Successful Digitalisation Pathways

A Services Readiness Levels Stage Model: A Roadmap

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Help with digitisation of healthcare needs a focus on service innovation – using a roadmap can help make implementation more successful.

☑ Key Points

- Service innovation is a key element for the future of Europe's health and care.

- Cities, regions, and sites working on health and care can benefit from using a service innovation roadmap.

- Successful implementation of new services needs these practical kinds of tools.

- Much wider use could be made of such a roadmap in many more fields.

Introduction

Service innovation in healthcare has become an increasingly widespread area of investigation. The European Health Telematics Association (EHTEL) focused part of its innovation-related work on developing an 8-stage service readiness levels model. As a result of its investigation, the EHTEL Innovation Initiative (the EHTEL initiative or initiative) produced an early service innovation roadmap.

Europe Focuses on Service Innovation

Service innovation has become an area of major concern in Europe.

Horizon 2020 was a European Union programme of activities that aimed at improving innovation in Europe in a large number of disciplinary areas. Among the societal challenges faced in the programme were health, demographic change, and wellbeing. One area of importance was the technological support to be given in the service-related fields of health, care, and active and healthy ageing.

In the context of Horizon 2020, the EHTEL initiative concentrated on fields like the tackling of social and societal challenges, and a combination of health care and social care (integrated care) (Kodner and Spreeuwenberg 2002), innovative technologies in the provision of care (Guldemond and Hercheui 2012), and general services including service innovation (Witell et al. 2016). These orientations led EHTEL's initiative to focus on the notion of service readiness and service innovation in integrated care.

Today, EHTEL continues to update this work under ongoing European endeavours related to Horizon Europe and Digital Europe. Working with European regions and countries, it explores what could be done throughout European countries under the Resilience and Recovery Facility. Chief among progress to be made towards resilience and recovery will be services reform and innovation. As Europe heads towards new sets of major milestones in 2030, one could imagine the potential growth of use of service readiness innovation as a domain for practical application in the integrated care fields of health and care.

Background to Technological Readiness Innovation

Technology readiness is a notion that has increasingly pervaded technological research over a 40-year time-period. Originating from work undertaken in the USA and taken up by international organisations including the space industry and standardisation bodies, it was transformed into the International Organization for Standardization (ISO) standard 16290. A similar, yet simplified, list of technology readiness levels was adopted by the European Commission (European Commission 2014). As part of its own work on service innovation, EHTEL's initiative decided to critique the model of technological readiness and see to what extent it needed to be complemented by a service readiness levels model.

A Service Innovation Model

The model developed by the EHTEL initiative brings together in a single instrument innovation management and service readiness (Table 1). It was originally called a Service Readiness Levels Stage Model, and produced in the 2015-2017 timeline.

This service readiness levels model is a stage-based model.

good practice(s) as an innovation incubator.

Each service innovation took place in a different region of Europe (both inside and outside the European Union). The three sites reported on their service readiness. They were located in Galicia, Scotland, and Humberside in England.

Each site dealt with a different form of innovation. Each

TRL9 • Actual system proven in operational environment	SRL8 • The service has been rolled out to its target population
TRL8 • System complete and qualified	SRL7 • The organisation supporting the service has been adapted as appropriate
TRL7 • System prototype demonstration in operational environment	SRL6 • Wide-scale adoption: The service (with its technology solution) is adopted by its users and non-users
TRL6 • Technology demonstrated in relevant environment	SRL5 • Evidence of the benefits of the service has been assessed with a statistically significant number of users and non-users
TRL5 • Technology validated in relevant environment	SRL4 • Service prototype developed, tested and validated in lab
TRL4 • Technology validated in lab	SRL3 • Technology identified as an enabler for the desired change
TRL3 • Experimental proof of concept	SRL2 • User readiness to change a process or create a new one
TRL2 • Technology concept formulated	SRL1 • Capturing drivers and scoping for change
TRL1 • Basic principles observed	

Table 1: Roadmapping for Service Innovation. Source: EHTEL

It was designed to provide a complementary mechanism to the notion of technology readiness levels (TRLs). The main purpose of the model, and its associated template for gathering information, was to focus on the processes involved in scaling-up service innovation. The fields to which it has been applied are in both healthcare and social care, i.e., integrated care. The model was refined by undergoing several iterations.

Ultimately, the model forms a roadmap. It has now been called Roadmapping for Service Innovation. This roadmap covers a set of stages. The stages range from the origins of an innovation proposal through its entire process of scaling-up. Eventually, actual integration of a service innovation is achieved in a healthcare system or service(s).

Three Sites Apply the Use of the Service Innovation Model

A range of sites and examples offered to test both the usability and workability of the service innovation model. These three sites used the model and the template to describe their own

concentrated on particular aspects of its health and care work. The innovations covered work in the secondary care sector (hospitals), the primary care sector (general practices), and a wider domain of activity that encompassed health care, social care, and voluntary care. They included a hospital; a primary care institution with a focus on both cardiac and lung disease; and an organisation offering community social and health care support.

Overview of a Service Readiness Levels Stage Model

The EHTEL initiative's study of innovation showed that a Service Readiness Levels Stage Model, and the template accompanying it, is easy to use. Use can be made of it by sites that are preparing, or are involved in, the process of scaling-up service innovation.

Other Types of Service Innovation Models

EHTEL's initiative members designed the 8 levels of the model to be displayed in a way that permits the model to be compared to the international, and especially the European,

technical readiness levels model (European Commission, 2014). It can also be examined in a similar way to the approach used in the Electronic Medical Record Adoption Model (EMRAM). EMRAM was developed by the Healthcare Information and Management Systems Society (HIMSS) in the USA.

These two instruments are both stage-based models. The greatest similarity is with their look-and-feel. Ultimately, the instruments might form part of a group of tools which could

- **A tool:** Used as a simple tool, the mechanism could help people to evaluate service innovation initiatives in both health and care. For example, it could constitute just a single component embedded in a user-friendly online course. The overall course could include a teaching set – modules of easily accessible documents – that would be used to introduce and teach the basic foundations of service innovation scaling-up.

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be grouped together as a toolkit. This toolkit of tools could be used to support the scaling-up of service innovation in a wide range of fields.

Other Types of Supportive Service Innovation Activities

The scaling-up of service innovation and service development could also be undertaken through at least three types of activities. These activities would include twinning, coaching, and self-assessment.

In the first two of these activities, the service innovation model/tool could function as a type of teaching aid or learning aid. Each of these types of activities to support scaling-up is becoming increasingly popular. These types of activities have been supported by a variety of European Commission co-financed activities, through studies such as ScaleAHA and projects like Scirocco and Scirocco Exchange.

The third activity – self-assessment – deserves more attention. When used as self-assessment, the service innovation form (or template) could be displayed online by using a more interactive, attractive visual format. It could then be filled in electronically through a user-based platform.

Future Developments of the Model and Application of the Roadmap

EHTEL members and people involved in the EHTEL initiative concluded that further elaboration of the Service Readiness Levels Model could enable the creation of several instruments: a roadmap; a tool; and a compendium/resource directory.

- **A Roadmap:** When used as a roadmap, the mechanism could help a site move towards making more advanced and applied innovative actions. It could enable the people on the site to understand how to make progress, stage-by-stage, on a service innovation journey.

- **A compendium or resource directory:** Such a compendium or directory could constitute the collection of a set of descriptions of service innovation good practices and experiences. When gathered together, these examples could provide accessible, easy-to-use case studies to be used as examples by other sites. The collection could be used as a reference point for ongoing innovation management and service innovation in health and care.

In this brief article the focus of further work is on the use of the model as a tool. It is evident, however, that investigation could also be undertaken on its use in a much wider set of areas of innovation management and service development in health and care (Joiner and Lusch 2016; Mori et al. 2015; Wise et al. 2011). Other fields, such as food/agriculture, are also ripe for the application of readiness models (Jostein et al. 2021). Within the last year too, suggestions have been made for how to better evaluate and assess public health service innovation (Hughes et al. 2021).

Today, there is rapid growth in fields like hospitalisation@home, the greater need for the use of digital technologies, and for hybrid (physical and virtual) forms of care. All three might offer appropriate fields for further exploration and implementation of the model/tool and, specifically, the roadmap.

Conclusion

This 8-stage model shows that there is an opportunity to focus on concrete approaches to exploring and applying service readiness in real-life applications. With EHTEL's guidance, three example sites/regions in Europe were able to use the model/template to explore the service readiness and innovation of their digital health developments.

EHTEL remains keen to validate further the use of the model, the template, and especially the roadmap. The association would aim to do so by involving a wider range of organisations

and stakeholders. Examples could include innovation incubators, users of services or health and care systems, and representatives or members of regional associations motivated by

is eager to work with other sites/regions that might wish to apply its service readiness-oriented roadmap. It is especially keen that its application would help in building Europe's resil-

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improved service innovation. Any ensuing gaps in knowledge will be highlighted by further active application and transferred practical learning.

There is considerable potential complementarity between this specific tool and the several others identified. The roadmap especially can be seen as one tool among several that could form a basic toolkit to be used by sites wishing, in the future, to make innovative shifts in their service provision.

As a member organisation, with some 50+ institutional members, EHTEL serves primarily its own members. EHTEL

ience and recovery before 2030 in the field of digitisation of healthcare.

Conflict of interest
None. ∎

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