

## **DL 4.3 – 5.3**

# **Skills Evaluation Report & Skills Plan**

*WP4 – Pilots &*

*WP5 – Exploitation*

Version 2.2

Release: 29th of June 2017



## 1 Document Information

### 1.1 Purpose of Document

This document outlines the Skills Evaluation Report and Skills Plan combined.

### 1.2 Organisation Responsible

Alertisugere is the organisation responsible for this deliverable. All project partners are contributors and reviewers of the document.

### 1.3 Authors and Contributors

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### 1.4 Version History

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2.0	23 <sup>rd</sup> of June 2017	Final version release.	A .Seiça
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2.2	29 <sup>th</sup> of June 2017	Final Contributions & Release	A .Seiça K.Poulton

## **2 Executive Summary**

### **2.1 Background**

The internet revolution and growth in mobile technologies has change the way we live, work, play and communicate; in ways that would have been previously unimaginable. Despite elderly populations accounting for a disproportionate use of healthcare resources, this group has traditionally been under-served by the technologies that are changing the way we live in so many other aspects of our lives.

### **2.2 Purpose of IntegrAAL**

Project IntegrAAL (Integration of AAL (Active Assistive Living) Components for Innovative Care Pathways) aimed to explore the fundamental question of how we can first understand the challenges faced by some of these older people, and then take available technologies and design and develop new ways of introducing them in meaningful ways in order to improve health outcomes, quality of life, and cost-effectiveness of delivering care. More specifically, IntegrAAL intends to understand the circles of care that are responsible for delivering the day-to-day care for these populations, both formal and informal, and design and develop systems based on handheld mobile technologies to foster and facilitate communication within the circle of care. In addition, the use of newer Internet of Things devices incorporated into the information management system creates the opportunity to develop new care pathway paradigms that have the potential to revolutionise the approach to care of the elderly living at home.

### **2.3 Purpose of the document**

The consortium decided to combine the Skills Evaluation Report and Skills Plan report into one single document as they naturally flow together.

**DL-4.3 Skills Evaluation Report:** includes with an analysis of the gaps in skills in current care pathways regarding the skills required for the use of technology, **DL-5.3 Skills Plan** identifying the enhancements required for users and care providers.

The document includes contributions from the pilots across the three regions, looking into each national care education system and including conclusions and recommendations that vary across the territories, as well as bringing some that are common to all.

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## 4 Introduction

### 4.1 Document arrangement

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The document includes contributions from the pilots across the three regions, looking into each national care education system and including conclusions and recommendations that vary across the territories, as well as bringing some that are common to all.

### 4.2 Glossary

AAL	Active Assistive Living
Care pathway	Multidisciplinary management tool based on evidence-based practice for a specific group of patients with a predictable clinical course, in which the different tasks (interventions) by the professionals involved in the patient's care are defined, optimized and sequenced either by hour, day or visit.
IntegrAAL	Project acronym for Integration of AAL (Active Assistive Living) Components for Innovative Care Pathways
Nourish Integra Platform	Cloud-based data management platform to support care providers in managing care data in a person-centred manner. It enables assessment, care planning, care recording using mobile devices, and outcome management as well as reporting. It also enables care

	providers to make use of IoT devices as well as wearable devices in the context of care provision.
IoT device	Internet of Things device, normally a sensor device connected to the internet enabling the monitoring of location, movement, or temperature amongst others.
Pilot	A small-scale preliminary study conducted in order to evaluate feasibility, time, cost, adverse events, and effect size (statistical variability) in an attempt to predict an appropriate sample size and improve the study design prior to performance of a full-scale research project.
Evaluation	Structured interpretation and giving of meaning to actual impacts of proposals or results.

## 5 Introduction

The care industry operates within a strict regulatory environment. These regulations stem from two main aims: patient safety and care quality assurance. These are two vast domains of regulation. Patient safety includes all areas related to safeguarding, personal data protection and privacy, as well as health and safety of the service, environment of the people receiving care and the staff. Quality of care includes all areas related to documentation of practice, service delivery, including patient care plans and clinical pathways; as well as the use of evidence-based practice in the context of care service design and care delivery.

The delivery of care in the context of a community involves a significant amount of record creation and record keeping, to ensure compliance with these regulations. The care profession therefore involves a large amount of note writing, and paperwork completion.

The use of paper-based records has two clear limitations. On the one hand, writing notes on paper takes time away from the face-to-face element of caring,



and on the other, it does not allow for information to be shared effectively. For example, notes and paperwork completed by a carer are kept in numerous, large files that management simply do not have time to read over and evaluate; let alone to analyse the notes in the context of trends over months of care. Limitations such as these helps explain why some significant problems, such as slow weight loss, can go undetected.

The main objective of this project was to study the effectiveness of care pathways and supportive technology in maintaining or improving independence and quality of life for older people and their carers. Defining the economic impact was outside the scope of this project, however the study sought to provide an indication of the potential to release capacity in care provision. Due to its limited size and duration the results of this study were intended to help define and guide the direction of future research in this area.

A study methodology to be used to assess the impact of the pilots as part of Workpackage 4 had been included in the proposal document. An alternative approach was proposed by the responsible organisation, following changes to their project staff members. A different set of questionnaires were proposed that sought to introduce a range of validated questions that could be applied consistently across all three pilot areas.

In the event, due to a range of technical and practical issues during the study, the desired volume and quality of information was not able to be produced to generate robust evaluations. In November 2016, the project partners agreed to fully understand the experience of the older adult and their circle of care in the three different pilot regions to focus the evaluation on a series of in depth case studies. The case studies were carefully selected to reflect typical participants personas and their general attitudes described in the study. The quantitative data that was able to be collected is presented in DL 4.2.

Throughout the project it became clear that the development of the technology together with the integration of the chosen devices was not as simple as had been anticipated. The technical challenges involved in deploying and integrating “off the shelf” devices as well as collecting information from a variety

of formal and informal carers was a major conclusion from the study. Without a stable intervention that could be tested over a certain period of time the planned effect study of the technology became challenging. The effectiveness of the deployment of the technology varies across the three pilot regions. It proved particularly difficult in Brussels where setting up of even the project mobile phones proved problematic. The impact of these technological difficulties proved all the more difficult due to reliance on support from partners in other countries. Despite the best endeavours of partners providing this support in hindsight these difficulties might have been eased had a technological company based in Brussels been included within the project team.

In addition to the case studies, other experiences of the project staff members involved in the pilots are presented in this report.

In the discussion differences noticed between the three regions are described and recommendations for the further development the IntegrAAL technology are formulated.

## 6 ICT skills in nursing education at the European level

The European Federation of Nurses Associations made a guideline for implementation of Article 31 of the mutual recognition of Professional Qualifications Directive 2005/36/EC, amended by 2013/55/EU. (EFN, 2015)

Competence n°4: communication and teamwork:

- eHealth and ICT, health and nursing information systems.
- 

Potential learning outcomes:

- To use the IT systems available in their healthcare system.
- To apply healthcare technologies and information and communication systems.

The EU Council of Ministers (2003) defines eHealth as the application of modern Information and Communication Technology (ICT) to meet the needs of the population: patients, health personnel, health administrators and politicians. eHealth involves the applications of ICT within the whole range of stakeholders and functions that influence the health sector: patients, health personnel, hospitals, municipal health and social services, research and education, leadership and authorities.

Efficient and effective use of ICT is crucially important that developments must focus on patient safety and patient empowerment; support continuity of care throughout the patient's journey; safeguard citizens' privacy with mandatory standards for managing confidential information; reflect holistic care and multi-professional practice; take into consideration both usability and user-friendliness. (EFN, 2009).

Furthermore, nurses and nursing practice among other carers must be involved in all stages of development and implementation of eHealth; health professionals and support staff require education and training for all aspects of

eHealth; health information systems must include reference terminology for nursing; the development of EU Quality and Safety Standards regarding eHealth services should be undertaken. (EFN, 2009).

## 7 ICT skills in care education at national level

### 7.1 United Kingdom

Information about the social care workforce in the UK is collected by each country area. Skills for Care, the sector skills council for adult care in England, estimates that there were 1.55 million jobs in local authority and independent sector adult social care employers. This is an increase of 240,000 jobs (18%) since 2009.

As at 2015/16, 83% were held by British people, 7% were held by people with a European Union (EU) nationality and 11% were held by people with a nationality from outside the EU (NMDC – Skills for Care 2016). The implication of the Brexit decision on the sector has yet to be determined but it could lead to even greater difficulties in recruiting staff to the sector than is currently experienced.

There is no compulsory minimum qualification required to work in the social care sector in England, although all staff do need to complete an Induction. It is estimated that only half (51%) of staff working in the sector have a qualification relevant to the requirements of their role.

The clear majority of jobs (80%) in social care, as is shown in the following table from the Skills for Care NMDC report, are care workers that undertake direct care. The competence of this group together with higher level managers is therefore key to the deployment and use of digital technologies.

**Chart 5.7: Estimated number of adult social care jobs by individual job roles in England, 2015**



\* 'Others' includes 14 job roles where it was estimated there were fewer than 5,000 jobs

In the UK there is an historic distinction between the organisation and delivery of health and social care services. Although efforts are being made to provide better joined up services there remain differences between how the two service areas are funded with different attitudes to the importance of training and qualifications required to work in front line delivery.

The King's Fund in a 2016 report into the needs of the future health and social care workforce recognise the importance of investing in training and upskilling the existing social care workforce, many of who it considers have been neglected historically. The report includes the following conclusions:

- Although the most highly paid section of the workforce currently attracts most of the attention and the training budget, there is an urgent need to develop and invest in the unqualified workforce, such as health care assistants in hospitals, and care workers in the community. Given the growing shortage of informal carers we also need to consider new ways to attract and support volunteers in health and care.
- Many of tomorrow's workforce are here today. Much greater priority needs to be given to developing the skills and competences of the current workforce, and the quality of teamworking, to better meet the needs of patients today and tomorrow.
- In the future, it will be important not to be bound by our thinking regarding current ways of delivering health care. New technologies will force changes in delivery models that we have not yet thought of. Without building capacities and capabilities in our workforce for a world of continuous change and emergence of new roles and possibilities we risk being perpetually out of step and continually rebuilding our workforce to do yesterday's, not tomorrow's, health care work.

While digital skills are not explicitly mentioned there is a clear implication that these are a key requirement to take advantage of the opportunities presented by technological developments. I experience of this project give practical experience to that conclusion.

In 2014 Skills for Care, the sector skills council for adult social care in England, commissioned research into Digital capabilities in social care in order to gain a better understanding of the status of digital technologies and digital capabilities in the social care context. The research informed the development of a workforce strategy for "Digital Working, Learning and Information Sharing", which aimed to support commissioners and employers to develop the digital capacity of their workforces and ensure that digital approaches to care and support are open to everyone.

Skills for Care then produced in 2016 the Core Digital Skills required in social care. The justification for this requirement was:



“Technology has been developed and introduced for communicating, storing and sharing information, and learning bring new opportunities to:

- run social care businesses more efficiently
- enable people who need care and support to gain greater control
- create wholly new and alternative forms of support.

Therefore, to make the best of these opportunities, employees at all levels within social care need to have core digital skills and have the confidence and competencies to use them.”

Core digital skills are identified as being important for:

- Organisations - so they can offer an efficient service that makes best use of resources.
- For employees - so they can utilise all that the ‘online’ world has to offer, work more efficiently, move upwards or onwards from their role and use all the learning opportunities available, including those online.
- For people who use care and support services - so they can engage with ALT’s, utilise the benefits of being able to use technology and so they choose to self care via the use of information and peer networks.
- The following are the four key digital skills areas or domains that a social care worker will need to have skills and knowledge in:
  - managing Information
  - sharing data
  - using digital skills in direct care
  - learning and development.

Digital skills are not mentioned explicitly within the qualifications and units that exist within social care. There are however implied within certain learning. The Care Certificate Standard 14 ‘Handling Information’ states, for example, that the learner should:

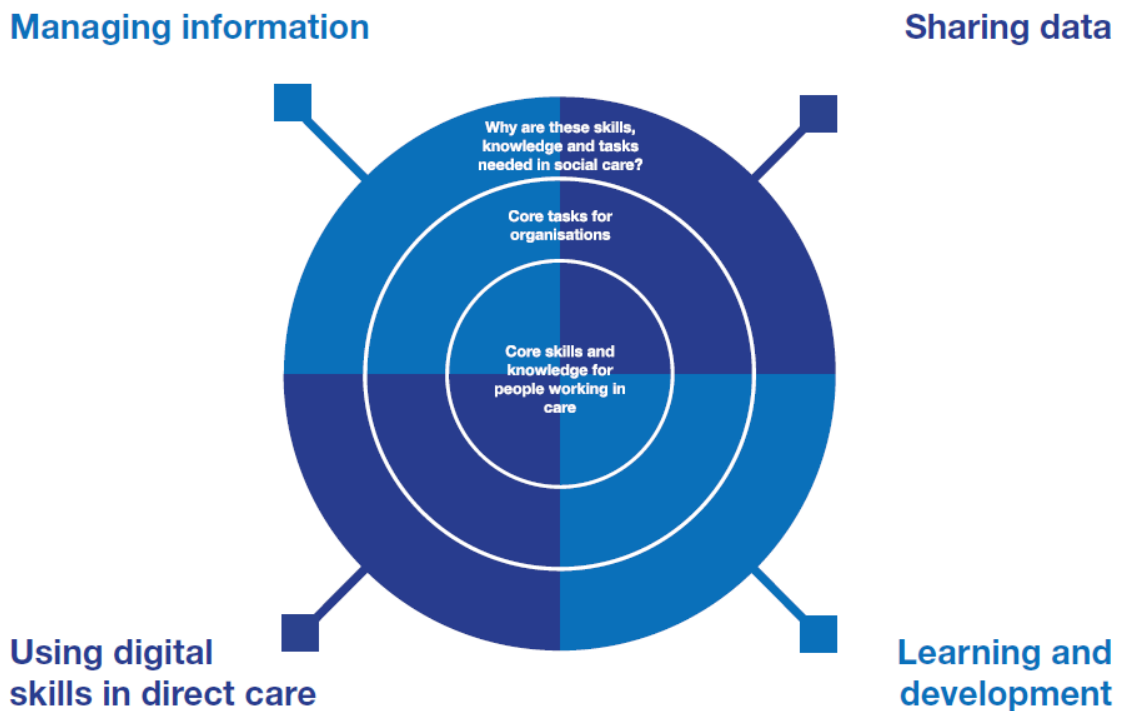
- 14.1a Describe the agreed ways of working and legislation regarding the recording, storing and sharing of information
- 14.1b Explain why it is important to have secure systems for recording, storing and sharing information

The context of this skills development is the relationship of the learners development compared with their employer organisation’s culture and strategy for towards digital deployment. It states “It is also important not to view the example task for individuals in isolation from the example tasks for



organisations or vice versa; it is pointless and frustrating for a worker to have digital skills they can't use as the organisation is yet to catch up and vice versa."

The importance of digital core skills is demonstrated by the following diagram taken from the 2016 core Skills report (page 8).



In recognition of the need for action to improve the digital competencies within social care Skills for Care have produced a "Digital working, learning and information sharing. A workforce development strategy for adult social care 2016-2020".

The purpose of the strategy is to challenge, encourage and support employers to engage with the inevitable changes that digital working and learning are bringing. To take the strategy forward five actions are proposed:

- Examples of how technology is being used to enable workers, employers, people with care and support needs, and carers to work and learn differently, and an exploration of the evidence of the impact of using digital technology will be collated and shared, giving employers real examples of where technology has worked to improve a service.

- The current culture, leadership and management issues that enable or disable digital change will be examined via research and discussion with the sector.
- A guide to overcoming some of the barriers identified will be developed and published.
- The notion and formation of a 'digital roadmap' for the independent sector will be explored, using the above work, helping them to identify their current position, potential challenges and where they may find supporting resource to overcome these.
- Specific guidance and resources will be developed to assist social care employers identify and address data protection and information governance issues.

The existence of this recently published strategy, together with other drivers including the National Information Board's (NIB) work, with its ambition for health and social care to be paperless at the point of delivery by 2020, demonstrates that the care sector is not currently in the vanguard of deployment of digital technologies.

However, there is a clear recognition of the importance for the sector as a whole to make improvements to achieve the benefits technological change provides for new service delivery models, better outcomes for the users and efficiencies through connected services.

While digital skills enhancement is clearly required within the UK context of care services these are by no means limited to the front-end providers of services. The culture, leadership and management of managers as well as their individual competence in recognising, and utilising the potential of these technologies is a major inhibiting factor to successful design and deployment.

Barriers exist to the wider adoption of digital technologies in the sector, some of which have been made explicit in the IntegrAAL project trials. The experience gained from this process can provide vital practical information for policy makers and individual organisations wishing to make a difference.

## 7.2 Portugal

Based on projections of the evolution of the elderly population, it is expected that the demand for care services will increase in the next years in the Europe, but especially in Portugal, with the proportion of the elderly population expected to reach close to 25% by 2025.

Portugal has the highest rate of continued and palliative care provided by unqualified persons, and one of the lowest coverage rates for care provided by professionals.

With a consequent increase in the pressure on social and health care, an increase in jobs on this sector is also expected, and consequently, the number of unqualified persons would rise too.

Aware of the new emerging challenges related to reforms in implementation in this area of care, it is important to focus on a differentiated training of health professionals in order to develop competencies, more autonomously, in community intervention and primary health care.

ICT is considered a key part of professional development, improving the lives of disadvantaged and disenfranchised persons, and necessary for all forms of civil engagement.

### 7.2.1 Care and nursing education in Portugal

In Portugal, women tend to provide the majority of care for older adults or those who require special care due to illness, incapacity (age-related or not) or disability.

There is, therefore, a significant feminization of care work. The role of caring for the children and the elderly by their families, has been under the traditional female role for the last few generations. It tends to fall to women, therefore, to promote the practice of caring by making the link between social and health care.

In addition, care tends to be provided by people with low levels of education, who have received very little specific training and have little opportunity to

progress within their employment. For instance, formal carers often come from other professions, such as closed factory units, whose reconversion has been effected by the need for subsistence and access to employment. It is therefore necessary to train formal caregivers with the relevant skills to enable them to tailor care provision to the individual, whilst having the ability to reduce the burden that caring can have on a carer.

Within the Home Support Service regulation (No. 38/2013 of January 30), Article 9 states that technical personnel, who direct care actions, must have adequate training in order to facilitate intervention in situations of dependence. However, this regulation does not specify clear training requirements.

While formal carers rely on a multidisciplinary intervention team (Technical Director, Psychologists, Nurses, Social Workers), it is up to the Technical Director to decide the strategies for the inclusion of formal carers from the different domain areas, when creating the care team.

Usually, the scope of a social worker's role is specified on their employment contract which establishes the duties and rights of these carers. The duties of these professionals are set out in (Decree Law 414: 99 of October 15). However, there continues to be large training gaps in caregivers skillsets and they often face difficulties in carrying out their tasks; this can compromise the quality of the service provided and the safety of caregivers and care receivers alike.

Each year, every employer is obligated to provide 35 hours of training, which must be appropriate and relevant to occupational health and safety, and ICT. ICT, however, is rarely formally considered.

Some recent training developments have been positive. For example, a range of training courses for carers can be found among training organizations, which focuses precisely on the knowledge and needs of elderly people suffering from dementia (Rolland et al., 2007). The majority of professionals recognize the importance of this type of training, understanding that the theoretical knowledge about these pathologies directly facilitates a better level of care provision for

the person in need. The problem, however, is that this form of training is still not mandatory in the majority of care organizations.

### 7.2.2 Training pathways

Social workers within Portugal can follow different training pathways. Whilst some train from secondary schools or private training entities, others may come from Vocational Training Centres of the 'Institute of Employment and Vocational Training', which offers courses in Geriatrics.

These courses are characterized by following a standard model that has been established by the Institute, with follows a strong practical application and requires a minimum of 500 hours to establish trainees as levels one or two.

The courses given, both in the vocational centres and secondary schools, have a duration of 3 years, conferring the 12th year and the 3rd level since they have a wide variety of denominations. The courses tend to be broad and general, and focus on the basic scientific and animation component. ICT is integrated on these courses only through targeting the general use of a computer (MS Office tools in general).

## 7.3 Belgium

### 7.3.1 Care and nursing education in Belgium

#### ***Level 4: nursing auxiliary (only care, no cure)***

- ICT skills are integrated is a course "Project general subjects" and the objective is functional ICT literacy
- General use of the computer structurally and efficiently.
- Select and use two or more programs for a specific assignment and integrate the results into one product.
- Select information from two different or equal ICT sources and integrate this information.
- Use socially relevant ICT applications.
- Critically assess socially relevant information, using ICT.
- Gained access to socially relevant information using ICT, based on ethical principles, on the one hand, and on the other hand, deontological

principles relating to copyright, privacy, security. (VVKSO, 2014)

***Level 5: health care assistant (until now still called “nurse” in Belgium)***

- Instruction, differentiation and remediation using ICT as a teaching support
- Obtaining and processing information with ICT

The Internet is also an inexhaustible source of information. In order to pave the way through the wide range, a critical attitude is necessary. This attitude must be learned. If students search information on the web within or outside the class, they must have a number of assessment criteria for 'text material'. For this purpose, they can work with the instructions in the attachment.

Group assignments and end products can qualitatively exceed requirements in terms of design and presentation. Some assignments can be linked to an oral presentation: a presentation package can be supported here. Collaboration with the teacher (applied) computer science belongs to the possibilities.

- Communicating with ICT

An important added value for learning is that ICT provides young people with the opportunity to communicate with each other about the subject matter via email or electronic correspondence.

Email supports student collaboration. This collaboration can take place within a class or school, but also with students from other schools at home and abroad. Creating a joint interscolar project is one of the possibilities.

Communication between teacher and student(s) is also possible: the teacher can make electronic material available, examples of test and exam questions, annual planning, ... Students can send reports, homework and the like electronically to the teacher. (OVSG, 2007)

- Related to care, the use of ICT is required to access the patient record file, to look for information in the nursing literature. (VVKSO, 2004)

***Level 6: Registered nurses (bachelor nursing education)***

***Level 6: Specialized nurses (bachelor after bachelor education)***



- Looking efficiently for scientific articles and reliable information.
- Word processing: Table of contents, footnotes, making tables, using a reference manager.
- Spreadsheet: processing of surveys, applying basic statistics, making charts and tables.
- Presenting data: making a poster, a folder or a powerpoint presentation.
- Using tools to work together.
- Knowledge about digital security.
- Different electronic patient files.
- Personnel planning using planning systems.
- Use of computer science in the context of the care process (e-health).
  - Use of professional terms for nurses.
  - Handles and manages the basic principles of the tools imposed or made available by the government.
  - Is familiar with the IT architecture in healthcare.
  - Divides and manages data through recognized healthcare data sharing platforms.
  - Manages the nursing section of a standard electronic patient/client file.
  - Uses the electronic prescription. (Federale raad voor Verpleegkunde, 2015)

***Level 7: Advanced practice nurses (master in nursing education)***

- Using statistical programs for example SPSS.
- Using reference managers for example endnote.

**7.3.2 E-health action plan of the federal and eight regional governments (2013-2018; actualised in 2015)**

The government wants to focus on 20 concrete action points. One of these action points is action point 12: Education and ICT-support of carers

- Integrate eHealth in the education (see above).
- Initiatives for ICT-support in primary care.
- E-Health should be integrated in accreditation of carers.
- A training platform to learn the applications.
- User meetings to get feedback from the carers to the software developers.



## 8 Skills shortages

During the project, skills shortages have been identified by either the end, secondary users as well as skills deficits at the care providers and their managers level.

### 8.1 UK pilot

As anticipated, assumptions made by the project were challenged in real world situations as the pilot progressed. The regular face to face project contact with operational team members enabled this learning to be captured throughout the pilot. Intrinsic factors such as the design and use of the app itself and the skills required to navigate the software, previously believed to be the main requirements to create confidence in the system, gave way to more extrinsic factors. Most notably familiarity with the 'intuitive' nature of modern technical devices, this coupled with reliability and signal were found to have a higher impact on the confidence and uptake of the system than training on the software alone.

#### 8.1.1 Primary end user

Participants often had several aids to help them cope with the limitations they experienced. These were generally physical aids such as a trolley so they do not need to carry things. Bed rails; grab rails in the toilet and bathroom and outside the doors. Family had often bought well intended aids such as an electronic day clock to orientate to the day and time, but the current over 65 generation often unplug everything at night (for safety) so items are switched off unintentionally and forgotten, rendering them useless.

Within Dorset and especially the pilot area the demographic is predominantly retired people living locally with little diversity of skills and abilities to draw on with regard to technology usage. Some had a tablet computer that is connected to the internet but do not use the tablet by themselves, instead preferring to wait for family. The conditions of the group varied and where they were all passively accepting of the technology they did not wish to use it themselves, appreciating that it will help their families and happy for it to be in their home as long as they

were not responsible for it. Many thought you must be clever to use it or brave. A person-centred approach was adopted as some were very interested but had limited physical ability and dexterity to use the tablet screens.

#### 8.1.1.1 Summary

- Our assumptions that the clients understand the 'intuitive' software and commands is misplaced.
- Clients can't remember how to use it, it feels unfamiliar so they don't want to use it and if they think it has gone wrong they panic.
- We expect people to adapt to weaknesses in technology design and implementation, this only creates confusion and disengagement or bad habits.
- It is very quickly forgotten, the devices have very little visual impact to act as a prompt.
- People can sit on negative experiences such as hacking and fraud, often causing them to give up on new technology and view it as unsafe.
- Not everyone is in the same place with tech, sense of security, fears over security, awareness, password familiarity, touch screens, sensory impairments – especially visual, caution vs openness is an ongoing issue.
- Reception from clients quite mixed, some including families realised how useful it could be but some Clients offended by the use of tablets in their homes, "like teenagers glued to their phones".
- It needs a lot of human support.

#### 8.1.2 Secondary end user - Informal carers

The app was very well received by family carers and they really wished to be involved, the potential of the ability to support and co-ordinate their loved one was clear. Family were still often working full time and would use the desk top version to check the status of their relative and to respond to or coordinate care

using the message feature of the app. This user group were the most open and enthusiastic.

Community were also very interested in using the app as a check in for vulnerable people who used their service, friends and family were happy to use the tablet in the home when they visited to record the person was ok or to note what they had been doing on the visit as a discussion point for later and for remote family to be more aware and involved in the day to day needs and activities of the person.

However, many informal carers had not owned a mobile phone never mind a smart phone, the poor signal in the area had not only affected the function of mobile phones it had affected the culture and the community who had not yet evolved to rely on them. They actually were quite well connected already; the app did not offer them anything they did not have, they phoned, visited and spoke to each other on a regular basis. Introducing technology to make this more efficient would introduce a lot of stress for people because they were not used to using technology and because it remains unreliable in that area due to poor signal.

#### 8.1.2.1 Summary

- Proactive families can see the benefits but the technology and the supporting culture are not mature or reliable.
- It needs a lot of human support.
- Personal logins were often corrupted or forgotten and due to the low level of familiarity with technology this required personal/phone support to clients and carers to reset passwords (there is a forgotten password function on the login page)
- Recruiting circle of care very time consuming, each individual to be recruited personally and from scratch on each occasion.
- Very difficult to explain and engage over the phone, it must be visual and personal, 1-1 or small groups, it is such a new concept.

- Technology is a very low priority for most people who are caring for a loved one. Families are often entrenched in work rounds, the new technology requires an investment of time and energy to set up correctly which is not possible in each situation.
- Technology fails!
- Carers are often older people too with little or no tech experiences or interest, relying on grandchildren for tech advantages and help.
- It is only useful if everyone in the circle of care is engaged, if one party is not engaged the effectiveness and efficiency of the app is disproportionately affected.
- A paper how to fact sheet is essential. Where to find the app, how to download and open it, setting up logins and entering tasks and alerts.
- Local businesses, who wished to support vulnerable customers, were open and willing to be involved. The app was not accessed at all, not one visit was logged, it simply did not factor in the daily routine of the staff that were behind the counter. The technology requires people to change their routines.

### **8.1.3 Secondary end user - Formal Carers**

In the UK the pilot worked with Tricuro Reablement service in Bridport, beginning with a roll out to a small number of staff who quickly grasped the potential of the concept. Whilst out in the community staff used the app on their existing work tablet or phone to record notes and progress of the Client as they moved through the Reablement process.

More training was requested by the Reablement Team but the content was unspecified. On expansion the request for training was due to the belief it would improve staff confidence. However on analysis of feedback, confidence in using the device, device reliability and basic transferrable computer skills appeared to have far more influence than familiarity of the particulars of the app itself. Indeed once familiar with the devices and basic commands many staff

were happy to explore and 'play' in order to familiarize themselves with the system as they were using it, reporting it as easy to use and quick to learn.

The biggest impact was the App behaviour in low to no signal areas where it would be unable to detect if the signal was strong enough and try to update continuously, then stall, drain the battery and lose information or prevent information being input. Where the Reablement workers (RW) were using a project phone they reported significantly better signal than on the DCC tablet devices. However some preferred the larger screen of the tablets to work on a larger visual area.

The RW were using the App on Dorset County Council tablets, this led to issues with security and who was responsible for updating the App: as this would usually be pushed out straight from Nourish but here must go through Dorset County Council IT department, where it was subject to delays. The App is designed to be left logged in all day. However, the use of DCC tablets requires RW log into the tablets to check their rota and enter mileage and then log off to save data charges and battery. This logging off behaviour had the impact of losing any unsaved notes in the app when there was poor signal in the area.

The RW remained committed to the project but the impact of this was a 'work around' where they would write up notes on the app at home in their own time and having to log on and log off at home where they knew they had a good signal or WiFi. It often hindered day to day work and signal and related issues surrounding how the app operated caused frustration. This [rightly] led staff to a negative fixation regarding connectivity.

One unplanned additional benefit of the project was closer working with the local GP surgery. The community coordinator was also given a login and training from the project team during a couple of sessions. They were open and supportive to the project but not at all confident with the technology, one of the training sessions required how to use the smart phone; this included how to turn it off and on and the various screen locks and screen swipes. This limited experience and the developmental stage of the app meant there were

barriers to them feeling comfortable and confident enough to start using the app independently.

- Feedback Unreliable signal

“We experienced a lot of problems with signal and connection, so we feel people need to know how to turn data on and off. It was assumed that people would know this, but most of the team did not.”

- Buddying System

“The best way of learning is through sharing knowledge and experience with your peers. A buddying system would be great; between someone experienced and someone new to the technology.”

- More training time

“Training given was brief and only happened once. To really understand how to use the system, more in depth training is needed on more than one occasion.”

- Basic use of messenger

“To make the most of the system people need to know how to use an electronic messaging system; how to send short, informative messages directly to an individual and to a group of people.”

- Having more patience with learning new tech

“Having a better understanding of how technology works so that when things to go wrong you feel you can find a work around.”

“Understanding there are different types of devices and you can find one that suits you; i.e. some carers preferred the smart-phone devices and others the tablets”

- Be open to learning and willing to experiment with the technology

“Learning the technology did not happen in training; that gave you a starting point. The best learning came from using the software, trying new things and working out what does and does not work.”

#### 8.1.4 Tertiary end users

Team managers immediately had a view of progress over a particular client and of the team as a whole, they were generally office based and did not experience such frustrations with the signal. Real time reports showed client progress from each task area to a record of daily notes to staff activity with the client, presented as tables or easy to ready charts, this was very well received. This user group had a broader experience of technology and had been involved in the setting up of timelines, this group most benefitted from the App. When they remembered to use it.

### 8.2 Portuguese pilot

During the project, skills shortages have been identified among users, either among the elderly people and among their families and carers, where even basic abilities regarding the usage of a mobile phone were detected. Skills deficits at the care providers have been also identified.

#### 8.2.1 Primary end user

The observations in Miranda do Corvo were quite different from the Dorset area regarding assistive devices and aids. The end users in Miranda do Corvo tend to live in the areas where they have lived their entire lives, with no significant changes experienced; including assistant devices or equipment acquired such as physical aids, grab rails, bed rails, tele-assistance devices.

It has been experienced that the elderly generation tend to be more resistant to changes and the usage of new technology, even when the technology does not change the daily routine.

In this situation, substituting a land line phone with a mobile device can be quite difficult, and thus almost impossible to introduce tablets or more complex technology.

The end users were also mainly retired farmers with experience and abilities to use technology beyond the television. The few users that already a used mobile

phone were keen trying the True-Kare phones proposed, however this was not always successful due to the need for change in routine; often end users left the mobile phone behind.

Some of end users understood the idea of the panic button, and reported that they felt more secure, but this was the exception. Internet was not available in all cases, though some users had some contacts with it though their family, in particular when some family members live abroad (skype calls).

Our conclusion is that, with a few exceptions, the end users in this rural area are not yet ready to deal with technology. There is a need to work further with the community, to tackle the stigma of technology and assistive devices; they are not as expensive as believed, they do not have to limit daily routine and they can introduce clear benefits.

### 8.2.2 Secondary end user Informal carers

Internet and smartphones were familiar to the majority of the informal carers, however smartphones are mainly used as a normal phone and a 3G connection is not the norm. People tend to use the internet at home, and they are quite familiar with email, facebook and skype. Installing and configuring applications it's a more complex job thus its can be an obstacle when introducing a new app among this kind of users.

In general, the informal carers do understand the benefits of the technology when they live far away from their relative. In some cases, people were keen to install the Nourish App or receive daily emails with information about the person that they take care. But just on rare occasions, the informal carers contribute with notes, warnings or alarms to the system.

Several problems occur during the pilot such password forgotten, concern about information missing due to lack of internet and synchronization of the app. Technology is a very low priority for most people who are caring, and the telephone is still the preferable method to communicate and to keep the support network informed.



This group for users, even more familiar with technology, still needs to improve the general usage and need to realise that technology if used might have a significant impact on the way that the support network operates.

### 8.2.3 Secondary end user Formal Carers

The Portuguese pilot worked with ADFP, which is one of the organizations in the consortium. Recruiting and training carers proved relatively easy as they understood the importance of the project for the organization.

Other organizations such as the Local health were also been involved. Unfortunately, due to the difficulty on agreeing time to share data across the organizations, the practice experience was not possible to explore. However, the meetings held demonstrated that the personnel involved were capable to use the system and benefit from it.

ADFP carers initially started using the system to record two activities per user per day and slowly, more activities were added. Alarms and warnings were raised when needed, and additional communication between managers and carers was possible through the messaging system in built on the system. This practice was not fully used by all carers due to the lack of internet on some devices – even with 3G, the connection was not always present, particularly in the most remote areas.

Some difficulties with logins and passwords were raised and the synchronization of information was also a problem in the beginning of the pilot (a password recovery feature was introduced but people are reluctant to use it).

In addition, some of the information on the App was in English which caused some concerns among the users due to the lack of English proficiency among the team.

After an adaptation period the electronic daily notes become a routine and no complaints were raised once the team felt comfortable with the system. The service coordinator was very committed on keeping the electronic notes, and despite some initial difficulties when setting the system, she could build the

individual plans for each end user, configure the devices and manage the warnings and alarms generated. The coordinator was very happy with the reports generated from the system. Some difficulties were experienced when the mobile devices were introduced, however there was a general knowledge of how to manage a computer system.

#### 8.2.4 Tertiary end users

Care managers, both social and health professionals are very well qualified regarding technology as well as regarding the subject matter where they operate. This group includes nurses, psychologists and social assistants with a high qualification degree.

These professions are office-based and computers, tablets and smartphones with 3G are available. These professionals understood how the system could improve the general work from the support network and they were keen to support the project as much as possible; using the system, receiving alarms and daily notifications and encouraging their staff to do the same.

In the Portuguese pilot, the experience of the project was good. This experience could be further improved with involvement and data sharing from more organizations.

### 8.3 Belgian pilot

#### 8.3.1 Primary users

We met several older adults with cognitive impairment. Since they weren't familiar using a smartphone before, it was almost impossible to learn them new things in general and the use of a smartphone in specific. Also between older adults without cognitive problems, several obstacles were encountered:

- not many of them were spontaneously interested to use the app themselves.
- most of them were of the opinion that since they weren't familiar with the technology, they also couldn't learn it now. So a kind of 'fear to learn' was detected.
- the screen of the smartphones was too small: considering their reduced sight, visual aspects are really important.

- they weren't used to typing messages (nor on a smartphone nor on a tablet: the effort seemed too big and it they got frustrated that it took so long to type a message.
- a lot of them thought they would need to pay for the internet connection, even after explaining them that the project would pay these costs.

### 8.3.2 Secondary users - Informal Carers

Some informal carers we met were used to work with a smartphone. For those people, the installation of the app and understanding how it works wasn't a problem. But even though they had the skills, they didn't use the app because since they felt no need to use it. On the one hand because they had other ways to communicate with other informal carers that worked fine. On the other hand because there was no integration of the signals of the additional devices, so using the app for that purpose wasn't an option. Of course, we also met some informal carers who didn't know how to use a smartphone. They also didn't see the point of getting to learn how to work with it, if there was no added value in using the IntegrAAL app. Another remark was that the smartphone was too big to carry around, definitely compared to the simple mobile phone they are used to.

### 8.3.3 Secondary users - Formal Carers

Considering the Belgian situation, formal caregivers weren't really interested in using the IntegrAAL application, as a patient record form with the possibility to share information with informal caregivers and other formal carers because the system didn't communicate with the Belgian e-Health application of the government.

## 8.4 Research findings

The evidence review revealed little existing evidence on the use of digital technologies in social care.

Where digital technologies were deployed, they are having an impact on the direct interactions between care staff and the people they support. Managers

and staff felt that digital technologies played a significant role in making services more person-centred.

Lack of consistent internet access for mobile workers providing services in people's homes, however, still inhibits the use of digital technologies directly with people who receive care and support services at home.

The two most significant determinants for whether organisations were embracing digital technologies appeared to be management priorities and the overall attitude to change in the organisation.

Personal use of mobile digital devices – smartphones, laptops and tablets – is considerably higher than workplace use, suggesting that in terms of digital mobile at least, individual staff are more digitally engaged than their employers are

These findings were generally echoed during the project deployment.

## **8.5 Deployment in Brussels**

Deployment in Brussels, where there no technology partner specific learning was recording about skills needs during the deployment process. These included:

- In the proposal, good ICT-skills for deployment wasn't described as required. But during the project, it became clear that certain ICT skills were needed. Deploying partners in Brussels had to configure it out themselves: the app (creating circles, assigning logins,...) as well as the installation and use of the additional devices.
- Explanations and arms-length technical support to configure the app proved insufficient and ineffective.
- Several devices were tested (Obli, Buddi, Smart Things), which wasn't proved not to be as straightforward as expected. Contact was made with the providers of these devices to fully understand their product. Setting up of these devices were not a simple "plug and play" arrangement but required technical skills to be learnt and applied.

- The app is designed to respond to a organisational level deployment. In Brussels individual users were recruited which led to the need for the acquisition of even more skills to respond to this new situation.
- This experience also demonstrated the value in providing technical user manuals and instruction films to help create internet connection, to install, configure, integrate and use the app together with additional devices.
- The importance of direct and easy contact with a technical helpdesk to provide specific information and reinforce new skills was also recognised.
- Many encountered problems were solved by ‘finding a way around it’, which made the learning process even more difficult. An example was when you wished to provide a login to an older adult (who wants to use the app), you need to create another carer profile with the same name as the older adult which was counter intuitive.
- Another factor that complicated the learning process for those deploying the system was the changing methodology, due to technological delay and the evolving nature of product development during a pilot.

To summarize, a considerable amount of time and effort was required to learn about the technology. While the deployment team succeeded it highlighted the range of skills needed to effectively implement the system in evolving pilot conditions. These skills may be evident in, or capable of being taught to, some care organisations but cannot be expected in all end users.

## **8.6 Related Projects**

### **8.6.1 EU\*US eHealth Work**

The IntegrAAL project has engaged with the EU\*US eHealth Work which is a Horizon 2020 project. Their Mission is to map skills and competencies, provide access to knowledge tools and platforms, and strengthen, disseminate and exploit success outcomes for a skilled transatlantic eHealth workforce. The

overall goal of the EU\*US eHealthWork project will be to measure, inform, educate and advance eHealth and health information technology skills, work and workforce development throughout Europe, the United States and globally. This project shares the main conclusion of this project in recognising that

“Healthcare systems require a robust supply of both highly proficient eHealth/IT professionals as well as an overall workforce that has a sufficient level of IT skills to make the optimum use of eHealth. However, there is a global shortage, especially in the European Union, of eHealth workers across the full spectrum of job roles, spanning clinical, social care, informatics, and administration. There is also a dearth of structured eHealth education and training opportunities. The goal of this project is to address this workforce shortage by:

- mapping needs, gaps, and outcome models
- providing resources to assess and improve skills
- increasing educational and training opportunities
- promoting knowledge and development in the field of eHealth”

## 9 Outline Skills Plan

One of the project outcomes is to define the enhancements in skills required for users, family, care providers and related workforces to increase utilisation of technologies. These are identified from the evidence obtained across the pilots in the 3 pilot areas. They include important basic, soft and more technical competencies for the main end user groups.

### 9.1 UK pilot

- The use of the term technology is a barrier to many people, so the benefits must be presented in a person-centred way.
- A person-centred assessment is key to the success of the use of the app and this must be carried out by an experienced staff member.
- People need support to use the app and the investment is in the staff being able to use the app freely.
- Family are keen to use this but need support setting this up and creating habitual use.
- Technology must be presented in a person-centred way, you only get one chance to get the person on board; a generic approach does not work.
- The community and families are more ready for this than statutory services are; we need to enable them to use these tools.
- Community businesses are busy, more work needs to be done around how to build habitual use of recording welfare checks in the community.
- There needs to be ongoing dialogue with end users to ensure the product continues to serve them.
- We must remain fully engaged as our Community stakeholders are key, we must invest time and current care experience into setting this up.

### 9.1.1 Skills identified as prerequisites to adoption of technology across all user groups

- Basic Computer Skills
- How to turn on a device
- How to charge a device
- How to use a touch screen
- How to identify where the text boxes are that you can start typing in
- How to recognize commonly used symbols in apps and websites.
- How to turn data/connection off
- How to use a messenger system

## 9.2 Portuguese pilot

- In general, the use of technology is a barrier to primary end users
- Secondary end users are keen on the usage of technology, and they believe in the benefits of it, however awareness about these benefits must be provided.
- The professionals adopted the technology easier than the family, and they need less support. They need some incentives to be proactive solving their issues when facing loss of password or lack of internet.
- Family are keen to use the system but they need support setting up the app and they need clear incentives to participate and contribute actively to it.

### 9.2.1 Skills identified as prerequisites to adoption of technology across all user groups

- Basic Computer Skills
  - How to turn on a device
  - How to charge a device



- How to use a touch screen
- How to connect to the internet
- Benefits of a pro-active support network based on technology
  - How to communicate properly
  - How to raise alarms and warnings and how to follow on
  - How to involve additional family members and the community

## **9.3 Belgian pilot**

### **9.3.1 Primary users**

Some older adults like to be involved in the coordination of their own care and should be able to work with the app themselves. They don't have any modern technical skills in working with an app. It is difficult to learn the new technology at their age. Alternative ways, close to the skills they have, should be looked for. For example: operate the app with voice.

### **9.3.2 Secondary users - Informal carers:**

Some informal carers are used to work with apps and have all the skills required. Other informal carers have not. They can either learn it, but the motivation to learn this must be big enough. If they really want to understand the app and someone wants to take time to explain, they can overcome this problem.

### **9.3.3 Tertiary users**

Care managers who have to configuration of the activities, devices and circle of care into the app can learn this, but have to take time to understand the full picture. A personal instruction course, the instruction videos in the app and the Nourish helpdesk can facilitate this. Once they have the skills to do so, they have to be aware of that the configuration of Integraal of the situation of each different older adult and their circle of care is very time consuming.

## 10 Bibliography

### 10.1 United Kingdom References

The size and structure of the adult social care sector and workforce in England, 2016 Skills for Care Retrieved from: <https://www.nmds-sc-online.org.uk/Get.aspx?id=971293>

NHS and social care workforce: meeting our needs now and in the future?

The Kings Fund 2016 Retrieved from:

[https://www.kingsfund.org.uk/sites/files/kf/field/field\\_publication\\_file/perspectives-nhs-social-care-workforce-jul13.pdf](https://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/perspectives-nhs-social-care-workforce-jul13.pdf)

Digital capabilities in social care Sarah Dunn Associated and Skills for Care July 2014 Retrieved from: <http://www.skillsforcare.org.uk/Document-library/NMDS-SC%2C-workforce-intelligence-and-innovation/Research/Digital-literacy/Digital-Capabilities-Research-Report-300714-FINAL.pdf>

Core Digital Skills in social care. Skills for Care 2016 Retrieved from: <http://www.skillsforcare.org.uk/Documents/Topics/Digital-working/Core-digital-skills-in-social-care.pdf>

Digital working, learning and information sharing. A workforce development strategy for adult social care 2016-2020. Skills for Care 2016 Retrieved from: <http://www.skillsforcare.org.uk/Documents/Topics/Digital-working/Digital-working-learning-and-information-sharing-strategy-2016-2020.pdf>

### 10.2 Belgian References

European Federation of Nurses Associations (2015). EFN Competency Framework. Guideline to implement Article 31 into national nurses' education programmes. Brussels, Belgium. Retrieved from: [http://www.efnweb.be/?page\\_id=6897](http://www.efnweb.be/?page_id=6897)

European Federation of Nurses Associations (2009) EFN Policy Statement on eHealth. Retrieved from: [http://www.efnweb.be/?page\\_id=839](http://www.efnweb.be/?page_id=839)

Federale Raad voor Verpleegkunde (2015) Beroeps- en competentieprofiel Verpleegkundige verantwoordelijk voor algemene zorg, goedgekeurd op 1 april 2015

OVSG (2007) Leerplan secundair onderwijs Verpleegkunde Vierde graad BSO Module 1-4. O/2/2007/126

VVKSO (2014) Leerplan secundair onderwijs maatschappelijke vorming Nederlands Project Algemene Vakken Derde Leerjaar Derde Graad BSO. D/2014/7841/034

IntegRAAL Research, study design and personas

The main purpose of the project, as stated in DL-4 Integraal monitoring and evaluation was to measure the effect of the IntegrAAL platform and integrated devices on maintaining or improving independence and the quality of life of the older adult and his circle of care (formal and informal carers)

A randomised controlled intervention study in 100 older adults and their carers (formal and informal) living in three different regions Dorset, UK; Miranda de Corvo, Portugal: and Brussels, Belgium.

Users:

Older person

Formal carer

Nurses

Other professionals

Informal carer

VVKSO (2004) Leerplan secundair onderwijs Verpleegkunde Vierde graad BSO. D/2004/0279/050

### **10.3 EU\*US eHealth Work**

<http://www.ehealthwork.eu/>

## 11 Partner Logos



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### International support



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### National funding agencies

