

Health and Care Ecosystems as Drivers for Transforming European Welfare in the 2020s

The AAL Eco-system Learning Journey

Acknowledgements

A word of thanks to all the individuals who, wittingly or otherwise, contributed to the creation of this status report, which itself is the result of a trajectory begun in 2007 with the founding of the AAL Programme. This path includes countless encounters, formal and informal, with professionals from the health and care field, speakers and attendees of our seminars, workshops, and interviews. They are too many to mention all. The non-exhaustive list of events and organisations includes:

- The participants of the eco-system and collaboration workshops at the AAL Forum 2018 in Bilbao and 2019 in Aarhus
- The partners of our online seminar on the role of 'health & care eco-systems as drivers for transforming European welfare in the 2020s', i.e. Health Valley Netherlands, the Universities of Vaasa and Tampere, the Scanbalt Network and the German Health Regions and especially our experts from 12 countries sharing their experiences
- The AAL Programme with its Executive Board, Strategy Workgroup and country members
- Our collaboration partners from the EIPonAHA and the JPI MYBL

The AAL Programme would like to express its gratitude for the accumulated experience and progress made defining and advancing the ideas and practice of health and care ecosystems. This work has been, by definition, a collective endeavour. Without your help it would not have been possible. Its continuation will be impossible without your unrelenting support. What follows is a working document. We invite our growing network to stay involved, and for others to join us on this exciting, ongoing journey.

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The eco-system learning journey in a nutshell

How do we deal with complexity? How do we deal with new insights into human behaviour, collective leadership and individual agency, advancing science and proliferating technology, ageing populations and shrinking financial means? With ever-increasing complexity presenting itself as a given, are we even asking the right questions?

Populations are ageing. The way that we approach health and care seems to be changing as well. A new health and care environment is emerging. Existing governance structures and frameworks geared towards human health outcomes, designed and created step by step, are complemented by something else. We are becoming aware of the emergence of spontaneous decision-making processes, connections and collaboration, gradually developing over time: **health and care ecosystems**.

Why is this happening? What are some of the causes, and what is the nature of these new health and care ecosystems? What are their advantages as opposed to the old – top-down – way of doing things?

For 13 years, the AAL has been connecting with health and care providers all over Europe to formulate these and other questions, and to plot a way forward, in pursuit of a transformation of European welfare and better health outcomes for all.

What follows is a snapshot of the learning process that the AAL has embarked upon, together with its partners over the course of formal and informal discussions, seminars, interviews, and workshops. It is also an invitation to join us on this journey, to attend our upcoming conferences, to connect with other stakeholders and embark on the next stages of our journey.

Definition(s)

As our awareness of what health & care ecosystems can do and which forms they can take evolves, so does our definition...

A **health & care ecosystem** is a web of people and organisations engaged in obtaining health & care outcomes and creating impact. They are linked together via formal or informal relationships expressed through joint projects, strategy reflexions & frameworks as well as governance systems, information technology tools, investment, etc., across geographic; local, regional, cross-national contexts.

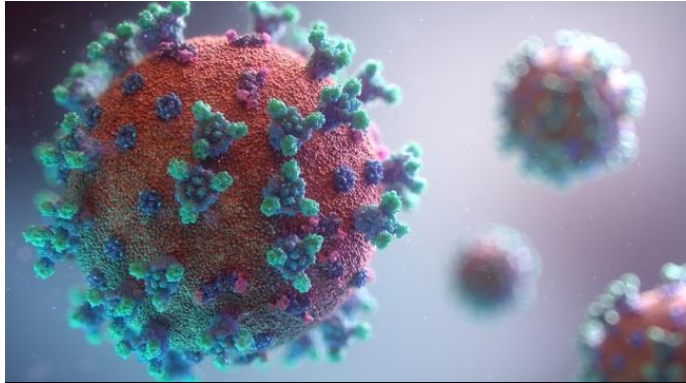
Source: AAL, 2021



1. WHY?

From crisis to opportunity

Many countries, in Europe and beyond, are confronted with immense health and care challenges. Ageing populations require increasingly complex and longer-duration care. The associated higher financial costs and need for health and care personnel have put governments in a tight spot. An OECD study¹ among others indicates an overall trend: older populations increase government health expenditure, while putting downward pressure on tax revenues on account of the shrinking proportions of the working population. The care profession, due to shrinking budgets and salaries that are not commensurate with the demands of the job, has become less attractive. In short, the gap has widened between the demand for health and care services on the one hand, and supply on the other.



Source: Fusion Medical Animation, Unsplash

The shock of the recent – and in many ways ongoing – COVID-19 pandemic has accelerated these trends, and brought into sharper relief the overall shortcomings of European health and care systems. The crisis also showed that a lot can be achieved in a short period of time, provided adequate political attention and concertation. Crises can be catalysts for change.

Health measures were agreed upon, in tight coordination between the political domain, national research institutions, and providers in the field. Close collaboration between academia and private sector players made possible the rapid development of vaccines. Yet, beyond the immediacy of these much-needed actions, it's become abundantly clear that the health and care sector finds itself on the cusp of profound and much needed changes. What those changes will be is only slowly emerging.

But before we can even begin to flesh out these details, we must first agree on the overall goal. In other words, what is the desired impact? How can we make

Micro, meso, macro

One way to think about health and care ecosystems is to divide them into strata or levels. Micro-, meso-, and macro-levels refer to the patient interaction level, the health care organisation and community level, and the policy level, respectively. Each of these levels interacts with and dynamically influences the other. For example, consider the levels as linked by interactive feedback loops in which events at one level influence actions and events at another level, and so on. Patients respond to the system in which they receive care, and health and care organisations and communities respond to policies that in turn influence patients, and so on.

Source:

www.who.int/chp/knowledge/publications/iccc_ch2.pdf

¹ <https://www.oecd-ilibrary.org/sites/f749fcd0-en/index.html?itemId=/content/component/f749fcd0-en>

sure that ongoing changes bring us closer to **improved health outcomes for all**? Articulating the need for better health and care systems revolves around framing the right questions, at the micro-, meso-, and macro-level. How can we, in the broadest terms, bring people together to overcome health and care challenges, not just to sustain current levels of care in the face of scarcer resources, but to improve on them?

Increased complexity in Health & Care systems

Digitalisation and innovation

In addition to ageing populations, another challenge is that of increasing digitalisation. Fast evolving electronic equipment, inside hospitals and doctors' offices, but also in the patient's hands are expensive. Electronic medical devices cost a lot up front, but maintenance, software updates, and training – of health and care professionals and patients alike – arguably represent an even higher cost. Conversely, in increased networking abilities, empowerment of patients, and less invasive techniques, lie many opportunities for making care more effective as well cost-efficient.

In recent decades, what is sometimes called “the fourth industrial revolution” has already had an undeniable impact on society. Information technology solutions have rapidly become an integral part of everyday life. The faster spread of information itself enables even faster-paced innovation. The Covid-19 pandemic has accelerated this trend.

The speed of the ongoing transformation has created significant challenges for institutions and organisations in keeping up with the pace of change. And while complex health care systems involve different organisations and actors, different professions, and different levels of government; each component has traditionally been guided by sector- and organisational-specific goals. The availability or lack of financial resources, and economic incentives have similarly played an important role. Negotiating this complexity requires the involvement of different actors and stakeholders, to adapt governance structures, and to set joint long-term goals which all actors and stakeholders can commit to.

A mapping exercise aimed at identifying who these different actors and stakeholders are can be helpful. A number of tools, like the ecosystem shakers map², exist to get a clear picture. See also [Annex 1](#).

The need for a new approach, an economic lens

Different models, applied at different scales; **cities, regions** (not necessarily administrative regions), **countries, and the European level**, can lead the way. The challenge for the future is to find sustainable institutional, organisational and technological policy frameworks that can generate better health and care outcomes for all. In other words, the purpose of health and care ecosystems is to enable the design of more effective and sustainable welfare systems:

- Closing the gap between needs and resources, without compromising quality or efficiency.
- Improve productivity and cost-efficiency
- Facilitate new business models, spur R&D, and partnerships
- Accommodate and harness disruptive innovation

Source: AAL, 2021

² <https://www.strategytools.io/strategy-tools/ecosystem-shakers-map/>

Some countries are further along with these trends than others. Increasing the use of digital solutions in health and care can increase quality and efficiency, improve participation and inclusion, and ramp up accessibility. Digital solutions have the potential to help an increasingly elderly population confront such challenges as decreased mobility, lack of technological skills, whilst reducing the overall economic costs of care in the longer-run. Here too, we must look closely at changes across all health and care actors, and their interconnectedness at the micro – meso – macro level. In order to accommodate and harness the disruptive innovation needed to turn this challenge into a success story, to facilitate new business models and partnerships, we need to first frame the right questions.

Linking technology, welfare, and well-being

Harnessing connected technology can lead to the creation of products and services that can change people's lives while developing new markets to expand Europe's industrial base.

Digital health and care solutions can support the wellbeing of older adults in many areas of their daily lives; at home, in their communities, and in the health and care system itself.

Digital solutions can accelerate the development of new concepts, such as integrated care, supporting care professionals through informal care-givers, and tapping into the labour potential of fit and healthy older people. In other words, a more holistic approach towards health beckons.

Source: AAL, 2021

From emergence to discovery of eco-systems

What's new?

The broader health care sector seems not yet to have fully embraced the ecosystem concept. However, awareness of and interest in the idea of health and care ecosystems is on the rise among all stakeholders involved in creating health outcomes: healthcare providers, formal and informal caregivers, insurers, governments; regional, national and cross-border networks, academia, technology companies, and – most importantly – the citizens as patients and users themselves.

In short, what happens is that at some point, we simply become aware of them. Ecosystems, in health and care, but also in other sectors, are already working today. They seem to be the answer to a question we have not yet clearly defined. In order to do so, and to benefit from or maximise the usefulness of these emerging health and care ecosystems, we need to look very closely at what they are, what exactly sets them apart from previous models, how they work, and how we can make them to work even better. The AAL programme has been working closely with a number of these ecosystems to analyse this.

Serendipity

Traditionally, care networks are understood to be the result of intentional, cross-organisational integration, mostly of multiple legally autonomous partners, in function of a well-defined, common target.

Health and care ecosystems are different. Their emergence is said to be 'serendipitous'. They emerge through spontaneous interactions between different partners. These partners can consist of organisations or single actors. They work together to achieve not only their own goals, but a collective goal.

Source: AAL, 2021

We deal with complex ecosystems because they are (t)here.

Ecosystems are already working today. In fact, they've been around in different forms for a long time. Around the fourteenth century, the textile industry in the Italian city of Prato could be seen as an ecosystem, where independent craftsmen specialised in weaving, carding, spinning, fulling, and dyeing. The hub of this network was occupied by wool merchants who provided critical functions of coordination, quality control, and financing.



Digital health and care ecosystems. Source: opendei.eu

Health and care providers and companies responding to the COVID crisis were required to rethink many existing rules, regulations, and routines. This enabled them to innovate and collaborate like never before. In some places, virtually overnight, a contactless health and care system became a necessity, fostering a plethora of new digital applications, including advances in telehealth, innovative distribution of medical supplies, and coordinated care across geographical regions³.

³ <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/telehealth-a-quarter-trillion-dollar-post-covid-19-reality>

2. WHAT EXACTLY IS A HEALTH AND CARE ECOSYSTEM?

There exist as many definitions of health and care ecosystems as there are health and care givers or receivers to populate them⁴. However, certain recurring traits can be recognised. Not all ecosystems will exhibit all of them, nor do these commonalities feature everywhere to the same extent. What follows is an overview of some of these essential characteristics.

Continuous adaptation

In their growth, health and care ecosystems show a particular dynamic. They grow and evolve internally to accommodate their various components. When pursuing a particular change in a health and care ecosystem, it's essential to think through the implications of the proposed changes on other parts of the system. Every organisational change implies winners and losers, who need to be convinced of new ways of doing things. Creating space for advocacy, reflection, and coalition-building is crucial.

Spontaneous emergence

Overall, ecosystems are not conceived of or designed as a conscious effort by a human actor. A core tenet of health and care ecosystems is that they are also not necessarily decided upon from the top down. While government can give the impetus to collaboration networks, they can emerge naturally and collaboratively, for example to respond to unmet needs. Health and care ecosystems don't appear out of nowhere. Different phases can be recognised:

Participants of a May 2021 AAL seminar highlighted different aspects of what a health and care ecosystem entails:

"An ecosystem is a community working towards a common goal. It's about connecting people more than connecting organisations."

Nico de Fauw, In4Care, Belgium

"Collaboration is the new innovation. No one can do it by himself."

Jelle van der Weijde, Regional Development Authority Utrecht, NL

"Some activities are too complex for companies alone to produce desired outcomes."

Malek Bouhaouala, Ageing Well eco- system Grenoble, France

"Ecosystems have a hidden strength to transform individual capacity into collective capacity. The whole is more than the sum of its parts."

Antonio Lindo da Cunha, Instituto Pedro Nunes, Portugal

Source: AAL, 2021

Case study: one-day clinic, UK

In the U.K., the first point of contact for patients is their general practitioner (GP). The GP might send the patient to a specialist; tests follow, and the patient returns to the GP to discuss the results. They often go back and forth for weeks, sometimes months, until the patient is diagnosed and a treatment can be started.

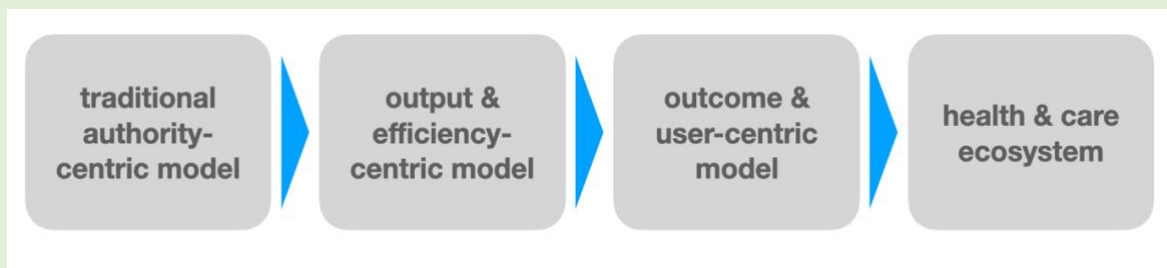
One hospital executive decided to create a 'one-day-clinic'. Here, the patient enters in the morning. By the end of the day, all the tests should be done, and a diagnosis made. This new modus operandi required all stakeholders to radically adapt their thinking. The process involved a lot of experimenting. Solutions arose spontaneously, often unexpectedly.

Source: AAL, 2021

⁴ The current AAL programme working definition: see page 1.

Health and care ecosystems emerge along four distinct phases:

1. A traditional authority-centric model in which health outcomes can be seen as emanating from a doctor, who learned his craft from a traditional teacher. Leadership is centralised and governance hierarchic.
2. In an output & efficiency-centric model, medicine is increasingly based on testing and evidence such as x-ray photos, blood tests, etc. Learning is equated with ingesting vast amounts of information with little attention paid to the long-term retention of knowledge and skills. In this model, leadership is decentralized and governance geared towards competition.
3. In an outcome and user-centric health and care model, the patient moves to the centre. In terms of the learning process, caregivers follow the same path, from the periphery to the centre. The system is governed by networks, led by multiple stakeholders.
4. Finally, health and care ecosystems are geared more broadly toward strengthening sources of wellbeing, not necessarily only medical ones. Learning is broadened to include an array of sources, and is continuous. 'Distributed' leadership can be found at all levels. Governance becomes awareness-based collective action.



Adapted from: 'An ecosystem-driven approach', Julie Arts, AAL Forum, Sep 23, 2019, Aarhus

A hub philosophy

In health and care ecosystems one finds multiple centres, each consisting of several cells and (sub)teams that collaborate, co-create and lead, with cross-pollination occurring between them. Bottom-up initiatives in the region drive a process of identifying and fixing shortcomings in the organisation. A central node of key actors or 'hubs' brings older and newer players together. These hubs are different for every context. It's the relationships between the different players that are crucial to the success of the ecosystem. Mapping this relational data is key to achieving the desired transformation. In other words, **social relations among the actors in the ecosystem are more important than technical solutions.**

Distributed leadership at all levels

Leadership is crucial, but for health and care ecosystems to be successful, one needs to move beyond the classical top-down notion of leadership. People connect with each other less based on hierarchical patterns, and more on energy and chemistry as well as purpose.

Leaders are first and foremost: people who identify issues and advocate for their resolution. They can be found at every level and in any sector. In a true ecosystem, different organisations and/or individuals can contribute

Leadership

Leadership is closely related to 'inspiration'. Leaders can inspire others to 'jump the fence', toward adopting new technologies and practices, to innovate, and establish connections.

Source: AAL, 2021

What is good leadership to you?

to 'leadership'. For each topic, or every problem to be solved, this combined array of leaders can look very different. Different goals require a different combination of skill sets.

Inside a network, different organisations are at different levels of innovation. Some are leaders, most are not. To cater to these divergent groups, connecting leaders is crucial. You need to find the right people to get things moving. Who will inspire you to action? And how?

Digitalisation & data eco-systems

The advent of information technology has made possible the rapid sharing of health data, processes, and experience. Where currently information still trickles down slowly top to bottom, the objective of emerging health and care data systems is for information to move unimpeded in all directions. Digital healthcare ecosystems aim to enable a shift from organisation-centric to patient-centric models of delivering healthcare services. The underlying infrastructure is made up of digital platforms, the main goal of which is to encourage cross-organisational, multidisciplinary, and collaborative healthcare delivery.



Source: public domain

Digital services range from health data and patient management services, distance monitoring of patients, for instance through wearables to facilitate the collection of personalised real-time data, remote education, treatment via video, and advanced telemedicine like remote surgery. Meanwhile, customer feedback to support improvements in health, care and social care have also been facilitated through a variety of digitalisation processes.

Digital health and care ecosystems can be particularly beneficial for the development of welfare services in rural and remote areas. The accessibility of health care facilities across sparsely populated regions varies, depending both upon the spatial distribution of the populations and on the organisation of health, care and social care services in the individual regions.

Case Study: remote care technologies in Sogn og Fjordane and Luster municipality, Norway

Video consultations in dermatology

Video consultations are now commonly used in several locations across the region. Patients receive dermatological treatment from a dermatologist at the central hospital in Førde, or a dermatologist working from another part of the country through a video connection.

Video-connected ambulances

In a pilot project, across the region video cameras are being installed on the helmets of ambulance staff, providing a direct connection to the hospital. Through a live video feed, ambulance staff can receive direct support from doctors at the hospital.

Source: <http://norden.diva-portal.org/smash/get/diva2:1478007/FULLTEXT02.pdf>

The effects and potentials of digitalisation in health and care services relate to quality (ex. improving health care through shared data); efficiency (ex. reducing costs through less need for transportation); inclusion (ex. easier dialogue between patients and health care professionals), and accessibility (improved accessibility of health care through video consultations). The potential encompasses not only enhanced health and wellbeing, but also a boost to regional development and economic, social and environmental sustainability.

Some obstacles hamper the implementation of digital solutions in health and social care. These relate to **leadership, management and legislation**, in addition to technical, economic and cultural barriers. The implementation and adoption of e-health interventions are also held back by financial aspects, concerns about reliability, and security and data privacy, as well as a lack of education and training.

Integrated health & care

The WHO defines integrated healthcare as the organisation and management of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money.⁵ Other definitions stress the systematic coordination of general and mental health care, allowing patients access to a wide variety of medical and psycho-social support services in a more convenient way, providing support for a patient's emotional and physical well-being while also being cost-effective.⁶

In classical care, too many silos exist that prevent information that is available for instance to the general practitioner from reaching a specialist or vice versa. Primary care, secondary care, social care, home care, or psychological care are all treated as separate challenges.

Health and care data ecosystems are driven by models, analytics, and visualisations to inform data-driven decisions. They consist of a collection of various fit-for-purpose systems that capture, analyse, and distribute data and information among the appropriate actors in the health and care ecosystem.

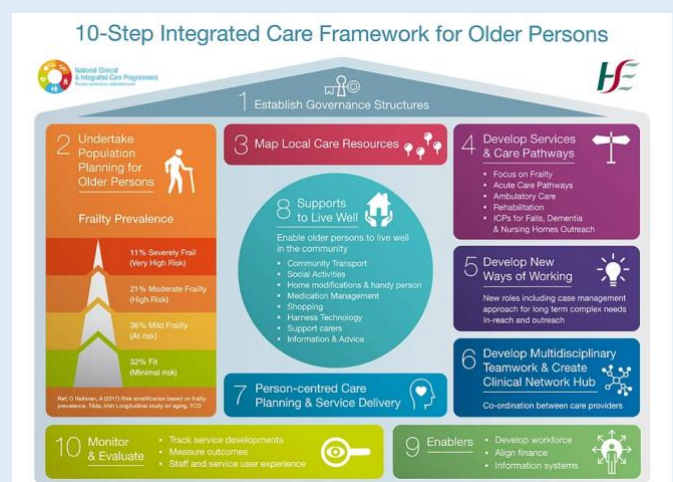
Source: AAL, 2021

A common European understanding of integrated healthcare is emerging. The following elements are recurrent:

- patients are at the centre
- patients are empowered
- healthcare integrated with social care
- connection with climate and sustainability

Source: AAL, 2021

Case study: in Ireland, a **10-step Integrated Care Framework** was developed, specifically geared towards Older Persons.



⁵ https://www.who.int/healthsystems/technical_brief_final.pdf

⁶ <https://online.queens.edu/resources/article/what-is-integrated-health-care/>

Integrated care, on the other hand, breaks down these barriers. By approaching seemingly disparate aspects of an individual's wellbeing as a whole, we can for instance avoid the doubling of efforts. New integrated care models can increase patient satisfaction, perceived quality of care and improve access to services.

Research suggests that the potential for overall cost reductions is substantial. In order for synergies and cost reductions to improve care as well as reduce costs, a clear distinction needs to be made between commonalities and transplantable tools across regions and countries on the one hand, and area-specific circumstances that require investment in tailor-made solutions on the other.

An **implementation ecosystem** integrates:

- investment support
- Implementation process support
- Service innovation and implementation
- Leadership
- Training of staff and citizens
- Informal and formal networks, exchange of knowledge
- Structured follow up, analysis and recommendations for wider implementation.

Source: AAL, 2021

Crucial role for region-spanning collaboration

Integrated care also means cross-referencing knowledge between different levels. This means integrating local and region-spanning knowledge, and sharing experiences, for instance, through the current AAL Platform. Local governance levels and cross-region collaboration networks play a pivotal role in developing policies to enhance wellbeing, along with private, public and third sector stakeholders; a bottom-up approach toward national reforms and an emerging European coordination framework. Local interventions or cross-region ecosystems can be used to stimulate changes at the national level.

Chief Experience Officer

The chief experience officer is a relatively new position, but it's becoming important to the hospital and health system.

It is a role that encompasses and leads a broad portfolio of resources and services fundamental to the patient and family experience – from advocacy to service and, in some cases, broadening to provide leadership on quality and safety issues. In the Netherlands, these patient advocates are given access to training, and emerging policy proposals before they are sent to parliament or voted into law.

Source: <https://spexperience.org/en/virtual-contents-en/chief-of-patient-experience-who-is-he-and-what-does-he-bring-to-a-hospital/>

Case study: SmartVitAALity ecosystem, Kärnten, Austria

The project consisted of an exchange between test regions to develop solutions for prevention & telemonitoring.

The key actors were



organisations dealing with older people, but also informal partners such as regions and health insurers.

The project was made up of an evolving network of stakeholders, whose level of involvement was dynamic over time.

While evaluating the results, a lot of attention was given to the concrete impact; usability, acceptance, quality of life analysis, as well as socio-economic factors (number of quality years, savings, and business models).

One of the outcomes was a new product: iLogs (www.ilogs.care/en/): this integrated digital care platform includes care management software, remote monitoring, data-sharing between primary care-givers, hospitals, and insurers.

Over the course of the trial, the need arose to bring together the regional government and healthcare providers as financing partners in closer collaboration.

Source: www.smart-vitaality.at

Case study: Eksote Health & Care District

South Karelia is a region located in south-eastern Finland, consisting of nine municipalities. The region's largest city is Lappeenranta, with 72.699 inhabitants. The old-age dependency ratio, i.e. the 65+ group as a share of the working age population (15–64 year), is much higher (44.9%) than the Finnish average (35.1%). With a view to the region's decreasing and ageing population, local decision-makers understood early on that to continue to provide health care services across the hospital district would require a regional approach.



Early discussions centred on the urge to organise health care and social welfare services in the region by focusing on the patient's perspective. In 2010, a new health district, Eksote, was created providing both social welfare and health care services (including primary and specialised care) in an integrated manner across the region.

As a first step, a common patient record system was set up that could retrieve information in an integrated manner from both secondary care and specialised hospital care sources, allowing for a more holistic overview for the care provider. Overall, the reform process resulted in improved access to care, better quality across the region, with ambulance services present in every municipality.

In addition, Eksote has been a forerunner in Finland with regards to digitalising health care and social care services, such as video consultations, remote treatment vehicles, and automated meal systems.

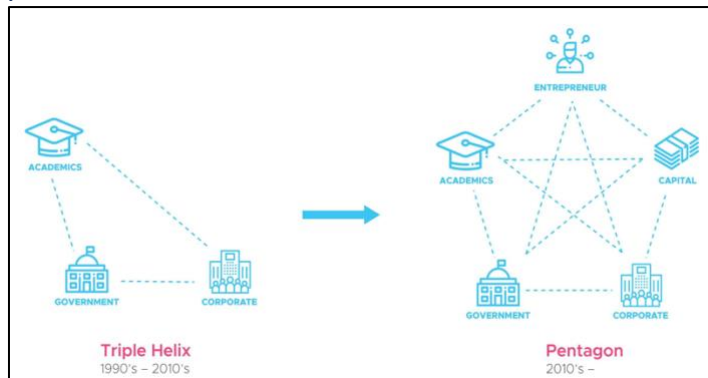
Source: www.eksote.fi/sites/eng/Sivut/default.aspx

Patient-centric & holistic healthcare approach

Patient-centred care is about treating a person receiving healthcare with dignity and respect and involving them in all decisions about their health. The patient comes first, in an open and sustained engagement to achieve the best experience and outcome for that person and their family. Treatment, clinical trial, or other health solutions are centred on the patient, which involves obtaining feedback from real patients and their loved ones, and making decisions based on their needs, perspectives and goals. The overall objective is not solely to treat but also to prevent disease, and to promote health and wellbeing in a holistic way.

Dealing with ever-increasing complexity

From the triple helix to the Pentagon; health and care ecosystems are made up of an increasing array of key actors, including, but not limited to small and large companies, public entities and policy makers, municipalities, provinces, regions; education and research institutions; laboratories, finance & funding organisations; insurers, civil society; and patient advocacy groups. This emerging paradigm shift, adding capital and entrepreneurship to the traditional triple helix of organisations, is not only apparent in health and care ecosystems. More info, see Annex 3.

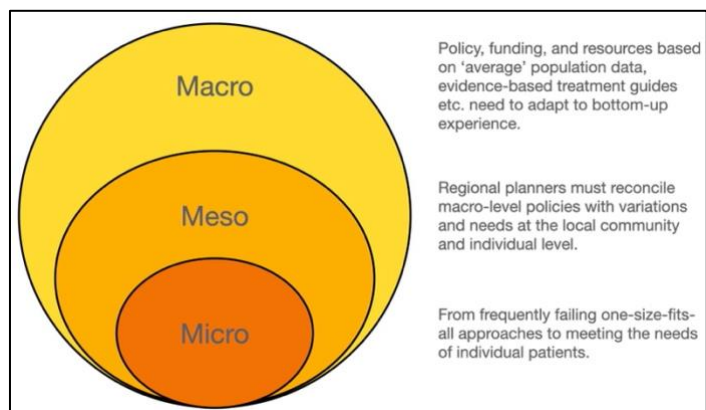


Source: www.strategytools.io/clusters-capital-10-challenges-to-overcome/

Integrating the micro, meso, macro level

Health and care ecosystems emerge out of interactions on the micro, meso, and macro levels, with value creation occurring on all three levels.

1. The micro level concerns mainly the **demand side**, on the level of interaction between patients and physicians, patient records and documentation, and the wide variety of summary information directly related to case management. It's on this level that in health and care ecosystems patients, their families, and advocates are becoming actively engaged in improving overall well-being. Small-scale innovations cater to newly discovered niches.



Adapted from: www.researchgate.net/figure/The-relationship-between-meso-or-regional-planning-level-with-both-the-macro-policy_fig1_339449845

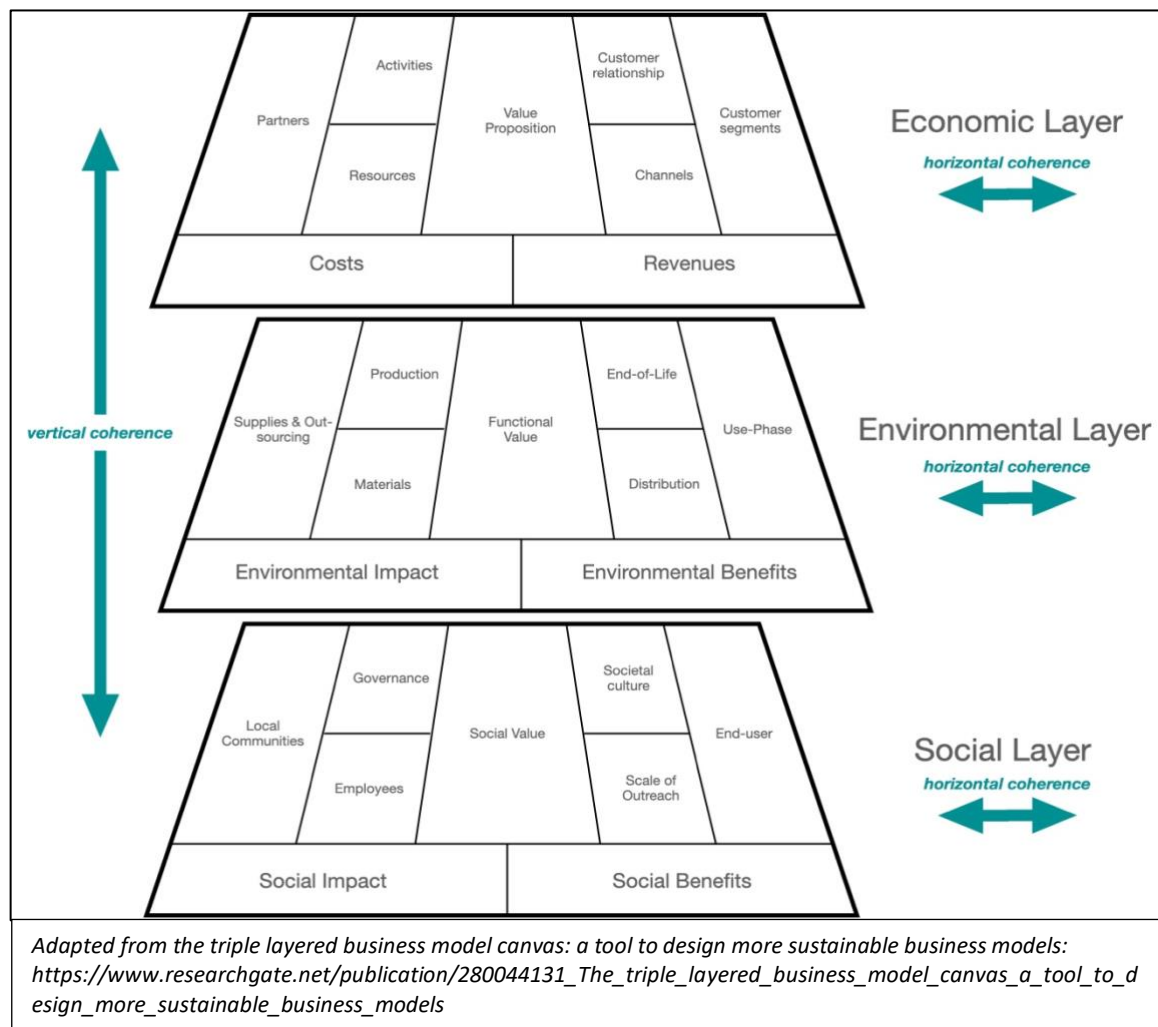
2. The meso level relates to cohorts of patients, capacity and demand, care pathways, and service effectiveness, i.e. the **social infrastructure supply side**. It is at this level that hospitals and other healthcare-related institutions come into play, changing administrative and clinical processes to embed for instance online consultations, changes to clinical care pathways, potential changes to staff roles, etc.
3. At the macro level, we find governments, other policy makers, and funders, who will have to take the above into account in terms of overhauling regulatory and financial frameworks for example, i.e. the **enabling environment side**.

In addition, emerging health and care ecosystems not only bring about changes inside these three levels, but also connect them vertically. Through these connections, new roles and opportunities arise. The **Triple Layered Business Model Canvas**⁷ offers a way to explore innovation for sustainability-oriented organisations and health and care ecosystems. It features an economic layer, an environmental layer based on a lifecycle perspective, and a social layer based on a stakeholder perspective. The three layers combined clarify how organisations generate multiple types of value – economic, environmental and social. This visual representation can aid the development and communication of a more holistic and integrated view of health and care ecosystems, geared towards innovation and sustainability.

Micro, meso, macro through a geographic lens

The micro, meso, and macro level can be seen as geographic entities; respectively local, cross-regional, and national, or even transnational. To benchmark different health & care systems across Europe, the local/regional health & care ecosystems provide a helpful meso-analytical level, which enables easier comparison in contrast to national healthcare systems. This also affords a systemic view, which goes beyond simple case studies and best practices at the micro-level.

Source: AAL, 2021



⁷ <https://sustainablebusinessmodel.org/2015/04/17/the-triple-layered-business-model-canvas-a-tool-to-design-more-sustainable-business-models/>



The AAL is not the only programme preparing for the challenge and opportunities of Europe's demographic changes. The AAL aims to harness learning and experiences from a number of vibrant local or regional health and care ecosystems across Europe. The goal is to help initiate similar ecosystems in other regions while taking into account the local socio-economic contexts, and to stimulate innovation in existing and emerging ecosystems. Networks like the AAL can explore and implement new approaches toward sharing and upscaling these innovations.

After initially focusing on technology, the emphasis has moved to the needs of end-users. With the end-user and development capacity in place, a third pillar emerges: the financial instruments, not to fund additional research, but to introduce innovative solutions into the market place.

For the future AAL proposes an ecosystem-building approach for ageing well in a digital world. Partnerships are a means to capitalising on existing relationships, knowledge and experience around Europe and internationally. The aim is to be able to prototype new service offerings, to test and upscale them in a collaborative way between all concerned actors. For this, a wider vision and strategic framework is required in which to operate and support the future partnership.

3. HOW?

3.1. Better understanding complex systems

How do we navigate complex systems?

How do we integrate ourselves in them to become co-creators?

When we say that health and care ecosystems emerge spontaneously, it doesn't mean that they are fully beyond our control. In order to maximise the potential of a health and care ecosystem, we need to understand how its various components correlate with each other, how it affects resource usage, but most important of all, patient outcomes.

Common language



For an eco-system approach, using a common language is crucial for people and organisations to connect and collaborate. It's important to establish a common understanding about what defines a health & care eco-system, and to agree on a language/vocabulary, which can be easily used across the various types of health & care ecosystems in Europe.

Designing care-pathways

Complexity arises where, for instance in cancer care, a recurring loop of 15 to 20 micro-systems are found working together in the care-pathway of the patient: screening, oncology, surgery, pathology lab, education, shared decision-making, etc. The challenge lies in managing the complexity of this clinical micro-system chain, their inter-connectivity and mutual influence or co-evolution. The huge complexities at the

A few useful starting points:

Bringing in start-ups

Currently, many health and care start-ups don't yet see the benefit of being part of an ecosystem. Early adopters play the role of connecting these start-ups with the broader network. Some care-givers are eager to adopt new technologies.

Multiple stakeholders

One party cannot do it alone. Innovation hinges on multiple stakeholders agreeing to a course of action.

Patient-centric approach

What we have seen in last 10 years is a more human centric attitude towards technology, and a patient-centric approach of health and care.

Balance

Crucially, a balance must be struck between innovation and preserving what works. For providers innovation is interesting, but a patient just wants a treatment that works. An ecosystem is not oriented exclusively toward innovation. Developing new products comes second to creating better outcomes for patients.

Digital tools

While the need for services increases, there is a limit to how much can be done. Digital tools can bridge the gap. Digital tools also allow for services to be tailored to different needs. One size does not fit all.

Technology connecting the micro, meso, and macro levels

Experience suggests that ICT solutions are best tailored to larger geographical areas, in line with the diverse needs of healthcare, social and home care recipients and providers. True interoperability between data systems at larger scales will enable the establishment of connections, infrastructure-agnostic flexibility, the exchange of ideas, and the harnessing of data for research purposes. Ultimately, every level needs to formulate an appropriate response, fitting the right technology to the appropriate domain, be it AI and machine learning in diagnostics, or cloud solutions for organising human resources or patient data.

From gathering data to figuring out what to do with data

On the collection side, improvements can be made, for instance by implementing speech and natural language text input. But once we find ourselves confronted with exponential amounts of data in proliferating databases – cloud-based or otherwise – the question arises: what to do with all this data? How can we leverage data to create better outcomes for citizens? How can a GP sift through 5 years' worth of patient data? Processes need to be developed to automatically summarise data. Most likely these solutions, like patient risk stratification based on data and statistics, will be AI-based.

Source: AAL, 2021

micro level are indicative of even greater challenges at the macro level.

Dealing with continuous change

Organisational sustainability does not mean sustaining the status quo. It is an ongoing dynamic process of co- evolution and learning within a changing environment. New structures and ways of working are developed to – continually – adjust to a changing set of conditions. Leadership and the creation of an **enabling environment** for change are necessary but not sufficient. The idea of ‘continuous change’ needs to be embedded within the **organisational culture**, through a different way of working, relating and thinking. Leadership is key to fostering learning in organisations, co-creating enabling environments that facilitate learning, and a stable eco-system that delivers specific results but also embraces experimentation for bringing in innovation, reconciling security and agility.

The smallest building block

Exploring complexity begins with analysing a system at the smallest unit level. It is not the size of the ecosystem that defines success, but the balance within the ecosystem and whether it works well.

The clinical micro-system thinking, a term coined by Professor Nelson at Dartmouth, illustrates this approach. The clinical micro-system is the building block of every healthcare system. It's the place where patients, families, and care teams meet. It's the frontline care, which encompasses a small group consisting of support staff, technology, processes, and recurring patterns of information and behaviour and results. The patient is central to every clinical microsystem.

source:

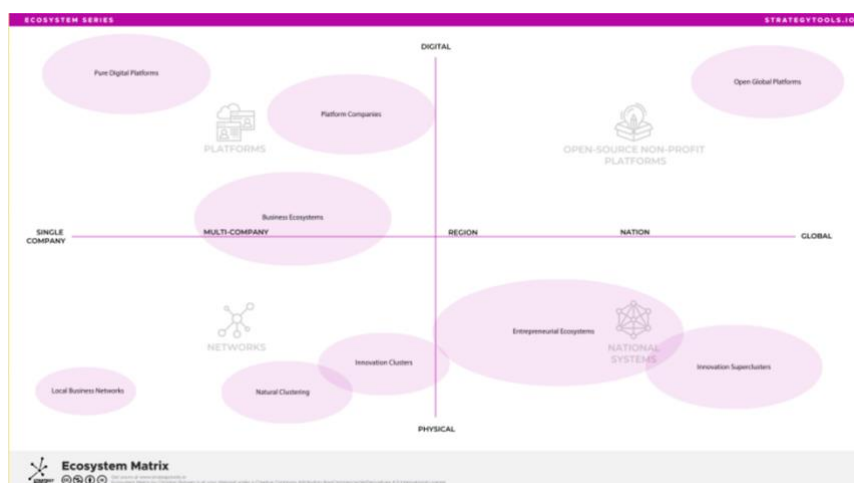
<https://clinicalmicrosystem.org/uploads/documents/JQIPart1.pdf>

3.2. Plotting a course toward a desirable future

Embracing digital technology ecosystems

A digital technology ecosystem consists of small, medium-sized and large companies; academic institutions; and not-for-profit organisations, set up to unlock the power of data, develop major engines of growth and job creation, and improve service delivery and efficiency.

Setting up or managing such a digital technology ecosystem overnight can seem like a daunting if not impossible task. First and foremost, it's imperative to establish an accurate picture of where your organisation stands today. Who are its stakeholders, and what are their relations? Once you have established a map, it's possible to plot a path to a desired future point in time, including



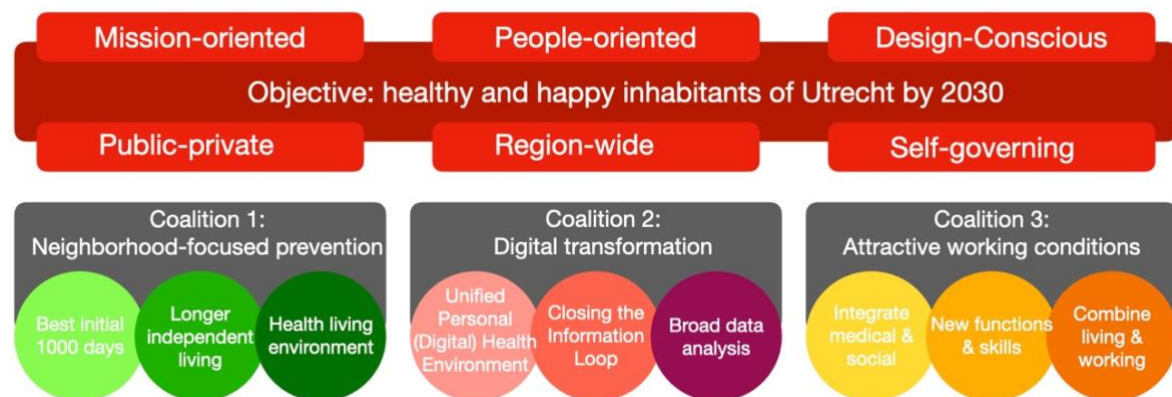
Understanding the landscape: ecosystem matrix (Source: www.strategytools.io).

potential intermediate steps. In terms of working with ecosystems, multi-annual roadmaps are required; for instance, a 15-year timeframe broken up into five three-year strategy plans.

Case study: Health Hub Utrecht

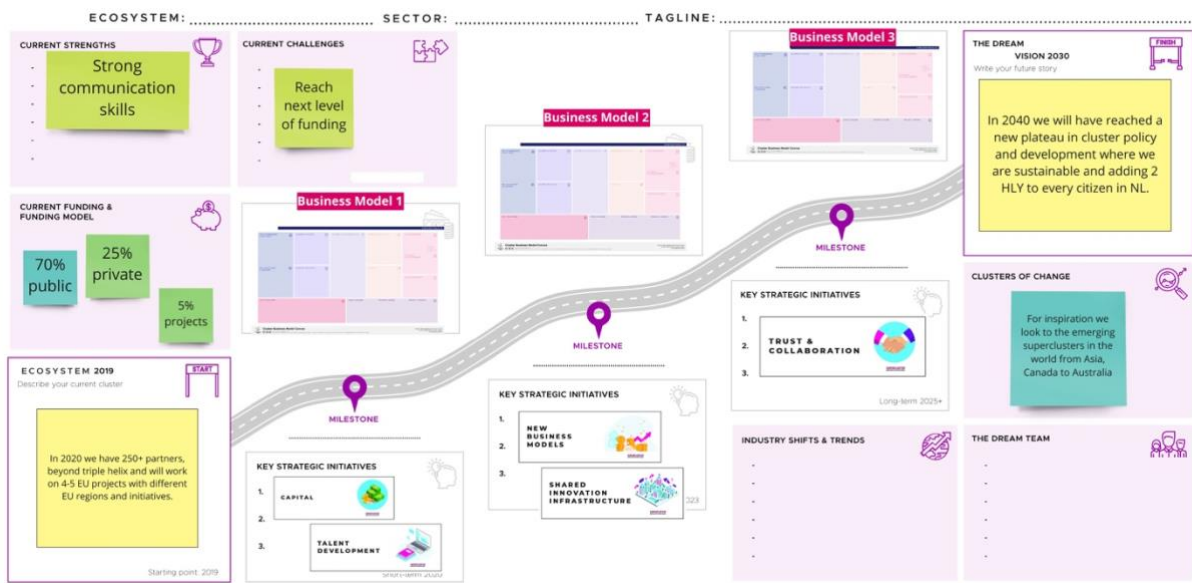
The Health Hub Utrecht started in 2016 as one of a number of 'City Deals'; this one aimed at making inhabitants of Utrecht happier and healthier. The ecosystem prioritises four design criteria: efficiency, effectiveness, empathy and ethics. The Hub aims to keep health and care affordable, among other things by shifting the focus from curing to preventing.

After remaining dormant for about a year, the initiative was picked up by Jelle van der Weijde at the Economic Board Utrecht, who drew in two further partners UCreate en Walter Amerika, a strategy expert on socio-economic creativity and creative industries policies, and current director of Health Hub Utrecht. Meanwhile, all sixteen Utrecht municipalities as well as the Province of Utrecht have joined. The Health Hub is conceived of as an 'open movement', with about 30 members to date. The initiative rapidly developed as a dynamic alliance in the fields of health, care and welfare, linking healthcare professionals, researchers, policymakers, designers and entrepreneurs. The stakeholders comprise four categories: people in the practice; the doctors, nurses, the people involved in research and education, and policy.



Source: translated & adapted from <https://agendastad.nl/health-hub-utrecht-verder-na-city-deal/>

Innovation roadmaps



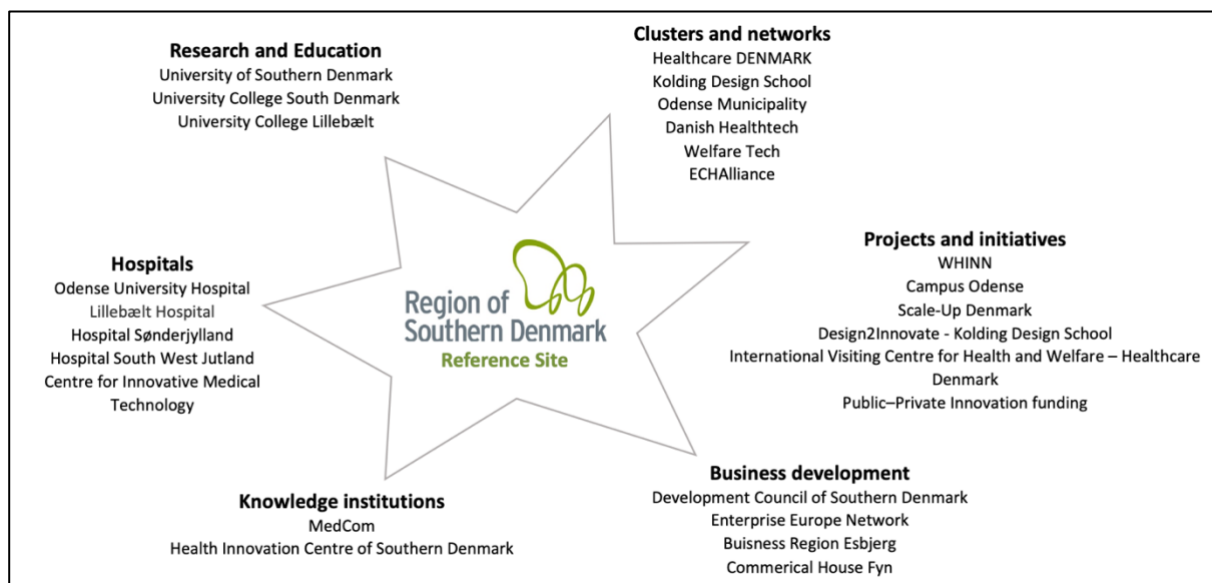
Example of an innovation roadmap. Source: www.strategytools.io

An innovation roadmap is a **visual representation of the necessary steps to be taken to achieve a strategic goal driven by innovation**. This strategic tool lays out specific actions to be implemented over time to create new health and care products and services, or business models.

Zooming out

When looking at hyper-complex systems like health and care super-clusters, it's easy to lose oversight of the wide array of stakeholders and how they interact with each other. Zooming out, acquiring a bird's eye view, is a beneficial practice in any context. Mapping software can lend a hand, but a good old white board or pen and paper will just as easily do the trick.

Case study: Mapping the South Denmark Regional Health Innovation Ecosystem



Zooming in

By definition, all human interactions are fraught with challenges and obstacles. even more so in the health and care domain, leaving many stakeholders overwhelmed by the sheer volume of problems that need to be addressed. Every issue seems urgent. Torn into a number of different directions at once, rather than spurred into action, we find ourselves paralyzed. The book, *Immunity to Change*, by Harvard professors Robert Kegan and Lisa Lahey delves into how the increase in complexity in all aspects of modern life leaves many people feeling overwhelmed. In other words, the complexity of our world surpasses our 'complexity of mind' and our ability to effectively handle that level of complexity. This is not a matter of intelligence, but of how we make sense of the world and how operate in it.

Integrator units

We assume that just passing along information between units will do the trick. However, people need to actively manage these linkages, beyond simple data transfer. We can do this for example by establishing so-called integrator units. These are teams whose task it is to harmonise systems. Integrator units should be given the responsibility to harmonise the system's various components.

Source: www.aal-europe.eu/wp-content/uploads/2021/06/220615_AAL_HealthCare_event_finalreportv1.pdf

For our purposes, a quick way to overcome this, is by zooming in on an ecosystem network. This allows us to analyse what happens when we introduce change in one particular node. One or two nodes within an ecosystem network can serve as the starting point for decision making. Because everything is interconnected, we end up addressing a lot of other issues at the same time. **While zooming out can be considered a mental exercise, zooming in is a starting point for action.**

3.3. Stimulating 'spontaneous' emergence

How do we transition from classical 'top-down' hierarchical systems to ecosystems?

A tension exists between relatively flexible local and regional levels, and more traditional hierarchical governance and financial structures on the national and European level.

This tension is not negative per se. Competition between competing visions drives progress. Complexity leadership can identify and pursue a consensus that is then scaled up and implemented; unlike the classical model of copy-pasting best-practices from one region to another. However, a balance must be struck between too much tension, which imbalances a system, and a lack of dynamism, which is equally detrimental. Seen from this perspective, a health and care ecosystem can be seen as an enabling environment; an open policy space where distributed leadership, emerging spontaneously on all levels to solve pinpoint issues and enabled by trust, can make real progress.

Piloting

We cannot assume a linear system. We need to provide space to adapt systems to a local context. You have to pilot every time in every new context where innovation is implemented. The human touch remains critical. This way, change will be embedded, not just the icing on the cake.

Rapid prototyping

- Learning by doing and experimentation
- Failing fast and out loud
- Going through several iterations based on feedback from stakeholders
- The new is emerging through a collection of prototypes
- Scaling up is reproducing NOT standardising

Source: AAL, 2021

Fostering collaborative leadership to move things?

At the organisational level there exists a fear of failure, which keeps health professionals and policy makers from experimenting. This applies to the clinical setting, all the way up to the ministries. Changing established methods requires analysing a problem at its core, without looking at existing solutions, to experiment with an open mind. Convincing people to do this requires leadership.

"Innovation and experimentation are fundamental. We need to continuously explore the space of possibilities."

Prof. Eve Mitleton-Kelly, Cambridge University

Recognizing the value of experience

Emphasis on exchange of experience: no person or entity alone can grasp the whole ecosystem, but by bringing in various eco-system actors, we can become more aware & learn.

Managing continuous change

An ecosystem is per definition something that transcends projects or programmes. But long-term road-maps need to be broken down into shorter, manageable bits. Change seems to be accelerating. Some established healthcare providers almost function like a start-up. Some things do stay the same, but new things are introduced continuously. A tension exists between staying flexible but also building something that is future-proof. It's not just health and care governance systems that are lagging, but the overall mental models.

How do we activate health and care ecosystems?

- Making the system visible to itself through clear information, stories and data
- Tracking (in)coherence
- Eliminating redundancies
- Attracting allies
- We need to track our change road map through visual artifacts in the so as not to lose the overview of the path travelled.

Source: AAL, 2021

In order to bridge the gap, the idea of '*continuous change*' of mindsets needs to be embedded within the organisational culture. Change management; introducing different ways of working, relating and thinking is key to fostering learning in organisations. At the centre of all these efforts is the co-creation of an enabling environment built on trust. With a mix of formal and informal networks, ecosystems connect people rather than organisations, integrating the whole of society. Only an environment built on trust can bring forth a culture of change.

Source: AAL, 2021

Fostering trust

While the technical conditions for the emergence of health and care ecosystems are relatively easy to set up, cultivating an atmosphere of trust is a much more challenging endeavour. Among critical trust-building traits are transparency, reliability, relations between citizens and health and care providers, competency, leadership, and fairness, to name but a few aspects. Building trust is everything, and it is an absolute prerequisite to establishing long-term partnerships. Where trust is established, synergies follow.

In order to **maintain trust** in the processing of personal data, individuals must:

- be able to monitor the processing in real time;
- stay informed on the phase and scope of the processing of their data;
- be given an opportunity to withdraw their consent in real time;
- have a guarantee that their data is protected by default, meaning that the control over data is as easy as possible;
- have the authority to control who, why and for what purpose their data is used.

Spreading use cases & best practices

Best practice resources need to be actively promoted. Simply building databases and focusing on explicit knowledge is not sufficient. Databases relate to examples and people, but it is through people that deep knowledge is transferred. To advance the spread of use cases, best practices, and tools that have been shown to work, connections inside and among ecosystems can be a powerful tool. 'Hubs' can play a role in this, but also the 'brand' or reputation of particular ecosystems and networks. When it comes to start-ups who don't have a track record to inform potential partners of success stories, ecosystems can be instrumental to opening doors. Through its activities, interviews, and seminars, the AAL programme, among others, has played this role.

Learning from existing healthcare ecosystems

Case study: Health Valley Netherlands



Health Valley Netherlands connects entrepreneurs who developed a particular product with health and care providers. The same networking functionality is provided for doctors with an idea for innovative therapies to find entrepreneurs who can develop it and bring it to market. Health Valley Netherlands equally presents patients looking for help with or cure for their condition as a challenge for other people to prod them towards innovative solutions. For instance, the network collaborated with a clinic to develop an exoskeleton, enabling a formerly wheelchair-bound person to walk again. The ultimate goal of the collaboration between the clinic and Health Valley is to convince the national government and health insurance companies to reimburse this currently expensive solution on account of its broader physical and psychological advantages.



Source:
www.healthvalley.nl/actueel/archief/nieuw-exoskelet-march-iii

4. ROADMAP FOR THE FUTURE

Much uncertainty lies ahead, but adaptable and resilient ecosystems are better positioned to cope with expected and unexpected changes. What are the next steps? What does the future hold for health & care systems, and for health & care ecosystems in particular?

Coping with an unpredictable environment

Health and care ecosystems can provide fast access to a broad range of external capabilities that may be too expensive or time-consuming to build internally. This is particularly relevant for health and care providers that want to reap the benefits of open innovation, an area where ecosystems outperform classical models. Secondly, ecosystems can scale much faster. Their modular setup, with clearly defined interfaces, makes it easy to add partners and expand the network. And finally, ecosystems offer a large degree of flexibility and resilience. They can quickly adapt to changing consumer needs or technological innovation, which makes them particularly advantageous in unpredictable environments and during times of high uncertainty.



Source:
www.euractiv.com/section/coronavirus/news/poor-investment-in-digitising-health-hit-europe-back-with-covid-19/

Sustainability as an integrated learning path

In health and care ecosystems, a dynamic group of largely independent partners work together to deliver integrated products or services. By learning from other each other and harnessing the innovation potential of the ecosystem model, health and care could bring substantial improvements in care. Health and care ecosystems can enable new solutions and major improvements in quality by enhancing coordination and effectively using data across partners. Like cloud-computing platforms or e-commerce marketplaces, health and care ecosystems can lower cost and tap the efficiency potential currently lost in the fragmented interplay of stakeholders, sectoral boundaries, and limited coordination, which researchers estimate account for up to 25% of health and care spending in Europe and the US⁸. When designed and managed properly, health and care ecosystems can break the painful trade-off between access, quality, and cost.

Europe as a living lab

Everyone is evaluating their national health systems. Individual countries look to Europe for guidance and boundaries. The European digital single market approach to data entails a

⁸ <https://www.bcg.com/en-be/publications/2021/five-principles-of-highly-successful-health-care-ecosystems>

variety of new legislations, on AI, data governance, the operation of large platforms, or the secondary use of health data. Connected to the European health data space is the European recovery and resilience fund. A part of its 800 billion Euros pertains to health as a way of building resilience. Organisational processes and structures need to follow these evolving needs and aspirations.

The **AAL Programme** can set its partners on their way to continue shaping a European agenda on transforming European welfare on the one hand while getting on track to crack the hard problems of governance and regulations, investment, and funding, and people sharing experiences, networking, dealing with culture, organisational differences, and harnessing collaborative leadership.

Cross-regional collaboration to make Europe happen

Health and care ecosystems look to each other, across regions and across borders, for positive examples and collaboration. National cluster policies are also considered. A number of countries are looking at 'what good are national cluster policies?' and at making national health care systems work together. Cross-regional clusters are also engaging in more cross-border collaboration. This trend has become more apparent since COVID-19. Digital communication tools have greatly reduced the distance between different ecosystems.

Technology as a support tool

As regards the adoption of digital health technologies by health professionals and patients alike, trust is key, as is inclusiveness. No one should be excluded. As a next step, leaders across the health system will need to agree on how innovation is funded, and which technologies and standards are most effective. A robust ICT infrastructure should provide secure and equitable access to both the technology and the generated data. The importance of integrated data eco-systems cannot be overstated.

Holistic cross-sector approach

Because a true holistic and integrated view on health implies not only the absence of disease but complete physical, mental, and social wellbeing, a maximum of stakeholders needs to become involved. Shifting the focus to prevention encompasses for instance nutrition and exercise. Many non-traditional players are now investing in developments for the health sector. The potential list of partners can include nutrition retail, sports clubs and fitness studios. Consumer goods companies are

We don't know everything

Although ecosystem thinking in health and care is not new, the need to apply its tenets has become more urgent while discussions on the topic are reaching a fever pitch. Ecosystem thinking is more than a buzz word. It's also more than simply a new set of rules that can be applied across the board. The concept itself is still evolving.

The goal of the AAL Programme is to foster a deeper awareness, and to help health and care stakeholders ask the right questions through forums and seminars, interviews with experts, projects calls and funding projects aimed at improving the wellbeing of older adults through the use of adapted digital technology, stimulating the development of an age-tech sector in Europe, and contributing towards more sustainable health and care systems.

The health and care ecosystem transformation is a journey. This paper is both a status update and an invitation to join us in Nijmegen in March 2022 and in Gdansk in October 2022 to reflect and co-create the next steps on our way to better health outcomes for all.

"Gradually, the observer realizes that these organisations are connected to each other, not linearly, but in a net-like, entangled fabric."

Alexander von Humboldt

developing health and wellness products. Telecommunications companies are investing in remote monitoring systems and medical applications for smart phones. Broader still; individuals, organisations, businesses, governments and communities all play a critical role in designing and implementing better ways to live well. There are real opportunities from cross-sector engagement and collaboration to deliver more efficient healthcare solutions. Opportunities for transformational innovation can be found everywhere.

“Through greater awareness and understanding, through methodology and rigour but above all through personal and organisational experience, ecosystems can become drivers for systemic change & transformation.”

Source: AAL Health & Care Eco-systems as Drivers for Transforming European Welfare in the 2020s draft programme.

Emerging reflections

Much work lies ahead, many questions need answers:

- How can we increase awareness of health and care ecosystems?
- How can we engage and activate ourselves in them?
- How can we better ‘manage’ health and care ecosystem, from a governance perspective and in practice?
- What can we learn from novel governing models aimed at harnessing complexity, challenges and opportunities, that have been applied in different countries?
- How can we achieve our ambition for a future European super-ecosystem by learning and collaborating with regional eco-systems for integrated healthcare & social care?
- How can we identify new ways of empowering citizens and promoting health literacy to enable people to manage their own health, stay healthy and productive for longer?
- How can we achieve standardized collaboration methods?
- How can we develop long-term integrated care plans to overcome silos?
- What integrated care concepts can be developed to span border regions of different countries that have a lot in common in terms of health needs and challenges?
- How can we integrate mental health in integrated health and care concepts?
- How can we make sure that no crucial stakeholders are forgotten?
- How can we integrate climate in integrated care thinking?
- How can we innovate finance to fund and invest sustainably into these eco-systems?
- How do we design more resilient health & care systems, beyond the pandemic?

Many questions have yet to be formulated. The AAL Programme warmly welcomes you to join this collective effort to make good health & well-being for all a strategic choice and a political priority in Europe.

Send us your health and care ecosystem stories. How did they help you? Where do we need more attention? How can we become better at co-creating more effective health and care ecosystems for better health outcomes for all?

**Join us in Nijmegen on March 15-17, 2022, and in Gdansk in October 2022
(info on events to be published via AAL website at www.aal-europe.eu)**

October 2021

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Bibliographic information

Title: Health and Care Ecosystems as Drivers for Transforming European Welfare in the 2020s - The AAL Eco-system Learning Journey

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Date of initial publication: October 2021

Pages: 24

Original Language: English