## Technical Program

### Wednesday, September 14

<table>
<thead>
<tr>
<th>Time</th>
<th>Auditorium</th>
<th>Business Club</th>
<th>T1a</th>
<th>T1b</th>
<th>T2a</th>
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<tr>
<td>13:30-16:30</td>
<td></td>
<td></td>
<td>GP01-a: Ambient Assisted Living</td>
<td>Workshop: SPAIMEH &amp; ReHIS</td>
<td>Workshop: SCH'16</td>
<td>Workshop: Health 4.0 Global Village</td>
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<tr>
<td>15:00-18:00</td>
<td>Workshop: ETPHA</td>
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<td>GP03: Telemedicine &amp; Telematics</td>
<td>GP02-a: Feature Recognition</td>
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<td>18:00-20:30</td>
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<td>Welcome Reception</td>
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### Thursday, September 15

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<th>Time</th>
<th>Auditorium</th>
<th>Business Club</th>
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<tbody>
<tr>
<td>09:00-09:10</td>
<td>Chair's Welcome</td>
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<tr>
<td>09:10-10:30</td>
<td>Keynotes: Orange, GS1</td>
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<tr>
<td>11:00-12:30</td>
<td>GP00: Emerging Topics</td>
<td>GP01-b: Ambient Assisted Living</td>
<td>GP02-b: Feature Recognition</td>
<td>GP05-b: Decision-Support &amp; Intelligence</td>
<td>GP06-b: Self Monitoring &amp; Disease Management</td>
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<td>12:30-13:30</td>
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<td>13:30-14:00</td>
<td>Beyond the Wire: how 5G will boost e-Health</td>
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<td>14:00-16:00</td>
<td>Workshop: 5G PPP Phase III - Introduction</td>
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<td>16:00-17:30</td>
<td>Workshop: 5G PPP Phase III</td>
<td>GP09: Nano Technologies</td>
<td>GP01-c: Ambient Assisted Living</td>
<td>GP02-c: Feature Recognition</td>
<td>GP05-c: Decision-Support &amp; Intelligence</td>
<td>GP06-c: Self Monitoring &amp; Disease Management</td>
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<td>18:00-23:00</td>
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### Friday, September 16

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<th>Time</th>
<th>Auditorium</th>
<th>Business Club</th>
<th>T1a</th>
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<tbody>
<tr>
<td>09:30-15:30</td>
<td>Keynotes (TBD)</td>
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<tr>
<td>11:00-12:30</td>
<td>GP12-a: Medical Imagery &amp; Teleradiology</td>
<td>GP11: Hippocratic Data: Access Control and Legal Implications</td>
<td>GP07: Augmented Reality, Virtual Reality, Tools and Methods</td>
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<td>13:30-14:00</td>
<td>Cybersecurity in Health Care</td>
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<td>18:00-23:00</td>
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### Lunch

- 13:30-14:00  - Beyond the Wire: how 5G will boost e-Health
- 14:00-16:00  - Workshop: 5G PPP Phase III - Introduction
- 18:00-23:00  - Banquet (Hofbräuhaus)

### Workshop: 5G PPP Phase III
- Introduction
- 16:00-17:30
- GP09: Nano Technologies
- GP01-c: Ambient Assisted Living
- GP02-c: Feature Recognition
- GP05-c: Decision-Support & Intelligence
- GP06-c: Self Monitoring & Disease Management
**Wednesday, September 14, 13:30 - 16:30**

**Workshop: SPAIMEH & ReHIS**

Shared session between the 3rd International Workshop on Secure and Privacy-Aware Information Management in eHealth + the 3rd International Workshop Reliability of eHealth Information Systems  
*Room: T1b*

**Chairs:** Haider Abbas (King Saud University, Saudi Arabia), Randike Gajanayake (SMS Management and Technology, Australia), Amjad Gawanmeh (Khalifa University, United Arab Emirates (UAE)), Daniel Grunwell (Queensland University of Technology, Australia), Youssef Iraqi (Khalifa University, United Arab Emirates (UAE)), Tony R Sahama (Queensland University of Technology & IEEE ACM IBS ACS SSAInc HISA, Australia), Kashif Saleem (King Saud University, Saudi Arabia)

**SPAIMEH:** Traditional access control measures for privacy preservation may not match the eHealth record system scenario, where the roles of all stakeholders are less defined. Questions regarding data ownership and information management obligations for major stakeholders (healthcare professionals, patients, administrators) arise. Healthcare professionals require ready access to as much information as possible to support informed decision making. However, patients may want to exercise control over the entities gaining access to their personal health information, with particular concerns for information privacy. Balancing these competing concerns is a major challenge in the implementation of successful e-Health systems. This is not just a technological challenge, but a multidisciplinary problem with technological, social, legal and health policy aspects.

**ReHIS:** The workshop provides an international forum for research community working on testing, verification, performance evaluation, and reliability of eHealth research areas.

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**Workshop: SSH**

The 4th International Workshop on Service Science for e-Health (SSH 2016)  
*Room: T2a*

**Chairs:** Jolanta Mizera-Pietraszko (Opole University, Poland), Pawel Swiatek (Wroclaw University of Technology, Poland)

Technological developments in computing and networking have largely made the delivery of health services, including medical diagnosis and patient care, possible from a distance. Many funded projects have evaluated and are evaluating the use of communications technology in the implementation and performance of telemedicine activities, and examined the impact of telemedicine on medical care in terms of cost, quality, and access. Telemedicine has become a growing new interdisciplinary field, which will eventually contribute to improving the quality of health care for everyone. However, successful implementation of this vision depends not only on innovative telemedicine applications but also on networking and computing technical readiness. Furthermore, many ethical, social, and political problems arising in telemedicine need technical solutions.

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**Wednesday, September 14, 13:30 - 15:00**

**Workshop: SCH’16**

SOCIALHEALTH 2016 - International Workshop on Social Computing in Digital Health  
*Room: T2b*

**Chairs:** Jim Black (The University of Melbourne, Australia), Fernando Koch (Samsung Research Institute, Brazil), Kashif Saleem (King Saud University, Saudi Arabia)

"Social Computing in Digital Health" aims to discuss the application of social computing to eHealth, mHealth, and public health services. This field of research aims to bring together interactive social intelligence to eHealth systems by combining information from multiple users and groups, along with context information and social interaction to
The objective of this workshop is to offer an international platform for the presentation of research papers that would address the impact of Emerging Technologies on Healthcare applications and services. Recent advances in sensing, computing, communication and networking technologies have paved the way to dangle unprecedented pervasive healthcare applications and services. For example, body sensor networks (BSNs) employ numerous miniaturized, portable, and autonomous sensing devices in, on, or around the body for pervasive health monitoring such as predicting contingency abnormal condition and treatment of chronic diseases including diabetes and hypertension. Moreover, BSNs can help in determining context-aware psychological classification (e.g., personality type, mood, psychological condition) in real-time based on physiological parameters (e.g. body temperature, heart rate, blood pressure, perspiration, and brain impulses), which can revolutionize human-interactions. Other potential applications may include activity scheduling based on circadian rhythms, social network computing, interactive gaming, driver drowsiness detection, and entertainment. Nonetheless, enormous amount of critical data (Big Data) collected through various BSN nodes require fast, reliable, on-demand, scalable, secure, and powerful communication (e.g., 5G) and computing infrastructure (e.g., cloud computing). However, integration of these technologies introduces new social, legal, technical and security challenges. Emerging technologies have played a vital role to elevate the health services in rural and urban areas of entire world. New horizons are opened in Telemedicine, remote patient monitoring, remote ICU monitoring (e-ICU), wearable technology, patient data analytics and healthcare cyber-security. The aim of this workshop is to foster high quality original, unpublished research papers that articulate recent advancements on the domain.
**Architecture Design Ubiquitous Telemedicine Based on Arduino Mhealth LTE**
Yair Rivera (Universidad Simon Bolivar, Colombia)

**Potential Redundant Link Fail-over Strategies for Uptime-sensitive Medical Telemetry Applications**
Isaac J True (Viaboxx GmbH, Germany & Swinburne University of Technology, Australia); Grenville Armitage (Swinburne University of Technology, Australia)

**A Flexible Architecture for Mobile Health Monitoring**
Mathieu Bagot (Université Bretagne Sud, France); Pascale Launay (IRISA, Université de Bretagne-Sud, France); Frédéric Guidec (Université de Bretagne-Sud (UBS) & IRISA Laboratory, France)

**Economic Evaluation of m-Health: Case of e-Ambulance in Japan**
Masatsugu Tsuji (University of Hyogo, Japan); Yoshihisa Matsumoto (The Graduate University for Advanced Studies, Japan); Masaru Ogawa (Kobe Gakuin University, Japan)

**Multi-Layer Architectures for Remote Health Monitoring**
Rahul Krishnan (Amrita Vishwa Vidyapeetham, India); Maneesha Vinodini Ramesh (Amrita Vishwa Vidyapeetham, Amrita University, India); Ekanath Rangan (Amrita University, India)

**An Innovative WebRTC Solution for e-Health Services**
Paola Pierleoni, Luca Pernini, Lorenzo Palma, Alberto Belli, Simone Valenti, Lorenzo Mauriz and Loris Sabbatini (Università Politecnica delle Marche, Italy); Alessandro Marroni (DAN Europe, Malta)

**Time-Frequency Based Contactless Estimation of Vital Signs of Human While Walking Using PMCW Radar**
İsar Nejadgholi (University of Ottawa, Canada); Sreeraman Rajan (Carleton University, Canada); Miodrag Bolic (University of Ottawa, Canada)

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**Wednesday, September 14, 16:30 - 18:00**

**GP02-a: Feature Recognition**

**Room: T1b**

Chair: Norbert Noury (University of Lyon & Team Biomedical Sensors, France)

**Intelligent Depression Detection and Support System: Statistical Analysis, Psychological Review and Design Implication**
Mashrura Tasnim (Bangladesh University of Engineering and Technology); Rifat Shahriyar (Bangladesh University of Engineering and Technology, Bangladesh); Nowshin Nahar (Eastern University, Bangladesh)

**EEG-based Automatic Emotion Recognition: Feature Extraction, Selection and Classification Methods**
Pascal Ackermann, Christian Kohlschein, Jó Ágila Bitsch and Klaus Wehrle (RWTH Aachen University, Germany); Sabina Jeschke (RWTH Aachen University & Institute Cluster IMA/ZLW & IfU, Germany)

**Emotion Recognition Using Mobile Phones**
Shams Y Shapsough, Ahmed Hesham, Youssef Elkhorazaty, Imran A. Zualkernan and Fadi Aloul (American University of Sharjah, United Arab Emirates (UAE))

**Breast Mass Detection From Mammography Using Iteration of Gray-level Co-occurrence Matrix**
Somchanok Tivatansakul and Keiichi Uchimura (Kumamoto University, Japan)

**Analysis of Thigh Cross-sectional Proportion Using the Portable Ultrasound Imaging System**
GP05-a: Decision-Support & Intelligence

Room: T2a
Chair: Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal)

CorporateMeasures: A Clinical Analytics Framework Leading to Clinical Intelligence
Fadi Nammour (Kingston University, London, Germany); Nashat Mansour (Lebanese American University, Lebanon); Kostas Danas (Kingston University, London, United Kingdom)

Predicting 30-Day All-Cause Readmissions From Hospital Inpatient Discharge Data
Chengliang Yang, Chris Delcher, Elizabeth Shenkman and Sanjay Ranka (University of Florida, USA)

Summarizing Patient Daily Activities for Clinical Pathway Mining
Xiao Xu, Tao Jin and Jianmin Wang (Tsinghua University, P.R. China)

"OntoDrive" A Multi-Methodological Ontology Driven Framework for Systems Analysis of Health Informatics
Vasilios Keramaris (Kingston University, Greece); Kostas Danas (Kingston University, London, United Kingdom)

A Concept for Consistent and Prioritized Presentation of Surgical Information
Erik Schreiber and Stefan Franke (Universität Leipzig, Germany); Richard Bieck (Innovation Center Computer Assisted Surgery, University of Leipzig, Germany); Thomas Neumuth (Universität Leipzig, Germany)

GP06-a: Self Monitoring & Disease Management

Room: T2b
Chair: Klaus Moessner (University of Surrey, United Kingdom)

Mobile Self-Management Application for COPD Patients with Comorbidities: a Usability Study
Drishty Sobnath, DS (Kingston University & Kingston University, United Kingdom); Nada Y Philip, Reem Kayyali, Shereen Nabhani-Gebara and Barbara Pierscionek (Kingston University, United Kingdom); Andreas Raptopoulos (EXUS SA, Greece)

A Mobile Health Solution for Chronic Disease Management At Retail Pharmacy
Hongguang Zhang and Kai Liu (Shanghai CareLinker Medical Technology Co., Ltd., P.R. China); Weijian Kong (Shanghai University, P.R. China); Fei Tian, Youren Yang, Chu Feng, Ti Wang and Qi Chen (Shanghai CareLinker Medical Technology Co., Ltd., P.R. China)

Mobile Health Applications in Bangladesh: A State-Of-The-Art
Muhammad Nazrul Islam, Md. Mahboob Karim, Annita Tahsin Priyoti, Zaki Tasnim Dut and Nusrat Jahan (Military Institute of Science and Technology, Bangladesh)

Cell Phone- Based Diabetes Self-Management and Social Networking System for American Indians
Juan Li and Jun Kong (North Dakota State University, USA)

Wednesday, September 14, 18:00 - 20:30
Welcome Reception

Thursday, September 15

Thursday, September 15, 09:00 - 09:10
Chair's Welcome
Thursday, September 15, 09:10 - 10:30

Keynotes: Orange, GS1

Thursday, September 15, 11:00 - 12:30

GP00: Emerging Topics

Room: Business Club
Chair: Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal)

- **Dynamic Fine-Grained Access Control in e-Health**
  Alois Paulin (Technische Universität München, Germany)

- **Determinants of Next Generation e-Health Network and Architecture Specifications**
  Christoph Thuemmler (TUM, Germany); Alois Paulin (Technische Universität München, Germany); Ai Keow Lim (Celestor Ltd, United Kingdom)

- **HI-risk: A Method to Analyse Health Information Risk Intelligence**
  William J Buchanan and Nicole van Deursen (Edinburgh Napier University, United Kingdom)

- **5G-enabled Healthcare: The Case of Multiple Sclerosis**
  Nikolaos Grigorlaidis (Biogenea Pharmaceuticals Ltd, Greece); Christos Bakirtzis (Aristotle University of Thessaloniki, Greece); Christos Politis (Kingston University, United Kingdom); Kostas Danas (Kingston University, London, United Kingdom)

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GP01-b: Ambient Assisted Living

Room: T1a
Chair: Armin Schneider (Klinikum Rechts der Isar der TU München, Germany)

- **System Architecture of Customized Intelligent Lighting Control and Indoor Environment Monitoring System for Persons with Mild Cognitive Impairment or Dementia**
  Mika Raatikainen and Robert Ciszek (University of Eastern Finland, Finland); Johanna Näräväinen, Juho Merilahti and Sami Siikanen (VTT Technical Research Centre of Finland, Finland); Timo Ollikainen (City of Kuopio, Finland); Ilona Hallikainen and Jukka-Pekka Skön (University of Eastern Finland, Finland)

- **Smartwatch Based Tumble Recognition - A Data Mining Model Comparision Study**
  Klemens Waldhör (FOM Hochschule für Ökonomie und Management & Heartsome Europe GmbH, Germany); Rainer Lutze (Dr.-Ing. Rainer Lutze Consulting, Germany)

- **Smartphone-based Transport Mode Detection for Elderly Care**
  Nuno Cardoso (ISEP & Fraunhofer Portugal AICOS, Portugal); João Madureira (Fraunhofer Portugal AICOS, Portugal); Nuno Pereira (Polytechnic Institute of Porto, Portugal)

- **Wireless Indoor Low Power Tracking System for Elderly People Assistance in an Urban Environment**
  Gabriele Di Simone (University of Salerno, Italy); António Espírito Santo (University of Beira Interior, Portugal); Vincenzo Paciello (University of Cassino and Southern Lazio, Italy); Antonio Pietrosanto (University of Salerno & CEO of SPRING OFF srl, Italy); Bruno Ribeiro (University of Beira Interior & Dep. Eng. Electromecanica, Portugal)

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GP02-b: Feature Recognition

Room: T1b
Chair: Norbert Noury (University of Lyon & Team Biomedical Sensors, France)
Development of a Portable Anatomical Obstructive Sleep Apnoea Monitor
Esuabom Dijemeni (Imperial College London, United Kingdom); Oluwatosin Ajewole (Mater Dei Hospital, Malta); Cherry Nzekwu (Mater Dei Hospital & University of Debrecen, Malta)

Sleep Apnea Detection Using a Feed-Forward Neural Network on ECG Signal
André Pinho (Universidade da Beira Interior, Portugal); Nuno Pombo (University of Beira Interior & BSAFE - Lab, Portugal); Nuno M. Garcia (Universidade da Beira Interior & Instituto de Telecomunicações, Universidade Lusófona de Humanidades e Tecnologias, Portugal)

Internet of Things in Sleep Monitoring: An Application for Posture Recognition Using Supervised Learning
Georges Matar (École de Technologie supérieure, Canada); Jean Lina (École de Technologie Supérieure, University of Quebec, Canada); Julie Carrier (Center For Advanced Research In Sleep Medecine, Canada); Anna Riley (Riley's 321 Sleep, Canada); Georges Kaddoum (ETS Engineering School, University of Québec, Canada)

Clinical Validation of a Data Fusion System for Drug Induced Sleep Endoscopy (DISE) Study
Esuabom Dijemeni (Imperial College London, United Kingdom); Oluwatosin Ajewole (Mater Dei Hospital, Malta); Cherry Nzekwu (Mater Dei Hospital & University of Debrecen, Malta); Bhik Kotecha (University College London Hospitals & NHS Foundation Trust, United Kingdom)

Severe Burns Assessment by Joint Color-Thermal Imagery and Ensemble Methods
Mihai-Sorin Badea (Politehnica University of Bucharest, Romania); Constantin Vertan and Corneliu Florea (University Politehnica of Bucharest, Romania); Laura Florea (Politehnica University of Bucharest, Romania); Silviu Badoiu (Carol Davila University of Medicine and Pharmacy, Romania)

GP05-b: Decision-Support & Intelligence
Room: T2a
Chair: Thomas Jell (Siemens AG, Germany)

Patient-Aware Adaptive Ngram-based Algorithm for Epileptic Seizure Prediction Using EEG Signals
Hussein Alawieh, Hussein Hammoud, Mortada Haidar, Mohammad Nassralla, Ahmad El-Hajj and Zaher Dawy (American University of Beirut, Lebanon)

Data Fusion for Predicting ARDS Using the MIMIC II Physiological Database
Aline Taoum (Université de Technologie de Troyes, France & Lebanese University, Lebanon); Farah Mourad-Chehade (Université de Technologie de Troyes, France); Hassan Amoud (Lebanese University, Lebanon); Aly Chkeir (University of Technology of Troyes, France); Ziad Fawal (Lebanese University, Lebanon); Jacques Duchène (Université de Technologie de Troyes, France)

Adaption of Medical Information System’s E-Learning Extension to a Simple Suggestion Tool
Petar Rajkovic, Dragan Jankovic and Aleksandar Milenkovic (University of Nis, Serbia)

Electronic Health Records: Improvement to Healthcare Decision-making
Hamzah Osop (Queensland University of Technology, Australia); Tony R Sahama (Queensland University of Technology & IEEE ACM IBS ACS SSAInc HISA, Australia)

GP06-b: Self Monitoring & Disease Management
Room: T2b
Chair: Klaus Moessner (University of Surrey, United Kingdom)

An Inference Mechanism Using Bayes-based Classifiers in Pregnancy Care
Mário W. L. Moreira (University of Beira Interior, Portugal); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal); Antonio Oliveira (Federal Institute of Ceará, Brazil); Kashif Saleem (King Saud University, Saudi Arabia); Augusto J. Venancio Neto (Federal University of Rio Grande do Norte & Centro de Ciências Exatas da Terra, Brazil)
Still in Flow - Long-term Usage of an Activity Motivating App for Seniors
Christian Lins (OFFIS - Institute for Information Technology, Germany); Andreas Hein (Universität Oldenburg, Germany); Luca Halder (Bremer Heimstiftung, Germany); Philipp Gronotte (Jade University of Applied Sciences, Germany)

Workload Management Through Glanceable Feedback: The Role of Heart Rate Variability
John Munoz Cardona (Universidade da Madeira & Madeira Interactive Technologies Institute, Portugal); Evangelos Karapanos (Cyprus University of Technology, Cyprus); Fabio M-iti Pereira (Madeira Interactive Technologies Institute, Portugal)

Towards Rehabilitative E-health by Introducing a New Automatic Scoring System
Tracey Lee (Singapore Polytechnic & Monash University, Singapore); Joo Ghee Lim and Kee Hao Leo (Singapore Polytechnic, Singapore); Saeid Sanei (University of Surrey, United Kingdom); Mandy Pei Yin Lew (University of Glasgow, Singapore); Effie Chew (National University Hospital, Singapore); Ling Zhao (Senior Therapist, Singapore)

ROAMM: A Software Infrastructure for Real-time Monitoring of Personal Health
Sanjay Nair, Matin Kheirkhahan, Anis Davoudi, Parisa Rashidi, Amal Wanigatunga, Duane Corbett, Todd Manini and Sanjay Ranka (University of Florida, USA)

Microfluidic Bioelectronic Cartridge "M-Cart" and Portable Exhaled Breath Counter
Muge Yucel (Izmir Institute of Technology, Turkey); Osman Akin (Izmir Katip Celebi University & IMGE Sensor Technologies Inc., Turkey); Umit Yildiz (Izmir Institute of Technology & IMGE Sensor Technologies, Turkey)

Thursday, September 15, 12:30 - 13:30
Lunch

Thursday, September 15, 13:30 - 14:00
Beyond the Wire: how 5G will boost e-Health
Dr. Walter Weigel, Huawei
Room: Auditorium
Chair: Christoph Thuemmler (TUM, Germany)

Thursday, September 15, 14:00 - 16:00
Workshop: 5G PPP Phase III - Introduction
Room: Auditorium
Chairs: Markus Dillinger (Huawei Technologies, Germany), Halid Hrasnica (Eurescom, Germany)

Thursday, September 15, 16:00 - 17:30
Workshop: 5G PPP Phase III
Room: Auditorium
Chair: Christoph Thuemmler (TUM, Germany)

GP01-c: Ambient Assisted Living
Room: T1a
Chair: Armin Schneider (Klinikum Rechts der Isar der TU München, Germany)

A Data Fusion System to Study Synchronization in Social Activities
Loïc Sevrin (Université de Lyon & INL, France); Bertrand Massot (University of Lyon & INL - INSA Lyon, France); Norbert Noury (University of Lyon & Team Biomedical Sensors, France); Nacer Abouchi (CPE Lyon, France); Fabrice Jumel (INSA de Lyon, France); Jacques Saraydaryan (CPE, France)

Exploiting Riemannian Manifolds for Daily Activity Classification in Video Towards Health Care
Sway Analysis and Fall Prediction Method Based on Spatio-Temporal Sliding Window Technique
Kabalan T Chaccour (Antonine University, Lebanon); Hiba Al Assaad (TICKET Lab. & Antonine University, Lebanon); Amir Hajjam (UTBM, SeT, France); Rony Darazi (Antonine University, Lebanon); Emmanuel Andrès (CHU Strasbourg, France)

A Conceptual Model for Integrating Social and Health Care Services At Home: The H@H Project
Fabrizio Pecoraro, Daniela Luzi, Elaheh Pourabbas and Fabrizio Ricci (National Research Council, Italy)

GP02-c: Feature Recognition
Room: T1b
Chair: Norbert Noury (University of Lyon & Team Biomedical Sensors, France)

ParkNosis: Diagnosing Parkinson's Disease Using Mobile Phones
Abdulwahab H Sahyoun, Karim Chehab, Osama Al-Madani, Fadi Aloul and Assim Sagahyroon (American University of Sharjah, United Arab Emirates (UAE))

Smartphone Based Automatic Abnormality Detection of Kidney in Ultrasound Images
Pallavi Vaish (Indian Institute of Technology Hyderabad, India); Ramkrishna Bharath (Indian Institute of Technology, India); Pachamuthu Rajalakshmi (Indian Institute of Technology Hyderabad, India); Uday B Desai (IIT Hyderabad, India)

ST-segment and T-wave Anomalies Prediction in ECG Data Using RUSBoost
Medina Hadjem and Farid Naït-Abdesselam (Paris Descartes University, France); Ashfaq Khokhar (Illinois Institute of Technology, USA)

An Approach to Localization in Crowded Area
Md Osman Gani, Golam Mushih Tanimul Ahsan, Duc Do, Drew Williams, Mohammed Balfas and Sheikh Iqbal Ahamed (Marquette University, USA); Muhammad Arif and Ahmed Kattan (Umm Al-Qura University, Saudi Arabia)

GP05-c: Decision-Support & Intelligence
Room: T2a
Chair: Thomas Jell (Siemens AG, Germany)

Application of Recommender System Methods for Therapy Decision Support
Felix Gräßer (Technische Universität Dresden, Germany); Stefanie Beckert, Denise Küster and Susanne Abraham (Universitätsklinikum Dresden, Germany); Hagen Malberg (Technische Universität Dresden, Germany); Jochen Schmitt (Universitätsklinikum Dresden, Germany); Sebastian Zaunseder (TU Dresden & Institute of Biomedical Engineering, Germany)

Immediate and Long-term Effects of 2016 Zika Outbreak: A Twitter-based Study
Aparup Khatua (University of Calcutta, India); Apalak Khatua (XLRI Xavier School of Management, India)

Big Social Data Analytics for Public Health: Facebook Engagement and Performance
Nadiya Stratron (Copenhagen Business School, Denmark); Kjeld Hansen (Westerdals - Oslo School of Art Communication & Technology); Raghava Rao Mukkamala and Abid Hussain (Copenhagen Business School, Denmark); Tor-Morten Grønli (Westerdals - Oslo School of Art Communication & Technology, Norway); Henning Langberg (University of Copenhagen, Denmark); Ravi Vatrapu (Copenhagen Business School, Denmark)

Patterns for Conflict Identification in Clinical Trial Eligibility Criteria
Christina Schweikert and Bonnie MacKellar (St. John's University, USA)

Evaluating the QoE of a Mobile DSS for Diagnosis of Red Eye Diseases by Medical Students
Marta Manovel, Miguel Maldonado, Isabel de la Torre, José Jimeno and Miguel López-Coronado (University of Valladolid, Spain); Joel J. P. C. Rodrigues (Instituto de
GP06-c: Self Monitoring & Disease Management

Room: T2b
Chair: Klaus Moessner (University of Surrey, United Kingdom)

Midwifery E-Health: From Design to Validation of "Mammastyle - Gravidanza Fisiologica"
Grazia Tommasone (ISTITUTO SUPERIORE MARIO BOELLA, Italy); Valentina Solinas (Università di Torino, Italy); Marco Bazzani (ISTITUTO SUPERIORE MARIO BOELLA, Italy); Paola Serafini (Università di Torino, Italy)

Wireless Solution to Prevent Decubitus Ulcers: Preventive Weight Shifting Guide, Monitor, and Tracker App for Wheel Chair Users with Spinal Cord Injuries (Phase II)*
Arshia A Khan (University of Minnesota Duluth, USA); Michael Reuter (Essentia, USA); Nam Phung and Syed Hafeez (UMD, USA)

Activating Long-Term Care eHealth Accessible Application for Visually Impaired Users
Chung Wei Kan (Institute for Information Industry & IDEAS, III, Taiwan); Po Wei Tseng (Project Assistant, Taiwan)

Experiment Design of Free Pregnancy Monitoring mPHRs Quality Evaluation
Ali Idri (University Mohamed V of Rabat, Morocco); Ambrosio Toval (University of Murcia, Spain); Mariam Bachiri (University Mohamed V of Rabat, Morocco); José Luis Fernández-Alemán (University of Murcia, Spain)

GP09: Nano Technologies

Room: Business Club
Chair: Kashif Saleem (King Saud University, Saudi Arabia)

QoS Aware Molecular Activation and Communication Scheme in Molecular Nanoscale Sensor Networks
Hong-Hsu Yen (Shih-Hsin University, Taiwan); Xinheng Wang and Dong Wang (University of the West of Scotland, United Kingdom)

Adaptive Code Width Protocol for Mitigating Intersymbol Interference in Diffusion-based Molecular Communication with Mobile Nodes
Yao Sun and Masaki Ito (The University of Tokyo, Japan); Kaoru Sezaki (University of Tokyo, Japan)

Thursday, September 15, 18:00 - 23:00
Banquet (Hofbräuhaus)

Venue is in Munich old town. Busses will be provided.

Friday, September 16

Friday, September 16, 09:30 - 10:30
Keynotes (TBD)
Room: Auditorium
Chair: Christoph Thuemmler (TUM, Germany)

Friday, September 16, 09:30 - 15:30
Workshop: WWRF
Setting the Scene for the 5G-enabled Health Ecosystem

Room: T2a

Chairs: Kostas Danas (Kingston University, London, United Kingdom), Christos Politis (Kingston University, United Kingdom), Bin Zhen (Huawei Technologies Co., LTD, P.R. China)

Mobile health (m-Health) covers health applications that are enabled by mobile communication devices such as smartphones, tablets and laptop computers. The forthcoming 5G (fifth generation of mobile communications) will enable the independent communication of intelligent devices (known as the Internet of Things IoT) providing an ecosystem where such devices will have the autonomy to monitor the health related issues of individuals and update the Electronic Patient Record (EPR) that is centrally controlled by the healthcare system. This ecosystem will provide amazing opportunities for innovative applications that could transform the quality and efficiency of healthcare delivery and personalised support. It is envisaged that together with prescribed medication we will be prescribed a mobile application system that will provide support on the way that we treat our health conditions. It is also important to point out that this ecosystem is predicted to create jobs and economic growth combining ICT, smart medical devices, and smart pharmaceuticals all working together for the delivery of healthcare encouraging prevention and leading to a healthier lifestyle.

The aim of this workshop is to present the vision of m-Health under 5G, provide experts' views on the development of this future ecosystem of intelligent devices and demonstrate with the presentation of case studies and short demos the benefits to the healthcare industry and the individuals.

Workshop: Project ALFRED

Room: T2b

Chair: Peter Merz (TieKinetix, Germany)

ALFRED - Personal Interactive Assistant for Independent Living and Active Ageing - is a project funded by the Seventh Framework Programme of the European Commission under Grant Agreement No. 611218. It will allow older people to live longer at their own homes with the possibility to act independently and to actively participate in society by providing the technological foundation for an ecosystem.

Friday, September 16, 11:00 - 12:30

GP04-a: Sensor Networks, Wearables, and IoT

Room: T1b

Chair: Markus Dillinger (Huawei Technologies, Germany)

Distributed Scheme for Interference Mitigation of WBANs Using Predictable Channel Hopping
Mohamad Ali (Paris Descartes University, France); Hassine Moungla (University of Paris Descartes, France); Mohamed Younis (University of Maryland Baltimore County, USA); Ahmed Mehaoua (University of Paris Descartes, France)

Performance Improvement of the Wireless Body Area Network (WBAN) Under Interferences
Sarra Essafi (SysCom, Communication System Laboratory, Tunisia); Tahar Ezzedine (Tunis El Manar University, Tunisia)

Buffer-aware and QoS-effective Resource Allocation Scheme in WBANs
Zhiqiang Liu and Bin Liu (University of Science and Technology of China, P.R. China); Chang Wen Chen (State University of New York at Buffalo, USA)

Performance Improvement of the Wireless Body Area Network (WBAN)
Sarra Essafi (SysCom, Communication System Laboratory, Tunisia); Tahar Ezzedine (Tunis El Manar University, Tunisia)

Sensors and Mobile-Based System for Patients Who Suffer From Congenital Insensitivity to Pain with Anhidrosis
Nader Rahman (Esprit School of Engineering & ESPRIT, Tunisia); Salma Sayah and Karray Gargouri (Esprit School of Engineering ESPRIT, Tunisia)

GP07: Augmented Reality, Virtual Reality, Tools and Methods

Room: T1a
**Language Therapy of Aphasia Supported by Augmented Reality Applications**
Daniela Antkowiak (RWTH Aachen University & Institute of Information Management in Mechanical Engineering, Germany); Christian Kohlschein (RWTH Aachen University, Germany); Roksaneh Krooß and Maximilian Speicher (Bitstars GmbH, Germany); Tobias Meisen (RWTH Aachen University, Germany); Sabina Jeschke (RWTH Aachen University & Institute Cluster IMA/ZLW & IfU, Germany); Cornelius Werner (University Hospital RWTH Aachen, Germany)

**PhysioVR A Novel Mobile Virtual Reality Framework for Physiological Computing**
John Munoz Cardona (Universidade da Madeira & Madeira Interactive Technologies Institute, Portugal); Teresa Paulino (University of Madeira, Madeira-ITI & M-ITI, Portugal); Vasantharajah Harryharasuthan (Madeira Interactive Technologies Institute & University of Madeira, Portugal); Karolina Baras (University of Madeira, Madeira-ITI, Portugal)

**Prediction of Anatomical Exposure to Solar UV: a Case Study for the Head Using SimUVEx V2**
Arianna Religi (University of Geneva, Switzerland)

**Ergonomic Surgical Practice Analysed Through sEMG Monitoring of Muscular Activity**
Amandine Dufaug and Christine Barthod (Université Savoie Mont Blanc, France); Laurent Goujon (University Savoie Mont Blanc, France); Nicolas Forestier (Université Savoie Mont Blanc, France)

**Is There a Relationship Between Frailty Indices and Balance Assessment in Older People**
Aly Chkeir (University of Technology of Troyes, France); Safieddine1 Doha (Inserm UMR 1099 Campus de Beaulieu Bat. 22 Rennes F-35042 France, France); Farah Mourad-Chehade (Université de Technologie de Troyes, France); David Hewson (University of Bedfordshire, United Kingdom); Jacques Duchêne (Université de Technologie de Troyes, France); Moustapha Drame (CHU de Reims - Hôpital Robert Debré, France); Delphine Bera (Arcades, France); Michèlle Collart (Hopital, France); Jean-Luc Novella Novella (CHU de Reims - Hôpital Robert Debré, France)

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**GP11: Hippocratic Data: Access Control and Legal Implications**

Room: Business Club
Chair: Alois Paulin (Technische Universität München, Germany)

**An Attribute Based Access Control Scheme for Secure Sharing of Electronic Health Records**
Harsha S Gardiyawasam Pussewalage and Vladimir Oleshchuk (University of Agder, Norway)

**UML/OCL-based Modeling of Work-Based Access Control Policies for Collaborative Healthcare Systems**
Mohamed Abomhara and Mehdi Ben Lazrag (University of Agder, Norway)

**Data Security and Patient Privacy Challenges in Adopting eHealth Solutions**
Supriya Seemanapalli (Siemens Healthcare Pvt Ltd, India); Sagar Padaki (Siemens Healthcare Pvt Ltd, India)

**Computer-Aided Diagnosis in Medical Imaging: Review of Legal Barriers to Entry for the Commercial Systems**
Ting-Wei Lin and Po-Yu Huang (School of Medicine, Taipei Medical University, Taiwan); Claire Wan-Chiung Cheng (Taipei Medical University, Taiwan)

**Blockchain Technology in Healthcare - The Revolution Starts Here**
Matthias Mettler (Boydak Strategy Consulting AG, Switzerland)

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**GP12-a: Medical Imagery & Teleradiology**

Room: Auditorium
Chair: Zviad Kirtava (Tbilisi State Medical University, Georgia)
**Echocardiography to Cardiac CT Image Registration**
Azira Khalil (University Of Malaya, Malaysia); Yih Miin Liew (Universiti Malaya, Malaysia); Siew Cheok Ng (University Malaya, Malaysia); Yan Chai Hum (Lee Kong Chian Faculty of Engineering and Science, Universiti Tunku Abdul Rahman, Malaysia); Lai Khin Wee (Universiti Malaya, Malaysia)

**Architecture of a Web-Based DICOM Viewer Showing Segmentations and Simulations**
Roland Ellerweg and Dominic Reuter (Fraunhofer FIT, Germany); Phil Weir (NUMA Engineering, Ireland)

**Generic Features for Fundus Image Quality Evaluation**
Zhenjie Yao, Zhipeng Zhang and Li-Qun Xu (China Mobile Research Institute, P.R. China); Qingxia Fan and Ling Xu (Shenyang He Hospital, P.R. China)

**Accessing Image Resolution and Frame Rate Effects in Radiology From a Human and a Machine Point of View**
Roland Ellerweg (Fraunhofer FIT, Germany); Tuomas Alhonnoro and Mika Pollari (Aalto University, Finland); Peter Voigt (Leipzig University, Germany); Phil Weir (NUMA Engineering, Ireland)

**Integrating Multiple Data Sources in a Cardiology Imaging Laboratory**
Tiago Marques Godinho and Eduardo Almeida (University of Aveiro, Portugal); Luís Bastião Silva (BMD Software, Portugal); Carlos Costa (University of Aveiro, Portugal)

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**Friday, September 16, 12:30 - 13:30**

**Lunch**

**Friday, September 16, 13:30 - 14:00**

**Cybersecurity in Health Care**

Prof. Bill Buchanan, Edinburgh Napier University

Room: Auditorium  
Chair: Christoph Thuemmler (TUM, Germany)

**Friday, September 16, 14:00 - 15:30**

**GP04-b: Sensor Networks, Wearables, and IoT**

Room: Auditorium  
Chair: Markus Dillinger (Huawei Technologies, Germany)

**Towards Semantics in Wearable Sensors: The Role of Transducers Electronic Data Sheets (TEDS) Ontology in Sensor Networks**
Olamidipupo Ajigboye (Kingston University, United Kingdom); Kostas Danas (Kingston University, London, United Kingdom)

**A Queue-Size & Channel Quality Based Adaptation of the Energy Detection Threshold in IEEE802.15.6 CSMA/CA**
Vladimir Marbukh (National Institute of Standards and Technology, USA); Martina Barbi (National Institute of Standards and Technology (NIST), USA); Kamran Sayrafian (NIST, USA); Mehdi Alasti (Time Warner Cable, USA)

Hossein Fotouhi and Maryam Vahabi (Mälardalen University, Sweden); Apala Ray (ABB, India); Mats Björkman (Malardalen University, Sweden)

**Healthcare Security Collaborative Model Based on Internet of Things (IoT) Cloud Technologies**
Danco Davcev (University Ss Cyril and Methodius, Macedonia, the former Yugoslav Republic of); Goran Jakimovski (Faculty of Electrical Engineering and Information Technologies, Macedonia, the former Yugoslav Republic of)
**A Framework for Modularised Wearable Adaptive Biofeedback Devices**
Yonghee Ahn, Dhammika Jayalath and Adekunle Oloyede (Queensland University of Technology, Australia)

**GP08: Implantable Sensors**
Room: T1a
Chair: Joel J. J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal)

*Exploiting Dental Implants for Creating Wired Implantable Health Monitoring Devices*
Saied Hemati (University of Idaho, USA); Sepideh Rahmani (Pickard Orthodontics, USA)

*Implantable Microdevice with Integrated Wireless Power Transfer for Thermal Neuromodulation Applications*
José Fernandes (DEI- University of Minho, Portugal); Hugo Dinis, Luis Goncalves and Paulo Mendes (University of Minho, Portugal)

*Reliable Listen-Before-Talk Mechanism for Medical Implant Communication Systems*
Selman Kulac (Duzce University, Turkey); Huseyin Arslan (University of South Florida, USA)

*Wireless Optogenetic Neural Dust for Deep Brain Stimulation*
Stefanus Arinno Wirdatmadja, Sasitharan Balasubramaniam and Yevgeni Koucheryavy (Tampere University of Technology, Finland); Josep M Jornet (University at Buffalo, USA)

**GP10: Data Processing and System Interoperability**
Room: Business Club
Chair: Kashif Saleem (King Saud University, Saudi Arabia)

*Clinical Validation of a Data Management System for Glottic Narrowing and Flow Limitation Studies*
Esuabom Dijemeni (Imperial College London, United Kingdom)

*A Maturity Model for Interoperability in eHealth*
Lex Van Velsen (Roessingh Research and Development, The Netherlands); Wendy Oude-Nijeweme d'Holosy and Hermie Hermens (University of Twente, The Netherlands)

*Constellation: A Secure Self-Optimizing Framework for Genomic Processing*
Cody Bumgardner, Victor Marek, Caylin Hickey and Kannabiran Nandakumar (University of Kentucky, USA)

*Dynamic EEG Compression Approach with Optimized Distortion Level for Mobile Health Solutions*
Mohammad Nassralla, Ahmad El-Hajj, Fady Baly and Zaher Dawy (American University of Beirut, Lebanon)

*Cross-cutting Concerns: Improving an Intelligent System for Decision Making in Healthcare*
Leonardo Gardini (State University of Ceara, Brazil); César de Moura, Filho (IFCE, Brazil); Odorico Andrade (UFCE, Brazil); Antonio Oliveira (Federal Institute of Ceara, Brazil)

**GP12-b: Medical Imagery & Teleradiology**
Room: Auditorium
Chair: Zviad Kirtava (Tbilisi State Medical University, Georgia)

*A Simple and Accurate Matrix for Model Based Photoacoustic Imaging*
Francis K j, Pradeep Mishra and Pachamuthu Rajalakshmi (Indian Institute of Technology Hyderabad, India); Ashutosh Richhariya (LV Prasad Eye Institute Hyderabad, India); Sumohana Channappayya (Indian Institute of Technology Hyderabad, India)

*Non-local Means Kernel Regression Based Despeckling of B-mode Ultrasound Images*
Ramkrishna Bharath (Indian Institute of Technology, India); Pachamuthu Rajalakshmi (Indian Institute of Technology Hyderabad, India)
Human-machine Interface Based on Multi-channel Single-element Ultrasound Transducers: A Preliminary Study
Yuefeng Li, Keshi He, Xueli Sun and Honghai Liu (Shanghai Jiao Tong University, P.R. China)

Assessing the Relational Database Model for Optimization of Content Discovery Services in Medical Imaging Repositories
André Alves (DETI / IEETA - University of Aveiro); Tiago Marques Godinho and Carlos Costa (University of Aveiro, Portugal)

A Hybrid Quality Evaluation Approach Based on Fuzzy Inference System for Medical Video Streaming Over Small Cell Technology
Ikram Rehman and Nada Y Philip (Kingston University, United Kingdom); Moustafa M Nasralla (Prince Sattam Bin Abdulaziz University)

Friday, September 16, 15:45 - 16:30

Closing Ceremony