME participated in the International Health Hall in Galicia where important health councillors of different regions of Spain could see MobiHealth system working in the environment of an emergency ambulance.

MovilForum Fair 2003 (10-11 December 2003). Approx. 2500 visitors. Our main customers were invited. There were a presentation and a demo sessions and a special exhibition area where the visitors could test the MobiHealth system on real time. Press media offered coverage about the project. TME presented the project to the GSM Association Awards 2003 in the category 4 “Wireless in the Community” into the subcategory “Best Use of Wireless for Emergency Situations”.

Because of the events where the project was exhibited, TME has delivered several press releases explaining the participation of TME and the project in these events.

TME has arranged the inclusion of the MobiHealth project in the TME Demo Center for Services and Applications (Plaza de Independencia 6, Madrid) where the more innovative mobile services, products and applications are exhibited, specially the ones related to 3G. It offers companies in all sectors and segments a unique space in which to explore and together create the new possibilities in the data business. The project is exhibited in an area dedicated to health applications. All our customers and visitors that are interested in health applications can see demos of the system on real time: the demo shows the capacities of MobiHealth working with UMTS. Relevant visitors are Government administrators, health institutions managers, foundations and users/patients organisations.

TME has planned actions for the dissemination of the results of the trials and the end of the project in the next months as:

- Inclusion of information in the corporate web site ([www.empresa.movistar.com](http://www.empresa.movistar.com)).
- Presence in MovilForum web site ([www.movilforum.com](http://www.movilforum.com)).
- Press release and/or inclusion in electronic news bulletin for journalist.
- Dedicated video of the project in Telefónica Móviles Corp web ([www.telefonicanoviles.com](http://www.telefonicanoviles.com)). Result of the presentation of the project during MovilForum 2003 Fair.
- Special articles in technological magazines or newspapers or TV channel.

These activities will support the commitment of TME with the e-health applications development as MobiHealth and its aim of UMTS services portfolio improvement.

### 5.11 Corporacio Sanitaria Clinic (CSC)

**Conferences, seminars, workshops**

- Oral communication presented on May, 27th 2003 at the ordinary session of the ForumCIS (Catalan Forum on Health and Informatics).
- Related oral communication to be presented at the workshop on Telehomecare and Monitoring, International Congress on Medical and Care Compunetics (ICMCC), The Hague, the Netherlands, 2-4 June 2004.

**Other**

- Lecture to the pre-graduate medical students on mobility and telemedicine (16th May 2003)
• Barcelona, September, 10\textsuperscript{th}: On-site visit and full hands-on presentation. The current Mobihealth set-up of the two Barcelona pilots (home visits and outdoors training) was shown and discussed to professor Stan Kanowski and two of his colleagues representing Johnson & Johnson (USA). The reason for this visit is that Johnson&Johnson is exploring ongoing mobile health care experiences that could be interesting from a commercial perspective in the near future.

• The Project was presented to Respironics. Respironics is a leading supplier in the respiratory medical device market that manufactures innovative products and provides disease management programs. The company’s focus is on homecare, hospital and international markets providing products and programs that manage sleep disordered breathing, chronic obstructive pulmonary disease, asthma, allergies and sinusitis, infant jaundice and apnea, heart failure and restrictive lung disorders. We are currently exploring the possibility of collaborating with Respironics to establish a new application of MobiHealth in the domain of monitoring non-invasive home ventilation.

5.12 University Pompeu Fabra (UPF)

UPF Dissemination work has mainly been centred in the network and application security issues of e-Health applications, and centred in the approach taken by MobiHealth. This dissemination work has been focused in publications in conferences and in participation in standardisation bodies, mainly in CEN/ETSI.

Conferences:

Publications:

Standardization activities:
• Contribution to standardisation activities, mainly in CEN/ETSI Joint Group on Network Information Security (NIS), where a reference to e-Health security was included.

5.13 Philips Research Laboratories (PRL)
Philips provided an alternative wireless connection between the iPAQ and the TMSI front end. It is envisaged that when full production ZigBee chips become available that links could be made directly from the sensors to the iPAQ, bypassing the front end. Work was therefore conducted by looking into this future system and by working directly with the ZigBee standardisation body to ensure that the appropriate networking and application support will be available for such medical applications within the standard. Further work was also conducted in proposing how the Internet Protocol could be delivered over ZigBee. This could allow sensors to be connected over a variety of different infrastructures.

ZigBee Standardisation
Philips is a founding member of the ZigBee alliance. In particular, the network specification has been developed to allow large networks to form that have a minimal power requirement to preserve battery life. Our work has helped develop the standard and Philips has been involved directly in the production of the specifications.

Internet Protocol Over ZigBee
The Internet Protocol (IP) is the dominant protocol for interconnecting electronic devices and processes. Work was conducted to determine how individual ZigBee network devices could be addressed over IP. A report was produced that describes the ZNEP protocol that translates and compresses TCP/IP data into ZigBee optimised packets. This should allow connected applications to be completely agnostic of the underlying network transport. The work has been compiled into a report that will be published within the project and distributed within Philips.

5.14 LogicaCMG (LCMG)
- International Press Release Q3 ’03
- Presented Mobihealth at Telecom Geneve ’03
- Presented the concept to our mobile and healthcare sales units, who do mention it in their discussions with customers: governments, pharmaceuticals, hospitals, assurance companies, operators, etc.
- We included it in our wireless enterprise press kit, which we deliver to journalists, communication agencies, etc.
- It is presented at a number of customer seminars.
LogicaCMG and Medisch Spectrum Twente and University Twente are has made a plan to take-over the project MobiHealth and make the MobiHealth release ready for commercialisation.

6 Market Potentials and Market Entry Approaches for Mobile Healthcare Applications
Please refer to Annex I

7 The Importance and Potential of Mobile Healthcare Applications – Market Analysis and Business Cases
Please refer to Annex II