Trust the e-Health TC Members are continuing to enjoy a good 2013 thus far! Our fifth edition coincides with IEEE Healthcom in beautiful Lisbon! So, it's not entirely a coincidence that our center piece is a ringside view of two of the key technical sponsors from Portugal, AAL4ALL and WSN4QoL. We hope to see you all in Portugal, and invite you to consider our newsletter for your articles in the near future. Happy Reading!

- Aravind Kailas and Nazim Agoulmine

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From the e-Health TC of the IEEE ComSoc ...

Dear All,

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 eHealth 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 eHealth. As a Steering Committee Chair of this conference and Vice-Chair of the eHealth 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/), WSN4QoL – Secure Location-Aware Cooperative Network-Coded WSNs for Better Quality of Life, and Portugal Telecom. Infact, the fifth edition provides a snapshot of the research activities of the WSN4QoL and AAL4ALL endeavors.

After the first 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.

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 look forward to meeting you all in person here in Lisbon, and encourage you to consider our TC Newsletter for disseminating short articles/preliminary research results to the fast-growing eHealth TC mailing list.

Best Wishes,

Joel Rodrigues,
Vice-Chair, e-Health TC of the IEEE ComSoc

NetGNA
http://netgna.it.ubi.pt

Secure Location-Aware Cooperative Network-Coded WSNs for better Quality of Life

WSN4QoL

Abstract
WSN4QoL is a project oriented to the enhancement of the Quality of Life through the development of advanced technological solutions for pervasive healthcare applications. The main target of WSN4QoL is to bring together experts from industry and academia, from cross-sectorial research areas and complementary background, in order to conduct top-notch research in the area of wireless sensor network (WSN) at both theoretical and experimentation level.

1. Motivation
The median age of the world population has shown a steady increase over the last 50 years, mainly due to the reduction of fertility and the 20-year increase in the average life expectancy. These factors, combined with the elevated birth rate observed in many countries during the decades following World War II, have led to a shift in the distribution of the population towards older ages in most regions of the planet. On the other hand, the average lifespan worldwide is expected to increase by 10 years by 2050.

The growing number of aging population poses a strain on the public healthcare system and on medical and social services. Public healthcare programs must now respond to the additional challenges and costs, including the management of chronic illnesses, injuries and disabilities. In other words, the above projected demographic shift will have a tremendous impact on the society and will ask for specific actions to be put in place to deal with it in the next years.

WSN4QoL is committed to create a fully-integrated and multidisciplinary program on the development of WSN technologies for pervasive healthcare applications, ensuring enhanced quality, efficiency, flexibility and cost reductions in healthcare delivery.

2. Research Agenda
The main research efforts within the WSN4QoL project are oriented towards:
- Energy efficiency: Inorder to increase the battery lifespan of the sensor nodes and ensure the continuous network operation for several days between recharge cycles careful management of radio communications and data processing is required.
- Real-time availability and action: Critical data must be gathered by the network, and the real-time identification of emergency situations is instrumental for saving lives.
- Security: Patient physiological data is highly confidential and security must be ensured throughout the healthcare application scenario.
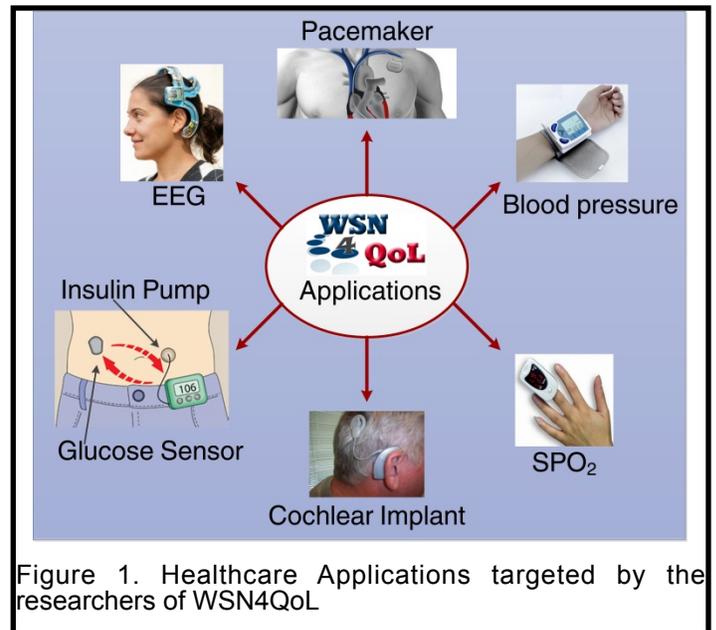

Figure 1. Healthcare Applications targeted by the researchers of WSN4QoL

- Multi-hop/cooperative networking: Multi-hop wireless connectivity enhanced by cooperative techniques is required to enable the continuous monitoring of critical vital patient parameters without range limitations.
- Error resilience and data Reliability: Reliable communication is vital for medical applications, especially under emergency situations.
Context awareness: Information of the environment and activities of the monitored patients can significantly enhance the quality of healthcare.
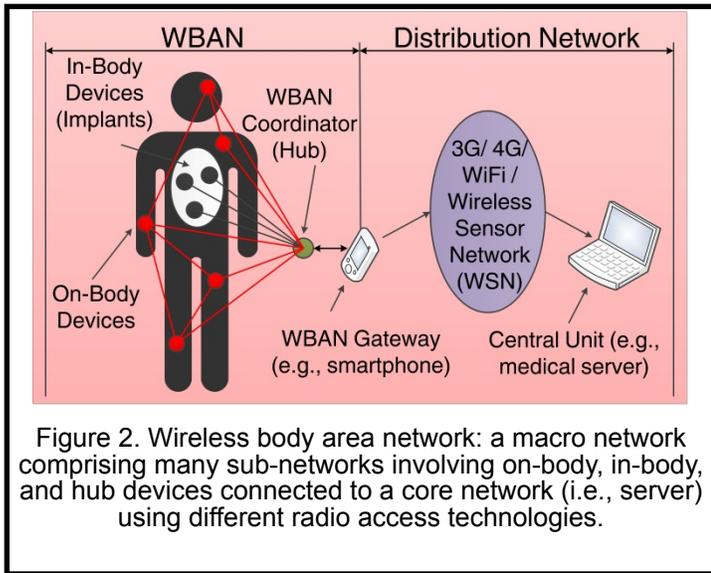
3. Healthcare Applications
The emerging application scenarios include:
- Active disease management such as diabetes (e.g., by measuring blood sugar levels and controlling the insulin dosage accordingly).
- Support for independent aging to the elderly (e.g., by tracking their medication intake and their activity level).
- Monitoring of personal fitness activities to improve health and well-being (e.g., by logging health and fitness indicators during workouts).

4. WSN4QoL Scenarios

WSN4QoL defines three scenarios for pervasive healthcare that will provide a framework for the design of WSN algorithms and protocols.

- Single patient scenario: collection of medical data from a single patient by a coordinator and their delivery to a central unit through a distribution network (often a WSN).

- Multi-patient scenario: monitoring of multiple patients, introducing additional challenges such as cooperation between coordinators, frequency selection, etc.

Figure 2. Wireless body area network: a macro network comprising many sub-networks involving on-body, in-body, and hub devices connected to a core network (i.e., server) using different radio access technologies.

- Localization and tracking scenario: estimation of the patient's position and movement tracking, in both indoor and outdoor environments.

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Technical Manager: Christos Verikoukis, Ph.D.

Project website: http://www.wsn4qol.eu

Partners: Universitat Politècnica de Catalunya (SP), VIDAVO (GR), WEST (IT)

Duration: Dec. 2011 - 2015

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Vision

Health and social care systems of today typically do not focus on prevention. Support for the well-being isn't currently part of the benefits catalogs of insurances! Although technologies for AAL are already available and often in use for different purposes, these 'first offers' for primary and secondary end-users are monolithic, incompatible and thus expensive and potentially not sustainable. AAL4ALL presents an idea for an answer! The project intends to join a vast range of relevant stakeholders, like Public Institutions, Industry, User Organizations and R&D Institutions, for the discussion and definition of the basic AAL services of general interest. Analyze what standards and other international activities already exist are the key concepts of the project which wants to avoid reinventing wheels and bring the focus only to the missing pieces.

Objectives

The main objective of the AAL4ALL project is the development of an ecosystem of products and services for Ambient Assisted Living (AAL) associated to a business model and validated through large scale trial.The definition of reference models for different environments reduces the investment risk and time-to-market of the products and services. The competitive advantage of being First mover coupled with the standardization of products and services will enable the wide scale adoption of AAL solutions and their export to other countries, particularly European ones.