Businesscase and Proposal Pantein Telecare:
Longer Independent at Home

Principal:
Pantein Steering Group Home Automation and Telecare

Subject:
Home Automation program: Longer Independent at Home

Version:
This is a version of the Pantein Business case for Home Automation and Telecare, translated and written for the TCares project in the People framework. No legal obligations can be derived from this document.

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Imagine:
a window to the world outside...?
"the Prinses Irenelaan, that is where she lives, Nel de Vries, a nice lady of 73 years old, who is very much appreciated by everyone. Her grandchildren like to visit her and also her neighbors drop in regularly for a nice cup of coffee and a chat. Nel lives independent and still does her own housekeeping. She cooks, washes her clothes, buys her groceries, plays cards with her friends and she even cleans the windows by herself. On Saturdays she goes to town with her friend to visit the market and buy some fresh vegetables and occasionally a tasty fried fish. Nel never has a boring moment and she is happy to be so self supporting.

However lately she is becoming aware of her age. Since her husband passed away, she doesn't feel so secure in her home anymore. She has looked at several options but for a supported living apartment she feels much to vital and for a residence for elderly she feels much to young. Either way will require moving and the risk of losing contact with the neighborhood she likes so much. Still at times Nel feels afraid to be alone in her house. She feels like she shouldn't make a fuzz, but what if she was to fall and hurt herself? How fast would someone find her? And will the be able to get into the house? Or what if a fire breaks out? Who will know?

.....would there be a solution to help Nel stay in her own comfortable environment....?

Possibilities
The example above depicts a situation in which a lot of elderly find themselves. They want to live independently in their own home. Because of fear, social exclusion, physical burdens, old age, or illness, they are forced to move to an elderly home or supported living apartment. But there are also many new technologies and possibilities to prevent the need of moving or being admissioned to a residential care home. This technology offers elderly a lot of safety, comfort and contacts as well as possibilities for care and support.
That is the function of PAL4, the Personal Assistant 4 Life. PAL4 opens a window to the outside world and brings opportunities for contact, living welfare and care into peoples homes.

Mr. Klaassen is watching his TV. This time it is not broadcast or a TV show but a list of news from his neighborhood. "Look, I can see all activities that are being organized in my neighborhood and I can play games with people who are living around me" Mr. Klaassen points out. Then the doorbell rings. Mr. Klaassen pushes a button on his remote control en seconds later he has video contact with his grandson. "Are you doing alright grandfather?" sounds from the speakers. "You look good in that blue vest" On the TV his grandsons face is displayed.
"This way I have a daily contact with my home care nurse and also instantly if I press this alarm button" he tells. The nurse can see how I'm doing and she helps me to take the right medication."

When Mr Klaasen goes to his GP he finds PAL4 in his office too. On a big screen in the practice GP Dr. Maes and Mr Klaassen make contact with the neurologist Dr. Geraerds in the hospital. He observes Mr. Klaassen and gives immediate advice. This prevents a now unnecessary trip to hospital and the GP can explain some of the things again after the consultation with the neurologist.
With PAL4 Mr Klaassen can join the outpatient consultation of his hospital. And Mr Klaassen uses PAL4 for his exercises. Group exercises are broadcasted on PAL4 every Wednesday. This way he can stay fit and work out at home.

.....Thanks to PAL4 Mr Klaasen lives very comfortable and safe in his own home....!

Content

1. Introduction

1.1 Telecare businesscases

In Europe telecare is one of the fastest growing areas of healthcare.It has the potential to help with one of the key challenges facing health services; coping with the growth in long term conditions as European populations age over the next couple of decades. Yet, business cases for telecare prove a particular challenge because the technologies are developing quickly making evidence date quickly, its implications for service change are wide ranging making the number of stakeholder groups to be involved unusually large.

It is a policy requirement that substantial changes and significant investments are initiated using a business case. It is easy for the business case stage to feel onerous and a little unnecessary. But our research of success and failure factors shows that projects that fail often do so because the initiative was not sufficiently well defined at the beginning.
The business case simply makes the case for the investment and change. It is an explanation of how a proposed new initiative will affect the organisation and what is required to be successful. It presents the arguments and evidence for why resources should be allocated. One of the most common comments made by people after business cases have been produced is to say how useful the process was, causing people to consider deeply the changes being proposed and work through all the complexities and implications.

For telecare, at its current early stage of adoption, the business case is particularly important, as it also serves to update, educate and convince others within the organisation, who will necessarily have less experience of this area than most others that they must make decisions upon. And being new it will need new resources and funding. So it will need to compete with the many other potential investment areas that a healthcare organisation might be considering.
The fact that a business case is usually presented as a completed and polished document or presentation can be misleading. Most business cases start as early ideas with general understanding of their implications and through subsequent investigations of the details and using analyses of operational, financial and other data the case is strengthened and uncertainties and concerns are resolved. Nor is the business case completed once approved. It is important to bear in mind that during implementation, new evidence can strengthen, weaken or even invalidate a business case.

It is also easy to get overly focused on the financial outcomes within a business case such as NPV (net present value) or ROI (return on investment). The business case for telecare needs to be wider than this and address all the concerns of stakeholders with an interest in the changes.
For examples, commissioners will want to see the case for service improvements. Clinicians will be concerned that the proposals are medically safe and improve patient care. Staff will want to know the key implications for them and that change will be managed and resourced. And directors will need to be assured that all the difficulties and risks have been included and that the anticipated benefits will be realised.

It is important to consider that because telehealthcare is a relatively new field, it is easy for ideas to be proposed for which people are overly optimistic about the benefits or which have unforeseen difficulties. This is often labelled "optimism bias" and is commonly associated with new technologies. One of the best ways to overcome this bias is to try to validate that an idea is sound by referring to several sources. So if a telehealthcare proposal has support from research and there are relevant case examples that can be cited and there is local data and opinions to support it, then this reduces the risk of optimism. This triangulation of views and perspectives can also yield good sources of information for building an authoritative business case.

1.2 Pantein

Pantein and Pantein Extra provide care and home services to independent living clients and inhabitants of social housing, private homes, residential care homes and nursing homes. Pantein delivers care in all intensity levels for elderly, chronic patients and for example care for births at home (in the Netherlands 60% of the women with an uncomplicated pregnancy choose to deliver their baby at home). Pantein Extra is a membership organization that provides paying members access to a wide range of personal services and house services and price reductions on materials and health related courses. The service of Pantein and Pantein Extra match the trend of elderly living longer and independently in their own home, even when they are in need of support because of old age or poor health. This brings their mission besides providing high quality care, also to develop new services enabling their clients to maintain their social contacts, gather reliable information, and receive quick support when needed also in the area of wellbeing, comfort and housing.
Pantein wishes to start three projects to implement this mission:
- Longer Independent at Home (video communication, content, telecare for residential and home care)
- Monitoring from the Hospital (supporting chronically ill in the relationship of GP-Hospital care)
- Community for members (already started)

1.3 Community services, Social Media and Telecare

Since the arrival of internet new ways of client communication have developed for care organizations. First there were passive and later on interactive websites and web shops and of late we see the development of social media or web communities. (1.) In these platforms people who share interests, backgrounds and/or other common connections find new ways of communication between each other and their environment. Communities are very successful mainly because they enable people and organizations to communicate free from boundaries like time or place and thus create involvement in all kinds of issues.
Examples like Facebook (700 M members worldwide in April 2011, about 10% of the world population) LinkedIn (100M members) and the Dutch community Hyves (11 M members in Netherlands, 66% of the Dutch population) show how communities are a powerful platform that is promising for healthcare applications. The PAL4 platform shows this and can be integrated with concepts of telecare, screen to screen care and home automation and advanced monitoring or personal alarms.

1.4 PAL4: Personal Assistant for Life

PAL4 is a platform founded in 2006 by four care organizations and care innovator Focus Cura Ltd. The initiative was taken when projects in the field of home automation and video communication in care situations showed very little connection to the experience of the users. Smart sensors, video communication on TV, alarm systems were technology driven and the projects in which they were deployed were "empty boxes" without functions the users really needed.
On the one hand caregivers felt a need of communication tools that would prevent the need of making lots of house calls (saving time, enabling medical monitoring like medicine therapy and giving opportunities for more frequent contact with clients). On the other hand clients, especially 70+, wanted simplicity in their home electronics, wanted to play games and interact with friends and relatives and feel secure. PAL4 is the answer to these needs.

PAL4 offers services for care (like support for chronically ill), entertainment (games and prizes), contact (with family, caregivers and other participants) and local information (activities for elderly, ordering services). Through PAL4 a community of 70+ elderly remains the ability to stay in their own environment and lead a happy and social life. Thanks to the "open" character of the system more functions become available on PAL4 all the time. Developed by the PAL4 team but also by others.
Through high performance video technology is is possible to really deliver care from a distance and have good quality of communication with clients.

In 2009 PAL4 was selected as best practice for telecare from 95 applications examined by the Dutch ministry of care. PAL4 was awarded means for a wider scale implementation through her partners such as care organizations, municipalities, housing organizations and service providers.
This plan describes a business plan to realize Telecare services for clients under the Dutch special healthcare act including the availability of all equipment and touchscreens for users and the use of available resources in the Dutch Special Healthcare Act.

2. Background: Communityservices and Telecare

2.1 Background and trends

Europe is more and more confronted with (capacity)problems regarding healthcare. These problems have a direct relation to several themes that seem to be different but all reflect on the capacity and capability of care providers. The most relevant themes and trends are listed here:

- Development of supply and demand
Because of developments in the working force the number of persons aged 20-64 years old, working in healthcare remains stable or even shrinks while the number of elderly in need of care will rise significantly. (2.) Combined with the growth of number of chronically ill people (3.) ensures that all sectors of healthcare will be dealing with a growing shortage of staff and growing expenditure on health care cost (from average € 4.000 per Dutchman per year to av. € 6.300 in 2020. (4.)

- Growing intensity of care in nursing homes, care homes or in home care.
Trends like short stay care in hospitals and moving professional care from institutes to the home are a result of policy changes and autonomous developments triggered by new technologies and improved medical procedures. This trend will continue in the next years. We will continue to see an shift from hospitals to small scaled nursing homes, care homes and if possible to the home situation. This shift will also confront the residential care facilities with a larger number of clients and an intensified care demand.

- A changing patient/client
Besides demographic changes, social and cultural changes such as a growing diversity and individualization and changes in mobility will play an important role. (5.) The patient will be financially involved in the care process. New information sources like internet emerge. This means clients have access to more knowledge. This trend is combined with a growing wish of individuals to receive the care in their own home, from people they know and trust.

- Growing number of chronically ill
We expect to see a growth in the number of people with chronic diseases and also in the part of the total care consumption they represent. Until the year 2020 we expect the "big three" to grow with a percentage of 43% (hart failure), 36% (diabetes) en 40% COPD compared to the year 2000. Also for dementia a comparable growth of 41% is expected (6.)
Co-morbidity and a growing number of diseases with a chronic character (like cancer) plays an important role. This care will be given mostly in the first line, for example in home care. (7.)

- Developments in medical technology and ICT.
The medical-technological and pharmacological developments are making cure much more refined and care much more complex, resulting in a greater dependence on technology. In the long run technologies like nanotechnology, stem cell and biotechnology will further complicate this. Elderly care and chronic care will become more complex.

- Market dynamics in healthcare
Keywords for a changing structure and market approach of care are decentralization, downsizing and deregulation. Institutions must establish themselves based on quality, service and / or accessibility. This may be done by price and quality of services. Innovative technology can directly influence this. Market dynamics also implies more luxurious forms of care, which stresses out the importance of a focus on quality.

2.2 A growing importance of innovative technology and internet in healthcare

The current problems in production capacity are being caused by both the demand and supply-side. This means that solutions must be sought on both sides. So not only in changing the structure of supply, but also with the consumer, whether or not accompanied by new forms of

supply. Additionally, the capacity shortages not only apply to the professional care, but are also manifesting in the availability of informal carers. Informal carers are declining in numbers due to changing social structures in our society. New Dutch legislation (WMO-act) lays responsibility for encouraging and supporting informal care with the municipalities. The effects of this new approach are still uncertain. (8.) So we need to look for new solutions to be able to provide sufficient healthcare. Solutions must be found in reducing the workload, increasing efficiency and substituting labor with technology. Key to this are new technologies such as internet and broadband infrastructures which make it possible to provide telecare to people in their own trusted environment, stimulating self-efficacy of elderly. This way we can reduce cost while maintaining a high quality of care.

The health consumers and especially the elderly are using the internet to promote their self efficacy. Finding health-related information has entered the top 10 of activities undertaken on computers in the Netherlands. Most insurers are responding to this development by offering and developing self-care and prevention programs on their websites.

And what's the government doing about it?
Applying ICT is becoming a government priority as well. They also see ICT as an important tool to contribute to the problem of capacity that is confronting Dutch healthcare. Several research reports (9.) show telecare and E-health to be promising areas where technology can contribute to a higher quality or better efficiency in healthcare. Led by these findings the Dutch Care Authority (NZa) announced that she would continue current (temporary) policy rules for telecare until January 2012 and come with a new permanent policy to continue this new form of healthcare after that. The production of telecare can be contracted in the Dutch Healthcare Act (AWBZ) and in the new Diagnose-Treatment Combinations (DBC's) in the Dutch health insurance Act (ZVW).

2.3 Chances for Pantein

Telecare can help Pantein to improve the efficiency and the quality and accessibility of care. For example with (tele)care programs for chronic patients and for prevention. Still, the possibilities of internet go beyond that. Social networking and community services are good ways to promote self efficacy of patients and support informal carers. At the same time it is a good way to bind your clients to the organization, it becomes a powerful CRM tool. With the new competitive market strategy the Dutch government is promoting it becomes vital to maintain good relationships with your customers.

PAL4 has a strategic value for Pantein as well. Through PAL4 and her community Pantein can form alliances with other parties such as the municipality, the housing association, commercial partners and partners from the care chain, who can also supply their services through the system. Telecare as a new product is also a new source of income for Pantein.

Telecare
- new product & revenues
- improving efficiency

Informal carer support
- customer satisfaction
- improving efficiency

Service and information
- extra revenues
- supporting CRM

Welfare support
- substituting care with wellbeing
- prevention

Binding strategic partners
- strengthening market position
- more services for clients

3. PAL4 & Focus Cura

3.1 Background

In recent years, a lot of projects have been started to determine the effect of technology like telecare and home automation on the self efficacy of people, helping them to stay at home for longer. Most of these projects are about technology, where they should be about people, clients and the service they need. In 2006 Focus Cura decided to change this approach, together with four healthcare providers. They started PAL4, a content based platform to give home automation a face by developing content and making it widely available. After piloting and finding the right partners PAL4 is now being introduced to a wider audience. Now more than 35 organizations are supporting PAL4 and hundreds of people are using it on a daily basis.
By the end of 2009 the Healthcare Innovation Platform (Ministry of health) selected PAL4 for a wider upscaling to tens of thousands users. Because of this PAL4 is on it's way of becoming the standard for telecare in the Netherlands.

3.2 About PAL4

PAL4 is an independent organisation that has a Joint Venture with over 35 care providers. PAL4 has a not for profit goal. It's mssion is to make this concept widely available, in a co-creating relationship with her customers. To achieve this, there is a quarterly meeting of a content group where experiences and priorities for the development are being exchanged. PAL4 commits itself to invest in the development according to these priorities.

PAL4 is also a part of the Focus Cura organization (www.focuscura.nl) which has vast experience in healthcare technology. Focus Cura is an all round project- en installation company for technology in housing, welfare and care. With 80 highly trained professionals, managing over 65.000 telecare systems for housing organisations and care providers all over the Netherlands. Their board of recommendation and advisory board has leading scientists and decision makers and a long list of reference projects make Focus Cura a leading innovator in healthcare. The knowledge and capacity (24/7 repair service) of Focus Cura is deployed to support PAL4.

3.3 Open, scalable and proven technology

PAL4 consists of a central database, central control room server and internet platform to unlock a variety of services. PAL4 is visualized through a TV, touchscreen of PC in peoples homes. Through a simple, graphic menu structure several function can be used such as video communication with family and friends, neighbors and carers and an extensive Personal Assistent. This Personal Assistent has content like games, neighborhood news, activities and the PAL4-today editorial office that provides news service on a daily basis. This content can be completed by the care providers, supported by the editorial office to keep things up to date. The video technology is developed in the security environment where it is currently being used by 35.000 connections of the German police network. PAL4 is completely open technology en operates on normal consumer internet connections. Other applications (electronic patient files, websites or time registration programs) can be shown in PAL4 through a simple web-interface. PAL4 comes in four varieties for patients and professionals:

Clients	Professionals
PAL4 Internet On patients own PC	PAL4 teampost With video consultation hours nurse
PAL4 Welfare With an integrated touch screen	PAL4 Medical With video consultation hours doctor/hospital
PAL4 Care With a high end touch screen	PAL4 Control Room Video communication with control rooms
PAL4 Care-TV With a high end TV screen	PAL4 Mobile With mobile video communication briefcase

4. PAL4: the concept of content, video and activities

PAL4 is more then technology, PAL4 is a concept exciting of:
1. High quality video technology through regular internet
2. Personal content: a window to the outside world
3. Virtual and physical activities: the PAL4-today editorial office
4. Support: a service window and 24/7 installation and repair service

4.1 High quality video technology

An important part of the PAL4 is the video technology. Research has shown that telecare only works if the quality of video communication has a real-life feel to it. This means a full screen audio-visual connection, with no delay and full duplex (both ends can talk and listen at the same time) And above all: it must be a secure connection! PAL4 is of the highest quality and reliability and uses a very safe infrastructure.
The safety issue is not solved by using closed technology, as many other systems do. The uniqueness of PAL4 is that it opens the access of the user to its content and the internet. PAL4 solves the security issue in the core, being the patented application.

Worldwide proven video technology from the world of security video surveillance
Cooperation with a company specialized in video technology with a track record video surveillance control rooms worldwide (e.g. more than 30.000 connections for the German police force) offers PAL4 the use of a patented technology to transport video completely safe over the internet. Also PAL4 has other safety features such as a return to factory settings at every reboot, without the user even noticing it. PAL4 has chosen to use proven technology from the security business. This ensures Pantein and thus it's users, safety and reliability beyond the screen to screen care. The technology also has features such as waiting queues, forwarding, connecting to files, alarm history etcetera.

High quality on regular consumer internet
Experience from many Dutch projects has taught us that user will not be forced to subscribe to an obligated internet provider. Contracts often even prohibit switches in the first year. Other users have even higher standards and want to use glass fiber connections, with a whole new range of applications. The video technology used by PAL4 will work on any of these connections. Normal consumer internet will work fine for PAL4 (even mobile UMTS connections are sufficient).
A lot of business cases fell over the high costs for special connections to obtain high quality video. PAL 4 enables:

A. User to work with their existing internet connection or choice of their own preferred internet provider.
B. In theory it is possible to join PAL4 from 100kb/s upstream (eg. mobile) up to 8 mb/s upstream (High Definition)
C. From 256 kb/s upstream (base-DSL) several users are currently using PAL4
D. The advised speed is 512kb/s upstream, which is provided at excellent rates by a lot of providers
E. Fiber to home connections from several providers are being used in different projects already
F. No need for private WAN's or expensive NPLS connections (as with several other applications)
G. PAL4 can also act as a provider (including billing for the care organisation (1mb up / 8mb down – economy overbooked)
H. Informal care viewer (program for informal carers on their own PC)

4.2 Personal content

An important pillar of PAL4 is the extensive content that is being offered and managed. The care provider has control over the lay-out and the content itself. PAL4 is offered as a white

label meaning the care organisation can determine the looks of PAL4.

Content platform
The PAL4 content platform exists of a central secured database from where the content is dynamically uploaded. This content exists of four different menu-items with a possibility to make more buttons under the item. The care organisation can choose from PAL4-modules and can make their own buttons and content as well. Also the website of the care provider can be displayed or the patient file can be displayed through PAL4.

Users are uploaded in the database with a standard profile chosen by Pantein (for example community information from a specific neighborhood and the Pantein website). On top of that individual buttons can be installed and removed, for example a button "heart failure" with info on the subject and PAL4-TV. This way PAL4 is very easy to adapt to groups and individuals, connected to specific services for users and specific functions Pantein wishes to offer.

Here is an example of a personalised opening screen:

The banner inserted by Pantein

direct access to PAL4 mail (can be disabled)

News from the PAL4 agenda: PAL4 today

direct access to the bulletin board (for more experienced users)

Navigation buttons for the touchscreen

The main choices of PAL4
Personal assistent
Video contact with care center
Videophone photo address book
PAL4 TV

Or a pictogram starting screen for the PAL4 touchscreen:

Neighborhood information, activities planned in the neighborhood.

Telecare, videocare, telemonitoring, patient files, etcetera.

Games, quizzes, shopping and other content from the PAL4 editors.

Videocontact with family and friends, social media profile, family fotoalbum, addresbook

It is very important that the Pantein Web is filled properly from the beginning. PAL4 provides a big part of this content for 35 organisations already. Under here you can read about different

examples of content in the PAL4 content library:

Pantein content		
My PAL4 My address book My favorites My agenda My carers Neighbourhood activities User manual My virtual activities		**Healthcare and services** Direct care demand Services to home My municipality My housing organisation My care organisation Medical encyclopedia Lifestyle coach Fitness coach
Videocalling 		Telecare

PAL4 editorial desk Content		
Benefits: Discounts and contests Discount coupons Contests with prizes My credits wallet Prize shop Discount tips from members Discount from shops	**Cozy: Activities and participants** Neighborhood activities Groups: participants invite 50+Net: matchmaking Flicks: you should have been there Social media, profiles, videocalling	**Practical: Living** Safe at home Independent at home Utilities (personal alarm, etc.) Energy saving Tips from participants
Handy: work and money Internet banking (with Rabobank) Ageing and money Mortgage and insurance Working and ageing Groups: participants discuss	**Useful: volunteer work and charities** Giving to charity Nature (e.g. global warming) Doing volunteers work Wartime stories Online learning & education	**Do: your neighbourhood** Information on neighbourhood Social map of neighbourhood Local history Local entrepreneurs Public transportation
Fun: R&R Hobbies: discover and share Playing games Internet tips from participants Video, TV and radio Oldies Travel	**Close:family and friends** Birthday calender Address book Photo book Life stories Family secrets	**News: from our editors** News Gossip corner quizzes and prizes contact with service desk 24/7 PAL4 contact line

4.3 Physical and virtual activities

Experience from PAL4 and other communities show that the strength is in the combination of reality and virtual reality. That means the community is supporting the physical services (and not replacing them). It is like Ebay, where people can find each other in a virtual space to buy things from each other in the "real" world.

The same goes for telecare: a nurse or carer gives tangible care in peoples homes, but can

also have contact from a distance at the end of the day to check in (10). Telecare for chronic patients is another example: the patient enters his answers to questions and his readings into a digital device, there is video contact when there are problems and the telemetry readings are input for his physical consultation with his medical specialist, GP or specialised nurse (11.).

Also in the area of welfare the combination of physical and virtual reality seems to work fine. PAL4 organises activities throughout the country. Here people meet each other, and after that encounter they continue their contacts through the community as video contact or playing virtual games together. It is activating senior citizens (12.) An extra advantage is that this digital service directly benefits the users ensuring an early positive acquaintance with the services PAL4 has to offer. It contributes to better customer satisfaction and binding to Pantein services. Secondly it contributes to people becoming acquainted and at ease with the use of the technology, so they will use it more easily when they need it for healthcare purposes. Research by the Technical University of Twente (13) shows that the services offered must have a direct added value to the user, if they are are to be accepted by users in the target group (70+). An introduction through "fun" stuff like games, information on neighborhood and hobbies, discounts or people stories of their lives seem to be of great importance in that matter.

The PAL4-editorial desk is responsible for:
a. The service desk where virtual activities are being organised (virtual bingo, contests, etc)
b. Advising the care organisation (or there local partners, e.g. welfare) with the editing of the "neighborhood and living" button.
c. Keeping the PAL4 content platform up to date
d. Publishing the PAL4-program guide (monthly)
e. Organising local activities with local organisations and user groups

4.4 Supporting implementation and 24/7 repair service

Realising telecare is an often underestimated phenomena. Implementing it means actually deploying technology to deliver part of your care in a more efficient way. PAL4 is experienced in several forms of telecare and supports organisations hands on with the implementation process in through workshops exemplary cases and providing the necessary protocols.
Before the implementation a task force is formed with people from PAL4 and Pantein. Both organisations appoint a project leader The task force starts with describing the required functionalities in the format of a Program Implementation Document (PID). In this document all agreements concerning functionalities, releases, fault monitoring and repair and other agreements are recorded.
The task force monitors the progress of the PID and can be asked for advise in matters of for example recruitment and wide scale implementation. The PID also serves as a project plan and contains a clear project planning for time and resources.

Next to implementation, instruction and attending the user is just as important. PAL4 offers this attendance through her 24/7 installation and repair service (with nationwide coverage). As soon as an admittance form is processed by the care organisation, PAL4 takes care of the technical realisation. This consists of entering the users (video database), configuring and installing the equipment at the clients home and instructing them. After the instruction a written manual is left at the client. The procedure is concluded with a demonstration of a call to the emergency center. A document of deliverance is signed by the user as proof that the system was installed and left in a good working condition. Also a photo is being taken (if the user agrees to that) for the photo address book. If there are any questions after the installation the user can contact the PAL4 service desk between 9:00 AM and 17:00 PM through the PAL4 touchscreen or a regular phone.

5. PAL4-Connected: menu card safe and happy at home

5.1 Home automation – Menu card

PAL4 believes in a choice approach for senior citizens. Because not all seniors are alike and have the same human needs. The individual approach in home automation is considered to be the key to success. It starts with a base unit and can be expanded with functionalities (preferably wireless) according to the needs of the user.

PAL4 usually starts with a base kit that can be augmented with safety features. All features in the menu card are made with first rate materials that meet the strict EU norms for telecare equipment. They also meet Dutch quality marks, like KIWA for alarms and the Police Quality Mark Safe Living for locks and key systems. This guarantees Pantein that the items on the menu really add a professional support to users.

PAL4 base kit includes the most important items for every senior user who wants to live independent at home (no matter if it is a privately owned home or a social housing home or a supported care home).
PAL4-alarm and PAL4 entrance are in the base kit, and also PAL4-Video, which is in essence a window to the world outside.

EXTRA: Telecare for the chronically ill.
A special part within the Pantein project is "Telecare for Chronic Patients" in which is suggested to start with 2 groups of chronic patients, namely COPD(GOLD classes 1 to 4) and Heart failure (because of the changing Dutch budget rules for readmission within 12 weeks). The proposed project is a self management monitoring for these groups to start a telecare program directly after leaving the hospital (with COPD e.g. after an exacerbation or with so called "revolving door patients" and with heart failure patients after hospital discharge). This program is made of three sections:
1. Validated information and clarification materials on the condition, which can be accessed through the touch screen
2. Video support in the form of planned care and video consultation hours for outpatients with the specialised nurse
3. Telemonitoring or coaching consisting of three month monitoring programs where a daily risk profile assessment is made through questionnaires on themes like general condition, symptoms and knowledge about the illness/ disease self management tips.

Depending on the start date of this monitoring, Pantein can choose from the validated questionnaires for COPD and Heart failure that are currently being used by several care organisations in the AGIS region or choose for the lifestyle coach for chronic patients which is available early 2011 in PAL4 including the medical coaching center of MedicInfo.

EXTRA: Video surveillance for "digital rounds" or "night care surveillance"
A special function that can be added, is video surveillance (especially for evening/night) The possibilities are:
A. One or more cameras in the apartment (with consent of the user), hallway and shared rooms of the building;
B. One or more "nurse stations" for easy to use monitoring screens will be fitted with an observation post and/or the signals can be (secured) transmitted through internet to a control room and be recorded.
C. Walking digital rounds where high resolution cameras are strategically placed throughout the complex giving carers an overview of the complex at night on demand expanded with alarm features (if someone is walking in the hallway for example).

The cameras are normally deactivated and have to be activated by the carers (or run on a timer). The cameras meet the following specifications:
- Night vision
- Compatible with home automation in the home (e.g. camera detection after movement,

wandering or manual alarm from pull cord or personal trigger)

All technology used is of A-class quality. Video communication can be routed to internal nurse posts, a control room or to carers or teams externally. Of course users can also contact each other through the system. For the connection of PAL4 video (which can be used as a stand-alone in care teams or a hospital for example) and PAL4-alarm special control room software is needed called "General Control Room Reception" (in Dutch: UMO) This software will connect certified alarm and home automation systems of many suppliers to the video connections of PAL4.

Control Room
Since Pantein is still deciding which control room she wants to use this is not part of this business case. If needed PAL4 can offer this service including a control room. PAL4 works with many different control rooms specialised in the follow up of alarms and services. Pantein can decide to use any control center or can make or expand her own center. PAL4 advises to organise the video support programs (planned care and consultation hours) in the Pantein care teams (as part of this proposition) and make the control room in one central. For the integration of personal alarms/ home automation with PAL4-video the control room needs to have the UMO-software to which PAL4 is compatible.

6. Proposition for Pantein

6.1 Cost and benefits

Pantein already is a PAL4-community partner and participates us such in the project Call for Scaling (Health innovation Platform) in which members of Pantein Extra are offered PAL4-Internet services (the PAL4-community) Additional to this service Pantein wants to start pilots for Pal4-Telecare and home automation for user with a legally indicated need for Healthcare (AWBZ).

For this purpose an investment scheme is made for a project starting on January 1st 2011, with a two year running time. Pantein is advised to apply for two funding policies:
- the Healthcare Infrastructure Policy ("Beleidsregel Zorginfrastructuur") for the coverage of the investment and exploitation of the infrastructure
- the Care Innovation Policy ("Beleidsregel Zorginnovatie") based on the screen-to-screen experiment, in which the Actiz-video network can assist.

The proposed planning:
1) PAL4 assists Pantein with the making of the businesscase and investment overview (under here)
2) PAL4 assists Pantein with the application for the Healthcare Infrastructure Policy ("Beleidsregel Zorginfrastructuur") for the coverage of the investment and exploitation of the infrastructure; only for users with a legally indicated need for Healthcare (AWBZ), in this case approximately 100 clients.
3) On approval of this application, PAL4 and Pantein will start the project
4) Parallel, PAL4 will introduce Pantein to the video network Actiz for the application for the Care Innovation Policy ("Beleidsregel Zorginnovatie") based on the screen-to-screen experiment.

The characteristics of the project for Pantein are (all prices in this document excl. 19,0% VAT): The project has an operational time of 24 months, starting January 1st 2011 and ending on December 31st 2012 (in 2 phases upscaling). Pantein is advised to implement the following project organisation:
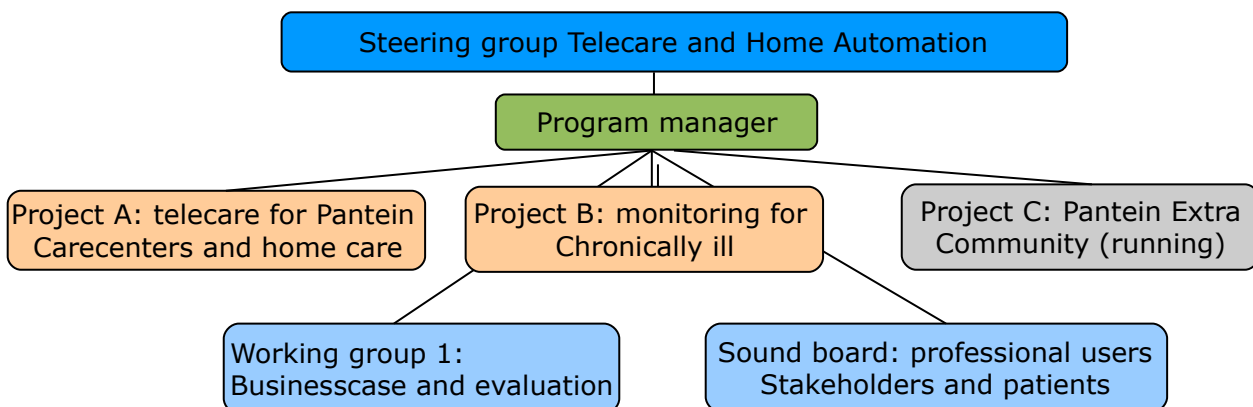
The project provides all cost for infrastructure, availability of equipment, editorial support and the installation and servicing for 100 clients with the following configuration:
o 35 Clients, independent living or supported living get a base kit as described in 5.1
o 20 Clients receive telecare (e.g. heart failure) together with Pantein Hospital
o 45 Clients can be added over these categories in phase 2 for the last twelve months (2nd year)
o In total 50 extra sensors are provided from the menu card (e.g. fire alert, movement sensors)

All cost are based on a pilot situation in which equipment and infrastructure is made available

on a lease to Pantein. If Pantein wants to continue the project after the pilot phase they can redeem the rent for indefinite time for € 250,00 and become owner of the equipment. If they don't want to continue the project they can return the equipment to PAL4.

In the cost are included:
o Subscription and licensing fees
o Availability of equipment (Touchscreen, Alarm, Pull chord + av. 1 extra sensor per user)
o 1 Video-control room station (control room equipment/software to be placed on a Pantein location of choice)
o 2 Video-team posts
o 1 Medical-team post (in the hospital)
o Internet connections with 50% of the users
o Installation and instruction in users homes
o Editorial services and service post PAL4 including help desk and "virtual activities" (*e.g. bingo)
o Project consultancy by project leader PAL4 (who functions besides internal project leader Pantein)

For the project Monitoring for Chronically Ill, next to the video communication-equipment and content, also the Coach for Chronically Ill is part of the package. Hence the exact model for this is not yet decided, nor is the specific target group for Pantein we have submitted a provisional sum for this that will be sufficient in any case. This will be further discussed with people from Pantein and MedicInfo.

Not included are the UMO for the control room to combine PAL4 with personal alarms, etcetera (this is dependent upon the choice of control room by Pantein) and the personnel capacity for the control room and the nurse stations.

About the application for the Healthcare Infrastructure Policy ("Beleidsregel Zorginfrastructuur"): PAL4 will provide the neccesary information to Pantein; Pantein has to discuss the application personally with the Healthcare Administration. This policy is commonly applied to this kind of projects and PAL4 has good practices/experience with the application procedure with other healthcare organisations.

About the Care Innovation Policy ("Beleidsregel Zorginnovatie"): this is being advised to apply for by the Actiz video network. The possibilities for PAL4 is relatively unknown and the resources of the policy are limited. We can not predict if the application will be granted. Pantein will have to take steps in this matter herself, being a member organisation of Actiz.

The total cost for the execution of such a project, including the possible benefits for Pantein IF the possibilities of the said policies are being effectuated are:

Summary investment and operating cost PAL4 project and business case			
Pantein Carecenters and Homecare, projecttime 24 months + telecare hardware			
Cost for PAL4 video and content network	Excl VAT	Incl VAT	
Subtotal net investment whole project time	€ 69.850	€ 83.122	cost
Subtotal net operating cost clients whole project time	€ 365.320	€ 434.731	cost
Subtotal net operating cost carers whole project time	€ 29.880	€ 35.557	cost
Total cost video and content network 24 months	€ 465.050	€ 553.410	24 months
Financing by Pantein	Excl VAT	Incl VAT	
Healthcare Infrastructure Policy: investment	€ 69.850	€ 83.122	coverage
Healthcare Infrastructure Policy: operations clients	€ 365.320	€ 434.731	coverage
Healthcare Infrastructure Policy: operations carers	€ 29.880	€ 35.557	coverage
Care production under AWBZ performance contract	reminder	If accepted: 4hrs per connection/ per month	
Acceptance in Care Innovation Policy or Screen to Screen policy	reminder	All legally indicated time	
Total financing from policies	€ 465.050	€ 553.410	
Total result Pantein, care production excluded	€ 0	€ 0	
Other possible resources			
Care production under AWBZ performance contract: 4hrs per connection/ per month	€ 468.000	At €65 rate (nurse)	
Acceptance Care Innovation Policy or Screen to Screen policy: 5 minutes telecare weekly	€ 43.333	At €40 rate (carer)	
Extra income community (payments by third parties, municipalities, serviceproviders	€ 0	In section community	
Total result Pantein before deducting personnel cost		€ 511.333	Positive margin
		€ 255.667	Per year
Key figures Pantein Telecare project, covering all technical and content cost			
clients	100	Community logins	Running project
Internet connections	50%	Project duration	24 months

Split-up of cost compilation
In the following three overviews you can find a split up of cost and revenue from the last page into three sections:
1. Investment and running cost: investment in video content network
2. Investment and running cost: running cost clients (55 clients for 2 years, 45 clients for 1 year)
3. Investment and running cost: running cost carers

Investment and operating cost PAL4 project - split up				
Key figures Pantein Telecare project, covering all technical and content cost				
clients	100		Community logins	Running project
Internet connections	50%		Project duration	24 months
Investment in video content network, including community				
	pcs	months	Cost	Total cost project
Implementation, support and project management	140 H		€ 135	€ 18.900
Implementation coach for chronically ill	80		€ 135	€ 10.800
Implementation and editing content Pantein	0		In community	€ 0
Setup infrastructure video and content network Pantein	1		€ 20.400	€ 2.400
Setup and instruction clients by PAL4 service	100		€ 175	€ 17.500
Setup and instruction carers by PAL4 service	4		€ 250	€ 1.000
Internet connections clients for PAL4 (optional)	50		€ 25	€ 1.250
Investment in video content network, including community ex. VAT				€ 69.850
Investment in video content network, including community incl. VAT				€ 83.121

Investment and operating cost PAL4 project - split up				
Running cost clients video content network, including community				
	pcs	months	Cost per month	Total cost project
PAL4 Care (Phase 1) Bidi box, touchscreen, repair service, PAL4 editing, PAL4 service desk, video calling participants & family	55	24	€ 135	€ 178.200
Home care module with alarm and sensor (Phase 1) Connect+ gateway, including 35 wireless sensors programmable for different independent living scenarios, medallion, pulling chord and one sensor of choice	35	24	€ 35	€ 29.400
PAL4 Care (Phase 2, from January 2012) Bidi box, touchscreen, repair service, PAL4 editing, PAL4 service desk, video calling participants & family	45	12	€ 135	€ 72.900
Homecare module with alarm and sensor (Phase 2) Connect+ gateway, including 35 wireless sensors programmable for different independent living scenarios, medallion, pulling chord and one sensor of choice	20	12	€ 35	€ 8.400
PAL4 Chronically Ill (with Medicinfo) Licenses, hosting&housing, tele-support programs, validated for 25 chronically ill COPD or Heart failure			Provisional sum	€ 25.000
PAL4 hosting (optional) of PAL4 servers	1	24	€ 395	€ 9.480
PAL4 maintenance Maintenance of the PAL4 buttons and content by PAL4 editors	1	24	€ 500	€ 12.000
PAL4 internet connections for clients (optional) PAL4 internet 1MB upstream, 8MB downstream	50	24	€ 24,95	€ 29.940
Running cost clients in video content network, including community ex. VAT				€ 365.320
Running cost clients in video content network, including community incl. VAT				€ 434.731

Investment and operating cost PAL4 project - split up				
running cost carers video content network, including community				
	pcs	months	Cost per month	Total cost project
PAL4 control room control room video working places, including all functions for registration, logging, etcetera	1	24	€ 750	€ 18.000
PAL4 nursing and home care team posts Team post consisting of Bidi Box, 17 inch screen, PTZ Canon camera, wireless mouse and keyboard and limitless usage	2	24	€ 150	€ 7.200
PAL4 Medical GP or doctors terminal with Bidi Box, 26 inch High contrast screen PTZ Canon camera, wireless mouse and keyboard and limitless usage	1	24	€ 195	€ 4.680
Running cost carers in video content network, including community ex. VAT				€ 29.880
Running cost carers in video content network, including community incl. VAT				€ 35.557

7. Business agreement: let's go for IT!

7.1 Preferred partner network PAL4

Upon participation in this project, Pantein will be admitted to the PAL4 preferred partner network. Meaning that for the region where Pantein works, Pantein will be the preferred partner for PAL4. This way new developments, new content and marketing and PR communications always will be made first available to Pantein. Also PAL4 will provide copy for the Pantein Magazine and Pantein website with links to the community and will PAL4 refer to Pantein in its internet marketing to the areas of Panteins work. This means when people subscribe to PAL4 in the area of Pantein, they will be referred to Pantein. This way a nation wide community is coming into existence for all senior citizens in the working territory of all PAL4 partners.

7.2 Sign IT!

By signing this businesscase and proposal:
1. Both parties declare to fully understand the contents of this proposal and all questions about it have been asked and answered in a clear and understandable way;
2. The cost overview is based on the said project running time and number of users for the Care variable, namely 45 users in year 1, 45+55 users in year 2. Pantein is responsible for bringing the participants, PAL4 will support this effort. Cost will be charged regardless of the number of active users (because the infrastructure must be in place, whether it is being used or not). At project ending there will be an evaluation and if wanted a new proposal will be made based on the financial policies at the time (care arrangements National Health Authority, NZa) a new agreement will be made up or this one will be continued.
3. Pantein can always expand the number of participants, based on the cost mentioned in this proposal. In case of substantial upscaling Pantein and PAL4 will discuss bulk discounts.
4. To integrate current alarm services and home automation of Pantein a link with the UMO is needed. This runs at Verklizan and is available there if Pantein has an UMO herself. All video- and content functions run stand alone on the offered infrastructure(for this no UMO is needed).
5. Parties are familiar with the billing conditions of PAL4 that will be in effect after signing this proposal, Namely a billing ion the following manner:
- 30% directly upon the first meeting of the project working group
- rest of 70% on a monthly basis on 18 equal distributed months
6. After signing this document a working group meeting will be planned where the project leader from PAL4 and the internal project leader of Pantein will make a planning for the project and start up. Parallel an agreement with detailed SLA's will be drawn up.
7. To guard the quality of the content and continuously anticipate the needs of the users a content group exists. By signing this proposal Pantein will be a member of the Content group and through this group has influence on the development of content (care concepts, functionalities for dementia patients, games, etcetera).
8. PAL4 will assign a project leader within two week after signing this proposal, who will organise a kick off meeting for the start of the project, with the Pantein project leader.
9. The named policies (care innovation and care infrastructure) are being used by several organisations to finance telecare and are being advised by the ACTIZ network. PAL4 can point out these policies to Pantein but has no status as a grant consultant, nor has influence on the awarding of grant proposals made to these policies, the running period of these policies, nor the effects of them on the relation between Pantein and the Health Administration. The responsibility for applying to these policies, the financial justification, handling and possible risks are and stay with Pantein completely.
10. The initial approval to the application to the Care innovation Policy is a negating condition to this proposal. Pantein will keep PAL4 informed on this. A side Letter A is attached to this agreement for this purpose.
11. All proposal of PAL4 are made under the Terms and Conditions (ALIB2007) of branche- organisation UNETO-VNI and sent with this proposal and freely to download at www.focuscura.nl. After the signing a detailed agreement will be drawn up describing all Service Level Agreements.
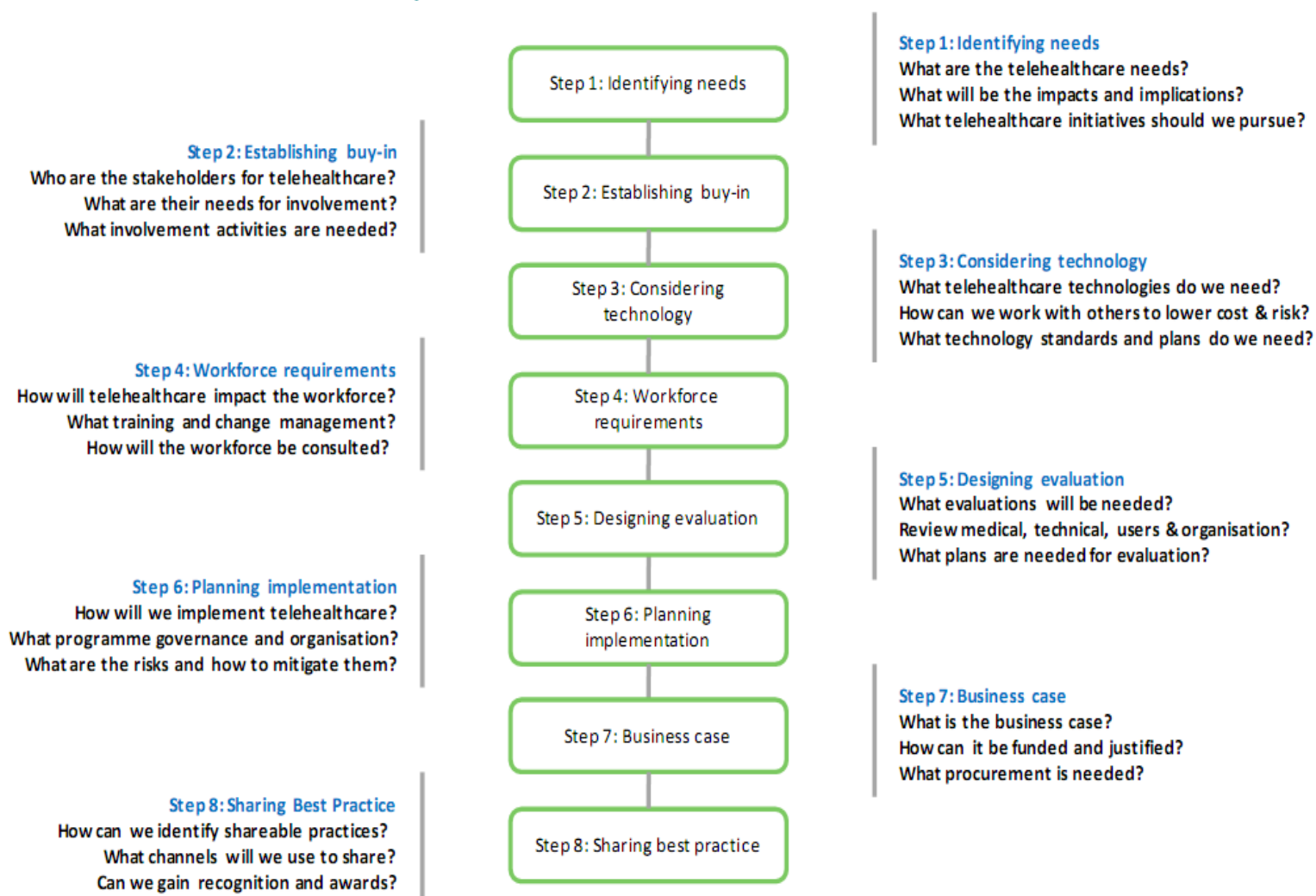
12. As contract partner to Pantein will act Focus Cura Zorginnovatie BV, owner of the PAL4 Platform and will supply the whole package including the editorial services performed by PAL4 Ltd.

Appendix A Eight steps to follow to create a telecare businesscase

To make the case for a telehealthcare initiative, it is important to consider all the aspects that affect the outcomes – both positive and negative. It is also important to convince decision makers that the proposed option is the best by discussing alternatives. Telehealthcare initiatives are often complex and because they are new to organisations, they need thorough business cases to create confidence and commitment. The NHS toolkit breaks the business case development into eight steps that each addresses a different perspective. Together they aim to be comprehensive.

A step by step approach to telehealthcare business cases
The following eight steps cover the major areas that should be considered for a comprehensive business case. They are not meant to be prescriptive, but instead adapted to the particular initiative being considered. So for a research pilot the business case might place less emphasis on workforce capabilities and creating buy-in as the work is exploratory. But a business case for developing telehealthcare services for a locality would need to ensure that all the areas are addressed.

Step 1: Identifying needs
What are the telehealthcare needs?
What will be the impacts and implications?
What telehealthcare initiatives should we pursue?

Step 2: Establishing buy-in
Who are the stakeholders for telehealthcare?
What are their needs for involvement?
What involvement activities are needed?

Step 3: Considering technology
What telehealthcare technologies do we need?
How can we work with others to lower cost & risk?
What technology standards and plans do we need?

Step 4: Workforce requirements
How will telehealthcare impact the workforce?
What training and change management?
How will the workforce be consulted?

Step 5: Designing evaluation
What evaluations will be needed?
Review medical, technical, users & organisation?
What plans are needed for evaluation?

Step 6: Planning implementation
How will we implement telehealthcare?
What programme governance and organisation?
What are the risks and how to mitigate them?

Step 7: Business case
What is the business case?
How can it be funded and justified?
What procurement is needed?

Step 8: Sharing Best Practice
How can we identify shareable practices?
What channels will we use to share?
Can we gain recognition and awards?

Flow: Step 1: Identifying needs → Step 2: Establishing buy-in → Step 3: Considering technology → Step 4: Workforce requirements → Step 5: Designing evaluation → Step 6: Planning implementation → Step 7: Business case → Step 8: Sharing best practice

This step by step approach was taken from the NHS West Midlands "Telehealthcare Commissioning & Evaluation Toolkit " (July 2010).
http://www.tribalgroup.com/ServicesAndSectors/Pages/PrototypeTelehealthcareToolkit.aspx

Appendix B Summary of the Pantein telecare review of succes and failure factors

Summary

The Dutch partner in TCares, Zorgcentra Pantein, has made an analysis of succes and failure factors in recent Dutch telecare projects. The analysis was made by holding interviews with key persons in recent telecare projects and by a literature study.

All failure and success factors are divided into three different categories: project management, business model and implementation model.
From our findings we concluded that the implementation model has the most identified success and failure factors. No less than 16 failure and 9 success factors were identified in this category.

We will now sum up the success and failure factors per category.

Implementation Model

Failure factors:
- The legislation is not set on innovative concepts.
- The legislation is lagging behind on technological capabilities.
- The regulations may vary by region causing confusion.
- The regulations can be contradictory.
- User is not the starting point for the development of E-health and home automation.
- Applications focus on the possibilities of technology.
- Not clearly demonstrable added value of home automation and e-health care for the receiving user.
- Doctors see e-health and home automation as an erosion of care.
- Users are not involved in the development of e-health and home automation applications.
- Receiving care users do not know how to deal with e-health and home automation products.
- Too little insight into the demands and wishes of users.
- Insufficient support and acceptance by staff / carers.
- Insufficient support and acceptance by the patient.
- No long-term acceptance of end users.
- Technical solutions are often not certified.
- Unreliable technical solutions.
- The absence of a continuity plan for 1, 2 and 5 years.

Success factors:
- The residents see privacy as an exchange relationship which they can trade for safety and comfort.
- Users see the benefits of social aspects of e-health applications: for example, contact with distant relatives, and the possibility always to connect to a caregiver.
- Clients sometimes find that they have better contact with an e-consult. They dare to ask and tell more.
- Residents will, after some time, automatically use features that they previously did not seem to want or see fit.
- Clients are willing to pay for home services when added value for them is demonstrated.
- Security is most valued by a user (burglar alarm, telephone care, personal alarms), followed at great distance by comfort/luxury services.
- Demonstrating benefits exceed the costs.

Business Model

Failure factors:
- Hardly any investment.
- No clear earnings model.
- No fixed costs for e-health services to patients.
- Only grants available, no structural funding.
- No clear cost to the user.
- The products are too vendor dependent.

Success factors:
- Open source software for office applications instead of Microsoft, to cut costs.
- Ability to differentiate from other care suppliers by introducing e-health services.
- Clients are willing to pay for home services as an added value for them is demonstrated.
- Regulatory changes may affect the business model by allowing certain technology to be compensated.
- Funding based on DBC structure ("diagnosis/treatment combination" is a new Dutch budget mechanism where you get a fixed budget for the diagnosis and treatment of certain illnesses).

Project Management Method

Failure factors:
- Projects are difficult to manage.
- Unclear division of responsibility within the project participants.
- The absence of chain responsibility.

Success factors:
- Scale through cooperation.

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