

2023

ANNUAL REPORT

Centre for e-health

University of Agder

ANNUAL REPORT 2023

Centre for e-health
University of Agder



Centre for e-health, University of Agder

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PRESENTATION



About us

Since the beginning of the 21st century, the University of Agder (UiA) has been working to develop knowledge and expertise in e-health and modern care and welfare technology. The Centre for e-health was established in 2010, and in 2011, the centre was designated as the first cross-faculty focus area at UiA.

After an evaluation in 2015, the centre extended its status as a Top Research Centre until 2018. In 2019, the centre was granted the status of a Priority Research Centre and is among UiA's flagship efforts in research of national and international caliber.

In 2023, there was an evaluation of the priority research centres at UiA, and the result was an extension of the centre's funding as a priority research centre until 2024.

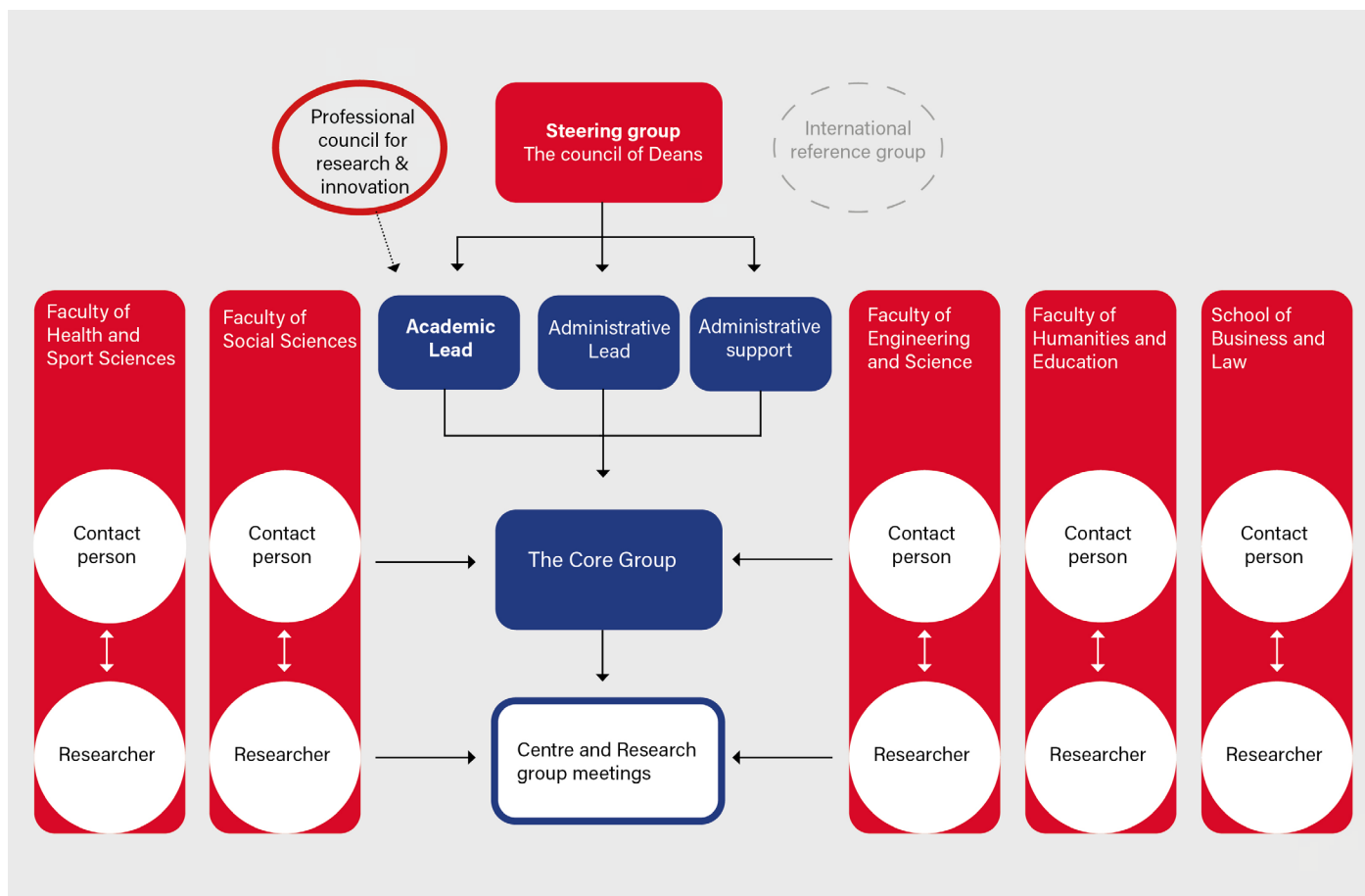
Today, the centre is operated as a collaboration between five faculties: Faculty of Health and Sport Sciences, Faculty of Humanities and Education, Faculty of Social Sciences, Faculty of Engineering and Science, and the School of Business and Law.

The core group of the centre consists of one representative from each of these faculties. Part of the core group's mandate is to act as a link between the faculty and the centre, contributing strategic input to ensure the quality and relevance of research and innovation at the centre.

In 2018, a joint professional council for research and innovation in e-health was established at the University of Agder. The ambition of the council is to create a common meeting arena, discuss current challenges, and provide advice to the University of Agder. In this way, the council can function as a coordinating body and contribute to a collective effort for the entire e-health initiative in Agder.

The professional council includes members from entities such as the Directorate of e-health, the Norwegian Centre for E-health Research, NORCE, Norwegian Smart Care Cluster, Sørlandet Hospital, Grimstad Municipality, RKG eHealth, and a user representative from the Disability Federation in Aust-Agder.

The organisational structure



Academic leader`s statement



Elin Thygesen
Professor and academic leader

In 2018, the Centre for e-health applied for and was approved as a prioritized research centre at UiA for the period 2019-2023. Consequently, much of 2023 has been devoted to evaluating the centre's activities for this period and applying for further funding as a prioritized research centre. The outcome of the evaluation resulted in the assurance of continued funding until 2024, with a clear directive to utilize 2024 to work on further strategy development and explore alternative financing and organisational solutions.

Simultaneously with the evaluation work, there has been significant research and application activity. For the first time, we decided to coordinate an application to the Horizon Europe program. The work on the application has been ongoing throughout the year, with the final application deadline in spring 2024. We believe we have a strong case and consortium and are eagerly awaiting the outcome.

In 2023, we also established a collaboration with the research group CIEM (Centre for Integrated Emergency Management) at UiA, where we participate as partners in their application for status as a Centre for Research-Based Innovation (SFI). We have spent time getting to know each other's research environments to lay the foundation for further collaboration. We also collaborated on a workshop with various actors from the healthcare sector to gather knowledge for the continued work on the application. The main part of the application work will take place in 2024.

This year, we maintained close contact with our partners in Scotland, with visits from them both in March and in connection with the research day we organized in September. The year ended with a study trip to Scotland together with Sørlandet Hospital, where we learned a great deal about digital innovation in the healthcare sector, providing us with inspiration to explore new opportunities.

The Centre for eHealth also has a collaboration agreement with the Norwegian Centre for E-health Research, where we have contributed to their popular webinar series on digital home monitoring and shared our own research findings.

Additionally, we continued our active participation in Arendalsuka (a big national political event), focusing on important topics such as the significance of the caregiver role in preventing digital exclusion and user involvement in service development.

2023 has been a year where several national reports and messages relevant to the healthcare sector and to those of us involved in research and education in the e-health field have been released. Both the Healthcare Personnel Commission's report and the outlook report, released in spring 2023, emphasize the importance of so-called 'hybrid competence' combining health and technology in a time where the shortage of healthcare personnel necessitates investment in digitalization and technological development in the healthcare sector. The preparedness report launched in the fall of 2023 underscores the need to ensure resilient health preparedness in a time of a more complex and demanding threat picture. A common thread across all these reports is the emphasis on the importance of interdisciplinary competence and collaboration to tackle future challenges, demonstrating our relevance in today's society and in the future.

We look forward to an exciting 2024 where we will develop a new strategy, clarify models for the centre's continued operation, and simultaneously work on new, major projects and applications.

Affiliated with the Centre for e-health

Employees at the centre

Elin Thygesen

Academic leader (60%)

Affiliated with Department of Health and Nursing Science

Ragni MacQueen Leifson

Administrative leader (100%)

Elisabeth Giil

Administrative support function (100%)



Overview of all members affiliated with the centre

Members of the core group

Geir Inge Hausvik

Researcher (20%)

Affiliated with the Dep. of Information Systems

Martin Engebretsen

Professor (20%)

Affiliated with the Dep. of Nordic and Media Studies

Hege Mari Johnsen

Researcher (20%)

Affiliated with Department of Health and Nursing Science

Morten Goodwin

Professor (10%)

Affiliated with Department of Information and Communication Technology

Marianne Klungland Bahus

Professor (20%)

Affiliated with the Dep. of Law

Elisabeth Holen-Rabbersvik

Researcher / external network coordinator (20%)

Affiliated with Department of Health and Nursing Science / Kristiansand municipality



Yoga stretch - Centre seminar in Fevik June 2023. Photo: Ragni M. Leifson

Vision and strategy

«Knowledge and solutions that lifts the digital healthcare of the future»

- the centre`s vision in the strategy plan 2022-2024



Values

We contribute to emphasizing the user perspective so that solutions and services are:

Accessible and
inclusive

Preventive,
health-promoting
and oriented
towards coping
with life

Useful, efficient
and sound

Our strategic focus areas



User participation in development and co-creation

The centre's aim is to promote a focus on user participation in development and co-creation. Our aim is for the centre to be recognized for its expertise in user-centred co-creation and for I4Health to be a preferred arena for design, development, testing and evaluation of digital healthcare services and healthcare technologies. In addition, we want to contribute to ensuring that marginalized groups, who are rarely included, are involved in design and development processes and that technology is developed based on needs, also outside the traditional target groups.



Digital healthcare services

Digital health services can contribute to increased self-help and life mastery and enable new ways of delivering treatment and follow-up. It can also contribute to comprehensive and seamless health services and a more sustainable society. Through our research, we aim to contribute to user-centered development, implementation, and evaluation of digital health services in primary and secondary care sectors.



New technologies for health, coping and learning

New technologies, such as robotics, sensor networks and virtual/augmented reality (VR/AR), are entering the healthcare sector. The Centre for e-health will contribute to user-centred, needs-driven and ethically responsible development and introduction of these new technologies.



Better use of health data

Better use of health data can contribute to more personal adapted healthcare services, for more learning in the healthcare service and for better communication with the population about health topics. The Centre for e-health wants to contribute to user focus by building knowledge about the need for, understanding of and application of health data and health information among health personnel, patients and the general population.

RESEARCH & DEVELOPMENT



A selection of projects

I2I - From Isolation to Inclusion (2020-2023) Interreg North Sea programme



More than 75 million Europeans only see their family once a month or even less frequently. Social isolation affects our physical and mental health. Similar to smoking and physical inactivity, social isolation can increase the risk of premature death. The project works to reduce loneliness in communities and neighborhoods in the North Sea region. Together, we strive to help the public sector rethink social inclusion. We do this by connecting academia, municipalities, businesses, and those affected by social isolation. The Centre for e-health leads the project and has partners from seven countries. The project has been awarded 3.2 million euros.

Agder as model region in e-health (2019-2023) Aust-Agder Development - and Competence Fund



The project aims to elevate Agder as a region in e-health, building upon its already established national and international presence. It is based on the existing status of the Centre for e-health and places additional focus on competence, infrastructure, and visibility. This will lead to additional outcomes in these areas. Some results include the opening of a new Showrrom for welfare technology in the i4Helse building, achieving the status of a four-star reference region in the EIP on AHA network, and three associated international professors in II positions at UiA. The Centre for e-health leads the project. The project has been awarded 15 million NOK.

ENACT - Ethical risks assessment of Artificial intelligence in practice (2023-2026) NRC



In this project, researchers will collaborate with Norwegian businesses to create a tool for effectively testing the ethical viability of digital solutions. The goal of the project is to design a method for ethical testing and to develop training programs so that the method can be learned by all those who develop technology for the Norwegian market. The Enact project is composed of Norwegian companies currently using artificial intelligence in areas such as healthcare (Medsensio), welfare (NAV), finance (DNB), education (Hypatia Learning AS), transportation (Posten), as well as leading research environments in artificial intelligence and ethics (SINTEF, NTNU, Østfold University College, NORA). The Centre for e-health is part of a reference group in the project, led by SINTEF Digital. The project has been awarded 12 million NOK.

DUALSAVE-FGS (2022-2026) Horizon Europe



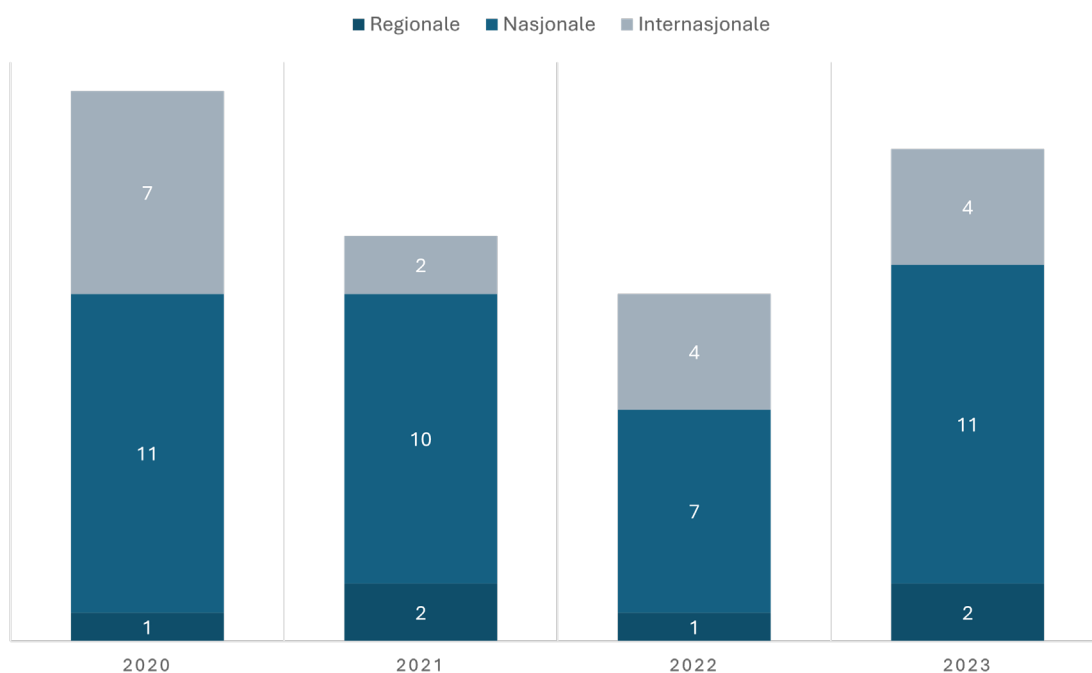
Approximately 300 million African girls and women are at risk of the poverty-related disease Female Genital Schistosomiasis (FGS), and 400 million are at risk of developing cervical cancer. Most of these cases occur in Sub-Saharan Africa. FGS can be mistakenly confused with cervical cancer or a sexually transmitted infection and treated as such. A multispectral, highly innovative colposcope linked to a smartphone, designed to recognize cervical cancer, will be adapted and validated for FGS diagnosis in this project. Drawing from experiences during the SARS-CoV-2 pandemic, an e-learning course will also be developed and tested. The Centre for e-health is a partner in the project, which is led by Oslo University Hospital. The project has been awarded 80 million NOK.

Project portfolio

Centre for e-health is partner in the following projects

Project title	Financing	Period	Budget
CoTech - Cocreated health technology	Norwegian Research council (NRC)	2022 - 2027	NOK 27 mill
SOS/ Partially Digital Citizens	Nordforsk	2021 - 2023	Euro 1,47 mill
Learning control operation to ensure proper reimbursement from healthcare reimbursement schemes	NRC - IKTPLUSS	2021-2024	NOK 13 mill
DIGISAFE - Utilization of digital supervision as a technology for fall prevention and fall detection among individuals living alone with cognitive impairment (pilot project)	Regional research fund- Vestland	2023-2024	NOK 0,5 mill
DIGPAS - HIV Digital Patient Pathway for Individuals with HIV (pilot project)	SSHF - RFF-Agder	2021-2023	NOK 0,3 mill
DIGPAS - DIA Digital Patient Pathway for Young Adults with Type 1 Diabetes at SSHF	TELLU	2022-2024	NOK 0,5 mill
HELKOST- COVID19	Dam Foundation	2021-2023	NOK 0,66 mill
Heart Health for Individuals with Developmental Disabilities: Rare, Forgotten, or Overlooked?	Dam Foundation	2019-2024	NOK 3 mill
Simulation (VR) as a Training and Educational Method for Service Providers in Services for Individuals with intellectual disabilities	Health Directorate	2023-2024	NOK 0,2 mill/ year

APPLICATIONS SENT



Applications 2023

*granted applications

***Simulation (VR) as a Training and Educational Method for Service Providers in Services for Individuals with intellectual disabilities.** Health Directorate. Led by Arendal Municipality.

Heart-ID: HEART health for people with Intellectual Disability – forgotten or overlooked? EU Horizon. Two-Step Application. Coordinated and led by the Centre for e-health, represented by Ellen Ersfjord.

VIZPREV: Visualizing data for Preventive Health Care. NRC. Led by the Centre for e-health, represented by Martin Engebretsen.

IMMERSIVE MIND: Advancing mental health learning practices through co-designed scenarios. NRC. Led by the Centre for e-health, represented by Sofie Wass.

***DIGPAS-DIA:** Digital Follow-up for Young Adults with Type 1 Diabetes at Sørlandet Hospital HF. Expenses covered by the company TELLU. Initiated by Ellen M. Iveland Ersfjord, postdoctoral fellow at the Centre for e-health in collaboration with Annette Cecilie Bævre, diabetes nurse at SSHF.

UNG-PREDIA: Prevention of type 2 diabetes in obese adolescents with prediabetes using glucose monitoring sensor technology. Funded by the Dam Foundation. Led by Ellen M. Iveland Ersfjord, postdoctoral fellow at the Centre for e-health.

RadPar: Intelligent Radar Sensing for the Diagnosis, Monitoring, and Therapy of Parkinson's Disease. NRC. Led by Matthias Pätzhold (Tek Real), the centre for e-health in as partner.

VIRSIM: Use of web-based virtual patient simulations to increase nursing students' knowledge, clinical reasoning skills and self-efficacy. NRC. Led by Hege Mari Johnsen, UiA.

LIPHUNT: Lipoedema – prevalence, risk factors and treatment. NRC. Led by NTNU.

***DIGISAFE:** Utilization of digital supervision as a technology for fall prevention and fall detection among individuals living alone with cognitive impairment (pilot project). RFF Vest. Led by SOF Vest/HVL

OSS: Optimizing collaborations for Social Support for Immigrant Parents. NRC. Led by OsloMet.

iQuest: improving QUality and patiEnt Safety in Transitions of care. EU/THCS. Led by Biosistemak, Spain.

***UPSCALE:** Unfolding the processes between user needs and health and welfare technology in socio-technical transition of health and care services. EU/THCS. Led by LUT University in Finland.

TackNervAI - Tackling High Burden Peripheral Nerve Disorders with Artificial Intelligence. EU Horizon. Led by Oslo University Hospital HF.

HEAL: Health Equality and Access for Life. NRC/PilotHelse. Led by the company Pasient pluss.

Commercializing «Kompass» - a digital career exploration tool. NRC/KOMMERSFORSK. Led by Sofie Wass, UiA.

Professional healthcare worker and Instagram star: The role and legitimacy of health influencers in a new era of health communication. Norwegian Media Authority. Led by Martin Engebretsen, UiA.

Development and testing of a web-based decision support system for mental health disorders in a primary care setting. NRC. Led by SSHF.

PhD projects

Ayan Chatterjee - Dep. of Information & com. technology

Thesis title: *Automatic Generation of Personalized Recommendations in eCoaching*

- Startet i 2019 - **defended on 4. September 2023**
- Main supervisor: Martin Wulf Gerdes, UiA
- Co-supervisors: Andreas Prinz, Santigao Martinez, UiA

Mugula Chris Safari - Dep. of Psychosocial Health

Thesis title: *Intellectual disability and participation in digital technology design activities: A catalyst for social inclusion*

- Started in 2019 - **defended on 19. December 2023**
- Main supervisor: Elin Thygesen, UiA
- Co-supervisor: Sofie Wass, UiA

Dragana Paparova - Dep. of information systems

Thesis title: *Data spaces and the (trans)formations of data innovation and governance*

- Started in 2020 - **Defended on 31. January 2024**
- Main supervisor: Margunn Aanestad, UiA
- Co-supervisors: Sara Hofmann, Marianne K. Bahus UiA

Magnus R. Wanderås - Dep. Health & Nursing Science

Thesis title: *Video consultation in general practice*

- Startet i 2020 - planlegger disputas høst 2024
- Main supervisor: Santiago Martinez, UiA
- Co-supervisors: Elin Thygesen, UiA, Eirik Abildsnes, Kristiansand municipality

Henriette Hovland - Dep. Health & Nursing Science

Thesis title: *Older adults, social inclusion, and digital technology*

- Startet i 2020 - planlegger disputas 2024
- Main supervisor: Elin Thygesen, UiA
- Co-supervisors: Cecilie Karlsen, Kristin Haraldstad

Sarala Ghimire Subedi - Dep. of Information & com. tech

Thesis title: *Augmented video consultation*

- Started in 2020
- Main supervisor: Martin Wulf Gerdes, UiA
- Co-supervisors: Santiago Martinez, UiA, Gunnar Hartvigsen, UiT

Trine Holm - Dep. Health & Nursing Science

Thesis title: *Proxy ePROM in public health centers and school health services*

- Started in 2021
- Main supervisor: Thomas Westergren, UiA
- Co-supervisors: Elin Thygesen, Geir Inge Hausvik, UiA

Katherine Brown - Dep. of information systems

Thesis title: *Digital infrastructures in immigrants healthcare networks in Norway*

- Started in 2021
- Main supervisor: Margunn Aanestad, UiA/UiO
- Co-supervisor: Carl Erik Moe, UiA

Jishnu Das - Dep. of information systems

Thesis title: *Design of Decision Support for Clinical Decision Making*

- Started in 2022
- Main supervisor: Geir Inge Hausvik, UiA
- Co-supervisor: Carl Erik Moe, UiA

Ida Victoria K. Pedersen - Dep. of economics

Thesis title: *Birth outcomes and human capital*

- Started in 2022
- Main supervisor: Eirin Mølland, UiA
- Co-supervisor: Jonas Minet Kinge, FHI/UiA

Linda Sørensen - Dep. Health & Nursing Science

Thesis title: *How can Humanoid Robots assist users with disabilities in activities of daily living? - A qualitative study on user needs, perceived usefulness, ease of use and acceptance.*

- Started in 2021
- Main supervisor: Hege Mari Johnsen, UiA
- Co-supervisors: Åshild Slettebø, Dag Thomas Sagen, UiA

Andrea Jervell Hult - Dep. Health & Nursing Science

Thesis title: *Evidence-based E-learning Training and Education program for Female Genital Schistosomiasis*

- Started in 2023
- Main supervisor: Santiago G. Martinez, UiA
- Co-supervisors: Professor Eyrun Kjetland, Oslo University hospital, Professor Saloshni Naidoo, University of KwaZulu-Natal, Sør-Afrika

Dissertation defenses

Ayan Chatterjee

Automatic Generation of Personalized Recommendations in eCoaching

This thesis focuses on the concept of eCoaching for real-time personalized lifestyle support using information and communication technology. The research aims to design, develop, and technically evaluate the performance of an intelligent eCoach prototype system for automatic generation of personalized and evidence-based lifestyle recommendations.

The proposed solution specifically focuses on a use case for promoting physical activity. The prototype system utilizes wearable medical activity sensors, followed by semantic representation of data and their processing with artificial intelligence algorithms for automatic generation of meaningful, personalized, and context-based lifestyle recommendations to reduce sedentary time. This thesis examines theoretical foundations and practical implementations following well-established design science research methodology.

- First Opponent: Professor Oresti Banos Legran, University of Granda, Spain
- Second Opponent: Professor Antonio Liotta, Free University of Bozen-Bolzano, Italy
- Committee Chair: Professor Vladimir Oleshchuk, UiA

The main supervisor is Martin W. Gerdes, UiA, and the co-supervisors are Andreas Prinz and Santiago Gil Martinez, UiA.



t h e

Mugula Chris Safari

Intellectual disability and participation in digital technology design activities: A catalyst for social inclusion

Social inclusion is a central goal in welfare policy and an important health-promoting factor. The purpose of this doctoral thesis was to gain knowledge about how participation in the design of digital technology can contribute to the social inclusion of young adults with developmental disabilities. This issue was explored through the following research questions:

- 1) How do young adults and adults with developmental disabilities experience participating in the design of digital technology?
- 2) How can young adults and adults with developmental disabilities be supported to enable participation in the design of digital technology?

- First Opponent: Professor Marilyn Lennon, Computer and Information Sciences, University of Strathclyde, Glasgow, UK
- Second Opponent: Chief Researcher Kristin Skeide Fuglerud, Norwegian Computing Center and Associate Professor II, Department of Health and Social Sciences, USN.
- Committee Chair: Associate Professor Bård Erlend Solstad, Department of Sports Science and Physical Education, UiA

The main supervisor is Elin Thygesen, UiA, and the co-supervisor is Sofie Wass, UiA.



Projects that finished in 2023

Healthcare workers on social media

- Project leader: UiA
- Project period: 2022-2024
- Allocated funds: NOK 500 000 from the Norwegian Media Authority
- Kontakt person: Professor Martin Engebretsen, Department of Nordic and Media Studies, UiA

The digitization of the healthcare sector has many facets, and one of them is the emergence of health counseling on social media. A growing group of healthcare workers - including doctors, psychologists, and psychiatric nurses - have discovered the opportunities that platforms like Instagram, TikTok, and YouTube offer for reaching new audiences with health advice.

This project aimed to uncover and describe the opportunities and challenges associated with health counseling on social media. The project was organized into three sub-studies, with each sub-study resulting in a scientific, peer-reviewed article. Martin Engebretsen primarily worked on the project alone but received assistance from the Oslo-based company Medlytic in conducting data collection for the final sub-study.

The first sub-study is a close analysis of a single practice, the Instagram account "PsyktDeg". On this account, psychologist Maria Abrahamsen provides advice on mental health to young people through images and short, often entertaining video clips, accompanied by relevant textual elements. The study focuses on how Abrahamsen uses text, photos, and videos to make the health advice understandable, engaging, and credible.

Engebretsen, M. (2023) *Communicating health advice on social media: A multimodal case study*. I *Mediekultur: Journal of Media and Communication Research*, 39(74). <https://doi.org/10.7146/mk.v39i74.134085>

In the second sub-study, three selected media practices are examined through text and media analyses, as well as qualitative interviews with the healthcare workers behind them - two psychologists and one doctor. This study demonstrates that healthcare workers can reach broad user groups even if they choose quite different strategies for their health communication.

Engebretsen, M. (2024) *På YouTube og Instagram i folkehelsestjeneste. En studie av tre helsearbeidere på sosiale medier*. *Norsk Medietidsskrift*, 4/23. <https://www.idunn.no/doi/10.18261/nmt.30.4.2>

The third study is a reception study. Based on the findings from the first two studies, an interview guide was developed and used in three focus group interviews. The three groups consisted of students from three different health education programs: medicine, psychology, and public health nursing. The selected representatives of the next generation of healthcare workers showed great respect for the dissemination work done by qualified healthcare workers on social media. However, none of them felt called to enter such work themselves. Healthcare workers on social media often have a personal and relationship-building communication style, but they still cannot offer their followers individual follow-up. Several of the informants perceived this as a problematic role for a healthcare worker.

Engebretsen, M. (2024) *The role, impact, and responsibilities of health experts on social media. A focus group study with future healthcare workers*. *Frontiers in Communication, Sec. Health Communication*, vol. 9, 2024. <https://www.frontiersin.org/articles/10.3389/fcomm.2024.1296296/full>



The psychologist Maria Abrahamsen (right) and the doctor Wasim Zahid are both examples of healthcare workers who have become popular advisors on social media. The illustrations are taken from [instagram.com/psyktdeg/](https://www.instagram.com/psyktdeg/) and [youtube.com](https://www.youtube.com/).

I2I - From Isolation to Inclusion

- Project leader: Centre for e-health, UiA
- Project period: 2020-2023
- Allocated funds: EURO 3.2 mill. from EU Interreg North Sea Region
- Website: <https://northsearegion.eu/i2i/>
- Partners: Arendal municipality, Abertay University, Region Värmland, Assen municipality Diakonie Bremen, Canal & River Trust, Campaign to End Loneliness, Aarhus municipality, Stad Aalst, OCMW Turnhout
- Project coordinator: Ragni MacQueen Leifson, UiA.

More than 75 million Europeans only see their family once a month or less. Social isolation affects our physical and mental health. Similar to smoking and physical inactivity, social isolation can increase the risk of premature death.

The project "From Isolation to Inclusion" has worked to reduce loneliness in communities and neighborhoods in the North Sea region. Together with its partners, they have worked to help the public sector rethink social inclusion. They have done this by connecting academia, municipalities, businesses, and those affected by social isolation.

Over the past three and a half years, the I2I project has contributed to changing society by creating stronger bonds between people and their neighborhoods. Through various initiatives and activities, the project has encouraged more engagement, making more people feel included.

I2I partners have worked directly with residents to identify their needs and have used smart tools such as personal profiles and prototypes. This collaboration has made it possible to develop effective and sustainable initiatives.

The collaboration among I2I partners has led to new ways of working, allowing everyone to learn from each other and try out new ideas. This has positioned I2I as a leader in finding innovative ways to help the community, with activities suitable for everyone.

The success stories in the project are not only impressive but also important news. The clear narrative of inclusion has been well-received, ensuring that service providers recognize the importance of such activities. By sharing detailed stories of what has worked, I2I provides a recipe for success that others can follow.

With a plan covering multiple countries, the I2I project has made a significant difference - over 500 individuals report feeling less isolated thanks to the initiatives.

I2I is committed to collaboration and inclusion, involving various groups to address significant societal issues. While solving complex societal problems may take time, it is essential not to give up. I2I has demonstrated that making a difference is possible, and they are keen to share their experiences with others to help more individuals and communities.

Regarding the project's goal of improving measures and services for social inclusion, Arendal municipality and UiA have focused on three main initiatives: KOMP (digital solution for social contact), AKT Svipp (transport service for the elderly), and "Meals and Information" (social event for the elderly at the volunteer center).

On June 1st, a digital final conference for the project was held, where partners had the opportunity to present and showcase their experiences and results from the project, many of which were summarized in a film.



The pictures are linked

Projects that finished in 2023 - continued

DIGPAS- HIV

Digital patient pathway for individuals with HIV.

- Project leader: Associate Professor Hege Mari Johnsen, Department of Health and Nursing Sciences
- Project period: 2022-2023
- Allocated funds: NOK 300,000 from the Regional Research Fund Agder
- Other participants in the project: Ellen Ersfjord, postdoc at the Centre for e-health, Anita Øgård-Repål, associate professor at the Dep. of Health and Nursing Sciences, Santiago Martinez, associate professor at the Centre for e-health and Dep. of Health and Nursing Sciences (all UiA), Kim Fangen, experiential consultant at the User-Driven Outpatient Clinic for Patients with HIV and ME, and project leader for Digital Patient Pathways, and Kristin Bårdsen Aas, nurse and HIV coordinator at the User-Driven Outpatient Clinic for Patients with HIV and ME (both Southern Norway Hospital Trust).

Today's HIV medications are very effective, making physical follow-up at hospitals unnecessary for a large portion of the patient group. A digital alternative has not been available, which this project group aimed to address.

The Medical Outpatient Clinic at Sørlandet Hospital in Kristiansand has developed the digital solution that is now in use. Through the pilot project, the goal was to gain greater insight into patients' needs and expectations for a digital patient pathway, develop co-creation methodology to ensure user involvement, and examine how patients experience using such a digital solution. Patients were interviewed and invited to co-creation workshops with representatives from user panels, healthcare professionals, developers, and researchers.

The result has become Norway's first fully digital follow-up for HIV patients. The solution consists of an initial digital assessment of health status and symptoms, dialogue messages between the user and healthcare professionals, and video consultations.

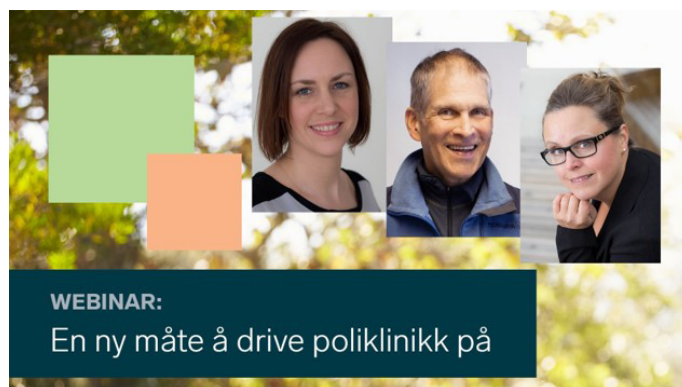
Patients receiving this follow-up are recruited according to strict criteria. They must have had the virus under control for some time, generally stable health, basic knowledge of living with HIV, and be motivated to try digital follow-up.

Researchers at UiA have evaluated the pilot project and found that the digital offering has met the patients' needs well. They experience greater flexibility and increased quality of life. They also save time and money on travel and avoid having to take time off from work. For those who perceive their HIV diagnosis as stigmatizing, it has been positive to avoid sitting in the waiting room.

The evaluation also shows that digital patient follow-up must be tailored to the specific user group, as the needs and expectations vary greatly from patient group to patient group. It also emerged that while users are satisfied with digital follow-up, they still want the option to choose when they want consultations and whether they want to meet the doctor in person. The same applies to doctors, who sometimes need to see patients physically to better understand symptoms.

Organizing co-creation workshops helped further develop and improve the digital solution. For example, patients felt that the digital assessment questionnaire was too general, leading to the translation and adaptation of an English questionnaire to Norwegian conditions. There was also a need for clearer information on privacy, resulting in the creation of instructional videos.

The project group has presented the project and its experiences and findings in various forums, both in webinar form and as presentations at conferences and events.



Publication affiliated with the project:

Johnsen, Hege Mari; Øgård-Repål, Anita; Gil Martinez, Santiago; Fangen, Kim; Aas, Kristin Bårdsen; Ersfjord, Ellen Margrete Iveland (2024). Patients' perceptions of use, needs, and preferences related to a telemedicine solution for HIV care in a Norwegian outpatient clinic: a qualitative study. BMC Health Services Research. ISSN: 1472-6963. 24 (1). doi:10.1186/s12913-024-10659-z.

DIGPAS- DIA

Digital follow-up for young adults with type 1 diabetes at Southern Norway Hospital Trust

- Project Leader: UiA / SSHF
- Project Period: 2023
- Funding: TELLU
- Project Participants: Ellen Ersfjord, Postdoctoral Researcher at Centre for e-health, Associate Professor Hege Mari Johnsen, Department of Health and Nursing Sciences, Anita Øgård-Repål, Associate Professor at the Department of Health and Nursing Sciences (all from UiA), Kim Fangen, Experience Consultant at the User-Controlled Clinic for Patients with HIV and ME, and Project Manager for Digital Patient Pathways, and Annette Cecilie Bævre, Diabetes Nurse (both from Sørlandet Hospital Health Trust).

Background of the Project

The Medical Outpatient Clinic at Sørlandet Hospital Kristiansand (SSK) conducted a pilot project in 2023 with the aim of developing digital follow-up for young adults (18-26 years) with Type 1 Diabetes using Tellu's digital solution 'Dialogg'. The project, called DIGPAS-DIA, was followed by action research conducted by researchers at the University of Agder (UiA).

Study Background

SSK identified the need for changes in the follow-up services for patients with Type 1 Diabetes, especially among young adults who cancel or do not attend consultations. Active participation in the development of digital tools for Type 1 Diabetes follow-up can contribute to increased self-management of health conditions and improved communication between specialized health services and patients. The DIGPAS-DIA project was designed to involve patients and examine methods of user involvement.

Methodology

The study was conducted at the Medical Outpatient Clinic at SSK, where researchers from UiA closely collaborated with healthcare professionals and patients. The project was carried out as action research, focusing on involving patients (young adults with Type 1 Diabetes) in the development and evaluation of the digital solution. Research methods included workshops, participatory observation, conversations with healthcare professionals and patients, and evaluation of the digital solution.

Results and Recommendations

The study resulted in valuable insights into patients' needs and preferences regarding digital follow-up of Type 1 Diabetes. Participants were generally positive about digital follow-up, as it provides flexibility, increased disease management, and better accessibility to healthcare services. Feedback also indicated the need for a balance between digital and physical follow-up, as well as the importance of user involvement in the development of digital tools.

The project addresses themes such as user involvement, adaptation of digital tools, and challenges related to technology and privacy. It also discusses how the identified needs and findings can be integrated into further development of digital follow-up at SSK.

The study concludes that digital follow-up of Type 1 Diabetes can be an effective way to support patients, especially young adults. User involvement is crucial for developing tailored and user-friendly solutions. Further research and evaluation are necessary to optimize and tailor digital follow-up further.

The report provides recommendations for further work on digital follow-up of Type 1 Diabetes at SSK. This includes continued user involvement in the development process, adaptation of digital tools based on patient needs, and evaluation of the effect of digital follow-up on patients' health and quality of life.

The report summarizes the importance of active user involvement in the development of digital health tools and emphasizes the importance of adapting and evaluating such tools based on patient needs and experiences. Further research and implementation of the findings can contribute to improving healthcare services for patients with Type 1 Diabetes.



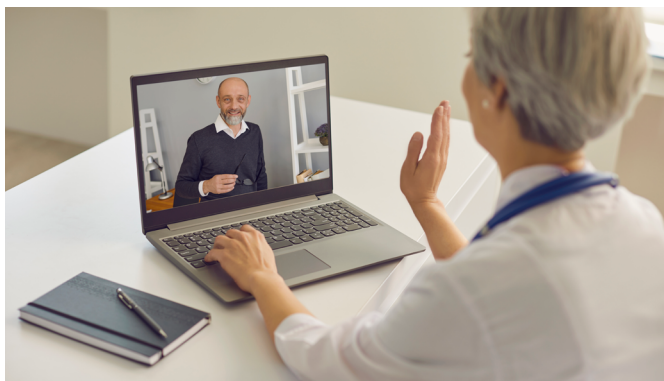
PUBLICATIONS 2023

On the next page, you can find an excerpt of articles representing the range of research conducted by researchers affiliated with the centre.

An overview of all publications can be found in Appendix 1 on page 36.

26 scientific articles
3 books/chapters
9 conference papers
2 PhD theses





Video consultation in general practice: a scoping review on use, experiences, and clinical decisions

The 2019 coronavirus pandemic forced healthcare personnel to adopt alternative consultation methods. In primary care, the use of video consultations (VC) surged significantly as countries went into lockdown. This review aimed to summarize scientific knowledge regarding the use of VC in primary care, focusing on (1) the use of VC in primary care, (2) the experiences of users of VC in primary care, and (3) how VC influenced clinical decision-making among general practitioners.

Wanderås, Magnus; Abildsnes, Eirik; Thygesen, Elin; Martinez, Santiago (2023). BMC Health Services Research.



Principles to Facilitate Social Inclusion for Design-Oriented Research

The article aims to develop principles that facilitate design-oriented research focusing on social inclusion with marginalized groups. Building on the recognition that the research process must be based on theoretical perspectives on social inclusion, the work begins with an empirical investigation of a multi-year research project that designed several IT-based solutions for individuals with intellectual and developmental disabilities.

Wass, Sofie; Thygesen, Elin; Puroo, Sandeep (2023). Journal of the Association for Information Systems.



Data governance spaces: The case of a national digital service for personal health data

This article empirically investigates data governance by conducting a retrospective study of the ten-year development of a national digital service for personal health data in Norway. We demonstrate how data governance unfolds over time as data are shared and move among multiple actors. Based on our findings, we introduce the concept of data governance domains to refer to the authorized arrangements among multiple actors, specifying the boundaries of decision-making authority, rights, roles, and responsibilities related to data management.

Paparova, Dragana; Aanestad, Margunn; Vassilakopoulou, Polyxeni; Bahus, Marianne (2023). Information and organization



Communicating health advice on social media: A multimodal case study

Social media platforms represent new arenas for health communication. Platforms such as YouTube, Instagram, Snapchat, and TikTok offer unique opportunities for healthcare workers to build understanding, engagement, and trust among a broad and young audience. At the same time, such platforms require healthcare workers to find a careful balance between social proximity and professional distance. The article is based on a case study where the award-winning Norwegian psychologist Maria Abrahamsen's health communication practice on Instagram is studied through multimodal discourse analysis.

Engbretsen, M. (2023). Journal of Media and Communication Research.

Research infrastructure

Centre for e-health is located in the i4Health building on the Grimstad Campus of the University of Agder (UiA). The building was officially opened in 2019 and brings together researchers, students, residents, and public and private stakeholders. It also houses state-of-the-art laboratory facilities, including housing simulators, XR labs, a Usability Lab, and a Showroom for welfare technology.

i4Health AS, a subsidiary of UiA, was established to engage with the business community, and the company's managing director was tasked with showcasing and realizing the value i4Health AS could offer to stakeholders in healthcare, academia, and the supplier market in the healthcare industry. After the summer of 2023, the managing director left the position, and the i4Health AS board decided to explore alternative ways to organise activities in the i4Health building. This work is still under consideration, and in the meantime, the Centre for e-health has taken

over responsibility for supplier contact related to the showroom.

In 2023, films showcasing the facilities in the i4Health building were produced. These films were financed by the Norwegian Centre for E-health Research with funds from EEA grants in a project collaboration with Poland. The films became part of their [Virtual Study Tour](#) - a website presenting information on the topic of digital health in Norway.



Scan or click to read more about our facilities





ACTIVITIES



Follow us on LinkedIn!

Highlights from 2023

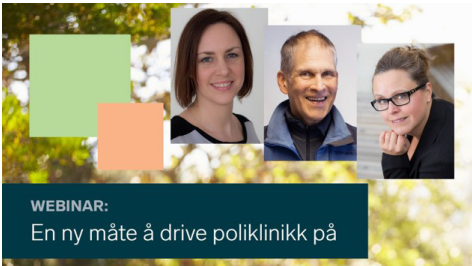
There has been a lot of activity at the centre during 2023, and on the following pages, we will show some highlights

17 - 18. January



In January, we had a visit from Professor Daniel Gilmour and Associate Professor Ken Scott-Brown from the University of Abertay, Scotland, with whom the centre has had a collaboration for several years. The main purpose of the visit was to discuss cross-national collaboration in the Interreg project "From Isolation to Inclusion," as well as planning for dissemination and publications in the project. Additionally, Daniel and Ken were given a tour of the Grimstad campus, including the i4Health building and the e-sports lab.

24. February



The project Digital Project Pathways for People with HIV (DIGPAS HIV) was presented in a new webinar series on Digital Home Follow-up organized by the Norwegian Centre for E-health Research. Associate Professor Hege Johansen is the project leader and collaborates with other researchers from the University of Agder (UiA) and Southern Hospital Trust.

Elisabeth Holen-Rabbersvik, a member of the core group at the Centre, is part of the editorial committee for this webinar series.

23-24. March



In March, we had visitors from Scotland again, this time Donna Henderson and Andrea Pavlickova, both working in the Scottish health authorities' Digital Health and Care department. These are individuals the centre has had a longstanding collaboration with over several years. The purpose of the visit was to discuss various project collaborations, and they were presented with different project proposal ideas from some of our researchers. Additionally, the facilities available in the i4Health building were showcased, and future study visits to Scotland were discussed. An important outcome of the visit was that the centre, led by postdoc Ellen Ersfjord, undertook the coordination of an EU Horizon application for the first time.



21. April

Monthly Research Forum: The centre experimented with a new format for its research forum, inviting multiple researchers from the same faculty to come and present their research. In April, we had five different presentations from the Faculty of Health and Sports Sciences, focusing on the use of various forms of digital media in educational research. The image shows a demonstration of MedexVR, a program designed to allow nursing students to practice the ABCDE examination in virtual reality.



12. May

Monthly Research Forum: In May, we had six different presentations from researchers from the Faculty of Technology and Natural Sciences. The theme and focus of the presentations were on how artificial intelligence can and is being used in health research. Professor Morten Goodwin (pictured) introduced the topic. The presentations showcased various areas where AI can be applied, including interpreting monitoring data, automatically interpreting pain levels from video analyses, and diagnosing sepsis.



15 -17. May

Workshop at the **International Forum on Quality and Safety in Healthcare** in Copenhagen: The workshop was linked to the DIGPAS HIV project, demonstrating to participants how to involve users in the design of digital patient pathways and how to identify factors that enable or hinder the development of digital outpatient clinics.

Pictured: Anita Øgård-Repål, Hege Mari Johnsen, Ellen Ersfjord, Santiago Martinez (all from UiA) + Kim Fangen from SSHF.



23-25. May

Academic leader at the centre, Elin Thygesen, presented at the **Vitalis conference** in Gothenburg - the largest e-health event in Scandinavia. She presented alongside Christine Gustafson (Sophiahemmet University) and Helinä Melkas from LUT University in Finland (who is also affiliated with the centre as a professor II). They are all associated with The Health and Welfare Technology (HWT) Research Network, a network comprising over 80 researchers from across the Nordic countries. At the conference, they presented various research projects within welfare technology.

24-25. May



Participation in the SOVA Conference - Together on Welfare Technology Agder. An annual event where the centre is part of the organising committee. This time, the centre presented research under the theme "Research and Sustainability;" addressing both digital exclusion, the DIGPAS HIV project, and how to develop technology in collaboration with people with developmental disabilities. The presenters were Margunn Aanestad, Ellen Ersfjord, Hege Mari Johnsen, and Mugula Chris Safari.

1.June



The end conference for the Interreg project "From Isolation to Inclusion" was held digitally at the UiA media studio on Kristiansand campus. This project was led by the centre from 2020 to 2023. Daniel Kumar was hired as the host and guided participants through the program. The project has partners from seven different countries, and there were many attendees. Several examples of how the project has helped many individuals overcome loneliness and social isolation were presented.

11-16.June



The European Conference on Information Systems (ECIS), was organised in Kristiansand by the Department of Information Systems at UiA, where several of the centre's researchers are affiliated. The conference theme was "Co-creating Sustainable Digital Futures," and over 700 researchers from 27 countries around the world participated. Margunn Aanestad and Carl Erik Moe were part of the conference committee.

22-23.June



As tradition dictates, the centre organised a strategic gathering for all affiliated researchers at Fevik before the summer. These two days were dedicated to discussing future activities for the centre, how the centre can be utilized as a resource, and a review and discussion of the SFI (Centre for Research-driven Innovation) application. Head of departments and other relevant researchers were also invited to a session where insights into various research groups and educational programs were provided, followed by an open discussion on potential synergies and expanded collaboration. Additionally, Professor Il Helinä Melkas delivered an intriguing presentation on Sociotechnical Perspectives on e-health. We also found time for a yoga stretching session.

14-18. August - ARENDALSUKA (annual political event)



Although the center was allocated a potentially inconvenient time on a Monday evening, there was a significant turnout of individuals interested in learning about developments in the e-health field. In the UiA tent, the center was responsible for three interconnected thematic presentations.

Firstly, there was a presentation titled "Should Nurses Assist Patients with Technology?" linked to the Nordic research project "Infrastructures for partially digital citizens: Supporting informal welfare work in the digitized state." This project sheds light on challenges related to digital exclusion.

Following that, there was a presentation on the project "Video for All - Inclusive Video Services in Healthcare," where Sunnaas Hospital with partners has developed a guide for this purpose. These two presentations were followed by a panel discussion on the topic "Can we provide digital welfare services in such a way that those who need them most will also benefit from the services?"

In the final session, the topic was "How to Ensure User Involvement in the Development of Digital Home Monitoring?" A brief introduction was given to what user involvement in service development entails, followed by research presentations from the project Digital Patient Pathways (DIGPAS), providing a practical example of how user involvement in the development of digital home monitoring can be conducted. There was also a debate involving invited professionals, researchers, experiential consultants, and politicians on how we can ensure user involvement in the development of digital home monitoring.



24-25. August



The kick-off for the ENACT project took place at Østfold University College. This project has been awarded 12 million NOK by the Norwegian Research Council and is led by SINTEF Digital. In this project, researchers will collaborate with Norwegian businesses to develop a tool for effectively testing whether digital solutions are ethically sound. Associate Professor II Leonora O. Bergsjø, affiliated with the centre, specializes in digital ethics, digital judgment, and responsible digitization. She is the one who has involved the centre in this exciting project. We look forward to following the project's progress.

28. August



Professor Martin Engebretsen from the Department of Nordic and Media Studies, and affiliated with the center's core group, participated in the NSE webinar series on digital home monitoring. He discussed his research on how healthcare workers can integrate good health information with popularity on social media. *How can the general public know that the information they see on social media is correct and research-based? How can healthcare professionals leverage new communication methods to disseminate good information in an understandable and credible manner?* These were some of the questions he addressed.



14. September

Researcher Santiago Gil Martinez, who is involved in the EU Horizon project DUALSAVE-FGS, participated in the Science Summit around the 78th United Nations General Assembly (UNGA78) in New York. On behalf of The European & Developing Countries Clinical Trials Partnership (EDCTP), he delivered a presentation on Case study 3 - *Dual diagnosis by Spectral Artificial Visual Examination for Female Genital Schistosomiasis and cervical cancer. Digital, new, low-cost, and simple diagnosis and training (DUALSAVE-FGS).*

22. September



At the centre meeting, there was a celebration and recognition of the submitted EU Horizon application. This marks the first time the centre and the Faculty of Health and Sports Sciences have coordinated such an application. The project, abbreviated as HEART-ID, addresses a very important topic: How to ensure equitable healthcare for individuals with developmental disabilities, with a focus on heart health. The overarching goal of the project is to investigate the underlying causes of disparities in access to health and care services for the prevention, diagnosis, and treatment of cardiovascular diseases, in order to prevent unnecessary suffering and premature death in this vulnerable group. The project leader is Ellen Ersfjord, a postdoctoral fellow at the Centre for e-health.

1-2. November



A team from the Directorate of e-Health, tasked with creating a plan for the operationalization of goal 1 in the national e-health strategy "active involvement in one's own and nearby health," expressed interest in a study trip to Agder. The centre and Grimstad municipality collaborated to create a program where the team received various presentations from the region and the centre. They also had a tour of i4Health with various demonstrations. Additionally, they met with businesses and paid a visit to Arendal to observe the Telemedicine Centre, the municipal acute care unit, and the emergency room.

7. November



The EHIN conference in Lillestrøm. The business sector and researchers often have different incentives for collaboration. Researchers may be primarily concerned with publications, while businesses want things to work and have an impact. How can a common mission for the use of health and welfare technology be created? This was a theme at this year's conference, where the centre was, of course, present. As part of the Nordic research network on health and welfare technology, the centre co-organized a seminar based on results from a Nordic collaborative project called Proactive Health and Welfare Technology for Nordic Users and Societies (PROTECT).

Open Research Day

On September 13th, the Centre for e-health hosted an Open Research Day, shedding light not only on the research activities at the centre but also providing valuable insights into perspectives on trends and visions within e-health.

"On September 13th, the Centre for e-Health hosted an Open Research Day, which not only shed light on the research activity at the centre but also provided valuable insights into perspectives on trends and visions within e-health," said Lene Rathe, Senior Advisor at the Directorate of e-health. She was one of the keynote speakers invited by the centre to discuss perspectives on trends and visions within e-health. Donna Henderson, Head of International Collaboration at Scotland's Digital and Care Directorate, was also invited to speak from an international standpoint.

User involvement in focus

The day's program was structured in accordance with the centre's strategic plan, which clearly identifies four main focus areas:

- User involvement in development and co-creation
- Digital health services
- New technologies for health, coping, and learning
- Better use of health data

A strong user-centered approach is central to all these areas, which the Centre for e-health holds as a core value. Ragni MacQueen Leifson, administrative leader at the centre, expressed this clearly: *"When user involvement is needed in a project, the Centre for e-Health should be the first thing that comes to mind."*

Agder region stands out

The Regional Coordination Group for e-Health and Welfare Technology in Agder (RKG e-health), represented by Kathrine M. Holmerud, presented an overview of e-health from a regional perspective and their extensive collaboration across sectors.

The Agder region was highlighted as a clear leader in welfare technology, being one of five model regions in the Nordic countries in this area. Their commitment and innovation were recognized when they won the EPSA (European Public Sector Award) for "Best Practices" in 2019. Agder has also been awarded four-star status as a reference region in the European Reference Network for Active and Healthy Aging.

The i4Health building was also presented as a prime example of the region's commitment to promoting e-health and welfare technology. Participants at the event were given a tour of the facilities, including a housing simulator, XR lab, Showroom for welfare technology, and user testing lab.

"These facilities provide a unique opportunity for interdisciplinary learning and problem-solving, preparing future professionals for work in digital care environments," said Dr. Sanna Rimpiläinen, who had traveled all the way from Scotland to attend the research day. She is the head of the Research & Skills department at the Scottish innovation center Digital Health & Care, which has close collaboration with the centre.

A technological future

In a time of constant innovation, the healthcare sector is taking a big step into the future with a range of innovative technologies. Extended reality (XR), humanoid robots, and artificial intelligence (AI) have now taken a central place in the healthcare industry, and groundbreaking developments are predicted.

Dr. Sanna Rimpiläinen pointed to the explosive growth in the global XR market. From \$12 billion in 2020, the market is expected to increase by an incredible 506% to reach \$72.8 billion by 2024. This development indicates a revolution in the way we approach health and medical treatment.

In the UK and Germany, we also see significant changes in the job market. By 2030, it is expected that a total of 400,000 jobs will benefit from VR/AR technology, a staggering increase of 2567% from just about 15,000 in 2019. This underscores the significant growth potential these technologies have to transform the workforce and streamline healthcare services.

Professor Helinä Melkas from LUT University in Finland and Professor Il at the centre discussed the use of robots in healthcare. She emphasized the positive attitude change currently taking place. However, she pointed out that there is still a lack of user involvement in product development and that the healthcare sector is not sufficiently prepared for the technological revolution. She stressed the importance of starting by identifying users' needs and tasks where robots can provide valuable assistance.

Successful event

The Open Research Day was a success, providing participants with valuable insights into what the Centre for e-health is researching, as well as interesting perspectives on e-health trends, both nationally and internationally. To round off the day, an informal gathering with delicious tapas was arranged, creating great opportunities for discussion and networking.



Anders W. Andersen, Dean of the Faculty of Health and Sports Sciences, guided everyone through the day. He is also head of the centre's professional council for research and innovation in e-health.



Senior Advisor Lene Rathe, Directorate of e-health



Kathrine M. Holmerud, RKG e-health



Ph.D. candidates affiliated with the center also presented their work. Pictured is Jishnu Das from the Department of Information Systems.



Dr. Sanna Rimpiläinen, DHI Skottland

Study trip to Scotland

From December 10th to 15th, a delegation from the Centre for e-health and Southern Hospital Trust (SSHF) traveled to Scotland with the goal of gaining a better understanding of Scotland's digital healthcare sector.

The team included Elin Thygesen, Ragni MacQueen Leifson, and Elisabeth Giil from the Centre for e-health, along with Steinar Omnes, Sondre Tharaldsen, and Harald Reiso from SSHF. The journey began in the north in Aberdeen and continued by train southwards towards Glasgow.

The trip aimed to acquire knowledge, discover innovative ideas, as well as strengthen and build new connections within the healthcare sector. The main focus was to explore how Scotland is advancing in digital health, gather insights from local projects, and initiate discussions to bring valuable experiences back home to promote future collaboration in healthcare.

Sondre Tharaldsen, an innovation consultant at SSHF, expressed that collaboration across borders, sharing experiences, and exchanging solutions are necessary to address tomorrow's health challenges. He saw the study trip as an opportunity to build new relationships and strengthen existing collaborations.

The first day of the study tour was spent at the Alexander Graham Bell Centre for Digital Health at UHI Moray. Here, the group gained insight into the project "Moray Rural Centre of Excellence for Digital Health and Care," led by the Digital Health & Care Innovation Centre (DHI). Co-design approaches and the Quadruple Helix model were discussed, and ideas for future collaboration were exchanged.

The second day was spent at Inverness Campus, a campus where business, academia, and the region have collaborated well to create an environment with a focus on

life sciences and technology. The group was very inspired by the area and hopes to return to learn more about how they have achieved such collaboration.

On the third day, the group split into two, with the centre visiting Blantyre Life Hub outside Glasgow, while those from the hospital visited Queen Elizabeth University Hospital in Glasgow.

Blantyre Life Hub is an award-winning care centre that emphasizes independence. Around the main building are 20 housing units equipped with smart technology and aids to enable residents to live independently in their own homes. The main building contained a gym for rehabilitation and a technology area where various aids were displayed. On the second floor, arrangements were made for patients to stay for up to 6 weeks after a hospital stay to train for an independent life at home.

Queen Elizabeth University Hospital was visited to explore potential areas of collaboration in digital patient care and innovation. Experiences were exchanged, and possible collaborative projects for the future were discussed.

On the last day of the study tour, the group participated in the DIGIFEST 2023 conference. Here, Elin Thygesen took part in an international panel discussion, where they discussed trends in digital health and care.

In summary, the study trip provided a platform to build new relationships, strengthen existing collaborations, and gain valuable insights into Scotland's progress in digital health and innovation.





APPENDIX

Publications

Scientific articles Level 2

1. Wanderås, Magnus; Abildsnes, Eirik; Thygesen, Elin; Martinez, Santiago (2023). Video consultation in general practice: a scoping review on use, experiences, and clinical decisions. *BMC Health Services Research*.
2. Paparova, Dragana; Aanestad, Margunn; Vassilakopoulou, Polyxeni; Bahus, Marianne (2023). Data governance spaces: The case of a national digital service for personal health data. *Information and organization*.
3. Strømland, Monica; Bahus, Marianne; Andersen, Anders Johan Wickstrøm (2023). "What's the Purpose of Having a Say If I Cannot Participate?" A Qualitative Study of Young People's Experiences of Being Heard and to Participate in Decision-Making Processes in Norwegian Child Welfare Services. *The International Journal of Children's Rights*. ISSN: 0927-5568. 31 (3). s 729 - 755.
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Scientific articles Level 1

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3. Engebretsen, M. (2023). Communicating health advice on social media: A multimodal case study. *Mediekultur: Journal of Media and Communication Research*, 39(74), 164-184.
4. Chatterjee, Ayan; Pahari, Nibedita; Prinz, Andreas; Riegler, Michael Alexander (2023). AI and semantic ontology for personalized activity eCoaching in healthy lifestyle recommendations: a meta-heuristic approach. *BMC Medical Informatics and Decision Making*. ISSN: 1472-6947. 23 (1). doi:10.1186/s12911-023-02364-4.
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6. Mortensen, Jon Andreas; Mollov, Martin Efremov; Chatterjee, Ayan; Ghose, Debasish; Li, Frank Yong (2023). Multi-Class Stress Detection Through Heart Rate Variability: A Deep Neural Network Based Study. *IEEE Access*. ISSN: 2169-3536. 11s 57470 - 57480. doi:10.1109/ACCESS.2023.3274478.
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