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Dear participants of the IEEE HEALTHCOM 2013 conference,

On behalf of the IEEE HEALTHCOM 2013 Committee, it is my great pleasure to welcome you all to the 15th IEEE International Conference on e-Health Networking, Application and Services (IEEE HEALTHCOM 2013) on October 09-12, 2013 hosted in Lisbon, the beautiful capital of Portugal.

I am very glad to have the opportunity to take part in the organization of a conference that gathers researchers and professionals from academia and industry to share experiences and new ideas in such a dynamic area as e-Health technologies. In the new emerging knowledge based technologies and with the increase in life expectancy, it is crucial to find new solutions to improve health services and applications, offering safe, comfortable, inexpensive, and reliable solutions. Close collaboration between industry and the scientific and academic community is a key success factor in the current highly competitive global marketplace. This cooperation is essential for industry, academia, and society, in general.

IEEE Healthcom is the flagship conference of the IEEE Communications Society Technical Committee (TC) on e-Health. As a Steering Committee Chair of this conference and Vice-Chair of the e-Health TC, it is my great honor to organize our high-level conference in my country. IEEE Healthcom 2013 is fully sponsored by the IEEE Communications Society and technically sponsored by the University of Beira Interior, Portugal; Instituto de Telecomunicações, Portugal; CTTC - Centre Tecnològic de Telecomunicacions de Catalunya, Spain; CI2 – Centro de Investigação e Criatividade em Informática; and by the Projects AAL4ALL – Ambient Assisted Living for All (http://www.aal4all.org/) and WSN4QoL – Secure Location-Aware Cooperative Network-Coded WSNs for Better Quality of Life.

After the 1st conference in Sydney, Australia, in 1999, IEEE Healthcom conferences have been successfully held yearly. We are greatly honored that this year’s conference is hosted for the very first time by our country, Portugal. I would like to express my heartfelt gratitude to all the people involved in the conference organization who have worked very hard for its success, including the support of the Portuguese Ministry of Health.

The conference offers an excellent program addressing the new frontiers of e-Health technologies and brings together experts from all over the world who come to Lisbon to share their expertise and new ideas. We received contributions from 51 countries and a total of 286 papers submitted for the main conference.
The acceptation ratio is about 46%. The program includes twenty technical sessions and two poster sessions, a demo session, two panels, four keynote speeches, four tutorials, three workshops, and a large industry Exhibition. The conference also promotes a social program to offer participants the opportunity to visit the beautiful city of Lisbon and its surroundings.

It is my privilege to convey the community's gratitude to the conference patrons, namely to Siemens, Carestream, and others, as well as to the exhibitors and other sponsors and to the countless other volunteers who contributed in numerous ways to the success of the conference. I hope our participants enjoy the technical discussions and the meetings with colleagues and discover the local culture and beauty.

I look forward to meeting you all in person here in Lisbon for an excellent event.

Sincerely,

Joel J.P.C. Rodrigues
Professor, University of Beira interior, Portugal
Researcher, Instituto de Telecomunicações, Portugal
Chair, Steering Committee IEEE HEALTHCOM
Vice-Chair, IEEE Communications Society Technical Committee on e-Health
General Chair, IEEE HEALTHCOM 2013
ABOUT LISBON

Lisbon’s location, spread over seven hills, overlooking the river Tejo, once lured traders and settlers, and continues to be a stunning site.

Add to that the cultural diversity, a pleasantly temperate climate all year-round and a people that by longstanding tradition offer visitors a warm welcome.

Medieval Alfama is the charming and oldest part of the city with its maze-like streets, crowned by the Castelo de São Jorge. The Baixa’s commercial avenues lies just below. The elegant Chiado shopping area climbs away up another hill, next to Bairro Alto, home of much of the Lisbon nightlife.

The westernmost part of the city, Belém, was the birthplace of the Age of the Discoveries and Parque das Nações (the 98 World Expo site – Expo’98) in the northeast side of the city is an area full of 21st century avant-garde architecture built on a most impressive river side site.

We welcome you to Lisbon and we invite you to discover this unique city.
General Chair
Prof. Joel Rodrigues
Instituto de Telecomunicações, University of Beira Interior, Portugal

Technical Program Committee Chairs
Prof. Ricardo Correia
Faculty of Medicine, University of Porto, Portugal
Dr. Christos Verikoukis
Telecommunications Technological Centre of Catalonia, Barcelona, Spain

Operations Chairs
Prof. Maria Helena Monteiro
Instituto Superior de Ciências Sociais e Políticas, University of Lisbon, Portugal
Prof. Rita Amorim
Instituto Superior de Ciências Sociais e Políticas, University of Lisbon, Portugal

Publication Chair
Prof. Norbert Noury
University of Lyon, France

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Instituto de Telecomunicações, University of Beira Interior, Covilhã, Portugal
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Industrial Technology Research Institute, Taiwan
Prof. Pradeep Ray
University of New South Wales, Australia
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University of Lyon, France
Prof. Chi-Ren Shyu
University of Missouri, Columbia, MO, USA

Portuguese Government Liaison
Prof. Henrique Martins
Chairman of the Board, SPMS, Portugal; University of Beira Interior, Portugal
COMMITTEES

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Eng. Rui Gomes
Prof. Fernando Fonseca Hospital, Portugal

Industry Forum Chair
Prof. Miguel Sales Dias
Microsoft

Workshop Chairs
Prof. José Neuman de Souza
Federal University of Ceará, Brazil
Prof. Rui Rijo
Polytechnic Institute of Leiria, Portugal

Tutorial Chairs
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University of Coimbra, Portugal
Prof. José Carlos Nascimento
University of Minho, Portugal

Panel Chair
Prof. Eric Addeo
DeVry University, USA

Communication Chair
Prof. Francisco Roxo
Catholic University of Lisbon, Portugal

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Instituto de Telecomunicações, IPCB, Portugal

Treasurer
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IEEE Communications Society, USA

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UNC Charlotte, USA
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Linköping University, Sweden
ISCSP provides students with programs in the areas of Social and Political Sciences, offering graduate and postgraduate education, First, Second and Third Cycles, i.e., Bachelor’s, Master and Doctoral degrees. Sociology, Public Administration and Public Policy, Political Science, International Relations, Social Policy, Anthropology, Communication Sciences and Management of Human Resources are taught and researched here.

ISCSP promotes scientific research through its research centers recognized by the Foundation for Science and Technology (FCT) through its centers: Center for Public Administration and Policy (CAPP) and Institute of Orient (IO), and other centers in the areas of Gender and African Studies.

ISCSP, the School of Social and Political Sciences of Universidade de Lisboa – Ulisboa, follows a local policy that entails the provision of services to the community, contributing to social and economic development of the country, in the private and public sectors, namely by research and consultancy interventions in both sectors of the national activity. Internationally, the school’s aim is to cooperate worldwide, with a particular focus on Portuguese-speaking countries, namely in its some of its main areas of expertise, Public Administration, Geostrategic areas and Social and Economic Development.
**Conference Secretariat**
The Conference Secretariat is located in the ground floor in the venue main lobby.

**Opening hours**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tbody>
<tr>
<td>Wednesday, October 9</td>
<td>08.30 - 19.00</td>
</tr>
<tr>
<td>Thursday, October 10</td>
<td>08.30 - 19.00</td>
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<tr>
<td>Friday, October 11</td>
<td>08.30 - 18.30</td>
</tr>
<tr>
<td>Saturday, October 12</td>
<td>08.30 - 14.30</td>
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</table>

**Badge**
All participants should collect their name badge at the Conference Secretariat and wear it all time visible, in order to guarantee access to the scientific program sessions.

**Certificate of Attendance**
You are welcome to print your personalized certificate of attendance at the Conference Secretariat on October 9 afternoon.

**Official Language**
The official language of the Conference is English. No simultaneous translation will be provided.

**Internet Access**
Participants will have free internet access. To access please select the following network:
Network: guest eduroam

**Daily Transfers**
A Transfer service (10, 11 and 12 October) by coach will be organized from centrally located pick up points to the Conference Venue and vice-versa.
Information on timetables and pick up points is available on the website and at the Conference Venue.
Please make sure to be punctual at the pick up points as the coaches will leave on time.
KEYNOTE SPEAKERS

1. "e-Health in Europe"

Prof. Henrique Martins
MD (Lisbon), MPhil, PhD (Cambridge)
Assistant Professor, Faculty of Health Sciences, Universidade da Beira Interior, Portugal; Adjunct for Health IT to the Portuguese Health Secretary of State, Ministry of Health; President and CEO of the SPMS - Shared Services of the Portuguese Ministry of Health; Health Executive education Coordinator at the Catholic Lisbon Business School; Internist Physician, Fernando Fonseca Hospital, Lisbon, Portugal.


Dr.-Ing. Heike Vallery
TU Delft, Netherlands

3. “The Challenge of Big Data in Health: Meaningful Use of Information for Patient Centered Care”

Márcia Ito
M. D., DSc., Research Staff Member, IBM Research, Brazil
KEYNOTE SPEAKERS & PANELS

4. “Disaster Communications after the Accidents of the Fukushima Nuclear Power Plant (Japan)”

Isao Nakajima  
M.D., Ph.D., Ph.D., Tokai University, Fukushima Nuclear Accident Independent Investigation Commission of the National Diet

PANELS

1. “Telemedicine Today!”

Moderator

Eric Addeo  
Devry University, North Brunswick, NJ, USA

Panelists

Miguel Castelo Branco  
University of Beira Interior, Portugal; Centro Hospitalar Cova da Beira – University Hospital, Covilhã, Portugal

Cláudio de Souza  
State University of Minas Gerais, Belo Horizonte, Brazil

José Luís García Pacheco  
Carlos III Institute, Madrid, Spain

Eric Addeo  
Devry University, NJ, USA

Milton Jijón  
Atalaac, Ecuador
2. “Cloud or not to Cloud for eHealth”

Moderator

Masum Z Hasan
Technology Director, Cisco

Panelists

Nazim Agoulmine
Professor
University of Evry, France

Gerard Parr
Professor
University of Ulster, UK

Dr. Benjamin Hirsch
EBTIC
Khalifa University, UAE
**PROGRAM AT A GLANCE**

### IEEE HEALTHCOM 2013, LISBON, PORTUGAL

#### PROGRAM SUMMARY

<table>
<thead>
<tr>
<th>Time/Day</th>
<th>Tuesday October 08</th>
<th>Wednesday October 09</th>
<th>Thursday October 10</th>
</tr>
</thead>
</table>
| 09:15-10:30| Tutorials (1/2)
Workshop 1: Auditorium 1, floor 1
Workshop 2: Room 3, floor 3
Workshop 3: Room 4, floor 3 |
| 10:30-11:00| Coffee Break        | Poster Session 1     |
| 11:00-13:00| Tutorials (1/2)
Workshop 1: Auditorium 1, floor 1
Workshop 2: Room 3, floor 3
Workshop 3: Room 4, floor 3 |
| 13:00-14:00| Lunch               | Exhibit move-in      |
| 14:00-15:45| Tutorials (1/4)
Workshop 1: Auditorium 1, floor 1
Workshop 2: Room 3, floor 3
Workshop 3: Room 4, floor 3
Session #1: Room 1, floor 1
Session #2: Room 2, floor 2
Session #3: Room 3, floor 3
Session #4: Room 4, floor 4
Session #5: Room 5, floor 5 |
| 15:45-16:15| Coffee Break        | Coffee Break         |
| 16:15-18:00| Tutorials (1/4)
Workshop 1: Auditorium 1, floor 1
Workshop 2: Room 3, floor 3
Workshop 3: Room 4, floor 3
Session #6: Room 1, floor 1
Session #7: Room 2, floor 2
Session #8: Room 3, floor 3
Session #9: Room 4, floor 4
Session #10: Room 5, floor 5 |
| 18:30-21:30| Welcome Reception   | Conference Banquet   |

**Workshop 1**
International Workshop on New Trends on Telemedicine (NTT 2013)

**Workshop 2**
First International Workshop on Services Science for eHealth (SSH 2013)

**Workshop 3**
First International Workshop on Active and Healthy Ageing (AHA 2013)

**Tutorial 1**
T1. Methodology for Evaluating Experience of Mobile (Healthcare) Applications Used in Different Contexts of Daily Life (Dr. Katarzyna Wac)

**Tutorial 2**
T2. Health Care Collaborative Networked Organization (Dr. Morcosus M.Yassa)

**Tutorial 3**
T3. Introduction to openEHR - Main Concepts, Tools and Archetype/Template Creation (Prof. Ricardo Correia)

**Tutorial 4**
T4. Designing an Information Accountability Framework for eHealth (Prof. Tony Sahama)

**Panel 1**
Telemedicine Today!
Moderator: Luís Gonçalves (MD; Telemedicine Working Group, Ministry of Health of Health, Portugal)
Miguel Castelo Branco (University of Beira Interior, Portugal; Centro Hospitalar Cova da Beira - University Hospital, Covilhã, Portugal), Cleinaldo Costa (State University of Amazonas, Brazil; Marcial Garcia Rojo (Vice-President of SEIS, Spain); Eric Addeo (Devry University, NJ, USA)

Cloud or not to Cloud for eHealth

**Panel 2**
(Chair: Dr.Masum Hasan, Cisco, France)
Monique Morrow (CTO, Cisco Service); Nazim Agoulmine (University of Evry, France); Gerard Farr (University of Ulster, UK); Benjamin Hirsch (BT-Etisalat Innovation Center, Abu Dhabi, UAE)
## PROGRAM AT A GLANCE

### IEEE HEALTHCOM 2013, LISBON, PORTUGAL

### PROGRAM SUMMARY

#### Friday
**October 11**

- **09:00** - Welcome
  - Henrique Martins (Chairman of the Board, SPMS; University of Beira Interior, Portugal; Helena Monteiro (Operation Chair; ISCSP, University of Lisbon, Portugal)

- **10:00** - The Governance of the NHS with new management tolls (Activity Based Cost)
  - Ana Paula Harfouche (IPO, Portugal; ISCSP, University of Lisbon, Portugal)

- **11:00** - Panel - Moderator
  - Adalberto Campos Fernandes
  - Participation of previous speakers

#### Saturday
**October 12**

- **09:00** - Welcome
  - Henrique Martins (Chairman of the Board, SPMS; University of Beira Interior, Portugal; Helena Monteiro (Operation Chair; ISCSP, University of Lisbon, Portugal)

- **09:15** - Medicine in 2020
  - António Murta (President of Pathena Group, Portugal)

- **10:00** - The Governance of the NHS with new management tolls (Activity Based Cost)
  - Ana Paula Harfouche (IPO, Portugal; ISCSP, University of Lisbon, Portugal)

- **10:15** - Facilitators and Inhibitors in Hospital Management in Portugal
  - Francisco Velez Roxo (Hospital Center of Leiria Pombal and Catholic University, Portugal)

- **11:00** - Panel - Moderator
  - Adalberto Campos Fernandes
  - Participation of previous speakers

- **11:30** - SNS systems and infrastructures - Architecture and Governance
  - Henrique Martins (Chairman of the Board of SPMS, Portugal; University of Beira Interior, Portugal)

- **12:00** - Closing Session (w/ Paulo Macedo, Portuguese Minister of Health, Joel Rodrigues (General Chair, IT-UBI, Portugal)

#### Sunday
**October 13**

- **09:00** - Welcome
  - Henrique Martins (Chairman of the Board, SPMS; University of Beira Interior, Portugal; Helena Monteiro (Operation Chair; ISCSP, University of Lisbon, Portugal)

- **09:15** - Medicine in 2020
  - António Murta (President of Pathena Group, Portugal)

- **10:00** - The Governance of the NHS with new management tolls (Activity Based Cost)
  - Ana Paula Harfouche (IPO, Portugal; ISCSP, University of Lisbon, Portugal)

- **10:15** - Facilitators and Inhibitors in Hospital Management in Portugal
  - Francisco Velez Roxo (Hospital Center of Leiria Pombal and Catholic University, Portugal)

- **11:00** - Panel - Moderator
  - Adalberto Campos Fernandes
  - Participation of previous speakers

- **11:30** - SNS systems and infrastructures - Architecture and Governance
  - Henrique Martins (Chairman of the Board of SPMS, Portugal; University of Beira Interior, Portugal)

- **12:00** - Closing Session (w/ Paulo Macedo, Portuguese Minister of Health, Joel Rodrigues (General Chair, IT-UBI, Portugal)

### Poster Session 2
**Atrium I, II-floor 3**
Abstract:
Many attendees at IEEE HealthCom conferences deal on a growing scale with development and evaluation of the mobile applications and services, and they will agree that a rigorous methodological approach towards a user experience "in the wild" is missing. In this course the attendees will learn a design and execution of empirical experiments to evaluate experience of mobile applications used in different contexts of daily life, as opposite to (theoretical) application's simulation or modeling. The methodology is based on a mixed methods approach: qualitative and quantitative methods. This course firstly presents a generic methodology for measurements-based performance evaluation of a mobile communication system and its service(s), and for evaluation of user experience, and second, it presents two case studies of application of this methodology. The performance evaluation aims at analysis of, for example, mobile system bottleneck or scalability characteristics, or at analysis of its application response time, as these metrics contribute to the overall experience of the mobile service use. The presented methodology has been derived from previous studies on performance of communication networks and QoE/QoS evaluation in a large-scale user studies using Experience Sampling Method and Day Reconstruction Methods. The methodology includes detailed steps for objectives determination, system instrumentation, and measurements execution and performance evaluation activities. The course illustrates use of the methodology for a performance evaluation of MobiHealth system and its vital sign tele-monitoring service provided to a mobile patient wearing a Wireless Body Area Network, and for entertainment, information and communication applications evaluated in a large-scale Android users study.

Short Bio:
Dr Katarzyna Wac is a senior computer scientist currently associated with Institute of Services Science at University of Geneva (Switzerland). In 2009-2010 she has visited the Human-Computer Interaction Institute at Carnegie Mellon University. In 2003 she has received a BSc and MSc degree in Computer Science from Wroclaw University of Technology (Poland), and in 2004 MSc in Telematics from University of Twente (the Netherlands). In 2009 she has defended her PhD thesis in Information Systems at University of Geneva. Her research focuses on measurements-based methodologies for an evaluation of performance of interactive mobile applications and its relation with the end-user perceived experience. She builds tools that predict application's performance and hence facilitate development of mobile computing applications that improve end-user perceived experience.
Tutorial 2: Dr. Morcous M. Yassa  
**Health Care Collaborative Networked Organization**  
**09:15 - 13:00**  
**Room 1 - Floor 3**

Abstract:
The major motivation of this course is to determine the essential features that must be considered in order to automate the Collaborative Networked Organization (CNO) construction. This course aims to provide (semi) automated support for dynamic adaptive intelligent virtual organizations thus by, utilizing CommonKADS knowledge modeling methodology for representing knowledge as a way to interchange knowledge between CNO partners.

Short Bio:
Morcous M. Yassa is an Egyptian researcher, Postgraduate diploma in computer science, from ISSR, Cairo University, Egypt in 1999. M.Sc in computer science, from ISSR, Cairo university, Egypt, in 2005. PhD in computer science from Faculty of Computers and Information, Cairo University (until now). Morcous has been published many research papers scientific journals and conferences. Morcous interests are Knowledge modeling, sharing and reuse, Intelligent information retrieval, Software Engineering, Service Oriented Architecture (SOA), Virtual Organizations, and Grid& Cloud Computing.

Tutorial 3: Prof. Ricardo Correia  
**Introduction to openEHR - Main Concepts, Tools and Archetype/Template Creation**  
**14:00 - 18:00**  
**Room 1 - Floor 3**

Abstract:
The openEHR standard is an open specification that describes the management and storage, retrieval and exchange of health data in electronic health records. It aims to store all health data in a "one lifetime", vendor-independent, person-centred EHR. The openEHR specification is not concerned with the exchange of data between EHR-systems but mainly on how the information is stored. In this tutorial you will learn: - The structure of the openEHR layers; - How to create openEHR archetypes and templates using the available tools; - And, the freely available APIs to use to automatically generate forms or web-services. Target Audience: health informatics professionals that do not have experience with openEHR and aim to understand the fundaments of this standard. This tutorial is not intended to people that already have experience with openEHR.
Short Bio:
Ricardo Correia is a computer scientist with a PhD in the integration of hospital Information Systems. He has a position as an Assistant Professor at the Health Information and Decision Sciences Department at the Faculty of Medicine of the University of Porto. He has more than 50 indexed (Medline, Scopus or ISI) publications. He has been deeply involved in the implementation and the coordination of departmental electronic patient records (obstetrics, intensive care units, pneumology, and breast cancer), integrated hospital information systems and multi-centre web-based information systems for clinical research. He is currently deeply involved in the coordination of a Master Degree on Medical Informatics that is currently in its 8th edition. He has recently started the Portuguese group of openEHR that aims to promote this standard nationally.

Tutorial 4: Prof. Tony Sahama
Designing an Information Accountability Framework for eHealth
14:00 - 18:00
Room 1 - Floor 3

Abstract:
This tutorial is primarily based on the IEEE eHealth technical committee Newsletter published in March 2013. Its main focus is on information privacy management in eHealth through information accountability. The tutorial consists of three main aspects of a proposed information accountability framework for eHealth, namely, social aspects, technical aspects and legal aspects. Following a brief introduction of the problem domain and context, we present the tutorial in these three main components.

Short Bio:
Tony Sahama is a senior lecturer in the Information Security Discipline, Faculty of Science and Engineering. His research interest is in Health/Medical Informatics in particular, Healthcare Information Technology (HIT) and Clinical Decision Support Systems design and development. Tony holds a PhD in Computer Science (Computer Simulation and Modelling, DACE), Master of Education (Higher Education), M.Phil (Statistical Computation) and B.Sc. (specialised in Applied Statistics and Computer Programming). Tony has experience working with researchers in developing customised technological applications for Clinical Decision Support Systems, Data warehousing, Data Integration and IT applications for healthcare decision making processes. Currently, Tony is supervising 4 research masters and 4 PhD level projects in the Medical Informatics research area. Tony holds professional membership with ACM (SIGBioinformatics), IEEE, IBS, ACS, SSAI and HISA.
Workshop 1: International Workshop on New Trends on Telemedicine (NTT 2013)
09:15 - 18:00
Auditorium I - Floor 1

09:15 - Opening Session
- Joel Rodrigues (IEEE Healthcom 2013, General Chair; Instituto de Telecomunicações, University of Beira Interior, Portugal)
- Andrés Bas (Fundación Videomed, Spain, Director)
- Cleinaldo Costa (State University of Amazonas, Brazil, Rector)
- José Ricardo (Associação para o Desenvolvimento da Telemedicina, Portugal, Chair)

09:30 - Development and experiences on brazilian telehealth programme in Amazonas
Cleinaldo Costa (State University of Amazonas, Brazil, Rector)

10:00 - Telemedicine: A steeple race
Claudio Peláez (Olivenza Health Center, Spain)

10:30
Coffee Break

11:00 - Panel New Trends On Telehealth / Telemedicine (I)
- Telepathology in Europe- Beyond efficiency Towards Innovation in Pathology
  Marcial Garcia Rojo (Hospital Ciudad Real, Spain)
- Telegeriatrics from northern to southern Brazil
  Euler Esteves Ribeiro (Manaus, Brazil)
- New perspectives on Telehealth/Telemedicine in Portugal
  Luís Gonçalves (Telemedicine Working Group, Portuguese Ministry of Health, Portugal)
- The telemedicine connection - a reality on Madrid
  Manuel Grandal (Hospital VPO, Madrid, Spain)
- Dermatological Triage by Telemedicine
  Fernando Gomes da Costa (Cantanhede Health Center, Portugal)

Each one speaks 20 minutes with a final discussion with about 20 minutes

13.00
Lunch
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>14:30</td>
<td>Panel New Trends On Telehealth / Telemedicine (II)</td>
<td>Henrique Martins (SPMS Portuguese Ministry of Health, President; University of Beira Interior, Portugal)</td>
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<td><strong>SPMS - Iniciatives on Telemedicine / Telehealth</strong></td>
<td>Diogo Reis</td>
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<td>15.00</td>
<td>Reasons for an enterprise to invest on Telemedicine / Telehealth</td>
<td>Marco Ferreira</td>
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<td>15.30</td>
<td>Coffee-Break</td>
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<td>16:00</td>
<td>Panel New Trends On Telehealth / Telemedicine (II)</td>
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<td><strong>Impacts to the regional development of the on-site teaching with technology in the State University of Amazonas</strong></td>
<td>Aderli Simões (State University of Amazonas, Manaus, Brazil)</td>
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<td><strong>Evaluation of the Telemedicine Programme on Alentejo, Portugal</strong></td>
<td>Tiago Cravo (Imperial College of London, UK)</td>
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<td><strong>Darwin Project: Clinical Simulation</strong></td>
<td>Carles Fabrega (San Joan de Deu Hospital, Barcelona, Spain)</td>
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<td><strong>Telemedicine in the training of the GP in the Community</strong></td>
<td>Ricardo Amaral (Manaus, Brazil)</td>
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<td><strong>Mobile Health</strong></td>
<td>Andrés Bas (Fundación Videomed, Spain)</td>
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<td>17.45</td>
<td>Closing Session</td>
<td>Joel Rodrigues (IEEE Healthcom 2013, General Chair; Instituto de Telecomunicações, University of Beira Interior, Portugal)</td>
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<td>Andrés Bas (Fundación Videomed, Spain, Director)</td>
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<td>Cleinaldo Costa (State University of Amazonas, Brazil, Rector)</td>
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<td>José Ricardo (Associação para o Desenvolvimento da Telemedicina, Portugal, Chair)</td>
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</table>
# Workshop 2: First International Workshop on Service Science for e-Health (SSH 2013)

**09:15 - 18:00**  
Room 3 - Floor 3

## 09.15 - Warm Welcome and Introduction

### 09.20 – 10.30 Image / video processing and transmission

- **Joint Source and Turbo Trellis Coded Hierarchical Modulation for Context-aware Medical Image Transmission**  
  Abdulah Jeza Aljohani (University of Southampton, United Kingdom); Hua Sun (University of Southampton, United Kingdom); Soon Xin Ng (University of Southampton, United Kingdom); Lajos Hanzo (University of Southampton, United Kingdom)

- **Medical Image and Video quality assessment in e-health Applications and Services**  
  Manzoor Razaak (Kingston University-London, United Kingdom); Maria G. Martini (Kingston University, United Kingdom)

- **An Intelligent System for Renal Segmentation**  
  Yassine Aribi (University of Sfax & Enis, Tunisia); Wali Ali (University of Sfax, Tunisia); Adel M. Alimi (REGIM, University of Sfax, National School of Engineers, Tunisia)

## 11.00 – 13.00 Wireless, mobile, and streaming services

- **Detecting Obstructive Sleep Apnea events in a real-time mobile monitoring system through automatically extracted sets of rules**  
  Giovanna Sannino (Institute of High Performance Computing and Networking National Research Council of Italy, Italy); Ivanoe De Falco (Institute of High Performance Computing and Networking, ICAR-CNR, Italy); Giuseppe De Pietro (ICAR CNR, Italy)

- **mHealth for Cardiac Patients Telemonitoring and Integrated Care**  
  Zviad Kirtava (Partners for Health NGO; Tbilisi State Medical University; Tbilisi, GEORGIA, Georgia); Tea Gegenava (Partners for Health NGO / Tbilisi State Medical University, Georgia); Maka Gegenava (Partners for Health NGO / Tbilisi State Medical University, Georgia)

- **Platform for building eHealth streaming services**  
  Pawel Swiatek (Wroclaw University of Technolgy, Poland); Patryk Schauer (Wroclaw University of Technology, Poland); Adam Kokot (Wroclaw University of Technology, Poland); Maciej Demkiewicz (Wroclaw University of Technology, Poland)

- **Construction of Healthcare Network based on Proposed ECG and Physical-activity Sensor adopting Energy-harvesting Technologies**  
  Makoto Kawashima (Chubu University, Japan); Taiki Nakamura (Chubu University, Japan); Kaori Hata (Chubu University, Japan)
- A Mobile Health Application for Falls Detection and Biofeedback Monitoring
Edgar Horta (Instituto de Telecomunicações, University of Beira Interior, Portugal); Ivo Lopes (Instituto de Telecomunicações, University of Beira Interior, Portugal); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal); Mario Lemes Proença Jr. (State University of Londrina, Brazil)

14.00 – 15.45 Planning, adaptation and assessment of e-health services

- Planning for Composition of eHealth Services
Pawel Stelmach (Wroclaw University of Technology, Poland)

- A multi-actor evaluation of the impact of eCare services
Frederic Vannieuwenborg (Ghent University - iMinds, Belgium); Jan Van Ooteghem (Ghent University - iMinds, Belgium); Mathieu Vandenberghe (Ghent University, Belgium); Sofie Verbrugge (Ghent University - IBBT, Belgium); Mario Pickavet (Ghent University - iMinds, Belgium); Didier Colle (iMinds - Ghent University, Belgium)

- IoT as a Service System for eHealth
Pawel Swiatek (Wroclaw University of Technolgoy, Poland); Andrzej Rucinski (University of New Hampshire, USA)

- Runtime Data-driven Adaptation of Composite e-Health Services
Pawel Stelmach (Wroclaw University of Technology, Poland); Łukasz Falas (Wroclaw University of Technology, Poland)

- Using Low-cost computer-based simulations in the Spanish National Transplant Procedures
Blanca Borro-Escribano (Complutense University of Madrid, Spain); Angel del Blanco (Universidad Complutense de Madrid, Spain); Baltasar Fernandez-Manjon (Universidad Complutense de Madrid, Spain); Itziar Martinez (National Transplant Organization, Spain); Beatriz Domínguez-Gil (National Transplant Organization, Spain); Rafael Matesanz (National Transplant Organization, Spain)

16.15 – 18.00 Case studies and disease prevention

- Ensemble SVM for imbalanced data and missing values in postoperative risk management
Maciej Zięba (Wroclaw University of Technology, Poland); Jerzy Świątek (Wroclaw University of Technology, Poland)

- Integrating Bayesian Networks into Fuzzy Hypothesis Testing Problem - Case Based Presentation
Edyta Winciorek (Military University of Technology (WAT), Poland); Andrzej Walczak (Military University of Technology (WAT), Poland)

- Comparison and adaptation of step detection and step length estimators to a lateral belt worn accelerometer
Taufique Sayeed (Universitat Politècnica de Catalunya & CETpD, UPC, Spain); Albert Samà (Universitat Politècnica de Catalunya & CETpD, UPC, Spain); Andreu Catala (Universitat Politècnica de Catalunya, Spain); Joan Cabestany (Universitat Politècnica de Catalunya & CETpD-UPC, Spain)
- **A multi-device framework to increase self-awareness for health and disease prevention**
Eduardo Metola (Universidad Politécnica de Madrid, Spain); Ana M. Bernardos (Universidad Politecnica de Madrid, Spain); Jose R Casar (Universidad Politecnica de Madrid, Spain)

- **DELPHI: Data E-Platform for Personalized Population Health**
Kevin Patrick (UCSD, USA); Sanjoy Dasgupta (University of California, San Diego, USA); William G. Griswold (UC San Diego, USA); Yannis Katsis (UCSD, USA); Ted Chan (UCSD, USA); Claudiu Farcas (UCSD, USA); Jeannie Huang (UCSD, USA); Yannis Papakonstantinou (UCSD, USA); Lucila Ohno-Machado (University of California San Diego, USA); Fredric Raab (UCSD, USA)

**Workshop 3: First International Workshop on Active and Healthy Ageing (AHA 2013)**
09:15 - 13:00
Room 4 - Floor 3

09:15 - Welcome
Filipe Sousa
Chair: Liliana Ferreira

Keynote Speakers:
- **Assistive Technologies for Home Care - Aim Quality of Life and the use of Service Design**
Ana Nobre (Comforto em Casa, Portugal)

- **Applying smartphone apps to drive greater patient engagement and personalized physiotherapy**
Gabriela Postolache (Universidade Atlantica, Portugal)

10:30
Coffee Break

11:00 - Session #1: AAL: The User’s Perspective and Architectures
Chair: Henrique O’Neill

- **Ambient Assisted Living Technology: Comparative perspectives of users and caregivers**
Gabriela Trevisan

- **A Platform to Emulate Ambient Assisted Living Environments**
Oscar Gama, Ricardo Simões

- **We.Can Platform: an Open Management Architecture for the Information Persistence**
Yosvany Llerena, Alexandra Queirós, Nelson Pacheco Rocha, Carlos Cardoso, Miguel Grade, Filipe Augusto, Carlos Cardoso, Miguel Grade, Filipe Augusto
12:00 - Session #2: Health Technologies for assisting User’s daily life
Chair: Filipe Sousa

- Evaluation of sensors and algorithms for person detection for personal robots
  Cláudia Tonelo, António Paulo Moreira, Germano Veiga
- Trends in Mobile Medical Thermography
  Ricardo Vardasca, Joaquim Gabriel Mendes
- Medical Video Streaming Utilizing MPEG-DASH
  Ognen Ogrenoski, Manzoor Razaak, Maria G. Martini, Peter Amon

13:00 - Closing Session
18:00 - 21:00
Open EXPO

18:30 - 21:30
Welcome Reception
Atrium I,II Main Hall - Floor 3

Thursday, October 10
09:15 - 09:45
Opening Ceremony
Auditorium Prof. Adriano Moreira, Floor -1
Henrique Martins (Chairman of the Board, SPMS; University of Beira Interior, Portugal)
Paulo Neves (AMA President) - Joel Rodrigues (General Chair, IT-UBI, Portugal)

09:45 - 10:30
Keynote: Marcia Ito (IBM Research Brazil)
The Challenge of Big Data in Health: Meaningful Use of Information for Patient Centered Care

Abstract:
The advancement of technology has allowed the establishment of different forms of data acquisition and today we have an explosion of data. Now, the problem is not to get the data, but transform it into information and knowledge that is particularly useful in decision making. In healthcare is no different, health professionals rely on data and information to make important decisions regarding their patients. In the past, it was difficult to obtain reliable information, accurate and in real time, so it was common to make a diagnosis based on intuition than knowledge of facts. Today, with the advancement of technology, especially in healthcare, is possible to achieve a large amount of data of all kinds. So the problem is not how to get more information but learn to use it wisely. It is necessary to store the data and extract from them information and knowledge in order to care the patients and improve their quality of life. On the other hand, as the data are personal it is possible to understand the evolution of the disease in the individual and thus, to establish a personalized care by practicing patient-centered care. So, we can make prevention and health promotion at the individual level, making them aware of their health and improving their quality of life.

Short Bio:
Marcia Ito is medical doctor, data processing technologist, doctor and master in electrical engineering. Currently, she is a researcher in the Human Systems group at IBM Research Brazil and professor in Faculty of Technology of São Paulo. She is also an Executive Secretary of the Brazilian Health Informatics Society, vice-coordinator of the Committee of Applied Computing in Health at Brazilian Computer Society
and she takes part in the ABNT Special Temporary Health Informatics Committee (ABNT/CEET 00:001.78) as an expert in data structure standards in Health Informatics. She has experience in the area of Computer Science and Medical Informatics, with emphasis on Software Engineering, Distributed Artificial Intelligence, Accessibility and e-Health, acting on the following topics: Requirements Engineering, Health Service Design, Multi-agent Systems, Management of Chronic Patients and Education for People with Special Needs.

10:30 - 11:00
Coffee Break and EXPO Visit

11:00 - 11:25
Keynote: Isao Nakajima (Tokai University, Japan)
Disaster Communications after the Accidents of the Fukushima Nuclear Power Plant (Japan)

Abstract:
The author served as vice-Rapporteur for ITU-D SG2 Question 14 (Telemedicine and eHealth) and is also involved in the field of disaster communications and emergency medical care as guest research scientist at the Fukushima Nuclear Accident Independent Investigation Commission established by the National Diet of Japan and reviewer of the Commission's report. Between the Government of Japan and local governments, there are three independent nationwide urgent communication systems.

1) J-ALERT (caution system for the missile launch, terrorism, natural disaster), 2) LASCAOM (Local government V-SAT network on Ku-band). 3) Municipal Disaster Management Radio Communication Network (via domestic Satellite and VHF radio). Separately from the network of three above, 4) two-way video conferencing system via Inmarsat satellite is applied between the Ministry of Economy, Trade and Industry, electric power companies, and each local government where nuclear power plant located. In the accidents of the Fukushima Nuclear Power Plant, the Government gave an evacuation directive for the head of the local governments just after a hydrogen explosion, however the communications didn't reach to the local governments well. Though there is the disaster communications network nominated for four(1)-(4) as above, the evacuation order and the evacuation advisory issued by the Government didn't reach the head of the local government. Why? The head of the local government appealed to inhabitants for criticism to hear the evacuation directive from VHF police radio.

As a result of having introduced a principle of the free competition into communications industry, for the past 20 years, in the Government of every country, the wireless network that many companies applied by self-management was replaced by cell-phone system. However, it is helped by this disaster by the VHF police radio which was the only network (independent wireless network in Fukushima after the Great East Japan earthquake). I have investigated the details in the field of disaster communications after the Fukushima Nuclear Power Plant accidents and report it at the Healthcom 2013 Lisbon.
Short Bio:
He is a Professor of the Department of Emergency Medicine and Critical Care, Tokai University School of Medicine and has his own laboratory for medical communications. He had finished his chief resident course at the 2nd General Surgery of Tokai University Hospital. He received his M.D. degree from Tokai University, Ph.D.(Bio Medical Eng.) in 1988, and Ph.D.(Applied Informatics) in 2009 from University of Hyogo Graduate School. He has studied on telemedicine and eHealth for over 30 years, had conducted the Asia Pacific Medical Network using ETS-V satellite under the umbrella of PARTARS project of the Government of Japan. Recently, he has developed the ICT system to prevent Avian Influenza. He has been a consultant of WHO-WPRO, World Bank, and JAXA, also a Vice- Rapporteur of ITU-D for ehealth.

11:30 - 13:00
Panel 1: Telemedicine Today!
Moderator: Luís Gonçalves (Telemedicine Working Group, Portuguese Ministry of Health, Portugal)

Panelists: Miguel Castelo Branco (University of Beira Interior, Portugal; Centro Hospitalar Cova da Beira - University Hospital, Covilhã, Portugal); Cleinaldo Costa (State University of Amazonas, Brazil); Marcial Garcia Rojo (Vice-President of SEIS, Spain); Eric Addeo (DeVry University, NJ, USA)

Abstract:
There is a vision being explored by an unprecedented partnership of industrial research organizations, academia, and government research organizations. This vision incorporates networked home applications, new intelligent transportation applications, and ehealth care appliances and communications services in the home aimed at reducing the soaring costs of medical care for a burgeoning ageing population. These three "big bangs" will likely change the way people work, interact with family members, socialize, and derive health care services over the next seven to ten years. This shared vision is driven by an increasingly large population of sophisticated Internet citizens who seek to leverage enhanced, multimodal communication environments to juggle home, work and personal needs, to have high quality and dependable home health care. This talk will explore the promise of emerging eHealth technologies, applications, and services within the landscape of market forces driving eHealth service providers and end-users operating within the boundaries of an uncertain regulatory arena.

13:00 - 14:00
Lunch Break
14:00 - 15:45
S1: Body Area Networks-I
Room 1 - Floor 3
Chair: Aravind Kailas (Algorithms, Models, and Systems Solutions, LLC, USA)

Energy Harvesting Aware Hybrid MAC Protocol for WBANs
Ernesto Ibarra (Telecommunications Technological Centre of Catalonia (CTTC), Spain); Angelos Antonopoulos (Telecommunications Technological Centre of Catalonia (CTTC), Spain); Elli Kartsakli (Universitat Politècnica de Catalunya (UPC), Spain); Christos Verikoukis (Telecommunications Technological Centre of Catalonia, Spain)

Simulation of Human Activity in a Health Smart Home with HMM
Norbert Noury (University of Lyon & Team Biomedical Sensors, France); Tareq Hadidi (Salman bin Abdulazizi University, Saudi Arabia)

A Bluetooth Low Energy Approach for Monitoring Electrocardiography and Respiration
Bing Zhou (University of Chinese Academy of Sciences, P.R. China); Xianxiang Chen (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Xinyu Hu (University of Chinese Academy of Sciences, P.R. China); Ren Ren (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Xiao Tan (University of Chinese Academy of Sciences, P.R. China); Zhen Fang (Chinese Academy of Science, P.R. China); Shanhong Xia (Institute of Electronics, CAS, P.R. China)

Early Detection of Myocardial Infarction Using WBAN
Medina Hadjem (Université Paris Descartes, France); Osman Salem (University of Paris Descartes, France); Farid Naït-Abdesselam (University of Paris Descartes, France); Ahmed Mehaoua (University of Paris Descartes, France)

Probabilistic Data Association for Wireless Passive Body Sensor Networks
Wenxing Xu (University of Bristol, United Kingdom); Robert J Piechocki (University of Bristol, United Kingdom); Geoffrey Hilton (University of Bristol, United Kingdom)

Experimental Characterization of Low Power Listening in BAN
Stefan Mijovic (University of Bologna, Italy); Andrea Stajkic (DEI, University of Bologna, Italy); Riccardo Cavallari (DEI - University of Bologna, Italy); Chiara Buratti (University of Bologna, Italy)
S2: Web based applications for eHealth
Room 2 - Floor 3
Chair: José N de Souza (Federal University of Ceará, Brazil)

A Web-Based Telehealthcare System with Mobile Application and Data Analysis for Diet People
Han-Ping Chen (National Taiwan University, Taiwan); Wei-Hsin Chen (National Taiwan University, Taiwan); Xing-Yu Su (National Taiwan University, Taiwan); Feipei Lai (National Taiwan University, Taiwan); Yi-Ju Chen (National Taiwan University Hospital, Taiwan); Kuo-Chin Huang (National Taiwan University Hospital, Taiwan)

Integration of Emergency Web App for accessing the emergency services by mobile phones
Carlos Juiz (University of the Balearic Islands, Spain); Beatriz Gomez (University of the Balearic Islands, Spain)

E-Learning Templates for Peripheral Vascular Stenting
Evanthia Tripoliti (Technical University of Crete, Greece); Ioannis Pappas (Technical University of Crete, Greece); Euripides G.M. Petrakis (Technical University of Crete (TUC), Greece); Josep Maria Sans (NeXTReT, Greece)

A DICOM Viewer based on Web Technology
Eriksson Jorge Monteiro (University of Aveiro, Portugal); Carlos Costa (University of Aveiro, Portugal); José Luís Oliveira (University of Aveiro, Portugal)

CAD systems and e-Learning in radiologists training
César Súarez Ortega (CETA-CIEMAT, Spain); Jose M Franco-Valiente (Spanish National Research Centre for Energy, Environment and Technology (CIEMAT), Spain)

Alerts for Remote Health Monitoring Using Online Social Media Platforms
Chonlatee Khorakhun (Computer Science, University of St Andrews, United Kingdom); Saleem N Bhatti (University of St Andrews, United Kingdom)

S3: Applications and system development for eHealth
Chair: Nazim Agoulmine (University of Evry Val d’Essonne, France)

A review of applications for the improvement of the life quality in patients with mental disorders
Isabel de la Torre (University of Valladolid, Spain); Borja Martínez-Pérez (University of Valladolid, Spain); Miguel López-Coronado (University of Valladolid, Spain)
MoSHCA - My Mobile and Smart Health Care Assistant
Arjen Hommersom (Radboud University, The Netherlands); Peter Lucas (Radboud University, The Netherlands); Marina Velikova (Radboud University, The Netherlands); Giso Dal (Radboud University Nijmegen, The Netherlands); Joaquim Bastos (Instituto de Telecomunicações, Portugal); Jonathan Rodriguez (Instituto de Telecomunicações, Portugal); Marleen Germs (Evalan, The Netherlands); Henk Schwietert (Evalan, The Netherlands)

Deployment of Wireless Sensor Networks for Biomedical Applications
Carlos Abreu (University of Minho, Portugal); Paulo Mendes (University of Minho, Portugal)

Medoop: A Medical Information Platform based on Hadoop
Lijun Wang (Tsinghua University, P.R. China); Yongfeng Huang (Tsinghua University & Tsinghua National Laboratory for Information Science and Technology, P.R. China); Qi Chen (Huazhong University of Science and Technology, P.R. China); Ke Zhou (Huazhong University of Science and Technology, P.R. China); Chunhua Li (Huazhong University of Sci. and Tech., P.R. China)

Integrated Care Services in Ambient Assisted Living
Luis M. Camarinha-Matos (New University of Lisbon - FCT, Portugal); Filipa Ferrada (New University of Lisbon - FCT, Portugal); Ana Inês Oliveira (New University of Lisbon - FCT & Uninova, Portugal); João Rosas (New University of Lisbon, Portugal); Jorge Monteiro (Conforto em Casa, Lda., Portugal)

Videoconferencing in eHealth: Requirements, Integration and Workflow
Víctor Torres-Padrosa (Universitat de Girona, Spain); Claudio Gasparini (Universitat de Girona, Spain); Imma Boada (Universitat de Girona, Spain); Jose Luis Marzo (Universitat de Girona, Spain)

S4: Models and algorithms for eHealth
Room 4 - Floor 3
Chair: Augusto José Venancio Neto, (Universidade Federal do Rio Grande do Norte & Centro de Ciências Exatas da Terra, Brazil)

A General Model for Specifying Near Periodic Recurrent Activities - Application to Home Care Activities
Marinette Bouet (Clermont-Ferrand University, France); Kahina Kani (Clermont-Ferrand University, France); Michel Schneider (Clermont-Ferrand University & LIMOS, France); Farouk Toumani (Clermont-Ferrand University, France)
<table>
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<tr>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Cross-layer optimization for m-health SVC multiple video transmission over LTE uplink</td>
<td>Sergio Cicalò (University of Ferrara - Italy, Italy); Matteo Mazzotti (University of Bologna, Italy); Simone Moretti (University of Bologna, Italy); Velio Tralli (University of Ferrara - Italy, Italy); Marco Chiani (University of Bologna, Italy)</td>
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<td>JSM-2 Based ECG Compression with Statistical Support Prediction</td>
<td>Sucheng Yu (University of Science and Technology of China, P.R. China); Bin Liu (University of Science and Technology of China, P.R. China); Wei Qiao (University of Science and Technology of China, P.R. China); Chi Zhang (University of Science of Technology of China, P.R. China); Chang Wen Chen (State University of New York at Buffalo, USA); Jian Cai (Institute of Microelectronics of the Chinese Academy of Sciences, P.R. China)</td>
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<td>Multi-distance motion vector clustering algorithm for video-based sleep analysis</td>
<td>Adrienne Heinrich (Philips Research, The Netherlands); Xin Zhao (Technical University Eindhoven, The Netherlands); Gerard Haan (Philips Research Laboratories, The Netherlands)</td>
</tr>
<tr>
<td>A simulation and integration environment for heterogeneous physiology-models</td>
<td>Mercedes Huertas (Barcelona Digital Technology Centre &amp; Barcelona Digital, Spain)</td>
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<tr>
<td>Accurate and Reliable 3-lead to 12-lead ECG Reconstruction Methodology for Remote Health Monitoring Applications</td>
<td>Sidharth Maheswari (Indian Institute of Technology Guwahati, India); Amit Acharyya (IIT HYDERABAD, India); Pachamuthu Rajalakshmi (Indian Institute of Technology Hyderabad, India); Paolo Puddu (Sapienza University of Rome, Italy); Michele Schiariti (Sapienza University of Rome, Italy)</td>
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**S5: Privacy, Security in eHealth**

**Room 5 - Floor 3**

Chair: Tony R Sahama (Queensland University of Technology & IEEE ACM IBS ACS SSAInc HISA, Australia)

**Leveraging the DSP48E1 Block in Lightweight Cryptographic Implementations**

Antonio de la Piedra (Vrije Universiteit Brussel (VUB), Belgium); An Braeken (Erasmushogeschool Brussel, IWT, Belgium); Abdellah Touhafi (Vrije Universiteit Brussel, Belgium)
**Security threats against the transmission chain of a medical health monitoring system**
Juha Partala (University of Oulu, Finland); Niina Keränen (University of Oulu, Finland); Mariella Särestöniemi (University of Oulu, Finland); Matti Hämäläinen (University of Oulu, Finland); Jari Iinatti (University of Oulu, Finland); Timo Jämsä (University of Oulu, Finland); Jarmo Reponen (University of Oulu, Finland); Tapio Seppänen (University of Oulu, Finland)

**Security and Privacy in eHealth: is it possible?**
Tony R Sahama (Queensland University of Technology & IEEE ACM IBS ACS SSAInc HISA, Australia); Leonie R Simpson (Queensland University of Technology, Australia); William B Lane (Queensland University of Technology, Australia)

**Secured e-health data retrieval in DaaS and Big Data**
David Shin (EE&CS, SEF, QUT, Australia); Tony R Sahama (Queensland University of Technology & IEEE ACM IBS ACS SSAInc HISA, Australia); Randike Gajanayake (Queensland University of Technology, Australia)

**Trust Factors in the Adoption of National Electronic Health Records**
Bruno Meira (Universidade do Minho, Portugal); Filipe de Sá-Soares (Universidade do Minho, Portugal)

**CoSeMed - Cooperative and Secure Medical Device Cloud**
Andreas Kliem (Technische Universität Berlin, Germany); Odej Kao (TU Berlin, Germany)

**Poster Session 1**
Atrium I, II - Floor 3
Chair: Augusto Jose Venancio Neto, Ph. D. (Universidade Federal do Rio Grande do Norte & Centro de Ciências Exatas da Terra, Brazil)

**E-Health Support System in University Environment**
Toshiyuki Maeda (Hannan University, Japan)

**Stand Up from a Chair with Lesser Body Load: Biomechanical Simulation and Visual Supplement**
Asuka Takai (Osaka Prefecture University & Division of Mechanical Engineering, Graduate School of Engineering, Japan); Chihiro Nakagawa (Osaka Prefecture University, Japan); Atsuhiro Shintani (Osaka Prefecture University, Japan); Tomohiro Ito (Osaka Prefecture University, Japan)
Cognitive Impairments in Human Brain Due to Wireless Signals and Systems: An Experimental Study Using EEG Signal Analysis
Aisha Al-Qahtani (Texas A&M University at Qatar (TAMUQ), Qatar); Adnan Nasir (Texas A&M University at Qatar & Nanyang Technological University, Qatar); Muhammad Zeeshan Shakir (Texas A&M University at Qatar (TAMUQ), USA); Khalid A. Qaraqe (Texas A&M University at Qatar, USA)

Development of a Calcium Sensitive Fluorescence Sensor as Medical Device
Elisabeth John (Danube University Krems, Austria); Thomas Posnicek (Danube University Krems, Austria); Martin Brandl (Danube University Krems, Austria)

Enabling Comfortable Sports Therapy for Patient: A Novel Lightweight Durable and Portable ECG Monitoring System
Min Chen (Huazhong University of Science and Technology, P.R. China); Yujun Ma (Huazhong University of Science and Technology, P.R. China); Jialun Wang (Huazhong University of Science and Technology, P.R. China); Dung Mau (Huazhong University of Science and Technology, Wuhan, P.R. China); Enmin Song (Huazhong University of Science & Technology, P.R. China)

Context-Aware eHealth Information Approach for the Brazilian Primary Healthcare System
Augusto Jose Venancio Neto, Ph. D. (Universidade Federal do Rio Grande do Norte & Centro de Ciências Exatas da Terra, Brazil); Joelia Silva Pinto Júnior (Federal University of Goiás, Brazil); Jose N de Souza (UFC, Brazil); Eduardo Cerqueira (Federal University of Para & UFPA, Brazil)

WSN4QoL: Wireless Sensor Networks for Quality of Life
Stefano Tennina (WEST Aquila srl, Italy); Elli Kartsakli (Universitat Politècnica de Catalunya (UPC), Spain); Aristeidis Lalos (Technical University of Catalonia (UPC), Spain); Angelos Antonopoulos (Telecommunications Technological Centre of Catalonia (CTTC), Spain); Prodromos-Vasileios Mekikis (Universitat Politècnica de Catalunya (UPC), Spain); Marco Di Renzo (French National Center for Scientific Research (CNRS), France); Yuriy Zachacia Lun (WEST Aquila srl, Italy); Fabio Graziosi (University of l'Aquila, Italy); Luis Alonso (Universidad Politècnica de Catalunya-BarcelonaTECH & Telecommunications and Aerospatial Engineering School of Castelldefels, Spain); Christos Verikoukis (Telecommunications Technological Centre of Catalonia, Spain)

An application of Brain Computer Interface in chronic stroke to improve arm reaching function exploiting Operant Learning strategy and Brain Plasticity
Giulia Cisotto (University of Padova, Italy); Stefano Silvoni (I. R. C. C. S. Fundation San Camillo Hospital, Italy); Francesco Piccione (I. R. C. C. S. Fundation San Camillo Hospital, Italy); Silvano Pupolin (University of Padua, Italy)
Using Machine Learning to Identify Benign Cases with Non-Definitive Biopsy
Finn Kuusisto (University of Wisconsin - Madison, USA); Inês Dutra (University of Porto, Portugal); Houssam Nassif (University of Wisconsin - Madison, USA); Yirong Wu (University of Wisconsin - Madison, USA); Molly Klein (University of Wisconsin - Madison, USA); Heather Neuman (University of Wisconsin - Madison, USA); Jude Shavlik (University of Wisconsin-Madison, USA); Elizabeth Burnside (University of Wisconsin - Madison, USA)

Developing a Mobile Case-based Reasoning Application to Assist Type 1 Diabetes Management
Daniel Brown (Oxford Brookes University, United Kingdom)

Social Media Communications Networks and Pharmacovigilance: SequelAE-2.0
Eric W. Burger (Georgetown University, USA); Howard Federoff (Georgetown University, USA); Massimo Fiandaca (Georgetown University, USA); Ophir Frieder (Georgetown University, USA); Nazli Goharian (Georgetown University, USA); Andrew Yates (Georgetown University, USA)

15:45 - 16:15
Coffee Break and EXPO Visit

16:15 - 18:00
S6: Body Area Networks-II
Room 1 - Floor3
Chair: Ricardo Vardasca (Faculty of Engineering, University of Porto, Portugal)

Reliable Vital Sign Collection in Medical Wireless Sensor Networks
Amal Naseem (Paris Descartes University, France); Osman Salem (University of Paris Descartes, France); Yaning Liu (JCP-Consult, France); Ahmed Mehaoua (University of Paris Descartes, France)

P2Care: A Dynamic Self-Organized Healthcare Network for Ubiquitous Healthcare Environment
Foteini Andriopoulou (University of Patras, Greece); Konstantinos Birkos (University of Patras, Greece); Dimitrios Lymberopoulos (University of Patras, Greece)
A Network of Collaborative Sensors for the Monitoring of COPD Patients in their Daily Life
Norbert Noury (University of Lyon & Team Biomedical Sensors, France); Bruno Perriot (University of Lyon & Sleepinnov Technology, France); Jerome Argod (Sleepinnov Technology, France); Jean-Louis Pepin (Grenoble University Hospital, Sleep and EFCR & INSERM U1042, HP2 Laboratory, Joseph Fourier University, France)

An Adaptive Access Control Model for Medical Data in Wireless Sensor Networks
Htoo Aung Maw (University of Hertfordshire, United Kingdom); Hannan Xiao (University of Hertfordshire, United Kingdom); Bruce Christianson (University of Hertfordshire, United Kingdom)

On Designing an Ubiquitous Sensor Network for Health Monitoring
Bertrand Massot (University of Lyon & INL - INSA Lyon, France); Norbert Noury (University of Lyon & Team Biomedical Sensors, France); Claudine Gehin (INL, France); Eric McAdams (INL, France)

Radiation Awareness in Three-Dimensional optimal WBAN model deployment
Hassine Mounghla (Paris Descartes University & LIPADE Labs, France); Nora Touati (LIX, Ecole Polytechnique, France); Ahmed Mehaoua (University of Paris Descartes, France)

S7: Models and algorithms for eHealth-II
Room 2 - Floor 3
Chair: Norbert Noury (University of Lyon & Team Biomedical Sensors, France)

Comparative Analysis of Indoor Location Technologies for Monitoring of Elderly
Silvia Miguel-Bilbao (Health Institute Carlos III, Spain); Jose Roldan (ISCIII, Spain); Jorge Garcia (Health Institute Carlos III, Spain); Pilar Garcia-Sagredo (ISCIII, Spain); Victoria Ramos (Institute of Health Carlos III, Spain); Fernando López (ISCIII, Spain)

Mitigating the Hospital Area Communication's Interference using Cognitive Radio Networks
Dramane Ouattara (Labri, France); Thao Quach (University Bordeaux 1, France); Francine Krief (University of Bordeaux, France); Mohamed Aymen Chalouf (IRISA Lab - University of Rennes 1, France); Hicham Khalife (Thales Communications & Security, France)
A Method for Identifying Temporal Progress of Chronic Disease Using Chronological Clustering
Sangjin Jeong (ETRI, Korea); Chan-Hyun Youn (Korea Advanced Institute of Science and Technology, Korea); Yong-Woon Kim (Electronics and Telecommunications Research Institute, Korea)

Clariisa, a Context-Aware Framework Based on Geolocation for a Health Care Governance System
Leonardo Gardini (State University of Ceara, Brazil); Reinaldo Bezerra Braga (Federal University of Ceará & GREat, Brazil); José Bringel Filho (University of Evry, France); Rossana Maria de Castro Andrade (Federal University of Ceará, Brazil); Carina Teixeira De Oliveira (Federal University of Ceará (UFC), Brazil); Herve Martin (Université Joseph Fourier, France); Odorico Andrade (UFCE, Brazil); Mauro Oliveira (Centro Federal de Educação Tecnologica do Ceara, Brazil)

A Pervasive Energy-Efficient ECG Monitoring Approach for Detecting Abnormal Cardiac Situations
Vinicius Bezerra (State University of Piaui - UESPI, Brazil); Misael Junior (State University of Piaui - UESPI, Brazil); Olga Valéria (State University of Piaui - UESPI, Brazil); Constantino Dias Neto (State University of Piaui - UESPI, Brazil); Marcus Lemos (University of Fortaleza, Brazil); Liliam Leal (University of Fortaleza, Brazil); Carlos Giovanni Nunes de Carvalho (State University of Piauí, Brazil); José Bringel Filho (University of Evry, France); Agoulmine Nazim (University of Evry Val d'Essonne, France)

Using Text Mining to Diagnose and Classify Epilepsy in Children
Luis Pereira (Polytechnic Institute of Leiria, Portugal); Rui Rijo (School of Technology and Management, Polytechnic Institute of Leiria & INESC - Institute for Systems and Computers Engineering at Coimbra, Portugal); Catarina Silva (University of Coimbra, Portugal); Margarida Agostinha (Hospital Leiria-Pombal, Portugal)

S8: Signal processing/Telemedicine
Room 3 - Floor 3
Chair: Aravind Kailas (Algorithms, Models, and Systems Solutions, LLC, USA)

Telecardiology: Hurst Exponent based Anomaly Detection in Compressively Sampled ECG Signals
Bollepalli S Chandra (Indian Institute of Technology Hyderabad, India); S. Sastry Challa (IIT Hyderabad, India); Soumya Jana (Indian Institute of Technology, Hyderabad, India)
Discrete-Wavelet-Transform-Based Noise Reduction and R Wave Detection for ECG Signals
Hsin-Yi Lin (National Tsing Hua University, Taiwan); Sz-Ying Liang (National Tsing Hua University, Taiwan); Yi-Lwun Ho (National Taiwan University Hospital, Taiwan); Yen-Hung Lin (National Taiwan University Hospital, Taiwan); Hsi-Pin Ma (National Tsing Hua University, Taiwan)

Electrodes consisting of electroconductive polymer PEDOT-PSS combined with fabric for persistent electrocardiography monitoring
Shingo Tsukada (NTT Basic Research Laboratories, Japan); Nahoko Kasai (NTT Basic Research Laboratories, Japan); Hiroshi Nakashima (NTT Basic Research Laboratories, Japan); Koji Sumitomo (NTT Basic Research Laboratories, Japan)

Context-aware Low-energy Wi-Fi Sensor Networks for e-Health
Luis Miguel Carvalho (Faculdade de Engenharia de Universidade do Porto, Portugal); Rui Lopes Campos (INESC TEC, Portugal); Manuel Pereira Ricardo (Universidade do Porto, Portugal)

On Asynchronous Flow Scheduling for Wireless Body Sensor Networks
Liang Zhou (Nanjing University of Posts and Telecommunications, P.R. China); Jianxin Chen (Nanjing University of Posts&Telecommunications, P.R. China); Baoyu Zheng (Nanjing University of Posts and Telecommunications, P.R. China); Isabel de la Torre (University of Valladolid, Spain); Sudip Misra (Indian Institute of Technology-Kharagpur, India)

Catastrophic Collision in Bio-nanosensor Networks: Does it really matter?
Nabiul Islam (Indian Institute of Technology Kharagpur, India); Sudip Misra (Indian Institute of Technology-Kharagpur, India); Judhistir Mahapatro (Indian Institute of Technology Kharagpur, India); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal)

S9: Services and Standards
Room 4 - Floor 3
Chair: Liliana Ferreira (Fraunhofer Portugal Research, Portugal)

Healthcare professionals as customers: A service perspective on Portuguese primary care health information systems
Jorge Grenha Teixeira (University of Porto - Faculty of Engineering, Portugal); Lia Patrício (University of Porto, Portugal); Leonel Nóbrega (University of Madeira, Portugal); Larry Constantine (University of Madeira, Portugal); Raymond Fisk (Texas State University, USA)
**Norms and Standards in Modular Medical Architectures**

Christoph P Thuemmler (Edinburgh Napier University, United Kingdom); Oli Mival (Edinburgh Napier University, United Kingdom); David Benyon (Edinburgh Napier University, United Kingdom); William J Buchanan (Edinburgh Napier University, United Kingdom); Alois Paulin (Edinburgh Napier University, United Kingdom); Samuel Fricker (Blekinge Institute of Technology, Sweden); Markus Fiedler (Blekinge Institute of Technology, Sweden); Bert-Jaap Koops (Tilburg University, The Netherlands); Eleni Kosta (Tilburg University, The Netherlands); Astrid Grottland (University Hospital of North Norway, Norway); Armin Schneider (TU München & Klinikum r.d. Isar der TUM, Germany); Thomas Jell (Siemens, Germany); Anastasius Gavras (Eurescom GmbH, Germany); Maria Barros (Eurescom GmbH, Germany); Thomas Magedanz (TU Berlin / Fraunhofer FOKUS, Germany); Philippe Cousin (eGlobalMark, France); Ioana Ispas (Ministry of National Education, Bucharest, Romania); Euripides G.M. Petrakis (Technical University of Crete (TUC), Greece)

**eHealth Complex Services Require Holistic Design**

Nelson Pinho (University of Porto, Portugal); Lia Patrício (University of Porto, Portugal); Raymond Fisk (Texas State University, USA)

**The Role of Perceived Usefulness and Attitude on Electronic Health Record Acceptance**

Randike Gajanayake (Queensland University of Technology, Australia); Tony R Sahama (Queensland University of Technology & IEEE ACM IBS ACS SSAInc HISA, Australia); Renato Iannella (Queensland University of Technology, Australia)

**Interoperability in Ambient Assisted Living Using OpenEHR**

Eduardo Osório (Fraunhofer Portugal Research Center for Assistive Information and Communication Solutions, Portugal); Liliana Ferreira (Fraunhofer Portugal AICOS, Portugal); Rui Abreu (Faculty of Engineering, University of Porto, Portugal); Filipe Sousa (Fraunhofer Portugal, Portugal)

**Analyzing open-source and commercial EHR solutions from an international perspective**

Isabel de la Torre (University of Valladolid, Spain); Borja Martínez-Pérez (University of Valladolid, Spain); Miguel López-Coronado (University of Valladolid, Spain)

**S10: Applications and system development for eHealth**

Room 5 - Floor 3

Chair: Shi-Ren Shyu (University of Missouri, USA)

**Control and Personalization Approach for an ICT-enabled Wearable Artificial Kidney**

Lukas Pielawa (OFFIS, Germany); Torben Wallbaum (OFFIS - Institute for Information Technology, Germany); Melina Frenken, (born Brell) (OFFIS Institut für Informatik Oldenburg, Germany); Andreas Hein (Universität Oldenburg, Germany)
Development of a Real-Time Vital Data Collection System from Players during a Football Game
Shinsuke Hara (Osaka City University, Japan); Tetsuo Tsujioka (Osaka City University, Japan); Toui Kanda (Osaka City University, Japan); Hajime Nakamura (Osaka City University, Japan); Takashi Kawabata (Kansai University, Japan); Kenji Watanabe (SYNTHESIS Corporation, Japan); Masanao Ise (SYNTHESIS Corporation, Japan); Noa Arime (SYNTHESIS Corporation, Japan); Hiroyuki Okuhata (Synthesis Corporation, Japan)

IntellWheels: intelligent wheelchair with user-centered design
Marcelo R Petry (INESC TEC and University of Porto, Portugal); António Moreira (Fac. Eng. da Universidade do Porto, Portugal); Brigida Monica Faria (ESTSP, Polytechnic Institute of Porto and IEETA, University of Aveiro, Portugal); Luis Paulo Reis (DSI/EEUM, University of Minho, Portugal)

A System for Assessment of Limb Movements in Sleep
Adriana Adami (University of Caxias do Sul, Brazil); André G Adami (University of Caxias do Sul, Brazil); Zachary Beattie (Oregon Health and Science University, USA); Tamara Hayes (Oregon Health and Science University, USA)

Linear Time-Invariant System Based Assessment Model for Coronary Heart Disease
Zening Qu (Tsinghua University & Tsinghua University, P.R. China); Lyu Yongqiang (Tsinghua University, P.R. China); Yida Tang (Fuwai Hospital, P.R. China); Wenyao Wang (Fuwai Hospital, P.R. China); Zihan Wang (Tsinghua University, P.R. China); Jiaming Hong (Tsinghua University, P.R. China); Agoulmine Nazim (University of Evry Val d’Essonne, France)

TeleMDID: Mobile Technology Applications for Interactive Diagnoses in TeleDermatology Clinics
Mirna Becevic (University of Missouri & Missouri Telehealth Network, USA); Blake Anderson (University of Missouri, USA); Jing Ginger Han (University of Missouri, USA); E. Rachel Mutrux (Missouri Telehealth Network, USA); Karen Edison (University of Missouri, USA); Lanis L Hicks (University of Missouri & School of Medicine, USA); Chi-Ren Shyu (University of Missouri, USA)

S11: Applications
Auditorium I - Floor 1
Chair: Weider D. Yu (San Jose State University, USA)
ARPEGE: Assessment of Frailty at Home
Rana Jaber (Université de Technologie de Troyes, France); Aly Chkeir (University of Technology of Troyes, France); David Hewson (Université de Technologie de Troyes, France); Jacques Duchêne (Université de Technologie de Troyes, France)

Fall Detection on the Road
Felix Büsching (Technische Universität Braunschweig, Germany); Henning Post (Technische Universität Braunschweig, Germany); Matthias Gietzelt (PLRI, Germany); Lars C Wolf (Technische Universität Braunschweig, Germany)

KiReS: A Kinect-based telerehabilitation system
David Antón (University of the Basque Country UPV/EHU, Spain); Alfredo Goñi (University of the Basque Country, Spain); Arantzaz Illarramendi (University of the Basque Country, Spain); Juan José Torres-Unda (University of the Basque Country UPV/EHU, Spain); Jesús Seco (University of León, Spain)

A Portable Spatial Monitoring System for Autonomous Heart Diagnosis
António Meireles (GECAD & IEETA, Portugal); Lino Figueiredo (ISEP Institute of Engineering of Porto, Portugal); Luís Lopes (IEETA, Portugal)

RehabNet: A Distributed Architecture for Motor and Cognitive Neuro-Rehabilitation
Athanasios Vourvopoulos (Madeira Interactive Technologies Institute & University of Madeira, Portugal); Ana Lúcia Faria (Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra & Madeira Interactive Technologies Institute, Portugal); Mónica Cameirão (Madeira Interactive Technologies Institute, Portugal); Sergi Bermúdez i Badia (Universidade da Madeira, Portugal)

OSHCO: A Cross-Domain Ontology for Semantic Interoperability Across Medical and Oral Health Domains
Tejal Manojkumar Shah (University of New South Wales, Australia); Fethi Rabhi (University of New South Wales, Australia); Pradeep Kumar Ray (University of New South Wales, Australia)

19:00 - 21:30
Conference Banquet - Centro Cultural de Belém, Room Vitorino Nemésio
Friday, October 11
09:15 - 09:50
Auditorium I - Floor 1
Keynote: Prof. Henrique Martins (Faculty of Health Sciences, Universidade da Beira Interior)
eHealth in Europe

Abstract:
While health organizations fight to increasingly integrate their health records and use IT for betterment of patient care, countries try to find mechanisms to bridge the gaps between levels of care as well as different systems and practices. eHealth in Europe is considered to such a high degree as to figure in the first directive of the EU on cross-border care to enter into force in October 2013. There is no timelier occasion to discuss some of most meaningful and important programs at EU level than IEEE HEALTHCOM 2013. This Keynote will update information about a number of projects and initiatives at EU level where Portugal is also participating (PARENT project; eHGI - eHealth Government Initiative; epSOS project; and eSENS). Like all other EU member states, Portugal is part of the high-level eHealth Network, which meets biannually to define the eHealth strategy and priorities regarding Cross-border care. Health at patient level is rapidly growing and a number of issues like cross-border telemedicine services as well as patient portals and patient controlled electronic health record as worthy of discussion.

Short Bio:
Prof. Martins is an Internal Medicine Specialist. He obtained his PhD degree from the Judge Business School, University of Cambridge with a thesis on "The use of Mobile ICT in clinical Settings". He holds a Master in Management from the University of Cambridge and a Masters in HIV/AIDS from the University of Barcelona. He has several publications in the area of Mobile computing in healthcare and many conference presentations/keynotes in the area of eHealth. He currently works at the Ministry of Health as Adjunct for Health IT to the Health Secretary of State and is President and CEO of the Shared Services of the Portuguese Ministry of Health (SPMS), being responsible for the new Health Information Sharing Platform for Electronic Health Records and for nationwide efforts on complete electronic prescription and Clinical informatics. He is the representative for Portugal at the European eHealth Network as well as the National EpSOS projecto Coordinator (www.epSOS.eu). He additionally works as CMIO - Chief Medical Information Officer at the Hospital Fernando Fonseca, and coordinates the Center for Investigation and Creativity in Informatics (www.ci2.pt), where he supervises projects in robotics, mobile computing and database exploration and intelligent systems. He teaches health management, leadership and medical informatics in Portugal and abroad.
Abstract:
Today, a wide variety of robotic devices supports gait training for patients with neurological locomotor deficits. However, clinical studies have not confirmed the expected therapeutic benefits of these devices compared to conventional therapy. Reasons could be that current robotic environments often limit active patient participation and change the task to be trained, due to kinematic constraints, excessive assistance, or undesired interaction forces caused by robot dynamics. This talk will present hardware and control concepts that remedy these shortcomings and enable transparent, user-centered gait training. These concepts range from task-specific hardware design over the targeted use of compliance to minimalistic balance assistance. Embodiments and experimental results will be shown for all concepts, for example a robotic platform for overground gait training in rats, which enabled groundbreaking research on recovery after spinal cord injury, as well as a recent extension of the robotic principle to human scale.

Short Bio:
Heike Vallery graduated in Mechanical Engineering from RWTH Aachen University in 2004, and she received her PhD from Technische Universität München in 2009. As a postdoc at ETH Zürich, she established a research group on leg exoprosthetics. In 2011, she joined Khalifa University in Abu Dhabi as an assistant professor. Currently, she holds an assistant professorship at Delft University of Technology, and she also remains affiliated with ETH Zürich and Khalifa University. Her research interests are in the areas of bipedal locomotion, rehabilitation robotics, and haptic human-robot interaction. She has published more than 30 peer-reviewed publications and filed 4 patents.
**11:00 - 13:00**

**S12: Cloud for eHealth**

**Room 1 - Floor 3**

Chair: Rui Rijo (School of Technology and Management, Polytechnic Institute of Leiria & INESCC - Institute for Systems and Computers Engineering at Coimbra, Portugal)

What challenges have to be faced when using the cloud for e-health services?

Fei Liu (Leiden University, The Netherlands); Eric Rijnboutt (Leiden University, The Netherlands); Dimitrios Routsis (Leiden University, The Netherlands); Nicolaas Venekamp (Leiden University, The Netherlands); Harry Fulgencio (Leiden University, The Netherlands); Mohsen Rezai (Leiden University, The Netherlands); Adriaan van der Helm (Leiden University, The Netherlands)

Activity recognition and resource optimization in mobile cloud through MapReduce

Shujaat Hussain Kausar (KyungHee University Suwon, Korea); Muhammad Bilal Amin (Kyung Hee University, Korea); JaeHun Bang (KyungHee University Suwon, Korea); Manhyung Han (Kyung Hee University, Korea); Sungyoung Lee (Kyung Hee University, Korea); Chris Nugent (University of Ulster, United Kingdom); Sally I McLean (University of Ulster, Coleraine, United Kingdom); Bryan W. Scotney (University of Ulster, United Kingdom); Gerard P. Parr (University of Ulster, United Kingdom)

A Distributed Storage Solution for Cloud Based e-Healthcare Information System

Weider D. Yu (San Jose State University, USA); Manjula Kollipara (San Jose State University, USA); Roopa Penmetsa (San Jose State University, USA); Sumalatha Eliadka (San Jose State University, USA)

Mapping of Sensor Nodes with Servers in a Mobile Health-Cloud Environment

Snigdha Das (Indian Institute of Technology-Kharagpur, India); Sudip Misra (Indian Institute of Technology-Kharagpur, India); Manas Khatua (SIT, IIT Kharagpur, India); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal)

Fault- and Disaster-Resistant Medical Cloud System for Various Medical Applications

Yasushi Hirano (Yamaguchi University, Japan); Nobuya Negishi (Kozo Keikaku Engineering Inc., Japan); Yoshiyuki Ipposhi (Kozo Keikaku Engineering Inc., Japan); Junichi Yamaguchi (Kozo Keikaku Engineering Inc., Japan); Noboru Sonehara (National Institute of Infomatics, Japan); Shu Kuramoto (Kochi Organization for Medical Reformation and Renewal, Japan); Tsutomu Sawada (Kochi Health Sciences Center, Japan)

**S13: Sensors for Healthcare applications**

**Room 2 - Floor 3**

Chair: Isao Nakajima (Tokai University School of Medicine, Japan)
Ultra Low-Power Smart Medical Sensor Node for In-Body Biomonitoring
Maykel Alonso-Arce (Centro de Estudios e Investigaciones Técnicas, Spain); Jon Legarda (Deusto Institute of Technology, Spain); Beatriz Sedano (CEIT, Spain); Paul Bustamante (CEIT, Spain)

Ultra-Compact Bird-Borne S-band Transceiver Aiming to Search Low Pathogenic Avian Influenza
Isao Nakajima (Tokai University School of Medicine, Japan); Leonid Androuchko (International University Geneva, Switzerland); Toshihiko Kitano (Tokai University, Japan); Kaoru Nakada (Tokai University, Japan); Masaaki Katayama (Nagoya University, Japan)

A Multi-Sensor Surveillance System for Elderly Care
Bassant Selim (Khalifa University, UAE); Youssef Iraqi (Khalifa University, UAE); Ho-Jin Choi (Korea Advanced Institute of Science and Technology (KAIST), Korea)

A Low Noise Wearable Wireless ECG System with Body Motion Cancellation for Long Term Homecare
Yishan Wang (RWTH Aachen University & Chair of Integrated Analog Circuit and RF-System, Germany); Ralf Wunderlich (RWTH Aachen University, Germany); Stefan Heinen (RWTH Aachen, Germany)

Embedded Implementation of Modular Closed-Loop Control of Diabetes and In Silico Validation
Maurizio Gentili (STMicroelectronics & Scuola Superiore Sant'Anna, Italy); Caltabiano Daniele (STMicroelectronics, Italy); Roberto Sannino (STMicroelectronics, Italy); Chiara Toffanin (University of Pavia, Italy); Federico Di Palma (University of Pavia, Italy); Lalo Magni (University of Pavia, Italy); Stephen Lane (Triteq Ltd, United Kingdom)

S14: Smart eHealth
Room 3 - Floor 3
Chair: Stefano Tennina (University of L'Aquila, Italy)

Consumer Engagement with eHealth Information through Smartphones and tablets
Lynda Andrews (Queensland University of Technology, Australia); Randike Gajanayake (Queensland University of Technology, Australia); Tony R Sahama (Queensland University of Technology & IEEE ACM IBS ACS SSAIInc HISA, Australia)
A Smartphone-Based Fall Risk Assessment Tool: Measuring One Leg Standing, Sit to Stand and Falls Efficacy Scale
Vânia Guimarães (Fraunhofer Portugal AICOS, Portugal); David Ribeiro (Fraunhofer Portugal AICOS, Portugal); Luís Rosado (Fraunhofer Portugal AICOS, Portugal)

Localization with WLAN on Smartphones in Hospitals
Chien-Hsing Lu (National Tsing Hua University Hsinchu, Taiwan); Hsuan-Hung Kuo (National Tsing Hua University, Taiwan); Cheng-Wei Hsiao (National Tsing Hua University, Taiwan); Yi-Lwun Ho (National Taiwan University Hospital, Taiwan); Yen-Hung Lin (National Taiwan University Hospital, Taiwan); Hsi-Pin Ma (National Tsing Hua University, Taiwan)

Body movement analysis during sleep based on video motion estimation
Adrienne Heinrich (Philips Research Laboratories, The Netherlands); Xavier Louis Aubert (Philips Research Laboratories Europe, Germany); Gerard Haan (Philips Research Laboratories, The Netherlands)

Wireless Solutions for Improving Health and Safety Working Conditions in Industrial Environments
Jose Antonio Palazón Selva (Universidad Miguel Hernández de Elche, Spain); Javier Gozalvez (Universidad Miguel Hernandez de Elche, Spain); Juan Maestre (Universidad Miguel Hernandez de Elche, Spain); Jose Ramon Gisbert (Universidad Miguel Hernandez de Elche, Spain)

S15: Mobile Health
Room 4 - Floor 3
Chair: Carlos Juiz (Universitat de les Illes Balears, Spain)

Reducing Adolescent Obesity with a Mobile Fitness Application: Study Results of Youth Age 15 to 17
Fletcher Lu (University of Ontario Institute of Technology, Canada)

A Multi-Communication-Fusion Based Mobile Monitoring System for Maternal and Fetal Information
Pei Lyu (Hunan University, P.R. China); Manman Peng (Hunan University, P.R. China); Lyu-Yongqiang (Tsinghua University, P.R. China); Yu Chen (Tsinghua University, P.R. China); Jijiang Yang (Tsinghua University, P.R. China)
**Digital Signature of Network Segment using PCA, ACO and Holt-Winters for Network Management**
Luiz F. Carvalho (State University of Londrina, Brazil); Marcos V. O. de Assis (State University of Londrina, Brazil); Gilberto Fernandes, Jr. (State University of Londrina, Brazil); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal); Mario Lemes Proença Jr. (State University of Londrina, Brazil)

**A Software Model of Mobile Notification System for Medication Misuse Prevention**
Petar Rajkovic (University of Nis, Serbia); Dragan Jankovic (University of Nis, Serbia); Aleksandar Milenkovic (University of Nis, Serbia)

**Electrochemical Detection of Arsenic via a Microfluidic Sensor and Mobile Interface towards Affordable, Rapid, and Point-of-Use Water Monitoring**
Unyoung Kim (Santa Clara University, USA); Benjamin Demaree (Santa Clara University, USA); Jessica VanderGiessen (Santa Clara University, USA); Mary Reynolds (Santa Clara University, USA); Kyle Perricone (Santa Clara University, USA); John Seubert (Santa Clara University, USA); Zuhayr Elahi (Santa Clara University, USA); Sonny Gandhi (Santa Clara University, USA); Shoba Krishnan (Santa Clara University, USA); Silvia Figueira (Santa Clara University, USA)

**STAlz: remotely supporting the diagnosis, tracking and rehabilitation of patients with Alzheimer's**
Hélder Moreira (Associação Fraunhofer Portugal Research, Portugal); Nuno Flores (University of Porto, Portugal); Renato Oliveira (Associação Fraunhofer Portugal Research, Portugal); Vânia Guimarães (Fraunhofer Portugal AICOS, Portugal)

**Demos**
**Auditorium I - Floor 1**

13:00 - 14:00
Lunch Break

14:00 - 15:45
S16: AAL
**Room 1 - Floor 3**
Chair: Ricardo João Cruz Correia (University of Porto, Portugal)
A Testing and Certification Methodology for an Ambient-Assisted Living Ecosystem
João Pascoal Faria (University of Porto - Faculty of Engineering, Portugal); Bruno Lima (University of Porto - Faculty of Engineering & INESC TEC, Portugal); Tiago Boldt Sousa (INESC TEC & University of Porto - Faculty of Engineering, Portugal); Angelo Martins (Instituto Superior de Engenharia do Porto, Portugal)

Automatic fall detection: complementary devices for a better fall monitoring coverage
Pierre Barralon (Tecnalia Research & Innovation, Spain); Inigo Dorronsoro (Tecnalia Research & Innovation, Spain); Erik Hernandez (Tecnalia Research & Innovation, Spain)

Real Time Falls Prevention and Detection with Biofeedback Monitoring Solution for Mobile Environments
Edgar Horta (Instituto de Telecomunicações, University of Beira Interior, Portugal); Ivo Lopes (Instituto de Telecomunicações, University of Beira Interior, Portugal); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal); Sudip Misra (Indian Institute of Technology-Kharagpur, India)

An approach for the Management of an AAL Ecosystem
Ana Inês Oliveira (New University of Lisbon - FCT & Uninova, Portugal); Filipa Ferrada (New University of Lisbon - FCT, Portugal); Luis M. Camarinha-Matos (New University of Lisbon - FCT, Portugal)

Non-Intrusive Human Activity Monitoring in a Smart Home Environment
Mohsen Amiri (University of British Columbia & Sharif University of Technology, and Simon Fraser University, Canada); Mahsa T. Pourazad (TELUS Communications Company, Canada); Panos Nasiopoulos (University of British Columbia, Canada); Victor CM Leung (The University of British Columbia, Canada)

Real-Time Physiological Stream Processing for Health Monitoring Services
Lawrence Chow (Stanford University, USA); Nicholas Bambos (Stanford University, USA)

S17: CDSS
Room 2 - Floor 3
Chair: Eric J Addeo (DeVry University, USA)

Clinical-based Prediction of Side Effects in Colon Cancer Chemotherapy
Mouna Kacimi (Free University of Bozen-Bolzano, Italy); Ognjen Savkovic (Free University of Bozen-Bolzano, Italy); Manfred Mitterer (Hospital Franz Tappeiner, Italy)
Application of Support Vector Machine and k-means Clustering Algorithms for Robust Chronic Lymphocytic Leukemia Color Cell Segmentation
Emad Mohammed (University of Calgary, Schulich School of Engineering Electrical and Computer Dept., AB, Canada); Mostafa Mohamed A. Mohamed (Helwan University, Egypt); Christopher Naugler (University of Calgary and Calgary Laboratory Services Calgary, Canada); Behrouz Homayoun Far (University of Calgary, Canada)

Meta-classifier for Type 2 Diabetes Mellitus comorbidities in Colombia
Angela Franco (Universidad Nacional de Colombia, Colombia); Elizabeth León (Universidad Nacional de Colombia, Colombia)

A Bag-of-Tasks Approach to Speed Up the Lung Nodules Retrieval in the BigData age
Marcelo Oliveira (Federal University of Alagoas (UFAL), Brazil); José Ferreira, Jr (Federal University of Alagoas & Computing Institute, Brazil)

Profile-based System for Nutritional Information Management
Catarina Silva (University of Coimbra, Portugal); Rui Costa (Polytechnic Institute of Leiria, Portugal); Luís Marcelino (Polytechnic Institute of Leiria, Portugal)

Smartphone Based Fall Prevention Exercises
Bruno Ferreira (Fraunhofer Portugal - AICOS, Portugal); Vânia Guimarães (Fraunhofer Portugal AICOS, Portugal); Hugo Ferreira (Faculty of Engineering of the University of Porto, Portugal)

S18: Knowledge acquisition
Room 3 - Floor 3
Chair: Olivier Nocent (University of Reims Champagne-Ardenne, France)

Diversifying Medical Search Results
Chunchen Liu (NEC Laboratories, P.R. China); Jianqiang Li (NEC Laboratories, P.R. China); Bo Liu (NEC Laboratories, P.R. China)

Unsupervised Graph-based Word Sense Disambiguation of Biomedical Documents
Wessam Gad El-Rab Gad El-Rab (University of Alberta, Canada); Osmar Zaiane (University of Alberta, Canada); Mohammad El-Hajj (MacEwan University, Canada)

Abdominal Morphometric Data Acquisition Using Depth Sensors
Sylvia Piotin (University of Reims, France); Aassif Benassarou (University of Reims, France); Frédéric Blanchard (University of Reims, France); Olivier Nocent (University of Reims Champagne-Ardenne & CReSTIC, France)
Towards Automated Self-tagging in Emergency Health Cases
Fasee Ullah (Umm Al-Qura University, Saudi Arabia); Abdelmajid Khelil (TU Darmstadt, Germany); Adil A Sheikh (Umm Al-Qura University, Saudi Arabia); Emad Felemban (Umm Al Qura University, Saudi Arabia); Hattan Bojan (Ministry of Health, Saudi Arabia)

Differences in Internet Usage Patterns with Stress and Anxiety among College Students
Sriram Chellappan (Missouri University of Science and Technology, USA); Levi Malott (Missouri S&T, USA); Sai Preethi Vishwanathan (Missouri S&T, USA)

The Virtue of Sharing: Efficient Content Delivery in Wireless Body Area Networks for Ubiquitous Healthcare
Min Chen (Huazhong University of Science and Technology, P.R. China); Dung Mau (Huazhong University of Science and Technology, Wuhan, P.R. China); Xiaofei Wang (Seoul National University, Korea); Honggang Wang (University of Massachusetts, Dartmouth & College of Engineering, USA)

S19: Image & 3D Models
Room 4 - Floor 3
Chairs: Ricardo Vardasca (Faculty of Engineering, University of Porto, Portugal)

Classification of Retinal Image for Automatic Cataract Detection
MeiMei Yang (Beijing University of Posts and Telecommunications, P.R. China); Jijiang Yang (Tsinghua University, P.R. China); Qinyan Zhang (Beijing University of Posts and Telecommunications, P.R. China); Yu Niu (Tsinghua University, P.R. China); Jianqiang Li (NEC, P.R. China)

Quality Evaluation of Asymmetric Compression for 3D Surgery Video
Chaminda T. E.R. Hewage (University of Kingston, United Kingdom); Harsha Appuhami (Kingston University-London, United Kingdom); Maria G. Martini (Kingston University, United Kingdom); Ralph Smith (MATTU, United Kingdom); Iain Jourdan (MATTU, United Kingdom); Timothy Rockall (Surrey University, United Kingdom)

Comparing Limb-Volume Measurement Techniques: 3D Models from an Infrared Depth Sensor versus Water Displacement
Guannan Lu (University of Missouri, USA); Guilherme N. DeSouza (University of Missouri-Columbia, USA); Jane Armer (University of Missouri, USA); Chi-Ren Shyu (University of Missouri, USA)
A Framework toward Detecting and visualizing Kinematic Data for Children with Hemiplegia
Md. Abdur Rahman (Umm Al-Qura University, Saudi Arabia); Saleh Basalamah (Umm Al-Qura University, Saudi Arabia); Asad Toonsi (MCH - Makkah, Saudi Arabia); Abdulmotaleb El Saddik (University of Ottawa, Canada)

An Improved Digital Pain Body Map
Ellen Jaatun (NTNU & St Olav University Hospital, Norway); Dagny Haugen (NTNU, Norway); Yngve Dahl (SINTEF, Norway); Anders Kofod-Petersen (SINTEF, Norway)

A Skillet-Based Recoloring Algorithm for Dichromats
Madalena Ribeiro (University of Beira Interior, Portugal); Abel Joao Gomes (Universidade da Beira Interior, Portugal)

Poster Session 2
Room Atrium I,II - Floor 3
Chair: Stefan Covaci (Technische Universität Berlin, Germany)

A cloud based architecture for medical imaging services
Carlos Viana-Ferreira (University of Aveiro, Portugal); Carlos Costa (University of Aveiro, Portugal)

Towards Design of Technologies Persuading more Physical Activity
Yao Meng (Inje University, Korea); Hee-Cheol Kim (Inje University, Korea)

Active Protection of Patient Data by Reverse Cloud Approach
Tom Pfeifer (Technische Universität Berlin, Germany); Stefan Covaci (Technische Universität Berlin, Germany)

Fall Risk Assessment by means of a pocket size screening tool: preliminary results
Andrea Cattabriga (University of Bologna, Italy); Marco Corbelli (University of Bologna, Italy); Sabato Mellone (University of Bologna, Italy); Chiara Mussi (University of Modena, Reggio Emilia, Italy); Lorenzo Chiari (University of Bologna, Italy)

Automatic Verification of Health Regulatory Compliance in Cloud Computing
Khaled Md Khan (Qatar University, Qatar); Yun Bai (University of Western Sydney, Australia)

Design of adaptive IEEE 802.11 WLAN in hospital environments
Sunghwa Son (Daegu Gyeongbuk Institute of Science & Technology, Korea); Kyung-Joon Park (DGIST, Korea); Eun-Chan Park (Dongguk University, Korea)
Promoting a Healthy Lifestyle: Towards an Improved Personalized Feedback Approach

Reinoud Achterkamp (Roessingh Research and Development, The Netherlands); Miriam Cabrita (Roessingh Research and Development, The Netherlands); Harm op den Akker (Roessingh Research and Development, The Netherlands); Hermie Hermens (University of Twente, The Netherlands); Miriam Vollenbroek-Hutten (Roessingh Research and Development, The Netherlands)

Exploring nanopublications integration in pharmacovigilance scenarios

Pedro Sernadela (University of Aveiro, Portugal); Pedro Lopes (University of Aveiro, Portugal); José Luís Oliveira (University of Aveiro, Portugal)

OtoLeitor: A Protocol Implementation of Universal Newborn Hearing Screening by a Mobile Platform in Brazil

Natan Barros (Universidade do Estado do Rio Grande do Norte, Brazil); Rodrigo Medeiros (Universidade do Estado do Rio Grande do Norte, Brazil); Cicília R. Leite (State University of Rio Grande do Norte and College Mater Christi, Brazil); Anna Ribeiro (Universidade Federal do Rio Grande do Norte, Brazil); Fabiana Araujo (Universidade Federal do Rio Grande do Norte, Brazil); Ana Guerreiro (Universidade Federal do Rio Grande do Norte, Brazil); Maximiliano Araújo da Silva Lopes (State University of Rio Grande do Norte, Brazil)

MonitorMe: Online Video Monitoring for First Responders Using a Smartphone

Ana P. Rocha (University of Aveiro, Portugal); Oscar Pereira (IEETA, University of Aveiro, Portugal); David Ribeiro (IEETA, University of Aveiro, Portugal); José Maria Fernandes (University of Aveiro & IEETA, Portugal); Joao Silva Cunha (University of Aveiro, Portugal)

Low-cost nationwide medical imaging storage

Ariel Sabiguero (Instituto de Computación - UDELAR, Uruguay)

An Intelligent Medicine Cabinet Proposed to Increase Medication Adherence

Claudio E. M. Gomes (Universidade Federal do Amazonas, Brazil); Farzan Yazdi Motlagh (University of Stuttgart, Germany); Vicente Lucena Jr (University of Amazonas, Brazil); Peter Göhner (University of Stuttgart, Germany)

Meeting: IEEE Comsoc TC on Health

Room 6 - Floor 3

15:45 - 16:15

Coffee Break and EXPO Visit
TECHNICAL PROGRAM

16:15 - 18:00
Panel 2: Cloud or not to Cloud for eHealth (Cisco)
Auditorium I - Floor 1
Moderator: Masum Z Hasan

Participants: Monique Morrow (CTO, Cisco Service); Nazim AGOULMINE (University of Evry, France); Gerard Parr (University of Ulster, UK); Benjamin Hirsch (BT-Etisalat Innovation Center, Abu Dhabi, UAE)

Abstract:
True to human physiology and anatomy the healthcare provider entities or HPE (healthcare IT applications, networks, providers, physicians, departments, such as diagnostics, cardiology, radiology, pharmacy departments to name a few) are disparate and can be widely and geographically distributed. But all these disparate HPEs serve a single other entity, which is the patient. The disparateness of the HPE causes many issues in providing consistent care to a patient. One major issue is difficulty in providing consistent and single electronic medical record (EMR). With the advent of use of personal mobile or IoT (Internet of Things) devices, including small diagnostics devices such as those supporting Continua consortium architecture or ISO/IEEE 11073 series standards, the upkeep of EMR becomes even more challenging. Can Cloud come to the rescue? What are the issues that should be addressed to support true Cloud based secure EMR and healthcare services in general? This panel of industry and academia experts will address these issues.

18:30 - 21:30
Organiser/Volunteers Recognition Meeting

Saturday, October 12

09:00 - 09:15
Welcome
Auditorium Prof. Adriano Moreira, Floor -1
Welcome - Henrique Martins (Chairman of the Board, SPMS; University of Beira Interior, Portugal), Helena Monteiro (Operation Chair; ISCSP, University of Lisbon, Portugal)

09:15 - 10:00
Medicine in 2020
António Murta (President of Pathena Group, Portugal)
10:00 - 10:15
The Governance of the NHS with new management tools (Activity Based Cost)
Ana Paula Harfouche, (IPO, Portugal; ISCSP - University of Lisbon, Portugal)

10:15 - 10:30
Facilitators and Inhibitors in Hospital Management in Portugal
Francisco Velez Roxo (Hospital Leiria - Pombal; Catholic University, Portugal)

10:30 - 11:00
Coffee Break and EXPO Visit

11:00 - 11:30
Panel
Auditorium Prof. Adriano Moreira - Floor (-1)
Moderator - Adalberto Campos Fernandes (President of SAMS, Portugal; National Public Health School, Portugal)

11:30 - 12:00
Keynote
SNS systems and infrastrutures - Architecture & Governance
Henrique Martins (Chairman of the Board of SPMS, Portugal; University of Beira Interior, Portugal)

12:00 - 12:15
Closing Session
Paulo Macedo, (Portuguese Minister of Health)
Joel Rodrigues (General Chair, Instituto de Telecomunicações, University of Beira Interior, Portugal)

14:00 - 18:00
Half-day Tours
WELCOME RECEPTION
Tuesday, October 8
18:30 – 21:30
Venue: Instituto Superior de Ciências Sociais e Políticas - University of Lisbon
Main Hall - Floor 3

CONFERENCE BANQUET
Thursday, October 10
19:00 – 22:30
Venue: Centro Cultural de Belém, Room Vitorino Nemésio

A Transfer service by coach will be organized from centrally located pick up points to the Conference Banquet Venue and vice-versa.
Information on timetables and pick up points is available on the website and at the Conference venue.

Centro Cultural de Belém is the ideal backdrop for the Conference Banquet in an environment characterized by quality. Its innovative cuisine of Mediterranean flavours underlines an haute Portuguese cuisine and its traditional products result in a perfect combination.

Centro Cultural de Belém
Praça do Império
1449-003 Lisbon / Belém
T. (+351) 213 648 561
OPTIONAL TOUR PROGRAM

Participants and accompanying persons have the opportunity to book half day or full day tours at the Conference Secretariat. A minimum of 15 participants is required to operate each tour.

**Lisbon Introduction Tour**

Join us for an introduction tour to the monumental parts and the centre of Lisbon. Coaches will depart from the official hotels in the city centre for a panoramic drive along the main avenues and a presentation of Belém, the monumental part of Lisbon, where the UNESCO world heritage sites of the Torre de Belém and the Mosteiro dos Jerónimos are to be found.

When:
Saturday, October 12
Time: 15:00 – 18:00
Price per person: 28 €
Price includes: Transportation in bus with air conditioning and duly licensed official guide

**A UNESCO World Heritage Site**

Located about 30 km northwest of Lisbon, Sintra is a beautiful town at the foot of the mountain range with the same name. Its unique characteristics and natural riches, historic buildings in the town and mountains led UNESCO to create a special category in order to classify the whole historical village and the mountain as a World heritage site.

When:
Saturday, October 12
Time: 15:00 – 18:00
Price per person: 42 €
Price includes: Transportation in bus with air conditioning and duly licensed official guide
**Lisboa Vineyards on the south bank of the river**
Depart from official hotels by coach crossing the river Tagus via the 25th of April bridge built in the 1960's by the US Steel Company, a "sister bridge" of the Golden Gate in San Francisco. Just across the river on the Palmela Peninsula we find the closest vineyards to Lisboa, famous for its fortified dessert wine “Moscatel” as well as the table wines produced in the area. The tour includes a visit to one of the modern Wine cellars for a guided tour and tasting. Return to Lisbon via the Vasco da Gama Bridge, built for the world exhibition held in Lisbon in 1998. At the time of its construction this was the longest bridge in Europe.

When:
Sunday, October 13
Time: 10:00 – 18:00
Price per person: 89 €
Price includes: Transportation in bus with air conditioning and duly licensed official guide, wine tasting at Quinta de Catralvos em Azeitão

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**Medieval Óbidos and Alcobaça**
By a landscape rich in windmills and fruit trees we arrive to Óbidos, a walled town surrounded by medieval walls where we can admire the harmony of the architecture, the diversity of the handicrafts and taste the famous “ginginha” (bitter cherry liqueur). Visit to Alcobaça with the first and largest gothic church in Portugal with the tombs of D. Pedro and Inês de Castro, known by its love story.

When:
Sunday, October 13
Time: 10:00 – 18:00
Price per person: 85 €
Price includes: Transportation in bus with air conditioning, duly licensed official guide and free entrance at Mosteiro de Alcobaça.
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