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ReAAL
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Final consolidated operation report
D4.3

Lead Editor: Janne Rasmussen & Kirsten Ravn Christiansen, MedCom

Internal Reviewer: Helmi Ben Hmida, Fraunhofer

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This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Executive Summary

Introduction

This document serves as the final consolidated operation report based mainly on information provided in the individual pilot periodic operation reports and documents the ReAAL pilot and associated pilots' status of operation.

The purpose of ReAAL is to explore the use of an Open Platform (universAAL) via multiple pilots in nine European countries (13 pilot sites). Each pilot has a different focus and in total 31 of 32 planned applications have been through a piloting phase, which covered both universAALization, testing, deployment and evaluation.

In addition, the pilots have each chosen an application piloted in one of the other pilots to deploy in their local setting in order to demonstrate the openness of the platform and easiness of installation. This is referred to as imported application, meaning that the application had already been universAALized, tested and in operation at the original pilot site. The pilot sites have chosen to import applications that are well in line with their existing portfolio of ReAAL applications and end user target groups.

Status of ReAAL applications and users

The project's ambition was a minimum of 5000 individual end users (assisted persons, informal caregivers and formal caregivers). The pilot sites' ambition was in total 5813 if adding all their individual end user targets. In total, 6025 individual end users are in operation at time of report (June 6th, 2016)[1]. In terms of overall end users[2], the total is 8108. Consequently, the overall target has been achieved and exceeded.

Five pilots have surpassed their individual total number of end users, although in some cases it is a reflection of one or more applications having surpassed their target while other applications within the same pilot site had less user than planned. Three pilots have reached the exact number of total end users, three pilots are just short of their targets and two are far behind target.

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[1] Note that this is number of users is based on the pilots' statements. Via the evidence of usage, the project is currently validating the final number of users by pilot site.
[2] Some end users use more than one application.

Overall status per pilot site

ODE	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, Deployment and Operation and Evaluation have all been completed. Ultimately, ODE has included more than its target of users.
RNT	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. User recruitment has been finished and well above target. Currently focussing on the evaluation but close to completion.
BSA	Phases Initial activities, universAALization, Lab test, User test, and Organisational set-up have all been completed. Operation not fully completed but was able to recruit almost all the target users. The imported application is also in operation. Evaluation activities in process but close to completion.
TEA	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. TEA has included more than its end user target. Evaluation activities in process but close to completion.
IBR	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. IBR had implemented a contingency plan due to slower progress in user recruitment than expected (a Private Insurance Company has agreed to deploy one of the services in one of their nursing homes). It was successful and IBR has recruited more users than its total target. Moreover, many maintenance tasks are taking place to ensure that the data collected have enough quality and evaluation is ongoing but close to completion.
PGL	Phases Initial activities, universAALization, Lab test, User test and Organisational set-up have all been completed. Recruitment has been running slowly and the target number of end users has not been reached. Different local factors has inhibited the full deployment of the project. Evaluation in progress but close to completion.
SL	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. All end users were recruited and in operation. Evaluation tasks have been reinforced and in progress but close to completion.
WQZ	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed for the Home Management App and the target of active end users was reached. CapFloor is not deployed in the project after all and was stopped at universAALization/Lab test phase. Evaluation for Home Management App is ongoing and close to completion.
PRC	Phases Initial activities, universAALization, Lab test, User test and Organisational set-up have all been completed. The application *Ici et Maintenant* worked well and most of the target users are in operation. *MonParcours* experienced problems and as a result, user integration was postponed but has been in operation since end of March. Evaluation is in progress but close to completion.
IMA	Phases Initial activities, universAALization, Lab test, User test and Organisational set-up have all been completed. IMA has not reached its target of users but are close to. Evaluation activities are completed.
NCSR	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, Deployment and Operation and Evaluation have all been completed. Has included more than its target of users.
SCUPS	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, Deployment and Operation and Evaluation have all been completed. Has included more than its total target of users. Technical problems in Remote Home Care service means that application was behind schedule in recruitment. The Remote Rehabilitation and Diagnostics has considerably surpassed targeted number of users though.
EIC-IL	Phases Initial activities, universAALization, Lab test, User test and Organisational set-up have all been completed. The deployment and operation phase was delayed and EIC-IL has been trying to catch up but not succeeded at this point and is considerably behind its end user target. However, operation will continue and targets will be kept before the final review date. Evaluation is ongoing and progressing well.

Consolidated status

The phases covering Initial activities (Planning, procurement etc.), universAALization, Lab tests, and User tests are all fully completed by the pilot sites for the applications that are in operation in the ReAAL project. In general, we see that these phases have varied between sites in how much delay they encountered:

Phase	Variance in start from planned to actual
Initial activities	From -2 to +2 months
universAALization	From 0 to +4 months
Lab tests	From 0 to +8 months
User tests	From 0 to +8 months

The status for each pilot in relation to Deployment, Organisational set-up (user recruitment, set-up of support system etc.), and Evaluation reflects the situation that not all target end users have been recruited yet (in some pilots but overall the project target was exceeded), not all pilots achieved 6 months of operation and evaluation is still ongoing (although close to completion). Also here, there is a great variation between how much delay has been encountered for the phases.

Phase	Variance in start from planned to actual
Deployment	From -2 to +12 months
Organisational set-up	From 0 to +6 months
Evaluation	From 0 to +5 months

Main challenges

- One of the main challenges of the pilots has been recruitment of end users within the planned time and/or at planned volumes. Issues were access to sufficient end users, end users willingness to participate and sign consent forms

- Concerning universAALization, many pilots felt they lacked knowledge and documentation.

- Lab test were from a resource and time perspective perceived as very demanding.

- Evaluation has in many cases been more resource demanding than expected and thereby planned for.

- Other phases and activities (e.g. procurement, user test) also posed challenges but not to a serious extent and resulting in considerable delays or strains on resources.

Operation tracking

Status of operation has been tracked in relation to the following phases: Requirements & Initial; Activities; Adaptation; Deployment; and Operation.

The tracking shows that 27 of 31 applications have been in operation for a minimum period of 6 months which is the established objective and 3 applications for more than five months which is not too far from the objective. A majority have actually been in operation for a year or more, some even up to 16-17 months.

Risks and treatment measures

The risks identified by the pilots can be classified as follows:

1. End users - engagement, capabilities and recruitment
   This has been the main risk identified by the pilots and concerns not being able to recruit the target number within the timeframe. The issues concerns sufficient time, population and locations to recruit from.

2. Technology
   This has involved risks associated with the universAALization process, issues with hardware (incl. delivery, support etc.), and vendor relations and contractual agreements.

3. Resources
   The resources actually needed to progress and deliver the tasks the pilots were committed to do, exceeds the planned amount of resources and allocation hereof.

4. Other
   Mostly relates to evaluation such as ethical approval as well as quality and quantity of end user evaluation and data.

Lessons Learned

Phase	Lessons learned
Initial activities (planning, procurement etc.)	• Good vendor relations are important • Do not underestimate the importance of good planning • Do not assume you know what the users want • Know yourself and your role • Determine the categorisation of your intervention and technology
universAALization	• Do not underestimate the complexity • Access to expertise and to correct and timely documentation is critical
Lab tests	• Planning is the key • Have an alternative solution to remote testing • Test before you implement
User tests	• It is a very valuable learning experience
Deployment	• Real-life environments are not fully controllable even in a well-planned project • Prepare for the time after project
Organisational set-up (user recruitment, set-up of support system etc.)	• Get to know your target users • Organise your installation and support in a manner that optimises process
Evaluation	• Start early • Keep it simple and know your audience

Conclusions

ReAAL has achieved its objective of having multiple pilot sites across Europe, which have implemented universAALized AAL applications and which are in operation with a large population of end users. The project had 13 operational pilots using the common open platform where 87% of the applications have been in operation for 6 months or more and 9% for more than 5 months. The total number of users has

exceeded the 6000 end users. Critical learning points based on the experiences of the pilots, vendors, end users etc. for the AAL market have also been obtained.

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1. About This Document

This document serves as the final <u>consolidated</u> operation report based on all periodic operation reports (ID4.2) for the laboratory preparations and the operational iterations of each application deployed at the pilot sites and associated pilot sites in the ReAAL project.

Note that the deadline for submission of D4.3 Final consolidated operation report was May 16, 2016. In order to capture the final inclusion of end users and ensure consistency in reporting, the report has been extended to include status of operations up until 6th June 2016, which is also the time for which the project's evaluation inclusion period ends. Consequently, a 1-month delay in submission of D4.3 was occurred to cover the latest status.

1.1. Method and data used

In addition to the individual pilots' periodic operations reports as background material, the consolidated operations report also builds on further data:

- Detailed tracking through the spreadsheet "Monitoring Number of Ind-Users Every Two Weeks_Detailed".
- Workshop/assignment during ReAAL plenary meeting in Puglia (April 26, 2016) on challenges and lessons learned.
- Information gathering from pilot sites after their final periodic operations reports.
- Information gathering from associated WP leads (WP3 and WP5).

1.2. Limitations

The timing of the report impacts the status of operation which is documented in the report. It is important throughout the report to consider that while the deliverable has been delayed by one month in order to align the "cut-off" date (June 6, 2016) for information with the WP5 evaluation period, then there are still phases and activities that remain open and active after this date and time of submission of this report. Consequently, further progress is achieved daily and status thereby changing quickly, but this is not possible to reflect appropriately in this report.

1.3. Deliverable context

Project item	Relationship
Objectives	O1 'Deploy at least eight applications and services in support of independent living for approx. 5000 users in eight European countries in order to reach scales that promote the ReAAL experience as the ultimate reference for future investments.'
Exploitable results	Res 1 'At least 12 operational pilots using a common open platform, each with at least 6 months of active operation in conjunction with each deployed application to be used in real life involving at least 5000 users in total until the end of the

	project' Res 2 'An established portfolio of interoperable applications readily adapted to universAAL, associated with guidelines for matching the user requirements against it and deriving complete deployment plans in conjunction with future replications as well as an enlarged developers community around the common platform.'
Work plan	This deliverable is linked to T4.2 and T4.3 in WP4. This deliverable is also linked to T5.1, T5.2 and T5.3 in WP5.
Milestones	MS3 - End of planning / ready for deployments 'Pilots' infrastructure & planning ready, Evaluation framework mature, Applications first releases, Platform maintenance releases'
Deliverables	This document is a consolidated operation report based on the individual pilot sites' periodic operations report, which has been used to track the pilots' laboratory preparations and operational iterations. Every pilot site has delivered a periodic operation report regularly since the real start time at their site. These reports are internal deliverables. Furthermore, T4.2 and T4.3 deliver input to this document.
Risks	Rk1 'Poor match between user constraints and pilot needs' Rk7 'Difficulties and delays in setting up application-level service provision' Rk9 'End-Users Recruitment fail to secure enough users for the project' Rk11 'Risks with maturity of pilots' Rk13 'Users' overreliance on the system might lead in failure cases to major disappointments' Rk15 'User drop-out / low user retention throughout the project' Rk16 'Resistance of health and social care providers to use legacy technology'

2. ReAAL applications deployed by pilot sites

ReAAL explores the use of an Open Platform (universAAL) via a number of pilots from nine countries across Europe. Each pilot has a different focus and ReAAL aimed to pilot 32 applications in total[3].

The map shows the location of the pilots and associated pilots by pilot short name and number of applications being piloted in each site.
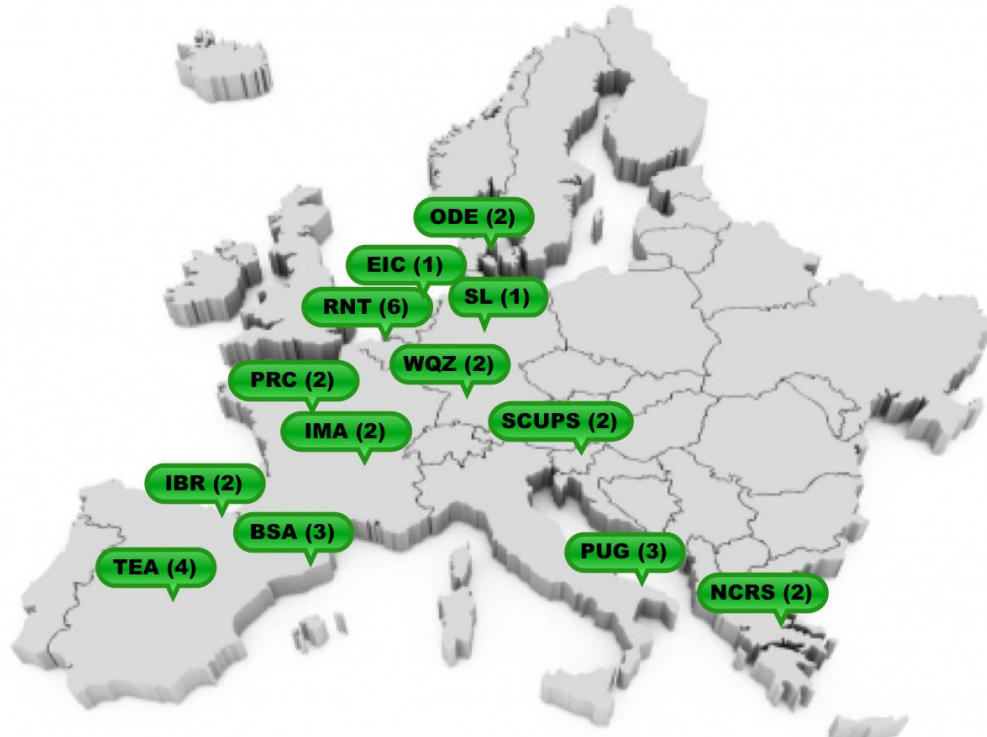
2.1. Local Applications

Below is a short description of each of the applications that were piloted and in which location. A comprehensive overview of the applications is also available in a project brochure, which can be found here:

http://www.cip-reaal.eu/fileadmin/user_upload/ReAAL-Broschuere_EN_web.pdf

Name of application	Brief description of application	Name of pilot site
Task Scheduling with pedometer	Task Scheduling support the coordination and execution of daily exercising tasks. Citizens will be equipped with a pedometer and the caregivers will help set goals for them. The aim is to make the elderly more independent and physically healthier by motivating them to exercise more.	ODE

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[3] It should be noted that of the 32 applications, 1 application did not make in to operation during the ReAAL project lifetime. CapFloor in WQZ was, due to technical problems, stopped during lab testing and therefore will not be part of ReAAL operation. Although, WQZ is in illustration above listed with 2 applications, then CapFloor is excluded from the list of applications throughout this report.

Rehabilitation Portal	An application to help the citizens do their exercise through a flexible and customised training program for training at home. The application is intended for older people with physiotherapy needs and for their physiotherapists and will increase compliance through continual monitoring and personalisation of training as well service efficiency. It consists of an app on tablet and exercise sensors for training at home and a web portal for professional support.	ODE
MedicineMen	The MedicineMan system is intended to be a mobile medication management solution for home use, based on a cloud-connected watch/smartphone combination. The user is warned by the watch through a gentle vibration and simple messages to take medication according to a predefined but intelligently adaptable schedule. Actual intake is recorded and upon request, graphically shown through a web-interface (for users, caretakers and doctor on request).	RNT
MindDistrict	MindDistrict provides a universal, user-friendly communication platform for digital purposes for mentally less independent people. The platform supports one-to-one online and mobile communication between professionals, clients and their social communities. It supports a client in all phases of the lifecycle: e.g. orientation and self-support, pre-care in case of waiting lists, diagnostics and treatment and aftercare. Supporting clients with themselves in combination with their communities enhances their independency. Specific for older and more dependent people the application will focus on alcohol problems and suffering of (first signs of) depressions. Motivating the social community of the users will increase their social enhancement and thus their independency in life.	RNT
MiBida	Mibida provides primarily a screen-to-screen connection. Based on this application, various specific target groups can be approached. Each target group can have its own wishes regarding specific details of the application. Possible goals for the application could be to promote social contact between patients themselves to enhance wellbeing, or to work in the primary care process for communication between caregivers and patients.	RNT
VitAAL	The Almende application enables its end-users (independent living elderly) to monitor and manage their personal, social and physical wellbeing. The application combines a smartphone app with a cloud-based personal portal.	RNT
Curavista	Health Portal Rijnmond offers a set of self-management diaries for chronic conditions spanning from Alzheimer to pain by cancer. A diary encompasses several functions, such as: o treatment plan; o patient facing self-management diary designed for a specific chronic condition;	RNT

	o progress status based on data extracted from the patient's diaries and treatment plan; o e-consultation for any questions that cannot be answered automatically; o alerts to the healthcare professional on points of special attention; o SMS reminders to the patient; o e-learning through screens with information and/or links to other sources and an explanation on a pop-up feedback page.	
Netmedical	NetMedical provides chronic disease patients (hypertension, diabetes, obesity, heart failure) with different measurement devices, which allows to measure key performance indicators for the disease from home. The readings are transmitted and almost instantly available for the healthcare professionals allowing remote review of the status of chronic disease. The ability to set thresholds and alerts on these values enhances to experienced safety and freedom of patients.	RNT
Nomhad Chronic	An advanced integral management system of chronic conditions. It includes the implementation of the plans of multi-actor care and the support to the patients and professionals' decisions. A station in the house of the patient allows monitoring vital signs besides informing, managing and treating the illness from the distance. The hospital of reference centre disposes of a medical response centre and everything needed for the management of the support processes and the decision making.	BSA
Social Agenda (WSN)	A service that is able to remind the user about certain events: health related appointments, leisure and cultural appointments of interest for them and personal appointments or events to remind charged into the system by health professionals, social workers, etc.	BSA
Help When Outdoor (HWO)	HWO service helps assisted persons who want to be independent and walk outdoor, feeling secure even if they lose their way, knowing that they can get home safely. This should enable a peace of mind for themselves and their next of kin or caregivers. The service enables them to locate the assisted person on a map and help him back home if required.	BSA
Cognibox	The Cognibox app tries to improve and follow up through personalised training the state of patients with cognitive problems/illnesses, like memory deficiency or Alzheimer, always in earlier stages of illness.	TEA
eHealth	eHealth application allows patients, caregivers and patient's familiars to follow the state and evolution of some health parameters like weight, height, glucose, spirometry, oxygen, heartrate, blood pressure and temperature. In addition, it contains a calendar that allows the user to schedule appointments, medical visits, treatment's actions (taking pills) and create alerts associated to these events. Finally, it contains a	TEA

	functionality that brings some useful advices to users, through day phrases to help them improve their daily life.	
SocialByElder	SocialByElder app is designed to provide final users a tool that avoid social exclusion and help their relations with other users and their families. To make this possible, SocialByElder provides functionalities to share news, photos, videos, a private social network and tools to make chats and videoconferences.	TEA
OptiSAD	OptiSAD is a web application that allows healthcare users to monitor what patients are doing with their tablets and some extra functionalities like sending notifications using Android notifications system. OptiSAD has all information about the patients to get a big picture about their state and their evolution.	TEA
Lynx Immediate Aid Provider	The service provides a system based on sensors to detect abnormal situations at the house of an assisted person (AP) and send alarm messages to a caregiver. (Smoke alarms, Gas alarms, Inactivity in a specific room during a long time, unusual activity, etc. The AAL alarm system will be able to a) capture the data from a set of sensors deployed in the house; b) process the data captured locally; and c) send the information to a remote server to process it remotely.	IBR
Lynx Healthy Habits	The service implies an Android application that encourages assisted people to do healthy habits like go walking every day, they are able to see the evolution of their exercises and also they have a calories burnt calculator. The application uses the GPS to track the distance, time and the average slope of the exercise to measure and rate it.	IBR
Safety at Home	Safety at Home aims to improve, in a proactive way (i.e. not only detecting but also taking protective actions), the safety at home of elderly people with neurodegenerative diseases at risk of progressive loss of memory.	PGL
Home Activity Monitoring	The Home Activity Monitoring service aims to help health professionals for disease management (e.g. early detection, follow up, etc.) and formal/informal caregivers for care management (e.g. monitoring, surveillance, etc.). More specifically, this service allows to monitor activities of elderly people from another room or from a remote location. In addition, this service annotates activities (both manually and automatically), health status, and environmental conditions, and it generates reports for health professionals and formal/informal caregivers.	PGL
Easy Home Control	The Easy Home Control service aims to help disabled older people to be more independent in managing their own home environment, removing the need to ask continuous assistance. This service allows older people to manage easily from a centralised touchscreen device (e.g. Tablet PC, smart phone, smart TV, etc.) the opening/switching of windows, lightening, main doors, heating, and other home appliances.	PGL

Smart Living System	The Smart Living System offers several services. There are four categories of services: comfort, welfare & health, communication and security. The Smart Living System can therefore be equipped with at least four main services: o There for you (If users feel ill, sick or bad, they can use this service); o Delivery of everyday commodities (residents with limited mobility can order some everyday commodities by using smart living system); o Information for the user (residents will be informed about news, gossip, weather, sports and so on); o Welfare Service (Inhabitants can order different welfare services like cutting hair, podiatry, massage, and so on).	SL
Home Management	The "WoQuaz" Home Management application is one application within the "inHaus" management portal that maintains, store and process incoming events, information from several electronically controllable sensors, their status, events or consumption situation. The home management thereby is targeting several functionalities for the home of the assisted person and provides access to sensors as well as actuators within each of the homes mainly to control the electronic equipment at home: light, outlet, blind, heating. Therefore all information in relation with the apartment will be captured, displayed and be accessible on a terminal.	WQZ
Ici et Maintenant	The service *I et M* allows to transmit short messages of various natures to the user mobile phones: o Local events and information (recreation, cultural activity, security) o His medical appointments, e.g. reminder of taking his medicine o His personal events (e.g. rendez-vous) These events are created by several broadcasters (municipality, associations, healthcare professionals, social workers, caregivers, public library, police force).	PRC
Mon Parcours	Mon Parcours service helps assisted persons who want to be independent and walk outdoor, feeling secure even if they lose their way, knowing that they can get home safely. This should enable a peace of mind for themselves and their next of kin or caregivers. The service enables them to locate the assisted person on a map and help him back home if required.	PRC
Assistive Social Network	This application aims to provide services to caregiver and elderly (still "in activity", "just retired" or which is at risk of loss of autonomy but still able to move). The central concept of the IMA application is to create an efficient network of people (informal caregivers, neighbours, family, professional caregivers) able to assist the older persons. Services for the group of caregivers are: o A Dashboard with a set of alerts related to the older persons	IMA

	o Messaging capabilities between the older persons and the group Services for the older persons are: o An alert call functions with localization 'indoor' or 'outdoor' o Social Link features including o Messaging with his preferred contacts Service Ordering o Managing Prevention Alerts o Activity Monitoring with a logbook	
Alert with Home Location (Contextual Geolocation)	The CG application supply the ASN application with information related to the indoor localisation of the user by getting data via the iBeacon sensors installed, for instance, in the house of the user. A typical use case: When an older person triggers an alert using the ASN application, if he is in his house (bedroom, living room, etc.) near a BLE Tag, the CG application, through the universAAL platform, send to the ASN application, contextual data related to the indoor localisation of the elderly. Then, the information is displayed on the ASN web portal.	IMA
Health-Tracker	The Health-Tracker app keeps track of health goals through a number of wireless vital sign monitoring devices, including among others, an oximeter, a blood pressure device and a blood glucose meter. The application requires registration at a specific site from the health professionals and allows them to set the health monitoring plan. The Health-Tracker app is accessed through a tablet or a mobile phone, which has a user interface that enables the user to view the current or previous statuses of both personal and home environment parameters, the latter being monitored through environmental sensors (monitoring temperature, humidity, air quality, etc.) that have been integrated to the system.	NCSR
RemindMe	RemindMe app targets end users living at home in need of assistance to follow medical recommendations and treatments. The application consists of visual and audio reminders and refill alerts; it also allows dynamic scheduling from the health professionals, who have to register at a specific site in order to use the service. RemindMe app is accessed through a tablet or a mobile phone.	NCSR
Remote Home Care	The main objective of the Remote Home Care service is to facilitate more independency, safety, and quality of life for users, especially elderly in their homes. The main purpose of the Remote Home Care application is therefore to support elderly living at home by making them feel more safe. This is achieved by combining complementary competences of technology and care service providers in order to provide a multitude of specific features that	SCUPS

	contribute towards this goal. The potential target features for the proposed pilot include the following: ○ Automatic Hands-Free Emergency Call ○ SOS alarm	
Remote rehabilitation and diagnostics	The basis of the service is a remote rehabilitation device, a standing frame with integrated sensors (accelerometer, gyroscope – 2D tilt sensor) and actuators (horizontal translational standing platform), which is connected to the remote rehabilitation application. The system is used by the therapist to remotely set rehabilitation tasks, follow therapy execution and progress, guide the patient in the therapy, and prepare reports for assessment of the therapy by doctors. The system is used by the patient to execute regular therapies according to the prescribed tasks and guidance from the therapist. Remote rehabilitation is supplemented with remote diagnostics, which collects and reports on rehabilitation outcomes, it can also correlate these outcomes with data from other multisensory devices that assess functional vital parameters (heart rate, blood pressure, body temperature) as well as motion parameters and more complex medical parameters (ECG) from personal health systems or self-designed built-in sensors.	SCUPS
Heart Failure recovery using Activity, Dietary and Behavioural monitoring	The core component of the service is a patient-centred web application for patients with coronary artery disease entering cardiac rehabilitation (CR). In this web application, patients can view their measurements and rehabilitation goals, upload and inspect training and physical activity data and share it with formal and informal carers. Patients are offered to follow their CR exercise training program at home (telerehabilitation), training with an accelerometer and a heart rate (HR) monitor. The HR monitor sends its data to the accelerometer through Bluetooth. The accelerometer is connected to a PC, which automatically uploads the HR and accelerometry data to the server. Patients and their physical therapists can then view the data and discuss the patient's progress through a webcam consult. After completing the CR program, patients are encouraged to keep training, continue their activities, and to upload their data. They will be contacted on-demand; that is, when activity levels and/or training intensity decrease.	EIC-IL

2.2. Imported applications

The imported application exercise is an additional experiment done in the context of ReAAL for the developer and service provider to experience the benefits of having an open platform. The imported applications stem from other pilots and / or universAAL. This way the flexibility of the platform and its support for adaptability can be tested. This will be a valuable asset for future replication in itself. Already

trained and experienced staff is available for mentoring new users just as it is possible to create links between technical support behind the scene. In addition, trained and experienced users can further challenge the vendors with advanced requirements to the applications.

The imported applications are not part of the project's objective of six months operation, this is only relevant for the original applications in each pilot. At the same time, they have often been deployed for a reduced number of users (several tens, depending on the capability and goal of the pilot). Currently all original pilots, except Puglia, have deployed an application imported from another pilot.

Note that the associated pilot sites (IMA, NCSR, SCUPS, EIC-IL) and the late entry pilot (PRC) are not required to import any ReAAL application from the other pilot sites and are therefore not included in below table.

Application	Original pilot site	Importing pilot site	Reason for choosing the application
Netmedical weight	RNT	ODE	Can be tested on same target group as Task Scheduling with pedometer. The application also use uAAL on the server side. Possible to use data from two applications (in theory, will not be done during this project).
SmartLiving System	(DE)	RNT	The service which the SmartLiving system is offering, is a new domain to our current services. It is focussing on the ambient domain, which is currently not served within RNT.
Rehabilita-tion Portal	ODE	BSA	BSA has a big target population, so a big amount of our end users do need access to preventive and curative physiotherapy exercises. The range of application for this service is really wide: People coming from a surgery, people that needs some kind of rehabilitation after an accident, people that needs some kind of postural correction, etc. BSA thinks it would be very interesting in order to improve the welfare of its inhabitants. The prescription of the application will be easy, because BSA reaches all the three levels of healthcare: going from primary care, through specialized care to tertiary care. BSA also thinks it is very important the accessibility of the application. Being it a web based application makes very easy to use it at patient's home (wherever it is even if the patient goes travelling and has Internet access) but also within BSA's rehabilitation rooms and gyms
The health gateway module from Nomhad Chronic	BSA (TSB)	TEA	This application complements the one we have because for two health parameters it adds two devices by which the end user does not need to introduce in a manual way the measurement but it is done directly by the two devices pulse-oximeter and tensiometer (blood pressure). In this way, for more aged people it avoids

			mistakes when introducing the parameters and is more technology friendly.
LynxHH	IBR	TEA	This imported application gives a new functionality to e- health because it monitors exercising. A very good complement.
Netmedical	RNT	IBR	This application can use the weight measurement and integrate it in the IBR Lynx application automatically instead of typing manually every time.
HWO	BSA (TSB)	IBR	Ibermatica application LynxHH users go walking many times a week and sometimes they get lost. Therefore, HwO is a good application to be used in conjunction with LynxHH to make the user feel safer.
MiBida Video Communi- cation	RNT	SL	It is a perfect extension of the Smart Living System. Also we think, that this application is an added value for the tenants of the apartments to increase their social integration.
Nomhad Chronic	BSA (TSB)	WQZ	Requested by some tenants. It is a perfect extension to the existing application.
-	-	PGL	In light of the local difficulties in the piloting of their three original applications, PGL will not be importing an applications from another pilot site but rather focus their efforts on progressing the existing applications in their pilot.

3. Status of ReAAL applications and users

Throughout the deployment process, all pilot sites have reported in details about the status of their deployment per ReAAL application and number of users as well as challenges encountered, solutions implemented, lessons learned and risks managed.

Individual Operations Reports (ID4.2) were submitted by pilot sites at M24, M29, M32, M35 and M38. Associated pilots, due to a later start, has submitted Individual Operations Reports at M32, M35 and M38.

Note that the last individual operations reports were submitted March 2016. Since, information on user status per pilot site and other details on status in phases have been updated based on further details provided by the pilots in the time leading up to delivery of this report. The status listed below is equivalent to status as of June 6, 2016 as reported in the final "Monitoring Number of Ind-Users Every Two Weeks_Detailed" and thus as close to the time of submission of report to EC as possible.

The provided number of user is based on the pilots' statement. Via the evidence of usage, the project is currently validating the final number of user by pilot. Any deviations in number of end users, whether per application, pilot or project, to future project reports, e.g. evaluation etc., will be subject to further analysis at central project level. WP4 accepts the numbers from the "Monitoring Number of Ind-Users Every Two Weeks_Detailed" to be correct but cannot currently guarantee them as the validation is ongoing. The final number is not expected to vary much from the current one and will be officially reported in the last periodic report.

3.1. User status per pilot site

The current status of user inclusion per application is provided below per pilot site. Note that the inclusion period of the project is open until June 6th 2016. The tables therefore provide the status as per time of delivery of the report (one month prior to end of inclusion period). To demonstrate which applications are still recruiting users and which have finished, the number of active users in total and missing number of users are coloured according to status:

Green   The inclusion of end users has been completed.

Black   The inclusion of users has not reached the target.

—   The missing number of end users is not relevant as the number of users per individual application or in total per pilot site has been reached or exceeded.

3.1.1.   Odense Kommune, Denmark (ODE)

ODE has **803** active users, which in total exceeded its target of 800.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Task Scheduling with pedometer	Assisted person	98	500	489	-
	Informal caregiver	0			
	Formal caregiver	391			
Rehabilitation Portal	Assisted person	297	300	**314**	-
	Informal caregiver	0			
	Formal caregiver	17			

* Note that active users also refers to users who are no longer using the application, which is mainly because the assisted persons have completed the rehabilitation service according to local procedures and set targets and therefore their termination is an expected outcome given the nature of the application/service.

3.1.2. **Stichting RijnmondNet, NL (RNT)**

RNT has a total number of end users of **2846** with an original target of 1700, thus far exceeding its original target of users.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
MedicineMen	Assisted person	76	110	85	-
	Informal caregiver				
	Formal caregiver	9			
MindDistrict	Assisted person	113	400	237	-
	Informal caregiver				

Service / Application	Type of users	Active number of users (divided in types)	Target number of users	Active users in total	Missing number of users
	Formal caregiver	124			
MiBida	Assisted person	100	160	126	-
	Informal caregiver				
	Formal caregiver	26			
VitAAL	Assisted person	205	300	219	-
	Informal caregiver				
	Formal caregiver	14			
Curavista	Assisted person	1881	410	1894	-
	Informal caregiver				
	Formal caregiver	13			
Netmedical	Assisted person	256	320	285	-
	Informal caregiver				
	Formal caregiver	29			

3.1.3. Badalona Serveis Assistencials, ES (BSA)

BSA has 1114 active users, which in total is just below their target of 1200 users. This includes the imported application. See details below.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Nomhad Chronic	Assisted person	237	300	433	-

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
	Informal caregiver	179			
	Formal caregiver	17			
Social Agenda (WSN)	Assisted person	501	350	519	-
	Informal caregiver	18			
	Formal caregiver				
Help When Outdoor (HWO)	Assisted person	40	200	85	-
	Informal caregiver	40			
	Formal caregiver	5			
Rehabilitation Portal	Assisted person	76	350	77	
	Informal caregiver				
	Formal caregiver	1			

It should be noted that BSA initially raised their target of end users for the applications to 1530 in total (Nomhad = 480; Agenda = 530; HWO = 420) as they anticipated to be able to reach that figure. Due to difficulties not foreseen in the early phases of the project and consequently substantial delay, the targets were adjusted to targets as above in table, incl. the imported application Rehabilitation Portal, as BSA was able to deploy the imported application relatively quickly as part of their ReAAL service delivery. These numbers are also set as the targets in the "Monitoring Number of Ind-Users Every Two Weeks_Detailed". Interestingly, the final numbers show that BSA has still almost reached its original target number of end users for Nomhad (433 of 480) and Social Agenda (519 of 530).

3.1.4. **Tercera Edad Active, ES (TEA)**

TEA has **557** active users, which in total exceeded its target of 540.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users

Cognibox	Assisted person	547	530	547	-
	Informal caregiver	0			
	Formal caregiver	0			
ehealth	Assisted person	547	530	547	-
	Informal caregiver	0			
	Formal caregiver	0			
Social by elder	Assisted person	547	530	547	-
	Informal caregiver	0			
	Formal caregiver	0			
Optisad	Assisted person	547	540	557	-
	Informal caregiver	0			
	Formal caregiver	10			

3.1.5. **Ibermatica, ES (IBR)**

IBR has **462** active users, which in total exceeded its target of 460.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Lynx Immediate Aid Provider	Assisted person	194	210	300	-
	Informal caregiver	10			
	Formal caregiver	96			

Lynx Healthy Habits	Assisted person	123			
	Informal caregiver	37	250	162	-
	Formal caregiver	2			

3.1.6.   **Puglia, IT (PGL)**

PGL has 21 active users, which is considerably below its target of 125.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Safety at Home	Assisted person	1	40	3	37
	Informal caregiver	2			
	Formal caregiver				
Home Activity Monitoring	Assisted person	6	70	15	55
	Informal caregiver	7			
	Formal caregiver	2			
Easy Home Control	Assisted person	1	15	3	12
	Informal caregiver	2			
	Formal caregiver				

3.1.7.   **Smart Living, DE (SL)**

SL has **48** active users, which is equivalent to its target of 48.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Smart Living System	Assisted person	43	48	48	-
	Informal caregiver	5			
	Formal caregiver	0			

3.1.8. **WoQuaz, DE (WQZ)**

WQZ has **65** active users, which is equivalent to its target of 65.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Home Management	Assisted person	36	65	65	-
	Informal caregiver	29			
	Formal caregiver	0			
	Formal caregiver	0			

3.1.9. **Perche, FR (PRC)**

PRC has 168 active users, which is below its target of 200.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Ici et Maintenant	Assisted person	97	200	168	32

	Informal caregiver	46			
	Formal caregiver (broadcaster)	25			
Mon Parcours	Assisted person	3	20	6	14
	Informal caregiver	3			
	Formal caregiver	0			

3.1.10. **Inter Mutuelles Assistance Gie, FR (IMA)**

IMA has 71 active users, which is below its target of 90.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the univers-AALized service	Missing number of users
Bundle* (ARST_Assistance, LocationMapping, BLE Source)	Assisted person	31	90	71	19
	Informal caregiver	40			
	Formal caregiver	0			

* Note that the two applications from IMA is in the rest of report considered as one bundle as the application 'alert with home location' is a background application for the Assistive Social Network (ASN application).

3.1.11. **National Center for Scientific Research, GR (NCSR)**

NCSR has **91** active users, which exceeds its target of 90.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
RemindMe & Health-Tracker	Assisted person	36	90	91	-

	Informal caregiver	46			
	Formal caregiver	9			

Smart Com d.o.o., informacijski in komunikacijski sistemi, SI (SCUPS)

SCUPS has **76** active users, which is equivalent to its target of 75.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Remote Home Care	Assisted person	33	60	40	-
	Informal caregiver	6			
	Formal caregiver	1			
Remote rehabilitation and diagnostics	Assisted person	35	15	36	-
	Informal caregiver	0			
	Formal caregiver	1			

3.1.13. **EIC-IL, NL (EIC-IL)**

EIC-IL has 17 active users, which is considerably below its target of 420.

Service / Application	Type of users	Active number of users (divided in types) in the universAALized service	Target number of users	Active users in total in the universAALized service	Missing number of users
Heart Failure recovery using Activity, Dietary and Behavioral	Assisted person	5	420	17	403
	Informal caregiver	0			

monitoring	Formal caregiver	12			

3.2. Summary of individual end user targets

The pie chart shows the proportion of pilots that in total achieved or exceeded their individual end user target (≥100%), that are very close to their target in terms of recruited and active end users (≥85%) and that are less than 85% in terms of reaching their target. Note that this reflects the achievement against the pilots individual total targets and not the overall project target or per application.
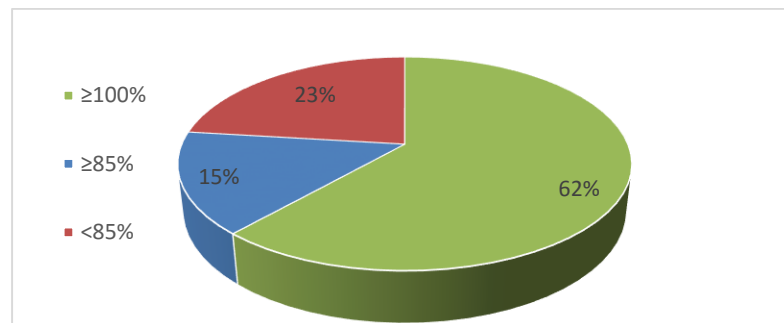
3.3. Overall status and challenges

The individual pilot and overall status is described in the table below according to the different phases of the ReAAL process.

Note:

- The consolidated status reviews the individual pilots' status in relation to commonalities and differences in an effort to detect patterns in relation to the individual phases.

- % are used to indicate level of completion and comments are only included if further information is relevant.

- Delays can be carried over from previous phases. The timing of actual start date against planned start date as presented in the tables below each phase have not been "cleaned" for earlier delays, meaning that each table does not use the actual start date of the previous phase as baseline for the comparison of timing in the next phase but uses the originally planned start date prior to encountered delays. This is significant in reading and interpreting the tables and understanding the consolidated status.

- Status (%) may vary from what pilots themselves have reported in their final periodic operations report as the status has been updated by work package lead (in collaboration with WP3 and WP5 leads) based on the original definition of the phases and the activities they contain and which status should be measured against. The adjustment mainly concerns organisational set-up, deployment and evaluation. It should be emphasised that the discrepancies were a reflection of different interpretations of what activities the phases consisted of. An example is that user recruitment is an activity in

the organisational set-up and refers to the planning hereof and also an activity in deployment. Therefore, it is possible to have completed the planning of recruitment without having recruited all end users.

3.3.1. **Initial activities**

Phase description:
This phase concerns mainly the planning of procurement of technologies (Is procurement necessary? What are the rules for procurement? What are the local prerequisites? Etc.).

Completion refers to when planning and procurement (if needed) activities carried out and the necessary components for the ReAAL applications are available locally for the universAALization.

Phase status per pilot:

Pilot site	Start date	Status (%)	Comments
ODE	June 2013	100%	Only procurement for Task Scheduling was needed.
RNT	December 2013	100%	
BSA	November 2013	100%	
TEA	February 2014	100%	
IBR	November 2013	100%	
PGL	July 2014	100%	No procurement was needed.
SL	March 2014	100%	
WQZ	January 2014	100%	
PRC	July 2015	100%	
IMA	September 2014	100%	
NCSR	February 2015	100%	No procurement was needed.
SCUPS	April 2015	100%	
EIC-IL	September 2014	100%	

Consolidated phase status:
All pilots have completed the Initial planning phase and when appropriate have procured the necessary technology to run the ReAAL application(s). Most have done this within planned time and in the pilots where this phase took longer than expected it was within a 1-2 month margin only.

Timing of actual start date against planned start date:

Pilot Site	Initial planning, incl. procurement
ODE	-2
RNT	0
BSA	+1
TEA	+1
IBR	+1
PGL	0
SL	0
WQZ	0
PRC	0
IMA	0
NCSR	0

SCUPS	+2
EIC-IL	0

3.3.2. **universAALization**

Phase description:
This phase covers the activities regarding adaptation planning and preparation at local site (requirement analysis, adaption (universAALization) and internal laboratory testing).
Completion refers to when applications are universAALized (uAAL) and sent to lab testing.

Phase status per pilot:

Pilot site	Start date	Status (%)	Comments
ODE	March 2014	100%	
RNT	April 2014	100%	Two phases of universAALization were required[4].
	April 2015	100%	
BSA	June 2014	100%	
TEA	July 2014	100%	
IBR	June 2014	100%	
PGL	January 2015	100%	
SL	September 2014	100%	
WQZ	March 2015	100%	
PRC	-	100%	Already completed in other pilot site. Adaption and integration with local legacy system has been performed.
IMA	February 2015	100%	
NCSR	February 2015	100%	
SCUPS	April 2015	100%	
EIC-IL	November 2015	100%	

Consolidated phase status:
All pilots have completed the universAALization phase. Two pilots (SL and WQZ) experienced delays of 3-4 months in this phase due to problems with getting uAAL to run in the local working environment (WQZ). All other pilots experienced no delay in this phase or it was of 1 month only.

Timing of actual start date against planned start date:

Pilot Site	UniversAALization
ODE	0
RNT	0/+2[5]

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[4] The initial universAALization plans included a three phases approach to ease the integration and deployment, the first phase included a combined use of universAAL and another platform, CommonSense, and after assessment from the management team it was agreed (formal letter sent to EC by 2015, February 23rd) to implement corrective actions to achieve a full universAAL based implementation.

[5] The start of phase 2, with the first of the corrective actions took place beginning of June 2015. By 17 September 2015, the planned milestones habe been achieved. Finally the Viewer, as a part of RNT universAALization plan phase 3, has passed the lab test and thus being operational the 16-04-2016. The final assesement of the running system is currently a part of the prove of usages that the

BSA	0
TEA	+1
IBR	0
PGL	0
SL	+3
WQZ	+4
PRC	-
IMA	0
NCSR	0
SCUPS	0
EIC-IL	+1

3.3.3.   Lab tests

Phase description:
A Lab test of each application carried out at one central project location and in a controlled and independent environment for technical verification. The testing occurs to a pre-set protocol, but the extent of this testing can vary according to the service.

Completion refers to when manual technical testing is performed in the central project lab and the result is satisfactory according to pre-determined criteria. The applications are then ready to be tested by users.

Phase status per pilot:

Pilot site	Start date	Status (%)	Comments
ODE	November 2014	100%	
RNT	January 2015 September 2015	100% 100%	Two phases of Lab test were required.
BSA	July 2015	100%	
TEA	January 2015	100%	
IBR	Jan 2015 and May 2015	100%	
PGL	January 2015	100%	
SL	January 2015	100%	
WQZ	April 2015	100%	Completed for Home management app. CapFloor did not complete Lab test
PRC	-	100%	Already performed in other pilot site. Further testing and debugging performed locally.
IMA	September 2015	100%	
NCSR	September 2015	100%	
SCUPS	October 2015	100%	
EIC-IL	January 2016	100%	

Consolidated phase status:
All pilots have completed the Lab test phase. It appears that in this phase, especially, delays (≥3 months) appear more frequent than in the previous phases. In BSA it is as high as 8 months.

Timing of actual start date against planned start date:

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project is requiring from all pilots.

Pilot Site	Lab tests
ODE	0
RNT	+2
BSA	+8
TEA	0
IBR	+6
PGL	0
SL	0
WQZ	0
PRC	-
IMA	0
NCSR	+3
SCUPS	+2
EIC-IL	+3

It is not surprising given the content and purpose of the project that this phase has experienced delays. The Lab test is where the universAALization of the applications is thoroughly tested and consequently it has in some cases been necessary for pilots to go back to univerzAALization and redo as the lab testing has identified areas of improvement.

It is important to clarify that the delays caused in this phase are not related to the central test site in ReAAL but the as explained above the nature of the process itself.

3.3.4. User tests

Phase description:
A smaller number of real users are to test each application before full roll-out is begun in order to identify best practices for the installation, configuration, customisation and personalisation of hard and software components. Finally, the User tests serves to do a final check that everything works and has the needed quality for a large scale implementation.

Completion refers to when user tests have been performed among relevant end users. Specifically, the pilots will carry out 4 steps in the User test: Step 1: Writing use cases for testing; Step 2: Installing the application in the user test setting; Step 3: Introduction of the application to the end users or training of the end users in the use of the application; and Step 4: Testing.

Not till the test shows that the application is ready for deployment and operation is the phase considered complete.

Phase status per pilot:

Pilot site	Start date	Status (%)	Comments
ODE	January 2015	100%	
RNT	February 2015	100%	Two phases of User test were required.
	September 2015	100%	
BSA	August 2015	100%	
TEA	February 2015	100%	
IBR	February 2015	100%	

	and July 2015		
PGL	November 2015	100%	
SL	May 2015	100%	
WQZ	July 2015	100%	Completed for Home management app. CapFloor did not progress to User test phase.
PRC	*October 2015*	100%	
IMA	February 2016	100%	
NCSR	October 2015	100%	
SCUPS	September 2015	100%	
EIC-IL	February 2016	100%	The User tests have been carried out recently and no documentation hereof has yet been received by WP lead.

Consolidated phase status:

All pilots have completed the User test phase. The trend towards increases in delays become more apparent in the User test phase. PGL and IMA who have been on track during the other phases are now seeing 7 and 4 months delays, respectively. For IMA, the delay was not due to the performing of User tests in itself, but rather a delayed start of them because IMA had to wait for a second version of the ARST_Assistance application (which is one of the universAALized applications) to be ready and tested before they had authorisation by their own organisation to deploy it.

As for PGL, no major challenge in this phase has been reported and it is therefore inconclusive as to what the reason for the delay is. However, PGL has faced organisational challenges in their region throughout the project and is likely this has also impacted the User test phase.

Timing of actual start date against planned start date:

Pilot Site	User tests
ODE	0
RNT	+2
BSA	+8
TEA	
IBR	+7
PGL	+7
SL	+3
WQZ	+2
PRC	0
IMA	+4
NCSR	+1
SCUPS	+1
EIC-IL	+3

3.3.5. Organisational set-up

Phase description:

Related to the actions taken by the pilot sites according to the legal issues to ensure that the rights of the subjects involved in the trials have been properly taken into consideration. Status has been monitored through the following activities: Ethical Board approval, local Investigation Ethical Committees, the set-up of the user recruitment process and the localisation of the informed consent forms.

At the same time, this phase covers the organisational set-up in relation to the pilots taking place under a project frame and with what that entails. It means the pilots must set up an organisation structure to manage the conditions of being in a project as well as how to support the piloting of the applications. As this activity is seen as a planning activity and not the continuous support and continuation of a project structure. It is therefore possible to have completed this even though the project is ongoing as a whole.

Completion refers to all preparatory activities concerning organisational set-up having been completed and e.g. does not refer to all users being recruited (this is phase: Deployment and Operation). While this has caused misunderstanding in the periodic operations reporting and some pilots have reported less than 100% status due to recruitment still ongoing, then the WP lead has updated the status according to the original definition of the phase for this report.

Phase status per pilot:

Pilot site	Start date	Status (%)	Comments
ODE	March 2015 *(Task Scheduling)* May 2015 *(Rehabilitation Portal)*	100%	
RNT	June 2013	100%	
BSA	November 2013	100%	
TEA	June 2014	100%	Ethical Board method and Local Investigation Ethical Committee was not reviewed necessary by the Spanish Agency of Medication.
IBR	November 2013	100%	
PGL	April 2014	100%	
SL	October 2014	100%	Ethical approval was not needed from the outset of the project, as the pilot was not working with medical data, and thus status is reported as 100% completed. However, later it has been recommended to obtain ethical approval anyway and this has been initiated by the pilot. Nevertheless, the status remains fully completed since it refers to the initial work of investigating the requirements and acting accordingly, which has been done.
WQZ	October 2014	100%	Same as for SL.
PRC	September 2015	100%	
IMA	May 2015	100%	
NCSR	July 2015	100%	
SCUPS	June 2015	100%	
EIC-IL	May 2015	100%	

Consolidated phase status:
Organisational set-up (user recruitment, set-up of support system etc.) is fully completed.
The delays can again for the most part be attributed to delays occurred in previous phases or in parallel with other delays, so there appear to be no major issues in respect to the organisational set-up.

Timing of actual start date against planned start date:

Pilot Site	Organisational set-up
ODE	+3-5
RNT	0
BSA	+1
TEA	0
IBR	+1
PGL	+6
SL	0
WQZ	0
PRC	0
IMA	+1
NCSR	+3
SCUPS	0
EIC-IL	1

3.3.6. **Deployment and Operation**

Phase description:
Deployment refers to the preparation phase just before operation and the first users. The technical installation instructions are ready and user mentoring / training preparations (plans and materials) are to be carried out.

It is important to make a clear distinction between deployment and being in operation, which is the subsequent phase and where the users are active on the universAALized application. At the same time, end users are recruited continuously and therefore the two phases are likely active simultaneously in the pilot site until the last end user is in operation.

Operation is the stage where the pilot have gone "live", meaning minimum one end user is active on the application. It is from this stage that the length of operation is measured (see Section 4).

Completion refers to all end users being active in the universAALized service, meaning that all deployment activities have been completed and all target end users are active on the application. If not all end users are yet active on the application, the phase is not fully completed.

Phase status per pilot:

Pilot site	Start date	Status (%)	Comments
ODE	March 2015 *(Task Scheduling)* May 2015 *(Rehabilitation Portal)*	100%	The total target number has been reached. More users for the rehabilitation portal has been included to make up for the 11 fewer users for the task scheduling application.
RNT	April 2015 September 2015	100% 100%	The total target number has been reached and more than the planned users have been included. The number of users for the Curavista application has been increased in relation to the originally planned number for this application due to challenges with recruiting sufficient users for the other applications.

BSA	September 2015	95%	The target number of users for the Agenda and Nomhad Chronic has been reached and more than the planned users have been included for these two applications to make up for the fewer users recruited and included for the other two applications: HWO and Rehabilitation Portal. 85 out of the 200 planned users for the HWO application has been included and 77 out of 350 planned users for the Rehabilitation Portal has been included.
TEA	October 2014	100%	The target number of users for all four applications has been reached.
IBR	January 2015	100%	The target number of users for the LynxIAP has been reached and more than the planned users have been included to make up for the fewer users recruited and included for the LynxHH application. 162 out of 250 planned users for LynxHH has been included.
PGL	December 2015	20%	3 out of 40 planned users for the Safety at Home application has been included. 15 out of 70 planned users for the Home Activity Monitoring application has been included. 3 out of 15 planned users for the Easy Home Control application has been included.
SL	September 2015	100%	The target number of users has been reached.
WQZ	July 2015	100%	The target numbers of users for the Home Management application has been reached. The Capfloor application has not been able to go into operation due to technical problems.
PRC	November 2015	85%	168 out of 200 planned users for the Ici et Maintenant application has been included. 6 out of 20 planned users for the Mon Parcours application has been included.
IMA*	February 2016	79%	71 out of 90 planned users for the ASN application has been included. 31 out of 45 planned users for the Alert with Home Location has been included.
NCSR*	February 2016	100%	The target number of users for the two applications has been reached.
SCUPS*	September 2015	100%	The target number of users for the remote rehabilitation and diagnostics application has been reached and more than the planned users have been included to make up for the fewer users recruited and included for the remote home care application. 40 out of 60 planned users for the remote home care application has been included.
EIC-IL*	February 2016	15%	17 out of 420 planned users has been included.

Note that the associated pilots were from the outset planned to start later than the regular pilots.

Consolidated phase status:
The majority (8) of the pilots have completed the Deployment and operation phase. Of those who have not completed the phase yet, most are well on its way with btw. 79-95% completion, while two are far behind with 15% and 20%, respectively.

In general, Deployment phase was delayed in most pilots. Only 2 of 13 pilots started as planned or prior to planned start date. In most cases, the delayed sites also had a delay carried over from the Lab and User test phases. Still we see a slight further delay in some cases (≤2 months) and in some also a considerable further delay (≥3 months).

Timing of actual start date against planned start date:

Pilot Site	Deployment
ODE	+1-3
RNT	+2-7
BSA	+8
TEA	-4
IBR	+12
PGL	+6
SL	+1
WQZ	0
PRC	0
IMA	+2
NCSR	+5
SCUPS	-2
EIC-IL	+4

3.3.7. Evaluation

Phase description:
Include the planning and execution of the activities for the evaluation from the beginning of the project to the end and according to the set-up defined in WP5.

Pilots sites activities have been actively monitored during both Adaptation, Deployment and Operation phases. Data collection tables have been defined in order to periodically check the current status of each pilot. In particular, for each indicator to be measured, according to the ReAAL Multidimensional Evaluation Framework defined basing on the OPEA-framework.

The completion of data collection items was measured on weekly and monthly bases. In particular, the data collection and evaluation activities were organised as following:
- Report data collection activity daily status in an internal document, named Pilots_TechData_Diary, weekly updated in the Livelink platform, only accessible to the ReAAL data collection and evaluation team responsible;
- Report data collection of each single pilot in the Data Collection Summary_Pilots_Status table, weekly updated in the Livelink platform, only accessible to the ReAAL data collection and evaluation team responsible;
- Report an overview of data collection activities for all pilot in the Data Collection Table, weekly updated in the Livelink platform, only accessible to the ReAAL data collection and evaluation team responsible;
- Organize monthly telco with pilot responsible and check the status of each evaluation activities.

Information referred to current status data collection activities for both ReAAL pilots and Associated pilots, such as the status of filled in surveys, minimal data set table, ethical analysis documentation, showcases activities, universalization evaluation,

automatic tests at pilot levels, issue reporting, pilot costs activities, reports on Real Life tests, status of stakeholders interviews, status of focus groups, application usage evidence.

Moreover, with regards to the issue reporting questionnaires, an email was sent each end of the week with the intent to remember pilots in deployment and/or operation phases to report issues related to the last week, in order to keep a log of all the issues in ReAAL pilots. Once the information has been collected, it is possible to estimate the evaluation progress in terms of percentages. This information is finally shared with pilots and ReAAL members through different data format, for instance via the "Monitoring Number of Ind-Users Every Two Weeks_Detailed" table.

Phase status per pilot:

Pilot site	Start date	Status (%)	Comments
ODE	March 2015 *(Task Scheduling)* May 2015 *(Rehabilitation Portal)*	100%	
RNT	March 2015	95%	Execution of the evaluation is in progress under responsibility of partner EUR
BSA	December 2014	95%	Focus group on the showcase must be performed. Most of the evaluation activities already delivered. Missing the evaluation results for the Rehabilitation Portal, which has not yet started. Showcase data collection table to be sent.
TEA	February 2015	95%	Focus group on the showcase to be performed.
IBR	November 2014	90%	Most of the evaluation activities already delivered. Minimal Data Set table to be updated to 460 users. Many T1 questionnaires are still in physical paper.
PGL	January 2016	90%	Most of the evaluation activities has been delivered. Some T1 survey to be still executed. Minimal Data Set table to be updated.
SL	December 2014	95%	Most of T1 surveys are done and data is inserted in LimeSurvey. End user focus group to be executed.
WQZ	October 2014	90%	Minimal Data Set table to be updated. Focus group on the showcase must be performed.
PRC	October 2015	95%	Most of the evaluation activities already delivered. Focus group on the showcase must be performed.
IMA	June 2015	100%	
NCSR	December 2015	100%	
SCUPS	April 2015	100%	
EIC-IL	June 2015	85%	Some activity related to surveys to be finalized. Showcase data collection table to be sent.

It should be explicitly mentioned that the status in evaluation reflects the status from the time of the last information gathering for the completion of the report (June 6th, 2016). Recognizing that evaluation is an ongoing and high priority activity in the project at present, then progress in this phase changes daily and thereby the completion rate improves quickly for the pilots not at 100% above.

Consolidated phase status:
Given the status of the pilots and timing of the project, the final phase is still open for most of the pilots but close to completion btw. 85-95%. Activities still outstanding concern focus groups, showcase data, update of minimal dataset and T1 surveys. Four pilots have fully completed the evaluation activities.

Timing of actual start date against planned start date:

Pilot Site	Evaluation
ODE	+2-4
RNT	+3
BSA	+1
TEA	0
IBR	0
PGL	0
SL	+2
WQZ	0
PRC	0
IMA	0
NCSR	+5
SCUPS	0
EIC-IL	0

3.3.8. **Overall pilot status**

ODE	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, Deployment and Operation and Evaluation have all been completed. Ultimately, ODE has included more than its target of users.
RNT	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. User recruitment has been finished and well above target. Currently focussing on the evaluation but close to completion.
BSA	Phases Initial activities, universAALization, Lab test, User test, and Organisational set-up have all been completed. Operation not fully completed but was able to recruit almost all the target users. The imported application is also in operation. Evaluation activities in process but close to completion.
TEA	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. TEA has included more than its end user target. Evaluation activities in process but close to completion.
IBR	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. IBR had implemented a contingency plan due to slower progress in user recruitment than expected (a Private Insurance Company has agreed to deploy one of the services in one of their nursing homes). It was successful and IBR has recruited more users than its total target. Moreover, many maintenance tasks are taking place to ensure that the data collected have enough quality and evaluation is ongoing but close to completion.
PGL	Phases Initial activities, universAALization, Lab test, User test and

	Organisational set-up have all been completed. Recruitment has been running slowly and the target number of end users has not been reached. Different local factors has inhibited the full deployment of the project. Evaluation in progress but close to completion.
SL	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed. All end users were recruited and in operation. Evaluation tasks have been reinforced and in progress but close to completion.
WQZ	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, and Deployment and Operation have all been completed for the Home Management App and the target of active end users was reached. CapFloor was not deployed in the project after all and was stopped at universAALization/Lab test phase. Evaluation for Home Management App is ongoing and close to completion.
PRC	Phases Initial activities, universAALization, Lab test, User test and Organisational set-up have all been completed. The application *Ici et Maintenant* worked well and most of the target users are in operation. *MonParcours* experienced problems and as a result, user integration was postponed but has been in operation since end of March. Evaluation is in progress but close to completion.
IMA	Phases Initial activities, universAALization, Lab test, User test and Organisational set-up have all been completed. IMA has not reached its target of users but are close to. Evaluation activities are completed.
NCSR	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, Deployment and Operation and Evaluation have all been completed. Has included more than its target of users.
SCUPS	Phases Initial activities, universAALization, Lab test, User test, Organisational set-up, Deployment and Operation and Evaluation have all been completed. Has included more than its total target of users. Technical problems in Remote Home Care service means that application was behind schedule in recruitment. The Remote Rehabilitation and Diagnostics has considerably surpassed targeted number of users though.
EIC-IL	Phases Initial activities, universAALization, Lab test, User test and Organisational set-up have all been completed. The deployment and operation phase was delayed and EIC-IL has been trying to catch up but not succeeded at this point and is considerably behind its end user target. However, operation will continue and targets will be kept before the final review date. Evaluation is ongoing and progressing well.

3.3.9. **Main challenges**

The pilots have through their operations reports included information of the main challenges they have faced through the different ReAAL phases. In addition, pilot sites were asked during a session at a plenary meeting in April 2016 to expand on what they perceived to be the main challenges they had dealt with during the ReAAL project according to the different phases.

Below is a summary and consolidated review of the main challenges based on both sources of information.

Key area	Consolidated challenges
Procurement	The experiences concerning procurement varied between the sites. Several pilot sites did not need to run a procurement process and were able to manage under different forms of official collaboration with their existing or new partners. PGL interestingly have set it up so that companies choose to invest in universAALization by themselves.
	For those pilots who did procure, experiences also varied. WQZ found it to be a lengthy and difficult process, then had poor experiences with the products and had to replace them. For others, the process was not challenging. Two pilots using tablets found the market to be full of appropriate products, and e.g. TEA was able without comprising quality of the product to switch from a well-known brand at higher cost to a less well-known at lower cost without problems.
	Vendor relations has been an issue for several pilot sites. In ODE, they had difficulty in getting commitment from the supplier to adapt their application to uAAL but it was ultimately achieved through dialog. TEA's original tablet provider was trying to sell a consignment of tablets to clear its stock but at same price level. TEA opted for a different provider instead.
	Other challenges refer to e.g. bureaucracy and changes in national health system, which have impacted the procurement processes.
User recruitment & Consent	Recruitment at a sufficient level according to planned targets have been a consistent issue. Many pilots report that recruitment is behind schedule. Some pilots have attempted to solve this through optimising processes at existing sources of users or by adding new sources. Timing can also be a challenge as other activities or priorities can halter recruitment of users just as recruitment is sensitive to seasonal factors, e.g. holiday periods. A 'marketing approach' had to be adopted.
	Method of recruitment vary great as some pilots are based on care homes or other institutional arrangements while e.g. PGL offers the applications to users independently of any institutions. In that case, they are dependent on users own initiative whereas in specific environments such as care homes, rehabilitation clinic etc. it is easier to target the users directly or through staff. In WQZ, all users already have a consent form attached to their tenancy agreement and the application is deployed in the apartments which means each tenant will use it.
	Several pilots report problems with obtaining consent from the users. RNT, TEA, NCSR have had varies issues concerning obtaining signed consent forms from the users. It is likely this has to do with the targeted population of users not being familiar with applications of this nature, which is likely to cause uncertainty and reluctance towards using them. TEA also report that they found it to be an issue especially with rural end users,

	who does not like to sign papers. An issue is also creating dependencies on the applications in case they are not continued after the project.
	For some it has a challenge to understand exactly who the target users precisely are (e.g. ODE) so a better understanding of them in advance had been an advantage. For instance, SL also reported it had been a challenge to know what motivated the end users in order to recruit them. This relates to the issue of being able to clearly define to the end users what the benefits are and address incentives for each group of end users.
universAALization	Many sites report that the universAALization process was a steep learning curve. They found that they did not have sufficient knowledge and competence in the universAALization component of the project.
	Problems with the available documentation for the universAALization have been experienced in several pilot sites. The documentation was found to be insufficient, unclear, and outdated. This was managed and overcome by the sites affected through close contact with WP2 team and experts, but in light of the challenge reported about lack of knowledge about universAALization, the lack of sufficient and updated documentation has been a main challenge.
	The universAALization appear to have been a resource demanding process. The technical environment also impacted the process.
	PRC found that the Lab test did not find all issues with the application.
	The lack of readiness or maturity of the uAAL platform from very beginning was found to be a challenge by some sites, RNT adopted a two-phases approach that resulted in the need for corrective actions and ODE suggests that it should have been tested prior to the project. As they have experienced it, the project as it evolved had more character of a technical development project rather than an implementation project.
	The experience of main challenges seen from those involved in the universAALization and lab tests (non-pilots partners) was that there was a lack of understanding of the uAAL process among the pilot sites and companies, which resulted in many training sessions and time explaining uAAL.
Lab tests	The main issue has been that the process was time-consuming, required many resources and logistically could cause problems as equipment had to be shipped away for testing which was not always possible.
User tests	The user tests do not appear to have caused major problems in any sites. There was issues around timing, e.g. difficult to plan in advance as dependent on lab test, holiday season timing),

	resources required (one pilot found it time and resource consuming while another found it less than expected), and guidance on how to perform the tests but all seemed to be localised to a pilot rather than generic issues.
Deployment	The main challenges concerning deployment relates much to the issues described in User recruitment above. The targeted population, conflicting activities and priorities, achieving the planned number of end users within planned time etc.

There has been extensive focus on recruiting the targeted numbers at project level and ODE experienced that perhaps that focus was too narrow and one-sided given the many other challenges the project presented with the applications. |
	One pilot (TEA) also reports on the additional time they use on training as their experience has been that training takes longer than they had expected and planned for. TEA aimed to resolve it by finding new ways to do the training in a shorter period, e.g. by establish different groups based on different levels of technology mastering.
	Another pilot (IBR) found the distribution of the equipment and installation a challenge but managed to find a way to make this process easier.
Organisational set-up	The need for support for the end users has in some cases been higher than expected. This had to be managed internally or by external party; in both cases more time-consuming and resource-demanding than planned for. ODE has in response to this updated their user manuals and also see that with time, users are able to solve more of the minor problems themselves.
	Establishing an organisational set-up in a sustainable manner that will be able to support the long-term operations of the applications and AAL services after the end of the project has been a challenge and priority for RNT.
	Pilots are also sensitive to internal changes such as personnel leaving their post during the project as well as to external factors and environment such as changes in the wider health and care systems of the region or country. Both require time to manage but especially the latter can have a major impact on the deployment and operations of the pilot. In this case, it was managed though.
Evaluation	A main challenge is related to the questionnaires to be filled by the end users. First, the questionnaires had to be translated to local language. Secondly and what caused the biggest problem was method of completion. Either the questionnaires were filled out on paper and then had to be converted to the online LimeSurvey or it was filled in directly online. The online method proved difficult given the targeted population of end users (age, frailty and cognitive skills, poor or none IT skills etc.) and some pilots had to do one-to-one support for end users filling in the

	questionnaire. Others did it as phone interviews to avoid having the end users do the online survey and also paper copies were used.
	Some sites report that it was difficult for their end users to understanding the questions and that the focus of them was very broad and not in all cases relevant to their end users.
	It is very resource demanding to obtain the data, both the quantitative and qualitative, due to e.g. volume of it, access to end users (time and geography).
	Limitation of the data can be that some end users have not used the application much, perhaps only one or few times.

4. Operation tracking based on Deployment Plan

This section aims to evidence the gathering of information regarding the different activities planned in each of the different phases of the National Deployment Plan(s). Pilots have reported in details on the progress in their operations according to the local deployment plans as documented in the consolidated report D4.2.

The purpose of the tracking of pilot operations was also to share the status of each pilot site inside the consortium and to apply any corrective measures if necessary with the end objective of reaching a successful implementation of the project as a whole.

The first table contains a brief summary of each phase and associated activities as well as the general status.

4.1. Consolidated operation tracking

Activity	Definition	Status according to operation tracking
Phase: Requirements & Initial Activities		
Procurement	Procurement of technologies (is procurement needed, what are the rules and what are the local prerequisites etc.)	All procurement activities have been completed by the pilots. Not all pilots had to procure and issue a tender, because they had other available arrangements in regards to the local context.
User Recruitment & Consent	Related to the actions taken by the pilot sites according to the legal issues to ensure that the rights of the subjects involved in the trials have been properly taken into consideration. Status has been monitored through the following activities: Ethical Board approval, local Investigation Ethical Committees, the set-up of the user recruitment process and the localisation of the informed consent forms.	Current consolidated status is that all activities relating to Ethics Board approval and local Investigation Ethical Committee have been fully completed by all pilots. Not in all cases, have ethics approval been necessary but all pilots have ensured to proceed according to local procedures and guidelines.

The set-up of user recruitment process and consent forms are in most cases also completed. It is to be noted that completion of user recruitment in this context does not refer to having all end users recruited but to the set-up of the recruitment process. Problems with obtaining consent forms from end users have been an issue several pilot sites have had to deal with. |
| Organisation set-up | At the same time, this phase covers the organisational set-up in relation to the pilots taking place under a project frame and with what that entails. It means | All sites have fully completed all the actions in relation to the project frame. |

	the pilots must set up an organisation structure to manage the conditions of being in a project as well as how to support the piloting of the applications. As this activity is seen as a planning activity and not the continuous support and continuation of a project structure. It is therefore possible to have completed this even though the project is ongoing as a whole.	
Evaluation	Initial activities also include planning of the activities for the evaluation from the beginning of the project and according to the set-up defined in WP5. As Evaluation, despite being falling under phase 1 activities, is an activity that will continue to the end of the project, some sub-activities of Evaluation can remain open and ongoing for pilot sites.	General preparations and Adaption phase are for all pilot sites 100% completed. In the deployment phase, progress is measured against Baseline measurements, Intermediate measurements and End measurements activities and the completion rate varies greatly between the sites. The tracking shows, nevertheless, that this is an ongoing activity and has priority in the sites.
Phase: Adaptation		
universAALization /adaptation of applications	Adaptation planning and preparation at local site (requirement analysis, universAALization and internal laboratory testing).	These activities have been fully completed by all sites and for all applications apart from WQZ's CapFloor application, which had completed 50% of the internal laboratory testing.
Lab Tests	A Lab test of each application carried out at one central project location and in a controlled and independent environment for technical verification. The testing occurs to a pre-set protocol, but the extent of this testing can vary according to the service.	Status shows that manual technical testing is 100% complete for all applications apart from WQZ's CapFloor (50%).
User Tests	A small number of real users are to test each application before full roll-out is begun in order to identify best practices for the installation, configuration, customisation and personalisation of hard and software components. Finally, the User tests serves to do a final check that everything works and has the needed quality for a large scale implementation.	Status is that for the sites and applications all User Test activities have been completed. Not started for CapFloor as it was stopped at Lab test phase).
Phase: Deployment		
Deployment	Deployment refers to the	Status is that technical installation

	preparation phase just before operation and the first users. The technical installation instructions are ready and user mentoring / training preparations (plans and materials) are to be carried out. It is important to make a clear distinction between deployment and being in operation, which is the next phase and where the users are active. At the same time, users are recruited continuously and therefore the two phases are active simultaneously until the last end users is in operation.	instructions and training plans and materials have been completed in all sites and all applications apart from WQZ, where it is still not yet completed in relation to the dementia group they are targeting.
Phase: Operation		
Operation	This is the stage where the pilots have gone "live", meaning end users are actively using the application. It is from this stage that the length of operation is measured.	27 of 32 of all planned applications (not including imported applications) have been ≥6 months in operation.

4.2. Length of operation per pilot

The key issue here is the status of operations in terms of length measured against for how long there has been an active user of the application. Below table outlines the number of months of operation for each application per pilot site. The applications that have been ≥6 months in operation are marked in green and bold.

As noted above, 27 of all applications (not including imported applications) have been ≥6 months in operation. That is equivalent to 87%. Three applications have 5 months of operation (note that the IMA bundle accounts for two separate applications), so very close to the target, and one has been in operation for 3 months.
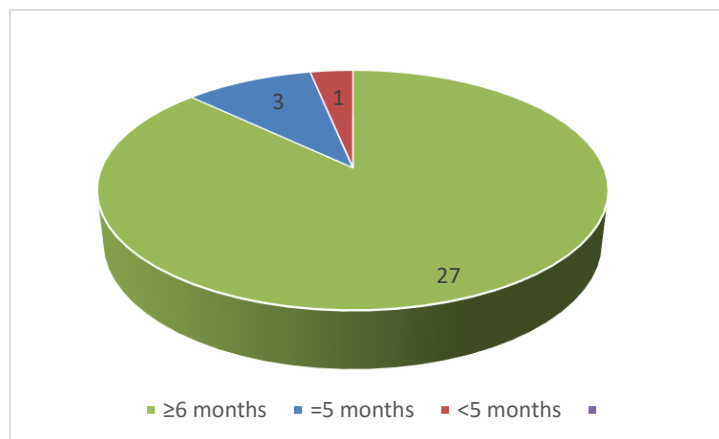
Note that the time by which the length of operation is calculated is from the reported start date until June 2016 (time of submission of report).

Pilot Site	Application	Months in operation
ODE	Task Scheduling with pedometer	**16**
ODE	Rehabilitation Portal	**15**
RNT	VitAAL	**5** (1st phase) **+ 8** (2nd phase)
RNT	MiBida	**5** (1st phase) **+ 8** (2nd phase)
RNT	NetMedical	**5** (1st phase) **+ 8** (2nd phase)
RNT	MindDistrict	**5** (1st phase) **+ 8** (2nd phase)
RNT	Curavista	**5** (1st phase) **+ 8** (2nd phase)
RNT	MedicineMen	**5** (1st phase) **+ 8** (2nd phase)
BSA	Nomhad Chronic	**16**
BSA	Help when outdoor (HWO)	**10**
BSA	Social Agenda (WSN)	**10**
TEA	Cognibox	**13**
TEA	Optisad	**13**
TEA	ehealth	**13**
TEA	Social by Elder	**13**
IBR	LynxIAP	**17**
IBR	LynxHH	**13**
PGL	Easy Home Control	**6**
PGL	Safety-at-Home	**6**
PGL	Home activity monitoring	**7**
SL	Smart Living System	**11**
WQZ	Home Management	**11**
PRC	Ici et Maintenant	**7**
PRC	Mon Parcours	3
IMA	Bundle (ARST_Assistance, LocationMapping, BLE Source)	5
NCSR	Health Tracker	**7**

NCSR	RemindMe	**7**
SCUPS	Remote Home Care	**9**
SCUPS	Remote Rehabilitation and Diagnostics	**9**
EIC-IL	Heart Failure recovery using Activity, Dietary and Behavioural monitoring	5*

*The situation in EIC-IL concerning operation vary from the other pilots in the way that the while they have had active end users since February 2016, no more end users were added to the application before end May 2016. This was because the experiences from the first users showed that further technical improvements had to be made, also there was a focus of resources on setting up the RCT study, which EIC-IL is doing on the ReAAL applications. To that effect, the first active users were thus functioning as an extended user test. The 5 months of operation are therefore to be considered with caution.

5. Risks and Treatment Measures

Through the project phases, pilots have recorded the risk they have anticipated and encountered as well as what treatment measured were or would be used to either eliminate or minimise the risk.

The following standard table has been used for their reporting:

Risk no.	Risk/barrier	Impact	Probability	Treatment measure	Manager	Deadline	Status

As such, the ReAAL pilots have used a standard risk management model.

IDENTIFICATION

⇩

CATEGORISATION

⇩

ASSIGNING RESPONSIBILITY
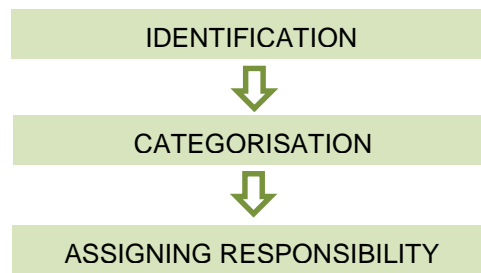
The categorisation is based on impact and probability according to the following criteria:

IMPACT is categorised as follows:	
High	If this risk occurs it will have significant impact on the ability to achieve the objectives of the project
Medium	If this risk occurs it will have some impact on the ability to deliver in the shorter or medium term and cause inefficiency
Low	If this risk occurs it will have little impact on the ability to achieve the objectives of the project

Probability is categorised as follows:	
High	Likely or very likely to occur
Medium	Moderately likely to occur
Low	Unlikely to occur

The risks identified by the pilots and reported in their individual and quarterly operations reports are consolidated below in a thematic approach according to four overall categories:

1. End users - engagement, capabilities and recruitment

2. Technology

3. Resources

4. Other

The categorisation of risks shows that matters concerning End users (engagement, capabilities and recruitment) and Technology are the most prominent among the pilots. The pie chart shows the % of the 13 pilots that have identified risks within each category. In some cases, pilots have identified more than one risk within each category. Multiple risks for each category is also mostly associated with End users (engagement, capabilities and recruitment) and Technology.
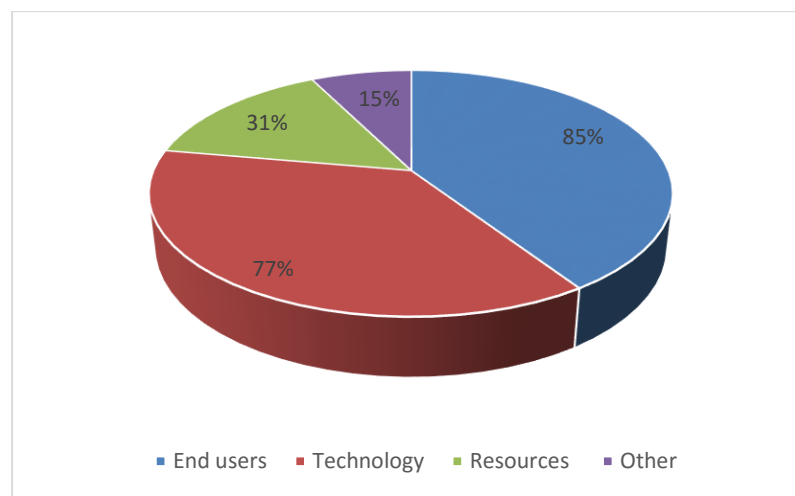
End users - engagement, capabilities and recruitment

Matters relating to end users have been some of the largest risks for the pilots. A large proportion reports that they risk not being able to recruit and include the planned number of end users in their pilot either at all or within the time planned for. The issues concerns sufficient time, population and locations to recruit from.

It was also reported that some pilots have faced risks associated with lack of continuity, commitment and capability by end user in relation to the applications. This has impacted recruitment as well as evaluation, where it has been difficult to have questionnaires filled in.

These are for the most part still open risks and are still being managed by the pilots and treatment measures are implemented.

Technology

Several pilots have identified risks that involve the universAALization process and delays in this phase. Other risks come from issues with hardware, i.e. updating and support for sensors, devices and other pieces of hardware.

A few pilots have also faced risks to their pilot due to delay in delivery of the equipment needed either due to overdue delivery or because funding was lacking to purchase it in time.

Another risk relates to vendor relations and the supplier potentially breaking contract or other matters in regards to agreements with suppliers.

Given the advanced stage of the project at present time, these risks are closed.

Resources

A risk associated with the resources actually needed to progress and deliver the tasks the pilots are committed to do, exceeds the planned amount of resources and allocation hereof has been reported by several pilots.

Other

A few other risks relate to the evaluation phase of the project. In the beginning of the project, it concerned obtaining ethical approval and throughout and towards the end of the project, it has been the quality and quantity of end user questionnaires.

Another risk identified is the involvement of local stakeholders and their lack of experience in working in collaborative projects. Stakeholder commitment, engagement and expertise are often a likely risk in projects. Combined with the complexity of an innovation and European-wide collaborative context, it is perhaps surprising that this risk was only flagged by one pilot. It is likely that this risk is somehow implicit and incorporated in other risks, e.g. end user risks, or it a question of addressing risks associated to purely on-the-ground local pilot activities rather than more overall.

6. Lessons learned

Developing, adapting, implementing, evaluating etc. innovations in health and social care in and across institutions disrupts the existing procedures, workflows and cultures of the existing systems, whether the system is a team, a department, an institution or an organisational domain. The "disruption" is by many seen as necessary and the way to go in order to create sustainable health and social care systems. Consequently, most countries have engaged on this journey, either years ago or recently. Progress has certainly been made but nevertheless, the field of eHealth (here broadly defined as the use of ICT in health and social care) is still in constant development and still faced with many challenges. One of the later spin-offs of specialised fields within in the larger domain of eHealth is AAL – ambient assisted living. AAL can in short be described as 'age-based assistance systems for a healthy and independent life that cater for the different abilities of their users' (Pieper, M., Antona M., & Cortés, U., 2010). The age aspect of AAL and the focus on independent and healthy lives are important given the demographic development Europe is facing and which will have significant impact on the ratio of between people at work and the remaining population. It is foreseen that in the future it will 2 to 1, compared to the current 4 to 1 as it is now (http://www.aal-europe.eu/about/why-this-programme/).

AAL initiatives are being supported by e.g. specific funding programme (Active and Assistive Living (AAL) Programme) co-funded by the European Commission and 19 Member States. This programme alone has since 2008, funded 154 transnational innovation projects with over 1000 partners (http://www.aal-europe.eu/about/). Consequently, the field of AAL and eHealth in general is constantly developing and growing.

Therefore, learning from what others are doing, how they are doing it, why they are doing it etc. is imperative to progress. When perceiving innovation, AAL, eHealth etc. as a constant journey towards improvement rather than a goal in itself, the roads taken on the journey become highly interesting and meaningful and we learn which roads end blind, which are curvy or narrow, and which leads you to the expressway and takes you fastest to the destination. Lessons learned from experiences in the ReAAL pilots have the same effect and can provide valuable information to others, both within the project itself as well as external organisations who are making the same journey or planning to.

The lessons learned (LL) by the ReAAL pilots are consolidated and presented according to the phases the pilots have journeyed through. Details of lessons learned by each pilot site is provided in Appendix A.

6.1. Lessons Learned on Initial activities (planning, procurement etc.)

Lessons learned from the initial planning phase, which includes planning, procurement etc. can be summarised as follows:

❖ **Good vendor relations are important**

   o The Open Source nature of ReAAL, building on the UniversAAL platform, can be problematic for working with vendors.

- o Consider the power relationship given the scale of your project. If you are implementing the applications to 500 users, this is not scale necessarily of importance to larger vendors but can be to smaller vendors.

❖ **Do not underestimate the importance of good planning**

- o Always plan well and account for unknowns in your planning as the innovative nature of the project and the unknown dimensions of the universAALization means you will not be able to predict everything.

- o Begin procurement as early as possible as it takes a long time to do properly. Consider mechanisms in the tender that minimises your risks, e.g. delayed delivery of products etc.

❖ **Do not assume you know what the users want**

- o Your idea and perception of what the end users would like and how they would use the devices may not be accurate, e.g. you might assume a large screen smartphone is sufficient for elderly people but they still prefer a tablet in order to see probably.

❖ **Know yourself and your role**

- o Given what type of organisation you are, then consider carefully what you role should be in the project and intervention. Who is most appropriate to do what and is the necessary experience available to do it.

- o Ensure that you within your organisation has commitment at the highest level possible.

❖ **Determine the categorisation of your intervention and technology**

- o It is important to know if the technology used are labelled as medical devices and if your intervention requires ethics approval according to national standards. Examine this early and begin proper process as early as possible as it can be time-consuming and cause delay.

6.2. Lessons Learned on universAALization

Lessons learned from the universAALization phase can be summarised as follows:

❖ **Do not underestimate the complexity**

- o The universAALization process is very complex and requires appropriate time and people (skills).

❖ **Access to expertise and to correct and timely documentation is critical**

- o The documentation to support the universAALization process should be very detailed and updated immediately when changes (e.g. updates) occur.

- o There should be access to experts, whether directly or through a forum, so problems can be quickly resolved.

6.3. Lessons Learned on Lab tests

Lessons learned from the Lab test phase can be summarised as follows:

❖ **Planning is the key**

- o The process can be time-consuming and even small things can take longer than expected.

- o A joint plan for the process between pilot, tester and potential third party should be agreed upon and adhered to in order to avoid delays and extra use of resources. Good and regular communication and documentation is also important.

❖ **Have an alternative solution to remote testing**

- o In cases where remote testing, requiring shipment of equipment to test site, is not possible, an alternative option must be in place.

❖ **Test before you implement**

- o The Lab tests showed that the applications were not ready for use following the universAALization and that lab tests were critical to getting the applications ready for use. Only use the applications when you are sure that they are 100% functional.

6.4. Lessons Learned on User tests

Lessons learned from the User test phase can be summarised as follows:

❖ **It is a very valuable learning experience**

- o The user test functions as a means to adjust future activities such as training and deployment.

- o A source for identification of potential end user problems when deployed in real-life environments as well as possible new features.

- o Understanding the end users and how they perceive the application and what motivates them to use it.

- o Log all outcomes of the user test for future reference so they are available at the right time in the next phases.

6.5. Lessons Learned on Deployment

Lessons learned from the deployment phase can be summarised as follows:

❖ **Real-life environments are not fully controllable even in a well-planned project**

- o It is a given that you will encounter factors for which you not planned or which are different than you expected them to be. You might find other priorities come in to play; other projects or new systems are implemented at the same time etc. Or that connectivity is so poor, your application

cannot run without you finding another (and often more expensive and time-consuming) way to run the application and deliver the intervention.

- o Training is likely to be underestimated, in terms of both how much is needed and how long it takes. You must also be available for continuous training and support throughout the deployment phase.

❖ **Prepare for the time after project**

- o Organise deployment in such a way that you can upscale and transition to a daily operational environment following the project lifetime.

6.6. Lessons Learned on Organisational set-up (user recruitment, set-up of support system etc.)

Lessons learned from the organisational set-up phase, which includes user recruitment, set-up of support system etc., can be summarised as follows:

❖ **Get to know your target users**

- o Make sure to clearly communicate to the end users the purpose of the project and applications and the value they will obtain from it. It will ease the recruitment.

- o Consider if incentives can help you sign up and hold onto more end users, e.g. keep the tablet after end of pilot period.

❖ **Organise your installation and support in a manner that optimises process**

- o Look for ways to streamline or simplify the installation and deployment of the applications.

- o Consider if support is best managed in-house or by third party.

- o Allocate sufficient resources for support and consider that you might have to upgrade the skills of non-technical staff to manage support functions if you are to cope with demand and available resources.

6.7. Lessons Learned on Evaluation

Lessons learned from the initial planning phase, which includes planning, procurement etc. can be summarised as follows:

❖ **Start early**

- o Evaluation is often thought of as an end phase of the project, but it is essential to plan it already from the start.

❖ **Keep it simple and know your audience**

- o The questionnaires should be short and precise so they are manageable to complete or you risk losing the informants (low completion rate) and receiving deficient responses (poor data quality). Translation can also be complicated and time-consuming and more likely so, the larger and vague the questionnaire is.

- o Consider method carefully and take in to account the risks with e.g. online submission and inability by some end users to complete this way. 1:1 support was often needed to complete the questionnaires.

- o If there are specific stakeholders for whom your evaluation results are aimed at, takes this in to account when planning the evaluation themes, data etc.

- o If possible, identify your evaluation metrics based on the context, e.g. pilot or application features.

7. Conclusion and discussion

Consolidated overall status

In the ReAAL project, 31 AAL applications have been implemented in 13 pilot sites across Europe. Of these, 27 have been in operation for a minimum period of 6 months. A majority of the applications have actually been in operation for a year and some up to 16-17 months, so nearly 1.5 years. 3 applications managed nearly the target with 5 months of operation and one only for 3 months.

Concerning targeted users, in total 6025 individual end users have been recruited. This exceeds the original project target of individual end users, which was 5000 in total. Five pilots have surpassed their individual total number of end users, although in some cases it is a reflection of one or more applications having surpassed their target while other applications within the same pilot site had less. Recruitment and meeting the set targets of end users has been a consistent and key challenge in the majority of pilots, and which has required a lot of management efforts by the pilot sites in order to identify users and recruit them. The issue is further addressed below.

All pilots apart from the late entry pilot and associated pilots were obligated to identify and actively import an application from one of the other pilots in the project. This has been achieved by nearly all, and only one has not done this due to primary focus being concentrated on the operation of existing ReAAL applications at the pilot site. They have all chosen imported applications, which are well in line with their existing portfolio of ReAAL applications and end user target groups or wider local AAL strategy.

Consolidated status in relation to ReAAL phases

ReAAL has operated its processes in phases that are for the most part chronological but also with a few that intersect other phases, e.g. evaluation.

The phases covering Initial activities (Planning, procurement etc.), universAALization, Lab tests, and User tests are all fully completed by the pilot sites for the applications that are in operation in the ReAAL project. In general, we see that these phases have varied between sites in how much delay they encountered:

Phase	Variance in start from planned to actual
Initial activities	From -2 to +2 months
universAALization	From 0 to +4 months
Lab tests	From 0 to +8 months
User tests	From 0 to +8 months

The status for each pilot in relation to Deployment, Organisational set-up (user recruitment, set-up of support system etc.), and Evaluation reflects the situation where not all target end users have been recruited yet (measured against individual pilot targets and not overall project target) and where evaluation is ongoing although close to completion. Also, here there is a great variation between how much delay has been encountered for the phases.

Phase	Variance in start from planned to actual
Deployment	From -2 to +12 months
Organisational set-up	From 0 to +6 months

Evaluation	From 0 to +5 months

It should be noted that the listing of the actual start time compared to planned are not neutralized at the beginning of each phase, meaning that a delay in a previous phase can be carried over to the next. Example, if a +3 month delay occurs at time of Lab test, then a +3 month delay in the User test phase is the same delay and no further delay has occurred just as no time has been won back in the next phase.

Main challenges and risks

One of the main challenges of the pilots have been recruitment of end users within the planned time and/or at planned volumes. Issues are access to sufficient end users, end users willingness to participate and sign consent forms. Pilots had to rethink their approach to recruitment, which also helped progress, but there is still a majority of pilots that still have not managed to get the targeted number of active users in operation.

universAALization was another big challenge. This is not surprising given that a core part of the project is to test the universAALization of applications before implementation in pilots. The process showed the need for understanding the universAALization better at pilot level as well as the need for having detailed and updated documentation and thus access to central universAALization expertise was vital for the pilots in this phase. Lab test were from a resource and time perspective very demanding and it is in this phase that substantial delays are encountered and which impacts on delayed deployment in addition to the recruitment problems.

Finally, evaluation has been a local challenge as it has in many cases been more resource demanding than expected and planned for. Even in regards to online questionnaires, which are intended to be fairly simple to collect from a large population, a hands-on approach using considerable additional manpower was needed to obtain the questionnaire information.

Other phases and activities (e.g. procurement, user test) also posed challenges but not to a serious extent and resulting in considerable delays or strains on resources.

The risks identified by the pilots correlate closely to the main challenges and corrective measurements were taken to rectify or reduce the risks. For example, a big risk across most pilots was the engagement, capabilities and recruitment of end users and has remained an open issue throughout the project lifetime. Risks associated with the technology used for the applications and the universAALization process were managed and closed, although not without delays as explained above.

Lessons learned in ReAAL

Lessons learned by the pilots from the project are highly relevant for the pilot sites amongst themselves in relation to ongoing and future AAL activities; for others outside the project attempting to do similar things; for companies and developers in the AAL market; and for the wider eHealth community in general as some of the lessons learned are applicable to other eHealth domains as well.

Overall and perhaps superficially condensed, the lessons learned can be summarised as the following three advices - 1) know yourself; 2) know your end users; and 3) know that are things you do not know.

1. In this case 'yourself' is to be understood in a wider frame, meaning the whole chain of your system – what each organizational or companies role is in this scenario and what you will need of skills, resources etc. to carry out all the different activities.

2. It is essential to understand as early as possible whom the end users are, what motivates and drives them and how they would approach and use the application.

3. When approaching on unknown territory as innovative AAL applications are for most, there will be things you have not planned for as you did not know it would occur and you must somehow find ways to manage that and build in buffers to manage unknowns.

In conclusion, ReAAL has achieved its objective of having multiple pilot sites across Europe, which have implemented universAALized AAL applications and which are in operation with a large population of end users. The project had 13 operational pilots using the common open platform and 85% of the applications were in operation for 6 months or more and have been used by more than 6000 end users. Critical learning points based on the experiences of the pilots, vendors, end users etc. for the AAL market have also been obtained.

Large scale deployment of innovative technologies or services is in itself difficult, time-consuming and resource-demanding even with more mature and off-the-shelf products. In the ReAAL project, 31 different applications were first to be universAALized and lab tested in a collaboration of service providers, vendors and universAALization experts. The overall project target was ultimately reached where highly valuable lessons have been learned by all in relation to the universAALization process, testing and deploying the AAL applications for large scale number of users

Appendix A – Lessons Learned by pilot site

Initial activities (planning, procurement etc.)

Pilot	Lessons learned
ODE	- It can be difficult for a supplier to commit to adapt to an open source platform. There has to be a mutual understanding before the process is going the right way. It is important to take the time necessary or you might have trouble later on in the project. - If possible, check if the devices or the way you will use them requires approval by local ethical committee.
RNT	Plan well in advance and create room for overflow of activities.
BSA	- Preparatory activities are essential for a successful deployment. - The deployment plan is a key document that helps the pilot site to think about everything needed to have in mind before starting. - Procurement activities need to be started as soon as possible, specifically if you have to go under public tenders. Process can be very long and can put in risk the overall planning. - Ethical approval may be a key issue in your country. The process always takes longer than expected. Plan in advance and deliver as soon as possible. - Put huge economic contractual constraints in your tenders regarding the time of delivery. That will ensure that if you are not receiving things on time, at least the vendor will be charged for it.
TEA	In terms of providers (hardware), it is better to negotiate with small companies than with big ones .They have too much power and they can leave you out at any moment. TEA thought that buying 550 tablets at least would be interesting for them, but it is not the case.
IBR	N/A
PGL	- Regione Puglia as a local government body cannot play a direct role in administering technology to final users. - Preparatory activities are essential for a successful deployment. - The deployment plan is a key document that helps the pilot site to think about everything needed to have in mind before starting. - Procurement activities for users (as Puglia did) need to be started as soon as possible, specifically if you have to go under public

	tenders or long bureaucratic processes. It must be put in the risk the overall planning. • The model chosen has not been suitable because of the very long procedures set up to finance final users. The public call received 73 applications by end users for a total of more than 210 users. The delay in evaluating the applications and financing them resulted in "mortality" in applications by more than 50%. For the future, Regione Puglia should be a partner as a policy maker rather than a direct player in interventions.
SL	N/A
WQZ	From the planning phase, WQZ have learned how important to is to have a flexible system available to be always adjusted, extended and adopted. As it is the first experience for WQZ, same for Fraunhofer in the field of functional AAL systems, the initial planning was a good basis but did not cover all requirements of the user needs that we have explored after. Fortunately, and due to the flexibility of the used uAAL platform, it was easy to include most of the new appearing needs and requirements.
PRC	PRC planned to buy only smartphones because they thought that it would be a good way of getting elderly to have always a phone with them (planned to buy large screen smartphones that are easier to use by novices). But the first elderly persons that PRC met insisted to have tablets because they think that a 5'' screen is too small. PRC decided then to buy tablets but will work on a way to present the project in order to have some elderly that accepts smartphones.
IMA	N/A
NCSR	N/A
SCUPS	N/A
EIC-IL	N/A

universAALization

Pilot	Lessons learned
ODE	• Not that easy to download, install and run the uAAL examples because it requires certain version of JAVA and other tools. • There is a lot of old documentation on the Gforge forum, and therefore it is possible to download an old and not working version. • When a new version of the uAAL software is released the documentation is not updated. • Very quick response time with answers from the uAAL experts when we ask question on the Gforge forum.

	• No support for Bluetooth 4.0 Low Energy in uAAL.
RNT	• Get in contact with the universAAL experts on a way to think how to solve. There is always a way to work it out. • Concentrate knowledge on universAALization within a core team to make good progress. However, to involve more people in this, make a wider circle of stakeholders who are involved in training of the platform. • universAAL is a very complex piece of software. Adaptation to current views on IoT for example are evolving slowly. • Documentation on the platform seems to be not properly defined. This influences current visions of the suppliers on the maturity of the platform.
BSA	• The universAALization process must be carefully planned because it takes longer than expected. • The Android version of uAAL is not so well developed and developers going through it may experience a lot of trouble. • The developers report that the documentation available is not so well organised and easy to find the desired information. • Developers going inside the uAAL world must be aware that the community support is not so big in order to cover any issue.
TEA	Close relationship with UPM (Alejandro) has been very helpful and important for us.
IBR	• The steep learning curve of universAAL may lead to increase the resources for the development of the process, especially in the early phases. • uAAL should not be underestimated, developers should at least be trained in the technologies in which uAAL is based on. • Technical partners were a key element in learning uAAL process much more than the available documentation.
PGL	N/A
SL	Configuration, Setup and getting into uAAL is very difficult and challenging
WQZ	Several good lessons learned: • It is always better to split the application to very small modules so it will be aligned with the uAAL philosophy • More the semantic model is homogeneous and accurate, more it is easy to profit-extend the application

	• More the applications make use of the Platform component and features, more it will benefit from the Platform advantages.
PRC	N/A
IMA	• The documentation of uAAL for Android shall be updated. Some recommendations have been reported to the project ReAAL Knowledge Portal. In this list of recommendations, one is important to mentioned for future use of uAAL on Android. • If we install an universAAlized application that uses a new ontology, and we don't put this ontology in sdcard/data/felix/ontologies folder, when we start uAAL middleware, the uAAL application stops with a fore close error. • This is a question to be discussed with uAAL experts about the deployment of Android universAALised App to the user mobile. The specific uStore (this is named of the "Google Play, or "iStore") for uAAL Application is not available. For Android App, the normal way to download application to mobile is to use the Google Play. However as there is dependency between one App and uAAL App and potentially other Apps, and as a specific configuration file should be also updated to include ontology files, it seems difficult to impose all this type of configuration to end-user
NCSR	AAL on Apache Karaf is more advanced and more easy to use than the Android Middleware. Of course, following the latest development Android is getting improved.
SCUPS	Context bus is not designed for distribution of larger sets of data; a possible workaround is to distribute an URL, which is then used for fetching the data.
EIC-IL	The documentation of uAAL shall be updated. Some recommendations have been reported to the project ReAAL Knowledge Portal. In this list of recommendations, the performance issues mentioned is important to mentioned for future use of uAAL.

Lab test

Pilot	Lessons learned
ODE	• A lot of things to prepare and even small issues takes more time than expected • Very useful to have a sharp deadline because it gives focus on that the need to have functionality is achieved and has the right quality. • The agreements of the scheduled time and dates for the activities in the lab test should not be changed because there are a lot of external resources dependent on the scheduled time and dates.

	• Duplicated equipment is best practice to ensure avoiding delays due to hardware failure
RNT	• Due to busy schedules and communication issues between different stakeholders, this testing phase can take more than time scheduled. A good idea to solve this is to make a 1-day appointment and try to align all the work as much as possible. • Short communication together between the tester and the pilot could save a lot of time.
BSA	N/A
TEA	N/A
IBR	N/A
PGL	N/A
SL	N/A
WQZ	The labtest phase was very useful for the Fraunhofer team to understand mode the importance of the Log files and to relay on them (later on) for verification of the executed services by the platform.
PRC	The tests performed by Trialog demonstrated a lack of tests in the previous versions. The lesson is that systematic test campaign shall be performed in order to identify the last issues preventing reliability and scalability.
IMA	Preparation of lab-tests takes time especially to write a complete documentation easy to understand. The aim is to explain all the steps and procedures to let the tester perform the tests more easily
NCSR	It turned out to be a big challenge in order to gather all medical devices as due to the capital control it was almost impossible (and only after a lot of bureaucratic work) that the necessary equipment was gathered.
SCUPS	• It was not possible to send all HW required for RRD application testing to test site in Eindhoven. Various alternative approaches were considered for doing RRD lab tests at SCUPS site, e.g SmH team would be physically present or execute/manage the tests remotely via VPN or videoconference. However, no alternative was viable for all involved partners. • SIP voice call could not be tested due to RHC application requires relatively complex installation including network configuration, which caused compatibility issues in local network at lab test site. Consequently, SIP voice call in RHC could not be tested, however voice call is not main function in the context of uAALisation.

| EIC-IL | Preparation of lab-tests takes time especially to write a complete documentation easy to understand. The aim is to explain all the steps and procedures to let the tester perform the tests more easily. |

User test

Pilot	Lessons learned
ODE	Useful to have a diary during the testing. It makes it easier to remember details.
RNT	Good step in procedure to finetune the process of training and deployment.
BSA	The user test must be planned carefully. A good set of tests to be done has to be put in place in order to systematize the process.
TEA	N/A
IBR	Some aspects that we thought were already considered were not enough. For example, the sampling for user testing should have considered users living in a low connectivity area, as unexpected problems happened when we faced this situation.
PGL	N/A
SL	We/Faco have to motivate the users to use constantly the Smart Living System. So there has to be a good motivating introduction of the system and a good coaching. Important is to show the added value of the usage of the system to motivate them
WQZ	The user test phase was very useful to adjust the system, especially from the assisted rules perspectives, where theoretical logics has faced several real issues due to the infrastructure which has held to the adjustment of several rules to fit the real life conditions.
PRC	The user tests performed locally provides useful feedback in order to implemented new features which are currently tested.
IMA	N/A
NCSR	It was decided between the pilot manager NCSR 'Demokritos' and its other two involved partners that before being used under real life circumstances on a far distance, the applications are assured to run, work and are stable in the real-life setting at selected sites in Athens. The pilot sites were therefore until now not involved within the test phase but also for obvious reasons as cost and resource constraints. Regarding the test phase, the test users experienced the registration procedure and filling out the questionnaire as annoying. It has to be taken into account that the people recruited are users with low technology experience.

SCUPS	• The training did not cause any problems. • The user can inadvertently disconnect the power supply from the home service gateway. The caretakers will be instructed to regularly visually verify that the home service gateway is powered, e.g. LED indicator.
EIC-IL	N/A

Deployment

Pilot	Lessons learned
ODE	General lessons learned from other roll out projects: • Remember always to put in buffer time at large roll-outs, because it is a fact that when an application, device or technology hits the real world there will be issues that you did not know of. • Let the resource/person that has the experience with a specific area in the plan do the work, it saves time and money, because he or she can benefit from their experience and knowledge. • Involve and train local resource persons in the roll-out. You will get the benefit of their local knowledge and experience and at the same time you increase the probability of a successful use after the roll-out, because they will take ownership of the application, device or technology which ensures that it will actually be used. Lessons learned in ReAAL project: • A project like this is not the only new initiative in a big organization like Municipality of Odense, and it is necessary to ensure that all new initiatives have focus. It is necessary to understand that staff has to cope with many new things at the same time and therefore it is essential to have a good detailed planning that has room for changes.
RNT	Takes a lot of time and effort to do in cooperation with health institutions.
BSA	Deployment of hundreds of users requires a lot of planning. Training sessions at patient's place usually takes one hour from both a technician and a clinician. This must be planned carefully to fit in their agenda.
TEA	• Training is slower than expected. • We have found that it is difficult to leave the people by themselves with the tablet without personal survey. Meetings are being continuously asked for and we have to do a lot of refreshment sessions. The good news is that we also receive a lot of feedback from the users which have enabled to do some improvements in the applications.

IBR	Lots of preparations should be performed before any installations and hundreds of things to take into account.
PGL	N/A
SL	Deployment in small groups of max. ten users are a good way to introduce the app and the tablet. It needs more than one time to coach and teach the users in the use of the app.
WQZ	N/A
PRC	The uAAL Ici et Maintenant application is easy deployable. The server side is currently scalable for more thousands of people.
IMA	It takes more than 1 hour to teach how to use the application for 1 user, and each time we have to go to the house of the elderly in order to setup the beacon used for the indoor geo-localization.
NCSR	N/A
SCUPS	• The Remote Home Care (RHC) depends on data connectivity. Elderly on the other hand, especially those in rural areas, which are the main candidates for becoming users of this service, typically do not have any connectivity available. This incurs additional technical issues and/or planning and/or costs for service deployment. A non intrusive solution was devised, i.e. temporary use of wireless connectivtiy provided by mobile operator. • Due to the above, a GPRS modem and mobile connection was used for connecting pilot users in RHC: However, the use of GRPS connectivity in user's homes caused considerable technical problems. The RHC service uses a homekit, which was optimised for the use of wired connection, however, in ReAAL it was not possible to use fixed internet line for connecting the homekit with the backend system. Instead, we were forced to use the GPRS modem and mobile data connection. The use of GPRS conenction considerably affected the quality of VoIP voice calls between the carer and assisted person. We tried to solve the problem by applying different solutions, but to no success. We finally resolved to developing the new version of homekit, which is optimised to work with GPRS/GSM connections.
EIC-IL	N/A

Organisational set-up (user recruitment, set-up of support system etc.)

Pilot	Lessons learned
ODE	General lessons learned from other roll out projects:

	• For success and ensuring proper use of the application or equipment remember to train local resources/people close to the end users, because supervision locally and the fact that the users have someone to ask for help is more efficient than a central support unit that maybe only visits the elderly or the location once a month. Lessons learned in ReAAL project: • A project like this is not the only new initiative in a big organization like Municipality of Odense, and it is necessary to ensure that all new initiatives have focus. Project group has to set focus on the project in order to keep it on track.
RNT	• Make sure you have a proper set up of the pilot including training activities and a well-functioning support system. • Combine processes as much as possible, for example; make sure that the installation is combined with good registration of users.
BSA	Staff, technicians and users must be trained properly. Get ready the materials in advance.
TEA	• We had problems with people when signing any kind of written commitment. • We invested time in convoking users for further explanations. In the end a good argument has been that if they did not sign they could not participate but if they did, then at the end of the six months operation, they would be able to keep the tablet.
IBR	• The longer the questionnaire to check issues from the users the better. Some users omit important information about their personal situation (diseases, home distribution, they have pets at home...) that interfere with the system. However, those questionnaires for user recruitment should be very concise to the target group of population. • The user recruitment has found problems with the local authorities due to the change of the person in charge in Bilbao Council. Some of these issues are impossible to foresee, so the best thing to do is to have a contingency plan if everything fails. • For end users we have introduced a new feature which is to use an Out-Of-The-Box paradigm, to make the installation package as easier as possible. Caregivers will be able to deploy the applications themselves, saving time and money in the deployment process. • Maintenance tasks are also quite important to ensure the quality of the applications and finding hidden issues.

PGL	- User Recruitment: it is advisable to eliminate income and age limits and to establish different level of public financing according to the economic status of users. - Stable staff from Puglia Region on the project since the beginning
SL	One person at Faco side is not enough. There could be some problems regarding this point, if the person e.g. is ill or busy with other things of his normal business.
WQZ	N/A
PRC	Account creation are handled by Trialog as well as the tablet / mobile personalisation. This work is really time-consuming and should be subcontracted. Later on, account creation will be made by the user itself. But this implies to add intelligence in the system in order to associate users with their local broadcasters. Mobile personalisation is a must to succeed such a project. Configuring Android tablet is not an easy task for elderly.
IMA	- Users recruitment takes a lot of time and a lot of energy, especially in order to explain the project and the experimentation to the stakeholders and then get the signed consent forms. - The set-up of the support system is a central point in order to fix the technical, social or organisational problems. One of the challenges is that non-technical resources have to be trained on technical aspects.
NCSR	Both applications were received with more enthusiasm than expected and from start on there were already 27 people in operation. Still more are expected on the longer term. It was necessary to go 3 times to Thessaloniki in order to train properly the end users and their care givers. So far no huge problems were faced and the recruitment phase is ongoing.
SCUPS	URI is a research institution, so its standard R&D organisational set-up (ethical approval, informed consent recruitment process, support system) has been reused for Remote Rehabiliation and Diagnostics service pilot in ReAAL. Organisational set-up for Remote Home Care service pilot required more work, therefore pilot preparation workshops with involved partners have been organised to define organisational set-up.
EIC-IL	The set-up of the FLOW support system is a central point in order to fix the technical, social or organisational problems. One of the challenges is that non-technical resources have to be trained on technical aspects

Evaluation

Pilot	Lessons learned

ODE	General lessons learned from other roll out projects: • Preparation is essential for both monitoring and evaluation. • Monitoring requires systematical approach • Strategy for evaluation when you make deployment plan • Questions can be difficult to frame. Minimize numbers of questions – answers must be useful and clear Lessons learned in ReAAL project: • In order to ensure enough questionnaire answers, extra time with the citizens at nursing homes is needed.
RNT	Try to align the different points of interest in terms of research. Both the 'project as a whole' as the involved national stakeholders are interested in the outcome of the project.
BSA	• Evaluation is normally left to the very end of the project when there's always a lack of resources. Evaluation activities must be considered since the very beginning to avoid problems with the tools provided. • Data quality is a key issue. A process to ensure data quality must be put in place in order to safeguard the results of the study to be performed.
TEA	• Evaluation cannot be done in a comfortable way by sending the tests to the users by e-mail and expect the answers. Unfortunately we have to go with a computer and user by user ask them and type the answer, which in the end for 100 users, mean a lot of time. • In nearly 6 months of operation we find a lot of satisfaction in the end users.
IBR	• Our user recruitment company has a long experience in the scope of elderly care and also has some experience in other AAL projects. Their impression of the provided questionnaires is that they are all too complex for many elderly people that have to fill in them with the help of a caregiver. • In the Ibermatica Pilot site, our user recruitment company has recently pointed out that the evaluation questionnaires are quite long and some questions are not appropriated. Many questions should be rephrased as it is important to approach to the Elderly People target group in a friendly way. • The digitalisation of the questionnaires from hardpaper is a tough activity.
PGL	N/A

SL	Visit the people at their apartments takes a lot time because they are lonely and happy if they have social contact. So they like to talk about a lot of different things beneath the app and its use.
WQZ	At this level of the project, the technical team feedback was as follow: • The use of the platform at the beginning need some effort to learn the basics, in the meantime, the ability of developing applications on the top of the platform will quickly evolves. As the platform is very rich in number of features and help methods, the technical team must well learn about the platform and looks for the available features before deciding developing his owns. • The other very important lesson learned was mainly related to the required level of development to be able to experience the Platform advantages. In fact, while developing the initial modules based on the platform in order to satisfy the minimum requirement of the services, the developer will experience very small advantages compared with the original development environment. Once the minimum set of applications is created, the service provider, same the developer will experience a huge advantages using the platform to Extend, adapt, adjust and transfer the created application.
PRC	N/A
IMA	The preparation/translation of the questionnaires needed for the evaluation is a very long task. It is very important to allocate several resources to perform this task in the best condition.
NCSR	• Due to the rich Greek language, it was a lot of work to translate and verify all questionnaires. • The Ethical Board method of ReAAL has been followed as there exist many laws in Greece but at the same time many of these are inactive. Also, matters that concerns informed consent issues are not very known in Greece.
SCUPS	Activating online questionnaires in specific way may require a separate e-mail account for each pilot user filling in the questionnaire. This is an issue, when carers fill in online questionnaires on behalf of pilot users (typical in SCUPS pilot). Discussion with responsible person showed that questionnaires can be activated in an "Open-access" mode, which does not require a separate e-mail for each pilot user-public way.
EIC-IL	The preparation/translation of the questionnaires needed for the evaluation is expected to be a long task. However, as it turned out, the questionnaires were already translated to Dutch, and EIC-IL only had to work on proposing additional questions.