

How can pilots be of help?

ModuLAAR - Large Scale Integration and Evaluation of AAL Technologies in Eastern Austria

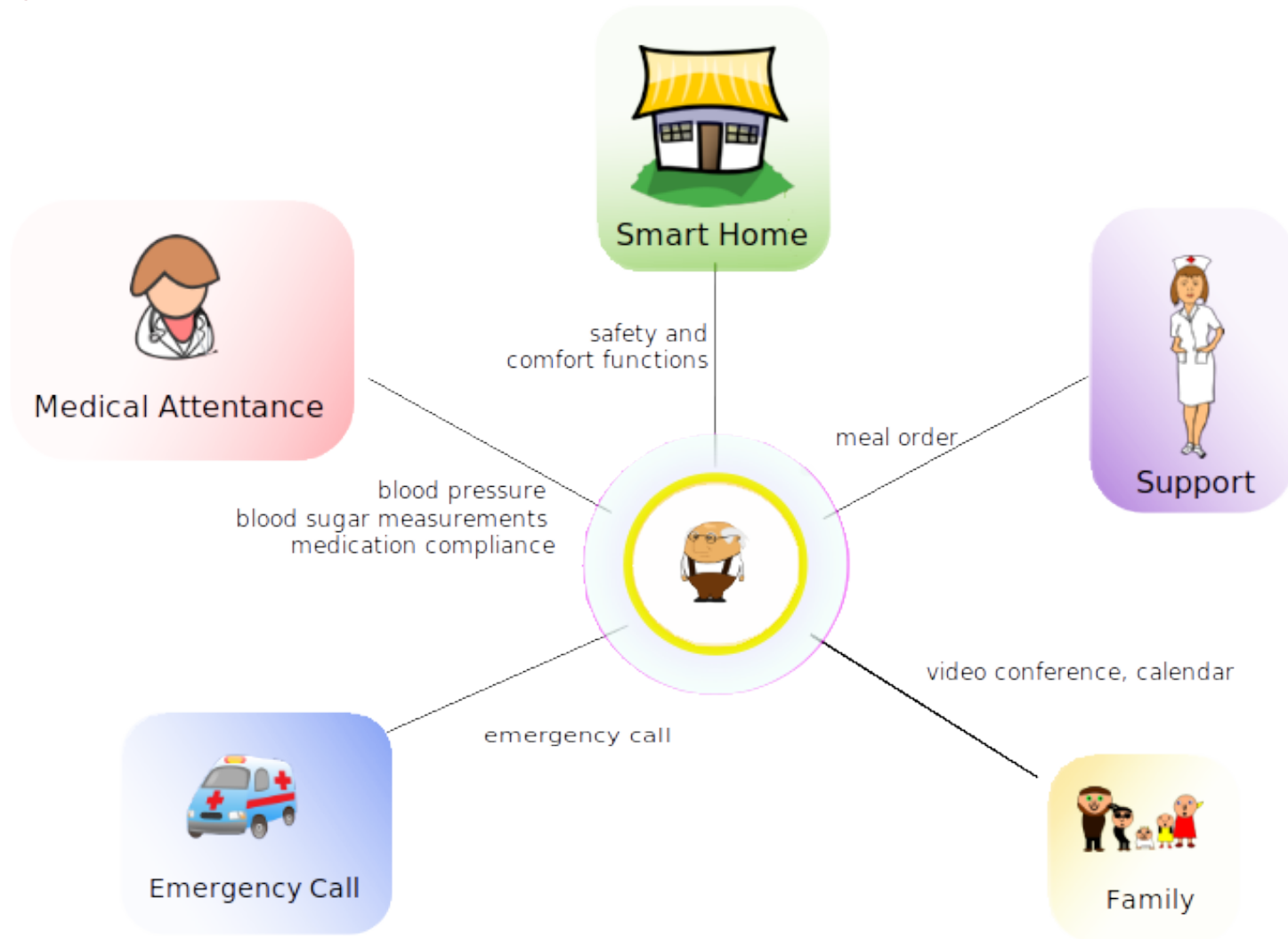
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Project facts

- Coordinator: AIT – Biomedical Systems
- Duration: 36 months, Start: 01.09.2012
- 50 assisted flats equipped with modular and standard compliant AAL technology
- Long term scientific evaluation (>18 month) of the used technologies with respect to user acceptance, usability, benefit as well as the user acceptance of the care provider personnel
- The aim was to realize a reference implementation in a whole region, to publish the outcomes to the public and the create an economic model for further use and exploitation of the system
- Evaluation of technical feasibility, retrofitting vs. new installations
- Increase of public perception of AAL and the implemented solutions
- Co-financed by the benefit program of the Federal Ministry for Transport, Innovation and Technology

Project facts - General approach

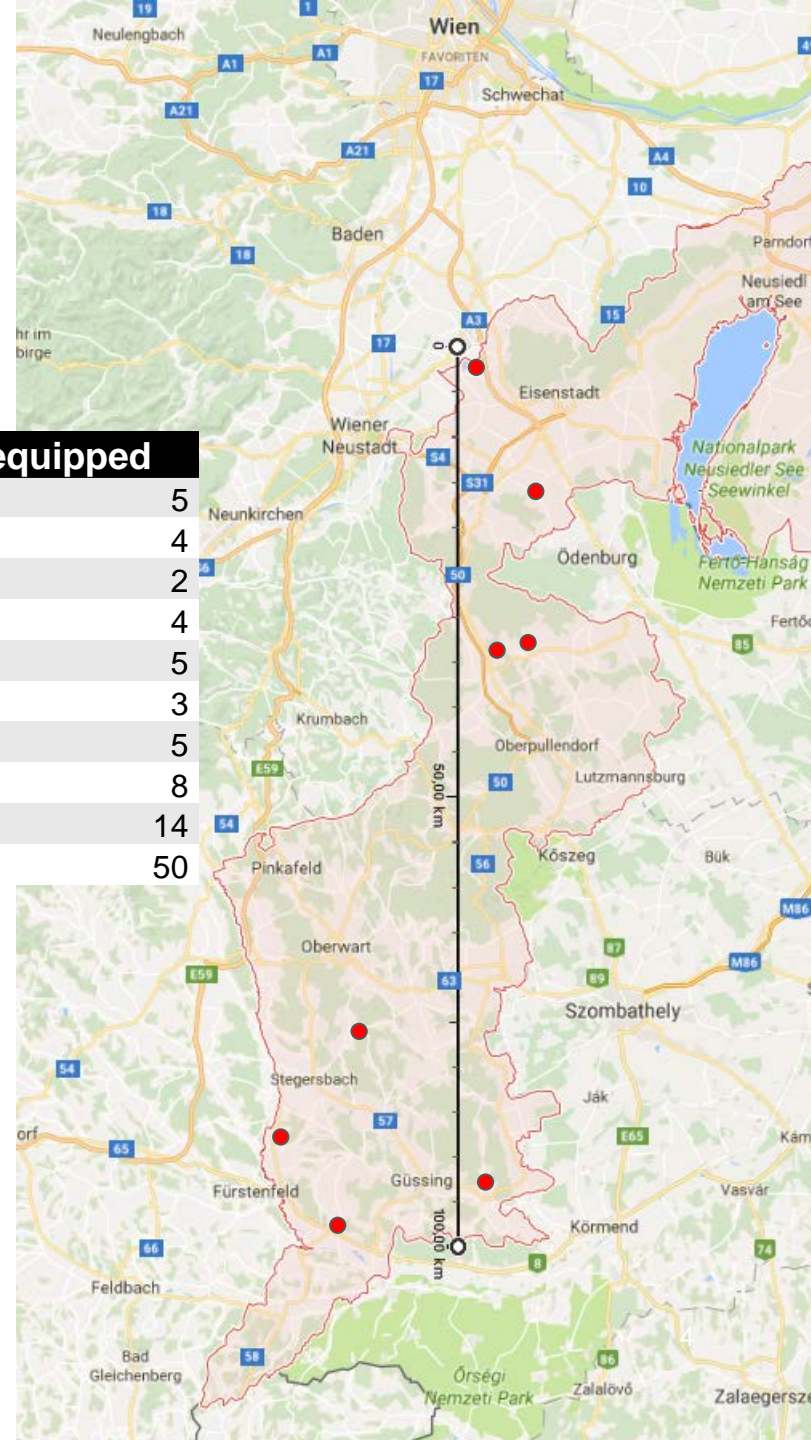


Project facts

- Places spread all over Burgenland

Place	old/new building	flats	flats equipped
Neufeld	old	44	5
Draßburg	old/new	8	4
Lackenbach	old	5	2
Weppersdorf	old	5	4
Olbendorf	old	9	5
Deutsch-Kaltenbrunn	new	3	3
Strem	old	17	5
Eltendorf	new	8	8
private household	old	14	14
		109	50

- Some of the technology used (in the flats):



Evaluation

- User acceptance, influence on their quality of life
- Usability of the system
- Acceptance by the institution
- Technical feasibility – retrofitting versus new installation
- Efficiency and health economic benefits → creating a business model
- Benefits for service providers and end users

Evaluation – User behaviour

- User behaviour heavily dependent on age and education
- Usage decreased over time
- At the beginning intensive support for using the technology needed
- Active requesting and motivation important

Function	Frequency of usage
Measurement of blood pressure	5014
Weather service	599
Photoalbum	464
measurement of weight	2382
Videotelephony	350
Home control	273
Emergency button	188
Measurement of blood sugar	526
Hotline	29
Games	17
Reminders	16
Meal plan	14
<i>Sum of usages</i>	9872

Lessons learned

- System has to be configurable/adjustable to the personal needs
- Using standard hardware with really simple UI
 - Standard hardware not stigmatising
 - Reduces barriers to work with the technology
 - Possibility to extend functionality as knowledge grows (advanced users)
- At the very beginning training how to use the devices/technology is crucial (multiple appointments needed)
- Potential users should be technology oriented
- Is the used technology an additional burden or does it enable more autonomy?



Lessons learned

- Bottom-up approach for bringing technology into the field may look like:
 - a use case must be clearly defined
e.g. monitoring of the health status
 - a need/requirement must be there
collection of vital parameters through a mobile device for a better treatment
 - Functionality to stimulate those requirements can be a basis/door opener for more advanced or related functionalities
an app that collects vital parameters can also be used to offer other services (e.g. ordering of meals from the weekly mealplan)

Lessons learned – Technical aspects

- Retrofitting doable without big effort and in a short time
- No actuators installed when retrofitting – no change of existing electrical installation necessary
- Reliability of the used wireless system could have been better
- KNX installation a bit more expensive, but reliable and requiring little maintenance
- Existing sensors/actuators sometimes only of limited suitability
- Acceptable overhead in new buildings in contrast to the conventional electrical installation
- Smart home technology still unusual in the area of private residential buildings (still a luxury segment) Broadband internet sometimes a challenge in the rural areas (availability, stability), but required for state of the art AAL solutions

Thank you for your attention!

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BACKUP

Public Perception

- Press work leading to a significant increase of public perception of AAL
- Highlight: press conference with the Austrian Chancellor and the minister



Press – Stimulating the AAL market



Lessons learned – user aquisition

- AAL widely unknown in the population
- scepticism about technology present
- Benefit for the single user hard to communicate
- Inclusion of relatives difficult
- Residents of assisted flats rather too old for the technology used
- Offer an incentive for participating → motivation

Evaluation – Used Methods

Focus on Qualitative methods (small sample):

Interviews

Focus groups with carers

Diaries

Questionnaires:

WHOQOL BREF and OLD

TA-EG (TU-Berlin)

Usability Scale (SUS)

Soziologische Evaluierung - Teilnahme Kriterien

- Inklusion:
 - Alter: 60+
 - Fähig die Einverständniserklärung zu verstehen und zu unterschreiben
 - Max. Pflegestufe 4

- Exklusion:
 - Mini mental state score < 17 zum Zeitpunkt der Vorerhebung
 - Nicht fähig oder nicht gewillt die Fragebögen (auch mit Unterstützung) auszufüllen
 - Signifikante Verschlechterung der Gesundheit während der Studie
 - Tod

Modulaar Kohorte

In Summe 46 TeilnehmerInnen und über 50 ausgestattete Wohnungen:

- 3 TN verstorben
- 7 TN während der Projektteilnahme ausgestiegen (Verschlechterung der Gesundheitszustandes, Umzug in ein PKZ, Frustration über technische Schwierigkeiten)
- Geschlechterverteilung: 62,79% weiblich, 37,21% männlich
- Pflegestufe:
 - 0: 59,46%
 - 1: 18,42%
 - 2 und 3: jeweils 8,11%
 - 4: 5,41%
- Altersschnitt über gesamte Projektlaufzeit lag bei 70 Jahren
- Ausbildung: 74,36% hatten einen Volksschul- Hauptschul-, oder Lehrabschluss

Evaluation plan

T_{V1} : ~ 4 months before installation

T_{V2} : ~ 1 months before installation

T_0 : ~ 1 months before installation

T_{I1} : ~1 months after installation

T_{I2} : ~ 4 months after installation

T_{I3} : ~ 12-18 months after installation

T_E : end of the project

T_{V1}

T_{V2}

T_{I1}

T_{I2}

T_{I3}

T_0 : Installation

Pre - Evaluation

Intervention (installation)

Evaluation – Integration with the care facility

- Technically doable without big effort
- Needed services and structures/work flows still have to be created
- AAL not that easily integrable with the emergency call service



ModuLAAR Dienste

Paket	Module
Soziale Interaktion	Essensbestellung Videotelefonie Bildergalerie als soziale Interaktion mit Angehörigen
Komfort	Automatisierung, Fernsteuerung (Licht,..) Erinnerungsfunktionen wie <ul style="list-style-type: none"> ● Türe schließen ● Herd nicht unbeaufsichtigt lassen ● Warnmeldungen ● Medikamenteneinnahme ● Kalendererinnerungen (Geburtstage, Termine,..)
Notruf	Manueller Notruf an die Zentrale (semi)automatischer Notruf mit verschiedenen Alarmierungsebenen (Angehörige, ASB...)
Telemonitoring	Blutdruck, Blutzucker, Gewicht, Benutzerdialog, Grenzwertüberwachung, Benachrichtigung

Simple User Interface



ModuLAAR devices



Lessons learned – Question #4

- A use case and need (e.g. fall detection)
- 50 flats was a challenge - basically enough flats but:
 - Users can't be forced to participate
 - some of the potential users where out of scope / inclusion criteria