Support countries and regions to strengthen their information systems and information architecture in a sustainable way to achieve the Sustainable Development Goals (SDGs) in the health sector and beyond.

We pursue this goal through DHIS2 platform development, capacity building, action research, local ownership, and innovation sharing in the global community.
## Contents

### Introduction & Highlights 1

| Preface | 09 |
| 2023 Highlights | 10 |
| The Next Crisis: Climate Change & Health | 12 |
| - HISP in Action: Breaking silos to strengthen climate-resilient health systems | 13 |
| The HISP Aproach | 15 |
| - Interview with Dr. Edem Kossi | 16 |
| - HISP in Action: Strengthening information system design in LMICs | 19 |
| DHIS2 World Map | 20 |
| - HISP in Action: Enhancing subnational data use | 23 |
| - Interview with Monica Amuha | 25 |

### About the HISP Centre 2

| The HISP Centre | 28 |
| The HISP Network | 30 |
| - Interview with Tiwonge Manda | 31 |
| - HISP in Action: Sharing Innovations Across Sectors | 33 |
| Partnerships | 34 |
| - Interview with Dr. Carl Kinkade | 35 |
| Finances and Funding | 36 |
# HISP Centre Activities 3

<table>
<thead>
<tr>
<th>Research</th>
<th>41</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching</td>
<td>43</td>
</tr>
<tr>
<td>DHIS2 Design Lab</td>
<td>45</td>
</tr>
<tr>
<td>DHIS2 Software Development</td>
<td>46</td>
</tr>
<tr>
<td><strong>- HISP in Action: Enhancing DHIS2 interoperability with FHIR -</strong></td>
<td>49</td>
</tr>
<tr>
<td>DHIS2 Implementation Support</td>
<td>51</td>
</tr>
<tr>
<td>DHIS2 for Health</td>
<td>52</td>
</tr>
<tr>
<td>DHIS2 for Logistics</td>
<td>53</td>
</tr>
<tr>
<td>DHIS2 for Education</td>
<td>54</td>
</tr>
<tr>
<td><strong>- HISP in Action: Collaborating on student and teacher app design -</strong></td>
<td>55</td>
</tr>
<tr>
<td>DHIS2 Training &amp; Communications</td>
<td>57</td>
</tr>
<tr>
<td>DHIS2 Academy</td>
<td>58</td>
</tr>
</tbody>
</table>

# Appendices 4

| Active Ph.D. Candidates | 62 |
| Defended Ph.D. Thesis in 2023 | 63 |
| Postdoc Projects | 64 |
| HISP Ph.D. Alumni | 64 |
| Project portfolio | 68 |
| Publications | 70 |
1
Introduction & Highlights
Professor Kristin Braa, right, (HISP Centre) and Zeferino Saugene, left, (Saudigitus) visit a weather station in Changalane, Mozambique to explore climate data digitization challenges.

Professor Kristin Braa and HISP researchers engage in a school visit as part of field work for the DHIS2 for Education project in The Gambia.
In last year’s Annual Report, we reflected on how the HISP network and DHIS2 capacity in low- and middle-income countries (LMICs) contributed to an effective global response to the Covid-19 pandemic. Now, a new health crisis calls for collective action: climate change. In this global challenge, we see an opportunity for HISP to contribute. Helping countries improve their climate resilience represents the next step in our decades-long work supporting strong and effective health systems in LMICs.

We began exploring Climate & Health in May 2023, and it became a focus of HISP for the rest of the year, culminating in a substantial award from Wellcome for Climate & Health action research and an exciting opportunity to present this initiative virtually during COP28. As 2024 begins, we’re already exploring how weather data can be incorporated into DHIS2 and expanding our network of collaborators to take on this challenge, partnering with experts on Climate & Health modeling, weather and climate data, and machine learning. Read more on pages 12-13.

Climate & Health is just one example of how the HISP network is becoming more interdisciplinary. The theme for the 2023 DHIS2 Annual Conference was “Sharing Innovations Across Sectors,” and this really defined HISP’s work over the course of the year. In this annual report, we highlight examples of the innovative work the HISP network and global DHIS2 community are doing both in and beyond health.

This includes work that builds on existing health systems to expand their functionality beyond the traditional HMIS role. In addition to Climate & Health, another example of this is DHIS2 for Logistics, where countries are using DHIS2 as a last-mile tool for managing health logistics and supply chain (see page 53). It also includes projects like DHIS2 for cross-sector monitoring of the SDGs or Agriculture that leverage HISP digitalization expertise, country capacity, and DHIS2 platform flexibility in an entirely new sector.

Currently, 11 countries in Africa and Asia are also using DHIS2 in the education sector to manage both aggregate and individual-level data. We are now witnessing Ministries of Education leading the deployment and planning of in-country capacity-building activities, which reflect country ownership. Based on our experiences deploying the generic DHIS2 software for collecting individual student and teacher data, we realized that it would be more efficient to develop a custom DHIS2 application for individual data at the school level. You can read more about this app on page 55.

Taken together, these examples show how DHIS2 has gone beyond being a digital solution for health to being a key part of LMIC Digital Public Infrastructure, which you can learn more about on page 33. Building capacity in the digitalization process to support governments has also been the focus in the Information Systems Research Fundamental workshops held in the African region in 2023 and in Asia in 2024. Read more about these courses on page 19.

To support this expansion of DHIS2 use and HISP’s work, in 2023 we made a significant decision regarding the HISP and DHIS2 names. When the project first began, these were acronyms that reflected our focus on strengthening Health Information Systems (HIS). However, in recent years, several partners pointed out that the “H” in these names was becoming a barrier, as it led stakeholders in other sectors to perceive DHIS2 as only a “health” information system, not a generic solution that could meet their needs. So, to support growing cross-sector demand while still honoring our history, we decided that from 2023 onward, the official names of our software platform and organization are simply DHIS2 and HISP, not as abbreviations, but as names in and of themselves.

It’s in this same spirit that we move into 2024, the 30th year of HISP: Respect for what our community has achieved and a willingness to continue to innovate and adapt to change.

Professor Kristin Braa
Director of HISP Centre, University of Oslo
2023 Highlights

DHIS2 used to help contain Ebola outbreak in Uganda with HISP support

USAID report identifies DHIS2 as cost-effective logistics platform

WHO launches health digitalization initiative in Iraq with DHIS2

New Global Fund-supported DHIS2 Planning & Budgeting online course (page 59)

DHIS2 for Logistics supports MEDEXIS-DHIS2 interoperability in Mali

More than 50 participants attend first ever DHIS2 Integration Academy in Rwanda

January

February

March

July

August

September

Uzbekistan deploys DHIS2 for TB with WHO, USAID, and HISP support

DHIS2 for Education conference in Entebbe, Uganda, results in new communiqué

SDG Digital: Ola Titlestad & Monica Amuha present DHIS2 at UN HQ

New Global Fund-supported DHIS2 Planning & Budgeting online course (page 59)

HISP Middle East & North Africa (MENA) joins the HISP network

Information Systems (IS) Research Fundamentals course held in Rwanda

DHIS2 for Education team commissioned for UNESCO GEM background paper

DHIS2 integration team participates in FHIR integration workshop
HISP presents in Bogotá, Colombia, with PAHO for the Regional Meeting on Safe Vaccination

Saudigitus and Education team pilot Learner Attendance App in Mozambique

April

HISP and WHO host Routine Health Information Systems Academy in Jordan

DHIS2 v40 and Android App v2.8 released

May

350+ participants attend DHIS2 Annual Conference: “Sharing Innovations Across Sectors”

Launch of first online DHIS2 Academy course in Spanish

June

HISP and WHO host Routine Health Information Systems Academy in Jordan

DHIS2 v40 and Android App v2.8 released

April

Wellcome awards HISP Centre grant for Climate & Health (page 12)

7 HISP groups & 29 countries attend Asia regional DHIS2 conference

November

HISP Zimbabwe and HISP Ghana join the HISP network (page 30)

Chile deploys DHIS2 for public health surveillance

October

Kristin and Jørn Braa of HISP Centre receive the AIS Impact prize

IS Research Fundamentals course held in Togo (page 19)

HISP Centre signs MoU with CARPHA for collaboration in the Caribbean

December
Climate change poses unprecedented challenges to global health, demanding innovative solutions to mitigate its impact. Understanding the interrelation of weather, environmental factors, and health outcomes is complex, and requires both integrated data and interdisciplinary expertise. The impacts of climate change have been shown to hit people in low-income countries the hardest—whether through increases in the spread of infectious disease outbreaks, or damage and death from floods, droughts, or other extreme weather events. Strengthening health systems in LMICs in the face of climate change means making them climate resilient. This means developing systems that help national and local health authorities understand the specific climate-related threats posed to their populations and that facilitate targeted actions that reduce the impact on human health.

In November 2023, Wellcome announced a £14.5 million award to the HISP Centre to launch a multi-year action research project on Climate & Health and support core DHIS2 resources that are shared across all domains. Through this project, we aim to collaborate with local, regional, and global partners across disciplines to develop innovative Climate & Health solutions based on the DHIS2 platform that address local needs and leverage existing local DHIS2 capacity, systems, and data. These local innovations will then be developed into a generic DHIS2 Climate & Health toolkit that will be freely available for use around the world. In addition to helping countries respond, learnings from this project will contribute to the global body of knowledge on the impact of climate change on human health, helping inform policy, planning, and funding on a global scale.

To provide the interdisciplinary expertise required for this project, the HISP Centre is partnering with subject matter experts from the Barcelona Supercomputing Center, the International Research Institute for Climate and Society at Columbia University, and the Center for International Climate Research. We have also convened an interdisciplinary working group at the University of Oslo including experts on digitalization, machine learning, data/statistics, health and climate, and are forging partnerships with stakeholders and research partners in LMICs. We have already begun building a Climate & Health project team in the HISP network, and will be rapidly ramping up this project in 2024!

DHIS2 is by far the most widely deployed health information management system, and the team brings a holistic, socio-technical approach to its development and implementation, working closely with the communities they support. We’re pleased to be supporting the team to develop and maintain this essential digital health infrastructure, which will help deliver effective healthcare and high-quality research to understand and adapt to the effects of climate change on human health.”

—Tariq Khokhar, Head of Data for Science and Health, Wellcome Trust
Breaking Climate & Health data out of silos to strengthen climate-resilient health systems

Incorporating climate data into DHIS2 can support the combined analysis and identification of causal relationships between climate change and health outcomes. This can help health programs to plan climate-informed resource allocation, respond to localized early warnings with targeted interventions to maximize effectiveness and reduce cost, and generate evidence to show the impact of climate change on health. Here are a few examples of how we believe DHIS2 for Climate & Health can help:

**Analyze Climate & Health impacts in near real-time:**
Move from ad-hoc or sporadic Climate & Health analyses to routine climate-informed disease surveillance and automated alerts that include climate data to better support real-time decision making.

**Think global, act local:**
Integrate global climate and weather data sets, incorporate local meteorological data, and leverage enhanced DHIS2 mapping and visualization capabilities to provide highly targeted, localized insights to users.

**Generate evidence:**
Show the linkages between extreme weather and negative health impacts, which can be used for strategic policy development and climate change adaptation plans.

**Support sustainable, cost-effective systems:**
Leverage existing knowledge, training, management, hosting, and broad use of the platform to reduce costs and fast-track from ideation to actual use.

Learn more: dhis2.org/climate
DHIS2 Academies, such as this course on Analytics Tools held in Togo, are a key part of the HISP approach to capacity building.
The HISP Approach: Local Innovation, Global Sharing & Strengthening Capacity for Sustainable Systems

Action-oriented research, participatory user-centric design, and strengthening local information system capacity have been at the heart of HISP since its origin in 1994 in post-Apartheid South Africa as a joint project between the University of Oslo and the University of the Western Cape. The central idea was to explore how digital tools could support a decentralized health information system, through the process of developing those tools in collaboration with local stakeholders and users in the field.

Since that time, HISP researchers have engaged with health and IT experts and practitioners in low- and middle-income countries to refine and implement DHIS2 systems, following the Scandinavian model of participatory design. The HISP model helps ensure that the software platform we design meets the needs of local users, and supports the development and sharing of local innovations around the world.

Central to the HISP approach is the concept of action research: exploring real-world problems and developing solutions in a local context, transforming the generic elements of those solutions into globally shared tools, and facilitating local innovation and adaptation with those tools in other countries. These iterative processes form a cycle of innovation, country-to-country sharing, and feedback between local stakeholders and the HISP network. In the HISP network, we operationalize this action research cycle through three mutually reinforcing activities: system design in context, software development, and implementation support. The HISP Centre’s organizational structure is designed to reinforce this approach (see page 28-29).

A core HISP principle is that information systems should be locally owned, and the success of DHIS2 rests on our holistic approach to building and sustaining country capacity to customize, manage, and sustain their own systems over time. Our capacity strengthening approach has several key components:

- **Networks of academic training and research** foster IT capacity through M.A. programs with universities in Africa and Asia, and support knowledge and innovation sharing.
- **The HISP Ph.D. program at UiO** has graduated 72 Ph.D. scholars to date, the majority of which are from the Global South, and several of whom now lead HISP groups.
- **Postgraduate academic programs at UiO** in Informatics and Digitalization in the Health Sector support information systems research.

The **DHIS2 Academy program** builds country and regional capacity on key DHIS2 skills and provides a platform for cross-border sharing of experiences and best practices (see page 58-59).

- **Direct country support by HISP groups** working with local DHIS2 core teams reinforces country capacity through the apprenticeship model.
- **Networks between universities** promote DHIS2 research and development in low- and middle-income countries.

Taken together, the holistic HISP approach of action research and capacity building has been the driving force behind our success in helping strengthen public sector systems—in health and beyond—through South-South-North collaboration on the iterative design, implementation, and use of DHIS2.
Expanding the HISP network to support new countries & sectors

Interview with Dr. Edem Kossi of HISP West & Central Africa

Could you tell us about HISP WCA’s work in West and Central Africa?
The first country HISP West and Central Africa (WCA) supported with DHIS2 implementation was Sierra Leone in 2007. Since then, thanks to country interest and partner investment, we have grown to 23 countries in total. We also support the West African Health Organization (WAHO) at the regional level and collaborate with other HISP groups to support WHO AFRO on the continental level.

When we began this work, countries were using a variety of HMIS systems. But very quickly everyone saw that the Sierra Leone case was different, that suddenly—for the first time—data from various sources were brought into a single system that also has some analytical capabilities. This looks obvious today but back then, it was quite an achievement and in a country that was just rebuilding from a devastating civil war. The news quickly spread to other countries and sparked a regional change. Other countries started using DHIS2, and everyone realized that now, at the central, regional, and district levels, people were suddenly able to analyze and compare data themselves. That was really a giant step forward. I think the success of DHIS2 is largely thanks to the dedication of people in these countries, who understand the value of the system for the country and the value of data for the development of their community.

How have you expanded your group and the HISP network to meet this demand?
When we started, there were not many DHIS2 implementers out there. So, as the number of countries grew, we recruited people to be able to support them. Today we have a big team at HISP WCA, but there are also some large countries in the region that need closer support. At the same time, we are seeing a trend toward greater independence across Africa, where countries want to show that they can do things themselves, but that they face some capacity challenges in becoming fully self-reliant. We decided to create new HISP groups to provide better support to these countries, starting with Mali, then the Democratic Republic of the Congo (DRC) and Côte d’Ivoire.

So, the creation of new HISP groups is a way to respond to local and country challenges and needs. Through the process, we are showing our partners that there is enough DHIS2 expertise locally, so that even if there is a crisis that their core team cannot address, then HISP can quickly bring together people to support them. This is encouraging partners and countries to initiate more projects with DHIS2. For example, in DRC, DHIS2 activities had been a bit limited. But since we started forming HISP DRC around four years ago, partners and stakeholders have gradually become confident in initiating DHIS2 activities. For instance, they recently decided to implement DHIS2 as the country’s single health campaign management tool. I think having a HISP group there has helped assure them that if they go with DHIS2, they have people on the ground on a permanent basis who can provide support.

How is HISP supporting building capacity for digitalization?
In each country, we always try to work in a participatory way with users and stakeholders, and to empower people. We start by building local capacity first. We also try to not just jump right into digitizing existing tools, but to promote the idea of using digitization as an opportunity for innovation, for improving processes and making things easier and more efficient for people. But most importantly, we share the value of empowering and listening to people. So that’s why we always try to discuss approaches collaboratively and evaluate existing practices, what needs to be changed, and what the impact will be. And together we assess the situation as we move forward, and the local team learns by doing. Today, we see that country DHIS2 core teams are capable of managing their systems themselves. That is something to be
opportunity, especially for the younger members on our team.

How did the Information Systems Fundamentals course in Lomé in 2023 contribute to this?

This is related to one of the challenges in growing our network. Some of us who have been involved with HISP for many years have had the opportunity to go through the Information Systems Ph.D. program at UiO. Doing that program helped us learn the HISP history and approach, and to be exposed to the body of knowledge that guides our action research and implementation. Not everyone who has joined the community or HISP network recently wants or has time to do a Ph.D., but it is very important that everyone knows our history – because if you don’t know where you are coming from you cannot know where you are going. So, we felt it was very important to bring the new members together and expose them to our history and the body of knowledge related to our work. Most importantly, we wanted to make sure that these newcomers are not just IT people focused on the IT part, but that they are digitalization partners with the agenda of empowering people in their daily work.

So, we invited participants from seven HISP groups; partners from Ministries of Health, Agriculture, and Education from six countries; and researchers from two universities in Lomé to join for a weeklong course on Information Systems Research Fundamentals. We shared the history of HISP and the key role that our participatory approach has played in our success, discussed information systems theory, and worked through real-world cases that participants had brought with them from their countries. It was very useful for the new HISP group members, and for the Ministry participants it was eye opening. It really helped them see their work with information systems differently, and inspired them to think about how they can do things better. They also learned about action research, how the various theories can be applied in IS research, and most importantly, how the IS knowledge can inform their interventions and how they can contribute back to the IS field.

This is also relevant beyond the health sector. As we are starting to work with various sectors like Education, Agriculture, and so on, we see that the HISP approach to digitalization can be applied to support the implementation of DHIS2 and other digital systems in different contexts. This helps support the use of Digital Public Goods to support all SDGs, not just health. For HISP groups and DHIS2 implementers who are new to the community, this can also be an opportunity to work with a system from the start. DHIS2 is already established in the health sector in almost all the countries in our region, but going into new sectors allows people to learn and apply things in an intensive way, working through the process of stakeholder alignment, participatory design, and configuration from the ground up. In Togo, we have had this experience in the Education sector, which has been a great pride of, having good people locally who are able to keep country systems alive and continuously evolving.

Interview
Jerry Azawa of HISP West & Central Africa engages in the weeklong course on information systems and digitalization held in Lomé, Togo.
From IT experts to digitalization partners: Strengthening information system design & implementation capacity in LMICs

In 2023, the HISP Centre, with support from Global Fund, launched a new initiative to reinforce capacity for action research and participatory information system design in LMICs. These principles are a key part of the HISP approach (see page 15) that have been central to the adoption and sustainability of the DHIS2 platform, and are broadly applicable for information system design across sectors. While many HISP group leaders have completed a Ph.D. with HISP and have studied this material in depth, several newer HISP members—and our local partners—have not had this experience. This weeklong course was designed to help share knowledge and experience, and to support the development of local digitalization expertise in LMICs.

The first version of this course was held in Kigali, Rwanda, in September 2023. The workshop in Lomé, Togo, in December gathered members from seven HISP groups in the West and Central Africa region, as well as Ministry of Health participants from the Democratic Republic of the Congo (DRC), the Central African Republic, Senegal, Guinea, Côte d’Ivoire, and Togo, plus the Ministry of Agriculture DRC, Ministry of Education Togo, and two universities in Lomé. Prior to the event, participants engaged in fieldwork to see how users were using their information systems, and what the challenges were. These case studies were discussed during the workshop in light of the research principles being discussed, giving participants the opportunity to collaboratively discuss interventions that could address real-world challenges.

The feedback from Ministry and university participants was very positive—several described the course as “eye-opening.” It helped them understand how to approach information system design and implementation in a more organized way, grounded in stakeholder alignment and participatory design. *Bringing different Health, Agriculture, and Education sectors together was particularly enlightening, as it demonstrated that the HISP approach to digitalization is relevant across sectors.* The course in Togo has inspired interest in collaboration between HISP and local universities on Master’s courses on information systems. The HISP Centre plans to hold a workshop for the Asia region in 2024.
See how countries around the world are using **DHIS2**

125 countries use DHIS2

- National scale
- Sub-national scale and other systems

84 DHIS2 systems for Health
29 DHIS2 systems for Logistics
11 DHIS2 systems for Education

**New in 2023**

- 5 New countries reach national scale with DHIS2: Chile, Comoros, Ecuador, Maldives & Kyrgyzstan.
- 3 Countries deployed DHIS2 for the first time: Egypt, Venezuela & Costa Rica, helping expand DHIS2 in Latin America and the Middle East and growing our Spanish and Arabic language communities.

**Learn more**

Read country stories about DHIS2 impact at [dhis2.org/in-action](http://dhis2.org/in-action)

---

**Chile: Building an Innovative Epidemiological Platform with Local Expertise and Community Support**

The Ministry of Health developed a cloud-based implementation of DHIS2 at national scale, improving effectiveness and lowering costs, using public resources and input from the global DHIS2 community.
3.2 billion people live in countries using DHIS2 for health at national scale

Mali implements an integrated eLMIS leveraging DHIS2 and MEDEXIS for real-time logistics management
Integrating digital logistics management software with the existing national DHIS2 system allows Mali to achieve end-to-end electronic health supply chain management for data-backed timely stock replenishment, thereby reducing stock-outs in health facilities.

Sustaining high vaccination coverage against priority diseases by leveraging DHIS2 data in Timor-Leste
The Ministry of Health in Timor-Leste conducted a nationwide Supplementary Immunization Activity in record time using DHIS2, raising the national vaccination coverage rate from 86% to 95%.

Uganda responds to an Ebola outbreak using DHIS2 tools and lessons learned from COVID-19
Ugandan health authorities successfully stopped an Ebola Virus Disease outbreak in its tracks using their existing DHIS2-based eIDSR system for alerts, outbreak surveillance, and case management.
Using a District of Excellence approach in Uganda has helped improve utilization of education data and explore cross-sector linkages.

HISP Rwanda has worked with local stakeholders to develop dynamic scorecards that facilitate data analysis and decision making.
Enhancing subnational DHIS2 data use through Districts of Excellence

Implementation of DHIS2 has improved the efficiency, quality, and timeliness of data collection in countries around the world. While data in DHIS2 is available for use at all levels of the health system, subnational stakeholders in many countries lack the training, tools, and support structures to use their data effectively. To help change this, the HISP Centre and HISP network are engaged in an ongoing effort to enhance subnational data use through the District of Excellence model.

**Tanzania:**

In Tanzania, the District of Excellence provides a learning environment where approaches and technologies can be collaboratively developed and tested for improved processes of monitoring, evaluation and learning, facilitating data management, analysis, and use. HISP Tanzania has worked with two exemplar districts in the Dodoma Region, one urban and one rural. Following a baseline assessment, several interventions were planned and carried out, using participatory design and building on existing practices and routines. These included the design of customized dashboards for district- and facility-level users, local capacity building, and establishment of monthly data use routines enabling users to engage, discuss, and interpret their data. Results as of 2023 show the use of these dashboards to inform local actions, the scaling of capacity for data use down to health facilities, and sharing and dissemination of best practices.

**Rwanda:**

HISP Rwanda has worked on strengthening data utilization within pilot sites in the Districts of Excellence in Rwanda through the implementation of scorecards and dashboards, and has engaged in regional collaboration with HISP Tanzania to share approaches and learnings. The key steps in their process are coordination meetings, assessing and addressing gaps, documenting interventions, and publishing and replicating results. After evaluating and documenting data use processes at select health facilities, the team took a collaborative action research approach, working with local stakeholders to configure local scorecards and dashboards in DHIS2, then participating in monthly and quarterly meetings to document processes and challenges and assess data use gaps. This work has resulted in increased data use capacity, improvements in use of data in routine reports and meetings, promotion of local data availability, and translation of routinely collected data into meaningful information that can support decisions at the local level.

**Uganda:**

HISP Uganda has been working to support effective data use in Uganda across sectors. In the Education sector, they have taken a District of Excellence approach, bringing together system implementers, practitioners, and researchers in collaborative work across thematic areas. This facilitates opportunities for generating knowledge and sharing lessons about how data can be used at the district level—where it has historically been under-utilized—to improve the education system, and to explore cross-sector linkages such as school-based disease surveillance. This approach, which involves implementation research in four districts and the engagement of local Ph.D. and Master’s students, was formalized in 2023 through an MoU with the Ugandan Ministry of Education and Sports. The DHIS2 for Education project has been active in Uganda since 2019, and has helped make education management at the district level more efficient and effective in the exemplar districts.
Monica Amuha (HISP Uganda) and Ola Tistlestad (HISP Centre) speak about HISP and DHIS2 at UN Headquarters for the SDG Digital Day event in 2023.
Contributing to the impact of HISP & DHIS2
Interview with Monica Amuha of HISP Uganda (and Ph.D. candidate at UiO)

What has been the focus of your work with HISP Uganda?
I’ve been working with HISP Uganda since August 2017. Because of my background as a pharmacist, I was supporting the national implementation of the web-based antiretroviral ordering and reporting system, which is also based on DHIS2. When I became involved with DHIS2 for Education in 2019, I was part of the team that supported the initial engagements with the Ministry of Education and Sports and Save the Children Uganda. I then supported the implementation. I was working with the team to do the requirements gathering, understand the education landscape, and identify gaps where DHIS2 could help decentralize data management and improve data use. Along the way, I became essentially the team lead for the DHIS2 for Education project in Uganda, working with HISP Uganda and the global team as the project has expanded.

What do you enjoy most about working with HISP?
I like that HISP focuses on creating impact by putting data in the hands of the users—working with people to give them what they need to do their jobs well—and I find it very motivating working in that environment. I feel that it has more impact, because it’s touching the lives of the people who need it most. Before, I was coming from a project-oriented mode, where you have key project deliverables to meet, and yes, supporting the Ministry of Health, procuring commodities and having them delivered to health facilities, but I wasn’t as close to the community. With HISP and DHIS2, you move closer to end users and the community.

What impacts have you seen from your work with DHIS2 so far?
For the education sector, I see change. In Uganda, for example, we are working in four districts and I’ve seen DHIS2 change the way things are done. Before, whenever they needed data, they would have to go back to schools and look for specific data, like enrollment numbers to plan for allocating school grants. They didn’t have access to that data at the district, but now with DHIS2, a planner can say “with the click of a button, I can access my data. I can plan. I can budget for the sector.”

How has your journey as a HISP Ph.D. student been?
Coming from a health background into the world of information systems research was a complete paradigm shift, and has been a challenge for me. But, I think the Ph.D. has helped get me out of my comfort zone and try something new. When I look at my colleagues in the pharmacy world, not many have gotten involved in health information systems, so this has been a great professional opportunity for me.

Going into a totally new domain was also challenging. Education? I’m not an educationist. I’ve had to unlearn and learn—with support from the faculty and colleagues, of course. All the specific needs of the education system have to be put into context to see how to modify the system and make sure it fits the processes and ultimately addresses the needs of the users.

I hope to use what I’ve learned about information systems and action research, and translate that knowledge into solving education data challenges. As more countries are coming on board, the knowledge we generate through action research can help ensure that their systems are successfully implemented and add value to education service delivery.

In 2023 you presented DHIS2 to a global audience at UN Headquarters—what was that like?
Last year’s experience speaking at the SDG Digital forum was mind blowing. Being on that platform, presenting our work and its impact, I felt I was representing the voices of the people who are out there working in the community. It was an honor. Now, when I meet new people and they want to connect with me online, they find that video from SDG Digital. So now, people are meeting me and they think that I’m doing all of these wonderful things, but I see it as just a contribution. I think we are in this world to make a contribution, so maybe this is my piece, continuing the good work of HISP and DHIS2.
2

About the HISP Centre
Part 2 - About HISP Centre

HISP Centre Annual Report 2023

- Consolidate learning and potential guidance around DHIS2 architecture
  - Document lessons learned from selected countries and jointly (UNICEF and HISP groups) develop better guidance to others

- Strengthen app development collaboration and processes
  - Capacity building and meetups
  - Shared registry/list of existing apps across all HISP groups
  - Explore funding models for local app development and maintenance

- Strengthening HISP group organisational development through a mentorship model
  - Formalise collaboration across HISP groups to help new/growing HISP groups develop sustainable organisations
  - Other suggested activities to help HISP to HISP collaboration on organisational strengthening

Will dedicate time next week to plan Climate & Health activities

Notes from all sessions here:
https://drive.google.com/document/d/1Aa_TFC32iLjQ8ubk_U63MA8RbK4hX8kq
The HISP Centre:
Coordinating global efforts on information system research, development & capacity strengthening

The HISP Centre at the Department of Informatics (IFI), University of Oslo (UiO) is an interdisciplinary center that promotes research, innovation, and capacity strengthening on information systems and digitalization for health, education, and other programs that support the Sustainable Development Goals. Through our work, we help LMICs to design, deploy, and sustain digital tools for improved public sector governance through decentralized data collection and use. Much of our work centers around the open-source DHIS2 software platform. The HISP Centre leads the development and maintenance of DHIS2 and related global resources and tools to support local implementation, innovation, and capacity strengthening.

HISP began in 1994 as the Health Information Systems Programme, a Ph.D. research collaboration between UiO in Norway and the University of the Western Cape in post-apartheid South Africa. The project has grown over time to meet growing DHIS2 demand in LMICs, first becoming a section within IFI, then achieving research centre status in 2022.

Organizationally, the HISP Centre is divided into six groups: Research, Implementation Support, Software Product, Software Engineering, Training & Communication, and Project Support.* These groups are made up of a mix of local employees at UiO and remote employees based around the world. We work within and across these groups—and in collaboration with our partners in the HISP Network (see page 30)—to achieve our cross-cutting goals.

Total HISP Centre Staff

156

63% Remote (98 staff members)

37% At UiO (58 staff members)
*Note: Prior to April 2024, Software Product and Software Engineering were part of one combined Software Development group.
The HISP Network: Support sustainable, innovative & effective locally owned systems

HISP is a global collaborative network made up of 23 HISP groups (and counting!) that are based in-country in Africa, Asia, the Middle East, and the Americas, with the HISP Centre at UiO playing a coordinating role. Collaboration between HISP groups is based on a set of guiding principles that emphasize strengthening sustainable national health information systems, empowering local staff, supporting local ownership, facilitating data use for improved outcomes, and promoting sharing, transparency and trust. These principles are codified through a Memorandum of Understanding between each HISP group and the HISP Centre.

HISP groups are the primary DHIS2 partners with national Ministries of Health in the countries they support. They also partner with Ministries of Education, Agriculture, and other government stakeholders and agencies, depending on local interest in using DHIS2 across sectors. They provide support for DHIS2 implementation and maintenance, local customization and configuration, app development and integration, and in-country and regional capacity strengthening through national trainings and the DHIS2 Academy program. They also share local stakeholder perspectives with the global DHIS2 team to inform software and resource development, collaborate with the global team on design and testing of new features and products, including the adoption of DHIS2 for new use cases and domains, and engage in research projects with researchers, Ph.D. scholars, and Master’s students from the HISP Centre and local partner universities.

HISP groups are led by DHIS2 experts, many of whom have a Ph.D. from the HISP program at UiO and have been part of the DHIS2 community for more than a decade. The close and ongoing collaboration of the HISP network has been the main reason for the widespread success of DHIS2.

HISP is still growing. In 2023, we welcomed three new HISP groups to our network: HISP Ghana, HISP Middle East & North Africa (MENA) and HISP Zimbabwe, and while this report was being prepared in early 2024, we welcomed three additional groups in West Africa!

### HISP Network as of 2023

**Africa**
- HISP Côte d’Ivoire (2024)
- HISP DRC (2024)
- HISP Ethiopia
- HISP Ghana
- HISP Kenya
- HISP Mali (2024)
- HISP Nigeria
- HISP Rwanda
- Saudigitus
  - HISP South Africa
  - HISP Tanzania
  - HISP Uganda
  - University of Malawi
  - HISP West & Central Africa
  - HISP Zimbabwe

**Asia & the Pacific**
- HISP Bangladesh
- HISP India
- HISP Indonesia
- HISP Pakistan
- HISP Sri Lanka
- HISP Vietnam

**Middle East**
- HISP MENA

**Latin America & the Caribbean**
- HISP Colombia
Leveraging Trust, Collaboration & Sharing to Expand into New Domains

Interview with Tiwonge Manda of the University of Malawi

Could you tell us about your history with HISP in Malawi?
I first got involved with HISP around 2006, and started doing a Master’s with UiO in 2007. This led me to get involved in the national health management information system (HMIS) work for the Ministry of Health (MoH). In 2009, I worked on the transition from DHIS v1.3 to DHIS2. Then, starting in 2010, I was part of the UiO Ph.D. MobiHealth project, which introduced the first DHIS2 mobile app to the HMIS. Today, we are continuing that HMIS work, while expanding the portfolio of activities that we support. For example, two years ago, we added the integrated community health information system (iCHIS), and that effort is ongoing. Alongside the MoH, we have also expanded to support projects with the Ministry of Agriculture (MoA). Previously, the University of Malawi and HISP Malawi operated independently on DHIS2 activities. In 2023, we decided to align efforts and bring both teams under the HISP network to coordinate with UiO.

How does your work relate to Climate & Health?
Starting in 2018, we began implementing the National Agriculture Management Information System (NAMIS) for the MoA. We developed statistical and early warning modules in DHIS2, like a food situation assessment and production estimate surveys. This system includes the collection of some weather data in DHIS2, such as rainfall, which has become a key source for meteorological forecasting for the agricultural sector in Malawi. NAMIS has been rolled out in 12 districts so far, and in 2024 we will, in collaboration with the MoA, start expanding it to the rest of the country. At the end of 2022, we also got funding from the World Bank through the Malawi Government to help start a center for resilient agriculture systems (CRAFS).

In the context of Climate & Health, we are looking into how we can leverage Malawi’s DHIS2-based systems—food security, nutrition surveillance, iCHIS, HMIS—to develop a nutrition early warning system that can tie together climate, food production, and nutrition to show the impact on human health and help guide interventions. Right now, health authorities only learn about a rise in malnutrition cases from routine reports from health facilities, or if they schedule a nutrition campaign, but we think we can do this more proactively by leveraging these data sets. This is particularly significant now that we are in a period of El Niño, which has had disastrous effects on our agriculture and national food security. The president of Malawi, Dr. Chakwera, has declared a State of National Disaster in 23 districts impacted by the El Niño weather conditions. An early warning system can help drive action to support affected households. In addition, we’re also looking into systems for climate-sensitive diseases like malaria and cholera.

In addition to the HISP-Wellcome project, there are several related initiatives. There is a UiO Ph.D. project in Malawi looking at making climate data more accessible and actionable to subsistence farmers. We are also in discussion with WHO HQ and the WHO Malawi country office on infectious disease early warning systems. We have talked to MoH officers from nutrition, health, and environmental programs at various levels about data gaps and opportunities. The interest in Climate & Health is definitely growing, and we hope to support it by helping build early warning tools and capacity, and by leveraging the work we have already done with DHIS2.

How have you been able to work with so many organizations effectively?
A lot of the connections that we have and the support that we get stems from our efforts over more than 10 years to keep the HMIS going and expand its functionality over time. We’ve built trust and a network of collaborators. For example, there were initially doubts in-country about whether Tracker could handle iCHIS. The MoH reached out to ask if it could be done, and they took our word for it because of the trust that had been built over a decade. Being part of the HISP network also makes supporting different pieces of work easier—leveraging lessons learned and similar work that was done elsewhere. Now, working on a solution for long-lasting insecticidal nets on very short timespans, we have been able to learn from the HISP team.

Both these national and international networks have helped us get started with Climate & Health quickly. We get learnings and tools from UiO and other countries, and we’re already in touch with the key focal people in Malawi, so when these early warning projects come up, our contacts at the MoH reach out to get us involved.

HISP Centre Annual Report 2023
Part 2 - About HISP Centre
Malawi’s national agriculture management system, developed with support from the HISP network, brings together data from various sources to improve food security.

The Ministry of Education and Training in Eswatini leverages the DHIS2 platform to improve education management.
Sharing Innovations Across Sectors

In selecting the theme for the 2023 DHIS2 Annual Conference, we wanted something that reflected one of the key strengths of the HISP network and DHIS2 community: the willingness to share innovations openly between groups and across borders, to learn from experiences in other countries, and to adapt solutions to new contexts. We chose “Sharing Innovations Across Sectors” to reflect the fact that these solutions are increasingly addressing needs beyond the health sector, in Education, Agriculture, and more.

Building from our solid foundation in health, this openness to new domains has helped position the HISP network as digitalization partners for LMIC governments and DHIS2 as a key element in countries’ Digital Public Infrastructure supporting the achievement of the Sustainable Development Goals.

Here are a few examples of recent cross-sector innovations from the HISP network and DHIS2 community. Visit our website to read the full stories, and check out the DHIS2 Community of Practice where the global community shares innovations, experiences, and lessons learned in real-time: community.dhis2.org

**Mali implements an integrated eLMIS leveraging DHIS2 and MEDEXIS for real-time logistics management**

Integrating digital logistics management software with the existing national DHIS2 system allows Mali to achieve end-to-end electronic health supply chain management, reducing stock-outs in health facilities.

dhis2.org/mali-integrated-logistics

**Eswatini implements a DHIS2-based digital education management information system to promote equitable access to quality education**

The Ministry of Education and Training revamped education planning and management, in the aftermath of the COVID-19 pandemic, by leveraging features of the DHIS2 platform.

dhis2.org/eswatini-dhis2-emis

**Malawi supports small-scale agriculture and promotes food security using climate data in DHIS2**

A comprehensive DHIS2-based agriculture information system harmonizes climate, demographic, and agricultural data to improve food security in Malawi by supporting over 150,000 households.

dhis2.org/malawi-climate-agriculture

**Leveraging DHIS2 to plan, monitor, and evaluate national development programs in Uganda**

The government of Uganda adopted DHIS2 as a government-wide M&E platform to help achieve the country’s Vision 2040 development goals.

dhis2.org/uganda-e-governance-platform
Part 2 - About HISP Centre

HISP Centre Annual Report 2023

Since HISP’s beginning in 1994, our work has been funded by the Norwegian Agency for Development Cooperation (Norad), the University of Oslo, and the Research Council of Norway, with the goal of strengthening health systems in the Global South. In 2013, Norad, PEPFAR, and The Global Fund to Fight AIDS, Tuberculosis, and Malaria committed to support the HISP program together due to DHIS2’s expanding footprint. Later, UNICEF, the CDC, The Bill and Melinda Gates Foundation (BMGF), and GAVI, The Vaccine Alliance came on board, and remain active investors in HISP and DHIS2. These health-focused partners were joined in 2019 by STELLA/Novartis for health supply chain and logistics and by IDRC and GPE KIX (plus additional funding from Norad) for the education sector. In 2023, the Wellcome Trust announced two multi-year grants to the HISP Centre to fund both our core DHIS2 development and operations and our new engagement in the field of Climate & Health.

Our investors are not merely financial partners. They are our close collaborators on the HISP approach to supporting countries in strengthening their digital systems for improved governance, first in health and increasingly across sectors. We work with them through multi-year agreements that include research, software development, implementation, and capacity building, both at the global level and at the country level through the HISP network. Each year, our investors come together with us in Oslo for an annual meeting to review our progress and help drive us forward, and to help facilitate collaboration and coordination across the investor group.

While our investors have different health program priorities—and, with the addition of IDRC and GPE KIX, priorities in other sectors—their funding for HISP and DHIS2 balances and complements each other, and supports countries in information system strengthening overall. Sharing financial support across investor organizations reduces financial risk, as no one investor is responsible for supporting the core DHIS2 platform by itself, and they can collaborate to make up for individual shortfalls, and reprogram funding to meet emerging needs, such as the COVID-19 pandemic and the climate change crisis.

This stable funding has enabled HISP to expand and sustain over time, to have the flexibility to explore the latest technologies, to develop a network of experts across countries and regions, and to continue delivering a stable and generic open-source platform that can be adapted to meet new challenges and local demands. Their ongoing support also ensures that DHIS2 remains a sustainable free and open-source solution, a digital public good available for use by all.
Investing in HISP to maximize health system impact

Interview with Dr. Carl Kinkade of the Centers for Disease Control and Prevention

What has the collaboration with HISP meant for CDC?

The number one thing is that it has helped us advance collaborative program work in countries. We haven’t had a mechanism in the past that went across all of our centers and our programs like our cooperative agreement does. Now we have a lot of programs engaging with UiO, and we’re getting questions about DHIS2 from many more, like border surveillance, antimicrobial resistance, mortality surveillance, vaccine-preventable diseases, malaria, global health security, NCDs—the list is long. Thanks to our agreement, we have a way to frame these conversations and structure our funding, which supports collaboration between programs at the country level, and with other funding partners, like Global Fund, USAID, the Gates Foundation. Compared to how things worked before this agreement, we’re doing much more collaboration now than we used to. The impact has been huge.

How have you worked with HISP to support country system strengthening?

Through UiO, we’ve funded HISP group work in a number of countries, like eIDSR in Pakistan, lab integration in Zambia, case-based surveillance in Sierra Leone, One Health in Guinea, the vaccine platform in Liberia, as well as work with Africa CDC. We didn’t have the technical expertise at HQ or in the field offices to support these implementations ourselves. This is where the HISP network is critical. It’s not just about software—it’s really helpful to have a local partner in the region, whether we’re working in Cameroon or Guatemala, who can ask the right questions and identify gaps and opportunities. The HISP network provides support that we can’t get from other partners, and they also provide continuity. A lot of countries in the same region encounter similar problems, so a HISP group that has solved the same problem in one place can use what they learned in another.

This is also a really good benefit of DHIS2 itself. If one country does some work that can be put back into the DHIS2 software to make it better, the next country gets it for free. Like the Covid toolkits and how they started in Sri Lanka, then spread to other countries. They all improved it, and all of those improvements went back out there for other countries to use. When Uganda developed a system for generating travel passes for truck drivers, it was then picked up by Mozambique. It’s hard not to see the benefits of this. All these countries are solving the same problems, they find a way to make customizations or improvements, and then those become available for other countries.

How does this compare to other CDC investments?

I want our leadership to feel like this money was invested well. One of my arguments about the program early on was that we can invest in one place and support a lot of countries. Before, we would go into a country and do a support activity, then do it all over again in another country. But we realized this wasn’t sustainable—not if we want to reach all the countries in the world. But one thing we can do is pool our money in one spot to support tools that most countries can benefit from. When I share these stories with CDC leadership, they say, “Wow, we didn’t realize that so much got done.”

CDC spends a lot of money on our other activities, but we’re not getting the same return on investment as we do from our work with HISP. From a country support perspective, I think there’s been good ROI.

This has percolated up to our leadership. A lot more people at high levels know about DHIS2, and understand the importance of system strengthening and collaboration between programs that it supports. At CDC, we’re software agnostic. I’m seen as the big “flag waver” for DHIS2, but ultimately it’s up to the country—whatever they want to use, we’ll help them make it as good as it can be. But now we have a number of programs that are very interested in using DHIS2, and my goals are to get them engaged, continue to expand our collaboration with partners and country offices, and continue to advance the knowledge of our own people, so that our teams can really understand what DHIS2 can do and we get the most of our investment with UiO.
The HISP Centre is primarily funded through single- and multi-year grants through a cooperative group of long-term investors, in addition to funding for research and academic programs from the Department of Informatics (IFI) at the University of Oslo. IFI contributes with permanent academic staff spending most of their research time on the HISP activity.

Around 75% of the funds received by the HISP Centre are used to finance the maintenance and further development of the DHIS2 platform. This is carried out by staff connected to HISP Centre, based in Norway and around the world, as well as by HISP groups. Around 25% of the funds are spent on regional and country work in the Global South. This is carried out mainly by the HISP groups and other collaborators. Overheads from HISP Centre contracts are split between the Centre and IFI.

In 2023, we were very happy to welcome a new investor, the Wellcome Trust, while at the same time our project with Novartis came to a successful conclusion. Looking forward to future years, we will continue our dialogue with existing and potential partners and stakeholders on additional funding sources and potential alternate financing models to diversify our funding streams.

$21.01M USD
Total Funding in 2023

75% Core DHIS2 platform & global resources

25% Regional & country work in the Global South
This reflects funding for research staff located at the HISP Centre that receive funding directly through the Department of Informatics.
3
HISP Centre Activities
The NEEM project is a collaborative research project focused on increasing knowledge capacity within health information systems in Nepal.

The Education Data Use project engages local stakeholders on visualization and dissemination of education data.
Research

The Information Systems (IS) Research Group at the HISP Centre is made up of Professors, Postdoc researchers, and Ph.D. candidates and Master’s students engaged in research and education work related to information systems. The group’s work includes action research projects grounded in DHIS2 implementations in the Global South—including collaborations with local universities—research into information systems theory and practice in the larger context, and conducting Master’s programs at the University of Oslo’s Department of Informatics.

Featured Research Projects

Our research continues to revolve around the “Datafication,” “Digitalization management,” and “Digital platforms and infrastructures” themes. In 2023, this included exciting projects related to, for example, implementing a country-wide system for antimicrobial surveillance based on DHIS2 and supporting a country’s digital strategy by investigating challenges of coordinating stakeholders’ interests in evolving the information infrastructure to support its stated aims.

Organizing Digitalization as Systemic Design, Change, and Innovation

While digitalization involves organizational improvement and innovation based on the new opportunities that lie in digital technologies, it is often guided by methodologies that are centered on the design and development of discrete digital technologies. Accordingly, many digitalization efforts fail to develop the kinds of systemic and sociotechnical understanding and interventions that are relevant when engaging in organizational change and improvement. This research project aims to extend knowledge on how we organize digitalization as systemic and sociotechnical design, change, and innovation processes. It engages with HISP groups, examining how they can improve their system implementation practices moving from pure technical IT design and development, to systemic, sociotechnical design and innovation, and with the Norwegian IT sector, where the aim is to examine efforts to introduce systemic design and innovation methods in public sector digitalization projects.

Education Data Use

DHIS2 for Education has an action research arm coordinated by the HISP Centre and implemented by HISP groups, with the participation of Ph.D. candidates and Masters students from The Gambia, Uganda, Sierra Leone, and Norway. The project engages with stakeholders to find ways to visualize and disseminate district and school education data and supports ministries to locally customize EMIS tools that fit their needs and to build in-country capacity to mold and scale EMIS tools and procedures over time. As part of this project, a tripartite agreement was signed by the Ministry of Basic and Secondary Education of The Gambia, the University of The Gambia, and UiO to design a demand-driven Master’s in EMIS. The aim is to improve data management, utilization, and information systems strengthening through local ownership of global tools, standards and procedures, while also building institutional support to sustain the degree program and create opportunities for career progression. The program is currently being piloted in The Gambia, with an aim to expand regionally.

NEEM

In March 2023, the NEEM project (Nepalese Education in E-health – Master) was launched with funding from Erasmus+ (2023-2026). In this project, partners from UiO, ISCTE – University Institute of Lisbon, Kathmandu University, and Pokhara University collaborate on increasing the knowledge capacity within health information systems in Nepal by launching two Master’s programs at the Nepalese partner universities. As part of this initiative, a lab will be established where students can experiment with health information systems, including DHIS2, and carry out in-service training of health personnel. To ensure long-term sustainability, the project also funds the education of eight Nepalese Ph.D. students. During the spring of 2023, eight candidates (four female, four male) were recruited. They will receive supervision from Nepalese and European faculty to successfully complete their research projects within the area of health information systems.
Research Highlights

Graduated Ph.D. Candidates

Marta María Vila Pozo investigated the design, implementation, and adoption of a Humanitarian Health Management Information System (H-HMIS) in a global medical humanitarian organization. Her central question aims at understanding what constitutes effective use of a health information system in a humanitarian context. Her contributions to the field include contextualizing effective use in the humanitarian context and proposing an affordance-based process for measuring effective use. Practical outcomes involve guidelines for H-HMIS use strengthening and digitizing manual data collection in the field. Overall, the study offers insights into designing information systems for easy adoption and effective use in humanitarian organizations, with broader applicability to similar resource-constrained settings.

Yogita Thakral examined the practices of antibiotic use and developed a process-oriented approach to establishing a digitally mediated institution for Antimicrobial Resistance (AMR) data management in resource-constrained public health settings in India. Her research focuses on the problem of inappropriate antibiotic prescription practices and explores, through an institutional work lens, how digital tools can make the challenges visible to address AMR. This research offers practical insights on enabling hospital ownership and enhancing their capabilities in using open-source digital AMR systems, fostering growth through collaborative learning by doing, and kickstarting discussions about data to fuel local actions at practice and policy levels.

Association for Information Systems (AIS) Awards

The Association for Information Systems (AIS) is the premier professional association for individuals and organizations who lead the research, teaching, practice, and study of information systems worldwide. AIS granted awards to three HISP Centre researchers in 2023: Associate Professor Silvia Masiero was awarded the Association for Information Systems (AIS) Mid-Career Award for the year 2023, which recognizes outstanding research, teaching, and/or service contributions to information systems research. Substantiating Masiero’s nominations were her 72 peer-reviewed publications in the fields of information systems and ICT for Development (ICT4D), her service as Co-Chair of the AIS Women’s Network and her multiple service responsibilities in the organization, including her current role as Vice-President for Education of the AIS Special Interest Group in Global Development. The award is the fifth recognition Masiero received from the AIS.

AIS also awarded the 2023 AIS Impact Award to Professors Kristin Braa and Jørn Braa in recognition of the societal impact of their nearly 30 years of work with HISP and DHIS2. This award recognizes information systems research with widespread impact on practice in business and society. Through their work with HISP, siblings Kristin Braa and Jørn Braa—both professors at HISP Centre—have contributed to the adoption of the DHIS2 software platform in more than 80 low- and middle-income countries, where it is used to support the effective management of public-sector programs in health, education, and more.

Editorial Roles

In November 2023, Associate Professor Silvia Masiero became Editor-In-Chief of IT for Development (ITD), a flagship journal of the ICT4D discipline that has been published since 1986. ITD has a five-year impact factor of 5.1 (2022) and publishes social and technical research on the effects of IT on economic, social and human development. As Editor-In-Chief, Masiero manages a team of over 40 editors, whose fields of expertise vary from economics and statistics to political sciences, human geography, and information systems research, oversees submissions, the review process, and accepts processes, and contributes to shaping the direction of the journal. In addition, HISP Centre researchers also hold other editorial roles: Associate Professors Johan Ivar Sæbø and Siliva Masiero are Senior Editors in the Electronic Journal of Information Systems in Developing Countries, and Professor Petter Niels- en is Senior Editor in the Information Systems Journal.

Book Published

In December 2023, the edited collection “Sustainable Health and the Covid-19 Crisis: Interdisciplinary Perspectives” was published. In this book, more than 25 authors offer interdisciplinary perspectives on some of the key health challenges faced by individuals, communities, and governments during the Covid-19 pandemic. The purpose of the book is to demonstrate the unbounded complexity of the impact incurred by the Covid-19 crisis on a welfare society. A central claim is that such a health crisis requires the engagement of a wide variety of sciences to be understood and handled. As a result, the book contains contributions from social sciences, health sciences, and the humanities. The book is edited by Nicole Thualagant (Roskilde University), Pelle Korsbæk Sorensen (University College Absalon), and Troels Sune Mønsted of the HISP Centre at UiO.
Teaching

Our teaching is primarily geared towards Master’s students (eight courses). We also offer two courses at the Ph.D. level and contribute with lectures in Bachelor programs at the Department of Informatics. The common denominator of our courses is that they build on the strong link between research and teaching. The teaching material is research-based, and the courses feed back to researcher training and other activities in the network in the form of methods, pedagogical frameworks, and practice-oriented theory.

Our Master’s students are curious about the prospects of using DHIS2 and other Health Management Information Systems in high-, low-, and middle-income countries. Several of them participate in existing research projects through their thesis work related to capacity building and global digital goods in these countries, contributing to country-specific implementations. They are particularly skilled in understanding context-specific constraints on the prospects of digital health innovations. In 2023, we supervised 25 Master’s students to completion.

Courses Offered

- DIGHEL4360 - Information Technology in Health Services
- DIGHEL4350 - Health Services and Information Needs
- IN5320 - Development in Platform Ecosystems
- IN4380 - Digital Transformation of Healthcare
- IN5090 - Health Data and Decision-Making
- IN4340 - Engaged Qualitative Research Methods
- IN5210 - Information Systems
- IN4380 - Digital Transformation of Healthcare
- IN9900 - Selected Theoretical Topics in Information Systems Development

IN5320 – Development in Platform Ecosystems

This is one of the most popular Master’s-level courses at the department, qualifying over 144 students in 2023. The course has two goals: 1) to introduce students to “platform thinking” and 2) to teach them skills necessary to develop web apps that extend a platform. Students learn about architecture, governance, and other organizational aspects, often using DHIS2 as an example platform, and how to use modern programming frameworks, together with the DHIS2 APIs and other resources, to develop apps that follow requirements and goals set by others, following user-centered approaches.

IN5210 – Information Systems

This course broadly introduces information systems research, practices, and theory. Information systems research emphasizes Information Technology’s (IT) role in social contexts and is based on a sociotechnical perspective—we can only understand design and use and improve IT if we address both social and technical elements. The teaching is based on HISP Centre researchers lecturing about their research activities and the theories they use, including digitalization processes, digital platforms, sustainability, data justice and institutions, as well as readings and seminar discussions. In 2023, 66 students completed the course.

IN4340 – Engaged Qualitative Research Methods

This course deals with the epistemological and methodological foundations of qualitative research. The course focuses on engaged scholarship as a participatory form of research for studying complex real-world problems based on the different perspectives of key stakeholders. Engaged research, with the aim of tangible impact beyond (but without neglecting) theoretical contribution, closely reflects the ethos of HISP, a group with a strong history of action research reflected in positive outcomes around a wide spectrum of countries of the Global South. In 2023, 37 students completed the course.
Information Systems (IS) Fundamentals

In 2023, we gathered seven HISP groups from Eastern Africa for a five-day seminar to strengthen capacity in digitalization research and practice under the umbrella of “moving from IT experts to digitalization partners.” A group of researchers from the IS group at the HISP Centre and representatives from the HISP groups offered short lectures on core IS topics, such as theory, action research, participatory design, digitalization and digital innovation processes, and sociotechnical systems thinking and design. The lectures were followed by extensive discussions, aided by these theoretical concepts, on how we can strengthen HISP practice together. The week also involved practical work where each HISP group engaged in activities for strengthening routine data use in their respective countries.

Digitalization Course: Rwanda

Following the IS fundamentals week in Kigali, the DHIS2 Design Lab gathered representatives from seven HISP groups for a four-day workshop on strengthening the HISP group’s capacity for organizing digitalization and digital innovation processes. Particularly, we focused on how to approach the unstructured sociotechnical problems that we increasingly meet when engaging not only as technical experts but as digitalization partners. During the week, the participants engaged in practical work through two small projects where they were exposed to a methodology for systemic design and innovation developed by the Design Lab. While learning concrete methods and techniques for understanding organizational problems, experimenting with different ways of framing problematic situations, and ideating various interventions, we discussed the applicability of such methods in our current HISP practices and how we can strengthen our practice in terms of both implementation processes and project management moving forward.

ETHIC

ExTending Health Informatics Capacity (ETHIC) was a project running from 2016 to 2024 that aimed to support international student mobility between Universidade Eduardo Mondlane in Mozambique, the University of Malawi, and UiO, to improve health informatics curriculums at these partner institutions, and to bring the long-term collaboration between the three partners to the next level. This included UiO initiating and supporting the establishment of sustainable health informatics teaching capacity and programs at the institutions in the South, including Master’s and Ph.D. programs, student mobility, internships at joint partners, joint curriculum development, joint student supervision and academic research. The project resulted in more coordinated health informatics curriculums between the institutions: 85 Master’s and Ph.D. student exchanges involving coursework, supervision, Master’s thesis workshops, fieldwork, internships, and full degree scholarships for Master’s students. 46% of the exchanges involved female students, and 48% involved students from Norway traveling to Mozambique and Malawi.

Teaching Highlights
The design lab does research and capacity building on systems design, innovation, and digitalization—“From IT to digitalization.” The lab collaborates closely with HISP groups and collaborating universities within the Norwegian Partnership Programme for Global Academic Cooperation (NORPART), and also engages in empirical research in the Norwegian IT sector. Key research themes include (1) how to strengthen sociotechnical systems design approaches for digitalization projects (2) how to organize projects to be conducive to sociotechnical systems design and digitalization, and (3) how HISP groups can engage more with client organizations beyond IT experts—moving towards becoming “digitalization partners.” The lab encompasses Master’s and Ph.D. students at UiO and collaborating universities in Mozambique, Tanzania, and Rwanda through the NORPART project, and collaborators from the local HISP groups in those countries.

DHIS2 Design Lab Highlights

- 7 UiO Master’s students graduated within the lab.
- Four-day workshop in Kigali including representatives from seven HISP groups on strengthening the HISP group’s capacity for organizing digitalization and digital innovation processes.
- Two UiO Master’s students in collaborative project with HISP Rwanda to improve capacity and resources for systemic design, innovation, and digitalization management (two months).
- Continued development of “design and innovation toolkit” in collaboration with implementers from various HISP groups.
Part 3 - HISP Centre Activities

HISP Centre Annual Report 2023

Changing to an annual release cycle & new naming convention

In May, 2023 we released version 40 of the DHIS2 core software. This was a major release which introduced new ways to visualize data and made it easier to integrate with external DHIS2 instances or other systems. Following this major release, we also updated the cadence of our releases from biannual to annual. This change was introduced after many years working with country governments and other organizations implementing DHIS2 who were rarely able to plan, budget for, and implement major DHIS2 version upgrades more than once per year. Additionally, this change offered an opportunity to spend more time during the development cycle to improve the quality of the software and reduce the risks associated with future version upgrades. Meanwhile, rapid innovation in applications is supported through continuous release.

In addition to changing the release cadence, we made a small change to the way we name release versions. Following the move to using DHIS2 as a standalone name (rather than as an acronym), we decided to remove the 2 prefix from software version numbers. So, the last release was v40 instead of v2.40, and DHIS2 version 41 will be released in May, 2024 instead of v2.41. This simplified numbering system has also helped us launch a clearing numbering system for the patch releases and other minor updates we release throughout the year.

Connecting developers with users & emphasizing user experience

During 2023, we worked extensively on improving the DHIS2 user experience by strengthening the supporting functions of the software team to create high-quality and usable releases of DHIS2 and improving the connection between DHIS2 software design and DHIS2 users. Two team members joined the quality team to increase our focus on software quality. We also hired our first User Experience Researcher in 2023 and collaborated extensively with Resolve to Save Lives (RTSL) on design, leading to new features and improvements in the Android Capture App. The Tracker team traveled to Ghana, where they could see the Capture app in action in clinical care sections, and work with HISP Ghana and the local health authorities to learn how they are implementing Tracker, helping inform future development of this product.

Facilitating collaboration in the core DHIS2 team & the HISP network

In September, 2023 almost 50 members of the global core software team gathered in Oslo to meet in person for All-Devs week. About 75% of the team works remotely, so this opportunity to meet in person was critical for productive collaboration throughout the year. This week included a hackathon, with cross-product teams working to rapidly prototype innovative apps and tools for DHIS2.

Throughout the year, the team also worked to support application development in the HISP network, collaborating with Saudigitus (HISP Mozambique) on the Real-Time Stock application to support the DHIS2 for Logistics project (see page 53), providing input and support as needed to the team developing the SEMIS app for the DHIS2 for Education project (see page 54-55) and working with HISP Rwanda to develop the Data Quality Annual Report app. These collaborations help connect the core software team to user needs in different contexts, and reinforce developer capacity in the HISP network.

Development of new community-driven roadmap process

The DHIS2 software development roadmap has always been based on input from the global DHIS2 user base, with an emphasis on supporting the needs of country-owned information systems and other key stakeholders, with opportunities for input from the general community. At the end of 2023, we took additional steps to make this process more transparent by introducing a new online tool that allows all members of the community to see which software changes are under consideration, propose their own ideas, and vote for their highest priority features. The software team is using this input to help guide the roadmap for DHIS2 v42, with development kicking off in 2024.

Development and stewardship of the DHIS2 software platform are central activities of the HISP Centre. The DHIS2 software product serves as the bedrock for hundreds of DHIS2 systems supporting critical programs in health, education, logistics, and more, around the world. The developers, product managers, designers, and testers making up the software group at the HISP Centre maintain, support, and continuously improve this foundational piece of digital infrastructure.

DHIS2 Software Development

Development and stewardship of the DHIS2 software platform are central activities of the HISP Centre. The DHIS2 software product serves as the bedrock for hundreds of DHIS2 systems supporting critical programs in health, education, logistics, and more, around the world. The developers, product managers, designers, and testers making up the software group at the HISP Centre maintain, support, and continuously improve this foundational piece of digital infrastructure.
Software Release: DHIS2 version 40, Android Capture App version 2.8

In May 2023 we released DHIS2 version 40 and version 2.8 of the DHIS2 Android Capture App. Among many other features these introduced:

- Support for on-the-fly calculations to be added to visualizations in the Data Visualizer application
- Support for including Line List visualizations on the dashboard
- Saveable program stage working lists for tracker programs in the Capture app
- A new application for reviewing and submitting Aggregate Data Exchanges, developed in collaboration with The Global Fund to support direct reporting from national country HMIS systems
- Release of the transaction-based RTS (Real-Time Stock) tool that allows facilities to manage real-time stock transactions using Android Capture mobile app

Improving Android Capture App usability through testing in the field

The DHIS2 Android team has been working closely with our design team and RTSL in order to conduct usability studies on our mobile app and implement improvements based on their outcomes. In May 2023, the Functional Design team joined HISP Sri Lanka and RTSL to visit health facilities in Sri Lanka and get user feedback from midwives using DHIS2 to register children in their nutrition program. Outcomes from this trip helped inform improvements to user experience and visual design in the October 2023 release of version 2.9 of the DHIS2 Android Capture App.

Getting a first-hand perspective on clinical Tracker use in Ghana

In November 2023, the DHIS2 Tracker software team traveled to Accra for a weeklong workshop. During the week, the team collaborated with the local teams from HISP Ghana and HISP West and Central Africa, gaining valuable local insights that can help inform future Tracker development. Additionally, the team visited clinics to observe firsthand how their software is utilized in practical settings. This kind of hands-on experience is an essential part of ensuring that DHIS2 continues to meet the needs of real-world users, and helps to inform the DHIS2 software roadmap.
The HISP Centre engages with WHO and other global health partners on increasing health system interoperability through DHIS2 and FHIR.

The first-ever DHIS2 Academy focused on integration was held in 2023 in Kigali, Rwanda, with participants from 23 countries.
Enhancing DHIS2 interoperability with a focus on FHIR

The architecture of DHIS2 was designed to support interoperability and integration from the start. In the real world, national health systems rely on a number of software applications and data sources to manage their programs, provide services, process results, allocate resources, monitor performance, and much more. One of the first core use cases of DHIS2 was as a data warehouse, helping Ministries of Health bring data from these disparate sources together into one place, breaking data out of silos to make it possible to have a holistic picture of health system performance.

As countries have continued to develop, the digital health ecosystem has gotten more complex. There are an ever-increasing number of digital solutions that need to “talk” to each other in order for these systems to run smoothly and for stakeholders to be able to use data effectively, which means they also need to “speak” the same language.

FHIR is an interoperability standard that can help make it easier to connect different health software systems. There has been increasing interest in FHIR among our partners, and some global organizations have begun to promote FHIR as a way of expressing and implementing interoperability standards, such as the WHO SMART guidelines. It became clear that we needed to support FHIR-based interoperability with DHIS2, and to increase our engagement in global conversations on interoperability in general, bringing the HISP perspective—grounded in country needs and real-world experiences—to the table, while also learning more from the diverse group of stakeholders engaged in interoperability.

This has resulted in a lot of progress in a short time, including development and publication of guidance and tools, global collaboration on standards and approaches, and national and regional capacity building. Here are just a few examples of our interoperability work from 2023:

**DHIS2 Integration Academy:**
We hosted the first-ever DHIS2 Academy focused on interoperability in March 2023, sharing integration tools, patterns and guidance with 50 participants from 23 countries.

**Camel DHIS2 component:**
In April, this component was incorporated into the Apache Camel codebase, facilitating building integrations with DHIS2 with many other systems including through FHIR.

**Cross-sector data sharing for One Health:**
We worked with partners from FAO, CDC, WHO, and WOAH to develop approaches and tools for exchanging early warning, and zoonotic disease surveillance data between systems and sectors under the One Health framework in the Democratic Republic of the Congo, Tanzania, and Guinea.

**FHIR integration workshop:**
In August, the DHIS2 integration team participated in a multi-day workshop in Belgium on using FHIR to facilitate DHIS2 health data integration across systems.

**WHO HIV DAK & DHIS2 Toolkit launch:**
In December, we joined WHO for a webinar launching the HIV DAK version 2 and a new suite of DAK-compliant tools and resources to support countries to uptake the WHO guidelines in DHIS2 systems.

Learn more: dhis2.org/integration
HISP group leaders Ranga Matavire (Zimbabwe), Tiwonge Manda (Malawi), Zeferino Saugene (Mozambique), Edem Kossi (Togo), and Ayub Manya (Kenya) pose with Professor Kristin Braa at the DHIS2 Annual Conference.

Members of the global DHIS2 Implementation Support group assist the implementation of Tracker for TB Surveillance in Pakistan.
Part 3 - HISP Centre Activities

The Implementation group has dedicated domain teams with subject matter expertise on Health, Logistics, Education, and—starting in 2023—Climate. These domains—and others that may be added in the future—are supported by cross-cutting teams with expertise on general technical areas needed in all sectors, including Information System Strengthening and Coordination, Capacity Building, Implementation Guidance and Support, Integration, and Server support. Read more about the work of our domain teams in 2023 on pages 52-55.

We follow a set of core principles:

- Global products should be guided by country needs and demand.
- Country support should when possible be provided by local/ regional DHIS2 expertise - to scale and to sustain.
- Global team involvement in country implementation should be triggered by the need to learn/innovate, and documented with a goal to support other countries/feed into global product streams.
- Foster a network of sharing and learning among the HISP groups - global and regional.
- Facilitate coordination of DHIS2 country support across donors and projects with an overarching goal to align and integrate—a country-first approach.

The Implementation group works primarily with three kinds of partners:

**HISP Groups:** Through collaboration with and support of HISP Groups, we develop DHIS2 toolkits and guidance and do capacity building. Several of our “global” resources, such as training material or toolkits, are developed in close collaboration between the HISP Centre and HISP groups.

In 2023 we have:
- Developed and released the Health Facility Profile toolkit.
- Supported and conducted training and capacity building, including DHIS2 Academy courses.
- Increased focus on mobilizing in-country funding for DHIS2 implementation work.

**Countries:** Ongoing support to country implementations of DHIS2 is primarily provided by local HISP groups. However, the HISP Centre also engages in some direct country support where needed, such as to provide subject matter expertise on specialized topics, to support implementation of DHIS2 in new geographical areas, and to inform the development of global tools and implementation guidance. Examples from 2023 include:
- Jamaica: Performed a readiness assessment for use of DHIS2 for Adverse Events Following Immunization.
- Supporting the implementation of DHIS2 Tracker for TB surveillance in the public and private sectors in Pakistan, while also strengthening the newly established HISP Pakistan group.

**Partners:** In addition to traditional project management tasks, the Implementation group works closely with our partners and investors to ensure that we draw on their domain expertise to develop tools and guidelines that can benefit several countries. We also advocate for coordinated investments in DHIS2 across projects and programs, for example through the DHIS2 Maturity Profile, and regularly advise partners on “what it takes” to implement and scale DHIS2, through support with implementation planning, budgeting, and structuring of contracts. In our capacity as a WHO Collaborating Centre, HISP continues to partner with WHO and its Member States to strengthen HIS implementations and data use at country level.

Highlights from 2023 include:
- Participated in the WHO Routine Health Information Systems Conference in Athens.
- Engaged in a FHIR workshop in Ghent, Belgium, with representatives from Digital Square, to refine the DHIS2 FHIR strategy.
- Conducted DHIS2 training sessions for The Global Fund country focal points in Geneva on security, interoperability, Tracker, and budgeting.
DHIS2 for Health

Countries leverage DHIS2 to implement One Health approaches, share data across sectors and prepare for health emergencies

- Indonesia, DRC, Rwanda, and Zanzibar implement DHIS2 for capturing, managing and sharing animal surveillance data for early warning under a One Health approach, thanks to support from CDC and collaboration with One Health quadrupartite institutions FAO, WOAH, and WHO.

- Uganda stops an Ebola outbreak before it spreads, using DHIS2 tools and lessons learned from COVID-19 to support surveillance and case management.

- Laos health authorities improved reporting rates of notifiable diseases from 68% to more than 80% using DHIS2 for case-based surveillance.

DHIS2 used to improve accessibility & use of health data

- Health Facility Profile implemented in five country DHIS2 systems and increases access to key data about health facility service availability and readiness for program planning and for planning responses to health emergencies.

- Participatory design of DHIS2 dashboards with MOH Uganda health program and district users increased data engagement by 288%.

- The number of countries using DHIS2 to capture and analyze NCD data has more than doubled in the last year—now 22 countries—for a broad range of NCDs from cancer registries to hypertension and rehabilitation.

Innovative tools for strengthening health information systems

- ICD-11 mortality app developed in partnership with HISP Vietnam and WHO DDI is scaling up in countries with the Data 4 Health initiative and CDC support. The app is now used in six countries and leapfrogs traditional barriers to coding the cause of death in countries by using innovative approaches to interoperate with WHO’s ICD-11 API and DORIS coding tool.

- HISP released version 2.0 of the DHIS2 HIV toolkit, aligned with the WHO SMART guidelines for HIV, including indicators and dashboards for integration with HMIS, and case surveillance and prevention Trackers. 45 countries now use DHIS2 for HIV.

Deepening relationships with global and regional public health institutions

- WHO EMRO and HISP partnered in a workshop with 22 Member States to provide training and guidance on designing integrated surveillance/HIS and develop country roadmaps.

- CARPHA signed with HISP for health system strengthening in the Caribbean.

- PAHO partners with HISP to implement DHIS2 as a regional platform for vaccine preventable surveillance and pharmacovigilance (ESAVIs).

- Saudigitus (HISP Mozambique) continued to provide capacity building and dashboard configuration Mozambique’s national information system for water and sanitation.

- HISP Rwanda, RBC, CDC Global Immunization Division, and Afenet partner to implement and train all districts on DHIS2 dashboards for triangulating data to identify immunity gaps, zero-dose populations and improve immunization, program performance.
DHIS2 for Logistics

Launch of the Real-Time Stock tool (RTS)
- The Real-Time Stock tool was incorporated into the DHIS2 core software and released with version 40 and Android version 2.8. Originally developed and deployed by the ICRC, this Tracker-based tool allows for a facilitated workflow for issuing medicines and products at hospital and other health facility stores.
- The benefits of this tool include digitizing last-mile health facilities while leveraging the existing DHIS2 infrastructure, knowledge, and know-how in countries. It also provides real-time data for decision making, the lack of which is one of the key drivers for stock-outs and demand distortion in the national supply chain.
- Some country pilots of this tool are planned, and the DHIS2 for Logistics team is actively looking to engage with additional countries and partners interested in this solution.

Supporting Immunization Supply Chain with Thrive360 National Control Towers
- Developed supply chain visualizations and dashboards with UNICEF that use HMIS service data and other data sources, such as country forecasts for vaccines, eLMIS data and survey data (WUENIC, NHS, and others).
- Conducted a training in Abuja with the NLWG to support Nigeria’s implementation, and planned training in Sierra Leone.

Implementing stock data entry in Sudan during an ongoing conflict
- Originally planned to digitize stock data from facilities, to be entered at locality (district) level and integrated with the central ERP, and conduct a pilot of the RTS tool in selected facilities.
- A country assessment was carried out by UiO and HISP Rwanda and implementation plans were being developed when an internal conflict began that impacted the entire population. The country teams, both the HMIS unit in MoH and The Global Fund PMU, moved to an emergency operation mode and strongly supported the continued implementation of the project, but in a more limited scope, with fewer states, without integration with the central ERP, and without piloting of the RTS tool at facility level.
- The implementation was carried out entirely through local teams, as the conflict made it impossible for HISP or UiO staff to travel to the country.
- The DHIS2 instance was migrated from government servers based in Khartoum to a cloud-based solution to ensure service continuity.
- The team was able to configure stock data sets for data entry and analytics. Training took place in different locations, bringing together several states at a time.
- Stock data is now available for decision making from several states, despite the ongoing internal conflict. The main challenge is the data quality and reporting rate, as the conflict has had a tremendous impact on the capacity of the health services to continue operation.
DHIS2 for Education

Addressing challenges of education data availability & use

The education sector faces two broad data challenges: availability of data and how data is used. Addressing this requires a shift from rigid statistics to dynamic analytics and early warning systems. Previous attempts at digitizing education data have generally not succeeded as they primarily focused on the technology itself, and not on building the long-term capacity required to sustain the system over time. Since 2022, DHIS2 for Education implementation coverage has seen a marked increase, with Ministries of Education (MoE) taking advantage of the DHIS2 platform to various degrees of scale in Eswatini, Nigeria, Mozambique, Senegal, South Sudan, Sri Lanka, The Gambia, Togo, and Uganda.

SDG 4 calls for the use of data to guide improvement of learning outcomes and equitable access to education. DHIS2 for Education extends the software platform from Health to the Education sector for the collection, analysis, visualization, and use of aggregate and individual data from institutions of learning. The work takes advantage of decades of experience with national-level HMIS systems, offering a stable, scalable, and customizable Education Management Information System (EMIS) solution, supported by the development team and global HISP network, leveraging existing capacity and expertise.

This solution allows for integration with DHIS2 apps and Tracker, and complements existing in-country systems with controlled access to data and analytics at all levels of the education system. It also facilitates the development of national- and international-level programs that use data across sectors, such as a schools-based child immunization campaigns, by making it easy to combine health and education data in one report or custom dashboard. The DHIS2 for Education project has proven to make data-driven decision-making more accessible to schools, and the subnational and national levels to inform policy, planning, and design of data-informed interventions.

A digital platform approach to scale education innovations

With support from GPE KIX, a combination structure has been established to coordinate research and innovation across ministries and country implementations, where researchers, DHIS2 implementers and ministry officials meet to share data, inform problem identification and validate proposed solutions. The EMIS learning lab consists of senior researchers, Ph.D. and Master’s students who share research capacity and explore key use cases for the education sector. The complementary EMIS innovation network consists of HISP implementers and developers who work across the HISP network to share countries’ experiences and innovations to develop generic solutions that respond to changing education sector needs. The link acts as a mechanism between countries and the development of generic DHIS2 products and services. This has led to the joint development of a student-staff-school EMIS (SEMIS) application to improve data utilization at all levels of the education system (see next page), with an emphasis on the middle tier; the professionals working in the space between policy-making and classrooms and schools.
Cross-HISP collaboration to rapidly design a DHIS2 app for student & teacher management

Adapting DHIS2 to the needs of the Education sector has required some creative thinking and extensive engagement with local stakeholders, Education Ministries, and implementers to ensure that the digital solution meets their needs. In the initial stages of the DHIS2 for Education project, several of the HISP groups involved, designed and developed custom applications to extend built-in DHIS2 functionality for education use cases. These apps were presented at the first DHIS2 for Education Academy & Conference, held in The Gambia in 2022, and generated a lot of interest. However, because the DHIS2 systems they were designed for had been configured differently, they were not easily compatible or shareable between countries.

The 2023 DHIS2 Annual Conference brought the HISP focal points together at UiO. A conversation at a social event sparked the idea to join efforts to design a new app that would meet the requirements of all groups. Within the week, before the HISPs left Oslo to return to their home countries, they had already defined preliminary requirements and designed initial mockups covering the app’s core functionalities: management of enrollment, attendance, and transfers, as well as performance for students and staff.

The project team, which included members of Saudigitus (HISP Mozambique), HISP Uganda, HISP West & Central Africa, and HISP Sri Lanka, then kicked off the development process, and worked tirelessly over the next two months to produce an app that they could demo at the second DHIS2 for Education Academy & Conference in Entebbe, Uganda, in August 2023. The demo was a big success. The Gambia, Eswatini, and Sri Lanka signed on to begin piloting the new SEMIS app.

Two factors that made this project successful were engagement with Education Ministries and local stakeholders through participatory design, and a commitment to cross-border collaboration and sharing. Bringing together members from different HISP groups made it possible to identify the differences and commonalities between different countries using DHIS2 for Education, helping them to design an app that would be flexible enough to meet each country’s needs. The team used iterative cycles of requirements gathering in the field, software development, code reuse and user testing and feedback to ensure that the app was effective and easy to use for day-to-day management of learners and staff at schools.

This shows the power of the HISP network across continents and the HISP approach. The members of the project team shared everything with each other as they worked, including code, outputs, and experiences. By working together, they helped each other to improve, and produced a robust application that can make history in LMICs: a user-friendly, open-source tool for education management down to the level of individual teachers and students.

The Gambia and Eswatini have successfully piloted and started the scale of implementation across the country and Kingdom respectively to manage over 2 million learners and over 500,000 staff. Several other countries also planned to start testing and implementing the SEMIS app in 2024, and it will be featured in the training modules in the third DHIS2 for Education Conference & Academy in Colombo, Sri Lanka, in May 2024.

Learn more: education.dhis2.org
The global DHIS2 community comes together in Oslo every year for the DHIS2 Annual Conference, with more than 350 participants from 54 countries in 2023.

The DHIS2 Academy program provides hands-on courses on a variety of DHIS2 topics to help build local and regional capacity.
The Training & Communications group at the HISP Centre aims to help countries build strong core DHIS2 teams to support local system ownership through a combination of online and in-person DHIS2 Academy courses and other training materials, which complement HISP’s larger capacity-building efforts. We also foster networks of innovation, knowledge sharing, and peer-to-peer support across borders and domains through outreach, informational products, and coordination of the DHIS2 Community of Practice.

Training
The DHIS2 Academy is our flagship program for strengthening national and regional DHIS2 capacity. In 2023, the HISP Centre and HISP network collaborated to host 18 live, in-person Academy courses with almost 1,000 participants in total. These events were hosted in Asia and Africa, and conducted in English, French, and Portuguese. We expanded the Academy curriculum with several new offerings in 2023, including courses on Advanced System Design, Routine Health Information Systems, and Integration, as well as the return of the Community Health Information Systems Academy. Meanwhile, the DHIS2 Online Academy continued to grow, with nearly 16,000 new course enrollments in 2023, and the launch of a new course on Planning & Budgeting DHIS2 Implementations, designed in partnership with Global Fund, and translated versions of our most popular course, Introduction to DHIS2, in French and Spanish. See page 59 for more highlights. In addition, we also collaborated with HISP groups to produce an online training toolkit for the Health Facility Profile project, which can be adapted and used to support in-country training efforts.

Annual Conference
The DHIS2 Annual Conference is our most significant event of the year, bringing members of our global community together at UiO for four days packed with presentations, country stories, networking, and innovation sharing. 2023 was our largest conference ever, with 352 in-person participants from 54 countries and more than 1,000 people joining us online. Our theme, “Sharing Innovations Across Sectors,” highlighted the increasing use of DHIS2 beyond Health, including in domains such as Education and Logistics, and more broadly as an open-source tool for e-governance and SDGs (see page 33).

Community
The DHIS2 Community of Practice (CoP) forum is the central online gathering space for the global DHIS2 community, including the HISP network, Ministry staff, NGOs, IGOs, private sector implementers and partners, and researchers, among others. Membership in the CoP grew almost 30% in 2023, reaching a total of 7,800 active members from 167 countries. These members use the CoP to ask for and receive peer support on DHIS2 projects, share innovations and lessons learned, and make professional connections. Community members made nearly 7,300 new posts on the CoP in 2023 and visited the forum over 290,000 times. The DHIS2 CoP is considered to be a model of a successful online open-source community platform, and we have contributed insights and learnings from our experience to research projects and our peers in other software organizations.

Communications
Our international audience continues to grow. The dhis2.org website had 380,000 unique visitors from 220 countries and territories in 2023, with a total of 1.3 million page views. Growth is particularly notable in Spanish- and Arabic-speaking countries, reflecting the increasing adoption of DHIS2 in Latin America and the Middle East. Our YouTube channel passed 1 million total video views in 2023, and our monthly DHIS2 Highlights newsletter reached 15,000 subscribers, an increase of almost 17% from the year before. We researched, wrote, and published 18 DHIS2 Impact Stories in 2023, including stories in French and Spanish. We remain active on social media, engaging with our audience on Facebook, Twitter, and LinkedIn. We also supported HISP team members at high-profile events, such as the presentation of DHIS2 at UN Headquarters for SDG Digital and the announcement of our Climate & Health project at COP28, getting positive exposure for our project on the global stage.
DHIS2 Academy: 12 Years of Strengthening Country Capacity

The DHIS2 Academy program was launched in 2011 with courses held in Ghana and Tanzania to meet the growing demand for regional capacity building on DHIS2 customization and use. Since then, the Academy has grown to become our flagship training program, with a range of 25 courses covering basic skills to advanced topics, designed to support country capacity for sustainable and effective DHIS2 systems. While many of these courses take place in person, in 2017 we launched the DHIS2 Online Academy to reach a wider audience with free training material that students can complete at their own pace, from anywhere in the world. Our current Academy program features a combination of live, instructor-led courses facilitated by the HISP network, and self-paced online courses designed by subject matter experts.

DHIS2 Academy certificates are sought after as professional qualifications, and over the past 12 years, the program has helped establish local and regional networks of DHIS2 experts that support sustainable, locally-owned DHIS2 systems in LMICs.

New courses in 2023

Advanced System Design: 46 participants from 13 countries attended this new course in Addis Ababa, Ethiopia, to get in-depth training on DHIS2 system design, testing, management, and more.

Routine Health Information Systems: 50 participants from 11 countries joined us in Amman, Jordan, for this course co-hosted with WHO, which offered tools to understand the benefits of an RHIS and how DHIS2 can be utilized to implement an integrated system in practice.

Integration: 50 participants from 23 countries attended the first-ever DHIS2 Integration Academy, hosted in Kigali, Rwanda, to learn about integration patterns and principles, interoperability, standards and architecture, the DHIS2 data model and API, and the integration toolchain.

Live DHIS2 Academies

Since 2011
186 Academies
11,797 Participants

In 2023
18 Academies
978 Participants
Since the launch of the DHIS2 Online Academy in 2017, we have expanded and modernized our course offering, providing a selection of self-paced courses on beginner and specialized material to a global audience—almost 20,000 students from 178 countries used our Academy website in 2023. Our iterative approach to improving and updating material has also helped make our courses more effective: Our overall course completion rate of 38% in 2023 is more than double the industry average of 10-15%, and reflects a significant improvement over earlier versions of DHIS2 online courses.

**New courses in 2023**

**Planning & Budgeting DHIS2 Implementations:** Since its launch in January 2023, 900 students enrolled in this new course—designed with support and input from Global Fund—to learn how to plan and budget scalable, sustainable, and flexible DHIS2 systems.

**Introduction to DHIS2 (French & Spanish):** Following our release in 2022 of the English version of this new introductory course, we produced fully translated versions for our French- and Spanish-speaking communities, and launched them in July 2023. 425 students enrolled in these courses in the last 6 months of the year.

**Self-paced DHIS2 Academy courses**

**Since 2017**
- 60,675 enrollments
- 14,883 certificates
- 25% completion rate

**In 2023**
- 15,866 enrollments
- 6,072 certificates
- 38% completion rate
Appendices
## Active Ph.D. Candidates

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Topic</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu Sadat M. Sayem</td>
<td>Evaluating Impacts of Long-term Digitalization on Empowerment of Front-line Health Managers - A Case Study From Bangladesh</td>
<td>Jens Johan Kaasbøll (Principal supervisor), Johan Ivar Sæbø</td>
</tr>
<tr>
<td>Adama Momoh</td>
<td>Empowering District Education Intermediaries in data use for decision-making at Basic and Senior Secondary Education Level</td>
<td>Terje Aksel Sanner (Principal supervisor), Silvia Masiero</td>
</tr>
<tr>
<td>Andrew Muhire</td>
<td>Scaling strategies for the multisectoral antimicrobial resistance surveillance system in Rwanda</td>
<td>Sune Dueholm Müller (Principal supervisor), Silvia Masiero</td>
</tr>
<tr>
<td>Aprisa Chrysantina</td>
<td>Strategies for Health Information Use Strengthening in Developing Countries: a case from Indonesia</td>
<td>Johan Ivar Sæbø (Principal supervisor), Jens Johan Kaasbøll</td>
</tr>
<tr>
<td>Arijit Sen</td>
<td>Mapping Surveillance, E-governance Nexus and Citizen Control in India</td>
<td>Sundeep Sahay (Principal supervisor), Tarangini Sriraman, Åshild Kolås</td>
</tr>
<tr>
<td>Bjørnar Valbø</td>
<td>Towards Re-Calibrating the IS-Notion of Affordances: An Affordance Perspective on the Implementation of a Platform-based Education Management Information System in The Gambia</td>
<td>Terje Aksel Sanner (Principal supervisor), Kristin Braa, Silvia Masiero</td>
</tr>
<tr>
<td>Carolyn Kavita Tauro</td>
<td>Ambitions and Challenges for Person-Centered Health Monitoring in India: Impact of the Digital Transition on Key Populations</td>
<td>Sundeep Sahay (Principal supervisor), Eivind Engebretsen</td>
</tr>
<tr>
<td>Eric Munyambabazi</td>
<td>Cross-sector Information Infrastructures and Public Sector Planning: The case of Uganda</td>
<td>Petter Nielsen (Principal supervisor) and Johan Ivar Sæbø</td>
</tr>
<tr>
<td>Florence Matewere</td>
<td>Leveraging Mobile Technology to Support Community Health Workers in Patient Referral Tracking: A Case of Malawi Rural Healthcare Services</td>
<td>Jens Johan Kaasbøll (Principal supervisor), Brian Antony Nicholson, Davis Tiwonge</td>
</tr>
<tr>
<td>Hassan Omary</td>
<td>Decentralized Evidence-based health planning in Low- and-Middle Income Countries: Processes, challenges, and opportunities</td>
<td>Troels Sune Mønsted (Principal supervisor), Alexander Moltubakk Kempton</td>
</tr>
<tr>
<td>Johanne Thunes</td>
<td>Dealing with the socio-technical complexity of scaling in practice</td>
<td>Alexander Moltubakk Kempton (Principal supervisor), Margunn Aanestad, Viktoria Stray</td>
</tr>
<tr>
<td>Joseph Wu</td>
<td>Capture early warning Signal of abnormal increasing respiratory Infections in the Community using routinely collected Electronic Medical Records in developing Country - Field Operation Study in Malawi</td>
<td>Jens Johan Kaasbøll (Principal supervisor), Gunnar Aksel Bjune</td>
</tr>
<tr>
<td>Josue Watat</td>
<td>Exploring the Role of Innovation Platforms for Organizational Performance: An Effective Use Perspective</td>
<td>Silvia Masiero (Principal supervisor), Johan Ivar Sæbø</td>
</tr>
<tr>
<td>Katherine Wyers</td>
<td>An institutional perspective on the challenges of designing sustainable digital logistics management information systems supporting the last mile of global health supply chains</td>
<td>Johan Ivar Sæbø (Principal supervisor), Silvia Masiero</td>
</tr>
<tr>
<td>Koffi M. Siliadin</td>
<td>Evaluating maturity in Digital Public Goods platform implementation: the case of Country DHIS2 maturity assessment</td>
<td>Troels Sune Mønsted (Principal supervisor), Johan Ivar Sæbø</td>
</tr>
<tr>
<td>Maja Lanestedt Thomassen</td>
<td>Organizing projects for digitalization</td>
<td>Magnus Li (Principal supervisor), Terje Aksel Sanner</td>
</tr>
<tr>
<td>Candidate</td>
<td>Title/Topic</td>
<td>Supervisors</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Merina Marcelino</td>
<td>A Stakeholders’ Coordination and Engagement model for Evolution of Health Information Infrastructure. A Case Study of Health Program Information Systems Integration in Tanzania</td>
<td>Sune Dueholm Müller (Principal supervisor), Eric Monteiro</td>
</tr>
<tr>
<td>Melaeke Serawit</td>
<td>Strategies to local innovation in Digital public goods: Case of multi-sector DHIS2 implementations</td>
<td>Petter Nielsen (Principal supervisor), Abyot Asalefew Gizaw</td>
</tr>
<tr>
<td>Monica Grace Amuha</td>
<td>Decentralization of Education Management Information Systems in Developing Countries; An Institutional Logics Perspective of the role of Digital Platforms</td>
<td>Silvia Masiero (Principal supervisor), Kristin Braa, Terje Aksel Sanner</td>
</tr>
<tr>
<td>Nilza E. C. de Lemos Collinson</td>
<td>Historical analysis of the institutional dynamics surrounding the implementation of health management information systems in developing countries: The case of Mozambique</td>
<td>Sundeep Sahay (Principal supervisor), Petter Nielsen</td>
</tr>
<tr>
<td>Pamod M. Amarakoon</td>
<td>Analyzing Role of Governance in Building Agility in Health Systems Information Systems Responses: Case Studies from Asia</td>
<td>Sundeep Sahay (Principal supervisor), Jørn Anders Braa, Roshan Hashantha H.</td>
</tr>
<tr>
<td>Ragnhild Basseo Gundersen</td>
<td>How Does the Digitalization of Contact Tracing Affect Infectious Disease Surveillance- and Response Information- and Communication Processes?</td>
<td>Johan Ivar Sæbø (Principal supervisor), Petter Nielsen</td>
</tr>
<tr>
<td>Scott Mc Kee Russpatrick</td>
<td>Leveraging the Data-Driven Decision Making Conceptual Framework to Assess the Use of Local Health Data by Community Based Stakeholders - A Comparative Analysis</td>
<td>Kristin Braa (Principal supervisor), Terje Aksel Sanner, Eric Monteiro</td>
</tr>
<tr>
<td>Seedy Ahmed Jallow</td>
<td>The Shift from Aggregate to Individual-Level Data System in the Case of The Gambia EMIS</td>
<td>Terje Aksel Sanner (Principal supervisor), Kristin Braa, Silvia Masiero</td>
</tr>
<tr>
<td>Vetle Utvik</td>
<td>Digital Platforms as Public Goods</td>
<td>Petter Nielsen (Principal supervisor), Johan Ivar Sæbø</td>
</tr>
<tr>
<td>Yamikani Daniel Jamison Phiri</td>
<td>Making Climate Health Data Actionable: Monitoring Food Security through DHIS2 in Malawi</td>
<td>Silvia Masiero (Principal supervisor), Anders Nielsen</td>
</tr>
</tbody>
</table>

**Defended Ph.D. Thesis in 2023**

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Title/Topic</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marta María Vila Pozo</td>
<td>Institutional Shaping of Effective Use of Routine Health Data Management in the Context of Global Humanitarian Organizations</td>
<td>Sundeep Sahay (Principal supervisor), Johan Ivar Sæbø</td>
</tr>
<tr>
<td>Yogita Thakral</td>
<td>Institutional work for digitally mediated AMR data management: A process-based approach in a resource constrained setting in India</td>
<td>Sundeep Sahay (Principal supervisor), Katja Maria Hydle, Ernst Kristian Rødland</td>
</tr>
<tr>
<td>Festus Mukoya</td>
<td>Interplay of ICTs and social capital in building and scaling peace networks within contexts of violent ethnic conflicts: a study from Kenya</td>
<td>Sundeep Sahay (Principal supervisor), Petter Nielsen</td>
</tr>
</tbody>
</table>
## Postdoc Projects

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Title/Topic</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnus Li</td>
<td>Organizing digitalization as systemic design, change and innovation</td>
<td>Eric Monteiro and Petter Nielsen</td>
</tr>
</tbody>
</table>

## HISP Ph.D. Alumni

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Topic</th>
<th>Research Setting</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nilza Eliana Correia de Lemos</td>
<td>Historical Analysis of the Institutional Dynamics Surrounding the Implementation of Health Management Information System in Developing Countries: The Case of Mozambique.</td>
<td>Mozambique</td>
<td>2024</td>
</tr>
<tr>
<td>Bjørnar Valbø</td>
<td>Towards Re-Calibrating the IS-Notion of Affordances.</td>
<td>The Gambia</td>
<td>2024</td>
</tr>
<tr>
<td>Marta Maria Vila Pozo</td>
<td>Institutional Shaping of Effective Use of Routine Health Data Management in the Context of Global Humanitarian Organizations.</td>
<td>South Sudan</td>
<td>2023</td>
</tr>
<tr>
<td>Yogita Thakral</td>
<td>Institutional work for digitally mediated AMR data management: A process-based approach in a resource constrained setting in India.</td>
<td>India</td>
<td>2023</td>
</tr>
<tr>
<td>Festus Mukoya</td>
<td>Interplay of ICTs and social capital in building and scaling peace networks within contexts of violent ethnic conflicts: a study from Kenya.</td>
<td>Kenya</td>
<td>2023</td>
</tr>
<tr>
<td>Magnus Li</td>
<td>Enterprise Software as Design Infrastructure.</td>
<td>India, Malawi, Mozambique, Norway, Tanzania</td>
<td>2022</td>
</tr>
<tr>
<td>Eric Adu-Gyamfi</td>
<td>Frugal Digital Innovation for Health Information Systems in Resource-Constrained Settings: The Case of Sierra Leone.</td>
<td>Sierra Leone</td>
<td>2022</td>
</tr>
<tr>
<td>Flora Nah Asah</td>
<td>Challenges and Approaches of Implementing Standard Health Indicators in Hierarchical Organizations: A multi-sited study.</td>
<td>Cameroon, Ghana and South Africa</td>
<td>2021</td>
</tr>
<tr>
<td>Denis Leonard Adaletey</td>
<td>Design Principles for Data Use in Health Information Systems Developing Countries Perspective.</td>
<td>Ghana</td>
<td>2021</td>
</tr>
<tr>
<td>Elise Østmo</td>
<td>Coordinating Patient Information in HIV/AIDS Care with Hybrid Health Information Systems: An Ethnographic Case Study from South Africa.</td>
<td>South Africa</td>
<td>2020</td>
</tr>
<tr>
<td>Author</td>
<td>Title</td>
<td>Location</td>
<td>Year</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Ayub Shisia Manya</td>
<td>Understanding the Role of Institutional Incentives in Shaping Data Quality and Information Use in Devolved Health Systems: A Case of Health Information System Implementation in Kenya.</td>
<td>Kenya</td>
<td>2019</td>
</tr>
<tr>
<td>Patrick Albert Chikumba</td>
<td>Geodata Maintenance and Collaboration in GIS Implementation in Health Sector in a Developing Country Context: The Case of DHIS2 GIS in Malawi.</td>
<td>Malawi</td>
<td>2019</td>
</tr>
<tr>
<td>Elisabeth Fruijtjer</td>
<td>Scaling ICT4D Sustainably: A Naturalistic Inquiry of District Health Information System (DHIS) 2.</td>
<td>Norway</td>
<td>2019</td>
</tr>
<tr>
<td>Brown Chawanangwa Msiska</td>
<td>Leveraging Open Source Software Platforms towards HIS Implementation in Developing Countries.</td>
<td>Malawi</td>
<td>2019</td>
</tr>
<tr>
<td>Esther Namatovu Landén</td>
<td>MHealth systems, Transformations in Work and Implications for Sustainability.</td>
<td>Uganda</td>
<td>2019</td>
</tr>
<tr>
<td>Thanh Ngoc Nguyen</td>
<td>Design Principles for Health Information Infrastructures in Developing Countries.</td>
<td>Vietnam</td>
<td>2018</td>
</tr>
<tr>
<td>Roshan Hewapathirana</td>
<td>FOSS as a Platform Ecosystem: Understanding governance of open source HIS implementation in a Low and Middle Income Country context.</td>
<td>Sri Lanka</td>
<td>2018</td>
</tr>
<tr>
<td>Lars Kristian Roland</td>
<td>Designing architectural patterns for distributed flexibility in health information systems.</td>
<td>India, Uganda, Zambia, Nigeria, Rwanda</td>
<td>2018</td>
</tr>
<tr>
<td>Mikael Gebre Mariam</td>
<td>Digitalization Trajectories of Health Information Systems and the Role of Governance in Development Projects.</td>
<td>Ethiopia</td>
<td>2018</td>
</tr>
<tr>
<td>Christon Mesheck Moyo</td>
<td>Transformational Feedback: Breaking the vicious cycle of information use in Health Information Systems - A case from Malawi.</td>
<td>Malawi</td>
<td>2017</td>
</tr>
<tr>
<td>Arunima Mukherjee</td>
<td>Empowerment: The invisible element in ICT4D projects? The case of public health information systems in India and Kenya.</td>
<td>India, Kenya</td>
<td>2017</td>
</tr>
<tr>
<td>Hanne Cecilie Geirbo</td>
<td>Crafting connections – practices of Infrastructuring: An ethnographic study of developing a village electricity grid in Bangladesh.</td>
<td>Bangladesh</td>
<td>2017</td>
</tr>
<tr>
<td>Edem Kwame Kossi</td>
<td>Bottom-up Architecting of National and Regional Health Information Systems in Malawi and West Africa.</td>
<td>Malawi, West Africa</td>
<td>2016</td>
</tr>
<tr>
<td>Pandula Siribaddana</td>
<td>Training as a Means for Cultivating Communities of Practice around Health Information Systems.</td>
<td>Sri Lanka</td>
<td>2016</td>
</tr>
<tr>
<td>Selamawit Molla Fossum</td>
<td>An Institutional Perspective on Health Information Systems' Standardization: Multiple Case Studies.</td>
<td>Ethiopia</td>
<td>2016</td>
</tr>
<tr>
<td>Rangarirai Matavire</td>
<td>Producing the Agora: Appropriation of Health Information Systems in Developing Countries.</td>
<td>Malawi, Zimbabwe</td>
<td>2016</td>
</tr>
<tr>
<td>Yahya Hamad Sheikh</td>
<td>Health Information Systems Integration as Institutionalisation.</td>
<td>Zanzibar, Tanzania</td>
<td>2015</td>
</tr>
<tr>
<td>Nima Herman Shidende</td>
<td>Distributed Collaborative Practices in Resource Restricted Settings. Ethnographic studies from the Tanzanian Primary Healthcare Information System.</td>
<td>Tanzania</td>
<td>2015</td>
</tr>
<tr>
<td>Name</td>
<td>Title/Topic</td>
<td>Research Setting</td>
<td>Year</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>-----------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Terje Aksel Sanner</td>
<td>Grafting Information Infrastructure: Mobile Phone-based Health Information System Implementations in India and Malawi.</td>
<td>India, Malawi</td>
<td>2015</td>
</tr>
<tr>
<td>Tiwonge Davis Manda</td>
<td>Developing HIS Infrastructure: Negotiating Tensions to Design, Implementation, and Maintenance.</td>
<td>Malawi</td>
<td>2015</td>
</tr>
<tr>
<td>Marlen Stacey Chawani</td>
<td>Development of Electronic Medical Record Systems for Maternal Health Services in Rural Settings.</td>
<td>Malawi</td>
<td>2015</td>
</tr>
<tr>
<td>Saptarshi Purkayastha</td>
<td>The Genus of Information Infrastructures: Architecture, Governance &amp; Praxis.</td>
<td>India, Malawi</td>
<td>2015</td>
</tr>
<tr>
<td>Caroline Ngoma</td>
<td>Approaches for Improving the Quality and Accessibility of Maternal and Child Health Data from Rural Communities: Action-Case Studies from Tanzania.</td>
<td>Tanzania</td>
<td>2014</td>
</tr>
<tr>
<td>Abyot Asalefew Gizaw</td>
<td>Open Generification: The case of District Health Information Software.</td>
<td>Ethiopia</td>
<td>2014</td>
</tr>
<tr>
<td>Zeferino Saugene</td>
<td>Customization of Generic Open Source Software for Health Sector in Developing Countries: A Practice Based Approach.</td>
<td>Mozambique</td>
<td>2014</td>
</tr>
<tr>
<td>Zufan Abera Damtew</td>
<td>Harnessing community knowledge for health: Case studies from community health service and information systems in Ethiopia.</td>
<td>Ethiopia</td>
<td>2013</td>
</tr>
<tr>
<td>Murodillo Latifov</td>
<td>Global Standards and Local Health Information Systems Applications: Understanding their interplay in the context of Tajikistan.</td>
<td>Tajikistan</td>
<td>2013</td>
</tr>
<tr>
<td>Johan Sebø</td>
<td>Global Scaling of Health Information Infrastructures: Circulating Translations.</td>
<td>Sierra Leone, Botswana</td>
<td>2013</td>
</tr>
<tr>
<td>Chipo Kanjo</td>
<td>In Search of the Missing Data: The case of maternal and child health data in Malawi.</td>
<td>Malawi</td>
<td>2012</td>
</tr>
<tr>
<td>John Lewis</td>
<td>From technology for information to information for local action: the role of participatory networks from case studies in India.</td>
<td>India</td>
<td>2011</td>
</tr>
<tr>
<td>Nigussie Tadesse Mengesha</td>
<td>Revisiting Networking of Actions and Knowledge Transfer: An Outline of Practice and Community Based Distributed Approach For Open Source Information Systems Implementation in Developing Countries.</td>
<td>Ethiopia</td>
<td>2011</td>
</tr>
<tr>
<td>Knut Staring</td>
<td>Organizational Open Source in the Global South: Scaffolding Implementation Based Distributed Development.</td>
<td>Vietnam, India, Mozambique, Ethiopia, Zanzibar, South Africa</td>
<td>2011</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Location(s)</td>
<td>Year</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Vincent Shaw</td>
<td>A Complexity Inspired Approach to Co-Evolutionary Hospital Management Information Systems Development: Case studies from the &quot;South.&quot;</td>
<td>South Africa, Malawi, Nigeria, Zambia</td>
<td>2009</td>
</tr>
<tr>
<td>Humberto Muquingue</td>
<td>Understanding and improving medical students’ exposure to health management in rural settings of Mozambique.</td>
<td>Mozambique</td>
<td>2009</td>
</tr>
<tr>
<td>Jagrati V. Jani</td>
<td>Assessing the &quot;window of susceptibility&quot; in measles control: The case study from Mozambique.</td>
<td>Mozambique</td>
<td>2009</td>
</tr>
<tr>
<td>João Carlos de Timóteo Mavimbe</td>
<td>Understanding the global and local interplay of standards: The case of the Expanded Program on Immunization in Mozambique.</td>
<td>Mozambique</td>
<td>2008</td>
</tr>
<tr>
<td>Honest Christopher Kimaro</td>
<td>Decentralization and Sustainability of ICT Based Health Information Systems in Developing Countries: A Case Study from Tanzania.</td>
<td>Tanzania</td>
<td>2006</td>
</tr>
<tr>
<td>Jose Leopoldo Nham possa</td>
<td>Re-Thinking Technology Transfer as Technology Translation: A Case Study of Health Information Systems in Mozambique.</td>
<td>Mozambique</td>
<td>2006</td>
</tr>
<tr>
<td>Marisa D'Mello</td>
<td>Understanding Selves and Identities of Information Technology Professionals: A Case Study from India.</td>
<td>India</td>
<td>2006</td>
</tr>
<tr>
<td>Jyotsna Sahay</td>
<td>Understanding Organisational Implementation of (G)IS From a Human Response Development Perspective.</td>
<td>India</td>
<td>2006</td>
</tr>
<tr>
<td>Emilio Luís Mosse</td>
<td>Understanding the Introduction of Computer-Based Health Information Systems in Developing Countries: Counter Networks, Communication Practices, and Social Identity: A Case study from Mozambique.</td>
<td>Mozambique</td>
<td>2005</td>
</tr>
<tr>
<td>Baltazar Gonçalo Mazungane Chilundo</td>
<td>Integrating Information Systems of Disease-Specific Health Programmes in Low Income Countries: The Case Study of Mozambique.</td>
<td>Mozambique</td>
<td>2004</td>
</tr>
<tr>
<td>Elaine Byrne</td>
<td>A participatory approach to the design of a child-health community-based information system for the care of vulnerable children.</td>
<td>South Africa</td>
<td>2004</td>
</tr>
<tr>
<td>Satish K. Puri</td>
<td>The Challenges of Participation and Knowledge in GIS Implementation for Land Management: Case Studies from India.</td>
<td>India</td>
<td>2003</td>
</tr>
<tr>
<td>Jørn Braa</td>
<td>Use and Design of Information Technology in Third World Contexts with a Focus on the Health Sector: Case Studies from Mongolia and South Africa.</td>
<td>Mongolia, South Africa</td>
<td>1998</td>
</tr>
</tbody>
</table>
## Project portfolio

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Project Lead</th>
<th>Funding Source</th>
<th>Funding (In USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC CoAg 2020-2025</td>
<td>Rebecca Potter</td>
<td>CDC</td>
<td>9,294,000</td>
</tr>
<tr>
<td>ETHIC - NОРPART-2016/10134</td>
<td>Petter Nielsen</td>
<td>DIKU</td>
<td>100,208</td>
</tr>
<tr>
<td>NОРPART-2021/10205 - DEDICATED - DIKU</td>
<td>Jens Kaasbøll</td>
<td>DIKU</td>
<td>511,794</td>
</tr>
<tr>
<td>EU 101083048 - ERASMUS-EDU-2022-CBHE - NEEM</td>
<td>Jens Kaasbøll</td>
<td>EU</td>
<td>299,212</td>
</tr>
<tr>
<td>BETTEReHEALTH</td>
<td>Jens Kaasbøll</td>
<td>EU</td>
<td>143,275</td>
</tr>
<tr>
<td>CDC - CoAg 2020-2025</td>
<td>Ola Hodne Titlestad</td>
<td>Gates</td>
<td>3,011,713</td>
</tr>
<tr>
<td>BMGF - TB Tracker Pakistan</td>
<td>Ola Hodne Titlestad</td>
<td>Gates</td>
<td>813,050</td>
</tr>
<tr>
<td>GAVI Global 21-23</td>
<td>Ola Hodne Titlestad</td>
<td>GAVI</td>
<td>5,923,461</td>
</tr>
<tr>
<td>GAVI Global 23-25</td>
<td>Ola Hodne Titlestad</td>
<td>GAVI</td>
<td>3,598,800</td>
</tr>
<tr>
<td>GAVI TCA 2022-2025</td>
<td>Anne Thorseng</td>
<td>GAVI</td>
<td>2,400,000</td>
</tr>
<tr>
<td>DHIS2 support for strengthening Sudan - Health/Logistics Information Systems</td>
<td>Breno Horst</td>
<td>Global Fund</td>
<td>161,100</td>
</tr>
<tr>
<td>Global Fund - UIO - 2021-2023</td>
<td>Ola Hodne Titlestad</td>
<td>Global Fund</td>
<td>5,798,000</td>
</tr>
<tr>
<td>Global Fund - WCA - 2021-2023</td>
<td>Ola Hodne Titlestad</td>
<td>Global Fund</td>
<td>1,850,000</td>
</tr>
<tr>
<td>HMIS Improvement in Sierra Leone - Global Fund 2023/24</td>
<td>Anne Thorseng</td>
<td>Global Fund</td>
<td>96,986</td>
</tr>
<tr>
<td>IOM - TEAM2: Tuberculosis Elimination Among Migrants</td>
<td>Jørn Braa</td>
<td>Global Fund</td>
<td>296,604</td>
</tr>
<tr>
<td>SISMA - Mozambique MISAU 2021-23</td>
<td>Kristin Braa</td>
<td>Global Fund</td>
<td>489,133</td>
</tr>
<tr>
<td>Global Partnership for Education Knowledge and Innovation Exchange (GPE KIX) - EMIS</td>
<td>Terje Sanner</td>
<td>GPE/ IDRC</td>
<td>1,116,177</td>
</tr>
<tr>
<td>Digital Public Goods Capability Strengthening for Digital Public Infrastructure Cultivation</td>
<td>Kristin Braa</td>
<td>Norad</td>
<td>2,137,370</td>
</tr>
<tr>
<td>NORAD Core Funding 2021-2024</td>
<td>Anne Thorseng</td>
<td>Norad</td>
<td>4,800,000</td>
</tr>
<tr>
<td>Norad Covid Pandemic Surveillance Support 2020-2022</td>
<td>Anne Thorseng</td>
<td>Norad</td>
<td>4,500,000</td>
</tr>
<tr>
<td>NORAD EMIS Extension of pilot to 3 additional countries</td>
<td>Sophia Kousiaksis</td>
<td>Norad</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Novartis UNIBAS DHIS2+LMIS 2022</td>
<td>Breno Horst</td>
<td>Novartis</td>
<td>572,547</td>
</tr>
<tr>
<td>Digital Square - PEPFAR 2022</td>
<td>Leonardo Rodarte</td>
<td>PEPFAR</td>
<td>1,311,826</td>
</tr>
<tr>
<td>PEPFAR 2023</td>
<td>Ola Hodne Titlestad</td>
<td>PEPFAR</td>
<td>1,304,710</td>
</tr>
<tr>
<td>RKI collaboration TB-COVID Project</td>
<td>Ola Hodne Titlestad</td>
<td>Robert Koch Institute</td>
<td>120,000</td>
</tr>
<tr>
<td>Description</td>
<td>Responsible</td>
<td>Agency</td>
<td>Amount</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>RTSL Capture App &amp; UserCentered Design</td>
<td>Karoline Tufte Lien</td>
<td>RTSL</td>
<td>499,400</td>
</tr>
<tr>
<td>UNDP - AGYW DHIS2 Initiative Zimbabwe 2022-23</td>
<td>Ola Hodne Titlestad</td>
<td>UNDP</td>
<td>426,424</td>
</tr>
<tr>
<td>UNDP - DHIS2 Guinea Equatorial</td>
<td>Ola Hodne Titlestad</td>
<td>UNDP</td>
<td>88,120</td>
</tr>
<tr>
<td>UNICEF App Development 2021-23</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>194,090</td>
</tr>
<tr>
<td>UNICEF ESARO Subdistrict population data use in DHIS2</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>133,582</td>
</tr>
<tr>
<td>UNICEF Ethiopia BNA and scorecard</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>53,569</td>
</tr>
<tr>
<td>UNICEF Nutrition 2023</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>34,296</td>
</tr>
<tr>
<td>UNICEF Pakistan Sindh 43296389 - 2020-21</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>100,654</td>
</tr>
<tr>
<td>UNICEF Rapid Pro</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>151,308</td>
</tr>
<tr>
<td>UNICEF Somalia #2 2021-22</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>91,786</td>
</tr>
<tr>
<td>UNICEF Somalia 2022-2023 DHIS2 Tracker for IDSR Reporting</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>172,027</td>
</tr>
<tr>
<td>UNICEF Somalia HIV Tracker 2022-23</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>118,808</td>
</tr>
<tr>
<td>Unicef Thrive360 platform</td>
<td>Ola Hodne Titlestad</td>
<td>UNICEF</td>
<td>197,331</td>
</tr>
<tr>
<td>Drug Resistant Survey training Uzbekistan - WHO 2023</td>
<td>Olav Poppe</td>
<td>WHO</td>
<td>9,189</td>
</tr>
<tr>
<td>PAHO Administered Web-Based Integrated Surveillance System 2021-22</td>
<td>Ola Hodne Titlestad</td>
<td>WHO</td>
<td>120,000</td>
</tr>
<tr>
<td>PAHO ESAVI 2021-22</td>
<td>Ola Hodne Titlestad</td>
<td>WHO</td>
<td>247,058</td>
</tr>
<tr>
<td>PAHO ESAVI 2022-23</td>
<td>Ola Hodne Titlestad</td>
<td>WHO</td>
<td>138,000</td>
</tr>
<tr>
<td>PAHO ESAVI Module Implementation - Jamaica</td>
<td>Ola Hodne Titlestad</td>
<td>WHO</td>
<td>20,000</td>
</tr>
<tr>
<td>PAHO Surveillance Part II - 2023</td>
<td>Ola Hodne Titlestad</td>
<td>WHO</td>
<td>77,600</td>
</tr>
<tr>
<td>WHO APW Contract 202790102</td>
<td>Olav Poppe</td>
<td>WHO</td>
<td>873,108</td>
</tr>
<tr>
<td>WHO DNA Digital Packages</td>
<td>Olav Poppe</td>
<td>WHO</td>
<td>260,271</td>
</tr>
<tr>
<td>WHO EMRO 2023</td>
<td>Anne Thorseng</td>
<td>WHO</td>
<td>23,915</td>
</tr>
<tr>
<td>WHO Nepal Assessment 2022/23</td>
<td>Anne Thorseng</td>
<td>WHO</td>
<td>25,056</td>
</tr>
<tr>
<td>WHO TB Jordan 2023</td>
<td>Anne Thorseng</td>
<td>WHO</td>
<td>7,036</td>
</tr>
<tr>
<td>WHO West Bank and Gaza</td>
<td>Anne Thorseng</td>
<td>WHO</td>
<td>34,688</td>
</tr>
<tr>
<td>WHO-AICS project in Ethiopia and Somalia (Pastoralist)</td>
<td>Ola Hodne Titlestad</td>
<td>WHO</td>
<td>502,555</td>
</tr>
</tbody>
</table>

**Total** 56,941,837
Publications

Journal Publications


Müller, S. D. (2023). Bridging the Practice-Research Gap through Student Research: Learning to Become an IS Community of Practice Member. ISCAP Conference.


Other Publications


The Global Education Monitoring Report, UNESCO.

