

Spotlight on health: technical solutions and services to promote an independent and autonomous life

D.Krainer, J.Plattner & S. Lattacher

23.11.2018, ENOVA, Pinkafeld

Who we are and what we do

Institute for Applied Research on Ageing (IARA)

IARA is a multidisciplinary research institute for applied research, in the field of ageing and demographic change

- Ageing society – respond to new challenges and potentials
- Demand for innovative and cross-disciplinary solutions
- Give priority to needs of older adults

3 Departments:

DCRD – Demographic Change and Regional Development

HAT – Department for Health & Assistive Technologies

ISAC – Intergenerational Solidarity, Activity and Civil Society



Who we are and what we do

Research Unit Active & Assisted Living (AAL)

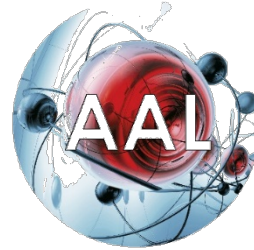
Aims:

- develop concepts, products and services
- connect technologies and the social environment with one another and
- thereby, make a positive contribution to increasing the quality of life in old age as well as all phases of life

Research Fields:

- User Research Methodology
- Human Centered Design & Development Methods and Processes
- Smart Sensors, Interoperable Interfaces, AAL-IoT Layer, ADL-Algorithms
- User Interfaces (User Interface / Interaction Design)
- Socio-technical Evaluation

Spotlight on ...



Research area



A Best Practice example

HEALTH
Technical Solutions
& Services



Framework for strengthen
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The Living Lab Approach

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Active & Assisted Living (AAL)

Demographic change in A/EU

- Number of elderly is steadily increasing
- Increasing number of people with need for care
- Urbanization / emigration to the cities (especially Carinthia, Styria and Waldviertel),
See: https://www.wienerzeitung.at/nachrichten/oesterreich/politik/945531_Oesterreich-waechst-Wien-noch-mehr.html
- ...

Research Area:

- AAL is a broad research field
- Comprises concepts methods, multidisciplinary collaboration
- To develop products, services, processes
- Meet the needs of an ageing society
- And improving different domains of Quality of Life



AAL Market

For more than a decade....

- Various technical assistance systems & services have been developed and evaluated
- Research activities with focus on linkage between technology and social environment led to cross-disciplinary attention for this topic
- Direct effect: large number of market ready technologies has emerged already

But: Market success, associated financing models, transfer to standard supply models have not yet been achieved (a minimum extend)

Research community of AAL is seeking to invest on large scale, long term and multi-dimensional approaches and evaluation to provide argumentative basis for supporting market success!

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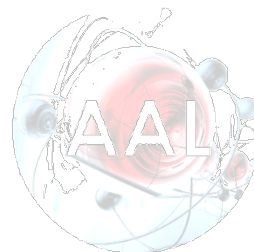


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Living Lab Approach

Living Lab R & D & I Methodology:

- Methods, processes, infrastructure and partnerships for the realization of cooperative, applied research with relevant actors in the context of AAL
- Ideation, conception, validation and testing, evaluation of technical products, services, concepts
- connect technologies and social environment
- positive contribution to increasing the quality of life

Main focus of our Living Lab:

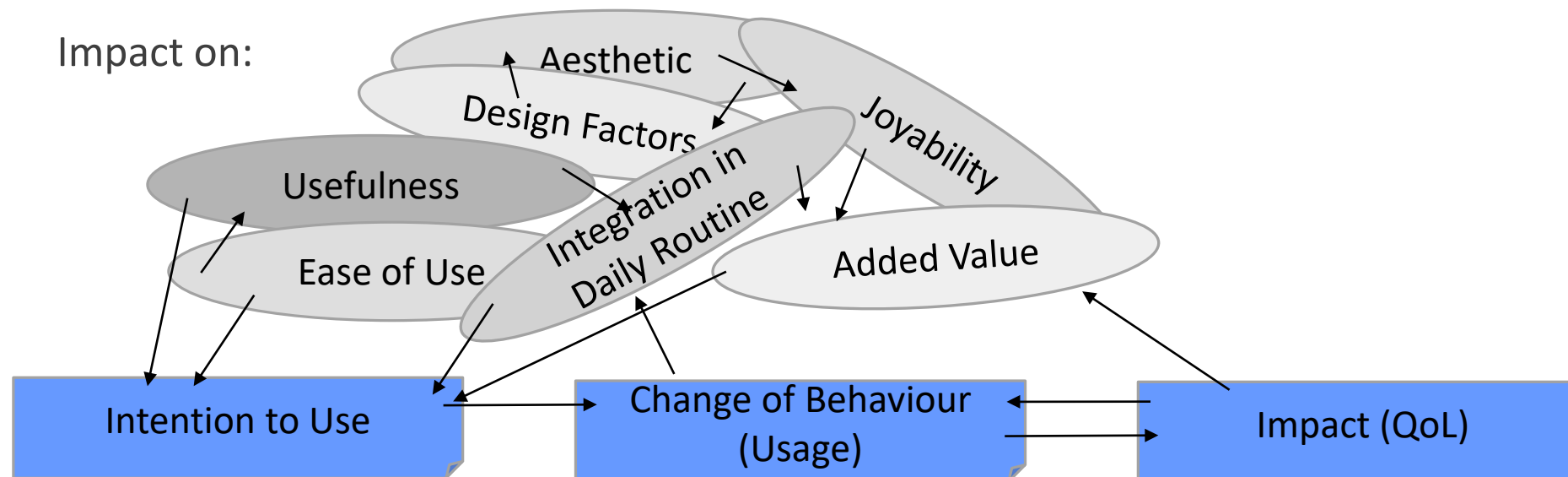
- Applied Research in the field of AAL: user centered, participatory research and development cycle
- Dissemination Activities
 - Networking activities with all stakeholder groups
 - Demonstration flat with various (technical) assistive devices to support independent living
- Skills lab for teaching

„Human centred design is a philosophy, not a precise set of methods, but one that assumes that innovation should start by getting close to users and observing their activities“

Donald A. Norman

Why User Involvement (EN ISO 9241-210)

- Understand the context of use (Who, where,...)
 - Specify the user requirements (what do the users need,...)
 - Design solutions (to avoid conceptional errors)
 - Evaluate designs/solutions (valuable feedback)



User Involvement in Austrian AAL projects



AAL Austria, AK Bedürfnisartikulation (working group)

Online questionnaire, 2016, Austria

- Stakeholder Involvement in AAL Projects?
- 27 questionnaires received
- One best practice projects had to be chosen to answer the following questions
- Figure shows the chosen best practice project (Usage context of project)

M. Garschall, K. Neureiter, J. Hallewell, D. Bertel, D. Krainer, and C. Moser. Investigating user-centered design practices in Austrian AAL projects. in *Proceedings of Smarter Lives 2016, 2017*.

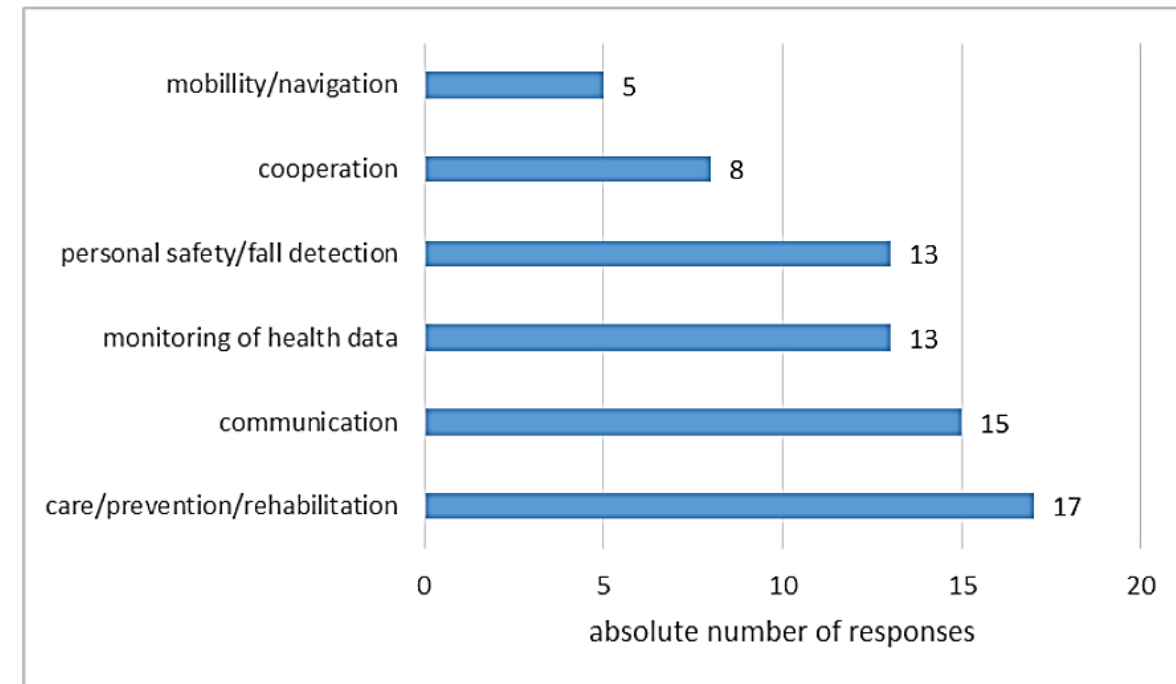
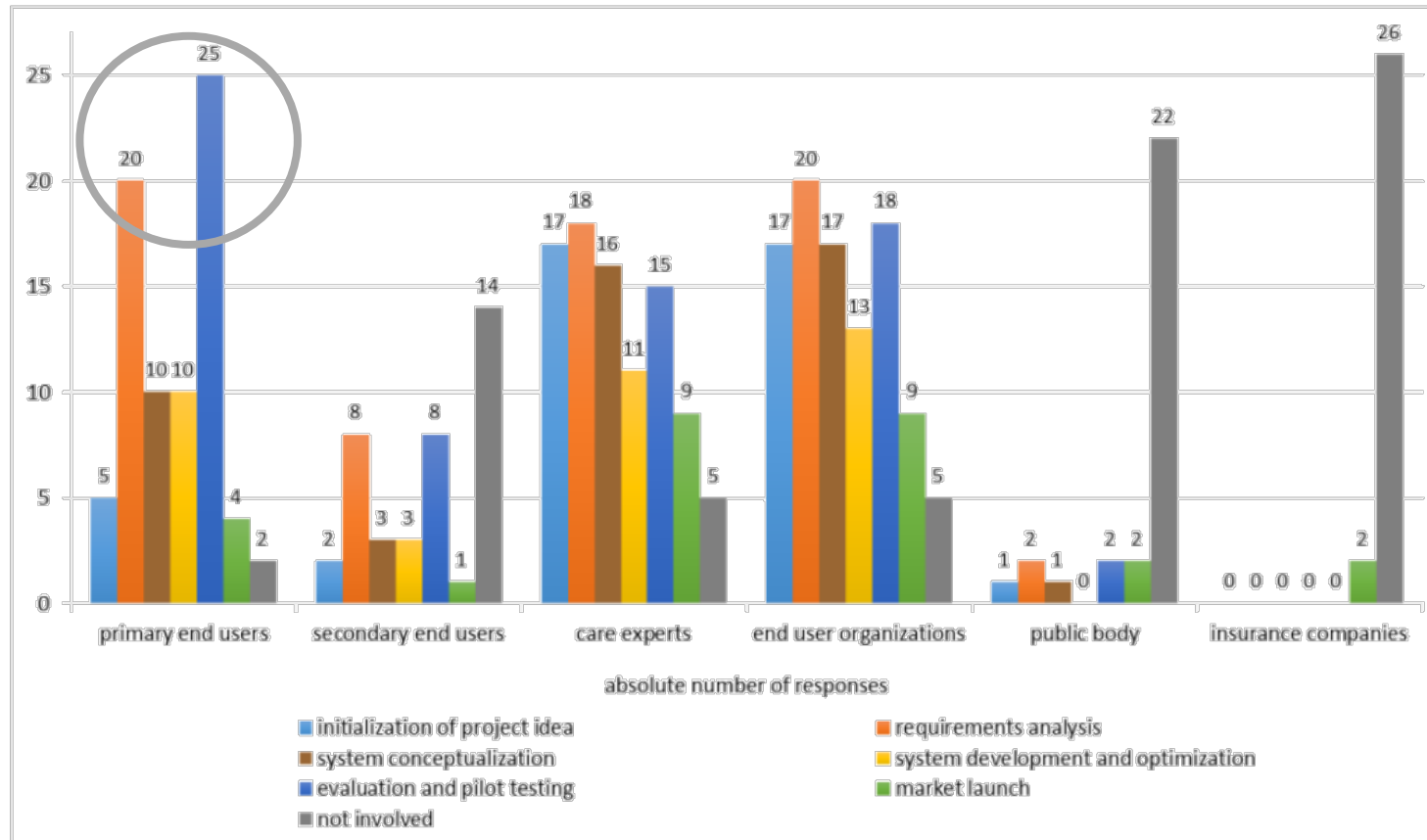


Figure 1. Usage context of projects (N=27, multiple responses possible)

User Involvement in Austrian AAL projects

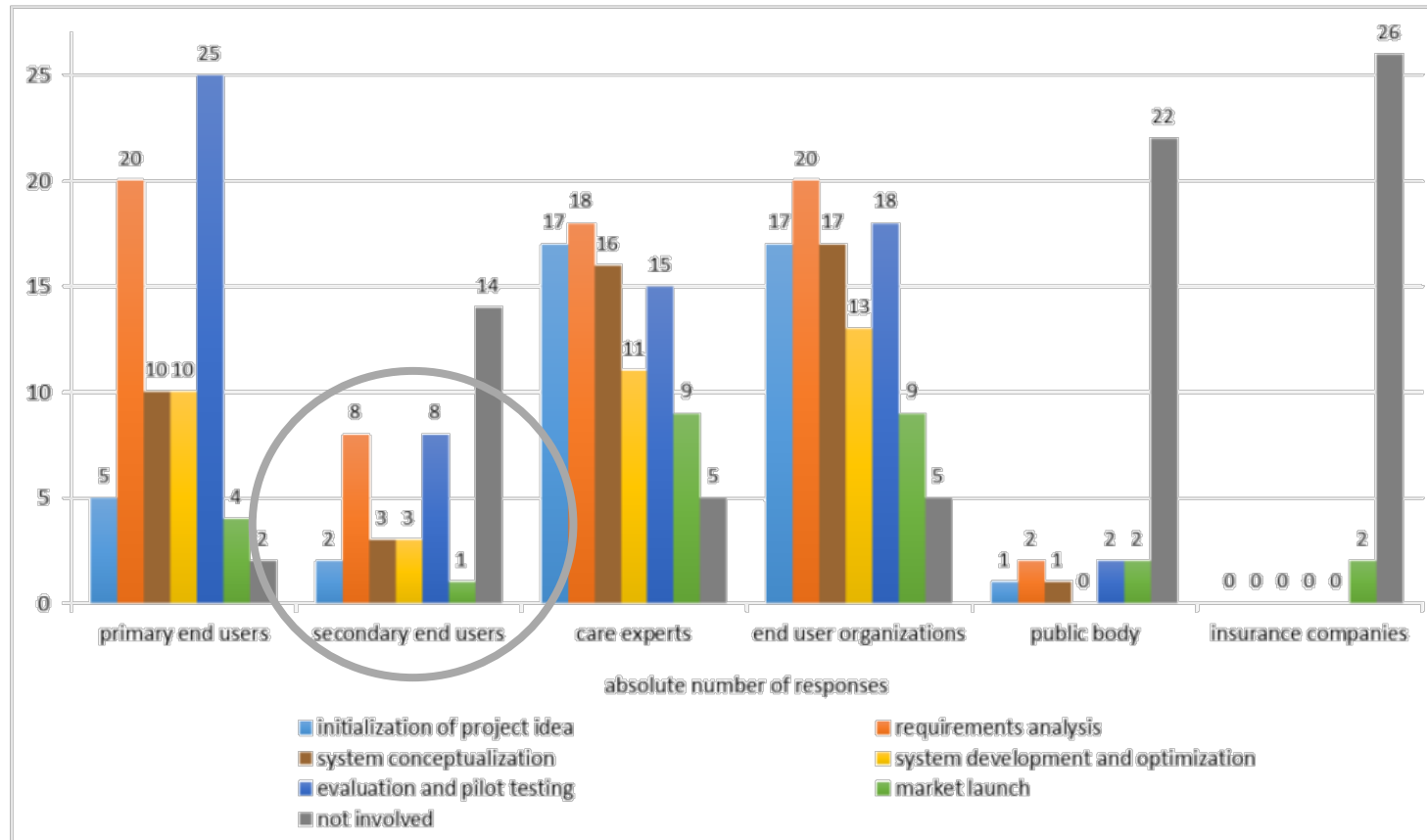


Primary users are often integrated in the phases:

- Requirement analysis and
- Evaluation and pilot testing

Figure 3. Involvement of user groups in different phases of the project (N=27, multiple responses possible)

User Involvement in Austrian AAL projects



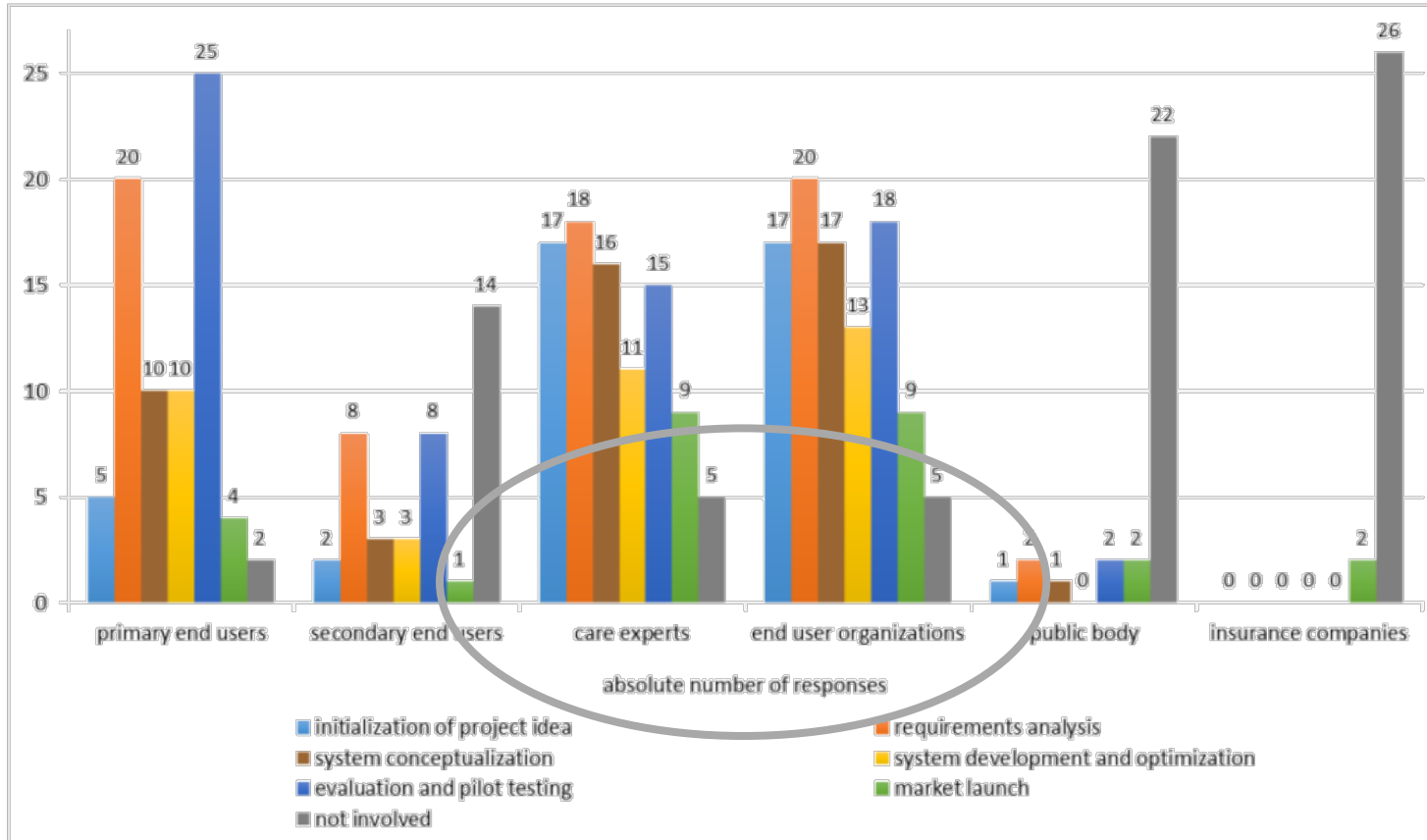
Low number of involvement of secondary end-users

For instance: family or friends

15 projects with focus on communication

Figure 3. Involvement of user groups in different phases of the project
(N=27, multiple responses possible)

User Involvement in Austrian AAL projects

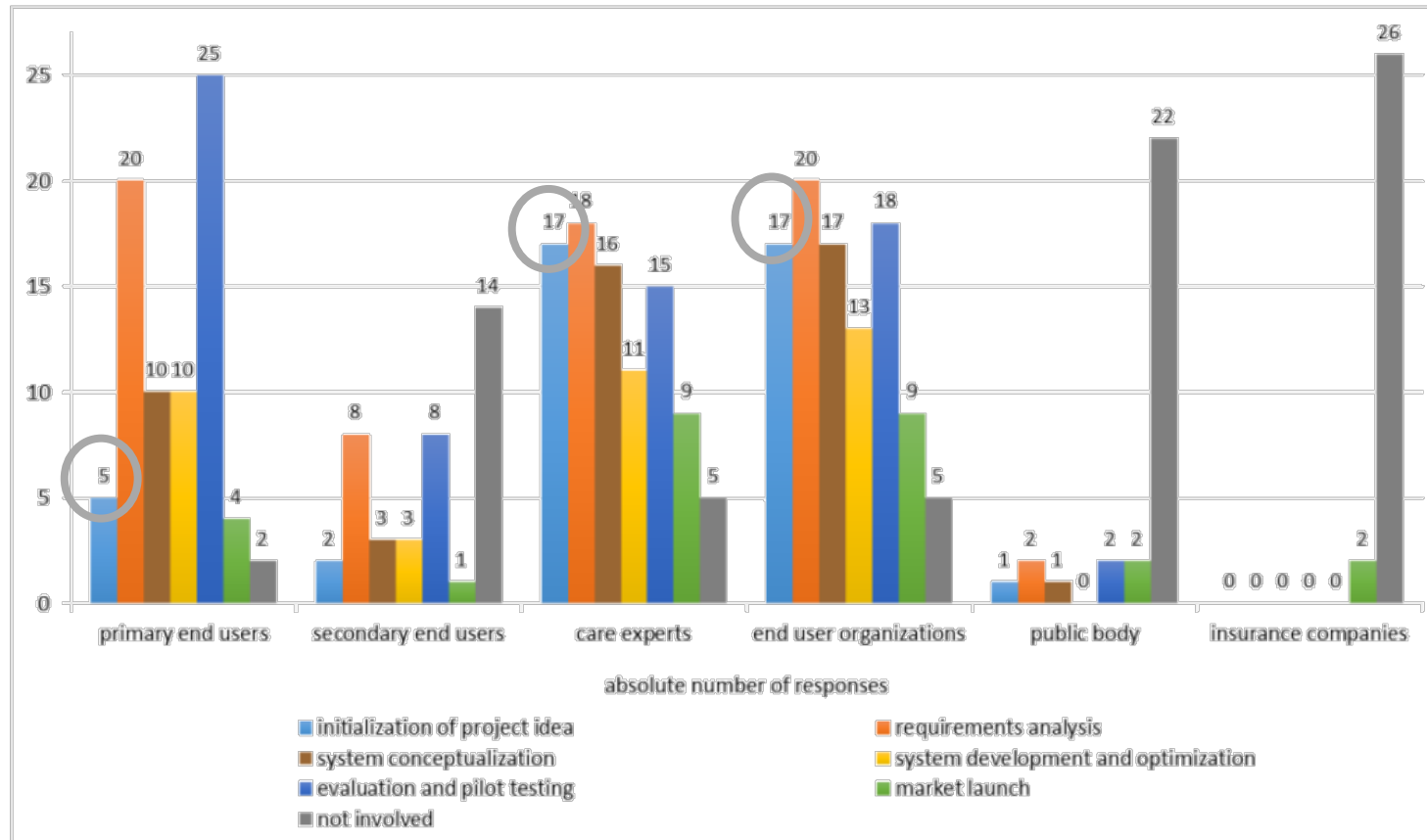


Care experts and end user organizations are at least in some of the project phases quite „OK“ involved

There are also a lot of chosen projects in the field of prevention, rehabilitation, care, monitoring of health data.

Figure 3. Involvement of user groups in different phases of the project (N=27, multiple responses possible)

User Involvement in Austrian AAL projects



The initialisation of a project idea is triggered by care experts and user organisation to a quite high number.

But not by primary end users.

Figure 3. Involvement of user groups in different phases of the project (N=27, multiple responses possible)

User Involvement in Austrian AAL projects

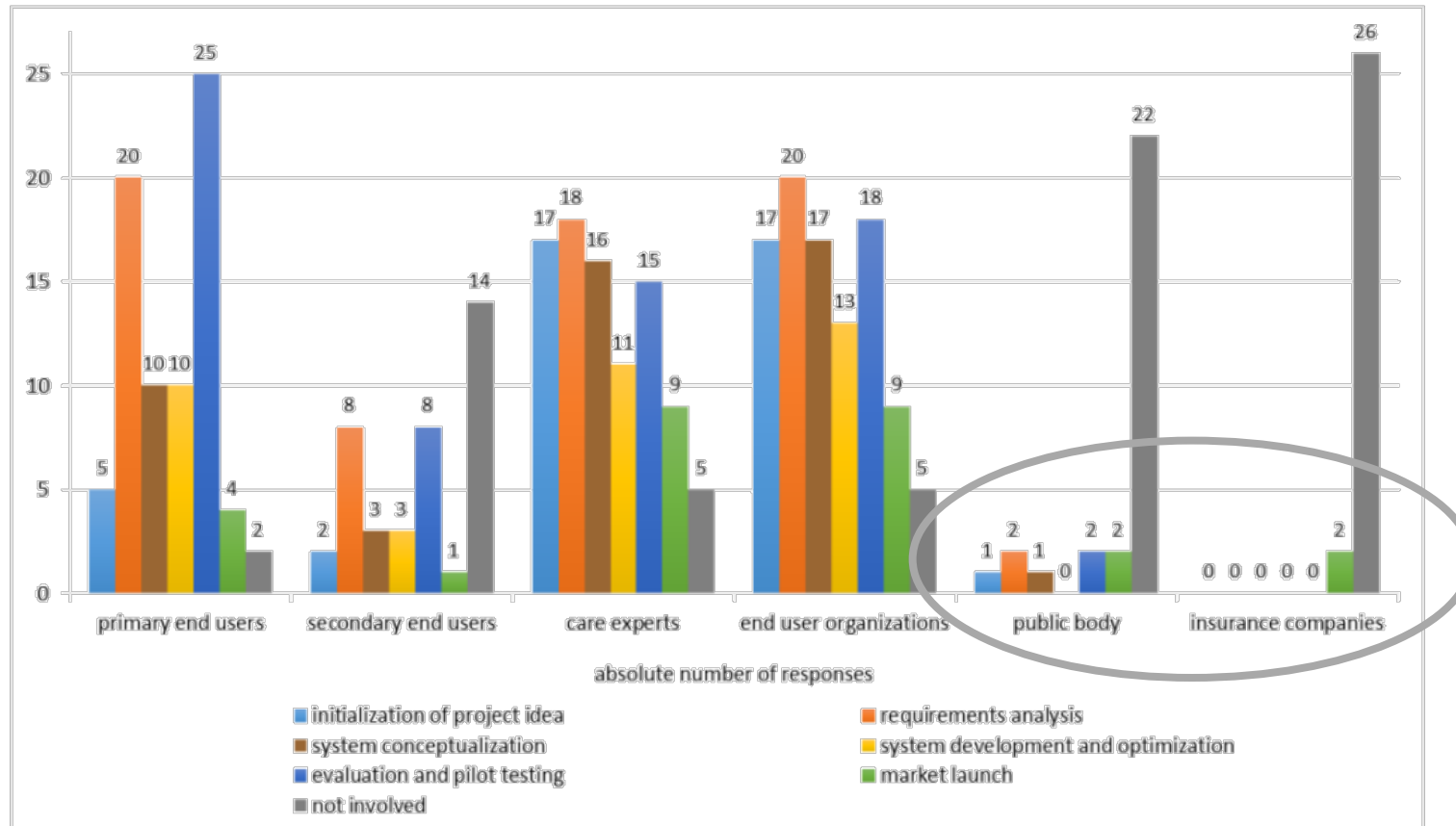


Figure 3. Involvement of user groups in different phases of the project (N=27, multiple responses possible)

Spotlight on ...



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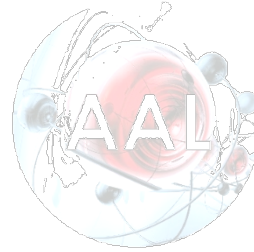


Framework for strengthen
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Smart VitAALity

Carinthia Pilot Region for AAL and Smart Living Technologies

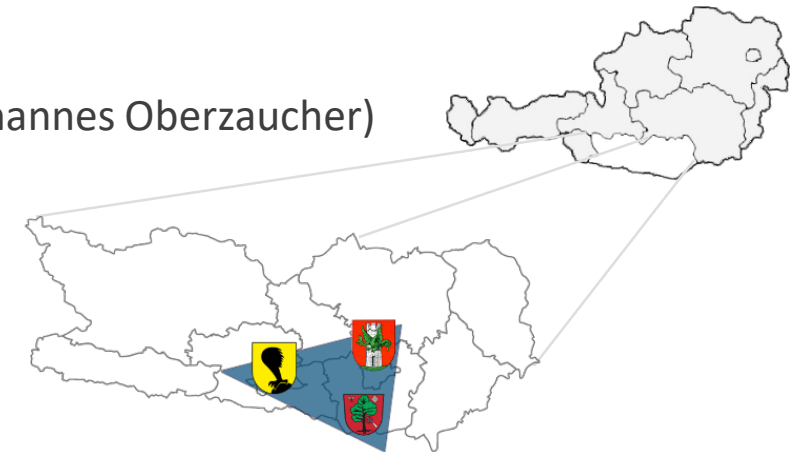
Duration: 01.01.2017-31.12.2019

Project Partner:

- Fachhochschule Kärnten gemeinnützige Privatstiftung (Projekt Manager: Johannes Oberzaucher)
- Joanneum Research Forschungsgesellschaft mbH
- ilogs mobile software GmbH
- Hilfswerk Kärnten

Associated Partner:

- Netzwerk Geriatrie Kärnten (geriatrician)
- City government (Villach, Klagenfurt, Ferlach)
- Verein Lebenswertes Altern in Ferlach (community activities with elderlies)



The project Smart VitAALity is co-financed through Austrian Ministry for Transport, Innovation and Technology (BMVIT) by the “Austrian Research promotion Agency” (FFG) within the programme “Benefit”. (grant no. 858380)

Key question:

How can we create benefit for the target group?



Definiton of an overall goal-

Improvement of QoL(specific domains)



Definition of (linked) interventions

Evaluation of added value? (e.g. **impact** on **Quality of Life**)

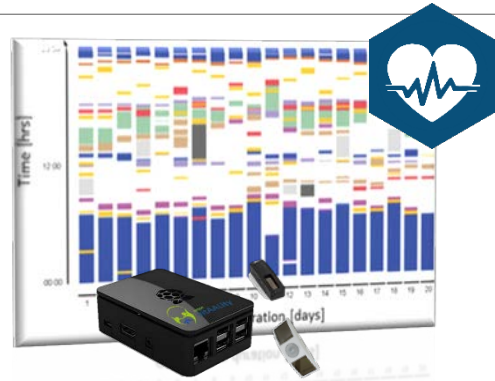


Definition of the target group, der challenge in everyday living, needs

Translation in technical **Applications** (to support the interventions)



Smart VitAALity System & Services



Smart Home Component

Vital Parameter Monitoring



Smart Watch



Tablet



Medical Care Center



Emergency Call-Center

Smart VitAALity Applications

Health and Wellbeing

Social Participation

Focus on chronic diseases:

- Diabetes
- Hypertension
- Congestive heart failure



The Expectations

Health and Wellbeing

- Information about and usage of (competences) selected health management tools
- Knowledge about health and wellbeing



Usage

- **Reflexion:** basic health knowledge; *Which aspects affect the health state?*
- **Awareness:** self-assessment of health condition; *What can I do?*
- **Empowerment:** increasing competences to monitor and influence the personal health state; *How can it be done?*



Social Participation

- Accessibility and ability to interact with information and communication tool
- Access to relevant information (region)
- Maintain existing and establish new social networks



Usage

- **Social Inclusion**
- **Life-Long-Learning**
- **Occupation & and Active Participation**



Smart VitAALity Evaluation

„The main goal of Smart VitAALity is to increase quality of life in the areas of health and social participation.“

Pilot Study (controlled study design)

- 16 months (pre-tests included) April 2018 – July 2019
- 103 + 123 households (intervention group and control group)
- People aged 60-85 years, living alone or in a small family setting, level of care 0-4

Evaluation:

- **Usage frequency** of Smart VitAALity applications
- **User experience** and **acceptance**
- **Effects** on specific dimensions of empirically measurable **quality of life: health and social inclusion**
- **Socio-economic** potential analysis: Evaluation of the efficiency of the implemented AAL-Solution by using cost-benefit analysis and cost-utility analysis

Smart VitAALity Challenges

Time – Team – Goals

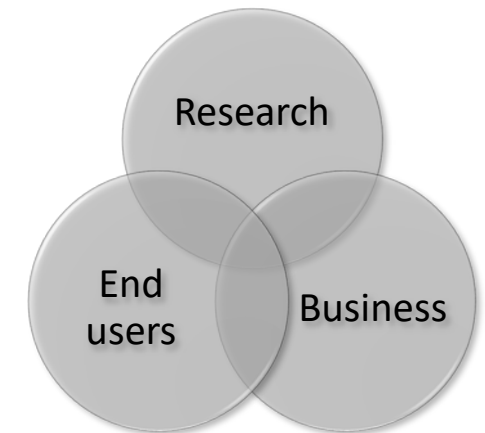
Parallel lifecycles

- Requirement analysis (with stakeholders e.g. older adults)
- Technical development
- Preparation of Study / Evaluation
 - Theory-driven (measurable) vs. multifunctionality function set
- Business models
 - Economical and socio-economic aspects



Different interests of project partners

- What do the users want? – What is the business model behind a function?
- What is the market potential of the function set? – Can evaluation unit measure an impact (QoL) according to that function set?
- What do the user expect according to technology innovation? – What is technically feasible(within the time and the frame of the project)?



Insights: Smart VitAALity – Care Center

Care Center Process:

- Assessment – initial recommendation by care expert – monitoring and evaluation of vital signs data - feedback to users
- So called „escalations“ emerge if no value is too high or too low according to WHO or personalized thresholds → care expert contacts the user

Some facts:

- 70 persons use the Care Center Service
- 36 with hypertension + 8 new hypertension diagnosis after 5 month of monitoring and consulting
- About 70 escalations per week (all in all more than 300 escalations due to high bloodpressure / 28 due to low blood glucose)

Interlinked Aspects of Anchoring an AAL Solution



Interlinked Aspects of Anchoring an AAL Solution



- Definition of **appropriate target market** for Smart VitAALity
 - **Telecare, TeleHealth, Smart Homes including non-technological services**
- Planned implementation as an **integrated marketing system** (competences and services distributed across multiple actors)
- Potential **business or financing models**
 - Hybrid model (focus: B2B, modular design)
 - Integrated care (focus: Medical Care Centre)
 - Software-as-a-Service (focus: AAL middleware)

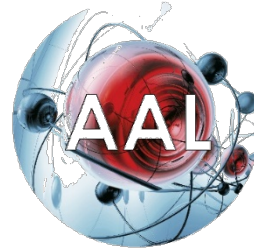
Interlinked Aspects of Anchoring an AAL Solution



- **Multi-dimensional requirements analysis**
 - Integration of all quadruple helix actors (academic, public, private, societal) in a participatory development process
- Anchoring in the **regional context** by incorporation of carrier organizations, decision makers and potential service finances
- Regular discussions with supporting organizations and local/regional authorities to anchor the solution in the **standard care process**

Target: Transfer to standard care processes and financing process in the regional context.

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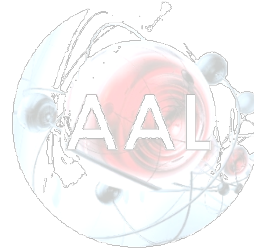


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COOP4HEALTHCARE



Cross-sectoral Alliances for Smart HealthCare Solutions

- SI-AT Interreg Project, 05.2018 - 04.2020
- **Builds the base for upcoming pilot regions and anchoring**
- With the aim to improve the **provision of services** in the **health sector** through consistent cross-border cooperation between the relevant actors (program area, strategic European partners)
- Provide a **high-quality care** to **all population areas** on local and independent basis
- Expected Outputs:
 - Set-up a knowledge and cooperation-oriented workbase
 - Preparing and implementing pilot projects
 - Definition of an action-oriented Roadmap 2020-2026
 - Long-Term anchoring of a healthcare Think Tank (Team of Experts)



Thank you for your attention.

*For further information,
please visit the COOP4HEALTHCARE booth.*



DI Daniela Krainer
Tel. +43 (0)5 90500-3225
E-Mail: d.krainer@fh-kaernten.at



DI Sandra Lattacher
Tel. +43 (0)5 90500-3267
E-Mail: s.lattacher@fh-kaernten.at



<http://blog.fh-kaernten.at/aal/en/>
<https://www.linkedin.com/company/research-unit-aal-cuas/>



www.coop4healthcare-project.eu/
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