



Suomen Telelääketieteen ja e-Health seura
Finnish Society of Telemedicine and eHealth

#eHealth2026

The 31st Finnish National Conference on
Telemedicine and eHealth

"Effective digital solutions in health care
and social welfare services"

1.-2.10.2026

Helsinki

Editors: Eini Ruuhilehto, Elina Laukka, Paula Veikkolainen,
Paulus Torkki, Timo Tuovinen, Outi Ahonen

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Esipuhe

Nordic eHealth 2026 - XXXI Kansallinen ja kansainvälinen Telelääketieteen ja e-Health konferenssi

Outi Ahonen, puheenjohtaja

Suomen telelääketieteen ja eHealth seura ry

Arvoisat kutsuvieraat, hyvät konferenssipäiviin osallistujat.

Suomen telelääketieteen ja eHealth seuran puolesta minulla on ilo toivottaa teidät tervetulleeksi eHealth2026 konferenssiin ja samalla 31. vuotuisen kansalliseen konferenssiimme Helsingin Yliopiston tiloihin, jonka teemana on "Effective digital solutions in health care and social welfare services". Seura on jo vuodesta 1995 edistänyt tieto- ja viestintätekniikan käyttöä terveydenhuollossa.

Seuramme tärkein toimintamuoto on koulutustilaisuuksien järjestäminen ja kansalliseen keskusteluun osallistuminen. Julkaisemme nyt neljättätoista virallista vuosikertaa Finnish Journal of eHealth and eWelfare (FinJeHeW) -lehestä yhdessä Sosiaali- ja terveydenhuollon tietojen käsittely-yhdistyksen (STTY) kanssa. Vuodesta 2004 alkaen olemme jakaneet vuosittaisen kansallisen eHealth- tunnustuspalkinnon ansiokkaasta toiminnasta telelääketieteen ja eHealthin alueella, joksi katsotaan esimerkiksi telelääketieteen ja/tai eHealth alaan kuuluva väitöskirja tai muu merkittävä seuran tavoitteiden mukainen toiminta kansallisella ja kansainvälisellä tasolla. Tuemme myös ammatillista jatkokoulutusta vastaamalla osaltamme lääkäreiden, hammaslääkäreiden ja eläinlääkäreiden terveydenhuollon tietotekniikan erityispätevyysohjelmasta yhdessä Suomen lääkäriliiton ja Suomen hammaslääkäriliiton ja Suomen eläinlääkäriliiton kanssa. Konferenssista myönnetään 10 tuntia teoreettista koulutusta lääkäreiden, hammaslääkäreiden ja eläinlääkäreiden terveydenhuollon tietotekniikan erityispätevyyteen. Seura tukee stipendein suomalaisen eHealth osaamisen näkemistä kansainvälisesti. Seuramme on toiseksi vanhin jäsen International Society for Telemedicine and eHealth (ISfTeH) järjestössä, jonka hallituksessa toimii seuramme puheenjohtaja.

Vuoden 2026 konferenssissa käsitellään teemoja ja tuodaan uusinta tietoa kansainvälisestä ja kansallisesta digitaalisen sosiaali- ja terveydenhuollon kehityksestä, sen vaikuttavuudesta ja ratkaisusta huomioiden myös tekoälyn tuomat näkökulmat. Kohtauspaikkana konferenssissa on tuoretta tietoa niin eri alojen lääkäreille, hoitotyön ja kuntoutuksen eri ammattiryhmille, sosiaalialan toimijoille sekä sosiaali- ja terveydenhuollon digitaalisten palveluiden kehittämisestä kiinnostuneille ammattiryhmille. Koulutus tuo uutta tietoa myös sosiaali- ja terveydenhuollon hallinnosta, suunnittelusta ja koulutuksesta vastaaville toimijoille. Konferenssi tarjoaa mahdollisuuden keskustella teknologisten ratkaisujen kehittämisestä näytteille asettajiemme kanssa. Tänä vuonna meillä on mahdollisuus keskustella työpajoissa laajasti eri näkökulmista, toivottavasti löydät osallistujana itsellesi mieluisen työpajan. Konferenssi sisältää englannin- ja suomenkielisen rinnakkaisohjelman. Lisäksi tutkijat ja kehittäjät esittelevät tiivistetysti tuloksiaan.

Suomen telelääketieteen ja eHealth seuran puolesta haluan kiittää kaikkia luennoitsijoitamme ja tieteellisten abstraktien esittäjiä korkeatasoista esityksistä. Samoin kiitän kaikkia näytteilleasettajiamme ja työpajojen järjestäjiä. Ilman teidän osallistumistanne konferenssimme ei olisi se oppimisen ja verkostoitumisen paikka, jona se nyt palvelee. Erityinen kiitos konferenssistamme kuuluu pääyhteistyökumppaneillemme Suomen Vaikuttavuusseuralle ja HUS yhtymälle, sekä rahoittajallemme Tieteellisen Seuran Valtuuskunnalle.

Toivon kaikille osanottajille antoisaa konferenssia.

Outi Ahonen

Foreword

Nordic eHealth 2026 - The 31st Finnish National and International Conference on Telemedicine and eHealth

Outi Ahonen, President

Finnish Society of Telemedicine and eHealth, Finland

Distinguished invited guests, dear participants in the conference.

It is my great pleasure to warmly welcome all of you to our eHealth2026 and 31st annual conference in University of Helsinki, which the theme is “Effective digital solutions in health care and social welfare services”. Finnish Society of Telemedicine and eHealth (FSTeH) have been promoting the use of information and communication technology in health care since 1995.

Our most important activity is to arrange educational events and to participate in the national discussion. Our society also publishes the Journal of eHealth and eWelfare (FinJeHew) together with the Finnish Social and Health Informatics Association (FinnSHIA). Since 2004, we have delivered the annual Finnish eHealth award for the significant accomplishments in the field of telemedicine and eHealth. Eligible contributions include, for example, a doctoral dissertation in this field or other significant activities at the national or international level that support the Society's goals. We are supporting further education and training of health professionals in the eHealth sector by coordinating special competence for healthcare information technology to physicians, dentists, and veterinarians together with the Finnish Medical Association, the Finnish Dental Association and the Finnish Veterinary Association. Our conference will contribute 10 hours of theoretical training for Finnish physicians', dentists' and veterinarians' special competence for healthcare information technology. Our society supports the international visibility of Finnish eHealth expertise by scholarships. Our society is a member of International Society for Telemedicine and eHealth (IsfTeH). Our society's President holds one of the IsfTeH's board member seats.

This year's conference covers themes related to updating knowledge on international and national digital health trends, the effectiveness of digital solutions, and perspectives on artificial intelligence in health and social care. The conference offers a unique meeting place and valuable new insights for physicians from a wide range of specialties, nurses, and professionals working in welfare and rehabilitation services who are interested in the development of digital health and welfare services. The conference also brings new knowledge to those responsible for the administration, planning and training of health and social care in people's daily lives. The conference will provide an opportunity to discuss the development of technological solutions with our exhibitors. This year, our workshops provide a broad range of perspectives and topics for discussion, and we hope that you will find a workshop that is particularly relevant and engaging for you as a participant. Our conference includes parallel programs in English and Finnish, as well as joint plenary sessions.

Our conference organizes sessions and exhibitions for researchers and developers to provide a compact presentation about their research, innovation and development (RDI) results. On behalf of Finnish Society of Telemedicine and eHealth, I would like to express my sincere gratitude to all keynote speakers, workshop facilitators, and scientific abstract presenters for their valuable contributions. Our sincere thanks also go to all exhibitors and demonstrators. Without your support, this conference could not be the vibrant networking event that it is today. We would also like to extend our special thanks to our partner organizations: the Finnish Society for Effectiveness in Health and Social Care, HUS Helsinki University Hospital, and the Federation of Finnish Learned Societies (TSV) for their support of this conference.

I wish you all a successful and inspiring conference.

Outi Ahonen

Lämpimästi tervetuloa eHealth 2026 -konferenssiin

Digitaaliset palvelut muuttavat sosiaali- ja terveydenhuoltoa nopeasti. Samalla on yhä tärkeämpää kysyä, mitä hyötyä uudet ratkaisut todella tuottavat potilaille, ammattilaisille ja koko palvelujärjestelmälle. Tarvitsemme teknologisten innovaatioiden rinnalle vahvaa vaikuttavuuden ja kustannusvaikuttavuuden arviointia sekä kykyä hyödyntää tätä tietoa päätöksenteossa.

Toivon, että konferenssi tarjoaa uusia näkökulmia, tutkimustietoa ja ennen kaikkea innostavia kohtaamisia vaikuttavamman digitaalisen sosiaali- ja terveydenhuollon rakentamiseksi.

Paulus Torkki

Puheenjohtaja, Vaikuttavuusseura ry

A warm welcome to the eHealth 2026 Conference

Digital services are rapidly transforming health and social care. As their use expands, it is increasingly important to ask what benefits these solutions actually create for patients, professionals, and the healthcare system. Alongside technological innovation, we need robust evaluation of effectiveness and cost-effectiveness – and the ability to use this evidence to guide decisions.

I hope the conference will provide new insights, evidence, and, above all, inspiring encounters as we work together towards more effective and value-creating digital health and social care.

Paulus Torkki

Chair, Finnish Society for Effectiveness in Health and Social Care

Järjestäjät / Organizers

Suomen telelääketieteen ja e-Health seura ry

Suomen Telelääketieteen ja e-Health seura on tieteellinen seura, jonka tarkoituksena on informaatio- ja kommunikaatioteknologian kautta edistää väestön terveyttä ja terveydenhuollollisen asiantuntemuksen levittämistä. Tarkoituksensa toteuttamiseksi seura järjestää seminaareja, luento- ja esitelmätilaisuuksia, kursseja ja symposiumeja, kehittää toimivan sähköisen yhteydenpitojärjestelmän jäsenten välillä, harjoittaa julkaisutoimintaa, tukee alan tutkimustyötä, antaa lausuntoja telelääketieteen kysymyksissä sekä ylläpitää suhteita ulkomaisiin alan järjestöihin. Suomen Telelääketieteen ja e-Health seura on jäsenenä alan kansainvälisissä verkostoissa kuten International Society for Telemedicine and eHealth, Nordic Telemedicine Association ja European Connected Health Alliance.

Seuran jäseneksi voi hallitus hakemuksesta hyväksyä henkilöjäseniä sekä kannatus- ja yhteisöjäseniä, jotka toiminnallaan tahtovat edistää seuran tarkoitusta. Jäsenetuihin kuuluvat jäsenkirjeet, joissa tiedotetaan ajankohtaisista telelääketieteen koulutustapahtumista sekä hallituksen toiminnasta. Seuran jäsenille myönnetään alennus osanottomaksuista seuran järjestämiin tilaisuuksiin. Liittymällä jäseneksi Sinulle avautuu verkosto, jossa saat helposti kontaktin muihin asiasta kiinnostuneisiin henkilöihin.

Seura jakaa vuosittain eHealth -tunnustuspalkinnon alan ansioituneelle henkilölle.

STeHS HALLITUKSEN JÄSENET / FSTeH BOARD OF DIRECTORS 2026



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Finnish Society of Telemedicine and eHealth

The Finnish Society of Telemedicine and eHealth is an important forerunner in the field of telemedicine and eHealth in Finland as well as internationally. The aims of the Finnish Society of Telemedicine and eHealth are to promote the health of the population through telecommunication and to disseminate expertise within health care. To achieve these aims, the Society will arrange seminars, lectures and presentations, courses and symposia, develop a functioning electronic communication system between the members, engage in publishing activities, support research within the discipline, formulate statements on issues dealing with telemedicine and have contact with other telemedicine organisations. We have a close collaboration with other national and international organisations, health care service providers and users. The purpose of the Society is to promote education and development in the field of telemedicine and eHealth. The Finnish Society of Telemedicine and eHealth is member of international networks such as International Society for Telemedicine and eHealth, Nordic Telemedicine Association and European Connected Health Alliance.

The board accepts the members based on application. Membership will be available for individuals or companies and organisations, as well as supporting membership. Foreign and overseas members do not pay an annual fee if they submit a regular report of the progress of eHealth in their respective countries

Each year, the FSTeH presents the Finnish National eHealth Award to a distinguished person in the field.

Internet: www.telemedicine.fi | Facebook: www.facebook.com/ehealthfinland | LinkedIn: <https://www.linkedin.com/company/53112016/>

The main activity of the FSTeH is to organize annually the Finnish National Conference on Telemedicine and eHealth. The conference rotates between different cities and telemedicine sites to give local organizers the opportunity to promote their achievements.

- 2026 - Helsinki
- 2025 – Cruising Helsinki-Stockholm (International)
- 2024 – Tampere (International)
- 2023 – Vantaa (International)
- 2022 – Cruising Helsinki-Stockholm (International)
- 2021 – Oulu/hybrid (International)
- 2020 – Online (National)
- 2019 – Kuopio (International)
- 2018– Cruising Helsinki-Stockholm (International)
- 2017 – Turku
- 2016 – Cruising Helsinki-Stockholm (Nordic)
- 2015 – Espoo
- 2014 – Tallinn, Estonia (International)
- 2013 – Seinäjoki
- 2012 – Cruising Helsinki-Stockholm
- 2011 – Joensuu
- 2010 – Cruising Helsinki-Stockholm
- 2009 – Oulu
- 2008 – Cruising Helsinki-Stockholm
- 2007 – Kuopio
- 2006 – Helsinki, Nordic Congress of Telemedicine, NCeHT (International)
- 2006 – Cruising Helsinki-Stockholm
- 2005 – Lappeenranta
- 2004 – Kemi
- 2003 – Cruising Helsinki-Stockholm
- 2002 – Seinäjoki
- 2001 – Rovaniemi
- 2000 – Turku
- 1999 – Kajaani
- 1998 – Pori
- 1997 – Oulu
- 1996 – Kuopio, Nordic Congress of Telemedicine (International)
- 1995 – Turku (Local organizer, not FSTeH)



Yhteistyökumppanit

Vaikuttavuusseura ry

Vaikuttavuusseura ry on vuonna 2019 perustettu poliittisesti sitoutumaton yhdistys, jonka tarkoituksena on edistää vaikuttavuusperustaisuutta Suomen sosiaali- ja terveydenhuollossa. Seura kokoaa yhteen vaikuttavuudesta kiinnostuneita tutkijoita, sosiaali- ja terveydenhuollon ammattilaisia ja johtajia, kehittäjiä, päätöksentekijöitä sekä muita alan toimijoita.

Vaikuttavuusseuran tavoitteena on edistää sosiaali- ja terveydenhuollon toimintaa, jossa huomio kiinnittyy toiminnan määrän sijasta yhä vahvemmin asiakkaalle ja potilaalle tuotettuun terveys- ja hyvinvointihyötyyn sekä käytettävissä olevien voimavarojen mahdollisimman vaikuttavaan käyttöön. Seura edistää vaikuttavuuteen liittyvän tutkimustiedon, käytännön kehittämisen ja päätöksenteon välistä vuoropuhelua sekä tekee vaikuttavuutta ja sen kehittämistä näkyväksi suomalaisessa sosiaali- ja terveydenhuollossa.

Tarkoituksensa toteuttamiseksi seura järjestää seminaareja, koulutuksia, lukupiirejä ja muita tapahtumia sekä osallistuu vaikuttavuutta koskevaan yhteiskunnalliseen keskusteluun. Seura tarjoaa foorumin eri taustoista tulevien asiantuntijoiden kohtaamiselle ja tiedon jakamiselle. Toiminnassa käsitellään muun muassa vaikuttavuuden ja kustannusvaikuttavuuden arviointia, vaikuttavuustiedon hyödyntämistä johtamisessa sekä vaikuttavuusperustaisten toimintamallien kehittämistä ja käyttöönottoa.

Seura järjestää vuosittain Kansallisen vaikuttavuusseminaarin ja tarjoaa jäsenilleen vaikuttavuuteen liittyviä koulutuksia ja muita tilaisuuksia. Seura on vuodesta 2021 lähtien järjestänyt vuosittain **Vuoden vaikuttavuusteko -kilpailun**, jossa nostetaan esiin sosiaali- ja terveydenhuollon tekoja, toimintamalleja ja innovaatioita, joilla on saatu aikaan todennettavaa vaikuttavuutta. Kilpailun tavoitteena on tehdä näkyväksi konkreettisia esimerkkejä vaikuttavuuden parantamisesta sekä edistää valtakunnallista keskustelua vaikuttavuudesta.

Seuran jäseneksi voivat liittyä yhdistyksen tarkoituksen ja säännöt hyväksyvät yksityishenkilöt. Yritykset ja muut organisaatiot voivat liittyä seuran kannatusjäseniksi. Jäsenyys tarjoaa mahdollisuuden osallistua seuran jäsenille suunnattuihin tapahtumiin, koulutuksiin ja lukupiireihin sekä liittyä valtakunnalliseen verkostoon, joka kokoaa yhteen vaikuttavuudesta kiinnostuneita eri alojen toimijoita. Osa seuran tilaisuuksista on jäsenille maksuttomia ja jäsenet voivat saada alennuksia osallistumismaksullisista tapahtumista.

VAIKUTTAVUUSSEURA RY HALLITUS 2026

Puheenjohtaja

Paulus Torkki

Varapuheenjohtaja

Suvi Liimatainen

Hallituksen jäsen

Piia Vuorela

Hallituksen jäsen

Paula Risikko

Hallituksen jäsen

Aapo Tahkola

Hallituksen jäsen

Tomi Mäki-Opas

Finnish Society for Effectiveness in Health and Social Care

Vaikuttavuusseura ry (Finnish Society for Effectiveness in Health and Social Care) is an independent, non-political association founded in 2019 to promote effectiveness and value-based approaches in Finnish health and social care.

The Society brings together researchers, healthcare and social care professionals, managers, policymakers, developers, and other stakeholders interested in improving health and well-being outcomes and the effective use of resources. It promotes dialogue between research, practice, management, and decision-making and supports the development and implementation of evidence-informed, outcome-oriented practices.

The Society organizes seminars, training events, workshops, and other activities related to effectiveness and cost-effectiveness. Its key annual event is the National Effectiveness Seminar. Since 2021, the Society has also presented the **Effectiveness Award of the Year**, recognizing initiatives that have demonstrated measurable improvements in health and social care outcomes.

Individual membership is open to anyone supporting the aims of the Society. Organizations may join as supporting members. The annual individual membership includes access to member events and other activities as well as opportunities to connect with a multidisciplinary national network of professionals interested in effectiveness and value-based health and social care.

HUS

HUS palvelee väestöpohjaltaan Suomen suurinta ja monimuotoisinta erikoissairaanhoidon aluetta. HUSin omassa vuoden 2025 aineistossa väestöpohja on siis noin 1,7 miljoonaa asukasta, eli noin 30 % Suomen väestöstä. Väestö on myös poikkeuksellisen kaupunkimaista, kasvavaa ja kansainvälistä. Uudenmaan väestö kasvaa muuta Suomea nopeammin, ja vuonna 2025 jo joka viides Uudenmaan asukas oli ulkomaalaistaustainen. Tämä lisää muun muassa monikielisten palvelujen ja kulttuurisesti saavutettavan hoidon tarvetta. Ikärakenteeltaan HUSin alue on koko Suomea nuorempi, mutta väestön ikääntyminen kasvattaa samanaikaisesti erikoissairaanhoidon kysyntää. HUSin toimintakertomuksessa väestön ikääntyminen sekä lääketieteen ja teknologian kehitys tunnistetaan keskeisiksi tulevaa palvelutarvetta ja kustannuksia lisääviksi tekijöiksi. Valtakunnallisesti keskitettyjen tehtävien vuoksi potilaita tulee myös muualta Suomesta.

HUSn uudistuu. Tammissairaala otettiin käyttöön toukokuussa 2025 ja silmätautien toiminta keskitettiin sinne. Lohjan sairaalan toiminnan muutokset mahdollistivat elektiivisen kirurgian tehostamisen. HUS vahvisti samalla yhteistyötä Uudenmaan hyvinvointialueiden ja Helsingin kanssa, ja vuonna 2025 otettiin käyttöön yhteinen alueellinen tietopohja palvelujen suunnittelun ja seurannan tueksi.

Tutkimus ja opetus keskeisiä tehtäviä. HUSin oma tutkimusmääräraha oli 14,0 milj. euroa, valtion tutkimusrahaa käytettiin 8,3 milj. euroa ja ulkopuolista tutkimusrahoitusta 8,4 milj. euroa. Vuonna 2025 myönnettiin 999 tutkimuslupaa. Viimeisimmän julkaisutilaston mukaan HUS tuotti 2 292 tieteellistä julkaisua, joista 376 kuului korkeimpaan JUFO 3 - luokkaan.

Tulevien vuosien keskeinen haaste on rahoituksen riittävyys suhteessa kasvavaan palvelutarpeeseen. Väestön ikääntyminen, lääketieteen ja hoitoteknologian kehitys sekä hoitovelan purkaminen lisäävät kysyntää samalla, kun suunniteltu valtakunnallinen rahoitusmallin muutos voi hidastaa rahoituksen kasvua. HUS korostaa siksi tuottavuuden jatkuvaa parantamista, investointien priorisointia ja tiivistä yhteistyötä hyvinvointialueiden kanssa.

HUS lukuina vuonna 2025

Hoidetut potilaat yhteensä 711 000
Yli 90 000 leikkausta
HUSin jäsenalueiden palveluja käyttäneet 651 467
Asiakaskokemus, NPS 83
Henkilöstö 31.12.2025 26 481
– hoitohenkilökunta 14 348
– lääkärit 3 758
Toimintakulut 2,954 mrd. €

HUSn toimintaa ohjaavat yhteiset arvot - kohtaaminen, edelläkävijyys ja yhdenvertaisuus. Lupaamme antaa joka päivä, jokaiselle potilaalle yhä parempaa hoitoa. Strategiset tavoitteet ovat:

- Suomen paras asiakaskokemus
- Henkilöstökokemus: Halutuin työpaikka
- Hyvinvointialueyhteistyö: Systemaattinen, tavoitteellinen ja tuloksellinen yhteistyö asiakkaiden eduksi
- Jatkuva parantaminen ja uudistaminen: Pohjoismaiden paras yliopistosairaala
- Kestävä talous: Laadukkaat, yhdenvertaiset ja kustannustehokkaat palvelut

<https://www.hus.fi/tietoa-meista/vuosikertomukset/husin-vuosi-2025>

<https://www.hus.fi/tietoa-meista/strategia-ja-vastuullisuus/arvot-ja-strategia#vuoden-2025-strategiset-tavoit>

<https://www.hus.fi/en/about-us/strategy-and-responsibility/values-and-strategy>

Helsinki University Hospital, HUS

HUS serves the largest and most diverse specialist healthcare area in Finland. In HUS's own data for 2025, the population base is approximately 1.7 million inhabitants, or approximately 30% of the Finnish population. The population is also exceptionally urban, growing and international. The population of Uusimaa is growing faster than the rest of Finland, and in 2025, one in five residents of Uusimaa was of foreign origin. This increases the need for, among other things, multilingual services and culturally accessible care. The age structure of the HUS area is younger than that of Finland as a whole, but the aging of the population is simultaneously increasing the demand for specialist healthcare. In HUS's annual report, the aging of the population and the development of medicine and technology are identified as key factors increasing future service needs and costs. Due to the nationally centralized tasks, patients will also come from other parts of Finland.

HUS is being renewed. The Tammissairaala Hospital was put into operation in May 2025 and ophthalmology operations were concentrated there. Changes in the operations of Lohja Hospital enabled the efficiency of elective surgery. At the same time, HUS strengthened its cooperation with the Uusimaa welfare regions and Helsinki, and in 2025 a common regional database was introduced to support the planning and monitoring of services.

Research and teaching are key tasks. HUS's own research allocation was 14.0 million euros, state research funding was used for 8.3 million euros and external research funding for 8.4 million euros. In 2025, 999 research permits were granted. According to the latest publication statistics, HUS produced 2,292 scientific publications, of which 376 belonged to the highest JUFO 3 category.

A key challenge in the coming years is the adequacy of funding in relation to the growing need for services. The aging population, the development of medicine and care technology, and the resolution of care debt are increasing demand, while the planned nationwide change in the financing model may slow down the growth of financing. HUS therefore emphasizes continuous improvement of productivity, prioritization of investments, and close cooperation with welfare regions.

HUS in figures in 2025

Total number of patients treated 711,000

Over 90,000 surgeries

651,467 used the services of HUS member regions

Customer experience, NPS 83

Employee 31.12.2025 26,481

– nursing staff 14,348

– doctors 3,758

Operating expenses 2.954 billion €

HUS's operations are guided by shared values - encounter, pioneering, and equality. We promise to provide better care to every patient every day. The strategic goals are:

- The best customer experience in Finland
- Employee experience: The most desirable workplace
- Welfare area cooperation: Systematic, goal-oriented and effective cooperation for the benefit of customers
- Continuous improvement and renewal: The best university hospital in the Nordic countries
- Sustainable economy: High-quality, equal and cost-effective services

<https://www.hus.fi/tietoa-meista/vuosikertomukset/husin-vuosi-2025>

<https://www.hus.fi/tietoa-meista/strategia-ja-vastuullisuus/arvot-ja-strategia#vuoden-2025-strategiset-tavoit>

<https://www.hus.fi/en/about-us/strategy-and-responsibility/values-and-strategy>

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Suomen Vaikuttavuusseura ry
vaikuttavuusseura.wordpress.com



Helsinki University Hospital, HUS
<https://www.hus.fi/en>



University of Helsinki
<https://www.helsinki.fi/en>



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Ohjelma / Program

Welcome to the major international telemedicine and eHealth event in 2026!

Our Finnish Society of Telemedicine and eHealth organize the 31st of eHealth conference. This year 2026 we organize the conference together with The Finnish Society for Effectiveness in Social and Healthcare. The 2026 conference will cover themes related to effectiveness of eHealth and Welfare. The program is aimed at healthcare professionals, service providers and other professionals. The conference offers a unique meeting place for physicians, nursing staff and management, planning and education professionals. Top-quality international keynote presentations are accompanied by up-to-date scientific abstracts. We work closely with the University of Helsinki and Hospital District of Helsinki and Uusimaa. The conference will be held in University of Helsinki in very center of Helsinki. This year, the conference will take place between Thursday and Friday, 1.-2.10.2026.

<u>Conference topics (Track in English):</u>	<u>Conference topics (Track in Finnish):</u>
Opening ceremony	Avajaiset (englanniksi)
How to evaluate effectiveness of digital health and social services?	Vaikuttavuus tiedolla johtamisessa
Cybersecurity and Trust in Digital Healthcare and Social Welfare Services	Digihoitosta vaikuttavuutta ja kustannustehokkuutta
AI Assistants Transforming Healthcare and Social Services	Vaikuttavuus digitaalisilla hoitopoluilla
Advance Analytics and AI	Advance Analytics and AI (yhteinen)
Metaverse in Healthcare and Social Welfare Services	Etävastaanotto toiminta ammattilaisen ja asiakkaan näkökulmasta
Paradigm shift toward Planetary Health (joint session / yhteissessio)	

The conference will contribute 10 hours of theoretical training for Finnish physicians', dentists' and veterinarians' special competence for healthcare information technology. The application to accept 10 hours of theoretical training for Finnish medical and dental specialist qualification has also been submitted.

Welcome to listen, discuss and innovate!

*Outi Ahonen
President
Finnish Society of Telemedicine and eHealth*

*Paulus Torkki
President
The Finnish Society for Effectiveness in Social and Healthcare*

More information

Speakers

Paula Veikkolainen
conference@telemedicine.fi

Scientific Abstracts and Posters

Elina Laukka
conference@telemedicine.fi

Registration (ordinary)

<https://www.telemedicine.fi/ehealth2026/>

Exhibition | Sponsors

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General information

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Conference info

<https://www.telemedicine.fi/en/>

CONFERENCE INFORMATION

- The conference is arranged in University of Helsinki.
- University of Helsinki: Aleksanterinkatu 5, 00170 Helsinki, Finland.

CONFERENCE FEES

- All conference fees include the full program, workshops, conference materials, meals announced in the conference program, and Dinner in Helsinki. Accommodation is not part of the conference fee.

Conference fees:

Early bird price (valid until August 14, 2026):

- For members of the Finnish Society for Effectiveness in Social and Healthcare & the Finnish Society of Telemedicine and e-Health: €420 (VAT 0%)
- Non-members: €450 (VAT 0%)

Standard price (525 € (0% VAT) starting from August 15, 2026. The last day of registration is 4th of September.

Undergraduate students 95 € (VAT 0 %)

- The undergraduate student fee includes the program, coffee service, and lunches, but not dinner

Exhibitor Package 850 € (VAT 0%)

Includes:

- Exhibition desk (2 x 2 m)
- Catering during the conference (coffee and lunch)
- Conference dinner
- 5-minute presentation slot in the program
- Visibility on the conference website and in the conference booklet
- One full conference pass for a company representative

CONFERENCE PROGRAM

THURSDAY 1.10.2026 (Finnish time, Eastern Europe Time)

Venue: University of Helsinki.

9.00 Registration opens
University of Helsinki, Aleksanterinkatu 5

Session 1: The Opening Ceremony

Chair Outi Ahonen, President, Finnish Society of Telemedicine and eHealth (FSTeH)

Location: Main building, F4050 Pieni juhlasali

10.00 Conference opening words

Outi Ahonen, President, Finnish Society of Telemedicine and eHealth

Paulus Torkki, President, The Finnish Society for Effectiveness in Social and Healthcare

10.20 The role of digitalisation in developing social and healthcare services

Sara Kinnunen, Director, Data, AI and Digital Services, HUS, Finland

10.35 Opening words from Finnish Ministry of Social Affairs and Health

Sari Palojoiki, Senior Advisor (International Digitalization Policy) Ministry of Social Affairs and Health, Finland

10.50 Assessment

of

Case

Pohjanmaa

Mika Kortelainen, Professor of Health Economics, University of Turku, Finland
Research Professor, Finnish Institute for Health and Welfare (THL)

11.15 Delivery of Finnish national eHealth awards

Outi Ahonen and Timo Tuovinen Finnish Society of Telemedicine and eHealth

11.30 Lunch, networking break, exhibition and posters

Session 2A: How to evaluate effectiveness of digital health and social services?

Chair Paulus Torkki, President, Finnish Society for Effectiveness in Social and Healthcare

Location: U3032 Karolina Eskelin

12.30 Using European health data for evaluation in health systems

Henrique Martins, MD, PhD, MLaw, FIAHSI, Professor in Health Management and Leadership at FCS-UBI, ISxCTE-IUL, and Univ. Lusófona

12.55 Value, effectiveness and impact – concepts in evaluation

Paulus Torkki, Associate Professor, Healthcare Operations Management University of Helsinki, Finland

13.20 Scientific 5 min rapid presentations:

O – 1 Katariina Korniloff: Digital Rehabilitation as a Scalable Solution for Low Back Pain in Rwanda: An Exploratory Cost-Effectiveness Analysis

O – 2 Elias Vaattovaara: The Economic Impact of AI-Based Fracture Detection in the Emergency Department

O – 3 Elina Wärnhjelm: Real-time video visits in pediatric urgent care: A registry-based study of clinical presentations and outcomes

O – 4 Kaisa Pesonen: Reducing Care Backlogs and Improving Access with Nurse-Assisted Remote Diagnostics: Experiences from a Finnish Public Healthcare Implementation

13.40 Corporate 5min presentations

Medanets, Julia Koppinen: Impact through mobile workflows: Supporting early detection of sepsis

Filon, Johanna Mätäsaho, Founder, CEO: VOXER: Surfacing What Truly Matters

13.50 Coffee, networking break, exhibitions and posters

THURSDAY 1.10.2026 (Finnish time, Eastern Europe Time)

Session 2B: Vaikuttavuus tiedolla johtamisessa Puheenjohtaja: Jarmo Reponen, Suomen telelääketieteen ja eHealth Seura (STeHS) Location: F4050 Pieni juhlasali			
12.30	Tietojohdaminen hyvinvointialueella Yrjänä Hynninen, Tietojohdaja, Länsi-Uudenmaan hyvinvointialue	Session 2B	Exhibition
12.55	Vaikuttava tietojohdaminen Markku Eskola, Lääketieteellinen johtaja, Sydänsairaala		
13.20	Scientific 5 min rapid presentations: O – 5 Aino-Lotta Alahäivälä: Using health and social care data to predict home care service initiation O – 6 Viet Nguyen: Trends and determinants of telemedicine use across healthcare sectors in Finnish primary care - A register study O – 7 Aino Nokelainen: The Pirha Information View – Multiple Data Sources, One Unified View for Social and Health Care Professionals O – 8 Morris Viitanen: Sex-specific Age Differences in the Use of Digital Occupational Health Services Among Public Sector Employees		
13.40	Corporate 5min presentations NHG, Mika Kaartinen: Kokemuksia vaikuttavuuden kehittämisestä Aivot Labs, Kristian Taipale, LT, lääketieteellinen johtaja: Vaikuttavuustietoa kaikista puheluista ja chateista Aivot Labsin analyysiratkaisulla		
13.50	Coffee, networking break, exhibitions and posters		
Session 3A: Cybersecurity and Trust in Digital Healthcare and Social Welfare Services Chair: Aappo Keränen, Finnish Society of Telemedicine and eHealth (FSTeH) Location: F3004 and F3006			
14.30	Cybersecurity Challenges in the Era of the European Health Data Space, EHDS Evangelos Markatos, Professor, Computer Science Department, University of Crete, Greece.	Session 3A	Exhibition
14.50	Cybersecurity of everyday and disruptive technologies in healthcare Kimmo Halunen, Professor, Faculty of Information Technology and Electrical Engineering, University of Oulu, Finland		
15.10	It asks, it never tells: identification, disclosure and trust in a production AI voice agent Aappo Keränen, Advisory Dentist, Wellbeing Services County of North Ostrobothnia (Pohde), Finland		
15.25	Scientific 5 min rapid presentations: O – 9 Maiju Kyytsönen: Ethical Challenges in Data Protection and Information Security Among Licensed Practical Nurses Using Digital Tools in Finland O – 10 Anas Al Natsheh: Machine Learning–Based Mortality Risk Prediction in ICU Patients to Support Clinical Decision-Making O – 11 Kristina Rosqvist: Overcoming Cultural Differences in Cross-National Digital Health Education O – 12 Laura Heinonen: Towards More Proactive Client and Patient Safety Through the Reform of National Adverse Event and Patient Safety Incident Data Production		
15.45	Networking break, exhibition and posters		

Session 3B: Digihoitosta vaikuttavuutta ja kustannustehokkuutta Puheenjohtaja: Tomi Laitinen Suomen Telelääketieteen ja eHealth Seura (STeHS) Location: F4050 Pieni juhlasali			
14.30	Digitaalisten hoitomuotojen arviointi <i>Jari Haverinen, Erikoissuunnittelija, Kansallinen HTA-koordinaatioyksikkö (FinCCHTA)</i>	Session 3B	Exhibition
14.50	Digitaalisten hoitojen käyttöönotto - Riskit ja mahdollisuudet, paneelikeskustelu <i>Jenny Vuollet, Johtaja, DigiFinland, Jari Haverinen, Erikoissuunnittelija, FinCCHTA, Tuomas Mäkynen, Toimitusjohtaja, ORLA, Laura Aulanko, Takeda Europe. Puheenjohtajana Tomi Laitinen</i>		
15.45	Networking break, exhibition and posters		
Session 4A: AI assistants Transforming Healthcare and Social Services Chair: Birgitta Tetri, Finnish Society of Telemedicine and eHealth (FSTeH) Location: F3003 Tekla Hultin			
16.30	AI Summary Assistant for Child and Family Social Work <i>Milla Sulunsilta, Project Planner, The Wellbeing Services County of Pirkanmaa, Finland</i>	Session 4A	Exhibition
16.50	Evaluation framework for AI tools in specialized care <i>Sami Pakarinen, Chief Medical Officer of Clinical Auditing, HUS, Finland</i>		
17.10	AI Assistants as the New Health Workforce Layer? <i>Robin Ohannessian, Founder & CEO, Vickino & President, Armenian Association of Digital Health, Armenia</i>		
17.30	Scientific 5 min rapid presentations: <i>O – 13 Jarmo Pulkkinen: The Barrier Inversion: Why the Most Motivated Employees Cannot Adopt Generative AI in Public Health and Social Care</i> <i>O – 14 Marja Harjumaa: AI-Assisted Documentation in Social Care</i> <i>O – 15 Laura Heinonen: AI-assisted identification of Clavien-Dindo grades as part of structured adverse event reporting</i> <i>O – 16 Antti Brunn: From Research to Production: Structural Bottlenecks and an Orchestration Model for Scaling AI in the Finnish Health and Social Care System</i>		
17.50	Corporate 5min presentations <i>Tandem Health, Johan Sanmark: Tandem - Europe's leading AI Medical Assistant</i> <i>Costa Labs, Tatu Han: Gosta - AI transforming social and healthcare, one encounter at a time</i>		
Dinner and networking event Restaurant Domus, Hietaniemenkatu 14. Helsinki A Buffet Dinner (included in the conference fee)			
19.30	The Telemedicine and eHealth History book launch Amazing Magic Show		

Session 4B: Vaikuttavuus digitaalisilla palvelupoluilla			
Puheenjohtaja: Juuso Tamminen, Suomen sosiaali- ja terveydenhuollon vaikuttavuus seura Location: F4050 Pienijuhlasali			
16.30	Henkilökeskeinen tietomalli vaikuttavuuden arvioinnin pohjana <i>Katja Antikainen, Tieto- ja vaikuttavuusjohtaja, OmaHäme</i>	Session 4B	Exhibition
16.50	Digi- ja etäpalvelut osana asiakkaan hoitoa ja palvelupolkua <i>Nora Tarvus, Ylilääkäri, Pohjois-Karjalan hyvinvointialue</i>		
17.10	Pitkäaikaissairauksien digihoitopolut <i>Pauliina Nurmi, Ylilääkäri, Digipalvelut, Etelä-Savon hyvinvointialue</i>		
17.30	Scientific 5 min rapid presentations: <i>O – 17 Johanna Leväsluoto: AI in integrated care pathways: From task level optimization to pathway level integration</i> <i>O – 18 Henna Harju: From Client Self-Assessments to Data-Driven Impact: Digital Wellbeing Indicators in Social Services</i> <i>O – 19 Arja Kobylin: A mixed method study on patient selection to urgent remote appointments in Medical Helpline setting</i> <i>O – 20 Vivi Mauno: Accumulated experience and healthcare personnel productivity in public digital clinics</i>		
17.50	Corporate 5min presentations <i>JST Healthcare Solutions, Markku Kallio: Yhtenäinen hoidon tarpeen arviointi – vaikuttavuutta ja tehokkuutta asiointikanavasta riippumatta</i> <i>DIAG, Päivi Sipola: ZekkiPro- digijärjestelmällä vaikuttavuutta hyvinvointityöhön</i> <i>BeeHealthy, Sampo Oksanen, kaupallinen johtaja: Hoitopolku, joka alkaa ennen potilasta: mitä tapahtuu, kun riskipotilaat tunnistetaan ennakoivasti datasta</i>		
Dinner and networking event Restaurant Domus, Hietaniemenkatu 14. Helsinki			
19.30	A Buffet Dinner (included in the conference fee) The Telemedicine and eHealth History book launch The Amazing Magic Show		

FRIDAY 2.10.2026 (Finnish time, Eastern Europe Time)

Session 5: Advance Analytics and AI			
Chair: Vesa Jormanainen, Finnish Society of Telemedicine and eHealth (FSTeH)			
Location: F4050 Pieni juhlasali			
9.30	Using real-world data for personalized forecasts and shared decision making <i>Philip van der Wees, Professor of Allied Health Sciences, Radboud University Medical Center, Netherlands.</i>	Session 5	Exhibition
9.55	Front-line deployed AI solutions in healthcare - where are we today? <i>Oscar Boldt-Christmas, Co-founder, Tandem Health, Finland</i>		
10.20	Networking break, exhibition and posters		
Session 6: Workshops			
Chair: Outi Ahonen, Finnish Society of Telemedicine and eHealth (FSTeH) Paulus Torkki, The Finnish Society for Effectiveness in Social and Healthcare			
Locations: F3020, F3010, U4062, U4072, U4075			
10.45	Below is the current lineup of this year’s workshops, highlighting emerging technologies, evidence generation, and practical implementation of effective digital health solutions. More information is coming later!	Session 6	Exhibition
Workshop 1 Minna Pikkarainen Professor, OsloMet, Norway Challenges and Benefits of Virtual Reality / Augmented Reality in Home Rehabilitation Focus on VR/AR tools supporting remote care, rehabilitation pathways, and patient engagement.			
Workshop 2 Silje Havrevold Henni Senior researcher, PhD, MNSc, RN, University of Oslo, Norway Eugenia Ivoa Research Assistant, Deggendorf Institute of Technology, Germany Building Interoperability Capacity for the European Health Data Space (EHDS) The overall vision of XiA-project is to translate validated workforce needs into an operational, EHDS-aligned educational architecture. The workshop will: Present an overview of the educational content and training resources that XiA can offer Discuss how we can jointly build interoperability capacity for the European Health Data Space among: IT developers, Implementers of EHDS components, Users of EHDS components. Your input will help us refine and prioritise the educational pathways needed to effectively realise the European Health Data Space.			
Workshop 3 Laura Suojanen MSc (Nutrition Science), Psychotherapist, RN, Development Manager, Abdominal Center, HUS, Finland Sanna Ritola Director of Nutrition Services, Metabite, Finland Jaana Kotila RN, MSc (Health Sciences), Development Manager, Health Village Services, HUS Information Management – Data, AI and Digital Services Division, Finland AI Competences and Industry Collaboration – Case Health Village Discussion on the skills needed for safe and effective AI deployment in healthcare, including opportunities for co-development with digital health companies.			
Workshop 4 Otto Olavin Founder, Health Design Impact Coordinator, Biodesign Finland / Aalto University Transforming Clinical Needs into Innovative Solutions A practical deep dive into human-centered design, clinical need identification, and pathways from problem to validated digital solution.			
Workshop 5 Paulus Torkki President, The Finnish Society for Effectiveness in Social and Healthcare, Finland How Can the Effectiveness of Digital Services Be Evaluated? Methods, metrics, and frameworks for assessing effectiveness and performance of digital health solutions in real-world environments.			
12.00	Lunch, networking break, exhibition and posters		

Session 7A: Metaverse in Healthcare and Social Welfare Services Chair: Aino Rubini, Finnish Society for Telemedicine and eHealth (FSTeH) Location: F3020 and F3005				
13.00	Federated Infrastructure for digital twin applications in scientific virtual environments - Advancing eHealth and biomedical research Jayden Khakurel, Researcher, Pirjo Spuul, Senior Researcher, TalTech, Estonia	Session 7A	Exhibition	
13.15	Digital Twins and Data-Driven Health Technologies: New Opportunities for Personalized Monitoring and Decision Support in Neurological Disorders Parisa Gazerani, Professor, Faculty of Health Sciences, Oslo Met, Norway			
13.30	Scientific 5 min rapid presentations: O – 21 Rosa Hautamäki: Toward a Digital Competence Framework for Social Work: Findings from a Descriptive Literature Review O – 22 Ying Zhang: Digital Literacy in Home-Based Elderly Care Services as Frontline Practice: Evidence from a Scoping Review O – 23 Vili Kostamo: Fully digitalized, self-service screening for cardiovascular diseases: A case study and call to action from the Frankfurt University Hospital Heart Centre			
13.50	Coffee, networking break, exhibitions and posters			
Session 7B: Etävastaanottotoiminta ammattilaisen ja asiakkaan näkökulmasta Puheenjohtaja: Paula Veikkolainen, Suomen Telelääketieteen ja eHealth Seura (STeHS) Location: F4050 Pieni juhlasali				
13.00	Etälääketieteen suositus lääkäreille Timo Tuovinen, Piiriyliääkäri, digitaalisen terveyden dosentti, Lääkäriliitto	Session 7B	Exhibition	
13.15	Voidaanko lihavuutta hoitaa etänä? Vaikuttavuusperusteisen Kevyt Askel-ohjelman tuloksia. Johan Fagerudd, Vastaava lääkäri, Diabetes- ja Painonhallintaklinikka, Pihlajalinna			
13.30	Scientific 5 min rapid presentations: O – 24 Ritva Mäntysalo ja Tiina Haapala: Rethinking Digital Services and Remote Consultations in Specialized Healthcare: Nurses' Experiences from the Perspective of Competence and Support O – 25 Minna Eriksen: Developing the Open-Source AIRe Platform: An AI-Assisted Digital Solution for Multidisciplinary Rehabilitation O – 26 Arja Rantala: Public Health Nurses' perspectives on technology management in digital interaction in a Unified Maternity and Child Health Chat Service: A qualitative study			
13.45	Corporate 5min presentations Axitare, Lasse Rousi, CEO: Etäpalvelut kotihoidossa			
13.50	Coffee, networking break, exhibitions and posters			
Session 8: A paradigm shift toward Planetary Health Chair: Timo Tuovinen, Vice President, Finnish Society of Telemedicine and eHealth Location: F4050 Pieni juhlasali				
14.20	A paradigm shift toward Planetary Health and One Health in digital services Chiara Cadeddu, Professor, Erasmus University Rotterdam, Netherlands			
14.45	Summary and closing words Outi Ahonen, President, Finnish Society of Telemedicine and eHealth Paulus Torkki, President, The Finnish Society for Effectiveness in Social and Healthcare			
Have a safe trip back home!				



POSTERS:

- P-1 Ida Kärki:** A Digital Service Model Enabling Pharmacist Consultation Across a Wide Geographical Area
- P-2 Sanna Heikkinen:** Making Impact Visible: Six Thematic Dimensions for Evaluating Effectiveness in Digital Health and Social Services – A Case study
- P-3 Ylönen Katri:** The social construction of user experiences in information systems
- P-4 Alexandra Dahlberg:** Clinical Note Comparison and Data Retrieval Via Embedding Vectors: Model Selection, Metrics, and Convergence
- P-5 Heikki Peltonen:** Evaluating the Accuracy of Basal Energy Expenditure Estimates Using Heat Flux and Machine Learning During Changes in Body Composition
- P-6 Jaana Toikkanen:** TäsmäZekki: A Digital Life Situation Assessment Tool for Identifying Support Needs and Resources among workers with support needs
- P-7 Katariina Korniloff:** AI-supported task-sharing in community-based rehabilitation: a pilot study of the AIRe platform in Rwanda
- P-8 Sanaz Akhavan:** Reducing Workplace Sitting with a Prompting App: A Randomized Controlled Trial Using Accelerometry
- P-9 Tiina Pelander:** Large-Scale Educational Testing of Care Technologies to Support User-Centred Development
- P-10 Zoi Theofilakou:** Governance-Aware RAG for Literature Pre-Screening and Evidence Retrieval in Healthcare Research
- P-11 Antti Junttila:** State of Administrative Cybersecurity in Public Healthcare: Case Finnish Wellbeing Counties
- P-12 Eeva Aartolahti:** Advancing AI Assistants for Digital Rehabilitation Through Citizen Science
- P-13 Eija Metsälä:** Health Technology Assessment competency needs and future trends
- P-14 Lili Aunimo:** AI Assistants for future and current healthcare professionals
- P-16 Antti Brunni:** Adapting the Method Ecosystem of Service and UX Design to Regulated Healthcare Software: A Qualitative Study of Designer Practice in Finland
- P-17 Suvi Holm, Tiina Pelander:** Health Technology and AI Acceptance Among Finnish Nursing Students
- P-18 Ghida Khalife:** Lung cancer risk prediction models: A systematic review of externally validated models
- P-19 Pauliina Tryykilä:** Understanding Regulatory Boundaries of Generative AI Virtual Assistants for Symptom Management in Multiple Sclerosis Care
- P-20 Alexandra Dahlberg:** Measuring the quality of AI-generated clinical notes: A systematic review and experimental benchmark of evaluation methods
- P-21 Laura Jernström:** The Effectiveness of AI-Assisted Documentation in the Western Uusimaa Wellbeing Services County
- P-22 Satu Peltonen:** Elevated Blood Pressure as a Silent Killer in Coronary Artery Disease: Significant Patient Improvements Through Digital Care Pathway
- P-23 Veera Häkkinen:** University Attuning with the AI Act – human oversight and the role of healthcare professionals in AI-integrated self-management services
- P-24 Erika Jarva:** Understanding, trusting and using AI-generated risk prediction results to help prevent ageing with multi-morbidity – stakeholder views
- P-25 Reija Arnberg:** From Experiments to Ecosystems: A Networked Open Innovation Model for AI Driven Experiments
- P-26 Jaana Kotila:** Clinical Impact of Digital Care Pathways: New Evidence from Omapolku
- P-27 Annamajja Id-Korhonen:** Deep Tech Competence Enhancement for Digital Transition in Dementia Care
- P-28 Hilikka Korpi:** Developing Health Technology Assessment Competence through Lifelong Learning: Insights from Student Feedback on Career Development
- P-29 Teddy Nabutono (presented by Jean Wanyana Mpagi):** Acceptability and feasibility of use of smart phone App in monitoring and management of hypertension in Uganda: Cross-sectional study

- P-30 Marja Harjumaa:** Cross-case analysis and synthesis of AI-assisted documentation across social and healthcare services
- P-31 Tuija Rinkinen:** Enhancing Labor Market Accessibility for Disabled Persons Through Digital Job Coaching Pathway
- P-32 Anna Nummela:** Metaverse-Based Environments for Healthcare Services – Gamified Operating Room as a Learning Environment. Ongoing Development and Early User-Centred Findings (2025–2027)
- P-33 Emilia Lahdenperä:** Ensuring Adequate Digital Security Competence within the Health and Social Care Workforce
- P-34 Nina Korsström:** Digital FeelWork-training model to support the well-being and competence of acute care personnel conducting remote assessment and guidance
- P-35 Outi Ahonen:** Micro Learning Curriculum: The Interoperability Competencies Around European Health Data Space
- P-36 Rasmus Kyyhkynen:** AI-Supported Communication Training for Remote Healthcare Consultations
- P-37 Tahvanainen Laura:** Planetary Health and Wellbeing as part of the Ethical requirements for ENACT-project
- P-38 Eronen Lotta:** Beds2Bytes: Advancing Digital Care Competence Among Healthcare Students Through Study Modules and Web-Based Simulation
- P-39 Mitha Rachel Jose:** Evaluating Effectiveness and Value Creation in Digital Health Education through AI-Based Training
- P-40 Tahvanainen Laura:** Service design course with systemic design framework as part of Managing the Digital Transformation in the Health Sector Master programme
- P-41 Anna Maria Rauha:** Linking Nature-Based Wellbeing and Planetary Health: Insights from an International Development Project
- P-42 Arja Liinamo:** Strengthening Effective use of Digital and Technological Solutions for Elderly Care through a National AgeTechNet Continuous Education Network
- P-43 Eija Metsälä:** Advancing health technology assessment training in cooperation with health technology companies
- P-44 Elina Niemi:** AI-Assisted Documentation in Residential Care: A Pilot in Private Social Welfare Services
- P-45 Jaana Kokko:** Current situation of the implementation of PohdeAI and methods for measuring the actual use
- P-46 Riikka Vuokko, Sari Palojoki:** From Nordic Telehealth Projects to Scaled-up Use: Supporting Sustainable Service Delivery
- P-47 Sanna Keskikuru:** LASSI- Occupational Safety in Child Welfare – Virtual Simulations for Supporting Anticipation and Learning

Session 1: Opening Ceremony

Chair: Outi Ahonen, president, Finnish Society of Telemedicine and eHealth (FSTeH)

Thursday, 1.10.2026 klo 10:00 – 11:30 EET

- 1-1 Conference opening words**
Outi Ahonen, President¹, Paulus Torkki, President²
¹ Finnish Society of Telemedicine and eHealth, ² The Finnish Society for Effectiveness in Social and Healthcare

- 1-2 The role of digitalisation in developing social and healthcare services**
Sara Kinnunen, Director
Data, AI and digital services, HUS, Finland

- 1-3 Opening words from Finnish Ministry of Social Affairs and Health**
Sari Palojoki, Senior Advisor (international digitalization policy)
Ministry of Social Affairs and Health, Finland

- 1-4 Assessment of Case Pohjanmaa**
Mika Kortelainen, Professor of health Economics
University of Turku, Finland

- 1-5 Delivery of Finnish national eHealth awards**
Outi Ahonen and Timo Tuovinen
Finnish Society of Telemedicine and eHealth

The role of digitalisation in developing social and healthcare services

Sara Kinnunen¹

¹ Data, AI ja Digipalvelut -vastuualue, HUS Tietohallinto



Biography: Sara is Data, AI and digital services director at HUS (Helsinki University Hospital) and is responsible for all data, AI and digital development and related operations at HUS. HUS is a pioneer in utilizing data, developing AI solutions and enabling world-class medical and academic research through HUS's datapool, which is one of the largest healthcare-related datapool in Europe. Sara has worked in trailblazer roles in digitalizing Finnish healthcare sector in both private and public healthcare sector and has led the development of several data-driven innovations in this field and is at home leading tech and data teams. Sara is a people first leader with a passion for making healthcare sector more efficiently with the help of data, digitalization and new technologies such as LLMs. Sara is a change maker who focuses on utilizing agile development methodologies and creating a human centric and efficient working culture. Empathy, honesty and passion are three big values for Sara. Sara is a hands-on problem solver who always wants to focus on maximizing value creation. Sara is used to working in between business and technology and is a bridgebuilder.

Healthcare is entering a new phase of digital transformation. Artificial intelligence is rapidly moving from individual experiments and productivity tools towards an integral role in clinical work, patient services and the optimization of entire care processes. In this presentation, I will discuss how AI is changing healthcare and how HUS is moving from digitizing existing processes towards redesigning operating models with data, digital services and AI embedded in everyday work. The key question is not technology alone, but how we create measurable value and impact while ensuring responsible AI, effective change management and human-centered care. Ultimately, the transformation is about redefining how work is shared between people and technology so that professionals can focus on the tasks and human encounters where they create the greatest value.

Opening words from Finnish Ministry of Social Affairs and Health

Sari Palojoki¹, Senior Advisor (international digitalization policy)

¹ Ministry of Social Affairs and Health, Finland



Biography: Sari Palojoki holds a Ph.D. in health informatics and an M.Sc. in health care. For the past eight years, she has served as Senior Advisor of international digitalization policy at the Finnish Ministry of Social Affairs and Health, including two years as Principal Expert in eHealth at the EU's European Centre for Disease Prevention and Control (ECDC) while on leave from the ministry. She currently drives international digitalization policy within the EU, WHO, and the Nordic Council of Ministers, e.g., serving as Finland's second national representative to the EC EHDS (European Health Data Space) regulatory committee and chairing the WHO Europe Health Information Network (HIN). Earlier, she worked in the pharmaceutical industry and at the Finnish Medicines Agency, later

serving as deputy head and then head of the eHealth Unit at the National Institute for Health and Welfare. Before joining the Ministry, she spent seven years as Head of Patient Safety and Security at Helsinki University Hospital District (HUS).

Across Europe, health systems are at a pivotal moment in their digital development, and Finland has long been regarded as forerunner in this journey. Building on that experience, digital health is now moving toward a more structural, regulation-driven transformation. The European Health Data Space (EHDS) provides the central framework for this shift, distinguishing between two complementary dimensions of health data use: primary use, which strengthens patients' rights and access to their own health data, and secondary use, which opens health data for research, innovation and policymaking through a governed permit process. The interoperability is anchored by a common European data exchange format (EEHRxF), that critical also if solutions such as telemedicine and remote services are to scale into a sustained, effective part of routine care.

Finnish and more broadly Nordic experience show that technical feasibility alone is not sufficient: scale-up also requires strategic commitment, functioning governance, and trust, themes that resonate directly with this year's conference focus on effectiveness. The rapid development of artificial intelligence adds a further layer to this picture. AI applications, e.g., supporting clinical decisions and easing administrative workload, can meaningfully improve effectiveness, but require careful governance, trust and security, topics also addressed in this conference's cybersecurity and AI sessions, as well as in the workshop on EHDS interoperability.

At a broader level, these developments sit within the EU's Digital Decade Policy Programme 2030, which sets a shared European ambition for digitally empowered citizens and services, including the target that all EU citizens have online access to their electronic health records by 2030. Progress has been described by the Commission as tangible but still insufficient, underlining that effective digital health services and the EU's wider digital ambitions are two sides of the same challenge. This address reflects on how Finnish and Nordic digital health development is positioning itself within this broader European framework.

Digital Primary Care and Demand for Health Care: Evidence from a Large-Scale Randomized Trial

Mika Kortelainen^{1,2}, PhD

¹ Turku School of Economics, University of Turku

² Finnish Institute for Health and Welfare, Helsinki



Biography: Mika Kortelainen is Professor of Health Economics at the University of Turku and Research Professor at the Finnish Institute for Health and Welfare (THL). His research focuses on generating causal evidence on the effectiveness and cost-effectiveness of health and social care policies through randomized controlled trials and advanced quasi-experimental methods. He leads several large research initiatives on digital health services and artificial intelligence in healthcare, including the Strategic Research Council-funded GAINS consortium. His research has contributed to evidence-informed health policy and decision-making in Finland.

Introduction: Digital health services are expanding rapidly, with the promise of improving access, increasing productivity and reducing pressure on traditional health care. Yet their effects on health care utilization and costs are ambiguous. Easier access may substitute for more resource-intensive forms of care, but it may also generate additional demand by lowering barriers to seeking care. Reliable causal evidence remains limited, partly because digital services are often introduced without designs that allow their impacts to be evaluated.

Material and Methods: The presentation draws on a population-level randomized experiment in Ostrobothnia, Finland, where access to a new public digital primary care clinic was randomized at the household level in a region of approximately 179,000 residents [1]. Outcomes were measured using administrative health records over a nine-month follow-up.

Results: Digital clinic access increased digital contacts but had little effect on in-person primary care visits. Substitution occurred mainly through reductions in other traditional primary care contacts, while total primary care utilization increased. We find no clear evidence of effects on hospital, private or occupational health care use.

Discussion: The findings suggest that digital services can improve access, but their potential to reduce overall service use and generate cost savings may be more limited than often assumed. More broadly, the experiment illustrates how implementation and rigorous evaluation can be designed together to support evidence-based development of digital health services.

References:

[1] Haaga T, Kivimäki A, Kortelainen M, Nokso-Koivisto O, Saxell T, Seppä M, Sääksvuori L. (2026) Ostrobothnia Digital Clinic Experiment: Populated Statistical Analysis Plan for a Randomized Controlled Trial. SoteDataLab. Link: <https://www.julkari.fi/items/84035f86-1a99-472d-95bc-922f03499971>.

Finnish National eHealth Award

Finnish National eHealth award is delivered by President and Secretary of the Finnish Society of Telemedicine and eHealth.



Tapani Piha has been awarded the Finnish Society of Telemedicine and eHealth's eHealth Recognition Award in recognition of his long-standing, influential, and internationally significant contributions to digital health, electronic health services, the use of health data, and European eHealth cooperation.

Tapani Piha has had an exceptional international career in healthcare digitalisation and European health policy. He worked at the European Commission from 2001 to 2018, including 14 years as Head of Unit. His responsibilities included the digital transformation of healthcare, cross-border healthcare and eHealth, European Reference Networks for rare diseases, implementation of the Directive on Patients' Rights in Cross-Border Healthcare, and policy development in health technology assessment.

Piha played an important role in the development of European eHealth from individual projects towards a shared digital infrastructure across Member States. He contributed to the development of the governance framework for the European eHealth Digital Service Infrastructure and the network of National Contact Points for eHealth (NCPeH). This work helped establish the foundations for the cross-border exchange of electronic prescriptions and patient summaries in Europe.

As early as 2014, Piha highlighted cross-border digital health services, EU-wide electronic prescriptions, and the electronic exchange of patient summaries as key future priorities for European healthcare. These solutions have subsequently become concrete elements of European cross-border health data exchange.

Throughout his career, Tapani Piha has combined the perspectives of a physician, public health expert, civil servant, and international health policy leader. Before joining the European Commission, he worked at the Finnish Ministry of Social Affairs and Health, where he coordinated Finland's EU health policy from 1995 to 2001. Prior to this, he worked at the WHO Regional Office for Europe from 1989 to 1994, where his responsibilities included the Action Plan for a Tobacco-Free Europe.

Since 2019, Piha has continued his work in Finland as an expert and adviser on digital health, the use of health data, and EU health policy, including assignments for the Ministry of Social Affairs and Health and Sitra. Within the TEHDAS Joint Action, he contributed particularly to work concerning the sustainability and continuity of the European Health Data Space. He has also participated in initiatives aimed at improving the use of health and social care data to enhance quality, effectiveness, and productivity.

In addition, Piha serves as President of AIACE Finland, the association of former EU officials in Finland, and continues to participate actively in discussions concerning European policy and its implications for Finland. He remains an active contributor to the field of digital health and European health policy, combining an exceptional understanding of EU-level policy development with a practical understanding of national health systems.

His career represents an exceptionally coherent body of work spanning several decades. He has contributed to the development of digital health policy, regulation, interoperability, and cross-border digital health services during a period in which eHealth has evolved from individual projects into an integral part of European healthcare. At the same time, he has brought his international experience back into the development of Finnish healthcare and the effective use of health data.

The eHealth Recognition Award acknowledges Tapani Piha's outstanding contributions to the transformation of healthcare through technology, the interoperability and mobility of health data, responsible digitalisation, and strong national and international cooperation, all of which are central objectives of the Finnish Society of Telemedicine and eHealth.

Finnish National eHealth Award

Finnish National eHealth award is delivered by President and Secretary of the Finnish Society of Telemedicine and eHealth.



Vesa Jormanainen has been awarded the Finnish Society of Telemedicine and eHealth's eHealth Recognition Award in recognition of his long-standing and exceptionally influential contributions to Finnish eHealth, the national Kanta Services, digital health services, and health and social care information management.

Throughout his career, Vesa Jormanainen has combined the perspectives of a physician, public health expert, researcher, civil servant, and national healthcare developer. He is a physician, holds a Master of Health Sciences degree, is a specialist in public health medicine, and holds special competence in healthcare information technology. He currently serves as a Ministerial Adviser at the Finnish Ministry of Social Affairs and Health.

Jormanainen's particularly significant contribution to Finnish eHealth relates to the large-scale implementation of Finland's national Kanta Services. At the Finnish Institute for Health and Welfare (THL), he served as Director of National Operational Management from 2010 to 2017, with responsibility for the large-scale implementation and adoption of the Kanta Services across healthcare, pharmacies, and social welfare services. This represented one of the most extensive national digital transformations in Finnish healthcare. The implementation of Kanta established the nationwide infrastructure for electronic prescriptions, the national availability of patient data, and MyKanta, while subsequently also enabling the nationwide use of social welfare data.

Jormanainen has also documented and studied this transformation in an exceptionally systematic manner. His doctoral dissertation, published by the University of Helsinki in 2023, *Large-scale Implementation of the National Kanta Services in Finland 2010-2018 with Special Focus on Electronic Prescription*, examined the nationwide implementation of the Kanta Services, with particular emphasis on electronic prescribing. The research analysed, among other areas, the deployment of the Prescription Centre and Patient Data Repository, implementation monitoring, and the development of MyKanta use.

In addition to his work on the Kanta Services, Jormanainen has contributed extensively to the development of healthcare quality, effectiveness, and performance assessment in Finland. Through his work at the Finnish Institute for Health and Welfare and later at the Ministry of Social Affairs and Health, he has promoted the use of data and research evidence in healthcare governance, service development, and national decision-making, advancing a broader understanding of the effectiveness, usability, and governance of digital health services in Finland.

Jormanainen has also made a long-standing contribution to the work of the Finnish Society of Telemedicine and eHealth and has served on its Board. Through the Society and other professional forums, he has contributed actively to discussions concerning the effectiveness of digital health services, national digital health governance, and the continued development of Finnish eHealth. In recognition of his extensive expertise in healthcare policy, effectiveness, and evidence-based decision-making, he was appointed Chair of the Council for Choices in Health Care in Finland (COHERE Finland). Internationally, Jormanainen has brought Finnish eHealth expertise into the European debate. He has served on the Board of the European Health Telematics Association (EHTEL) and participated in European cooperation concerning the European Health Data Space, the secondary use of health data, and digital health infrastructure.

Vesa Jormanainen's career combines, in a particularly rare way, the practical implementation of national digital infrastructure, research-based evaluation, national health policy, and international cooperation. The impact of his work is visible in everyday Finnish healthcare, where millions of citizens, healthcare professionals, and service providers rely on the national Kanta infrastructure.

The eHealth Recognition Award acknowledges Vesa Jormanainen's central role in building the foundations of Finnish eHealth and his consistent ability to combine practical implementation, research, national governance, and international cooperation. His work has made a lasting contribution to the development of digital health services, health information management, healthcare effectiveness, and evidence-informed decision-making in Finland.

Session 2A: How to evaluate effectiveness of digital health and social services?

Chair: Paulus Torkki, Associate Professor, Healthcare operations Management, University of Helsinki, Finland

Thursday 1.10.2026 12:30-13:50 EET

2A-1 Using European health data for evaluation in health systems

Henrique Martins, MD, PhD, MLaw

Associate Professor, BRUDHI – BRU Digital Health International, ISCTE, Portugal

2A-2 Value, effectiveness and impact – concepts in evaluation

Paulus Torkki, PhD

Professor, Operations Management, LUT University and Etelä-Karjala Wellbeing Services County (Ekhva)

Scientific 5 min rapid presentations:

O – 1 Katariina Korniloff: Digital Rehabilitation as a Scalable Solution for Low Back Pain in Rwanda: An Exploratory Cost-Effectiveness Analysis

O – 2 Elias Vaattovaara: The Economic Impact of AI-Based Fracture Detection in the Emergency Department

O – 3 Elina Wärnhjelm: Real-time video visits in pediatric urgent care: A registry-based study of clinical presentations and outcomes

O – 4 Kaisa Pesonen: Reducing Care Backlogs and Improving Access with Nurse-Assisted Remote Diagnostics: Experiences from a Finnish Public Healthcare Implementation

Using European health data for evaluation in health systems

Henrique Martins, MD, PhD

MLaw, FIAHSI, Professor in Health Management and Leadership at FCS-UBI, ISxCTE-IUL, and Univ. Lusófona



Biography: Henrique Martins, MD, PhD, MLaw, FIAHSI, is a leading international expert in digital health, healthcare transformation, and health information systems. He previously served as President of SPMS, Portugal's Digital Health Agency, where he led the national eHealth agenda, and represented Portugal for eight years in the EU eHealth Network, including as Member States Co-Chair. A specialist in internal medicine with advanced degrees in management and law, Martins was among Portugal's first Chief Medical Information Officers (CMIOs). He has played a key role in European digital health policy, interoperability, and cross-border health data exchange.

Currently, he is a professor and researcher at ISCTE in Lisbon, where he leads the BRUDHI research group. He also serves as a Senior Consultant in Digital Health and Innovation for the WHO Athens Office and coordinates major EU-funded interoperability initiatives, including XiA and i2X. Previously, he coordinated the XpanDH project supporting the implementation of the European Electronic Health Record Exchange Format. Martins is a Fellow of the International Academy of Health Sciences Informatics (IAHSI) and has published extensively on digital health transformation at global, European, national, and healthcare provider levels. His work focuses on advancing healthcare through digital innovation, interoperability, leadership, and evidence-based transformation.

There have been several ways by which Countries and Governmental and Non-Governmental Organizations have been trying to measure and evaluate health systems. The WHO Performance Framework that links health-system organization to ultimate health-system goals is particularly useful for global comparisons and conceptual analysis; the OECD (Health Systems Performance Assessment HSPA, uses strong quantitative indicators and benchmarking allowing somehow for comparing countries and monitoring performance; or the WHO/European Observatory HSPA that links functions, intermediate outcomes and final goal, why can allow some diagnosing of why a health system is underperforming in some areas. All three have to some extent relation to the famous Donabedian's Structure–Process–Outcome model, however this one while pertaining to health-care evaluation, it evaluates quality of healthcare/services more directly than the whole health system. This distinction is nonetheless disappearing and the WHO Europe Office for Quality of Care (QoC) and Patient Safety, in Athens, for example has a set of system indicators organized under the 6+1 dimensions of QoC.

Despite all these efforts, we have been using almost always national health data. This means data organized, stored and processed at national level. The new European Health Data Space regulation brings the promise of a large pool of data being use (for secondary use) for not only research and public health but also for health management and policy. Talking about European Health Data is also talking about patient provided data (as per the new rights of natural persons to upload data) and so opening Patient Reported Outcome Measurements and Experience Measurements (PROMs, and PREMs) to the equation. New types of data, and new ways of organizing and meta-cataloguing them at EU27+1 space allow us to discuss and conceptualize new ways of using European data for evaluation, not just OF health systems, but IN health systems. Linking with the new MDR regulation or the AI Act, both being new data-lead continuous safety evaluation challenges and value assertion questions (for HTA, risks, and risks mitigation).

Exploring how we will need to move from a national level data-craving methodology to a European levelled data-inspired and participated methodology will be the focus of my talk to the conference.

Value, effectiveness and impact – concepts in evaluation

Paulus Torkki, PhD

Professor, Operations Management, LUT University and Etelä-Karjala Wellbeing Services County (Ekhva)



Paulus Torkki serves as Professor of Industrial Engineering and Management at LUT University. His area of expertise is impact-based development and management in services, with a particular focus on the improvement of social and healthcare services. In addition, Paulus has extensively studied the application of systematic development methods (such as Lean) in the management and development of service production. He has also worked in several expert organizations in development, leadership, and board positions.

Digital health services are increasingly expected to demonstrate not only that they work, but that they create meaningful value for patients, professionals, healthcare organisations, and society. Yet concepts such as *value*, *effectiveness*, and *impact* are often used interchangeably, despite referring to different aspects of evaluation.

This session clarifies these key concepts and discusses how they can be translated into practical evaluation of digital health services. We will explore what should be measured, from health and patient-reported outcomes to service utilisation, costs, productivity, and broader system-level impacts. The session will also present examples of evaluation approaches and review current research evidence on the effectiveness and cost-effectiveness of digital health services. Finally, we will discuss what existing studies can—and cannot—tell us about the value created by digitalisation in healthcare.

AI-supported task-sharing in community-based rehabilitation: a pilot study of the AIRe platform in Rwanda

Katariina Korniloff¹, PhD, Jean Damascene Bigirimana¹, MSc, David Tumusiime², PhD, Kari-Pekka Murtonen¹, MSc

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² *College of Medicine and Health Sciences, University of Rwanda and The Regional Centre of Excellence in Biomedical Engineering and eHealth, University of Rwanda, Kigali, Rwanda.*

Introduction: Access to rehabilitation services remains limited in many low-resource settings. In Rwanda, community health workers (CHWs) play a central role in primary healthcare delivery, yet their capacity to address rehabilitation needs is constrained by limited rehabilitation-specific training and specialist support. AI-supported digital rehabilitation may strengthen task-sharing and extend rehabilitation support closer to where people live. The AIRe platform is a rehabilitation decision-support system that helps identify rehabilitation needs, select interventions, and support self-management through structured exercise programmes delivered via a mobile application. Previous digital rehabilitation pathways in Rwanda have demonstrated promising health and cost-effectiveness outcomes [1,2]. AIRe may also represent a system-level shift by enabling rehabilitation tasks traditionally performed by rehabilitation professionals to be redistributed to CHWs within a structured digital-first pathway. This study explores the feasibility and user-perceived impact of integrating AIRe into CHW-led community-based care in Rwanda.

Material and Methods: A pilot implementation was conducted in two primary healthcare catchment areas in Rwanda in early 2026. Ten CHWs were trained to use the AIRe platform as part of their routine community work. CHWs used AIRe to identify individuals with rehabilitation needs, screen for red flags requiring referral, and select tailored exercise programmes delivered through the Inclusion App. A mixed-methods approach was used to explore early implementation experiences and user-reported outcomes. Qualitative data were collected through focus group interviews conducted approximately three months after deployment. A total of six focus groups were held: two with CHWs (n=10) and four with community members receiving rehabilitation support (n=20). Quantitative outcomes were assessed using the EQ-5D-5L and EQ visual analogue scale (VAS), collected at baseline and one-month follow-up which captures respondents' self-rated overall health.

Results: Preliminary findings indicate that integrating AIRe into CHW workflows was perceived as feasible and beneficial. CHWs reported that the platform enabled more structured and consistent rehabilitation guidance and increased confidence in decision-making. Community members reported increased trust in CHWs when rehabilitation support was delivered using AIRe. Participants described a shift in care: whereas previous support often focused on symptom relief, particularly through pain medication, the AIRe-supported approach provided concrete, exercise-based interventions targeting functional improvement. Participants also reported noticeable improvements in participation and engagement in community life. Early quantitative findings showed improvement in health-related quality of life. Mean EQ-5D-5L utility increased from 0.248 at baseline to 0.722 at follow-up, while mean EQ VAS scores improved from 35.5 to 77.8.

Discussion: These early mixed-method findings suggest that AI-supported digital rehabilitation can strengthen community-based care by enhancing CHWs' capacity to deliver rehabilitation and improving user-perceived outcomes. The observed empowerment of CHWs and increased trust among community members suggest a potential reconfiguration of rehabilitation service delivery. Rather than replacing rehabilitation professionals, AIRe appears to enable task-sharing in which CHWs take a more active role in early identification, structured guidance, and delivery of rehabilitation exercises. The shift from symptom-oriented care towards function- and participation-oriented rehabilitation is particularly notable, aligning with contemporary rehabilitation frameworks [3]. These findings are preliminary, and further analyses will be presented at the conference.

References:

- [1] Kempers, J., Bigirimana, J. D. N., & Murtonen, K.-P. (2026). Policy Brief: Exploratory Cost-Effectiveness Analysis of Digital Rehabilitation Services, Use of the Inclusion App for Persons with Low Back Pain in Rwanda. Zenodo. <https://doi.org/10.5281/zenodo.19345220>
- [2] Oduor, M., Lällä, K., Eriksen, M., Korniloff, K. & Murtonen, K.-P. (2025). Bridging AI and Primary Care: AI-assisted Health System Integration Model for the Inclusion App. Jamk Arena Pro.
- [3] World Health Organization. Rehabilitation 2030: A Call for Action. WHO; 2017

The Economic Impact of AI-Based Fracture Detection in the Emergency

Department

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² *Medical Research Center, University of Oulu and Oulu University Hospital, Oulu, Finland*

Introduction: Hospitals are increasingly implementing artificial intelligence (AI)-based software; however, prospective savings in personnel resources or costs are still rarely rigorously evaluated during procurement [1]. This study aimed to determine the economic impact of an AI application for automated fracture detection in a university hospital emergency department.

Material and Methods: We conducted a retrospective analysis of 2535 extremity radiographs performed between June 1st and September 30th, 2025. The AI software (Rayvolve, AZMed, France) provides preliminary interpretations to emergency physicians, with an option for radiologist review upon request. Data were stratified based on whether a radiologist report was requested (n=731, 29%) or the AI interpretation was used exclusively (n=1804, 71%). Radiologist report times were extracted from the radiology information system and analyzed to quantify potential time savings.

Results: The AI software facilitated a reduction of 81 hours and 39 minutes in radiologist working time over the four-month study period, extrapolating to an estimated annual saving of 245 hours; this time could be spend reading more challenging cross-sectional imaging studies e.g. CTs and MRIs. Based on a conservative estimate of radiologist salary (5400 EUR/month) [2], this translates to an annual cost saving of approximately 10,500 EUR. Despite a software license cost of 10,000 EUR/year, the net financial benefit was modest (500 EUR).

Discussion: While AI implementation can yield time savings for radiologists, our analysis demonstrates that the economic benefits may be rather marginal. Prospective cost-effectiveness analyses are crucial for informed decision-making regarding AI software adoption in healthcare settings, as implementation costs may necessitate a substantial period to reach financial break-even.

References:

- [1] Lawrence et al. Artificial intelligence for diagnostics in radiology practice: a rapid systematic scoping review. *ClinicalMedicine* (2025).
- [2] Kunta- ja hyvinvointialueyönantajat KT. Lääkärien virka- ja työehtosopimus 2025–2028.

Real-time video visits in pediatric urgent care: A registry-based study of clinical presentations and outcomes

Elina Wärnhjelm^{1,4}, MD, Arja Kobylin^{2,4}, MD, Heli Salmi^{3,4}, MD, PhD, Mari Hongisto^{2,4}, MD, PhD, Mikael Kuitunen^{1,4}, MD, PhD

¹ Pediatrics, New Children's Hospital, Helsinki University Hospital, Finland

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⁴ University of Helsinki, Finland

Introduction: Real-time video visits offer a promising approach to pediatric urgent care. Still, its clinical scope and safety profile, including the types of conditions managed and subsequent care pathways, remain poorly characterized.

Material and Methods: We retrospectively analyzed real-time video visits for pediatric patients (ages 1–15 years) within a publicly funded urgent care setting, from October 1, 2021, to August 30, 2024. Data were collected from electronic health records. Families contacted Medical Helpline -service by telephone, whereupon a nurse conducted a checklist-based evaluation before directing suitable cases to a physician for video consultation.

Results: A total of 601 real-time video visits were scheduled during the study period. If technical issues prevented a successful video visit, it was conducted via telephone and photographs. (Figure 1) The patients had a median age of 5.9 years (IQR 3.1–9.7), with an almost equal distribution of girls (52.4%) and boys (47.6%). Encounters were mostly related to infectious and inflammatory conditions, particularly conjunctivitis, rashes, and tonsillitis/pharyngitis. A substantial proportion of consultations resulted in prescription, most frequently for conjunctivitis. (Table 1)

Of all 601 visits, 18 patients (3.0%) were referred to the pediatric emergency department, and an additional 17 patients (2.8%) attended the emergency department on their own initiative. All 35 patients were discharged home without inpatient admission. (Figure 1) Clinical uncertainty was reported in 20 (3.3%) visits, primarily due to limitations in video quality and resolution that made clinical assessment challenging. Laboratory tests were ordered in 59 (9.8%) consultations. The majority were streptococcal antigen tests; no imaging was performed.

Presenting complaint	Encounters n (% total visits)	Prescription n (%)
Eye	243 (40.4)	219 (90.1)
Skin	196 (32.6)	123 (62.8)
Throat	61 (10.1)	18 (29.5)
Trauma	38 (6.3)	13 (34.2)
Other	63 (10.5)	34 (54.0)

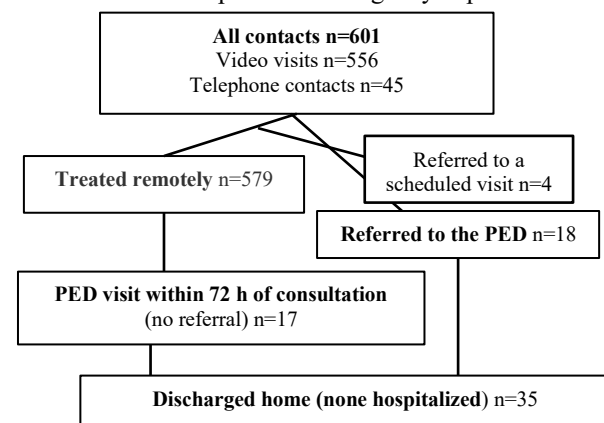
Table 1. Presenting complaints and prescriptions

Discussion: Real-time video visits were primarily used to manage common, low-acuity conditions and frequently resulted in prescription issuance without immediate escalation to in-person care. This proof-of-concept study provides real-world insight into the clinical use of pediatric telemedicine and highlights the need for further research on safety, appropriateness, and system-level impact.

References:

- [1] Shah AC, Badawy SM. Telemedicine in Pediatrics: Systematic Review of Randomized Controlled Trials. JMIR Pediatr Parent. 2021 Feb 24;4(1): e22696. doi: 10.2196/22696.
- [2] Pappalardo M, Fanelli U, Chiné V, Neglia C, Gramegna A, Argentiero A, Esposito S. Telemedicine in Pediatric Infectious Diseases. Children (Basel). 2021 Mar 28;8(4):260. doi: 10.3390/children8040260.
- [3] Bajwa NM, Perron NJ, Braillard O, Achab S, Hudelson P, Dao MD, Lüchinger R, Mazouri-Karker S. Has telemedicine come to fruition? Parents' and pediatricians' perceptions and preferences regarding telemedicine. Pediatr Res. 2024 Oct;96(5):1332-1339. doi: 10.1038/s41390-024-03172-w

Figure 1. Disposition of patients following video visits
PED= pediatric emergency department



Reducing Care Backlogs and Improving Access with Nurse-Assisted Remote Diagnostics: Experiences from a Finnish Public Healthcare Implementation

Kaisa Kangasmäki¹, MHSc, Kaisa Pesonen¹, MSSc

¹ *Wellbeing Services County of South Karelia, Finland*

Introduction: Limited availability of physicians in regional public healthcare has led to care backlogs and long waiting times, particularly in specialized services such as memory clinics. Digital solutions and new care models are needed to improve access, resource efficiency, and continuity of care. Nurse-assisted remote consultations supported by diagnostic devices have been introduced as a potential solution, but real-world implementation experiences, particularly in public healthcare settings, remain limited.

Material and Methods: Nurse-assisted remote consultation models were implemented in Wellbeing services county of South Karelia. In this model, patients attend appointments on-site with a nurse, while physicians participate remotely using connected diagnostic tools (e.g., digital stethoscopes, otoscopes, and cameras). The model was piloted in a memory clinic (n = 396 remote consultations) and tested in limited use at a wellbeing centre, in school health services, and in a dermatology outpatient clinic in specialized care. This descriptive implementation report is based on operational service data, patient and family feedback collected during the memory clinic pilot, and qualitative professional experiences from different service contexts.

Results: The model improved access to care and reduced service backlogs. In the memory clinic pilot, waiting queues decreased from over 100 patients to 4 at one location and by approximately 50% at another. Waiting times decreased from up to 8 months to as short as 3 months. The model enabled flexible use of specialist physicians across geographical boundaries and improved service availability in areas with limited local resources. Patient and family feedback (n > 200) was highly positive. A total of 76–88% of patients and up to 97% of family members reported receiving needed help and information “very well”. In addition, 90–94% felt they were treated with respect and were heard “very well”. Most respondents reported that nothing essential was missing compared to in-person visits. Early diagnosis of memory disorders was supported, enabling timely initiation of medication and potentially delaying disease progression and the need for more intensive services. Professional experiences were positive, highlighting smooth collaboration between nurses and physicians and generally good technical performance. Identified development needs included workflow optimization, ensuring sufficient time for interaction, and addressing technical challenges. Initial experiences from school health services indicated that nurse-assisted remote physician examinations were feasible and could be integrated into routine workflows. The model was perceived as smooth after initial familiarization, and preparation, including equipment testing and joint practice, was essential for successful implementation.

Discussion: Nurse-assisted remote diagnostics appear to be a feasible and effective approach to improving access to care and reducing service backlogs in public healthcare. The model enables more flexible use of limited specialist resources and expands service provision beyond geographical constraints. In addition to improving availability, the model supports early diagnosis and may help prevent the need for more resource-intensive services. High patient and family satisfaction suggests that remote consultations can provide an experience comparable to traditional in-person care in appropriate contexts. Successful implementation requires attention to workflow design, professional training, technical reliability, and adequate staff preparation. Early experiences suggest that hands-on practice and clear operational guidance can significantly improve confidence and workflow efficiency in remote consultations. Further development and evaluation in different service contexts are needed.

Session 2B: Vaikuttavuus tiedolla johtamisessa

Puheenjohtaja/Chair: Jarmo Reponen, Suomen telelääketieteen ja eHealth Seura (STeHS)

Thursday, 1.10.2026 12:30 – 13:50 EET

2B-1 Tietojohdaminen hyvinvointialueella

Yrjänä Hynninen, Tietojohdaja
Länsi-Uudenmaan hyvinvointialue

2B-2 Vaikuttava tietojohdaminen

Markku Eskola, Lääketieteellinen johtaja
Sydänsairaala

Scientific 5 min rapid presentations:

O – 5 Aino-Lotta Alahäivälä: Using health and social care data to predict home care service initiation

O – 6 Viet Nguyen: Trends and determinants of telemedicine use across healthcare sectors in Finnish primary care - A register study

O – 7 Aino Nokelainen: The Pirha Information View – Multiple Data Sources, One Unified View for Social and Health Care Professionals

O – 8 Morris Viitanen: Sex-specific Age Differences in the Use of Digital Occupational Health Services Among Public Sector Employees

Data-Driven Management in a Finnish Wellbeing Services County: From Centralized Reporting to Distributed Value Creation

Yrjänä Hynninen, D.Sc.

Western Uusimaa Wellbeing Services County (LUVN), Data & Analytics Unit, Finland



Biography: Yrjänä Hynninen, D.Sc. (Tech.), has served as Chief Data Officer at Western Uusimaa Wellbeing Services County since the county's planning phase. Over the past four years, the data & analytics unit has grown, and its data foundation, infrastructure, and ways of working have been built from the ground up. He brings extensive experience in building data foundations for social and health care, data-driven management, analytics, and cost-effectiveness evaluation, drawn from his current role, more than 10 years of consulting work, and his research background.

Introduction: Finnish wellbeing services counties (hyvinvointialueet) started from more or less challenging positions, including in data-driven management (tietojohdaminen). The Western Uusimaa Wellbeing Services County (LUVN), formed from 10 municipalities, inherited fragmented systems and no prior centralized data unit or data warehouse. One of its notable early achievements was the Tahti reporting system, which brought the most critical data into the organization's management system. However, sustaining it has been labor-intensive, centralized, and largely manual with a recurring wish to automate it. At the same time, information needs across the organization have grown substantially: beyond analysis and reporting, data is increasingly needed as a direct input to digital applications, including tools and AI-based solutions offered by external vendors. This paper examines how LUVN's current strategy responds to that shift.

Material and Methods: We describe an ongoing transformation of LUVN's Data & Analytics Unit (roughly 20 in-house specialists plus consulting capacity), guided by a 2026–2029 strategy built on three strategic choices. First, decentralization: analytics capability shifts to units and partner developers outside the central unit, enabled by shared data sets, a unified data pipeline, common data definitions, and a self-service data catalogue. Second, “less is more”: rather than adding data products, existing information is consolidated into fewer, more usable views — illustrated by supervisor-level dashboards (esihenkilönäkymät) combining elements such as service outputs, personnel and monetary inputs, productivity, quality and effectiveness in one role-specific view. Third, strengthening the data foundation: the data lakehouse evolves from a mid-management resource toward operational, near-real-time use, supported by master data management and a person-centric model that let reports, applications, interfaces and AI-based tools be built without duplicating data.

Results: Distributing analytics capability and simplifying access to data aim to reduce the central unit's role as a single point of failure, while a strengthening foundation keeps this distribution safe through shared definitions and governance. Success is tracked through indicators of use, distribution and value creation — active users, share of self-service analytics, and dashboard adoption — rather than report volume.

Discussion: Data-driven management is effective only when data leads to action, not when more reports are produced. Sustaining a centralized system like Tahti through manual effort alone does not scale. The bottleneck in Finnish wellbeing counties is organizational and architectural, not purely technological: scaling requires distributing capability, consolidating data products, and strengthening the data foundation together. These choices are offered as transferable mechanisms for other wellbeing counties moving from centralized reporting toward distributed, effectiveness-oriented data-driven management.

Impactful Data-Driven Management

Markku Eskola¹, MD, PhD

¹ Heart Hospital, Tampere, Finland



Biography: Markku Eskola is the Medical Director and Chief Physician of the Heart Hospital and serves as Hospital Director at Tays Heart Hospital. He has played a key role in developing the Heart Hospital's quality registries for over two decades and has been a member of the core working group of the Finnish national cardiac registry (THL) since 2018.

Eskola has several years of experience in value-based management at an organizational level and has been actively involved in developing value-based lifecycle models and practices for measuring and monitoring outcomes. Under his leadership, real-time treatment effectiveness dashboards have been implemented across major cardiovascular conditions. He is a specialist in internal medicine and cardiology, holds a PhD in medicine, and is an adjunct professor (docent) in cardiology, with over 130 peer-reviewed publications.

Introduction: Healthcare organizations collect more data than ever before. However, the mere availability of data does not automatically improve patient outcomes, patient experience, or the efficient use of resources. At the same time, population ageing, increasing demand for healthcare services, and constrained resources require more effective and sustainable care models. The objective of impactful healthcare data management is to transform clinical, operational, financial, and patient-reported data into actionable intelligence that supports decision-making and enables improvements in healthcare outcomes, quality of care, and cost-effectiveness.

The aim of this presentation is to describe how data-driven management can be embedded into an organization's daily management system to support the development of clinical practices, optimal allocation of resources, and maximization of health benefits. In addition, the presentation will share practical experiences from a cardiovascular care environment where data-driven management has been systematically developed as an integral part of clinical practice.

Material and Methods: The development of data-driven management has involved integrating information from multiple sources, including clinical quality registries, electronic health records, operational management systems, and patient-reported outcome and experience measures (PROMs and PREMs). Based on these data sources, real-time effectiveness dashboards have been developed to enable near real-time monitoring of clinical outcomes, quality indicators, and resource utilization.

Results: The primary benefit of impactful data-driven management is the transformation of information into action. Real-time effectiveness dashboards enable monitoring of adherence to evidence-based care, early identification of deviations, benchmarking between units, and targeted improvement initiatives where their impact is likely to be greatest. Data can be utilized to evaluate clinical outcomes, complications, readmissions, functional status, implementation of evidence-based therapies, and the efficiency of care pathways. As a result, the focus of management shifts from monitoring activity volumes to managing the health benefits achieved for patients.

Experience has shown that effective data-driven management requires more than technology alone. It depends on shared goals, structured documentation, high-quality and reliable data, and an organizational culture in which the use of information is considered an integral part of everyday management. Technology enables access to information, but value is created only when information guides decision-making and leads to meaningful changes in practice.

Discussion: Impactful data-driven management is a key enabler of the transition toward value-based healthcare. In the future, real-time analytics, artificial intelligence, and predictive models will provide new opportunities to identify improvement areas, support decision-making, and enhance healthcare outcomes. Rather than focusing solely on data collection, healthcare organizations should prioritize the systematic use of information in ways that result in measurable improvements in patient care, patient experience, and health outcomes.

Using health and social care data to predict home care service initiation

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Introduction: In the elderly population, a substantial share of service costs is associated with home care services. In Finland, the costs of these services in year 2022 were 1256 M€. Identifying target groups that could benefit from lighter, proactive services may help delay the need for intensive home care and thereby reduce service costs and increase quality of life. The aim of this study, conducted within the ITEA/PROFIT project, was to develop a predictive model to identify individuals with an elevated probability of initiating home care services.

Material and Methods: We developed machine learning models to predict the probability of an individual to start home care services within one year. The retrospective dataset included citizens aged 70–90 years and contained routinely collected health and social care data, including demographics, diagnoses, procedures, medication use (psycholeptics and psychoanaleptics), and functional assessments. The data set was used under data permit issued by Päijät-Häme wellbeing services county [1]. During feature engineering, we constructed 15 features while restricting pairwise correlations to below 0.5 to reduce multicollinearity and improve model interpretability. We used data from years 2019 and 2020 to train logistic regression (LR) and Extreme Gradient Boosting (XGBoost) models for predicting initiation of home care services in year 2021. We also applied a secondary outcome based on favourable scores of physical and cognitive assessments to identify individuals who are likely to start home care while still maintaining good cognitive and functional abilities. For the model development, the dataset was split into training (70%) and testing (30%) subsets. We applied five-fold cross-validation, randomly assigning stratified folds in each round. We trained models for the full cohort as well as for National Health Index [2] based subgroups derived from diagnosis data of year 2018.

Results: A total of 29,405 individuals (56.2% female; mean age 76.9 years) were included in the model development. The area under the curve (AUC) for the LR and XGBoost methods was 0.76 and 0.75, respectively, indicating moderate discrimination. Across subgroups and methods, AUC values ranged from 0.5 to 0.8. Precision was evaluated at a fixed false positive rate of 0.25. Relative precision (precision divided by prevalence) ranged from 1.34 (LR) and 1.07 (XGBoost) in the dementia subgroup to 2.60 (LR) and 2.27 (XGBoost) in the coronary artery disease group. Across all subgroups, the most important predictors for home care initiation were age, number of outpatient visits per year, number of hospital admissions per year, and the use of psycholeptics and psychoanaleptics. Disease-related factors, including mental health conditions, cerebrovascular disease, and respiratory disease, were also relevant but generally less important. The results were similar for the secondary outcome, although it was only assessed for the full cohort because of the small number of members in some subgroups.

Discussion: Many existing studies focus on predicting disease-related risks [3], while few studies to date focus on predicting social service use with approaches similar to ours [4–5]. Besides home care, they also include residential care as an outcome, showing stronger associations with mental and neurological conditions. Our study focuses on home care clients, who still have high potential for independent living and could benefit from proactive support. According to our results, such a prediction model could improve the selection of individuals for lighter, proactive services and interventions. The relative precision values demonstrate a clear improvement over random selection. Moreover, the required variables are readily available in routine care, supporting the model's practical applicability. Further testing of the prediction models, particularly for the secondary endpoint and using data from other regions, is warranted to obtain more conclusive results.

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Trends and determinants of telemedicine use across healthcare sectors in Finnish primary care - A register study

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Introduction: Telemedicine use has expanded rapidly, but its uptake is uneven, with lower use among older, less educated, and minority-group patients, raising concerns about widening inequities in access to care. Objective: To examine both temporal trends and patient-level determinants of telemedicine utilization across public, occupational, and private healthcare sectors in Finland.

Material and Methods: We used nationwide Finnish register data on primary care visits (2022-2025) to examine telemedicine use across public, occupational, and private sectors. We described monthly telemedicine shares by sector and estimated sector-specific logistic regression models for any annual telemedicine use, distinguishing frequent users (at least 5 tele-visits and at least 50% remote visits) from occasional users.

Results: Telemedicine use declined across all patient groups from 2022 to 2023, but increased again in 2024–2025. Occasional use mirrors sectoral patient profiles: the public sector serves disadvantaged patients, whereas occupational and private sectors are used more by employed, urban, and highly educated groups. Frequent use is concentrated among women with chronic conditions and lower education across sectors. Notably, frequent telemedicine use in the private sector was also observed among unemployed individuals and those living more than 20 km from the nearest public health center.

Discussion: Telemedicine is becoming an established component of routine care, particularly for patients with chronic conditions requiring regular follow-ups. Analyzing intensity of use reveals patterns not visible when focusing solely on occasional telemedicine use. Promoting equitable access will require attention to sectoral differences in provision and continued support for coordinated care pathways across healthcare sectors.

The Pirha Information View – Multiple Data Sources, One Unified View for Social and Health Care Professionals

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Introduction: Social and healthcare professionals often need to use multiple information systems to gain a comprehensive view of a client's or patient's situation. This consumes time and may lead to important information being overlooked. Information transfer between social and healthcare services can be slow or incomplete, or may not occur at all, resulting in delays in care or services, duplicate work, or unmet care and service needs. In the Wellbeing Services County of Pirkanmaa, the Pirha Information View has been developed, in collaboration with Istekki, to support professionals' operational work by accelerating and improving access to information, thereby supporting decision-making and care and service planning. Its aim is to provide professionals with the necessary information from multiple source systems in an aggregated, structured, and harmonized form, while complying with legislation governing data presentation.

Material and Methods: The Pirha Information View utilises the Unified Care Record (UCR) data platform, which is part of the InterSystems HealthShare product family. Patient or client data are transferred from multiple source systems to the UCR either in real time (e.g. patient information systems) or on demand (e.g. verification of authorizations for acting on behalf of another person, which will be introduced in spring 2026). Information is presented to professionals in the information view (Clinical Viewer) unchanged, in a structured and harmonized format. The data can also be shared with other applications via FHIR interfaces (e.g. client-provided consents). Information in the view is always examined on a patient- or client-specific basis, and the content is displayed to professionals according to their role. Through role-based content, professionals working in different tasks are shown only the information that is relevant to their work, while complying with legislation that restricts the presentation of information.

Results: The Pirha Information View was implemented in 2024. Professionals have experienced the system as easy to use and have found the information to be easy to review. Based on these experiences, the use of Information View is being expanded to all social and healthcare service lines. Information combined and harmonized from multiple source systems accelerates and may standardise the understanding of a patient's or client's overall situation and thereby support decision-making, particularly in services where multiple separate systems are used, such as client guidance and shared social and healthcare services. Although the standardised data models of the technical solution reduce the effort required for system development and maintenance, integrating data requires in-depth expertise in the source systems at both the user interface and database levels. Adapting data to a new data model requires careful planning, as there are no established references or standards to support this process. In addition, legislation governing the presentation of information must be carefully considered, particularly when designing role-based content for social services. [1,2]

Discussion: The Pirha Information View is a concrete example of a digital solution in social and healthcare services that improves efficiency in everyday work situations and enhances access to information across service line boundaries, thereby facilitating decision-making. Its modular architecture enables the information view to be extended to new use cases and ensures that uniformly aggregated data can also be utilised in other systems and AI applications. Role-based access allows the content of the information view to be tailored to the needs of different professionals while complying with legislation governing restrictions on data presentation. Information View will be further developed in the future as new systems are integrated into the overall solution. In the future, artificial intelligence is also intended to be utilised, with the UCR data content providing a reliable data foundation for information retrieval and presentation to professionals.

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Sex-specific Age Differences in the Use of Digital Occupational Health Services Among Public Sector Employees

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Introduction: The use of digital services has expanded rapidly, particularly during the COVID-19 pandemic [1]. Finland, like other Nordic countries, is strongly advancing digital-first policies [2]. Previous research suggests that digital occupational health services (DOHS) are used more frequently by women and individuals in higher socioeconomic positions, while older age is associated with poorer satisfaction in DOHS and lower use of overall digital health services [3,4]. This study examined whether DOHS use varied by age among women and men working in the Finnish public sector, while accounting for socioeconomic position (SEP) and healthcare need.

Material and Methods: This register-based study included 49,455 individuals aged 20 years or older who were employed by the City of Helsinki during 2020–2022 (76 % women). Age was categorized into five groups. Socioeconomic position—measured by education, occupational class, and income—was adjusted for in the analyses. The number of sickness absence days was included to control for underlying health status [5]. Associations between age group and the number of DOHS visits were analysed using negative binomial regression.

Results: Clear differences in the use of DOHS by age group were observed. Among women, employees aged 40–49 had the highest use of services (IRR 1.25 [95% CI 1.22–1.29], reference group 20–29-year-olds). The second highest use was observed among employees aged 30–39 (IRR 1.14 [95% CI 1.11–1.17]) and 50–59 (IRR 1.13 [95% CI 1.10–1.17]). The oldest group, those aged 60 years and above, used the services significantly less than all other age groups (IRR 0.61 [95% CI 0.55–0.67]). A broadly similar pattern was observed among men.[3]

Discussion: The findings highlight age as a significant determinant of DOHS use. Midlife employees had the highest engagement with DOHS, whereas employees aged 60 and over were the least likely to use them. Employees aged 20–29 used DOHS services more than those over 60 but less than midlife employees. The results underscore the importance of designing occupational health services, including digital services, that are accessible to employees across all age groups. Future research should explore long-term trends in age-related differences in DOHS use and investigate potential barriers among older employees.

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Session 3A: Cybersecurity and trust in digital healthcare and social welfare services

Chair: Aappo Keränen, Finnish Society of Telemedicine and eHealth (FSTeH)

Thursday 1.10.2026 14:30-15:45 EET

- 3A-1 Cybersecurity Challenges in the Era of the European Health Data Space, EHDS**
Evangelos Markatos, Professor
Computer Science Department, University of Crete, Greek
- 3A-2 Cybersecurity of everyday and disruptive technologies in healthcare**
Kimmo Halunen, Professor
Faculty of Information Technology and Electrical Engineering, University of Oulu, Finland
- 3A-3 It ask, it never tells: identification, disclosure and trust in a production AI voice agent**
Aappo Keränen, Advisory Dentist
Wellbeing Services County of North Ostrobothnia (Pohde), Finland

Scientific rapid presentations:

- O – 9 Maiju Kyytsönen: Ethical Challenges in Data Protection and Information Security Among Licensed Practical Nurses Using Digital Tools in Finland
- O – 10 Anas Al Natsheh: Machine Learning–Based Mortality Risk Prediction in ICU Patients to Support Clinical Decision-Making
- O – 11 Kristina Rosqvist: Overcoming Cultural Differences in Cross-National Digital Health Education
- O – 12 Laura Heinonen: Towards More Proactive Client and Patient Safety Through the Reform of National Adverse Event and Patient Safety Incident Data Production

Cybersecurity Challenges in the Era of the European Health Data Space

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Biography: Evangelos Markatos is a Professor of Computer Science at the University of Crete. He earned his diploma in Computer Engineering from the University of Patras, followed by an MSc and PhD in Computer Science from the University of Rochester. He is the founding head of the Distributed Computing Systems and Cybersecurity Laboratory at FORTH-ICS, where his research focuses broadly on computer systems, with particular emphasis on cyber security, privacy, and cybercrime. He is currently leading or participating in several EU funded projects including C-SOC, xShare, and Xia. He has co-authored over 150 publications in leading conferences and journals. His work has received over 10,000 citations, with an h-index of 52, according to Google Scholar. Professor Markatos is also a recipient of the prestigious Pichorides Teaching Award, the highest undergraduate teaching honour at the University of Crete.

Introduction: The European Health Data Space (EHDS) Regulation marks a fundamental shift in how citizens access, control, and share their electronic health data [1]. They will be able to access records held by different healthcare providers in machine-readable format, the European Electronic Health Record Exchange Format, and store, transmit and process these records electronically in an accountable way. This development promises to overcome the fragmentation of health information across multiple healthcare organizations and, in some cases, paper-based systems. Initiatives such as xShare and its Yellow Button illustrate the power of the EHDS vision by enabling citizens to download and share their health data with a single click [2]. Although the EHDS and related patient-mediated data-sharing initiatives are expected to improve continuity of care, data portability and patient empowerment, they will also take sensitive and clinically significant personal health information out of the tightly controlled environments of healthcare organizations and data centers, thereby creating novel cybersecurity risks. A useful parallel can be drawn with the emergence of online banking. As banking services moved online, criminals developed new phishing campaigns, account-takeover techniques and other forms of digital financial fraud. Similar risks can be anticipated as health data becomes more widely accessible and shareable online: cybercriminals are likely to develop new scams and attack methods specifically designed to exploit personal health information, digital health services and individuals who use them.

Material and Methods: A threat-oriented analysis was conducted of the end-to-end, citizen-controlled health-data-sharing pathway introduced by the EHDS and exemplified by the xShare Yellow Button. The analysis traced personal health data throughout its lifecycle: from its extraction and export by a healthcare provider, through downloading and storage on an individual's personal device, to its subsequent sharing with a friend, a healthcare professional, another healthcare organization or third-party application. At each stage, the actors, systems, trust boundaries, data transfers and potential attack surfaces were identified and examined. The objective was to identify cybersecurity risks arising specifically from the increased accessibility, portability and reuse of health data enabled by the EHDS.

Results: Four interrelated challenges were identified. First, personal health records are highly valuable for cybercriminals. Indeed, these records contain a wealth of information that can be used for identity theft, phishing, and insurance fraud. Second, although health data used to be stored in secure data centers, downloaded records may be stored on smartphones, laptops, email accounts or messaging services and AI bots that generally have weaker security controls. As a result, they will be an easier target for cybercriminals. Third, the availability of new patient-mediated sharing services gives attackers credible themes for phishing and scams, such as false requests to download records, update personal details or secure an EHDS account. Fourth, attackers may falsify the information available in medical records stored in compromised home devices. For example, malware could remove a documented penicillin allergy from a record stored on a patient's phone; if the altered record is then sent to a physician, it could contribute to an unsafe prescription. Thus, cybersecurity is not a data property anymore – it becomes a critical patient safety issue.

Discussion: As health data moves beyond closed hospital infrastructures to citizens' personal devices, cybersecurity must extend across the entire data-sharing lifecycle. Effective protection requires strong authentication, encrypted and verifiable data transfers, validation of provenance and integrity, clear identification of data sources, tamper detection, access auditing and logging, secure recovery mechanisms, and citizen-oriented guidance on phishing and other forms of digital deception. Personal devices must therefore be treated as integral components of the clinical trust chain rather than as external endpoints. This is essential because unauthorized modification of a shared medical record may directly affect clinical decisions, potentially leading to incorrect diagnosis or inappropriate treatment. Within the EHDS, cybersecurity is therefore not merely a matter of privacy and personal-data protection; it is a prerequisite for trusted data flowtrust and flow that protects patient safety.

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Cybersecurity of everyday and disruptive technologies in healthcare

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Biography: Kimmo Halunen is a Professor of Cybersecurity at the University of Oulu and National Defence University in Finland, holding a D. Sc. (Tech.) in computer engineering specializing in hash function security obtained in 2012. He has authored over 60 publications on cybersecurity, cryptography, cyberwar, and blockchain technology, and has coordinated national research projects including post-quantum cryptography initiatives. His current research interests include security of artificial intelligence systems, cybersecurity of quantum computers and automatic verification of the security posture of critical systems. Since 2024 he has also served on the board of Xiphera, a cryptographic HW design company in Finland.

Introduction: Cybersecurity is a necessary part of any modern digital system and service. This is true also in healthcare as well as in other areas of society that are going through rapid digitalisation. Challenges to cybersecurity come from many directions and to understand those we need to understand the effects of everyday digital technologies and also the current and future disruptive technologies on cybersecurity. Cybersecurity principles in both cases are very much similar, but there are also some differences that need to be carefully addressed when using those technologies in healthcare.

Material and Methods: Based on recent research findings from academic research and our own results on the cybersecurity of different technologies such as artificial intelligence (AI) [1] and quantum computing [2], we formulate some key advice on how to go about adopting new digital technologies in healthcare. These can be used both for everyday technologies and disruptive technologies taking into account some of the differences between those.

Results: The main advice for using any technology in a secure manner is to start designing and thinking about security already in the early stages of technology development. This is an omission that has been made with many current everyday technologies and is being made with many technologies that are supposedly bringing disruption to our societies. For healthcare especially, there are more stringent requirements for cybersecurity for privacy and patient safety reasons and these need to be achieved with digital solutions both old and new. A very important point of cybersecurity is the potential to test and verify systems regardless of their maturity. For this end, new types of security tools are needed [1,3].

Discussion: Securing both old and new digital technologies is not an easy task and it is perhaps even more challenging in the healthcare domain. However, the main principles in cybersecurity remain fairly constant and there are new technological possibilities for addressing these issues. Still, solely technological solutions will not be enough to achieve the best possible cybersecurity in healthcare. Thus, there is a need for solutions that take into account the processes and human factors involved in healthcare and also regulation is needed to enforce suitable levels of security in this domain.

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UusiAika: Phased implementation of a telephone-based AI assistant for appointment rescheduling in public oral healthcare

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Biography: Aappo Keränen is an advisory dentist at Pohde, the Wellbeing Services County of North Ostrobothnia, which serves 418,000 people in northern Finland. In the UusiAika project, co-funded by Sitra and Pohde, he led the oral healthcare implementation of an AI voice agent for appointment cancellations and rescheduling. Live since May 2026, it runs in 14 of the county's 30 municipalities, covering some 70 per cent of the population. He is a doctoral researcher at the University of Oulu, studying the reliability, impact and implementation of AI voice agents in public healthcare, and serves a second term on the Finnish Dental Association council. His central observation is that an AI assistant does not simplify a complex service process: it first exposes where the process was never actually defined. He writes on healthcare AI at aappokeranen.fi.

Introduction: Healthcare telephone services include a large volume of administrative contacts, such as appointment cancellations and rescheduling, that do not require clinical judgement. These contacts consume healthcare professionals' time, congest telephone services, delay callbacks, and may leave released appointment slots unused. In public oral healthcare, easily accessible cancellation and rescheduling options are particularly important because they may reduce unfilled appointments, improve resource allocation, and support access for patients who may encounter barriers in digital health services or prefer telephone-based communication [1, 2]. UusiAika was launched to address this challenge by introducing an AI-based voice assistant into public healthcare telephone services in North Ostrobothnia, Finland. The aim is to improve accessibility of appointment-related services and to refocus professional time for tasks requiring human assessment.

Material and Methods: UusiAika is a development and implementation project carried out by Pohde in collaboration with Aivot Labs Oy and the University of Oulu. The solution was designed for public healthcare telephone services and integrated with the telephony platform and two patient information systems. The service was first implemented in oral healthcare. The implementation followed a staged approach including process design, technical integration, data protection impact assessment, testing, communication planning, and phased production deployment. The service was limited to adult patients handling their own appointment matters. Early evaluation focused on implementation progress, technical functionality, practical observations from testing and early production use, and user-related feedback, consistent with domains emphasized in early-stage evaluation of conversational AI in healthcare [3].

Results: The project progressed from planning and technical preparation to phased production deployment during spring 2026. Pre-deployment testing identified issues with caller identification, speech recognition of regional dialects, and acting on behalf of another person. Production deployment proceeded in three phases: starting on 18 May 2026 in a shared telephone service area of five municipalities, expanding to a second shared service area of eight municipalities, and reaching Oulu, the largest city in the region (approximately 217 000 inhabitants), in early June 2026. The service enabled adult patients to cancel or reschedule their own appointments immediately by phone, including evenings and weekends. An initial evaluation, conducted after the first weeks of production use, was based on a professional review of transcripts from 178 calls. Of these, 146 calls (82%) were completed without identified errors, while 32 calls (18%) contained issues flagged for development. No critical failures were observed: the issues related primarily to caller identification and affected the caller's ability to complete the intended action rather than indicating a fundamental breakdown in service behaviour.

Discussion: The early phase of UusiAika suggests that AI-assisted telephone services may improve accessibility of administrative healthcare services and reduce routine workload in public oral healthcare. Based on early learnings from the project, successful implementation requires careful management of safety, data protection, identification, exception handling, and interoperability between service and information systems. The project also indicates that conversational AI is most useful when embedded in a clearly defined service process rather than introduced as a standalone technical tool. In addition to operational value, the implementation creates a strong basis for future research on safety, service performance, customer experience, workload, and broader system-level effects of AI-assisted service models in public healthcare.

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Ethical Challenges in Data Protection and Information Security Among Licensed Practical Nurses Using Digital Tools in Finland

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Introduction: Digital transformation in health and social welfare services increases the volume and accessibility of client and patient data and requires substantial changes in front-line work practices. Such changes reshape service systems at multiple levels, from policy and organisational governance to day-to-day care delivery, while simultaneously heightening demands for robust data protection and information security. [1,2] Licensed practical nurses are key users of digital tools in Finland, e.g. in home care and service housing, yet their everyday ethical concerns related to data handling remain under-described. This study aims to characterise the ethical challenges licensed practical nurses encounter when using digital tools, with particular focus on dilemmas related to data protection and information security.

Material and Methods: We conducted a cross-sectional online survey on information systems use among licensed practical nurses working in Finland. The study was approved by the Ethics Board of the Finnish Institute for Health and Welfare before data collection (THL/620/6.02.01/2024 §963). The survey was disseminated via trade unions in March 2024, with one reminder sent during the two-week data collection period. This study is based on responses to an open-ended question: “What ethical dilemmas have you encountered related to the use of digital tools in your work? You can describe ethical dilemmas related to clients, the work community, or your professional role.” One researcher analysed the data using inductive thematic analysis, progressing from initial coding to theme development.

Results: In total, 259 licensed practical nurses out of 2,341 responded to the open-ended question. Seventy respondents reported ethical dilemmas explicitly related to data protection and information security. They described 73 distinct issues, which could be divided into five subthemes: (1) **the security of ICT applications and mobile phones:** participants expressed doubts about the security of tools in use, while also describing a perceived necessity to rely on less secure channels (e.g., SMS, instant messaging apps, or personal phones) to complete tasks and ensure care quality; (2) **access-right limitations and inappropriate access,** reflecting tensions between role-based access controls and information needs in care, alongside concerns about colleagues accessing records without a justified reason; (3) **physical data protection,** including risks arising from access-free and shared nurses’ offices, visible screens, and printed materials; (4) **photography, publication, and consent,** particularly taking and sharing photographs (including on social media) without valid consent; and (5) **other issues,** encompassing miscellaneous and in some cases succinct concerns related to information security and data protection. A cross-cutting finding was moral uncertainty: many respondents questioned whether their own actions met expectations for secure and ethically sound practice. Others worried that colleagues’ digital practices did not sufficiently support data protection and information security, pointing to shortcomings in organisational guidance, shared norms, and unit-level procedures.

Discussion: Data protection and information security were frequently experienced as sources of ethical burden among licensed practical nurses. The identified themes and subthemes recurred in the data, supporting the study's relevance despite the relatively small proportion of respondents who answered the question on ethical dilemmas. The findings suggest that while information security and data protection are technical and compliance issues, they are also a matter of professional ethics. As new ICT is implemented, organisations should provide role-specific training and practical instructions on data protection and information security in everyday contexts. In addition, structured opportunities to reflect on ethical dilemmas in formal settings (e.g., team meetings or organised events) may strengthen confidence and consistency in secure conduct. Consistent with multi-level perspectives on technology-related ethics [1], resolving these dilemmas requires coordinated action at macro (regulation and governance), meso (organisational policies), and micro (front-line decision-making) levels to support trustworthy digital care.

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Machine Learning–Based Mortality Risk Prediction in ICU Patients to Support Clinical Decision-Making

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Introduction: Intensive Care Units (ICUs) generate large volumes of complex clinical data that often remain underutilized in real-time decision-making [1]. Early identification of high-risk patients is essential for improving clinical outcomes and optimizing resource allocation. Machine learning (ML) offers opportunities to transform these data into actionable insights for mortality risk prediction and clinical prioritization [1,2]. This study develops and evaluates an AI-assisted decision support model for ICU mortality risk prediction using real-world clinical data.

Material and Methods: Retrospective clinical data from ICU admissions at Kajaani Central Hospital (KAKS) covering 2014–2024 were used for model development and evaluation [3]. The prediction target was in-hospital mortality, defined as death occurring during or after the ICU stay within the same hospitalization. The dataset included routinely collected clinical variables such as vital signs, laboratory measurements, and patient demographics, derived from values recorded during the first 24 hours of ICU admission. The dataset was randomly split into training (80%) and internal validation (20%) sets, stratified by mortality outcome to preserve class proportions. Multiple machine learning models were evaluated, including logistic regression, random forest, gradient boosting, histogram-based gradient boosting, and XGBoost. Missing values were handled using median imputation, and class imbalance was addressed using the Synthetic Minority Over-sampling Technique (SMOTE) applied to the training set only. Feature selection was applied to retain a compact and clinically interpretable set of variables. Model performance was assessed using the area under the receiver operating characteristic curve (AUROC) for discrimination, together with accuracy, sensitivity, and specificity. Model development followed the HealthHub Finland EDIH “Test Before Invest” framework, ensuring ethical and secure data handling [2].

Results: There were $n=7,976$ ICU admissions, of which $n=919$ resulted in in-hospital death. Among the evaluated models, a Histogram-based Gradient Boosting Classifier achieved the strongest predictive performance on the internal validation set, with an AUROC of 0.95 and an overall accuracy of 0.97. Sensitivity for ICU mortality was 0.77 and specificity was 0.98, supporting early identification of high-risk patients and clinical prioritization. A reduced set of clinically relevant features provided comparable or improved performance relative to larger feature sets, supporting interpretability and practical implementation.

Discussion: The results demonstrate that combining appropriate imbalance handling with machine learning models can yield accurate and clinically useful mortality predictions in ICU settings. The ability to identify high-risk patients early has clear implications for improving care prioritization and intervention timing. Emphasis on interpretability and compact feature design supports potential clinical adoption. Future work will focus on external validation and integration into clinical workflows.

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Overcoming Cultural Differences in Cross-National Digital Health Education

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Introduction: The rapid digital transformation of health care has created a shared need to strengthen health professionals' digital competencies across countries. Evidence indicates that successful digital transformation depends not only on technology adoption but also on pedagogically sound educational approaches that account for contextual, institutional, and learner-related factors [1]. Digital health education remains heterogeneous across countries and professions, with learning effectiveness strongly influenced by curriculum design and alignment of learning outcomes. To address this cross-border challenge, several European universities collaboratively developed a joint master's degree programme focused on managing digital transformation in health care (Master of Managing Digital Transformation in the Health Sector), aiming to meet common digital competence needs while accommodating diverse educational, cultural, and health care contexts. This paper describes the design and implementation process of a joint training programme curriculum unit developed through collaboration between universities from different countries.

Material and Methods: The curriculum unit design was informed by internationally recognised digital health competency frameworks, emphasising the need to address globally shared digital transformation challenges while remaining sensitive to local cultural, educational, and professional contexts [1]. The development process involved identifying a set of common core digital health competencies relevant across health systems, followed by alignment of learning outcomes, pedagogical approaches, and assessment practices [1, 2]. This balance between standardisation and contextualisation guided the co-design process across partner institutions. The assessment of the curriculum units were carried out by external evaluator of the project.

Results: The results describe the key phases of a jointly conducted curriculum unit development process carried out by partner universities. These phases included the collaborative identification of shared digital health competencies, co-creation of learning outcomes, and the development of joint pedagogical solutions such as online learning formats, collaborative teaching, and international student teams. Throughout the process, structural and contextual challenges such as differences in assessment practices, regulatory requirements, and institutional procedures were encountered [3]. These challenges were addressed through iterative dialogue and alignment efforts supported by common European higher education frameworks, enabling partners to maintain coherent academic standards while allowing contextual flexibility. Student feedback on the curricular unit, collected and analyzed by an external evaluator, demonstrated teacher-student communication, supportive instructor feedback and a well-organized course structure.

Discussion: The findings demonstrate that cross-country collaboration and joint curriculum development can act as a powerful driver for innovation in health care education, particularly in response to shared challenges related to digital transformation. The joint programme development process not only supported the acquisition of digital health competencies but also strengthened intercultural competence, collaborative capacity, and a shared understanding of digital transformation across diverse health care systems, and across different countries. Aligned with European Union objectives for cross-border cooperation, digital education, and workforce development, the results suggest that joint degrees can effectively bridge global competence needs and local contextual realities. The study highlights practical lessons for institutions seeking to develop joint programmes, including the importance of theory-informed competency frameworks, structured collaboration processes, and flexible curricular design. These findings contribute to ongoing European and international discussions on how higher education can support sustainable digital transformation in health care. [3]

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Towards More Proactive Client and Patient Safety Through the Reform of National Adverse Event and Patient Safety Incident Data Production

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Introduction: The reporting of adverse events and patient safety incidents in Finnish healthcare is fragmented, dispersed across separate systems and poorly interoperable between organizations and authorities. Current reporting processes often rely on duplicate documentation, manual workflows and varying classification practices, which reduces the comparability of data and limits its utilization in national steering, benchmarking and data-driven management. At the same time, the documentation burden consumes a significant proportion of healthcare professionals' working time and may negatively affect the quality and comprehensiveness of reporting. The aim of this project was to describe the national reform of adverse events and patient safety incident data production and to define and outline an operating model in which standardized and structured data recorded once in electronic client and patient information systems enables its use in regulatory reporting, supervision, peer development and data-driven management. [1,2]

Material and Methods: The project is based on a national development initiative funded by the Ministry of Social Affairs and Health, which integrates an analysis of the current state, modelling of the target state, regulatory and data structure assessments and multidisciplinary stakeholder collaboration. The project examined existing data sources, reporting obligations and the legislative framework, while identifying key challenges related to data quality, interoperability and data usability. The definition of the target state utilized the opportunities provided by international classifications and standards, as well as the ongoing development of national information management and national data repositories. A central principle of the project was single-entry documentation, along with the use of artificial intelligence to support documentation, classification and analytics.

Results: The analysis of the current state revealed several key barriers to the effective use of data. The challenges recognized included fragmented data, duplicate documentation, the limited use of structured data and the weak integration of safety information into management and healthcare system governance. The proposed target state includes nationally standardized data structures and documentation practices, automated data transfers from local systems to national data repositories and AI-assisted analytics solutions for the identification and prediction of client and patient safety risks. In addition, the proposed solution supports multi-level reporting, enabling the utilization of data both in organizations' operational management and in national monitoring and governance. This would enable a transition from reactive reporting to proactive client and patient safety management.

Discussion: The systematic development of client and patient safety requires more standardized, structured and effectively utilizable adverse event and patient safety incident data than is currently available. Transformation from fragmented and manual practices towards an integrated, structured and intelligent data ecosystem would improve the ability to identify risks, target development measures and enhance client and patient safety. If successfully implemented, the reform is expected to reduce duplicate documentation, improve the quality and comprehensiveness of data and increase the availability of timely and comparable information to support decision-making. However, successful implementation requires long-term national collaboration, legislative development and strong, coordinated governance.

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Session 3B Digihoitosta vaikuttavuutta ja kustannustehokkuutta

Puheenjohtaja/Chair: Tomi Laitinen, Suomen Telelääketieteen ja eHealth Seura (STeHS)

Thursday 1.10.2026 14:30-15:45 EET

- 3B-1 Digitaalisten hoitomuotojen arviointi**
Jari Haverinen, Erikoissuunnittelija
Kansallinen HTA-koordinaatioyksikkö (FinCCHTA)
- 3B-2 Digitaalisten hoitojen käyttöönotto - Riskit ja mahdollisuudet, paneelikeskustelu**
Jenny Vuollet, Johtaja, DigiFinland; Jari Haverinen, Erikoissuunnittelija, FinCCHTA; Tuomas Mäkynen, Toimitusjohtaja, ORLA; Laura Alanko, Takeda Europe; Puheenjohtajana Tomi Laitinen

Assessment of Digital Treatment Applications

Jari Haverinen¹, PhD, MSc (Tech)

¹ Finnish Coordinating Center for Health Technology Assessment (FinCCHTA), Oulu University Hospital, Oulu, Finland



Biography: Mr. Jari Haverinen received his PhD (2024) and M.Sc. in Electrical Engineering (1999) from the University of Oulu, Finland. He has an 18-year background in the telecom industry before transitioning to digital health. Between 2016 and 2024, he served as a researcher at the Faculty of Medicine, University of Oulu, where his work focused on developing health technology assessment (HTA) methods for digital health technologies (DHTs) and conducting eHealth research. He led the development of Digi-HTA in collaboration with the Finnish Coordinating Center for Health Technology Assessment (FinCCHTA). Digi-HTA was the first HTA method to support a wide range of DHTs, including digital therapeutics, AI, and robotics. Since 2021, he has worked as a Senior Planning Officer at FinCCHTA, focusing on the Digi-HTA process, its further development, and international collaboration. He also contributes to the Digital Therapy Trial initiated by the Ministry of Social Affairs and Health.

Introduction: Digital health technologies (DHTs) designed to support treatment and patient self-management, such as digital therapeutics (DTx) and remote patient monitoring (RPM) solutions, have attracted growing interest due to their potential to improve patient outcomes while promoting more sustainable healthcare delivery. Some European countries have established national health technology assessment (HTA) and reimbursement frameworks to facilitate their integration into routine care, with Germany, France, and Belgium emerging as leading pioneers. [1,2] In Finland, the assessment of DHTs has been advanced through the Digi-HTA framework, which was published in 2019 and incorporated into the routine assessment activities of the Finnish Coordinating Center for Health Technology Assessment (FinCCHTA) [2]. The Finnish Ministry of Social Affairs and Health launched the Digital Therapy Trial for the period 2025–2027. The results of the project are intended to support the development of a proposal for the next Finnish Government Programme on an assessment and reimbursement model for digital treatments within the Finnish healthcare system. The trial is coordinated by DigiFinland in collaboration with Kela, Sitra, and FinCCHTA. Within the project, FinCCHTA is responsible for conducting Digi-HTA assessments of the selected applications and contributes to the development of a future national assessment model for digital treatments. [3]

Material and Methods: The final proposal for a future Finnish assessment model will be based on both the findings of the Digital Therapy Trial and the best practices identified in pioneering countries, namely Germany, France, and Belgium [3,4]. Information on the assessment and reimbursement frameworks of these countries was collected through a narrative literature review and qualitative comparative analysis drawing on peer-reviewed and grey literature, policy documents, HTA guidelines, legislative and reimbursement materials, and product registries. The analysis examined eligible DHT categories, assessment criteria, stakeholder roles, reimbursement pathways, and the characteristics of reimbursed products. [4]

Results: Clinical effectiveness and interoperability as well as data security and protection are common domains across the assessment frameworks of all three leading countries. Nevertheless, notable differences exist in the technologies covered, evidentiary expectations, and practical implementation. Germany has the broadest assessment framework in terms of the domains covered, encompassing both DTx through the DiGA pathway and digital nursing applications through the DiPA pathway. In addition, assessment activities in Germany are centralized under a single national authority. France has established dedicated assessment and reimbursement pathways for DTx and RPM, involving several national stakeholders in the process. Belgium has recently reoriented its approach from the mHealth Validation Pyramid toward a model that prioritizes care pathway integration and demonstrated value. Across all three countries, reimbursed solutions are predominantly aimed at the management of chronic diseases, with a particular focus on mental health, cardiovascular conditions, and metabolic disorders. [4] At the time of writing, the first Digi-HTA assessments conducted within the Digital Therapy Trial were still in progress, and therefore a summary of their findings was not yet available [3].

Discussion: There is growing interest across Europe in integrating digital treatments into healthcare systems through systematic assessment and reimbursement processes [1,2]. Finland has also taken steps to advance this development through the Digital Therapy Trial. The proposed future model for the assessment and reimbursement of digital treatments will be informed by the findings of the trial as well as lessons learned from international best practices. [3]

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From Evidence to Impact: Enabling the Adoption of Digital Therapies in Finnish Healthcare

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⁵ *Takeda Europe*

Introduction Digital therapies have the potential to improve health outcomes, support patients in self-care, increase healthcare productivity and reduce the pressure on limited professional resources. However, moving from promising technology to routine healthcare remains challenging. Unlike pharmaceuticals, digital therapies still lack established and widely harmonised pathways for assessment, reimbursement, distribution and adoption. Finland is currently addressing this gap through the national Digital Therapy Pilot, while several European countries have already introduced different models for assessing and financing digital health applications. [1]

Material and Methods: This session combines perspectives from health technology assessment, national implementation, healthcare industry and digital therapy providers. It draws on experiences from the Finnish Digital Therapy Pilot, Digi-HTA assessment, European reimbursement and market-access models, and practical implementation of digital therapies. Particular attention is given to lessons from European approaches such as Germany's DiGA and France's PECAN and to their relevance for developing a sustainable Finnish model. [1]

Results: Experience to date indicates that successful adoption requires more than demonstrating clinical efficacy or technical quality. Digital therapies need a predictable pathway from assessment to implementation, including proportionate evidence requirements, integration into care pathways, appropriate financing and reimbursement, interoperability, cybersecurity, access to real-world data and incentives for healthcare organisations and professionals to adopt new ways of working. Preliminary findings from the initial Digi-HTA assessments undertaken as part of the trial have identified shortcomings in the availability of robust research evidence and highlighted the need for processes that support the generation of such evidence. Drawing on international experiences, conditional access combined with real-world evidence generation may provide a means to balance early access to innovation with the need to demonstrate clinical and economic value.

The Finnish Digital Therapy Pilot provides a practical environment for testing these elements. It will generate evidence on the benefits of selected digital therapies for patients and healthcare professionals, their integration into public healthcare, distribution and data utilisation, while informing recommendations for a permanent national assessment and reimbursement model. The value of the Finnish Digital Therapy Pilot lies not only in assessing individual solutions, but in building a consistent and scalable national pathway from evaluation to adoption, distribution and follow-up. The pilot must also demonstrate how digital therapies integrate into real-world care pathways, support professionals' workflows and patient care, and generate measurable clinical, operational and economic benefits to inform a sustainable financing and reimbursement model. In addition, HTA frameworks should assess not only clinical and economic value but also the practical prerequisites for implementation, including workflow integration, organisational readiness and the generation of real-world evidence. Greater alignment of assessment principles across Europe could reduce duplication and accelerate access to effective digital therapies. [1]

Discussion: The key challenge is shifting the focus from assessing individual technologies to creating a system that enables effective solutions to become part of routine care. Clinical evidence remains essential, but implementation, organisational impact, usability, professional adoption, sustainable financing and demonstrated value must be considered together. At the same time, the intended use of the solutions must be clearly defined: the current pilot focuses on applications intended for the treatment of diagnosed conditions, whereas the possible inclusion of self-care applications would require separate reimbursement criteria.

The central question is no longer whether digital therapies can create value, but how evidence can be translated into scalable adoption, measurable outcomes and sustainable healthcare.

References:

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Session 4A: AI assistants Transforming Healthcare and Social Services

Chair: Birgitta Tetri, Finnish Society of Telemedicine and eHealth (FSTeH)

Thursday 1.10.2026 16:30 – 18:00 EET

- 4A-1 AI Summary Assistant for Child and Family Social Work**
Milla Sulunsilta, Project Planner
The Wellbeing Services County of Pirkanmaa, Finland
- 4A-2 Evaluation framework for AI tools in specialized care**
Sami Pakarinen, Chief Medical Officer of Clinical Auditing
HUS, Finland
- 4A-3 AI Assistants as the New Health Workforce Layer?**
Robin Ohannessian, Founder & CEO¹ & President²
¹Vickino, ²Armenian Association of Digital Health, Armenia

Scientific rapid presentations

- O – 13 Jarmo Pulkkinen: The Barrier Inversion: Why the Most Motivated Employees Cannot Adopt Generative AI in Public Health and Social Care
- O – 14 Marja Harjumaa: AI-Assisted Documentation in Social Care
- O – 15 Laura Heinonen: AI-assisted identification of Clavien-Dindo grades as part of structured adverse event reporting
- O – 16 Antti Brunni: From Research to Production: Structural Bottlenecks and an Orchestration Model for Scaling AI in the Finnish Health and Social Care System

AI Summary Assistant for Child and Family Social Work: Reducing Workload and Improving Quality in Statutory Documentation

Milla Sulunsilta, MSc

The Wellbeing Services County of Pirkanmaa, Finland



Biography: Milla Sulunsilta is a Project Planner in the digital development unit at Pirkanmaa Wellbeing Services County, Finland. She works on the development and reporting of digital health and social services and is involved in AI-assisted solutions for social welfare. At eHealth2026, she will present *AI Summary Assistant for Child and Family Social Work*, sharing practical experiences from using AI to support child and family services.

Introduction: The increasing volume of case data in child and family social work creates a significant documentation burden for professionals. Documentation in statutory service needs assessments is time-consuming and requires synthesizing large amounts of fragmented information into structured narratives within strict deadlines. The aim of this project was to develop and pilot an AI-based solution, the AI Summary Assistant, to support the preparation of statutory service needs assessment summaries. The assistant reviews case data and generates a structured draft summary to support professional work. The project was part of DigiFinland's AI program and one of ten social and health care AI pilots coordinated within the national ecosystem.

Material and Methods: The project was carried out in collaboration with Pirkanmaa Wellbeing Services County, Istekki and Accenture. The pilot was conducted in one service needs assessment team in Tampere between 14 October and 5 December 2025 (39 working days). A comparison team continued with normal practice during the same period and an equivalent preceding period. Evaluation data included feedback collected within the tool, survey responses from professionals, and measurements of time spent preparing summaries. Additional data on completed summaries and compliance with statutory deadlines were extracted from the client information system. Operational efficiency was measured through time spent summaries and the number of completed summaries. Documentation quality and usability were assessed through professional feedback and surveys. The evaluation examined operational efficiency, documentation quality, usability, user satisfaction, and ethical considerations under real-life conditions using the SOTE AI pilot impact assessment framework developed by Virtanen et al. [1].

Results: The AI summary assistant was used to generate 100 service needs assessment summaries, of which 90 were successful, and 65 summaries were completed during the pilot. The pilot team spent on average 1 hour 36 minutes per completed summary, 42 minutes less than the comparison team using normal practice. The pilot team achieved full compliance with the statutory three-month deadline, compared with 97% in the comparison team. The system remained available throughout the pilot. Professionals reported that the assistant reduced information gathering and synthesis work, but the manual copy-and-paste workflow, editing and verification of outputs increased workload in some cases. The summaries required professional review and were most useful when the amount of background data was limited; with larger data volumes, relevant information could be omitted. Feedback was received for 53 generations, corresponding to 59% of successful generations, and indicated a modestly positive user experience. The findings confirmed that AI-generated summaries are always draft texts that require professional review, correction, and approval before being finalized as official documentation.

Discussion: The pilot demonstrated that the value of AI-assisted documentation in social work depends not only on the quality of generated text, but also on how well the technology is integrated into professional workflows. While the AI Summary Assistant reduced the effort required for information synthesis, the benefits were partly offset by manual transfer steps and the need for extensive review in complex cases. The findings suggest that future gains are more likely to arise from seamless integration with client information systems and workflow redesign than from improvements in text generation alone. Importantly, the pilot highlighted that AI functions best as a decision-support tool rather than an autonomous actor: professional judgement remained essential for validating, correcting and contextualizing outputs. In social services, successful adoption therefore requires equal attention to technical performance, usability, governance, and change management. With these prerequisites in place, AI-assisted documentation has the potential to release professional capacity for direct client work while maintaining accountability, transparency and legal compliance.

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Evaluation Framework for AI Tools in Specialized Care

Sami Pakarinen, Chief Medical Officer of Clinical Auditing

HUS, Finland



Biography: Doctor of Medicine (MD, PhD) Sami Pakarinen is a clinician–researcher and cardiologist currently serving as Chief Medical Officer for Clinical Auditing at Helsinki University Hospital (HUS). He has held senior leadership roles at HUS for over two decades, including Physician-in-Chief of Internal Medicine and Senior Consultant in Cardiology. Dr. Pakarinen has played a key role in national and EU-funded initiatives advancing value-based healthcare, cost-effectiveness, and outcome-driven care, including leadership positions in the EU funded ONCOVALUE project and EU Recovery and Resilience Facility programs. He has long-standing expertise in cardiac rhythm management and rhythm device therapy. In his current role, he promotes evidence-based practice, transparency, and continuous quality improvement. His responsibilities include real-time data production, analytics, and reporting on the cost-effectiveness of HUS specialized healthcare services and also participation in both hospital-level and national health technology assessment (HTA) processes. He also actively participates in EUHA and NUHA collaboration.

Artificial intelligence (AI) tools are increasingly becoming integral parts of specialized healthcare rather than isolated pilots or technology projects. Their successful implementation requires more than technical validation: value is created through alignment with clinical objectives, care processes, organizational practices, and decision-making.

My talk presents an evaluation framework for assessing the impact of AI solutions throughout their lifecycle in specialized care. The framework emphasizes clinical effectiveness, patient safety, operational efficiency, economic impact, usability, and organizational change. It also highlights the importance of data quality, process maturity, continuous monitoring, and systematic measurement of real-world outcomes.

Using the HUS context as an example, my presentation discusses how flexible and evolving metrics can support the responsible scaling of AI across healthcare organizations. The aim is to move beyond measuring technology adoption towards understanding whether AI solutions genuinely improve patient care, professional work, and healthcare system performance.

AI Assistants as the New Health Workforce Layer

Robin Ohannessian, Founder & CEO¹ & President²

¹Vickino, ²Armenian Association of Digital Health, Armenia



Biography: Dr. Robin Ohannessian, MD, MPH, PhD, is a public health physician, digital health strategist, and global expert in telemedicine. He is the Founder and CEO of Vickino, an advisory firm guiding healthcare systems and organizations through digital transformation, telehealth deployment, and AI integration. Dr. Ohannessian serves on the Board of the International Society for Telemedicine & eHealth (ISfTeH) and presides over the Armenian Association of Digital Health (AADH). With an extensive background in stroke telemedicine research and policy development, he regularly advises international institutions, governments, and academic centers on sustainable

eHealth strategies across Europe, Africa, the Middle East, and the Caucasus.

Introduction: The global health workforce is projected to remain about 10 million workers short in 2030, and the shortfall is expected to shrink by only 7% in the WHO African and 15% in the Eastern Mediterranean regions [1]. Generative AI assistants, such as ambient documentation scribes, inbox-reply drafting tools and clinical copilots, are increasingly presented as a new capacity layer that extends the workforce without adding staff. We examined whether current evidence supports this framing, and under which conditions.

Material and Methods: Targeted search for PubMed-indexed literature (last run September 2026), prioritising randomised and pragmatic real-world evaluations of LLM-based assistants used by clinicians for documentation, patient messaging and decision support, plus workforce projections. Seven sources were retained [1-7] and synthesised narratively by workforce function (administrative, communication, cognitive). No meta-analysis or formal risk-of-bias appraisal was performed.

Results: Administrative: in a randomised trial of 238 outpatient physicians, one of two ambient scribes reduced time-in-note by 9.5% (95% CI -17.2 to -1.8) while the other showed no significant change (-1.7%); secondary outcomes suggested lower task load and work exhaustion with either scribe, and clinically significant inaccuracies were reported "occasionally" [2]. Communication: AI-drafted replies to patient messages achieved notable adoption and improved burden and burnout assessments in a five-week pilot, but did not reduce time [3]. Cognitive: access to an LLM did not improve physicians' diagnostic reasoning versus conventional resources (76% vs 74%; adjusted difference 2 percentage points, 95% CI -4 to 8), although the LLM alone scored higher [4]. In Kenyan primary care, 99% of 1,469 reviewed copilot outputs were guideline-aligned, yet 7.8% contained potentially harmful recommendations, and clinicians made no LLM-induced changes in 62% of encounters [5]. A cluster-randomised trial (9,691 patients, 103 clinical officers, 16 clinics) found no significant difference in 14-day treatment failure (2.2% vs 2.0%; adjusted OR 0.77, 95% CI 0.55-1.08) [6]. Real-world evaluations in low- and middle-income countries remain rare [7].

Discussion: The evidence supports AI assistants as augmentation of clinician time and cognitive load, chiefly in documentation and communication, rather than as a new workforce cadre that closes staffing gaps. Benefits are modest, vary between products, and have not yet been shown to change patient outcomes. A "workforce layer" needs the governance applied to staff: local guidelines, supervision, monitoring of drift, clear accountability and training. Workforce plans should not assume that AI substitutes for the projected shortfall. Priorities are prospective trials with patient and workforce outcomes (time, retention, access), post-deployment surveillance, and digital-health training for clinicians.

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The Barrier Inversion: Why the Most Motivated Employees Cannot Adopt Generative AI in Public Health and Social Care

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Introduction: Generative AI tools are increasingly available to employees in public health and social care, yet uptake remains low despite organizational expectations [1]. Finland's 2023 wellbeing services county reform created large integrated organizations where readiness for AI varies across service domains, making the setting well-suited for examining adoption constraints. Drawing on the Armenakis et al. [2] change readiness framework, this study identifies distinct employee readiness profiles and examines whether different configurations produce different barrier structures.

Material and Methods: Data were collected via an internal web-based survey (N = 437; analytical sample n = 373) from employees of a Finnish wellbeing services county in autumn 2025. Four readiness dimensions (valence, appropriateness, discrepancy, and principal support) were operationalized from survey items mapped onto the Armenakis framework. K-means cluster analysis identified employee subgroups with similar motivational readiness configurations. Profiles were validated against generative AI adoption status, and the cross-tabulation of profiles with AI adoption status yielded six diagnostic groups. Adoption barriers among non-users (19 items) were analyzed using severity thresholds and Kruskal-Wallis tests. Thematic analysis of open-ended responses complemented the quantitative findings.

Results: Three profiles emerged: change-ready (26%), pragmatic moderate (54%), and disengaged (20%), with corresponding AI adoption rates of 63%, 49%, and 20%. A counterintuitive pattern emerged among non-users. The most motivated employees reported the most pervasive barriers (8 of 19 exceeding the 70% severity threshold), while the least motivated reported only 2. Perceived training need increased with motivational readiness, suggesting that higher motivation coincided with greater recognition of one's own learning needs. Qualitative data showed that motivated non-adopters identified specific missing elements, including training, safe experimentation environments, and domain-specific tools, even as they perceived strong symbolic management support.

Discussion: The findings suggest that employee motivational readiness, even at high levels, does not translate into technology adoption behaviour when the organizational learning environment lacks essential enabling conditions. The barrier inversion locates the core bottleneck in organizational infrastructure deficits, specifically in training provision, tool availability, and safe experimentation spaces. Organizations should assess the distribution of workforce readiness and tailor interventions accordingly. Awareness campaigns without investment in learning infrastructure risk leaving the most adoption-ready employees unable to act.

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AI-assisted documentation in Social Care Services

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Introduction: The foundation of social work is the assessment of the client's life situation and need for support. Social work is documented in client information systems, as this information is necessary for organizing services or benefits, as well as for planning, implementing, and monitoring actions. Documenting social work is important for the legal protection of both the client and the worker, but it is not merely an administrative obligation; it is an integral process of the work that includes writing, reading, using information, and analytical examination. Currently, entries are often delayed due to quick transitions between meetings, which increases administrative burden. The aim of this study was to determine how an AI-assisted documentation application can support social welfare services.

Material and Methods: The pilot took place in 2025 within the Western Uusimaa wellbeing services county, with the RDI unit providing support and utilizing a bottom-up implementation approach. At first, a small team was recruited for the pilot to participate in testing model versions and providing feedback. A Teams chat was set up for the pilot, including the RDI team, the solution supplier, and end users. Professionals used Teams to ask each other for help, but the supplier also responded directly to users' questions. The application was used in real customer work from the start. As technology matured, more voluntary users joined the pilot. The deployment was organized so that before using the application, users had to apply for user credentials and complete user training, which was also available as a video. The application worked in a web browser and produced a draft record based on the conversation between the customer and the employee or the professional's dictation. The employee reviewed the draft and copied it into the client information system. The impact assessment examined the functional process of professionals and the use of the service as part of it to identify and scale benefits. The perspectives considered were operational efficiency, quality, employee and customer experience. Data collection methods included application log data, built-in surveys, as well as interviews and a survey conducted at the end of the pilot.

Results: From March to November, the application was used a total of 5,721 times. There were 225 identified users in total. Users made the most use of the encounter recording function, while smart dictation and dictation were used less frequently. 79% of the draft notes (n = 4,769) were copied—that is, utilized. When examining employees' commitment to using the application, it remained relatively consistent as the months of use progressed. About half of the users used the application regularly, either daily or weekly. On average, 20% of the application's users used it daily. The results showed that the cognitive load of application users decreased, work processes became more efficient, working time was saved, and presence during customer encounters was improved. The benefits of the application were experienced similarly regardless of the service and achieving them did not require efforts to standardize documentation guidelines or practices. The change brought by AI-assisted documentation was easy to implement, and it did not increase professionals' workload despite other simultaneous changes. The quality of documentation or differences in quality between entries were mentioned in the interviews less frequently, as employees rarely read documentation made by others.

Discussion: Based on the findings, it is worth expanding the use of AI-assisted documentation in social services, as the benefits can be scaled as the number of users grows. The application's use can also be deepened by sharing information about new professional-driven ways of using it and by developing support for other purposes besides documentation. Expanding the use also supports the adoption of the social welfare client data repository, as it makes it easier to complete documentation without delay. However, it is important to note that a potential risk of AI-assisted documentation is its possible negative impact on professional reflection and workplace learning, especially for employees who are just starting their careers. Documentation is a part of the job, not just an obligatory task. In social services, the conditions for timely documentation would also improve if there were time between client meetings to finalize entries and if better internet connections were available in the home visits.

AI-assisted identification of Clavien-Dindo grades as part of structured adverse event reporting

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Introduction: The systematic identification, severity assessment and standardized national reporting of surgical complications are essential for improving the quality, patient safety and cost-effectiveness of surgical care. The Clavien-Dindo classification is an internationally established grading system for surgical complications that enables a standardized approach to describing complication severity. The aim of this pilot study was to evaluate how the Clavien-Dindo Classification could support more structured and nationally comparable surgical complication reporting, and to explore the potential of AI-assisted documentation support in surgical care. [1]

Material and Methods: This pilot study was conducted as part of a Sitra-funded consortium project *Proactive Management of Surgical Complications*, carried out in collaboration with the Finnish Centre for Client and Patient Safety and the Wellbeing Services County of Southwest Finland. The project consisted of two parallel sub-studies. The first sub-study examined the structural and semantic correspondence between the Clavien-Dindo Classification and the eleventh revision of the International Classification of Diseases (ICD-11). The analysis evaluated to what extent ICD-11 enables a structured reporting of surgical complication severity grades. The second sub-study evaluated the ability of a large language model for identifying Clavien-Dindo grades from unstructured patient records as part of an AI-assisted documentation support.

Results: The analysis of correspondence between ICD-11 and the Clavien-Dindo Classification demonstrated that the systems are partially compatible, although full correlation remains incomplete. The findings indicated that the use of the Clavien-Dindo Classification as a part of national adverse event reporting through ICD-11 codes requires additional structures, interpretation rules or complementary data elements alongside ICD-11. The second sub-study demonstrated that the large language model could identify Clavien-Dindo grades from unstructured patient records with promising accuracy, supporting the feasibility of AI-assisted complication classification and reporting.

Discussion: Together, the two sub-studies suggest that an advanced and automated national adverse event reporting requires both standardized classification structures and AI-assisted documentation support. The compatibility analysis between ICD-11 and the Clavien-Dindo Classification highlighted the need for the national implementation of the Clavien-Dindo Classification as part of electronic health record systems and potentially also as a separate structured data element within the National Care Register for Health Care system. Such a solution could improve data comparability and interoperability while creating a foundation for nationally scalable, automation-assisted patient safety data production in Finland. Simultaneously, the language model pilot demonstrated that AI-assisted documentation support could enable a future documentation model integrated into electronic health record systems and clinical workflows for surgical complication reporting. This could reduce the burden of clinical documentation and support the systematic monitoring of surgical quality and patient safety.

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From Research to Production: Structural Bottlenecks and an Orchestration Model for Scaling AI in the Finnish Health and Social Care System

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Introduction: Artificial intelligence (AI) research in healthcare has grown rapidly in recent years, including in Finnish university hospitals, producing models for imaging, risk prediction, documentation, and decision support [3, 4, 5]. Yet impact depends on sustained operational use, and most solutions do not move beyond research or pilots. This indicates that key barriers are structural, organizational, and governance-related rather than purely technical or data-driven. The urgency is increased because many priority use cases are considered high-risk under the EU AI Act and may also fall under the MDR when qualifying as medical-device software. Identifying these bottlenecks is therefore essential for scalable, safe, and sustainable AI adoption in public health and social care.

Material and Methods: This study is based on a qualitative analysis of a national expert survey commissioned by Istekki Oy. The material comprised approximately 30 semi-structured interviews conducted in autumn 2025 with researchers, clinicians, ICT leaders, data protection specialists, and representatives of wellbeing services counties, university hospitals, and partner organizations. In addition, a literature review covering 759 PubMed-indexed publications was conducted to contextualize Finnish AI research activity within international trends. The data were analysed using thematic content analysis, focusing on recurrent barriers, enablers, and structural patterns affecting the transition from AI research to production use.

Results: The analysis shows that AI research activity in Finnish university hospitals is high-quality and internationally comparable, but most initiatives remain at technology readiness levels (TRL) 3–5. The dominant obstacles to production deployment are structural rather than technical. Key bottlenecks include the absence of clear ownership after research phases, lack of standardized evaluation and prioritization criteria, fragmented regulatory and data protection responsibilities, missing production environments and lifecycle management models, and limited coordination across organizations. AI pilots typically demonstrate technical feasibility but fail to establish sustained ownership, monitoring, maintenance, and governance, resulting in local and temporary benefits rather than system-level impact. The pattern aligns with international evidence on barriers to AI adoption in healthcare [4] and with broader implementation evidence on digital health effectiveness [1, 2].

Discussion: The findings highlight a systemic gap between AI research and operational use in the Finnish health and social care system. Closing this gap requires more than incremental pilots; it requires a deliberate orchestration model that integrates regulatory compliance, data protection, cybersecurity, production readiness, and lifecycle governance into a repeatable deployment pathway. The results emphasize the need for a neutral, long-term coordinating actor and shared structures that make AI adoption auditable, scalable, and sustainable. Addressing these structural issues is a prerequisite for translating promising AI research into tangible improvements in healthcare delivery, productivity, and patient and client safety.

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Sessio 4B: Vaikuttavuus digitaalisilla palvelupoluilla

Puheenjohtaja/Chair Juuso Tamminen, Suomen sosiaali- ja terveydenhuollon vaikuttavuus seura:

Thursday 1.10.2026 16:30 – 18:00 EET

4B-1 Henkilökeskeinen tietomalli vaikuttavuuden arvioinnin pohjana

Katja Antikainen

Tieto- ja vaikuttavuusjohtaja, OmaHäme

4B-2 Digi- ja etäpalvelut osana asiakkaan hoitoa ja palvelupolkua

Nora Tarvus, Ylilääkäri

Pohjois-Karjalan hyvinvointialue

4B-3 Pitkäaikaissairauksien digihoitopolut

Pauliina Nurmi, Ylilääkäri

Digipalvelut, Etelä-Savon hyvinvointialue

Scientific 5 min rapid presentations:

O – 17 Johanna Leväsluoto: AI in integrated care pathways: From task level optimization to pathway level integration

O – 18 Henna Harju: From Client Self-Assessments to Data-Driven Impact: Digital Wellbeing Indicators in Social Services

O – 19 Arja Kobylin: A mixed method study on patient selection to urgent remote appointments in Medical Helpline setting

O – 20 Vivi Mauno: Accumulated experience and healthcare personnel productivity in public digital clinics

Person-Centered Data Model as a Foundation for Impact Assessment

Katja Antikainen, DSc (Tech)

Kanta-Häme Wellbeing Services County



Biography: Katja Antikainen holds a Doctor of Science in Technology, with expertise particularly focused on assessing the effectiveness of integrated social and healthcare services. She works as Chief Data Officer in the Kanta-Häme Wellbeing Services County, with an emphasis on effectiveness. She has over 20 years of experience in data management within the public sector.

Introduction: Effectiveness (impact) is widely regarded as the primary objective of health and social care. Furthermore, the national strategic objectives set by the Finnish Government for wellbeing services counties emphasize effectiveness-based management, leadership, and governance. In the strategy of the Kanta-Häme Wellbeing Services County, effectiveness plays a central role. It is defined as a positive and verifiable change in the wellbeing, health, functional capacity, and safety of clients and the population that results from the services and activities provided by the wellbeing services county. Effectiveness is reflected in improvements in an individual's situation, timely and seamless services, enhanced population wellbeing, and the sustainability of the service system. It manifests at multiple levels: at the individual level through improved functional capacity, wellbeing, health, quality of life, safety, and ability to cope independently; at the service production level through timely, seamless, and appropriate care and service pathways, fewer unnecessary service steps, and cost-effectiveness; and at the system level through improved population wellbeing, reduced demand for intensive services, and a sustainable service system. Because effectiveness is multidimensional and operates across several levels, its assessment must also consider these different dimensions. To support this need, a person-centered data model and an effectiveness assessment framework have been developed [1,2]

Materials and Methods: The person-centered data model was implemented using dimensional star-schema modeling. The core of the model is a unique personal identifier that links person-level information stored in the wellbeing services county's information systems. In addition to the star schema, summary tables have been created for the most essential datasets, such as service events, to facilitate data use. The data model also serves as the foundation for a segmentation catalog, enabling flexible and versatile utilization of information for different target groups. The effectiveness assessment framework compiles effectiveness indicators identified in the literature and classifies them into three levels based on the breadth of their applicability. [3,4,5]

Results: The person-centered data model integrates the information required for effectiveness assessment at the individual level. The model is dynamic and can be expanded as needed. The most frequently used data elements include demographic information, healthcare and social care data, functional capacity assessments, patient/client experience measures, quality-of-life assessments, and cost data. These data enable the construction of generic and broadly applicable indicators included in the effectiveness framework, which can be supplemented with disease-specific or service-specific indicators when required. In addition to regional-level analyses, the model supports expansion to national-level assessments and interregional comparisons through a national data model. [4,5,6]

Discussion: The developed data model and framework support both effectiveness research and effectiveness-based management. Beyond person-centered analyses, the model also enables family- and close-network-centered analyses, providing added value particularly in studies concerning children and young people. In addition to effectiveness assessment, the model supports productivity and operational analyses, monitoring of care and service pathways, development of service coordination, and predictive alerts. [3]

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Digital and Remote Services as Part of the Patient's Care and Service Pathway

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Biography: Nora Tarvus is a Medical Doctor and a Master of Business (Innovation Management), who has built her career in the crossroads of medicine, leadership and digitalization. Currently she works as a Chief Physician of the Digital Social and Healthcare Center of Wellbeing Services County of North Karelia, Finland. She also conducts research towards a PhD and specializes in Public Health and Prevention.

Introduction: Digital services in healthcare become more popular during covid pandemic few years ago [1]. Previous research shows that digital services provide safety and quality comparable to in-person services [2,3,4], improve treatment adherence and standardize care needs assessment [5]. Digital services are most suitable for treating simple care episodes [4,6]. In Finland most of the population have access to digital clinics [7], however, evidence of digital services from Finnish primary healthcare is limited [8]. This retrospective study evaluated the centralized Digital Social and Health Care Center (DSHCC) in the Wellbeing services county of North Karelia – Siun sote, describing reasons for contact, resolution rates, and user demographics compared to other healthcare centers.

Material and Methods: Data on chat volumes and user demographics were extracted from platform provider reports (1 April 2024–30 September 2025). Reasons for contact and repeat visits were assessed using electronic health record statistics (1 January 2023–30 September 2025). Additional information on user demographics was collected from Avohilmo and Terveystieteiden tutkimuskeskus data (1 January 2023–31 March 2026).

Results: There were 55 147 chats during the observation period. Reasons for contact were diverse, three most common reasons for visits included general advice, upper respiratory infections and other respiratory tract infections for nurses, and general advice, need for vaccination and acute urinary tract infections for doctors. Most patients of the DSHCC did not recontact for the same issue within 2 days (94.1%) or within 14 days (79.5%). The ones who had another contact within 2 days 3.9% contacted DSHCC, 1.8% had a contact with another healthcare center of which 1.1% were appointments with healthcare providers, 0.2% of patients contacted emergency room (ER) contacts. Within 14 days 8.3% contacted DSHCC again, 11.0% contacted healthcare centers with 6.5% having an appointment, and 1.2% contacted ER. The chat service was utilized across all municipalities in North Karelia and by all age groups. From underserved groups non-Finnish and Swedish speakers were overrepresented, and people with high public primary care (PPC) use were underrepresented.

Discussion: High users of PPC are recognized and given a care plan including their own contact person, this most likely explains the low number compared to other healthcare centers in the region. This might also at least partially the high resolution rate since the sickest patients are using DSHCC less. Another factor affecting high-resolution rate is likely that the visits consisted mostly general advice and acute infection episodes that have been found to be suitable for remote care in previous studies.

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Pitkäaikaissairauksien digihoitopolut Digital Care Pathways for Chronic Diseases

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¹ Chief Physician, Digital Health Services, South Savo Wellbeing Services County (Eloisa), Finland



Biography: Pauliina Nurmi is the Chief Medical Officer of Digital Services at the South Savo Wellbeing Services County (Etelä-Savon hyvinvointialue) in Finland, a role she has held since May 2024. She graduated as a Medical Doctor from the University of Eastern Finland in 2019 and has rapidly advanced into leadership in digital healthcare. Nurmi has been closely involved from the very beginning in the development of digital care pathways for chronic conditions such as type 2 diabetes, hypertension, asthma/COPD, and coronary artery disease in primary care. At the Finnish eHealth Conference, she presents on implementing effective digital pathways for chronic disease management.

Her interests lie in scalable, patient-centered digital solutions that enhance health outcomes and care efficiency.

Background: The South Savo Wellbeing Services County (Eloisa) serves approximately 130,000 residents in Eastern Finland and has identified digitalization as a key strategic priority for ensuring accessible, high-quality, and sustainable health services [1]. As part of Finland's Recovery and Resilience Plan (RRP) and the Sustainable Growth Programme, Eloisa received funding to develop digital service solutions that strengthen preventive care, improve continuity of care, and support citizens' self-management of long-term conditions [2,3].

Chronic diseases such as type 2 diabetes, hypertension, hypercholesterolemia, coronary artery disease, asthma, and chronic obstructive pulmonary disease (COPD) account for a substantial share of healthcare utilization and require continuous follow-up and lifestyle counselling. To respond to these challenges, Eloisa began developing digital care pathways for chronic diseases in March 2024. Following a pilot phase, broad patient and client adoption began in 2026. The pathways aim to provide patient-centered, scalable, and digitally supported care while promoting healthy lifestyles and empowering patients to take a more active role in managing their health.

Main contents of the presentation: This presentation describes the development, implementation, and early experiences of chronic disease digital care pathways in Eloisa. The pathways have been designed for patients with type 2 diabetes, hypertension, hypercholesterolemia, coronary artery disease, asthma, or COPD.

Patients are assigned to different pathway models based on their digital capabilities and the severity of their condition. The first model is an independent self-management pathway that includes symptom and health diaries, educational materials, links to reliable information sources, and guidance supporting self-care. The second model combines self-management tools with secure asynchronous communication, allowing patients to contact their designated nurse through the platform and receive a response within five working days. This approach strengthens continuity of care and maintains a direct connection with the patient's own healthcare professional, who can consult the responsible physician when needed.

The digital pathways enable systematic collection of patient-reported information, including symptom monitoring, health measurements, and electronic questionnaires. This supports proactive follow-up, facilitates clinical decision-making, and improves the availability of relevant patient data between contacts.

A major focus of the pathways is the promotion of healthy lifestyles. Patients receive support for lifestyle modification through nutrition counselling, physical activity guidance, and links to community-based wellbeing services available through Eloisa's Wellbeing Service Directory ("Hyvinvointitarjotin") [4]. By combining healthcare services with broader wellbeing resources, the pathways seek to strengthen prevention, self-management, and long-term health outcomes. The presentation will discuss strategic objectives, practical implementation, and anticipated benefits of digital care pathways for chronic disease management in a regional healthcare system.

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AI in integrated care pathways: From task level optimization to pathway level integration

Johanna Leväsluoto¹, PhD, Mika Nieminen³, PhD, Laua Wiman⁴, MSc, MSc, Richard Schmidt⁵, MSc, Mika Naumanen⁶, PhD⁶, Peter Ylén⁷, PhD

¹ VTT Technical Research Centre of Finland

Introduction: The integration of artificial intelligence (AI) into health and social care services has accelerated rapidly with growing evidence of benefits at the level of individual tasks and processes. Existing studies demonstrate that AI applications can reduce administrative burden, enhance workflow efficiency and support clinical and organisational decision making. Examples such as ambient documentation systems, automated image processing, and decision support tools allow professionals to redirect time with the clients [1,2]. However, research also highlights that the impact of AI is strongly shaped by human–AI interaction quality, organisational readiness, digital infrastructure, training, and governance. If AI systems are poorly designed and aligned with the current work practices it may increase cognitive load, disrupt workflows and remain underutilised. Despite these advances, AI's contribution to cross sectoral integration between health and social care remains limited. Integrated care pathways are understood as coordinated, client centred services designed for individuals whose needs cannot be met within a single sector. Their aim is to enable timely identification of complex needs, joint assessment, shared care planning, and coordinated service delivery across organisational boundaries [3]. Integrated care pathways can thus reduce fragmentation and improve continuity of care.

Material and Methods:

A scoping review was conducted to examine existing evidence on the use of artificial intelligence (AI) in supporting integrated care pathways across health and social care. The review focused on whether and how AI applications have been reported to contribute to cross-sectoral integration, coordinated service delivery, or shared care processes. Scientific articles were identified primarily through searches in Scopus, complemented by the use of Scopus' AI-assisted search functionality to capture relevant studies that explicitly address AI, health and social care, and service integration. Studies were screened based on titles, abstracts, and full texts, with inclusion criteria covering empirical and theoretical research addressing AI applications in health care, social care, or their integration

Results: As we reviewed the current AI literature, we observed the lack of studies focusing on AI in relation to integrated care pathways or cross sector service coordination. Most research focuses on individual aspects of integration, such as risk identification, monitoring, documentation, or decision-making support. These applications are typically developed and used within healthcare settings with little integration of social care. As a result, AI solutions tend to reinforce sectoral silos rather than enable integration of different sectors. Challenges include fragmented data infrastructures and governance misalignment across sectors, which constrain the development of AI systems capable of supporting shared accountability and coordinated service models.

Discussion: The main finding from the literature review is that AI has not managed to support integrated care pathways so far because the main obstacles are organisational, relational, and systemic rather than technical. Integrated care pathways rely on shared governance models, with ongoing changes in how data sharing and access are regulated. Aligned incentives, clearly defined professional roles, and continuous collaboration are also emphasised as essential components. These are conditions that AI alone cannot create. To meet the need of developing better integrated pathways, future development of AI applications should focus more on pathway level processes, e.g. supporting shared decision making across professions and strengthening cross sector data governance.

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From Client Self-Assessments to Data-Driven Impact: Digital Wellbeing Indicators in Social Services

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Introduction: The digital transformation of social services and the increasing demand for impact assessment require timely, comparable and client-centred wellbeing data that can be utilised both in client work and in knowledge-based management. Unlike healthcare, social services lack nationally established wellbeing indicators that enable systematic monitoring of life-situation changes and service impact. Digital self-assessment tools offer a promising approach to bridging micro-level client work and macro-level impact management.

Material and Methods: This qualitative study is based on data collected in four multidisciplinary workshops involving social work professionals, managers and ICT specialists. The workshops explored perceived benefits, challenges and managerial use of digital wellbeing indicators in client work. The data were analysed using qualitative content analysis. The findings are reflected through ZekkiPro, a digital system based on the validated and reliable 3X10D Life Situation Survey, which measures multidimensional subjective wellbeing.

Results: Digital wellbeing indicators were perceived to improve the quality of client work by supporting preparation for encounters, structuring clients' life situations and strengthening client participation. Self-assessments make changes in wellbeing visible and support goal-oriented work. At the organisational level, systematically collected digital wellbeing data enable knowledge-based management, service targeting, client segmentation and impact assessment. Identified challenges included implementation burden, system integration, data interpretation skills and risks of technostress.

Discussion: The findings suggest that digital, client-reported wellbeing indicators can function as a key enabler of data-driven impact management in social services. Measurement and technical systems alone do not generate impact; achieving effectiveness requires organisational capabilities to utilise data in management, decision-making and service development. ZekkiPro demonstrates how human-centred wellbeing data can simultaneously support meaningful client encounters and organisational decision-making. Such data should not be regarded as "soft", but as essential evidence for developing effective and sustainable social services.

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A mixed method study on patient selection to urgent remote appointments in Medical Helpline setting

Arja Kobylin¹, MD, MSc (Pharm), Elina Wärnhjelm², MD, Milja Niinihuhta³, RN, Ph.D., Mari Hongisto⁴, MD, Ph.D.

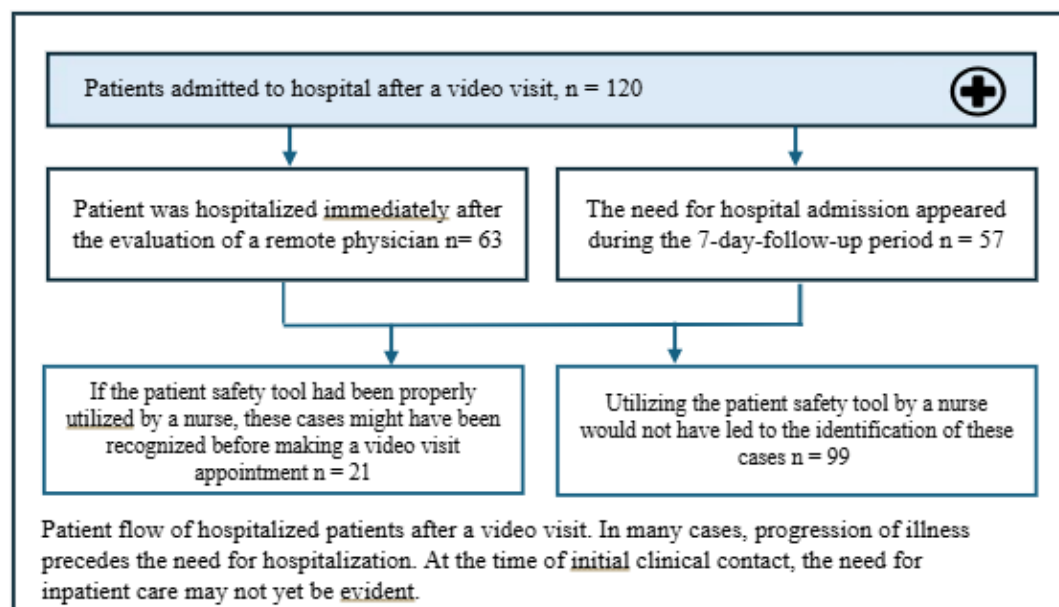
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Introduction: Patient safety of remote appointments (RA) has not been studied enough. The aim of this study was to analyze the capability of Medical Helpline Nurses (MHN) to exclude critically ill patients from RAs. We assessed the usability of a patient safety tool (PST) developed based on Real-World Data. PST consists of critical questions that MHN goes through before choosing RA. Questions are based on the assessment of vital functions, such as is the patient having shortness of breath, neurological symptoms or intolerable pain.

Material and Methods: We analyzed patient cases (n= 5986) treated remotely 1st Oct 2021–30th Aug 2024 by Medical Helpline physicians of Helsinki University Hospital, Finland. We used inductive content analysis to classify cases that could not be resolved remotely. We made a questionnaire for MHNs to assess their insight into the cabapility of PST. The study follows the SRQR (Standards for Reporting Qualitative Research) guideline.

Results: 86 % of patients did not need to go to Emergency Department (ED) after RA. 8 % of patients were guided to ED directly after RA. 1,1 % of patients were hospitalized immediately after physician's guidance to ED. If PST had been properly utilized, 21 cases should have been referred straight to the ED instead of RA. MHNs found the PST useful for decision-making.



Discussion: A remote appointment can be a major patient safety risk of missing something important. PST was developed for needs of Medical Helpline service where nurses focus on performing assessment of the need for urgent care. This study validated the PST as an effective means of reducing preventable safety risks.

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Accumulated experience and healthcare personnel productivity in public digital clinics

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² *University of Helsinki, Finland*

Introduction: The use of digital clinics in Finnish public healthcare has expanded rapidly in recent years, alongside a growing number of healthcare professionals delivering care in digital clinics. However, important knowledge gaps remain regarding how health care personnel productivity evolves with accumulated experience in digital clinics, and whether digitalizing primary care visits partially is associated with differences in productivity and care provision.

Material and Methods: This study uses globally unique log level digital clinic data from a Finnish public primary care digital clinic in the Päijät-Häme region. The data was extracted from years 2023-2025 to describe the users, healthcare personnel and visits of the digital clinic on a detailed level. The patient characteristics, visits and personnel experience were described, as well as the length and amount of simultaneous digital clinic discussions. The association between the personnel's previous digital clinic work experience and length of digital clinic discussions was tested statistically for the whole study population as well as diagnostic groups.

Results: Between 04/2023-08/2025 a total of 118 951 primary care digital clinic visits were found for 35732 patients, 23418 (65.6 %) of which were female. The mean age of patients was 41.4 (median 39), and 27453 (76.8 %) were living in an urban municipality. 7555 (21.1 %) had acted on behalf of a family member in the digital clinic. Most common reasons for visits were general counselling, acute upper respiratory infection and psychological symptoms. For these patients and visits, 277 healthcare personnel were found with the following previous digital clinic working experience (number of discussions): 10-49, 49-99, 100-499, 500-999, 1000-1499 and 1500 or more. The median length of the digital clinic discussion for these groups was 31, 31, 31, 29, 29 and 24 minutes, respectively. Due to skewness of the data, we analyzed conditional quintiles rather than the mean. Specifically, we modelled the median using quantile regression. Since the unique personnel individuals were observed repeatedly in the data, a median quantile regression bootstrapped for clustering was chosen. Median quantile regression showed that greater professional experience was associated with shorter digital clinic visits. Each additional unit of experience reduced the median visit length by 0.0031 minutes ($\beta_1 = -0.0031$, cluster-bootstrap SE = 0.00040, $t = -7.61$, $p < 0.001$). The estimated median visit length for a professional with zero experience was 36.5 minutes (β_0 , SE = 1.72). To express the effect in more intuitive units, an increase of 1000 visits experience corresponded to a 3.17 minutes shorter median visit.

Discussion: Our findings suggest that health care personnel's accumulated experience working in the digital clinic is associated with higher productivity in the digital clinic. However, these results may be specific to this public primary care digital clinic, where the patient population is predominantly working age, female, and living in urban areas.

Session 5: Advanced analytics and AI

Puheenjohtaja/Chair: Vesa Jormanainen, Finnish Society of Telemedicine and eHealth (FSTeH)

Friday 2.10.2026 9:30-10:20 EET

- 5-1 Using real-world data for personalized forecasts and shared decision making**
Philip van der Wees, Professor of Allied Health Sciences
Radboud University Medical Center, Netherlands

- 5-2 Front-line deployed AI solutions in healthcare - where are we today?**
Oscar Boldt-Christmas, Co-founder
Tandem Health, Finland

Using real-world data for personalized forecasts and shared decision making in allied healthcare and rehabilitation

Philip J. van der Wees, PT, PhD

Radboud university medical center, Science department IQ Health and department of Rehabilitation, Nijmegen, Netherlands



Biography: Dr. Philip Van der Wees is a Physical Therapist and Professor of Allied Health Sciences at the Science Department IQ Health and Department of Rehabilitation of Radboud University Medical Center in the Netherlands. The Chair focuses on quality improvement and implementation of allied health care in interdisciplinary networks, and to evaluate new technologies and treatment strategies for allied health care. He is coordinator of the research program 'Value Based Network Care', evaluating value-based healthcare in interdisciplinary networks of health professionals. The research and teaching activities of Philip van der Wees are aimed at implementation science, quality improvement, and evaluation of healthcare quality. Central focus of his research is assessing health care outcomes, specifically patient-reported outcomes. His research projects over the past years were aimed at development and implementation of clinical practice guidelines. He is Associate Editor of Physical Therapy & Rehabilitation Journal and chair of the Dutch Guidelines Network

Introduction: The rapid digitalization of healthcare services creates opportunities to leverage real-world data for personalized prediction modeling and decision support. Rehabilitation care is inherently complex, involving interactions between health conditions, functional status, social determinants, patient preferences, and long-term outcomes including participation in society and quality of life. Traditional prediction models have often been developed using relatively small datasets and isolated clinical settings, limiting their generalizability and clinical utility. Emerging approaches based on large-scale real-world datasets, standardized data models, and federated learning offer a promising pathway toward more accurate, transparent, and patient-centered predictive analytics.

Outline: This presentation will discuss prospects for prediction modeling in allied health sciences and rehabilitation, focusing on the European Horizon Europe project PREPARE-REHAB (Personalised Rehabilitation via Novel AI Patient Stratification Strategies). PREPARE addresses a major challenge in rehabilitation: developing robust prediction models that support personalized therapy selection without requiring patient-level data sharing across institutions. By combining machine learning techniques with federated analyses of routine care data from multiple European countries, the project aims to generate individualized forecasts of recovery trajectories and treatment outcomes across nine major rehabilitation populations.

A critical enabler of this vision is data interoperability. The Observational Health Data Sciences and Informatics (OHDSI) Rehabilitation Workgroup is advancing the adoption of the OMOP Common Data Model as a foundation for harmonizing rehabilitation datasets across organizations and countries. This infrastructure enables large-scale observational research, reproducible analytics, and federated machine learning while preserving privacy and data sovereignty.

A practical example will be presented from rehabilitation prediction research in musculoskeletal and spine care. Using longitudinal real-world registry data, individualized outcome forecasts can be generated to estimate expected recovery under alternative treatment options. Such personalized prediction models support patient-clinician communication, help manage expectations, and facilitate shared decision making by translating population-level evidence into individual outcome probabilities.

Discussion: Allied health and rehabilitation services and are entering a new era in which real-world data can move toward prospective, personalized decision support. The successful implementation of these innovations will require multidisciplinary collaboration among clinicians, researchers, patients, data scientists, and policy makers to ensure that prediction models remain trustworthy, equitable, and clinically meaningful.

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Front-line deployed AI in healthcare: where are we today?

Oscar Boldt-Christmas

Tandem Health, Stockholm, Sweden



Biography: Oscar is the Co-Founder of Tandem Health, a leading European AI medical-assistant which serves more than 5000 organizations in 14 European countries. Previously he was a Senior Partner at McKinsey & Company, where he led the European Healthcare Practice across payers, providers, and healthcare-technology businesses. In this role he served many of Europe's leading healthcare systems, companies and institutions on topics spanning strategy, large-scale operating-model change, digital and AI transformations, and post-merger integration. Oscar sits on the board of multiple health-oriented organizations and holds a M.Sc. Engineering Physics and a M.Sc. in Business Administration.

Introduction: Clinicians spend a substantial share of the working day on documentation, and artificial intelligence (AI) is being deployed against that burden faster than evidence accumulates. Debate nevertheless groups very different objects under one label: a general-purpose chatbot answering a symptom question and a CE-marked imaging algorithm are neither adopted by the same route nor evaluable with the same instruments. Evidence from European systems, where Medical Device Regulation and GDPR materially shape product design, remains scarce. This presentation proposes a two-axis framework for classifying deployed healthcare AI and uses it to locate what is running in front-line European care today and what early outcomes show.

Material and Methods: This is a structured, non-systematic synthesis prepared for oral presentation rather than a primary study. Three classes of source were assembled: cross-sectional adoption surveys of physicians, health systems and consumers fielded between 2023 and 2026 [1,5]; randomised evaluations of AI performing clinical work [2,3]; and a mixed-methods observational evaluation of an AI medical scribe covering 236,153 notes generated by 1,295 clinicians across primary, secondary and hospital care in a Swedish integrated provider [4]. Use cases were classified on two axes: model basis, from general-purpose foundation model to dedicated taskvalidated model, and domain, from administrative and operational work to clinical and specialised expertise. Figures are reported separately and never pooled, because populations, denominators and measured constructs differ.

Results: Adoption is mainstream but shallow. Eighty-one per cent of surveyed US physicians report professional AI use, double the 2023 share, but an average of only 2.3 use cases each [1]. Use concentrates in general-purpose, text-generating tasks a clinician reviews: research and guideline summarisation 39%, discharge instructions and care plans 30%, visit-note and billing documentation 28%, chart summarisation 28%; assistive diagnosis reaches 17% [1]. In the Swedish deployment, self-reported documentation time per note fell from 6.69 to 4.72 minutes (−29%, $P < .001$); median in-tool editing time was 93 seconds and did not fall with continued use; 42% of notes were never edited in the tool, their fate unverifiable; and perceived ease of use predicted reduced administrative stress, greater presence with patients and lower perceived documentation time, whereas measured editing time predicted only stress [4]. Capability, however, runs ahead of realised benefit: physicians given a language model did not outperform controls (median 76% vs 74%; 2 percentage points, 95% CI −4 to 8) while the model alone scored 16 points higher [2], and a diagnostic dialogue system was rated superior to primary care physicians on 30 of 32 specialist-rated axes [3]. Meanwhile 32% of US adults report having used an AI chatbot for health information, against 16% a year earlier [5].

Discussion: Mapped onto the axes, adoption clusters where the model is general and the output is text a clinician verifies; dedicated clinical models remain rare in a general physician population, though they can be adopted deeply within single specialties. The binding constraint on realised benefit appears to be not model capability but the system around the model — interface, workflow, training and oversight — consistent both with the flat editingtime trajectory and with a capable model failing to improve the clinicians given access to it. European deployment is further shaped by regulation that pushes specificity out of the model and into the scaffolding around it. Limitations: sources are heterogeneous and not pooled; adoption rests on self-report; the scribe evaluation is single-arm, restricted to sustained adopters and non-causal; and both randomised studies used vignettes or patientactors rather than patients. Evaluation should therefore target the human–AI system rather than the model alone, while consumer use advances outside institutional governance. Conflict of interest: the author is employed by Tandem Health, vendor of the AI medical scribe evaluated in reference [4]. No funding was received.

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Session 6: Workshops

***Puheenjohtajat/Chairs: Outi Ahonen, Finnish Society of Telemedicine and eHealth (FSTeH)
Paulus Torkki, The Finnish Society for Effectiveness in Social and Healthcare***

Friday 2.10.2026 10:45-12:00 EET

Workshop 1

Challenges and Benefits of Virtual Reality / Augmented Reality in Home Rehabilitation

Focus on VR/AR tools supporting remote care, rehabilitation pathways, and patient engagement

Minna Pikkarainen

Professor, OsloMet, Norway

Workshop 2

Building Interoperability Capacity for the European Health Data Space (EHDS)

The overall vision of XiA-project is to translate validated workforce needs into an operational, EHDS-aligned educational architecture. The workshop will: Present an overview of the educational content and training resources that XiA can offer Discuss how we can jointly build interoperability capacity for the European Health Data Space among: IT developers, Implementers of EHDS components, Users of EHDS components. Your input will help us refine and prioritise the educational pathways needed to effectively realise the European Health Data Space.

Silje Havrevold Henni

Senior researcher, PhD, MNSc, RN, University of Oslo, Norway

Eugenia Ivova

Research Assistant, Deggendorf Institute of Technology, Germany

Workshop 3

AI Competences and Industry Collaboration – Case Health Village

Discussion on the skills needed for safe and effective AI deployment in healthcare - including opportunities for co-development with digital health companies.

Laura Suojanen

Director of Nutrition Services, Metabite, Finland

Jaana Kotila

RN, MSc (Health Sciences), Development Manager, Health Village Services, HUS Information Management – Data, AI and Digital Services Division, Finland

Workshop 4

Transforming Clinical Needs into Innovative Solutions

A practical deep dive into human-centered design, clinical need identification, and pathways from problem to validated digital solution.

Otto Olavinen

Founder, Health Design

Impact Coordinator, Biodesign Finland / Aalto University

Workshop 5

How Can the Effectiveness of Digital Services Be Evaluated?

Methods, metrics, and frameworks for assessing effectiveness and performance of digital health solutions in real-world environments.

Paulus Torkki

President, The Finnish Society for Effectiveness in Social and Healthcare, Finland

Workshop 1

Biography of Minna Pikkarainen



Minna Pikkarainen (PhD, MBA) is Professor of Digitalization of Healthcare Services and Academic Research Leader for Future Health and Care Services at Oslo Metropolitan University (OsloMet), Norway, and Visiting Professor at the National University of Singapore. Her research focuses on digital health, AI-enabled healthcare, rehabilitation technologies, service innovation, and the implementation of person-centred health services. She has published more than 160 peer-reviewed publications and has contributed to securing over €95 million in competitive research funding.

Professor Pikkarainen has extensive experience leading international interdisciplinary collaborations between academia, healthcare organizations, industry, and public-sector stakeholders across Europe and Asia.

Challenges and Benefits of Virtual and Augmented Reality in Home-Based Rehabilitation: Insights from Co-Design and Qualitative Studies in Neurological Rehabilitation

Minna Pikkarainen¹, Trust Saidi¹, Nenad Pavel¹, Kamila Sykorova¹, Kumar Sourav Moharana¹, Nirunya Narupan², Piyanee Yobas², Parisa Gazerani¹

¹ OsloMet – Oslo Metropolitan University, Norway ² National University of Singapore, Singapore

Introduction: Neurological conditions such as pediatric acquired brain injury and stroke are among the leading causes of long-term disability and often require prolonged rehabilitation to optimize recovery, participation, and quality of life [1]. Home-based rehabilitation has gained increasing attention due to growing demands on healthcare services and the need for accessible, person-centred rehabilitation pathways. Virtual Reality (VR), Augmented Reality (AR), and Extended Reality (XR) technologies have emerged as promising tools to support rehabilitation by enabling intensive task repetition, real-time feedback, increased accessibility, and enhanced patient engagement [2]. Despite promising clinical outcomes, successful implementation depends on understanding the experiences, needs, and concerns of patients, caregivers, and healthcare professionals.

Material and Methods: This workshop is based on findings from two qualitative studies exploring the use of VR/XR technologies in home-based neurological rehabilitation. The first study investigated opportunities and concerns related to gamified XR for home-based motor rehabilitation among children with acquired brain injury through interviews and co-design activities involving children, parents, clinicians, and technology developers [3]. The study explored game-based rehabilitation activities incorporating movement challenges, rewards, and interactive feedback designed to support upper-limb motor training. The second study explored challenges and benefits of VR in home-based post-stroke rehabilitation using a co-design qualitative methodology involving stroke survivors, family caregivers, rehabilitation professionals, and researchers [4]. Discussions included VR-supported rehabilitation scenarios involving task-oriented exercises, functional movements, and home-based training activities relevant to everyday life.

Results: Across both studies, participants described VR/XR technologies as highly motivating rehabilitation tools that increased engagement, enjoyment, and participation in rehabilitation activities [3,4]. Stakeholders highlighted benefits such as improved access to rehabilitation services, opportunities for intensive home-based training, increased flexibility, greater patient empowerment, and enhanced continuity of care. Gamification, immersive environments, meaningful challenges, and performance feedback were perceived as important facilitators of long-term engagement.

At the same time, participants raised concerns related to physical and cognitive fatigue, cognitive load, attention demands, motion sickness, technological complexity, varying digital competencies, and challenges integrating VR/XR technologies into existing rehabilitation pathways [3,4]. In the pediatric study, participants emphasized balancing engaging game mechanics with cognitive and sensory demands to avoid overload and fatigue. In the stroke study, stakeholders highlighted the importance of adapting VR activities to individuals' functional abilities, cognitive capacity, and tolerance for prolonged training. Participants across both studies emphasized the need for personalized rehabilitation pathways, adaptive systems, and active clinician involvement to ensure safe and sustainable implementation.

Discussion: The findings suggest that VR, AR, and XR technologies offer considerable opportunities to enhance home-based rehabilitation, patient engagement, and remote care services. However, technological functionality alone is insufficient to ensure successful implementation. User-centred design, personalization, fatigue management, and integration within existing healthcare services emerged as critical factors influencing adoption and sustainability [3,4]. Personalization should also consider individual neurological and clinical characteristics, including cognition, balance, sensory tolerance, fatigue levels, and potential medication-related factors that may influence tolerance and response to VR/XR-based rehabilitation. The workshop will present findings from both studies and facilitate an interactive discussion on future opportunities and challenges related to VR/XR implementation in healthcare. Participants will be invited to discuss patient engagement, implementation barriers, integration into clinical practice, ethical considerations, and future research priorities for digitally enabled rehabilitation services

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Workshop 2

Biography of Silje Henni



Dr. Silje Henni is a senior researcher at the University of Oslo and a registered nurse with a master's degree and PhD in Nursing Science/Medicine. Her work sits at the intersection of health informatics and clinical practice, with a focus on testing and validation of digital health interventions. She has extensive experience in conducting research and leading work packages in EU-funded projects. Clinically, she has worked in hospitals and primary health care, and she currently teaches at master's level and supervises a PhD student. As a postdoctoral fellow, she was a Fulbright Scholar at Columbia University in New York, where she deepened her expertise in data visualisation and biomedical informatics. She is also the chair of the Fulbright Alumni Association Norway

Biography of Eugenia Lvova



Eugenia Lvova is a digital health researcher and health policy specialist focusing on health data governance, digital health education, and international health systems. She is a Research Associate in Digital Health at the Deggendorf Institute of Technology (Germany), contributing to European initiatives on health data interoperability and capacity building. She also works with the WHO Collaborating Centre for Digital Health on digital health policy and research. Alongside her academic work, Eugenia is a Health Data Policies Associate at the Forome Association, supporting transparent and interoperable health data infrastructures.

Building Interoperability Capacity for the European Health Data Space (EHDS)

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Introduction: The overall vision of the XiA-project is to translate validated workforce needs into an operational, EHDS-aligned educational architecture. This workshop will: 1) present an overview of the educational content and training resources that XiA offer, and 2) discuss how we can jointly build interoperability capacity for the European Health Data Space (EHDS) among three key learner groups: IT developers, Implementers of EHDS components, Users of EHDS components. Participant input from this workshop will help refine and prioritise the educational pathways needed to effectively realise the European Health Data Space [1,2,3,4].

Material and Methods: The workshop is designed as an interactive session that combines brief presentations with structured small-group discussion. Following an opening that frames the EHDS workforce readiness challenge, a concise presentation of the XiA Framework is given, outlining its educational content, three defined learner groups, and the Micro-Content Learning Block (MCLB) structure, as a response to the skill gaps identified in the XiA-project. Participants then work in small groups organised by audience type — educators, clinicians, IT professionals, industry representatives, and national policy actors — to review a sample MCLB against the questions: relevance to their audience, what barriers could hinder implementation in real life, what is missing, and whether formal recognition is feasible in their organisational and national context. Group outputs are reported to the full room during a closing synthesis.

Results: The workshop is expected to generate structured input from participants across XiA's main learner groups on four dimensions: relevance and applicability of XiA content to real learner needs; practical barriers to implementation in different organisational and national contexts; gaps in content or delivery approach that XiA needs to address; and the feasibility of formal recognition through existing accreditation, credit, or endorsement routes. Taken together, these inputs will provide a multi-audience view of workforce readiness for EHDS, grounded in the perspectives of professionals actively engaged with health data and interoperability in their daily practice.

Discussion: The insights gathered will directly inform XiA's ongoing work on content development, integration and delivery. Identified gaps will feed into content prioritisation with XiA partners, barriers surfaced will shape the delivery approach and platform design, recognition data will inform the project's accreditation strategy across countries and partner types. Participants interested in continued engagement will be invited to join the XiA Community of Practice, ensuring that the collaborative work started at this workshop continues as XiA content becomes progressively available during 2027 and 2028.

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Workshop 3

Biography of Sanna Ritola



Sanna Ritola is Director of Nutrition Services at Metabite and a doctoral researcher at the University of Helsinki. She has nearly 15 years of experience in digital health, spanning healthcare, research, and industry. In her current role, she supports healthcare organizations in implementing digital health solutions and works across research and innovation partnerships in Finland and the United States. Her work focuses on translating research and technology into practical solutions that improve health outcomes, care effectiveness, and scalability.

Biography of Jaana Kotila



Jaana Kotila, RN, MNsc, is a Development Manager at Helsinki University Hospital (HUS), leading the development and evaluation of digital health services and care pathways. She previously worked as a Clinical Nurse Specialist and educator in neuroscience nursing and has contributed to the development of advanced practice nursing in Finland. Kotila has published also in professional journals and conference proceedings and currently serves also as a member of the Council of the Finnish Nurses Association.

Biography of Laura Suojanen



Laura Suojanen is Development Manager of the Healthy Weight Hub at Helsinki University Hospital (HUS) and a doctoral researcher at the University of Helsinki. She is a nutrition scientist, psychotherapist, and registered nurse with extensive experience in obesity treatment, digital health, and healthcare service development. She leads the development of digital obesity care services and works at the intersection of clinical practice, research, and innovation. Her work focuses on integrating evidence-based treatment, behavioral science, and emerging technologies, including artificial intelligence, into healthcare. She is particularly interested in how digital solutions can improve access to care, support healthcare professionals, and enable effective and scalable obesity treatment.

The Health Village Healthy Weight Hub ❤️ Metabite. AI-Assisted Obesity Care Through Public Private Collaboration: From Development to Scale

Laura Suojanen^{1,2}, MSc (Nutrition), Psychotherapist, RN, Development Manager, Doctoral researcher,

Ritola Sanna^{2,3}, MSc, RD, Director of Nutrition Services, Doctoral researcher

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Background: Obesity is a common chronic disease, yet healthcare resources are limited in relation to the number of people requiring treatment. Digital care models can improve the quality and accessibility of care, but scaling them requires not only technological solutions but also an understanding of clinical practice, professional expertise, and healthcare processes. The Health Village Healthy Weight Hub is a comprehensive digital obesity care service developed within a university hospital. In collaboration with Metabite, the Healthy Weight Hub is exploring the use of artificial intelligence (AI) to support both patient care and healthcare professionals, as well as opportunities to scale care to reach a larger patient population [1].

Approach: In this workshop, we use the collaboration between the Healthy Weight Hub and Metabite as a real-world case of developing AI-assisted care. We will briefly introduce the digital care model, the foundations of the AI development process, and the collaboration model between healthcare and a technology company. Participants will work on key questions related to scaling: Who benefits from AI? Where can AI support healthcare professionals? How do healthcare practices and workflows need to change to achieve meaningful resource benefits from AI?

Results / Expected Outcomes: The workshop aims to identify practical prerequisites for the responsible and scalable use of AI in healthcare. Participants will gain perspectives on how the benefits of AI can be assessed from the perspectives of patients, healthcare professionals, and the healthcare system.

Innovation: Rather than asking “*What can AI do?*”, our development approach begins by asking “*What does healthcare need, who benefits from the solution, and where can AI provide meaningful added value?*” This case demonstrates how clinical expertise accumulated within a university hospital, an established digital care model, and the technological expertise of an industry partner can be combined to develop scalable healthcare solutions.

Why Take Part With Us? This workshop moves beyond discussing the potential of AI towards practical implementation: How can healthcare professionals’ expertise be made visible and incorporated into AI development? How can healthcare–industry collaboration support the development of sustainable solutions? What should be scaled, and how can scaling be achieved in practice? [2]

The workshop will be conducted in Finnish.

Keywords: artificial intelligence, digital health, obesity care, scalability, healthcare resources, public–private collaboration

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Transforming Clinical Needs into Innovative Solutions

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Biography of Otto Olavinen



Otto is the Impact Coordinator at Biodesign Finland, a need-driven MedTech innovation program, and co-founder of the Health Design Conference, a multidisciplinary Research, Development, and Innovation (RDI) forum advancing use technology and design thinking in healthcare since 2017. He also helps lead health_spin_, a leading regional health startup pitch competition with a €200k angel syndicate. With 10+ years in research and innovation communications, he has reviewed 170+ Finnish healthtech startups, giving him a sharp view of the ecosystem. He partners with founders, researchers, and investors to turn real needs into high-impact solutions.

Introduction: Healthcare innovation can begin with technology, but meaningful innovation begins with understanding a need. The Biodesign approach provides a structured framework for identifying unmet clinical needs and transforming them into opportunities for new solutions.[1] For participants who have not previously experienced clinical immersion, understanding how to recognise and articulate a genuine clinical need can be challenging. The workshop Transforming Clinical Needs into Innovative Solutions provides an introduction to need-based innovation and human-centered design, demonstrating how observation, problem framing, ideation, and validation can turn problems and needs to a potential solution.[1–3]

Material and Methods: The workshop introduces participants to the principles of need identification without requiring prior clinical immersion. Through examples from healthcare practice, guided exercises, case-based observations, and group discussion, participants explore how everyday clinical activities can reveal unmet needs. Participants learn to distinguish between observations, problems, needs, and solutions, and practise converting broad problems into focused need statements. The workshop then introduces ideation and rapid prototyping as methods for exploring potential responses to identified needs. Principles from the Biodesign process,[1] IDEO-inspired observation and creative problem solving,[2] and human-centered service design for medical technologies [3] are integrated to provide participants with a practical overview of the journey from clinical need to potential digital solution.

Results: The workshop provides participants with a structured understanding of how need-based innovation differs from solution-first approaches. Participants learn to look beyond immediately visible problems and consider the perspectives of patients, healthcare professionals, and other stakeholders. Guided exercises demonstrate how a clinical observation can be developed into a clearly articulated unmet need and subsequently translated into early solution concepts. The workshop also introduces the importance of testing assumptions, involving users, and considering the clinical and service context in which a digital solution would ultimately be used. These activities provide participants with foundational skills and a common vocabulary for subsequent clinical immersion and more advanced innovation activities.

Discussion: Clinical observation (immersion) is a central component of need-based healthcare innovation, but participants benefit from understanding what to look for even without prior experience. This introductory workshop creates that foundation by familiarising participants with the mindset and tools used to identify meaningful needs. Rather than teaching participants to arrive at solutions immediately, the workshop encourages curiosity, observation, questioning, and the systematic framing of problems. By connecting need finding with human-centered design and iterative solution development, the workshop offers an accessible starting point for participants for turning clinical needs to solutions. The approach supports a transition from simply recognising problems to understanding the needs behind them and eventually developing solutions that are relevant to people and healthcare systems. [1–3]

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How Can the Effectiveness of Digital Services Be Evaluated?

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Biography: Paulus Torkki serves as Professor of Industrial Engineering and Management at LUT University. His area of expertise is impact-based development and management in services, with a particular focus on the improvement of social and healthcare services. In addition, Paulus has extensively studied the application of systematic development methods (such as Lean) in the management and development of service production. He has also worked in several expert organizations in development, leadership, and board positions.

Background: Digital health solutions range from simple digital communication tools and remote consultations to digital care pathways, decision-support systems, and AI-enabled services. Their effectiveness cannot therefore be assessed with a single set of measures or one universal evaluation design. The relevant outcomes depend on **what the digital solution is intended to achieve, for whom it is designed, and how it changes the existing care or service process.**

Effectiveness also depends on targeting. The same digital solution may generate substantial benefits for one patient or client group while providing little value—or even creating additional burden—for another. Evaluation should therefore consider not only whether a digital solution works, but also **for whom, in what context, and through which mechanisms it creates value.**

Approach: The workshop combines a brief introduction to key principles of real-world evaluation with hands-on group work. The evaluation will consider effectiveness as well as broader performance dimensions, drawing on frameworks such as the **Quintuple Aim** and the principle of **fitness for purpose and proportionality.**

Participants will select specific digital health solutions or use cases and develop an **evaluation plan** for them. The groups will define the target population, intended outcomes and performance measures, relevant comparator, and an appropriate evaluation design.

Results: By the end of the workshop, participants will:

1. **Understand how the purpose, target population, and context of a digital solution shape its evaluation.**
2. **Be able to select relevant outcomes, performance measures, and evaluation designs** for different types of digital health solutions.
3. **Develop a practical evaluation plan for a selected digital health solution**, linking the target population, intended outcomes, measures, comparator, and evaluation design.

Session 7A: Metaverse in Healthcare and Social Welfare Services

Chair : Aino Rubini Finnish Society for Telemedicine and eHealth (FSTeH):

Thursday 2.10.2026 13:00 – 13:50 EET

- 7A-1 Federated Infrastructure for digital twin applications in scientific virtual environments - Advancing eHealth and biomedical research**
Pirjo Spuul
Senior Researcher, TalTech, Estonia
- 7A-2 Digital Twins and Data-Driven Health Technologies: New Opportunities for Personalized Monitoring and Decision Support in Neurological Disorders**
Parisa Gazerani, Professor
Faculty of Health Sciences, Oslo Met, Norway

Scientific rapid presentations

- O – 21 Rosa Hautamäki: Toward a Digital Competence Framework for Social Work: Findings from a Descriptive Literature Review
- O – 22 Ying Zhang: Digital Literacy in Home-Based Elderly Care Services as Frontline Practice: Evidence from a Scoping Review
- O – 23 Vili Kostamo: Fully digitalized, self-service screening for cardiovascular diseases: A case study and call to action from the Frankfurt University Hospital Heart Centre

A Decentralised Health Digital Twin Ecosystem

Pirjo Spuul¹, PhD, Jayden Khakurel¹, D.Sc (Tech)

¹ Tallin University of Technology, Estonia

Biography of Pirjo Spuul



*Pirjo Spuul is a biomedical researcher and Director of the Department of Chemistry and Biotechnology at Tallinn University of Technology. She leads a research team investigating pathogen-driven disease processes, with a particular focus on human pathogen *Helicobacter pylori* and its role in cancer development. Through the DTRIP4H project, she brings her expertise in biomedical research into the digital realm, contributing to the development of digital twins and federated infrastructures for eHealth and biomedical research. Her work supports virtual research environments that enable collaborative modelling of biological processes while safeguarding patient privacy.*

Introduction: Physiological digital twins (DT) and computational biomedical models require the integration of heterogeneous datasets, including clinical records, medical imaging, molecular measurements, and environmental data [1-2]. These datasets are typically generated and managed across hospitals, research institutes, and Research Infrastructures (RIs). However, integrating such data for modelling and simulation remains challenging because biomedical data are subject to strict privacy, ethical, and governance regulations [3]. These constraints often prevent data centralisation and limit cross-institutional analysis, resulting in digital twin models that rely on local datasets and therefore lack generalisability. The data mapping and infrastructure analysis presented in this study support the concept of a Decentralised Health Digital Twin Ecosystem (DDTE) that connects European research infrastructures (RIs), other stakeholders to enable distributed digital twin modelling. The proposed ecosystem emphasises metadata harmonisation, federated analytics, and distributed model execution to support collaborative DT research while adhering to institutional data governance requirements.

Material and Methods: A structured data mapping approach was conducted to identify the data sources, infrastructures, and computational environments required for the DDTE concept. The analysis focused on biomedical datasets relevant for physiological DT development, including clinical records, medical imaging, molecular and multi-omics data, physiological monitoring data, and environmental observations. Five representative use cases (UCs) and related data request scenarios were analysed to understand how researchers discover datasets, request access, and perform distributed modelling across infrastructures. European biomedical RIs and institutional data environments were examined to assess their capabilities for data storage, harmonisation, secure access, and computational analysis. The identified datasets and infrastructures were subsequently mapped to the functional components of the proposed ecosystem architecture.

Results: The data mapping exercise identified several key biomedical data domains required for DT development, including clinical datasets, medical imaging data, molecular and multi-omics measurements, and physiological monitoring data. These datasets are distributed across multiple institutions and research infrastructures that provide services for secure data storage, computational analysis, and data harmonisation. The analysis further showed that, although these infrastructures support data management and advanced analytics, interoperability between them remains limited. This lack of interoperability limits the ability to integrate datasets and modelling resources across different institutions. Based on these findings, the DDTE architecture is defined as a federated ecosystem connecting existing research infrastructures through interoperable metadata frameworks and distributed computing environments. This architecture enables DT models to be trained, validated, and executed across multiple infrastructures while maintaining institutional data governance.

Discussion: The results highlight the need for coordinated mechanisms, such as metadata harmonisation, federated data access to enable the effective use of distributed biomedical datasets for DT research. The proposed DDTE connects RIs to support interoperable data access and distributed digital twin modelling. The European Health Data Space (EHDS) provides an important policy framework that can further support collaborative and privacy-preserving biomedical research across Europe.

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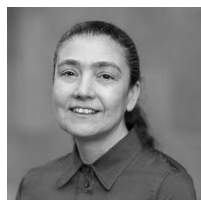
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Digital Twins and Data-Driven Health Technologies: New Opportunities for Personalized Monitoring and Decision Support in Neurological Disorders

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Biography: Parisa Gazerani, PharmD, PhD, is a Professor of Translational Neuropharmacology at the Department of Life Sciences and Health, Faculty of Health Sciences, Oslo Metropolitan University (OsloMet), Norway. Her research focuses on neuroscience, neurobiology, biomarkers, neuropharmacology, digital health, artificial intelligence in neurological healthcare, and personalized medicine in neurology and psychiatry. She leads interdisciplinary research initiatives that integrate neuroscience, technology, and patient-centered innovation. Professor Gazerani has published extensively in neuroscience, neurology, and digital health, and serves as an editor, reviewer, and advisor for numerous international journals, scientific organizations, patient organizations, and pharmaceutical and biotechnology companies. Her current work explores AI-enabled healthcare, digital twins, neurotechnology, and sustainable health innovations. She is currently Co-Leader of ADEPT (advanced health intelligence and brain-inspired technologies) at the Faculty of Technology, Art and Design, OsloMet, Head of the Pharmaceutical Unit at the Athens Institute, Greece, and co-founder of the startup company CreateHeal AS.

Introduction: Neurological disorders are characterized by substantial heterogeneity, fluctuating symptoms, variable disease trajectories, and individual differences in treatment response. At the same time, healthcare is generating increasingly rich longitudinal data through electronic health records, neuroimaging, neurophysiological measurements, wearable and mobile technologies, and patient-reported outcomes. Digital twins and related data-driven approaches offer a framework for integrating these heterogeneous data streams to support personalized monitoring, prediction, and clinical decision-making [1,2]. However, considerable differences remain between the conceptual promise of digital twins and their current clinical maturity [2–4].

Material and Methods: This presentation synthesizes recent literature on healthcare digital twins and data-driven technologies, with a particular focus on neurological applications [2–4]. Examples across dementia, multiple sclerosis, Parkinson’s disease, epilepsy, stroke, pain, and migraine are considered to examine how longitudinal and multimodal data can contribute to individualized disease modeling, monitoring, prediction, and decision support [2].

Results: Neurology provides several promising settings for digital twin-inspired approaches because repeated measurements can capture changing disease states and enable models to be updated over time [2]. Current applications range from mechanistically informed virtual brain models and individualized disease-trajectory modeling to wearable-supported monitoring and adaptive decision-support systems [2–4]. Migraine illustrates the potential particularly well: continuously collected real-world data could complement episodic clinical assessments and contribute to more individualized monitoring and treatment decisions [1,2]. Nevertheless, most existing neurological applications remain digital twin-inspired models rather than fully realized digital twins with continuous updating, bidirectional interaction, validated predictive capability, and demonstrated decision-related clinical value [2].

Discussion: The near-term opportunity may therefore lie not in creating comprehensive “digital replicas” of patients or the brain, but in developing clinically focused, question-specific models that integrate reliable longitudinal data and support clearly defined decisions [2]. Progress will depend on validated digital biomarkers, interoperability, prospective clinical evaluation, transparent handling of uncertainty, data governance, equity, and integration into clinical workflows [2–4]. Digital twins should complement rather than replace clinical expertise [1,2]. Developed within these boundaries, data-driven and digital twin-inspired technologies may provide an important pathway toward more continuous, proactive, and personalized neurological care [1–4].

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Toward a Digital Competence Framework for Social Work: Findings from a Descriptive Literature Review

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Introduction: In the contemporary digital society, digital competencies for professionals have emerged as a guiding framework for understanding how digital technologies can be effectively integrated into professional practice. With the exception of broader social sector frameworks, no theoretical model of social work professionals' digital competencies has been developed in Finland since the framework proposed by Kilpeläinen and Päykkönen [1], which reflects earlier technological realities and no longer aligns with current professional demands. This gap highlights the need to reassess how e-competence is conceptualized in present-day social work. This study updates the Finnish knowledge base to provide a contemporary understanding of digital competencies in social work, grounded in the framework (DigCompSW) proposed by Castellví [2]. The framework was developed for the European context and is grounded in robust empirical research, conceptualizing digital social work as integrated professional capacities related to digital information use, technology-mediated practice, ethical professional agency, and support for clients' digital inclusion across six dimensions. The research questions examine whether the dimensions included in the framework can be identified in the recent research literature, which of these dimensions are most strongly emphasized, and whether the literature reveals additional aspects not captured by the framework.

Material and Methods: The study was conducted as a descriptive literature review [3] focusing on Finnish-language research on the digitalization of social work published since 2015. Literature searches were carried out across multiple databases, supplemented by citation tracking of key scholars in the field and systematic examination of reference lists of relevant publications. The final dataset comprised 50 peer-reviewed articles. The DigCompSW framework [2] guided a deductive qualitative content analysis [4], with findings categorized and interpreted across its six core dimensions by two researchers.

Results: The reviewed studies primarily focused on information management, information systems, and social work professionals' competencies in an evolving digital environment, as well as technology-mediated client work related to participation and data protection. Finnish research largely emphasized professional, administrative, and organizational perspectives, while clients' digital competencies received comparatively limited attention. All six dimensions of the framework were identified in the literature. The most frequently detected dimension was *Digital data and content*, particularly in relation to data management and documentation skills. This was followed by *Professional development*, and with similar prevalence, *Communication and collaboration* and *Digital awareness and autonomy*. The least frequently represented dimensions were *Social intervention* and *Clients' digital competence*, both of which appeared in less than half of the reviewed studies. The analysis identified a research competence that was not included in the original framework.

Discussion: The prominence of the *Digital data and content* dimension can be attributed to its inclusion of information management, an area of particularly strong development and research in Finland. While the DigCompSW framework is well suited to the Finnish context, it should be extended to include research competence, which was also incorporated in the framework proposed by Kilpeläinen and Päykkönen [1]. Given that social work in Finland is a research-based, university-trained profession, we propose adding *Use of technologies in research* as a fourth subdimension of the *Professional Development* dimension. With this addition, the DigCompSW framework provides a more comprehensive and contextually grounded basis for conceptualizing and assessing digital competencies in Finnish social work.

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Digital Literacy in Home-Based Elderly Care Services as Frontline Practice: Evidence from a Scoping Review

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Introduction: As ageing in place becomes a dominant policy direction, digital technologies are increasingly embedded in home-based elderly care. Their effective and safe use depends partly on the digital literacy of frontline workers, yet evidence on what shapes that literacy remains fragmented. This review mapped determinants of digital literacy in the home-based elderly care workforce and examined which skill domains have been addressed or overlooked.

Material and Methods: We conducted a scoping review following JBI guidance and PRISMA-ScR. Nine English- and Chinese-language databases were searched for studies published from 2000 onwards, supplemented by web searching, expert consultation and citation tracking. Fifteen studies met the inclusion criteria. Determinants were synthesised using an adapted Opportunity–Propensity–Antecedent framework with an added engagement dimension, and outcome items were mapped to the 21st-century digital skills framework.

Results: The evidence base was small and geographically concentrated, with most studies from Europe, especially Finland. Determinant testing focused mainly on opportunity- and antecedent-level factors. Organisational learning support—including training, technical support, peer support and protected time for learning—was the most consistent facilitator. By contrast, distal structural variables such as gender, tenure and work location were often non-significant or showed mixed associations. Propensity and engagement factors, such as interest in technology, responsibility for competence development, technology exposure and practice opportunities, were examined less frequently but generally showed positive associations. Outcome measurement was conceptually fragmented and centred largely on technical skills, with limited attention to higher-order domains such as critical thinking, creativity, lifelong learning and cultural awareness.

Discussion: Current research on digital literacy in home-based elderly care remains narrow in geography, uneven in measurement and limited in causal design. Future studies should extend beyond Western settings, test cross-level mechanisms using longitudinal or quasi-experimental designs, adopt multidimensional measures beyond technical skills, and identify effective workplace learning-support practices that can strengthen safer technology-enabled care.

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Fully digitalized, self-service screening for cardiovascular diseases: A case study and call to action from the Frankfurt University Hospital Heart Centre

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Introduction: Cardiovascular diseases often develop silently, making proactive screening and early detection critical for prevention. However, access to low-threshold risk assessment is limited. Motivated by the need to engage the public more effectively in their own health, the University Hospital Frankfurt Heart Centre and MedicubeX partnered to offer accessible, self-directed screening. Our central research question is: Can a self-service eHealth Station serve as an effective tool for large-scale cardiovascular risk screening and successfully guide at-risk individuals toward preventative clinical consultation? [1]

Material and Methods: The project utilizes the MedicubeX eHealth Station, a Medical System (compliant with MDR Art. 22), which captures key risk factors including blood pressure, 1-lead ECG, AGE, weight, and body composition. The Station, labelled as the “e-Heart-Cube” was installed in the main lobby of the University Hospital Frankfurt, available for use by patients, visitors, and staff in late May 2025. Based on easy-to-understand results, users are guided to a dedicated hospital webpage where they can use a form to book a follow-up consultation with a specialist. There are not automated referrals, but instead the person has to request a consultation. [2,3].

Results: Our solution provides a crucial first touchpoint for preventative care within the existing regional health care infrastructure. The eHealth Station functions as a standalone screening point, empowering individuals to check their cardiovascular risk factors in just five minutes without an appointment. This model lowers the barrier to entry for preventative health checks. The process is designed for autonomy: the user performs the measurements, receives a printed summary of their results, and is directed to an online resource to schedule a consultation if their readings indicate potential risks, bridging the gap to professional medical advice. The Station has achieved exceptionally high user engagement, with approximately 5.500 users in the first 9 months, with the peak day reaching 55 users. In the same time this high volume of screenings has directly resulted in 150 individuals requesting clinical consultations based on their findings. For those who already have had their consultation, there have been 17 entirely new diagnoses, 21 cases where pre-existing medication had to be adjusted and a single case where an invasive intervention had to be performed. This demonstrates a significant public demand for accessible health monitoring. The key “lesson learned” so far is that empowering individuals with immediate, actionable health data in a convenient location is a powerful catalyst for proactive health-seeking behaviour, and it can be done without staff involvement. Starting in late November 2025 it became possible for individual users of the eHealth Station to volunteer their data for use in research. In this new process the users provide informed consent on the touch screen of the eHealth Station, which then sends their data anonymously to the hospital research database. In the first four months (December - March) 2109 people have participated. [1]

Discussion: This project serves as a proven best practice for implementing a high-impact, regional health screening initiative. Our immediate outlook involves developing and medically certifying software to automatically analyse screening results and transfer the results to a clinician. In parallel, we plan to collaborate closely with industry partners to develop the e-Heart Cube 2.0, which will incorporate point-of-care testing (PoCT) tools. This integration is designed to extend diagnostic capabilities, foster innovation in cardiovascular care, and provide tangible benefits for patients through faster and more precise decision-making. In time for the congress an analysis of the volunteer data gathered will be performed.

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Sessio 7B: Etävastaanottotoiminta ammattilaisen ja asiakkaan näkökulmasta

Puheenjohtaja/Chair: Paula Veikkolainen, Suomen Telelääketieteen ja eHealth Seura (STeHS)

Friday 2.10.2026 13:00-13:50 EET

- 7B-1 Etälääketieteen suositus lääkäreille**
Timo Tuovinen,
MD, PhD, Adj.Professor, Digital Health, University of Oulu
District Chief Physician, Finnish Medical Association
- 7B-2 Voidaanko lihavuutta hoitaa etänä? Vaikuttavuusperusteisen Kevyt Askel-ohjelman tuloksia.**
Johan Fagerudd
Vastaava lääkäri, Diabetes- ja Painonhallintaklinikka, Pihlajalinna

Scientific rapid presentations

- O – 24 Ritva Mäntysalo ja Tiina Haapala: Rethinking Digital Services and Remote Consultations in Specialized Healthcare: Nurses' Experiences from the Perspective of Competence and Support
- O – 25 Minna Eriksen: Developing the Open-Source AIRe Platform: An AI-Assisted Digital Solution for Multidisciplinary Rehabilitation
- O – 26 Arja Rantala: Public Health Nurses' perspectives on technology management in digital interaction in a Unified Maternity and Child Health Chat Service: A qualitative study

Etälääketieteen suositus lääkäreille

Timo Tuovinen, MD, PhD, Adj.Professor¹, District Chief Physician²

1 Digital Health, University of Oulu, 2 Finnish Medical Association



Shared costs and shared gains – The Light Step obesity treatment model for occupational health care.

Johan Fagerudd¹, MD, PhD, Robert Bergholm¹, MD, PhD, Erik Mandelin¹, MD, PhD, Lasse Parvinen¹ MSc, D.Sc (Tech), Janne Martikainen², Professor

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² School of Pharmacy, Faculty of Health Sciences, University of Eastern Finland, Kuopio, Finland.



Biography of Johan Fagerudd: Specialist in internal medicine with a comprehensive background in diabetology and diabetes-related clinical research. Currently serving as head of the Obesity and Diabetes Clinics at Pihlajalinna, a leading healthcare company in both private and public sectors in Finland. Lead of the Light Steps program—an outcomes-based obesity care model for occupational health, integrating cost-sharing for anti-obesity treatment between employers and employees.

Introduction: The obesity pandemic has noteworthy economic and productivity consequences, with obesity impacting workforce participation, absenteeism, presenteeism, work ability, and an increased risk of premature disability retirement. Traditionally, the therapeutical options for obesity have included life-style treatment and bariatric surgery, but recently, efficient pharmacological treatments have become available. Limited real-world evidence exists on whether active obesity treatment with lifestyle changes or surgery can improve workability in the working-age population living with obesity [1], and even less is known about the role of pharmacological treatment.

The Light Steps Programme is an outcome-based treatment path developed in the occupational health care of Pihlajalinna, a major provider of occupational health care in Finland. The Light Steps Programme consists of active treatment of obesity using lifestyle and pharmacological treatment in employees with obesity and signs of impaired workability. As a novel component, The Light Steps Programme includes a cost-sharing model for anti-obesity medication between employers and employees, making the use of anti-obesity medication a plausible alternative in real life.

Material and Methods: We report preliminary results from the first cohort of the Light Steps Programme, a remote channel, real-world, non-randomized service for the occupational health care provided by Pihlajalinna to one of its customer organisations operating in the paper mill industry. Starting in March 2025, The Light Steps programme has been offered to employees fulfilling the inclusion criteria, which are A body mass index (BMI) >30 kg/m² or BMI >27 kg/m² and at least one obesity-related co-morbidity) and Evidence of impaired workability defined as more than 14 sick leave days during the calendar year 2024, or as impaired workability judged by their occupational health professional.

To this first cohort, 80 employees were recruited, to take part in the outcome-based programme for 2 years. Two channels of recruitment were applied: first, direct recruitment via the occupational health care professionals (n=11) and second, data-driven recruitment via analysis of data in the electronic health records (n=69).

Results: The cohort consisted of 80 employees (male 83%, mean age 51 years (range 30-63), 80% manual workers). They were offered life-style counselling and a possibility to pharmacological obesity treatment with a 50%/50% cost sharing between the employer and the employee. At 6 months, 98% were still in the program and 86% were using anti-obesity medication. Their weight was reduced from (median [range]) 109 [81-198] kg at baseline to 101 [72-158] kg at 6 months, their BMI from 34.0 [28.0-57.2] to 31.6 [25.7-50.9] kg/m², and their waist circumference from 115 [93-176] to 110 [89-157] cm (P<0.001 for all parameters baseline vs 6 months [2]). The days on sick leave (rolling 12 months) was reduced from (median [range]) 25 [0-144] to 10 [0-185] days while the workability index (0-10) increased from 7.25 [5-10] to 8.00 [2-10] (P<0.001 for both parameters baseline vs 6 months [2]). Based on laboratory findings, the weight loss was associated with improvement in metabolic health (improved blood glucose, liver enzymes, and lipids).

Discussion: Our preliminary real-world findings suggest that obesity can be treated successfully in a remote setting in occupational health care with the proportion of employers using anti-obesity medication at 6 months being high. Our findings suggest that the combination of life-style counselling and anti-obesity medication result in a significant decrease in weight and is associated with a decrease in absenteeism at 6 months. For the employer, the savings due to decreased absenteeism exceed the costs of the treatment path and the reimbursement of the anti-obesity medication. For the employee, active treatment of obesity is associated with improvements in metabolic health and workability. Even though our findings need to be confirmed in a randomized and controlled study setting, they indicate that active treatment of obesity in the work force is to be seen as an investment instead of a cost.

References:

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- [2] Wilcoxon Signed-Rank Test for Paired Samples

Rethinking Digital Services and Remote Consultations in Specialized Healthcare: Nurses' Experiences from the Perspective of Competence and Support

Tiina Haapala¹, RN, Ritva Mäntysalo¹, RN, Kati Immonen¹, MSc, Elina Laukka^{1,2}, PhD, Docent

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² Wellbeing Services County of Ostrobothnia, Finland

Introduction: Effective digital solutions, including remote consultations, play an increasingly important role in specialized healthcare, particularly in outpatient services. Digital services are expected to enhance accessibility, flexibility and continuity of care while supporting efficient use of healthcare resources. However, their success depends not only on technology but also on how well digital services are integrated into everyday clinical practice. The increasing use of digital services has transformed nursing practice, and nurses play a central role in the daily use of digital solutions in outpatient care. Previous research has largely focused on technological and organizational aspects of digital service implementation, while healthcare professionals' experiential perspectives, including issues related to competence and support, remain underexplored especially in specialized healthcare. [1,2,4]

Material and Methods: This qualitative study was conducted in a Finnish specialized healthcare setting. Data were collected through thematic interviews involving 12 registered nurses working in somatic outpatient clinics in specialized healthcare. The interviews explored experiences of digital services and remote consultations, perceived competence requirements, and support needs during implementation. The data were analysed using inductive content analysis.

Results: Based on the results, digital services and remote consultations have become an established but functionally uneven part of nursing practice in specialized healthcare. Digital services were perceived to improve service accessibility, information flow, work flexibility, and continuity of care. At the same time, nurses reported increased workload, particularly in situations where several parallel systems were in use, training was inadequate, or technical and organizational support was difficult to access. Nurses' digital competence varied, and individual differences significantly influenced the smoothness of implementation and perceived work strain. Factors promoting successful implementation included targeted and practical training, opportunities to practice in test environments, peer support, and the active role of supervisors. In contrast, insufficient resourcing, lack of time, fragmented systems, and technical challenges slowed down implementation and reduced motivation.

Discussion: The findings demonstrate that implementing digital services in specialized healthcare is a multidimensional sociotechnical process, shaped by technological, organizational, and professional factors. As highlighted by nurses' experiences of fragmented systems, variable digital competence, and increased workload, successful implementation cannot be achieved solely through functional technologies. Instead, it requires systematic leadership, adequate resourcing, user-centered development, and continuous professional support. [3,4]

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Developing the Open-Source AIRe Platform: An AI-Assisted Digital Solution for Multidisciplinary Rehabilitation

Minna Eriksen¹, MSc, Eeva Aartolahti¹, PhD, Henna Nyman¹, MSc, Kari-Pekka Murtonen¹, MSc, Ida Mälkönen¹, MSc, Jouni Huotari², PhD

¹ *Institute of Rehabilitation, Jamk University of Applied Sciences*

² *Institute of Information Technology, Jamk University of Applied Sciences*

Introduction: The global demand for rehabilitation is increasing due to an ageing population and evolving health challenges, already exceeding available capacity in many contexts [1]. At the same time, digitalisation and artificial intelligence (AI) are transforming societies and becoming an integral part of everyday life [2]. In this context, the AIRe Platform was developed with support from Business Finland's innovative public procurement funding, aiming to become a globally scalable, AI-assisted solution that delivers personalised, multidisciplinary rehabilitation content directly to people in need. The long-term aim is to improve access to rehabilitation worldwide. [3]

Material and Methods: The development was carried out using a Human-Centred Design (HCD) approach, engaging rehabilitation service users and professionals, service providers, and representatives from academia. The aim was to identify shared elements of rehabilitation across different contexts and to support the development of a scalable, user-centred solution informed by continuous stakeholder feedback. The methods included workshops, interviews, as well as iterative software development and prototype testing. [3] During 2023–2024, around 400 participants from Finland, the United Kingdom, Rwanda, Kenya, Vietnam, and Indonesia contributed to the design and development of the solution. Furthermore, accessibility testing of the solution was conducted at the end of 2024. [4]

Results: Drawing on stakeholder engagement during the ideation phase, the core solution was designed to support interaction in the user's natural language, identify rehabilitation needs and goals, suggest personalised content, monitor adherence, and re-evaluate rehabilitation progress. The platform needed to be designed to be globally scalable and to use open-core architecture. Prototype testing highlighted concerns regarding AI ethics and data security, with participants emphasising the need for transparency, appropriate professional oversight, and safe yet seamless integration with existing systems. The user interface was expected to be intuitive and accessible by design, supporting voice-based interaction and incorporating visual aids and educational tools to ensure usability among individuals with low literacy levels. Offline functionality was also considered an important feature to improve access for those with limited connectivity. Based on accessibility testing, the solution partially met WCAG requirements, with most identified issues being minor and technically straightforward to address. Despite these issues, rehabilitation service users demonstrated a strong willingness to use the solution. While some professionals expressed concerns about potential job displacement, many showed interest in the platform's open-core technology. [3,4] The solution's open-source code was published on GitHub in March 2026 [5].

Discussion: Rehabilitation service users have diverse preferences, needs and capabilities. To ensure broad accessibility, the solution must remain user-friendly, continue to improve accessibility, and accommodate cultural differences and customization options. Future development should focus on recognising users' levels of technological proficiency and individual usage patterns. Furthermore, the solution must be further refined to improve the accuracy of identifying rehabilitation needs and providing personalised content. The solution is currently undergoing a Digi-HTA evaluation conducted by FinCCHTA. Recognition as a Digital Public Good by the DPG Alliance will be sought in 2026, contributing to the achievement of the United Nations' Sustainable Development Goals.

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Public Health Nurses' perspectives on technology management in digital interaction in a Unified Maternity and Child Health Chat Service: A qualitative study

Arja Rantala^{1,2,3}, Principal Lecturer, PHN, PhD, Marika Jarmunen^{1,4}, Application Specialist, PHN (Master), Taru Peltoranta^{1,4}, Application Specialist, RN (Master), Tarja Pölkki^{2,3}, Professor, RN, PhD, Hilikka Korpi¹, Principal Lecturer, PT, PhD

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⁴ The Wellbeing Services county of Kanta-Häme, Finland

Introduction: The use of digital remote services has increased in social and health services, as they offer a quick and easy way to address well-being and health matters in Finland. As the birth rate declines [1], maternity care services must be developed to support families. Chat services used by clients of maternal, child, and family planning clinics are part of modern service provision, enabling remote client guidance. Working remotely with clients requires public health nurses to possess competencies such as trust-building and the ability to establish a personal connection for successful implementation of care [2]. Perspectives on technology management of public health nurses in chat services have not been previously mapped. [3]

Material and Methods: Data was collected from public health nurses (N=60) in the Kanta-Häme welfare area in April 2024 using a Webropol survey [3] and analyzed using inductive content analysis [4]. Data were collected as part of a larger study, and this paper reports findings related to one main result, a key aspect of technology management in digital interaction.

Results: Response rate was good (n=36; 60%). A total of 516 open codes related to the research question were formed. Expertise in digital interaction in maternal, child, and family planning clinics services requires a broad range of digital service competencies. Public health nurses' work in remote chat services requires a combination of technological competencies and advanced interaction skills to ensure effective digital service delivery.

Digital environment management encompasses digital work skills, chat service operations, patient information system management, information retrieval, data security, and the continuous development of digital work practices. In parallel, digital interaction competencies include real-time customer service in chat environments, remote communication skills, emotionally intelligent communication, culturally sensitive encounters, and the ability to consider clients' varying levels of digital literacy.

Discussion: Technology management in chat service requires extensive knowledge of the own clinic sector. It also requires extensive digital skills, which should be emphasized in the training of healthcare professionals. The ability to engage with clients in chat-based services—while accounting for the inherent limitations of remote communication and the absence of nonverbal cues—is essential. This necessitates strong communication skills, the capacity to establish trustful relationships, and the ability to interact effectively without relying on nonverbal communication. The maternity and child clinic chat service can reduce costs, but it requires significant investment and proper resource allocation.

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Session 8: A paradigm shift toward Planetary Health

Puheenjohtaja/Chair: Timo Tuovinen, Vice President, Finnish Society of Telemedicine and eHealth

Friday 2.10.2026 14:20 -15:00 EET

- 8-1 A paradigm shift toward Planetary Health and One Health in digital services**
Chiara Cadeddu, Professor
Erasmus University Rotterdam, Netherlands
- 8-2 Closing words**
Outi Ahonen, President
Finnish Society of Telemedicine and eHealth
Paulus Torkki, President
The Finnish Society for Effectiveness in Social and Healthcare

A Paradigm Shift Toward Planetary Health and One Health in Digital Services

Chiara Cadeddu¹, MD, PhD

¹ Erasmus School of Health Policy & Management (ESHPM), Erasmus University Rotterdam, Rotterdam, The Netherlands



Biography: Chiara Cadeddu is a medical doctor, PhD, and Associate Professor at Erasmus School of Health Policy & Management, Erasmus University Rotterdam, where she chairs the Planetary Health theme. Her research focuses on measuring the health impacts of the planetary crisis, translating evidence into policy, and building capacity in health systems and education. She is Vice President of the Law & Public Health Section of the European Public Health Association, Steering Committee member of the Planetary Health Alliance and co-Chair of the last Planetary Health Annual Meeting 2025, and Vice Chair of the COST Action CliMent. She has authored over 73 peer-reviewed publications and is an active advocate for Planetary Health at European and global level.

Introduction: Digital health technologies, including telemedicine, artificial intelligence (AI)-driven decision support and remote monitoring, are expanding rapidly, promising more accessible, efficient and personalised care. Yet the frameworks used to design and evaluate these technologies remain largely anthropocentric and health-system-centred, optimizing for individual outcomes and service efficiency while overlooking the ecological conditions that underpin population health. Planetary Health and One Health recognize the interdependence of human, animal and ecosystem health and call for health innovations to be assessed not only for their clinical and economic value but also for their environmental and societal impacts [1,2]. This presentation argues that digital health is at a paradigm-shift moment and explores what it would mean to design and evaluate digital services within planetary boundaries rather than solely around patient outcomes.

Material and Methods: This presentation draws on a narrative synthesis of the Planetary Health, One Health, digital health and environmental sustainability literature, together with relevant WHO and European policy frameworks. Opportunities and challenges at the intersection of digital health and planetary health are examined across four domains: clinical and public health value, environmental footprint, equity and environmental justice, and health-system resilience.

Results: Digital technologies can contribute to planetary health objectives through several pathways. Telemedicine and virtual care models have been shown to significantly reduce travel-related greenhouse gas emissions, travel distances and time burdens, particularly among rural and underserved populations. AI-enabled forecasting and interoperable data infrastructures can strengthen surveillance of climate-sensitive risks, supporting integrated approaches that connect human, animal and environmental health [3,4]. However, the digital transformation of healthcare also carries substantial environmental and social costs. The growing use of AI relies on energy-intensive computational processes and increasingly large data infrastructures associated with high electricity demand, water consumption, resource extraction and electronic waste generation. Beyond carbon emissions, the rapid expansion of data centres raises emerging concerns related to environmental justice. New facilities are increasingly being located near residential communities, where they may contribute to local environmental burdens through intensive resource consumption, backup power generation, land-use pressures and potential air-quality impacts, while affected communities often have limited influence on siting decisions. Existing digital-health evaluation frameworks rarely capture these broader environmental and societal impacts [5,6].

Discussion: A genuine paradigm shift requires expanding the definition of value in digital health beyond clinical outcomes and cost-effectiveness. Planetary Health and One Health indicators should be incorporated into the assessment, design and governance of digital services, including measures of environmental sustainability, resource consumption, resilience and equity. Future digital-health strategies should not only reduce healthcare emissions but also address the broader environmental and social consequences of digital infrastructures. Embedding planetary and cross-species perspectives into digital-health innovation offers an opportunity to ensure that digital transformation supports both human wellbeing and the ecological systems upon which health depends.

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Posterit / Posters

Aakkosjärjestyksessä ensimmäisen kirjoittajan mukaan / Alphabetically by the first author

Advancing AI Assistants for Digital Rehabilitation Through Citizen Science

Eeva Aartolahti¹, PhD, Lari Lautamäki¹, MSc, Minna Eriksen¹, MSc, Kaisa Lällä^{1,2}, PhD

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² *Student and Academic Services, University of Jyväskylä, Finland*

Introduction: Artificial intelligence (AI) assistants have the potential to enhance digital self-management in health and social services. However, their adoption faces challenges related to acceptability, trust, and ethical implementation. Practical and ethically sustainable methods for involving citizens in AI assistant development are scarce [1,2]. This study examines the role of citizen science in developing an AI assistant for digital rehabilitation, focusing on low back pain self-management due to its high prevalence, economic impact, and the emphasis of current care guidelines on self-management and physical activity to enhance recovery [3]. The study investigates how citizen science-based participation can support the iterative development, acceptability, and ethical sustainability of AI assistants in digital rehabilitation.

Materials and Methods: This design-oriented, multiphase study was built upon the previously published open-source AIRe Platform [4], which was developed through extensive human-centered design involving rehabilitation service users and professionals across multiple countries. The study commenced with a series of expert workshops attended by educators and RDI professionals from the rehabilitation and related fields. This expert-led phase focused on co-creating user cases and usage scenarios to guide platform development, define the required functionalities, and establish ethical and practical boundaries for the AI assistant. These activities prepared the conditions for real-world testing and the application of citizen science as an open, iterative method of public participation, in which citizens interact with the AI assistant and provide continuous feedback. The approach builds on contributory citizen science, where projects are designed by researchers and citizens primarily generate data [5], while expanding toward iterative and development-oriented participation. The goal of this model is to enhance the relevance, acceptability, and societal impact of AI-assisted rehabilitation by incorporating extensive citizen input into the development process. Data collection focuses on short, standardized questionnaires (e.g., usability, acceptability, trust) and open feedback, combined with anonymized usage metrics linked to a research-specific identifier.

Results: The study is ongoing at the time of abstract submission. The AI assistant is scheduled to be opened for initial citizen feedback through an open, web-based testing phase prior to the conference. Unlike traditional user testing, citizen participation is continuous and development-oriented, allowing user contributions to shape subsequent iterations of the AI assistant. Our preliminary findings from expert testing using simulated low back pain scenarios suggest that perceived usability and relevance are high, while trust is strongly dependent on transparency, appropriate scope of AI support, and clear communication of the AI assistant's role.

Discussion: The primary contribution of this study is a scalable and transferable model for incorporating citizen science into the future development of AI assistants for health and social services. This proposed model is adaptable to other domains in which AI adoption hinges on trust, usability, and ethical considerations. From an impact perspective, this approach has the potential to improve the real-world implementation success of AI-assisted rehabilitation by strengthening user engagement, reducing adoption barriers, and supporting scalable self-management solutions.

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Micro Learning Curriculum: The Interoperability Competencies Around European Health Data Space

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Introduction: Digitalisation of healthcare and the implementation of the European Health Data Space (EHDS) [1] create urgent demands for new, role specific interoperability competencies across Europe's health professionals. Addressing these demands requires flexible and scalable learning models that support formal vocational education and training (VET), higher education institutions (HEI) and continuous professional development (CPD). This paper presents the Xpanding Innovative Alliance (XiA) [1,2] micro-learning [3] curriculum at European Qualifications Framework (EQF) level 5-7, designed to strengthen interoperability competencies aligned with EHDS requirements. The curriculum targets three primary learner groups: end users, implementers, and developers, and provides a modular, micro credential-based approach to interoperability education grounded in European policy, regulatory, and professional frameworks. Microcontent Learning Blocks (MCLB) are associated for creating micro courses and micro credentials.

Material and methods: The curriculum was co-created with diverse expert groups using a multi-phase methodology. First, a comprehensive literature and policy review on EHDS, interoperability, and digital health education was conducted to establish a conceptual framework. Second, learner groups were defined according to professional roles within the digital health ecosystem. Third, a pedagogical framework for micro credentials was co-created with educational experts, ensuring alignment with EQF, European Credit Transfer and Accumulation System (ECTS), and European micro credential recommendations. Each competence area is linked to specific learning outcomes for each learner group, organised into 20 families that cover key thematic areas. Stakeholder input from clinical, technical, academic, and governance experts was integrated iteratively to ensure relevance, quality, and applicability. First the curriculum was made to EQF 6 level and in next phase adapted to EQF levels 5 and 7.

Results: Each resulting learner group has its own competence areas, with every competence defined by learning outcomes at three levels: foundational (EQF5), applied (EQF6) and specialised (EQF7). The curriculum consists of 20 thematic families grouped into three domains: (1) Essentials and Transversals, (2) EHDS and Systems Components, and (3) Standards and Semantics. Each family corresponds to approximately 1-3 ECTS and includes learning outcomes defined at foundational, applied, and specialised levels. The curriculum operationalises role specific competencies for developers, implementers, and end users and supports stackable micro credentials. The framework integrates key interoperability standards and concepts, including EHDS/EEHRxF, HL7 FHIR, openEHR, SNOMED CT, LOINC, WHO_FIC, usability, ethics, privacy, and quality assurance, and is released under open licensing as CCBY-SA 4.0 to promote reuse and scalability.

Discussion: The XiA curriculum illustrates how modular, competence-based education can be designed to effectively address the complex and evolving interoperability requirements of the EHDS. The curriculum can be used in three ways: 1) within formal degree education, where teachers in VET and HEI reuse XiA study units as part of professional degree programmes; 2) as part of CPD, where healthcare organisations use XiA to support end users and implementers, while companies use it to effectively support developers' CPD; 3) for individual, self-directed learning, for example through open education offers. By combining pedagogical rigour with role specific flexibility, the curriculum supports workforce upskilling across disciplinary and national boundaries. Its micro credential structure enables rapid competence acquisition, recognition, and lifelong learning, while alignment with European standards enhances portability and trust. This work demonstrates how micro-learning offer a sustainable and scalable educational model for supporting EHDS implementation and interoperability capacity building across Europe's digital health ecosystem. AI tools were used to support language editing and text summarisation.

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Reducing Workplace Sitting with a Prompting App: A Randomized Controlled Trial Using Accelerometry

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Introduction

Prolonged sitting, particularly in office-based work, is associated with adverse health outcomes, including increased risk of cardiometabolic diseases.[1] Workplace interventions, such as prompting applications, have been developed to reduce sedentary behavior, but evidence on their effectiveness using objective measurements remains limited.[2] This study aimed to evaluate the effects of a prompting app intervention on accelerometer-measured workplace sitting patterns among office workers.

Material and Methods: A randomized controlled trial was conducted among Finnish office workers (n = 101). Participants were randomized to an intervention group receiving desktop prompts to interrupt sitting or to a control group with no prompts. Sedentary behavior was objectively measured using a thigh-mounted accelerometer over seven consecutive days at baseline and follow-up. Differences in workplace sitting time and sit-to-stand transitions between groups were analyzed using linear mixed-effects models.

Results: Ninety-seven participants provided valid follow-up data. Workplace sitting time did not differ significantly between the intervention and control groups over time (group × time interaction p = 0.485), although a small overall time effect was observed (p = 0.037). Sit-to-stand transitions increased over time in both groups, with a greater increase observed in the intervention group; however, the between-group difference was not statistically significant.

Discussion: Prompting app intervention increased sit-to-stand transitions but did not reduce total workplace sitting time. These findings suggest that such interventions may influence the pattern of sedentary behavior rather than substantially decreasing its overall duration.

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From Experiments to Ecosystems: A Networked Open Innovation Model for AI Driven Experiments

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Introduction: The social and health care sector face challenges in technology adoption due to limited collaboration between actors, lack of evaluation models and uncertainty related to ethical AI use. [1,2]. As a result, the adaptation of technology is slow and fragmented [2]. The RobotAI 2- intelligent technology to social and health care sector -project addresses these challenges by developing an Open Innovation model [3]. The model provides a framework for joint development, safe testing, and shared learning, ensuring that solutions are relevant, risks are reduced, and technology adoption becomes more systematic and impactful. The model brings together technology providers, social and health care organizations, higher education institutions, and third sector actors to collaborate in a shared network. The ecosystem offers a platform to address real-world challenges related to AI and technological development. It supports the safe and controlled adoption of AI and robotics. The model is based on open co-creation and experiment driven development [4], where participants get structured support to innovate and pilot AI- and technology-based solutions. The project is closely linked to Diginet network, which focuses on identifying future digital and AI competencies in the social and health care sector [5]. The model enables the effective sharing of expertise and resources, supports an agile experimentation culture, and facilitates piloting of solutions in real operational environments.

Material and Methods: Open Innovation model is developing as the central framework, following the principals of general Open Innovation model -frameworks [6]. The model includes five iterative steps. It still evolves through continuous experimentation and learning while the project is still on-going. The materials of the model include tools to support structural nature of the model. Technological renewal in the social and health care sector is complex and requires close, continuous collaboration between multiple stakeholders. Through facilitated analysis, experimentation and evaluation organizations can identify genuine needs, safely test solutions, and apply service design methods to develop technologies that address concrete challenges.

Results: The expected outcome of the model is increased organizational knowledge and stronger networks, as well as enhanced collaboration among network members through a network-based co-creation approach that makes shared value creation more tangible. It also enables integration with existing innovation ecosystems as well as Laurea's education and RDI activities. The model includes specific service design-based tools developed during the process and it enables more digitally advanced organizations to share knowledge and support those at earlier stages of adoption, thereby accelerating collective capability building. The model is based on experimentation-driven approach, where solutions are developed and validated through iterative, hypothesis-based testing and real-world implementation [4].

Discussion: The model provides insights into how collaboration between social and health care, education and working life should be developed as well as it creates new business opportunities for technology providers. In this way, the Open Innovation model is directly linked to future skills development. The results also highlight the importance of integrating economic perspectives into co-creation. Greater attention should be given to the cost-benefit impacts of experiments and technological solutions, including expected and realized savings, productivity gains, resource reallocation, and improvements in perceived work wellbeing. Such analyses strengthen the strategic value and scalability of the model. Looking ahead, the findings emphasize the need to further examine organizational culture in relation to AI adoption, as well as to more systematically incorporate ethical considerations into the development and deployment of AI solutions.

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AI Assistants for future and current healthcare professionals

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Introduction: European healthcare systems face persistent shortages of qualified professionals, driven by the high cost and limited scalability of traditional healthcare education. Another challenge is the skills mismatch related to the advancements in the domain of AI assistants and the opportunities and challenges they bring to the healthcare sector. These needs may be addressed by integrating modules on AI assistants into the education of both teachers in healthcare as well as current and future healthcare professionals. Although AI assistants are widely integrated into healthcare [2], and there is a wide belief in their benefits on the efficiency and quality in both education and care [1,5], there is a lack of knowledge on the current policies and initiatives in this domain as well as on the insights of teaching professionals on the topic. This study is an attempt to bridge this gap.

Material and Methods: This analysis is based on a review of existing literature, European, national and regional policy documents, existing EU-level initiatives on AI education in healthcare, experiential insights from teaching professionals in healthcare as well as AI assistant technology providers. It examines the development, practical implementation, and implications of AI assistants both in teaching and in the domain of healthcare. The scope includes teacher education as well as the education of current and future healthcare professionals. The evolving professional roles of healthcare educators and professionals as well as education quality and efficiency are in the scope.

Results: There are several important European level policies guiding the adoption of AI in education at all levels, ranging from vocational to doctoral studies, i.e. the European qualifications framework (EQF) levels 4 to 8, and including lifelong learning. These policies also apply to healthcare education. Along the policies, there are tens of ongoing European initiatives with European funding in the domain of AI in healthcare education. The literature review and experiential insights from teaching professionals show that doubts related to regulatory compliance, accountability and trust are the main obstacles in adopting AI assistants in healthcare education, whereas efficiency, cost savings and 24/7 availability of the AI assistants are the main drivers, [4,5]. Increase in quality of education through features such as personalized content and dialogue, and automatic creation of embodied virtual assistants and simulations are seen as major drivers in the literature [3,4,5], but do not appear to be as important according to healthcare teaching professionals.

Discussion: The findings suggest that while there are several European level policies encouraging the adoption of AI and thus also AI assistants in healthcare education, the adoption in terms of both pedagogical practices and actual study contents is still not widespread, despite the growing interest and demonstrated potential of AI-supported educational approaches reported in recent literature [4,5]. The scientific literature on the adoption of AI assistants in healthcare education highlights both their potential to reduce costs in education and in healthcare and how they can be employed to increase quality in both. Practitioners in the field should be guided to also take advantage of the possibilities of improvements for the equality instead of concentrating on the cost savings. An important aspect with relatively little literature and existing study offerings is the domain of trust and accountability related to the changing professional roles of educators and healthcare providers due to the adoption of AI assistants.

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Adapting the Method Ecosystem of Service and UX Design to Regulated Healthcare Software: A Qualitative Study of Designer Practice in Finland

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Introduction: The effectiveness of medical software depends not only on regulatory conformity but on whether everyday design practice delivers software that is simultaneously compliant, safe, usable and clinically valuable. The Medical Device Regulation (MDR) and the harmonised standards (notably IEC 62366-1, ISO 13485, ISO 14971) leave the designer's role and the choice of design methods largely unspecified. Service and UX designers, who shape the user-facing layer of most modern medical software, therefore work from a fragmented method ecosystem [1] without an established account of how methods translate to regulated contexts. This paper asks: how does the method ecosystem of service and UX design adapt when carried into regulated medical software development, and what does this imply for effectiveness?

Material and Methods: The paper draws on a data-driven qualitative study [2] combining a structured questionnaire (n=10) and five task-based semi-structured interviews. Respondents were service and UX designers at a Finnish digital consultancy developing medical software under an ISO 13485 quality system; one external usability specialist provided cross-organisational triangulation. Data were thematically analysed [2] and re-read here through the method ecosystem lens [1] and through effectiveness as a design property.

Results: Designers do not adopt a separate “medical-software method”. They adapt a familiar palette (interviews, observations, workshops, prototyping, co-design, benchmarking, service blueprinting, user stories) through three observable shifts: (i) a continuously maintained documentation layer coupled to traceability; (ii) an explicit re-orientation towards use-related risk via IEC 62366-1's usability engineering process [3], the practical interface between design choices and conformity; and (iii) a formalisation of design reviews, namely design input review (DIR), design output review (DOR) and design ready review (DRR), that breaks iterative cycles into auditable increments without erasing iterativity [2]. Methods judged inappropriate (e.g., societal-scope trend analysis) are dropped; organisational methods (visioning, service blueprint, roadmaps) are contested [2]. Convergence is less on which methods to use than on how to adapt familiar methods to a context where each design choice must be defensible.

Discussion: Read against the MDR's silence on design method, effectiveness in regulated medical software is best understood as a property of the adapted method ecosystem [1], not of any single method. The pattern extends earlier human-centred design evidence in health [4] but locates the effectiveness work upstream, in method choice and adaptation. Three implications follow: design practice should treat method-adaptation literacy as the core competence for regulated work; Software as a Medical Device (SaMD) guidance should include the documentation layer and make design-review rhythm explicit, since this is where practitioners do the conformity work; and the effectiveness of medical software is produced upstream, in the designer's negotiated method choices, well before deployment.

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Clinical Note Comparison and Data Retrieval Via Embedding Vectors: Model Selection, Metrics, and Convergence

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Introduction: Embedding models are an integral part of generative AI architectures, transforming text into embedding vectors that represent semantic content in numerical form. Despite their central role, their performance in clinical settings remains underexplored. We evaluate embedding models across two tasks: semantic difference detection in clinical texts, and data retrieval from patient records.

Material and Methods: Eight models were applied to synthetic discharge summaries in English, Finnish, and Swedish. Semantic sensitivity was assessed by introducing controlled perturbations (deletion, modification, and paraphrasing) at three levels of severity; cosine similarity, and L1 and Euclidean distances were computed between the vectors of the original and perturbed texts. Partial vectors were compared to explore dimensionality reduction. Two models with the biggest contrast in semantic difference detection were evaluated on retrieval of relevant information from real Finnish vascular surgery records.

Results: Embedding vectors captured semantic differences in clinical text: content deletion and modification produced larger increases in vector distance than paraphrasing. On average, models detected the direction of semantic change correctly, but case-level performance varied considerably. Qwen3-Embedding-8B was the only model with zero directional errors, while multilingual-E5-large erred in 13.8% of cases. In data retrieval, Qwen3-Embedding-8B again outperformed multilingual-E5-large, though the margin was narrower: sufficiency scores were 3.25 vs. 3.17 out of 5 for the first query and 2.25 vs. 1.15 out of 5 for the second query. For some models, as few as 0.6-1.2% of dimensions sufficed to replicate full-vector accuracy; principal component analysis and coordinate-level analysis did not account for this finding.

Discussion: Our results show that the choice of embedding model is important: performance differences between models can be large enough to determine whether clinically relevant information reaches the end user, and model weaknesses can be both task-specific and context-dependent.

Measuring the quality of AI-generated clinical notes: A systematic review and experimental benchmark of evaluation methods

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Introduction: High-quality clinical documentation is essential for safe and effective care, yet its production remains time consuming and prone to error. Large language models (LLMs) have shown potential for supporting clinical note generation, but their clinical adoption depends on how the quality of generated text is assessed, and current evaluation practices vary widely.

Material and Methods: We systematically searched Ovid Medline and Scopus on 10 April 2025 for peer-reviewed studies that used LLMs to generate clinical notes and reported an evaluation of text quality. Screening followed PRISMA guidelines, and the protocol was preregistered in PROSPERO. Evaluation metrics and outcome measures were synthesised narratively. Informed by these findings, we designed a controlled experimental setup using five synthetic clinical cases, with targeted perturbations to examine the behaviour of commonly used automated metrics and LLM-based evaluators.

Results: Thirty-seven studies met the inclusion criteria. Reported evaluations were dominated by lexical overlap metrics, primarily ROUGE and BLEU, whereas semantic similarity metrics such as BERTScore and BLEURT were less frequent. Human evaluation was common but heterogeneous in criteria and reporting, most often addressing correctness, fluency, and clinical acceptability. In the experimental analysis, lexical overlap metrics detected deletions and factual modifications but penalised meaning-preserving paraphrases. Semantic metrics and LLM-based evaluators were more tolerant of paraphrasing while remaining sensitive to clinically relevant changes, with performance varying by model and language.

Discussion: We conclude that lexical overlap metrics are insufficient as standalone proxies for clinical text quality and recommend a layered evaluation strategy combining semantic metrics, LLM-as-evaluator, and targeted human review to support scalable assessment.

Beds2Bytes: Advancing Digital Care Competence Among Healthcare Students Through Study Modules and Web-Based Simulation

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Introduction: To address the ongoing shift towards digital healthcare and hospital-at-home care, a two folded project was established to enhance the digital competence of healthcare students and professionals in Finland [1]. Evidence indicates that healthcare students and professionals often struggle to keep pace with technological developments, which may affect quality of care and clinical decision-making [2].

Material and Methods: Initially, six online interactive study modules were developed in collaboration with AI and IT experts, researchers, and lecturers from different healthcare disciplines, informed by a review of relevant literature. The modules included a web-based simulation platform designed for practical training, enabling the management of different patient scenarios through an environment with integrated real-time documentation, assessment, and intervention functionalities. The study modules were subsequently piloted among healthcare students (n = 17) at a University of Applied Sciences in Finland and reviewed by a working life expert. The second part of the project focused on person-centered care in a digital era among healthcare students. Digital competence was assessed before and after the educational program using the validated Digital Competence Questionnaire for Nurses [3], alongside focus group interviews.

Results: Pilot testing and preliminary study results indicate that students perceive virtual care as an integral component of their professional role and recognize its potential for person-centered care, particularly through digital solutions such as video consultations and digital tools. Students identified understanding of AI and data security in the healthcare context as particularly important and reported that the simulation was beneficial in translating theory into practice and supporting reflection on theoretical knowledge. Focus group interviews further highlight that while students are generally positive towards digital care modalities, they identify a need for additional education, particularly regarding communication and security risks.

Discussion: The study modules facilitate hands-on learning that bridges the gap between theoretical knowledge and the use of practical digital tools, enabling students to develop the digital competence required for care in digital environments. Ongoing development and maintenance involve multiprofessional collaboration. The web-based simulation platform is currently operational at the Arcada University Patient Safety and Learning Center (APSLC), enabling students to engage in multiprofessional hospital-at-home and remote care scenarios alongside the theoretical study modules. The modules will be piloted with clinical teachers prior to inclusion in the national continuous learning offering for all healthcare students and professionals in Finland. Overall, the project demonstrates the value of web-based clinical simulation in supporting the development of digital competence and person-centered virtual care, while highlighting the importance of multiprofessional collaboration in fostering digital competence among healthcare students and professionals.

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Cross-case analysis and synthesis of AI-assisted documentation across social and healthcare services

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Introduction: The growing prevalence of AI-assisted documentation across social and healthcare services is expected to significantly facilitate both the documentation of new information and the use of recorded data. However, before this happens, solutions must be expanded from pilots to permanent use. So far, there is only limited knowledge about how the specific characteristics of different social and health care professionals' work should be considered during implementation.

Materials and methods: In 2024, the Western Uusimaa Wellbeing Services County conducted a feasibility assessment of the use of an AI-assisted documentation for recording doctors' appointments. In 2025, the use was expanded in healthcare to ten health centers, and in addition to doctors, nurses, psychologists, and physiotherapists and occupational therapists working in rehabilitation became users. At the beginning of 2025, a feasibility assessment was also carried out in social services, and towards the end of the year, the use of the application was expanded to different units. The aim of this cross-case analysis is to produce understanding of application use in different units—what works, why, and under what circumstances. The evaluation was mainly based on usage data collected from the application, but for doctors, social workers, and social counselors, interview material and notes from project experts were also available. The assessment sought answers to the following questions: what shared benefits were observed between cases in the AI-assisted documentation pilots, in which cases were the benefits minimal or absent, and what prerequisites for successful adoption can be identified across cases.

Results: There were 449 identified users in total including social workers and counselors (n=225), doctors (n=153), physiotherapists and occupational therapists (n=40), and nurses (n=31). Draft clinical notes per user were made as follows: physiotherapists and occupational therapists (136), doctors (38), social workers and instructors (25), nurses (16). Draft clinical notes were copied, that is, utilized as follows: physiotherapists and occupational therapists (88%), social workers and instructors (79%), doctors (73%), and nurses (72%). When examining the development of usage activity among different professional groups as usage progressed, the following was observed: regular use by doctors decreased, for physiotherapists regular use increased, and the usage by social workers and social counselors remained relatively unchanged. Proportion of users who stopped using the application: nurses (42%), doctors (32%), social workers and instructors (11%), physiotherapists and occupational therapists (10%). AI-assisted documentation delivers benefits by reducing the time spent on record-keeping across all user groups. It also enhances presence in client meetings where simultaneous documentation is challenging. Despite using the application, reviewing and editing the draft clinical notes remains an essential part of the work. For doctors, perceived benefits are diminished by the need to review existing patient information and previous clinical documentation during consultations and while creating new draft clinical notes, the need to tailor content structures to fit their familiar workflow, and the wish to personalize content to match their professional identity. At first use in rehabilitation was found to be challenging if the client had multiple separate issues, as the application was initially unable to generate a sensible draft record. For social services it was important to be able to record the perspectives and interpretations of different parties regarding the client's situation. Prerequisites for adoption were identified as start-up days organized at health centers, additional resources allocated to change agent activities in rehabilitation, and the gradual, organically driven spread of use in social care based on voluntary participation. In healthcare, commitment to use will require more support than in other user groups, and dissemination should be done in doctors' own meetings with strong collegial support.

Discussion:

The needs of different user groups regarding AI-assisted documentation vary, since text is produced and utilized in different ways. Training language models to suit one's own work requires patience. Doctors are interested in details, which may be because they produce documentation for other professionals to read, and these texts may be seen as reflecting their professional identity. In contrast, in social welfare, documentation is typically regarded as the client's record. The active use of rehabilitation can be explained by the fact that predetermined goals and their follow-up are part of therapists' routine work, and the benefits brought by new solutions are easily noticeable through them.

Making Impact Visible: Six Thematic Dimensions for Evaluating Effectiveness in Digital Health and Social Services – A Case study

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Introduction: The rapid advancement of health technologies highlights the importance of understanding their benefits and impacts [1, 4]. Evaluating effectiveness is a critical prerequisite for the development and implementation of digital health and social services. Without systematic assessment, it is difficult to demonstrate whether solutions generate real benefits for individuals, professionals, and the system level. At the same time, there is a need for new operating models and practical methods that fit rapidly evolving digital environments and support decision-making. Empirical research plays a central role: examining real-world analytical experiences, comparing methods, and openly sharing results enable learning, scalability, and the identification of effective solutions across contexts. To address this need, we have developed and studied an operating model - including impact cards as a key tool - for assessing the impact of digital transformation within an ICT organization [2].

Material and Methods: This case study examined how the effectiveness of digital health and social services can be evaluated in practice using the proposed operating model. A qualitative content analysis was conducted using project documentation and decision-making materials [3]. The data consisted of 31 development projects, of which eight projects focusing on new service development were selected for closer analysis. These projects produced 18 impact cards, including 12 quantitative, five qualitative, and one mixed-method card. Most impact cards focused on organizational-level effectiveness (12 impact cards) and customer-level effectiveness (6 impact cards), while patient- and societal-level impact cards were not identified.

Results: The operating model has been in use for three years and has been applied across dozens of digital service development projects, where effectiveness evaluation has been systematically integrated into development and decision-making. The model has proven useful in making impacts visible, thereby supporting prioritization and informed decision-making. The analysis of 18 impact cards revealed six themes (T1–T6) describing how effectiveness was evaluated in practice. Customer-level effectiveness (6 impact cards) focused on service efficiency and accessibility (T1), care pathway throughput and preventive impact (T2), and data-driven decision-making capability (T3). Organizational-level effectiveness (12 impact cards) emphasized work efficiency and operational quality (T4), economic effectiveness and cost structures (T5), and productization, scalability, and continuous business (T6). Overall, effectiveness was assessed not only through outcomes but also by making impact mechanisms, enabling capabilities, and long-term sustainability visible across development projects.

Discussion: Building on the need for systematic evaluation and practical methods highlighted in the introduction, our findings emphasize the role of structured tools in operationalizing impact assessment. In this context, impact cards provide a concrete means to translate evaluation principles into everyday development practice. Completing impact cards is meaningful, as they make explicit the value a development project aims to achieve, for whom this value is created, and how its realization will be monitored. They also make underlying assumptions and impact pathways visible, fostering richer dialogue, strengthening shared understanding of project benefits, and improving the quality of decision-making. Together, these elements shift the focus from activities to outcomes and impact, while supporting stakeholder engagement and continual improvement.

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Health Technology and AI Acceptance Among Finnish Nursing Students

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Introduction: This abstract presents results of a survey of Finnish nursing students' attitudes, acceptance and emotional experiences regarding health technology and artificial intelligence (AI) in a nursing context. The data presented here contributes to the PROFIT research project, which aims to evaluate innovations in health technology and to develop a technology acceptance model for nursing. Knowledge about nurses' attitudes and acceptance of digital technologies is relevant when planning, implementing, and evaluating health-related technology and conducting data-informed management [1].

Material and Methods: The participants were 279 undergraduate nursing students (majority in the 18-29 age group, 250 women) enrolled in a Bachelor-level nursing programme at Turku University of Applied Sciences. 54.5% of the students had a previous degree in social or healthcare, and 73.8% had undergone clinical practice as part of their studies. Roughly half of the respondents (n = 152) had prior work experience in social or health care, typically 4-6 years. The survey included three scales with questions about attitudes and emotional experiences toward health technology and AI. Technology acceptance was measured with a 21-item modified UTAUT2-based scale [2] covering performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habits, and behavioural intention. Emotional experiences related to nursing technology use were assessed with an 8-item scale measuring positive affective states (e.g. pleasantness, calmness, safety, and comfort). AI-related attitudes were assessed with a 10-item scale measuring willingness to use AI-based nursing technologies, trust in AI, and perceived usefulness of AI applications. All items were rated on a 5-point Likert scale, with higher scores indicating stronger acceptance or more positive evaluations. The data was analysed using composite scores (means of all items). Background differences were examined using t-tests and ANOVAs.

Results: The modified UTAUT2 scale demonstrated high internal consistency (Cronbach's $\alpha = .92$), with a composite mean score of 3.95 (SD .53), indicating a generally high level of technology acceptance. The emotional experience scale also showed high internal consistency (Cronbach's $\alpha = .92$). The composite mean score was 3.38 (SD .75), reflecting neutral to slightly positive emotional experiences related to nursing technology use. The AI-related attitude scale showed good internal consistency (Cronbach's $\alpha = .93$), with a composite mean score of 3.39 (SD .80), suggesting neutral to slightly positive evaluations of AI-based nursing technologies. Background analyses suggested that general technology acceptance and emotional experiences were largely consistent across demographic and educational characteristics. However, AI-related attitudes were more positive among students with prior work experience in social or healthcare settings.

Discussion: The findings suggest that future nursing practitioners in Finland represent a broadly receptive user group for digital health technologies. While general technology acceptance and emotional experiences appear stable across backgrounds, practical experience may facilitate more positive attitudes toward AI-based applications, highlighting the relevance of experiential knowledge for AI adoption in healthcare. Overall, the findings indicate that nursing students do not generally hold negative attitudes toward digital health technologies or AI, providing a favorable starting point for data-informed leadership decisions related to technology implementation and change management in nursing contexts.

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Attuning with the AI Act – human oversight and the role of healthcare professionals in AI-integrated self-management services

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Introduction: AI solutions are increasingly adopted across healthcare [1], where self-management is no exception [2]. However, these solutions raise questions regarding human oversight [3]. The EU AI Act (Regulation 2024/1689) aims to promote safe and responsible AI development by defining obligations and guidance for human oversight [1]. Nevertheless, its practical utilization remains vague and requires case-by-case evaluation [4]. This thesis aims to clarify the obligatory role of the professional in the context of AI-integrated self-management interfaces and professionals' acceptance of this role, for theoretical and development purposes.

Material and Methods: This thesis is conducted as a constructive study, addressing first the theoretical and second the practical aspects. The first phase clarifies and operationalizes the concept of human agency in algorithmic healthcare processes by developing a conceptual framework. The framework is then applied in a deductive analysis to examine its alignment with the EU AI Act (Regulation 2024/1689). To gain deeper contextual insight, the second phase outlines the professionals' role in AI-integrated self-management interfaces, based on regulatory requirements and the conceptual framework. In the second phase, four self-management interface scenarios with varying levels of oversight were developed to prompt discussion among healthcare professionals. The findings are analyzed and reflected upon against existing literature to provide a theoretical and normative contribution to the field.

Results: The results of the thesis revealed comprehensive, yet concrete mandatory responsibilities and tasks of healthcare professionals in certain AI-integrated self-management solutions. Both human-in-the-loop (HITL) and human-on-the-loop (HOTL) systems were found to be feasible in most cases, depending on the nature of the task. During the discussions, it was revealed that the HITL level was largely preferred in treatment-related solutions, while the HOTL level received limited support due to various contextual factors, most notably patient-related considerations. Other factors disfavoring the adoption of the HOTL level included a lack of trust and concerns related to responsibility. The tasks and responsibilities associated with possible HITL-level systems were considered acceptable, and no conflicts were identified. Furthermore, professionals expressed excitement and generated ideas for further development. In contrast, the effective implementation of HOTL-level systems was found to require further development in the relationship between professionals and technology.

Discussion: The thesis scenario creation and reflective analysis confirmed that the scenarios could be legally feasible, however, additional legislation may apply further responsibilities [5]. Moreover, it was recognized that professionals' actions may influence the risk level of an AI-based solution [5]. During discussions, HITL was preferred over HOTL due to various reasons, while literature notes other professional factors influencing perceptions of HOTL oversight, such as ethical issues [6]. Both existing literature and the discussions align in that, even though in some cases, the agency of the professional may be reduced, professionals remain valuable and integral to the processes [6]. A novel positive perspective identified during discussions was the shift from assessing patients' or colleagues' responses to evaluating AI outputs, rather than the more radical changes discussed in the literature [6]. Finally, as AI-integrated systems and their use are likely to evolve [7]. Therefore, it may be beneficial to consider the development of agency between professionals and technology [8] and to involve professionals in these processes [9].

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Deep Tech Competence Enhancement for Digital Transition in Dementia Care

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Introduction: Europe is projected to experience a substantial increase in dementia cases by 2050, placing a significant burden on individuals, families, and healthcare systems. At the same time, a persistent skills gap among healthcare professionals hampers the effective adoption of artificial intelligence (AI) in care settings. The Deep Tech Competence Enhancement for Digital Transition (DETECT 2.0) project addresses these challenges by fostering AI-driven innovation aimed at enhancing independence and quality of life for people with mild cognitive impairment (MCI) and early-stage dementia. The project seeks to empower healthcare and ICT students in higher education institutions (HEIs) and vocational education and training (VET) by developing AI-related competences and human-centric innovation skills, ensuring the ethical and patient-centred application of technology. In addition, DETECT 2.0 raises awareness of AI's potential among healthcare professionals and supports the development of regional innovation ecosystems that bring together healthcare organisations, AI companies, educators, and researchers. Nine partners from Finland, Netherlands, Spain and Portugal are presenting HEI, VET and RDI institutions, AI companies and elderly care institution.

Material and Methods: Key actions in the project will be Innovative curriculum development in higher education and vocational education, AI training for healthcare and ICT students and professionals in healthcare, fostering innovation and entrepreneurial mindset and supporting innovation ecosystem approach supporting ethical and patient centred technology.

Results:

Expected result of the DETECT 2.0 project: 150 HEI and VET healthcare and ICT students are best equipped to develop human-centric and ethical AI related technology in dementia care, healthcare professionals and Healthcare and ICT students' innovations skills and entrepreneurial mindset have been strengthened, 50 healthcare professionals are aware of the benefits and use of AI -assisted technology in improving the lives of dementia patients, 1 AI hub has been established to enable and ensure the transnational collaboration, 4 countries have AI related innovation ecosystems in operation, 5 curricula in HEI or VET have been modernized with AI related teaching materials, 40 new educational materials for HEI and VET education are developed, Online library for educational materials has been developed and launched, 20 real-world challenges have been gathered leading to the co-designing of several low fidelity prototypes on novel AI-assisted dementia care solutions, of which 3 have been further developed into high fidelity prototypes. The case studies have been meticulously documented to serve as comprehensive educational materials and have been uploaded into the online library for easy access and use by learners. Expected impacts of the DETECT 2.0 project include strengthened innovation capacity, skills development, and sustainable ecosystem growth in AI-enabled healthcare. Within five years, the project supports the widespread adoption of at least ten AI tools and technologies across the healthcare sector. At least 70% of healthcare professionals and healthcare and ICT students using the DETECT 2.0 online library and participating in trainings delivered by partner HEIs and VET institutions are expected to demonstrate advanced digital and AI competences, complemented by enhanced innovation capabilities and an entrepreneurial mindset. Regionally, AI ecosystems are reinforced as systematic collaboration platforms, contributing to increased RDI funding, the establishment of at least five new startups, and the expansion of existing companies. In parallel, the project advances sustainability by integrating at least five AI-driven solutions into dementia care practices. Finally, DETECT 2.0 modernizes higher education and vocational training through long-term institutional collaboration, flexible educational offerings, and intensified innovation activities, positioning partner organizations as forerunners in AI-related education and workforce development.

Understanding, trusting and using AI-generated risk prediction results to help prevent ageing with multi-morbidity – stakeholder views

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Introduction: Artificial Intelligence (AI) holds significant possibilities to improve diagnostic accuracy, personalise care and enhance clinical-decision making [1,2]. However, issues with AI explainability and trust remain key inhibitors influencing stakeholder acceptability [3]. The aim of this work was to explore stakeholder views on the enablers and obstacles on delivering AI-generated risk prediction results to ageing citizens in multi-morbidity prevention, as part of the Stay Healthy Through Ageing (STAGE) project activities [4].

Material and Methods: A second Ageing Deal conference was held in April 2026 [5]. The conference was open to various stakeholders including members of the Ageing Deal cluster projects (COMFORTage, STAGE and SmILE), European Commission representatives, policymakers, local and regional stakeholders and professionals. Each cluster project held three 45-minute workshops and stakeholders were able to select the workshops they attended. The STAGE workshops included a short presentation about the STAGE Integrated Care Platform, the STAGE AI Risk Prediction Models and Large Language Models (LLMs) as an explainability layer when communicating AI risk prediction results to clinicians, to be used during clinical consultations. The participants worked in small groups to discuss potential concerns, trust issues, explainability and usability of the results according to a given user persona, representing sceptical, pragmatic and analytically oriented technology users.

Results: 34 stakeholders participated in the STAGE project workshops. The results were analysed thematically according to three themes: concerns, trust and usability. Concerns focused on ensuring that the AI risk prediction results are credible and medically sound, backed with evidence and the system delivering the results should be developed together with the clinicians to ensure the authority of the system. Concerns also related to potential data protection and sharing issues, as well as lack of transparency about the AI model training sets and validation procedures. Trust also highlighted the importance of transparency in how the algorithm works and how the collected data is used. Human-in-the-loop is needed to supervise use and provide validation by communicating clearly what the risk prediction result indicates. Any AI risk prediction model should be officially certified and integrated into existing care plans. Usability was perceived to entail the clarity and added value of the information provided by the AI, and the possibility to provide more personalised and adjustable care plan.

Discussion: The workshop results from multiple stakeholders can assist in understanding individual and system-level inhibitors affecting the use of AI-generated risk prediction results and help inform the development of AI healthcare policies. Moreover, the results of the workshop will inform the design of the STAGE AI Risk Prediction Models and the clinical decision-support tool within the STAGE Integrated Care Platform, enabling more person-centred, explainable and trustworthy risk result delivery for ageing citizens.

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The Effectiveness of AI-Assisted Documentation in the Western Uusimaa Wellbeing Services County

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Introduction: AI-assisted documentation is expected to enable significant improvements in the efficiency of social and health care services by reducing the time professionals spend on documentation and by supporting structured and up-to-date record-keeping [1]-[2]. Findings regarding the effects of AI-assisted documentation point to considerable heterogeneity in terms of cost and welfare impacts [3]-[4]. Although significant expectations are attached to the cost and welfare effects of AI-assisted documentation, high-quality evidence on the (causal) effectiveness of AI-assisted documentation remains limited.

Material and Methods: In this study, we will examine the effectiveness of AI-assisted documentation by leveraging a diverse range of data types and a natural experiment based on the staggered rollout of the intervention. Western Wellbeing Services County (LUVN) will implement AI-assisted documentation as part of its health and social services during the years 2026-2027. The staggered rollout enables the application of modern difference-in-differences methods and the estimation of (causal) effectiveness of AI-assisted documentation. The study population will consist of the health care professionals (mainly nurses) working in the well-child and school and student health care services of LUVN. We will utilize register data from the human resources and financial management systems along with self-assessed measures and interviews. The main outcomes will include time use and allocation within tasks, work satisfaction and burden along with work quality.

Discussion: Considerable expectations are attached to the potential of AI-assisted documentation to alleviate the documentation-related workload in health and social services. Evidence on user experience and the effectiveness of AI-assisted documentation is anticipated to promote the wellbeing of both professionals working in health care services and the clients they serve, as well as to enhance the cost-effectiveness of those services.

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Evaluating Effectiveness and Value Creation in Digital Health Education through AI-Based Training

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Introduction: The digital transformation of health and social care requires professionals to develop competencies in data analytics and artificial intelligence (AI). This study evaluates the effectiveness, impact, and value creation of a targeted educational intervention designed to introduce healthcare professionals with little or no prior experience to data analytics and machine learning within the MANGIDITH (Managing Digital Transformation in Health) programme. The course was delivered to two cohorts of healthcare professionals (n = 97) and combined theoretical foundations of data analytics, an introduction to machine learning concepts, and hands-on training using the Orange data mining tool. The participants engaged in practical exercises involving patient data analysis. Evaluation was conducted through participant feedback and assessment of learning outcomes. The impact is reflected in increased confidence in applying data-driven decision-making in professional contexts. In terms of value creation, the course participants reported a strengthened capability to support digital transformation initiatives within their organisations. These findings demonstrate the effectiveness of the intervention, with participants reporting improved understanding of data analytics and machine learning concepts, as well as increased confidence in applying data-driven approaches in their professional contexts. The course also contributed to enhanced decision-making capabilities and supported digital transformation practices within healthcare settings.

Material and Methods: The course was delivered to two cohorts with healthcare backgrounds and included theoretical foundations of data analytics, an introduction to machine learning concepts, and hands-on training using the Orange data mining tool. This course explores the intersection of innovative technology and the constantly evolving healthcare landscape, providing students with practical insights and hands-on experience. The participants engaged in practical exercises involving patient data analysis. The evaluation was conducted through participant feedback and assessment of learning outcomes.

Results: The findings suggest high effectiveness, with participants reporting improved understanding of data analytics and machine learning concepts. From an impact perspective, participants indicated increased confidence in applying data-driven approaches in their professional contexts. In terms of value creation, the course contributed to enhanced decision-making capabilities and supported digital transformation practices within healthcare settings.

Discussion: This study highlights that practice-oriented, interdisciplinary education can deliver measurable effectiveness, meaningful professional impact, and tangible value in digital health. These kinds of training models are essential for building capacity and supporting sustainable transformation in health and social care systems.

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State of Administrative Cybersecurity in Public Healthcare: Case Finnish Wellbeing Counties

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Introduction: In 2023, wellbeing counties were established through new legislation [1] which was originally encouraged by European Semester country-specific recommendations [2], reorganizing municipal social and healthcare organizations and transferring related taxation to the Finnish government, which allocates funds to these counties. The European Union directive NIS2 determines country-specific legislation [3] based on information security. ISO27001:2022 framework [4] is the de facto global standard in the arrangement of information security management systems. The wellbeing areas should comply with NIS2-based national legislation. It's recommended to comply with ISO27001:2022 in order to achieve best practices despite it not being mandatory.

Material and Methods: A study group comprised information security personnel from all 23 wellbeing counties and comparable organizations (21 wellbeing counties, Åland, and the City of Helsinki). A questionnaire, comprising 50 quantitative and qualitative questions based on NIS2 directive-based Finnish legislation (Cyber Security Act) and ISO27001:2022 framework, was sent in January 2026 to all wellbeing counties' and the City of Helsinki healthcare department's chief information security officers (or equivalent). Fourteen responses were received out of 22 recipients. Data was collected via an anonymous Webropol questionnaire sent to all respondents. The questionnaire was sent to 22 chief information security officers, or equivalent, in all welfare counties and the City of Helsinki social and healthcare department. Email addresses were obtained through internal sources, previous connections with welfare counties, or requests from chief information officers or equivalent officials. Åland was the only target organization where the chief information security officer's identity remained unknown. Of 22 welfare counties contacted, three required a research permit, and applications were submitted for all three. Two counties approved the research, while one denied it, resulting in a potential of 21 questionnaire responses. The 14 responses received represent two-thirds of the population permitted to participate.

Results: The study revealed major shortcomings in organization of administrative cyber security in Finnish wellbeing areas. 57 percent of wellbeing areas which participated in the study are still in progress of creating a data classification system for sensitive or otherwise classified data. Access rights restrictions on the risk moments of employment had significant diversity, surprisingly two respondents were unaware about access rights restrictions in their domain. The auditing process for the information security was reported to vary remarkably between solely internal, external or both internal and external audits. Besides this, two organizations still reported the auditing process under construction.

Discussion: Considering the criticality and amount of sensitive data in the possession of the wellbeing areas, the major shortcomings in the arrangement of information security processes deviates significantly. The study revealed significant shortcomings and inconsistencies in cybersecurity processes, practices, and maturity levels across wellbeing counties and comparable organizations. This variation places patients under different public healthcare organizations in unequal positions. Furthermore, the findings have implications for any future plans to consolidate wellbeing counties to reduce public healthcare costs.

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LASSI- Occupational Safety in Child Welfare – Virtual Simulations for Supporting Anticipation and Learning

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Introduction: The LASSI – Occupational Safety in Child Welfare – Virtual Simulations Supporting Anticipation and Learning -project will be implemented between May 1, 2026 and April 30, 2028. The main implementer is Tampere University of Applied Sciences (TAMK), with Jamk University of Applied Sciences as a co-implementer. The work of child welfare professionals often involves confronting violence or the threat of violence. The work is challenging because it takes place in a home-like environment, which is not a home. Child welfare professionals work with children and young people whose lives before entering child protection services may have been traumatic and whose trust in adults may have been tested. Child welfare professionals often experience insecurity in their work, especially when faced with threatening situations with children and young people.

LASSI- Occupational Safety in Child Welfare – Virtual Simulations for Supporting Anticipation and Learning project identifies, together with partners from different forms of foster care in the child protection field, issues and phenomena affecting occupational safety in child welfare. These findings will be used to create new types of training content and materials for the social sector through virtual simulations that are not bound to time and place. The project aims to respond to and find new solutions to the need for child welfare professionals to improve safety at work and increase their sense of security at work. It also aims to increase the sense of control over one's own work through the use of virtual simulation. Through these virtual simulations the project aims to improve the capacity of child welfare professionals to identify, manage and anticipate challenging situations in their work.

Material and Methods: The VR simulations will be scripted in cooperation with partners to meet real needs and will be filmed using professional actors in authentic child welfare environments. In the simulations, the learner, the user, will encounter threatening situations in a realistic setting, including soundscapes that reflect real-life scenarios. These simulations will be used to develop professionals' competencies related to anticipating, preventing, managing, and processing threatening situations in child welfare work. The project also strengthens trauma skills and resilience among child welfare professionals through virtual simulations and peer learning.

In the beginning of the project, the current state of threatening situations and training needs in child welfare will be identified and mapped via questionnaire. We will also conduct workshops to deepen the understanding of the situations identified in the mapping, as well as their prevention, management, and follow-up processing. After this, training content for VR simulations will be developed through workshops where professionals co-create scripts based on the situations identified before. Project's film and media production experts will script and produce VR simulations of threatening situations using professional actors. Child welfare professionals will test the simulations in workshops and provide feedback on their realism, after which the simulations will be further refined. Once finalized, the project will offer the simulations to partners for testing and provide VR headsets for their staff to use, enabling them to test the simulations and give feedback on the content. As a final goal, a training model for using VR simulations to develop the competencies of child welfare professionals will be created and piloted.

Results: As a result of the project, concrete and verifiable solutions will be developed to improve occupational safety in child welfare, as well as to strengthen the competencies of professionals working in child welfare in anticipating, managing, and post-processing threatening situations. The results will be achieved through the implementation of work package and will form a training and learning framework based on VR simulations for use in child welfare work communities.

The key outputs of the project include an analysed overview of threat situations in child welfare, pedagogical scripts for VR simulations, learning content and VR simulations developed on their basis, as well as a peer learning training model designed for work communities. The results can be utilized in child welfare education and in the development of workplace competencies even after the project has ended.

Lung cancer risk prediction models: A systematic review of externally validated models

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Introduction: Early detection of lung cancer is critical for improving survival, yet population-wide screening based solely on age and smoking history remains suboptimal. Risk prediction models are increasingly being developed to enable more targeted and data-driven screening. However, identifying high-risk individuals continues to be a critical challenge. This systematic review evaluates externally validated lung cancer risk prediction models and assesses their performance, clinical utility, and potential applicability in screening strategies.

Methods: A systematic literature search of MEDLINE (via PubMed) was conducted for studies published up to March 2024. Studies developing, validating, or comparing lung cancer risk prediction models with external validation were included. Of the 11,805 initial studies, 66 met inclusion criteria and 38 published mainly between 2020 and 2024 were included in the final analysis. Model characteristics, validation strategies, and performance metrics (e.g. discrimination, sensitivity, specificity) were extracted and analysed.

Results: The review identified 18 models using conventional machine learning, six employing neural networks, and 14 comparing different predictive frameworks. The PLCOm2012 model demonstrated consistently high sensitivity across multiple populations, while newer models such as OWL and CanPredict showed superior discrimination and calibration. However, differences in population demographics and healthcare systems may limit the generalisability of these models.

Discussion: While lung cancer risk prediction models have advanced, their applicability to specific healthcare systems requires further adaptation and validation. Integrating these models into digital health infrastructures and tailoring them to local contexts may improve clinical impact and cost-effectiveness in targeted screening programmes.

Current situation of the implementation of PohdeAI and methods for measuring the actual use

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Introduction: Increasing cost pressures in social and healthcare services require new, more effective ways of working for professionals. Documentation has been identified as a significant task that consumes a considerable amount of professionals' time. As artificial intelligence has advanced, a broader understanding has also emerged that AI and large language models could support the development of documentation practices. At Pohde, a decision was made to develop a solution for AI-assisted documentation through co-creation, starting from the needs of professionals. [1]

Material and Methods: In 2024, the AIDocLog project, funded by Sitra and Pohde, was launched. The project brought together the expertise of the wellbeing services county, research organizations, and technology partners in user-centered AI development. As a result of the development work, the PohdeAI application was created by EskoSystems Ltd, an in-house partner of Pohde. It listens to client or patient encounters and generates a structured documentation draft. The aim of the solution is to support professionals by freeing up time for interaction, improving the quality of documentation, and reducing administrative burden. The first pilots showed that properly guided AI can significantly speed up documentation without compromising quality. However, it quickly became evident that technology alone is not sufficient. Success requires continuous co-development, active feedback collection, and the adaptation of solutions to everyday work processes. In particular, the needs of different user groups, data protection issues, system integrations, and practical usage contexts require iterative development. [1,2].

Results: After the project, development continued through piloting and co-creation workshops. The application began piloting with real patient and client encounters in healthcare in November 2024 and in social services in May 2025. In the workshops, the needs of users from different domains have been discussed, simulated patient and client cases have been carried out, and different development versions of the application have been reviewed. A total of 15 co-creation workshops has been held with healthcare personnel and 11 with social care personnel together with the multidisciplinary team developing the application. The pilot has been expanded in a controlled manner. By the end of May 2026, a total of 134 healthcare professionals and 190 social care professionals had been trained to use the PohdeAI. Based on a sample from early June 2026, PohdeAI is used daily for average of 144 transcriptions and 199 chat interactions.

Discussion: The development of PohdeAI continues towards large-scale deployment across Pohde during 2026. PohdeAI is not just a single tool, but part of a broader transformation. It demonstrates how AI can be safely and effectively integrated into everyday social and healthcare services—through co-development, research, and practical testing. At the same time, it lays the foundation for a future in which AI supports professionals throughout the entire care and service process.

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AI-supported task-sharing in community-based rehabilitation: a pilot study of the AIRe platform in Rwanda

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Introduction: Access to rehabilitation services remains limited in many low-resource settings. In Rwanda, community health workers (CHWs) play a central role in primary healthcare delivery, yet their capacity to address rehabilitation needs is constrained by limited rehabilitation-specific training and specialist support. AI-supported digital rehabilitation may strengthen task-sharing and extend rehabilitation support closer to where people live. The AIRe platform is a rehabilitation decision-support system that helps identify rehabilitation needs, select interventions, and support self-management through structured exercise programmes delivered via a mobile application. Previous digital rehabilitation pathways in Rwanda have demonstrated promising health and cost-effectiveness outcomes [1,2]. AIRe may also represent a system-level shift by enabling rehabilitation tasks traditionally performed by rehabilitation professionals to be redistributed to CHWs within a structured digital-first pathway. This study explores the feasibility and user-perceived impact of integrating AIRe into CHW-led community-based care in Rwanda.

Material and Methods:

A pilot implementation was conducted in two primary healthcare catchment areas in Rwanda in early 2026. Ten CHWs were trained to use the AIRe platform as part of their routine community work. CHWs used AIRe to identify individuals with rehabilitation needs, screen for red flags requiring referral, and select tailored exercise programmes delivered through the Inclusion App. A mixed-methods approach was used to explore early implementation experiences and user-reported outcomes. Qualitative data were collected through focus group interviews conducted approximately three months after deployment. A total of six focus groups were held: two with CHWs (n=10) and four with community members receiving rehabilitation support (n=20). Quantitative outcomes were assessed using the EQ-5D-5L and EQ visual analogue scale (VAS), collected at baseline and one-month follow-up which captures respondents' self-rated overall health.

Results: Preliminary findings indicate that integrating AIRe into CHW workflows was perceived as feasible and beneficial. CHWs reported that the platform enabled more structured and consistent rehabilitation guidance and increased confidence in decision-making. Community members reported increased trust in CHWs when rehabilitation support was delivered using AIRe. Participants described a shift in care: whereas previous support often focused on symptom relief, particularly through pain medication, the AIRe-supported approach provided concrete, exercise-based interventions targeting functional improvement. Participants also reported noticeable improvements in participation and engagement in community life. Early quantitative findings showed improvement in health-related quality of life. Mean EQ-5D-5L utility increased from 0.248 at baseline to 0.722 at follow-up, while mean EQ VAS scores improved from 35.5 to 77.8.

Discussion: These early mixed-method findings suggest that AI-supported digital rehabilitation can strengthen community-based care by enhancing CHWs' capacity to deliver rehabilitation and improving user-perceived outcomes. The observed empowerment of CHWs and increased trust among community members suggest a potential reconfiguration of rehabilitation service delivery. Rather than replacing rehabilitation professionals, AIRe appears to enable task-sharing in which CHWs take a more active role in early identification, structured guidance, and delivery of rehabilitation exercises. The shift from symptom-oriented care towards function- and participation-oriented rehabilitation is particularly notable, aligning with contemporary rehabilitation frameworks [3]. These findings are preliminary, and further analyses will be presented at the conference.

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Developing Health Technology Assessment Competence through Lifelong Learning: Insights from Student Feedback on Career Development

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Introduction: In rapidly evolving healthcare systems, continuous learning is essential for sustaining professional competence and enabling adaptive career pathways [1,2]. Health Technology Assessment (HTA) provides a structured framework for evaluating the value, safety, and impact of health technologies and supports decision-making in healthcare systems [3]. In Finland, the Digi-HTA framework extends these principles to digital health services, supporting their safe and effective implementation [4]. Despite the importance of HTA, workforce competencies in evaluating and applying health technologies remain limited. To address this need, two universities of applied sciences developed 1–2 ECTS modules to support the development of HTA competence. This study examines participants' perspectives on competence development and career-related outcomes following HTA-focused training.

Material and Methods: Data were collected using a student feedback survey (n = 85) from the training programme “Competence in the Assessment of Health and Welfare Technologies for Working Life Experts (HTA-Kasvu).” The survey included items on motivation, competence development, applicability of learning, and career outcomes. Responses were measured using a five-point Likert scale and analyzed using descriptive statistics.

Results: The primary motivation for participation was the development of professional competence (80%), followed by expectations related to career advancement (46%). The training was perceived as highly compatible with working life (mean 4.3/5), suggesting good accessibility for professionals. Participants reported significant perceived gains in professional competence (mean 4.2/5), alongside the ability to apply acquired knowledge and skills in their current work (mean 3.7/5). Furthermore, the training was associated with perceived tangible benefits, particularly in strengthening competencies relevant to current tasks and future career opportunities. Collectively, these findings indicate that the training effectively supports continuous learning and competence development in working life.

Discussion: HTA-focused continuing education represents a relevant and effective strategy for strengthening professional competence in the context of rapidly evolving digital health ecosystems. The findings highlight the dual impact of such training in supporting both immediate work-related capabilities and longer-term career development. Embedding HTA competence development into continuous learning frameworks is essential to ensure that healthcare professionals are equipped to critically evaluate emerging technologies and contribute to evidence-based decision-making. Strengthening these capabilities at the workforce level is crucial for advancing the effective and sustainable implementation of digital health innovations.

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Digital FeelWork-training model to support the well-being and competence of acute care personnel conducting remote assessment and guidance

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Introduction: The number of acute care personnel conducting remote telephone assessments has increased in recent years. This work involves independent, high-pressure decision making and is perceived as particularly demanding, which makes it essential to support the well-being and competence of the personnel conducting the assessment.

The FeelWork project aims to develop and pilot a training model to address this need. It is an ESF+-co-funded group project led by Turku University of Applied Sciences, with Satakunta and Vaasa Universities of Applied Sciences as partners. The target group includes acute care personnel providing telephone-based remote assessment and guidance in Ostrobothnia, Southwest Finland, and Satakunta.

Material and Methods: The pilot version of the FeelWork-training model was developed in January 2026 by using different service design thinking methods. These methods included the interviews of acute care personnel, review of literature, conducting a survey and joint workshops for the target group which all created the understanding of the educational material needed to enhance the well-being and competence of the target group. Based on this understanding digital material was created and compiled into a unified training model (3 ECTS) in the Moodle learning environment. This educational model is currently being piloted with the acute care personnel (n=70), who were offered first information sessions where they were briefly introduced to how the digitally delivered training model operates in the Moodle learning environment. After this, they proceeded to pilot the model independently and applying relevant content within their work. After 3 months pilot period feedback on the pilot version will be collected from all participants using an electronic questionnaire.

Results: The results from the questionnaire regarding the functionality and usability of the training model will be published in the autumn of 2026. The training model finalized based on the results, will be published in the Finnish national online learning platform, Opin.fi.

Discussion: The FeelWork project addresses the growing demands of telephone-based remote assessment in acute care by piloting a digitally delivered training model focused on the competence and well-being of acute care personnel. The service-design-based development process ensured that the content responds to real-world challenges identified by practitioners. Although outcome data are pending, the model shows promise as an innovative model for supporting high-pressure clinical decision making in remote care contexts. Findings from the pilot will inform further refinement and wider implementation of the training model

Clinical Impact of Digital Care Pathways: New Evidence from Omapolku

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Introduction: Health Village's digital care pathways and Omapolku form a nationally implemented service supporting patient care, self-management, and rehabilitation. Evidence from 2020–2024 indicates reduced waiting times, improved patient outcomes and knowledge, and enhanced access to care. The pathways are integrated into routine clinical workflows and complement in-person treatment, although they require professional referral and oversight, and are not suitable for all patients. Building on earlier national level analyses of the Finnish Digital Care Pathway model, this paper synthesizes the most recent post market evidence on the clinical effectiveness, patient engagement, and safety of Omapolku care pathways. [1]

Material and Methods: This scoping review is based on Omapolku's post-market clinical evaluations and a targeted synthesis of publications from 2025, including peer-reviewed scientific articles and selected professional publications. Peer-reviewed studies were used to assess clinical effectiveness, patient engagement and adherence, and safety of digital care pathways. Professional publications were utilized to examine implementation-related outcomes, particularly impacts on clinical workflows and professionals' time use. Narrative synthesis and thematic categorization were applied to analyze clinical outcomes, engagement and adherence, professional competencies, and risk mitigation practices. [2].

Results: Across clinical domains, digital care pathways **demonstrated strong clinical effectiveness** and feasibility. Therapist-guided iCBT was at least as effective as face-to-face CBT, and scheduled telephone support improved **patient adherence and engagement**, particularly among patients at risk of dropout. Neuropsychological rehabilitation delivered via the NP-DCP showed high initiation (86%) and completion (68%) rates, with early referral significantly improving engagement. Professionals highlighted that successful implementation requires adequate digital skills, clear operational models, and managerial support. In addition, professional focused analyses indicated that digital care pathways may reduce professionals' time spent on routine patient guidance and follow-up, supporting more efficient allocation of clinical resources. [7] Multiple studies, including medical care pathways, emphasized that a professional referral is a key risk mitigation factor ensuring patient safety. [3,4,5,6]

Discussion: Recent research confirms that Omapolku and Health Village digital care pathways improve access, efficiency, and patient-centred care. New evidence shows that both medical and non-medical pathways are clinically effective and safe when integrated into routine practice, with therapist support and structured referrals playing a central role in patient engagement and outcomes. Although professional uptake is high, patients may require clearer guidance. Fully realising the potential of digital care pathways depends on strengthening support structures and further advancing integration into clinical practice.

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AI-Supported Communication Training for Remote Healthcare Consultations

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Introduction: Remote consultation services have grown in popularity since the Covid-19 pandemic [1]. In response to the growing use of digital healthcare services, nursing and medical education have evolved to provide more training in remote consultation practices [2]. At the same time, advances in artificial intelligence have created new opportunities to detect and analyse human communication using machine learning tools. Such tools can detect verbal communication (e.g., speech) as well as nonverbal communication (e.g., facial expressions and gaze direction). However, manual analysis of students' communication during simulated consultations can be time-consuming and impractical, which can lead to generic feedback being provided to entire groups of students rather than individualized feedback. In this work, we present the design and development of an application designed to support healthcare students and professionals in developing communication skills, such as nonverbal presence, for remote consultations using AI and discuss its potential impact on clinical communication training.

Materials and Methods: The aim of this study was to design and develop an AI-supported communication training application for remote healthcare consultations. The application is intended to be used in simulated telehealth environments where students can practice clinical consultations and receive automated feedback on their verbal and nonverbal communication after the consultation with the goal of supporting self-reflection and awareness of their behaviour during clinical interactions. Gaps in existing research on communication training solutions were identified through a literature review and application requirements were gathered through interviews with healthcare professionals and educators in nursing and medicine. The prototype is developed iteratively through two rounds of user evaluation, where feedback from test users guides further refinement of the application.

Results: The application enables remote consultations either between two real participants communicating through video call or between a student and a virtual AI patient that is connected to a large language model generating responses spoken through a virtual avatar. During the simulated consultation, the application analyses both verbal and nonverbal communication. The system transcribes the student's speech and detects elements such as filler words, open-ended questions, and speaking time distribution. Moreover, the application detects several nonverbal cues including facial expressions, head and gaze direction, nodding and shaking, shoulder visibility, and brow movement. Based on these detected communication elements, the application generates automatic feedback for the student. Feedback is generated using a rule-based method as well as LLM-generated summary of the detected communication cues. The system is designed to operate entirely on a single computer without requiring cloud services. All AI models and analyses run locally to support data privacy.

Discussion: When students practice clinical communication during their studies, individualized feedback may be limited due to time and resource constraints. The proposed system is designed to provide automated feedback while students gain experience in simulated consultations, with the aim of supporting self-reflection in a safe learning environment. By enabling more frequent and individualized feedback, such a tool may help students develop stronger clinical communication skills. Improved clinician-patient interaction may contribute to better health outcomes. The application illustrates how multimodal AI systems could potentially be integrated into healthcare education while maintaining data privacy. Beyond educational settings, this system may support communication training across various professional contexts within health and social services, including healthcare professionals and social workers who interact with clients. However, the system is currently in an early stage of development, and further development and empirical evaluation are needed in future research.

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A Digital Service Model Enabling Pharmacist Consultation Across a Wide Geographical Area

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Introduction: The rapid digitalisation of healthcare services has created new opportunities to improve access to professional expertise, especially in geographically wide and sparsely populated regions (Pennanen & al. 2023). However, access to pharmacist consultations remains limited in many healthcare systems due to physical distance, fragmented service structures and resource constraints. This abstract describes the implementation of digital solutions enabling pharmacist consultations across a wide geographical area as part of the development of integrated reception services. Pharmacist consultation is part of the DigiPharmacist project, funded by DigiFinland and coordinated by the Ministry of Social Affairs and Health (Ministry of Social Affairs and Health 2025). The Project was implemented in collaboration with University Hospital Pharmacy, reception staff and service management of the Wellbeing Services county of Pirkanmaa. [1,2]

Material and Methods: This work is based on a regional healthcare service development project conducted within a publicly funded healthcare system. The aim was to integrate pharmacist consultations into reception services using digital and remote solutions. The model was implemented in a geographically dispersed service area where access to on-site pharmacist appointments varies between units.

The development process included mapping existing reception workflows, defining the pharmacist's role within the service structure and selecting digital tools to support appointment booking, remote consultations and consultation management. Pharmacist consultations were delivered remotely using a secure digital integrated into everyday reception services. In addition, pharmacists utilised speech recognition technology to support clinical documentation during consultations.

Practical experiences were collected during the deployment phase through service usage data, professional feedback survey and observations from routine service operations. The focus was on feasibility, usability and integration into existing healthcare processes as well as the benefits of the operating model and impacts on changes in healthcare professionals time allocation and on medication safety.

Results: Remote pharmacist consultations were gradually expanded to cover the entire service area, enabling access from multiple healthcare units. Structured consultation workflows supported efficient coordination between reception service and pharmacists. According to the professional feedback survey, access to pharmacist remote consultation was associated with a reduced workload among physicians and nurses and supported clinical decision-making in medication management. From the professional perspective, the use of speech recognition accelerated clinical documentation and was experienced allowing pharmacists to focus more on patient interaction and medication-related counselling.

Discussion: The implementation demonstrates that pharmacists remote consultations can be effectively organised and managed through digital solutions as part of reception services in geographically dispersed regions. The integration of supportive digital tools, including speech recognition for documentation, contributes to more efficient and sustainable professional workflows. The model supports more equitable access to pharmacist expertise and more flexible service delivery. While further research is needed to assess long-term clinical and economic impacts, the presented approach is scalable and transferable to other healthcare settings developing digital reception and remote consultation services.

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Ensuring Adequate Digital Security Competence within the Health and Social Care Workforce

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Introduction: The social and health care sector has undergone rapid digitalization, transforming service delivery, professional practices, and client behavior, while simultaneously increasing digital security risks [1,2]. Organizational security culture and workforce competencies have not fully kept pace with the speed of digital transformation, despite the growing exposure of the sector to cybersecurity threats [3]. Digital security is increasingly understood as a sociotechnical phenomenon that emphasizes human behavior, risk management, and safe everyday practices alongside technical solutions [3]. Research literature and national strategies highlight the central role of staff competence, training, and multidisciplinary collaboration in ensuring digital security in social and health care settings [1]. Consequently, digital security competence is emerging as a critical component of professional expertise and future development in the social and health care sector [3]. To answer to these gaps in competence Jamk University of Applied Sciences have planned a new master's program of Master's Degree Programme in Digital Security in Social and Health Care (UAS).

Material and Methods: The program was developed through a co-creation process involving master students, working life representatives including cybersecurity professionals with expertise in the social and healthcare operating environment, and specialists from Jamk's Institute of Information Technology. Future competence needs were identified through needs assessment. The development work is grounded in international evidence. OECD has highlighted the growing urgency for digital security expertise in healthcare, identifying training, governance, and risk assessment as key areas for improvement [5], and emphasising that the transition to a digitally empowered health workforce requires continuous professional development encompassing data security, AI, and privacy regulations [6].

Results: Expertise in digital security within social and healthcare services encompasses the design of client-centred, reliable services through the application of cybersecurity, data security, and data protection principles. Risks in digital environments and their impacts on patient safety are systematically assessed, while the evolving landscape of social and healthcare services, including the utilisation of artificial intelligence, is continuously monitored and anticipated. Interdisciplinary collaboration is promoted and a digitally secure organisational culture is built in a sustainable and purposeful manner. Through a co-creation process informed by a future competence needs assessment, the following core studies were identified: Digital Competence in Social and Health Care, Digital Transformation and Future Trends, Information Technology Operations in Social and Health Care, Introduction to Cybersecurity in Social and Health Care, Artificial Intelligence in Social and Health Care, and Client-Centred Development.

Discussion: The first application round for the programme will be held in autumn 2026, and the education will start in January 2027. The programme aims to educate digital security experts for the needs of both the public and private social and health care sectors.

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Strengthening Effective use of Digital and Technological Solutions for Elderly Care through a National AgeTechNet Continuous Education Network

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Introduction: Strengthening professionals' competence in utilizing technological solutions in social and health care services for older adults is essential for ensuring the equitable implementation of technology across Finland. The development of technological solutions is rapid, and the social and health care sector requires up-to-date, proactive education and expertise to fully integrate new technologies into everyday practice. Nationally coordinated collaboration and structured approaches are needed to support the systematic development of such competences (Anttila H., ed., 2023). Enhancing technological competence enables the effective and meaningful use of age-related technologies within social and health care services. The national development project Ikäteknet (AgeTechNet, 2025–2027, ESF+) responds to this need. The AgeTechNet -project, Multidisciplinary Age Technology Continuous Education Networking Cooperation, is implemented by Metropolia University of Applied Sciences, Satakunta University of Applied Sciences, Tampere University of Applied Sciences, Oulu University of Applied Sciences, and WinNova VET.

The aim of the project is to strengthen age-related technology expertise in the social and health care sector through a broad, multidisciplinary network. The project brings together educational institutions, wellbeing services counties, technology companies, and NGOs working in ageing and elder care. Together, these actors co-develop continuous learning opportunities, up-to-date competencies, and innovative learning environments for elderly care services (Liinamo A et al., 2026).

Material and Methods: The development process is organized into four phases. First, a state-of-the-art analysis was conducted of the current continuous education provision in age-related technologies, of learning environments that support continuous learning as well as of existing educational and stakeholder networks relevant to age-technology competence development. Second phase was built on previous findings and aimed to co-create the Ikäteknet (AgeTechNet) networking model (version 1.0) through multi-stakeholder workshops and interviews involving educational and social & health care professionals, as well as representatives of health and wellbeing technology companies and ageing-related NGOs. The third phase, starting in autumn 2026, will focus on evaluating and piloting the Multidisciplinary Age Technology Continuous Education Networking Cooperation model (AgeTechNet). The evaluation will be conducted nationally through a survey and piloted regionally in project partners areas to refine the planned collaborations model, including its structure (as inputs like resources and actors), processes (like coordination, roles and communication) and results (outputs and outcomes, as perceived benefits, synergies and impact on the provision and use of on continuing educational nationally).

Results: There is a widely recognized and pressing need to develop up-to-date, easily accessible continuous education in age technology, including opportunities that are directly available in working life. In the workshops, key development areas were identified and concrete solutions to strengthen national coordination were generated.

Cooperation between national welfare technology and continuous learning networks, as well as with regional networks, was found to support the development of age technology expertise and continuous learning. The co-created model (version 1.0) describes the inputs, processes, and outputs/outcomes of this cooperation, and is structured using the Bergen Model of Collaborative Functioning (BMCF), a systems theory-based framework for analyzing and enhancing the effectiveness of multi-stakeholder partnerships (Corbin JH, Mittelmark MB, 2008). The final, evaluated version of the networking model (Ikäteknet, AgeTechNet -version 2.0) will be completed and documented for national use by May 2027.

Discussion: The coordination model for continuous education provision enables multi-stakeholder cooperation between education providers, welfare areas, technology companies and NGOs. National coordination can effectively respond to current competence needs and the utilization of health and wellbeing technology in elderly health and social care services. Through coordinated development cooperation, best practices and solutions as well as evidence based knowledge can be shaped into continuous learning modules. The work of the project so far has formed the basis for the further development of the coordination model, which is progressing in interaction with the field and various stakeholders.

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Advancing health technology assessment training in cooperation with health technology companies

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Introduction: Health technology assessment (HTA) is topical due to new EU regulation on health technology assessment (HTAR) [1, 2] that became applicable in 2025. One part of this assessment framework is Digi-HTA, a Finnish assessment framework dedicated to evaluating the suitability of digital healthcare services [3]. Additionally, Digi-HTA-Lite self-assessment model for business organizations is being developed in SoTek project [4]. HTAR sets challenges for health technology companies and other healthcare staff. Therefore, competence needed in the HTA process needs to be strengthened. The aim of a HTA growth- project operated by Metropolia University of Applied Sciences and Oulu University of Applied Sciences is to strengthen HTA competences of persons involved with HT e.g in development, manufacturing, use, maintenance and procurement.

Material and Methods: To construct 1-2 ECTS HTA-related online learning modules a co-creative approach was used [5]. Metropolia and Oulu UAS staff members contacted HT-companies, hospitals and other target organizations personally and via email discussing the necessary course objectives and contents. Learning modules were constructed based on collaborative discussions during fall 2025. During November the first course modules with learning materials were constructed, participants recruited and training started. Training was offered via open university in the frames of life-long learning for free to the participants subvented by the Service Center for Continuous Learning and Employment (SECLE).

Results: Altogether six learning modules to support HTA competences were created: Basics of systematic search and literature reviews as a part of HTA-process 1 ECTS, What is Health Technology Assessment? 2 ECTS, Digi-HTA 2 ECTS, Assessing wellbeing technologies 2 ECTS, HTA methods and criteria 2 ECTS and AI & robotics & HTA-assessment 2 ECTS. In addition to supporting persons participating in this education in their studies and future career, one more learning module for 1 ECTS was constructed. Digi-HTA course, as the name states, provides insights in assessing digital services. The AI and robotics & HTA course provides expertise in the quality and transparency of health AI data and algorithms, dynamic learning and adaptivity, and the ethical, legal, and social implications of these technologies. It also covers methods for evaluating clinical outcomes and safety, as well as strategies for effectively integrating AI into health systems and clinical workflows.

Discussion: In the future digitalization and artificial intelligence not only redefine how healthcare is delivered and managed but also democratize healthcare, making it more patient-centered, efficient, and adaptive. HTA-related education and information support should be both role- and context-sensitive, providing baseline knowledge for all staff, but also enabling specialization for those more actively engaged in HTA. Further, as the field evolves, continuous professional development should emphasize practical assessment methods, stakeholder collaboration, and the ability to appraise new health technologies.

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Health Technology Assessment competency needs and future trends

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Introduction: Medical devices, digital solutions, and AI-driven applications have become central to the delivery of modern healthcare. New innovations are entering the market at an increasingly rapid pace, even as healthcare providers contend with rising costs and shrinking resources. [1,2] Health technology assessment (HTA) is a practice developed for the need to have transparent, systematic and balanced processes to assess health technology entering into healthcare systems [3]. Digi-HTA, a Finnish assessment framework dedicated to evaluating the suitability of digital healthcare services is one part of this assessment framework. [4]. In a joint project of two Finnish universities of applied sciences, training modules about HTA-process, including Digi-HTA, were developed. We investigated the information needs regarding the HTA process participants of the training had and what kinds of health technology related development trends they see in the future.

Material and Methods: In order to construct 1-2 ECTS HTA-related online learning modules, Metropolia and Oulu UAS staff members contacted health technology (HT) companies, hospitals and other target organizations personally and via email and constructed learning module topics based on collaboration with them during fall 2025. Online survey which comprised open ended questions started 7.1.2026 and ended 6.5.2026. About 70 people participated in the HTA training modules between November 2025 and April 2026. A total of 21 respondents answered the questionnaire. Open-ended questions were analysed by inductive thematic analysis by two authors.

Results: Three main themes in regards to HTA-related information needs were identified: HTA-process as whole, HTA applicability and general interest in health and wellbeing technology. Participants identified five key future health technology trends: accessible technologies (remote, mobile, home-based self-measurement using smart devices), sustainable solutions (environmentally friendly and affordable), personalised diagnostics, predictive diagnostics, and the growing use of artificial intelligence and robotics in healthcare.

Discussion: Knowledge about HTA-process is still weak amongst those involved with health technology. and it is not typically covered in professional study programs in European countries [5]. The results also suggest that HTA for digital health solutions must broaden its scope. Assessments should address usability, equity, environmental and economic sustainability, data-driven personalisation, and predictive value, while integrating AI/robotics-specific dimensions (e.g., algorithm transparency, bias, safety). HTA processes must evolve from single-technology appraisal toward continuous, system-level evaluation of rapidly changing, user-embedded technologies.

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Acceptability and feasibility of use of smart phone App in monitoring and management of hypertension in Uganda: Cross-sectional study

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Background: Increase in longevity across the globe, is one of the best achievement registered in the 21st century. Despite the fact that most of the population in developing countries are youth, over 75% older persons will be residing in developing countries by 2030. Cardiovascular risk factors such as hypertension are more prevalent among older persons, but their monitoring and management is suboptimal. With unprecedented increase in the use of technology across all age groups in Uganda, the study sought to understand the factors that influence the acceptance and feasibility of using Smartphone App in monitoring and management of CVD risk factors in Uganda.

Methods: A cross-sectional study that applied qualitative data collection methods. A total of 45 interview guides and 4 focus group discussion were conducted. A study was nested from the prospective study of “Use of Smartphone App in control of CVD risk factors among older persons in Uganda”.

Results: The result showed that, self-satisfaction in navigation of smartphone, facilitating conditions such as; ability to access airtime Vouchers. Presence of social support network and support such as; grandchildren, reminder text messages for monitoring of CVD risk factors. Social demographic factors such as; high level of literacy, non-widowed and better economic status associated with paid wages or family support were more likely to use Smartphone App.

Discussion: The use of Smart phone App in monitoring and management of CVD risk factors was acceptable among older persons. However, being a stratified Smartphone user and availability of social networks grossly facilitate Smart phone App acceptability and feasibility.

AI-Assisted Documentation in Residential Care: A Pilot in Private Social Welfare Services

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Introduction: High-quality documentation is a core element of client safety, continuity of care, legal safeguards and client-centred social welfare services. National and international safety strategies emphasise the prevention of avoidable harm, safety culture, professional competence, participation and the safe use of digital systems [1,2]. In residential care, documentation must make residents' daily life, functional ability, participation, wellbeing and changes in care needs visible in a timely and structured way. However, documentation can be time-consuming and fragmented, and delayed recording may weaken the accuracy of observations. The aim of the pilot is to improve the quality and planning of documentation with AI-assisted support and to increase time for direct client work. Esperi Care Oy is piloting AI-assisted documentation to support clearer, more systematic and client-centred daily notes in line with responsible AI principles in residential care [3,4].

Material and Methods: The pilot is carried out with the Finnish health technology company Gosta Labs Oy in three private care homes for older people: Hoivakoti Harjus, Hoivakoti Untuva and Hoivakoti Fredrika. Care staff dictate daily care observations through a mobile application that converts speech into text, structures the content under documentation headings and produces a draft note. The staff member reviews, corrects and supplements the draft before transferring it to the client information system. Audio recordings are deleted after draft generation, drafts after review and transfer, and direct client identifiers are not attached during processing. All data are processed and stored within the EU/EEA, and the client organisation's data are not used to train AI models. The operating model was introduced through workshops and training covering safe dictation, documentation quality, professional accountability, data protection and practical use. Close collaboration with the care homes has been important throughout the pilot, and care staff as end users are actively considered in the development.

Results: As the pilot is ongoing, final results are not yet available. The evaluation examines the time used for documentation before the AI-assisted documentation pilot and the time used later during the pilot. In addition, the pilot examines care staff's user experiences and how the AI-based documentation application affects care staff's documentation practices. Documentation quality will also be assessed through documentation audits.

Discussion: AI-assisted documentation is expected to strengthen documentation quality, support planning and increase time for resident encounters. It is also hoped that AI can support more individualised, client-centred documentation that reflects each resident's situation, needs and daily life. The pilot is part of broader development work and supports Esperi Care Oy's strategic aim to strengthen high-quality documentation. Responsible use requires clear governance, human oversight, data protection, traceability and care staff's understanding of their professional responsibility [3,4]. The pilot highlights privacy by design, data minimisation, data protection impact assessment (DPIA), immutable audit trails and quality and information security management as prerequisites for responsible AI use [3–7]. The solution does not replace professional judgement. Experiences from the three care homes will be used to refine the operating model and assess prerequisites for wider implementation in residential care.

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Metaverse-Based Environments for Healthcare Services – Gamified Operating Room as a Learning Environment. Ongoing Development and Early User-Centred Findings (2025–2027)

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Background: Healthcare and social welfare services face persistent challenges in training and onboarding, particularly in complex and safety-critical environments such as operating rooms, where physical access is constrained by hygiene requirements, patient safety, high occupancy rates and operational costs, limiting opportunities for experiential learning and early familiarisation with environments, workflows and medical devices. Traditional training materials and static learning methods provide limited support for contextual and hands-on learning. The ongoing ERDF co-funded WellbeingVerse Services project (2025–2027) addresses these challenges by developing metaverse-based solutions. One of the central development tracks focuses on metaverse-based operating room environments created in close collaboration with industry and end users.

Objective: This paper presents the ongoing development of a gamified metaverse-based operating room environment and reports early user-centred findings from a 0-prototype developed in autumn 2025 and in spring 2026. The aim is to evaluate feasibility, usability and perceived value, and to identify key design requirements guiding continued development until summer 2027.

Methods: The work follows an experimental and user-centred development approach combining rapid prototyping with iterative evaluation. The 0-prototype represents a digital twin of an operating room developed using Unreal Engine and Twinmotion. The environment includes realistically modelled digital twins of surgical lighting system and operating table with accurate functional mechanics, lighting behaviour and camera features. User evaluations are conducted using hands-on both in VR and desktop environments, think-aloud protocol, interviews, observation and questionnaires. Participants include operating room nurses, anaesthesia nurses, simulation instructors, students and medical device manufacturer representatives. Particular attention is given to usability, realism, guidance, gamification and multi-platform accessibility (VR, desktop, browser and mobile).

Results and Conclusions: Early findings indicate that realism, usability and clear in-context guidance with possibility to pre-game orientation / getting acquainted with the environment, functionalities and controls are critical for acceptance and learning. Gamified elements and immediate feedback support engagement, while accessibility emerges as a key adoption factor, highlighting the need for multi-platform solutions. The ongoing development prioritises improved usability, increased realism, multi-user collaboration and scalable accessibility, demonstrating the potential of metaverse-based environments to support safer and more effective healthcare training and service development.

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Large-Scale Educational Testing of Care Technologies to Support User-Centred Development

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Introduction: Before the effectiveness of digital health and social care services can be evaluated, the technologies themselves must be functional, usable, and fit for purpose. The PROcedure Optimization and data driven eFFiciency Improvement in healthcare environments (PROFIT) project forms an international consortium that plans to streamline healthcare tasks and enhance patient outcomes with novel solutions. Before proceeding into an evaluation phase, proper feedback is needed. Educational settings provide a structured and supervised environment for early testing, experimentation, and feedback. The integration of care technologies into nursing education offers a practical approach to combine learning with systematic technology evaluation under realistic conditions. This is particularly relevant as current regulatory and development frameworks emphasize not only technical performance, but also safety, intended use, usability, and real-world use contexts of health technologies [1–5].

Materials and Methods: The aim was to integrate suitable care technologies into nursing education courses as part of standard teaching. The developed process was based on teacher-supervised, course-integrated practical use of technologies by students in simulated nursing care scenarios. Three simulation scenarios with 523 nursing students were selected for PROFIT project. The process formed a large-scale educational testing model in which technologies were repeatedly used in different courses and student groups. From a broader evaluation perspective, this structured real-world use aligns with the growing emphasis on real-world data and evidence in medical device assessment and post-market learning [2, 6, 7].

Results: The process enabled a repeatable educational testing environment for care technologies at a large scale. The high number of participants demonstrates the feasibility of course-integrated testing and supports supervised familiarization of future nursing professionals with emerging technologies. At the same time, the model provides a structured framework for identifying practical issues related to acceptability, usability, training needs, user experience, and implementation in nursing contexts—key aspects emphasized in Medical Device Regulation -related clinical evaluation and usability engineering guidance.

Discussion: Large-scale, curriculum-integrated testing functions both as a pedagogical innovation and as a resource for user-centered technology development. While not a substitute for formal clinical studies or regulatory processes, it can complement them by providing early, systematic insights into usability, workflow compatibility, user acceptance, and implementation readiness, thereby supporting responsible development of care technologies. This lays a foundation for evaluating the effectiveness of digital health and social services.

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Evaluating the Accuracy of Basal Energy Expenditure Estimates Using Heat Flux and Machine Learning During Changes in Body Composition

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Introduction:

Basal energy expenditure (BEE) accounts for more than half of total daily energy consumption. However, many physically active individuals rely on BEE estimates obtained from wearable devices that utilize background variables (age, sex, height, and body mass) together with heart rate data. Changes in body composition are known to influence BEE [1]. According to the first law of thermodynamics, all metabolic processes in the body generate heat. A novel heat flux based sensing approach enables the quantification of heat dissipated from the skin surface [2], which can be integrated with machine learning algorithms to estimate BEE. Therefore, we compared the accuracies of these two different BEE estimations - methods with indirect calorimetry of respiratory gases before and after preparing (23 weeks) and recovering (23 weeks) phases of physique athletes for fitness and body building competitions. Due to the demanding nature of the body composition change period, we used athletes as test subjects.

Material and Methods: A total of 58 athletes volunteered to participate in the study, of whom 27 were competing athletes. The remaining 31 physique athletes served as controls and they engaged in fitness-oriented strength training without competitive goals or intentional body fat reduction during the study period.

BEE was assessed concurrently with measurements of respiratory gases, heart rate, and heat flux, and body composition was analyzed during the same visit. BEE was calculated using Weir's equation [4] as the reference standard and compared with estimates derived from a trained heat flux based algorithm.

Data were collected at three time points corresponding to different body composition targets in the competitive athlete group.

Results: After the 23-week preparation period, competing athletes exhibited significantly lower body fat percentages compared to control athletes (women: $14.1 \pm 7.4\%$ vs. $25.3 \pm 6.8\%$, $p < 0.05$; men: $5.6 \pm 2.1\%$ vs. $18.0 \pm 7.2\%$, $p < 0.001$). BEE estimates derived from the heat flux method (1656 ± 410 kcal/d) did not differ significantly from those obtained via indirect calorimetry (1657 ± 305 kcal/d), whereas estimates based on background information were higher (1718 ± 270 kcal/d, $p < 0.001$). Additionally, energy expenditure values obtained from the heat flux method showed a positive correlation with indirect calorimetry ($r = 0.346$, $p < 0.001$), while no correlation was observed between resting heart rate and indirect calorimetry measurements. The combined use of background information and heat flux resulted in the lowest mean error (6.73%) in BEE estimation. The accuracy of the heat flux method did not differ between the competitive and control groups. However, a significant difference was observed between genders ($p < 0.05$), with higher estimation errors in females.

Discussion: The integration of heat flux measurement with machine learning represents a promising approach for achieving more accurate estimates of resting energy expenditure. The observed mean error (~7%) is notably lower than the errors reported for consumer wearable devices in earlier studies [3]. Future research should extend the evaluation of heat flux-based machine learning models to diverse populations, particularly in the context of changes in body composition.

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Elevated Blood Pressure as a Silent Killer in Coronary Artery Disease: Significant Patient Improvements Through Digital Care Pathway

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Introduction: Coronary artery disease (CAD) remains the leading cause of mortality globally, with hypertension serving as one of the leading global killers (1). The European Region exhibits the world's highest prevalence of elevated blood pressure (2). According to the 2024 update of the European Society of Cardiology (ESC) Guidelines, poor adherence to self-management, medication side-effects and lack of individualized care are key barriers to effective blood pressure control. Furthermore, the EUROASPIRE V study (2019) highlighted persist challenges in achieving secondary prevention targets for CAD. To address these issues, a Digital Care Pathway for CAD patients (DCP) was implemented at Kuopio University Hospital in 2020. Our study evaluates its impact on secondary prevention outcomes in CAD patients.

Material and Methods: This quasi-experimental, propensity score- matched study compared DCP patients (n=194) with control patients (n=190) in achieving key clinical targets for CAD secondary prevention. Data were collected at baseline, 3-month and 6-month follow-ups post-hospitalization.

Results: Our most significant finding was the impact on blood pressure. At baseline, no significant differences were observed between groups in systolic (SBP) or diastolic blood pressure (DBP) (p=0.292 and p=0.782, respectively). Both groups showed substantial reductions in blood pressure at 3 months (p < 0.001 in both groups) and 6 months (p < 0.001 in both groups). At 3 months, DCP group exhibited significantly lower SBP (p=0.01) and DBP (p=0.029) compared to controls. At 6 months, SBP remained significantly lower in DCP group (p=0.030). The proportion of patients achieving the SBP target (< 130 mmHg) was significantly higher in DCP group at 3 months (67% vs. 52%, respectively, p=0.006 between groups) and 6 months (67% vs. 51%, respectively p=0.004 between groups). Similarly, DBP target achievement was higher in DCP group at 3 months (73% vs. 58%, respectively, p=0.003 between groups) and 6 months (72% vs. 59%, respectively, p=0.019 between groups).

Discussion: While previous literature suggests that digital interventions have limited impact on clinical risk factors, some of the studies seemed significant improvement in achieving blood pressure goals (5), in which our findings are aligned. We also find out that although digital interventions are popular and widely investigated, the content and the terminology used in them vary. To the best of our knowledge, there is no earlier study about similar digital care pathway integrated in specialized care. The main difference in our digital care pathway was the possibility to adjust medications through the digital care pathway. Our suggestion is that easy access to medical adjustments and contact to professionals may be the key to blood pressure improvements.

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Linking Nature-Based Wellbeing and Planetary Health: Insights from an International Development Project

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Introduction: Planetary health highlights the interdependence of human wellbeing and environmental sustainability. At the same time, modern lifestyles are associated with a weakening connection to nature, even though research shows that nature contact supports mental health, reduces stress, and can strengthen pro-environmental behaviour. Concern has been raised that the growing disconnection from nature may contribute to both declining wellbeing and reduced environmental responsibility. Strengthening individuals' relationship with nature is therefore critical not only for improving health, but also for motivating people to care for the natural environment. This study explores how wellbeing technology can be used to support human–nature connection and motivate engagement drawing from experiences in nature-based activities within the Wellbeing from Nature project. [1, 2, 3, 4, 5]

Material and Methods: A qualitative, multi-perspective approach was used, combining user experiences, pilot interventions, and stakeholder insights. The study explored how technology-supported nature-based activities influence perceived wellbeing, motivation, and engagement with nature. Within the project, wellbeing technologies were introduced to support user engagement and self-awareness. Technology included two different wearable devices for monitoring physiological responses (such as stress and recovery), digital platforms that facilitate reflection, learning, and peer interaction. The wearable technologies were not treated merely as measurement tools but as mediators that deepen the user's relationship with nature.

Results: Findings indicate that wellbeing technology can strengthen both motivation and engagement in nature-based activities. Feedback on physiological or psychological responses to nature exposure appears to increase awareness of nature's benefits, support mood and stress recovery, and reinforce intrinsic motivation to continue spending time in nature.

Discussion: Strengthening the human–nature relationship is central to planetary health. The findings suggest that wellbeing technology can act as a bridge to nature by making its benefits visible and personally relevant, supporting motivation, repeated nature contact, and environmental responsibility. Guided reflection appeared essential, as without it technology use remained focused on data tracking rather than meaningful interpretation. These findings have relevance for telemedicine, eHealth education, and interdisciplinary collaboration. Future research should examine whether similar interventions can sustain motivation for nature contact and generate measurable benefits for both people and the environment. [4, 5, 6]

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Enhancing Labor Market Accessibility for Disabled Persons Through Digital Job Coaching Pathway

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Introduction: Disabled person's partial work ability refers to a situation in which an individual's work capacity is reduced due to illness or disability, but residual work ability remains and can be utilized with appropriate support.¹ An estimated 600,000 people in Finland report that a long-term illness or disability affects their employment opportunities. About half of them are employed, while approximately 65,000 people outside the labor market report on both a willingness and a perceived ability to work.² There is evidence that various types of digital tools are appropriate in job coaching processes when working with disabled persons.^{3,4} While the digitalization of social and health care services has created inclusion challenges for persons with disabilities,^{5,6} it also offers opportunities to enhance independent living and autonomous decision-making among persons with disabilities.^{7,8}

Material and Methods: LAB University of Applied Sciences and Disability Services of the Wellbeing Services County of Päijät-Häme are conducting an ESR funded project Digital Job Coaching pathway. The digital path will be created as a co-creation process with people with disabilities. The impact of the path will be assessed with quantitative and qualitative methods.

Results: The result of this project is a validated digital job coaching pathway that is customer-oriented and considers individual needs. It is primarily planned for customers of disability services who are under the age of 65. The developed digital pathway supports disabled people to take more responsibility for their own employment process and will increase working life skills and digital skills.

Discussion: The project started November 2025, and it runs until June 2028. First results will be available during the 2027. Leader of the project is LAB, and the associate partner is Disability Services of the Wellbeing Services County of Päijät-Häme. The job coaching pathway is planned so that it can be widely used by other Well-being Services Counties nationwide.

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Planetary Health and Wellbeing as part of the Ethical requirements for ENACT-project

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Introduction: As a response to the consequences of uncontrolled economic and population growth, the Rockefeller Foundation first defined Planetary Health as an “ambitious task of understanding the dynamic and systemic relationships between global environmental changes, their effects on natural systems, and how these changes affect human health and wellbeing at multiple scales” [1]. Due to the ongoing degradation of the world by humans, the Planetary Health concept has evolved towards a holistic systems view of the world, recognizing the interconnectedness of the health and well-being of all life on Earth and the need to regulate natural systems rather than simply minimize harm [2]. The ENACT-project [3] responds to the call for improved governance, enabling the ethically sustainable integration of interdisciplinary knowledge in support of digital technology and artificial intelligence by designing, co-creating, and participating in the development of a policy brief for future EU projects. [4, 5]. The ENACT-project is looking at human health from the perspective of “ecohealth” by identifying and measuring how the local changes in the Earth’s ecosystem affect human health. The ENACT ethical and legal framework, requirements and organizational arrangements support the development of sustainable technologies basing on the integrated ethical and research integrity requirements.

Material and Methods: The key documents for the ethical requirements of the ENACT-project include the Sustainable Development Goals, One Health and Planetary Health Principles, the World Medical Association’s Declaration of Helsinki, and Biomedical Ethical principles for medical and related research. In this presentation, the focus is on applying the Planetary Health Principles to guide digital technology development. The methodological approach followed the ethics and privacy-by-design approach of the European Commission. This includes desktop studies of existing ethical frameworks and legal requirements through qualitative content analysis, and in-depth use-case analyses to identify and elicit the functional requirements of the system under development.

Results: The selected principles of the Planetary Health and Wellbeing combine the relevant requirements of the Sustainable Development Goals, One Health, World Medical Association’s Declaration of Helsinki, and Biomedical Ethical principles for the ENACT ethical and legal framework, requirements, and Code of Conduct (CoC).

Discussion: The ENACT is a European research project building AI-based tools and a platform for defining exposomic risks for non-communicable diseases. The ethical requirements and legal regulations for AI-based service development may well support the Planetary Health, defined as “a holistic systems view of the world, recognizing the interconnectedness of the health and well-being of all life on Earth and the need to regenerate natural systems, rather than simply minimizing harm” [2].

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Service design course with systemic design framework as part of Managing the Digital Transformation in the Health Sector Master programme

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Introduction: As our societies increasingly rely on digital technologies, including the widespread diffusion of AI, the need for digital competence becomes essential for both personal and professional growth. The Digital Competence Framework (DigComp 3.0) [1] outlines the knowledge, skills, and attitudes that individuals need to be digitally competent and operational in today's world. The framework consists of five competence areas: Information search, evaluation and management, Communication and collaboration, Content creation, Safety, Well-being and responsible use, Problem identification and solving. Managing the Digital Transformation in the Health Sector (ManagidiTH) [2] is a joint Master's programme designed to manage the digitalization of health services, to promote the adoption of data science and information system resources to innovate clinical approach, services and to reorganize processes. ManagidiTH Master includes 3 main components: Health sector skills, Societal skills and Digital skills. Within this pedagogical framework, innovation-driven, interdisciplinary learning methods play a central role in equipping students from diverse backgrounds with the competencies needed to manage digital transformation in healthcare. The service design course is one of the Societal Skills courses. Service design, systemic design thinking and human-centered perspectives can promote several, if not all, of the DigComp 3.0 competence areas by enabling interdisciplinary work between students, lecturers, industry partners, and other stakeholders. The service design course, grounded in a systemic design framework [3], aims to develop an understanding of the concepts and principles of systemic service design and to acquire a comprehensive understanding of the applicability of service design in healthcare and digital health.

Materials and Methods: The study is based on a pedagogical case study of two online course implementations within the ManagidiTH programme of 340 students mainly from Finland, Portugal and Greece. The service design course was conducted through online studies, interactive lectures, case studies, group discussions, and hands-on experiments. The systemic design framework (explore, reframe, create and catalyse phases) acted as a baseline for the course structure. It builds on the existing framework for innovation by recognising the interconnected, complex nature of challenges and prioritising the planet as well as its people. During their coursework, student groups were asked to work from user-centered perspectives towards delivering services within the wider system, which includes several stakeholders and beneficiaries.

Results: Student groups planned and conducted a service design project in a digital health context by applying the systemic design framework and design tools and methods. The course project's iterative nature led to learning, and the systemic design framework proved effective at uncovering stakeholders and pain points and driving meaningful improvements. In addition to the technological challenges, this course project reinforced the views that development is not only a technical capability but is profoundly interconnected with coordination, communication, and user-centric aspects.

Discussion: Experiences from two student cohorts show that competencies in service design and the systemic design framework can effectively support work on complex healthcare and digital health challenges involving multiple disciplines and sectors. The course illustrates how systemic service design can serve as a pedagogical approach for developing interdisciplinary digital transformation skills in healthcare education. Students' reflections further indicate that a structured, evidence-based service design approach contributes to more practical and effective improvements in digital health services. Overall, the findings suggest that systemic service design can foster the interdisciplinary competencies required for sustainable digital transformation in healthcare.

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Governance-Aware RAG for Literature Pre-Screening and Evidence Retrieval in Healthcare Research

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Introduction: The digital world has become an integral part of high-stakes domains such as healthcare, continuously reshaping the conditions under which professionals work and critical decisions are made. The excessive use of and reliance on large language models (LLMs), compounded by information overload, introduce a number of risks in the decision-making processes within the healthcare sector, such as hallucination, automation bias and epistemic opacity [1, 2]. While retrieval augmented generation (RAG) improves factual grounding [3], the question of human governance remains structurally unresolved [4]. This proof-of-concept study proposes a governance-aware RAG pipeline for literature pre-screening and evidence retrieval in healthcare research. This work was conducted as part of the HybReDe project which develops a virtual assistant supporting hybrid rehabilitation for multiple sclerosis patients in Finland.

Materials and Methods: The proposed system follows a two-stage pipeline structure designed to support literature acquisition, filtering, semantic and lexical indexing, and evidence-grounded response generation.

The first stage – the offline stage – consists of the data acquisition and pre-screening phase. A total of 197 papers were collected through the Semantic Scholar API based on 10 search queries related to healthcare and digital health. After extracting metadata and full texts from the retrieved PDFs, the corpus underwent two rounds of rule-guided LLM screening, which narrowed it down to 108 papers deemed relevant to be indexed for retrieval.

The second stage – the online stage – encompasses retrieval and evidence-grounded generation. Retrieval uses a hybrid approach combining semantic embeddings (MiniLM, ChromaDB) and lexical BM25 matching, balancing the identification of relevant concepts and the precision for specific terminology. The generation model operates under strict evidence-grounding constraints: responses are derived exclusively from retrieved excerpts, clinical recommendations are explicitly excluded, and source papers with their corresponding relevance scores are provided to the user. Therefore, the human researcher remains the governing authority over the final interpretive decision.

To evaluate the system, the full pipeline was tested end-to-end, covering screening, retrieval, and response generation. Three types of test queries were used: in-domain, borderline, and out-of-domain queries, under a deterministic architecture (temperature = 0) to ensure reproducibility.

Results: Screening reduced 197 papers to 108 relevant papers, with 107 successfully indexed into 824 section-aware chunks. In-domain queries produced well-grounded responses; borderline queries led to lower confidence scores; out-of-domain returned no output at all, preventing unreliable responses. The same queries produced consistent responses across repeated runs. The system consistently prevented unsupported responses by enforcing abstention in cases of insufficient evidence, reducing the risk of misleading outputs.

Discussion: This study aimed to approach the use of AI development with both technical curiosity and responsible scientific practice. The proposed system demonstrated a way to structure AI within governance boundaries while preserving professional epistemic authority [4]. Nevertheless, a number of limitations should be considered, including restricted corpus size, potential misclassification of borderline cases during automated pre-screening, lack of empirical evidence, and precision-oriented screening strategy that may have excluded relevant papers from the indexed corpus. Future work should focus on empirical evaluation and larger corpora. In knowledge-intensive domains such as healthcare research, responsible AI deployment requires not only functional performance, but transparent epistemic boundaries and preserved human authority over final interpretive decisions.

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TäsmäZekki: A Digital Life Situation Assessment Tool for Identifying Support Needs and Resources among workers with support needs

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Introduction: Workers with support needs (WSN) often experience intersecting challenges related to health, functioning, finances, social participation, and employability. These factors are not always systematically identified in fragmented service pathways, which may delay timely and targeted support. Digital self-assessment tools can strengthen client participation, improve identification of needs, and provide structured information for coordinated service planning. TäsmäZekki was developed as a digital life situation assessment tool designed specifically for WSN. It aims to make invisible barriers and existing resources visible for both the client and professionals. (yyo.fi) Our object is to describe the co-development of TäsmäZekki and evaluate its potential to support holistic needs assessment, person-centered guidance, and effectiveness-oriented service processes.

Material and Methods: TäsmäZekki was developed through a multi-stakeholder co-creation process involving service users, employment professionals, rehabilitation actors, and third-sector organizations [1, 2]. The tool was adapted from previously validated 3X10D Life Situation Survey [3] and Zekki digital tool [4] for a new target group and service context. The digital questionnaire contains 12 questions relevant to work ability and employment pathways, including wellbeing and health, functional capacity, coping in everyday life, finances, social inclusion, employment readiness, strengths and personal resources, and perceived support needs. Initial implementation experiences and qualitative user feedback were collected from pilot use in two social enterprises that help people transition into the workforce, whose clients often have physical, mental, social, and/or cognitive disabilities. Descriptive analysis was conducted.

Results: Preliminary findings indicate that TäsmäZekki supports users in reflecting on their current life situation and identifying issues that may otherwise remain unaddressed. The tool appears to facilitate more structured and holistic discussions when used in service encounters. Professionals reported that the results profile help prioritize support actions, recognize clients' strengths, and improve preparation for multi-professional guidance. [5, 6] The digital format enables consistent data collection and creates opportunities for monitoring change over time. Based on initial experiences, TäsmäZekki has potential for implementation and significance for services aimed at WSN.

Discussion: Digital life situation assessment tools can play an important role in building person-centered and data-informed service ecosystems for vulnerable populations [7]. TäsmäZekki is a promising digital solution for integrated employment, social welfare, and rehabilitation services. It may improve identification of support needs, strengthen client agency, and support more effective allocation of services. In the future, TäsmäZekki should also integrate appropriate support services to which respondents would be directed based on their answers. Further research is needed to evaluate usability, psychometric properties, and long-term service outcomes.

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Understanding Regulatory Boundaries of Generative AI Virtual Assistants for Symptom Management in Multiple Sclerosis Care

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Introduction: Generative artificial intelligence (genAI) has gained significant attention in healthcare, leading to a growing number of pilot projects and publicly funded initiatives. Virtual assistants based on large language models (LLMs) are explored as scalable tools to support self-management, despite uncertainty regarding their clinical role and regulation. Within the *HybReDe - Effective joint hybrid e-rehabilitation solutions for Baltic Sea Region citizens* -project, generative AI-based virtual assistants are co-developed to support hybrid rehabilitation across the Baltic Sea region, including a Finnish solution targeting the management of MS-related fatigue.

Recent research shows that genAI-based medical devices challenge existing regulatory frameworks due to their non-deterministic and open-ended nature, complicating the interpretation of intended use, responsibility and risk management under the Medical Device Regulation [1,2]. The introduction of the EU Artificial Intelligence Act further increases regulatory complexity. However, empirical, case-based analyses examining how generative AI virtual assistants should be interpreted within the EU medical device framework remain scarce, thereby motivating this study.

Material and Methods: This study employs a qualitative regulatory case study approach. An interpretative, risk-based analysis was conducted using EU regulatory texts, official guidance documents and publicly available policy materials relevant to AI-based medical devices, including the EU Medical Device Regulation, the EU Artificial Intelligence Act and the General Data Protection Regulation. The analysis examined how regulatory concepts related to the intended use, responsibility and risk management are applied in the context of a generative AI-based virtual assistant. The analysis produced thematic findings that were used to interpret the practical application of regulatory requirements.

Results: The analysis identified key regulatory challenges related to intended use, responsibility and risk management of a generative AI-based virtual assistant under the EU regulatory framework. Non-deterministic behaviour, model updates and overlapping requirements between the MDR and the EU Artificial Intelligence Act complicate regulatory interpretation, while limited transparency and explainability of model behaviour together with the handling of sensitive health data further constrains real-world implementation and scalability.

Discussion: The generative AI-based virtual assistants follow a development and implementation pathway that differs significantly from traditional healthcare technologies, for which regulatory interpretation remains uncertain and evolving. While generative AI enables rapid technical iteration and testing, the evaluation of such systems with real patients is ethically sensitive and constrained by regulatory requirements. This creates a mismatch between innovation cycles and established regulatory and implementation structures, as noted in earlier research [3]. From a policy and implementation perspective, regulatory interpretation therefore functions as a key gatekeeping mechanism shaping the pace and direction of AI deployment in healthcare, while regulatory interpretation and supporting guidance continue to evolve at the EU level. This highlights the role of regulatory competence, understood as the ability to anticipate, interpret and integrate regulatory requirements into development and implementation processes, in supporting sustainable progression from experimentation to real-world deployment. Rather than determining legal permissibility, this study highlights the interpretative uncertainty that currently characterises regulatory assessment of LLM-based medical devices, suggesting that permissibility is context-dependent and closely tied to governance arrangements and risk management capabilities.

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From Nordic Telehealth Projects to Scaled-up Use: Supporting Sustainable Service Delivery

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Introduction: Telehealth can improve healthcare accessibility, efficiency, and continuity of care, particularly in response to ageing populations, chronic diseases, and workforce shortages. However, many successful pilot projects fail to achieve large-scale and sustainable implementation. This study aimed to identify elements supporting telehealth scale-up and to develop an integrated theoretical framework. In Nordic context, telehealth solutions have been piloted and assessed in projects for Healthcare and Care Through Distance Spanning Solution (VOPD) 2018 – 2021 and its continuation until 2025, namely the Integrated Health and Care Project (iHAC). VOPD supported implementation of distance spanning solutions in 52 municipalities and 8 healthcare regions across the five Nordic countries. These projects addressed the challenges of the Nordic region with ageing population and sparsely populated areas with long distances by deployment of telehealth. Telehealth may improve the working environment for healthcare professionals across the Nordic countries and are considered essential for maintaining the Nordic welfare model by ensuring equal access to services. [1, 2]

Material and Methods: The study began with an explorative literature review to develop a theoretical framework for scaled-up use of telehealth [e.g. 3]. To explore the applicability of the scaling-up framework, we conducted empirical data collection with a focus on a selection of the Nordic telehealth use cases. The data was gathered using qualitative research methods, namely site visits and interviews. The observations and interview transcripts are systematically documented and organized to support subsequent analysis for validating the theoretical framework with empirical data. Our study adheres to qualitative research tradition to utilize a mixed method approach.

Results: The resulting framework includes strategic elements that are financing, leadership, regulation, and interoperability; operational elements that are stakeholder engagement, evaluation, infrastructure, workforce development, and guidelines. To complement the framework, five scale-up drivers are related to integration, digital inclusion, contextual appropriateness, sustainability, and communication. The framework constructs a structured basis for empirical investigation of telehealth scale-up in various use environments. [4] The Nordic use cases explore three telehealth service contexts. These are (1) distance treatment that refers to telemedicine and virtual treatment and/or advice, (2) distance monitoring that applies sensors, cameras, reminders, and data collection, and (3) distance meetings between professions and citizens or professions (social and health care). Preliminary empirical results illustrate telehealth practices supporting sustainable service delivery.

Discussion: From theoretical perspective, the framework may help anticipate bottlenecks of telehealth advancement, identify priority areas for investments, and support continuous improvement. From practical perspectives, the telehealth use case experiences illustrate good practices for telehealth integrated into health service delivery. Looking ahead, the framework can support health systems in moving beyond pilot initiatives towards sustainable and scalable telehealth services. By identifying key enablers across policy, governance, financing, workforce, and implementation, it provides a basis for informed decision-making and continuous system development.

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The social construction of user experiences in information systems

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Introduction: Information systems user experience research often focuses on individual experiences and their aggregation. Research showing the social environment influencing user experience remains limited, even though its significance for user experience has been recognized (Van der Linden et al., 2019). Social work is inherently highly collaborative and interactional in nature. The work is based on extensive cooperation with different stakeholders, shared expertise, and collegial knowledge production and sharing. Although information systems are often used individually or together with a client, their use is closely embedded in collective work practices, shared knowledge processes, and workplace interaction. This study assumes that also user experiences of information systems are constructed as part of social practices and workplace interaction. The aim of the study is to explore the role of the social dimension in the formation of user experience, thereby opening new perspectives for user experience research, such as the design of information system training and the development of workplace practices.

Material and methods: The data were collected from November 2021 to January 2022 after receiving research permission from the different Finnish social work organizations. Using qualitative interview data (n=19), the study examines how social workers' user experiences of information systems appear as socially constructed. The analysis proceeded in a data-driven manner, but it was guided by the research question concerning the social and communal construction of user experience.

Results: In the analysis, four main themes were identified: 1) challenges encountered in the use of the information system as shared experiences; 2) positive user experience as an individual experience; 3) training in the use of the information system as a shared experience; and 4) the primacy of client work as a shared ideal in relation to the use of the information system. Preliminary results indicate that user experiences are in many cases socially constructed, particularly when encountering challenges in the use of the information system. On the other hand, positive user experiences were often detached from others' experiences and are described as individual experiences, as well as a personal interest in using the information system. The findings also emphasized a shared understanding of the primacy of client work over the use of the information system. Within the social work community, a collective view emerges regarding what is considered important in social work and which values are attached to practice. These values are also expected to be reflected in the use of information system. When technology fails to support these collectively shared meanings and goals of the work, it can lead to frustration, increased strain, and resistance toward its use.

Discussion: User experience was often shaped through shared discourse within the community and through accounts of others' experiences. Describing the experience as collective likely also provides a sense of security for social workers, fostering feelings of belonging and reassurance that they are not alone in facing various challenges. This can also ease the burden associated with the possibility of acting incorrectly or making mistakes. When the experience of difficulty in using the information system is shared, errors or the use of workarounds may also become more acceptable.

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FinJeHeW on Suomen telelääketieteen ja e-Health-seuran ja Sosiaali- ja terveydenhuollon tietojenkäsittely-yhdistyksen yhteisesti perustama tieteellinen lehti, joka palvelee myös jäsenlehtenä.

Lehden tarkoituksena on edistää tieteellisten perustajaseurojensa Suomen telelääketieteen ja e-Health-seuran (STeHS) eli Finnish Society of Telemedicine and eHealth (FSTeH) (www.telemedicine.fi) ja Sosiaali- ja terveydenhuollon tietojenkäsittely-yhdistyksen (STTY) eli Finnish Social and Health Informatics Association (FinnSHIA), (www.stty.org) edustamien tieteenalojen tieteellistä julkaisutoimintaa, kokouksia ja seminaareja. Se toimii myös seurojensa jäsenten ja muiden asiasta kiinnostuneiden tiedotuskanavana ja yhdyssiteenä sekä valistustyön ja koulutuksen tuottajana ja välittäjänä. FinJeHeW:lle on vuodesta 2010 myönnetty vuosittainen Tieteellisten seurojen valtuuskunnan julkaisutuki.

Lehti ottaa vastaan tieteellisiä artikkeleita sekä muuta aineistoa sosiaali- ja terveydenhuollon informaatioteknologiasta, telelääketieteestä ja eHealth-alalta. Kirjoitusohjeet ovat lehden sivustolla. Lehdessä julkaistaan pääasiassa sekä suomenkielisiä, että englanninkielisiä artikkeleita ja muuta aineistoa. Lehti noudattaa käsikirjoitusten arvioinnissa vertaisarviontimenettelyä. Lehden sisältö on julkaistu avoimesti syksystä 2017 lähtien. Lehti ilmestyy neljä kertaa vuodessa.

Lehden ISSN-tunnus on 1798–0798.

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Finnish Journal of eHealth and eWelfare



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Finnish Journal of eHealth and eWelfare (FinJeHeW) is a scientific journal established by the Finnish Society of Telemedicine and eHealth (FSTeH) and the Finnish Social and Health Informatics Association (FinnSHIA), and it also serves as the official journal for the members of the establishers.

The aim of the Journal is to promote scientific research, communication and education in the fields of information and communication technology relating to social and health care, telemedicine, eHealth and eWellbeing. FinJeHeW benefits the members of the associations further by functioning as an information channel, multidisciplinary publication forum, and supporter for the international network. Financial assistance has been granted to the journal by the Federation of Finnish Learned Societies since 2010.

The Journal welcomes articles on information and communication technology of social and health care, telemedicine and eHealth. Instructions for authors can be found on the Journal website. The Journal primarily publishes articles and other scholarly materials in both Finnish and English. The Journal uses a peer-review process for evaluating submitted manuscripts. The Journal has published its content as open access since autumn 2017. The Journal is published four issues times a year.

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Aivot Labs



Hello!

Aivot Labs is a Finnish startup helping healthcare organizations to answer, call, route, and understand patient conversations. Our products have been specifically crafted for use in the healthcare context with high demands for data protection and security. We work with both public and private sector providers and across different service categories (primary healthcare, dental care, diagnostics, specialized care, support services). We are happy to already have multiple Finnish wellbeing services counties as our customers.

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Axitare: cup-based medication dispensing robots with remote care for home care *Axitare Oy, Helsinki, Finland*

Axitare A200: a home care client takes her medication from the cup during a supervised remote video visit.

Background: European home care faces rising demand from ageing populations and a shrinking workforce, while medication administration remains a large, time-critical part of daily home visits. Wellbeing counties, cities and municipalities need to safeguard medication safety and free scarce nursing time without reducing the quality of care for people living at home.

Approach: Axitare, a Finnish medical device company founded in 2017, provides automated medication dispensing robots as a full subscription based service with a cloud-based remote-care system, maintenance and daily user support. Each dose is dispensed in a familiar medicine cup – no packaging to open, no button to press – and caregivers can dispense any dose remotely instead of travelling to the home. The A200, launched in 2025, adds an integrated video connection for supervised remote dispensing and virtual visits; both models are Class I medical devices under the EU Medical Device Regulation (2017/745).



Results: In a real-data cost-benefit study in the Etelä-Karjala wellbeing area the dispenser reduced home care visits by an average of 40% and total home care costs – staff time, travel and technology – by 17%, letting the same workforce serve a growing client base [1]. In a comparative concept study of 505 relatives of people aged over 80 ($\pm 3.8\%$), 71% preferred the cup-based concept over a sachet-based one [2]. Axitare serves over 6000 users across Finland and Denmark.

Innovation: Cup based dispensing works for clients with impaired vision, reduced dexterity or memory difficulties, while remote dispensing lets a nurse serve medication in real time instead of making a physical visit. The A200 extends the dispenser into a broader remote-care hub, making medication dispensing an integrated, evidence-based part of the home-care service model – automation handles routine dispensing and surveillance, and nursing expertise concentrates on care that needs human judgement [3].

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Flion's VOXER: An intelligent bridge between the client's life situation and professional practice, turning free narrative into core process data

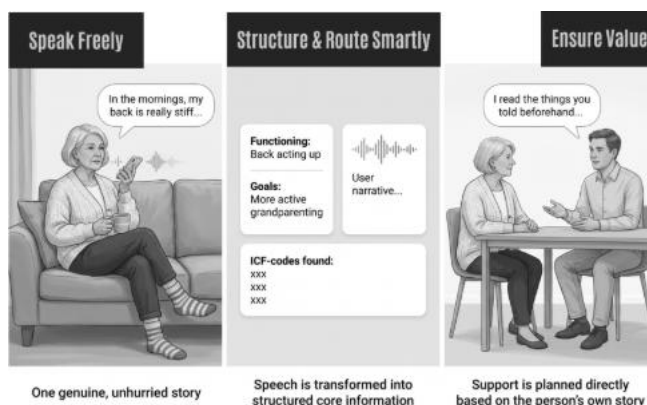
Background: Social care professionals frequently meet clients without comprehensive prior information about their life situation, which wastes valuable appointment time on establishing basic facts. Clients are forced to wait for appointments in a passive role without any means to advance their situation. Converting the information shared by the client into structured data burdens professionals and takes substantial time away from what matters most: genuine human contact, discussion, and designing solutions tailored to the client's circumstances.

Approach: VOXER is an AI-based solution that benefits both the client and the professional. Clients can describe their life situation freely by speaking or writing whenever it suits them best. Before information is forwarded, the client reviews and approves the resulting summary, ensuring psychological ownership of the process. VOXER structures this narrative in accordance with industry standards, such as the WHO ICF classification and national data models, and delivers it as a ready situational overview to the professional's desktop via standardised data exchange interfaces. Consequently, both professional and client enter the shared process thoroughly prepared, with the starting point rooted directly in the situation, support needs, and personal strengths articulated by the client.

Results: Launched in spring 2026, VOXER is currently being trialled in live client processes within one Finnish wellbeing services county, alongside lighter pilot deployments elsewhere. Initial findings confirm the solution's core value hypotheses. Client ownership, agency, and commitment are strengthened. For professionals, VOXER provides greater certainty and clarity, and improved workflow. Systemic impact relies on technical, semantic, and functional interoperability, establishing the foundation for a resource-wise and economically sustainable service system. However, realising the full potential of this model requires a substantial change in everyday operations and demands bold, long-term leadership.

Innovation and technology: VOXER offers a unique, EU-compliant approach to applying AI technologies in a human-centred and impactful manner. It is future-proof and represents a major step towards a service system where the client's own perspective and life context travel seamlessly with them across services without any need to repeat their story to different professionals. VOXER forms part of Flion Ltd.'s portfolio, united by a domain-agnostic technological core. This core enables free-form voice and text input to be structured into standardised master data and routed intelligently into core IT systems and workflows.

Further information: [Flion.fi](https://flion.fi)



JST Healthcare Solutions Oy

JST Healthcare Solutions Oy on vuonna 2020 perustettu suomalainen terveysteknologiayritys, jonka missiona on helpottaa potilaiden hoitoon ohjautumista ja sujuvoittaa ammattilaisten työtä digitaalisilla ratkaisuilla.

Yhtiön keskeinen tuote on Smart Symptom Check (Älykäs hoidon tarpeen arvio), MDR IIa -luokan lääkintälaitteohjelmisto, joka on jo laajasti käytössä Suomessa. Ohjelmisto kokoaa potilaan esitiedot, ohjaa sopivalle ammattiryhmälle, oikeaan asiointikanavaan ja oikeaan aikaan sekä tukee käyttäjää päätöksenteossa. Ratkaisu yhdistää kliinisen asiantuntemuksen, tietokantaosaamisen ja modernit teknologiat.

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Medanets



Background: Healthcare professionals face increasing pressure to deliver high-quality care while managing a growing documentation burden. Efficient digital tools at the point of care can help streamline workflows and leave more time for patients.

Approach: Medanets provides mobile solutions for safe and efficient workflows. Developed together with healthcare professionals, the Medanets app integrates with EHR systems and brings key clinical workflows and patient information directly to mobile devices at the point of care, supporting documentation and clinical decision-making.

Established in clinical practice: The Medanets app is used by healthcare organisations across multiple European countries, from large university hospitals to smaller healthcare units. Millions of patient data entries are made through the app each month.

Innovation: Medanets combines mobility, interoperability and user-centred design. By integrating with existing EHR environments, the solution makes key functionality available where care takes place, supporting smoother workflows and more time for patient care.

Tausta: Terveystenhuollon ammattilaisten työ on yhä vaativampaa laatu- ja kirjaamisvaatimusten ja kustannussäästöjen ristipaineessa. Digitaaliset työkalut voivat helpottaa päivittäisiä työnkulkuja ja jättää enemmän aikaa tärkeimmälle – potilaan kohtaamiselle.

Ratkaisu: Medanets sujuvoittaa potilashoidon työnkulkuja ensiluokkaisilla mobiiliratkaisuilla. Yhdessä terveydenhuollon ammattilaisten kanssa kehitetty Medanets-sovellus helpottaa hoitotyön rutiineja, tukee päätöksentekoa ja tuo keskeiset tiedot ja toiminnallisuudet mobiililaitteelle sinne, missä työtä tehdään. Medanets-sovellus integroituu potilastietojärjestelmiin ja täydentää niiden toiminnallisuksia.

Vakiintunut osa kliinistä työtä: Medanets on käytössä lukuisissa terveydenhuollon organisaatioissa eri puolilla Eurooppaa. Asiakkaisiimme kuuluu niin suuria yliopistosairaloita kuin pienempiäkin yksiköitä, ja sovelluksellamme tehdään miljoonia kirjauksia kuukaudessa.

Innovaatio: Medanets tuo potilastiedot ja hoitotyössä tarvittavat toiminnot mobiililaitteelle suoraan potilaan luo. Sovellus toimii yhdessä sairaalan nykyisen potilastietojärjestelmän kanssa, joten erillisen järjestelmän sijaan se tekee olemassa olevista toiminnoista helpommin käytettäviä hoitotyön arjessa.

Nordic Healthcare Group (NHG)

eHealth 2026 – Conference Book submission

Background

Nordic health and social care systems are undergoing a structural shift driven by an aging population, a rising burden of chronic conditions and long-term care needs, rapidly evolving technologies, and growing individual responsibility for health. This creates a global need for new ways of thinking that support health and wellbeing — while making it more difficult, and more urgent, for decision-makers to understand where resources are producing outcomes rather than simply being consumed.

Approach

Founded in 2004, NHG is a Nordic advisory, insights, and research company with 200 professionals in Finland, Sweden, and Denmark. Our multidisciplinary teams — including researchers, data scientists, digitalisation experts, designers, and change-makers — combine deep health and social care domain expertise with data science and design under one roof. We work across AI applications, digital transformation, hospital planning, management consulting, product development, real-world evidence research, service and UX design, and value-based healthcare, turning fragmented operational and financial data into a foundation for decisions that improve care rather than merely tracking it.

Results

Since 2004, NHG has delivered more than 7,000 projects across the Nordic health, social care, and life sciences sectors. Since 2020, NHG has served as an implementation partner for ICHOM (International Consortium for Health Outcomes Measurement).

Recent client engagements demonstrate this effectiveness-through-data approach in practice. In North Savo Wellbeing Services County (Pohjois-Savon hyvinvointialue), NHG's data-driven management approach improved the consistency of service delivery, sharpened resource targeting, and increased staff satisfaction. In Central Uusimaa Wellbeing Services County (Keusote), dashboards for value-based care now show decision-makers where resources are most needed. In Western Uusimaa Wellbeing Services County (LUVN), NHG conducted a study evaluating the effectiveness of AI-assisted recording of client information in social services.

Internationally, NHG has supported several value-based healthcare programmes, including a two-year national stroke pathway pilot with the Estonian Health Insurance Fund and Philips, and the implementation of ICHOM outcome sets for diabetes and hypertension at CIMAS in Zimbabwe. NHG also conducts real-world evidence research using Nordic health registry data for global life sciences and medtech partners, generating evidence on treatment patterns, clinical outcomes, and healthcare resource use.

Innovation

What makes NHG distinctive is the depth and breadth of expertise it has built specifically around health and social care. Founded in 2004 by researchers from Helsinki University of Technology, now Aalto University, NHG applies rigorous, evidence-based thinking to how health and social care systems actually work — grounding its recommendations in data and analysis rather than opinion. Today, NHG has grown into a team of more than 200 professionals — researchers, data scientists, digitalisation experts, designers, and change-makers — whose sole focus on this sector enables them to move fluently from hospital clinical pathways to wellbeing county cost structures and national policy, in service of NHG's vision of building an impactful health and social care system of the future.

ZekkiPro – human-centred wellbeing data for effective client work and service development

ZekkiPro is a digital system developed through research and development at Diaconia University of Applied Sciences (Diak) for measuring and monitoring wellbeing and supporting client-centred service development.

Launched in spring 2024, the service helps make people's perceived life situations, support needs and resources visible while producing up-to-date and comparable information for decision-making and knowledge-based management.



ZekkiPro is grounded in the research-based 3X10D® Life Situation Survey. The approach is based on the person's own assessment of wellbeing: instead of focusing only on problems, it also identifies areas of life that are going well and personal strengths. Organisations can use 3X10D versions developed for different target groups and complement them with their own background variables, additional questions, feedback and service recommendations. Surveys can be distributed through open or personalised links.

After completing the survey, the respondent receives a visual traffic-light summary that supports reflection on their life situation and can be used as a structured basis for discussion in client encounters. The results can support timely targeting of assistance and strengthen participation and agency. For organisations, accumulated data enables monitoring of wellbeing and change at individual, group and organisational levels, supporting service development, resource allocation and demonstration of impact.

ZekkiPro is scalable across age groups and service settings. It can be used by wellbeing services counties, municipalities, educational institutions, NGOs, projects and other organisations working to promote wellbeing. The aim is to integrate well-being measurements into everyday client and development work so that collected data contributes to better, human-centred and impact-oriented decisions.

The Zekki product family also includes TäsmäZekki, a digital life situation assessment tool developed for employees and jobseekers with support needs. TäsmäZekki makes visible both support needs and strengths related to employment, work and functional capacity, everyday coping, finances, social inclusion and personal resources. The conference also features the poster "TäsmäZekki: A Digital Life Situation Assessment Tool for Identifying Support Needs and Resources among Workers with Support Needs" by Jaana Toikkanen, Sakari Kainulainen, Päivi Sipola and Reija Paananen. The poster describes the co-development of TäsmäZekki and its potential to support holistic needs assessment, person-centred guidance and effectiveness-oriented service processes.

Read more: Sipola, P. (2025). Diakonia-ammattikorkeakoulun kehittämä ZekkiPro-palvelu luo vaikuttavuutta hyvinvointityöhön. Työn Tuuli 1/2025, 18–23.
<https://zekkipro.fi/>

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