


# EURIPIDES Forum 2010 in Paris

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# High Data Rate Body Centric Mobile Terminal Communication Systems in e-Health applications

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Acronym	HSBODYCOM	
Title of the EoI	High speed body centric systems and for integration in conformal applications	

**Abstract**  
 Health expenditure in the world will cause an unprecedented pressure on the social security systems and thus there is a large interest in cost saving innovations such as e-Health products which include e.g. remote patient supervision using wireless biosensors and communication technologies. The body centric networks like WBAN (wireless body area network) are emerging with new low power short range technologies as basic enablers for remote supervision. Thus the intra-WBAN communication, communication with other WBAN's/gateway will see many future applications in e-Health. To make this scenario happen a network is needed that can be ubiquitously used like a Mobile Terminal which is interlinked with the WBAN (MTWBAN) where terminal acts as a mini-server and gateway for WBAN system and thus handles also the communication (including video) not only with other WBAN networks but also within the WBAN network. The objective is development of sensor nodes and MTWBAN networks for high data rates, low power consumption, high robustness and privacy in communication. The node will be designed because of easier integration with textile to have a stretchable wireless interface that can be integrated with smart textile fabrics. The areas for demonstration of the MTWBAN system are chosen to be fitness and the disease stroke.

**Project vision & innovation**  
 The vision is that the Mobile Terminal which is interlinked with the WBAN (MTWBAN) where terminal acts as a mini-server and gateway for WBAN system and thus handles also the communication (including video) not only with other WBAN networks but also within the WBAN network. The node will be designed because of easier integration with textile to have a novel stretchable wireless interface that can be integrated with smart textile fabrics. The network has to operate at mm-wave (57 – 66 GHz) frequencies due to the high data-rate.

**Fields of Application**  
 The areas for demonstration of the MTWBAN system can be very large however two area has been chosen i.e. be fitness and the disease stroke.

**Existing or expected Partnership / Complementaries / R&D chain**  
 End-users in different applications and co-ordinator for the project.

## Objectives

### MTWBAN system communication scenarios:

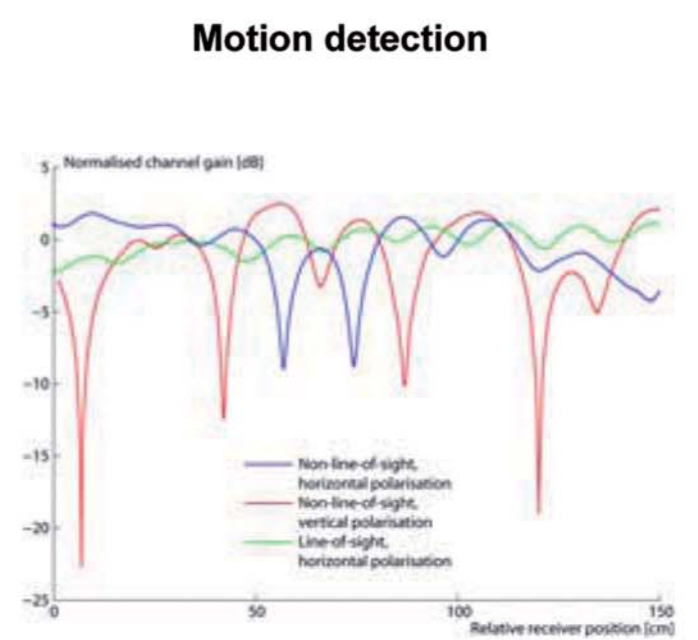
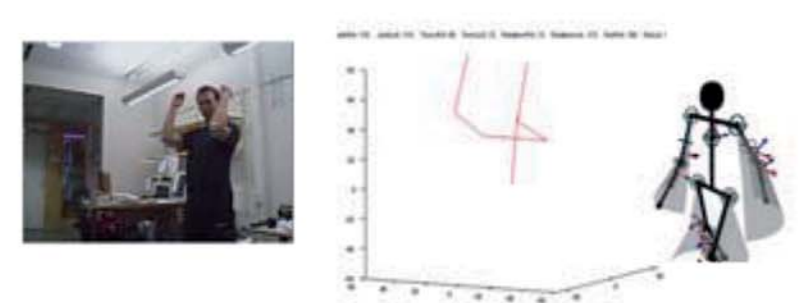
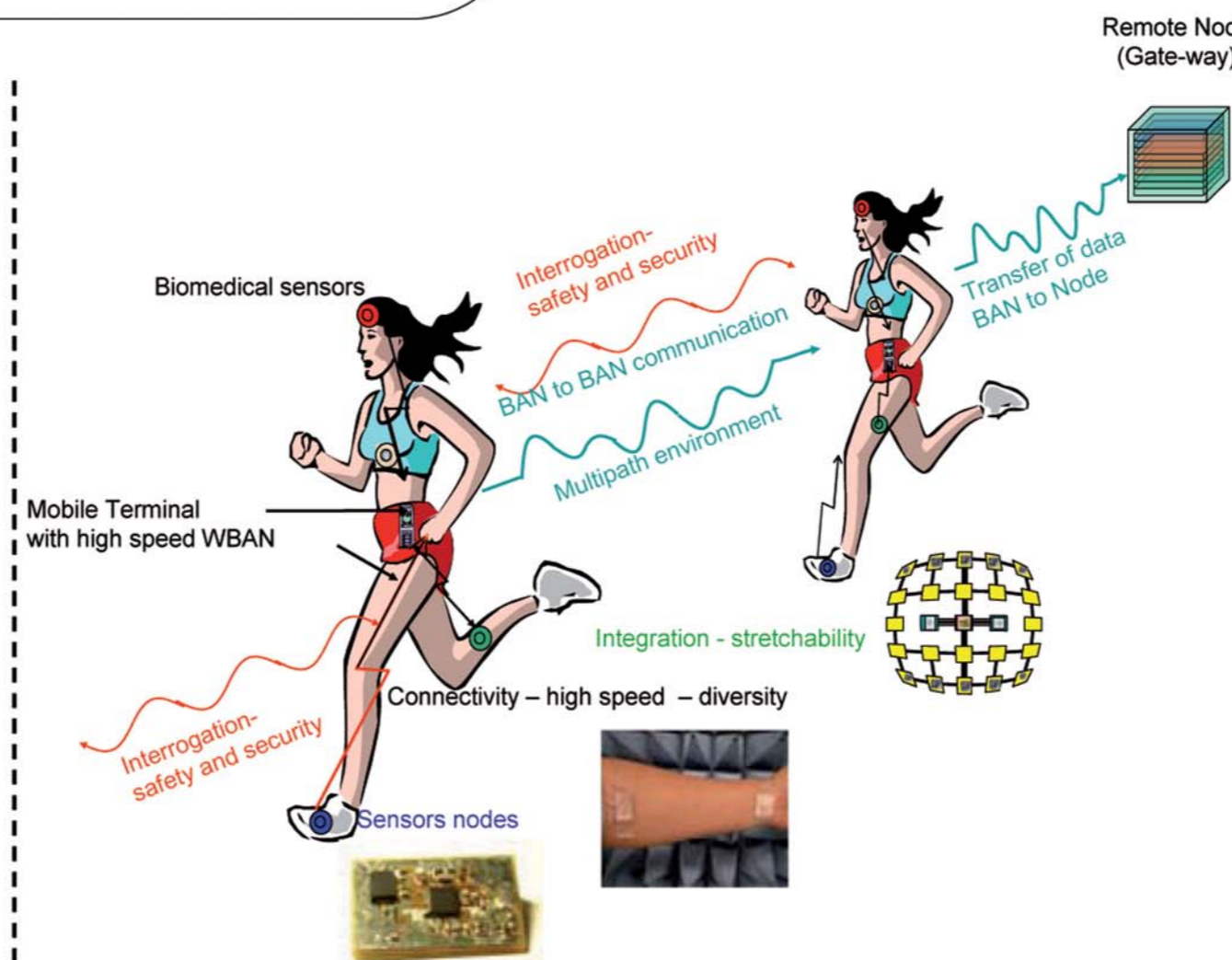
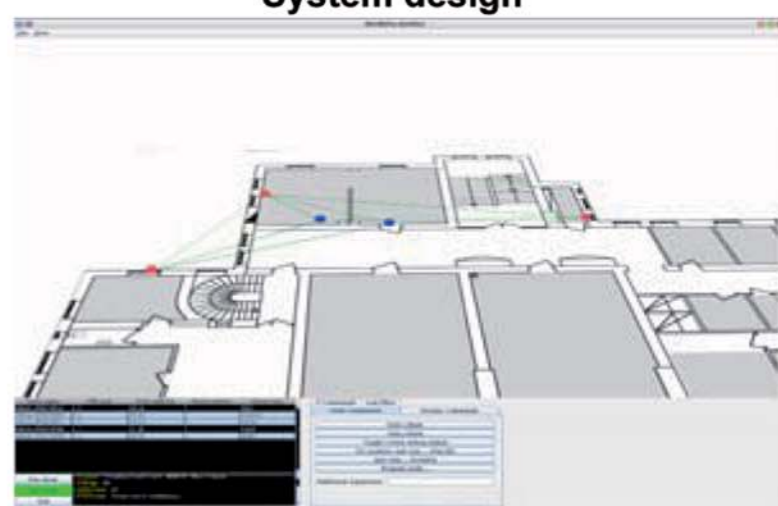
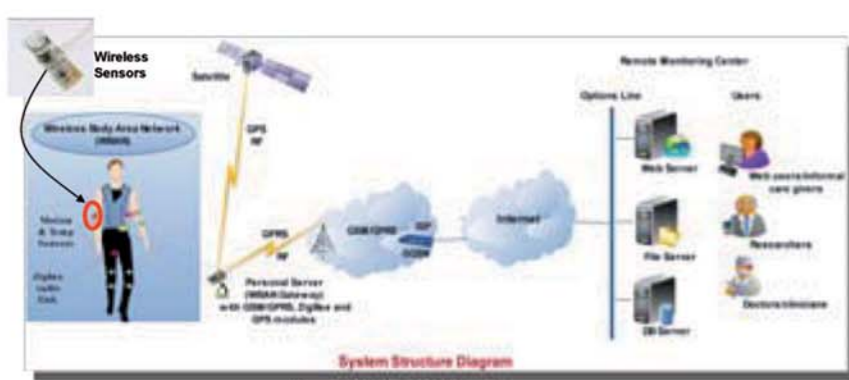
- ➔ Intra-WBAN
  - ➔ WBAN to WBAN mesh structures
  - ➔ WBAN to gateway
- First step: Implementation of the MTWBAN system in the 2.4 or 5.8 GHz bands with 40 Mb/s data transfer depending of wireless bearer used.
- Second step: Implement the MTWBAN in the new 57-66 GHz frequency band.

## Challenges

### Demands on:

- Communication robustness
- Privacy and Security
- Power consumption.

Directivity for the antennas is required at 57-66 GHz to overcome the higher path loss which implies a highly susceptible to blockage because of the limited ability to diffract around obstacles such as the human body and furniture.



**Intra-WBAN, WBAN-to-WBAN and WBAN-to-gateway communication.**

## Competencies and partners

### Uppsala Center in Wireless Sensor Networks (WISNET)

