INSIGHTS

10.1

HIMSS PUBLICATION

FEBRUARY 2022

FINLAND: HOW COLLABORATION IS DRIVING INNOVATION

USING
HEALTH DATA
EFFECTIVELY

PRIORITISE
THE PATIENT

EUROPE'S
DIGITAL HEALTH
HOTHOUSE

INSIGHTS 10.1

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Using Health Data Effectively

BY JYRKI KATAINEN
PRESIDENT, FINNISH INNOVATION FUND SITRA

How do we ensure a fair and sustainable future? That is a question we at Sitra – the Finnish innovation fund – consider constantly from several perspectives: democracy, the circular economy and the data economy. It is also a question that in many respects reflects the ambition of HIMSS to reform the global health ecosystem using information and technology. I believe it is a bold mission for both organisations, and its success depends on achieving a balance of all stakeholders' interests.

Data has already transformed multiple sectors of society and has great potential to improve peo-ple's wellbeing. The digital revolution in healthcare has provided innovative solutions that introduce more personalised care across the patient journey – from prevention to diagnosis and treatment.

Its acceleration over the last two years, at the start of which the whole world was caught off guard by a virus, have shown the importance and power of health data in securing the safety, resilience and recovery of societies.

The development of a common COVID certificate across 27 countries by EU member states is

just one example that demonstrates the power of collaboration. Yet we could do so much more. We must now find ways to overcome the multiple known barriers if we are to realise the full potential of health data, especially in scientific research, innovation and decision-making.

Some countries, including Finland - the focus of this *HIMSS Insights* issue - have already developed their national processes to move forward on this front. Recent studies by the Open Data Institute and OECD ranked Finland in top position, suggesting that change is succeeding. But what struck me was the heterogeneity of countries reflected in both studies. We continue to lack common rules and guidelines on how to use health data. I would like to propose three things to help us move forward.

Firstly, we need a European internal data market. Even the largest member states in the EU are too small to tackle issues such as rising healthcare costs and ageing population on their own. When problems are collective, solutions should be too. We need to form a common European Health Data Space that provides clear rules for the secondary use of health data and enables us to create a single market for data driven business.

Secondly, we need the participation of both public and private research in internal health markets.

Thirdly we need to keep individuals informed and involved. A recent study by the Towards the European Health Data Space (TEHDAS) joint action project concluded that the more people are aware of health data use for research, the more they are positive about it.

I hope you find this issue, the story of a pioneer nation, engaging. It takes you on a comprehensive tour through the Finnish social and healthcare system, from progressive government legislation, via successful public-private partnerships and nationwide health ecosystems to the most innovative healthtech start-ups and companies. Our story is undoubtedly one of the key elements behind Finland earning the title of the World´s Happiest Nation for the fourth consecutive year.

I would like to thank HIMSS for this opportunity to address you. See you at HIMSS22 Europe in Helsinki!

Jyrki Katainen

HIMSS

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Finland

Facts

- Independent Country since 1917
- Population 5.5 Million
- Business Languages: Finnish, English, Swedish
- Neighbouring Countries: Sweden, Norway, Russia, Estonia
- Multi-Party Democracy
- Member of the European Union since 1995
- Member of the Eurozone
- Corporate Tax Rate 20%
- Credit Ratings: Fitch (AA+), Moody's (AA), Standard & Poor's (AA+)

Number 1

- **HealthTech is the largest and one of the fastest-growing export segments of the high-tech Finnish industry**
  Healthtech Finland 2019

- **Availability of scientists and engineers**
  World Economic Forum Global Competitiveness Report 2017–18

- **Availability of latest technologies**
  World Economic Forum Global Competitiveness Report 2017–18

- **Digitisation and one of the best EU Countries in this domain**
  Digital Economy and Society Index 2018, Country Report Finland, European Comission

100%
of patient records in electronic format

kanta.fi

PERSONALISED HEALTH RANKED ACROSS EUROPE

Position 1
Score 73

Innovation-friendly legislation - act on the secondary use of data

stm.fi

5 HEALTHCARE TESTBEDS
IN FINLAND

OULUHEALTH LABS

Testbeds in a university hospital, healthcare centres and homes, simulation labs, 5G network

KUOPIO LIVING LAB

Living labs in a university hospital and healthcare centres and homes, e.g. senior care and home care

HEALTH CAMPUS TURKU

University hospital, paediatric testbed, PET centre

HUS TESTBED

University Hospital, e.g. operating room and New Children's Hospital

HEALTHHUB TAMPERE

R&D, simulation, testing and training platform for co-creation purposes, university hospitals RDI centre

Findata – a one-stop permit authority for the secondary use of Health and Social Data

The objectives are to:

1

IMPROVE DATA SECURITY AND THE data protection of individuals

2

SPEED UP AND STREAMLINE THE UTILISATION OF social welfare and healthcare data resources

3

DECREASE THE DUPLICATION OF work in permit processing

4

DEVELOP DATA DESCRIPTIONS FOR THE SOCIAL WELFARE and healthcare sector together with the controllers

FINDATA OPERATES UNDER THE PERFORMANCE GUIDANCE OF THE MINISTRY OF SOCIAL AFFAIRS AND HEALTH

Streamlined Access to Data Heralds New Chapter in Finland

Finland is often held up as a progressive example of how to provide universal health and social care in a universal welfare system. The most recent step in this story is an Act that aims to streamline the secondary use of health data for research and development purposes, overseen by a new permit authority.

BY PIERS FORD

The story of Finland's universal public healthcare system is rooted in the country's welfare system, which evolved steadily during the decades after the Second World War, and a constitution that stipulates the provision of adequate social, health and medical services for everyone by the public authorities.

Although it has undergone various reforms in subsequent years, its decentralised structure remains founded on the Primary Health Care Act of 1972, which gave responsibility for the provision and financing of primary health services to 450 municipalities. Today, these primarily state-funded services are delivered through a family doctor system and municipal health centres. Municipalities can provide them internally, in collaboration or source them from private partners.

Secondary care is provided by 20 hospital districts, each with its own central hospital, in addition to which there are five university hospitals which deliver advanced medical care and treatment for rare conditions. There is also a growing private healthcare sector, which provides around a quarter of the country's health and social care services, partly subsidised by the state.

The acceleration of change in the 21st century has increasingly been driven by the digital transformation of healthcare, fuelled by the availability of data to drive the country's response to changing needs and most recently, the COVID-19 pandemic. The most significant development in recent years has been the development of Kanta Services, which are the cornerstone of the digitalisation of Finland's health and social services reform. They include Kanta Pages, which gives citizens access to their own health records and prescriptions, and the Patient Data Repository. This is a national health information system which enables

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We started with a couple of principles: that the availability of data is a crucial thing to arrange for study purposes; and that you must have a compliant and ethical basis for the use of that data.

Antti Kivelä
Sitra

the centralised archiving of electronic patient records and long-term data storage.

DRIVING DATA ACCESS

Finland has also established a reputation for its progressive approach to the secondary use of health data for research and the development of new products. In 2019, the Act on the Secondary Use of Health and Social Data came into force, paving the way for the establishment in 2020 of Findata, the authority which grants permits for the secondary use of health and social data in a centralised manner, when it is requested from multiple registers.

The groundwork for the legislation and the creation of a one-stop-shop operating model was carried out by Sitra, the Finnish innovation fund, which launched Isaacus, a Digital Health Hub project in 2015 and the starting point for building frameworks to enable the more streamlined secondary use of health data for research purposes. A number of pre-production projects focused on the creation of data lakes that enabled the development of tools for use in clinical and biobank research.

The standard bearer of these initiatives was the Hospital District of Helsinki and Uusimaa (HUS) data lake project, which incorporated different patient data systems into a cloud-based, open-source data lake and made Finland the first Nordic country to create a data lake for use in AI-based healthcare system development.

"This was a joint project with the Ministry of Social Affairs and Health," says Antti Kivelä, who leads Sitra's capacity for renewal theme. "We started with a couple of principles: that the availability of data is a crucial thing to arrange for study

> **Finns tend to trust that if they let researchers use their personal health data, they will benefit back in better healthcare, better treatments, better medicine**
>
> Johanna Seppänen
> Findata

purposes; and that you must have a compliant and ethical basis for the use of that data. Having one place to licence access and analysis of data would be much easier and faster, where the processes have simply been too slow."

Sitra's success in laying the foundations for the new legislation attracted the attention of the European Commission, which invited the organisation to co-ordinate TEHDAS (Joint Action Towards the European Health Data Space), an initiative carried out by 25 countries to develop European principles for the secondary use of health data.

VOICE OF AUTHORITY

As Findata director Johanna Seppänen says, Finland has a strong tradition of using health data for secondary purposes and a culture of consent for data sharing that predates the digital age. In addition to the data held by the many national health registries and databases, Findata has a mandate to permit the data that accumulates in social and health services from every interaction.

"We have all this data, and it has been used a lot," she says. "But it has been recognised that it is still under used – it could be used much more if it was more accessible and available, if the metadata was better, if the data could be described so people can understand what has been happening, and that's where Findata steps in.

"We also have the key – the personal identity code – without which secondary use of data would be much harder."

Seppänen says that Finland has a strong culture of trust between citizens and authorities when it comes to data sharing for secondary purposes.

> **I dare to argue that we've already been able to collect richer data sets than would have been possible before.**
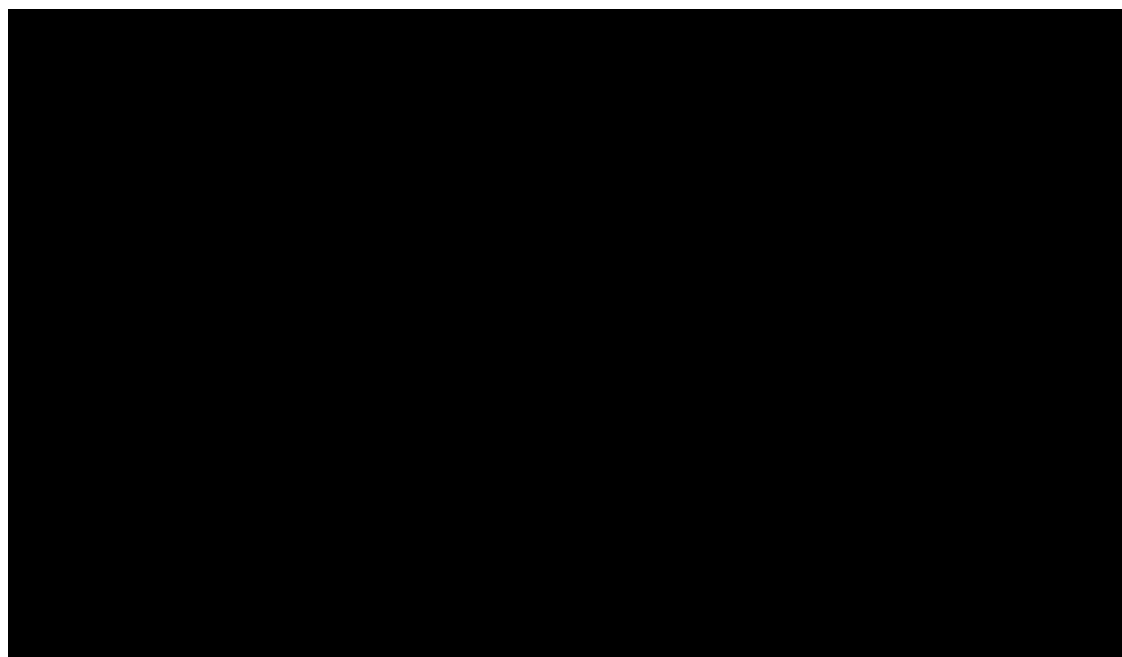>
> Johanna Seppänen
> Findata

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HOW EVERYONE IN FINLAND CAN UTILISE THEIR HEALTH DATA

Data is the cornerstone of a well-functioning society, and in "Kanta," Finnish citizens are empowered to use their data effectively, says Sinikka Salo, senior medical officer at the Regional State Administrative Agencies in Finland.

"Finns tend to trust that if they let researchers use their personal health data, they will benefit back in better healthcare, better treatments, better medicine," she says. "Why do they trust? It's linked to society – not that our authorities would be so much better than in other countries, but I think it has to do with the social wellbeing we have in the country. Nobody is left without any money. It's much easier to trust authorities when they take care of you."

In line with the GDPR, Finns can opt out of giving permission for the secondary use of their health data. As Seppänen points out, the fact that only 210 citizens have opted out since Findata began to operate in January 2020 is reasonable evidence of that trust: "We have a population of 5.6 million people, so in practice, the Finns are in!" she says.

Public trust is one thing, but the technical challenges of providing streamlined access via a single authority are quite another. Seppänen says that while the Act on the Secondary Use of Health and Data instituted Findata, defined its services and its IT system, and gave it a legal mandate to give permission to practically all the health data that exists in Finland, the operational launch revealed many unforeseen obstacles.

"It wasn't a question of 'Just send them [Findata] the sampling request and they will send you the data'," she says. "There are all kinds of problems with data availability – it has vanished, there has been a lot of IT management outsourcing, lots of changes in IT software, a lack of proper legal arrangements. These things saw the daylight when we started to operate. But the good thing is that when problems pop up, we can tackle them – and that's what we are doing a lot to enable availability."

Seppänen says that when she is asked for advice about how to plan such a one-stop-shop, she tells people that planning is important – but don't plan too much. "At a certain point you just start to run," she says. "Then prepare for the difficulties."

Even a progressive health system like Finland's can't avoid the legacy issues of data consistency and availability that are familiar globally, and it is still early days for Findata. But Seppänen says its services are already being well used.

"We have just checked the figures, and almost 400 research projects have had data through us so far," she says. "I dare to argue that we've already been able to collect richer data sets than would have been possible before." ●

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WHAT DO YOU THINK?

Could a Findata model operate successfully in your ecosystem?

Get in Touch

Private Practice: How Independent Operators Prioritise the Patient

Finland's private healthcare operators played a crucial role in accelerating the digital transformation of the country's health services at the start of the pandemic. In the case of two leading private health service providers, the foundations of that transformation were already in place when COVID-19 arrived.

BY PIERS FORD

f customer satisfaction is a good measure of a progressive approach, both Terveystalo and Mehiläinen with Bee-Healthy platform offer strong evidence that their respective approaches show what best practice in digital transformation looks like for the Finnish population.

Terveystalo's remote services currently achieve an NPS score of score around 75 NPS, where Mehiläinen application scores 89 – both notably high ratings for digital health companies.

"We have about 1.8 million different users within our digital services, which means about 400,000 weekly interactions," says Juha Juosila, chief digital officer at Terveystalo. "On average, it takes seven seconds to reach the doctor. I would say that's something you can call access!"

Anni Iso-Mustajärvi, director at BeeHealthy SaaS, reports similarly positive sentiment. At Mehiläinen, we are always monitoring access to care," she says. "We try to keep within a few minutes. When COVID-19 started, we peaked at 6,000 consultations per day overnight – it wasn't something we were prepared for, but we scaled up quite quickly."

PATIENT FOCUS

Iso-Mustajärvi says that traditionally healthcare has often been built around the professionals and not put the customer at the centre. "That's the perspective we're trying to build," she explains. "The patient not having to navigate through the service, but the app helping them through the digital journey. We're not dictating digital or physical – you just start with the app and it will hand-hold the patient where they need to go. That democratises healthcare a bit: the patient can focus on their own health."

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We have about 1.8 million different users within our digital services, which means about 400,000 weekly interactions.

Juha Juosila
Terveystalo

BeeHealthy is the digital platform developed by Mehiläinen, that they offer for other healthcare providers as well. As such, it has a strong history of collaboration with the public sector.

According to Iso-Mustajärvi, the ongoing dialogue between them has underpinned BeeHealthy's development. BeeHealthy's platform is currently used in joint private/public ventures in two regions. One of them, in Päijät-Häme, covers 120,000 people. Here, the Harjun Terveys project has used the Digital Clinic concept to reduce significant waiting times for appointments; the automated triage and AI-assisted asynchronous chat features can remove 60-80% of patients from the queue.

"The point is not to block anyone from seeing the doctor," says Iso-Mustajärvi. "It's to solve the case in the best medical way and enabling physician efficiency, so that they can spend their time with the patients who need it. In this digital setting, they can see 10-20 patients in an hour compared with 4-6 physical appointments."

With a network of 540 units and over 26,000 employees covering the whole spectrum of the care continuum - all the way from prevention and primary care to acute and social care - Mehiläinen is the largest private social and healthcare company in Finland. Terveystalo is Finland's largest private healthcare company. As both Mehiläinen and Terveystalo are integrated and comprehensive operators working with multiple payer models, the companies have strong ethos' of giving patients full visibility into their own situation.

A mobile app gives them complete access to their record, as well as the remote services which, Juosila explains, provide a parallel channel into the network. Here, too, the boundaries between digital and physical visits have faded – the choice is up to the customer, and the healthcare provision stipulated by their contract.

> " When COVID-19 started, we peaked at 6,000 consultations per day overnight – it wasn't something we were prepared for, but we scaled up quite quickly.

Anni Iso-Mustajärvi
BeeHealthy SaaS

BOTS TAKE THE STRAIN

When the pandemic arrived, Terveystalo created a COVID bot in the app – an AI-driven chatbot which took the burden of triage from the doctor. Juosila says that in the first year, 6,000 hours of doctors' time was saved and more than 30,000 referrals were made by the bot. With use cases like this, he says that private providers have a good opportunity to collaborate with public healthcare institutions to help pick up the slack caused by COVID-19.

"Public healthcare wasn't so ready to take on people remotely, they didn't have the tools and the staff weren't educated to do that, so across the country there is a lot of talk now about how queues can be 'undone'," he says. "We can help with that. We have the capacity to take on a lot more patients than we are seeing now, and we do a lot of co-operation with public healthcare because of those capabilities."

Juosila says public healthcare outsourcing tenders that include requests for tools, platforms and professional digital health services suggests that this type of co-operation is now becoming commonplace. It also anticipates a shift to preventative care models in which digital transformation will play a dominant role.

Terveystalo offers customers a personalised digital health plan, which includes AI-based reminders, content to support lifestyle changes related to chronic conditions, rule-based engines that automate reminders, and other programmes for preventative and supporting actions across its digital platforms.

"A preventative support partnership with the individual is really at the core of our future purposes," says Juosila. "We have standardised the vast spectrum of our services so they are a continuum. We've programmed a lot of those things already and that is something I strongly feel is the future of healthcare."

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> **The patient not having to navigate through the service, but the app helping them through the digital journey.**
>
> Anni Iso-Mustajärvi
> BeeHealthy SaaS

Working with customers to improve digital services continuously and transparently is an important part of Terveystalo's philosophy. "We've developed these tools in-house, we are in control of the whole digital scenery for our company," says Juosila. "We've learned a lot from developing these products and we believe that different systems in different countries could also benefit from that, which is why we're open to making them commercially available and sharing our knowledge across borders."

The confluence of healthcare and wellbeing also informs BeeHealthy's strategy. A combination of questions designed to obtain optimum information from the patient and intelligent algorithms that provide the doctor with a pre-consultation summary, a library of pre-written texts for the doctor to use in synchronous chat, and automated follow-ups creates a flexibility in the Digital Clinic that has already proved successful with customers.

PREVENTION FIRST

"Our traditional healthcare system is really good at taking care of symptoms – preferably acute symptoms – but maybe not so good on the prevention side, particularly if you consider that people are living longer, chronic diseases are an increasing share of healthcare costs, and those can be impacted if you work on your lifestyle," says Mustajärvi.

"Something else we are already tackling in the Digital Clinic concept is early interventions, making the threshold low so that people contact their healthcare provider before symptoms get too severe. If you can be encouraged to take part in lifestyle coaching, that's an important tool for doctors treating chronic conditions, using early triggers to suggest changes.

"If a patient has diabetes, it isn't usually the only thing going on with their health. Managing multiple disorders is something

> **If a patient has diabetes, it isn't usually the only thing going on with their health. Managing multiple disorders is something that's really coming up and we're seeing a lot of interest from international customers.**
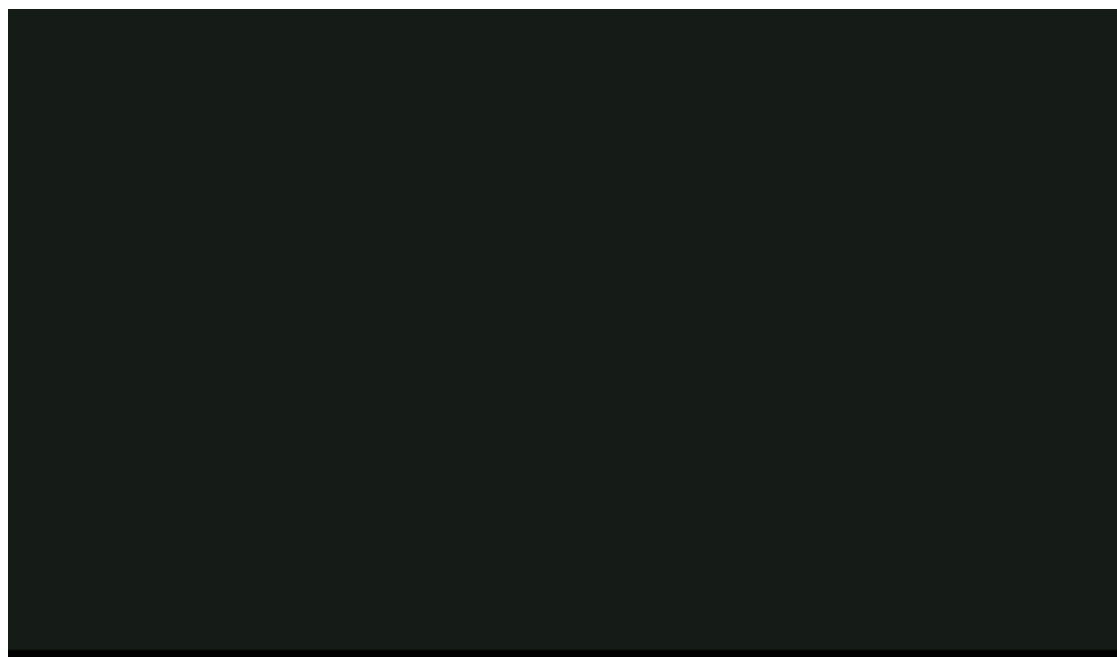>
> Anni Iso-Mustajärvi
> BeeHealthy SaaS

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STRIVING FOR CITIZEN-CENTRIC PREVENTIVE CARE IN FINLAND

Expertise in medicine, wireless solutions, and big data analytics allows the OuluHealth ecosystem to respond quickly to digital health bottlenecks and address societal needs, says its program leader Maritta Perälä-Heape.

that's really coming up and we're seeing a lot of interest from international customers," she concludes.

Finland's heritage as the country that invented the SMS message perhaps means the population's ready adoption of digital healthcare tools is unsurprising. Tech-enablement and integrated, streamlined tools make the transition to digital access seem natural.

As two of the nation's leading private healthcare providers, Mehiläinen with the BeeHealthy platform and Terveystalo continue to demonstrate best practice in digital transformation, and show how the private sector can collaborate with public providers to meet the challenges of demanding populations. ●

© Orion

Europe's Digital Health Hothouse – How Finnish Ecosystems Take Innovation to Maturity

The concentration of regional health ecosystems has resulted in a network of innovation hotspots, with public and private stakeholders collaborating to fuel Finland's growing reputation as a digital health hothouse on the global stage.

BY PIERS FORD

Finland's reputation as a hotbed of high-tech innovation is rooted in its role in the evolution of mobile communications, particularly its contribution to the creation of the GSM standard and the rise of text messaging.

Its transformation into a digital health hothouse shares many of the same pioneering characteristics, driven by the needs of a geographically remote country with its dispersed and increasingly mobilised population, a progressive health and social care system, and a high level of trust among citizens who are relatively at ease with the concept and possibilities of health data sharing.

It is only recently, however, that this generalised picture has coalesced into more concerted regional efforts to harness local potential for digital health innovation. Today, a network of health ecosystems consisting of city authorities, hospitals, universities, investors, and corporate and start-up businesses is emerging to enable collaboration, product commercialisation and entrepreneurial development beyond the laboratory.

Health Capital Helsinki is in the vanguard of these regional hotspots, a metropolitan health ecosystem that brings together Finland's two largest cities (Espoo and the capital itself), HUS hospital, and a number of major universities. All of these stakeholders share a vested interest in supporting innovation and start-ups, helping them to navigate the journey from lab-based research project to investment and international business opportunities. A quarter of Finland's approximately 400 health start-ups are located in the Helsinki metropolitan area.

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>
> Juha Paakkola
> Health Capital Helsinki

FUNDING GAP

When Health Capital Helsinki conducted a national survey of start-ups in November 2021, three key requirements emerged: an urgent need for funding – 84% of respondents said they needed support either immediately or within a year; a shortage of reference customers – the challenge of finding the first paying client; and access to the business skills and talent that enable them to take development to the next level.

"These findings are what we want to endorse and highlight," says Juha Paakkola, director at Health Capital Helsinki. "The level of urgency surprised us, but of course it can take five to ten years to take meditech products to the market. We can help by identifying potential investors and connecting start-ups with them."

Health Capital Helsinki collaborates with Health Incubator Helsinki, which is currently providing mentoring and business development services to 23 early start-ups, as well as promoting them internationally at industry events. It also collaborates closely with SPARK Finland, an initiative which supports the transition of ideas into viable solutions in the life science and healthtech space.

"Our university stakeholders would usually be competing with each other, and one of our values is that we support and connect a wide community in the ecosystem," says Paakkola. "We have different types of stakeholder who wouldn't otherwise find each other, and that allows us to inspire new services – either providing them ourselves or commissioning them from others, supporting innovation and start-ups through universities and research projects, and helping them with the tech transfer operation."
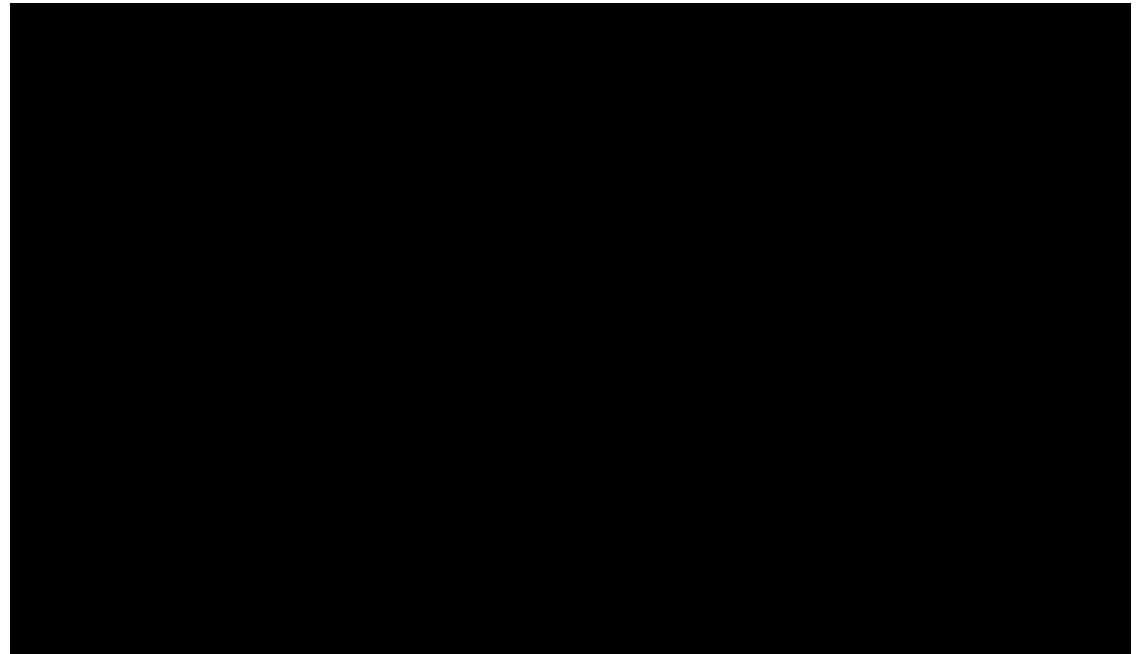
We now have 29 members – 25 of which are companies of various sizes. Some of them are health businesses but we also have investors and venture capitalist organisations.

Aki Gröhn
Kuopio Health

HIMSS TV

HOW HELSINKI IS USED AS A TESTBED FOR INNOVATION

Cooperation, co-creation and culture are crucial in boosting innovation in Finland's capital city, along with adopting a health ecosystem approach, says Marja-Leena Rinkineva, director of economic development, City of Helsinki.

A similarly comprehensive vision drives the OuluHealth ecosystem in the north of the country. Oulu claims to be the second largest health technology hub in Finland, with much of its reputation for innovation stemming from the region's largest public hospital.

"Oulu University Hospital is one of the forerunners in digital health," says OuluHealth network director Minna Komu. "To our knowledge they were the first one in the world to have an electronic patient health record system, ESKO, in place - developed by the hospital and not by any company.

> **We have different types of stakeholder who wouldn't otherwise find each other, and that allows us to inspire new services...supporting innovation and start-ups through universities and research projects.**
>
> Juha Paakkola
> Health Capital Helsinki

"Oulu University Hospital has a generally positive attitude towards digital health. They have also been developing a demand-driven innovation model, where the demands are collected from healthcare professionals and communicated as challenges for companies. This offers a solid cornerstone for innovation for the companies as they know that there is a real need for the developed solution."

TESTING TIME

As part of OuluHealth Labs, the hospital also has the OYS TestLab, which provides a testing, development and innovation environment for companies and healthcare professionals, as both a physical testing facility and a digital platform.

Komu agrees that the length of time between the conception of a new digital health idea and its realisation in the market is a challenge. Many of the start-ups emerging from the OuluHealth ecosystem are still in their early stages, but university spin-off Cerenion is an example of a company that is beginning to attract international attention for its products – AI tools and devices for analysing brain function in intensive care.

"OuluHealth has been supporting Cerenion in many ways," says Komu, "offering for example contacts and channels for funding, enabling testing in authentic environments (Oulu-Health Labs), providing business development support, enabling their growth and internationalisation through networking events with local, national and international contacts, and promoting exports with a spot on the OuluHealth booth at international exhibitions."

Helping start-ups to take the next step up was also an important motivation behind the establishment of Kuopio

Oulu University Hospital is one of the forerunners in digital health.

Minna Komu
OuluHealth

Health, an ecosystem that brings together entrepreneurs, business professionals, academic, medical and government experts with the goal of transforming ideas into viable commercial applications.

As with OuluHealth and Health Capital Helsinki, Kuopio Health's reach extends beyond its regional base and connects with other Finnish and international institutions, investors and business partners.

CONNECTED HEALTH

"We realised that companies were tired of working on a project-by-project basis, not knowing how things would go in the future," says CEO Aki Gröhn. "They needed a legal entity committed to collaboration, providing a platform for business development and co-ordinating services. We now have 29 members – 25 of which are companies of various sizes. Some of them are health businesses but we also have investors and venture capitalist organisations."

With all members sharing a commitment to health innovation, there is a strong focus on connecting business-oriented players with research projects at the earliest possible stage. Success stories that have emerged from the Kuopio Health ecosystem to date include Heart2Save's arrhythmia monitoring app, Algoa's personalised osteoarthritis treatment solution, and Adamant Health's tools for analysing movement disorders in the home environment.

Business itself is also playing an increasingly central role in the evolution of Finland's health ecosystems. Leading pharmaceutical company Orion, based in Espoo, has diversified into digital health – a transition based on collaboration with other organisations, which director of digital medicine Sammeli Liikkanen
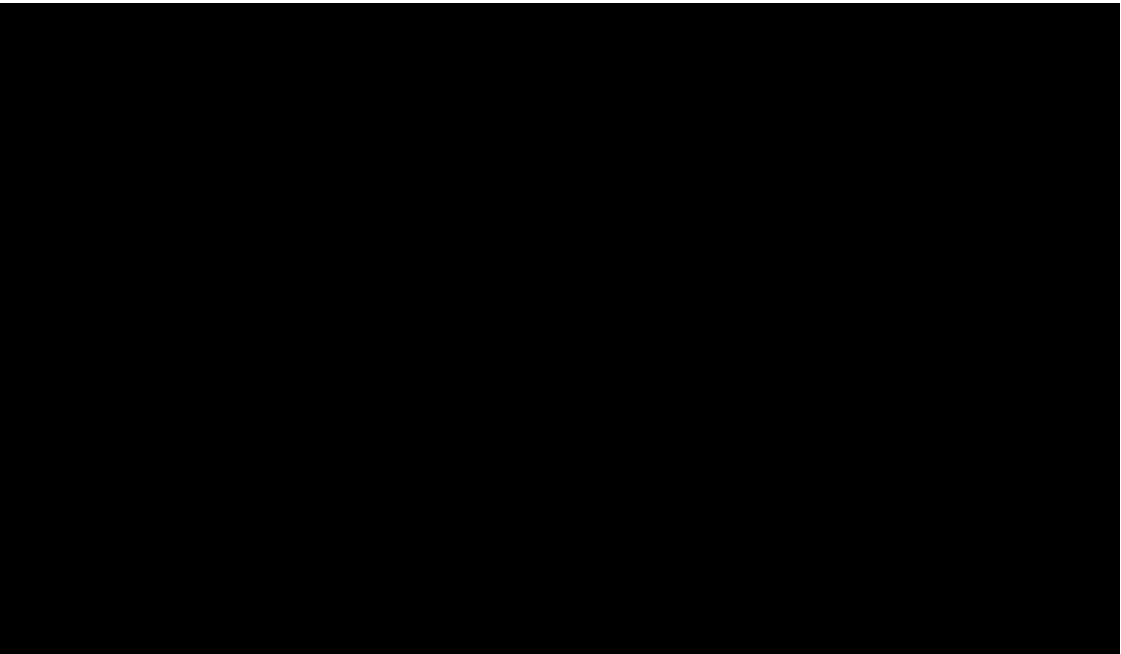
> **Of course we're already exploiting data, but in doing that we have also found opportunities for digital health and therapeutics to help patients in the future.**
>
> Sammeli Liikkanen
> Orion

HIMSS TV

SUCCESSFUL DIGITAL SOLUTIONS REQUIRE HUMAN EMPATHY

High-quality data and empathy are the key drivers in developing successful digital solutions and improving citizen-centered care, says Sammeli Liikkanen, director of digital medicine at Orion Corporation.

says is a natural extension of the business's health and research data exploitation.

"We realised that when we're creating new treatments for the future, they'll have to be based on data," he says. "Of course we're already exploiting data, but in doing that we have also found opportunities for digital health and therapeutics to help patients in the future."

One such collaborative opportunity has already been captured in the shape of Orion's Easyhaler, which combines the company's inhaler products with Propeller Health's digital medicine platform to enable the digital monitoring of medi-

cation use for asthma and COPD patients. Another project expected to reach the market in the future is VR for Pain, a solution that combines virtual reality, a cloud-based information database and AI to provide personalised treatment programs for people with chronic pain.

WORKING TOGETHER FOR THE GREATER GOOD

"Digital health is a joint effort," says Liikkanen. "If we are going to treat people suffering from sicknesses and illnesses, we are going to have to work together with everyone. It is not only the patients and healthcare professionals. Other stakeholders can provide something valuable with data or solutions that come from health ecosystems."

Whether they are led by business, research and academia, or health institutions, Finland's digital health hotspots and ecosystems continue the country's progressive tradition of collaboration across the public-private divide. And they demonstrate how the country remains at the forefront of global innovation in a world that will be reliant on the technologies and solutions that enable treatment in increasingly mobilised delivery models. ●

> **If we are going to treat people suffering from sicknesses and illnesses, we are going to have to work together with everyone.**
>
> Sammeli Liikkanen
> Orion

WHAT DO YOU THINK?

What challenges exist when trying to cultivate an innovative culture in your region?

Get in Touch

Bridging the Gap – How Public and Private Collaboration Drives Digital Change

Co-operation between public and private providers is a well-established aspect of Finland's healthcare system, but the relationship between public hospitals and private business has been distant until relatively recently. That situation is changing fast thanks to initiatives such as the CleverHealth Network.

BY PIERS FORD

Covering a catchment area of 2.2 million residents, HUS incorporates five hospital areas including Helsinki University Hospital. As well as being the country's leading hospital district, it is the largest provider of specialist care, and has built a strong reputation as a digital health transformation pioneer.

The HUS pedigree includes the creation of a data lake which contains structured and unstructured data from more than 100 patient registries, enabling the provision of data sets for research and knowledge management purposes. The data lake was an important initiative during the preparation and scoping of legislation for the secondary use of health data, which came into force in 2019.

Since the formation of the CleverHealth Network in 2017, HUS has also been the co-ordinator of an innovative health technology ecosystem bringing together clinicians, pharmaceutical companies, global technology players and start-up businesses with the aim of developing tools that will improve the health and wellbeing of Finns, and ultimately find international markets.

HUS chief digital officer Visa Honkanen says the pandemic has helped to break down the traditional barrier between public and private actors. The main proviso for CleverHealth is that a development project must be based on solving an immediate and relevant healthcare issue, he says, with the potential to be built into a product with commercial appeal.

"It has been a learning curve for us as a public hospital," says Honkanen. "Not just because of legal issues but because of the trust that both sides must have that everybody is working in everybody's best interests. Sometimes, we are having to build trust between competitors. It's good that as the head

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CLUSTER POWER

Honkanen explains that because HUS is a cluster of hospitals it can call on a rich resource of information and expertise. "The biggest fruits come from situations where you can reach over the whole care continuum," he says. "It has helped that we are all in the same EHR in the Helsinki Metropolitan area, which includes social, primary and tertiary care. That creates an abundance of available data, as long as we use it responsibly."

There are currently five major CleverHealth initiatives under way. Among the most prominent of these is the AI head analysis project for developing algorithms to diagnose the nature of and suggest appropriate treatment for brain haemorrhages.

This collaboration between HUS Helsinki University Hospital, Finnish health technology company Planmeca and Canadian IT services group CGI, gives clinicians cloud-based access to tools to support decision making in the emergency room, when a radiologist or surgeon is not at hand.

"You can't develop these things anywhere other than a hospital structure," says Honkanen. "You have to test the algorithm all the time. It might look fine in a data lake but when you try to make it work in real life, you can get into all kinds of technical problems."

CleverHealth Network project director Mirka Tammi says that development initiatives like this are so complex that it is not enough for HUS to work with a single partner – they require different competencies from different companies. And clinical expertise and validation are essential.

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HIMSS TV

WHY GRAVITATE HEALTH IS A UNIQUE PUBLIC-PRIVATE CONSORTIUM
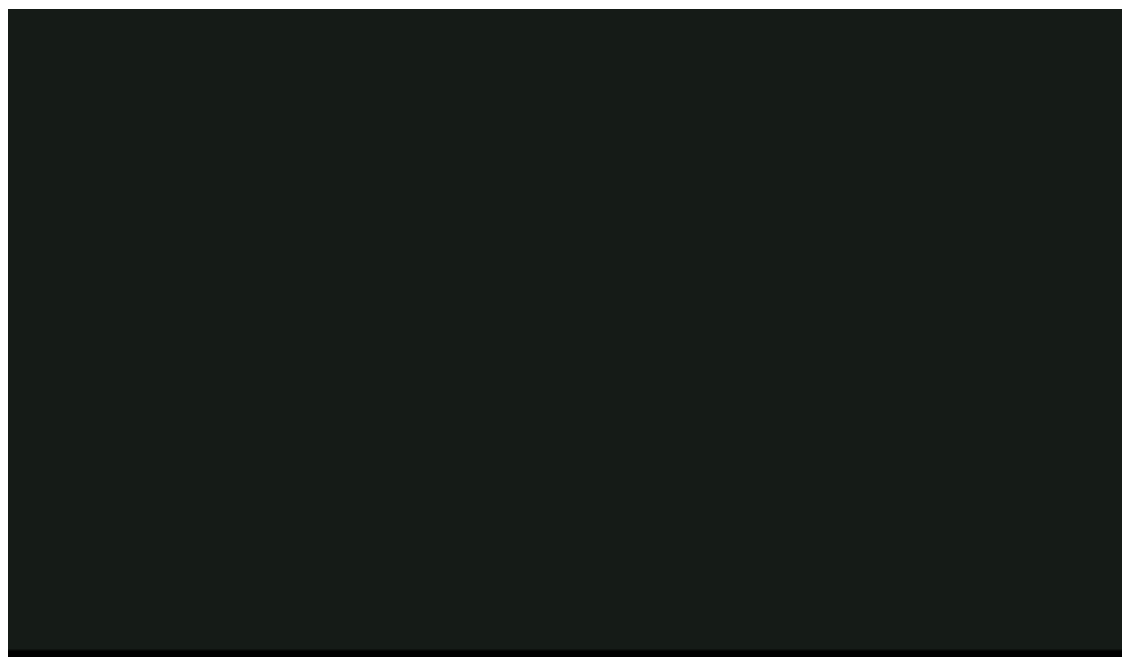
Members from Europe and the US are collaborating on how to improve patient outcomes iteratively by equipping them with the right tools, says Giovanna Ferrari, a project lead.

"The data lake is the core of all our projects," she says. "We want to use health data in new and clever ways, combining it with the competencies of the other actors in the ecosystem."

CLEVER CLINICIANS

"It's a win/win situation for HUS, and very much something that is the future," Tammi continues. "Multi-partner projects where clinicians and private companies are working together. Our experience is that it isn't very good if technology companies are just creating tools without help from clinicians. A start-up might create something, only for HUS clinicians to say they don't need it."

"For the AI head analysis, our neurosurgeons had to teach the algorithms – there was a lot of manual work for them at the

start of the project. But it would be impossible for a health tech company to have that competency. The clinicians have to clarify what the data is all about. It's so important that they are part of the development."

Another project, eCare for Me, also uses AI technology with the aim of developing tools for early rare disease detection, automated diagnostics, treatment selection and advanced homecare.

A parallel acute leukaemia project uses AI to mine data lakes in order to discover disease-related biomarkers and related personalised therapies, with the ultimate goal of building an intelligent dashboard application for clinical and research use.

"This is a very innovative project which will be quite easily scalable to other diseases with modifications to the algorithms," says Tammi.

Preventive healthcare is very much at the heart of another initiative, to develop an AI-based digital service model to support the treatment of gestational diabetes, potentially reducing the number of mothers who will go on to develop type 2 diabetes.

Many CleverHealth projects attract government investment. For example, a major venture to develop solutions for managing indoor air in clinical settings has brought Kone, the world's second largest air conditioning and elevator company into the ecosystem, where it is collaborating with three hospital departments and 12 other businesses.

Tammi explains that CleverHealth projects always combine three elements: clinical, health technology and pharmaceutical expertise. A minimum of three partners are required for a project to be considered viable.

> **"**
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BUSINESS MINDED

"Everybody involved brings something to our projects," she says. "No money is transferred between the main partners, but when solutions are created, private partners are responsible for their commercialisation and global markets. HUS is simply co-ordinating them."

"While we try to build these digital tools that we consider might be a product to sell somewhere else, I think it's important that those private companies take care of that," agrees Honkanen. "We are a public hospital! So we try to have one big inter-national company with a geographical presence in Finland on every project.

Honkanen says this isn't an easy proposition. Negotiation with the upper management of a global company and convincing them that their involvement in a development project would make perfect sense is a new challenge for HUS.

"Finland is a small country, and we have to prove ourselves a little more," he says. "But we see that [the global players] are starting to believe." ●

> **We want to use health data in new and clever ways, combining it with the competencies of the other actors in the ecosystem.**
>
> Mirka Tammi,
> CleverHealth Network

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WHAT DO YOU THINK?

Have you been part of a public-private partnership that has any lessons that can be learned from?

Get in Touch

# *Pushing Healthcare to New Boundaries*

All over the world, innovative thinkers and doers are working to reform the global health ecosystem through the power of information and technology. Learn more about them in our HIMSS TV interviews.

HIMSS TV **EMRAM MODERNISATION: WHAT'S NEW IN 2022?**
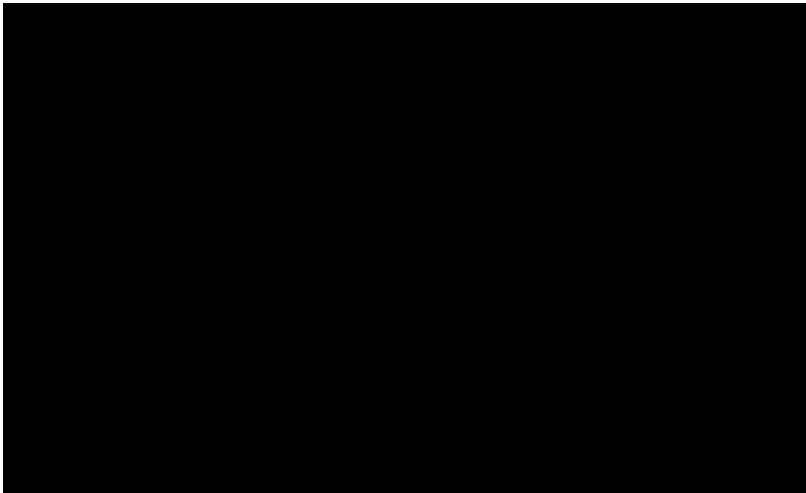
EMEA EMRAM 2022 improves the patient experience, provides financial and operational sustainability, and ultimately offers a roadmap to build an aspirational journey toward better outcomes, says Philip Bradley, Digital Health Strategist, HIMSS.

HIMSS TV **FRANCE ADOPTING GERMAN APPROACH TO HEALTH APPS**
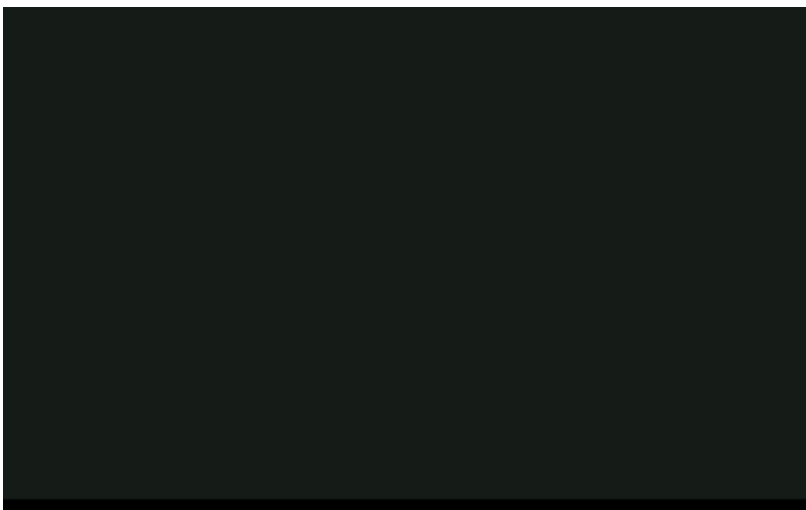
GERMANY Germany has pioneered prescribing apps to patients within their normal care setting, in the form of DiGAs, and France has decided to replicate the system as outlined by Armin Scheuer, Executive Director EMEA, HIMSS.

HIMSS TV **WHO: MOVING FROM A REACTIVE TO A PREVENTATIVE HEALTH SYSTEM**

EMEA Dr. Hans Kluge, WHO Regional Director for Europe, says universal health coverage is based on systems ensuring an equitable vaccination rollout that is underpinned by solidarity, while the power of connectivity can enable preventative care.

HIMSS **TV**   COUNTRIES ARE IN A RACE TO SUCCESSFULLY ELIMINATE COVID-19

EMEA   Deep Dive: COVID-19 will remain a challenge in 2021, but the vaccines raise hope that progress is being made in the battle with the coronavirus and there is light at the end of the tunnel.

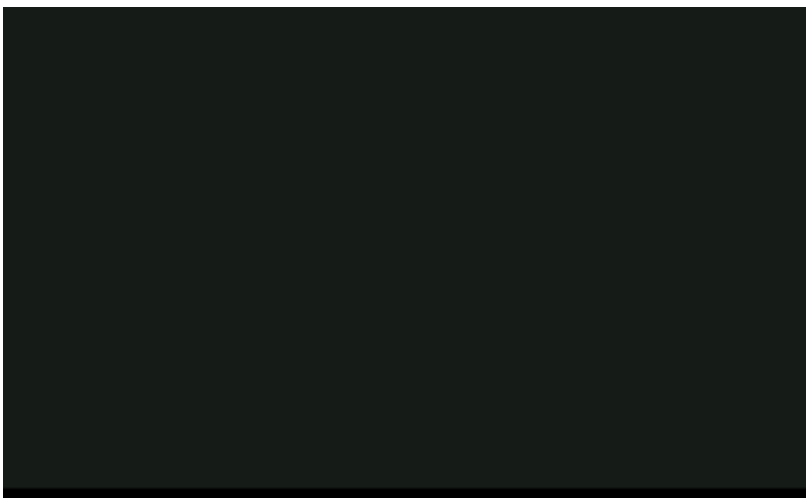## HIMSS **TV**   SUCCESSFUL DIGITAL SOLUTIONS REQUIRE HUMAN EMPATHY

FINLAND   High-quality data and empathy are the key drivers in developing successful digital solutions and improving citizen-centered care, says Sammeli Liikkanen, Director of Digital Medicine at Orion Corporation.

HIMSS **TV**   BOOSTING INNOVATION IN FINLAND'S CAPITAL CITY

FINLAND   Cooperation, co-creation and culture are crucial in creating a testbed for adopting a health ecosystem approach, according to Helsinki's Director of Economic Development, Marja-Leena Rinkineva.

Addressing Health Inequalities and Increasing Digital Inclusion

HIMSS and the Finnish Ministry of Social Affairs and Health (STM) co-hosted the 3rd annual Digital Health Advisory Group for Europe (DHAGE) meeting. DHAGE is a thought leadership platform for key decision-makers in Europe to identify synergies and nurture collaborations on digital health policies. The outcome of the high-level meeting is documented in the following report that focuses on collaborative actions, policy recommendations, and suggestions for joint strategic initiatives.

The pandemic has placed a spotlight on the pre-existing health disparities around the world, and highlighted digital inclusion as the key ingredient for building the resilience of our society. While digital inclusion and literacy are not specific to healthcare, their role surfaced as one of the most important to ensure continued access to information and healthcare during the pandemic.

In order to get the most out of digital health investments, the international community must share common goals in addressing the barriers to digital inclusion: lack of digital skills, connectivity, and the accessibility and user-friendliness of health services. This complex problem requires holistic, cross-administrative development, follow-up of new tools and approaches, and their evaluation.

Successful health policy requires that all aspects of equitable access are addressed, including gender, age, sexual orientation, different cultures and neural and intellectual diversity. Wider human rights issues are addressed as we promote digital inclusion in healthcare, to ensure that no one is left behind.

DHAGE Calls to Action:

1. Ensure digital inclusion in the design of health and social services and mandate health care service providers to demand more inclusive, interactive, accessible, and easy-to-use services from digital devel-

opment, both in-house and by private sector companies, using opportunities in procurement.

2. Cross-sectional response is required to tackle digital exclusion and promote inclusion. There is the need to bring together social, health and technical communities. The digital services must be based on life events and needs of citizens rather than organisational needs.

3. Enable the upskilling and empowerment of the workforce, with the competencies and skills needed for the effective use of digital health technologies, including promoting the use and assessment of new digital tools by all.

4. Develop a Global Interoperability Maturity Model, including a reference to digital inclusion, which provides data quality assessment tools and standards to be endorsed at both international and national level.

5. As part of generating a better knowledge base and body of evidence for promoting digital inclusion, the participating international organisations should set up and fund an initiative to gather experience, develop both policies and practical action, and test these.

Read the full report

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Piers Ford (UK) has been an IT journalist since 1988, unravelling the mysteries of technology for professional readerships in the healthcare, commercial and financial sectors.

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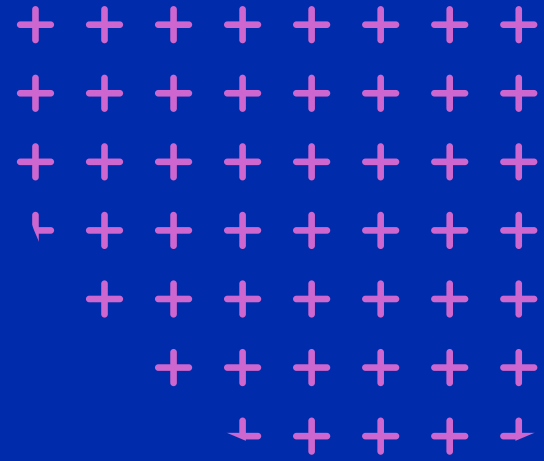
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