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myguardian

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D9 - MARKET ANALYSIS

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Glossary

Acronym	Meaning
ADL	Activity of Daily Living
Assisted Living Technology	Technology providing supervision or assistance with ADLs, coordination of services by outside health care providers and monitoring of resident activities to help to ensure their health, safety, and well-being.
CSIC	Consejo Superior de Investigaciones Científicas – Spanish National Research Council
EU	European Union
GPS	Global Positioning System
ICT	Information Communication Technologies
IMSERSO	Instituto de Mayores y Servicios Sociales – Spanish Institution for elderly and social servicesO
MCI	Mild Cognitive Impairment
Web-based Application	Application that is accessed over a network such as the Internet or an Intranet.

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1. Introduction

MyGuardian aims to facilitate safe and secure outdoor mobility of the seniors with mild cognitive impairments while preserving their autonomy and dignity, and thereby enable seniors to increase their mobility (while increasing their self-confidence) and consequently to take part in the self-serve society. By removing the barriers towards autonomous mobility, MyGuardian ultimately improves physical health, wellbeing, and social life of seniors.

Seniors with mild cognitive impairments are (to a certain degree) dependent on caregivers such as family careers and home care. The support and care by caregivers enables these seniors to continue living in their own home for as long as possible. However, these seniors might experience barriers towards moving around in outdoor environments when their caregivers are absent. The MyGuardian project aims for a product or service that facilitates safe and secure mobility of seniors with mild cognitive impairments. Not only seniors, but also caregivers (whether formal or informal) are likely to be users of this future product or service. Therefore, this market analysis explores when appropriate the drivers and inhibitors of the wider audience for the solution.

The market volume figures are not readily available and we have to develop our own algorithm to reach a fair estimate of the size of the target. Indeed, MyGuardian's superior solution is designed to deliver more than a straight location-based service (like existing GPS-based anti-wandering or location reporting technologies); at its core, it delivers behaviour-based alarms and reports. Therefore, the analysis will take inspiration from both the current location-based services for the outdoors and the current behaviour-based services for the indoors.

Market analysis reports in the context of innovative solutions have the duty to approach the issues from a broader perspective. Restricting the view to existing players and segmentation would inhibit initiative and corner the future business plan in a me-too pattern. Therefore, in addition to the usual topics, this report will also explore critical issues like:

- Technology and solution acceptance
- Revenues model
- Customer support and service
- Sector maturity
- Stakeholders' roles in the decision-making
- Existing GPS-based systems
- Existing portable panic button and apps
- non-ICT solutions

2. The MyGuardian service

Current monitoring and assistance systems for seniors with cognitive impairments are designed for certain senior needs (e.g., wandering, use of utilities, sleep quality) and mainly provided intrusively inside the care homes (e.g., based on cameras) for seniors with severe cognitive impairments, supervised by professional caregivers. This situation leads to rigid, obtrusive and of limited scope services that currently are not widely used.

I order to conduct the analysis and make the most from the sector data, it is necessary to re-focus on the objectives and structure of MyGuardian.

2.1. Monitoring & assistance

The MyGuardian system consists of a minimally intrusive device (consisting of a smartphone and possibly a bracelet) carried by the seniors with mild cognitive impairment, as well as a web service that can be accessed by their caregivers (using a mobile phone or desktop PC), and it will enable the caregivers, within pre-agreed and preset privacy and ethics parameters, to "virtually guard" the senior, by being informed of risky or unusual situations, getting in touch with a roaming senior (i.e., „nudging" him/her) anytime, as well as, if explicitly requested, to monitor the whereabouts of the senior (at the given precision level).

The system will also monitor seniors to assist in detecting if senior shows signs of being lost or confused, or if he/she is exposed to any particular behavioral risk. In these cases, the system will provide an appropriate, personalized intervention, escalating depending on the assessed criticality of the situation, the senior is in. Therefore, the intervention will be provided in the form of a feedback to senior himself ("Are you ok?"), an automatic assistance request to his caregiver(s) or, a direct contact with a call-centre.

As with other systems, in emergency situations, the senior can use the service to explicitly ask for help, in which situation, the MyGuardian system will alert the designated voluntary caregiver(s) - providing them with the details of senior context, including location, state and time. Using the communication module, the caregiver can then solve the incident (e.g., calm down the senior and help the senior in the orientation process to get back home), or delegate the request to other caregiver(s) or even a call center.

2.2. Rich communication between the mobile senior and the caregivers

MyGuardian removes barriers towards mobility, and at the same time increases peace-of-mind for seniors and caregivers by providing easy-to-use & rich communication. In non-emergency situations, communication between senior and caregiver can reassure both caregivers and the senior. Since explicit synchronous communication (e.g., by telephone) is often experienced as too intrusive, MyGuardian will provide additional communication modes. Asynchronous messages ("I'm feeling fine", "I'm home") can be a valuable source of information for caregivers, and seniors often want to share information. Moreover, explicit communication can be enriched using implicit tags, e.g. by tagging messaging with contextual information on senior state, including location (precise, or rough and ambiguous, as required) and senior's psychological state (i.e., feeling lost or confused). This will improve awareness of the actual care needs and increase peace of mind of caregiver(s) and senior itself.

2.3. Enable coordination between caregivers

Seniors with mild cognitive impairments are generally supported by a group of caregivers, both voluntary caregivers (including family members, neighbors, friends) and professional caregivers. A key challenge of the MyGuardian project is, on one hand, to calm them down by providing relevant real-time information about the senior state, and, on the other hand, if the need arises, to improve awareness within the group of caregivers, and enable them smooth distribution and delegation of care tasks.

2.4. Key technological innovation

The key technological innovations that will be introduced with MyGuardian are related to the following areas:

- *Unobtrusive monitoring of whereabouts of a person*, in such a way that the users feel safe. This includes indoor and outdoor locations, and making it available at different levels of details for authorized persons.
- *Contextual information generation and message tagging*: thanks to user input (tags), the user profiles, user state identification and localization, and in combination the knowledge discovery module, MyGuardian will be capable of generating contextual information for monitoring & assistance, and for the caregivers organization.
- *Ambulatory assessment of person's state*, towards recognizing state of confusion or feeling lost; based on behavioral traits like repetitive physical activity, e.g. walking at random and/or in cycles, and on selected physiological signals, e.g., pulse rate and skin conductance based on the commercially available wearable sensors in form of a watch-like bracelet.
- *Cascading, personalized assistance service*, where alert will be dispatched to selected caregivers in order of importance, following a pre-defined procedure set up configuring the service
- *Use of social networking mechanisms* to enable easy coordination, mutual awareness and delegation of tasks within a group of voluntary and professional caregivers.

All these technologies will be employed in an integrated but incremental way.

2.5. Outline of Data Mining and Investigation Approaches for the preparation of this report

The investigation and research effort carried out to gather the information summarised in this document cover, among others:

Interviews and Meetings
Customers and distributors of MyGuardian industry partners
Geneva (CH) Domiciliary Care Organisation
Lausanne (CH) Domiciliary Care Organisation
Sion (CH) Domiciliary Care Organisation
Haute-Savoie (F) dementia clinics directors
Alzheimer Haute-Savoie Association (F)
CHU Grenoble (F)
ARBT, Swiss Care technology association. President and Vice-President

Questionnaires
Vigisense + University of Glion (CH)
University of Geneva + Vigisense
Vigisense + "La Vesperale" Care Foundation

News and Publications
Over 400 news articles from a leading sector news portal
Mendeley and Mendeley.com, portal for academic publications
TeleCareAware newsletter (UK / Europe)
UK Industry portals
European competitors websites
Technology magazines

Topical Reports
University, Governments, Interest Groups, Care Provider Associations, Market Research
Covering mainly: Switzerland, France, UK, US, Australia
Topics involved: definition of needs, receptivity to technology, market acceptance/adoption, technology reviews, informal/formal caregiver perspectives, trial reports, market sizes

Table 1. Data mining and investigation process

3. Market definition

3.1. Mild cognitive impairment

MyGuardian as a service is designed to help individuals who can still go out and about on their own, but for whom this activity is perceived as not free of confusion or even wandering risks. MyGuardians is typically targeted at people with mild cognitive impairments ("MCI").

MCI describes a set of symptoms rather than a specific medical condition or disease. A person with MCI has subtle problems with one or more of the following:

- day-to-day memory
- planning
- language
- attention
- visuospatial skills ('visuo' referring to eyesight and 'spatial' referring to space or location), which give a person the ability to interpret objects and shapes.

In MCI, these symptoms will have been noticed by the individual and those who know them. If the person with MCI has taken cognitive function tests, their problems will be seen in test results over time. Any decline will be greater than the gradual decline that many people experience as part of normal, healthy ageing. There may be minor problems with more demanding tasks, but generally not problems in everyday living.
Memory loss and other cognitive problems can arise from many different causes. For some people diagnosed with MCI, memory loss will be the first sign of Alzheimer's disease. Other people will have MCI as a result of a curable condition such as stress, anxiety or depression, or from physical illness or side-effects of medication. A doctor may, or may not, be able to say what is causing a person to have MCI.

Many studies have shown that age is a major risk factor for both MCI and dementia. Although MCI significantly increases someone's risk of developing dementia, not everyone with MCI will get worse and develop the disease. Some people with MCI remain stable over time, and a few people improve and no longer have any problems. These different outcomes reflect the range of different causes of MCI.

3.2. Prevalence of Mild Cognitive Impairment ("MCI")

Main references for this paragraph:

- "Mild cognitive impairment1 – a review of prevalence, incidence and outcome according to current approaches". Article by J. Bischkopf, A. Busse, M. C. Angermeyer, Department of Psychiatry, University of Leipzig, Leipzig, Germany. Acta Psychiatr Scand 2002: 106: 403–414
- "Who cares? The state of dementia care in Europe". Published by Alzheimer Europe, 2011.
- Alzheimer's Disease Facts and Figures 2012, Alzheimer's Association, USA

Mild cognitive impairment (MCI) refers to cognitive impairment that is assumed to be due to pathological central nervous system processes, but which interacts with normal aging-related changes. Epidemiological studies conducted in the general population have been able to examine more heterogeneous forms of this disorder than clinical studies, and have also been able to provide early estimations of population incidence and prevalence. Large differences in

case identification procedures and sampling methods have led to considerable divergence in the rates of prevalence reported, which ranged from 1% to 29%. Suggested improvements in the definition of MCI have led to an upward adjustment of prevalence rates in most studies, giving between 5% and 29%. People with the 'memory loss' form of MCI make up about two thirds of all cases.

The principal problems with existing criteria are reported to be in the areas of “subjective reporting of memory problems” and “intact activities of daily living.” Modifying the criteria to allow for absence of subjective memory problems and permitting changes in ability to perform activities of daily living was found by all three studies to increase MCI prevalence to give rates between 3% and 19%.

MCI rates are likely to increase rapidly in parallel with the extension of life expectancy at higher ages. Current estimates of prevalence are limited by problems related to case identification, but, in the light of several revisions of the original definition, appear to be converging at around 5% of the general population.

Incidence is estimated as 8 to 58 new cases per thousand persons per year.

MCI facts and figures are increasingly important because people who have MCI are at an increased risk of going on to develop dementia. In studies carried out in memory clinics, 10-15 per cent of people with MCI went on to develop dementia in each year that the research results were followed up. In other studies the rates are about half this level, but MCI still represents a significantly increased level of risk of dementia – about three to five times the risk of someone without MCI.
Dementia is a major public health issue for the 21st century. 5.4 million people in the EU currently have dementia and one in every 20 people over the age of 65 have Alzheimer’s disease (AD), the most common form of dementia. The demographic time bomb of the ageing population means that these numbers are predicted to double in Western Europe and treble in Eastern Europe by 2040.
Surveys show that 84% of Alzheimer's patients were cared for at home. (source: Alzheimer Europe: 'Who cares?: The state of Dementia care in Europe')

3.3. Going out independently

Main references for this paragraph:

- Duggan, S. et al. (2008), Teesside University. 'The impact of early dementia on outdoor life: A 'shrinking world'?', Dementia, 7 (2), pp.191-204.
- "Alzheimer's Disease and Related Disorders SAR Research - Wandering Characteristics", dbS Productions 2008

Literature about 'wandering' issues is abundant. This most often refers to people leaving the safety of their home when they are not supposed to. In such cases surveillance of a perimeter however large around the home may be sufficient. Tags with GPS sensors and links up to communication networks usually suffice.

In MyGuardian's context, to allow the user more freedom and independence, it is assumed that the user is naturally allowed to leave the home to conduct a range of daily activities and the system will also provide assistance according to a set of context-based criteria depending on circumstances, not just location.

Duggan, S. et al. (2008) 'The impact of early dementia on outdoor life: A 'shrinking world'?' contributes greatly to understanding the behaviour and aspirations of people with early stage dementia towards the outdoors. This study reports the voices of twenty-two people with mild to

moderate dementia (MMSE scores between 15 and 29 - UK's Mini-Mental State Examination) and their carers about the use of the outdoor environment. But the extent to which the issues raised and the findings were common themes suggests a wider relevance to people at these stages of dementia. Among the key findings:

Theme: Reasons for going out

- The most common reason for going out was for shopping, with about half of participants shopping every day, if only for a newspaper;
- Going out of the house was seen by some as an opportunity for enjoyable informal encounters with friends and neighbours
- Functional reasons for enjoying a walk outdoors included exercise and the benefits of breathing fresh air
- Conversely carers identified the „need" to go out and that staying in the house all day could have a depressing effect on mood
- the enjoyment of being out of doors was maintained in the early and moderate stages of dementia and that going outdoors appeared to be an important contributory factor in maintaining quality of life

Theme: Relevance of confusion issues

- When asked „how has outdoors changed for you since you"ve had memory problems?", most people with dementia in the study thought there had not been any change. But their carers did describe effects that the illness was having in this respect.
- Confusion was referred to as being a factor placing limitations on outings
- The disorientation that can be a symptom of dementia and the associated fear of getting lost was a further feature. In addition, interviewees recognised that reduced confidence and consequent anxiety can cause people in the early stages of dementia to themselves restrict the outdoor environment in which they move.
- quotes from interviewees suggest that being in an unfamiliar place can be stressful and increase the feeling of confusion

The same study concludes:

- Assistive technology might offer some solutions in terms of tracking devices or simplified mobile phones, which can give both the person with dementia and their carer more confidence in using the outdoor environment independently.
- There may of course be good reasons why older people with dementia prefer not to go out independently. They might rarely have gone out alone prior to the dementia, preferring to go out with their spouse or family. There may be reasons related to physical health why they cannot go out alone or they may have already lost the confidence to do so.
- The data gathered in the interviews for this study suggest that people in the early stages of dementia value the experience of being outdoors. It is an aspect of their everyday lives that contributes significantly to their overall quality of life.

This calls for a different reading from existing standard wandering statistics, which will be developed below, under the paragraph "Market Size".

4. Competitive Field

4.1. Competitors

Telecare is a broad field where competitors abound, from small start-ups, spin-offs of world-renowned universities (Imperial College of London, MIT, Berkeley, ETH Zurich or EPF Lausanne etc) to the biggest companies like Philips or an Joint-Venture between Intel and GE.

Because of the nature of the MyGuardian solution, this report has chosen to address competitors in the "Third Generation" group of Telecare technologie: the most advanced telecare, typically involving extensive activity monitoring and data gathering/analysis (a core aspect of the 'Ambient assisted Living' concept).

4.1.1. Behavioural Change Detection

Chief among those are 3 names frequently mentioned for their leadership in solutions for behavioral change detection.

- **QuietCare**
- **WellAware**
- **GranCare**

These are listed for reference only, since the 3 of them are US companies, with limited activities in Europe.

Closer to our immediate market, Europe, 2 prominent names in the same field:

- **Vivago**
- **Just Checking,**

And noted for its innovativeness, earning growing recognition in countries like France, Switzerland, Belgium, UK, Australia:

- **Vigisense,** with its **MyAmego system.**

As the following research testifies, achieving market recognition is already a feat:

"Too many families have never been offered the option of telecare and telehealth - despite the evidence that they are overwhelmingly likely to consider it. Only 6% of respondents to our survey would not want telecare whilst almost two thirds had no idea what was available."

(Source: Carers UK, charity, "Care and technology in the 21st century" report and its 2012 update, "Carers and Telecare" report)

4.1.1.1. *Learning from Vivago's success story*

The Vivago Watch is part of a commercially available telecare product range developed by a Finnish company (Vivago Oy, formerly IST) that is now being used in a number of European countries. It represents a significant innovation on traditional social alarm products and is said to be the world's first security device that automatically monitors a person's well-being 24 hours a day. The product has received many innovation awards in Finland and internationally.

The Vivago system was developed by the Finnish company Vivago Oy (formerly IST International Security Technology Oy) and is said to be the world's first security device which

monitors the user's well being 24 hours a day. There are various models to meet different needs, including versions for home and institutional users. The product is innovative in its integration of both active and passive functionality of social alarms in the same unit.

Implemented in the form of a wristwatch-type device (that also works as a watch), the Vivago system continuously measures physiological signals, including movement, body temperature and skin conductivity. During the first fourteen days of use the system studies the user's normal activity level and well-being, and adapts its function to these. After this, if the system notices a significant change in the user's activity level or well-being, it automatically sends an alarm after a pre-determined period. There is also a manual alarm that can be triggered when help is needed immediately. As well as providing notification in case of alarm, the system also provides the possibility for ongoing activity monitoring over a longer period. For example, the activity curve transmitted by the Vivago Watch is used to support care activities associated with the monitoring of sleep/wake rhythms. The wrist unit can also be used as a monitoring solution for users with dementia as well as a security system for care personnel.

The Vivago home system includes a base unit that wirelessly receives the data from the wrist unit and transmits alarms and notifications to the alarm recipient via the telephone network. The alarm can be transmitted as a voice or voice and text message to any telephone - for example to a friend or nurse (through the Vivago Gateway router) or to a 24-hour call centre. The alarms can be routed to multiple recipients, depending on the time of day. The company also offers its own software application, Vivago Vista, used for receiving and handling calls at monitoring centres or in care facilities.

Development of the system and subsequent market penetration took quite a long time. The initial development work began in 1993 and the first prototype of the product was field tested in 1998. The Vivago Bodycode® technology underpinning the current product range was first commercially available in 2001. This consists of sensors and algorithms that allow body signals to be monitored and analyzed automatically and continuously.

Development support was provided by the Technical Research Institute of Finland (VTT), which participated in the clinical testing, as well as financial involvement from the financial services group FIM and the Finnish National Fund for Research and Development (SITRA). The company is now owned by Finnish insurance companies and pension institutions.

Bringing this new kind of product to the market took a long time, although nowadays there seems to be greater awareness and receptivity towards this type of system in target markets such as social care and sheltered housing for older people. Vivago systems are now used in for example Finland, Sweden, Germany, France and Italy. Sales are growing rapidly with already more than 35,000 elderly and over 300 care facilities using the system. In addition to the alarm functionality, the activity monitoring aspect seems to be of increasing interest.

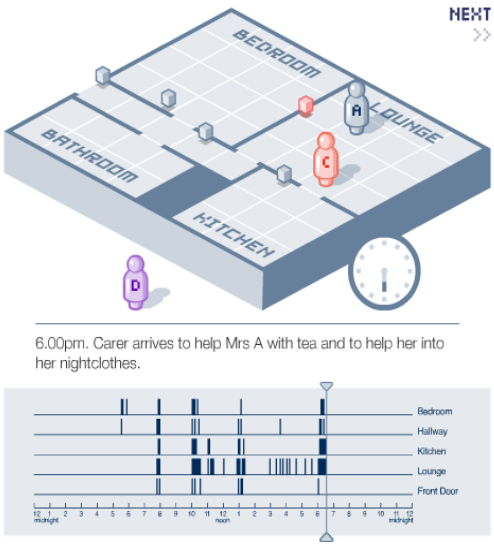
Key technological and other features underpinning its success include its form factor (physical size and shape) and power management, sensing technologies and algorithms, and conceptual fit to needs of purchasing institutions (i.e. market knowledge). Development of care solutions together with professionals within medicine, care and information technology has been a key factor in the success of the product range.

Key learning points from Vivago

- Correct and reliable technical functioning, and proof of concept, has been central to market penetration and take-up
- Success in the market requires good understanding and cooperation with health and social services that comprise the core target markets; it can take time to break into these markets.

4.1.1.2. *Just Checking*

Just Checking is a system developed by a UK company by the same name and now implemented by a number of social care providers to support dementia care in the community in UK.



Just Checking helps people to live independently in their own home. It monitors the movement of a person in their home and generates a chart of activity, on-line. Care professionals use the system for assessment and planning care. Just Checking highlights what a person is able to do for themselves in the familiarity of their own home, and the effect of care services. Families use it to 'just check' that a family member is following their usual pattern of life, without intruding or undermining their independence. It provides a real insight, so that you understand how best to offer support, and when to make social rather than 'checking' visits. Just Checking is simple to install. There are no video cameras. The system uses wireless movement sensors and the mobile phone network. You don't need broadband, just a single power socket.

Just Checking was developed as a result of talking to the families of people with dementia, who told us how much they worry about their relative who lives alone. In 2004, with a UK government R&D grant Just Checking developed and piloted this innovative system with several UK social services authorities. Now 150 of the 206 UK local authorities use Just Checking for assessment and care planning, and thousands of professionals and family users log on each day. The company is independently owned by its management team.

Key learning points from Just Checking

- Approaching informal caregivers via local authorities lowers barriers to adoption
- User interaction and pilot installations are critical development and launch activities

4.1.1.3. *Vigisense and the MyAmego system*

The MyAmego system, commecialised by Vigisense, is a new generation of intelligent assistive technology that enables service users to live as independently as possible and assists care teams in delivering quality personalised care. MyAmego offers service providers the opportunity to rethink the way they deliver care.

The system is designed specifically to support the person-centred care of people with high care needs. MyAmego manages the user's living environment, automatically notifying caregivers when service users are at risk or prompting reminders to carers for periodic tasks. The technology is remotely managed and hosted to remove the need for local technical expertise.

The MyAmego monitoring system is tailored to the needs and lifestyle of each individual (illustrated here, personnalised user sensors) allowing him more freedom to do as he pleases without unnecessary intervention. Identified risks, location and mobility targets, specific requirements and task reminders (such as fresh air, expected locations, schedules etc.) are easily added to the securely protected online interface for each individual user.

MyAmego is used by local authorities, private care homes and large care provision groups throughout the UK, Switzerland and Italy, helping bring a new approach to assisted living, sheltered housing, extra care and communal settings such as care and nursing homes.
With MyAmego's comprehensive set of features, alerts and reports, caregivers are able to monitor and understand better many aspects of the provision of care, including:

Care Situation	MyAmego Feature
A service user's mobility increases or decreases over a period of time	Mobility Analysis
A service user does not visit a required location within a set period of time	Required Locations
The caregivers needs handy, timely reminders for tasks to be carried out	Task Reminders
A service user enters a zone of risk	Location Analysis
A service user stays in a location for too long	Location Time Limits

MyAmego is used by local authorities, private care homes and large care provision groups throughout the UK, Switzerland and Italy, helping bring a new approach to assisted living, sheltered housing, extra care and communal settings such as care and nursing homes.

Key learning points from the MyAmego system

- Prepare the system to be as playful and personal as possible
- The time to educate the market to new, smart features is long

4.1.2. Cognitively impaired people on the move

Numerous systems populate this segment of the telecare market. Most of these are "dumb" GPS-based location tracking systems. They notify a list of preselected carers as soon as they leave their "safe zone", usually defined by a certain radius around their home. There is little innovatiion in this field.
As exemples of such services:

- **Securafone**
- **Doro,** who just signed a partnership with Bosch's call centres
- **CareWhere UK**
- **the VESAG Advanced Health Watch**

4.1.2.1. *Securafone*

SecuraFone Health includes tracking with GPS and allows around the clock monitoring of activity, body position and vitals. The app can be used to trigger alerts to a 24/7 monitoring service, emergency services, or a person that has already been designated in the app. Alerts can also be manually triggered by holding an SOS button on the main screen. One of the main markets for SecuraFone health is the elderly population.GPS location and speed monitoring functionality can be used to monitor children and patients with dementia. The data is stored in a cloud-based system to which the user can designate who has access. Access allows users to track historical data up to 90 days old.

In addition, the app can be used to monitor patients with any condition that can lead to a medical emergency indicated by a change in vitals . The data is received from a small sensor placed on the chest that communicates via low power Bluetooth. It measures heart rate, respiratory rate, skin temperature, body position, and activity. For any of the vitals, limits can be set. When these limits are crossed, customized notifications are triggered. Notifications can go to emergency services, healthcare providers, caretakers, and anybody else that is designated to research a notification (presumably loved ones). Notifications are sent by email and/or text message and there is no limit to the number of people that receive them.

Analysts say that at $8.95 a month, SecuraFone is less expensive than other monitoring apps. They believe the company will begin to generate more revenue from its app business than its current hardware business, which has largely been for the medically ill or the elderly.

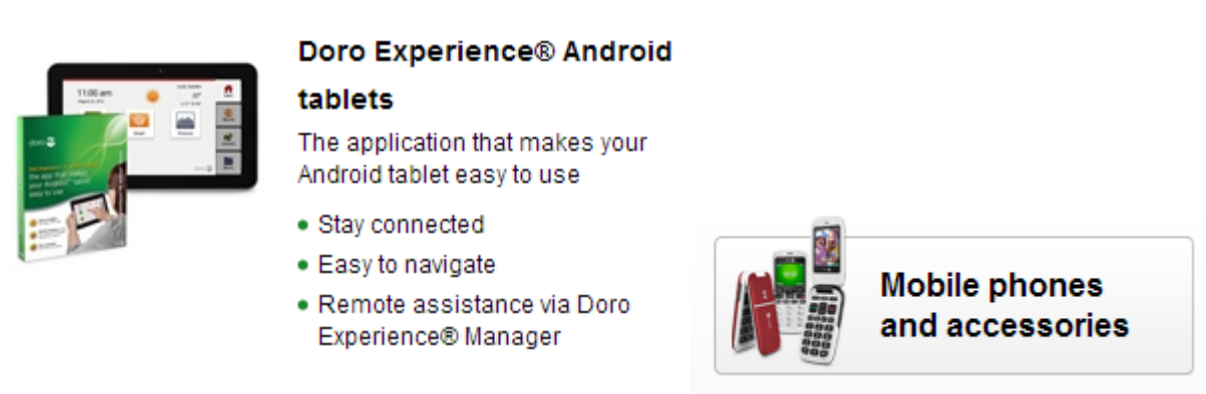
Key learning points from Securafone

- Critical to engage a conversation between caregivers and user about the objective and the scope of use of the system
- Priced at a reasonable level, the subscription model can generate a lot of appeal and increase revenues compared to one-off charges or even hardware revenues model

4.1.2.2. *Doro*

The Swedish phone handset company Doro has been growing in the telecare/telehealth market in Europe for some years. It regularly shows new products at the annual MEDICA conference, like:

- The Doro Secure 680, a mobile phone with GPS
- The Doro Secure 211, an M2M gateway, receiving alarms signals from alarm pendant including a fall detection option
- A smartphone, Doro Secure 740
- and new, ergonomic environments:



In November 2012, Bosch Healthcare has chosen Doro as a partner for its mobile TeleCare offering. Bosch is going to integrate into its portfolio both the Doro Secure® 680, a clamshell feature phone with GPS, and the new 3G smartphone with GPS Doro Secure® 740 dedicated to TeleCare, integrating a special application relaying an alarm to the receiving centers of

Bosch's customers. This new TeleCare offer will be commercialized by Bosch Healthcare in Germany, Switzerland and progressively to the rest of Europe from the beginning of 2013.

The devices use Doro Secure® protocols either based on SMS messaging or IP transmission. The Doro Secure protocols allow the phone to send an alarm or information message to an alarm-receiving center. The information that is sent together with the alarm can be easily integrated and processed by the call management system. The operator in the receiving center can monitor if the phone is active, if its battery is loaded and where the user is when he/she triggers the alarm.

Key learning points from Doro

- When involved in the hardware, the product design must ensure that failure modes are monitored and reported.
- A powerful expansion model can be to convince a major multinationals to endorse and commercialise less well-known companies' products.

4.1.2.3. *CareWhere UK*

Established in 2006, CareWhere UK takes complex GPS location and communication technology and create practical, easy to use solutions for everyday life, delivered to phones or computers. The company did not start with a GPS tracking box to sell, but created its own technology, systems and consumer products based on what was required or asked. International patents have been filed for various aspects of the hardware and system.

CareWhere products deliver the following:

- Location, monitoring and live tracking data directly to a mobile phone and computer.
- Notification that the device has been activated by the carer or user.
- Alerts that a device has left or arrived at safe areas.
- Extended battery life enabling typical recharging only once a week.
- Practical, comfortable and portable, but robust and waterproof.
- Emergency location alerts.

The CareWhere GPS monitors consist of a safety belt and a portable monitor. They are non-intrusive and simple to use. They provide location and personal alarm solutions for vulnerable people.

The company claims that its systems are unique because they put complete control in the hands of the carers. They will be able to find the wearer within seconds on their mobile phone or computer, without any involvement from a call centre. The belt is able to tell the carer whether it is on or undone, providing absolute certainty that the wearer has it with them.

Principles of the service:

A. By phone:
    1 Send a text to the CareWhere safety belt of monitor
    2 The answer contains an internet link; open this to get the location
    3 The phone opens the mapping application and shows where the wearer is
B. On a computer:
    1 Login to the CareWhere page
    2 Send a location request
    3 View the location and monitor the device as necessary

Key learning points from CareWhere

- At point of use, simplicity is key: no more than 1 or 2 manipulation when used in real-life situation
- Leaving control of the configuration to close ones has its advantages

4.1.2.4. *VESAG Advanced Health Watch*

This device works as a portable wireless hub, and can be worn as a watch or pendant. It has built-in GPS functionality to track the location, and medicine/task reminders can be set from the web portal. It auto detects falls and alerts the call center so that immediate help can be provided. In conjunction with other medical devices, this unit can monitor 17 different health parameters, which can be analyzed by a customer or doctor to take precautionary measures (Remote Health Monitoring - mHealth). Red (SOS) and Green (Call Center) buttons can be used to have a 2 way conversation with emergency Personnel during emergency (Mobile Personal Emergency Response System - MPERS). One watch can be used by the entire family by feeding the subscriber id. Doctors can use the watch for various notifications. Since recently, the watch can also be used to monitor/record approximate calories burnt and distance travelled during daily outdoor walk.

Key learning points from VESAG

- A great device is nothing without specific user-oriented services designed around it.

4.1.3. Other solutions for mobile elderly

Other initiatives are currently underway to enable a higher quality mobility and more independence when out and about for elderly people or people with cognitive impairments. They are not directly looking at prevention of wandering, at detection of risk, or calls for help in the outdoors, but they have been designed with the same target as MyGuardian in mind. MyGuardian may consider partnering with such solutions to provide the user a more holistic experience.

4.1.3.1. *WayFis*

The innovation of WayFiS is the development of a personalized way finding service for elderly people (considering both public transport and paths by foot) focused on the objective of making the elderly feel healthy-well and safe (not technology centered) and that takes into account their specific limitations and healthy habits, with the challenge of aggregating a huge amount of information from different sources and including them into one mobile service with an intuitive interface (voice-touch-write).

WayFiS is the first route planning service for elderly people that considers both the pedestrian and public transportation mobility issues. It is currently under development under the auspices of AAL-3. WayFiS seems to have a good chance to be the first commercial navigation tool specifically designed for elderly people.

4.1.4. Comparisons of competitor's services

	Vivago	Just Checking	MyAmego	Securafone	Doro	CareWhere	VESAG	MyGuardian
Monitoring and assistance								
Vital signs monitoring	Y	N	N	Y	N	N	Y	N
Position monitoring - Indoors	N	Y	Y	N	N	N	N	N
Position monitoring - Outdoors	N	N	N	Y	N	Y	Y	Y
Radius-based anti-wandering	N	N	Y	Y	N	Y	Y	Y
Behaviour monitoring	Y	Y	Y	N	N	N	N	Y
Care monitoring	N	Y	Y	N	N	N	N	Y
Manual call for assistance	Y	N	Y	Y	Y	N	Y	Y
Contextual call direction	N	N	Y	N	N	N	N	Y
Rich communication between mobile seniors and caregivers								
Suitable for mobile senior	N	N	N	Y	Y	Y	Y	Y
Asynchronous reassurance information	N	N	Y	N	N	Y	N	Y
Tags with contextual information	N	N	Y	N	N	N	N	Y
Reporting of psychological state	Y	N	N	N	N	N	N	Y
Voice communication	N	N	N	Y	Y	N	Y	Y
Enabling coordination between caregivers								
Smooth distribution of care tasks	N	N	Y	N	N	N	N	Y
Coordination of caregivers	N	N	Y	N	N	N	N	Y
Other key technological innovations								
Light on equipment	Y	N	Y	Y	Y	Y	Y	Y
Contextual information generation	N	N	Y	Y	N	N	Y	Y
Cascading, personnalised assistance	Y	N	Y	N	N	N	N	Y
Use of social networking mechanisms	N	N	N	N	N	N	N	Y

Table 2 - Comparison of existing services and MyGuardian functionalities

4.1.5. Summary of learning points from the experience of the sector

- Correct and reliable technical functioning, and proof of concept, has been central to market penetration and take-up
- Success in the market requires good understanding and cooperation with health and social services that comprise the core target markets; it can take time to break into these markets.
- Approaching informal caregivers via local authorities lowers barriers to adoption
- User interaction and pilot installations are critical development and launch activities
- Prepare the system to be as playful and personal as possible
- The time to educate the market to new, smart features is long
- Critical to engage a conversation between caregivers and user about the objective and the scope of use of the system
- Priced at a reasonable level, the subscription model can generate a lot of appeal and increase revenues compared to one-off charges or even hardware revenues model
- When involved in the hardware, the product design must ensure that failure modes are monitored and reported.
- A powerful expansion model can be to convince a major multinationals to endorse and commercialise less well-known companies' products.
- At point of use, simplicity is key: no more than 1 or 2 manipulation when used in real-life situation
- Leaving control of the configuration to close ones has its advantages
- A great device is nothing without specific user-oriented services designed around it.

4.2. Revenue models and pricing practices

When launching products in Telecare, prices and payment schedules are critical. Target decision makers involve the elderly themselves, informal caregivers, and care providing organisations, financed or mandated by care payers. Budgets of the elderly and of care payers are notoriously stretched.

After extensive research, and from real-life sector experience, it is confirmed that the vast majority of the telecare services are delivered against upfront payments for the hardware and subscriptions with monthly / quarterly / annual payment schedules for the on-going service. Very often these recurrent charges help finance components of the technology solutions like mobile data connections, central hosting, licence for the software for the period. 2 facts contribute to the popularity of these revenue models:

- The user easily understands the 2 distinct aspects of the Telecare solutions: equipment + connection, hosting or software services.

- The user is already very familiar with a very similar revenue model: the mobile phone commercial eco-system

In terms of scale of prices, acquiring the hardware is most often a matter of hundreds of Euros, Dollars or Swiss Franc, while monthly subscription are 2 digit figures.

In response to market feedback, manufacturers are starting to develop approaches to make it easy on the cash flow. More recently, they have started introducing rental options for the hardware.

For example:

4.2.1. CareWhere UK:

Product:	Description:	Qty	Total	Select
CareWhere Personal Monitor	£199.99 then just £9.99 per month	1	£199.99	Select
*Please contact CareWhere for other options including premium roaming devices suitable for locations with poor phone signal or for frequent use in Europe				

Figure 1. CareWhere UK subscription model

and the rental format:

Product:	Rental Rate:	Qty	Total	Select
CareWhere Portable Monitor	£35 per month for 6 months (minimum) and then £25 per month.	1	£210.00	Select

Figure 2. CareWhere UK rental model

4.2.2. Just Checking

Buy and rent options, highlighting in its commercial documentation the all-important quote for the first lump sum payment.

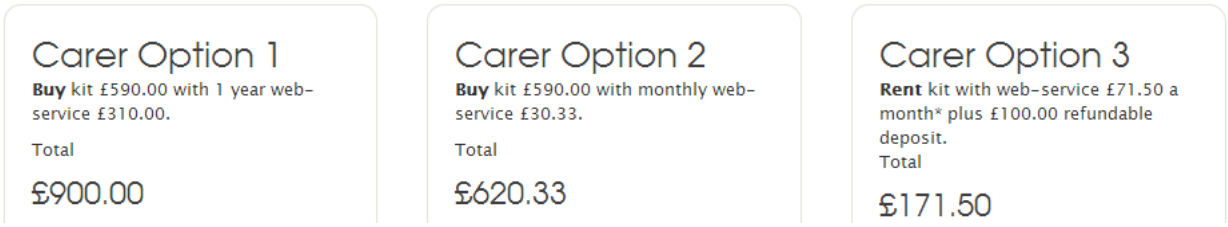


Figure 3. Just Checking revenue models

4.2.3. Learning point

This leads us to believe that a subscription model would receive the optimum acceptance. And when selling to local authorities or directly to families, rental can make the purchase decision easier, especially in cash-strapped economies or customer segments.

5. Conclusions

The objective of our analysis here was to firm up our perceptions of a large need in the market and outline in more details a business landscape for it. We have explored very concrete aspects of the sector and challenges ahead.

The market volume figures were not readily available and we had to develop our own algorithm to reach a fair estimate of the size of the target. We are satisfied that the intended service of MyGuardian will reach a large enough audience to make it a viable business opportunity.

We have clearly established that MyGuardian is a superior solution, intended to deliver more than a straight location-based service (like existing GPS-based anti-wandering or location reporting technologies). At its core, it will deliver behaviour-based alarms and contextual reporting, and this makes it unique in the market. Our analysis has taken into account the 2 prominent technology streams for dependent elderly: the current location-based services for the outdoors, and the current behaviour-based services for the indoors.

The MyGuardian project aims for a product or service that facilitates safe and secure mobility of seniors with mild cognitive impairments. Not only seniors, but also caregivers (whether formal or informal) are likely to be users of this future product or service. Therefore, this market analysis explores when appropriate the drivers and inhibitors of the wider audience for the solution. We have established that, very often, the complexity of the caregiver issues were undervalued by the existing solutions. Not by MyGuardian.

The business partners in our consortium will be happy to read revenue models and price benchmarks in this report. We now have these as reality checks in putting together the products and technologies to bring MyGuardian to life.

Market analysis reports in the context of innovative solutions have the duty to approach the issues from a broader perspective. Restricting the view to existing players and segmentation would inhibit initiative and corner the future business plan in a me-too pattern. Therefore, in addition to the usual topics, this report will also explore critical issues like:

For these reasons and more, while being fully aware of the commitment and investments required to bring such innovations to the market, we are optimistic about the perspectives of MyGuardian in the European markets.

6. ANNEX - Further Country Analysis. Netherlands, France

Extracts from: "ICT & Ageing European Study on Users, Markets and Technologies, Final Report Jan 2010. Report prepared by Empirica and WRC on behalf of the European Commission, Directorate General for Information Society and Media".

6.1. The Netherlands

6.1.1. Social alarms

Social alarm services are provided across the whole country and are provided to both older people in supported housing and ordinary housing. The main drivers and providers of social alarms in the Netherlands have been the municipalities and their organisations for well-being and welfare as well as the home care organisations. Take-up of social alarm services in the Netherlands is estimated at 3% of the population aged 65+.

Once a call has been received by the call centre, the service response is provided by either the family carer or by a professional home care organisation (either public or commercial). If there is no family carer available, a person may choose for immediate follow up by a professional care worker. In the latter case, the monthly subscription fee will be higher.
Social alarms have for many years already been an important element of homecare and independent living in the country. In recent years new functions, such as safety, comfort, access control etc. have been added to the basic social alarm systems. With this social alarm systems have been given even more importance.
To date the main focus of social alarm provision is on service quality improvement and enabling independent living. Cost reduction within the national system for long-term care has not yet become a focus of service development.
The main role given to social alarm services in the Netherlands is preventative in the sense that they help prevent older people entering institutional care. Social alarms also serve the purpose of preventing a situation worsening after a fall. It appears, however, that most older people accept social alarm systems only after they themselves or someone close to them has experienced an urgent situation in which the device was or would have been of great help. In this sense, up-take in practice is still more reactive then preventative.

6.1.2. More advanced Telecare

Telecare is mainly provided in pilot and trial activities. Take-up of telecare services is estimated to be below 1% of the population aged 65+. Actual numbers on screen-to-screen installations in pilots/trials are not available. A rough estimate, based on figures provided by some of the leading companies involved, would arrive at approximately 1,000 users in total.

Concerning reimbursement, homecare products available on the Dutch market can be divided into two different groups:
• official home aid products which are available through the social security system;
• commercial products which can be purchased at a person's own expense from normal shops or other providers.

The reimbursable/partly reimbursable products and those that are only available for borrow are listed in Hulpmiddelen Ziekenfondswet (TEKES 2002). Projects with add-ons to social alarms

are still in pilot phases in order to find out cost benefits. If implemented, end-users would not be charged extra for telecare services as far as add-ons to social alarm systems are concerned.
Otherwise there are extra eligibility criteria, which are assessed by the professional care workers and the home physician. These criteria include showing the clear benefit for replacing home visits of professional care workers.

6.1.3. Smart homes

There is a high level of activity in the area of smart homes and assistive technologies for home care and independent living in the country. Many applications which are being piloted are targeted at people who need some assistance and care in their own home.
Dutch policy shows a strong commitment to the goal of keeping older people out of residential and nursing homes for as long as possible. A recent indication for this is the temporary financial support which is being provided to pay for required extra equipment.

A variety of types of technology solutions are eligible for funding:
- personal alarm systems, including systems that need to be actively triggered by the client and systems automatically triggering an alarm in case of an emergency as well as dedicated fire alarm systems;
- systems enabling teleconsultations and remote monitoring, including video-based systems requiring a broadband connection and systems enabling remote access to care records by professional staff and/or clients;
- home automation systems directed toward enabling the older person to control the immediate home environment such as automatic door opening systems, intercoms and control systems relating to home appliances;
- systems enabling access to on-demand support in relation to activities of daily living such as meals on wheels and home care as well as social integration;
- IT systems supporting human resource planning, logistics and general administrative functions concerning health/care related service provision;
- assistive devices such as large button panels for people with dexterity problems and large screens for people with visual restrictions.

Smart home systems are now available across the whole country. By the end of 2007 some 40,000 homes had been equipped with smart home and telecare technology. It is estimated that this number will have increased by at least 25,000 annually since then, which means that about 5% of the population aged 65+ lives in houses with smart home or telecare technology.
Prominent pilots and trials of advanced smart home systems include HomeLab in Eindhoven, Smart Homes, and Living Tomorrow.

6.1.4. Reimbursement

Charging practices in relation to social alarms differ in various regions and municipalities. Minimum costs for end users are generally around €12 – €13 a month. This price includes free of charge installation and maintenance of the social alarm system and follow-up by a professional call-centre. For extra follow-up by a professional care worker, instead of first-follow up by a family carer, one has to pay extra monthly fees of up to €25 a month.
In the case of applying for publicly funded social alarms one will have to have their needs assessed and their personal circumstances taken into account before they will receive their publicly funded alarm.

People need to be assessed as in need of care before they can receive a social alarm device. The normal process is that a person has to apply to the local (or regional) Home Care Organisation, a GP or a community social service centre.
Since 2009, care organisations on request can receive reimbursement of extra costs for smart home technology, as long as expenses are within the total given budget for new housing. The scheme is expected to act as a strong push for market development. Many housing

organisations now build part of their apartments especially equipped for older residents, including smart home applications.

6.1.5. Drivers and barriers

Social alarms are in widespread use and also widely known about in the Netherlands. There is no stated policy on increasing the diffusion of social alarms. The same applies to telecare as far as add-ons to social alarm systems are concerned.
This is an indication that current policy-making on long-term care puts much emphasis on prevention, e.g. by postponing residential and nursing home care. The main facilitators for telecare applications which are added onto existing social alarm systems are the availability of technical solutions from the established social alarm system providers, and the fact that older people are increasingly concerned about their safety and security.

The following factors have been highlighted as important barriers to the development of social alarm and advanced telecare services:
• The stigma of a personal safety alarm (wearing a necklace with a button or a wrist band with a button indicates vulnerability);
• Fear of embarrassment in case the emergency button is pushed accidentally;
• Not knowing where to go in order to get such a system;
• The perceived long time that it takes to get some reimbursement for such a system;
• The high costs for secured xDSL lines which are required by providers of screen-to-screen services in order to guarantee 100% reliability.
Other key challenges to market development include:
• As more and more features are added to social alarm systems, organisation of the response becomes increasingly complex. In the current situation there is the risk that social alarm call centres may not be properly prepared to handle intrusion/smoke alarms while security call centres may not be properly prepared to handle social alarms.
• Add-ons to social alarms often require advanced installation skills, which the organisations hich today implement social alarm systems typically do not possess. This means that delivery channels may have to be reconsidered.

6.1.6. Take-up

Take-up of social alarm systems is expected to further increase in the foreseeable future due to the ageing of the Dutch society and the fact that new functions have been added to social alarm systems (safety, comfort, access control, etc), making the systems more attractive to potential users.
As regards smart homes, the reimbursement scheme mentioned earlier is expected to be a strong driver. This emerged from a number of policy initiatives in recent years. The Ministry of Housing, Spatial Planning and the Environment and the Ministry of Health, Welfare and Sport have jointly stimulated the implementation ‘domotics’ - technology in the home that enables people to continue to live independently for longer – through dedicated funds between 2003 and 2006. Also, the living and care action plan that had been submitted to the Lower House in July 2004 stated that housing corporations would have a responsibility to invest in this technology. Beyond this, the Ministry of Health, Welfare and Sport Studies funded studies on the impacts of domotics specifically geared towards the needs of people demanding a great deal of care such as people suffering from dementia.
Jointly, these policy efforts triggered a large amount of experimental activities concerning the introduction of smart home solutions and ICT enabled service delivery into the homes of older people across the country. Throughout this experimental phase a great deal of experience was gained by the various actor groupings involved, e.g. housing organisations, care services and technology providers. This phase was followed by a dedicated policy effort directed towards mainstreaming domotics in relation to serviced housing stock that was newly to be developed. The funding instruments mentioned above were an important part of this.

6.1.7. Laws and regulations

In the field of law and regulation, little is defined on E-health and home automation. However, in the Dutch literature on E-health and home automation some contributions on this theme can be found. Current regulations have little flexibility. The legislation is not set on innovative concepts. This is partly reflected by the fact that the legislation lags behind technological capabilities and also ignores the joining of sectors governed by different rules.

6.2. France

6.2.1. Current situation

Telecare

Social alarms

Today, social alarms are available in many but not all parts of France. It is estimated that such a service is used by about 3% of the population aged 65 and above. The service is usually provided by the counties or municipalities, whereby service operation tends to be subcontracted to local fire services, commercial service providers or non-profit organisations. The Association of Teleassistance (AFRATA) estimates that 28 out of 100 county councils supply social alarm services to older people. Social alarms are available to older people living in their own homes and also to people living in various forms of sheltered/supported housing arrangements. As regards service operation, three large players and a number of smaller players seem to be active on the market.

More advanced Telecare

More advanced telecare systems that go beyond simple push-button alarms seem to have been mainstreamed to some extent under current alarm schemes. However, there are currently no figures available on actual uptake in terms of the number of end users involved. The main market players have joined together within AFRATA with a view to developing quality standards and supporting wider service uptake. Telecare services seem to be mainly provided on the basis of the social alarm infrastructure provided at the county/municipal level. It is estimated that up to 50% of social alarm subscribers may currently be served with more advanced telecare solutions.

Home telehealth

Telehealth services seem to have mainly been implemented in pilot settings as of today. A number of pilot implementations have emerged with funding under various national programmes. Where the focus is on services directed towards older people in particular, it seems that concepts that combine both telehealth and telecare have received increasing attention.

More recent telehealth trials with relevance to older people that have been identified so far include:

- H2AD: This is a pilot service platform involving both telecare and medical assistance in case of an emergency. This service is provided by a private company on a 24hr basis. In the case of a medical emergency a physician will deal with the follow-up.
- Telemedom is a pilot trial involving telemedicine and telehealth research which includes ECG and fall detection.
- The Gardien Project: Another pilot trial including both telecare and telehealth is run by Grenoble Geriatric Hospital, involving 50 Alzheimer patients.

- TLEMD GIP RTR Midi Pyrenees: A pilot project involving a large number of actors, e.g. regional authorities, private clinics and sheltered housing facilities, that includes various applications such as telecommuting, teletraining and telecare
- Teleregia: A pilot project involving various actors, e.g. Paris social services, caring homes and hospitals, that includes applications such as teleconsulting, tele-follow-up and teletraining.
- Ailisa: This is a research project involving the development of sensors for health data transmission and the monitoring of movement, falls etc.

Smart homes

A number of piloting and trial activities have been identified in the smart home domain. It is estimated that up to 200 end users may be involved in schemes that are currently in operation. On the supply side, various players seem to be involved such as housing organisations, private companies as well as counties and municipalities. Wider mainstreaming has however yet still to occur.

Pilot activities that have been identified include:

- Vill'age: This is a real estate project located in Alsace. The scheme includes implementation of 'domotic' (smart home) systems and telehealth service provision into the home.
- Maison Intelligente: this is a research pilot run by the handicom research team of institute telecom and Garches Hospital. It involves the development of generic tools, domotic distant control and a telecare test platform
- ADIAM: this is pilot project run by a Jewish non-profit organisation. It involved the development of a smart home environment (domotics) for the support of older disabled persons).

6.2.2. Reimbursement

In relation to **social alarms**, charging principles and practices seem to vary quite a lot across counties and municipalities. According AFRATA, a national umbrella group of service providers, the average monthly cost for the service is at a level of 25 Euro. In some cases the basic alarm transmission equipment may be charged at about 50 Euros. Reimbursement through social schemes may include a certain proportion of the monthly service fees (e.g. 50% in some counties), and in some territories the service seems to be available free of charge. For persons who are eligible to receive social benefits service costs may be reimbursed.

When it comes to **telecare**, i.e. services that go beyond simple push button alarms, end user costs seem again to vary quite a lot across the country as service provision tends to build of the given social alarm infrastructure. End users may be charged a somewhat higher monthly service fee (e.g. a level of 38 Euro as has been reported). As in the case of social alarms, reimbursement under social schemes may however be available under certain eligibility criteria.

In relation to **telehealth** there seems to be no common funding/reimbursement model for mainstream service provision. The evidence currently available suggest that trials and pilot implementations seem to be funded by the main players involved such as public hospitals and regional authorities. These may however rely upon public funding available under different government programmes.

If telehealth is to become mainstreamed the reimbursement will need to fit within the overall framework operating in the French healthcare system. In France, the main funding is through the public health insurance system and providers are reimbursed on a fee-per-service basis. Rates for providers for different procedures are for the most part centrally agreed, as are the levels of co-payment that users must make. The percentage that is to be paid by the patient

(ticket modérateur) and not reimbursed by the Sécurité sociale varies depending on the type of service and there may be no co-payment required in case of various chronic conditions or long-term care situations.

In the field of smart homes with emphasis on independent living of older people, beyond funding of trials and pilot activities, there seems to be no general funding/reimbursement practice in relation to mainstream implementations.

6.2.3. Drivers and barriers

Although **social alarms** seem to have been mainstreamed in principle, actual uptake has remained rather low up to now (at about 3% of people aged 65 and over) when compared with other countries such as the UK, Ireland and the Nordic countries. Public provision through the counties and municipalities seems to have been the main driving force behind service deployment so far, and social alarms do not seem to have become a priority issue for all counties in their approach to care provision in the community. Were social alarms are generally available, public funding and reimbursement, e.g. under the social benefits schemes, seems to have acted as a facilitator in relation to actual uptake. However, geographic variability of funding/reimbursement practices and lacking information on these on the part of the end users have been reported as barriers for many potential users. Also, it has been suggested the service may be considered by many potential end user as being stigmatising.

In relation to **telecare** applications that go beyond simple push-button alarms, in principle the same aspects are relevant. However, there seems to be a general policy consensus that ICT holds considerable potential to support independent living of older people. The National Alzheimer Plan, for instance, highlights the need to develop ICT applications in order to maintain personal autonomy, quality of life and well being at home for people with dementia and support their informal carers; also for people with dementia in caring homes. The Association of Teleassistance (AFRATA), an umbrella organisation of the main market players in the social alarm and telecare arena, has estimated the potential market growth at about 10% over the next three years, provided that a number of key barriers can be overcome such as clarification/simplification of public funding/reimbursement practices, awareness-raising and capacity-building among end users and carers, establishment of common quality criteria and scientific assessment of quality/cost ratio as well as more efficient assessment procedures concerning eligibility of end users to receive financial support.

Despite considerable experimentation with **home telehealth** applications, mainstreaming into day-to-day health care practice has yet to occur. Telehealth services do not seem to have found their way into current health care funding regimes, nor do they seem to be provided to self-purchasers to a noticeable extent. Specific barriers are difficult to isolate. However it has been reported that the “value case” and the “business case” for home telehealth do not seem to have become clear from the trials that have been conducted to date, and this seems to have acted as a barrier towards mainstreaming. Also, it has been suggested that administrative aspects of the health system may not yet be well-attuned to the mainstreaming of home telehealth in the healthcare system.

Finally, ethical issues do not seem to have acted as a major barrier up to now. Existing regulations administered by a dedicated authority (CNIL) provide a framework for data protection in case recording of personal data is involved.