I-DAIR

The International Digital Health and AI Research Collaborative (I-DAIR)

Annual Report
2022

www.i-dair.org

The International Digital Health and AI Research Collaborative "I-DAIR" develops digital and AI solutions to bridge the digital knowledge gap in healthcare and support the collaborative development of digital health solutions that benefit all countries and communities.

Our goal is to become the neutral and trusted platform for global research collaborations on digital health and Artificial Intelligence (AI) for health to improve access to digitally-enabled innovative research for clinical researchers, policymakers, and patients from the Global South. Our focus is on small States, meaning nations with a population under 10 million of all income levels, and on Low- and Middle-Income Countries (LMICs). They will reap the most benefits from pooling resources, data, and talents with local technology pipelines that can be leveraged for global innovation.

Our vision combines research, infrastructure, investments, interoperability, capacity development, benchmarking, and governance to address the data and AI challenges that no single country or research institution can solve independently.

Our work is tailored to three areas of intervention identified to fully shape the digital health research and innovation space:

01

We strengthen research infrastructure and capacity for digital health and AI research in LMICs.

I-DAIR addresses the three components identified as the main entry barriers to digital health and AI research for many countries: the lack of hardware, software, and human capacities.

02

We develop and curate AI and data public goods.

I-DAIR works to become the main authority assessing, validating, sustaining, and disseminating AI Public Goods. Through use cases in the fields of youth mental health and pandemic preparedness and response, we are driving the early development of AI and data public goods for health.

03

We enhance the global governance framework and foster a worldwide community of researchers in digital health and AI for health.

I-DAIR is developing and aims to share common guidance, frameworks, and tools for the development of responsible AI, focusing on LMICs' use cases and regional contexts.

INTRODUCTION

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CEO
FOREWORD

Dear partners and friends of I-DAIR,

2022 has truly been a momentous year. Your support has been pivotal. It has taken us further on the path to becoming the trusted and global platform for inclusive, impactful, and responsible research into digital health and AI for health.

We have experienced an exceptional year at I-DAIR from all points of view, with a significant event being the appointment in July of our founder and first CEO, Amb. Amandeep Gill, as UN Tech Envoy. This represented the recognition of his efforts in creating I-DAIR, as well as building up the entire team that has now taken up the torch and continues to dedicate itself to our original vision of implementing effective research collaboration in Digital Health (DH) and Artificial Intelligence (AI) between different countries, particularly those in the Global South.

I-DAIR has grown and has established itself as a pioneering organization dedicated to DH and AI for collaborative research. This recognition led to our presentation at the **UN General Assembly in New York**, where we were introduced to the international community at an event chaired by H.E. Abdulla Shahid, President of the 76th Session of the UN General Assembly, and co-hosted by the Permanent Missions of Switzerland and Singapore to the UN.

This acknowledgement also culminated in the signing of an MoU with the WHO. This MoU formalised our shared vision and collaboration. Currently, we are working jointly with the WHO to define and create a competency framework as well as capacity development in DH. With our partner, the International Development Research Centre (IDRC) in Canada, we will contribute to their efforts to promote responsible AI for medical and clinical research in the Global South, by overseeing some of the projects that have been recently awarded to other partners and implementing a strategy, methodology and tools, as well as making available the necessary resource repositories.

We have also started a new Mental Health work stream, collaborating with different partners and focusing our efforts in working towards the definition and implementation of a research and development agenda of digital and AI in mental health. Specifically, the redesign of social determinants of Mental Health with the inclusion of new elements such as the digital and the climate change, the definition and standardization of digital biomarkers of Mental Health and the development of a framework for the implementation of digital mental health interventions.

I-DAIR has signed a Long Tern Agreement with the WHO, and we will work closely to build a visionary project for Traditional medicine evidence mapping using artificial Intelligence. We will explore the opportunities that the digital can bring to the Traditional Medicine.

I-DAIR has also assembled its inaugural board, composed of well known and respected personalities in global health, public health and digital health. Our board, chaired by Dr. Christoph Benn, is actively working on expanding our outreach and making our expertise known to various partners.

We have had the opportunity to participate in and showcase our vision and work at international events notably the **World Health Summit** in Berlin, the **Global Technology Summit** in New Delhi, the **Francophonie Summit** in Djerba, the **UNGA Science Summit** in New York, and the **Global Digital Health Forum** in Washington DC. Another major achievement is our invitation by India's **G20** Presidency to participate in the health working group and to cooperate on the development of the Digital Health work stream.
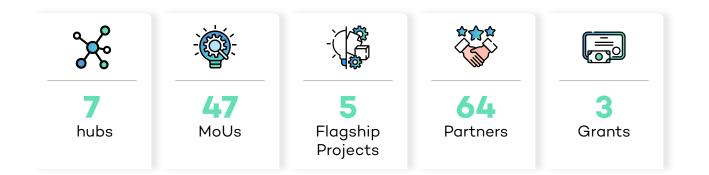
We look forward to continuing to work together in 2023 and to sharing exciting news about I-DAIR development.

I-DAIR CEO a.i.
Dr. Mehdi Snène

mehdi Snene

science

music

games

history

philosophy

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economic

2022 AT
A GLANCE

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PROJECTS

- I-DAIR released the Mental Health and Wellbeing edition of its Global Research Map, made available to the global scientific community as a public digital good to celebrate World Mental Health Day.

- I-DAIR launched its citizen science needs assessments aimed at researching optimal approaches to building participatory intelligence for efficient pandemic preparedness and response.

- I-DAIR assembled its first Research Infrastructure Box in Geneva, establishing the first node of the federated edge cluster architecture.

- I-DAIR launched its collaboration with WHO to co-lead the development of a digital health competency framework for health policy makers, planners, providers and practitioners, and people/patients/populations.

PARTNERSHIPS

- I-DAIR signed a Memorandum of Understanding (MoU) with WHO outlining their joint efforts to advance the use of digital technologies for personal and public health globally.

EVENTS

- I-DAIR presented its work at the UN Headquarters in New York, demonstrating its relevance and unique position to bridge the digital health and AI knowledge gap and accelerate progress on the 2030 Agenda.

- I-DAIR and partners addressed the growing knowledge and power imbalance in AI research and innovation for health through a high-level panel session held at the UNGA77 Science Summit.
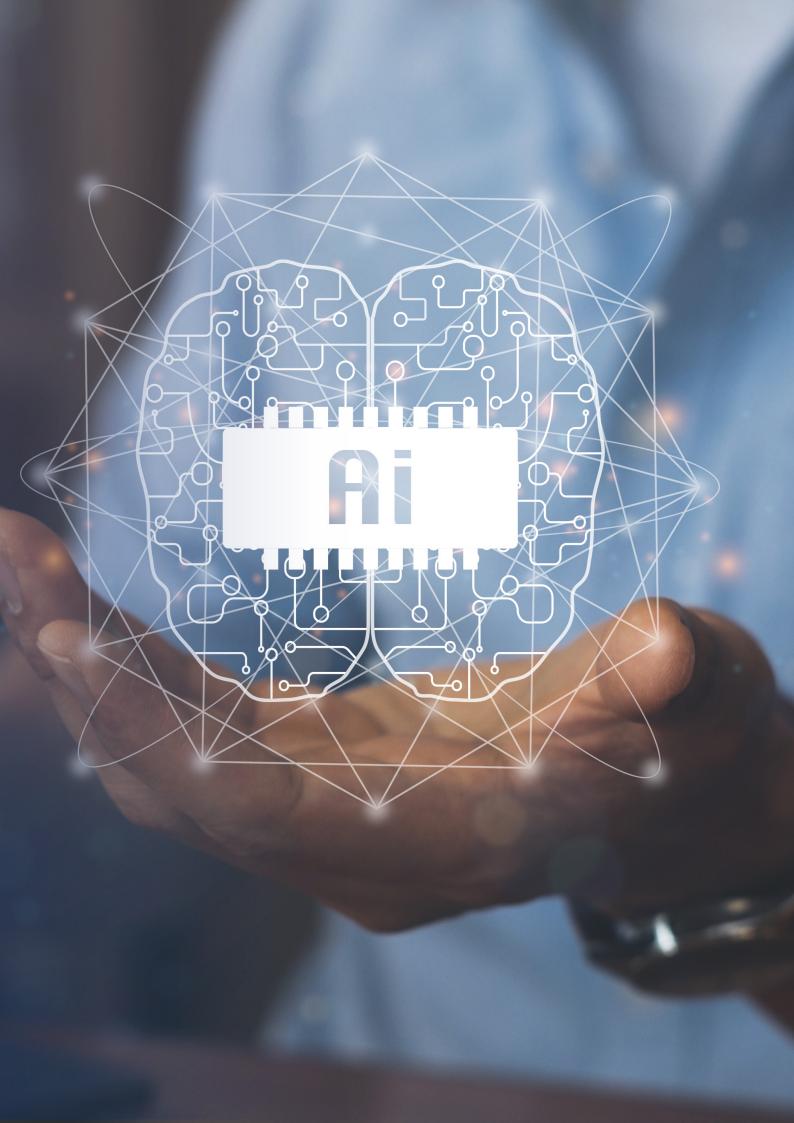
- I-DAIR participated at World Health Summit to spark stakeholder engagement for a Global Health Data Space that could help to treat and govern data for health as a global public good.

INSTITUTIONALIZATION

- I-DAIR inaugurated its Board, bringing together leading voices from the digital and health fields and reflecting high standards of transdisciplinarity and diversity, with particular attention to gender, geographic and sectoral representations.

- I-DAIR registered as an independent entity under Swiss law, in view of full operational autonomy in February 2023.

RESOURCE MOBILIZATION

- I-DAIR was awarded a CAD 1.2 million grant by Canada's International Development Research Centre (IDRC) to improve the implementation of responsible and gender-responsive AI in global health in LMICs.

- I-DAIR was selected by WHO as a partner for a project on Evidence for Traditional Medicine.

01.

PROJECTS

01.
Projects

I-DAIR has identified areas of scientific research exploration aimed at better supporting the digital transformation of health systems, providing end-to-end enabling of digital health, and assisting in developing policy responses to ensure equitable, impactful, and ethical use of new technologies.

Our project portfolio focuses on a limited number of flagship projects providing a holistic vision that combines research, infrastructure, capacity development, and governance. Additional ventures conducted at a smaller scale include exploring benchmarking and interoperability solutions and concrete digital health use cases for innovation.

FLAGSHIP PROJECTS

Research Infrastructure

I-DAIR's Research Infrastructure (RI) is a distributed digital infrastructure for the confederated use of data and AI thought for innovators and researchers from small states and low- and lower-middle-income countries (LMICs).

Capacity Development Network

The Capacity Development Network (CDN) for digital health and AI is I-DAIR's response to address the fragmented approach to capacity development and high demand, particularly in low- and lower-middle-income countries (LMICs).

Pandemic Preparedness and Response

I-DAIR is elaborating with its partners the idea of a global, science-based, data-driven, neutral, and trusted collective capacity which leverages citizen science to improve the quality of local and national responses throughout the continuum of pandemic phases.

Global Research Maps

The Global Research Map (GRM) is an interactive tool developed through an ontological approach to big data and AI to provide situational awareness of the Digital Health and AI research and development domains. In 2022, I-DAIR developed a second edition focusing on mental health and well-being research activities around the globe

Responsible AI for Health

I-DAIR aims to develop and share common guidance, frameworks, and tools for the development of responsible AI. The collaborative AI governance scheme will facilitate the exchange of governance innovations and outcomes across different nodes.

OTHER INITIATIVES

e-PROM

I-DAIR is working on shifting the evaluation of digital health and AI solutions in health from technical accuracy to human-centered benchmarks. One focus is the integration of e-PROMs into clinical practice in the oncology and neurological settings.

Digital Innovation in Health

Within this project, the aim is to develop digital or digitally-enabled innovations that help strengthen health systems and improve access to essential health services as part of the push toward the goal of universal health coverage by 2030. This effort includes the Mental Health, MOTHER and AMR schemes.

Interoperability

I-DAIR aims to develop and share common guidance, frameworks, and tools for the development of responsible AI. The collaborative AI governance scheme will facilitate the exchange of governance innovations and outcomes across different nodes.

RESEARCH INFRASTRUCTURE

I-DAIR's Research Infrastructure (RI) is a distributed digital infrastructure for the federated use of data and AI that provides a scalable and secure alternative to the current infrastructures dominated by tech giants. Its focus is on innovators and researchers from small states and low- and lower-middle-income countries (LMICs).

The RI is developed to answer to the double need of reducing the complexity and learning curve of ML/AI and building capacity in environments lacking IT and data expertise. Faithful to I-DAIR's tenet on data sovereignty, its federated approach will maximize ethical and secure exchanges of medical and health data while keeping it within predefined national, regional, or local ownership boundaries.

In its visible front end, the RI consists of an 'AI lab in a box' customizable in hard- and software to fit its users' needs. These so-called 'RI nodes' will be able to operate independently as well as form part of federated AI/ML use cases with other nodes in the network.

The RI nodes are supported by a centralized infrastructure hosted in a neutral and high-secure cloud at the UNICC. It consists of collaboration and productivity tools needed for AI/ML development for clinical research and digital health use cases, data repositories (both public as well as private ones) as well as a model and knowledge graph registries offered as digital public goods.

I-DAIR

In 2022, I-DAIR reached several significant milestones in the development of the RI. After completing the specification for the shared neutral infrastructure, I-DAIR assembled the first RI node and installed it in the I-DAIR headquarters. This RI node was tested with an AI/Deep Learning use case for pandemic predictions that also made use of the high-powered graphics processing unit (GPU). With this use case, I-DAIR exercised the full ML/AI lifecycle from data collection and storage in a private data repository, several iterations of model training supported by a state-of-the-art experiment tracking system, up to the publishing of the model to an ML/AI model registry. From that model registry, the model was deployed for inference (predictions) via both web based API's as well as a custom graphical user interface.

I-DAIR is now progressing with the development of a code-less experience (CODEX) system geared towards public health researchers that will be tested at the African Population Health Research Centre - APHRC (Nairobi, Kenya) together with a dedicated RI node. For a closer collaboration, I-DAIR also recruited a Data Scientist Research Fellow from APHRC end of 2022 who is actively contributing to the TRI project whilst ensuring to meet the ML/AI needs of APHRC's public health researchers. I-DAIR also progressed with the development of a personalized learning experience (PALEX) to assist medical students and researchers in understanding and using their data and to better prepare them to work with the CODEX.

Further partners that will each house a RI node tailored to its specific needs include: a data science research setting for public health data a medical imagery analysis capacity for neurological research at the Razi Hospital (Manouba, Tunisia); and a clinical and teaching setting at the Christian Medical College (Vellore, India).

Finally, the RI's centralized cloud capacity is being discussed with the UNICC to determine the various services to be included, such as hosting and cybersecurity. I-DAIR anticipates the software stack to be tested within the UNICC hosting capacity by mid-2023.

CAPACITY DEVELOPMENT NETWORK

The emergence of AI creates a new demand to develop the skills and technical knowledge needed to effectively leverage this technology for health. In LMICs, there is a groundswell of activity to train young people in AI, Machine Learning, and data science, but, at the same time, guidance and hands-on training on AI in health and data literacy for a non-technical audience are lacking. Moreover, conventional training is insufficient; adult professionals learn best with hands-on practice opportunities and access to coaches, mentors and peer networks.

I-DAIR is developing a global Capacity Development Network (CDN) for digital health and AI to address these issues. The CDN will be composed of the I-DAIR hubs and partners to leverage their faculty, expertise, courses, and other educational offerings. The target learners - researchers and developers, and policy and decision makers - will be able to engage with any learning opportunity with any member of the CDN, regardless of geographic location. The CDN will provide learners with a library of existing and new courses from around the world vetted by experts, as well as peer-to-peer learning and practice opportunities to build their technical, clinical, and policy-making capacities. The CDN will coordinate with professional and accreditation bodies to grant accreditation and continuing education units recognized at national and global levels. This effort is strategically aligned with I-DAIR's Trusted Research Infrastructure for clinical researchers interested in transitioning from classical methods to data science and AI for health R&D.

A foundational effort of the CDN is the collaboration with WHO to develop a

Digital Health Competency Framework for health policymakers, planners/implementers/ researchers, practitioners and providers, and people/patients worldwide. It will serve as a meta framework linking with existing exemplar competency frameworks.

Building upon the work begun by WHO AFRO in 2019-2020, the Digital Health Competency Framework will help define a blueprint for an effective and patient-centric health workforce. It will clarify what it means to be proficient in digital health. It will establish common ground for the critical digital skills and knowledge needed to bring health professions to a new level, ensuring health workforces can effectively use the technologies being deployed to bring digital health systems to a new level of usability, sustainability and impact and to bring health policies and decisions into the digital age.

After a period of consultations with I-DAIR hubs and partners in 2021, the project kicked off in March 2022 with the creation of a Steering Committee and two working groups on Competency Frameworks and Learning Content. Membership is diverse on multiple dimensions, with 60+ members in the Competency Framework working group from every continent except Antarctica, representing a range of roles and organizations. In 2022, the Competency Framework working group drafted the framework's initial domains, sub-domains, and competency statements. This work will continue in 2023, including a draft release at the World Health Assembly in May

2023 by WHO and I-DAIR, and review and feedback through a WHO call for experts. The final product will be a jointly branded WHO and I-DAIR technical product as called for in the WHO Global Strategy on Digital Health implementation plan. Discussions are underway with the Ministry of Health for a possible pilot implementation of the digital health competency framework to guide their digital health department structure and workforce planning.

Given the high unmet demand for training, I-DAIR organized the participation of a first cohort of learners from Kenya, Botswana, and Chile in the 11-week "Digital Health: Planning National Systems" course jointly developed by USAID, Digital Square, Last Mile Health and TechChange based on content compiled by the WHO and ITU. The cohort, composed of researchers from the APHRC and representatives from academia and the Ministry of Health in Botswana and Chile, will form the CDN's initial alumni and peer-to-peer learning community. Through their experience, participants will also constitute a focus group to inform the development of future courses and the competency framework. I-DAIR partnered with UNITE this year to develop a future course for parliamentarians.

GLOBAL RESEARCH MAP (GRM)

On World Mental Health Day (10 October) 2022, I-DAIR launched the Mental Health and Wellbeing (MH&W) edition of the I-DAIR Global Research Map (GRM).

Based on comprehensive and comparative mental health and well-being research activities around the globe, the Map enables a detailed analysis of digital trends in research and interventions for mental health. It sheds light on gaps across the mental health care spectrum, revealing research areas boosted by COVID-19 and disclosing the share of digital health applications in mental health and wellbeing studies.

The 2.5 million scientific articles analyzed and mapped through Natural Language Processing (NLP) indicate exponential growth in the research and development (R&D) of mental health and digital mental health publications in 2020 and 2021, as the pandemic accelerated the adoption of mental health digital and AI-based interventions. However, recent data also reveal a significant decrease in research and clinical trials in the field since 2022.

The entire publications dataset along with the specific semantic search tools are available as a public digital good to the global scientific community.

This special edition builds upon I-DAIR's original GRM on digital health and AI, an interactive tool designed to provide a national, regional, and global outlook on digital health and AI research and innovation, launched in November 2021.

Additional versions and editions of the GRM are currently under development, including version 2 of our Digital Health and AI Map and a Traditional Medicine edition produced in collaboration with WHO.

PANDEMIC PREPAREDNESS AND RESPONSE

The COVID-19 pandemic has demonstrated how a lack of accurate, real-time outbreak data and an inconsistent science-based response framework have led to global struggles in responding to the pandemic promptly and effectively. Should we fail to fundamentally transform the international pandemic surveillance and response system – as called for by WHO, we will not be ready for the next pandemic.

To achieve this transformation, I-DAIR and partners are co-developing a global pandemic preparedness and response scheme that is science-based, digitally enabled, and covers the continuum of pandemic phases, namely preparedness, surveillance, response, and recovery.

In 2022, following its second convening, I-DAIR's Scientific Working Group (SWG) (32 multi-disciplinary scientific experts from 17 countries, half of which LMICs) defined the scheme's final research and development (R&D) agenda. Based on the lessons from the Covid-19 crisis, the group identified four priority innovative areas to improve our global capacity to face the next pandemic:

i) Discovering unusual and diverse data sources using big data analytics and AI as well as building population cohorts for equitable data curation;

ii) Building models that could be Findable, Accessible, Interoperable and Reusable (FAIR) through standardization and validation and which would allow for citizen inputs through participatory approaches;

iii) Designing visualizations that are targeted for different stakeholders (such as policymakers and citizens) as well as developing effective communication interfaces between researchers, governments and citizens;

iv) Unpacking cross-cutting issues such as the governance of data and digital technologies, including AI, for pandemic preparedness and response as well as human and infrastructure capacity development efforts.

I-DAIR will gradually develop each priority area identified for building the end-to-end scheme over the next 5 to 10 years. Meanwhile, in May 2022, I-DAIR initiated a Special Research Topic in Frontiers to understand the current state of the art and existing gaps within these innovative areas.

Global contributors were invited to submit relevant articles on the topic. To date, two original research articles have been peer-reviewed and published with five other articles in the pipeline.

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In June, the SWG's call for citizen science in pandemic preparedness and response was published in the BMJ Global Health, introducing I-DAIR's vision and agenda on developing citizen science approaches, enabled by digital technologies so that the engagement of local communities can go beyond data generation and extend into modeling, communications and collaborative policy development. By empowering communities through shared knowledge-making and bidirectional communication, we believe that these approaches could build trust among communities, researchers, and policymakers which is critical in getting a concerted response during a health crisis.

In 2022, I-DAIR launched the first two projects for this vision: a citizen science needs assessment and a pilot implementation of participatory modeling for health.

1. Citizen science needs assessment

To identify the most suitable methods to engage citizens and co-produce knowledge in data generation and modeling, I-DAIR and its local implementation partners initiated needs assessments across nine countries (Bangladesh, Cameroon, India, Indonesia, Kenya, Nepal, the Philippines, Uganda, and Zimbabwe) to understand: (i) the landscape of participation and collaboration processes within the communities; (ii) the level of awareness and acceptance of local communities to citizen science approaches; and (iii) the feasibility and sustainability of digital participatory approaches over various geographies and cultural contexts.

In 2022, I-DAIR trained the local implementation partners on using mixed methodologies to carry out the study and produced video and infographic resources in local languages to introduce the concept of

citizen science to community members before the surveys and focus group discussions. About 1680 community members have been recruited to date, with surveys completed in Bangladesh, Cameroon, India, Indonesia, Nepal, and the Philippines, and the first results are anticipated for April 2023.

2. Participatory modeling

I-DAIR's participatory modeling project seeks to better attune data models to policy contexts and improve collective intelligence by enhancing the understanding of problems, mutual learning, and democratic engagement of local actors.

In 2022, I-DAIR and its research and implementing partners in Vietnam, Kenya and Brazil initiated a pilot study to address how to effectively manage patients and resources available in hospitals and their surrounding communities, during a disease outbreak, through the use of participatory modeling approaches and agent-based models. The objective is to give citizens an active role in dealing with a disease outbreak by having them provide their perspectives and inputs in resource management during the response. To explore this issue, we are currently working with local research institutions, hospitals and their communities in these three countries to train cohorts of local facilitators. They will conduct participatory modeling workshops and develop analog toolkits to exchange and engage with various stakeholders, ranging from citizens, policymakers, healthcare workers, and researchers to implementing partners. This effort will ultimately result in an open-source digital platform to support online participatory modeling activities on a larger scale with diverse and non-scientific stakeholders, leading to citizen collaborations across countries.

RESPONSIBLE AI FOR HEALTH

Researchers and innovators working with data and AI face an evolving regulatory landscape. They face challenges in concretely applying international and national regulations in their projects in their context. The use of AI and machine learning amplifies existing and introduces new questions on the ethical, legal, and social implications of using health data and algorithms, such as concerning informed consent and the ethical review of research methodologies. Patient safety and AI/ML transparency and fairness are growing concerns as evidence emerge of incorrect and biased decisions, as well as data privacy and security, as large and diverse volumes of data are the engine that drives AI.

In July 2022, I-DAIR signed a four-year grant agreement with Canada's International Development Research Centre (IDRC-CRDI) to fund a new project to improve the implementation of responsible and gender-responsive AI for global health in LMICs.

The project focuses on co-creating and co-validating a three-part governance mechanism to apply existing international principles and norms in LMIC contexts in two specific areas: a) epidemic/pandemic preparedness and response and b) sexual, reproductive, and maternal health. In line with IDRC and I-DAIR policies, the governance mechanism will be available to the global community of AI researchers and implementers as a global public good.

Ultimately this grant will enrich the international research agenda and regulatory discussions with experience and research from LMICs and create a deepened understanding and strengthen the capacity of not only the what but the how of implementing responsible and gender-responsive AI in low-resource contexts.

I-DAIR's activities thus far have focused on preparation to support the three new regional hubs that IDRC is establishing in Asia, Latin America/Caribbean, and the Middle East/North Africa. I-DAIR is compiling a landscape of existing resources about responsible and gender-responsive AI for global health and related topics and started conceptualizing a framework that would put these principles into practice. To foster synergies with other IDRC grantees, I-DAIR collaborates with other grantees and partners in the larger IDRC AI for Global Health (AI4GH) initiative to establish conceptual and operational connections across the projects and mutual support.

In 2023, I-DAIR will build the first version of the governance mechanism which will include processes and technologies for a robust normative framework, stakeholder engagement, and solutions exchange. As the three regional research hubs come online in 2023 and initiate research projects in their region, I-DAIR will work with each hub and their researchers to test and validate the governance mechanism as part of a joint work plan for support and collaboration. I-DAIR will also establish an advisory committee to test ideas and assess the governance mechanism.

Other projects

Mental Health

In 2021, I-DAIR collaborated with the state governments of Punjab and Nagaland in India to craft an open and community-centered continuum-of-care ecosystem. Entitled "Open Health," this approach was envisioned as a distributed digital infrastructure combined with locally-available clinical and medical knowledge to improve promotion, prevention, early diagnosis, and treatment.

However, in 2022, at the request of the Government of Punjab's Health Secretary, it was decided to refocus The Open Health project around the mental health and wellbeing of children and youth. Moving forward, I-DAIR rerouted the project to focus on using digital health and AI interventions and tools to enable the prevention and promotion of mental health in the identified population. The project will kick off in January 2023, and the resulting conceptual framework for digital interventions in mental health will be validated through a use case in Punjab's schools for the prevention/promotion of mental health and wellbeing.

In this domain, one of the significant innovations developed is the Global Research Map (GRM) for MH&W. The latter allowed I-DAIR to conduct a detailed analysis of key emerging trends in new areas of research and digital interventions for MH&W and highlight the impact of the COVID-19 crisis. For more details about this work, refer to the Global Research Map chapter.

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MOTHER

This year, I-DAIR and its partners from India, Kenya, and Nepal, concluded their project focusing on maternal and child health (MCH) issues in Nepal (MOTHER). The aim was to conduct a mixed methods needs assessment with local stakeholders to understand the state of the MCH system and infrastructure currently used in Nepal and the feasibility and readiness to adopt a potential integrated digital platform, bringing together mother-facing applications and community health workers-facing dashboards under one roof, to improve health outcomes. Preliminary results showed that even though there is a health information system in place, it is insufficient to meet the current demands of all stakeholders, including service providers and end users. One of the identified gaps was the lack of real-time data to inform decision-making and intervention planning at the community level. Pregnant women want a digital platform that can connect them with healthcare professionals in a bidirectional manner and empower them to adopt better health-seeking behavior. Detailed findings are anticipated to be published in the first quarter of 2023.

Antimicrobial resistance (AMR)

In 2022, I-DAIR completed phase one of its antimicrobial resistance (AMR) project. In-depth interviews were conducted with clinicians to understand their knowledge, attitudes, and acceptance of an AI-enabled clinical decision support system for antibiotic prescribing. To incorporate diverse perspectives to guide the future design of such a system, I-DAIR partnered with hospitals in Singapore and India with varying cultural contexts, practices, and technology readiness. Data analysis is ongoing, and the first results are anticipated for April 2023. The Financial Times even cited the AMR project as a model of innovative international data sharing.

"An example of I-DAIR's work involves nationally held data sets covering antimicrobial resistance. Authorities in Singapore and India, for example, have retained sovereignty over their data but have agreed to share them for research after mutually defining the problem the data are intended to solve and jointly working on an algorithm to analyse them. The AI that's developed is also done collaboratively, so that you can trust it."

- Sarah Neville for the Financial Times.

Electronic Patient-Reported Outcome Measures (e-PROM)

Patient-Reported Outcome Measures (PROMs) assess the disease symptoms, overall health, and Quality of Life (QoL) from the patient's perspective. In our era of wearable and remote physical health monitoring, I-DAIR envisions assessment methods directly integrated into patient-owned connected devices. This evolution would ease monitoring and avoid interference, such as questionnaire fatigue, recall bias, or language barriers.

Partners from the Christian Medical College in Vellore (India), the Tata Memorial Centre in Kolkata (India), and the Errazi Hospital in Manouba (Tunisia) are working with I-DAIR to create an electronic Patient Reported Outcome Monitoring (e-PROM) system. The goal is to facilitate the collection and longitudinal analysis of patient-reported outcomes by integrating AI and computerized adaptive testing across diverse disease groups. In May 2022, the project started with a webinar entitled "Changing paradigm: from recall to real-time". Stakeholders from diverse institutions gathered virtually to discuss clinical requirements for implementing digital biomarkers in PROMs and debate the proposed short- and long-term project approaches. By the end of the year, I-DAIR obtained ethical approvals for clinical trials focusing on cancer, radiotherapy, and neurodegenerative diseases as use cases.

Digital interoperability

The lack of interoperability is widely acknowledged as a critical barrier to using AI in health and digital health.

Research institutions studying health problems lack practical opportunities to work with relevant datasets. Access and interoperability constitute an issue even across departments within the same institution. At another level, governments and others planning investments in digital health miss practical models of contextually tunable and interoperable digital architectures and interoperable data ecosystems.
Without a degree of interoperability within and across data architectures, non-interoperable structures will continue to serve narrow mandates, particular diseases, and silos.

To address this challenge, I-DAIR conducted a cross-regional comparative study to review the interoperability methodologies, frameworks, methods, and standards used for data flows and services exchanges during the COVID-19 pandemic. Coordinated by I-DAIR's partners in South Africa, Tunisia, and the Philippines, the comparative study provided a situational analysis of the concrete advancements taken to solve interoperability issues during the pandemic. As a result, I-DAIR could assess if solutions existed and determine where investments would be most effective.

This study will inform recommendations on model pathways to build the health data infrastructure of the future and achieve total patient engagement with health data. Full results will be published in 2023 and will inform practical guidance on bridging digital and health and pumping prime digital architectures with diagnostic and other data flows related to public health problems.

02.

ENGAGEMENT

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Engagement

I-DAIR's work is rooted in multilateralism. In 2022, I-DAIR moved to the next level regarding its political and diplomatic outreach, as it gained important recognition from international actors.
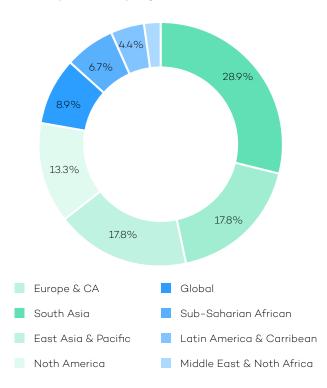
In July, I-DAIR signed a memorandum of understanding with WHO, setting up our collaboration on capacity development as well as Artificial intelligence and ethics. A couple of months later, it introduced its work to the international community at the UN Headquarters in New York, demonstrating its relevance and unique position to bridge the digital health and AI knowledge gap and accelerate progress on the 2030 Agenda. Several high-level UN officials, including the President of the 76th UNGA, the ECOSOC President, and Permanent Representatives to the UN participated in the event.

I-DAIR created a number of other engagement opportunities. It joined the Global Digital Health Partnership (GDHP) meeting in the Netherlands, organised a session at the Raisina Dialogue in India, participated in the Francophonie Summit in Tunisia, and with ts global partners conducted two high-level panels as part of the UNGA77 Science Summit. It further jointly held a webinar with WHO entitled "Building a Competent Digital Health Workforce", introducing their collaborative effort to develop the digital health competency framework, and intervened on a panel on digital health at the World Health Summit (WHS) in Berlin.

I-DAIR also prepared the ground for a potential knowledge partnership with India's G20 Presidency, engaged with high-level actors during visits to Sweden, Finland, Japan, Belgium and India. It conducted numerous diplomatic exchanges with potential investors in Geneva. Those include dinners at the Swiss Residence with a dozen Permanent Representatives as well as the Indian Mission, preceded and followed by numerous bilateral diplomatic exchanges.
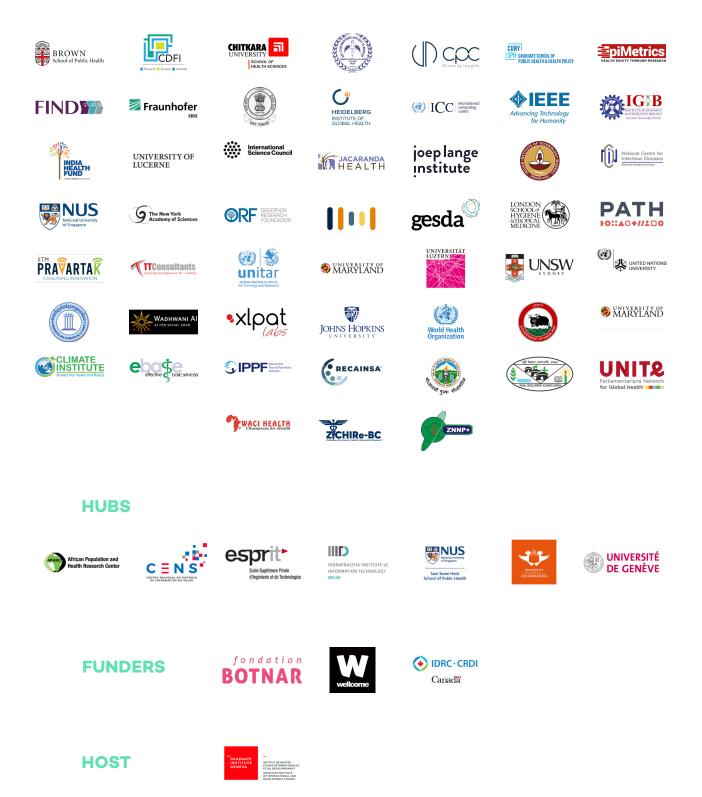
Finally, beyond the diplomatic sphere, I-DAIR extended its international network of partners and hubs, adding seven new Memorandum of Understanding to a total of 45. This very diverse network with renowned institutions, such as Johns Hopkins University and many others, provides the basis for a federated approach to data exchange and machine learning across countries and regions for meaningful global research.

I-DAIR's partners by regions

Legend:
- Europe & CA
- South Asia
- East Asia & Pacific
- Noth America
- Global
- Sub-Saharian African
- Latin America & Carribean
- Middle East & Noth Africa

Chart values: 28.9%, 17.8%, 17.8%, 13.3%, 8.9%, 6.7%, 4.4%

PARTNERS

HUBS

FUNDERS

HOST

This year highlighted I-DAIR's close alignment with the UN leadership on global digital health and AI issues. Beyond the UN appointment of I-DAIR's former CEO, the organization was featured in several high-level UN events.

On 7 September 2022, I-DAIR introduced its work at the UN Headquarters in New York, demonstrating its relevance and unique position to bridge the digital health and AI knowledge gap and accelerate progress on the 2030 Agenda. Several high-level UN officials, including the President of the 76th UNGA, the ECOSOC President, and several Permanent Representatives to the UN attended the session.

On 22 September, I-DAIR and its global partners conducted two high-level panels as part of the UNGA77 Science Summit. On 13 October 2022, I-DAIR and WHO jointly held a webinar entitled "Building a Competent Digital Health Workforce", introducing their collaborative effort to develop the digital health competency framework. Then, on 18 October, I-DAIR was invited to intervene in a panel on digital health at the World Health Summit (WHS) in Berlin.

"Bridging digital divides requires universal collaboration. I commend I-DAIR, which aims to foster inclusive, impactful & responsible research into digital health & AI for health with a focus on Global South"

- UN 76th General Assembly President, Abdulla Shahid.

"AI is built on the principle of having good data, but this requires breaking silos, sharing, and not leaving people behind. Much like WHO, equity is at the heart of the I-DAIR process."

- WHO's Chief Scientist, Dr. Soumya Swaminathan.

03.

INSTITUTIONAL PROGRESS

03.
Institituonal progress

This year, I-DAIR achieved major milestones toward greater institutional maturity. First, it set up and assembled its inaugural Board in September to discuss governance, strategy finance and the recruitment of the new CEO. Indeed Amandeep Gill, I-DAIR then-CEO was appointed by the UN Secretary General in June, as his Envoy on Technology, an important recognition of his and I-DAIR's global contribution to the field.

The Board brings together leading voices from the digital and health fields with representation across scientific institutions, global foundations, and international organisations as well as high-income and low-middle-income countries. It comprises nine members, with plans to extend membership as I-DAIR grows. Transdisciplinarity, gender balance, and geographical diversity were critical considerations in its development.

Another major step was taken in October, when I-DAIR registered as an independent legal entity under Swiss law, with the intention and plan to operate as a fully independent organization in February 2023.

I-DAIR continued to build its international, interdisciplinary team of experts and recruited a Chief Technology Officer (CTO), scientific community manager and an administrative assistant, along with two Research Fellows from its hubs in Geneva and Nairobi. It also developed new partnerships to strengthen its technical expertise with Tunisian counterparts.

www.i-dair.org

I-DAIR BOARD

Dr. Christoph Benn

Dr. Christoph Benn
Dr. Benn is the Director
of Global Health
Diplomacy at the Joep
Lange Institute. Medical
doctor with 30+ years of
experience in global public
health, he was formerly
with the Global Fund
as Director of External
Relations. Prior to his
appointment as Board
Chair, he acted as one of
I-DAIR's senior advisors.

Dr. Soumya Swaminathan

Dr. Swaminathan is
WHO's first Chief
Scientist and former
WHO Deputy Director-
General. Trained in India
as a pediatrician, she
is a globally recognized
researcher on tuberculosis
and HIV with 30+ years of
experience in clinical care
and research. She is one of
the commissioners for The
Lancet & Financial Times
Commission on Governing
Health Futures 2030.

Dr. Päivi Sillanaukee

Dr. Sillanaukee is the
Ambassador for Health
and Wellbeing at the
Ministry for Foreign
Affairs of Finland. She is a
specialist in public health
and management from the
University of Helsinki. She
has worked on policies
to promote public health,
social protection, gender
equality, innovation
and digitalization in the
European Union and at the
global level.

I-DAIR BOARD

Amb. Muhammadou Kah

His Excellency, Ambassador Kah is the Permanent Representative of The Gambia to the UN in Geneva. Formerly, he served as Vice President for Academic Affairs, Provost, and Professor of IT and Computing at the American University of Nigeria. Founding Chairman of the Zenith Bank in the Gambia, he is also a member of the Malabo Montpellier Panel.

Ms. Nnenna Nwakanma

Ms. Nnenna Nwaknma works as the Chief Web Advocate of the World Wide Web Foundation. She is an ICT4D strategist and an expert in eParticipation and Citizen Engagement with 15 years of experience working for the UN. A strong advocate for policy and systemic changes, she focuses on the need for meaningful internet access, open data, open government, and open web across Africa.

Mr. Steve Davis

Mr. Davis is the Strategy Advisor and former Interim Director of the China Country Office at the Bill & Melinda Gates Foundation. Lecturer at the Stanford Graduate School of Business, he currently serves as co-chair of WHO's Digital Health Technical Advisory Group. Formerly, he acted as President and CEO of PATH, Director of Social Innovation at McKinsey & Company, and CEO of Corbis.

I-DAIR BOARD

Amb. Cleopa Mailu

His Excellency, Ambassador Mailu is the Permanent Representative of the Permanent Mission of Kenya to the UN Office and former Minister of Health in Kenya, leading several national vaccination campaigns. Prior positions include CEO of The Nairobi Hospital and experiences working for UNICEF and WHO.

Dr. Jeanette Vega Morales

Dr. Morales is a Medical Doctor and Chile's former Social Development and Family Minister. Among numerous positions, she has worked for the Red de Salud UC-Christus, the main private health provider in Chile, as Chief Medical & Innovation and Digital Health Transformation Manager and took part in The Lancet & Financial Times Commission on Governing Health Futures 2030, as commissioner.

Dr. Mehdi Snène

Dr. Mehdi Snène is I-DAIR interim CEO. Swiss-Tunisian digital health expert and scientist, his research focuses on neuroscience, cognition, aging and machine learning. He has been working on frontier technology in digital health, with a strong emphasis on Quality of Life and Quality of End of Life of patients diagnosed with neurodegenerative diseases.

I-DAIR TEAM

Dr. Mehdi Snène
CEO a.i.

Anne Hassberger
Chief Operating Officer

Oliver Deak
Chief Technology Officer

Dr. Peiling Yap
Chief Scientist

Yi-Roe Tan
Research Implementation Lead

Alice T. Liu
Capacity Development
Director and Partnerships Lead

Léa Nacache
Communications Coordinator

Irene Rey Landeira
Administrative Assistant

Abanoub Nashaat
R&D Engineer

Resham Sethi
Liaison Officer, India

Evangelia Baka
Postdoctoral researcher

Steve Cygu
Research Fellow

I-DAIR

The International Digital Health and AI Research Collaborative (I-DAIR)

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