

From Generic Pathways to ICT-supported Horizontally Integrated Care: the SmartCare Approach and Convergence with Future Internet Assembly

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Abstract. Successful service integration in policy and practice requires both technology innovation and service process innovation being pursued and implemented at the same time. The SmartCare project (partially EC-funded under CIP ICT PSP Program) aims to achieve this through development, piloting and evaluation of ICT-based services, horizontally integrating health and social care in ten pilot regions, including Kraljevo region in Serbia. The project has identified and adopted two generic highest-level common thematic pathways in joint consolidation phase - integrated support for long-term care and integrated support after hospital discharge. A common set of standard functional specifications for an open ICT platform enabling the delivery of integrated care is being defined, around the challenges of data sharing, coordination and communication in these two formalized pathways. Implementation and system integration on technology and architecture level are to be based on open standards, multivendor interoperability, and leveraging on the current evolving open specification technology foundations developed in relevant projects across the European Research Area.

Keywords. Healthcare, Social care, Pathways, Services, Horizontal integration, Socio-technical Systems, Future Internet Infrastructures.

1. Introduction

The quest for horizontal integration of care delivery is in itself nothing new [1]. The approach aims at better joining-up of care services across established physical (regional, technological) or domain boundaries (social care and medical care, medicine and pharmacology) [2]. The SmartCare project (running from April 2013) pursues a dedicated program of service process innovation complemented by the development of ICT-based integrated care services, as experiences from earlier pilots suggest. The country sub-consortium for the Kraljevo pilot location in Serbia includes the local Social Work Centre, Health Centre, and Belit Ltd as the ICT service development and support provider.

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2. The SmartCare Pilot Service approach

The policy and practice have fully recognised that fragmentation of care threatens quality and cost effectiveness [3]. The potential of ICT-enabled support could be exploited in a more effective way if they were not, as today, embedded in healthcare and social care services delivered in “silos”.

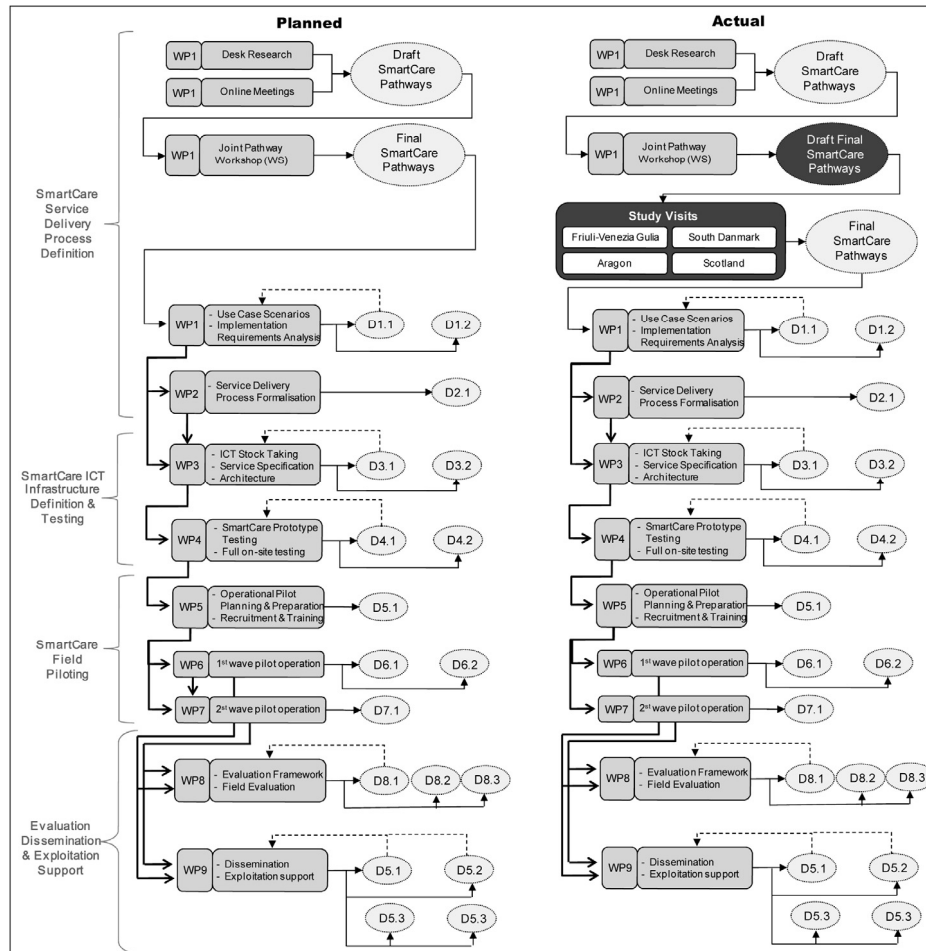


Figure 1. The extended SmartCare methodological approach

In a rigorous evaluation approach, the SmartCare pilots are to produce and document much needed evidence on the impact of integrated care, developing a common framework suitable for other regions in Europe, supporting long-term sustainability and up scaling of the services. The project has identified and confirmed two generic highest-level common thematic pathways in joint consolidation phase - integrated support for long-term care and integrated support after hospital discharge.

The sequencing of actions to be carried out, and the distribution of roles within each of the two confirmed generic highest-level common thematic pathways, largely varies, and horizontal integration of existing health and social care service practices across the 10 pilot regions comprises different levels of main activity:

- In most pilot locations, except the most developed ones, the system of social care be conveniently complemented, upgraded and enhanced with specific tools and -ons following the models and structures of the usually more advanced healthcare systems, to implement and deploy the baseline interoperability on the level of amon shared Integrated Care Records and Plans.

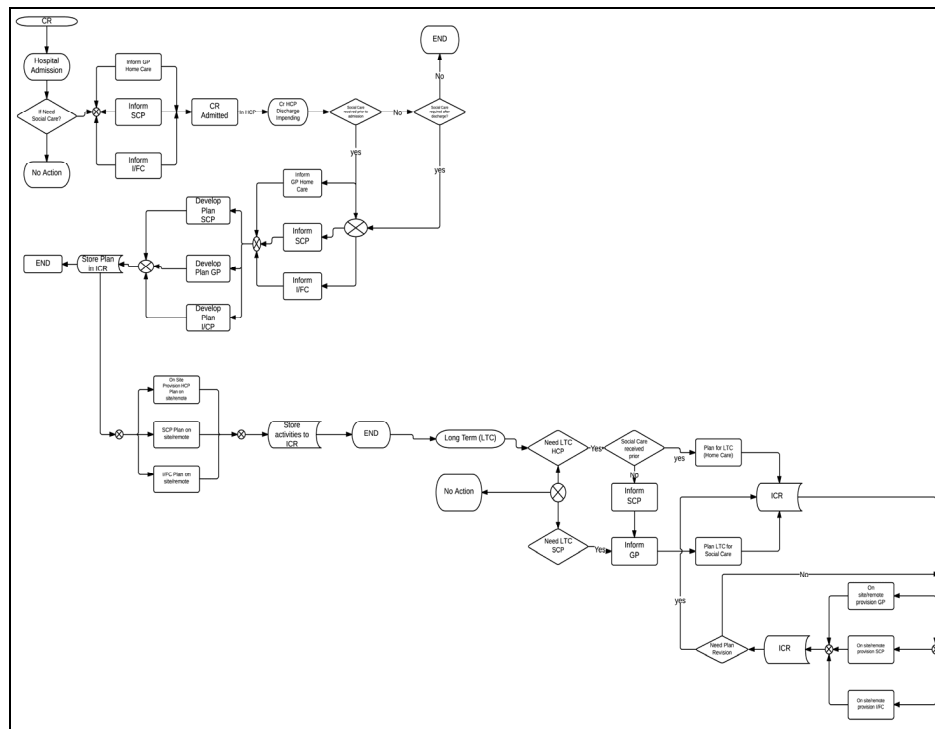


Figure 2. Tentative generic process model for main pathways on Serbia pilot location

On locations such as South Denmark pilot, much more emphasis is on higher-level interoperability, tele-care, and multimedia data exchange [4].

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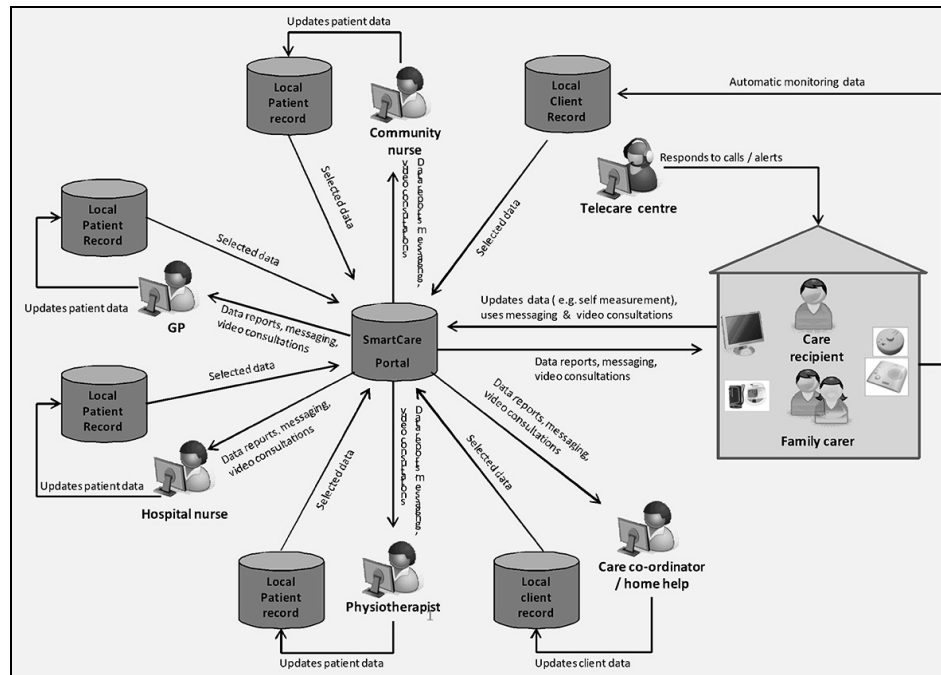


Figure 3. Schema of pilot service infrastructure implementation within the deployment context of South Denmark

3. Convergence and building on the Future Internet (FI) foundation

With implementation and system integration in the project aimed to be based on open standards and multivendor interoperability, a reasonable step further in architecture would be leveraging on the current cutting-edge and evolving open specification technology foundations and infrastructures developed in relevant projects and initiatives across the European Research Area, such as FI-PPP.

Envisaged complementarity between SmartCare as CIP project focused to field-implemented innovation and piloting, and a corresponding FI research project, such as ongoing FP7 FI-STAR in e-health, thus has high potential for reuse and wider adoption of the resulting services and tools.

4. Conclusion

In the Kraljevo pilot location, the development and specific implementation focuses on three specific objectives:

- Data integration and communication between the systems of healthcare and social work centres, improving the efficiency of staff teams and enabling access to system services also from mobile devices,
- Support for integrated care plans (ICPs) for all involved actors, including the necessary extensions of the systems in social work centres. ICPs are the

identified common and overlapping area between health and social care where workflow re-engineering can be performed. Care recipients themselves are also involved actors on provider side, in self-care use case scenarios. This implies also a needed module or set of generic services for facilitating and/or augmenting the use of advanced technology, as target CRs are mainly elderly or socially vulnerable category dependent persons with chronic conditions,

- Alerting, reminder and compliance tracking/verification services based on compiled integrated care plans, or just their scheduling data subsets, as inputs. The broadest generic range of reminders for appointments, therapy, social care interventions etc, and comprehensive verification/confirmation feedback types, such as audio/video/sensory, as outputs of the services, is intended to be covered, comprising the borderline scenarios (e.g. remotely observed therapy). These services will also comprise essential tele-care through monitoring cardiac parameters, with virtual devices in prototype.

In this aspect of higher target genericity, on wider level then being applicable in all project pilot locations, the considered implementation of developed services and components on the FI-WARE (General Enabler) paradigm has clear benefits on system architecture and technology levels.

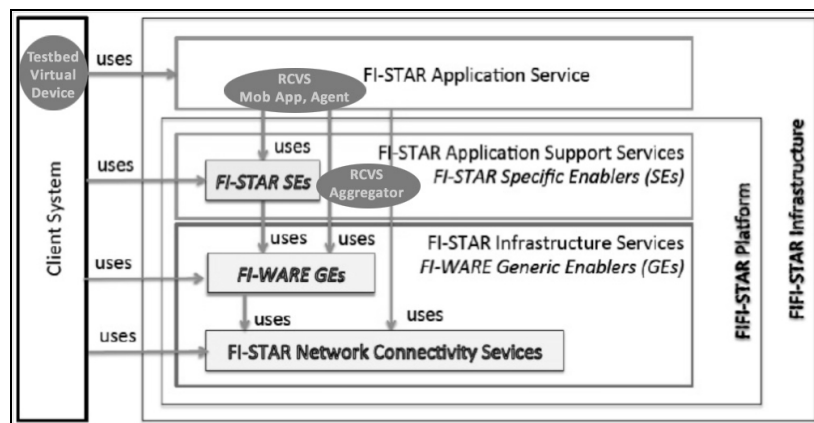


Figure 4. Conceptual Reminder and Compliance Verification Service (RCVS) components within the overall hi-level FI-STAR and FI-WARE platform architecture

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