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# Strategic Intelligence Monitor on Personal Health Systems Phase 3 (SIMPHS3)

*Operational Guidelines for ICT-supported Integrated Care and Independent Living*

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**Abstract**

The guidelines in this report have been developed as part of the Strategic Intelligence Monitor on Personal Health Systems Phase 3 (SIMPHS3) project. Twenty-four ICT-supported integrated care initiatives in the EU were identified which supported integrated care and/or independent living and were either deployed or promising large scale pilots.

The aim of this report is to define a set of recommendations to guide the process of developing and implementing ICT-supported integrated care and independent living, based on the experiences made in these 24 initiatives.

The intended audience for this guidance document are those who work on the development and implementation of initiatives at an operational level, such as professionals, managers in healthcare organisations, regional managers of health or social care, health insurers, professionals' organisations, etc.

**Acknowledgements**

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## Preface

E-health is considered one of the key solutions that can help solve many of the challenges EU member states are faced with: an ageing population; a growing number of chronically ill people; concerns about the sustainability of healthcare systems; changing patterns in healthcare delivery to promote independently living; a growing availability of technical solutions; and shortages in the healthcare workforce. In light of these societal challenges, there is a need to look at the bigger picture and take a long-term perspective in order to promote radical changes in healthcare and social care. The time is ripe for wider implementation of eHealth, both from a demand perspective (healthcare systems) and from a supply perspective (technology availability). There is a growing awareness about the need to move away from hospital care to care outside of institutions, and the importance of taking action before events happen rather than reacting, which is where ICT-supported integrated care comes into the picture. Exchange of information is a central element in this process. Solutions like remote patient monitoring, telehealth, telecare and electronic health records are all enablers for moving care outside healthcare facilities. This process not only affects healthcare, but also social care and therefore the overall organisation of care.

The guidelines presented in this report focus on ICT-supported integrated care and independent living. The aim is to contribute to the development of ICT-supported care delivery currently underway in European regions. This document is based on actual cases where innovative ICT-supported care practices have been implemented and scaled-up and allows us to learn about different strategies adopted to address this complex challenge.

Like with any innovation project, being aware of the best available technology solutions or knowing about the optimal scenario is not sufficient to introduce the required changes. Modifying routine processes in healthcare is difficult because healthcare is a sensitive area. Health professionals cannot afford to take any risks when trying new systems for diagnoses and treatment as the life of their patients is at stake. Furthermore, healthcare is highly personal and the interaction between practitioners and patients impacts health outcomes. In ICT-supported care delivery, sensitive patient information is exchanged which requires that the highest security standards are complied with. In addition, the structure of healthcare organisations is often very complex. Hospital staff, for instance, cover a wide array of disciplines and often different processes and information systems have been put in place over time which makes integration difficult.

The complexity that characterises health and social care delivery may be one of the reasons why communication technologies have been taken up at a slower pace than expected in the care sector. The most difficult challenges are not the technological possibilities per se but their implementation and adoption into existing routine practices.

The saying that "The proof of the pudding is in the eating" applies well to the implementation of ICT-supported integrated care. All the ingredients may be there, but ICT-supported integrated care will only succeed if it leads to better care delivery.

# Executive Summary

*Background*

The recommendations presented in this report have been developed as part of the Strategic Intelligence Monitor on Personal Health Systems (SIMPHS) project, a multiannual research project undertaken by the Joint Research Centre (JRC, IPTS) in cooperation with DG CNECT, European Commission. The aim of the SIMPHS project is to foster the development, adoption and implementation of ICT-for-health solutions and to address several of the most pressing challenges health and health systems are faced with today, such as chronic disease management, improving the sustainability and efficiency of health systems by unlocking innovation, enhancing patient/citizen-centric care and citizen empowerment. This report is part of the third and last phase of the project (SIMPHS3) which focusses on the analysis of best operational practices of integrated care and independent living services in European countries and regions.

*Aim*

The aim of this report is to define a set of recommendations to guide the process of developing and implementing ICT-supported integrated care and independent living, based on the experiences of a number of initiatives across the EU.

The intended audience for this guidance document consists of those who work on the development and implementation of initiatives at an operational level, such as care professionals, managers in healthcare organisations, regional managers of health or social care, health insurers, professionals' organisations, etc.

*Methods*

We identified twenty-four ICT-supported integrated care initiatives in the EU which supported integrated care and/or independent living and were either already deployed or were large scale pilots. A qualitative analysis of the cases was carried out on two levels: in-depth within-case and across-cases analysis. The analysis followed a framework which comprises a number of relevant dimensions for ICT-supported integrated care identified in the scientific literature. The dimensions used in the cross-case analysis include: 1) governance and policy; 2) care organisation and integration through ICT; 3) business models, funding and incentives; 4) deployment level and impact. Based on the 24 SIMPHS3 case reports and the cross-case analysis, key elements for success and barriers were identified for the development of these guidelines. Recurring observations in the cases were used to formulate recommendations. The recommendations are therefore based on the experiences reported in the analysed cases and do not intend to give a complete overview of all the possible elements that ICT-supported integrated care implementation may entail.

*Recommendations*

The following recommendations were formulated on the basis of the above analysis and grouped in 4 main categories:

**Policy and political setting**

1. Explore the regional/national political and policy context to identify potential blockers and enablers; develop a solution around the enablers, and define workarounds to resolve blocking elements. This includes mapping of existing resources in relation to the implementation context, Internet access, legislations etc.

**Preparation**

*Aims and objectives:*

2. Especially in large projects/ programmes and in those with a long-term perspective, monitor the objectives and activities regularly, linking the different work packages to ensure that the ultimate objective can be achieved. If necessary, reconsider and fine-tune the objectives with key stakeholders.

3. Define and distinguish clearly between project/programme objectives related to the short-term (in a temporary setting) and longer-term objectives for mainstreaming (in a permanent setting).

*Stakeholders:*

4. At the start and during the initiative, carry out a systematic inventory of stakeholders, including those who affect the initiative and those affected by it, in order to adapt the strategy to their particular circumstances.

**Characteristics of the ICT-supported integrated care solution**

*Functional characteristics:*

5. Make sure the eHealth solution in question is a good answer to a clear user need, focusing on care professionals and/or patients/citizens or other key stakeholders. In addition, design and plan awareness actions to make sure targeted users are engaged and know about the benefits of the new system.

*Technical characteristics:*

6. Ensure that the eHealth solution is as user-friendly as possible and evaluate it in a practical setting with the users, e.g. Living Lab or pilot study.

*Resources:*

7. Develop a sound business model which demonstrates the higher value of ICT-supported integrated care over standard care. Alternatively or in addition, identify available funding schemes at the start of the initiative, for both short- and long-term funding for mainstreaming.

8. Given the innovative nature of eHealth technology, explore suitable strategies for procurement and adapt procurement processes to allow for the development of technology-based solutions that answer the needs of care delivery optimally.

**Enabling implementation**

*At the level of the organisation:*

9. Starting an innovative eHealth strategy is costly: develop a business model/value proposition with those who make the financial investment and benefit from the outcomes, taking into account the financial and human resources requirements and the incentives needed to promote the use of the eHealth solution.

10. Plan and organise training within the organisation affected by the new technology so as to allow for adjustment to new roles and processes.

*Culture of ICT-supported integrated care readiness:*

11. Initiate cultural change in organisations to promote the adoption of innovation and to stimulate communication, co-creation and cooperation between organisations.

*Coordination between organisations:*

12. Check whether the policies of relevant stakeholder organisations are conducive to the uptake of the planned eHealth solution and devise strategies to address potential hindrances to implementation.
13. Build on existing coordination and cooperation networks between stakeholder organisations as a starting point.

*Professionals:*

14. Involve professionals from the various sectors in the development and implementation strategy of the eHealth solution from the start.
15. Appoint champions to advocate the initiative, monitor change management and define new roles for care professionals whenever required, to implement change and coordinate new care processes.

*Acceptance by patients and other users:*

16. Involve target users from the start in the development of the eHealth tools and the implementation strategy to answer their specific needs and adapt the solution to their capacities.
17. Offer training and support to patients/citizens and other users so they can acquire the necessary ICT skills and quickly solve problems.

# 1 Introduction

## 1.1 Background

The guidelines presented in this report have been developed as part of the Strategic Intelligence Monitor on Personal Health Systems (SIMPHS), a multiannual research project undertaken by JRC IPTS in cooperation with DG CNECT. The aim of the SIMPHS project is to foster the development, adoption and implementation of eHealth and to address several of the most pressing challenges health and health systems are faced with today, such as chronic disease management, improving the sustainability and efficiency of health systems by unlocking innovation, and enhancing patient/citizen-centric care and citizen empowerment. SIMPHS started in 2009 with the analysis of the market for Remote Patient Monitoring and Treatment (RMT) within Personal Health Systems (PHS) from a supply-side perspective. This approach was complemented in a second phase (2010-2012) with the analysis of the demand side, focusing on eHealth needs of healthcare professionals, patients, and other users of eHealth solutions[1]. This report is part of the third and last phase of the project (SIMPHS3), which focusses on the analysis of best operational practices of integrated care and independent living services in European countries and regions.

The SIMPHS research aims to support policy initiatives in the EU, such as the European Commission's Lead Market Initiative (LMI), the eHealth Action Plan, the Digital Agenda for Europe (DAE) and more recently the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA). There is a close link between the EIP on AHA and the analysis reported in this document on guidelines. The EIP on AHA promotes, inter alia, the development of ICT-supported integrated care in one of its Action Groups (B3), by collecting and analysing good practices. Some of the case studies included in the analysis of SIMPHS3 are also part of the EIP on AHA.

In SIMPHS3, the ultimate objective has been to investigate the implementation of ICT-supported integrated care and independent living in the EU to support further scaling up in Europe. The recommendations presented in this report identify a set of factors which lead to best operational practice, for use by those who pursue the deployment of ICT-supported integrated care and/or independent living. The guidelines are based on the analysis of 24 successful or promising initiatives whose aim was to develop and implement ICT-supported integrated care and independent living. The overall approach for the SIMPHS3 research and the analysis of the 24 case studies has been presented in a separate report[2], which is why it is only addressed briefly in the methods section of this report.

## 1.2 Objective of the guidelines

The lessons from the SIMPHS3 case studies have been the starting point for these guidelines whose aim is to raise awareness of key elements that should be taken into consideration when implementing ICT-supported integrated care and independent living solutions. Indeed, health and social care delivery is a very complex domain which requires the interplay of a number of actors and organisations in order to deliver care in the most efficient way and satisfy individual needs in the best way possible. Care organisations themselves can be difficult to manage because of the variety of disciplines they cover and

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[1]  http://is.jrc.ec.europa.eu/pages/TFS/SIMPHS3.html

[2]  See http://publications.jrc.ec.europa.eu/repository/bitstream/JRC92703/jrc92703.pdf and http://is.jrc.ec.europa.eu/pages/TFS/SIMPHS3.html

treatments they need to deliver. It would therefore be unrealistic to think that a simple tool could provide a recipe for the implementation of ICT-supported integrated care solutions in health and social care.

These guidelines are therefore an attempt to provide possible directions for the implementation of potential solutions, based on state-of-the-art experience from the field of ICT-supported integrated care and independent living, as analysed in the SIMPHS3 research. A number of guidance documents and toolkits[3] for the implementation of eHealth have been produced in recent years and this report may therefore address topics already raised in other documents. Nevertheless, this document aims to provide recommendations on the barriers that require most urgent action and the facilitators which have played a key role in most recent, successful ICT-supported integrated care implementation initiatives. It does not attempt to give a complete overview of all the issues involved in ICT-supported integrated care as the projects analysed are too different and the related implementation constraints too many to allow us to do so. However, based on the case studies developed in SIMPHS3, we highlight the most important teething issues. The guidelines do not include all relevant aspects of the development and implementation of ICT-supported integrated care but highlight those topics that emerge most strongly from the experiences reported in the cases. They should therefore be regarded as additional guidance to prioritising key points for success.

The intended audience for this guidance document are those who work on the development and implementation of initiatives at an operational level, such as care professionals, managers in healthcare organisations, regional managers of health and/or social care, health insurers, professionals' organisations, etc. The recommendations are not intended to provide guidance to policy makers and politicians. This follows from the fact that the analysis of the initiatives is mostly based on data gathered through interviews of experts directly involved in implementing ICT-supported integrated care initiatives. Thus, these guidelines should be of interest to anyone involved in the planning and implementation of eHealth solutions in the context of integrated care and independent living. Given the variety of ICT-supported integrated care solutions and settings considered in the analysis, not all recommendations included in the guidelines will apply to the same extent to a specific initiative.

These guidelines should also be seen in the context of the EIP on AHA as further support to the scaling-up efforts initiated by the EC through the EIP on AHA[4]. Indeed, several working groups in the EIP on AHA, more specifically Action Group B3 and C2, are analysing existing experience to support scaling up. At Partnership level, a twinning initiative was launched in 2014 and several regions have now concluded joint agreements. The research in SIMPHS3 and more specifically the guidelines presented in this document seek to provide further insights into what special effort and attention is needed when implementing innovative ICT-supported integrated care solutions.

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[3]  http://www.local.gov.uk/health/-/journal_content/56/10180/4060433/ARTICLE ;
    http://www.integralhealthsolutions.co.uk/wp-content/uploads/integral-health-solutions-a-toolkit-for-care-coordination-281013-version-2.pdf ;
[4]  http://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/scaling_up_strategy.pdf

## 1.3   Structure of this report

Following this introduction, Section 2 discusses the methods used for the case analysis and the development of these guidelines. Section 3 comprises the guidelines in four main categories of recommendations. The recommendations are presented along with some observations made in the various initiatives. The recommendations are often based on the analysis of several initiatives, although only a few may be mentioned as examples to illustrate the recommendation. Finally, the conclusions are presented in Section 4.

## 2   Methods

### 2.1   Overview of cases in SIMPHS3

The selection of cases has been described in detail in the SIMPHS3 Report on the methodological set-up for the SIMPHS3 research[5]. Table 1 provides the list of 24 cases analysed in SIMPHS3: 16 of these cases were selected following the review of EIP on AHA initiatives and reference sites and the remaining 8 from scientific or grey literature sources, or in answer to specific client requests (see above report for more details).

**Table 1: Case studies overview**

| Case | Region | Brief description |
|---|---|---|
| **FIRST WAVE** | | |
| **ARIA** | Emilia-Romagna (Italy) | Implementation of integrated home care services for COPD patients. |
| **BLMSE** | Skåne Region (Sweden) | Improving cooperation between home care, elderly home care, primary care and hospital care to better coordinate care of the elderly |
| **BSA** | Badalona, Catalonia (Spain) | Integrated care organisation offering health and social care services. |
| **CARTS** | Cork and Kerry South-West Region (Ireland) | Screening, triage, assessment and treatment to reduce risk of frailty and adverse outcomes in community dwelling older adults |
| **eTrikala** | Trikala municipality, Thessaly Region (Greece) | Telehealth/telecare services for chronic patients and the elderly and social services to all citizens. |
| **ETXEAN ONDO** | Basque Country (Spain) | Integrated person-centred care model for the elderly |
| **GESUNDES KINZIGTAL** | Kinzigtal region, Baden-Württemberg (Germany) | Integrated care and preventive services offered to the population covered by the health insurances AOK and LKK, based on a shared savings contract between Gesundes Kinzigtal and AOK/LKK. |
| **INAA** | Twente (Netherlands) | Helping the elderly to live independently for longer periods in their own environment. |
| **MACVIA-LR** | Languedoc-Roussillon (France) | Innovative solutions through living labs to improve care for chronic patients |
| **NEXES** | Barcelona, Catalonia (Spain) | Integrated care services for chronic patients based on structured interventions addressing prevention, healthcare and social support. |
| **OULU SELF-CARE** | Northern Ostrobothnia, Oulu (Finland) | Cloud services that can support integrated care services and allow the elderly to monitor their own well-being and manage their own health. |

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[5]   http://publications.jrc.ec.europa.eu/repository/bitstream/JRC92703/jrc92703.pdf

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| | | |
|---|---|---|
| **PDTA** | Brescia/Lombardy (Italy) | Anticipatory care planning to manage patients with chronic diseases (e.g. Dementia, Alzheimer) |
| **SAM:BO** | Region South Denmark (Denmark) | Encouraging local health and social care actors to launch integrated health care initiatives through shared agreement protocols of collaboration. |
| **SOLE/FSE** | Emilia-Romagna (Italy) | Interoperable infrastructure enabling the development of integrated care services for the whole population of the region. |
| **SPARRA** | Scotland (United Kingdom) | Local integrated care initiative which uses a population pre-screening model to measure patients' risk of emergency admission in hospitals in order to deliver anticipatory care planning. |
| **TDP** | Scotland (United Kingdom) | Funding and stimulating the implementation of telecare projects in the local community by health partnerships throughout Scotland. |
| **SECOND WAVE** | | |
| **ACTION** | Borås municipality, Western Sweden (Sweden) | Self-care and family care support service provided through ICT installed at patients' homes |
| **DiabMemory** | Breitenstein, Lower Austria (Austria) | Remote monitoring of diabetes patients using mHealth |
| **DREAMING** | Barbastro, Aragon (Spain) | Remote monitoring services to help the elderly live independently |
| **Getafe's Integrated Care Programme** | Madrid (Spain) | Integrated care programme for older in- and out-patients |
| **MOMA/Maccabi** | Israel | Care model based on a multi-disciplinary 24/7 advanced technology call centre for treatment of various chronic diseases (including remote monitoring) |
| **Healthcare PPI** | Galicia (Spain) | Public Procurement of Innovation projects and experiences developed in the healthcare system of Galicia |
| **Renewing Health** | Carinthia (Austria) | Pilots to integrate telemonitoring solutions with existing systems for diabetes type 2 and COPD patients and assess impact of the system |
| **VHA** | USA | Integrated care model for elderly veterans and their caregivers |

## 2.2  Analysis of cases

*Framework for analysis*

The framework used to analyse the cases was reported in detail in the SIMPHS3 Report on the methodological set-up for the SIMPHS3 research[6]. The analytical framework is based on the identification of the most relevant elements from the literature and the previous work carried out in the SIMPHS2 research (Lluch & Abadie, 2013; Villalba et al., 2013).

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[6]   See footnote 5.

Figure 1 below depicts the initial analytical framework that guided our data collection and analysis.

**Figure 1: Framework for analysis**
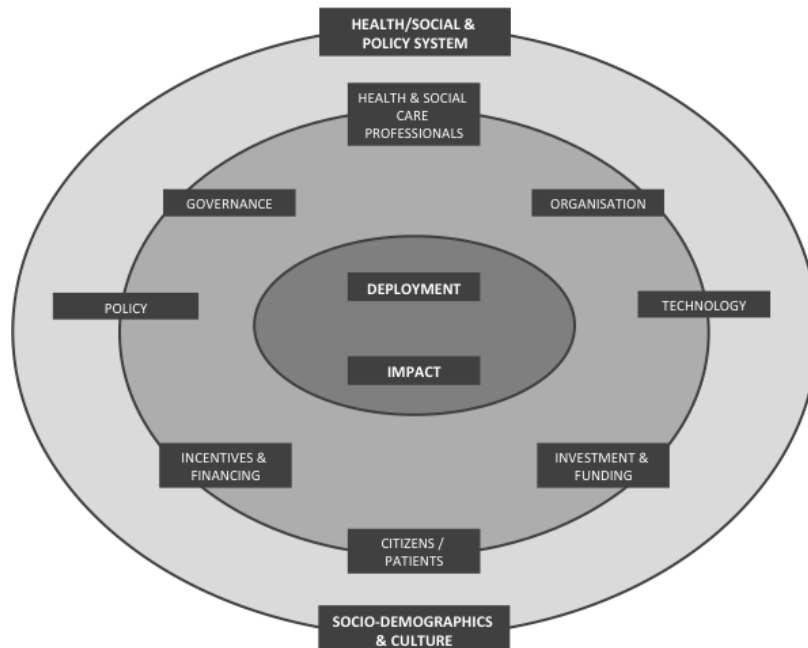


The inner ring shows the eight facilitators identified by Villalba et al. (2013) through the qualitative analysis of 27 Telehealth, Telecare and Integrated Care projects implemented across 20 regions in eight European countries. These projects were investigated in SIMPHS2 and analysed following the ten key principles for successful health systems integration identified by Suter et al. (2009). Eight main facilitators were identified among these key principles as necessary for successful deployment and adoption of telehealth, telecare and integrated care in European regions.

The outer ring captures the macro context including the overall health/social and policy system (supply side) and the socio-demographics and cultural factors (demand side). Therefore the inner ring represents the micro and meso dimensions of the analysis. These are based on the review by Suter et al. (2009) which identified the principles that were frequently and consistently presented as key elements for successful integration in the reviewed scientific literature.

Information on the cases was obtained following the elements in the above framework by means of questionnaire, telephone interviews and face-to-face interviews, as described in the SIMPHS3 Introduction to SIMPHS3 case studies[7]. The reports on the cases[8] provided the material for the guidelines as presented in this report.

*Case analysis*

We analysed the data on two levels: in-depth within-case and across-cases. By combining different sources, we characterised each case as a self-contained whole with respect to the dimensions of our framework as shown in Figure 1. This analysis is presented in individual

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7    See: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC96204/jrc96204.pdf

8    See http://is.jrc.ec.europa.eu/pages/TFS/SIMPHS3.html

case study reports mainly as qualitative and narrative accounts.[9] The cross-case analysis is reported in the SIMPHS3 Report on Models of Organisation.[10]

We began the cross-case analysis by grouping the initiatives according to the 'triggers' for the initiative: top-down, bottom-up, technology-driven and originating from organisational changes in healthcare delivery. We then systematically examined the following aspects within these categories: 1) governance and policy; 2) care organisation and integration through ICT; 3) business models, funding and incentives; 4) deployment level and impact.

Based on the reports on each case and the cross-case analysis, we identified key elements for success and barriers for inclusion in these guidelines. We then examined the strategy adopted in the various initiatives and what was reported as either a 'barrier' to or a 'facilitator' for the success of the initiative. Recurring observations in the cases were used to formulate the recommendations. The analysis is qualitative and draws on examples found in the case reports.

*Complementary information from the literature*

The recommendations presented in this document originate from the findings in the cases studied. In addition we have contrasted our observations from the cases with the scientific literature and other sources so as to put our recommendations into a wider context. Hence, where applicable, a short description is given of similar experiences reported in the literature. This does not represent a systematic review of the literature, as this was not feasible within the scope of the project, but the review served to clarify further the context of the recommendation.

As part of this literature review, we also checked a number of guidelines and toolkits published in recent years in the field of ICT and integrated care. The structure of the guidelines in Section 3 is therefore partly based on the review of recent toolkits and guidelines, such as those developed by the CommonWell project, the blueprint developed in the Momentum project, and the e-HIT toolkit (MacFarlane et al 2011). For each of the topics identified, we provide a short description of the findings from the case studies, possible background information from the literature, and a recommendation.

## 2.3  Expert opinion

The guidelines are based on the observations made about practices implemented in the EU. Experiences from real-life situations were the starting point for the formulation of recommendations for the implementation of ICT-supported integrated care initiatives. This qualitative approach meant that we had to interpret the context and outcomes of the various initiatives. To validate our interpretation and enhance the formulation of the recommendations, an expert workshop was held 17 March 2015 to discuss the content and structure of the draft guidelines. Experts were invited to contribute based on their hands-on experience with implementing ICT-supported integrated care initiatives, their insights on specific relevant initiatives and/or their wider knowledge of the field. The kind of expertise represented included ICT technology development from both small and large companies, change management, implementation, processes, and policies for eHealth implementation amongst others.

The initial recommendations prepared by the authors were adjusted to take into account the points made by experts at the above workshop.

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[9]  See footnote 8.
[10]  JRC Report JRC96146, forthcoming.

# 3 Guidelines

## 3.1 Political and policy setting

The political and policy environment can contribute to the success or failure of the implementation of ICT-supported integrated care. Especially when the implementation involves structural changes in healthcare and social care systems, the complexity of the implementation strategy increases and the policy setting is likely to have an essential impact. The integration of health care often means changes in healthcare and social care organisation at different levels, for example at the workplace and at political level. Differences in goals and interests across organisations on different levels can frustrate implementation (Plochg & Klazinga 2002). Therefore, for policy makers and those involved in political decision making, it is useful to be aware of the essential conditions required for an ICT-supported integrated care solution to be implemented successfully.

At health system level, the financing of healthcare and social care may already be an important element. Ultimately, professionals and professional organisations should be able to use eHealth solutions as part of their routine activities. The reimbursement of ICT-supported integrated care activities should therefore be an integral part of the healthcare system, which is often not the case. In Germany, innovative financing mechanisms have been set up which have encouraged regional health providers to invest in eHealth and to provide innovative and cost-saving solutions[11]. The way healthcare is financed partly determines the strategy for successful implementation. Often the healthcare system dictates the window of opportunity, but if possible, it is important to make the appropriate changes to reimbursement and funding schemes in order to stimulate the implementation of ICT-supported integrated care. If the use of ICT-supported integrated care is not fully recognised as a practice option and the investment in time and effort by those concerned is not compensated for financially, adoption is likely to be hindered. For instance in the Netherlands, the healthcare system allows the payment of doctors for eHealth services under specific conditions. Follow-up consultations by medical specialists can be done via teleconsultation and are paid for by the healthcare insurers as part of their catalogue of reimbursed services. This option is voluntary and only applies to follow-up consultations after the patient-doctor relation has been established in a first face-to-face visit.[12]

Citizens' access to Internet is another element that may be beyond the control of the organisations implementing an eHealth solution. Especially for telehealth and mHealth initiatives, access to Internet may be essential for the use of specific tools. However access differs greatly across EU countries and regions (Digital Agenda Scoreboard 2014 – Broadband markets, 2014[13]). Limited access to Internet and its use by both patients/citizens and professionals has been shown to be a barrier for implementation, for example in the SOLE initiative in Emilia Romagna (Italy), which aims to give patients online access to their health information.

In some of the initiatives studied, political decisions are being taken which are expected to dramatically increase the chances of take-up. Organisation strategies or priorities aligned

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[11] See SMPHS3 Gesundes Kinzigtal (Germany) Case Study Report
http://publications.jrc.ec.europa.eu/repository/bitstream/JRC93763/jrc93763.pdf

[12] See:
http://www.nza.nl/1048076/1048090/BR_CU_2108__Prestaties_en_tarieven_medisch_specialistische_zorg.pdf

[13] http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=5810

with integrated care facilitate a successful implementation. This is for example the case in Scotland where the legal framework (Public Bodies (Joint Working) Act in 2014[14]) and the Joint Improvement Team initiative[15] increased cooperation across healthcare, social care and other organisations, and fostered the implementation of telecare initiatives such as those promoted through the TPD funding initiative. In Israel, the creation of the Gertner Institute is another example of how the policy environment can be a key facilitator. Israel established the Gertner Institute as a national centre for inter alia the innovation and application of technology in healthcare. The above-mentioned political decisions aim to make the assessment and management of chronic patients cost-efficient and clinically effective. This has been an important factor for success in the Maccabi initiative.

On the other hand, a lack of political support may limit implementation as was the case in the Geriatrics Unit at Hospital Universitario de Getafe (HUG) and its Community Care Unit (CCU). Madrid's Regional Ministry of Health has not passed any law or reform to define a robust framework that would promote telemedicine or eHealth services. The CCU has proven to be successful at local level, but the lack of a suitable legal environment hinders the scalability and transferability of the initiative.

An assessment of the policy context should be carried out to make sure the framework conditions are sufficiently conducive to successful implementation of ICT-supported integrated care solutions. Specific laws and regulations determine opportunities and risks, and should be taken into account when establishing the ICT-supported integrated care solution and the optimal implementation strategy. Laws and policies which are likely to create barriers for implementation should be reviewed to identify unnecessary restrictions. Although it may often not be possible to change laws and regulations within the scope of the initiative, it is important to be aware of the difficulties legal barriers may cause. One should strive to identify the various pieces of legislations that would enable or restrict implementation, and develop the ICT-supported integrated care solution and strategy accordingly. One of the typical barriers faced by eHealth implementation are regulations around data protection and privacy. For example, the Oulu Self-Care initiative in Finland, which developed a self-care platform based on sharing of health-related information, could not be fully deployed as informal carers who are key players in this approach, were not allowed by law to access patient information.

> ***Explore the regional/national political and policy context to identify potential blockers and enablers; develop a solution around the enablers, and define workarounds to resolve blocking elements. This includes mapping of existing resources in relation to the implementation context, financing, Internet access, legislations etc.***

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[14]  http://www.gov.scot/Topics/Health/Policy/Adult-Health-SocialCare-Integration/About-the-Bill
[15]  http://www.gov.scot/Topics/Health/Quality-Improvement-Performance/Joint-Improvement-Team

## 3.2   Preparation

### 3.2.1   Aims and objectives

The involvement of different stakeholders in ICT-supported integrated care initiatives introduces a risk that goals and specific objectives are not necessarily shared among organisations. In the BLMSE (Better Life for Most Sick Elderly) initiative in Sweden, the organisations involved seemed to have diverging objectives, which made implementation more complicated. Similarly, in the case of the SPARR/ACP project in Scotland, the lack of integration between (health and social) organisations hindered its diffusion. The implementation of some of the projects developed under the Telecare Development Programme (TDP) in Scotland (UK) was affected by disagreement about the expected results of the project and lack of cohesion among the local health and social care players. In such complex projects involving large numbers of stakeholders, several work streams may be set up with specific objectives and timelines. At some point, all sub-projects should converge towards the same end result set in the overall objectives. However, when setting the objectives and planning the activities at the start of the project, it may be difficult to get a complete overview of all elements that need to be addressed. Not all essential steps in the initiative may be known from the start and the situation may change over time. Setting objectives and defining work streams is at best an educated guess, anticipating the future situation. New challenges may appear during the course of the project which may jeopardise the desired goals, such as changes in stakeholder organisations, in policy or even in the political balance of power.

Several initiatives suggest that objectives may have to be adjusted during or after the implementation process. For instance, as part of the eHealth initiatives deployed in the Emilia-Romagna region of Italy (SOLE/FSE), individuals can directly access their electronic health records through a dedicated website. However, at the time of writing, no more than 3% of citizens had accessed their own records. This means that to reach the objectives set for the initiative, some further action may be needed – for example, to raise awareness among citizens about the benefits of using the system. The evolving conditions in which an initiative is being implemented call for regular monitoring of the initial objectives so as to anticipate difficulties and react to changes. The initiatives analysed in the SIMPHS3 research and other experiences support the idea of establishing an iterative process to set and monitor objectives, in order to be able to anticipate difficulties and react based on new knowledge acquired through the initiative and adapt to new developments in the environment.

> *Especially in large projects/programmes and in those with a long-term perspective, monitor the objectives and activities regularly, linking the different work packages to ensure that the ultimate objective can be achieved. If necessary, reconsider and fine-tune the objectives with key stakeholders.*

Some of the initiatives in this analysis aim to adopt and mainstream an ICT-supported integrated care solution. In setting the specific objectives of an initiative, it is useful to distinguish between the "project" phase and the "mainstreaming" phase. The challenge associated with both phases can be very different. In the case of a project, the structure of the initiative is temporary while in cases of implementation of e.g. an eHealth solution, the structure of the initiative will have to adapt to the permanent structures it operates in (or the other way round). These two distinct phases have also been referred to as "innovation adoption" which is the decision to use an innovation, and "innovation implementation" which is the period in which individuals and organisations become increasingly skilled, consistent, and committed in their use of an innovation (Klein 2005). The difference between adoption and implementation is fundamental: individuals, teams, organisations, and communities often adopt innovations but fail to implement them successfully.

The Scottish Telecare Development Programme (TDP) initiative clearly distinguished two types of initiatives to be funded: those at project stage and those for mainstreaming. The main objectives of the former were to stimulate local communities to adopt integrated home care initiatives. The latter aimed to provide adequate pre-conditions for effective uptake of initiatives with high potential of diffusion within the entire local population.

Another approach that takes into account the difference between project and mainstreaming is that of the Innovation Unit of Barbastro, the Spanish site of the DREAMING project. At the end of each project, the Unit and the healthcare management of the area concerned evaluate patient and stakeholder satisfaction, economic aspects, and quality of life. If outcomes are positive and there is an adequate business case, the service is deployed to the local health area as a first step towards full deployment to the whole region. In all cases, the lessons learnt and barriers identified in previous experiences and projects are incorporated explicitly when designing the next initiative.

However, initiatives may not aim for large scale implementation. eHealth solutions can aim for a local setting and a specific topic, and may even benefit from not being dependent on a complex setting with many stakeholders and on changes in healthcare organisation. The initiatives in SIMPHS3 range from pilot studies, such as the Renewing Health initiative, to final implementation strategies such as the Community Care Unit (CCU) in the Hospital Universitario de Getafe, Spain, or Gesundes Kinzigtal in Germany.

The examples analysed in SIMPHS3 suggest that not all of them are projects of a strictly temporary nature. Often the objective of an initiative is to mainstream activities into routine processes. In these cases, the project phase can be considered the starting phase of the whole initiative. The intervention in the temporary project phase should move gradually towards mainstreaming of activities. This process could be made explicit. However, initiatives may not explicitly define long-term objectives and rely on a process of wider adoption of a good practice based on small-scale results. If mainstreaming is the goal, it is important that, for example, funding streams evolve from project to structural funding for implementation in routine practice. If this is not anticipated, mainstreaming may fail because availability of resources is not arranged or funding issues have to be sorted out

after finalising the project, delaying the start of the implementation with the risk of losing momentum, which may lead to the initiative being dropped altogether.

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**Define and distinguish clearly between project/programme objectives related to the short-term (temporary setting) and longer-term objectives for mainstreaming (in a permanent setting).**

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**Illustrative case example**

*The Scottish Telecare Development Programme (TDP) initiative put into practice the distinction between project and mainstreaming. Indeed, the TDP funding scheme comprised two stages with different objectives. In the first stage, over 50 projects were funded with a view to developing and evaluating telecare solutions. Based on the outcomes of these projects, only 6 telecare solutions were selected for further funding for mainstreaming. The main objective in the first stage was to stimulate local communities to adopt integrated home care initiatives while the second stage funding aimed to fund the development of adequate pre-conditions for effective uptake of initiatives with high potential for diffusion within the entire local population. In this initiative, the objectives in the two stages were clearly different: first, developing and testing in a temporary project setting, and second, the integration of the intervention into permanent structures.*

### 3.2.2 Stakeholders

The SIMPHS3 case studies and various toolkits developed in Europe for handling implementation challenges suggest that managing stakeholders is an essential step in any initiative. A stakeholder can be defined as any organisation, group or individual who is affected by the objectives and activities of an initiative. In other words, stakeholders are those who influence the course of the project and those who are directly influenced by the initiative.

In the Diabmemory initiative, a prior stakeholder analysis was performed to define tasks. This analysis helped the leaders to determine stakeholders' profiles to meet the needs of the project and the position of the different stakeholders. In several initiatives implementation was not completely successful because key stakeholders in the care process were not sufficiently involved in the planning and execution. This was the case in the Self-Care platform initiative in Oulu (Finland) which did not fully achieve its objectives because some of the care professionals and informal carers were not involved. Similarly, in the telemonitoring initiative Renewing Health in Austria, not all the relevant actors were duly taken into account. In this case, professionals outside the hospital did not have access to the required patient information, which jeopardised full implementation.

Without an explicit inventory of all potential stakeholders, the risk of running into unforeseen resistance from some of them increases greatly.

Depending on the objectives pursued by the initiative, different stakeholders may be relevant at different stages in the process. More specifically, some stakeholders may have to be involved more heavily during the project phase or on the contrary during the implementation phase. For instance, organisations dealing with policy may become increasingly relevant at the mainstreaming stage of the initiative.

An exhaustive inventory of the relevant stakeholders may not always be feasible at the very start of the initiative. However, it is likely that most stakeholders are known to those involved in the project team. In very complex and elaborate initiatives, an overview of relevant stakeholders can also be obtained by consulting the stakeholders already known, and asking them to identify additional stakeholders.

There may be differences in terms of the impact a stakeholder may have on a project and the extent to which they support its objectives. Those stakeholders that are in a position to hamper implementation should be carefully managed. A low level of participation in an initiative may reflect insufficient stakeholder management and signal potential difficulties when it comes to implementation. The essential stakeholders should be carefully briefed and encouraged to participate. The ARIA initiative in Italy is facing this type of problem in relation to healthcare professionals. The implementation of ARIA is mostly the result of the personal motivation of a few care professionals. For full implementation though, a majority of professionals would have to agree to commit to the new care processes which has not been achieved as yet. In this particular case, including professionals as major stakeholders in the inventory of stakeholders, and analysing both their attitudes towards the technology and the structure of the organisation in which they operate could have helped to develop an active strategy for wider deployment and helped to gain their support and commitment. An approach commonly used to get a clearer picture of all stakeholders is the mapping of stakeholders in a matrix according to their power and their interest (Bryson 1995).

***At the start and during the initiative, carry out a systematic inventory of stakeholders, including those who affect the initiative and those affected by it, in order to adapt the strategy and objectives to their particular circumstances.***

**Illustrative case example**

*There are several examples of initiatives whose implementation and impact has been hindered because key stakeholders in the care process affected were not involved. The self-care platform implemented in Oulu, Finland has not yet fully achieved its objective of care coordination because some important actors in the care delivery process such as social care professionals and informal carers were left out of the approach. A similar issue was highlighted in the Renewing Health telemonitoring initiative implemented in Austria, where the health data collected was not accessible to professionals outside the Hospital System, reflecting the complexity of the Austrian healthcare system. In cases like these, a systematic inventory of all relevant stakeholders and a mapping of their impact and attitudes towards the proposed changes would have helped to identify problems and the strategy could have been adapted accordingly.*

## 3.3   Characteristics of the ICT-supported integrated care solution

### 3.3.1  Functional characteristics

Results from practices suggest that the intervention should be convincing for all users, from professionals to patients and citizens, including older people. If the major stakeholders do not feel a need to change their routine, it may be difficult to succeed with implementation (Klein and Knight 2005). At least one or more of the stakeholders involved should feel the need for change. Besides the need for the intervention, the intervention

itself should be examined in the light of current practices. Ideally the initiative should replace an existing routine, or add some new functionality. If the eHealth solution replaces an existing routine, it should have clear advantages in terms of inter alia user friendliness compared to the existing routine (Aiman Smith and Green 2002). If an eHealth solution is added to the routine care process, without replacing the existing practice, this may be perceived as an extra workload which may have a negative impact on the motivation of users.

Especially if the initiative is triggered by a technology push or is strongly influenced by a top-down approach, it is especially important to evaluate if there is a real need for it. The eHealth initiative in the Emilia-Romagna region of Italy (SOLE/FSE) offers access for patients to their electronic health records through a dedicated website. However, at the time of writing, no more than 3% of the citizens requested access. It seems that not many patients see a need to access their electronic health record or they may not be aware of the benefits that access to health data would bring them. In this case, earlier involvement of patients through focus groups to detect which data is of main importance for special target groups and then raising awareness among users and patients is required to ensure greater uptake. In the VHA initiative, user perception of the new telehealth services is continuously evaluated through patient satisfaction surveys, which moreover empowers them to contribute with their ideas.

Convincing evidence about the effectiveness and safety of the ICT-supported integrated care solution is also needed to stimulate the uptake. Scientific evidence for the purpose of implementing an eHealth solution should ideally be related to the use in actual practice. This means that efficacy only (in a controlled research setting) may not be convincing enough for implementation purposes. The availability of effectiveness studies is however limited. In the first initiatives piloted in Barbastro (Spain), there was a lack of evidence on the clinical effectiveness and on the cost-benefit of the intervention due to the use of an inadequate evaluation methodology. Three main types of problems were reported: the low number of patients involved in the clinical trials, the duration of the evaluation periods in studies which was too short and the lack of information on the impact of the intervention other than the effect on patients (such as changes to the roles of professionals). Lack of scientific evidence may be used as an argument not to proceed with implementation. Several elements which are possibly related to the lack of scientific knowledge may prevent smooth adoption of eHealth solutions (Al-Shorbaij et al 2013). Common arguments include the fact that interventions are costly, not well evaluated (effectiveness and safety) and do not fit into existing standards. In some initiatives, however, evidence of their effectiveness is available: for example, MOMA, a high quality Call Center for 24/7 assistance to chronic patients. MOMA aims to be a point of contact for counselling, information and education of patients and interaction with a multidisciplinary team and GPs (who are the case managers). The MOMA model has proven cost-effective for Maccabi Healthcare Services in Israel.

An ICT-supported integrated care solution that is versatile is more likely to be taken up, especially if it provides an answer to a clear need For instance, eHealth solutions that are capable of supporting patients suffering from multi-morbidity have a much better chance than those focusing on only one chronic disease. If the eHealth solution does not have the functionality to cope with multiple diseases, this may be very impractical for users. As a consequence, the solution for the patient is very partial or multi-morbidity patients may be left out of the initiative.

> *Make sure the eHealth solution in question is a good answer to a clear user need, focusing on care professionals and/or patients/citizens or other key stakeholders. In addition, design and plan awareness actions to make sure targeted users are engaged, and know about the benefits of the new system.*

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**Illustrative case example**

*An important factor for successful uptake of an innovation in routine practice is the need perceived by the users. Especially in the phase when the implementation is starting or ongoing, user motivation is a critical factor. Once a new practice is part of the mandatory standard practice, individual motivation may be less important. In the initiative in the Emilia-Romagna region in Italy (SOLE/FSE) for instance, citizens are given access to their electronic health records through a dedicated website. Giving access to citizens and professionals to the same data is efficient and can foster the coordination of care services. A key factor is the use by citizens. However, at the time of writing, no more than 3% of the citizens accessed the website. Even though the ICT has been deployed and the system is working well, patients do not seem to perceive a need to use it. Solutions are being worked on to improve participation.*

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### 3.3.2  Technical characteristics

User motivation to work with the ICT-supported integrated care solution is a key factor in the success of the initiative. This motivation is, among other things, related to the user-friendliness of the eHealth solution. Smooth functioning of ICT tools is an essential prerequisite for uptake in practice. Innovative technological innovations may be especially unreliable and imperfectly designed (Klein, 2005), which can have a negative impact on user motivation. In the telemonitoring pilot project in Austria, part of the *Renewing Health* initiative, the technical solution was built in the simplest way possible to make it easy to use for older patients/citizens. The approach was also designed so that limited training would be required to use the eHealth solution, making scaling up more likely. In the projects developed by the Innovation Unit of *Barbastro* (Spain), the technology implemented was based on systems already in place, making scaling up easy in future projects. This was done by designing customizable platforms able to interoperate with existing information systems. Generally speaking, the technology used should be flexible enough to adapt or evolve according to the latest technological developments. In addition, eHealth solutions should be multi-channel so as to offer users the choice they need to access information or services.

A possible barrier to the use of the technology is the lack of smooth communication between systems. Interoperability is one of the most obvious prerequisites to be considered when developing and implementing eHealth solutions. This factor is usually taken into consideration before the start of an initiative. However, a number of initiatives suffer from a lack of interoperability which often dooms them to fail. In the SOLE/FSE initiative, striving to implement an Electronic Health Record across organisations in a region in Italy, 172 different information systems were found to be in use and interoperability was a key challenge. The mainstreaming of telecare solutions under the Scottish Telecare Development Programme (TDP) also faced similar difficulties. The sharing of information between social care and healthcare was also difficult because of the lack of interoperability in the ETXEAN ONDO pilot programme developed in Basque region in Spain.

> ***Ensure that the eHealth solution is as user-friendly as possible and evaluate it in a practical setting with the users, e.g. Living Lab or pilot study.***

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**Illustrative case example**

*The motivation to use an eHealth solution is a key element in the success of an initiative. This is true for both those receiving care and those providing care. Apart from few technology-savvy professionals and patients, most users want a system that works and makes their lives easier, because it saves time, or improves their quality of life or quality of care. User-friendliness is essential for wider uptake of technology and has been managed in several of the initiatives studied. The telemonitoring pilot project developed in Austria in Renewing Health was based on systems and interfaces which were kept as simple as possible in order to avoid resistance from older patients. In addition, it meant that the required training for professionals was neither too complicated to follow nor overly time-consuming. Technical solutions should also be flexible in order to facilitate scaling up.*

### 3.3.3  Resources

An important characteristic of the ICT-supported integrated care solution is the cost of its implementation. One of the major barriers for sustainable implementation of an eHealth technology is the availability of resources. Often resources are available in the project phase of an initiative because they are obtained from ad-hoc grants, but may no longer be available for the implementation and scaling-up phase. This is particularly true of EU-funded projects which often lack a clear strategy on funding following project completion. One would expect eHealth solutions to be clearly cost-effective, and thus intrinsically valuable to organisations. However, this is often not the case because evidence on cost-effectiveness is often lacking or very limited, and the evaluation period maybe too short to clearly demonstrate the benefit of the new strategy. Furthermore, those who invest in eHealth services do not always directly benefit from the impact, which may be rather general and thus a barrier for further implementation. Even when benefits can be demonstrated, payoff may be delayed by several years in relation to the initial investment. Furthermore, the eHealth solution is often just one element in a wider change strategy targeting care integration. The funding of an eHealth solution may therefore depend on the decision to fund the overall integrated care strategy.

Several initiatives show the struggle for funding. The *NEXES* project, an EU co-funded project which aimed to deploy integrated care services for chronic patients in Barcelona, faced deployment difficulties due to limited national investment and funding programmes. The deployment of a screening and integrated care programme in the Netherlands (INAA) was also at risk at the time of writing because of the lack of long-term financing. Also austerity measures in healthcare may jeopardise deployment of new initiatives. The eTrikala centre in Greece, developing telecare services, is struggling to secure long-term funding in a situation which is exacerbated by the economic crisis affecting the country. A telecare service that started in 2010 addressing primarily the elderly suffering from mild cognitive impairment was stopped 3 years later as a consequence of the lack of funding. The Gesundes Kinzigtal integrated care project in Germany developed an alternative funding model in which a long-lasting shared-savings contract is negotiated with healthcare insurers so that Gesundes Kinzigtal benefits from their investments in eHealth.

In general these examples show that the step from a funded project to further deployment of an ICT-supported integrated care initiative is not easy and never happens automatically, even when a project is considered successful. It is difficult to demonstrate the benefit of a new strategy over the existing routine and to convince decision makers. This is further complicated by political changes and budgetary pressures.

> ***Develop a sound business model which demonstrates the higher value of ICT-supported integrated care over standard care. Alternatively or in addition, identify available funding schemes at the start of the initiative, for both short-term funding and long-term funding for mainstreaming.***

A standard procurement process may not be suitable for innovative technological solutions in eHealth. The technical functionalities and the usability of the technology may depend on the setting in which it will be used. The innovative nature of eHealth solutions is fraught with uncertainty. This is inherent to the lack of upfront knowledge on the exact scope of the solution required and the scale it should achieve. For instance, constraints related to public procurement rules have acted as a barrier in the deployment of the self-care platform in the *Oulu* initiative in Finland. In the region of *Galicia* (Spain), different strategies have been implemented for procurement of technology innovation in healthcare. However pre-commercial procurement in the area of healthcare is rather new. Evidence is still lacking on the outcomes of these processes and on how innovative technology procurement affects the implementation of eHealth solutions in practice. Several EU-funded projects on pre-commercial procurement are, and have been addressing this topic[16], for example the 'STOPandGO' project[17].

> ***Given the innovative nature of eHealth technology, explore suitable strategies for procurement and adapt procurement processes to allow for the development of technology-based solutions that answer the needs of care delivery optimally.***

> ### Illustrative case example
>
> *Procurement of innovative technology may not be as straightforward as the purchase of other products. The main difference is that innovations come with uncertainties. They offer new solutions which aim to change practices. Solutions have to be developed according to the care needs and the implementation setting. For instance, in the Spanish region of Galicia, as part of their healthcare innovation model, two complementary public procurement processes have been developed: public procurement of innovative technology process and pre-commercial public procurement. The former has two consecutive steps: first, a technical dialogue with the market which informs the following process of procuring the innovative technology. In the latter, different phases are established with a view to adapting the procurement process to the R&D characteristics of the required services or products.*

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[16]  http://ec.europa.eu/digital-agenda/en/eu-funded-projects
[17]  http://stopandgoproject.eu/

### 3.4 Enabling implementation

### 3.4.1 At the level of the organisation

Organisational readiness is considered an important predictor for the success of the implementation of an innovation (Weiner et al, 2009). Models of organisational readiness include elements related to the ability of professionals to drive the change in their organisations and the capacity of the organisation to make a change. The capacity of an organisation to make a change depends on financial resources, available time and staff. Even the easiest strategies to implement require initial investments to start up (Repenning et al, 2002).

In some of the initiatives analysed in SIMPHS3, limited personnel numbers constituted a barrier to deployment. In the *DiabMemory* initiative, using remote monitoring for diabetic patients, additional tasks were given to the healthcare professionals such as the recruitment and training of participating patients, and support in a technical helpdesk. No new staff members were recruited and the increased workload was considered a major barrier for further implementation. Especially when the new tasks do not replace existing tasks but are additional to the routine care, numbers of personnel may have to be increased to cope with the changes.

Incentives can be used as a signal to professionals that the use of an eHealth technology is a serious part of their professional work. The incentive scheme should be consistent and aligned with the objectives of the initiative. A relevant incentive scheme, in monetary terms, was put in place in the integrated care initiative developed in in the Kinzigtal Region in the Southwest Germany. Healthcare professionals who joined the programme received additional fees, equivalent to about 5-10% of their salaries. In other initiatives, however, the lack of incentive schemes has been highlighted as a serious barrier (e.g. the Scottish Telecare Development program – TDP). Even where incentives are used, if these are temporary and funded from outside the structural financing mechanism of care pending full implementation, it can be argued that they jeopardise structural and sustainable implementation. The pros and cons should be weighed carefully as temporary incentives can lead to increasing costs in the long run. In addition, professionals may lack motivation to integrate the service into their routine practice, if incentives are not maintained. An alternative is to focus on the added-value of the new services or solution (e.g. time saving, better service) in non-monetary terms.

Few explicit business models are reported in the analysis of the initiatives in SIMPHS3. The costs and the impact of an initiative are often insufficiently clear.

> ***Starting an innovative eHealth strategy is costly: develop a business model (value proposition) with those who make the financial investment and benefit from the outcomes, taking into account the financial and human resources requirements and the incentives needed to promote the use of the eHealth solution.***

The adoption and implementation of an innovation may lead to a change of roles and routines, and it may disrupt hierarchical structures (Klein 2005). Doctors and nurses often struggle with the changes in roles (Adolfsson et al 2004), and may need special training. New patterns of cooperation in ICT-supported integrated care, in which patients play an

active role, may affect the traditional central role of the GP. Changes may also influence how organisations cooperate with each other and roles inside the same organisation. Conscious or unconscious resistance to the uptake of innovative technology may be the result.

In several of the SIMPHS3 cases there has been a change in roles or the creation of new roles. In the *Nexes* project in Barcelona, nurses were given a new role as part of the reorganisation of services using a health information sharing platform. This new role included, for example, the monitoring of patients and regular follow-up activities. Patients/citizens are also given roles in some initiatives: for example in the *Dreaming* initiative, citizens were encouraged to take an active part in their own care by recording their own vital signs with the help of easily used devices. For this role, patients/citizens received technology training, complemented with health education. In the Etxean Ondo cases in the Basque Country, a case manager role was created which was filled by a trained nurse.

The introduction of new roles and processes may interfere with the old routines. In the Spanish site of the DREAMING project, which deals with telemonitoring projects, it was observed that appointments to visit GPs were not only being made according to the old routine on the initiative of patients/citizens and their informal carers, but also as a result alarms generated by the telemonitoring technique. These systems were interfering with each other and needed coordination. This kind of interference may be most prominent in the initial phase of an initiative and is likely to be solved during the course of the implementation.

Training programmes on the use of technology are offered to healthcare professionals and users (patients, informal carers, and volunteers) participating in the projects developed by the Innovation Unit of *Barbastro* in Spain. It has been found that these programmes help to build up trust between patients and professionals, and also helps users to trust the technology which fosters further implementation.

Technical support is also a must as it helps to consolidate this trust.

Training should be planned carefully as it implies extra investment of time and resources. It should happen close to the beginning of the implementation of the real solution and should be taught by professionals. The sustainability and scaling up of the telecare services offered by the *ACTION* initiative in Sweden were hindered by the significant amount of training required to implement the service.

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> ***Plan and organise training within the organisation affected by the new technology so as to allow for adjustment to new roles and processes.***

### 3.4.2 Culture of readiness for ICT-supported integrated care

Cooperation and communication are central to the implementation of ICT-supported integrated care and depend on the culture within organisations and professional groups. Culture reflects a complex concept of shared beliefs and values at individual and organisational level, which in the case of eHealth relates to pursuing the use of eHealth technology for the benefit of healthcare delivery. The culture within an organisation is considered an important predictor of the success of the implementation of eHealth supported integrated care (Holahan 2004).

In several of the SIMPHS3 cases, it was reported that cultural differences were hampering the smooth implementation of the interventions. In the *SAM:BO* initiative, for instance, an agreement was made which included guidelines for cooperation and communication between professionals. Prevailing organisational cultural differences were a clear barrier when it came to following these guidelines, limiting their implementation.

Also the culture among patients and citizens may play a role in how changes in healthcare provision are taken up. Differences between patient groups and countries have been found to have an impact (Wilkowska 2012). For example, older people may have a more positive attitude than younger people with respect to the use of eHealth, possibly because of greater needs for care and more concerns about their health. Women also seem to be more positive about eHealth than men. In addition, the age effect could be related to the motivation of elderly "not to bother" others. Another challenge associated with the use of health technology by patients is the need to make people prioritise health and understand the benefits of self-care, as they are used to relying on health care systems and care professionals.

If the initiative involves changes in different organisations, e.g. social care and hospital care, one may have to consider how to bridge cultural differences between organisations before cooperation becomes possible. To support this, it may be useful to consult experts on change management. In addition, lessons from the field of patient safety on the benefits of collaboration and of removing silos which have helped prevent errors can also be applied in the field of integrated care.

Building a positive culture for innovation and cooperation takes time. Some of the initiatives in the analysis have a long history to build on. For example, VAEB in the Diabmemory initiative has been working on projects for integrated care since 2007 with the "Therapie Aktiv – Diabetes im Griff" initiative.

Furthermore, a culture where failures are accepted should be fostered. Currently, the prevailing culture in healthcare is one of success, even though a lot can be learnt from failures. Equally, a culture of innovation where risk taking is valued, even in the absence of immediate returns, can be beneficial.

The projects developed by the Innovation Unit of Barbastro (Spain), found that strong leadership is one of the requisites for success. This is confirmed by the NEXES project implemented in Barcelona where leadership was also found to be important throughout the initiative. Research in other areas of healthcare also shows that leadership is an important aspect of culture. For instance to promote patient safety in healthcare, the UK National Quality Forum identified leadership as a key factor for a positive culture for change.

> ***Initiate cultural change in organisations to promote the adoption of innovation and to stimulate communication, co-creation and cooperation between organisations.***

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**Illustrative case example**

*The culture within organisations, both corporate culture and that of the employees, also partly determines whether smooth cooperation can be achieved with other organisations. The analysis of the SAM:BO initiative shows clearly how the lack of cooperation between professionals and levels of care, resulting from differences in organisational culture, can be a barrier. This initiative relied on an agreement that set out guidelines for cooperation and communication among health care actors, together with standards on how to monitor the quality of the service provided and to support health care management processes by electronic communications. However, it was reported that the adoption of these guidelines and standards was limited because of the prevailing organisational culture and some resistance to change by professionals, which jeopardised the implementation of and adherence to the new way of working.*

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### 3.4.3 Coordination between organisations

The development of explicit policies to foster eHealth solutions by involved stakeholder organisations is an important factor in ensuring success of an initiative. Without an enabling policy context, technological innovations often fail to scale up as they lack the necessary conditions for further implementation. The initiative in *Trikala,* Greece, which was triggered by a technology push, aimed to improve cooperation between different healthcare providers by encouraging the sharing of information. However no organisational integration among the care actors accompanied the introduction of the new technology which hampered its wider implementation.

Policy alignment has been recognised as an important factor in the complex challenge to integrate care. Especially in complex interventions, such as the introduction of an electronic health record, many different stakeholders can be involved, such as the various organisations in charge of care delivery, regional and national governments, financing

organisations etc. Different and sometimes conflicting policies can be in place in the different organisations, which may have to be aligned to allow successful implementation. The *ETXEAN ONDO* pilot experiment in Spain was fully supported and financed at local municipality level in the Basque Country and had positive outcomes. In order to scale up however, the initiative needed the support of the departments of health and social care at regional and national level. The lack of policy support at these levels was highlighted as a significant barrier for full deployment of the initiative at local level. Similarly, other experiences show that different policy frameworks at local level can also impede the transfer of good practices. ACTION failed to achieve broader implementation due to a lack of alignment of policies among municipalities in the same region.

> ***Check whether the policies of relevant stakeholder organisations are conducive to the uptake of the planned eHealth solution and devise strategies to address potential hindrances to implementation.***

Setting up cooperation across organisations requires energy and is time consuming. It will not always be possible to build effective cooperation between organisations within the scope and timeline of an initiative. For example, joint training of staff, building trust, clarifying responsibilities, etc. may be needed. In some initiatives, building on existing cooperation improved greatly the chances of implementation. In the *TPD* initiative in Scotland for instance, 51 telehealth projects were financed initially. Of these, only successful projects received further funding for mainstreaming the telecare solution. An analysis showed that only those projects where cooperation was already in place were successful, mainly in the context of the Community of Health Partnerships which had been established for the specific purpose of fostering collaboration. In Badalona (Spain), the organisation of the Badalona Serveis Assistencials (*BSA*) has been structured in a way that facilitates coordination and cooperation between organisations and their professionals, which has been an important condition for the implementation of integrated care. In Carinthia, the organisation that manages public hospitals, KABEG, played a key role in the implementation of the Renewing Health pilot. It managed the telemonitoring systems for COPD and Diabetes and created communication standards to promote cooperation between stakeholder organisations, including public insurance companies, nurses from the Austrian Red Cross and technology companies. Although the initiative showed that making protocols for cooperation is important, these protocols did not guarantee the complete integration of GPs and Red Cross Nurses. Building partnerships is more than an agreement on paper, it is also about building a culture of cooperation.

> ***Build on existing coordination and cooperation networks between stakeholder organisations as a starting point.***

### 3.4.4 Professionals

The professional is one of the key players in the adoption and implementation of an ICT-supported integrated care solution. Individual readiness for change is an essential condition for organisational readiness for change. Nurses may deserve special attention in cases where they play a key role as the interface with the patient, be it in a hospital, outpatient or home setting. The benefit of involving professionals at an early stage of the project was shown in the *Dreaming* initiative. In this multisite telemonitoring project, it was reported that the inclusion of professionals improved the acceptance of the technology. It helped to lower the resistance to new technology that can be perceived as a threat to their job security or something that could impact negatively on their workload. In the *Barbastro* project site, a large number of professionals were involved which contributed to raising awareness and interest. The *Diabmemory* telemonitoring initiative in Austria also reported good experiences as a result of the involvement of professionals at an early stage of the project. Physicians and external experts were directly involved in the development of the medical part of the strategy.

Like any innovation, the implementation of an innovative technological tool comes with an investment in time and energy on the part of the user (e.g. training, time to adapt to the new practice). The investment should be worthwhile for the user who should perceive an added-value from using the new procedure or system. The greater effort it takes, the more resistance users will feel. They must have enough confidence in the technology to remain motivated to use it. Another element is scale, i.e. if the technology can only be used for a few patients, it may not be worth the investment for professionals. The *DIABMEMORY* telemonitoring initiative developed in Austria is a case in point. GPs need to learn how to access data from their diabetes patients collected via a remote monitoring system. However, because GPs can only monitor a small number of patients each through the system, most of them have not followed the necessary training, let alone adopted the system. Furthermore, the technology does not replace standard practice, but comes on top of it. These factors combined act as a barrier to further implementation of the technology.

*Involve professionals from the various sectors in the development and implementation strategy of the eHealth solution from the start.*

Changing the routines of healthcare professionals seems to be particularly challenging. This has to do with the nature of the healthcare services sector – indeed, it seems to be more risk averse than other sectors as patients' lives are at stake. This means that it may take extra efforts to convince healthcare professionals of the benefits of implementing a new routine, new care pathways or of using a new technology as they must have the certainty that this will not put their patients at risk. In addition, as using eHealth tools also normally requires changing work routines and doing things in new ways, it is not unusual to see some resistance to change.

An option that has been proven useful is when professionals take a leading role in promoting the change as champions. Champions are professionals whose sound reputation in the field generates the required trust from colleagues to support the implementation process. This helps to develop the strategy with specific input from professionals and peer-to-peer interaction during the implementation process. Another alternative is to create new roles dedicated to building commitment among those who have to use the solution. In the Better Life for Most Sick Elderly (*BLMSE*) initiative in Sweden, the position of 'improvement leader' was created to drive, inspire and facilitate the uptake of the initiative. These experts, who were appointed for three years and tasked with establishing leadership forums, have been key in facilitating change and boosting implementation.

In the *ETXEAN ONDO* initiative in the Basque Country, a pilot programme for personalised care pathways, social workers were assigned new roles as case managers for the patients, in order to facilitate coordination and the introduction of new routines. As a consequence, they were in constant interaction with primary care nurses who in turn interacted with the GPs and facilitated smooth implementation.

> ***Appoint champions to advocate the initiative, monitor change management and define new roles for care professionals whenever required, to implement change and coordinate new care processes.***

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**Illustrative case example**

*Champions are people that have a special role, promoting the implementation process from the inside. Champions, who can be professionals or patients, actively advocate the change. This peer-to-peer approach builds trust in the innovation. In the Better Life for Most Sick Elderly (BLMSE) initiative in Sweden, the post of improvement leader was created with a view to driving, inspiring and facilitating change and this role was acknowledged as key in facilitating the initiative. The professionals with this role were in charge of establishing leadership forums, including different health and social care professionals. The approach was considered important for the implementation process.*

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### 3.4.5 Acceptance by patients and other users

In ICT-supported integrated care, the ultimate goal is to integrate care services in order to optimise care delivery for the patient. In several initiatives, special attention was given to patients' needs early on when developing the strategy. In the *ACTION* initiative in Sweden, user feedback on their experience with the telecare service was collected from the very beginning. In the *DREAMING* initiative, it was also considered important to include patients

and carers from the beginning. Another common objective of integrated care initiatives is the wish to empower patients (or their carers) to manage their own care, putting them at the centre of the new care process. The ETXEAN ONDO initiative was designed with a patient-centred approach which considered not only the patients' needs, but also the respective context of caregivers and families. The projects by the Unit in Barbastro (Spain) explicitly anticipated the cognitive and physical limitations of the users. Patient characteristics were given prominent weight in the decision about which technologies should be adopted.

The adoption of services will also depend on the timeliness of the information provided and the way authentication processes are implemented. It is important to strike the right balance between security and ease of access so users are willing to use the services. Again involving users in the development process is essential

The concept of 'living lab' has been used in the MACVIA-LR initiative in the Languedoc Roussillon region (France) to integrate user experiences and needs into the development of processes. When patients and developers co-create strategy, users' wishes and capacities are taken into account.

More generally, special attention should be given to the doctor-patient relationship which is still considered a key element for successful treatment. Some researchers have found that principles that apply to normal face-to-face contact could also be applied in modern ICT (Sebasan et al 2014), which means that the human dimension of care delivery should be given due attention when designing new ICT-supported care processes.

> ***Involve target users from the start in the development of the eHealth tools and the implementation strategy to answer their specific needs and adapt the solution to their capacities.***

ICT-supported integrated care solutions often target older users, who are often not very skilled in using them. eLiteracy also differs between regions, countries and socio-economic groups. Reduced e-literacy has potential consequences for mainstreaming a technology. Special attention should therefore be given to the skills required and specific training for patients and (informal) carers should be planned. In the DiabMemory initiative in Austria, diabetes patients were given the opportunity to receive education during three weeks in a rehabilitation facility to learn about their disease, followed by training on the use of the eHealth remote monitoring equipment.  In the Renewing Health KABEG initiative, trained professionals manning a call centre helped non e-literate users if they had doubts or problems when using the active devices.

Acquiring the required ICT skills depends on the attitude of users towards a technology. A number of studies have been published, e.g. on the wish of the target group to use eHealth technology in the context of telemedicine. One of these studies showed that the use of telemedicine including online consultations was perceived positively by most invited patients (Gradner et al 2014). Studies among elderly generally showed a positive attitude towards the use eHealth tools (Cimperman et al, 2013).

*Offer training and support to patients/citizens and other users so they can acquire the necessary ICT skills and quickly solve problems.*

**Illustrative case example**

*The MACVIA-LR initiative in the Languedoc-Roussillon area launched several initiatives as part of its activities as a reference site of the European Innovation Partnership on Active and healthy Ageing, built around chronic diseases, ageing and handicap. The main objective of MACVIA-LR is to develop innovative solutions for a network of Living Labs in order to improve the care processes for patients affected by chronic conditions and to scale up innovative solutions within this framework for the benefit of patients and health care actors. MACVIA-LR has launched a series of integrated Living Labs (e.g. health and disease, health and innovation, health and autonomy) for real-life tests in an experimental environment, where users and producers can co-create innovative solutions. These Living Labs work as enablers of change by putting patients at the centre of the MACVIA-LR initiative.*

# 4 Conclusions

The recommendations in this report reflect the broad range of topics involved in the development and implementation of ICT-supported integrated care, both at policy level and at the workplace. A general observation from the analysis of the initiatives is that large-scale implementation of these innovations in healthcare is difficult. This was further confirmed by the limited number of initiatives deployed in the field of ICT-supported integrated care and independent living which could be identified after extensive searches in both the literature and through contacts with experts dealing with ICT-supported integrated care innovations. Indeed, 24 cases were identified, of which some are struggling to scale up. The limited number of deployed ICT-supported integrated care initiatives, also contributed to limitations in our selection of cases. We may have missed important healthcare-integration projects with a light ICT component and we may have missed important eHealth projects where the healthcare integration component was less obvious for our research.

The decision to include as far as possible deployed initiatives was based on the point of view that there should be large-scale use of eHealth technology in Europe. Larger scale initiatives include more organisations and users and are likely to have a bigger impact on healthcare systems. In the workshop in which these recommendations were discussed (see Section 2), some examples were given of small-scale initiatives that were running successfully as "business as usual". The small-scale nature and simplicity of some initiatives made it possible to work with only few organisations and in an environment with no conflicting interests or cultural differences. The analysis of initiatives suggests that we may not need to strive only for large-scale initiatives. Small-scale initiatives which have been proven to be successful may be adopted by others based on their small-scale success. Different models for scaling up may have to be considered and analysed in relation to implementation science. Nevertheless, our analysis shows that small projects that lack a longer-term vision or the ambition to scale up from the start are especially likely to stop. Projects should therefore be embedded in a larger vision or wider strategy in order to have more chances of deployment after the project ends.

The challenge with the recommendations in this report relates to the fact that real-life practices have been taken as the starting point. A qualitative analysis extracted valuable lessons from these 24 on-going initiatives, all of which differ in objectives, setting, size, strategy, stage of deployment, etc. In other words, the material for the recommendations is very diverse. On the one hand, this fits the reality of eHealth implementation around Europe. On the other hand, it makes it difficult to devise a systematic method to extract valuable, generalisable lessons. The recommendations should therefore not be read as a standard for development and implementation of eHealth. Anyone using these recommendations will first have to decide which areas are relevant for their specific initiative.

One crucial issue to be addressed in the implementation of ICT-supported integrated care solutions is how to make further progress and stimulate the uptake of eHealth. Indeed technology solutions are available and therefore the challenge is not to create new technologies but scale up the use of existing ones. It is our hope that these recommendations will help raise awareness about the experiences of those working hands-on with eHealth implementation and contribute to the scaling-up strategy promoted by the European Commission through the European Innovation Partnership on Active and Healthy Ageing platform. Last but not least, these recommendations may constitute a starting point

for the further development of tools and methods, which will allow us to learn more from other initiatives.

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## Definitions

**ICT-supported integrated care:**

eHealth in the setting of integrated care.

**eHealth:**

*eHealth is the use of ICT in health products, services and processes combined with organisational change in healthcare systems and new skills, in order to improve health of citizens, efficiency and productivity in healthcare delivery, and the economic and social value of health. eHealth covers the interaction between patients and health-service providers, institution-to-institution transmission of data, or peer-to-peer communication between patients and/or health professionals. (European Commission 2012)*

A non-exclusive description of the term eHealth, set out in the European Commission's eHealth Taskforce Report, comprising the following four interrelating categories:

1. Clinical Information Systems

   a. Specialised tools for health professionals within care institutions (e.g. hospitals). Examples are Radiology Information Systems, Nursing Information Systems, Medical Imaging, Computer Assisted Diagnosis, Surgery Training and Planning Systems.
   b. Tools for primary care and/or for outside the care institutions such as general practitioner and pharmacy information systems.

2. Telemedicine and homecare, personalised health systems and services, such as disease management services, remote patient monitoring (e.g. at home), tele-consultation, tele-care, tele-medicine, and tele-radiology.

3. Integrated regional/national health information

Networks and distributed electronic health record systems and associated electronic health record systems and associated services such as e-prescriptions or e-referrals.

4. Secondary usage non-clinical systems

   a. Systems for health education and health promotion of patients/citizens such as health portals or online health information services.
   b. Specialised systems for researchers and public health data collection and analysis such as biostatical programs for infectious diseases, drug development, and outcomes analysis.
   c. Support systems such as supply chain management, scheduling systems, billing systems administrative and management systems, which support clinical processes but are not used directly by patients or healthcare professionals.

eHealth can thus be said to cover the interaction between patients and health-service providers, institution-to-institution transmission of data, or peer-to-peer communication between patients and/or health professionals; it can also include health information networks, electronic health records, telemedicine services, and personal wearable and portable communicable systems for monitoring and supporting patients.

**Innovation:**

An intervention (process, technology, etc) which is not used in the organisation(s) included in the initiative. It could be that this intervention is already used in other settings elsewhere.

**Adoption of eHealth**:

The decision to start using an eHealth solution.

**Deployed eHealth**:

The eHealth solution is available and ready to use by any user or patient as a routine care service.

**Implementation of eHealth**:

The actual use of the eHealth solution in real practice. This includes the integration in routine processes and the extent of use.

**Initiative, case, eHealth solution**:

Used interchangeably to refer to the selected cases, i.e. projects or initiatives.

**eHealth solution and Intervention**:

The specific technological activities and tools that constitutes the core of the initiative.

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