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validated by 'doers' and stakeholders"*

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Abstract

This report on organisational implementation and change management of the design and implementation of telemedicine services analyses factors that are critical to the successful scale-up of new telemedicine services or telemedicine tool production from the organisational and change management point of view. The analysis is done based on the 26 telemedicine services investigated in the MOMENTUM project during 2012-2013 and the results of Deliverable 5.1. The analysis undertaken revealed five critical success factors:

- Address the needs of the primary client(s).
- Involve healthcare professionals and decision-makers.

ICT PSP – Empowering patients and supporting widespread deployment of telemedicine services

- Prepare and implement a business plan.
- Prepare and implement a change management plan.
- Put the patient at the centre of the service.

The report describes the meaning and content of each critical success factor and addresses the objectives, surrounding context and underlying pre-requisites of each of them. All five critical success factors are illustrated by descriptions of seven selected telemedicine cases. The results of the findings are presented as lessons learned and as an overall analysis of the cases.

Key Word List

Business plan, change management, communications, decision-makers, healthcare professionals, patient-centred, primary client, training.

Note on the seven telemedicine cases

Six of the telemedicine cases described in this deliverable can be located on the MOMENTUM website, called service descriptions, under their respective countries (Israel, Italy, the Netherlands, Norway, Sweden, and Spain): <http://telemedicine-momentum.eu/europe/>. A short description of each of the cases (including the Germany Patientenhilfe case) is also included in deliverable D3.2.

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Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise.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

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Executive summary

This report presents five factors that MOMENTUM consortium consider critical for the successful design and implementation of new telemedicine services or tools from the organisational implementation and change management point of view. This report is based on the analysis of 26 telemedicine services in Europe and the results of several workshops conducted by the MOMENTUM consortium in 2012-2014. The list of critical success factors concerning organisational implementation and change management includes:

- Address the needs of the primary client(s).
- Involve healthcare professionals and decision-makers.
- Prepare and implement business plan.
- Prepare and implement change management plan.
- Put the patient in the centre of the service.

Telemedicine is an area in the field of healthcare which aims, with the support of information and communication technology, to improve diagnosis, treatment and care quality, efficiency and effectiveness. During the last two decades, telemedicine has been seen as one of the most promising and innovative measures to counteract the challenges to the field of healthcare caused by demographic changes and continuously rising healthcare costs. However, until now, the real breakthroughs facilitated by telemedicine have not occurred. Among the reasons causing the relative failure of the implementation of telemedicine services, it can be argued that too much attention has been paid to technology-related issues at the same time as the importance of the organisational and change management issues in the organisations active in the health and care fields have been underestimated.

The main objectives of this report is to describe five critical success factors from the organisational and change management point of view that are important to the scaling-up of telemedicine services and to describe those factors as they occurred in seven selected large-scale telemedicine services. The description addresses systematically the objectives, surrounding context and underlying pre-requisites of each critical success factor. The results of the findings in the seven telemedicine cases are presented as lessons learned and as an overall analysis from the cases.

The report describes a set of actors, activities and potential barriers that influence successful design and implementation of telemedicine services or tools. First, in a complex healthcare environment, it is of utmost importance to find the proper sector for the specific telemedicine service or tool and to fit it in the existing care scheme(s).

Analysis of the seven cases indicates a number of important issues. First, choosing the right partner(s) that have a compelling need(s), a clear incentive to implement the new telemedicine service, and sufficient resources will help in scaling up the service. Second, involvement of different healthcare professional groups and healthcare decision-makers at an adequately early stage of the process and collecting their continuous feedback will speed up the implementation process. Third, business and change management plans seem to be underestimated as tools when planning the innovation, aiming to understand the customer’s needs and implementing the change. Writing a

business plan for a telemedicine service is not easy, but it is worthwhile the effort to involve the stakeholders and to be conscious of any risks. Fourth, extensive use of technology in healthcare makes patients concerned about the personal relationship between the caregiver and patient. The objective of the telemedicine service or tool implementation is to ensure that user needs and preferences are identified and are taken into account in the design of the service or tool.

The circumstances under which the critical success factors are valid differ from case to case. Not all the factors are relevant in all cases. To assist telemedicine doers, whether service providers or tool producers, to find the critical success factors that are relevant to each specific case, different telemedicine service deployment characteristics should be taken into the account. Those characteristics, among others, are:

- The spread of the service
 - When the telemedicine deployment takes place inside the organisation.
 - When the telemedicine deployment takes place across organisational borders.
- The service type
 - Provider-to-patient (or citizen).
 - Provider-to-provider
- The socio-economic rationale underpinning the service, including two options:
 - The business case (or socio-economic rationale) motivating the deployment of the service is defined by a public authority which aims at deploying the service for the benefit of a regional or national healthcare system.
 - The business case motivating the deployment of the service is defined by a telemedicine provider company or healthcare organisation which aims at deploying the service for its own purpose or commercial use.
- The role of the commercial partner in the service.

Analysis of the seven cases also reveals that, depending on the specific telemedicine service, the different critical success factors could be prioritised and/or applied incrementally during the timeline of the initiative.

1. Introduction

From the organisational implementation and change management point of view, it is important to understand that the aim of the changes made when implementing telemedicine is often not replacement of clinical routines or already-proven evidence-based diagnostics, treatment or care schemes. Rather, the implementation of new telemedicine tools and/or services should support evidence-based medicine while doing so with the help of modern information and communication technology. Telemedicine could, of course, also open new channels of interaction with citizens/patients to provide innovative clinical services, for instance, like the provision of specific alerts to patients for either therapeutic guidance or adherence improvement. Digital decision support software also has the potential to enlarge citizens’/patients’ roles in making decisions about their own health or treatment.

The aim of telemedicine is therefore to support the uptake of digital data, tools and services similar to what is happening in other service industries (e.g. banking, commerce, education, trade, and gaming). When a new telemedicine service is implemented successfully, the result will be that a citizen, healthcare professional, organisation or healthcare system will experience benefits. For example, these benefits may be an increased quality in the service and/or more efficient and effective outcomes from the same process or business which was the main target before the innovation took place. New systems, processes and services may also be merged together with already existing ones.

In order to implement telemedicine services into daily routine and scale up these services successfully, from the organisational implementation and change management perspective, the following five critical success factors need to be paid attention: the needs of the primary client(s); the involvement of healthcare professionals and primary client(s); a business plan; a change management plan; and putting the patient at the centre of the service. All the authors’ observations and concerns are included in the discussion of each of the individual critical success factors.

2. Address the needs of the primary client(s)

This section of the report describes the issues surrounding the needs of the primary client(s). As described in this section, the primary client is the key user that has clear incentives to set up and use the service.

2.1 What this critical success factor is

A primary client is a person, specialty group or organisation who or that has a clear incentive or incentives to set up the service or design the tool and has a sufficient resources to do so. A primary client can differ substantially in his, her or its characteristics. Therefore, their needs can cover a wide range.

The primary client is the initial main partner in implementing the telemedicine service or in designing the telemedicine tool and for whom the telemedicine service provided meets its needs. According to Ed Schein (1999), the primary client can be seen as the ultimate owner of the problem or issue that is being worked on. If the primary client is aware of a compelling but unsatisfied need, he, she or it is often willing to accept with ease the changes proposed or adjustments suggested to the current process or the tool used.

The primary client is therefore the main partner who is active during the introduction of the service or the design of the tool. A primary client may or may not be the initiator of the new telemedicine service or tool producer but he, she or it will be an important actor in the implementation and scale-up process.

The primary client may be a direct or indirect payer of the service (through either taxes, insurance or business incentives). With telemedicine services, a primary client may therefore be seeking to increase process efficiency and effectiveness.

The primary client's requirements should be recognised by the telemedicine doer. This recognition will guarantee the closest possible alignment of the services provided with the client that will benefit most from the new service launched, and who has the willingness to make the effort to change the process: for example, to achieve better quality and reduced costs.

The primary client can also help the provider to focus the service or tool on the precise target audience, and to avoid such sustainability problems as the provision of the service to too wide a group of patients.

The service provider or tool producer should not confuse the primary client with the client who will use the service or tool once it has entered onto the market.

It is necessary to make a distinction between the champion (see deliverable D4.2) and the primary client. The primary client is the partner of telemedicine doer from the customer's point of view, while the champion is an advocate of the innovation from the service or tool designers' perspective.

2.2 Objectives

There are several objectives which support addressing the needs of the primary client. Among those objectives that the telemedicine doer is attempting to achieve, by applying this critical success factor, are to:

- Optimise adoption on the part of the client (or business) which benefits most from the new service and which has the willingness to change the underpinning organisational or work process.
- Have a partner which helps to bring the service or tool onto the market and that has a clear incentive to support its use in daily production. This partner could represent a good example of the value of the telemedicine service.
- Avoid provision of the service to customers who might not benefit from the telemedicine at an initial stage. Identifying the primary client can help to focus ultimately on the appropriate patient group.

2.3 The context surrounding the success factor

The (new) telemedicine service/tool provider should understand the compelling need of the primary client and how the telemedicine service or tool helps the primary client to implement the innovation or change that provides him, her or it with a better service and increases professional or service quality (e.g., reaching more patients at the right time).

While there are usually several actors involved in the healthcare service provision, understanding different telemedicine service deployment characteristics will help to identify and locate more precisely the primary client and address his, her or its needs. The characteristics that will help in this task are as follows:

- The spread of the service
 - When the telemedicine deployment takes place inside the organisation.
 - When the telemedicine deployment takes place across organisational borders.
- The service type
 - Provider-to-patient or -citizen.
 - Provider-to-provider.
- The socio-economic rationale underpinning the service
 - The business case (or socio-economic rationale) motivating the deployment of the service is defined by a public authority which aims at deploying the service for the benefit of a regional or national healthcare system.
 - The business case motivating the deployment of the service is defined by a telemedicine provider company or healthcare organisation aiming at deploying the service for its own purpose or commercial use.
- The role of the commercial partner in the service.

2.4 First thoughts on pre-requisites underlying the success factor

The primary client has to be aware of the needs that he, she or it has or to validate the assumptions about his/her needs with the provider of the telemedicine service or tool.

The primary client should be recognised as a representative case by the other stakeholders in the process of telemedicine deployment, at least to a certain extent. The primary client has to have sufficiently clear characteristics that he, she or it can be differentiated from, and not mixed up with, other possible actors. The primary client has to have a clear role in the particular telemedicine service from which the client receives significant benefits.

2.5 Illustrations of this critical success factor from the Maccabi case

In the Maccabi case, there is more than one primary client. On the face of it, and from a strictly business point of view, Maccabi itself would appear to be the primary client as it expects to see benefits in improved quality, effectiveness and efficiency of care which will result in clear economic benefits over time: these are indeed its incentives for implementing the service. However, in order for the Maccabi service to be successful, it must serve at least another primary client – the primary care physician. The doctor is a “client” as s/he is the gateway to the service: i.e., if the doctor does not perceive a benefit from the service, s/he will not be willing to refer his/her patients to the Maccabi service.

2.6 Illustrations of this critical success factor from the RxEye case

In RxEye (<http://www.rxeve.net/en/>), it is possible to identify both the primary client and the reason for the client’s interest in the particular telemedicine service.

For RxEye, the primary client can be identified as the healthcare manager who is in need of additional medical imaging reporting capacity. This manager has a clear business objective. The main concern of the healthcare administrator is the lack of personnel, i.e., radiologists, pathologists or other medical imaging specialists in his/her healthcare institution and the deficit in certain other imaging subspecialists. This lack of reporting capacity causes long waiting lists on the part of patients. The manager is responsible for the effectiveness and efficiency of the healthcare organisation, but is neither the provider of the particular service nor the patient.

The primary client cannot replace the current radiological imaging reporting service. He/she is looking for new ways to provide the service, but is trying to change the current workflow as little as possible so as not to perturb the physicians too much. The healthcare administrator would like to use the institution’s own human resources alongside external resources.

2.7 Illustrations of this critical success factor from the Teledialysis case

The initiator of the Teledialysis service was the nephrology department at a specialist healthcare hospital. The funds for the routine service are coming from the hospital budget. The incentive of the hospital to start the service was to avoid their own staff travelling and, at the same time, to provide patients with the same quality dialysis service as patients who receive teledialysis at the university hospital in Tromsø.

From this perspective, the primary clients of the teledialysis service were the nephrologists responsible for the dialysis. They re-engineered their work with the teledialysis service in such a way that they were able to minimise moving around from one hospital to another. The medical staff in remote locations were also the primary clients insofar as they accepted teledialysis as a new way to help patients with renal failure.

2.8 Illustrations of this critical success factor from the ITHACA case

The primary clients were the public healthcare provider, BSA, s.a., the pharmaceutical company, Novartis; and the technology partner Indra. The aim was to promote the adherence to treatment of chronic hypertension patients. The incentives of these three primary clients were different, but all were motivated to start the telemedicine service.

2.9 Illustration of this critical success factor from the Patientenhilfe case

The primary client of the German service, Patientenhilfe, is an insurance company. The initial agreement was made between Patientenhilfe and the insurance company to agree on the reimbursement conditions of the telemedicine service. This agreement paved the way for Patientenhilfe to build a business case and to start up this service for cardiovascular disease patients.

2.10 Illustration of this critical success factor from the KSYOS case

At the beginning of service provision, the primary client of the KSYOS TeleMedical Centre was dermatologists. Once dermatologists had adjusted the service according to their needs, a second group of primary clients was identified. This was general practitioners. To scale up the KSYOS service outside the Netherlands, the company director has commented that the primary clients should be identified according to the local situation.

2.11 Illustration of this critical success factor from the Cardio Online Europe case

The primary client in the Puglia telecardiology service was the public emergency service which, through the telecardiology service, achieved instant feedback on electrocardiogram results from cardiology specialists.

The hospital cardiologists also play an important role since, by receiving the electrocardiograms, they can actually organise better their services, providing faster responses to more serious cases.

2.12 Lessons learned on addressing the needs of the primary client(s) from the cases

All the cases studied are relevant in the context of addressing the needs of the primary client. In the Maccabi and Patientenhilfe case, the primary client was the insurance company. In the RxEye, Teledialysis and KSYOS cases, the telemedicine service providers found healthcare organisations who required specialist consultants as their primary clients. In the ITHACA and Puglia telecardiology cases, the primary client was the public healthcare service provider whose incentives were to improve service quality and effectiveness. In the ITHACA case, a pharmacy company and the technology partner were also interested to see how the service fitted to the particular market.

2.13 Overall analysis on addressing the needs of the primary client(s) from the cases

All the cases show that the successful implementation of a telemedicine service requires finding the partner (the “primary client”) who has the incentive to implement the service and who also has sufficient resources to do this.

Finding the primary client appears to be an underemphasised, although very important, factor for the telemedicine service provider or tool designer in scaling up their service or tool production. None of the cases analysed entered into the telemedicine field by marketing the service directly to the final beneficiary, i.e., the citizen or the patient, but had to do this by using a partner with a clear incentive to do so which had at the same time sufficient resources to implement the service and an in-depth knowledge of the potential end-user group.

The analysis of these cases shows that, for the telemedicine service provider, it can be a complex task to find *the* primary client from among the large number of actors involved in the care process.

2.14 Further relevant discussion

The primary client concept should not be confused with the patient. The ultimate goal of any medical service, including telemedicine, is to improve individuals’ health

outcomes directly or indirectly. Additionally to patients, there might be one or several clearly defined beneficiaries of the particular telemedicine service.

As discussed in Deliverable 5.1, there are three types of stakeholders in healthcare – the patient/citizen, the healthcare provider and society. The telemedicine service could in fact address and benefit all three groups (which is a very unusual situation because of the complexity of this kind of service). Or the service could concentrate on the benefits to one of the stakeholders. This diversity in circumstances makes understanding who or which is the party who benefits the most substantially from the service complicated.

This issue of stakeholder identification emphasises the importance of differentiating between a telemedicine service’s beneficiaries and the primary client or other clients and knowing which one(s) among them are most critical at the implementation stage of the service.

The primary client should be understood as a most important partner to the telemedicine provider during the implementation stage of the service or tool. The primary client may perhaps be different at the piloting phase, and may then change by the time the large-scale implementation phase is reached. For example, as described in the KSYOS implementation case, the primary client was initially a set of dermatologists. Once the service had been accepted by the dermatologists, general practitioners were then included in the provision of the service. In the scaling-up phase, general practitioners became the primary clients: this was because they were the partners who were able to enlarge the use of the service.

The role of the primary client is to be the first user and advocate of the telemedicine service or tool outside the telemedicine provider organisation. The person or organisation which is the primary client will be the party which is first motivated to accept provision of the service or the introduction of the tool. The primary client will offer the initial objective feedback to the provider on the use of the service/tool and how to improve it.

3. Involve healthcare professionals and decision-makers

This section of the report describes the issues surrounding involving healthcare professionals and healthcare decision-makers. These are the individuals who play the most important role in terms of the changes to be made to the organisational, workflow and work structure, and economic components of the new telemedicine system or service.

3.1 What this critical success factor is

This critical success factor includes actions that help healthcare professionals and decision-makers to define, collaborate in developing and accept modifications in their usual way of delivering care as a result of a new service, and encourages them to act as advocates for the innovation. This process engages both healthcare professionals and decision-makers who are affected by the new telemedicine service.

In comparison to meeting the needs of the primary client, this critical success factor deals with the larger group of healthcare professionals and decision-makers after the initial decision to implement the new telemedicine service or tool has been taken. Depending on the type of telemedicine service to be deployed, the targeted healthcare professionals could vary, i.e., they could be physicians, nurses, or other specific groups of professionals. Decision-maker groups involve different levels of managers: for example starting with policy-makers or politicians, involving health plan leaders, and culminating with hospital, clinic or organisational department heads.

The adequate and timely involvement of healthcare professionals and decision-makers in telemedicine deployment has two roles. First, it guarantees that telemedicine service is properly designed in line with the specific needs of health professionals and satisfies the requirements of decision-makers (such as chief medical officers, chief executive officers, chief nurses, or chief information officers). Second, involving the category of healthcare decision-makers ensures alignment with the service’s information technology governance issues.

Healthcare professionals are often neither the decision-makers nor the target group for the telemedicine service implementation. However, healthcare professionals need to be involved properly in the process – since they are often informal leaders and decision-makers in organisations.

3.2 Objectives

The objectives behind involving healthcare professionals and decision-makers are to:

- Guarantee that the telemedicine service is properly designed in line with the specific needs of healthcare professionals and provider organisations.

- Engage healthcare professionals in the designing and implementation process in a timely way.
- Satisfy the requirements of decision-makers such as the chief medical officer, chief executive officer, chief nurse, or chief information officer.

3.3 The context surrounding the success factor

The context surrounding the success factor Involvement of healthcare professionals includes analysing the potential impact of the new service on daily routines, informing people about the planned intervention and any potential changes, and specifying professionals’ expectations of the innovation.

Healthcare professionals should be assured that the planned telemedicine service will not increase their workload or decrease their income. Different professional groups often have different motivations for being involved in the telemedicine adoption process.

Decision-makers should be assured that investing into the new service will bring clear benefits for them, e.g. increasing efficiency, improve care quality or help to cope with human resources.

3.4 First thoughts on pre-requisites underlying the success factor

The main pre-requisite in terms of this critical success factor is to understand and be aware of the existence and definition of different healthcare professionals influenced by the new telemedicine service or tool. Even healthcare professionals who belong to the same profession, such as physicians, could have different incentives and expectations about telemedicine depending on their position or subspecialty (e.g., radiologists as opposed to teleradiologists).

As a pre-requisite, the organisational structure of the new telemedicine service should be analysed to identify what organisations and actors are involved.

The existence of professional societies, associations and organisations could improve the involvement and acceptance of healthcare professionals.

3.5 Illustrations of this critical success factor from the Maccabi case

In the Maccabi case, doctors (both general practitioners and specialists) were involved in the design of the service. They continue to be involved in the service’s on-going development.

Decision-makers were also very involved: in fact, in this case, the chief executive officer of the organisation made the decision to implement the service and continues to monitor its development and on-going assessment personally.

3.6 Illustrations of this critical success factor from the RxEye case

The main groups of healthcare professionals influenced by the RxEye service are radiologists, pathologists or other medical imaging professionals. RxEye clearly differentiates between two subgroups of radiologists that have different expectations and incentives. The first are radiologists who are working for the local healthcare provider which is going to outsource the reporting service. The second are teleradiologists who provide the reporting service from the distance and do not belong to the local organisation. For RxEye, it was crucial to find incentives for both groups of professionals. Local radiologists are offered: i) subspecialty readings, if appropriate; ii) backup in case of vacancy, sick leave, or a temporary increase in workload. On the other hand, teleradiologists are provided with: iii) access to a wider market; iv) the opportunity to increase their income.

RxEye managed to introduce the service while making only minor changes in imaging and reporting processes.

From the point of the view of medical image reporters (i.e., radiologists and pathologists), the design of the RxEye service has the potential to re-engineer the current workflow and interfere with the comfort zone of the employees. When implementing the RxEye service therefore, one should also consider the benefits of the medical image reporter (for instance, the opportunity to be substituted for when on vacation or sick leave, or to be able to concentrate on more specific work such as paediatric, trauma or other specific fields of radiology).

In the RxEye case, the needs of healthcare decision-makers are addressed by offering them more diagnostic capacity and increasing the daily output of the organisation. In addition, the fact that the healthcare provider could obtain better access to specialised diagnostic sources, thus improving overall diagnostic quality of the radiological images, is a clear incentive for the decision-makers.

3.7 Illustrations of this critical success factor from the Teledialysis case

The Norwegian teledialysis service involves nurses in local hospitals and healthcare centres, doctors who are mainly nephrologists, and nurses in specialist healthcare hospitals. The service is considered as an improvement on the previous service it replaced by healthcare personnel. The personnel involved describe it as inspiring and exciting.

In the Norwegian teledialysis service, the healthcare professionals were considered to be more important than the decision-makers in the implementation phase. They were the ones who knew the routines and “the internal life” in the hospital, and had well founded and qualified opinions on what would work and what not. They were very important supporters when adaptations and practical solutions were discussed.

However, it was a pre-requisite for implementation and routine use that the service was supported both by the clinicians and the management of the hospital. The head doctor and the head nurse were initiators of the service and were involved throughout the whole process together with the project manager at the Norwegian Centre for Integrated Care and Telemedicine (NST). The health professionals continued, and continue, to be involved in all stages of the service development.

3.8 Illustrations of this critical success factor from the ITHACA case

The ITHACA service included the intense involvement of both healthcare professionals and decision-makers from the very beginning. The service incorporated the development of the current working processes, and integration of the telemedicine platform, in the follow-up and promotion of the adherence to treatment of chronic hypertension patients to the existing information system and daily routines. Healthcare professionals were involved in the deployment as they envisioned a reduction in visits and consultations due to the services provided by ITHACA.

3.9 Illustration of this critical success factor from the Patientenhilfe case

The German Patientenhilfe service addressed decision-makers on the level of financial decisions made through the health insurance company. Only after agreement was reached on the decision-maker level about reimbursement criteria for the service was the service design started.

The telemedicine service provider employed health care professionals (mainly nurses) and provided them with clear work descriptions and understandable workflows which made the healthcare professionals interested in the actual work.

To avoid resistance on the part of the general practitioners, in terms of any interference in their daily routines by a surplus of information about the home monitoring, the service provider attempted not to interrupt their information flow. For instance, reports are sent to the practitioners, according to an agreed schema, by the use of fax instead of in digital form. Hence, the doctors can read the important data coming from home monitoring at times which suit them rather than experiencing any major work interruption.

3.10 Illustration of this critical success factor from the KSYOS case

KSYOS has employed general practitioners and other specialists who provide clinical content to the telemedicine service. The type and content of the work is organised in a manner that includes sufficient incentives to in-house healthcare professionals. In relation to the healthcare professionals in institutions that are using the KSYOS service, the telemedicine provider attempts to find a mutually beneficial way of working rather than competing with them.

3.11 Illustration of this critical success factor from the Cardio Online Europe case

The Puglia Cardio Online Europe service was designed and implemented in close cooperation with ambulance doctors and cardiology specialists. The overall aim of the telecardiology service is to help and support ambulance doctors in their daily routine activity in cardiac emergencies. The telecardiology service offers 24/7 support to ambulance doctors by providing them with electrocardiogram (ECG) readings by specialist cardiologists based in the Cardio Online Europe centre. These reports are based on a mix of clinical findings and remote ECG reports. Both professional groups participated in a series of meetings that defined the functionalities of the system. The system was tested before going “on line” to be sure that it worked as required.

The Puglia region was one of the initiators and early supporters of telecardiology services. Thus, decision-makers were also involved in the implementation process. The Puglia Cardio Online Europe service has proven itself to be cost-effective through the referral to hospital of only those patients who are in need of hospital intervention, and therefore the system helps to avoid unnecessary hospitalisations. Cost-effectiveness increases the interest of decision-makers in the telemedicine service.

The telecardiology system is easy to use. In the place where the intervention of the public emergency system is needed, the standard 12-lead ECG is recorded. This is transmitted by a normal telephone to a central specialist who, in real time, analyses the track and, on the basis of anamnesis communicated from the ambulance doctor, issues a report. The operations centre of reference for the ambulance decides where to refer the patient. The platform enables viewing of all the electrocardiograms on-line. The parties involved in the Puglia telecardiology service are the public healthcare service, Cardio Online Europe and all regional hemodynamic centres.

3.12 Lessons learned on involving healthcare professionals and healthcare decision-makers from the cases

All the cases included the activities of addressing healthcare professionals and healthcare decision-makers. However, the groups that were involved were different in the various cases.

In Maccabi, Teledialysis, ITHACA, Patientenhilfe and Cardio Online Europe cases the new telemedicine service was implemented inside one organisation: i) In the Maccabi and Patientenhilfe cases, the organisation is the health plan; ii) In the Teledialysis, ITHACA and Cardio Online Europe cases, the initiator is the healthcare organisation itself.

In all these five cases the service was designed and implemented in close cooperation with different healthcare professional groups and healthcare decision-makers. All the parties involved were interested to implement the innovation inside

the organisation, and the focus was on the change management process. Accordingly, the risk of losing their position or job was very low among the healthcare professionals. From the healthcare decision-makers’ point of view, the risk of failure was low because the service was developed iteratively hand-in-hand with professionals from their own organisations. The opportunity to return to the old routines was present, without any remarkable negative consequences.

In the RxEye and KSYOS cases, the new telemedicine service was designed for service provision between healthcare organisations. This type of service provision included more stakeholder groups that were involved and were at risk of their working conditions being modified in a potentially undesirable way.

The following healthcare professionals and healthcare decision-maker groups could be highlighted:

- Professionals (such as radiologists, pathologists and dermatologists) employed by the healthcare organisation which buys the telemedicine service.
- Professionals (such as radiologists, pathologists and dermatologists) employed by the healthcare organisation which provides the telemedicine service.
- Decision-makers (such as chief executive officers or chief information officers, and heads of department) of the healthcare organisation which buys the telemedicine service.
- Decision-makers (such as chief executive officers or chief information officers, and heads of department) of the healthcare organisation which provides the telemedicine service.

The incentives of the various groups differed remarkably and the involvement of each group demanded a very good understanding of the needs of each group and thorough planning of the design and implementation tactics.

3.13 Overall analysis on involving healthcare professionals and healthcare decision-makers from the cases

The importance of the involvement of healthcare professionals and healthcare decision-makers is well illustrated in all these cases. The particular set of activities for the involvement varies from case to case, but two general groups of service provision can be demonstrated according to the complexity of measures:

- Services provided inside one healthcare organisation and involving professionals and decision-makers only from this organisation (whether it is a hospital, health plan or healthcare district).

- Services provided between different organisations and involving professionals and decision-makers from several stakeholder groups that have and experience different incentives and fears.

Timely involvement of the healthcare professionals and decision-makers speeds up the design and implementation process of a new telemedicine service. Involvement of different professionals and decision-maker groups helps them to collaborate in developing and accept modifications in their usual way of delivering care as a result of a new service.

3.14 Further relevant discussion

The involvement of healthcare professionals as users of the telemedicine system is extremely important because it can be advantageous to obtain their acceptance and their feedback in order to make further improvements to the service.

In many cases, the early involvement of healthcare professionals enables the proper addressing of adoption barriers, and helps to avoid and reduce risks.

4. Prepare and implement a business plan

This section of the report describes the issues surrounding the process of preparing and implementing a business plan (which can also include a financial plan and which therefore includes issues related to the reimbursement of telemedicine service).

4.1 What this critical success factor is

A business plan is a written document which results from careful analysis of available data. It describes the planned telemedicine service, its expected sales and marketing or – if it is not a commercial service – deployment strategy, and financial questions. It takes into account the appropriate reimbursement scheme. It contains a cost and benefit analysis and, in case of a large-scale deployment for the purpose of the healthcare system, it also includes a socio-economic analysis, which is much broader than a cost-benefit analysis as it aims at quantifying the indirect impact of the large scale service deployment.

A business plan for the new service has to be in place even when the telemedicine service will be provided by a non-profit organisation or a governmental organisation. The University of Alaska (Foster et al., 2006) provides arguments that a good business plan encourages a service provider or a tool producer (i.e., the telemedicine doer) to think about who is the potential customer for the telemedicine service, what elements the customer values, what are the underlying economic conditions, and how value can be delivered to customers at an appropriate cost.

A business plan for either telemedicine service provision or tool production could include, but is not limited to, a wide range of components (cf. Business plan template summary, April 2011):

- Executive summary.
- Introduction and background.
- Needs and demands assessment.
- Services plan or tool description document.
- Internal and external assessment (e.g., a strengths, weaknesses, opportunities and threats (SWOT) analysis).
- Marketing plan.
- Technical plan.
- Regulatory environment.
- Management plan.
- Financial plan.
- Presentation(s) to stakeholders.
- Training and testing.
- Operations plan.
- Evaluation feedback and refinement.

- Conclusion and recommendations.

In a business plan, it is particularly important to describe the paying customers, the revenue model, the customer value proposition (and service levels), existing solutions, competitive advantage, any hurdles that need to be overcome, and the resources required.

A business plan is a tool of high level importance for ensuring the sustainability of the service. All the costs are considered in a business plan and a cost-benefit analysis is done to check the validity of the investment required. The payer of the service or tool is defined depending on the characteristics and attributes of the reimbursement system, whether it is e.g., Beveridge-style or a Bismarckian system or the costs are paid out-of-pocket. Additionally, a timetable is defined and validated by all the relevant stakeholders, including the healthcare professionals.

4.2 Objectives

Having a business plan will help to define clearly the service objectives and its value for each stakeholder. This in turn will help to obtain the necessary support or the necessary resources for starting to deploy the service or develop the tool. Therefore each stakeholder’s requirement needs proper assessment.

The business plan will contribute to separate, and integrate, the actual telemedicine service from other similar services provided in the same domain.

4.3 Context surrounding the success factor

The fact that the telemedicine service is provided by a non-profit or a governmental organisation rather than by a commercial/for-profit one should not matter, as having a business plan can in either case help to think about who is the potential customer for the telemedicine service, what elements the customer values, what are the underlying economic conditions, and how value can be delivered to customers at an appropriate cost.

The business plan should also take into the consideration the applicable business model in the surrounding context (i.e., whether it is a publicly/privately funded service, for profit or not for profit, for the purpose of the organisation or the healthcare system).

4.4 First thoughts on pre-requisites underlying the success factor

Preparation of the business plan requires the existing market of medical services to be known. There should be clearly identified opportunities to serve underserved patients, healthcare providers and healthcare managers.

The telemedicine service provider which is preparing the business plan has to be either a legal entity in its own right or a clearly defined entity within the organisation that takes the responsibility to execute the business plan.

4.5 Illustrations of this critical success factor from the Maccabi case

In the Maccabi case, all the components of a business plan were prepared. The overall concept was presented: it included the anticipated outcomes in quality of care, patient satisfaction, and economic indicators (such as reduced emergency room visits and reduced hospital days). However, by and large, these outcomes were not quantified at this early stage. A budget for expenditures was prepared which was presented to both Maccabi and Gertner, the supporting organisation, and approved by both. The budget served as the basis for a contract between the two organisations that specified who was responsible for what services and how the costs for set-up and on-going operation were to be divided between the two.

4.6 Illustrations of this critical success factor from the RxEye case

RxEye prepared the business plan to provide a service for a certain market segment. RxEye knows its market segment and customers well: for example, it is aware of the pressure on the imaging service provider to be more effective while experiencing increasing budget deficits and having little possibility of increasing financing. RxEye has described the business opportunity deriving from the geographical, structural problem that exists between rural areas and university hospitals and the relative lack of healthcare professionals. Its business plan includes a clear description of the service components and information flow. RxEye is an enabler, on the one hand, for healthcare providers (hospitals) to speed up their reporting time and, on the other hand, for radiologists and pathologists to provide their services in a multi-organisational environment based on market rules. It aims to address the uneven distribution of radiologists and pathologists between hospitals. To raise financing from investors, all the components of the business plan, including milestones, were described. However, for the time being, the costs and the estimated benefits of the service are not publicly available.

4.7 Illustrations of this critical success factor from the Teledialysis case

In the Norwegian Teledialysis case, economic indicators were not quantified in detail at the stage of service development and implementation, but a simple economic analysis was worked out. The implementation decision was based on the perception that the service was wanted, that it would improve the quality, and that it would work on to be less costly to operate in the long run (investment costs were taken into account).

4.8 Illustrations of this critical success factor from the ITHACA case

In the ITHACA case, originally BSA drafted a functional plan to describe the intervention design, set the patient target, inclusion and exclusion criteria and size the service requirements. The joint initiative with Novartis and Indra required a detailed business plan that was built on the original functional plan. Despite the fact that there is not a tradition in Spanish public healthcare services to work by using this type of business document, the business plan was seen by BSA as a constructive initiative that defined the roles of partners along the journey. Novartis helped to refine the document that was finally approved by the steering committee.

4.9 Illustration of this critical success factor from the Patientenhilfe case

In order to strengthen the Patientenhilfe service, the telemedicine service provider addressed the need for clarity in specifying targeted (eligible) conditions, inclusion and exclusion parameters, and included the period of time needed. The services that are offered are most of the time clearly defined. The implementation plan includes clear success (and failure) parameters linked to eligibility, size of targeted population linked to the budgeting, screening and inclusion procedures, intended patient flows, exclusion procedures and follow-up offers.

4.10 Illustration of this critical success factor from the KSYOS case

Preparation of a sort of business plan was part of KSYOS service implementation. The provider highlights that it is important to translate the company's *vision and mission* into the business plan.

4.11 Illustration of this critical success factor from the Cardio Online Europe case

The Puglia telecardiology service was started with the help of sponsors. However, once it was proven to be cost-effective, the self-sustainable independent service provider continued the provision.

4.12 Lessons learned on preparing and implementing a business plan from the cases

The analysis of the cases reveals that only the RxEye company prepared a comprehensive business plan before scaling up the service.

In the ITHACA service, a functional plan was initially drafted to describe the intervention design, set the patient target, inclusion and exclusion criteria and size the service requirements. The joint initiative with Novartis and Indra required a detailed business plan that was built on the original functional plan.

Preparation of a sort of business plan was part of KSYOS service implementation and all the components of a business plan were prepared in the Maccabi case. In the three other cases, the respondents said that the implementation plan included parts of a business plan but a business plan per se was not prepared.

It can be concluded that, in all the cases, at least some of the components of a business plan were included and considered as important issues, but a comprehensive business plan was prepared only in that case where the need to bring resources from outside the telemedicine service-providing organisation was needed.

4.13 Overall analysis on preparing and implementing a business plan from the cases

The preparation and implementation of a business plan is not in the daily routine of many healthcare organisations. This also applies to the telemedicine services designed and implemented as supportive services for traditional diagnostic, treatment and care pathways. Healthcare organisations seem to prefer to undertake financial planning of the telemedicine service rather than analysing all the components of a business plan.

However, the analysis of these seven cases reveals that looking at the telemedicine service development and implementation process from the wider perspective could help understand customer needs better and foster the scale-up of the service. Cases that prepare proper business plans have a better potential to grow outside the organisation and be traded on the healthcare market.

4.14 Further relevant discussion

In the face of a lack of evidence of the existence of specific and comprehensive business plans properly developed by most providers, there is some indication that the need for a proper business plan could be among the most important critical factors.

One should recognise that, for a telemedicine service, writing a business plan is not easy but it is a worthwhile effort to involve the stakeholders and to be conscious of the risks involved in deploying the service.

In addition to the writing of a business plan, telemedicine doers could benefit from being aware of different maturity models (van Dyk et al., 2013) and telemedicine assessment tools such as ASSIST¹ and MAST².

¹ ASSIST is an example of a method for assessing cost and benefit analysis and socio-economic impact of telemedicine services. URL: <http://www.assist-telemedicine.net/home/>

² MAST stands Model for ASsessment of Telemedicine.
URL: <http://www.renewinghealth.eu/en/assessment-method>

In the Region of Veneto, the Business Model Canvas of Alexander Osterwalder³ has recently been used to support the decision process of the deployment of a telemedicine service for patients with Chronic Heart Failure conditions⁴.

³ URL: http://en.wikipedia.org/wiki/Business_Model_Canvas for a short presentation of the Business Model Canvas tool.

⁴ A video of a presentation made by Claudio Saccavini, from Arsenal IT, in the Veneto Region reports about the use of the Business Model Canvas to support the decision process of the deployment of a telemedicine service for patients with Chronic Heart Failure conditions.
URL: <http://tinyurl.com/YouTube-RH-Claudio-Saccavini> (last accessed on 31 August 2014).

5. Prepare and implement a change management plan

This section of the report describes the issues surrounding preparing and implementing a change management plan.

5.1 What this critical success factor is

Implementation of new technology into their daily routines always changes in one way or another the habits of the healthcare professionals and the traditional care pathways along which they have previously worked. This critical success factor is about preparing and implementing a change management plan to simplify and facilitate the adaptation to the new service.

A change management action plan may include a range of potential activities, such as:

- The preparation of a plan for change management.
- An explanation of the reasons for the change taking place.
- The addition of extra resources during the initial deployment phase.
- Development of a communications strategy.
- Support for the telemedicine service to find proper position in an existing care pathway.
- Counteract any challenges that prevent seamless implementation of the telemedicine service into the existing workflow.
- Identification of training and capacity-building needs.
- Include a communication plan for in-house use as well as for public use.

There may be a need for several change management plans as they may need to cover various phases of the implementation process.

The components of a change management plan could also include a set of actions to introduce the new telemedicine service to the organisation; targeting different stakeholders that range from patients and health professionals to administrative staff; and implementing the use of many different communication channels such as emails, internal news, seminars, and public news items to be covered in the media.

The service maturity of the telemedicine service also has to be assessed to avoid the telemedicine service delivery process or tool production either falling back towards the piloting phase or ceasing real-life production. As a result, the main changes in routine care should be addressed by a change management plan that involves all the relevant stakeholders (including health care professionals).

5.2 Objectives

Various objectives underpin a change management plan.

A change management plan supports the transformation of the organisation and working processes, because telemedicine introduces changes to both the health professional and business operations that are different from the previous, historical care pathway. Having such a plan ensures that the new telemedicine service can be well integrated in the ordinary routine of the organisation and will not disrupt normal procedures. The new telemedicine service changes’ requirements are to be assessed and compared with actual service processes (not telemedicine processes).

The change management plan has the objective of identifying training and capacity-building needs. This ensures that the new telemedicine service is implemented successfully for healthcare professionals and customers, including patients. The aim is to use a minimal level of resources to guarantee that all stakeholders are aware of and prepared for these changes.

The change management plan can encourage potentially troublesome new interactions and transactions between different stakeholders/parties more acceptable to them. It encourages the telemedicine service clients to become accustomed to the new type of service or tool, which for them is different than the previously used more conventional medical service or tool.

5.3 The context surrounding the success factor

The change management plan allows healthcare professionals to understand and overcome any barriers and accept innovation in their daily work. The plan and phasing of the implementation of the service or tool production delivery could differ depending on the following circumstances, for example, whether:

- The service is deployed inside the organisation, between organisations, across the borders, between the organisation or healthcare system and citizen.
- The service is a for-profit or non-for-profit service.
- The new service or tool changes the care pathway, and in what way.
- Different medical specialties are involved.

5.4 First thoughts on pre-requisites underlying the success factor

The change management plan demands the identification of issues that are pertinent to the main stakeholders before the implementation of the telemedicine service. This includes identification of business processes and the share of telemedicine in them. Understanding to what extent and in which segment of business the telemedicine service changes current medical service is important. The change management plan should include a budget for communication activities: in turn, this communication budget could, in some cases, be the part of the business plan.

5.5 Illustrations of this critical success factor from the Maccabi case

In the Maccabi case, the decision to foster a close collaboration with the primary care physician was a key element of the initiative. It included the decision that no patient could be admitted to the programme without the recommendation or consent of his/her general practitioner. The shared electronic medical record, which is transparent to all of the healthcare providers as well as to the centre's multidisciplinary staff, was a key factor in mediating the information exchange and communication which is critical to the success of the service. The core elements that lie behind this success factor are the clear responsibility for the service and the back-up of senior management in managing the change.

For the Maccabi service, training and capacity-building was clearly viewed as a critical success factor. Very stringent criteria were developed for the eligibility of the nurses to serve in the centre: they had to be registered nurses, have a bachelor's degree, have at least three years of experience of working with chronically ill patients, have a subspecialty in at least one of the relevant chronic diseases, and high-level communication skills. Each candidate was interviewed in depth: many were rejected. Those that qualified and were accepted to work at the telephone centre then underwent 300 hours of intensive training in all of the skills required to care for chronically ill patients using telemedicine.

The communication strategy included presenting the new centre at all levels of the organisation, and holding working meetings with those parts of the organisation likely to be affected by the centre. Primary care physicians were invited to come to visit the centre physically, and many of them did.

5.6 Illustrations of this critical success factor from the RxEye case

The RxEye service minimally changes imaging specialists' routines. It offers a simple and secure solution to employ remote reviewers of images. RxEye facilitates the image interpreting service using external radiologists or medical imaging experts for care given for internal purposes. Teleradiologists/pathologists can offer their reporting services to other companies through an automatically generated invoicing basis. The RxEye service fully supports clinical flow processes so as to minimise the need for administration on the part of both clients and reviewers. Only minor changes are needed in the routine workflow for imaging department. RxEye forms a part of the existing and reimbursed image reporting service. It is a mature service, well integrated into the whole health information chain that includes the use of an electronic medical record. RxEye customers are different hospitals and physicians groups who need only a little training. Each case is addressed according to the needs of the particular case. Therefore, there is no universal RxEye change management plan for healthcare professionals. However, the authors of this paragraph have no

evidence either that there has been any need for a specific change management plan in any of the implemented RxEye services.

To be more specific, the RxEye communication plan includes an internal communication strategy for healthcare providers (an Intranet); publicity (available via the service’s website, and several press releases); and professional exhibitions (held in Scandinavia, in England, and at international meetings).

5.7 Illustrations of this critical success factor from the Teledialysis case

In terms of Norwegian teledialysis, the new telemedicine service is integrated in the ordinary routines of the organisation, for example, by setting up schedules for use of the service. Technical training was performed, for instance, on how the monitoring devices and/or system(s) and video-conference equipment works. An alternative service (teledialysis to the patients in their homes) is available which offers various options for receiving the treatment to those patients who would not like to use the new teledialysis service. From the teledialysis service implementation point of view, the training at all times of the staff who are involved is crucial. It is important to bear in mind in mind that there is a need for update of the initial training and possible new elements and training of new staff, such as the checking and updating of routine descriptions, basic training in dialysis, and training in the use of video-conferencing in particular. Training in professional conduct via video-conferencing for the nurses was given.

The communication strategy might be divided into internal strategy and external strategy. However, no internal strategy was worked out as the service was initiated in the hospital’s renal department which is a well-known unit. The external strategy included presentations at conferences and at meetings for nephrology nurses and there was widespread publication of papers or articles in professional journals and reports.

The service was also exported to other countries. It was included in some international projects such as Implementing Transnational Telemedicine Solutions (ITTS) and Competitive Health, that were both European Union co-financed projects.

5.8 Illustrations of this critical success factor from the ITHACA case

The ITHACA partners did not call their plan a change management plan, however, they actually did everything that would be included in a change management plan. This included: training for different groups of end-users, disseminating activities both internally (through meetings) and externally (through public presentations). A particular emphasis was paid to training and communicating throughout the whole project plan. Since the service was co-designed by the health professionals, some change management activities were implicitly encompassed in the design process.

5.9 Illustration of this critical success factor from the Patientenhilfe case

Evidence is not available on a change management plan, but it is clear that the Patientenhilfe case did modify specialist, general practitioner and nursing behaviours (for the doctors, as little as possible).

The programmes available in the Patientenhilfe service form part of standard healthcare processes in cooperation with inpatient and outpatient facilities, i.e., with general practitioners and specialists. Physicians are alerted whenever an intervention is required above the level of nurse care, thus alleviating their workload but keeping them in the loop.

The service provides seamless implementation of the telemonitoring service into the existing workflow, which places exceptionally high demands on development and implementation. Only necessary, actionable information is delivered to the healthcare professionals and additional details are given on request. Hence, the system is one of management by exception, at least for the clinicians and general practitioners involved: their normal (old or former) workflow has not been interrupted by the introduction of the new service.

Customisable guideline-based rules stratify patients, based on the patients' prognosis, regarding their psychosocial stressors: thus, the guidelines or rules provide individually tailored care. Nurses follow up by phone, so as to ensure that patients comply with their care plan and avoid higher acuity⁵. Patient-specific alerts are subject to rule-based management.

5.10 Illustration of this critical success factor from the KSYOS case

KSYOS implemented telemedicine services incrementally to avoid resistance on the part of general practitioners and other specialist doctors. The change management started with the introduction of a new diagnostic service to dermatologists. After initial feedback, and adjustment of the service according to dermatologists' advice on acceptance of the system's use, the new teledermatology service was launched for general practitioners. A similar method was used to introduce other new telemedicine services.

5.11 Illustration of this critical success factor from the Cardio Online Europe case

During the analysis process, there was no opportunity to collect evidence about the change management plan in the Puglia telecardiology service.

⁵ This implies that patients are less likely to become even more seriously ill or to risk entering hospital.

5.12 Lessons learned on preparing and implementing a change management plan from the cases

The cases reveal that there was no written change management plan prepared or implemented in any of the investigated cases. To simplify and facilitate the adaption of new telemedicine service, the telemedicine service providers instead implemented components of a change management plan incrementally according to the progress of the change and observed findings.

The most commonly used measure concerning change management was the training of healthcare professionals. This activity was performed in six cases. However, the target groups, the training subject, and the extent of the training differed from case to case.

A communication strategy was the second most frequently mentioned activity in the change management domain.

In the Maccabi case, the importance of taking clear responsibility for the service and the back-up of senior management in managing the change was highlighted.

5.13 Overall analysis on preparing and implementing a change management plan from the cases

Based on the analysis of the cases, this critical success factor appears to be an umbrella for several activities necessary to make change management as acceptable as possible for the different stakeholders in the process. Surprisingly, no cases were found where a written change management plan was prepared. Instead, telemedicine service providers implemented training, capacity-building, a communication strategy, and other measures, incrementally according to the progress of the development of the service. Sometimes in the cases, that part of a change management plan which is generally in charge of managing the transition phase was either not needed or was organised in an ad hoc way.

The change management activities differed from case to case depending on the type of the service and stakeholders involved in the service. In all the cases, the training of the healthcare professionals involved was performed. In provider-to-provider services (such as RxEye and KSYOS), measures to facilitate change management were targeted so as mostly to avoid reluctance on the part of the healthcare professionals and to communicate about the service to healthcare decision-makers. In provider-to-patient services (such as Maccabi, Teledialysis, ITHACA, and Patientenhilfe), a lot of effort was put into the training of healthcare professionals so that they could use telemedicine tools properly and find patients who would really benefit from the new service.

5.14 Further relevant discussion

Useful materials and documentation exist from associations like the Association of Change Management Professionals and Canada’s Infoway.

- Association of Change Management Professionals (ACMP):
www.acmpglobal.org
- Managing eHealth Change: A Pan-Canadian Collaborative Approach:
https://www.infoway-inforoute.ca/index.php/resources/toolkits/change-management/methodologies-and-approaches/further-reading/cat_view/2-resources/83-toolkits/99-change-management/103-methodologies-and-approaches/129-further-reading?limit=5&limitstart=0&order=date&dir=ASC

6. Put the patient at the centre of the service

This section of the report describes the issues surrounding putting the patient at the centre of the service. It also draws some attention to user-centeredness in the case of provider-to-provider services.

6.1 What this critical success factor is

Putting the patient at the centre (or patient-centeredness) means developing the service with the patients’ perspective in mind. It indicates that this critical success factor is related to the design phase of the telemedicine intervention.

It takes into account the values of the culture, the personal and social needs of the users, and the users’ comfort level with the different forms of interaction both face-to-face and virtual. It seeks to strengthen the human relationship and not to depersonalise it.

6.2 Objectives

The objective of this critical success factor is to address the most common fear of the system’s future users: that the technology replaces a human being.

The objective of the doer is to assure that user needs and preferences are identified and are taken into account in the design phase of the service. In conceptualising the service and enlisting support for it, the doer needs to emphasise that the objective of the service is to enable, improve and support human interaction and not replace it.

6.3 The context surrounding the success factor

Patient-centeredness is much more of a critical success factor in patient-oriented telemedicine services than it is in provider-to-provider services (although it is not negligible in the latter services either).

This critical success factor is relevant at both healthcare system level services as well as organisational level services. Patient-centeredness is relevant in both public and private settings.

The characteristics of patient-centeredness may differ according to whether the service is a provider-patient or a provider-provider one. For example, in a provider-patient service, a patient-centeredness approach implies that the technology is intended as an enhancement of the personal relationship between the caregiver and patient, not a substitute for it. Patient-centeredness may be seen as a consequence of the new service being introduced, i.e., the patients benefit either from better care or from more accessible care.

A patient-centred service can be multi-channel, and can include face-to-face physical visits as well as the use of multiple technologies, such as telephone, videoconferences, emails, communication via a portal or even letters.

The technology is perceived as an enabler that provides efficiency benefits but also strengthens the therapeutic relationship between the patient and the healthcare team.

In the case of provider-provider telemedicine, the technology enhances the relationship between the people involved in the system and also allows for multi-channel communication including face-to-face team meetings when necessary.

6.4 First thoughts on pre-requisites underlying the success factor

The pre-requisite for this success factor to function is that it is in a context that involves human interaction as an integral and essential element. Accurate identification of the human needs in the particular situation and insights into how these needs may evolve over time is needed.

6.5 Illustrations of this critical success factor from the Maccabi case

The Maccabi service is human-centred insofar as it promotes a strong personal relationship between the case-manager nurse in the telemedicine centre and the patient. All the nurses have their own group of assigned patients for whom they are responsible. The individual nurse is also responsible for coordination with both the patient’s primary care physician and the specialists who are caring for the patient. The patients are still free to make face-to-face appointments with their doctors (and most do). Thus, the service enhances and strengthens the therapeutic relationship with the healthcare team and does not replace it. It is intended that the service reduces the burden on both the general practitioner and the specialist while giving the patient a sense of security and safety. The patient knows that s/he has access to his/her nurse (or another nurse on the team who knows everything that has happened to the patient recently) on a 24/7 basis.

The strategic decisions made by Maccabi in going to large-scale deployment were: to strengthen the proactive relationship between the nurse and the patient via video-conferencing; to bolster this with multidisciplinary back-up; and to use telemonitoring only on selected patients where it provides actual value-added.

6.6 Illustrations of this critical success factor from the RxEye case

User-centeredness is important to RxEye, both in terms of patient-centeredness and from the perspective of the employees involved. Patient-centeredness was a very important factor in the RxEye service deployment. A successfully deployed service speeds up the medical imaging reporting process which enables the patient to get quicker access to the service. Even if the patient is involved in the RxEye service only indirectly, the communication of this opportunity regarding quick access to results to the patient plays a very important role through public broadcast channels.

6.7 Illustrations of this critical success factor from the Teledialysis case

The aim of the Norwegian teledialysis service is to deliver good quality service to patients with kidney failure who live in areas where there are no nephrologists (medical doctors who are specialists in kidney care).

The teledialysis service avoids unnecessary travel on the part of patients. Thus, it saves a remarkable amount of patients’ time and resources that would otherwise be needed in the case of travelling to receive conventional services.

6.8 Illustrations of this critical success factor from the ITHACA case

The multimodal design of the ITHACA service – based on communication via web, phone, and paper – supports the inclusion of all sorts of patients regardless of their level of computer skills. The telemedicine service is intended for chronic hypertensive patients, to improve patient satisfaction and treatment adherence. In order to achieve these objectives, patient-centeredness was a key feature for all the agents involved in the project. Patients’ health and personal needs were taken into account in the design process and throughout its deployment.

6.9 Illustration of this critical success factor from the Patientenhilfe case

The Patientenhilfe service is a complementary service to face-to-face meetings with doctors. Patients are stratified according to their health status so as to provide individualised care. The results of the service prove that the patient benefits from the service a lot – in the first year of the service provision in Germany, 46% of deaths were prevented, up to 40% of hospital admissions were avoided, and there was a gain of 25% of cost savings (S. Sonntag, presentation in Athens, May 2014).

6.10 Illustration of this critical success factor from the KSYOS CASE

The KSYOS service aims to avoid unnecessary visits to general practitioners or specialists. The patients start with a visit to their general practitioner’s office where the necessary images are taken or tests made. This ensures physical contact with the healthcare provider. Images and test results are consulted by specialists using the telemedicine solution, and the ensuing report is provided remotely. The results show that, using the KSYOS telemedicine service, 74% of all live referrals are prevented after selection of the appropriate patients by general practitioner. The average response time is 4.6 hours only and the short-term cost savings are 20-40%.

6.11 Illustration of this critical success factor from the Cardio Online Europe case

The Puglia telecardiology service provides patients with immediate ECG interpreting using a telemedicine solution. This avoids unnecessary visits to emergency departments or other forms of speciality care. Even more importantly, the results show that the telecardiology service improves patient outcomes and ensures access to proper intervention and treatment.

6.12 Lessons learned on putting the patient at the centre of the service from the cases

The issues surrounding putting the patient at the centre of the service depend on the service type, such as:

- Telemedicine service provided from the healthcare provider to the patient.
- Telemedicine service provided from the healthcare provider to the patient.

In the case of a provider-to-patient service, the patient is directly influenced by the telemedicine service components. In that case, the emphasis of the service is more in assuring that the technology would not replace human interaction.

For example, in the Maccabi case, each nurse in the telemedicine centre has her own group of assigned patients for whom she is responsible. In this way, the service enhances and strengthens the therapeutic relationship with the healthcare team and does not replace it.

In the ITHACA case, the patient-centeredness was addressed using communication channels via web, phone, and paper complementary to telemedicine that supported the inclusion of all groups of patients regardless of their level of computer skills.

The Patientenhilfe service is a complementary service to face-to-face meetings with doctors. Patients are stratified according to their health status so as to provide individualised care.

In all the provider-to-patient service cases, the design of the user interface and easy-to-use technology were very important features.

In the case of a provider-to-provider service, the patient-centeredness is achieved indirectly by improving the care quality to patients or by providing patients with quicker access to the care.

6.13 Overall analysis on putting the patient at the centre of the service from the cases

Putting the patient at the centre of the service was directly or indirectly evident in all of the seven cases studied. The form of patient-centeredness differed according to the type of the service – provider-to-patient or provider-to-provider service.

6.14 Further relevant discussion

Patient-centeredness is a strategy to improve fitting services to actual patient’s needs. The importance of citizen or patient satisfaction in the design and implementation of the telemedicine service is continuously in the scope of telemedicine service or tool developers. Many telemedicine initiatives are starting to address the issue of patient-centeredness.

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