The widely acclaimed series of AAL congresses, now in its seventh year, impressively demonstrates that the many research projects, especially those developed under the Federal Ministry of Education and Research’s (BMBF) grant program for assistance systems for the elderly, have delivered a wide range of results for and approaches to Ambient Assisted Living solutions. At the same time, we must acknowledge that successful products in the smart home area are still a rarity, although “in recent years, innovative applications for every stage of life and situation have been developed and brought to the market” [Klausing, 2013]. Several of the reasons for this have been analyzed and addressed repeatedly (for example, in [SmartSenior, 2011]): Many of the solutions are stand-alone and often incompatible with existing systems; their benefits to users are frequently unclear, suitable business models have yet to materialize etc. Moreover, many of the systems have a peculiar focus on technology. They are designed for homeowners or tenants and expect users to be technophiles, with many requiring advanced home networking skills. They also demand the willingness, abilities and time for installation, configuration and maintenance.

The collaborative project "Sensor-based healthcare services", launched within the framework of the “Connected Technologies” Berlin Research Campus, assumes that these demands of end-users will generally not be met in the AAL target group, particularly older women (and men). As such, there is no consumer acceptance for the “conventional” smart home products characterized above. In light of this, the "Sensor-based healthcare services” project follows a different approach: The focus is on the service, which the connected smart home technologies make possible, optimized through the equipment – and thus more efficient and less expensive – and which can be rendered by service providers (see Figure 1).

Figure 1: Vision of the BMBF-funded collaborative project "Sensor-based healthcare services"
Workshop contents

During this three-hour workshop, various aspects of the topic will be presented and discussed based on a project overview and six interrelated presentations. The presentations will be prepared and presented with visuals by the project partners (15-20 minutes each), each followed by a round of discussion (around 5-10 minutes).

**Sensor-based services for healthcare and personal safety**
Dipl.-Ing. Harald Klaus (Telekom Innovation Laboratories)

This introductory presentation provides an overview of the objectives and prime focuses of the BMBF-funded collaborative project "Sensor-based healthcare", which is being carried out within the framework of the "Connected Technologies" Berlin Research Campus.

**Sensor-based activity identification in the domestic environment**
Dipl.-Inf. Felix Rodemund (Technical University of Berlin, DAI Lab)

Current solutions involve home emergency call services, which are alerted through the phone network by means of a wearable emergency button and which can implement further measures as needed. The obvious disadvantage of this approach is that the alarm cannot be raised if the wearer cannot press the emergency call button. In this context, the "classic" home emergency call will be optimized through a technical assistance system in the smart home environment, to compensate for this critical deficit. This presentation focuses on the technical aspects of this new, service provider-oriented approach for situation identification in the domestic environment.

**Stand up for your health – technology-based establishment of healthy everyday living**
Dr. Sibylle Meyer (SIBIS Institute for Social Research, Berlin)

The concept presented here for sensor-based health coaching – "Stand up for your health" – combines personal and technology-based health coaching based on the latest findings in motivational theory. The aim is to develop a practical boost to healthy living that starts with everyday activities and deploys the motivational potential of new technologies in a targeted manner. The program is based on the principles of universal design. FC health coaching will be adaptable to both young, fit users and older user groups with less-than-stellar condition or mobility restrictions.

**Audio-visual metaphors as a motivational factor for fitness and health coaching**
Dipl.-Inf. Martin Zöllig (Technical University of Berlin, DAI Lab)

This paper examines a concept for sensor-based coaching from the design theory and technical perspectives. The question is the extent to which technologies can influence user motivation to reach their health-related goals through visual elements (ambient persuasive technology) and auditive elements (sonification), with the aid of the deployed sensor devices. More specifically: How can sensor values and other relevant data for health targets be presented so users can understand the current status of their data as easily as possible, while at the same time motivating them to continue pursuing their personal health targets?

**Exploring the possibilities for interactive data visualization in the context of sensor-based healthcare services**
Jan Lindenberg, art+com

Nearly every smartphone sold in recent years contains a number of embedded sensors. These sensors make it possible for the devices to record data for movement, orientation, ambient light and other phenomenon. This is an advance study and practical exploration of sensor-based monitoring of activities with conventional smartphones.

The project is intended to provide a foundation for further developments in sensor-based applications for activity monitoring in general and home care in particular, by providing a simple, cost-effective way for researchers and designers to quickly develop prototype sensor systems that are based on readily available hardware and standardized web technologies.

This presentation describes how the technologies can be used in a creative way for the short-term data recording and rapid prototyping of interactive, sensor-based solutions.
**Challenges to social service providers in the implementation of sensor-based healthcare services**

Anna Heindorf, Johanniter-Unfall-Hilfe

The research project aims to develop sensor-based service concepts to improve and maintain personal health and boost willingness for prevention and personal fitness. Technical solutions are being embedded in an overarching service concept, which consists of several individual concepts and combines prevention, early detection, safety aspects and individual support. The special requirements of the development process become particularly clear when one takes the perspective of a social service provider. Since this perspective has often been neglected in previous AAL activities, this presentation focuses on the requirements that have to be taken into account from the service provider's point of view in the implementation of "sensor-based healthcare services".

**Business model development for sensor-based healthcare services**

Dipl.-Ing. Harald Klaus (Telekom Innovation Laboratories)

This presentation at the AAL Congress describes an interview-based approach to business model development. It presents the initial findings developed and gleaned during the preliminary phase of the collaborative project "Sensor-based healthcare services". It will demonstrate in detail how this approach aims to further intensify and detail the results obtained through the use of open-space and canvas-based methods such as the Osterwalder Model [1].

The application scenarios used for this study are based on the findings for intelligent home emergency call and applications in the tele-monitoring area gained from the collaborative SmartSenior project. In this project, business model workshops were held based on the business model canvas developed by Osterwalder and Pigneur, including methodological enhancements through 3D modeling. The results underscore how these methods quickly reach their limits, even in elaborate workshops with numerous experts, when it comes to analyzing the myriad aspects needed for a complete business model – such as detailed delivery and service flows, partner-specific cost-benefit considerations, and the examination and assessment of sector-specific framework conditions.

Workshop leader: Dipl.-Ing. Harald Klaus, Telekom Innovation Laboratories, Berlin