

ICT PSP – Health, Ageing and Inclusion Programme



Health monitoring and sOcial integration environMent for Supporting WidE ExTension of independent life at HOME

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Abstract

This document presents the general recommendations from the participating pilot sites in order to assist the planning and implementation of similar projects. The statements in relation to direction, reported in the deliverables, are based on the best practices and experiences acquired from the Home Sweet Home trials.

Key Word List

Executive Summary

This document establishes a set of guidelines based on the experiences of the four pilot sites with respect to elements of the Home Sweet Home project that worked effectively and elements that were less effective. It is anticipated that the lessons learned on this project can be analysed and exploited by other regions who would like to implement the Home Sweet Home service or a similar service.

The initial consideration to understand in introducing such a service must be the motivation of the participant and healthcare professionals in addition to the perceived value added of the solution. However, understanding of other factors and guidelines will prove advantageous in terms of replication:

- Understanding and matching the target population to the solution provision, including segmentation and service co-ordination.
- Evaluating the risks in terms of national regulations and legislation.
- The quality of external provision of ancillary services.
- Equipment reliability and interface friendliness.
- Escalation of alerts and associated protocols.
- Participation management and training provision.
- Technology acceptance by both participants and healthcare professionals.

The appreciation in understanding these lessons has led the Home Sweet Home consortium to compile further recommendations in order to progress the service implementation in other regions:

- Customer Selection: matching the solution to the customer's motivation with the potential to build on this over the course of service lifetime.
- Planning: ensuring both the internal and external environment are conducive to providing the solution to an adequate degree.
- Equipment selection and training: introducing robust technology with the flexibility to provide improved interfaces and directed training backed up with up-to-date documentation.
- Alarms: agreeing and continuously reviewing alerts and escalation paths in terms of appropriateness and effectiveness.
- Collaborations: exploiting the solution to complement and support existing care teams in order to provide a more efficient and effective service with the customer at the centre.
- Customer Satisfaction: providing and reviewing feedback loops constantly in order to inform future progress.

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Outstanding Issues

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1. Introduction

1.1 Purpose of this document

This document sets out the collective experiences gained and the valuable lessons learned from the four pilot sites of the Home Sweet Home project.

Document D3.13 Barriers to deployment sets out some of the issues which can act as potential barriers.

1.2 Structure of Document

Section 2 lists instances where the project consortia experienced situations where the technology solution did not work as planned and other situations where the solution was more successful.

Section 3 creates a set of guidelines (“to do” and “not to do” lists) for other regions who want to implement the same or similar services.

1.3 Glossary

GUI	Graphic User Interface
ICT	Information and Communication Technology
ISP	Internet Service Provider
MTBF	Mean Time Between Failure
TMV	Thermostatic Mixing Valve
UPS	Uninterruptible Power Supply
VOIP	Voice over Internet Protocol
WTP	Willingness To Pay

2. Lessons learned

2.1 Introduction

This section details the experiences of the four pilot sites over the course of the Home Sweet Home project, and lists the challenges encountered and the potential solutions in order to guide similar projects in the future.

2.2 Target population

The Home Sweet Home project planned to deploy the full range of devices and services to all participants at the outset. This required the introduction of exclusion criteria that, while useful when researching the use of some devices, precluded a section of the general population liable to gain the most from other devices.

The prime example of this is the navigation system attached to the Mambo unit. Designed to guide participants who are confused or lost, this tool would be most beneficial to older people who suffer from cognitive impairment. However, a specific exclusion criterion in the Home Sweet Home project was dementia, due to the requirement to be able to take medical measurements and complete questionnaires.

Initial criteria in terms of trial participation should be reviewed and aligned with the solution being tested, for example:

- Telecare domotics and the Mambo navigational portal may be useful solutions for participants with cognitive impairment issues.
- Homematic devices may be most useful for participants with severe physical impairment. Inclusion criteria should allow for participants who have high frailty scores if the deployment of Homematic solutions is possible.
- Other considerations, such as education and socio economic levels, should be tested in order to inform the future marketing strategy.

2.3 National rules and legislation

In order to understand the value of the service going forward, it is important to fully consider the implications of national rules and laws that must be taken into account, for example:

- In Belgium the fire brigade is not obliged to respond to a call from the Call Centre, for example if a smoke detector alarm is registered. Some fire brigades will react to the call; others will not.
- With the advent of the Cloud, care must be taken that using this does not breach data privacy rules (e.g. when medical data must not cross national borders) and that the encryption systems necessary are robust enough to prevent hacking.
- Differences in national reimbursement systems influence the success of the system. For example, how GPs are compensated, is telehealth monitoring

recognised as a reimbursable service, do health insurance companies provide health plans that can include monitoring and self management.

- Public procurement regulations must be observed.

2.4 Organisational issues

2.4.1 Service segmentation

While every person has individual requirements when it comes to tele-monitoring, it will be helpful for any organisation looking to deploy these types of services to define the typologies or segmentation of the potential users. For example:

- Domiciliary devices may be suitable for very frail persons, or persons with early stages of dementia.
- Vital sign monitors may be difficult for very frail persons or those with dementia, but would certainly be suitable for persons with a chronic health condition.
- The setting (rural v. urban) may also be relevant in terms of broadband coverage and telephony.
- The digital divide problem should be taken into account when deploying tele-monitoring services to a cohort comprised of those who are not particularly IT literate. Where the target population has no or little familiarity with technological devices, a specific training phase should be considered in addition to closer assistance during the service implementation phase.

2.4.2 Service reimbursement

It is vital that the appropriate healthcare professionals are involved in the tele-monitoring of vital health signs. This can create problems when these healthcare professionals are only reimbursed when face-to-face consultations take place.

In these healthcare systems, it is vital that this issue is addressed and solved before contemplating deployment of tele-monitoring of health parameters.

2.4.3 Health and social care coordination

It is important to coordinate effort between health and social care providers. While not all participants using tele-monitoring will be receiving care from both, many will, and opportunities for improving care delivery more economically will be lost without such coordination.

2.5 Connectivity

2.5.1 Broadband coverage

In some more remote, rural areas, broadband coverage can be poor, with low bandwidth and speed, or non-existent. This clearly has an impact on whether or not

tele-monitoring services can be deployed successfully, although alternatives (e.g. UMTS, 4G) may be an option, subject to cost implications.

In addition, even where the broadband service is sufficient, installation lead times can be long. While this impacts on how quickly tele-monitoring services can be implemented for an individual older person, it should not have longer term consequences.

Some broadband providers apply a cap on usage in order to reduce costs to the consumer under certain tariffs. It is important to be aware if this cap is set at a suitable limit for the participant's home, bearing in mind other devices using the home broadband connection.

2.5.2 VOIP

The Consortium has discovered that some broadband suppliers restrict the use of VOIP. (This appears to be linked to whether the broadband supplier also supplies normal telephony services.)

This prevents the use of videoconferencing, but is also dependant on the choice of broadband tariff.

2.6 Equipment related issues

2.6.1 Batteries

Battery life is an issue for any battery operated devices that need to be installed to provide HSH type services. Anyone wishing to implement these services should explore this issue thoroughly with their device suppliers.

2.6.2 Equipment reliability

The field of tele-monitoring equipment is rapidly developing, with new devices coming to market all the time. While these new devices may have enhanced functionality, their long term reliability has no track record.

Procurement needs to take this into account, either through selecting suppliers with a good demonstrable track record in their other equipment, or through the contract terms that are included, e.g. Mean time between failures (MTBF).

In any case, all devices should be tested thoroughly before use in the project (e.g. BPM, temperature and glucometres) with adequate supplier guarantees in place.

All pilot sites in the Home Sweet Home project felt it was a necessary to have a dedicated maintenance staff member on the team in order to visit participants and make minor repair to equipment – rebalance scales, change batteries, move smoke detectors, reboot InTouches etc.

2.6.3 Device selection

It is important to tailor the selection of devices to the needs of the older person. In particular, there is no value in providing devices for which the older person sees no purpose or benefit, although the Project did find that this view could change after experiencing the devices.

The ultimate goal should be to move to a position where the devices are integrated into the normal way of living. For example the functionality of the Mambo should be incorporated into the functionality of a standard mobile phone.

2.6.4 Medical devices

The choice of medical devices provided was based on participants' pathologies. However the functionality of some of these devices was questionable, e.g. the blood pressure monitor can be difficult to apply to the upper arm for older people with dexterity problems or obesity, and with the ECG device, it can be difficult to obtain an accurate reading.

An additional consideration to observe is the battery life between charges.

2.6.5 Domotic devices

The water leak detector must be positioned carefully, as it can be dangerous to place it loose on the floor – the user could trip over it, or hurt him/herself by stepping on the pins. One solution may be to stick it to a wall in the bathroom, but still touching the ground.

Smoke detectors must also be positioned carefully, especially in small apartments, to reduce false alarms to a minimum. In addition, consideration must be given to how the user can disarm the detector in the case of a false alarm. Standing on a chair to do this may not be safe for an older person. One solution might be to include a switch (with wifi) to turn off the audible alarm and avoid the risk to the person and the device.

Unfortunately, the Homematic devices were not suitable for installation in the study groups' homes.

- Winmatic and keymatic devices require holes to be made in windows and doors respectively, which may not be acceptable to persons, either because they are renting properties, or because they do not want to damage the windows and doors.
- Winmatic does not work with sash (vertical sliding) windows.
- Climatic devices cannot be fitted to some radiators, and are not suitable for electric storage heaters at all.

In this case, alternative solutions will be needed. For doors, one option is an online door with badge system that can be opened from distance. The Antwerp site observed a very positive response from older people in relation to operating a badge system. It also should be noted that at a certain age it can become difficult to unlock a door using the key – a badge, therefore, is a very good alternative.

2.6.6 Platform independence

Increasingly, there is a need to consider platform independence especially in relation to the InTouch central unit, as potential users may choose to use their own interface devices with which they are more familiar (e.g. iPad, tablet, PC, smartphone, etc.). While this may reduce the investment in hardware, it may increase the complexity of the software environment.

2.6.7 User Interface

It is not important for participants to be aware of the intricacies of the solution design nor the back office portal. Interfaces need to be simply designed using coloured buttons on an uncluttered page.

The *ello!* solution proved very complicated with participants. While the Consortium is in agreement with the merits of the concept, the *ello!* interface needs to be reconsidered before a successful deployment is possible, especially given other possible alternatives available off the shelf.

2.7 Operational issues

2.7.1 Alarms & alarm protocols

2.7.1.1 Temperature

The pilot sites are based in regions with vastly different average temperatures. For this reason, a generic alarm management policy is not always valid. For example, low temperatures are not a danger in the coastal areas of Mediterranean countries, while high temperatures are not a concern in Northern European countries.

Also, temperatures can be lower than normal at night without needing to generate an alarm.

2.7.1.2 Other

The portal is not capable of receiving automatic alarms from the Mambo device and keyfob when their batteries are low. This represents a reliability gap with the system.

When monitoring vital health parameters, it is important to set thresholds and limits appropriately. E.g. a higher blood pressure is only relevant when it is consistent over a period of time, or if it is excessively high (Type 1 and Type 2 alarms). Individual measurements should be interpreted with caution and in conjunction with parameters agreed with health professionals. Alarm protocols must be defined to take this into account.

2.7.2 System functionality

The Daily Scheduler should have the ability for the older person and his/her relatives and friends to add/amend events on the schedule.

Another possible improvement would be the addition of more games in existing formats, such as Solitaire and Sudoku. These have the advantage that there are no language or cultural issues associated with them.

There is a requirement for the inTouch to be on the home screen mode when taking readings or else they are not recorded. Also, if readings are not confirmed by the participant, then they are not received by the portal and therefore no alert is triggered.

In order for the Call Centre to have a greater understanding of the needs of the older person, it would help if the portal had a section where operators could read some general information on the participant – living alone with a pet, diagnosed with mild dementia, recently returned from a hospital stay. The levels of access to this information would need to be determined in conjunction with national guidelines.

The navigation system on the mambo portal is a good concept in terms of assistance to older people with cognitive impairment. However, the pilot sites encountered a some areas that would need improvement:

- The map updates at a slower than expected speed and is dependent on cloud cover.
- The directions given are in an unfriendly / jargon filled manner, e.g. “move north for 150 metres then turn northeast on the R142”.
- The directions given give no consideration to the safety of the individual – there were instances during the lab test that the portal was asking the participant to cross a busy highway.

2.7.3 Mambo

Mobile alarm should be more reliable and user friendly:

- The Mambo will disconnect when a long conversation takes place.
- The Mambo holder is not easy to use: cables are too easily disconnected; the weight of the device often loosens them.
- Some users see the Mambo as a duplication of their mobile phone.
- There is no alarm for low battery either on the device or on the portal, and the device will shut down when out of power without any warning.

2.7.4 Training & technical support

Both the participant and his/her family need to be trained appropriately to improve technology acceptance. This training should be adapted to the needs of the participant, and may need several visits and revisits. Understandably, pilot sites need to be aware of the resource implications where intensive training is required.

Literature, in terms of user manuals and training manuals will need to be kept and updated as necessary.

The requirements for ongoing technical support should not be underestimated, particularly in the first few months after installation.

2.7.5 Participant Management

It is a good idea to organise a consultation meeting with the participant, friends, family, healthcare professionals and other stakeholders beforehand in order to provide complete information on the equipment solution. But the older person must not feel they are patronised or under external pressure to adopt the technology. In this regard, expectations are managed especially in relation to technological glitches. Whenever a participant decides to stop using tele-monitoring services, the reasons should be determined and analysed to identify any weaknesses in service provision, training, device functionality etc.

Frustration can also be caused where multiple calls are being received from the Call Centre either through faulty alarms or inappropriate alarm parameters. (But this is not always true: some participants liked to chat to Call centre staff!) Some participants expressed an interest in having an option button on the InTouch for “Feeling OK / No Intervention Required” in order to avoid unnecessary calls from the Call Centre where the participant is feeling fine or the alert is triggered in error. Flexibility in this approach would need to be considered in cases where the participant is suffering from cognitive impairment.

The pilot sites also found it useful for a team member to contact participants at regular intervals in order to ascertain their feelings with respect to the monitoring and follow up responses. This was useful to feedback to the Contact Centre and an initial identifier of participant frustration.

2.7.6 Summer holidays affecting participants

In certain cultures, both Mediterranean and Nordic, older people often take extended holidays. In the Mediterranean cultures, these tend to be in the summer, to be with their families, which may take place at some distance from their normal place of residence. For the Nordic countries, these extended holidays are in the winter, often relocating to warmer countries or staying with extended family.

This has implications for the use of tele-monitoring, in particular using medical devices. I.e., during this extended holiday, tele-monitoring will not normally be possible, so if necessary, the older person needs to make alternative arrangements through their normal GP protocols.

However, the domotic and movement detectors can still play a useful role in monitoring the home of the older person during their absence (i.e. detecting intruders, fires, etc.), though it is necessary that the older person accurately informs the Contact Centre about their planned absence (giving exact dates of absence and new contact details).

2.8 Display devices

2.8.1 Power surges knocking out InTouch units

Although in general the InTouch units have proved resilient to power failures and accidental unplugging from the mains supply, this is not always the case.

At this stage, the Consortium are not clear whether this is due to the nature of the cause of the power failure (e.g. lightning strikes causing power surges), or the power network itself being susceptible to power surges, either when the power fails, or when it is restored.

This issue can be solved either through the use of UPS or an extension lead with built in surge protection.

2.8.2 InTouch units turned off

Sometimes the InTouch units are turned off by users. In this case, further training & information is needed about the requirement to keep the units turned on at all times, especially to maintain the internet connection.

The effect of the InTouch being powered down can be disruptive, e.g. multiple messages are received from inTouch with previous readings from devices, but the date and time recorded is when the InTouch is powered back up again, and not the date and time that the measurement was actually taken.

The Irish site found that repeated power intrusions can lead to broadband connectivity failures. In order to mitigate against this, the Irish site introduced a CronJob that power-cycles all devices and reconnects them to the internet at 3.00am every night.

2.9 User Acceptance

The Home Sweet Home project produced results showing a majority of users were interacting with the technology solution. However, there were a few reservations drawn from the qualitative analysis that were interesting; these should be addressed to ensure successful widespread deployment.

For example, there was a negative correlation between technology acceptance and the type and quality of existing support and environment. This was mostly seen in the Antwerp pilot site, where the technology was installed in serviced accommodation. Some of the users responded that they felt the solution was only duplicating existing services and would be of greater use to people living in their own homes in the community.

There was also a feeling from some participants that they were taking part in the project for solely altruistic reasons. This presents a possible barrier for full deployment because altruism is not transferrable to real life situations. In order to ensure more effective results and conclusions, it is important for participants to understand the potential benefits to themselves in addition to society as a whole.

Every effort should be made to reduce the amount of wiring that is needed in the user's home. This can create real resistance to acceptance of these systems. However, the increasing prevalence of Bluetooth, wifi etc. is making this more and more possible.

3. Implementation guidelines and recommendations

3.1 Introduction

This section presents a set of guidelines for other countries or regions who would be interested in deploying the Home Sweet Home platform or a similar service on a wider scale.

The approach to implementing a Home Sweet Home type solution should be viewed from both the participant / customer perspective and the region's existing healthcare system. There is an inherent belief that using technology to assist older people to live independently is more cost effective due to the reduction in use of healthcare resources and facilities; however, the qualitative analysis from the Home Sweet Home project would suggest that older people still prefer interaction with other people and not with a computer interface.

Clearly healthcare systems will be motivated by cost reductions and other ad hoc efficiencies to use the Home Sweet Home solution, but what motivations exist for the end user? Maslow's Hierarchy of Needs can be considered a fair representation of a persons' needs and motivations up to the point of retirement, where the need to better oneself is diminished or eliminated. After this point the triangle is inverted (see below). In early retirement, the esteem need and the need to belong are satisfied through membership of clubs or committees and through volunteering. Later, in the final years of life, individuals' needs revert to safety in the home and finally the basic physiological needs of food and rest – the satisfaction of needs mostly associated with long term care. Long term care is costly to society, and can be very disruptive to the individual. The Home Sweet Home solution can address the social and safety needs of older people, thus delaying the necessity to transfer to long term care.

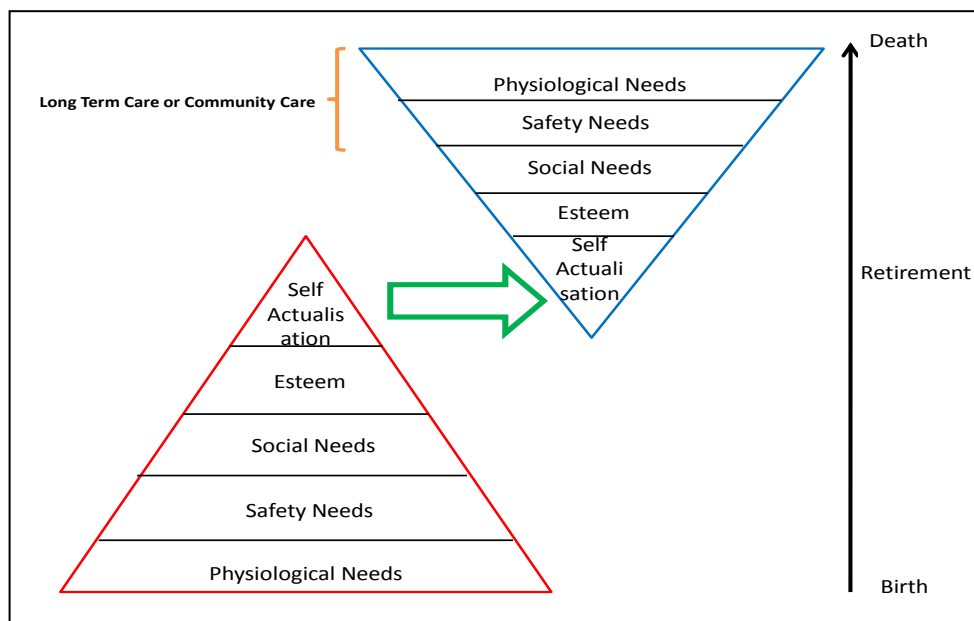


Figure 1: Maslow's Hierarchy of Needs

3.2 Customer Selection

The Home Sweet Home solution pilot was tested on older people over 65 years, who showed no signs of cognitive impairment and who scored within the mildly frail range of the Edmonton Frailty Scale. However, it should be noted that other customer segments can also avail themselves of the services, such as:

- Physically disabled persons.
- Younger participants suffering from chronic diseases.
- Persons with cognitive impairments.
- Persons with severe physical impairments.
- Couples – partners can assist each other in using the devices.

It is important to try and tailor the solution to the needs of the customer. This will require a mass-customisation philosophy whereby only parts of the solution are offered as required, for instance:

- Telecare domotics and Mambo for customers with cognitive issues.
- The *e//o!* system for customers who are housebound and want to stay in touch with family and friends.
- Telehealth devices for customers suffering from chronic physical diseases, depending on the pathology and co-morbidities.
- Homematic devices for very frail customers.

An initial interview or assessment with the customer would be helpful in order to ascertain their motivation for accessing the solution. Further reviews with family members and their existing care team will help to co-ordinate the person's needs with the relevant device solution.

A further layer to this offering could be an online store presenting further devices with video demonstration accessible either from the InTouch or similar touchscreen device.

3.3 Initial Planning & Installations

The initial planning stage requires an in-depth audit of the customer's home environment and connectivity. It is vital to have both a good quality broadband connection and cellular network in the customer's home. Speed tests should be carried out initially to ascertain whether a different pricing tariff is required from an ISP bearing in mind policies in relation to blocking VOIP.

Customer profiles should also be drafted with names of other contacts (professional carers, family and friends) and keyholders in order to agree escalation paths and update the notes pages on the portal screen. This will also assist in the planning of cognitive games required for the customer.

It is important that care is taken in the installation of telecare domotics, for example:

- The smoke detector will need to be kept away from the cooker in order to ensure everyday cooking emissions are not treated as an emergency fire situation.
- The presence sensors will need to be placed in the areas of the house which the person most occupies.
- The temperature sensor should be placed in the room most occupied by the customer during the day.

Consideration, in terms of placement, should also be given to the need to replace batteries regularly.

The Home Sweet Home project encountered difficulties in placing broadband routers, InTouch devices and *ello!* boxes together. The solution provided required hard wiring these systems together with the participant's television. Future solutions will need to consider a wireless protocol to alleviate the clutter associated with a set-up of this nature.

3.4 Device Selection & Training

One of the major lessons from the qualitative analysis of the Home Sweet Home project was the need to eliminate duplication in devices. This was particularly true in the case of the Mambo unit. While proving to be a particularly useful device, participants also felt that its functions were duplicating their mobile phones. Future service providers should bear in mind that equipment and devices should remain as hidden as possible so as not to disturb the customer's existing lifestyle.

The Home Sweet Home project encountered some technical malfunctions with the chosen equipment that led to loss of faith by some participants. Bearing this in mind, any new devices must be fully tested in order to ensure durability. Appropriate validation certificates and warranties should also be sought from all equipment suppliers, with calibration tests carried out at regular intervals. Importantly, the devices (especially the medical devices) should be tested on older people in order to ensure good quality functionality, appropriateness and a practical GUI.

There is an open question in relation to interoperability of devices. Each potential purchaser will need to weigh up the pros and cons of using a closed proprietary system versus an open plug and play type.

The Home Sweet Home project was four years in duration. Therefore with the progress in technological advancement, it is reasonable to conclude that the equipment tested is now out of date. Taking this into consideration, future deployments will need to be cognisant of new advances in this market and make use of off-the-shelf products, for example:

- Using a small, light and wireless tablet device instead of using the InTouch.
- Using Skype or MSN instead of the *Ello!* box; this would eliminate the need for family and friends to download additional software on their own computers.
- Incorporating the Mambo functions into existing mobile phones such as a Doro.

Most devices tested in the Home Sweet Home project are passive in nature, and require little or no interface with the participant. Other devices, and in particular the medical devices, require user intervention and therefore adequate training. Device training will need to be given individually and not in groups. This ensures that the customer is comfortable with using the device and is not too anxious to ask further questions. Repeat training will also need to be budgeted in cases where the customer requires a refresher course. Consideration should also be given to providing a help function with FAQs on the InTouch (or equivalent). Training could also be given in conjunction with family members and professional carers in order to increase familiarity with the equipment amongst the customer's care circle.

Training and instruction manuals, using plain language and images, are a useful component in improving customer satisfaction levels. These manuals could be in booklet format, or form part of the help function on the InTouch. Coupled with this, healthcare organisations should consider the maintenance support function. Where possible, the customer should be able to build up a rapport with the technician assigned to their account. Therefore, there is a challenge to reduce staff turnover in this area.

Finally, healthcare organisations should be constantly aware of new developments and evolving technologies in this market space. Integration of new developments in a seamless fashion will ensure cost effectiveness in terms of future upgrades.

3.5 Monitoring of Alarms and Intervention Protocols

Customers need to be made aware of the importance of ensuring alerts sent to the Call Centre are suitable, and the escalation paths chosen are appropriate, given the circumstances. Clarifying objectives is a good starting point, for example:

- Responding effectively to emergency situations.
- Managing chronic conditions effectively.
- Minimising the instances of emergency room admissions.
- Reducing or eliminating stress for the customer.

Alarm thresholds should be individualised in order to minimise the number of false positive alerts sent to the Call Centre. This should be seen as an evolving process throughout the lifetime of the service. Maximums and minimums in terms of health parameters should be agreed in conjunction with the customer's GP and other care professionals. Input from the Call Centre can also be useful to learn from existing best practice in terms of environmental alerts.

Escalation paths should be agreed with the customer at the planning stage with the use of scenario testing ensuring zero tolerance for emergency situations. However, despite the planning at the initial stage, it is always useful to review the escalation paths and alarm protocols throughout the lifetime of the service and test for adequacy and appropriateness. A written flowchart and protocols should be signed off by the customer, or a family member, agreeing to the appropriateness of the escalation pathways going forward. Consideration should also be given to national rules in relation to escalation paths leading to emergency services calls.

The Call Centre staff will need to be trained in the use of devices in order to troubleshoot issues with customers over the phone. In order to ensure effectiveness,

it is useful for the Call Centre to retain a selection of devices in their office for training and review purposes. A “Go Dark” protocol is also useful where the broadband coverage fails and emergency calls need to be responded to. Risk management plans in terms of power supply and service continuity should also be documented and updated where necessary.

Where Call Centre staff have little or no medical experience, it is vital that robust protocols are in place to ensure that alarms and alerts are dealt with correctly, and that no risks arise because of poor handling. The protocols / handbook must be very detailed in terms of "does and don'ts" in order to make Call Centre staff feel confident when dealing with an alarm, and relieve them of any kind of "medical understanding responsibility".

3.6 Professional Collaboration

First and foremost, these technologies should not be seen as a substitute for personal contact between citizens and their carers and healthcare professionals. Rather, they should be seen as a way of enriching contacts, by reducing the time spent on the more "mechanical" aspects of healthcare and home support provision (e.g. taking vital signs measurements).

In order to effectively deal with chronic physical conditions, it is necessary to have a strong multi-disciplinary team of medical and healthcare professionals working together. Using a technology solution should not be seen as a substitute for this. On the contrary, the Home Sweet Home project showed that the use of technology in the home actually places the person at the centre of this professional care circle. There is strong evidence that where measurements are taken by the older person themselves and alert responses are directed back to the older person, they become more aware of their condition and tend to self manage.

Co-ordinating the care team support can be a challenge, and is dependent on the remuneration process within the healthcare system. Behaviour will tend to follow reward in this instance. For example, where GPs are paid by the State per client by the number of visits, they will be less proactive about managing chronic conditions remotely. Therefore it is important for regions to re-align the reward system for care professionals in order to accommodate remote monitoring and care management from an individual customer perspective.

It is also helpful to engage a professional care circle that is experienced in any of the chronic conditions the customer may have. Where possible, the first recruits should be from existing healthcare workers already familiar to the customer. Regular team meetings are a good idea in order to assess progress and brainstorm new suggestions in order to improve care. There may be changes to existing workflows and responsibilities that will need to be agreed, adjusted and recompensed accordingly, for example, GPs are not required to take vital health measurements anymore and can spend more time on diagnosis and referrals.

3.7 Customer Satisfaction

In terms of the Home Sweet Home solution or similar packages, it is important to acquire and review any feedback from customers. In this instance, the views of internal and external customers need to be considered. Feedback loops are a vital

D4.7 Implementation Guidelines

component of good change management practice and are an invaluable source of knowledge to the new structure.

Independent living can expend a lot of resources both technically and on the human front. Therefore co-ordinating effort to the most effective solution is practical. However, the most effective solution does not necessarily mean the best solution for the customer, and can be subsequently rejected. Intermittent anonymous surveys from external customers should form part of the service review with an open mind from the professional care team to consider constructive suggestions for service improvement.