

## IPICT - AN EXPLANATORY SCHEME ABOUT THE INNOVATION PHENOMENA TOWARDS INTEGRATED CARE ENHANCED BY DIGITAL TECHNOLOGIES

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### Abstract

The introduction of innovative models of care, especially in the management of chronic diseases and other long-term conditions, responds to an urgent need of economic sustainability of the health and social system, while maintaining or increasing the level of quality of the system. In this context it is crucial to assure the proper co-evolution of organisational models and technological solutions. This paper presents an explanatory scheme about Innovation Phenomena towards Integrated Care enhanced by digital Technologies (IPICT), developed in the context of the European project STOPandGO: organisational and informational integration may be achieved both vertically among care settings and horizontally between healthcare and social care. Full integration may be the final goal of a long process made by a progressive local deployment of several initiatives, possibly coherent with regional or national plans. Within each initiative, innovation has not to be necessarily present in each individual activity or in each technological component, but it may be triggered by the appropriate combination of activities and technologies according a suitable model of care. The proposed scheme identifies six layers, ranging from a technological approach on enabling infrastructures in Layers L1 and L2, to a perspective on organisational models co-designed with technological solutions in Layers L3 and L4, up to the comprehensive vision of the overall (regional) strategies on Integrated Care in Layers L5 and L6. In particular, Layer L4 regards the measures able to “reify the innovation” in the models of care deployed within the initiatives of Layer L5. The list of L4 measures worked out by STOPandGO project was tested on the production of a coherent set of local tenders to improve the

health and well-being of citizens across heterogeneous organisational/clinical circumstances.

**Keywords:** Integrated Care; digital agenda; telehealth; telecare; innovation; public procurement

### Introduction

The diffusion of effective and high-quality health and social services, strengthened by appropriate digital technologies, is among the objectives of the European Framework Programme for Research and Innovation “Horizon 2020”.<sup>1</sup>

The most comprehensive scenario concerns Integrated Care,<sup>2-9</sup> where “*rapid technological change is enabling the development of increasingly innovative care models*”<sup>5</sup> (e.g. by advanced primary care centres, disease-related networks, proactive care, engagement of the citizens about their health), with “*the simultaneous evolution both of the models of care and of the organisational ones, as an enabling and in some cases decisive factor for their realisation.*”<sup>10</sup>

However technology is propagating slowly to health processes and has not yet reached the pervasiveness of other economic sectors; moreover only a fraction of the numerous Telemedicine pilots were able to scale up to “systemic” services.<sup>11</sup>

We propose a scheme, called IPICT (Innovation Phenomena towards Integrated Care enhanced by digital Technologies), which characterises the innovation under a perspective of Integrated Care to explain the strategic, organisational and technological differences among the initiatives in the field.

The ultimate goal is to provide some insights about innovation phenomena in the health sector and to identify operational suggestions towards more aware regional and local strategies.

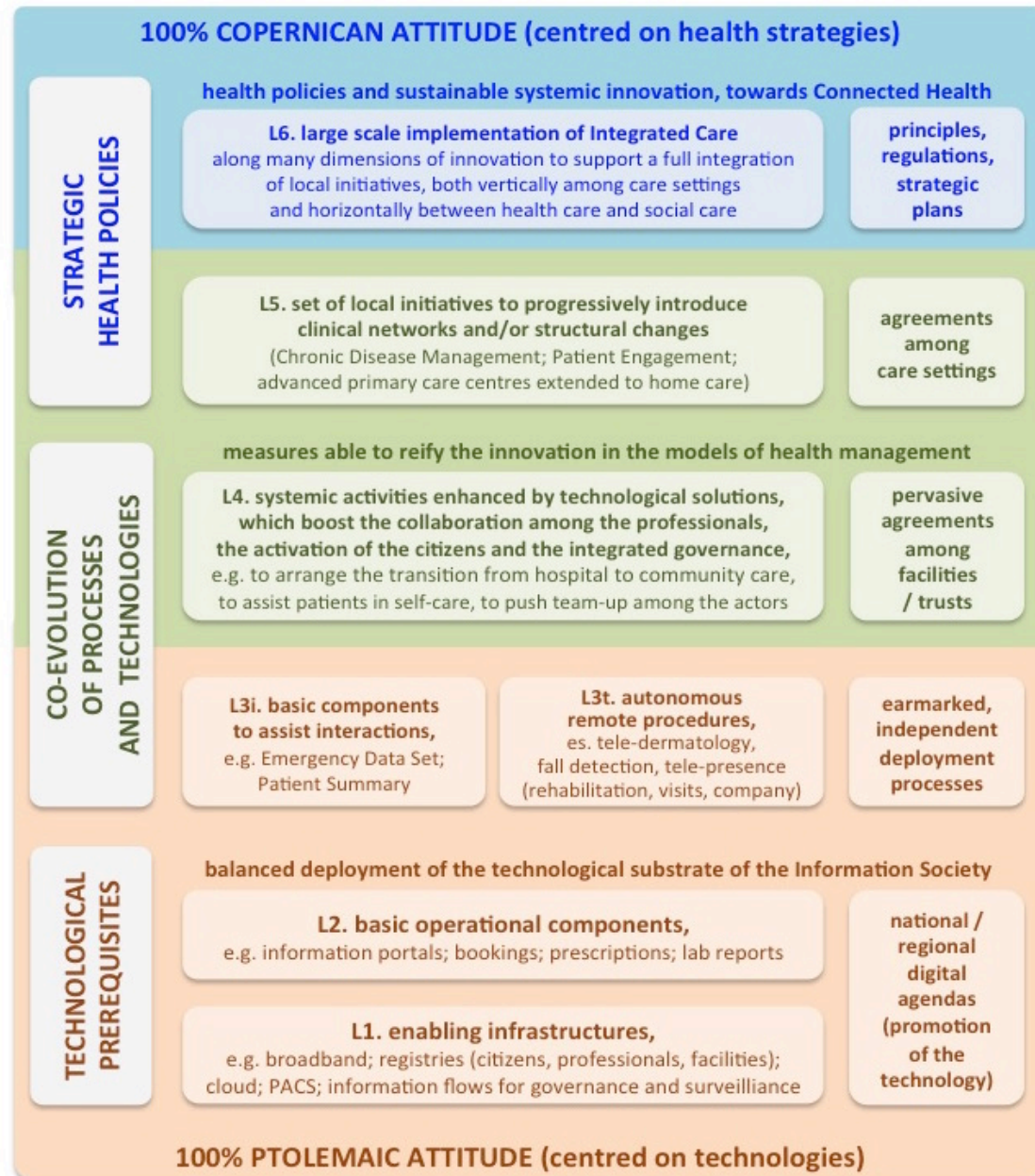
A concrete approach to the diffusion of innovation

through public procurement developed by the European project STOPandGO<sup>12</sup> in line with the IPICT scheme is also presented.

**Outline of the IPICT scheme**

The IPICT scheme is organised into six layers that help interpreting the concept of innovation in care provision with the support of digital technologies. (Figure 1)

Layers L1 and L2 deal with the enabling (cross-sectorial) technological infrastructure, a prerequisite for any eHealth development: **layer L1** is used by the upper layers and does not provide direct services to users, while **layer L2** concerns the dematerialisation of some operational processes (e.g. about booking, prescriptions, diagnostic reports, discharge summaries). They reached a high level of adoption, both as the natural evolution of the market and as a



**Figure 1.** Synthetic representation of the six layers of the IPICT scheme.

result of plans and regulations now converging in the Digital Agendas. Their deployment orbits around a technological perspective, named as “Ptolemaic attitude”,<sup>13,14</sup> to differentiate it from the perspective of the upper four layers centred on innovation of care models, named as “Copernican attitude”. They are outside the main focus of this paper.

Layers L3 and L4 refer to the co-evolution of processes and technologies aiming at continuity of care provision and patient engagement; they foster the enhancement of roles and responsibilities of the various players across the system.

**Layer L3** regards the circumscribed re-organisation of procedures without extensive changes to usual care models; as such, they cannot be considered as “systemic innovation” towards Integrated Care. Our scheme preserves the distinction between two traditional attitudes, one aiming at the integration of information (L3i) and one supporting remote activities, derived from the telehealth and telecare milieu (L3t), which overcomes the constraint of physical presence allowing many ways to reorganise the processes.

Layer L3i components belong to the information infrastructure, e.g. to manage a log of contacts between citizens and the system, or the Patient Summary/Emergency Data Set in the longitudinal Electronic Health Record (EHR). These components can be offered to the professionals without adopting an explicit organisational innovation in the care processes. L3t activities may extend the setting of delivery beyond the physical boundaries of a facility (e.g. to the patient's home). Remote services may be performed either by the same professional who is in charge of the patient as a complement to face-to-face activities, or by other players (e.g. through regionally operated contact centres).

Typically they emerge spontaneously in a bottom-up fashion, for a combination of unique circumstances and the presence of committed pioneers (classified as “innovators”).<sup>15</sup> They include for example: tele-dermatology, telepresence (e.g. for visits, rehabilitation, company) and management of alarms generated by a life-saving button.

**Layer L4** measures imply a course of actions to achieve structural and persistent solutions that may have a high impact on the core business of health maintenance in the community, e.g. help desk information, tele-coaching, non-urgent telephone triage, remote follow-up (with identification of

abnormal events and activation of the solution). They may be deployed by different organisations, according to several levels of complexity and coverage; simplified variants could in some cases belong to Layer L3.

The STOPandGO project worked out a list of 20 kinds of measures pertaining to Layer L4 that could be used to systematically describe the local initiatives and, if needed, the related tenders. (Table 1)

The literature provides lessons on numerous services that denote an innovative model of care for a phase of a clinical pathway<sup>2</sup> (e.g. the management of home care after discharge for patients with Chronic Heart Failure), involving heterogeneous facilities (“early adopters”)<sup>15</sup> in a piece-wise organisational integration. They require explicit managerial decisions, difficult to achieve but likely to be assimilated and scaled up afterwards within the health system.<sup>11</sup>

Packages of L4 services may face specific processes for a class of patients necessitating long term care, e.g. affected by one or more chronic diseases, or frail elderly people, or persons living independently alone.

They may help a “Functional Team” to take shape (formally or informally) around the citizen’s needs, connecting health and social professionals, as well the citizen and its caregivers.<sup>16</sup>

**Layers L5 and L6** have a strong strategic perspective. L5 initiatives achieve structural changes in the health system by chaining together innovation-triggering L4 services and traditional ones. The vision of Layer L6 provides an overall framework to support several L5 initiatives, through multiple innovation channels to scale up and harmonise them.<sup>11</sup>

## Discussion

### *The relevance of the Layer L4*

The STOPandGO Project intends to promote a unified view on innovation across Europe, based on the list of L4 measures, where innovation arises mainly from two key factors, collaboration among the professionals and patient activation, plus the integrated governance.<sup>12</sup> Health services and technological components are not requested to be particularly innovative in itself, since it is expected that the actual innovation is in the way they are used to reorganise the overall model of care, i.e. to reshape the activities and the roles of the health and social professional and of patients and their

**Table 1.** Kinds of measures pertaining to layer L4.<sup>12</sup>

<p><b>COLL - Collaboration among professionals</b></p> <ul style="list-style-type: none"> <li>• Supporting a stepwise refinement and update of the multidisciplinary care plan</li> <li>• Sharing information on contacts and health problems among the professionals who take care of a patient</li> <li>• Reinforcing the interactions among the professionals around a patient</li> <li>• Organising remotely incidental procedures of a predefined type</li> <li>• Supporting the medical supervision on the progress of a care plan (Case Manager)</li> <li>• Supporting the Care Manager on the proactive assistance to the patient and the caregiver for the application of an individual care plan</li> <li>• Acquiring reliable data and information from a remote location</li> <li>• Controlling and optimising a multi-drug therapy</li> <li>• Coordinating the transition between care settings (in particular from hospital to local facilities in primary care)</li> </ul>	<p><b>ACT - Activation of the citizen and the caregiver</b></p> <ul style="list-style-type: none"> <li>• Handling simple clinical questions and clarifications</li> <li>• Managing operational information (e.g. on the facilities and on the procedures)</li> <li>• Enhancing therapeutic education and coaching</li> <li>• Coping with alerts and reminders to facilitate adherence to the care plan</li> <li>• Helping the citizen in carrying out self-care activities</li> <li>• Supporting active ageing and independent living</li> <li>• Strengthening social inclusion, reinforcing the communication with relatives or patients groups</li> <li>• Promoting age friendly buildings, cities and environments</li> </ul> <p><b>GOV – Timely and integrated governance</b></p> <ul style="list-style-type: none"> <li>• Analysing regional / national data streams for management and administrative purposes</li> <li>• Analysing routine data used in service delivery, for management purposes</li> <li>• Identifying possible beneficiaries for programs targeted to the population.</li> </ul>
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informal caregivers. In fact, technology can help all the players to focus on the most appropriate activities for their capacities, allowing to redistribute part of the workload currently assigned to higher levels of qualification, with obvious consequences on the economic sustainability. In this way, for example, a nurse with the role of care manager may help individuals to adhere to their "care contract" acting more smoothly and efficiently than a GP, who in turn might better focus on their role of doctor.

In planning a local initiative to implement an innovative model of care (at Layer L5), the policy makers will reorganise their services, introducing some measures of Layer L4 to catalyse the innovation: the related services act as the archetypal building blocks to take under control the innovation across the huge diversity in the models of care among the localities – and in the involved market.

Part of the services at Layer L4 need perhaps to be procured. In the case of the PPI Pilot of the STOPandGO project, by including these kinds of services in their local tenders, the procurers are applying a common approach to connote the innovation across their heterogeneous local scenarios, to promote the “early adoption of innovative services which are not yet available on a large-scale commercial basis”.<sup>17</sup>

The initiatives on the national/regional EHR can

further illustrate the meaning of the Layer L4. The original motivation for the EHR stemmed from the perception of a systemic need of continuity of care (layer L4); this view is usually mentioned in national and regional regulations, as well as in promotional materials.

Most regions implement different layers simultaneously:

- to improve the enabling infrastructures (Layer L1)
- to dematerialise current documents for operational procedures, as prescriptions (Layer L2)
- to create the Patient Summary, especially for emergencies and cross-border events as in epSOS<sup>18</sup> (Layer L3).

However, additional services of layer L4 will be necessary to achieve the claimed target of "Connected Health" for care coordination, remote support and analytics.

**Embedding innovation in a care model (Layer L5)**

L5 initiatives face regulatory and organisational issues towards innovative models of Integrated Care, to attain structural changes in the health system along two main perspectives: one on clinical integration, the other on organisational integration. (Table 2)

The focus of clinical integration is on citizens’

**Table 2.** Relations among organisational and clinical integration. The size of the circle represents the relevance of the interaction, as an hypothesis for presentation purpose; the actual ones should be worked out in each locality by the policy makers and the representatives of the stakeholders.

Perspective on the clinical integration (examples)	Perspective on the organisational integration				
	hospital & community	among professionals in primary care	health care & social care	formal care & informal care	formal care & self-care
diabetes, without complications					
chronic heart failure, after discharge					
long-term follow-up, after stroke					
support to caregivers in dementia					
prevention and management of falls					
palliative care					

needs and related clinical pathways, e.g. to realise Chronic Disease Management;<sup>19,20</sup> the criteria underlying the organisational integration regard the restructuring of the provision of health services, e.g. extending the coverage of Primary Care Centres to home care for vulnerable/elderly persons or deploying pathology networks.

Each cell in Table 2 identifies a scenario coupling the two approaches; for each scenario, a selection of L4 services – added to the usual ones – may be able to trigger an innovative model of care.

Each local L5 initiative combines – with different weights – one or more scenarios, horizontally (on health issues) and/or vertically (on organisational issues).

For example, the following Action Groups in the “European Innovation Partnership on Active and Healthy Ageing” (EIPonAHA) could lead to specific L5 initiatives:

- A1 - Better prescription and adherence to medical plans for older patients
- A2 - Personalised health management, starting with a Falls Prevention Initiative
- A3 – Prevention and early diagnosis of frailty and functional decline, both physical and cognitive in older people

- C2 – Development of interoperable independent living solutions, including guidelines for business models
- D4 – Innovation for age friendly buildings, cities and environments.

Over time a locality could activate a sequence of L5 initiatives, according to local priorities, following the vision of a comprehensive (regional) plan towards an adequate level of coverage of the main health issues.

Each scenario involves various options on its deployment, on level of coverage (region, locality, facility), on chance to manage it partially or totally by external contracts, on set of specifications to be satisfied (perhaps coherent with a regional plan). Following an analysis of the local situation and the identification of both the called model of care and the resources available, part of health and social services and/or the technologies may be the subject of a tender.

***The lines of innovation across the local initiatives (Layer L6)***

Layer L6 does not directly involve local deployments but supports them through a comprehensive Action Plan envisaging a large-scale coordination among L5 initiatives along several lines of innovation.<sup>1,20-22</sup> In

fact, the uncontrolled activation of several heterogeneous initiatives could severely affect the organisational and informational interoperability. Layer L6 provides a shared view across the initiatives and includes all common activities on regulations, financing, training, research and consistent formalisation of knowledge.<sup>23-27</sup>

An example of Lines of Innovation is provided in Table 3. The first set aims at the necessary assets on technology, education, research/innovation and evaluation methodologies. The second set is directly related to the improvement of the care activities with a comprehensive approach across the health issues.

The lines of innovation fit with the Action Areas of the Action Group B3 “*Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional levels*” in EIPonAHA, i.e.

organisational models; change management; workforce development; risk stratification; care pathways; patient empowerment; electronic care records/ICT/tele-services; finance, funding and procurement.

***How the concept of innovation emerges in the six IPICT layers***

The IPICT scheme enables interpretation of the attitude of different decision makers within each layer, in their journey in the Digital Agenda and, specifically for the health sector, towards Integrated Care.

Within the STOPandGO project, the scheme identifies the crucial role of L4 measures, where the availability of technology makes the vision of connected and integrated care a reality. But of relevance are also the roles of other decision makers in charge of the infrastructures in Layers L1 and L2,

**Table 3.** Examples of lines of innovation supporting local initiatives.<sup>24</sup>

<p><b>I - Increased availability of mechanisms for knowledge management</b></p> <p>I.1 Technology in support of Prevention and Integrated Care</p> <ul style="list-style-type: none"> <li>• Redirect digital technologies towards Integrate Care</li> <li>• Introduce telematics to support the citizens, to improve prevention and promote self-care</li> </ul> <p>I.2 Plans for education and training</p> <ul style="list-style-type: none"> <li>• Train / motivate patients and caregivers about Integrate Care</li> <li>• Train / motivate professionals, as appropriate to the new requirements</li> </ul> <p>I.3 Research, Development and Innovation</p> <ul style="list-style-type: none"> <li>• Improve the targeting of resources in research on chronicity</li> <li>• Promote the practical application of innovations on chronicity</li> </ul> <p>I.4 Tools for evaluation and dissemination</p> <p>Generate mechanisms for the dissemination of good practice</p> <p>Enable a reliable and adequate monitoring of the initiatives, for a process of continuous improvement</p> <p><b>II - Improvement of care processes</b></p> <p>II.1 Promotion of healthy lifestyles and prevention</p> <ul style="list-style-type: none"> <li>• Develop models of patient participation in decisions about their disease</li> <li>• Promote physical activity</li> <li>• Promote the prevention of complications and comorbidity</li> <li>• Promote optimal habits for healthy aging</li> </ul> <p>II.2 Care multidisciplinary, integrated and longitudinal</p> <ul style="list-style-type: none"> <li>• Stratify the population by level of risk, with early identification of the patient</li> <li>• Systematise the care processes, with customization of care</li> <li>• Enforce the reference clinical pathways for the most relevant health problems</li> <li>• Adapt the reference clinical pathways to the individual and reconcile multiple pathways</li> </ul> <p>II.3 Coordination in the community</p> <ul style="list-style-type: none"> <li>• Systematise the social processes and share information with healthcare services</li> <li>• Integrate the social workers in the healthcare processes</li> <li>• Support assistance to the family at home</li> </ul>
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which imply a technology-driven dimension. That attitude is embedded in the plans of the Digital Agendas scoping across several different economic sectors.

Layers L3 and L4 recognise technology as a lever to rationalise or redesign increasingly complex and integrated health and social services, starting from identifying the needs of classes of citizens and consequently the packages of care services that can take advantage of the potential offered by existing technologies.

Any locality can certainly implement its own L4 measures as pathfinders for developing innovative models,<sup>15</sup> even in the absence of an overall plan; however without a robust framework (possibly according to a regional/national vision) sustainability is at risk, and the overlap of heterogeneous initiatives will cause in the long run severe harmonisation problems. The experiences of the “early adopters” may be progressively extended, scaling up the initiative within the “early majority” of a region.<sup>11,15</sup>

In turn, layers L5 and L6 depend on the Regional/National vision, with targeted programmes implemented at scale,<sup>11</sup> either to put into practice the main clinical pathways, or to activate structural and regulatory solutions, such as a re-organisation of the primary care centres with new professional profiles, or to introduce new principles, such as initiatives of anticipatory care or patient activation.

Layers 5 and 6 assume that innovation hardly propagates in complex, highly regulated and fragmented organisations characterised by long chains of command (such as public organisations) without a strong unified strategy and the adoption of a top-down vision. In fact, implementing Integrated Care by its nature requires the adoption of a unified vision to identify the actual needs of organisational and technological integration and to co-design the corresponding organisational and technological solutions to satisfy them.

Layer 5 concerns the definition of initiatives to promote innovative solutions, in the presence of predefined financial, regulatory, organisational constraints. Layer 6 may intervene on these constraints by adapting regulations, incentives to managers and professionals, by co-financing the deployments and by promoting new reimbursement modalities.

Note that the generation of innovative products is beyond the scope of this paper, promoting the adoption of technologies already tested and evaluated in

reliable, replicable contexts. Furthermore, the paper skips layers L1 and L2 being the object of the inter-sectorial Digital Agendas (on a regional, national and European milieu). In fact, the focus of the paper is on the sustainable re-organisation of the health system through innovative models of care envisaged by the four upper Layers:

- at layers L5 and L6, a national and regional top-down vision involves policies on innovation, regulation and coordination of health processes
- at layers L3 and L4, the priorities for the long-term evolution in service deployment can only be decided locally, based on local circumstances (as presence of leadership and innovators, availability of skills, spread reached by technology), through a bottom-up approach consistent with the vision.

The different perspectives on innovation across the six IPICT Layers are depicted in Table 4. With the limits implicit in any schematization, the six layers were characterized along three dimensions:

- the main object of the innovation, from the basic inter-sectorial infrastructures up to the full strategic vision on Integrated Care
- the minimum context in which the initiatives are optimally realised, from internal processes within a facility up to regional, national and cross-boundary services
- examples on remuneration, e.g. in case of a possible outsourcing.

### ***The STOPandGO approach on procurement towards Integrated Care***

STOPandGO<sup>12</sup> runs a Public Procurement for Innovation (PPI) Pilot,<sup>17</sup> to promote innovative care models for the elderly, in line with the objectives of Horizon 2020 and the activities in EIPonAHA,<sup>4,22,28,29</sup> by developing a “European Specification Template” (EST) to guide procurers in the preparation of tenders on this topic.

The interim version of the EST<sup>12</sup> was submitted to an Open Market Consultation, to attain a release to be used by the partners to launch a number of tenders. Based on the experience within the project, the partners will then produce specific templates on the most relevant scenarios, with training materials for a widespread use outside the project.

A smooth way to start introducing the innovation could consist in the inclusion of some technological components on the occasion of the renewal of con-

**Table 4.** Characterization of the innovation in the six IPICT layers

Layer	Object of the Innovation	Minimum context	Remuneration of services
L6 - strategic comprehensive vision towards Integrated Care	to accompany innovation in the local initiatives, by several action lines	Region, Country	per outcome
L5 - large-scale, targeted initiatives	to deploy an integrated pathway with multiple interconnected services (proactive care, new professional profiles, pathology networks, etc.)	locality, Region	per classes of enrolled patients
L4 – measures on collaboration among professionals, patient activation, governance dashboards	to catalyse an innovative model of care enhanced by digital technologies, on a single clinical /organizational scenario	health trust, multiple facilities	per output, Service Level Agreements
L3 - circumscribed support to care activities	to optimise a process delivering a health or social service	facility	fee for service
L2 – operational components	to dematerialise non-clinical processes	Region	per output, Service Level Agreements
L1 - enabling infrastructures	to propagate the basic infrastructures and reduce the digital divide	Region, Country	per output, Service Level Agreements

tracts currently operated with a traditional attitude. This approach could lead to a critical mass of infrastructures, basic services, contact centres that might be progressively expanded afterwards.

Investments on layer L4 could form the cornerstone of the development of innovation: the support to activities on chronic diseases, elderly and frail people can prelude to highly integrated regional strategies of layers L5 and L6 adopting certain services, as:

- enrolment in specific programs and multi-professional assessment
- social and health patient record shared among the Functional Team around the patient
- tele-coaching activities on health problems and their treatment
- social networks among patients, promoted and moderated by the public system
- monitoring the adherence to the care plan
- monitoring the clinical parameters through home devices.

## Conclusions

The IPICT scheme involves six layers of innovation towards Integrated Care enhanced by technological solutions. It is intended to assist a region or a locality in identifying the processes involved in the implementation of innovative care models and technology-enabled care services.

The goal of reaching Integrated Care at scale<sup>11</sup> is very ambitious but necessary, and cannot be achieved in the short term; it involves a progressive deployment of several initiatives within a long-term strategy.

In a local context, each scenario will initially fix two dimensions:

- the expected coverage in terms of health issues, perhaps within a specific clinical pathway
- the model of care that should be improved, with involved kind of services, facilities and professional profiles.

Once the scenario is defined, the co-design of organi-



sational and technological solutions should consider the measures of the Layer L4 in the IPICT scheme able to support collaboration among the professionals and the activation of the patients, considering that innovation is not requested within each individual activity or technological component, but it can be achieved by their appropriate combination into a suitable model of care.

The Layer L4 delimits a continuum of resources (health and social professionals, software / hardware / networks, devices, multi-media material) that could be the core for a very large market, if procuring organisations decide to acquire specific components of services, complementary to the ones assured by themselves.

The inter-relation among the initiatives of Layer L5 should be carefully considered: their juxtaposition without a strong commitment on a predefined comprehensive plan has two severe drawbacks:

- a high risk that an isolated initiative, even successful, could not reach a persistent status in the system;
- the heavy burden to face *a posteriori* the organisational and technical interoperability among initiatives.

The optimal situation is therefore represented by Layer L6, where several L5 initiatives are supported by a Regional strategy, which coordinates common lines of interventions across them; local deployments apply L4 measures embedded in L5 initiatives according to their priorities and context.

In case a need to acquire care services or technological components is perceived, a Regional plan may optimise the tendering processes across different initiatives and the development of the market, with benefits both for the procurers and the suppliers, and eventually for the citizens.

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**References**

1. European Commission. Horizon 2020. (2015). Available at: <https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020> accessed 10 September 2015.
2. Integrated Care Foundation. Available at: <http://integratedcarefoundation.org/resources> accessed 10 September 2015.
3. Valentijn PP, Boesveld IC, van der Klauw DM, et al.. Towards a taxonomy for integrated care: a mixed-methods study. *Int J Integr Care* 2015;Jan–Mar:e003.
4. EIP AHA B3 Action Plan - Nov 2012. (2012). Available at: [http://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/b3\\_action\\_plan.pdf](http://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/b3_action_plan.pdf) accessed 10 September 2015.
5. WHO. People-centred and integrated health services: an overview of the evidence. Interim Report - WHO/HIS/SDS/2015.7 - Geneva. (2015). Available at: [www.who.int/servicedeliverysafety/areas/people-centred-care/evidence-overview/en/](http://www.who.int/servicedeliverysafety/areas/people-centred-care/evidence-overview/en/) accessed 10 September 2015.
6. WHO global strategy on people-centred and integrated health services WHO/HIS/SDS/2015.6. Available at: [http://apps.who.int/iris/bitstream/10665/155002/1/WHO\\_HIS\\_SDS\\_2015.6\\_eng.pdf?ua=1&ua=1](http://apps.who.int/iris/bitstream/10665/155002/1/WHO_HIS_SDS_2015.6_eng.pdf?ua=1&ua=1) accessed 10 September 2015.
7. Lewis RQ, Rosen R, Goodwin N, Dixon J. *Where next for integrated care organisations in the English NHS?* London, The Nuffield Trust, 2010. Available at: <http://www.nuffieldtrust.org.uk/publications/where-next-integrated-care-organisations-english-nhs> accessed 10 September 2015.
8. Fulop N, Mowlem A, Edwards N. *Building integrated care - Lessons from the UK and elsewhere.* London, NHS Confederation, 2005. Available at:

- <http://www.nhsconfed.org/~media/Confederation/Files/Publications/Documents/Building%20integrated%20care.pdf> accessed 10 September 2015.
9. Rosen R, Mountford J, Lewis G, Lewis R, Shand J, Shaw S. *Integration in action: four international case studies - Research report*. London, Nuffield Trust, 2011. Available at: <http://www.nuffieldtrust.org.uk/publications/integration-action-four-international-case-studies> accessed 10 September 2015.
  10. Italian Ministry of Health and Regional Authorities. Memorandum of Understanding on Digital Health. July 2014.
  11. EIPonAHA. European Scaling-up Strategy in Active and Healthy Ageing, European Union. (2015). Available at: [http://ec.europa.eu/research/innovation-union/index\\_en.cfm?section=active-healthy-ageing&pg=documents](http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=documents) accessed 29 December 2015.
  12. STOPandGO EU Project. Sustainable Technology for Older People – Get Organised. (2015). Available at: <http://stopandgoproject.eu/> accessed 10 September 2015.
  13. Rossi Mori A (ed.). Position Statement: Connecting systems or connecting people?. Panel: Ptolemaic vs. Copernican - How healthcare policies and re-organisation of care provision will influence the eHealth roadmaps. In International conference Continuity, Collaboration, Communication: Challenges for Healthcare and Opportunities for eHealth, Rome 2007;May:24-25.
  14. Rossi Mori A, Mazzeo M, D’Auria S. Deploying connected health among the actors on chronic conditions - a Copernican attitude towards cooperability. *Europ J ePract* 2009;8:1-22. Available at: [www.ticsalut.cat/flashticsalut/pdf/242\\_2\\_1.pdf](http://www.ticsalut.cat/flashticsalut/pdf/242_2_1.pdf) accessed 10 September 2015.
  15. Berwick DM. Disseminating innovations in health care. *JAMA* 2003;289(15):1969-1975. Available at: <http://jama.ama-assn.org/cgi/content/full/289/15/1969> accessed 10 September 2015.
  16. Rossimori A, Mercurio G, Verbicaro R. Enhanced policies on connected health are essential to achieve accountable social and health systems. *Europ J ePract* 2012;15:4-25.
  17. European Union, DG CNECT. ICT-PSP GUIDE FOR APPLICANTS, Instrument: PPI pilot (Public Procurement of Innovative Solutions) Version 7, January 2013. (2013) Available at: [https://ec.europa.eu/research/participants/portal/doc/call/fp7/cip-ict-ppsp-2013-7/1542571-gfa\\_cip\\_7\\_ppi\\_v1a\\_18-01-2013\\_en.pdf](https://ec.europa.eu/research/participants/portal/doc/call/fp7/cip-ict-ppsp-2013-7/1542571-gfa_cip_7_ppi_v1a_18-01-2013_en.pdf) accessed 29 December 2015.
  18. epSOS EU Project “Smart Open Services for European Patients”. Available at: <http://www.epsos.eu> accessed 15 September 2015.
  19. Wagner EH, Davis C, Schaefer J, Von Korff M, Austin B. A survey of leading chronic disease management programmes: Are they consistent with the literature? *Manag Care Q* 1999;7(3):56-66.
  20. World Health Organization. Innovative Care for Chronic Conditions: Building Blocks for Action. WHO\_NMC\_CCH\_02.01. Geneva, WHO , 2002. Available at: <https://extranet.who.int/iris/restricted/handle/10665/42500> accessed 10 September 2015.
  21. European Union. EIPonAHA, Action Group B3 “Integrated Care”. Available at: [http://ec.europa.eu/research/innovation-union/index\\_en.cfm?section=active-healthy-ageing&pg=action\\_group\\_b3](http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=action_group_b3) accessed 10 September 2015.
  22. Steering Group on EIPonAHA. Strategic implementation plan for the european innovation partnership on active and healthy ageing. (2011). Available at: [http://ec.europa.eu/research/innovation-union/index\\_en.cfm?section=active-healthy-ageing&pg=implementation-plan](http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing&pg=implementation-plan) accessed 10 September 2015.
  23. Australian Capital Territory. *Health Directorate. ACT Chronic Conditions Strategy - Improving Care and Support: 2013-2018 / ACT Government Health*. Canberra, Canberra Health Directoratea, 2013. Available at: <http://trove.nla.gov.au/work/180101244?selectedversion=NBD51015805> accessed 10 September 2015.
  24. Castilla La Mancha. Strategic Plan on Integrated Care for chronic diseases. (2015). Available at: [http://sescam.castillalamancha.es/sites/sescam.castillalamancha.es/files/documentos/pdf/20150410/plan\\_cronicos.pdf](http://sescam.castillalamancha.es/sites/sescam.castillalamancha.es/files/documentos/pdf/20150410/plan_cronicos.pdf) accessed 10 September 2015.

25. Gobierno Vasco. Departamento de Sanidad y Consumo. Estrategia para afrontar el reto de la cronicidad en Euskadi. Vitoria, Departamento de Salud y Consumo. (2010). Available at: [http://www.osakidetza.euskadi.eus/r85-skorga01/es/contenidos/informacion/estrategia\\_cronicidad/es\\_cronicos/estrategia\\_cronicidad.html](http://www.osakidetza.euskadi.eus/r85-skorga01/es/contenidos/informacion/estrategia_cronicidad/es_cronicos/estrategia_cronicidad.html) accessed 10 September 2015.
26. The Catalan Health Care System in a Process of Change. Review of the 2011-2015. Health Plan for Catalonia at the halfway point. Barcelona, Government of Catalonia Ministry of Health. (2014). Available at: [http://salutweb.gencat.cat/web/.content/home/el\\_departament/pla\\_de\\_salut/documents/health\\_plan\\_for\\_catalonia\\_halfway\\_point.pdf](http://salutweb.gencat.cat/web/.content/home/el_departament/pla_de_salut/documents/health_plan_for_catalonia_halfway_point.pdf) accessed 10 January 2016.
27. NHS Scotland. 2015-16 local delivery plan guidance. (2015). Available at: [http://www.alliance-scotland.org.uk/download/library/lib\\_54944e763f61d/](http://www.alliance-scotland.org.uk/download/library/lib_54944e763f61d/) accessed 10 September 2015.
28. Steering Group of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA). "Operational Plan". (2011). Available at: [https://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/steering-group/operational\\_plan.pdf](https://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/steering-group/operational_plan.pdf) accessed 10 September 2015.
29. European Commission. Taking forward the Strategic Implementation Plan of the European Innovation Partnership on Active and Healthy Ageing. Communication from the Commission to the European Parliament and the Council, COM(2012)83final. Brussels. (2012). Available at: [https://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/d4\\_action\\_plan.pdf](https://ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/d4_action_plan.pdf) accessed 10 September 2015.