

**Research Activity of the German Federal Ministry of Education
and Research**

Technology and Services in the Wake of Demographic Change



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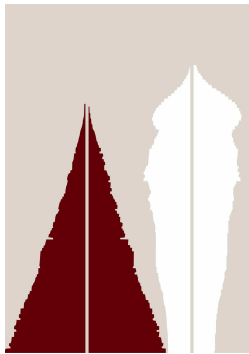
The Research Activity

„Technology and Services in the Wake of Demographic Change“

In Germany, as in most western societies, social and economic structures have been changing throughout the last decades. The consequences of these changes as well as forecasts for the future urge an interdisciplinary discussion and the development of innovative and sustainable solutions.

The research activity of the Federal Ministry of Education and Research (BMBF) focuses three structural changes and their interrelation:

- 1) The demographic transition results in a higher rate of old and very old people in the population.
- 2) The structural transformation from an industrial to a service economy that results in an increasing significance of services for economic growth and the labour market.
- 3) Microsystems technologies, especially information and communication technologies, play a more crucial role for growth and employment.



1) Demographic change

The demographic transition has mostly been discussed and researched as to its risks and negative consequences: lower birth rates and rising life expectancy, thus less and less young people, more and more old people. What has been neglected so far is the focus on chances and opportunities for society and economy.

As a matter of fact, the probability of emerging health problems, chronic disease, functional limitations rises at great age. Likewise, the complexity of health problems is not restricted to physical health problems but is likely to affect social and mental health. At the same time the available labour force to provide

necessary care-giving services is shrinking.

Demographic forecasts therefore urge questions about how to finance pension benefits or how to promote work ability as long as possible. However, an increasingly old population entails economic chances and possibilities due to the creation of new markets for products and services. Such positive side effects of the otherwise feared changes have so far been widely underestimated.



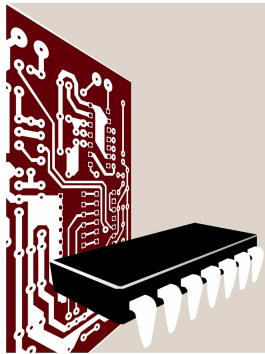
2) Service society

Supporting and sustaining service markets has become increasingly important. Services account for more than 70 per cent of GDP and the employment within the European Union and in all developed economies. Yet the service sector only covers one fourth of the internal trade in Europe. The industry has great potential waiting to be exploited and utilized. Services could be one answer.

The Federal Ministry of Research and Education has been funding service research for the last 15 years. In the mid 90s the quality of services in Germany

was highly questioned. Compared to other industrial countries, Germany failed to provide good services and moreover to identify important potential for service innovation. Extending its research and funding activities, the Federal Ministry clearly underlined the necessity and the relevance of service research for present and future economic as well as social processes.

The use of “service engineering” has helped to analyse and develop services according to strategic aspects. Service engineering adapts know-how drawn from traditional product engineering aiming at a more efficient, modern and customer-friendly service design. This research activity takes an approach that is based on a concept of “service engineering” which is not solely determined by economic aspects but which integrates technological, social and individual requirements likewise – which constitutes a new approach within the funding policy for service research of the Federal Ministry.



3) Technological development

Microsystems technology (MST) is an important and dynamically evolving cross-sectional technology. During the last 20 years MST has internationally developed into a key technology. With the help of MST it became possible to develop and improve many products and techniques. MST makes a considerable contribution to increasing the innovative power of German industry by integration of such new functions as “intelligence”, communicative ability or the ability of systems for self-organization.

The field of “Ambient Assisted Living (AAL)” has been developing during the past years. AAL aims at enhancing the quality of life of older people and their care-givers within their preferred environment by increasing autonomy and mobility as well as by supporting the maintenance of health and functional capacity. This approach constitutes a promising example of opening a new market by systematically combining technology development along with societal needs. Obviously, the provision of AAL services depends on the customers’ specific needs with regard to the fact that such needs are gradually changing and increasing.

Objectives

The research activity “Technology and Services in the Wake of Demographic Change” aims at pulling together these three perspectives. Furthermore the objective is to present solutions and approaches giving consideration to various needs: The potential of technological development has to be linked with the provision of services. Business models have to be conceptualized in consideration of users’ needs. Without involving end-users’ as well as service providers’ expectations and demands, technology threatens to fail unfolding its full potential. Such services which “vitalize” technological devices shall promote intergenerational cohabitation and support autonomous, healthy living for old and ill people within their own home.

The research activity thrives to enhance user-orientation when new technologies are developed, it promotes innovative thinking as to strengthening links between technology industry and the service sector and it demonstrates new economic possibilities against the background of the otherwise negatively associated demographic change.

Basic data

Funding Ministry: Federal Ministry of Education and Research (BMBF)
Project managing agency: German Aerospace Center (DLR)

There are 15 project consortia which are organized within two project groups. The first project group focuses on economic requirements and business models, the second one focuses on the interface of user and service. The meta project ensures networking between the project consortia, analyses results and generates deeper insights and knowledge of innovations integrating technologies and new services.

Funded project groups

Project group I: Economic requirements/business models for hybrid products

Alter leben	develops solutions in order to guarantee autonomous living suited to the needs of elderly people.
easyCare	aims at supporting the daily life of family carers with the help of a central internet platform.
E-Health@Home	designs and implements telemedicine services for elderly people.
lifescience.biz	develops and tests business models of prevention in the healthcare and wellness market.
MeDiNa	pilots aftercare telemedicine services for monitoring heart disease patients at home.
MIDIS	develops marketing methods and instruments of service innovation which are fit for cross-company, interdisciplinary and cooperative use.
STADIWAMI	develops service standards for Smart Homes and MST-based facility management services.
WEITBLICK	designs and develops an “Ambient Assisted Living” system on the basis of individual communication.

Project group II: Ambient Assisted Living (AAL) and Microsystems Technologies (MST) at the interface of user and service provider

CrossGeneration	works out MST-based solutions in order to improve the quality of life and health of elderly people within their home.
JUTTA	pilots a just-in-time assistance system for elderly people at their home.
Mobil50+	supports the development, marketing and use of services tailored specifically for the generation 50+ by means of Near Field Communication (NFC) as well as mobile services.
PAGE	develops a platform to integrate assistive health technologies into health care networks.
service4home	elaborates an approach to service coordination based on information guides by MST.
well.com.e	develops a platform for the provision of services supporting healthy behaviour of chronically ill patients.
WiMi-Care	researches how knowledge is generated at the front-stage of service work and transferred back to engineers.
The Meta Project	links all research projects of the research activity.

The German Federal Ministry of Education and Research (BMBF) funds the project consortia and the meta project. The German Aerospace Center (DLR) is the project managing agency. Responsible coordinator is Dr. Ranjana Sarkar, ranjana.sarkar@dlr.de, Phone: +49 (0) 228 3821 - 321.

Project group I:
Economic requirements/business models
for hybrid products

Alter leben

Growing old with a high quality of life – self-determined living with the help of technical improvement linked with the provision of services



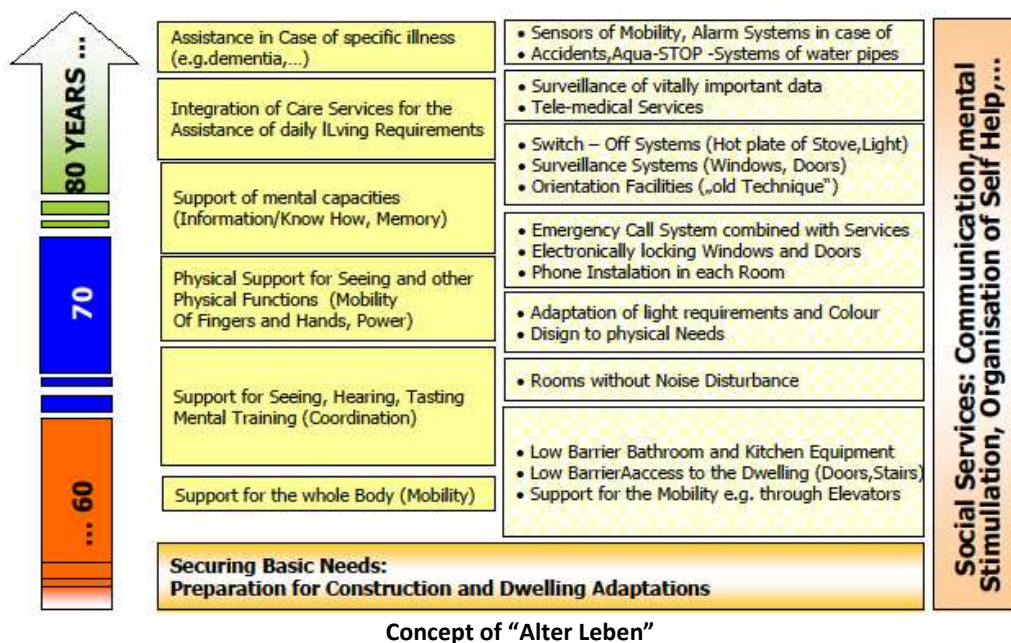
develops solutions in order to guarantee autonomous living suited to needs of elderly people. Therefore, the project designs concepts for personal services, technical assisting systems and Smart Home services.

The project concentrates on services in housing cooperatives in order to maintain an independent life, especially for the elderly. Different individualized services are combined with micro-technical solutions with regard to comfort, health care, home security and leisure time. They are established within networks of service providers according to the specific interests and needs of the target groups.

The essential part of “Alter leben” constitutes the concept of a Smart Home which is able to gradually adapt to changing and evolving needs of its occupants as they move through different stages of their life. Its modular structure ensures a high degree of adaptability considering old people’s changing life circumstances and abilities.

Further emphasis is put on the research of how micro-technically based services develop in the residential market as well as within the health care market. In addition special attention is paid to the question how successful business models can be established and promoted, and how adequate structures of cooperation can be developed.

The project supports the integration of voluntary service provision into professional service provision. Besides, the realization of informal exchange of experience and knowledge transfer will be enhanced.



Coordination:

Funding code: 01XZ09001 - 01XZ09005

Verband Sächsischer Wohnungsgenossenschaften e. V. *Project duration:* 08/2009 - 06/2012

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Funding: 1.053.070 €

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Project Consortium:

UV Sachsen Projektentwicklungs- und Verwaltungsgesellschaft mbH, Leipzig

ATB Arbeit, Technik und Bildung GmbH, Chemnitz

ccc software GmbH, Markleeberg

MFPA Leipzig GmbH

Wohnungsbaugenossenschaft Burgstädt eG

LebensRäume Hoyerswerda eG

easyCare

Support of care-giving relatives and friends by providing demand-oriented services, electronic systems and assistive devices



Today, there are more than 2 million people in Germany that need assistance in their daily life. Two thirds of them are cared for at home by relatives and friends. However, the care-giving relatives and friends are in a difficult situation. Usually, they are not only highly stressed on a physical and mental basis, but unfortunately overstrained. The following areas are mainly involved:

- Uncertainty about the actual state of the person in need of care,
- Lack of information, instructions and organizational help,
- Missing opportunities to exchange experiences of care-giving with others.

The project easyCare aims at offering support in order to facilitate care-giving persons' situation. A central internet platform will be developed presenting a unique combination of demand-oriented information, technology-supported services and assistance of the local care service provider. Consequently, the easyCare internet platform promotes a more self-determined living at home of persons in need of care by enhancing the potential of relatives' and friends' personal care-giving possibilities. Moreover, it constitutes a promising field for potential savings in the social systems as well as a market for innovative research for new ambient assisted living technologies and services.

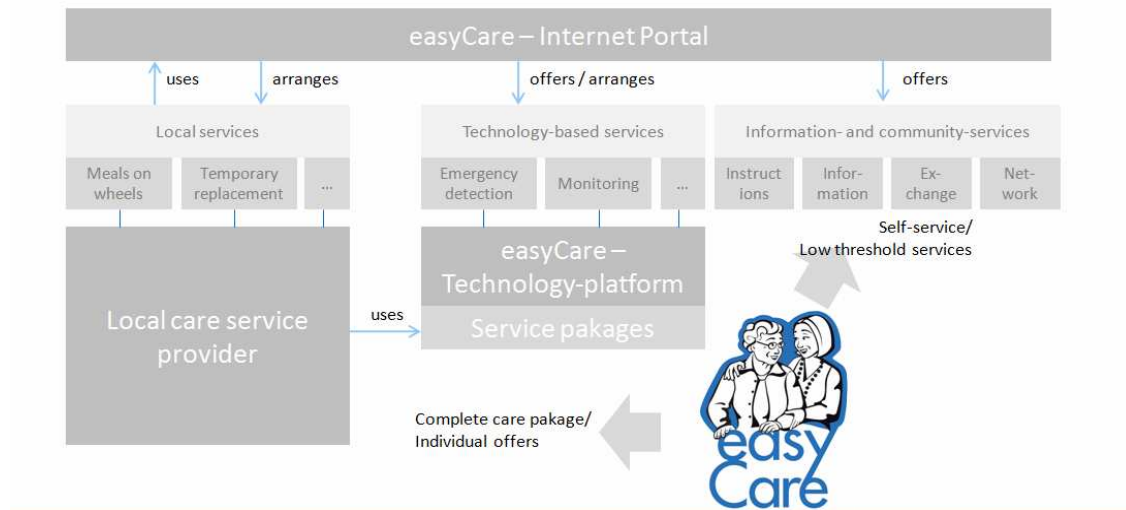
The project contains the following aspects:

- Providing an internet portal for supplying a range of demand-oriented services for care-giving persons,
- Integration of a social network component ("Care 2.0") for the exchange of information and experiences in the field of care giving,
- Providing retrofittable, flexible and intelligent environments for monitoring and for supporting dependent persons in daily life situations (e.g. emergency detection and recognition of dementia),
- Developing information and communication technology-based solutions for supporting the individual caregiver (e.g. software for care planning and documentation) and for the local care service provider that is enabled to offer specific, on-demand services via internet.

easyCare – Vision and Scenario



Demand-oriented services and information for care-giving relatives and friends



“easyCare” vision and scenario

Coordination:

FZI Forschungszentrum Informatik

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Funding code:

01XZ09007 - 01XZ09010

Project duration:

09/2009 - 08/2012

Funding:

1.552.417 €

Project consortium:

Vitanet GmbH, Mannheim

Wohlfahrtswerk für Baden-Württemberg, Stuttgart

Raumcomputer GmbH, Karlsruhe

E-Health@Home

Development of business models for a self-determined life in an ageing society



Based on innovative business models the project identifies, evaluates, designs and implements telemedicine services for the elderly. The project contributes to the solution for problems resulting from an ageing society. The objective is the development of alternatives for those who have been

living in residential nursing homes due to health impairment.

The project creates conditions under which these people can live independently in their own homes longer than it was previously the case. Starting points for E-Health@Home are current and future applications in telemedicine and Ambient Assisted Living (AAL).

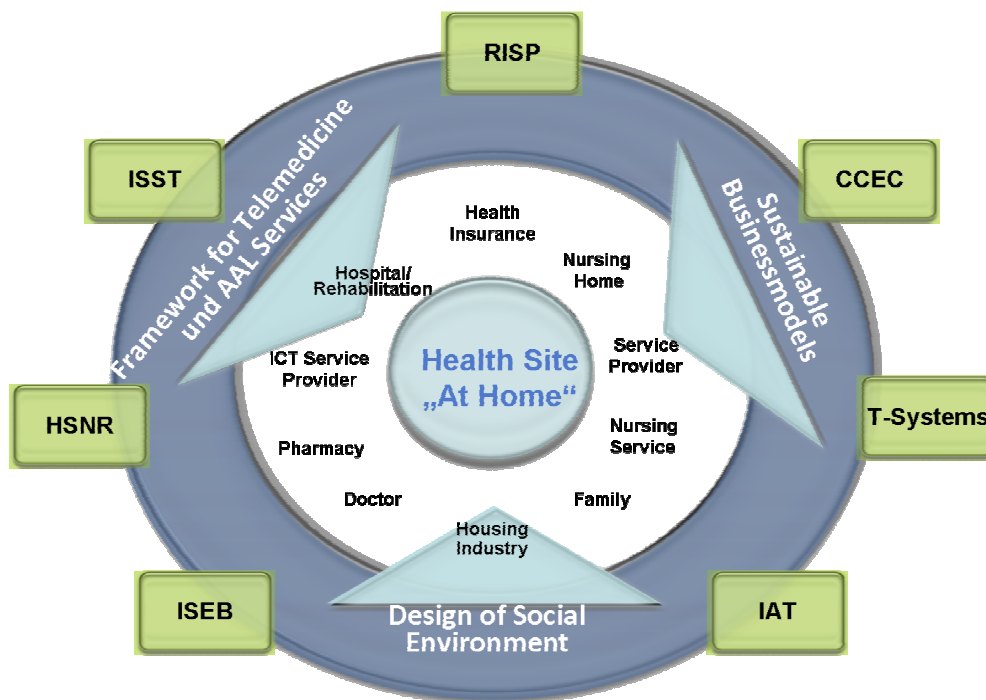
The success of the project depends on a balanced consideration of medical, technological, economical and social factors. The project team is thus structured in a highly interdisciplinary manner.

In the context of E-Health@Home, the social and economical protagonists of this evolving (third) health care market will be completely and innovatively linked. The objective of the project is a new model for supply:

- The elderly look for new models of living in their third phase of life. In addition, an aging society needs new supply models.
- The private home needs to be upgraded as a health site. An increasing interlocking of outpatient and nursing home care is emerging.
- Services in telemedicine and AAL will allow the home-centred treatment of a multitude of illnesses and complaints.
- Further critical success factors are the encouragement of independent and responsible behaviour of the elderly, involvement of relatives and new forms of social initiatives such as the “Mehrgenerationenhaus” (Multi-Generation-Home).
- This life and supply model requires a flexible network of business and intermediate organizations which offer medical, nursing, practical household and cultural services.

Developing the home as a health site improves the life quality of the patient. At the same time, nursing and health-care costs can be reduced.

The research project focuses the integration of existing and the development of new services, business models and methods of business management as well as the modelling of the social environment.



Overview “E-Health@Home”

Coordination:

Rhein-Ruhr-Institut für Sozialforschung und
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Funding code:

01FC08001 - 01FC08007

Project duration:

09/2008 - 08/2011

Funding:

2.017.075 €

Project consortium:

Competence Center E-Commerce (CCEC) an der Freien Universität Berlin, Berlin

Fraunhofer Institut Software- und Systemtechnik (ISST), Dortmund

T-Systems Business Services GmbH, Bonn

Hochschule Niederrhein (HSNR), Mönchengladbach

Institut für Sicherheit im E-Business (ISEB) an der Ruhruniversität Bochum, Bochum

Institut Arbeit und Technik (IAT), Gelsenkirchen

Rhein-Ruhr-Institut für Sozialforschung und Politikberatung (RISP) e.V. an der Universität Duisburg-Essen,
Duisburg

lifescience.biz

Development and management of hybrid business models in the health care and wellness sector

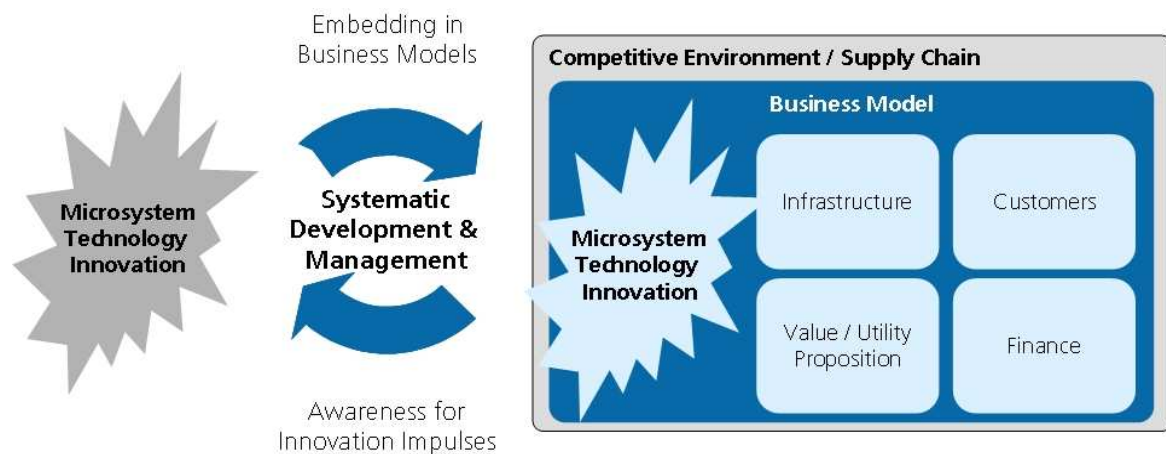


The health care and wellness sector offers great potential for the application of microsystems technology innovations. Yet, there is only a limited number of examples of such innovations embedded in profitable business models. Innovations based on microsystems technology might only be successful in the market if they are supplemented by adding systematically developed service concepts. Furthermore, these hybrid technology service bundles have to be embedded in marketable business models.

»lifescience.biz« aims at the development and testing of implementable business models in the health care and wellness market. The focus is put on concepts for the prevention and increase of the independence of elderly persons. This is to be achieved by health promotion activities for the target group of people between 45 and 65 years.

The immanent challenge of prevention is that expenses are incurred immediately, yet benefits – manifested in form of better quality of life, lower costs in the public health sector, and lower costs of care – appear much later.

Innovative business approaches closely interlace services and technological developments. Such business models have great potential in the health care and wellness market. »lifescience.biz« develops a method for the systematic development of such business models. Pilot cases are generated and implemented within the project. Practical testing and evaluation of the developed solutions are exemplarily carried out by the involved industry partners.



Challenge of embedding microsystems technology into business models

Coordination:

Fraunhofer Institut für Arbeitswirtschaft und Organisation (IAO)

Nobelstraße 12, 70569 Stuttgart, Germany

www.lifesciencebiz.de

Funding code:

01FC08063 - 01FC08068
+ 01FC08074

Project duration:

12/2008 - 11/2011

Funding:

1.558.770 €

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Florian Kicherer, florian.kicherer@iao.fraunhofer.de, Phone: +49 (0) 711 970 - 5129

Project consortium:

Fraunhofer Institut für Biomedizinische Technik (IBMT), St. Ingbert

Institut für Arbeit und Technik (IAT), Fachhochschule Gelsenkirchen

Institut für Arbeitswissenschaft und Technologiemanagement (IAT) der Universität Stuttgart

4sigmaGmbH, Oberhaching

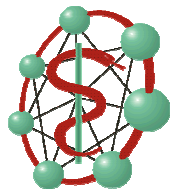
PSI Production Gesellschaft für Steuerungs- und Informationssysteme mbH, Berlin

pulson.med Medizintechnik, Hundsangen

Schwenninger BKK, Villingen-Schwenningen

MeDiNa

Microsystems engineering for holistic telemedical services in outpatient aftercare



develops telemedical support for the aftercare of elderly patients to recover faster and as completely as possible in their domestic environment. Service providers, especially hospitals, shall have the ability to offer new patient-centered services.

The potentials of microsystems engineering as well as information and communication technology shall be used for a systematic planning of telemedical basic services (provider: “Medical Service Provider”) to design all-embracing telemedical and patient-centered services systematically (provider: hospitals and rehab hospitals). The solution shall be organized in a way that the inpatient treatment prior to rehab treatment as well as the subsequent health training can be taken into account.

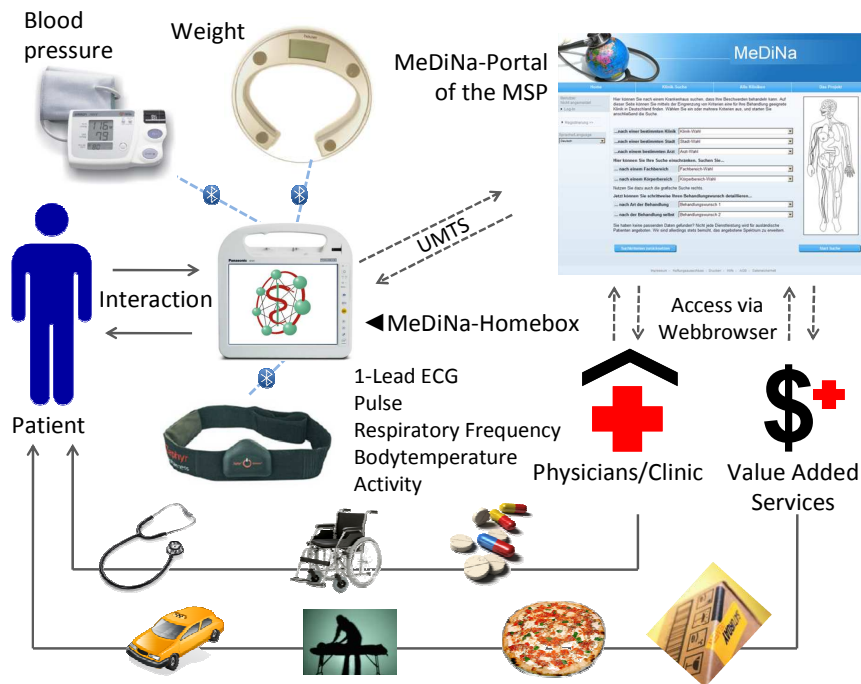
The medical service provider shall offer all basic functions and sensor systems for microsystems engineering-based medical services within the scope of a business-to-business-model which the relevant actors of ambulant aftercare need. Based on the fact of the technological potentials and on medical demands, the provider has to have the ability to create appropriate systems and information services. Fundamental basic services are:

- The assessment of vital signs
- The monitoring of the state of health and of individual parameters respectively
- The collection and distribution of information to relevant actors.

Furthermore other services, e.g. the control of the medication, guidance for a health care training, control of nutrition, can be used.

Hospitals shall implement the services of the medical service provider in the context of aftercare. On the basis of these services, hospitals can offer medical patient-centered services. On the basis of daily updated information physicians of the rehab hospital are able to get an all-embracing idea of the state of health of the patient (provided that the patient gives his consent) and can initiate therapeutic measures or visitations within the scope of aftercare. All planned services do not substitute consultations, but complement them in order to assure the surveillance of the patient after discharge at close intervals.

Thereby the elder patient is focused. From the patient’s perspective, the enlarged aftercare leads to an increased feeling of security. The patient will thus be able to recover faster and more steadily in the future. He shall also be able to decide who deals with his data in which way. In the whole project particular attention is paid to the acceptance of technology and to its easy usability.



Holistic approach for MST-assisted medical aftercare services

Coordination:

Forschungsinstitut für Rationalisierung (FIR) e.V.
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Funding code:

01FC08056 - 01FC08062

Project duration:

12/2008 - 11/2011

Funding:

1.545.997 €

Project consortium:

Institut für Arbeitswissenschaft (IAW) an der RWTH Aachen

Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme (IMS), Duisburg

Universitätsklinikum Aachen an der RWTH Aachen


Philips GmbH, Unternehmensbereich Healthcare, Hamburg

MUL Services GmbH – Geschäftsbereich Systemlösungen, Aachen

Fachverband Biomedizinische Technik (FBMT) e.V., Wetzlar

MIDIS

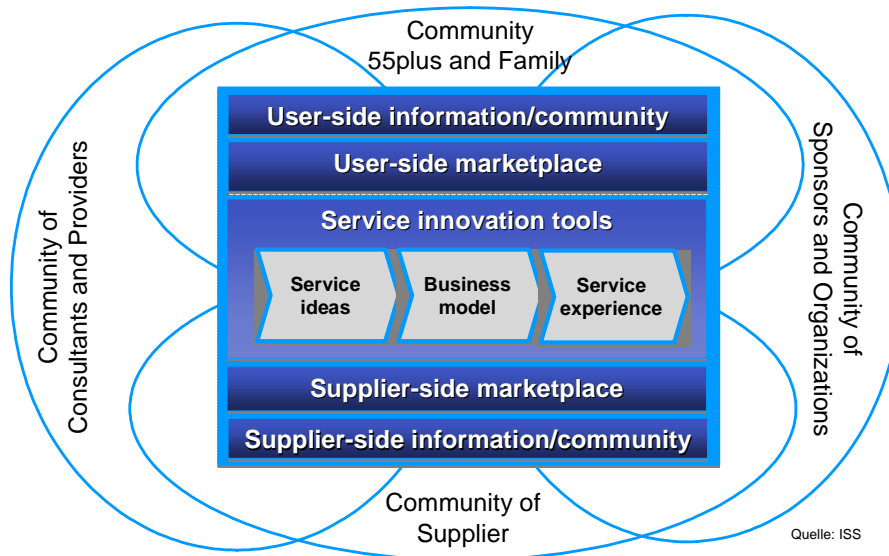
Microsystems-oriented service innovations for seniors

 aims at analyzing, developing and testing of contents, methods and instruments, which are necessary and suitable for an enterprise-spreading, interdisciplinary, cooperative development and marketing of microsystems-oriented service innovations for seniors (MST-services).

Starting point is a systems analysis of the central problem dimensions and relations in the investigation fields "senior economy" on the one hand and "microsystems-oriented application functions" on the other hand. On this basis, empirical investigations are accomplished as to seniors' specific needs for services and as to the problem solution potentials of microsystems techniques. On the basis of these results target fields with promising innovation potentials for MST-service developments are derived with the help of particularly adapted analysis and evaluation methods. For these target fields then MST-service concepts by means of service engineering are designed and tested exemplarily together with transfer partners. In addition a web-based service centre is developed as internet platform, which supports the enterprise-spreading, cooperative development and marketing of MST-Services. For operating this platform economically and effectively furthermore in the MIDIS-project business models for economic conversion as well as organizational concepts and Management tools are examined, which appear particularly suitable for enterprise-spreading development and marketing MST-services for seniors.

The utilization of the project results takes place on the one hand directly with the partners in the context of their business activity. On the other hand the results will be available on the IT-platform as a product at the market for order. Finally they will be an input to training and further education with some of the partners.

The work will be done by eight R&D-partners (enterprises and scientific institutes) and also by five preliminary selected partners, which are responsible for tests and transfer of results.



Platform of cooperation

Coordination:

Z&P Zangemeister & Partner

Systemforschung und Innovationsberatung

Charlottenhof 1, 24398 Winnemark, Germany

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www.midis.pdai.de

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Funding code:

01FC08033 - 01FC08040

Project duration:

11/2008 - 10/2011

Funding:

1.670.297 €

Project consortium:

GGT Deutsche Gesellschaft für Gerontotechnik mbh, Iserlohn

IGES Institut GmbH, Berlin

ISS International Business School of Service Management GmbH, Hamburg

RKW Rationalisierungs- und Innovationszentrum der Deutschen Wirtschaft e.V., Eschborn

Technische Universität Dresden (TUD), Privat-Dozentur für Angewandte Informatik (PDAl), Dresden

Universität Paderborn (UPB), Juniorprofessur für Betriebswirtschaftslehre, insbesondere Dienstleistungsmanagement, Paderborn

Zentrum für Mikrosystemtechnik (ZEMI), Forschungsverbund Berlin e.V., Berlin

Z&P Zangemeister & Partner, Systemforschung und Innovationsberatung, Winnemark

STADIWAMI

Standards for the growing AAL market



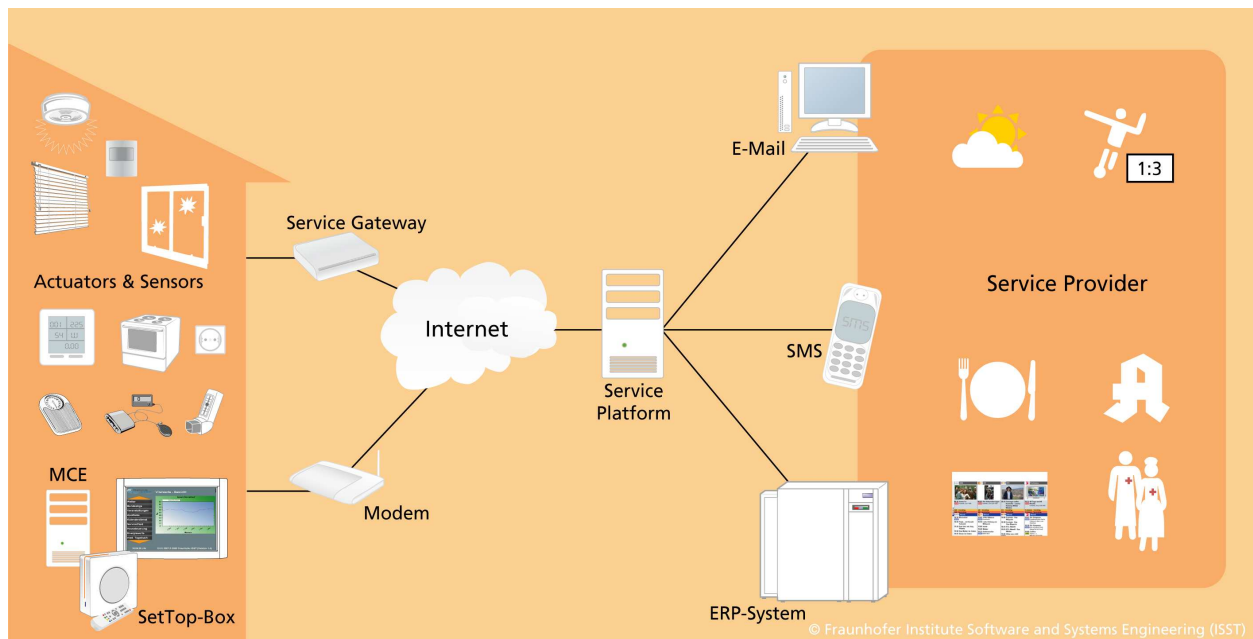
develops standards for the growing Ambient Assisted Living (AAL) market, with a strong focus on the effects of demographic change and the potentials of microsystems technology.

Our standardization activities cover the entire value-added chain of service packages for household living needs. One novelty is the holistic view of AAL services as a package of modular services that can be combined as needed. Although the services are still performed by specialized providers, the overall organization and assurance of the quality of these services are the responsibility of a central actor. The innovation is not in the services themselves, but in the fact that they are available as customized packages that are centrally organized by a single entity. Another innovative feature is the integrated approach of hybrid packets comprising services and their supporting microsystems. The aim of this project is not the development of new technologies, but the integration of existing products and systems or prototypes with services. This will result in innovative opportunities for developing marketable business models for the continuously changing AAL market.

To achieve these objectives, the project is divided into three interrelated sub-sections that build upon each other, yet have different focuses:

- *Screening and Monitoring:* Relevant developments and trends involving demographic change, microsystems technology and services are being examined in terms of their joint potential and need for standardization.
- *R&D Phase Standardization:* Central research results and projects are being identified for standardization. Researchers are being given the opportunity and tools for standardization so they can disseminate their research findings in the most user-friendly manner possible. Where desired, we assist them in the standardization process.
- *Services Project:* Working together with a central actor from the housing sector, we provide household-related services to residents in selected accommodations, covering the entire value-added chain of a service ranging from automatic or manual initiation to performance and payment. This requires an integration of various technologies and services which we achieve by creating standardized technical, organizational and economic interfaces.

Although the market for Ambient Assisted Living (AAL) services has enormous potential for growth, it has been largely disregarded by industry. By developing publicly accessible standards, the transparency of this market – and thus its attractiveness for investors – will be considerably enhanced.



System architecture

Coordination:

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www.stadiwami.de

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Funding code:

01FC08013 - 01FC08018

Project duration:

11/2008 - 10/2012

Funding:

1.815.866 €

Project consortium:

DIN Deutsches Institut für Normung e.V., Berlin

Fraunhofer Institut für System- und Innovationsforschung (ISI), Berlin, Karlsruhe

Fraunhofer Institut für Software und Systemtechnik (ISST), Berlin, Dortmund

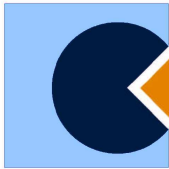
Kooperationsstelle Hamburg IFE GmbH – Institut für internationale Forschung, Entwicklung, Evaluation und Beratung

Spar- und Bauverein Hannover eG

Technische Universität Berlin (TUB) – Institut für Technologie und Management

WEITBLICK

Knowledge-based technology and demand-oriented services for seniors through usage of individualized care concepts



develops an assistance system, based on individualized communication, in order to enable the booking of (care) services tailored to the needs of elderly.

A variety of cognitive and physical challenges aggravate the ability to cope with everyday life for seniors. But only a small amount of those constrictions are aimed at by care providers. With the help of an assistance system based on microsystems

technology, WEITBLICK aims at establishing technology-based communication structures, to provide elderly with offers from a wider field than established care concepts do. Those offers may originate from needs in household, safety or leisure activities.

Assistance systems with comprehensive and complementary communication structures and a dynamic, self-adaptive knowledge base have the potential to increase the integration of the user into the society: They can provide an opportunity to order services tailored to the user needs and help to coordinate and schedule the service itself. A structured and organized but also adaptive flow of information is the central element of the functioning and efficiency of a system. Simple structures for supply and demand, being up-to-date, complete set-up of booked services (who, for whom, when, where, what, to which price) and flexible possibilities to reschedule, will increase acceptance of the services by elderly customers and will enable them to be service providers of social services themselves ("Offer myself to play cards every Wednesday at 2 p.m.") The kind of services will not be constricted a priori, but due to established conventional structures, health and wellness services will be a substantial part of such a system.

The project aims at the following results:

- Guidelines for optimizing existing services and for integrating new services fitted to elderly
- Methods for monitoring of spatial (position, direction of movement, speed of movement) and physical (pulse, ECG, blood glucose) parameters
- Prototypic hardware for integration of physical and spatial sensors
- Prototypic hardware for establishing location-independent and communication channel transparent communication
- Realization of the assistance system in three scenarios
- Maintenance of data transport operation under changing conditions

With the establishment of the WEITBLICK-system it is not only possible to utilize modern microsystems technology to open new business segments, but it is first and foremost intended to use this technology to integrate social functions and thereby increase the quality of life for seniors.



The organization of assisted daily living

Coordination:

Technische Universität Ilmenau

Institut für Automatisierungs- und Systemtechnik

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Funding code:

01FC08029 - 01FC08032

Project duration:

10/2008 - 09/2011

Funding:

1.144.136 €

Project consortium:

Arbeiterwohlfahrt Alten-, Jugend- und Sozialhilfe gGmbH, Erfurt

Kirchhoff Datensysteme Services GmbH & Co. KG, Erfurt

FALCOM Wireless Communications GmbH, Langenwiesen

Project group II:

**Ambient Assisted Living (AAL) and
Microsystems Technologies (MST) at the
interface of user and service provider**

CrossGeneration

MST-based services for the improvement and promotion of seniors' health and quality of life



CrossGeneration seeks to improve the health and quality of life of elderly people by developing services based on microsystems technology.

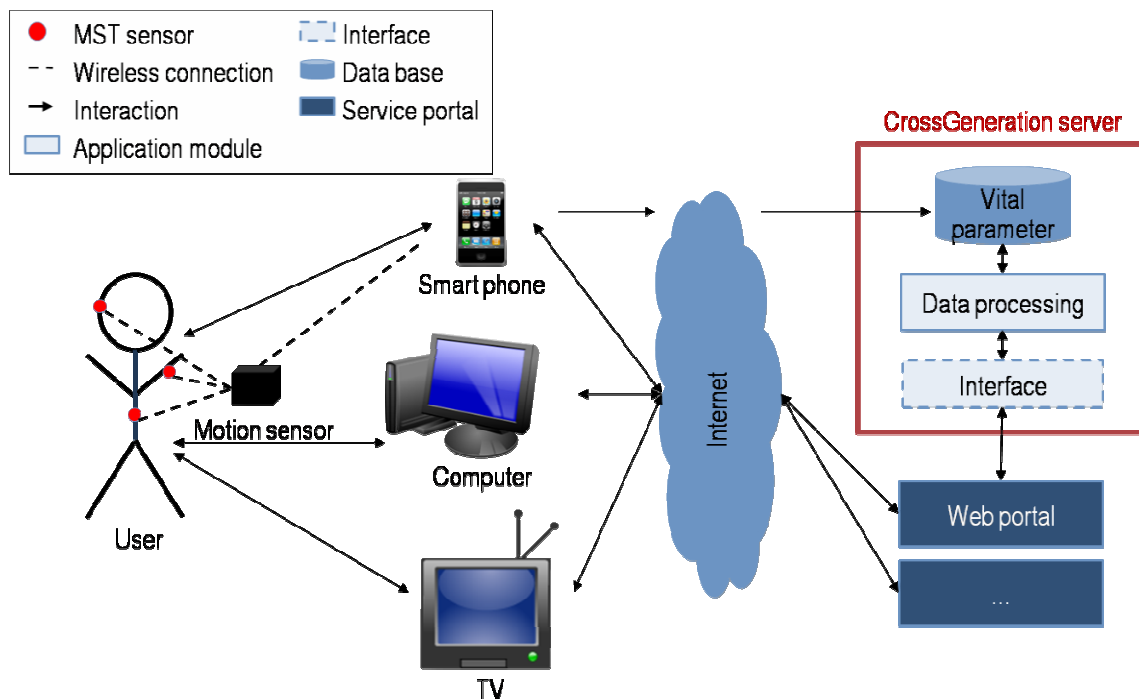
The CrossGeneration consortium lead-managed by the Center for Digital Technology and Management (CDTM) consists of several academic institutions and companies conjointly working towards a platform for innovative services to support seniors in their domestic and social environment.

CrossGeneration research is operating at the interface between microsystems technology and service models with a high focus on usability. Solutions developed by the consortium aim at motivating elderly people to exercise regularly in order to prevent diseases and to improve the current state of health. This shall help to fulfill one of the main desires of elderly people, which is to stay in their familiar environment as long as possible.

Important elements of the technical architecture are vital sensors placed on the body of the user and the integration of a mobile device enabling a real-time connection to the CrossGeneration online platform. The platform thereby analyzes incoming data concerning a user's health and fitness level and suggests relevant services and contacts based on this information.

CrossGeneration is pursuing the following main objectives:

- Design and development of an easy-to-use platform which serves as a basis for the supply of various services
- Exploration of usability requirements of the target group "elderly people"
- Creation of cooperation and business models for innovative services based on the developed platform.



Basic project architecture "CrossGeneration"

Coordination:

Technische Universität München

Center for Digital Technology and Management
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www.crossgeneration.info

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Funding code:

01FC08069 - 01FC08072

Project duration:

01/2009 - 06/2011

Funding:

1.649.045 €

Project consortium:

Fertl EDV Systeme GmbH, Eching

FutureCamp GmbH, München

Institute of Electronic Business e.V. (IEB) – Universität der Künste Berlin

Technische Universität München, Center for Digital Technology and Management – Lehrstuhl für
Realzeit-Computersysteme (RCS)

JUTTA

“Just-in-time-assistance“

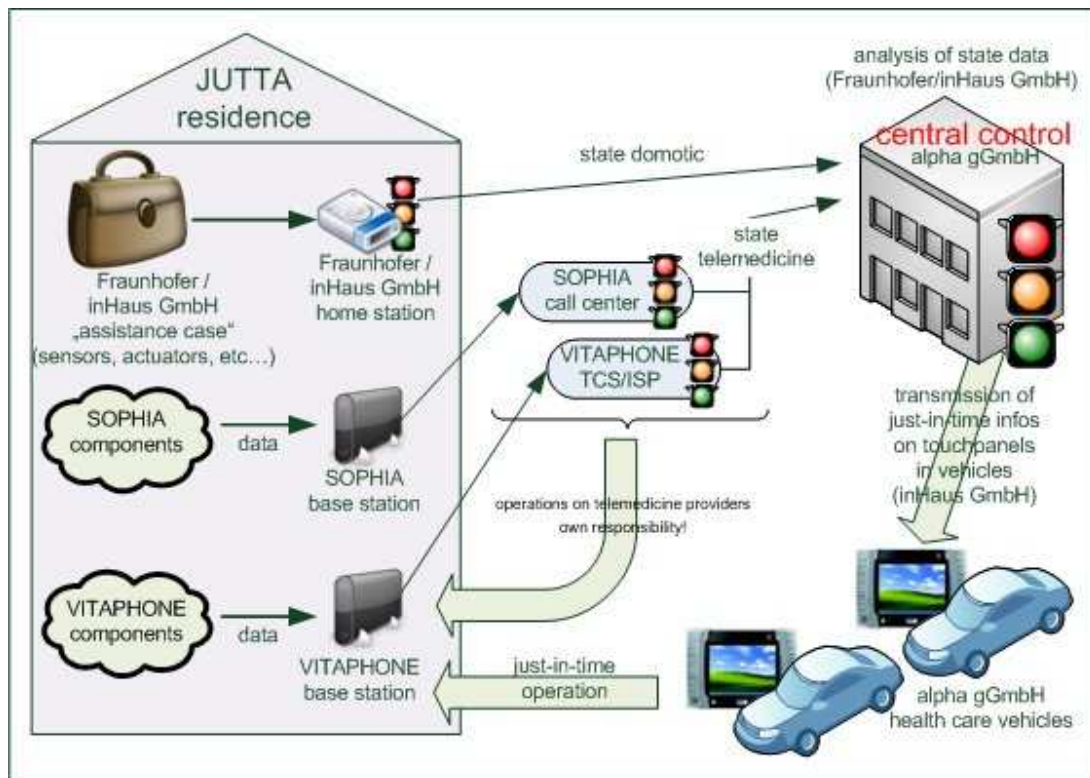


is developing a “Just-in-Time-Assistance” model. It will comprise the entire range of essential care services, thus ensure the provision of customized services for people who require nursing assistance and care in their homes. The technical solutions and structures are intended to support an integral care concept. In this context, applicable business models will be supplied.

“Just-in-Time-Assistance” refers to a comprehensive homecare service in a specific territory which is geared to the individual needs of the customer and not, e.g., to an efficient homecare visit plan of the service provider. A “mobile assistance case” and a “mobile emergency vehicle” will be used to allow customized care and “just-in-time-assistance”. The case will contain different technological support elements, e.g. for measuring vital signs. These can be installed in the homes of the patients, depending on the individual need for assistance. The acquired data will then be transmitted by a call centre to a service centre which will be set up within the territory. The emergency vehicle will serve as a mobile 24-h workplace. It will also be tooled up with the suitable technology to ensure that the nurse in the patient’s home can be provided with information on demand by the service centre. The compilation, processing and evaluation of the data acquired by the system’s sensors will be performed by a so-called “assistance traffic light”. It will supply the nurse with information about the condition of his or her patient in a compact, clear and in-line-with-demand manner. (Via status “green”, “yellow” and “red”). If, e.g., the light is red, an immediate intervention of a nurse or physician will be required.

In addition to the professional help supplied by homecare services, the solutions are aimed at supporting and promoting the integration of assistance provided by family members and voluntary helpers. This will contribute to the development and enhancement of social networks and communication. On one hand, these concepts are expected to improve the quality of care and, on the other hand, reduce the cost of care and additional follow-up expenses caused, e.g., by fall accidents and skin disorders. Apart from technical solutions, models are developed and tested, e.g., how the cooperation between nursing care providers, housing companies and voluntary helpers could work (Among other aspects, clarification of legal and remuneration concerns). Another issue closely linked to this is the development of new organisational models required for the transition to customized and demand-focused care and nursing assistance. Based on the changes and the scope of the tasks, these models will have to give consideration to the new demands on the competencies of the persons involved in the service supply process (e.g. nursing staff and service centre staff), as well as to the transfer of competencies.

The purpose of the joint project JUTTA is the creation of a prototype system aimed at the development and implementation of a regional and technology-based homecare service. To realise this project, a large number of individual services, technologies and stakeholders will have to be integrated into one service system. In future, this will meet the changing and growing demand of the aging society to lead an autonomous life in their home environment for as long as possible.



The “JUTTA”-system

Coordination:

ALPHA gGmbH

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www.just-in-time-assistance.de

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Funding code:

01FC08050 - 01FC08055

Project duration:

10/2008 - 09/2011

Funding:

1.111.013 €

Project consortium:

Sozialwerk St. Georg e.V., Gelsenkirchen

Ambient assisted living GmbH, Gelsenkirchen

Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme (IMS), Duisburg

inHaus GmbH, Duisburg

SOPHIA – Consulting & Concept GmbH, Bamberg

VITA PHONE GmbH, Mannheim

Mobil50+

Development, marketing and usage of IT-enabled service concepts for a mobile life at 50+

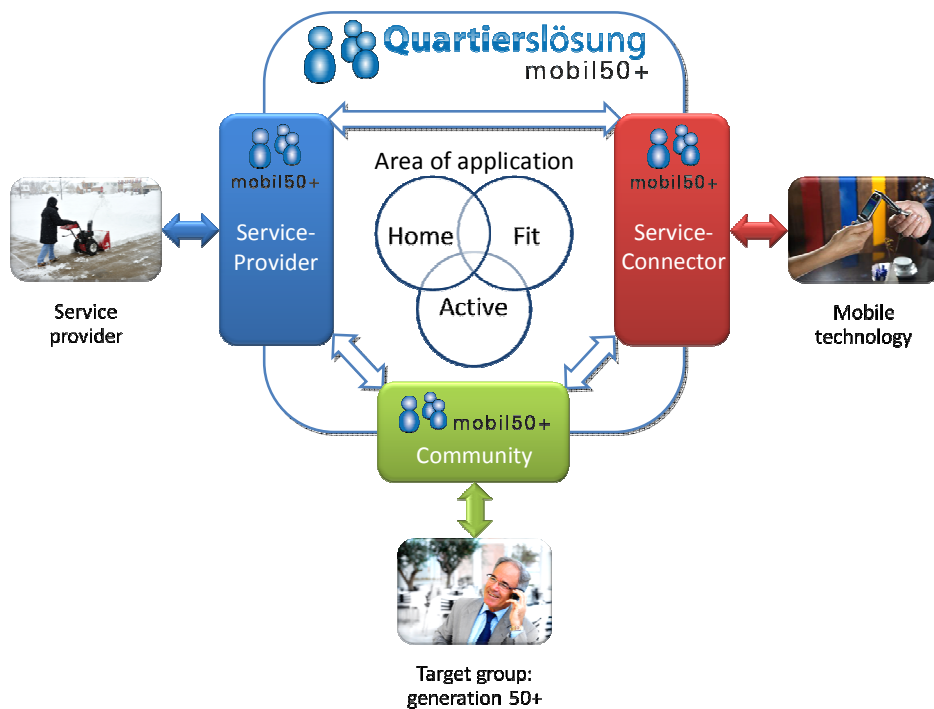


supports the development, marketing and usage of IT-enabled service concepts for mobile life and activity of the generation 50+ via Near Field Communication (NFC) and mobile services.

In light of the demographic shift in the societies of the European Union, the question arises of how to develop and support personal assistance services that cater to the growing demographic group of the 50+ year olds. Over 30% of the German population will be aged 65 or older in the year 2050. The ageing society will effect a dramatic increase in the need for care, home-care and support services. Along with the demographic shift comes a change in the value of family and family structures, and the challenge of how to integrate the generation 50+ in new social structures must be met, in order to keep our societies functioning in a changing demographic setting.

On the upside, the age-group 50+ is of particular interest to the service sector, since it has considerable, untapped amounts of income at its disposal to spend on improving quality of life. Leveraging this potential however, requires professional service engineering efforts that will create new jobs and modified job descriptions along the way. Developing and improving services for the generation 50+ can also lessen the strain of the demographic shift on public retirement and health care systems. Therefore, the goal of the project Mobil50+ is to enable affordable, custom-tailored service offerings through the design and development of innovative business models for mobile services. The project aims to develop processes and structures that enable service-providers to recognize the demand of the target group for new services, and to adjust and improve their existing services.

As a first step, the concept “Quartierslösung” (solutions within the community/neighbourhood) was developed, incorporating both hard- and software components and comprising the “Mobil50+ ServiceProvider”, “Mobil50+ ServiceConnector” and “Mobil50+ Community”. The “Mobil50+ ServiceProvider” supports the development, marketing and usage of services, custom-tailored to the generation 50+. The “Mobil50+ ServiceConnector” allows the incorporation of new and emerging mobile communication technologies, like Near Field Communication (NFC), to ensure a high usability of mobile services and reduce the infrastructure cost of personal assistance services considerably. The “Mobil50+ Community” establishes a direct communication channel between service providers and clients through the incorporation of online community functionalities into mobile service offerings, consequently creating a new social structure for the generation 50+. The joint usage of service offerings, enabled through community functionalities, strengthens cross generation co-living and cooperation.



Concept of "Mobil50+"

Coordination:

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Funding code:

01FC08046 - 01FC08049

Project duration:

10/2008 - 09/2011

Funding:

1.182.622 €

Project consortium:

Universität Kassel, Fachgebiet Wirtschaftsinformatik

Technische Universität München, CDTM, Lehrstuhl Wirtschaftsinformatik

Ludwig-Maximilians-Universität München, GRP – Generation Research Program

ITM Beratungsgesellschaft mbH, Stuttgart

PAGE

Platform for the integration of assisted health technologies in health care networks

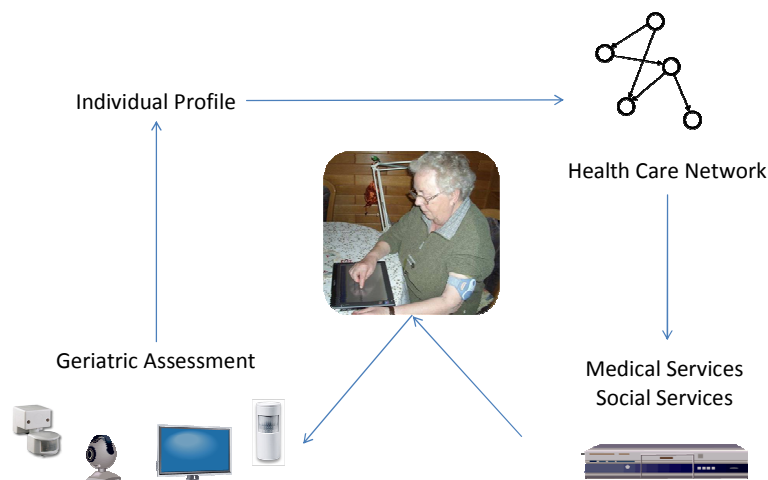


develops a platform to integrate health technologies in health care networks in order to maintain autonomy of elderly people in their home environment as long as possible.

Assistive health technologies are sensor-based technologies used for maintaining, improving and restoring health. So far, such technologies have not been widely used. This is not due to a lack of disposability, but due to the lacking linkage of technologies and user-friendly services. The integration of assistive health technologies is challenging and complex as health services are characterized by the multitude of different actors.

PAGE focuses on analyzing and developing the value creation chain with medical service providers and companies of different branches being involved.

PAGE wants to contribute to a sustainable use of assistive health technologies. Besides, new concepts of service provision are to be developed on the basis of models of users' requirements and needs. Such new service provision concepts focus the maintenance of autonomy and social integration of elderly persons.



Circle of value creation of an integrative platform

Coordination:

Technische Universität Carolo-Wilhelmina zu
Braunschweig

Fakultät für Mathematik und Informatik

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Funding code:

01FC08041 - 01FC08045

Project duration:

01/2009 - 12/2011

Funding:

1.316.739 €

Project consortium:

Charité – Universitätsmedizin Berlin

DiscVision GmbH – Abteilung Entwicklung, Paderborn

Oldenburger Forschungs- und Entwicklungsinstitut für Informatikwerkzeuge (OFFIS e.V.)

Technische Universität Berlin, Lehrstuhl für Technologie- und Innovationsmanagement (TIM)

service4home

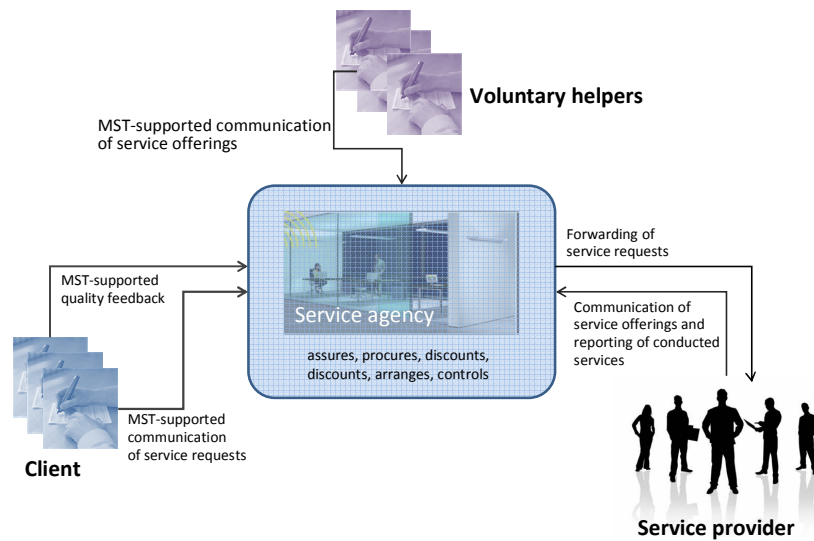
Coordination of services with the help of MST-based information transfer



Staying in their own home as long as they can is a desire many people have when they get older. However, if health conditions make medical care inevitable or house cleaning becomes almost undoable, proper help has to be found. The research project Service4Home aims at supporting this task with an ostensibly simple concept.

The goal of the project is the development and testing of work and organizational structures for domestic services by using microsystems technology. Such technology will improve information exchange for requesting and conducting services, thus supporting the organization and management of service conduction. For this, a socio-technical concept for service organization will be developed, which by intertwining technology and steps of service conduction will support the coordination of service providers. In conjunction with this concept, a business model with a service agency as its core element will be developed. Beside coordinative work, this agency will be responsible for continuous quality assurance of service conduction. For the conduction of services, the project aims at establishing a combination of volunteer work to foster the intergenerational exchange and professional service providers. This is supposed to keep cost for service utilization and therefore improve the acceptance of the overall concept. Additionally, this combination is supposed to establish a culture of well-being in living areas comprising inhabitants of heterogeneous age.

The technology to be used in the project is based on digital microsystems writing technology (pen technology): for writing, a special device resembling an ordinary pen in weight and size (15 x 2 x 1,5 cm) is used to fill in forms printed with special patterns not visible for the human eye. The pen's build-in camera captures and stores this handwriting and sends the resulting data to a service center. The advantage of this technology is that with its similarity of a pen, it can be used instantaneously. This will especially foster its acceptance among elderly people. The pen technology has already been successfully applied in monitoring and diagnosing cases for e.g. diabetes care with elderly people (as part of the framework program „Healthy Northrhine-Westfalia“).



MST-based service concept

Coordination:

Ruhr-Universität Bochum, Institut für
Arbeitswissenschaft

LS Informations- und Technikmanagement
Prof. Dr. Thomas Herrmann

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Funding code:

01FC08008 - 01FC08012

Project duration:

10/2008 - 09/2011

Funding:

993.834 €

Project consortium:

Ruhr-Universität Bochum, Lehrstuhl für Informations- und Technikmanagement am IAW

Ruhr-Universität Bochum, Lehrstuhl für Allgemeine Soziologie, Arbeit und Wirtschaft

Institut zur Modernisierung von Wirtschafts- und Beschäftigungsstrukturen GmbH (IMO), Mainz

VBW Bauen und Wohnen GmbH, Bochum

Institut für Wohnungswesen, Immobilienwirtschaft, Stadt- und Regionalentwicklung GmbH (InWIS), Bochum

TU München, Lehrstuhl für Wirtschaftsinformatik (I17)

ISS International Business School of Service Management, Hamburg

well.com.e

Platform for the provision of services to support healthy and autonomous behaviour of chronically ill patients



is developing a health platform with the prime objective of providing motivation and support relating to health-oriented activities to those suffering from chronic illness. The fundamental research aim

of the well.com.e project is to investigate the principle functions and modalities of supportive services in the secondary health-care market. Together with the corresponding service providers, the gained knowledge is transferred to the development of marketable, demand-oriented, quality-tested offers, which can then, in turn, be bundled in modular service models geared to user acceptance. The knowledge transfer into service and business models and the practical testing of such results thus represent the consistent implementation of a holistic and interdisciplinary project approach.

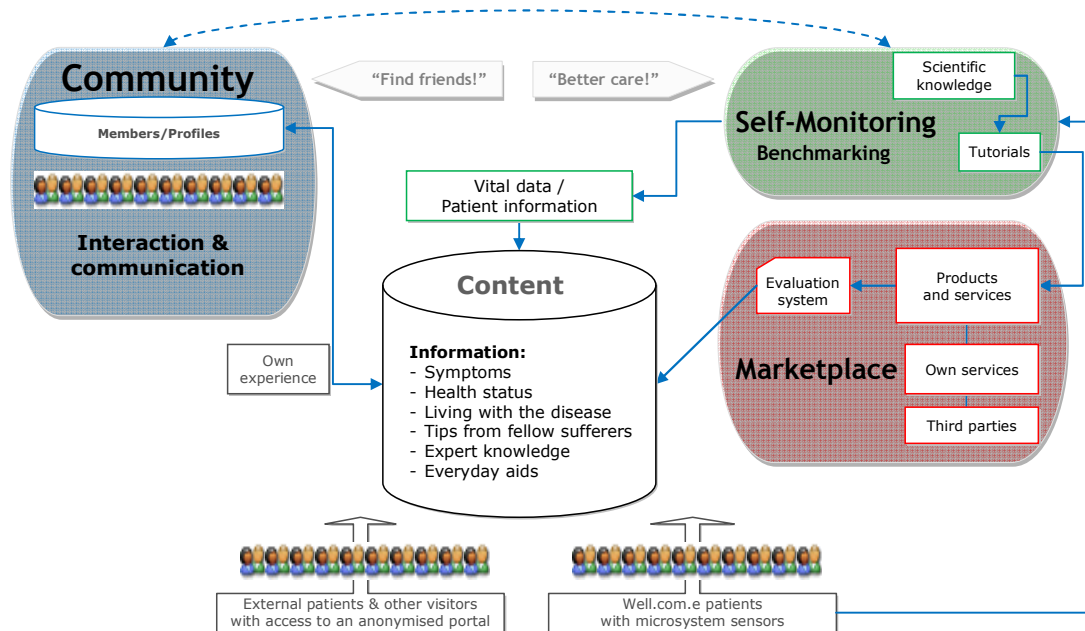
Essential elements are the core use of microsystems technologies and, on this basis, the development of services with high individual value in respect of a sustained and self-determined positive attitude to personal health, alongside promotion of individual efforts to improve health by way of offers tailored to the demands of specific target groups.

Taking the example of the group of patients with cardiovascular disorders, the project is elaborating model implementations in which individual health-relevant data acquired with the aid of microsystems technologies supply the user with a permanently up-to-date reflection of his or her health status and health development. At the same time, group-specific services aligned to the individual needs of the user are to be developed and tested. The envisaged health platform is to serve as the interface and communicative media hub. It will collate significant aspects of the health situation, needs and wishes of cardiovascular patients and, in addition to its function as an information and communication platform, will provide access to quality-controlled products and services in the sense of a marketplace. The user platform thus fulfils three key functions, namely

- as a system for immediate device-independent presentation of personal health parameters (self-monitoring),
- as a hub linking individuals in similar situations and with similar interests (community),
- and as a platform bringing together the providers and users of service models (marketplace).

The project views itself as a development process, in which, on the one hand, advances in microsystems technologies and service-oriented offers for a specific demographic group are utilised and adapted iteratively to customer (patient) needs. Concurrently, their marketability and user acceptance are verified in practical applications. The project thrives on the active integration of future users into this development process, and in this way ensures early adaptation by the actual target group. Through its development of microsystem-based services and the alignment of such services to the function principles of the secondary health-care market, well.com.e offers solutions to the social challenges arising from the processes of demographic change.

The project has adopted the concept of “Ambient Assisted Living”, as the means not only to meet social demands, but above all to offer the individual a higher quality of life.



Integrated health platform

Coordination:

Deutsches Institut für Gesundheitsforschung gGmbH (DIG)

Lindenstraße 5, 08645 Bad Elster, Germany

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www.well-com-e.de

Contact: Steffen Beer, dig@well-com-e.de

Funding code:

01FC08019 - 01FC08023

Project duration:

10/2008 - 09/2011

Funding:

1.511.411 €

Project consortium:

Deutsches Institut für Gesundheitsforschung gGmbH, Bad Elster

Master Solution AG, Plauen

Fraunhofer-Institut für Photonische Mikrosysteme (IPMS), Dresden

Binder Elektronik GmbH, Sinsheim

Musicon Valley e.V., Markneukirchen

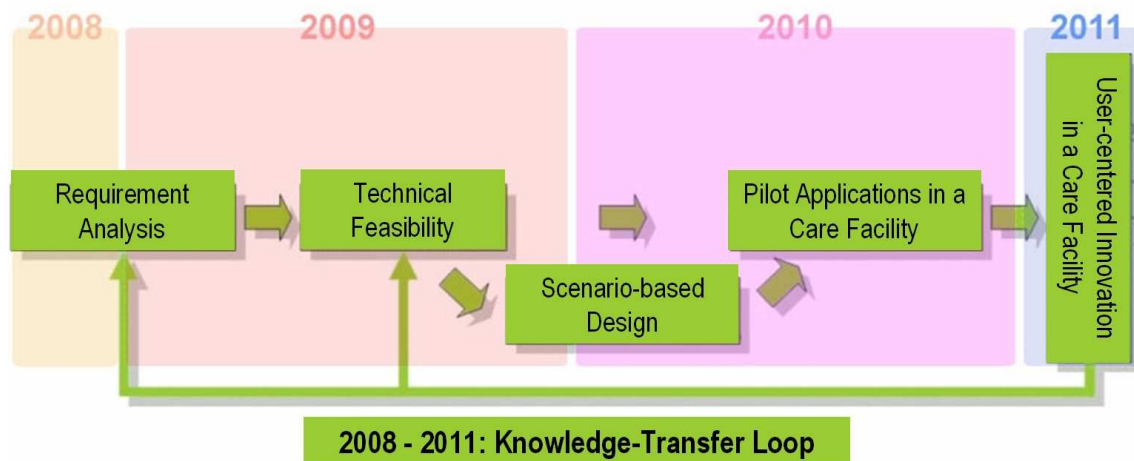
WiMi-Care

Supporting the transfer of knowledge for a participative design of the care sector through microelectronics



Developments in labor markets and demand for the care of the elderly open an opportunity for innovations in the use of service robots. Their development often proceeds however, without consideration of the needs of either caregivers or of elderly persons. The project consortium is coordinated by the University of Duisburg-Essen and involves a close partnership with the Fraunhofer Institute for Manufacturing Engineering and Automation in Stuttgart, the developer of the mobile robot assistant "Care-O-bot® 3". The main concern of the research is to understand how knowledge is generated at the front-line of service work and transferred back to engineers and commercial firms designing and marketing robots for service functions. The project begins with an assessment of an elderly care facility, where the Care-O-bot and the Automated Guided Vehicle "Casero®" - developed by the company MLR System GmbH - will eventually be tested.

The research findings will contribute to the further development of service robots. In the near future robots could help to reduce the stress and burden of care work by taking on time-consuming, yet routine tasks, and freeing up health care workers to focus on higher-skilled aspects of care provision. For the patients with acute care needs, robots may lessen their dependence on care workers and contribute to their ability to lead a more independent daily live.



Schematic project description

Coordination:

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Funding code:

01FC08024 - 01FC08027

Project duration:

11/2008 - 10/2011

Funding:

1.521.400 €

Project consortium:

Universität Duisburg-Essen, Institut für Soziologie, Duisburg
 Fraunhofer-Institut für Produktionstechnik und Automatisierung (IPA), Stuttgart
 MLR System GmbH für Materialfluss- und Logistiksysteme (MLR), Ludwigsburg
 User Interface Design GmbH (UID), Ludwigsburg

The Meta Project



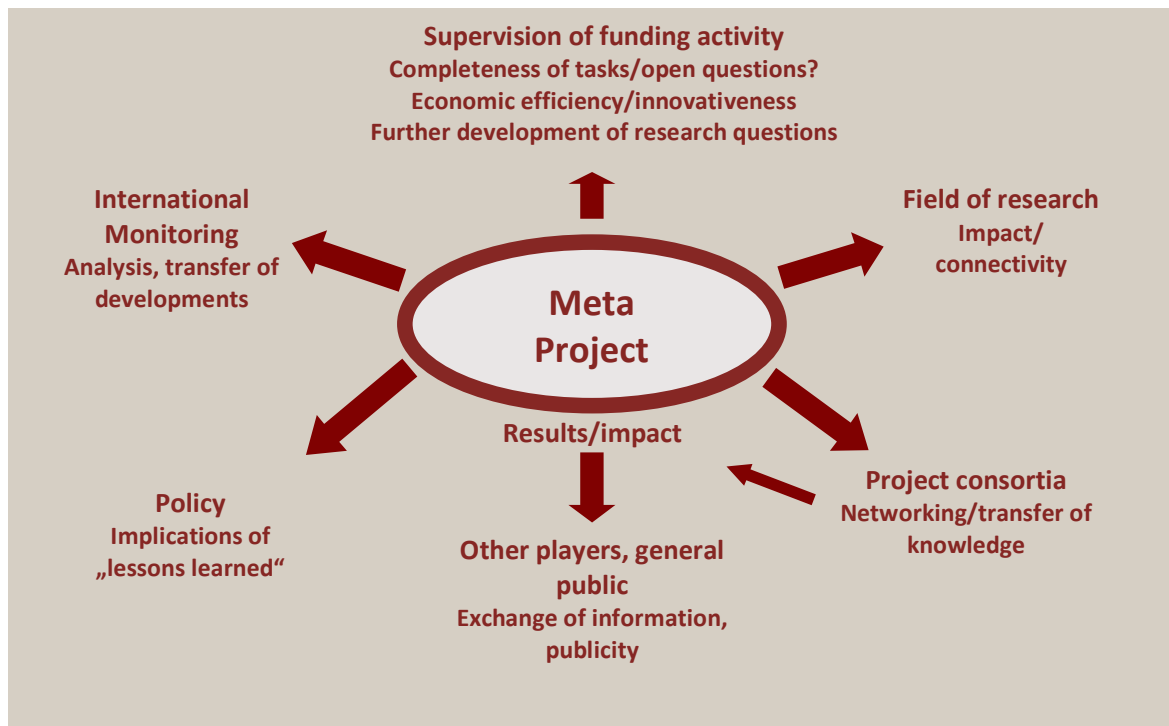
The meta project examines the relationship between technology development and the development of innovative services. It ensures that societal and social requirements due to demographic changes remain in focus. For this purpose, the meta project links all research projects of the research activity and analyses all the results of running projects. This analysis is needed to generate deeper insights and knowledge of innovations integrating technologies and new services.

Functions of the meta project:

- Research assistance
- Counselling
- Networking
- Communication and dissemination.

Objectives of the meta project:

- International networking
- Organizing a collective learning process, including all project consortia as well as the public funding institutions
- Creating a trusting cooperation and communication within the frame of the research activity
- Transferring the main results of the research projects through media and conferences
- Analysing the main target groups who are potentially concerned
- Analyzing new business models with regard to target groups and to the health care system.



Responsible institution:

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Contact: Prof. Dr. Daniel Bieber, bieber@iso-institut.de

Funding code:

01FC08073

Project duration:

11/2008 - 10/2012

Funding:

917.500 €

Research team:

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