MEDVIA

The innovation cluster for better health

Paradigm Shifts in Health Innovation: From Product Push to Market Pull

Understanding the rise in hospital-driven innovation and facilitating collaborations between companies and Flemish healthcare organizations

White Paper - April 2024

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Abstract

Recently we have been seeing a paradigm shift in health innovation. The creation of new healthcare products and services used to be supply-driven, with most R&D efforts undertaken by knowledge institutions and companies. However, there is a transition ongoing in the Belgian ecosystem from product-push to market-pull, as healthcare organizations are increasingly taking on an active role in driving health innovation. Hospitals are appointing Innovation Managers to define existing needs and take the lead in sourcing or creating solutions to their problems.

This white paper seeks to elucidate the role, innovation topics and toughest challenges currently facing these Innovation Managers. In a survey conducted in 2023, MEDVIA found that their primary hurdle is moving from a pilot project towards the sustainable implementation of a new solution, due to a lack of funding and support. We identified several opportunities where organizations like MEDVIA can provide support for Innovation Managers and facilitate future collaborations between healthcare providers and industry by clarifying hospital needs and what companies have to offer. The overarching aim of this white paper is to foster collaborative health innovation, benefiting companies, healthcare providers and patients.

List of abbreviations

ATMPs	Advanced Therapeutic Medical Products
B2B	Business to Business
IP	Intellectual Property
PCP	Pre-Commercial Procurement
R&D	Research and Development

About MEDVIA

MEDVIA is an industry-driven membership organization that fosters health innovation in Flanders. It does this by supporting R&D at the intersection of biotech, medtech and digital technologies, providing funding and services as well as jointly tackling the challenges entrepreneurs face in launching health innovations on the global market.

MEDVIA is one of six spearhead clusters in Flanders, Belgium, nurturing innovation in key sectors in the region[1]. Its specific focus is health innovation, which is increasingly arising at the intersection of devices, drugs, diagnostics and digital technologies.

MEDVIA's aim is to create maximum economic and societal value, which it achieves by acting as an objective partner to connect government, knowledge institutions, businesses and citizens in a 'quadruple helix' model. MEDVIA aligns the interests of the different stakeholders, addressing gaps, developing initiatives, setting policy targets and pursuing long-term goals in the health-innovation arena. The organization works to ensure that high-quality, novel health products reach the global public rapidly to further solidify Flanders' status as an international leader in health innovation.

To enable swift market entry for health innovations and enduring value for both innovators and patients, the experienced MEDVIA team provides members with project funding, collective problem-solving, training, visibility, networking and partnering support.

With this white paper, MEDVIA aims to disseminate insights into the ongoing shift in health innovation from being primarily company-driven to increasingly being initiated by healthcare organizations. MEDVIA also strives to elucidate the needs of these organizations, to facilitate mutually beneficial R&D collaborations between hospitals and companies.

Together, we can pave the way to better health for all.

[1] https://www.vlaanderen.be/publicaties/vision-2050-a-long-term-strategy-for-flanders

Introducing a multi-directional model for health innovation

The fabric of Flanders

The fabric of the health innovation ecosystem in Flanders is changing. Until recently, healthcare innovation was largely the domain of: (i) knowledge centers, such as universities and Research and Technology Organizations (RTOs); (ii) the R&D departments of large companies; and (iii) a vibrant community of start-ups and scale-ups. Regardless of the main actor, the development of innovative products and services has been primarily supply-driven: 78% of healthtech startups are B2B-oriented (data from 2016[2,3]), and healthcare organizations have typically been treated as customers or end-users, rather than as active participants in product development.

In this traditional innovation paradigm, experimentation and novel insights form the basis of the developmental process for new products and services. New solutions are then benchmarked against market expectations to facilitate adoption in the ecosystem. This predominantly supply-driven innovation model has brought immense progress to all aspects of society, including healthcare.

[2] https://www.bloovi.be/artikels/stories/2016/5-dingen-die-je-moet-weten-over-het-belgische-healthtech-landschap-anno-2017

[3] https://www.slideshare.net/omohout/europe-health-tech-report-2016

However, a new trend has recently emerged in Flanders and across the world. Increasingly, healthcare organizations (including hospitals, home care organizations and elderly care providers) are themselves taking a more proactive role in driving innovation. Contrary to the traditional paradigm, this new pattern is based foremost on the healthcare organizations' demands for solutions to current challenges.

New horizons for hospitals

To improve their ability to undertake innovating projects, an increasing number of Flemish (non-academic) hospitals have hired dedicated staff whose role it is to better understand the organization's internal innovation needs. These Innovation Managers are also tasked with exploring existing market opportunities and are functioning as liaisons between care organizations and businesses, as they can speak the language of both the hospital and the technology provider.

Within the 'Three Horizons' framework (Figure 1.1), this new approach typically relates to 'Horizon 2': New Innovation.

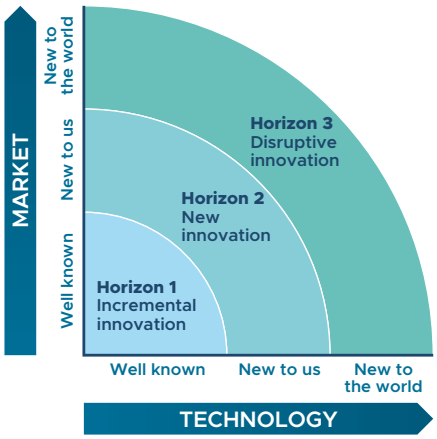

Figure 1.1: The 'Three Horizons' model of innovation.

At this level, healthcare organizations are primarily negotiating new ways to provide quality of care to patients. Unlike companies, they aren't necessary motivated to develop disruptive products, but rather are aiming to find the simplest solutions to the problems they face.

Patient participation

This shift towards in-house innovation is also driven by the changing role of patients and patient organizations – both are increasingly contributing to the development and diffusion of local innovations in complex healthcare systems[4].

It is usually the individual patient that benefits most from innovation, as new solutions often provide improved treatments (eg in terms of efficacy, safety and affordability), as well as a wider range of treatment alternatives. This increases the likelihood that each patient will find a good fit for their specific condition and personal priorities.

[4] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6737838/

In accordance with this, and the recognition of the active role of the patient themselves, patient-centric innovation is on the rise[5]. It does still have a way to go: In a recent round-table on patient perspectives regarding the use and reuse of real-world data in Belgium, patient organizations explicitly voiced the opinion that *"[…] our healthcare system is still too much a business run by suppliers without involving customers"*[6].

These societal and organizational changes are causing a shift from traditional supply-driven innovation to a multi-directional system where there is close interaction between different stakeholders during the R&D phase (Figure 1.2).

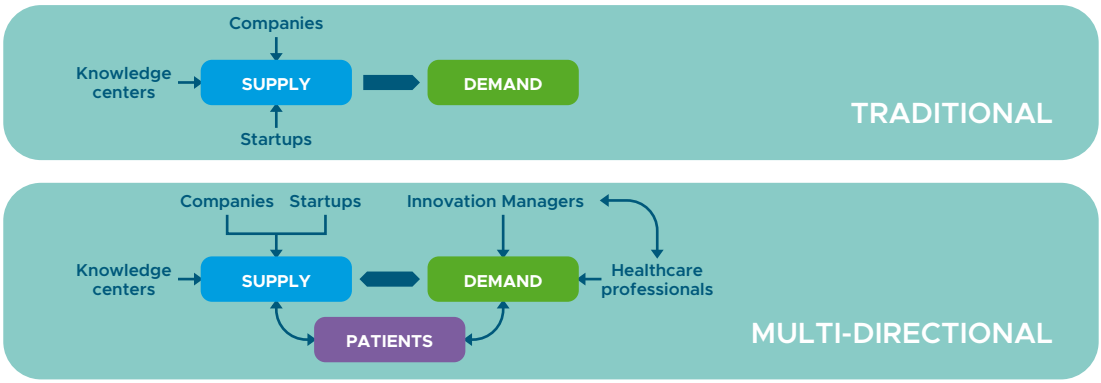

Figure 1.2: A shifting healthtech innovation paradigm

Defining the paradigm shift

Although there has been a significant increase in hospital R&D activities, health innovation has by no means been exclusively supply-driven in the past. An example of demand-driven innovation can be found in Pre-Commercial Procurement (PCP) procedures. In these procedures, the healthcare provides issue a challenge to the healthtech industry to develop novel solutions for predefined needs in the public sector, including a first customer reference, which enables companies to carve out a competitive advantage in the market.

PCP enables public procurers to compare multiple possible solutions and determine which address the public need best. Among others, the European Commission has been supporting PCP procedures to help public procurers and suppliers develop innovative solutions to complex societal challenges, including a wide variety of topics in healthtech.[7]

Coalition Next[8] presents another example of a purposeful effort to promote demand-driven innovation. Launched in Flanders in 2022 following an initiative that started in

[5] https://link.springer.com/article/10.1007/s00192-020-04238-z

[6] https://www.inovigate.com/media/filer_public/3d/4d/3d4d1571-80bb-46bf-a92a-59d3103df6f6/athena_patient_rt_report.pdf

[7] https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/innovation-procurement/pre-commercial-procurement_en

[8] https://www.coalitionnext.com/about-us

France, this is an international, informal and open healthcare collective comprised of public and private players. By combining their expertise, members of this collective are accelerating the implementation of digital healthcare solutions.

Taking these examples into consideration, the current paradigm shift involving healthcare providers still stands apart, for a few reasons:

- Innovation is driven by individual healthcare organizations, not regional authorities or stakeholder consortia
- Needs are frequently defined within individual healthcare organizations and are mostly based on priorities identified at the local level, not on consensus agreed upon between multiple partners (although of course there may be overlapping needs)
- Healthcare organizations are often most interested in the improved use of pre-existing technological solutions, rather than the de novo creation of new technologies which are often the preference of companies prioritizing unique selling points (see Figure 1.1).

Obtaining insights: methods and aims

This white paper explores the highly valuable role that healthcare providers play in health innovation and provides insight into the needs and challenges experienced by the Innovation Managers of these organizations.

The information in this white paper was obtained via an online survey, which MEDVIA created and distributed to more than 20 hospital Innovation Managers, home support organizations and elderly care providers in Flanders. From June to August 2023, respondents were invited to complete a brief online questionnaire (5-10 minutes' duration) collecting information about their organization's innovation needs, procedures to identify innovation priorities, relevant health endpoints and collaboration and funding pathways. The survey questions always included several predetermined multiple-choice answers but also allowed respondents to add topics. Sixteen completed questionnaires were received and formed the basis for the subsequent analysis.

The ambition of this white paper was not to obtain a complete and final overview of ongoing activities, but rather to gain an initial understanding of the innovation journey being undertaken by different healthcare providers. This was done to clarify the roles of a variety of stakeholders in the healthcare ecosystem, as their activities contribute to the evolution from a traditional 'product-push' to a multi-directional 'product-push and market-pull' model (Figure 1.2).

In disseminating these results, MEDVIA aims is to provide clarity on the shifting trends in health innovation and valuable insights and support for both healthcare providers and companies looking to collaborate on future projects.

Survey results: opportunities and bottlenecks

Understanding innovation priorities

From the data resulting from the survey, it's clear that the primary interest of healthcare organizations lies in technologies and topics that focus on (remote) patient monitoring and quality of care (Figure 3.1).

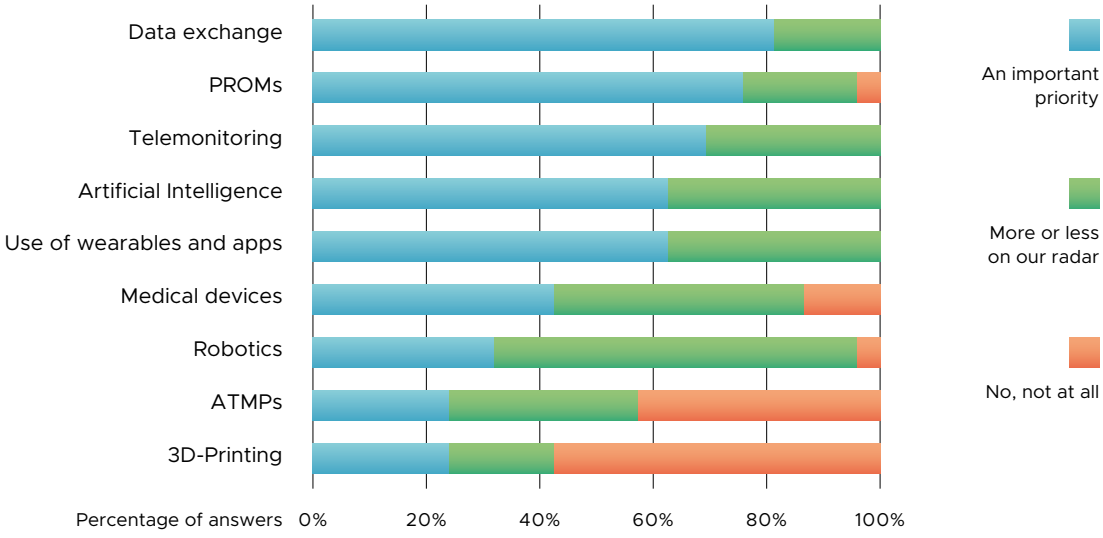

Figure 3.1: Survey question: "Within your organization, do you look at the implementation and the use of following specific innovative technologies?"

This fits in with the healthcare system currently facing extreme challenges due to the rapidly ageing population, budget constraints and an increasing pressure on the health-care workforce. These challenges require the healthcare system to reorganize itself and find new ways to deliver high-quality care at an acceptable cost for the entire population.

At the same time, a growing number of innovative services and technologies offer new ways to restructure and improve the efficiency of the system. But as resources are limited, healthcare organizations need to identify priorities for their internalinnovation strategies.

Another takeaway from the survey is that healthcare providers consider wearables, telemonitoring and the collection of patient-reported outcomes to be an important priority. Technologies that support these priorities, such as data exchange and artificial intelligence, are also of high interest. As a supplement to the preset categories, two survey respondents independently added references to Virtual Reality, Extended Reality and Augmented Reality (VR, XR, and AR) as technologies of interest to their organizations. Whether these specific technologies were mentioned within the context of enhancing patient experience (eg through pain management) or for specific operating procedures (eg immersive staff training) wasn't made clear. Survey respondents assigned a lower priority to procedure-directed technologies, such as 3D-printing, robotics, medical devices or ATMPs.

Collaboration topics

From the survey results it was clear that most of the collaborations between healthcare organizations and third parties centered on education and integrated (home) care, as well as staff motivation and inspiration. Fewer collaborations focused on the scaling and internationalizations of new solutions or the creation of spin-off companies (Figure 3.2).

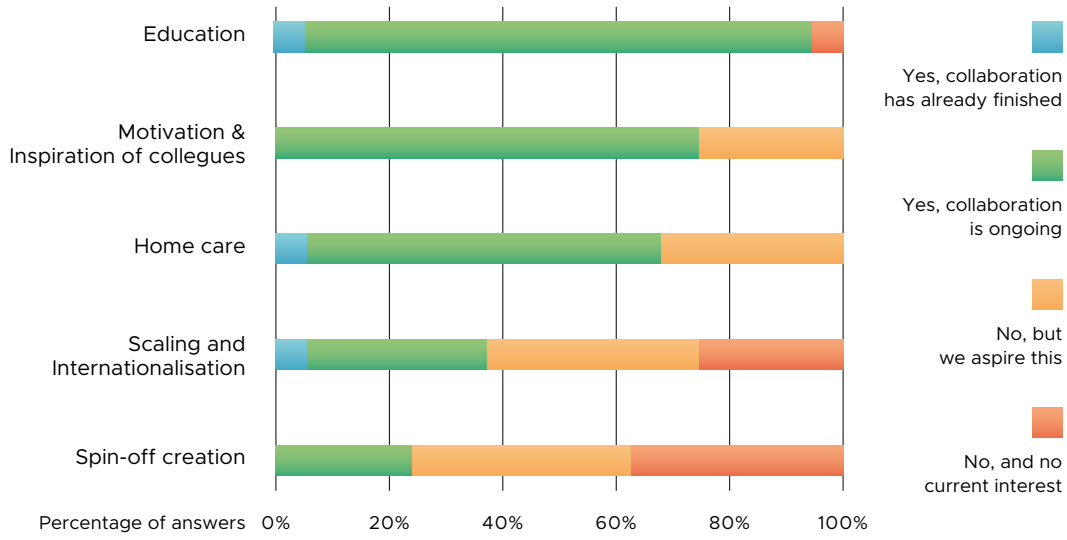

Figure 3.2: Survey question: "In the field of innovation, are you collaborating with third parties in the context of…?"

These differences could potentially be explained by: (i) the local scope of an individual hospital or healthcare provider; and (ii) the relatively novel role of Innovation Managers within hospitals. The focus of Innovation Managers is likely still on aligning internal processes and creating an innovation mindset within the organization, and not yet on scaling mature projects or solutions to reach a larger impact in the regional or (inter)national context.

The role of the Innovation Manager

This discrepancy in collaboration priorities is also supported by the results regarding the role of the Innovation Manager. Their focus is primarily on inspiring colleagues to maintain an innovative mindset, the practical coordination of innovation projects and the detection of both internal and external opportunities for future projects (data not shown).

Collaboration will likely be an important aspect of the role for most Innovation Managers, as 75% of respondents mentioned that they do not have a dedicated in-house testing facility or living lab for running innovation projects.

Test facilities are primarily organized either *ad hoc* within the healthcare organization (eg temporary facilities within a specific department), or through a collaboration with either existing Flemish living labs (e.g. LiCaLab[9] or Happy Aging[10]) or educational organizations such as university-colleges or universities.

[9] https://www.licalab.be/en

[10] https://www.in4care.be/zorgproeftuinen

Current and future innovation needs

Unsurprisingly, most respondents reported budget availability as the worst bottleneck for the implementation of innovative projects within their organization (Figure 3.3).

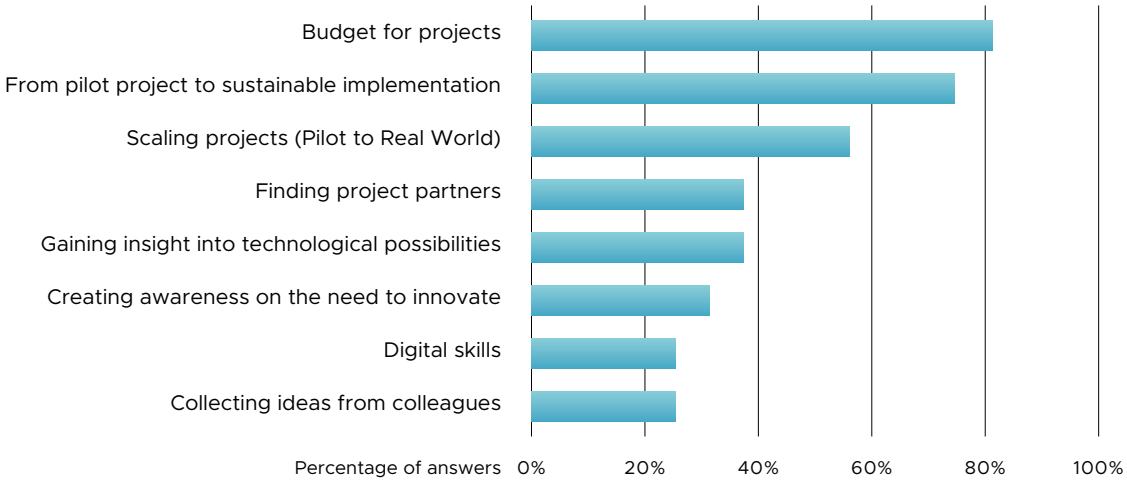

Figure 3.3: Survey question: "What are the most important constraints to implement innovations within the care organization?" (multiple answers were possible, expressed as a % of all respondents)

When asked about sources of funding, respondents answered that most of their innovation projects receive internal funding from within the healthcare organization, but also equity-free funding through research grants from various government bodies. These were primarily the Flemish Agency for Innovation and Entrepreneurship (VLAIO) and the European Commission (through EFRO, Horizon Europe and Interreg).

Another major bottleneck for healthcare organizations is the sustainable implementation of projects after the pilot stage has concluded. This difficulty may indicate that the adoption of new tools and procedures on the work floor is difficult and time-consuming for healthcare organizations, which makes sense as it requires rigorous training and therefore conflicts with the already heavy workload of healthcare workers. This finding resonates well with the previously observed lack of focus on scaling or the creation of spin-offs.

Respondents were least constrained by a lack of awareness of the importance of innovation and didn't seem to have many issues with harvesting ideas for projects with the level of digital skills.

The role of cluster organizations

Finally, we asked respondents about the role they see as most prominent for cluster organizations such as MEDVIA, and what these organizations need to work on. They answered that there is a need for support within the areas of: (i) the development of sustainable business models to facilitate valorization of innovation projects that were evaluated to have a positive return on investment; and (ii) a better connection between the healthcare organizations and technology providers and/or governments.

Steps to enable better health innovation

Take-home messages

The emergence of the Innovation Manager profile within Flemish healthcare organizations is clearly closely linked to the ongoing paradigm shift from supply-driven innovation towards a more multi-directional model. From our survey, the main innovation focus for healthcare organizations contributing to this shift is on patient-centered care and the use of digital health solutions for improved personalization of healthcare services (see Figure 1.1).

This shift brings with it strong advantages, such as the explicit inclusion of patient expectations and professional expertise in innovation through co-creation efforts. Moreover, digital health solutions are often very flexible in their development, implementation and updating capabilities, which supports their agile introduction into the healthcare ecosystem.

Matchmaking between supply and demand

Many healthtech start-ups have emerged over the last decade in Flanders. Each of these companies is trying to develop products or services with a unique selling proposition and has the ambition to tackle a specific problem within the healthcare system. While this vibrant start-up community offers an ever-growing range of health technologies within the Flemish ecosystem, it also makes it difficult for healthcare providers to keep track of the new and emerging solutions that become available. Hospital Innovation Managers have flagged their need for improved matchmaking and market scouting as a major concern.

Start-ups also have the tendency to operate in a very lean and flexible manner in order to rapidly achieve a product-market fit. This is inherent to their operational model, but it may also cause them to “oversell and underdeliver” in their eagerness to meet the expectations of potential customers. While start-ups can quickly pivot and create tailor-made solutions that fit the needs of specific customers, their limited resources can create a bottleneck, as change management often takes more time and resources than expected. This may not be a major issue during a small-scale pilot project but can cause projects to fail once large-scale roll-out occurs. It would be mutually beneficial for healthcare organizations and companies to be better connected, and healthcare organizations also need more support for the sustainable implementation of new solutions.

Reshuffling the healthcare ecosystem

Embedding innovations within any professional ecosystem is complex, and the healthcare system is certainly no exception. New innovations are rarely stand-alone solutions, and their adoption will often require a reshuffle of the entire ecosystem. According to Vanhaverbeke[11] technologies can only be adopted if users on the demand-side (ie healthcare organizations) change their (internal) business processes to guarantee that

[11] Vanhaverbeke W. 2021. Digitalization in distress: Digital technologies in healthcare and challenges of ecosystem adoption. Academy of Management Proceedings 2021(1):11035

innovative technologies can be effectively introduced. The speed of adoption is not determined by technical advancements but by the business model and process changes of the users.

Improving digital literacy

Although digital health solutions provide tremendous opportunities for improved patient-centric healthcare, it's important to bear in mind that patients and end-users don't necessarily have the technical skills needed to fully adopt new systems. Even in a highly educated and technologically advanced society such as Flanders, recent reports estimate that almost half of all residents lack basic digital literacy skills[12].

As an answer to this digital literary challenge, Belgium's King Baudoin Foundation (KBS/FRB) has developed the *"Eight Caring Technology Principles (8CTP)"* (Figure 4.1), which guide the development and use of technological innovations aimed at improving people's health, well-being and quality of life[13].

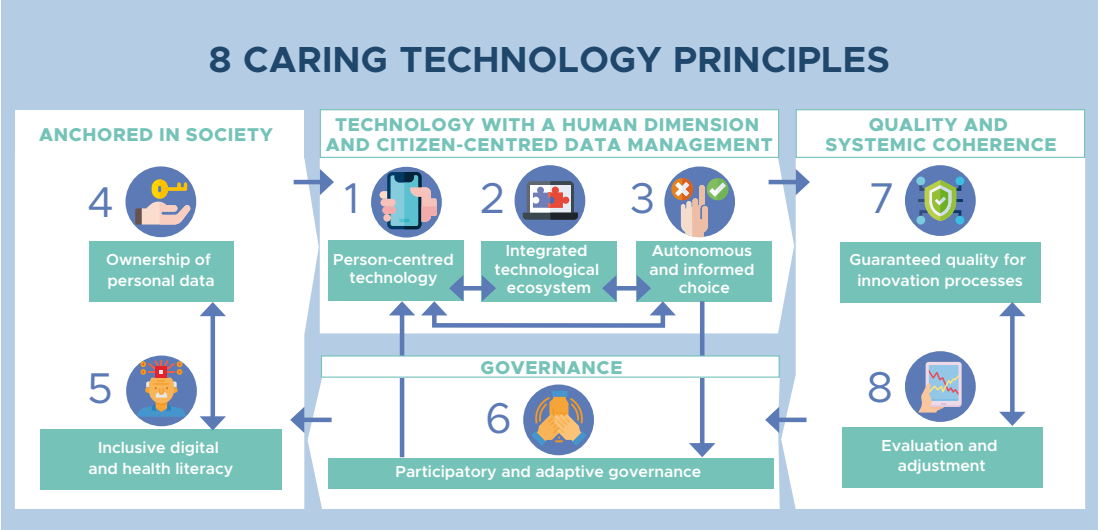

Figure 4.1: Summary overview of the 8 Caring Technology Principles (taken from Fonds Daniel De Coninck[12])

For healthcare organizations and companies looking to develop new health innovations, this digital literacy will need to be considered, preferably addressed through co-creation and early patient participation in the multi-directional model of the healthtech innovation paradigm (Figure 1.2).

Better business models

As was made clear by the survey – where respondents indicated difficulty with project continuation after the conclusion of the pilot stage – sustainable business models need to be employed. Without this long-term strategic perspective, many projects are abandoned after the research phase, even if initial results were positive. Health innovation needs to be supported beyond research and into the developmental phase.

[12] https://www.vlaanderen.be/statistiek-vlaanderen/digitale-economie/digitale-vaardigheden-bij-burgers

[13] https://www.fondsdanieldeconinck.be/initiative/caring-technology/

Belgium's mhealth pyramid[14] has long been acknowledged as one of the leading examples of governmental support for the uptake of digital health solutions across Europe. The system was recently revised, effective on 1 October 2023[15], with the pyramid-like structure abandoned but most other elements remaining.

Advantages of the new approach include[16]:
- A permanent working group (which includes experts with a health economics background) to evaluate applications on a monthly basis
- In addition to companies, healthcare organizations can now also submit dossiers
- A new (non-binding) timeline for dossier evaluation should provide more certainty for applicants
- A clear process for temporarily funding of promising innovations will be set up

However, some important bottlenecks remain:
- The period foreseen for the evaluation of dossiers is too long (minimum 12-15 months (for comparison, in France and Germany it is three months)
- The relevant administrations need to improve their knowledge and capacity in digital medtech to be able to follow the agile and rapid evolution of technologies
- Digital technology does not easily compare with traditional medical technologies and hence will require a shift from fee-for-service models towards a more outcomes-based evaluation

Creating a sustainable business model for digital health solutions, in which hospitals and other healthcare providers are properly reimbursed for implementing innovative digital health solutions, will likely remain one of the major challenges of healthcare systems in Belgium and beyond[17]. This concern was echoed in our survey as one of the major challenges for hospital innovators.

Healthcare organizations will need further reflection on how to scale demand-driven innovation towards a sustainable business model. Whether they want to achieve this on their own, in collaboration with an industrial partner or even through the creation of a spin-off entity, there will often be a substantial learning curve involved.

Nonetheless, we believe that there are many stakeholders that can guide and support healthcare organizations along this trajectory (including MEDVIA and other cluster organizations, incubators, accelerators, living labs and more). Additionally, Flanders has a strong, dynamic ecosystem of service providers active in the healthtech ecosystem, which can assist in discussions on topics such as user acceptance, product development, IP-protection, spin-off creation, intrapreneurship and the many other aspects required to create a sustainable business model around demand-driven innovations.

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[14] https://mhealthbelgium.be/validation-pyramid

[15] https://www.riziv.fgov.be/nl/nieuws/Paginas/vernieuwde-procedure-terugbetaling-medische-mobiele-toepassingen.aspx

[16] https://bemedtech.be/nl/onze-expertise/the-digital-medtech/nieuws/nieuwe-procedure-voor-mobile-health-stap-vooruit-maar-we-zijn-er-nog-niet/

[17] Van Kessel et al. 2023. Digital health reimbursement strategies of 8 European countries and Israel: Scoping review and policy mapping. JMIR Mhealth Uhealth. 11: e49003. 17p.

What can MEDVIA do for you?

This white paper is a first attempt to gain insight into the needs and bottlenecks faced by Innovation Managers, who are increasingly being recruited by healthcare organizations in the move towards a multi-directional innovation model. Based on the collected data, MEDVIA is initiating a series of activities to increase support for this paradigm shift and further enable the future of health innovation. These activities include:

- **Solution-oriented matchmaking sessions** between healthcare Innovation Managers and technology providers. While organizing annual events, MEDVIA will create new matchmaking and collaboration opportunities between healthcare organizations and industry, including "reverse pitching" events where hospitals have the chance to pitch their needs to companies and potential project partners.

- The MEDVIA academy will roll out a series of workshops to help healthcare organizations create **sustainable business models** for in-house development of innovative products and services. This will be done with the help of industry members experienced in topics such as IP, business plan development, market analysis, internationalization, regulatory (etc).

- **Build a community of Innovation Managers** to share experiences, learn from each other and stimulate collaboration across organizations. We foresee bringing in international experts and, together with FIT, developing international missions to state-of-the-art international healthcare organizations abroad. This will help Innovation Managers to get acquainted with best practices and identify what works in a specific setting.

One of the primary ambitions of MEDVIA is to establish a strong Flemish ecosystem of healthtech innovators. If you are a representative from a healthcare organization looking to improve innovation within your organization, get in touch with us to see what we can do for you. If you are part of a company looking to develop new health solutions, we can help your business connect with hospitals in need of partners and facilitate and fund projects for future health innovation.

Find more details on our website, **www.medvia.be**, or contact us at **info@medvia.be**.

Concluding Summary

Until recently, health innovation was largely the domain of knowledge centers, R&D departments of large companies and a community of start-ups and scale-ups. The development of innovative products and services was mainly supply-driven, and healthcare organizations were customers or end-users, rather than active participants in product development.

Recently, a new trend has emerged in which healthcare organizations are taking a more proactive role in driving innovation forward. Innovation Managers have appeared within healthcare organizations, exploring internal innovation needs, identifying new market opportunities and acting as the organization's liaison with external stakeholders. This shift towards in-house innovation is also driven by the changing role of individual patients and patient organizations – both are increasingly contributing to the development and diffusion of local innovations in complex healthcare systems.

This white paper explored the highly valuable role that healthcare providers play in health innovation and provided insights into the needs and challenges experienced by the Innovation Managers of these organizations. Insights were obtained via an online survey (June-August 2023). The ambition of this white paper was not to obtain a complete and final overview of ongoing activities, but rather to gain an initial understanding of the innovation journey being undertaken by different healthcare providers, to facilitate better collaborations between healthcare organizations and companies in the future.

From the survey data, we can deduce that (remote) patient monitoring and quality of care are two critical innovation topics for healthcare organizations and that the Innovation Manager's most important role is to inspire colleagues towards an innovative mindset. The biggest bottlenecks preventing the implementation of innovations were a lack of budget and the challenge of scaling pilot projects.

Cluster organizations like MEDVIA should continue to help healthcare organizations to:

- Develop sustainable business models for the implementation of innovation
- Facilitate matchmaking between organizations/companies on the supply and demand side of new products
- Build a community where Innovation Managers can share experiences and stimulate future collaborations

Acknowledgements

We would like to thank all Innovation Managers who completed the online survey and shared insight into the way they are trying to implement healthtech innovation to improve the quality of life of their patients. This analysis does not necessarily reflect the viewpoints of all Flemish healthcare organizations.

We invite interested readers to contact MEDVIA to contribute their insights in strengthening this initial analysis of data (you can contact us at **medvia.be**). We are particularly interested in hearing form Innovation Managers at Flemish healthcare organizations that were not involved in the initial data collection (June-August 2023).

Improved healthcare will only be possible through the sharing of experiences and expectations, mutual learning and open communication. Through these efforts, we can create a broadly accepted and data-supported framework for improved collaboration and health innovation in Flanders.

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