



**Leeds University**  
**Institute of Integrated Information Systems**  
**“Ambient Assisted Living” Project**



**Multidisciplinary research group at the University of Leeds:**

- Institute of Integrated Information Systems (I3S, Engineering): Professor G. Markarian, Dr. Sean Sonander – Integration of existing and emerging communication and computer technologies into working prototypes
- Nutritional Epidemiology Group (LIGHT, Faculty of Medicine & Health / Biosciences): Dr. Sara Kirk; Professor Janet Cade – public health / epidemiology expertise in nutrition / physical activities / life styles
- Leeds University Business School: Mr. John Hillard, Dr. Denis Kobzev – assessment of individuals and carers needs (directed to end user), system management

The leader of the consortium will be I3S, headed by Professor Garik Markarian. I3S was awarded grade 5\* in the latest RAE, and maintains its growth through recent achievements including the recently incorporated Wireless CIC (sponsored by Yorkshire Forward) and the Marie Curie Knowledge Transfer Fellowship Grant, sponsored by the European Union. As an area of potential growth, I3S created a strategic multidisciplinary partnership with other departments with the University of Leeds. The aim of this partnership is to explore and develop user friendly (“Design-for-All”) prototypes based on familiar communication systems (mobile phone, TV, PDA and computer) which will allow elderly people to live independently in preferred environment

**I3S key research strengths:**

- Wireless Communications (fixed and mobile) channels, networks and systems
- Navigation and location systems,
- Sensing systems, e.g. tomography systems
- Imaging and vision systems, e.g. assistive technology
- Broadcasting and satellite systems
- Representation of sound, vision/image and location data
- Signal processing methods



**Suggestion for proposal in 6<sup>th</sup> Call**



- The research will focus on how new wireless technology may be used to support self-monitoring of an elderly nutrition and physical activity patterns. With unhealthy lifestyles prevalence (especially among elderly) increasing globally, novel methods for self-monitoring of nutrition, health conditions and physical activity that provide a level of interactive capacity need to be developed.
- People often underestimate the role of nutrition and physical activities among elderly population; diet and the amount of exercise they do and it has been suggested that greater awareness of eating and activity patterns may be the key to addressing the increasing problem of chronic diseases, wellbeing and quality of life in general. More healthy and active elderly people who have successfully improved their health and quality of life report doing more physical activity and are more likely to monitor their intake. Any wireless system developed would need to enable data to be easily entered and provide useful output to increase the patient’s awareness of their own dietary habits, physical activities and offer simple technical means / solutions to healthy food e-shopping (thus increasing elderly independence and comfort).
- Wireless mobile technologies provide a natural and powerful means for remote and self-monitoring of elderly people. In case of necessity wireless e-health solutions should also enable professional real-time patient monitoring and therapy support as well as private user access to monitoring, medical assistance and individual care services in future ubiquitous computing environments. This allows to monitor a health conditions and probably handle minor emergency situations.
- It is anticipated that as a result of the project and exchange of visits between partnering institutions, Leeds will become an international coordinating centre in Wireless e-health technologies, in particular for elderly assistance and quality of life monitoring.



## Potential EU / International research net



### Potential European Partner Institutions (Core Partners):

- University College of London (Dr. Yang Yang, Dr.J. Mitchell, Dr. I. Darwazeh)
- University of Bergen (Prof. Oyvind Ytreus)
- University of Oslo (Prof. Frode Laerum)

### Developing links with other International Partners:

- USA: University of California/San Diego (Prof. Paul Ziagal)
- China: University of Nanjing (Prof. Aiqun Hu and Ing Zhi Gong Wang)
- China: Beijing University of Posts and Telecommunications (Dr. Kang Guixia)
- Russia: Academy of Medical Sciences Centre for Coordination of International Scientific Programmes (Prof. V. Maximov and Prof. G. Kolev)
- Brazil: Federal University of Pernambuco, (Prof. J.L. De Lima Filmo and Prof. Valdamar Da Rocha)
- India: Indian Institute of Management Centre for Management in Health Services (Prof. K.V. Ramani)

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