



I-DAIR



ANNUAL REPORT 2021

**THE INTERNATIONAL DIGITAL HEALTH & AI RESEARCH
COLLABORATIVE**



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FUNDERS

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HOST



Picture taken at the Primary Health Centre of Khezhakeno, District, Phek, Nagaland, India.

FOREWORD

As the I-DAIR team looks back at 2021, I wish to start with a few words of gratitude. Thank you to our gracious hosts at the Graduate Institute, thank you to our funders – Fondation Botnar and the Wellcome Trust, and thank you to each and every one of our partners.

We are set on a bold experiment. And 2021 gave us confidence on our prospects for the future. An international transdisciplinary team reflecting the variety of challenges we face in applying digital technologies to a complex domain like health came together. In May 2021, the Wellcome Trust joined Fondation Botnar in funding the co-creation of I-DAIR, in July we joined the Global Digital Health Partnership as an observer, and the year ended in December 2021 with a strong letter of commitment from the Bill and Melinda Gates Foundation. A small network of hubs came together across Chile, India, Kenya, South Africa Tunisia and Switzerland as a

harbinger of our vision of a distributed CERN' for digital health and AI'.

While the focus remains justifiably on building the platform, its governance structures and key partnerships, we are committed to bringing an early harvest of collaborative R&D in digital health and AI. From the seven 'PathFinders' chosen to explore these early outcomes, a natural first is understanding the current landscape of research and translational work as well as the taxonomy of the digital health domain. We believe that the GRM will pave the way to thoughtful digital health policies and interventions, and a sharper focus on inequities in R&D of digital technology. In the same vein, I-DAIR has been a thought-leader on the digital enabling of pandemic surveillance and response and contributed to the work of the G7 Pandemic Data Alliance as well as the WHO Independent Panel for Pandemic Preparedness and Response.



*Ambassador Amandeep GILL
Project Director & CEO of I-DAIR*

We will build on these early steps in 2022, an important year for us as we take steps to formalise I-DAIR, its Board and important consultative bodies such as the Science Consortium. We are still in an 'incubation' phase and we invite partners to join us and help shape I-DAIR into an innovative, inclusive and impactful platform.

I-DAIR's objective is to foster inclusive, impactful and responsible research into digital health and Artificial Intelligence (AI) for health.



ABOUT I-DAIR

Digital technologies have created enormous wealth and transformed our lives with new tools and services. At the same time, there is a growing divide between those who benefit from digital progress and those who do not. There is an opportunity to show that digital technologies can benefit everyone, particularly in health. Pooling expertise and resources through strengthened multilateral collaboration will be key.

Geneva has traditionally been a centre for health governance and international cooperation. Building on these advantages, the International Digital Health and AI Research Collaborative (I-DAIR) aims at building an international and interdisciplinary science and diplomacy platform on AI for health, leveraging global expertise and resources through a distributed network of partners fostering research collaboration and the free flow of data around concrete use-cases on digital health.

With an international network of over 40 partners, and prioritizing the involvement of the Global South, it strives to create and improve access

to cutting edge research on digital health and artificial intelligence for health for its partners members, using a distributed research infrastructure.

I-DAIR's singularity within the crowded digital health space stands in its ambition to operate as a "distributed CERN for AI and digital health", with one of the key ideas being to develop a federated system that facilitates research on large data sets, while ensuring data sovereignty and security. In other words, data stays local but knowledge serves everyone, which should allow participating countries and academia to create a scale advantage for themselves and benefit from a great diversity of data.

I-DAIR also seeks to further enable research by investing in infrastructure and human resources on AI and digital health, by supporting its partners and the WHO in addressing current and future challenges that no single country or institution could have the resources or interest for. Relevant UN organisations such as the WHO, UNICEF, UNICC, UNITAR, ITU and the UN University are being involved from the outset as partners even though the initiative is not envisaged as a UN platform.

MEET OUR TEAM

I-DAIR is composed of an international, diverse and transdisciplinary team of professionals, based in seven different countries: from Switzerland, where our headquarter is located, to Belgium, Egypt, Germany, India, Singapore, Serbia and the USA.



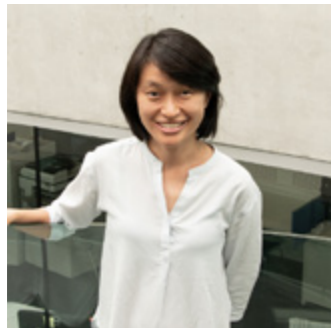
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Resham Sethi
"Open Health" Liaison
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Ognjen Milicevic
Data Scientist



Abanoub Nashaat
R&D Engineer

AFFILIATED EXPERTS



Flavia Schlegel
Senior Advisor & Science
Engagement



Christoph Benn
Resource mobilisation team



Katja Roll

I-DAIR'S HUBS

I-DAIR's hubs are a network of collaborating research centres on Artificial Intelligence and digital health, which constitute the backbone of I-DAIR's distributed architecture.

Hubs collaborate with I-DAIR, in group of two or more, by developing a common problem definition and using local expertise, datasets, clinical or community health settings to research health problems solutions answering to one or more PathFinder projects. This ensures that I-DAIR is able to meet the unique health and technology challenges faced by countries with solutions that are locally and regionally contextualised.

At term, the hubs will constitute a global infrastructure network and grow into regional centres of excellence for capacity building, fulfilling I-DAIR's vision of a responsible data and AI governance model fostering a multilateral flow of digital assets and scientific knowledge.

As of end 2021, seven hubs have been agreed upon in Geneva, Singapore, New Delhi, Santiago, Tunis, Nairobi and Johannesburg.

By the end of 2022 I-DAIR plans to federate a network of nine hubs aimed at countering the hoarding of data and knowledge within the digital and AI world.



PATHFINDERS

The PathFinders (PFs) are priority research areas, that have been identified through consultations with thought leaders in digital health and AI for health. They provide the framework for I-DAIR's projects portfolio and an end-to-end approach to the global research ecosystem for digital health - from infrastructure and tools to benchmarking and governance.

The complementarity of research subjects and the involvement of a great variety of trans-disciplinary partners allows for the creation of synergies and leverage between the various projects - guaranteeing I-DAIR's work stays comprehensive, coherent and cutting-edge.

Amongst a total of ten PathFinders, I-DAIR has chosen to focus on seven for the length of the incubation phase, running until mid-2022:

- **REAL TIME EPIDEMIOLOGY & DASHBOARDS (RTED);**
- **GLOBAL RESEARCH MAP (GRM);**
- **DIGITAL ARCHITECTURES AND DATA INTEROPERABILITY (DADI);**
- **DIGITAL INNOVATIONS IN HEALTH SYSTEMS (DIHS);**
- **BENCHMARKING;**
- **BRIDGING RESEARCH AND PRACTICE (BRP);**
- **GOVERNANCE FOR AI & DATA FOR HEALTH.**



KEY ACHIEVEMENTS IN 2021

GROWTH OF I-DAIR'S GLOBAL NETWORK OF PARTNERS & STEPS TOWARDS INSTITUTIONALISATION

In 2021, I-DAIR made notable progress in establishing a global network of first-class institutions on digital health and AI for health. It has now signed MoUs with 39 partners from 20 countries, recently with the Indian Institute of Technology (IIT) Madras and IIT Madras Pravartak Foundation, UN University's Institutes in Macau, Malaysia and Portugal, National Centre for Infectious Diseases in Singapore, University of New South Wales in Australia and the University of Johannesburg in South Africa (to also host an I-DAIR hub).

Currently hosted by the Graduate Institute of International and Development Studies, I-DAIR plans to become an independent entity in 2022, with a new governance structure developed and consulted on in 2021.



RELEASE OF I-DAIR'S GLOBAL RESEARCH MAP OF DIGITAL HEALTH AND AI

On November 24, 2021, a year after the start of its incubation phase, I-DAIR celebrated the release of the [report](#) from its first PathFinders project: the [Global Research Map](#) (GRM), with an hybrid launch gathering 41 physical and 108 online participants.

I-DAIR's Digital Health and AI Global Research Map is an interactive tool designed to provide awareness of the global, regional and national landscapes of digital health and AI research and innovation. Its objectives are to enhance visibility and understanding of current research and investment trends, identify gaps, and foster multi-stakeholders collaboration on AI and digital health to achieve Universal Health Coverage (UHC) and the Sustainable Development Goal 3 (SDG.3)

The GRM, like I-DAIR, is founded on the need for greater equity in the research and development of emerging technologies in critical areas such as health. The first of its kind, this tool uses a new AI-

enriched methodology and a novel approach to analysing data and evaluating National Digital Health Strategies (NDHS). It strives to uncover disparities while staying off a hierarchical mindset in order to highlight the varied potential of different countries in pursuing research and development of digital technologies.

Using the GRM, users can not only visualise general trends in digital health research and innovation, but also get a deeper dive into regional and national dynamics at play.

One of the key findings relates to the unequal distribution of patents: while high income countries (HICs) and low and middle income countries (LMICs) have a similar overall level of patents, there is a strong concentration within those groups. China holds 76% of patents from LMICs and more than 47% of patents filed worldwide. Comparatively the total number of patents filed in the Africa and MENA regions represent about 1% of global patents. Similarly amongst HICs, the USA dominate the patent world, with 24.74% of the global total, while

At the Intercontinental Geneva, during the panel discussion with: Dr. Boitumelo M. Tau (Botswana Permanent Mission), Dr. Megan Ranney (Brown University); Dr. Shyama Kuruvilla (WHO); Dr. Peter Benjamin (HealthEnabled); Dr. Christoph Benn (Joep Lange Institute). With special remarks from Aline Cossy-Gantner (Fondation Botnar) and Dr. Soumya Swaminathan (WHO).



Western, Northern and Southern Europe represent altogether 2.46% of worldwide patents.

Updated and enriched editions of the GRM will be released annually, along with special versions focusing on specific health topics.

“As researcher, data is step one and the GRM provides accurate digital health data on who’s doing what, where are the holes, where are potential collaborators, and most importantly what’s being translated into implementation.”

MEGAN RANNEY
BROWN SCHOOL OF PUBLIC HEALTH

“Digital Transformation of health systems can help shift the paradigm for global public investment, with a model where all countries contribute, benefit and decide. The GRM can contribute to identify the gaps in investment and build new roadmaps.”

CHRISTOPH BENN
JOEP LANGE INSTITUTE

“The role of I-DAIR is to be a new current response of science for peace through its collaborative approach in the field of health. The GRM follows this collaborative nature by moving away from ranking and reinforcing peer-to-peer learning.”

ALINE COSSY-GANTNER
FONDATION BOTNAR

Through a novel approach to analysing data, comparable country groups are gathered into clusters, forming a new world map of digital health and AI. Moving away from ranking, the GRM strives to meaningfully uncover disparities between National Digital Health Strategies, in order to highlight the varied potential of different countries in pursuing research and development of digital technologies.



GLOBAL PANDEMIC PREPAREDNESS AND RESPONSE SCHEME

I-DAIR has made some significant headway in developing a digital pandemic surveillance and response scheme under the Real-Time Epidemiology and Dashboards (RTED) PathFinder. The scheme aims at using digital technology to better engage citizens throughout the continuum of pandemic phases and providing local, regional and global actors access to better data and information (speed, diversity, accuracy). It is meant to be fully modular and customizable to local needs.

In 2021, I-DAIR has convened a multidisciplinary [Scientific Working Group](#) (SWG) (32 persons), which includes scientific experts and civil society representatives from 17 countries, to develop a R&D agenda, an architecture and an investment case for the proposed scheme. Since June 2021, the SWG has met twice as a whole group and at least twice a month as sub-groups for the

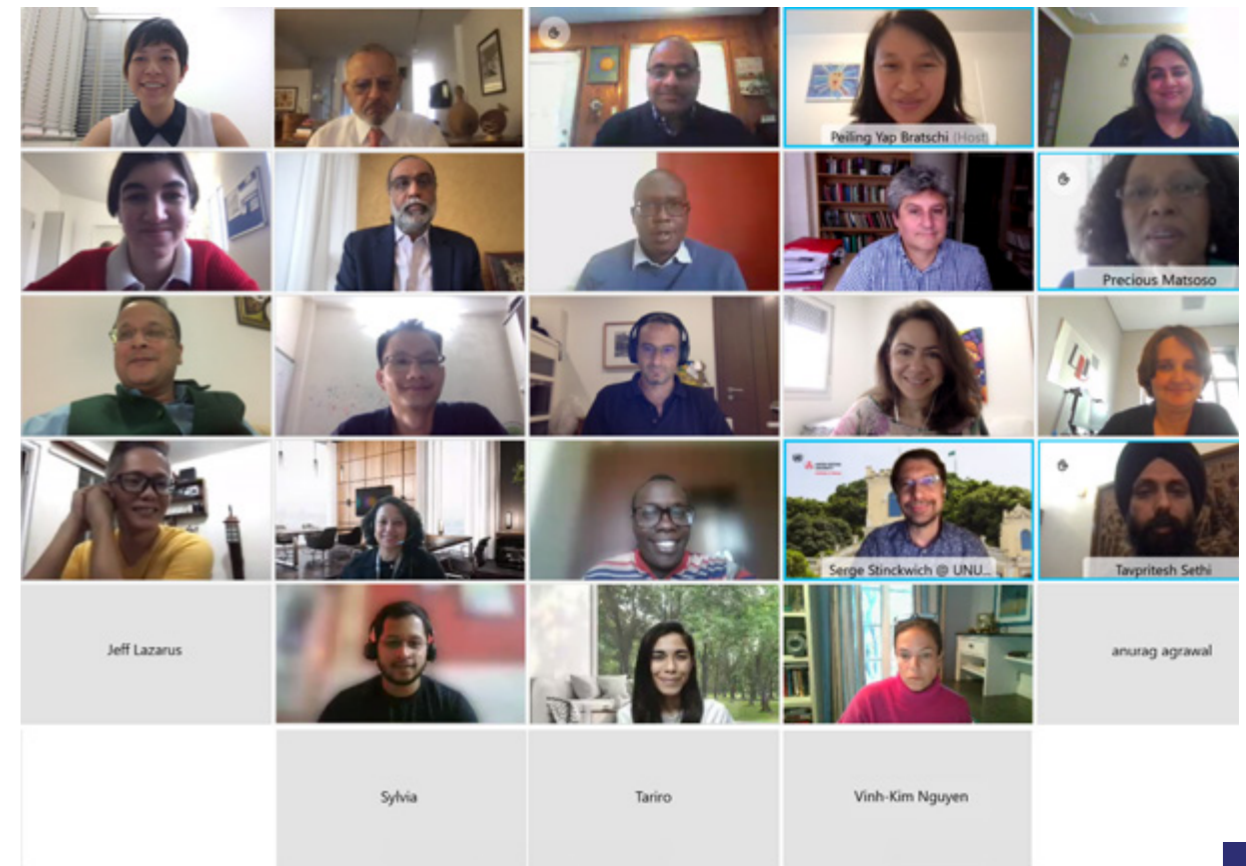
various workstreams. In addition, an investment case for the Scheme has been drawn up in partnership with IQVIA. This includes a cost calculator, which can be used to aggregate the investment needed to build out the various building blocks of the scheme.

High-level outreach has been conducted to raise awareness and gain buy-in for the scheme. The WHO and the Independent Review Panel on Pandemic Preparedness and Response, the World Economic Forum and the G7 Global Pandemic Data Alliance have been part of this engagement. A Minimum Viable Offering from the scheme has featured in these engagements as has the potential architecture and governance for the scheme.

In 2022, I-DAIR is looking into developing a collaborative space for governments from small states and LMICs to jointly pool knowledge and resources into open, plug and play platform containing an initial offering of selected existing digital

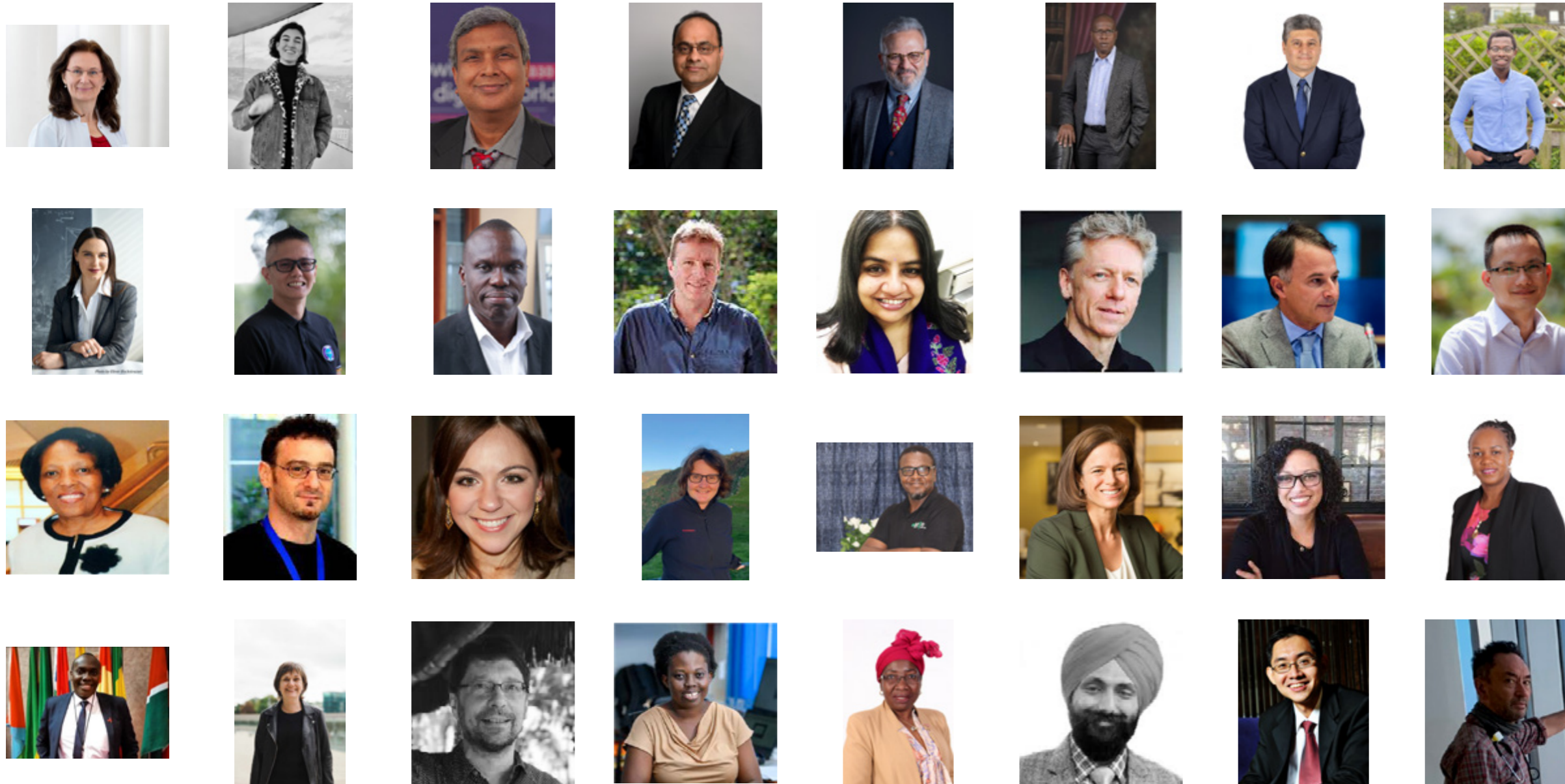
tools for swift response to different phases of the pandemic. There will be opportunities for iterative development of these tools, which will be made interoperable with each other. I-DAIR will be updating and maintaining the platform, act as a knowledge aggregator and provide training in the build and

deployment of the tools. We will also be examining the feasibility and acceptability of the citizen science approaches for data generation, modelling as well as health communication proposed in the R&D agenda developed by our SWG.



Second convening of the Scientific Working Group on November 3, 2021.

COMPOSITION OF THE SCIENTIFIC WORKING GROUP



For detailed information about the members of the Scientific Working Group, click on the picture to be directed to the relevant LinkedIn profile, when available.

To access the biography of each member, click [here](#).

OPEN HEALTH PROJECT

Open Health is a project explored under the Digital Innovation in Health Systems (DIHS) PathFinder aims to shift the current telemedicine paradigm to a community-centered health care approach, where a distributed digital infrastructure, combined with locally-available clinical and medical knowledge, provides a continuum of care from promotion, prevention, early diagnosis to treatment. A three step approach is envisioned where first, the communities will be mobilized/activated through digitally enabled open conversations on health. This is also an important phase to understand needs and assess demand for digital health and AI.

In the second phase, when buy-in from the community towards digital health solutions has been obtained and health issues identified, digital enablers which can optimize patient-clinician-patient interaction, such as continuous risk assessments in ambient environments and pooled

virtual medical appointments, would be assessed and materialized.

Finally, in the third phase, a full ecosystem is envisaged to bridge the different communities, namely patients, researchers & developers, health care professionals and policy makers.

In 2021, I-DAIR recruited the Open Health Project Liaison Officer in Punjab, who performed a landscape assessment in selected communities from the states of Punjab and Nagaland. The initial assessment, conducted in partnership with the local governments, looked into the barriers faced by the communities when accessing health services and focused on understanding their need and demand for digital health.

The field visits also helped to highlight the state limitations in providing equitable and quality public health services, as well as the existing digital solutions and



Resham Sethi (in the center), I-DAIR's liaison officer from the Punjab government, during a visit in the community health center of Jeoli Village, in Dera Bassi, Mohali, Punjab, India.

existing digital infrastructures used in various community health centers. I-DAIR took particular care in getting information on key health programs already implemented so that the project can be designed to be interoperable with these existing programs.

In 2022, we will be developing a Community Mobilization (CM) framework, consisting of both a digital platform and analogue tools, and will be testing it through a cluster-randomized controlled trial across multiple communities in India (Punjab and Nagaland), as well as Kenya. This process will provide I-DAIR with the contextual background understanding needed to the development of applicable digital health technologies.

Resham Sethi and the team from the Bhandari Whoka community health center, in Nagaland region, India.



VISIBILITY



PUBLICATIONS:

“I-DAIR’s Global Research Map of Digital Health 2021 report”

“Conceptual and normative approaches to AI governance for a global digital ecosystem supportive of the UN Sustainable Development Goals (SDGs)”

“Digital health as an enabler of human rights.”

“This is how we outrun the next pandemic”

“The case for a high-tech pandemic surveillance and response scheme.”

“We must seize the moment for a global pandemic surveillance and response scheme.”

EVENTS:



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+ 314 new followers

+ 28,813 profile visits

+ 15,944 impressions



I-DAIR

+ 682 new followers

+ 2933 unique visitors

+ 14,681 impressions



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