Mobile Personal Health Application for Empowering Diabetic Patients:

The Case within EMPOWER Project

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Short Company Profile

- A Recognized International Telecommunication Systems Vendor operating in EEMEA, CIS and APAC
- 35 years experience in the telecoms market
- Strong regional presence throughout EMEA
  - Operations in 16 countries
  - Exports to over 50 countries
- Revenue 2011 (Group): €255 million
- Over 2,000 employees in Greece and abroad
- Advanced R&D and Production facilities
- Core Business Offerings:
  - Wireless Network Systems
  - Telco Software
  - Services
- Major Shareholders: Intracom Holdings & SITRONICS

Technology Shaping the Broadband Future
<table>
<thead>
<tr>
<th>BROADBAND SYSTEMS</th>
<th>TELCO SOFTWARE</th>
<th>ICT SERVICES &amp; SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packet MW Radio Platform (OmniBAS™)</td>
<td>IPTV &amp; Digital Content Service platform (fs</td>
<td>cdn™)</td>
</tr>
<tr>
<td>Point-to-Multipoint Wireless Platform (WiBAS™)</td>
<td>Next Generation Intelligent Network (NGIN) &amp; Charging applications (NGINius-Apps™ &amp; NGINius-Charging™)</td>
<td>Turnkey Broadband Access Networks</td>
</tr>
<tr>
<td>Wireless Broadband Access, WiMAX (OmniMAX™)</td>
<td>Value-Added Services platform (ServiceWeaver™)</td>
<td>Converged Backhauling</td>
</tr>
<tr>
<td>Hybrid (ETH/TDM) MW Radio Systems (INTRALINK™)</td>
<td>Service Activation &amp; Provisioning system (ActionStreamer™)</td>
<td>Public &amp; Private Cloud</td>
</tr>
<tr>
<td>Multiservice Access Node, DSLAM (iBAS™, FASTmux™)</td>
<td>Contact Center solutions</td>
<td>Data Center &amp; IT Infrastructure Optimization</td>
</tr>
<tr>
<td>Universal Service Access Platform (IAS-W™, OmniRural™)</td>
<td>Service &amp; Network Assurance solutions</td>
<td>Advanced ISP Services</td>
</tr>
<tr>
<td>Monitoring &amp; Network Management Systems (uni</td>
<td>MS™)</td>
<td>Big Data Analytics &amp; Complex Event Processing platform (BigStreamer™)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Network Rollout &amp; Field Services</td>
</tr>
</tbody>
</table>

**Excellence in Telecommunication Products, Solutions & Services**
Patient Empowerment is seen as an essential aspect of patient-centric care and identified as a main element of change for improved quality and safety in healthcare. **Patient Empowerment engages patients to a greater extent in their healthcare process** so that disease management becomes an integrated part of their daily life.

⇒ **What do patients need to cope better with their chronic diseases as part of their daily life?**

11.04.2013
Fostering self-management

Access to relevant information

Managing the own health data

Fostering patient-physician relationship
Core objectives

(1) **Foster self-management with adaptive and secure patient pathways**
   - by including treatment goals and recommendations from their physicians
   - Adapted to the patients skills (maturity level), requirements and needs

(2) **Support behaviour changes with personalised action plans**
   - by including services for personalised, long-term self-management goals realised by short-term activities

(3) **Collect patterns of daily living**
   - Services for Observations of Daily Living (ODLs) about vital, physical and mental parameters and about physical and lifestyle activities based on openEHR archetypes

(4) **Semantic interoperability with existing Personal Health Applications**
   - by supporting semantic interoperability based on established standards such as HL7 IHE profiles, ISO/CEN13606 information models
General EMPOWER project presentation

Thursday 11 April 2013 14:00-15:30
Global eHealth Strategies (2)

The EMPOWER Project - Facilitating Self-Management of Diabetes Patients by Intelligent, Knowledge-Based Pathways

Holger Schmuhl, Hans Demski, Ilias Lamprinos, Asuman Dogac, Manuela Ploessnig, Claudia Hildebrand
Helmholtz Zentrum Munchen, Institute for Biological and Medical Imaging, Laboratory for Medical Information Systems, Neuherberg, Germany
Intracom Telecom, Telco Software Department, Greece
Software Research, Development and Consultation, Turkey
Salzburg Research Forschungsgesellschaft, Knowledge and Media Technologies, Austria
EMPOWER Mobile app

- Vital Signs
- Physical Exercise
- Sleep Diary
- Nutrition
Vital signs collection

- Vital Signs
- Physical Exercise
- Sleep Diary
- Nutrition

| Vital Signs | Physical Exercise | Blood Pressure | Blood Glucose Level | Weight |
Vital signs collection: manual entry

Set Date
Fri, 5 Apr 2013

Set Time
11:42 AM
Before breakfast

Insert

Insert from device

Blood Pressure
Systolic (mm/Hg)  Diastolic (mm/Hg)  Pulse (bpm)
113  66  76

Set Time
13:38 PM
After lunch

Insert from device

Weight (KG)
80.0 KG

Set Time
13:10 PM
Before breakfast

Insert

Insert from device

Blood Glucose (MG/DL)
132.0 MG/DL

Set Time
13:35 PM
After lunch

Insert

Insert from device
Vital signs collection: automatic entry

**Blood Pressure**

Choose Device: **705IT BT 5300216L**

- **Manufacturer**: OMRON BP
- **Serial Number**: 215300216L
- **Firmware**: CS10117-3AE01

**Current Measurements**

- **Systolic**: 100
- **Diastolic**: 70
- **Pulse**: 90
- **Time taken**: 5 Apr 2013, 12:26:56

**Note**: Before breakfast

**Connected**

**Disconnected**

**Measurements**
Vital signs collection: additional Information

Mobile Personal Health Application for Empowering Diabetic Patients
Vital signs collection: History (list view)

<table>
<thead>
<tr>
<th>Blood Pressure</th>
<th>Weight</th>
<th>Blood Glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BPM</strong> 12:25 PM, Tuesday, 25 Feb 2013</td>
<td><strong>80.0 KG</strong> 12:32 PM, Wed, 2 Apr 2013</td>
<td><strong>178.0 MG/DL</strong> 13:14 PM, Sat, 5 Apr 2013</td>
</tr>
<tr>
<td>77 BPM 12:25 PM, Wednesday, 26 Feb 2013</td>
<td><strong>90.8 KG</strong> 12:32 PM, Mon, 3 Mar 2013</td>
<td><strong>204.0 MG/DL</strong> 13:35 PM, Thu, 6 Mar 2013</td>
</tr>
<tr>
<td>66 MM/HG 113 MM/HG</td>
<td><strong>1.69 CM</strong> 21:09, Sat, 1 Mar 2013</td>
<td><strong>204.0 MG/DL</strong> 13:35 PM, Fri, 7 Mar 2013</td>
</tr>
<tr>
<td>77 BPM 12:25 PM, Friday, 28 Feb 2013</td>
<td><strong>BMI: 28.01</strong></td>
<td><strong>204.0 MG/DL</strong> 13:35 PM, Sat, 8 Mar 2013</td>
</tr>
<tr>
<td>66 MM/HG 113 MM/HG</td>
<td><strong>121.6 KG</strong> 21:09, Sun, 2 Mar 2013</td>
<td><strong>234.0 MG/DL</strong> 13:35 PM, Sun, 9 Mar 2013</td>
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<tr>
<td>76 BPM 12:25 PM, Saturday, 1 Feb 2013</td>
<td><strong>1.69 CM</strong> 21:09, Sun, 2 Mar 2013</td>
<td><strong>160.0 MG/DL</strong> 13:35 PM, Mon, 10 Mar 2013</td>
</tr>
<tr>
<td>66 MM/HG 123 MM/HG</td>
<td><strong>BMI: 42.58</strong></td>
<td><strong>132.0 MG/DL</strong> 13:35 PM,</td>
</tr>
<tr>
<td>76 BPM 12:25 PM, Saturday, 1 Feb 2013</td>
<td><strong>1.69 CM</strong> 21:09, Fri, 14 Mar 2013</td>
<td></td>
</tr>
<tr>
<td>66 MM/HG 123 MM/HG</td>
<td><strong>BMI: 29.97</strong></td>
<td></td>
</tr>
<tr>
<td>78 BPM 6:55 PM, Monday, 3 Mar 2013</td>
<td><strong>72.7 KG</strong> 21:09, Tue, 18 Mar 2013</td>
<td></td>
</tr>
<tr>
<td>113 MM/HG</td>
<td><strong>1.69 CM</strong> 21:09, Sat, 22 Mar 2013</td>
<td></td>
</tr>
<tr>
<td><strong>BPM</strong> 12:25 PM, Tuesday, 25 Feb 2013</td>
<td><strong>96.3 KG</strong> 21:09, Sat, 22 Mar 2013</td>
<td></td>
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<tr>
<td>66 MM/HG 113 MM/HG</td>
<td><strong>1.69 CM</strong> 21:09, Sat, 22 Mar 2013</td>
<td></td>
</tr>
<tr>
<td>66 MM/HG 113 MM/HG</td>
<td><strong>BMI: 33.72</strong></td>
<td></td>
</tr>
<tr>
<td>66 MM/HG 113 MM/HG</td>
<td><strong>BPM</strong> 12:25 PM, Tuesday, 25 Feb 2013</td>
<td></td>
</tr>
</tbody>
</table>
Mobile Personal Health Application for Empowering Diabetic Patients
Physical activity monitoring

- Vital Signs
- Physical Exercise
- Sleep Diary
- Nutrition

Activity Type
- Walking
- Cycling
- Dancing
- Swimming
- Jogging
- Bicycling
- Tennis
- Weightlifting
- Skiing
- Basketball
- Football

EMPOWER

Duration: 00:00:00
Distance: 0.0 km

Speed: 0.0 kmh
Avg. Pace: 00:00
Elevation: 0 m
Calories: 0

Start
Insert a workout manually
Physical activity: automatic monitoring

Duration: 00:02:26
Distance: 0.08 km
Your Goal: 2 km

Speed: 3.32 km/h
Avg. Pace: 13:00
Elevation: 157.7858
Calories: 10

Save activity session
stop and discard stop and save

Insert a workout manually

Duration: 00:00:02
Distance: 0.0 km
Speed: 0.0 km/h
Calories: 0

Start
Insert a workout manually

Additional Info
How do you feel?
Excellent Good Neutral Moderate Bad
Neutral "Smile! :)

How stressed are you?
PEACEFUL CALM WORRIED NERVOUS STRESSFUL

Save Discard
Physical activity: route tracking on a map

EMPOWER

Workout Tracker  Map  History

EMPOWER

Main  Map  History

11.04.2013
Physical activity: favorite routes

Add Favorite Route

Set Name

set name

comment

Ok Cancel

Favorite Routes

MY FAVORITE ROUTE

comment

COMMENT
Physical activity: manual entry of activities

**Insert Values**

- **TYPE OF ACTIVITY:** Jogging
- **DISTANCE:** 
- **DURATION:** 
- **SPEED:** 
- **CALORIES:** 
- **PACE:** 
- **NUMBER OF SETS:** 

**Set Time**
14:46 PM

**Change Date**
Fri, 5 Apr 2013

**Duration**

<table>
<thead>
<tr>
<th>HOURS</th>
<th>MINS</th>
<th>SECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>0</td>
<td>45</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

**Calories**

<table>
<thead>
<tr>
<th>CALORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

**Save** | **Discard**
### Mobile Personal Health Application for Empowering Diabetic Patients

**Physical activity: set goals and view past sessions**

#### EMPOWER

<table>
<thead>
<tr>
<th>Set a Workout Goal</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DISTANCE</strong></td>
<td>9 km</td>
</tr>
<tr>
<td><strong>DURATION</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>CALORIES</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>DURATION AND DISTANCE</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

#### History

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
<th>Distance</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYCLING</td>
<td>10.4 KM</td>
<td>3-2-2013</td>
<td>0:16:0</td>
<td>2-2-2013, 14:51 PM</td>
</tr>
<tr>
<td>CYCLING</td>
<td>8.1 KM</td>
<td>3-5-2013</td>
<td>0:16:0</td>
<td>3-5-2013, 14:51 PM</td>
</tr>
<tr>
<td>WALKING</td>
<td>8.1 KM</td>
<td>3-7-2013</td>
<td>0:16:0</td>
<td>3-7-2013, 14:51 PM</td>
</tr>
<tr>
<td>WALKING</td>
<td>8.1 KM</td>
<td>3-13-2013</td>
<td>0:16:0</td>
<td>3-13-2013, 14:51 PM</td>
</tr>
<tr>
<td>BICYCLING</td>
<td>12.6 KM</td>
<td>3-15-2013</td>
<td>1:0:0</td>
<td>3-15-2013, 14:51 PM</td>
</tr>
</tbody>
</table>

**Cancel**
Nutrition diary

- Vital Signs
- Physical Exercise
- Sleep Diary
- Nutrition
Nutrition diary: edit and store a meal entry

- **Change Date**: Thursday, Feb 28 2013
- **Set Time**: 15:49 PM
- **Type of Meal**: Breakfast

**Meal Information**

- **Milk, human**
- **Milk, NFS**
- **Milk, cow’s, fluid, whole**
- **Milk, cow’s, fluid, whole, low-sodium**
- **Milk, calcium fortified, cow’s, fluid, whole**
- **Milk, calcium fortified, cow’s, fluid, 1% fat**
- **Milk, calcium fortified, cow’s, fluid, skim or nonfat**
- **Milk, cow’s, fluid, 2% fat**
Nutrition diary: overview of nutrition facts
Sleep diary

- Vital Signs
- Physical Exercise
- Sleep Diary
- Nutrition

Set a new sleep session
- Repeat: Monday, Tuesday, Wednesday
- Date:
- Time: 17:39
- Label:
- Ringtone
- Vibration
- Movement Monitoring

Done  Cancel
Sleep diary: re-usable sleep session alarms
Sleep diary: live sleep session tracking

Calibration function

Please locate the smartphone on the mattress in a static position and do not move it until the end of the calibration process. Unplug the charger to maximize the accuracy of the results. The process requires 30 seconds to be completed.

Ok  Cancel

Calibration function

Intense movement recorded and the process interrupted! Do you want to repeat the calibration process?

Ok  Cancel
Sleep diary: relaxing sounds

- Water Fall
- Wind Whistle
- Nature
- Sky illusion
- Ocean Waves
- Dolphin Dreams
Sleep diary: charts

Sleep Duration - Stress Level

Sleep Duration - Mood

Mobile Personal Health Application for Empowering Diabetic Patients
visit www.empower-fp7.eu

Thank you!

Dr Ilias Lamprinos