



Join-In

Senior Citizens Overcoming Barriers by Joining Fun Activities

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Lead contractor for this deliverable:

Diakonie München-Moosach

Contributors:

HMGU, NORUT, NST, ITC, JOH x

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1 About Join-In

Join-In aims at providing the methodology and the technologies for elderly persons to participate in social activities and have fun via digital media.

Loneliness in the elderly is a major problem in elderly care. Studies in Britain show that more than half of the people over the age of 75 live by themselves. Many of these suffer from loneliness and social isolation¹. Activities offered by social services do, however, often not reach those most in need. Challenges for the elderly include: social deprivation, low self-esteem or physical inability. Social isolation and health are closely related and may lead to a variety of physical disorders and even depression. Studies have shown the correlation between loneliness and poor health. Especially the effects on immune system, the cardiovascular system and the onset of Alzheimer's disease could be shown²³⁴.

The Join-In project aims at counteracting loneliness in the elderly by providing a concept, the methodology and technologies for elderly persons to participate in social activities.



Fig.1 Join-In Platform

¹ Office of National Statistics: Older people, Living arrangements. At: <http://www.statistics.gov.uk/cci/nugget.asp?id=1264>

² CARMA – Care for the Aged at Risk of Marginalization (QLK6-CT-2002-03421) - Recommendations and Guidelines to Policy Makers. (2005). <http://www.egga.ee/RecommendationsFinalwCoverTOC.pdf> Last accessed:2/10

³ Sorkin D, Rook KS, Lu JL: Loneliness, lack of emotional support, lack of companionship, and the likelihood of having a heart condition in an elderly sample. *Ann Behav Med.* 2002 Fall; 24(4):290-8

⁴ Tomaka J, Thompson S, Palacios R: The relation of social isolation, loneliness, and social support to disease outcomes among the elderly. *J Aging Health.* 2006 Jun; 18(3):359-84

Join-In is setting up a social platform for the elderly; it allows communication by TV, Tablet and PC. A multi-player serious game for the elderly is being developed. The interest in gaming is high in seniors: In a survey performed in Germany with 1200 participants, age above 61, two out of three PC users stated that they enjoy playing games regularly on the internet⁵. Studies⁶ could demonstrate the increase of cognitive skills, reaction times, self-esteem and the sense of well-being in the elderly when playing computer games. Another positive effect is that gaming is multigenerational and enables the elder generation socialising with the younger one, e.g. grandchildren. The concept includes exercising either by exergames or by moderated exercises as physical activity - besides supporting good health- counteracts the feeling of loneliness, while loneliness leads to less physical activity⁷. Recent results indicate that exergames create physical benefits and counteract loneliness⁸. Join-In encourages contacts with peers in the region and with family and friends living further afield - if necessary facilitated by an assistant.

Active participation is vital if the individual is to profit from the Join-In developments. Yet motivation for participation among the elderly is a challenge. One of the problems is the heterogeneity of the elderly, among other things regarding interests and health. Join-In is developing a methodology for elderly persons to participate in social activities. This is based on a thorough user requirement analysis. User groups are set up in Germany, Hungary, Ireland and Norway. The lead user group is based in Munich. Based on the results of the user requirement analysis and the analysis of relevant studies and related work a methodology for setting up a social networking platform which will encourage and enable involving homebound senior persons in social networking activities being developed. Digital inclusion and factors hampering its acceptance -such as accessibility, motivation, lack of skills and confidence- will be tackled and form part of the methodology. The involvement of user groups in four different countries will help us to achieve a European solution which will also be useful in other countries.

The Join-In project web-page:

<http://www.join-in-for-all.eu>

⁵ OE24.at. Deutsche Studie - Sechs von zehn Senioren spielen am Computer.
<http://www.oe24.at/zeitung/digital/article318942.ece>. Last accessed: 2/10

⁶ Basak C, Boot WR, Voss MW, Kramer AF: Can training in a real-time strategy video game attenuate cognitive decline in older adults? *Psychol Aging*. 2008 Dec; 23(4): 765-77).OE24.at

⁷ Hawkey LC, Thisted RA, Cacioppo JT: Loneliness predicts reduced physical activity: Cross-sectional & longitudinal analyses. *Health Psychol*. 2009 May; 28(3):354-63

⁸ <http://www.theatlantic.com/technology/archive/2011/02/physical-video-games-may-help-the-elderly-psychologically/71184>

2 Introduction to the deliverable

The final goal of the project is the introduction and preparation of long-term use of the Join-In Social Network for the Elderly which offers entertaining activities such as gaming and exercising as an integrative part for “fun” and “socialising”. Pilot studies will be performed in the partner countries in order to evaluate the benefits and limitations of the Join-In system.

This deliverable describes the evaluation concept, its layout and set-up of the different pilot sites. It aims to ensure the timely and efficient performance of the pilot. The developments will be evaluated aiming at results that can serve as a basis for, at the one hand, marketing the Join-In products, and, at the other hand, to find the best ways to best possible address and involve the target group. This document will be replenished since evaluation is an iterative process. Additions will be made resulting from the pilot; some aspects will be further concretised (e.g. the exact workflow for the introduction phase) will be defined as soon as the prototypes have been lab-tested and the product definition and target audience for exploitation have been agreed between the project partners.

3 Join-In Evaluation Concept

3.1 Introduction to the Evaluation Concept

The main evaluation criteria are functionality, usefulness and usability of the Join-In system. The evaluation is an iterative process.

The chosen concept follows the guidelines for Good Evaluation Practice in Health Informatics by Nykänen P, Brender J, et al. [8] These guidelines are aiming at supporting evaluations in the health informatics domain. They were achieved by a consensus making process of the EFMI (European Federation of Medical Informatics) and the AMIA (American Medical Informatics Association) health informatics community. They seem to be well suited for the AAL-project “Join-In” as issues relevant for planning, implementation and execution of Join-In are vital aspects in the evaluation guidelines. By applying these guidelines we aim to avoid vital risks and pitfalls in the piloting. On top of that, it will allow for international comparisons.

3.2 The context of the evaluation study

Join-In is developing AAL-applications for elderly people. The core of the project is a social network and entertaining activities (games) for socialising in the elderly. By offering facilities for socialising we aim to reduce loneliness in elderly people. The evaluation will be performed in the context of the Join-In project in four countries, Germany, Hungary, Ireland and Norway. Name and concept of AAL have to be introduced to the elderly population. In addition to this, most of the older seniors lack technical experience or experience with new technologies⁹.

The Join-In Social Network includes entertaining activities such as the Join-In memory game, exergames (walking, exercising and cycling), a set of exercises using “Design-for-all” motion controllers / Kinect.

These need to be evaluated concerning their

- Functionality
- Usefulness and effectiveness towards the envisaged goals
- Usability and adaptability
- Acceptance by the users and by those promoting the applications (e.g. carers)

In addition applicability and effectiveness needs to be evaluated, for example, if Join-In effectively manages to encourage elderly persons to exercise or socialize more often during the pilot period. Evaluation steps

The evaluation study consists of several clearly distinguished phases. Each phase fine-tunes the results of the previous one and adds information to that. We distinguish the following evaluation stages.

⁹ In Germany, 13,6% of the age group 70-79 years and 21,8% of the age group 80+ own a computer. [9]

3.2.1 Study exploration

At this very preliminary stage we explore the need for an evaluation. We analyse the research issues and check whether an evaluation will serve vital issues in the project.

This identifies the reason and objectives for the evaluation study, and describes the following

- The information needs / objectives of the evaluation
- The context of the evaluation study
- The stakeholders - preliminary identification
- The setting - rough sketch
- The evaluation methods to be used - preliminary exploration
- The restrictions of the pilot and of the publication of the results - preliminary exploration
- Ethical and legal issues

At the end of this phase we will have a rough outline of the study.

3.2.2 Study design

This is a preliminary design of the study. We will define the framework of the study and define

- The study team
- The pilot sites in more detail
- The participants (which, for which tasks, when, how)
- Ethical and legal issues
- Identification of possible risks
- Timeline
- Resources

This is also the time to make decisions between the partners regarding:

- Study methods
- Study type
- Technical settings
- Outcome measures

Finally, we will ensure that

- All stakeholders' needs are covered
- Information needs as described in the proposal / theories have been covered
- The methods to be used for the different research issues fit with the pilot set-ups.

This is an important phase because bad planning of the study may mean that the field study cannot be performed during project runtime.

The detailed piloting and study design plan will be based on this.

3.2.3 Evaluation plan

The evaluation plan will serve as the core tool for managing the evaluation study and the pilot. At this stage we are setting up plans for the pilot and deciding on the procedures to be taken for ensuring a successful pilot and a thorough evaluation study. This stage includes

- Detailed pilot planning
- Designing and finalising the evaluation material
- Setting up the training material
- Designing a training plan
- Evaluation activity mapping
- Quality management plan
- Communication strategy (communication means, tools)
- Recruitment of necessary additional staff
- Revision of the time schedule
- Once this stage has been performed the pilot is ready for implementation

3.2.4 Implementation

The pilot study is being performed. The following needs to be done

- Project controlling and risk management
- Observation of changes regarding the planned realisation of the implementation as well as changes in the attitude and habits of the elderly.
- Continuous pilot management
- Performing the evaluation study

3.2.5 Finalisation of the evaluation study

The final step consists of

- Final analysis of the evaluation data,
- Integrating the results into the marketing and business plans
- Reporting and publishing the results

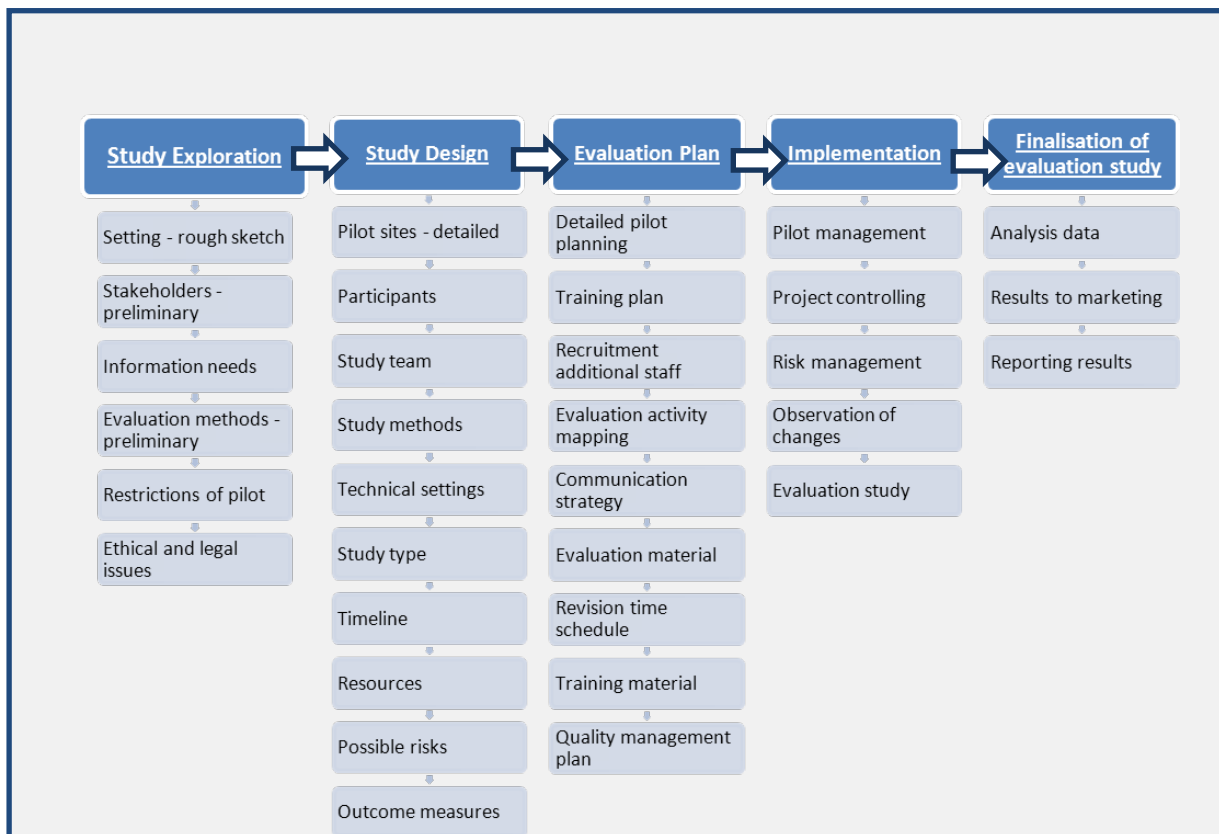


Fig. 2 Evaluation Phases

3.2.6 Time Schedule for the evaluation study

- Study exploration M 20
- Study Design M 21
- Evaluation plan M 21
- Pilot plan M 23
 - Implementation
 - Preliminary study M 24- 26
- Field test M 27- M 35
- Finalisation of the evaluation study M 36

4 Join-In Study exploration

Join-In is developing a social networking platform and a concept for elderly people to participate in social and fun activities and to escape social isolation. It will enable and facilitate communication by providing the necessary technologies. Join-In will offers a variety of activities to motivate and to stimulate the elderly, such as: communicating by social networking, multiplayer gaming and exergaming, moderated exercising. We aim to encourage socialising and to help the seniors to stay active, to improve their health status -as preliminary studies have demonstrated- and to contribute to the target group's quality of life. We aim to support elderly people maintaining and setting up contacts to family and friends but also to others sharing similar interests and/or being in the same situation.

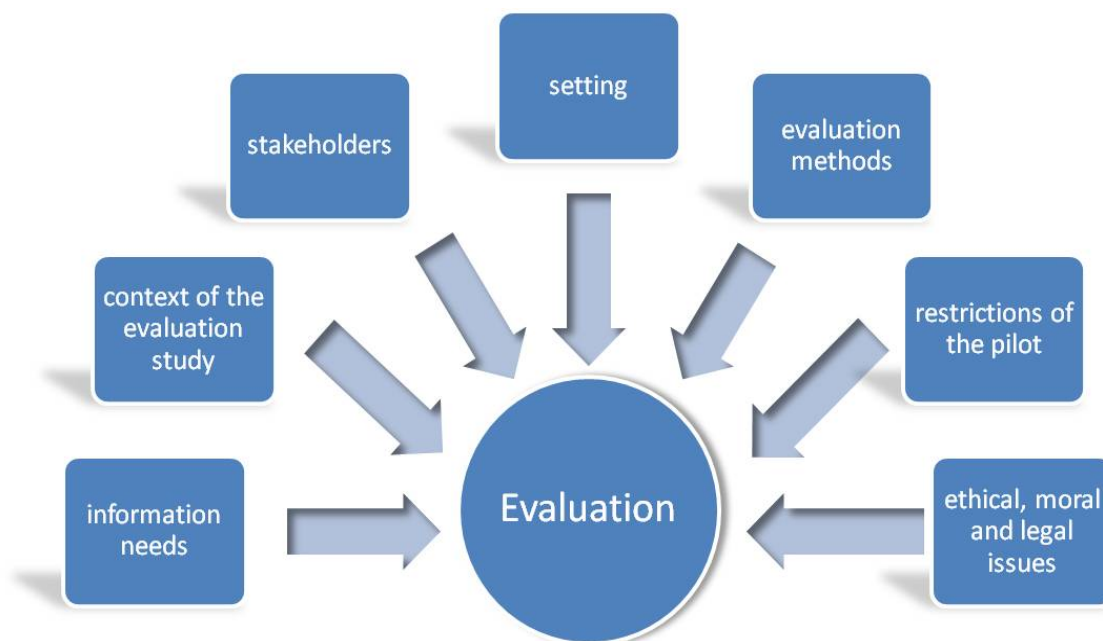


Fig. 2 Evaluation Study Design

4.1 Content of Join-In

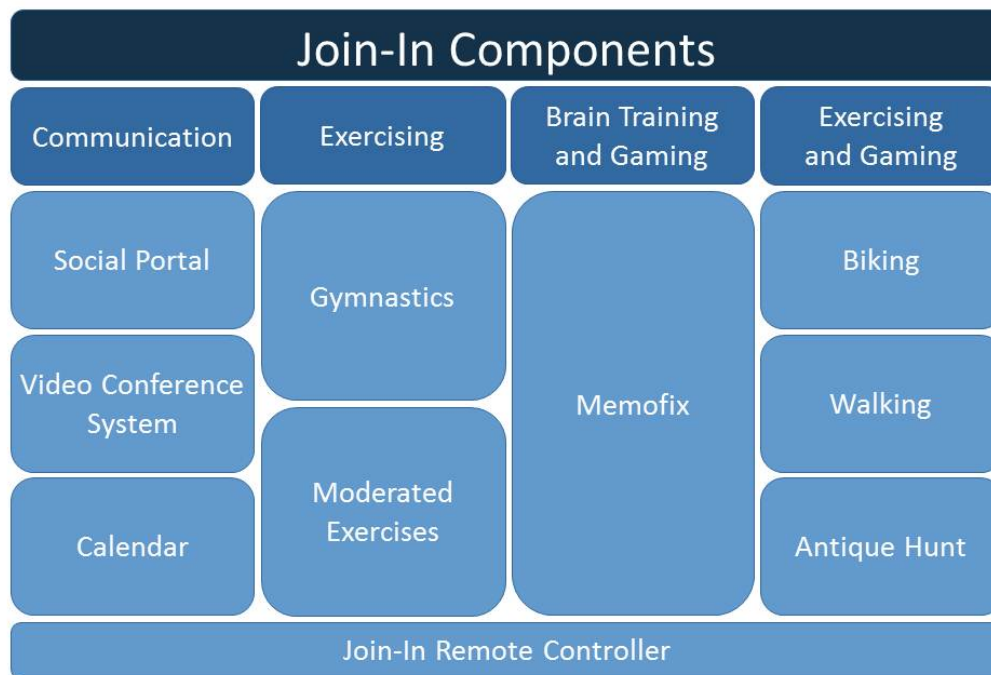


Fig. 3 Join-In Elements

4.2 The information needs

The Document of Work states that

- Computer games can increase the brain activity
- The use of exergames can encourages physical exercise
- The use of exergames can improves the quality of life for the individual
- The involvement in social activities can decreases the feeling of loneliness in the target group
- Join-In applications can make the elderly feel less lonely.

These statements are based on literature reviews and on results from other projects. They are long-term objectives. With the existing resources it is not possible to evaluate these statements on a quantitative level. It is, however, possible to obtain indicators for these statements and thus to gain an insight into the effects, the motivation and the attitudes on a qualitative level.

Some of the issues to be considered concerning piloting and evaluation are therefore

- How to channel the activities to increase the beneficial effect on the person/ on the person's state of health
- Identifying the incentives for motivation and pleasure in the target group.

◆ **The following Join-In objectives, stated in the DoW, are more concrete**

- ◆ **Objective 1: Providing access to the activities:** providing support and training, barrier free interfaces, technologies taking care of cognitive and mental capacities likely in the elderly; low cost access, enabling the use of the TV in combination with an easy-to-use set-top box
- ◆ **Objective 2: Improving motivation to work actively on maintaining a positive outlook on life and on staying physically active:** giving the elderly an incentive, such as a fun factor to use the internet, and by providing the necessary technologies for easy and motivating accessibility. Join-in will also offer set-top boxes that enable online communication with others – something that is –so far- not available on a commercial basis.
- ◆ **Objective 3: Improving skills and confidence:** easy-to-use interfaces and the necessary support through technologies such as controllers adapted to the special needs of the elderly and through human life support. Games may also enable the elderly to share experiences with other generations. Security and data protection will be major issues.
- ◆ **Objective 4: Providing a business case for the industrial partners of Join-In and cost effective solutions for the users**

While it will be impossible to evaluate within the framework of the project whether and how far the applications developed will improve the health status and quality of life of the elderly, all of the objectives can be evaluated to a certain degree. It will be possible to obtain indicative data on the subjective effects of the solution. Integrated with the a.m. evaluation criteria (acceptability, usefulness, usability, functionality and business case) the following preliminary information needs can be identified

- **Functionality**

This refers to the features and quality of the outcomes (products and services). Questions to be answered are

- Are the applications reliable, secure and adaptive?

- Do the applications fulfil the particular requirements for the intended use?
- Are the applications conform to the user needs and intended uses?

Functionality tests will be performed in the lab test, and in the pilot.

- Usability

For usability we refer to the ISO 9241 [10] definition “Extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use”, whereas

- Effectiveness is the “ accuracy and completeness with which users achieve specified goals”
- Efficiency means “ Resources expended in relation to the accuracy and completeness with which users achieve goals”
- Satisfaction is “Freedom from discomfort and positive attitudes towards the use of the product”.

The evaluation of this aspect has to take into account the context of use of the products. These need to be specified in detail. The socio-economic factors and possible behavioural changes will also be taken into account.

- Usefulness

This is an important issue as the work with the target group indicates, that they will not use the solutions offered -even if they are working fine- unless they consider them useful. Questions to be asked in this section are, for example,

- Do you think the walking exergame benefits your health?
- Do you think that regularly playing memory will improve your brain performance?
- Will Join-In help you to stay in touch with your friends?

Acceptability

Even though this sounds easy, it can be quite challenging to assess as acceptability is strongly related to people's expectations. It is very important to distinguish between the different stakeholders - as their interests and expectations are likely to differ -when assessing acceptability for the different stakeholders.

- Business case

All of the above issues provide the basis for the business cases. Yet the commercial partners of Join-In will have to pose specific questions to the users concerning e.g.

- Acceptable costs of the product
- Conditions which have to be fulfilled in order for the elderly person to use the product
- Other stakeholders (e.g. family, friends, health professionals)

It is important to remember that the a.m. Information needs might have to be assessed for all Join-In applications. Therefore, each one of the outcomes will have to be analysed accordingly.

4.3 A first sketch of the organisational environment, and the stakeholders

The information needs on the applied technologies and services will be evaluated in field tests. Evaluation studies - based on the same study design - are planned to be done in Germany, Hungary, Norway and Ireland.

4.4 Preliminary description of the pilot sites

4.4.1 Germany

In Germany Join-In will be evaluated in München, in the community of the Diakonie München-Moosach. Diakonie München-Moosach (DMM) is a carrier which has been providing social services in the north-west of Munich since 1965. The main focus of the work of DMM is the work with seniors. Though a large part of this is elderly care nursing, DMM is also offering other activities to this group. Thus DMM has set up "Senior-Clubs". These offers gymnastics, dance classes as well as a cultural and travel events. Some of the elderly have actively contributed to the user requirements. DMM has regularly informed its members on the Join-In activities and its progress. The pilot study is aiming at about 100 German users.

The pilot implementation will be covering different age groups. It will be performed in two steps: starting off with a small group (3-5persons), evaluating the results, adapting the pilot and then continue with a larger user group including homebound participants.

Recruiting will be done by the members of Join-In and by focus group members.

4.4.2 Hungary

In Hungary the evaluation study will be performed by the Johannita Segítő Szolgálat. These are supporting protestant elderly and persons in need in 7 regional centres spread across Hungary. Their workforce is mainly made up of volunteers. Three main types of user group will be involved, an urban group, a rural town group and a rural village group in different places i.e. Budapest, in Balatonalmádi, in Szombathely, Hódmezővásárhely

and in Hencse. It is planned to involve 100 persons.

The pilot implementation will start with a first, smaller group that will be recruited from elderly people speaking not only Hungarian but also German and/or English. The people will be covering different age groups and surroundings.

4.4.3 Ireland

The user group selected for testing in Ireland are part of the Active Retirement Ireland group located in New Ross, County Wexford. There are 110 total members of the group. They provide a mixture of active retirees from approx. 55 – 75 years old. The community meets regularly to take part in different activities such as bowling and dancing. Each member of the group can select the activities they wish to partake in. Some members of the group take part in activities 7 days a week. 14 members of the group attended the user group requirement sessions. The field trials are aiming at 10-15 persons.

In Ireland the pilot implementation will take place in three phases; initially an ethnographic study will be conducted in the community centre with the user group. This will be followed by interviews with care givers of the community centre. Finally, one or more focus group sessions will be held with the user group.

4.4.4 Norway

In Norway the pilot will include the same user group throughout the pilot. Users will be recruited among elderly persons from the Heracleum Elderly Centre, and include elderly with reduced mobility. The senior centre offers a wide range of activities such as different kinds of handicraft, dance session, entertainments, educational speeches, a café, a shop for selling handicraft, hairdresser, etc. They also have a day centre for elderly who cannot come by their own.

The number of participants in the field trials will be 10-15 persons and different age groups will be covered. The participants will be recruited by key persons in the Heracleum Elderly Centre and LHL, the Norwegian Heart and Lung Patient Organisation.

The regular visitors at Heracleum Elderly Centre include elderly with reduced mobility, particularly those living in the housing part of the centre. The senior centre offers a wide range of activities such as different kinds of handicraft, dance session, entertainments, educational speeches, a café, a shop for selling handicraft, hairdresser, etc. They also have a day centre for elderly who cannot come by their own. Heracleum has replaced Seniornett, the original user organisation, since it proved very difficult to recruit users from Seniornett.

LHL is a nationwide interest organization for people with heart and lung disease. LHL's vision is joy of life and good health for all. The organization has approximately 45 000 members, 300 local chapters and twelve district associations.

4.5 Preliminary identification of the stakeholders

We aim at the following stakeholders

1. Users

- age 55+: door openers and multipliers
- age 65 + (mainly age 75+)
- regardless of the ethnical background
- voluntary participation

Exclusion criteria are

- unable to handle the Join-In solution
- not speaking the National language
- unable to give informed consent
- physical conditions that might be at risk by using the Join-In Solution (e.g. epilepsy)

2. Family / friends (if applicable)

- regardless of the ethnical background
- suggested by the user

Exclusion criteria are

- unable to handle the Join-In solution
- lack of interest
- not speaking the National language

3. Health professionals (if applicable)

- ambulatory care nurse involved in the user recruitment and support of the pilot

4. Potential Business partners interested in marketing the solutions

4.6 Interventions

Join-In provides solutions that are primarily aimed at being implemented in the users' houses. This means

- Setting up Join-In solution in the homes of the elderly
- It cannot be expected that the target persons will be able to install and set up the solutions by her-/himself, neither that a family member will be able to help.
- Broadband connections must be available to get the best results from Join-In
- Some persons may not have internet access. This needs to be dealt with
- The pilot participants will be asked to test the different elements of the Join-In solutions (different applications, barrier free interfaces, ...)
- Handling new technologies might make them feel uncomfortable
- They will be asked to answer questions on their experience
- The questions have to be chosen carefully. Ethical issues have to be considered.
- The work with users requires a high social competence; the interviewers will be instructed in order to ensure a respectful interaction with the users as well as to prevent a distortion of results.

4.7 Ethical and legal issues

The ethical proceeding is based on the following documents

- Declaration of Helsinki: The World Medical Association (WMA) developed the Declaration of Helsinki as a statement of ethical principles for medical research involving human subjects, including research on identifiable human material and data
- European Parliament and Council Directive 95/46/EC of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data Official Journal L 281 of 23.11.1995
- Guidance Note for Researchers and Evaluators of Social Sciences and Humanities Research based on discussions among twenty-eight Ethics Experts with previous experience in Ethics Screening, Review and Audit at European Commission. It deals with privacy and data protection, Informed consent (ftp://ftp.cordis.europa.eu/pub/fp7/docs/ethical-guidelines-in-ssh-research_en.pdf)

The ethical committees as well as the data protection officers receive a detailed description of the study (see 5a) and the informed consent form.

The following will be specified for each pilot site:

- Subject and duration of the study
- Type and extent of data concerned
- How will the people be recruited
- Persons concerned
- Specifying how informed consent will be obtained
- Technical and organisational issues
- Data management – Responsibilities and data protection measures

Ethical and legal issues have to be considered at an early stage. It is important that the users' participation in the project pilot is voluntary and that the decision will in no way influence the level and service of any interaction or care or social groups they belong to.

The persons asked to participate in the trial will be explained their rights and obligations regarding the technology and/or the service. The participants are entitled to know about the status and results of the project at any time. They are also entitled to withdraw their permission to participate at any time.

Within the project all participating employees and representatives of the user organisations will be properly trained and instructed.

The national data protection officers and, where applicable, also the ethical officers will be informed and involved.

An Informed Consent will be used. A template of a consent form set up by the World Health Organisation (WHO) is available in App. 1.

The privacy of any participating person has to be respected at any time.

4.8 First exploration of evaluation methods to be used

The following methods will be used:

- Questionnaires (standardized and semi-standardised)
- Structured Interviews
- Semi-structured Interviews (Guided Interviews)
- Functionality tests

- Descriptive statistic methods
- Summary content analysis (Mayring)

4.9 Restrictions of study execution

We will solely be able to perform a feasibility study. Neither the improvement of any health status nor the improvement of the quality of life in the elderly persons can be measured statistically sound.

5 Join-In Study design

5.1 Detailing the pilot applications

5.1.1 Pilot Application I: Germany

5.1.1.1 *The study team*

The study team will consist of various persons responsible for

- Recruitment
- Attending the elderly people throughout the piloting phase
- The equipment acquisition as well as the organisation of internet access
- The technical installation
- The technical assistance

5.1.1.2 *Settings and locations*

At the beginning of the project we addressed mainly homebound elderly persons. One of the outcomes of the research so far has been that elderly people have to be introduced to new technologies in a careful manner. Results in the user requirement phase showed that, seniors have to get acquainted to new technologies while they are still active. The aim of Join-In is to find the best way of introducing elderly people into new technologies. The results will create a basis on how to involve the elderly.

Key persons will gain access to the elderly people. The key persons will be chosen from the DMM Community.

The solution will be tested in an urban area (Munich in several settings

- the introduction and the first testing will take place at the different premises

- approx. half of the test persons will have the Join-In solution in their homes to test it. They will be recruited from different interest groups and from ambulatory care
- additionally, DMM will offer elderly people the possibility to test the Join-In solution at the Diakonie premises as well as at the Olympic village
- some test persons will participate from a Join-In Social-Networking-Station set up in a nursing home

The technical surroundings:

- some of the test persons will have an existing internet connection
- some will get internet installed at their houses
- some will be against an installation of internet and will use Join-In either offline or with UMTS
- some users will access the platform with their own computer
- some will use their television with a STB
- some will need an AiO PC in order to be able to use Join-In

5.1.1.3 The sample size

The pilot will involve 50 – 100 persons.

The pilot study is going to take place in several steps; different groups will test the equipment for a certain amount of time. In order to ensure a close assistance, the participants will not all test the Join-In solution at the same time. We aim at having a maximum of 21 participants from home at the same time. Approximately 3 Persons will be introduced into the Join-In solution per week.

A preliminary study will take place with 3-5 persons and the evaluation will be done through a circular approach.

The participants will be chosen from different activity group of DMM; for a description of the groups see D 2.1.

- by behaviour: active, family centred, rest and peaceful, withdraw and misfortune
- persons with mental impairments will not be considered due to limited decision making ability
- male as well as female participants will be chosen. We aim at meeting the proportion of seniors in Moosach/Munich

5.1.1.4 The possible risks and countermeasures

Regarding the implementation there is a risk that the end-users will not be willing to participate. This may be due to several reasons

- not accepting new technologies
- not willing to having the internet installed in their houses (they will be asked to test at DMM instead)
- fear of not being able to learn how to use Join-In
- lack of interest
- peer/family influence (acceptance of the environment)
- users might consider it too much effort
- fear of letting anyone into the house
- not having enough space to place the Join-In solution
- too high prospective costs

The following possible risks for the participants have been taken into account by the team members

- The participants might feel overwhelmed by the new technologies – the team will prepare the workflow in order to prevent such situations. The results from the lab tests will help to prevent such situations.
- The participants might get the feeling that they are being tested and not the new technology.

The risks concerning the participants will be made clear at the beginning of the implementation and will be part of the written informed consent.

Following countermeasures will be taken:

- thoroughly planned workflow
- lab tests
- careful approach to participants, first access at community centres
- information sheets for the different stakeholders
- detailed information of the participants by trained key persons
- written informed consent
- close user support.

5.1.1.5 The time plan

- Each Person should be able to test for 3-4 weeks. That way it is secured, that she/he learns how to use Join-In and that it is not only interesting for the new moment.
- In order to ensure an intensive attendance of the participants, participation will start at different points of time
- Users will be introduced to the technology. The introduction will be realised at the different premises
 - The persons involved in the user tests will be presented to them
 - They will receive an information sheet (which they can take home) and will be asked to sign the written informed consent (if they wish they will have to possibility to take the informed consent home before they sign it)
 - They will receive an overall explanation of how the system and the sensors work
 - The different Join-In elements will be presented to them, followed by tests
 - Users will not be overloaded with too many topics
 - The participants will be offered short manuals (easy to use) on how to start the different elements of Join-In
 - We plan on groups of 3-5 persons having weekly common Join-In sessions. In addition the users can use the Join-In system whenever they want to

Participants will be introduced at the Join-In Social Networking Stations

- Approx. 3 Join-In Solutions per week will be installed at the houses of the participants
- Participants will be able to test the solution at the premises of DMM a OLY(Olympic village)
- A Join-In Social Networking Station will be set up at a nursery home (Heim)
- Since the participants will not be testing the solution at the same time app. 20 equipments will be needed

5.1.1.6 The Resources

Material Resources:

Different set-ups will be offered to the users.

	Set-top box / PC	All-In-One PC
Pro and Cons	+flexible +reuse of HD-TV +cheap? - no touch	+touch + flexible -expensive
Main Applications	Exergames Exercises Video-Chat	Demonstration Testing (Lab- and User)
Typical Users	“Standard User” - <i>likes big screen and easy remote control</i> Relative or Peer - <i>uses Standard-PC (for video-chat and gaming)</i>	Seniorclub

Human Resources:

The responsibilities of the persons involved in the piloting process were defined; the respective persons were” recruited”

5.1.1.7 *The study methods*

For study methods see 4.7. In Germany the data will be additionally collected through

- Focus Groups (after 2 or 3 weeks of trials)
- Ethnographic methods
 - Analysis of workflow
 - Analysis of users' behaviour

5.1.1.8 *Study Type*

The focus of the evaluation will be on the feasibility of the developments; this will include an acceptance study and usability tests. The different elements of the Join-In solution will be tested as well as an overall evaluation of the Join-In solution will be done.

5.1.1.9 *Technical settings*

The Join-In solution will be tested with the following hardware:

- All-In-One PCs
- STB with TV
- PC
- Kinect and/or remote control

The internet will be accessed through Internet from the Cable Company and with UMTS-Sticks

5.1.1.10 *Outcome measures*

The analysis will be regarding the following aspects

- relevance to the goals of Join-In
- ease of handling
- established reliability of the system
- adaptation to the persons abilities
- usability of the Join-In products also in relation to different abilities
- effectiveness on socialising
- acceptance of the solutions by the target group

5.1.1.11 *The recruitment*

The participants will be chosen from the DMM community. The recruitment process has already begun in the different areas of work of the DMM.

The participants will be recruited from the different activity groups of DMM:

- **Dancing groups:** The participants of these groups are very active, they visit these regular meetings in order to do something for their health and to enjoy the time with others
- **Senior clubs:** The participants of these groups visit the club on a regular basis; they have their regular seating arrangements. Most of them are between 76-85 years old. Have different educational backgrounds as well as different family constellations.
- **Home Care:** The participants from this group belong to the care level 1. Persons with mental illnesses will be excluded. One possible addition to Join-In from this group will be Information videos for patients and their family.
- **Olympic Village:** The participants from these groups belong to the Lutheran and to the Catholic Church groups.
- **Nursing home:** Some of these participants were/are part of the church community.

5.1.1.12 *Ethical Issues and data protection*

Type and extent of data concerned: Three data categories will be collected:

- **personal data for the organisation:** this data will purely be collected for organisational purposes (Information about internet access, television equipment, address, friends of family – depending if the participant wants to contact them via Join-In). This information will be kept separate from any other data.
- **socio demographic data:** age, gender, living situation, etc.
- **evaluation and user experience:** how the participants evaluate the Join-In solution as well how they experience using the different elements of the Join-In solution

The collected personal data for the organisation will be locked and kept separate from the evaluation data. Each participant will receive a number; it will not be possible to draw conclusions from the number to the person. The anonymised data will only be accessible to the persons responsible for the research. The data entry, blocking and deletion of data will only be possible by the responsible person.

As soon as a participant wishes, all data regarding his participation will be deleted. At the end of the project the personalised data will be deleted.

Ethical issues were solved:

- Ethical committee of DMM: At this stage the planned procedures as well as the methods are presented to members of the ethical committee of DMM.
- Ethical committee of Diakonisches Werk Bayern: The planned procedures as well as the documents (e.g. informed consent, see Appendix A) regarding the pilot are sent to the data protection officer of the Diakonisches Werk Bayern. ¹⁰
- Ethical committee of University: On request of the reviewer the ethical committee of the University has been contacted and consulted concerning further ethical issues. (See Appendix F)

5.1.1.13 *The responsibilities*

The responsibilities concerning

- Overall Responsibility
- Recruiting & Attending
- Equipment Acquisition
- Organisation of internet access
- Technical Installation
- Technical Assistance

were defined.

5.1.2 Pilot Application II: Hungary

5.1.2.1 *The study team*

The study team will led by JOH. Bull will provide the technical acquisition and quality control for the piloting. The team members and their responsibility will be the following:

- JOH is coordinating five main centres for the study. In each centres one local key person will take care of the users and the posted equipments. If necessary local volunteers will help in the field study to secure the timeline of the piloting. One member of JOH is responsible for the overall study.
- Bull will take care of any technical support needed.
- Responsibilities for quality control and ethical issues were laid down

¹⁰ It was orally assured that the data protection officer from the Diakonische Werk Bayern is the correct contact person for Join In. On request of the reviewer the Consortium is again enquiring about this

Total team number:

- JOH: 6 persons
- Bull: 2 persons

5.1.2.2 Settings and locations

Due to the country wide network of JOH, and to provide more detailed information for the business plans of the project, pilot locations will take place in five different locations in Hungary. The locations will cover urban area (Budapest), countryside towns (Szombathely, Hódmezővásárhely, Balatonalmádi) and rural village area (Hencse).

In each location

- one community centre will be fully equipped with all the necessary technical equipment for testing and for introducing the ICT technologies to the elderly.
- one key person (local club organizer, elderly caretaker, nurse etc.) will be involved. She will be in everyday touch with the users, and can take care of the well-use of the posted equipments
- app. 20 users will be chosen for the study and for the piloting

In each location users will be equipped to test the Join-In solution at their homes. The number of the equipments will depend on the cost of the platform.

At the urban site (Budapest) the users have internet connection.

On the countryside the homebound users will be equipped with the Mobile solution and other Join-In solutions will be set up in those houses which already have internet connections installed (e.g. who already have a cable TV connection).

5.1.2.3 The sample size

The pilot will involve at least 100 persons. The cost of the equipment determines the testing period for the users. If possible JOH will try to select participants from the user groups who have a more technically equipped background (already have compatible TVs or PCs at home, have access to the internet or can purchase that at minimum cost).

At pilot start the user group in Budapest with a high acceptance level for new technologies will be studied. At this stage a preliminary study will take place.

In the preliminary stage the key persons and volunteers will be invited to observe the method of setting up the equipment and the data collection.

5.1.2.4 *The possible risks and counteractions*

Risks in the implementation

- the users do not accept the new technologies
- users do not use the Join-In solutions regularly
- participants reject to cooperate
- elderly users fall nervous about using expensive equipment

These risks can be reduced with a very careful and sensitive introduction of the new technologies. Therefore, JOH aims to take good care by training the key persons of the team and by ensuring access to all the equipments in a neutral place (community centres), too.

5.1.2.5 *The time plan*

The piloting will be structured as follows

- lab testing in Bull with the team members
- preliminary test and study in Budapest with volunteers to create a good implementation method.
- organised meetings with the user groups in the equipped centres to introduce the Join-In platform and solutions (Training is very important to increase the acceptance).
- recruiting the users from the groups and asking them to sign the informed consent
- installing the systems in the houses

JOH will provide continuous support to the users to overcome barriers using the Join-In equipments.

5.1.2.6 *The resources*

- The material resources will be defined exactly when the prototype is ready. The minimal need is 50 equipment (10 in each site)
- The same amount of mobile solutions is needed

Human Resources

- JOH: 6 persons will be involved: One is the main coordinator and each of the five sites will have a local coordinator.
- JOH may involve volunteers to help with the pilot
- Bull: 2 persons. One is to provide the technical background for the pilot, and one is to ensure the quality of the study.

Join-In - Senior Citizens Overcoming Barriers by Joining Fun Activities

<http://www.join-in-for-all.eu/>



5.1.2.7 *The study methods*

The study will follow the methods described in section 4.7.

5.1.2.8 *Study type*

The focus of the evaluation will be on acceptance and usability. The study has to collect data for the business plan for the Join-In Project.

5.1.2.9 *Technical settings*

Test will use various hardware:

- PC
- TV&STB
- Tablet PC
- All-in-One PC
- Kinect
- Join-In remote
- Smartphone

Internet connection will be accessed via cable.

Mobile network connections will be provided for the Smart phones by a telecom company.

5.1.2.10 *Outcome measures*

The analysis will be regarding the following aspects

- relevance to the goals of Join-In
- ease of handling
- established reliability of the system
- adaptation to the persons abilities
- usability of the Join-In products also in relation to different abilities
- effectiveness on socialising
- acceptance of the solutions by the target group

5.1.2.11 *The recruitment*

The recruitment will be in the community centres of JOH and in its cooperating institutions

- Senior Club of high school teachers, Budapest
- Senior club in Hencse
- Elderly Home and day care institutions of Szombathely and Hódmezővásárhely
- Reformed Church in Balatonalmádi, Senior Club

5.1.2.12 *Ethical Issues and data protection*

In Hungary an informed consent is under development. The document will be controlled by a lawyer.

In Hungary the information see: Act CXII of 2011 on information self-determination and freedom of information applies.

For the Hungarian Informed Consent please see Appendix G.

5.1.2.13 *The responsibilities*

- | | |
|-----------------------------------|----------|
| • Overall Responsibility | Bull |
| • Recruiting & Attending | JOH |
| • Equipment Acquisition | Bull |
| • Organisation of internet access | Bull/JOH |
| • Technical Installation | Bull/JOH |
| • Technical Assistance | Bull/JOH |

5.1.3 Pilot Application III: Norway

5.1.3.1 *The study team*

The study team will consist of project members

- Recruitment: Norut via the elderly centre Heracleum and NST via LHL will be responsible for the recruitment of participants
- The equipment acquisition as well as the organisation of internet access will be handled by Norut and NST
- The technical installations and assistance will be handled by Norut

5.1.3.2 *Settings and locations*

The testing will be performed in the following locations

- Heracleum will offer the Join-In solutions in their premises
- The Join-In solution will be tested in home environments. The users will be recruited either at Heracleum or in other senior groups

The technical solutions in the home environments:

- some test persons will have existing Internet connections, some internet have to be installed
- some will use their television via a STB some will use a PC or a tablet

5.1.3.3 The sample size

- The pilot will involve 10-15 participants, and at least 5 sets of equipment will be available for the pilot.
- Several groups will test the equipment for a certain amount of time. We will recruit both male and female participants.

5.1.3.4 The possible risks and countermeasures

Possible risks that will be taken into account by the team members:

- Users can get sick and have to leave the group, which we have already experienced. We will then have to either work with smaller groups, recruit new users or reorganise the groups. This will depend on the groups and the situations.
- The participants might feel overwhelmed by the new technologies. The team will introduce the technology in a gentle manner. A sheet with information and contacts for help, as well as a user manual, will be handed out together when the equipment is installed.
- The introduction to the reason behind the testing must be very clear, to avoid that the participants may get the feeling that they are getting tested and not the technology.
- Elderly, who want to participate, but do not want the equipment at home or do not want to install internet, will be offered the opportunity to participate at Heracleum.
- To meet participants' fears of not being able to cope with Join-In, they will be offered assistance when they use the equipment for the first few times.
- The user organisations are not direct partners in the Join-In project, so their commitment is weaker than if they were partners. We must make sure that the burden on them does not get too big.

- The system will not be installed in the homes of the senior users unless it is stable and easy to use.

5.1.3.5 The time plan

Each person should be able to test the system for at least two weeks. In that way we will ensure that the person learns how to use it, and we will get feedback that is not just based on novelty.

After recruitment and before receiving the equipment at home the users will

1. get an introduction to the technologies
2. receive an overall explanation about how the system, and shall try it out.
3. will get a manual, and contact information for help if needed

We plan on groups of 3-5 persons having two weekly common Join-In sessions. In addition users can use the Join-In system whenever they want to.

In Norway the focus of the pilot will be on socialising through the Join-In exergames integrated in the Join-In system

5.1.3.6 The Resources

Material resources:

- PC / TV / Tablet
- Stationary bike
- Kinect with camera etc

Human resources: Project members from Norut, NST as well as Heracleum and LHL

5.1.3.7 The study methods

For the study method, see 4.7. Qualitative methods will be used.

5.1.3.8 Study Type

The focus of the evaluation will be on acceptability and usability, evaluating the elements of the Join-In solution piloted. Standard and self-made questionnaires will be used, and forms with few and simple questions will be chosen due to the nature of the target group. Interviews will also be used.

5.1.3.9 *Technical settings*

The Join-In solution will be tested on the following hardware

- STB with TV
- Kinect and/or remote control
- Stationary bike and a tablet or PC

The internet will be accessed through the most suitable provider for each location.

5.1.3.10 *Outcome measures*

The analysis will be regarding the following aspects

- relevance to the goals of Join-In
- ease of handling
- established reliability of the system
- adaptation to the persons abilities
- usability of the Join-In products also in relation to different abilities
- effect on socialising
- acceptance of the solutions by the target group
- enjoyment and usefulness

5.1.3.11 *Recruitment basis*

The users will be recruited among the regular users of Heracleum and LHL members

5.1.3.12 *Ethical Issues and data protection*

- Informed consent – signed forms from all participants (See Appendix B)
 - Must inform about the project, also the possibility to withdraw at any time (written form)
 - The participants must be able to understand what they sign
- Register the project with NSD (<http://www.nsd.uib.no/personvern/om/english.html>) and with “personvernombudet” at UNN
 - Inform about the project, the data we collect and how they are stored.

5.1.3.13 *The responsibilities*

The study team have the overall responsibility for the trial and is responsible for the recruitment, equipment acquisition, organisation of internet access, technical support and running the trial.

5.1.4 Pilot Application IV: Ireland

5.1.4.1 *The study team*

The study team consists primarily of the development team in IT Carlow. A physiotherapist student may participate in the testing if assistance is required in evaluating the test results of the exergames success on physical health.

5.1.4.2 *Settings and locations*

The testing will occur in the user's homes when they are issued a set-top box to test the software on. The testing may also take place in the user group meeting centre.

5.1.4.3 *The sample size*

The group size of the Irish Active Retiree group in New Ross, Wexford, Ireland is 110. There are 14 members of the group who will participate in the game testing. The devices issued to the users have the Join-In games and Kinect server preinstalled. The group size is dependent on the number of set-top boxes available.

5.1.4.4 *The possible risks*

The possible risks of the study include factors such as if the users don't have an internet connection available. If the users fail to fill out the surveys to evaluate the games on the system there will be gaps in the results.

The user organisations are not direct partners in the Join-In project, so their commitment is weaker than if they were partners. We must make sure that the burden on them does not get too big.

5.1.4.5 *The time plan*

The evaluation period will take place over a 3 month period. Half of the systems will have the version of the game with adaptive difficulty and the other half without. This is to evaluate what affect adaptive difficulty has. The two games will be tested in unison if there are enough set-top boxes such as 10 or more. If there are less systems available the one group will test the game for the first half of the study and then second group will evaluate the other game for the next half.

5.1.4.6 *The Resources*

A number of set-top boxes are required to perform the study. Each set-top box distributed will also need a Microsoft Kinect. At least 10 set-top boxes would be required to fully test the two game versions.

5.1.4.7 *The study methods*

Instruments will be used to measure the usability, motivation, physical and cognitive attributes of the game. The game will record relevant data to evaluate user progress. Questionnaires and interviews with the user group will also be conducted.

5.1.4.8 *Study Type*

The study type is an experiment primarily focusing on the effects adaptive difficulty has on motivating users to play exergames.

5.1.4.9 Technical settings

The game will be testing on a set-top box with the Kinect as the primary input device. An internet connection is required to fully test the system.

5.1.4.10 Outcome measures

The analysis will be regarding the following aspects

- relevance to the goals of Join-In
- ease of handling
- established reliability of the system
- adaptation to the persons abilities
- usability of the Join-In products also in relation to different abilities
- effectiveness on socialising
- acceptance of the solutions by the target group

Following aspects will additionally be taken into account:

- **Motivation:** A primary goal of this research is to motivate users to exercise frequently. This is achieved by attempting to keep the user in a state of Flow. Intrinsic motivation is measured using the Intrinsic Motivation Inventory (IMI) which contains 45 questions answered by selecting between 1 (not at all true) to 7 (very true). Motivation to exercise may be measured using the Motives for Physical Activities Measure (MPAM) scale. In addition to these instruments in-game data may be recorded to assess user motivation. The player data recorded includes the amount of time the user spends playing the game per session and the number of sessions each day and number of sessions in a week.
- **Usability:** Usability is an important element of any game. The game developed for this project is designed for elderly users who are generally not familiar with video games. This makes ease of use an even higher priority. Software usability will be measured by devising a set of usability metrics and evaluating those metrics using in-game data and questionnaires. The metrics selected are scenario success rate, error rate, scenario completion time and subjective user evaluation. Each user is given a set of tasks to complete, the system measures the time taken, number of errors and if the user can complete the task at all. A usability questionnaire is then administered to gather subjective data from the test group. The Software Usability Measurement Inventory (SUMI) is a 50 item questionnaire designed to measure the perceived quality of use of software.
- **Physical effect:** The exercise selected for this game is based on step aerobics. The version of step aerobics implemented in the game requires each user to

take a step indicated by the in game rhythm. Step aerobics is a low intensity exercise that is suitable for elderly people. The benefits of step aerobics include burning calories, improving flexibility and increasing balance. The benefits of the game will be measured using the Berg Balance Scale to assess a user's risk of falling.

5.1.4.11 The recruitment

The participants are part of the Active Retiree group in New Ross, Wexford, Ireland.

5.1.4.12 Ethical Issues and data protection

The project will follow the institute's ethics guidelines as well as adhering to the Irish data protection act (See Appendices C, D and E).

- "Irish Data Protection Law", The office of the Data Protection Commissioner is established under the 1988 Data Protection Act. The Data Protection Amendment Act, 2003, updated the legislation, implementing the provisions of EU Directive 95/46. The Acts set out the general principle that individuals should be in a position to control how data relating to them is used. The Data Protection Commissioner is responsible for upholding the rights of individuals as set out in the Acts, and enforcing the obligations upon data controllers. The Commissioner is appointed by Government and is independent in the exercise of his or her functions. Individuals who feel their rights are being infringed can complain to the Commissioner, who will investigate the matter, and take whatever steps may be necessary to resolve it. (<http://www.dataprotection.ie>)

The Data Protection Commissioner's office has been contacted; they have assured that the pilot is compliant with the law.

5.1.4.13 The responsibilities

Overall Responsibility ITC / VAL

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5.2 Comparability of the Pilot Sites

		Germany	Hungary	Norway	Ireland
Settings and Locations	Sites	Urban Area	Urban Area Rural Area	Urban Area	Rural Area
	Elderly	Introduction and Testing with Join-In Social Networking Stations Testing in their home environment			
	Internet	With existing internet connection No internet connection, installation by the project			
		No internet connection, UMTS No internet connection, offline usage	No internet connection, UMTS		
The participants the sample size	The participants	Older than 65 years			
		Mostly older than 75 Mainly from different activity groups Male/Female proportion as in pilot surroundings	Male/Female proportion as in pilot surroundings If possible, users with a more technically equipped background	From Heracleum and LHL Both males and females will be recruited	Irish Active Retiree group in New Ross
	The sample size	Preliminary Study with 3 - 5 persons 50 - 100 persons	Preliminary Study in Budapest 100 persons	10 – 15 persons	10 – 15 persons
Time plan	Beginning of lab test	15.10.2012			
	Pilot	01.02.2013 – 31.08.2013			

To be tested	Exergames and games			
	Social Network (socialising) Remote Control			
The study methods	Moderated exercises Memory game Social Network (Information) Video conference Telephone conference Cycling game		Exercising game (AntiqueHunt) Cycling game	
	Questionnaires Structured Interviews Semi-structured Interviews			
Study type	Functionality tests Descriptive Statistical methods Summary content analysis Focus groups Ethnographic methods		Functionality tests Descriptive Statistical methods	
	Acceptance Study Usability Tests			Main emphasis on (exer)games
Technical settings	STB with TV Kinect and/or remote control			
	AiO PCs PC	AiO PCs PC Tablet PC Smartphone	Tablet PC Smartphone	
				Experimental design: Effects of adaptive difficulty on motivation

Outcome measures	Relevance to the goals of Join-In Ease of handling Established reliability of the system Adaptation to the persons abilities Usability of the Join-In products also in relation to different abilities Effectiveness on socialising Acceptance of the solutions by the target group			
				Motivation Usability Physical effect
Ethical issues	Involvement of ethic committees and data protection officers Written informed consent – signed forms by all participants Must inform about the project, also the possibility to withdraw at any time The participants must be able to understand what they sign Information about how the data is collected and stored			

6 Join-In evaluation plan

The evaluation plan is the final step before piloting. It will prepare for a smooth performance of the pilot and evaluation study. It will help managing the evaluation study and the pilot. The following describes the procedures to be taken for ensuring a successful pilot.

Revision and finalisation of the pilot planning

The study team, the settings and locations, and the sample size will stay as described above. The risks have been identified and will be kept in mind throughout the pilot.

6.1 Detailed description of the Join-In Social Network

The Join-In Social Network provides the following plug-in functionalities. * Details can be found in D 4.2 Design and Implementation of the Join-In platform.

6.1.1 Social Contacts

- User Profile which contains the information that defines the user. It works within the social network as identification.

Additionally to the name, the User Profile includes:

- Photo
 - Interests and hobbies
 - Group memberships
 - Physical limitation
 - All the information will be given on a voluntary basis.
- User Settings including
 - First Name and Family Name
 - User Name / Gamer tag
 - User Id
 - Contact details: Email
 - Friends/Family

The user can add, delete or search new contacts as friends or family.
 - Videoconferencing (used in Germany and Hungary)
 - Videoconferencing allows the users to use video and sound as a communication channel with their contacts.
 - The user will be able to invite his/her friends to a videoconference, making it more private.
 - It will allow the user to play a game while videoconferencing, adding a new social value to the game.

- Messages

With the help of a keyboard (physical or virtual) the users will be able to send and receive written messages (similar to emails) to/from their contacts.

- Exchange (available in Germany/ Hungary)

The users are able to upload, share, comment, and tag different types of information, e.g.

- Photos
- Videos
- Web Links
- Texts: News, Histories, Poetry, etc...

6.1.2 Dates and Calendar

The management of the dates of the users is a functionality strongly connected to others like games, exercises or even groups, helping the users to coordinate their social activities.

- Calendar

The user can access a calendar to check personal, group or regional dates, events or reminders.

- Dates

The user is able to add, delete or modify appointments or reminders within a graphical interface. This interface is a plugin for managing the users' dates.

A date can be shared between friends or groups members. That is helpful when, for example, an activity moderator wants to establish that date for the next (exer)game or exercise. The moderator can set up an exercise goal, by adding a sequence of dates containing a set of (exer)games and also video exercising.

The users can see their progress in achieving the exercise goals in the calendar interface.

6.1.3 Games and Exergames

The games are an important part of the Join-In Platform and their integration with the Social Network is a major issue. The user can play the (exer)games with other users with or without the supervision of a Moderator, which will show how to play, observe the users movements and/or help and give feedback to the users.

- Game registration

Once a game has been developed, it needs to be made available to the user. The social network is a really good tool for this purpose.

In order to offer game information to the gamers, there is a need of a plugin to implement the game information acquisition and of its integration in the social network. This plugin is the Game Registration. Once the game is registered, it will be accessible to the users in the game lists.

- Games listing and gamer profile

We will implement a plugin to manage the lists of games offered and the list of games that the user already played. These lists are readable by the Social Media Connector.

- Game launcher

It is necessary to provide an easy access to the games. The game launcher gets the information from the registered games on the game list and from the gamer list.

- Game metrics performance viewer

Both the cognitive games and exercise games (exergames) will collect performance data from the player over time. This data will be readable by the Social Media Connector, in order that it can be stored and retrieved by the game servers. Read access may also be provided for future applications that might require access to this data (e.g. care providers who might have an interest in monitoring the progress of the participants).

- For each game, the following metrics data are supported by the Social Media Connector:

- total number of games completed by a player
- duration of individual games
- scores of single gaming sessions
- optionally, a skill level and experience level of a player.

6.1.4 Avatar selection

An external application - similar to a game - enables the user to select and potentially even to modify the look of the avatar.

The avatar that the user chooses will be used in (exer)games the user plays, and possibly for exercising. It can be used in the social network's user interface as an alternative to the user's photograph.

6.1.5 Exercising

Join-In offers the users a variety of exergames to improve their physical fitness. In addition to these exergames, a remote gymnastic program with a moderator can be set up,. For this purpose, the video sharing and the videoconferencing are helpful functionalities, as well as the calendar for organizing the exercises sessions.

6.1.6 Security and authentication issues

The Join-In social Network is designed as a private network, which allows access for registered users only. To achieve acceptance of the users obeying the users right on privacy and data protection is vital.

- Authentication

The user has different options to get authenticated to the Social Network:

- Paper form: A user can register in the Join-In Platform filling a form in one of the regional user centres. Here the User Support will give the login data to the user and help the user with the registration.
- Email: For users who own an email account. The user can access to a registration form within the Join-In Portal, where he will be asked for “User Name”, “Email” and “Password”. Once the User Admin has confirmed the registration process, the user will get a confirmation email, allowing him/her to access the portal.

The user needs to login on to the portal using “User Name” and “Password”. To avoid inserting the login every time, the information can be stored in the user’s machine.

6.1.7 Help

There will be a user manual

- explaining step-by-step the course of action (for example: “enter your first name now”- click -using the mouse- the large blue button “Confirm” at the bottom of the screen). Thus the user can easily get acquainted with the platform. Screenshots and pictures will lead to a better understanding. This part will also be available as a printed manual.
- Another part will describe the recommendations on the system.

A support centre will provide additional help. The “Help”-Menu provides a telephone number that can be called at a certain period of time. A person at the Call Centre will answer the questions of the users. He/she will also be able to remotely access the user's computer over the network– if the user has activated this option in the user setting- to resolve any technical problems.

The Join-In Social-Network is based on the results of the analysis of the user requirements.

6.1.8 Results from the Analysis of the user requirements

As Hungary only joined late in the project, the user analysis could not be performed there. The results are, therefore covering Norway, Ireland and Germany.

6.1.8.1 Socialising

- Socialising is a vital issue for the elderly in all the countries.
- The main interests stated were
 - In Germany: playing games, cultural activities, music, philosophy, handcrafting and religion.
 - In Norway: exercising , watching film , sewing and knitting ,
 - In Ireland: sports, walking, gardening

6.1.8.2 Platform

- the possibility to interact and communicate with family and friends in and outside of games/exercises
- a simple and intuitive interface
- the possibility to play/interact/communicate with limited fine motor skills, limited eyesight, limited mobility (sitting down)
- the possibility to get to know a peer

- data protection (possibility to choose which data is available to others)
- visibility of other persons participating
- cultural offers

6.1.8.3 Gaming

- For the involved user groups in the 3 countries gaming is a favourite past-time only in Germany. In Norway and Ireland some people play card games occasionally. It was, therefore, decided to concentrate the gaming requirement activities on Germany
- The (German) users preferred a communicative and at the same time competitive, brain-training game; one group asked for “Rommée”).
- The users decided on a special edition Join-In Memory Game, this was aimed at training the mind, but also to enable new contacts and to foster interaction and communication between two people.
- The following requirements on the technical solutions were put forward by the users on gaming
 - the possibility to interact and communicate with family and friends in and outside of the game
 - a choice of individual difficulty and speed levels
 - the story of the game should relate to real life
 - the possibility of following one’s progress
 - the benefit of exercises/games should be explicit
 - easy to follow gaming rules; yet the possibility to enter a higher level once the basic rules are clear
 - the possibility to play cooperative and competitive
 - the possibility to play/interact with strangers
 - the possibility to do specific exercises
 - the possibility to correct ones mistakes
 - layout/graphics should be adequate for elderly

6.1.8.4 Exercising and Exergaming sessions

- In all countries the user groups are interested in sports and exercising as they feel this could help them to stay fit longer. Many of the German users do sessions offered on TV (Tele-gym) regularly, but find many of the exercises not age-related. They stated that exercises for their age group offered by Join-In would be beneficial. Join-In decided to include exercises designed by a physiotherapist in the pilot phase
- Favourite activities amongst the elderly were hiking or taking walks and cycling, the Consortium, therefore, decided to develop a walking and a cycling game. The variety was emphasised.

6.1.8.5 Exergaming

- Users stated that
 - exergames should offer the possibility to interact and communicate with family and friends in and outside of the game
 - the exergames should be perceived as useful, not only for fun
 - exercises should be tailored to the users' needs; this means
 - easy start of the game
 - positive feedback
 - no calorie counting
 - handicap compensation
 - adjustable speed needed
 - possibility to take a break
 - avatars to represent the different participants

6.1.8.6 Social Network

- Social contact functionalities, such as user communication and profile setting
- An easy possibility to link to add applications
- The possibility for developers to modify the layout
- Requirements serving the special needs of the target group
- Simple access for the elderly users
- Accessibility providing for users with physical limitations
- Multilingualism providing for the users in the Join-In partner countries.

6.2 Evaluation material

The following methods will be used:

- Questionnaires
- Structured Interviews
- Semi-structured Interviews (Guided Interviews)
- Functionality tests
- Focus Groups
- Ethnographic methods
 - Analysis of workflow
 - Analysis of users' behaviour
- Descriptive statistic methods
- Summary content analysis (Mayring)

The categories that will be surveyed are the following:

- Acceptability
- Usefulness and effectiveness towards the envisaged goals
 - Motivation
 - Physical benefit
 - Mental benefit
 - Quality of life
- Usability and adaptability
- Functionality: to be measured against the specific requirements of the users

The business case will be considered throughout the process

The specific questions will be agreed across the Consortium. Scales as the SUS, SUMI, SF-36 or EQ-5D will be considered and discussed. In order to make the study as useful as possible the product definition and single selling point have to be kept in mind.

6.3 Activity mapping

At this stage it is important to map the activities in order to start and perform the different tasks on time

- Organising the study team/Recruitment
 - Designing training material
 - Manual for trainers
 - Manual for users
- Designing a training plan
- Setting up a study protocol
- Lab testing
- Operation schedule of involved employees and volunteers
- Operation schedule technical resources for the users
- Organisation of internet access
- Technical Installation
- Confidential disclosure agreement regarding all information about the users
- Data Collection
- Data Management
- Analysis

After recruitment and before receiving the equipment at home the users will

1. be given an introduction to the technologies
2. receive an overall explanation about how the system works, and shall try it out.
3. will get a manual, and contact information for help if needed

6.4 Quality management plan

- The responsibilities and tasks of each partner /participant are clear; they will - together with the respective person- be reviewed at regular intervals
- 3- weekly study group meetings
- Contact for persons outside of the consortium

- Control compliance with the protocol
- Quality indicators:
 - data usability
 - project management issues
 - on time intermediate and final solution
 - quality of the solution
 - extent of user needs being met
 - sustainability
- Review the risk plan and identify any problems as early as possible
- Ensure the distribution and maintenance of material
- Ensure the data ownership
- Keeping the time schedule
- Exit strategy

6.5 Communication strategy

- Training of all those who will be looking after /involved with users
 - advising them of the fears/specifics of the elderly users
- Aiming at setting up contacts to the targeted persons via persons of trust
- Ensuring Means of Contact (call centre, contact details,

6.6 Time schedule

The time schedule constitutes the following steps

- Coordination of the system and the questionnaires
- Lab testing with the team members
- Pre-testing with volunteers (3-5) system with volunteers
- Setting up Join-In Social Networking Stations in the centres

- Recruiting the users from the different groups, informing and introducing them to the system and asking them to sign the informed consent
- Installing the systems in the houses

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