

M. CERNY, N. NOURY. *Living laboratory for development of new solutions for remote home care of elderly*. *Gerontechnology* 2016;15(suppl):32s; doi:10.4017/gt.2016.15.s.830.00

**Purpose** Ageing populations is a worldwide problem, one which needs to be addressed. One possible solution is to implement remote home solutions for care of the elderly. We recently installed a new living laboratory at our university in cooperation with specialists from the nursing care and medical fields<sup>1</sup>. New modern equipment has been placed in the living laboratory which will serve as a new testing platform. The equipment is used for indirect measurements of the monitored individual, and provides a measurement of the interaction between the equipment and the monitored individual – this seems to be a promising way of future development. The living laboratory does not only include the equipment but also an interdisciplinary team. **Method** Each engineering project starts with analysis followed by a list of deliverables. We have listed main challenges in the field of ICT for elderly people, well-being and ambient assistive living. The list is not exhaustive, however, we have considered the most important challenges from the author's point of view: (i) usefulness, (ii) interoperability, (iii) easy installation of new solutions, (iv) unobtrusive, and (v) economics. **Results & Discussion** Considering defined problems in the field of ICT for elderly people and Assistive Ambient Living, we built a new living laboratory at our university. This laboratory meets the requirements defined above. We focused on unobtrusiveness of used technologies, which allows us to diagnose critical situations which occur during the day and night within the living quarters. It is obvious, that all technologies cannot be used in real living quarters due to the high economical demands. The primary motivation is to achieve similar results in the diagnosis of critical situations with a lower cost. It can be achieved by using more cost-effective sensors or by the optimization of measuring systems. Our living laboratory is also designed to allow tests on commercial and new devices in the field of ICT, primarily for elderly people. This will prove the usability of new devices and easy installation approach. We will also focus on interoperability of new devices. Thanks to the cooperation of the Faculty of Medicine, the department of nursing and midwifery we are also able to measure the social and economic impacts of tested devices. There are also possibilities for the development of new solutions, especially in the field of activity monitoring, circadian rhythms monitoring<sup>2</sup> and acute health problems detection and prevention. The next challenge is therapeutics in case of an emergency. For instance, how can we provide help to elderly individuals living alone in the event of an acute health problem (e.g., myocardial infarct or stroke)? Will calling emergency services be enough? The prevention of emergency events and the evolution of illnesses are the real scientific motivations for new living laboratories. The current state of the art in the ICT for wellbeing, assistive ambient living and remote health care of elderly people allows for the measurement of nearly everything with very good precision. It is also possible to conduct effective data processing and detection of acute health problems. What can be better than the precise detection of these emergency events? Prevention. And it can be achieved only thanks to prediction. There are many mathematical methods including fuzzy models, bio-inspired algorithms and so on, but only a few of them are already implemented into real-life applications. Each model for prediction needs to be supported by as precise data as possible. Living laboratories are the proper way to measure and create predictive models rapidly and efficiently.

#### References

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