

# Global Digital Health Forum 2022

December 5-7

## In-person Conference Agenda

(as at 30.11.22)

Washington, DC



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Monday December 5, 2022	
8:45 am-9:00 am	<b>Opening Remarks, Global Digital Health Forum Co-Chairs</b> Olivia Velez, Rose Nzyoka
9:00 am-9:15 am	<b>Opening Keynote Address, USAID Global Health Bureau Assistant Administrator</b> Dr. Atul Gawande
9:15 am-10:00 am	<b>Fireside Chat: What It Means to ‘Drive Effective and Equitable Digital Health Innovation’ in Our Work</b> Adele Waugaman, USAID (facilitator); Derrick Muneene, World Health Organization; Mathilde Forslund, Transform Health; Rose Nzyoka, Palladium and GDHN Co-Chair; Arletty Pinel, Entrepreneur and GDHF Scholarship Recipient
10:00 am-10:15 am	<b>Opening Remarks: Patrick J. McGovern Foundation President &amp; CEO</b> Vilas Dhar
10:30 am-11:45 am	Plenary Keynote USAID <b>Moving the Needle: Insights from COVID-19 Vaccines Delivery for Digitally Supported Pandemic Preparedness and Response</b> Joy Kamunyori, USAID (moderator); Dr. Stephanie Watson-Grant, CHISU; Dr. Godefroid Mpanya/Jessica Shearer, MRITE; Hassan Mtenga, Digital Square; Liziem Valladeres, Data.FI
12:00 pm-1:15 pm	Breakout Session: Main Stage <b>CDC Global Digital Health Strategy: A Collective Call from Strategy to Implementation</b> Cat Meurn, Vital Wave; Brooke Partridge, Vital Wave; Xen Santas, Center for Global Health

	<p>To prevent, detect, and respond to public health threats, government decision makers need timely, accurate and comprehensive public health data. While there has been improvement in surveillance systems, key gaps remain in data systems, governance and policy, and informatics and digital health competencies in the workforce. The CDC recently released its Global Digital Health Strategy (GDHS). The GDHS aims to improve the state of global digital health and accelerate the achievement of country-level digital enablement of health systems in support of public health, healthcare service delivery, health equity goals, science, disease detection and response, as well as research priorities. The GDHS is an agency-wide CDC strategy and a proposed collective strategy for the broader global digital health community. The approach is unique in that it calls the community to rally around a set of unifying goals and objectives where the achievement of each goal depends on collective commitment and action. It also offers a strategic road map for digital transformation that engages domestic, country, regional, and global partners. Throughout its creation and policy-clearance process, over 80 stakeholders internal to CDC and from the wider digital health community were consulted. This panel will discuss the key elements of the strategy, including a paradigm shift towards the use of shared digital platforms at the country- and region-level, supported by robust governance structures and a capable workforce. In addition, the panel will discuss how the strategy is being implemented through key strategic initiatives, including the Global Public Health Digital Initiative (GPHDI), which seeks to enable innovation in global public health data analytics in ten countries. Panel representatives will include the CDC, implementing partners, and representative(s) from key priority geographies, as well as Vital Wave who provided technical support to the CDC in the creation of the strategy itself.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room 1 Salon C  <b>Lessons from VIRA the COVID-19 vaccine chatbots AI-enabled social listening</b>  Rose Weeks, J. Sedoc, Smisha Agarwal, Johns Hopkins Bloomberg School of Public Health</p> <p>As of August 2022, COVID-19 deaths have plateaued at a still unacceptable rate, with thousands of deaths occurring in the U.S. on a weekly basis. Being up to date with vaccination provides increased protection against infection, and since protection wanes over time, being up to date on boosters is essential, particularly for vulnerable community members. Fewer than 4 in 10 Americans have received a booster shot. Just about 50 percent of Hispanic/Latino and 47% of non-Hispanic Black populations have been fully vaccinated. Misinformation is strongly associated with declines in vaccine</p>

	<p>uptake, perpetuating the spread of COVID-19. VIRA, the Vaccine Information Resource Assistant, is a chatbot launched by Johns Hopkins and IBM Research in July 2021 to provide instant, expert-vetted responses to questions about COVID-19 vaccines in English and Spanish. VIRA, which on a web-based chat environment as well as on WhatsApp, is powered by machine learning such that the chatbot has natural language understanding, both in English and Spanish. VIRA is used by health departments in seven states. VIRA's cutting-edge social listening strategies reveal leading and emerging questions about COVID-19 vaccines. Social listening analyses highlight top concerns by language and platform used. VIRA's agnostic analysis of chats also identifies new concerns, including misinformation that may be circulating over closed social media networks. This session will explore how chatbot-enabled social listening can yield insight about the public's changing questions and concerns about vaccines. Created to support pandemic response efforts, VIRA's technology and user engagement strategies could be used to emphatically address people's concerns about mental health, reproductive health, and other stigmatized topics in a private, safe, and accessible digital.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room Rm 2 Salon H  <b>Is the Digital Health Community Creating Better Jobs for Users?</b>  Jonathan Jackson, Dimagi; Neal Lesh, Dimagi; Gillian Javetski, Johns Hopkins Bloomberg School of Public Health</p> <p>At Dimagi, we spend significant time designing digital tools with our users, primarily community health workers (CHWs). It's why we like to think that Design with the User is the first Principle of Digital Development - because it's the most important. Satisfying users is by no means unique to our industry. Silicon Valley often talks about how technology should delight customers. But unlike TikTok, we limit our efforts to build user loyalty to the design stage, despite best practice. A major customer service study had one takeaway for customer service strategies: Delighting customers doesn't build loyalty; reducing their effort the work they must do to get their problem solved does. This is not a radical idea: digital tools can make jobs better for users by reducing their effort, and worse by increasing them. No one, including at this conference, wants to increase the time they spend on work for the same outcome. While there is growing recognition that CHWs in LMICs are overloaded, under-appreciated, and underpaid, our community lacks common standards to measure digital tools' impact on users' jobs. By running digital programs that increase organizational productivity but make users' jobs worse, we are exacerbating CHWs' challenges without recourse. Users often don't have a choice about which tools they use, or how. And while users may help design tools, projects often aren't structured for them to give feedback later. We can do a lot to protect CHWs by reducing their personal efforts.</p>

	<p>In this workshop, we are excited to dive into this topic in greater detail and work together to collectively define a hypothetical 10th Principle for Digital Development: Make the user’s job better.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room 3 Salons D-E  <b>Building a collaborative, community endorsed DAK for Community Health Services</b>          Kanishka Katara, Living Goods</p> <p>Digital health transformation at the community level is a growing priority for governments, with increasing support from donors due to its potential to improve access to essential health care at the last mile, especially in underserved and marginalized communities. However, funding for developing a foundational, standard toolkit to support the process of digitizing community health is limited. More countries want to improve their community health systems by implementing Electronic Community Health Information Systems (eCHIS), but the development of these systems can be costly, time-consuming, and complex journey given the underlying challenges of limited resources and lack of standard normative guidance for implementing digital interventions in the community health space. By virtue of our community health work across various regions of Africa, Living Goods had identified this gap leading to a significant overhead borne in terms of delays, high costs, limited impact, etc. by a lot of well-intentioned initiatives and organizations involved with such initiatives. Living Goods had had started to engage with diverse partners including the WHO, the Community Health Impact Coalition (CHIC), Digital Square, USAID-PMI and Global Goods Software providers, to bridge the gap and started to develop the Digital Adaptation Kit (DAK). We present our approach and progress towards developing the DAK that will to the strengthening of the community health systems, through a community designed and endorsed blueprint for digitally enabled community health services.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room 3 Salons D-E  <b>Configuring components of the WHO digital adaption kit for ANC with in the BornFyne-PNMS platform</b>          Miriam Nkangu, University of Ottawa; Valery Ngo, Denis and Lenora Foretia Foundation; Brice Tangang, Denis and Lenora Foretia Foundation; Arthur Pessa, Denis and Lenora Foretia Foundation; Donald Weledji, Donwel Systems</p> <p>The BornFyne-Prenatal management system was initially designed in 2018 using the WHO focused antenatal care package. With the recently launched recommended WHO digital adaption kit for antenatal care the BornFyne-PNMS</p>

	<p>team is updating the content and features of the platform by incorporating features of the WHO digital adaptation kit for antenatal care. Currently, the BornFyne platform covers up to 40% of the features recommended in the WHO digital adaptation kit for antenatal care. Incorporating features and content of the WHO DAK for ANC helps Provide: -Clear descriptions of the decision-support logic, algorithms and indicator calculations for embedding within digital systems. -Detail core data elements, coded to the ICD and other terminology standards to ensure consistency of how data is represented. -Distill workflows to help with the coordination of care between actors, augmented by digital systems. Given the trending nature of digital health in the sub-Saharan Africa and the importance in addressing maternal health services, the process of configuring the tool is considered an important step within the digital ecosystem. It is therefore important to understand the developers' experiences and the process involved in the development, configuration, contextualization, challenges, and facilitators from Cameroon to inform the digital ecosystem.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Understanding the Digital Health Landscape to Accelerate Progress Toward Controlling the Global HIV/AIDS Epidemic</b></p> <p>Annah Ngaruro,S/GAC/ICF; Mark DeZalia,Office of the US Global AIDS Coordinator and Health Diplomacy, US Department of State; Vladimer Shioshvili, ICF; Priya Karthik, ICF</p> <p>PEPFAR's Digital Health Inventory (DHI) provides a framework for multistakeholder informed development of information requirements for digital health investment planning. Data from tracking DHIs is intended to be used to: develop guidance resources to inform planning, ensure there is donor alignment of investments, synthesizing evidence, conducting national inventories and landscape analyses, identify scalable tools that help improve healthcare delivery, improving the efficiency of programming and reducing system redundancy, and articulating required digital functionality based on identified health system challenges and needs. Development of the DHI took several iterations including extensive stakeholder engagement, country-based interviews as well as a 3-country pilot in Uganda, Vietnam, and Zimbabwe. The DHI's data model is aligned with WHO's Digital Health Atlas (DHA). Eighty submissions from pilot countries were received. Follow-up focus groups were held with each country for all submitters and key MOH representatives with 20-25 attendees each. DHI was launched across all PEPFAR countries in July 2022 and targeted the 23 PEPFAR Priority Countries in its first year. The DHI tool contains 71 questions intended to answer key analytical questions and glean key findings such as: How investments are being used Investments across agencies and by PEPFAR</p>

	<p>program areas Implementation status of investments Patient tracking &amp; missed appointment capabilities Interoperability across investments.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Achieving data democratization: A practical combination of Digital Health Principles, Data Science and Analytics in building integrated real-time and dynamic Project Dashboards in Power BI</b></p> <p>Soudie Okwaro, Population Services International</p> <p>We intend to take the audience through a logical sequence of conceptualizing data analytics by employing Digital Health standards, Data Science, and analytics techniques to acquire, model and produce user-friendly, non-fragmented, and real-time dashboards in a fast-pacing Project setup. Additionally, we will seek to show some of the best practices in generating Data insights while working in Power BI. We will use learning from developing Delivering Innovation in Self-Care (DISC) Project Dashboards at Population Services International (PSI) to illustrate these. Finally, we will highlight our disruptive next steps in predictive analytics and achieving interoperability with Government Health Management Information Systems (HMIS), DHIS2, by implementing WHO's Fast Healthcare Interoperability Resources (FHIR). In this session, specifically: We intend that the audience will appreciate the DISC digital data transformation journey including tech stacks and the application of data science and analytics to design real-time, user-friendly Power BI Dashboards. Specifically, we would like the audience to gain insights on: a) How conceptualization of Data Analytics using a Data-to-Action (D2A) Framework was performed. b) The technology stack behind setting up a dynamic data warehouse and the infrastructure for data storage, modeling, and visualization. c) How data science techniques were employed in building real-time data insights including the application of Power BI DAX functions and M programming language to develop dynamic visualizations and Dashboards. d) How we are transforming big data into relatable stories e) How we are achieving data democratization for all.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Dashboard and Scorecard Mobile Applications: Health Facility Adapted Decision-Making Tools to Motivate Health Providers in the Use of Their Collected Information to Monitor Health Services and Commodities</b></p>



	<p>Moussa Ly, John Snow, Inc.; Steve Ollis, JSI; Gupta Lavanya, University of North Carolina; Fanor Joseph, JSI-PMI Measure Malaria; Leontine Gnassou, John Snow Inc</p> <p>Despite country support for strengthening health information, quality data remains a challenge in part because those who collect data do not always have access to appropriate tools to use it. Health facilities often report their data to districts and do not have the capacity nor mechanisms to review and use their own data for decision making. Enabling access and visualization of key health indicators at the health facility level will allow health providers to improve quality of service delivery. The U.S. President’s Malaria Initiative (PMI) Measure Malaria (PMM) project used the District Health Information Software, version 2 (DHIS2) malaria module to select key indicators of surveillance, commodity management, and service delivery at the health facility level to design mobile friendly dashboard and scorecard applications (apps). The dashboard displays trends of the selected indicators while the scorecard helps monitor health facility performance. The DHIS2 based mobile apps are supported on Android devices and data are accessible online and offline. PMM is supporting the implementation of the mobile scorecard and dashboard apps in Cote d’Ivoire and Madagascar. In both countries, the National Malaria Control Program worked with the Health Information System department to configure and adapt the applications in DHIS2. The process included the selection of indicators, their definitions, and the performance score targets. PMM piloted the mobile dashboard and scorecard apps in 20 health facilities in Co’te d’Ivoire and in 42 health facilities in Madagascar. After two months of use in Co’te d’Ivoire, 100% of health facility managers considered the apps helpful in terms of the timely sharing of information, 85% believed that the apps contributed to developing and carrying actions to address malaria service problems, and 67% confirmed the apps ability to help in identifying and monitoring service and commodity management performance.</p>
12:00 pm-1:15 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Digital Microplanning to Increase Therapeutic Coverage for NTDs</b></p> <p>Alinda Lauer, Akros, Inc., Mercy Odhiambo, Akros, Inc.</p> <p>Health campaigns for NTDs provide consistently low population coverage. Lack of reliable population data challenges teams to efficiently allocate resources and achieve high coverage; in 2017 only 31% of mass drug administration (MDA) for NTDs reached intended targets. In Kenya, Akros and partners supported the Ministry of Health to digitize the microplanning process, leveraging spatial intelligence to plan field operations that optimized therapeutic and</p>

	<p>geographical coverage during the STH/SCH MDA campaign. Building on the WHO recommended five step NTD microplanning process, Akros introduced innovative tools to enable data driven operational strategies: Step 1) Akros introduced the use of GRID3 maps for each ward that visualized fixed distribution points in relation to population density, household locations within health center catchment areas, and household accessibility to distribution points based on terrain and road networks. Steps 2-5) Akros developed a digital microplanning tool to improve allocation of resources. The first iteration of the tool was built in Excel to facilitate easy validation of inputs; ensuring all relevant variables for effective planning were represented and accurate. Inputs included population data sources and growth rates, eligible locations and age groups, drug and CDD quantifications, and budget. Making changes to these formulas in Excel was simple, now that these requirements have been validated by the MOH, Akros is adapting the tool into the open source Reveal platform. CDDs used Reveal to collect data during the campaign. A key outcome of this approach was enabling ward level public health offices (PHOs) to use a data based sliding scale to decide how to combine household based and fixed point distribution in order to maximize coverage within resource constraints. Akros' innovative approach also facilitated consensus across stakeholders on target population and exclusions, unlike the 2021 microplanning process where population, growth rate, and other factors changed frequently.</p>
1:15 pm-2:15 pm	<p><b>Lunch Break</b></p>
2:15 pm-3:15 pm	<p>Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K  <b>Recommending how better health outcomes can be achieved through digital public infrastructure investments</b>  Kate Wilson, Digital Impact Alliance; Henry Mwanyika, PATH Tanzania; Teddy Berihun, The Palladium Group</p> <p>Countries around the world are implementing digital technologies to both transform their economies and deliver the SDGs. SDG 3 (Good Health and Wellbeing), Digital Identity, and Digital payments in particular have had significant investment over the past decade. Despite these investments, countries struggle to make them work together and estimates still place an additional \$28B as needed financing by 2030 to develop the base systems. As private philanthropists and bilateral donors mobilize financing for the Co:Develop fund and build political will to invest in these systems through the DPG Charter, it is important to recognize and raise questions and develop recommendations on what the community should do to drive interoperability between this digital public infrastructure and the health information systems that support universal health coverage. Every country in the world struggles with - How do I protect citizen data? How do I make these systems work together? How do I avoid redundant systems and vendor lock-in?</p>

	<p>and how do I make these sustainable? The session will delve into these questions looking at the experiences of three countries and then soliciting feedback from the audience on approaches they have tried themselves. By the end of the session, the feedback will be developed to provide actionable recommendations to the existing political and financial mobilization efforts as part of the DPG Charter. Join the debate and tell us where you think help is most needed.</p>
2:15 pm-3:15 pm	<p>Breakout Session: Room 1 Salon C  <b>YouthSpeak360 (YS360) (20 minutes)</b>          Bhupendra Sheoran, Cell-Ed; Jennifer Johnson, Cell-Ed</p> <p>YouthSpeak360 (YS360) is a robust and flexible, multi-language digital platform (WhatsApp) reaching youth in Latin America and the Caribbean to gather and share health information. The YS360 solution integrates multiple digital elements to allow for the efficient flow of communication/messages and data for rapid engagement with youth and share-back with youth and stakeholders. The reality is that most youth-facing organizations and stakeholders struggle with being able to access large cohorts of young people in the community and/or access relevant data. As a result, most organizations often revert to outdated or out-of-context data. This poses a risk of using unreliable information to invest in initiatives. Moreover, there are few existing solutions that aim to achieve the YS360 goal of reaching, engaging, and centering youth in a meaningful and sustained manner at scale. YS360 meets youth where they are, on their phone, asking what is important to them about their health through surveys, while also sharing bite-size health education in the form of tips and resources, and then sharing this information back to youth and stakeholders through data visualization on the YS360 microsite. YS360 is focused on improving youth health outcomes by increasing health knowledge and literacy among participants, expanding health education to youth who may not otherwise have access, and ensuring key stakeholders have timely data from youth in order to make informed, youth-facing, decisions. YS360 has been largely influenced by the WHO Global Strategy on Digital Health 2020-2025, WHO Youth-Centered Digital Health Interventions, and Youth 2030: The UN Youth Strategy. As well as other initiatives that promote the appropriate use of digital health technology such as WhatsApp and those that recognize the urgent need to address major impediments faced by least developed countries in implementing digital health tech.</p>
2:15 pm-3:15 pm	Breakout Session: Room 1 Salon C

	<p><b>How Digital Solutions Can Help Scale &amp; Support Mental Health Care in LMICs (20 minutes)</b>          Lauren Magoun, Dimagi, Inc.</p> <p>There is a staggering unmet need for mental health care and it is intertwined with almost all other global development goals. These conditions are common -- at any time nearly 1 in 8 people have one -- and yet 75% of people living with depression (one of the most common conditions) in LMICs receive no treatment at all. The COVID-19 pandemic further increased rates of anxiety and depression, and even those without diagnosable conditions have felt strain in their mental well-being. Thankfully, there exist effective treatments for common conditions like anxiety and depression that don't require specialists, who are rare in much of the world. This session will describe why and how Dimagi is developing digital solutions to improve mental health and psychological wellbeing in Lower- and Middle-Income Countries (LMICs). It will cover how digital solutions can support improved outcomes by helping those delivering care, improving program operations, and supporting clients themselves. I will outline digital solutions we have developed, or in the process of developing, that support the scaling and effectiveness of mental health interventions, in particular those led by non-specialist providers such as CHWs, ASHAs or peers. We will review how the open source CommCare platform can support such programs, and explain an innovative tool for peer-supervision we developed using CommCare for EMPOWER, a Harvard Medical School initiative to scale the mental health workforce, where we are a technical partner. Dimagi, EMPOWER, Sangath (India) and the University of Toronto are presently piloting this app in India. We will also discuss a client-facing chatbot, PracticePal, to help clients practice CBT-based and other well-being and self-care techniques as part of their care between sessions with their providers.</p>
2:15 pm-3:15 pm	<p>Breakout Session: Room 1 Salon C</p> <p><b>Towards Inclusive Digitally Enabled Health Systems in Africa (35 minutes (2 presenters 15 -18 min. each))</b>          Heri Marwa, PharmAccess Foundation</p> <p>Most health systems in sub Saharan Africa suffer from underfunding and low public trust. Few insured patients, and high out of pocket healthcare costs for most, lead to late utilization or avoidance of healthcare. About 50% of healthcare is delivered through private providers (including Faith Baith Organizations), yet these health facilities lack sufficient income to improve their services and banks remain unwilling to invest. For patients, the poor quality of care means they have little appetite to join health insurance schemes. Given these complexities, PharmAccess takes a holistic approach to strengthen demand and supply sides of health systems, to increase access to basic, affordable and quality</p>

	<p>healthcare services for the poor in Ghana, Kenya, Nigeria and Tanzania. With mobile and digital adoption soaring, we are pioneering user centric digital solutions to leapfrog advancements towards Universal Health Coverage (UHC). Our internationally accredited SafeCare program has reached 5,000 primary healthcare providers with tailored quality improvement support, contributing to better outcomes for millions of patients. Our Medical Credit Fund has reached 1,800 health facilities with loans worth USD 200 million. These loans have a repayment rate of 96% and are digitally processed (using mobile money) to support small and remote health facilities. Our inclusive digital health platform, M TIBA connects 4.5 million people to care, and over 18 million people have access to health insurance through PharmAccess supported programs. Through digital technology and data analytics, we are pioneering value based healthcare models. This session will showcase how PharmAccess (with 150 public private partners) are leveraging digital opportunities to build trust and transparency in the entire health system for patients, healthcare providers and payers (including government and donors). It will advocate for resilient and data driven healthcare systems that use technology as the backbone, inspiring global health stakeholders to innovate for greater impact.</p>
2:15 pm-3:15 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>Expanding Access to Consumer Driven Health Care through AI-Powered Digital Self Care Tools to The Lower Income Population in Vietnam</b></p> <p>Sheila Kioko, Population Services International; Claire Morris, Babylon Health</p> <p>This session will take the audience through an innovative digital health solution that supports consumers to make better-informed decisions about their health in a non-stigmatized environment. The Artificial Intelligence (AI)-Powered Digital Self Care Solution is referred as AIOI which means Hi AI! in Vietnamese. The AIOI solution seeks to respond to the increased consumer demand for access to health information and services as a means of offering more control of their health journey and promoting digital inclusion. This innovative solution is a combination of multiple digital health tools that facilitate private health seeking behavior. This effectively moves triage to the consumer’s homes to increase capacity and service coverage, reduce misinformation and misdirection to inappropriate care, and reduce wasted time and costs for consumers and providers. The target audience benefits from the integrated digital capabilities that powers their health journey through their mobile phones: (i) Babylon’s Artificial Intelligence Symptom Checker, which captures consumer health symptoms, determines the potential causes of the symptoms, and provides a call to action for the</p>

	<p>consumer to decide on the appropriate next steps; and (ii) PSI's Health Provider Locator that links consumers with quality health facilities that match their health needs for more health care services. Data on consumers' interaction, and what they seek, will further hone the service as well as address consumer perceived inefficiencies and/or service deficits within the health system. The AIOI solution (<a href="https://aioi.vn">https://aioi.vn</a>) will be launched in August in 5 provinces in Vietnam and it aims to reach 200,000 users thanks to digital marketing campaigns that promote uptake and use of the integrated digital solution. Despite target audience marketing, the web-based platform will be accessible to anyone with access to a mobile phone or other internet enabled device and therefore by default will be national in scope.</p>
<p>2:15 pm-3:15 pm</p>	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Separating Fact from Fiction: discussing practical implementations of AI in health programmes</b></p> <p>Kieran Sharpey-Schafer, Palindrome Data; Jeni Stockman, Macro-Eyes; Michael Moszczynski, Cooper/Smith</p> <p>Palindrome Data, Macro-Eyes and Cooper-Smith convene a panel to share their experiences of practically implementing and using AI in development programmes at scale. With the increased opportunity to access AI &amp; ML services, along with increase in scepticism and oversight in their impacts, how can development practitioners separate Fact from Fiction? In the panel we will discuss the on the ground implementation experience of using AI and ML to improve health outcomes. The panel will contrast this, as well address with some of the frequent FAQs or Myths mythologies around AI, ML and Data Science head on and how that contrasts to reality: Do health programmes have enough of the right data? Navigating legislation protecting data rights and usage who really owns the data? What can be learned (and unlearned) from infamous misuse like Cambridge Analytica Never send a machine to do a humans job Are jobs and decision making being replaced? Is AI biased? Where in the construction of AI are the opportunities for Bias to be introduced? (hint: not what has been previously advertised!) The potential impact of these challenges are well documented in various reports (including but not limited to USAID's ARTIFICIAL INTELLIGENCE IN GLOBAL HEALTH: DEFINING A COLLECTIVE PATH FORWARD, <a href="https://www.usaid.gov/sites/default/files/documents/1864/AI-in-Global-Health_webFinal_508.pdf">https://www.usaid.gov/sites/default/files/documents/1864/AI-in-Global-Health_webFinal_508.pdf</a>) and the Panel will aim to recount the practical experiences of engaging with these challenges practically in real-world implementation. The panel will discuss both the evidence based value of new technologies, a long with the current realities, limitations and practical barriers to our sector absorbing these value propositions at large scale. These experiences will be supported by real world evidence, research and on the ground experience. Not limited to but including the publications:</p>

	<p><a href="https://journals.lww.com/jaids/Fulltext/2022/06010/Predictive_Analytics_Using_Machine_Learning_to.6.aspx">https://journals.lww.com/jaids/Fulltext/2022/06010/Predictive_Analytics_Using_Machine_Learning_to.6.aspx</a>  <a href="https://www.nature.com/articles/s41598-022-16062-0">https://www.nature.com/articles/s41598-022-16062-0</a></p>
<p>2:15 pm-3:15 pm</p>	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Improving the Accessibility and Quality of Health Care Services in Indonesia through Use of a Regulatory Sandbox</b>  Derek Junaka (Moderator), CHISU; Setiaju Setiaji, MOH, Indonesia; Agus Rachmanto, MOH, Indonesia; Reza Rudyanto Pramono, MOH, Indonesia</p> <p>Indonesia is an archipelagic nation whose population of 275 million is spread unevenly across 17,000 islands, resulting in inequitable access to quality health services. The COVID-19 pandemic exacerbated this issue of equity, and in response the Ministry of Health (MOH) of Indonesia prioritized the digital transformation of the health system, including efforts to promote investments in standardized and integrated health technology. To stimulate this investment in the health technology sector, the MOH championed the development of a regulatory sandbox as a testing mechanism to efficiently and effectively assess the reliability of health technology innovators’ business processes, models, technology, and governance. The sandbox uses international healthcare standards such as FHIR, ICD10, and LOINC. The MOH prioritized three clusters to be assessed using the regulatory sandbox: telehealth, pharmacy and medical devices, and online marketplace for on-demand healthcare. Using the regulatory sandbox, innovators’ solutions are tested, with feedback provided, to ensure that solutions are meeting certain standard criteria, such as patient safety, interoperability, security, and privacy. Ultimately the sandbox approach gives innovators a safe space and regulatory basis for health technology investment, narrowing the gap that is often seen between the two. In addition, for the MOH, the sandbox will support the health technology sector writ large both now and in the future, as regulation is currently lacking. During the panel, the MOH will share the process of developing the regulatory sandbox, both in terms of governance and technology, and how the sandbox is used in practice to create a flywheel effect to improve the quality of health technology innovation for the government, healthcare industry, and clients. It is expected that participants will take away information on promising practices on how to develop, deploy, and promote a regulatory sandbox model in their countries.</p>
<p>3:30 pm-4:00 pm</p>	<p>Coffee Break &amp; Poster Session</p>

3:30 pm-4:00 pm	<p>Poster Session: <b>Digital Health Solutions for COVID -19 case based surveillance, Vaccination and PCR Machine integration; Ethiopia's Experience</b>  Kalechristos Abebe, Clinton Health Access Initiative; Oli Kaba Eba, Ministry of Health; Yakob Wondarad ,Ministry of Health; Kirubel Eshetu Ayele, Madotechnology</p> <p>Since the global outbreak of coronavirus, Ethiopia was preparing and established National Public Health Emergency Operation Center (NPHEOC) to support the country's coordination, preparedness, response, and recovery from the COVID Emergency. The operational response to the COVID-19 pandemic required the rapid adaptation and leveraging of the capabilities of existing HIS to collect, transmit and analyze key health data in real-time that allowed to understand the epidemiological situation and craft appropriate control measures and the Ministry of Health of Ethiopia decided to use DHIS2 as digital tool for emergency data management. MOH in collaboration with partners worked on customizing DHIS2 for COVID surveillance both individual-level (or case-based) transactional, and aggregate data collection and reporting. The system supports the enrollment and tracking of suspected cases; captures symptoms, demographics, risk factors, and exposures; creates lab requests; links confirmed cases with contacts; and monitors patient outcomes. Additional apps were developed to facilitate lab test data flow, resource management and test distribution, electronic printable certificate for travelers, electronic messaging. Despite infrastructure and connectivity challenges, evidence-based decision making with the help of digital tools were enabled Laboratory tests and results are captured and reported for both Antigen Rapid Diagnostic Test (Ag RDT) and PCR tests. The process of encoding PCR data starting from lab request entry to data approval then to lab result entry usually takes excessive time and sometimes when the testing rate escalates it causes heavy burden on the laboratory technicians and delay on result disclosure. Machine integration with DHIS2 using the device called NODE is recommended and developed that enabled automatic reporting of test results from PCR platforms to DHIS2, to date GeneXpert and Roche 8800 are interfaced COVID free conference management data capturing and certificate was also implemented using DHIS2 in African Union meeting in 2022.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>PEPFAR digital health tools seek to ensure health equity across key populations</b>  Lauren Carmody, Guidehouse Inc; Marc-Endre Dion, Guidehouse Inc; Ashley Hills,Guidehouse Inc</p> <p>The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) Program has adopted a wholistic and contextual approach to leverage digital health tools for collecting, reporting, analyzing, and using health finance data to promote health equity across key populations that have been historically marginalized in their access to healthcare and healthcare</p>



	<p>investments. PEPFAR has identified and deployed global digital goods such as DHIS2 and universally accessible tools such as Microsoft Excel that are integrated into the national and global data flows, has strong local ownership, and align with local digital health capacity. Building on the Digital Health Investment principles of collaboration, tracking investments and progress, and expanding in country digital capacity, the health finance data systems not only serve as an important measure of programmatic performance of PEPFAR-funded testing, treatment, care, and prevention for people affected by the HIV/AIDS epidemic but also enables integrated analysis of service delivery and health workforce data collected through web-based and excel-based tools. Digital tools have allowed to collect and analyze health finance data from 50 plus countries and 100s of implementing partners. Furthermore, data-based decision-making contributed to a 32% increase in the budget for KP programming from 2020 to 2022 (data from PEPFAR Spotlight <a href="https://data.pepfar.gov/">https://data.pepfar.gov/</a>). The collection, reporting, analysis, and use of health finance data, enabled by digital health tools, disaggregated to KP allows PEPFAR to perform financial analysis to uncover more efficient means of budget allocation. These insights can be used for strategic decision making and the prioritization of initiatives that successfully improve the access to healthcare for marginalized populations at the community, sub-national, and national levels.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>Utilization of THINKMDs mHealth platform to improve health worker's compliance to WHO's IMNCI guideline in Nairobi, Kenya</b>  Barry Finette, University of Vermont College of Medicine; THINKMD</p> <p>Poor access to quality health services, especially in urban slums, is a global challenge. Given similar challenges in Kibra, an informal settlement area within Nairobi, we collaborated with the Langata/Kibra sub county health management team to conduct a pilot program for improving the quality of child health services delivered by health care providers (HCPs). A digital mHealth platform developed by THINKMD was introduced to HCPs working in Kibra. This mHealth platform was compliant to WHO's recommended guidelines for integrated management of newborn and child illnesses (IMNCI) and was designed to assist sick child assessment, triage and care plan management by HCPs. We aimed to determine if using this digital platform, coupled with supportive supervision and community outreach, would lead to improved compliance to the IMNCI guidelines for assessment, triage and treatment of sick children. We conducted baseline (February 2019) assessments, trained selected HCPs on the mHealth platform on handheld android tablets, conducted endline assessments (March 2020) and measured any change in HCP's compliance to IMNCI guidelines. A total of 89 HCPs utilized THINKMDs mHealth platform during endline assessments. When asked about the choice of</p>

	<p>antibiotics for treating childhood pneumonia, we found the proportion of HCPs who preferred Amoxicillin dispersible tablets, the recommended treatment for childhood pneumonia, increased from 3% at baseline to 38% at endline. The proportion of HCPs who were aware that antibiotics should NOT be used for the management of simple diarrhea increased from 14% at baseline to 50% at endline. Additionally, more than 90% of HCPs were found compliant in their practice to IMNCI guidelines for sick child assessment, triage and management. These results demonstrate the use of the THINKMDs IMNCI compliant mHealth platforms as an effective way to improve capacity and compliance among HCPs who are serving communities like the Kibra informal settlement.</p>
<p>3:30 pm-4:00 pm</p>	<p>Poster Session: <b>Increasing use of supply chain data in Kenya through the Indicator Tracking Tool, an automated user-friendly dashboard</b>  Danielson Kennedy Onyango, Janet Makena, Yasmin Chandani</p> <p>Supply chain management in Kenya is characterized by manual, paper-based tools reported in the Kenya Health Information System (KHIS), a DHIS2 instance. Health facilities on a monthly basis submit their logistics and service delivery data to the KHIS to be used for decision-making. However, the use of this data remains low due to limited skills and human resources to analyze and present it to identify supply chain challenges. Health managers download and use Microsoft Excel to analyze and visualize data. This process is time-consuming and worsens access to supply chain visibility, which impacts the ability to make data-driven supply chain decisions. We developed an Indicator Tracking Tool (ITT), an automated, user-friendly PowerBI dashboard that presents analytics and visuals of supply chain performance data from KHIS. The ITT automatically updates daily using API (application programming interface) to pull data from KHIS. The ITT is embedded into the Ministry of Health (MOH) Division of Health Products and Technologies website and a portal through which different managers can access it. Health Managers at different levels use the ITT to review and track their performance using various supply chain indicators for vaccines, family planning, malaria, nutrition commodities, and health products and technologies. The ITT is used by 43 sub-counties across 9 counties in Kenya, supported by inSupply but available for use by all 47 counties. There has been increased use of data characterized by over 80% reporting rate for the different programs, improved quality of reported data with minimal discrepancies, and reduced stock out rates in various program areas. As a result, there has been a recent deployment of the ITT version for Sierra Leone in 4 Districts and exploration to deploy an instance for Uganda and other countries where DHIS2 is being implemented.</p>

3:30 pm-4:00 pm	<p>Poster Session: <b>Using an Interactive Network Analysis Digital Tool to Enhance HIV Prevention Service Delivery of HIV Civil Society Organizations in Blantyre, Malawi</b>  Rachel Haggard, Cooper/Smith</p> <p>Civil Society Organizations (CSOs) play a critical role in HIV prevention and service delivery in Blantyre, Malawi. Deploying HIV prevention services and facilitating uptake for those at risk of acquisition requires nuanced understanding of CSO services, geographic location, and linkage to health facilities. We conducted an organizational network analysis of CSOs providing HIV prevention support and analyzed these networks using the digital tool, Kumu. We sought to display connections within CSO networks to target optimal pathways for prevention access for high risk populations and to identify gaps in service coverage. We sampled organizations from eight registration systems using an online questionnaire. We used Kumu Software to interactively display the relationships among CSOs on several dimensions, from financial exchange to commodity sharing. We then triangulated the results from the CSO survey with other data sources to target four Traditional Authorities (TA)/Wards with high HIV prevalence and high numbers of risk venues and mapped the network of existing organizations and health facilities in Kumu. Of 332 CSOs sampled, 124 responded to the questionnaire. One hundred CSOs (81%) worked with one health facility and 84 (68%) worked with another CSO. From the analysis of the four higher risk TAs/Wards, a few CSOs emerged as critical to the network across the four areas, indicating a small number of CSOs provide services to a large catchment of clients. These CSOs proved critical to service delivery, but also demonstrated gaps in service offerings not provided by other organizations, especially around adolescent girls and young women and PrEP uptake. CSOs are key to HIV prevention service delivery and outreach services. Using digital tools to identify key organizations essential to the network of service delivery helps identify resource gaps. Capitalizing on well connected organizations leverages the existing fabric of civil society to provide prevention.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>Improving Health Facility Attendance in Nigeria Using Voice Mobile Reminder</b>  Winnie David, Viamo Nigeria; Justin DeNormandie, Breakthrough Action Nigeria; Nii Lante, Viamo; Seth Gogo Egoeh, Viamo;  Maureen Ugochuku, Viamo</p>

	<p>Nigeria has the world’s second highest rate of maternal deaths (over 800/100,000 live births) with less than 40% of childbirths occurring in a health facility. Creating awareness and reinforcing social behavior change (SBC) messages can increase utilization of services. With funding from USAID, Breakthrough ACTION Nigeria (BAN) launched a mobile reminder service in January 2021. This was designed to reinforce SBC messages and increase the use of health facilities among people referred for services by community volunteers (CVs). The CVs engage community members on different health topics and refer them for appropriate services at a health facility. The referred persons are invited to join a mobile reminder service that uses recorded messages to deliver SBC content. Upon joining the service, participants receive a welcome message. This is followed by a reminder message after two days to reinforce the benefit of the referral service. Six days after enrollment, participants receive a survey asking whether they had received the service at the health facility. If they have not received the service, they immediately receive another message encouraging them to visit the health facility. This is followed up with another survey six days after the last reminder to see if the participant had gone to the facility for the service. Between January 2021 and July 2022, 13,609 people were sent mobile reminder messages. Of those who responded to the first survey, 49% reported visiting the health facility for their referral service. After receiving the reinforcement message and follow-up survey, the total proportion of people who visited the facility increased to 61%. The mobile reminder service is a powerful way to follow up with people after a referral has been made at scale and is an effective way to deliver targeted SBC messages designed to increase utilization of the health services.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>A Case Study on Developing a Data Dashboard to Support Integrated Family Planning and Maternal Child Health Service Implementation in West Africa</b>  Steve Sortijas, IntraHealth International; Amy Finnegan, IntraHealth International; Jen Snell, IntraHealth International; Sujata Bijou, IntraHealth International; Robert Bambara, IntraHealth International</p> <p>Family planning and maternal child health services are increasingly integrated, yet HMIS data collection tools and dashboards have yet to catch up. This poster presents a case study of one project that is helping to close this gap - the Bill &amp; Melinda Gates Foundation-funded INSPIRE project in West Africa implemented by IntraHealth International. It will document the application of a structured, standardized approach using agile principles to develop a project dashboard to be used internally for informing project management as well as for communicating results to external stakeholders. It will describe lessons learned in eliciting requirements from project and technical staff, including the</p>

	<p>benefits of dashboard development during a mature project implementation stage and the challenges of meeting requirements across a 9-country project with varied data systems. It will also reflect on the potential for data science in support of meeting the needs of users primarily at country and regional levels and the use of business intelligence tools for providing actionable data to internal project stakeholders as well as for external stakeholders, including donors, ministries of health, and regional health communities. This poster will seek to contribute to the knowledge base on applying data science and business analytics approaches in the field of global health.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>Successes and failures of biometrics for healthcare delivery</b> Alexandra Grigore</p> <p>Our poster will include information on our biometrics for healthcare delivery project in Ghana with DHIS2 tracker. We will highlight the use case of biometrics in healthcare delivery, potential benefits and how it can be used responsibly. As a case study, the implementation of Simprints in DHIS2 tracker for vaccine delivery in Ghana will be presented. A DHIS2 tracker and Simprints biometric workflow will be demonstrated and lessons from a 9 months pilot shared, including community perception and user adoption. A comparison between two biometric modalities will be shown with recommendations for anyone who wants to implement this technology in the healthcare sector. We will highlight key results, and draw on successes and failures such as: Two biometric modalities integrated with DHIS2 tracker Early anecdotal feedback is that up to 20 minutes per consult can be saved through the use of biometrics to ID and retrieve records. 70 users trained on fingerprint biometrics 44 users trained on face recognition 782 people enrolled to date 98% enrollments with at least one good quality fingerprint scan 9 out of 10 facilities where fingerprint was deployed reported no or few challenges getting client’s consent to record their biometrics 90% consent forms accepted overall Initial data shows that community acceptability of fingerprints is higher than for face, but more data needs to be collected during a 6 month period before we can draw a conclusion.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>Enhancing Digital Inclusion For Persons With Disabilities Through The Principles For Digital Development</b> Nelly Nyaga, IntelliSOFT Consulting Ltd; Mugechi Ngandu, IntelliSOFT Consulting Ltd; Susan Gathu, IntelliSOFT Consulting Ltd; Claudine Lim, Digital Impact Alliance; Steven Wanyee, IntelliSOFT Consulting Ltd</p>

	<p>In May 2022, Kenya gazetted the first ever Kenya Standards (KS 2952 1:2022) on accessibility to ICT products and services for persons with disabilities in Africa. The standards specify the functional accessibility requirements applicable to ICT products and services. Assistive Technology (AT) is widely adopted to ensure that Persons with Disabilities can access and use products and services. The combination of accessible ICT and AT enhances the function, independence, and overall well-being of Persons with Disabilities. In a bid to strengthen digital capacity, bridge the digital literacy divide, and ensure that no one is left behind, IntelliSOFT Consulting Limited (ICL), Digital Impact Alliance (DIAL), University of Nairobi (UON), and the Kenya School for the Blind (KSB) are developing a Learning Management System (LMS) that can integrate technical solutions and incorporate accessibility guidelines and universal design to enhance inclusivity and accessibility for persons living with disabilities. IntelliSOFT aims at digitizing, creating awareness, and training on the Principles for Digital Development which will enhance the digital capacity and skills of learners to ultimately more meaningfully utilize digital-enabled products and services, more effectively contribute to the design, development, and implementation of digital-enabled products and services, and create and participate in an all-inclusive community of practice on Principles for Digital Development. The learning content will be provided in both English and Kiswahili languages, in line with the content accessibility guidelines for persons with disabilities, and allow for both facilitated and self-paced learning. This flexibility of training language and learning modality will create a sense of ownership in the learners while promoting their self-confidence and independence and lead to a better understanding of the knowledge being impacted. The impact will be assessed through scores on tests completed on the learning modules.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>Defining a set of a-priori home detection algorithms and assessing their reliability using call detail records from a mobile network operator in Malawi</b>  Brandon Klyn, Cooper/Smith</p> <p>Call Detail Records (CDR) provide metadata on the location and time when a subscriber has an event (call/SMS). Paramount to the utility of CDR data is the inference of a subscriber's home location, which can be estimated using a home detection algorithm (HDA). While HDAs have been used in Malawi, no systematic attempt to identify an optimal method has been conducted. Therefore, I developed and tested a priori HDAs from a CDR data set in Malawi to determine the optimal method. Of the 16 HDAs tested, the optimal HDA boasted an R2 of 80.8%, followed by two others at 80.7% and 79.7%. The sensitivity analysis found minimal variation in the optimal HDA with an average R2 difference of 0.3%, and the removal of a small sized district with high sub district and tower allocations increased the</p>

	<p>R2 to 82.7%. The optimal HDA is now the standard used in Malawi and can be used as a near real time proxy for population density. This has dramatic impacts on its use in public health, as often, ministries of health rely on census information, which quickly become outdated for planning interventions or allocating resources. Understanding population density at a granular level, in near real time, can increase the ability to understand true service needs at health facilities, adequately plan health interventions, or make policy decisions. In addition, the HDA can be used to track migration patterns, therefore understanding where people are moving for short and long durations of time. This can have direct impacts when disease modelling, understanding outbreaks or patterns in pandemic response. Understanding where the population is, in near real time, is a game changer and further increases the chances that the right health interventions, will go to the right place, at the right time. This approach can be replicated for</p>
<p>3:30 pm-4:00 pm</p>	<p>Poster Session: <b>Cost-effectiveness of implementing a Digital Health APP as part of a health program in the workplace: Costa Rica m-Health case</b>  Anton Zamora Ilarionov, Central American Health Informatics Network (RECAINSA)</p> <p>During the Covid-19 pandemic, a free of cost App to monitor Covid symptoms was launched in 23 companies in Costa Rica. Every company in Costa Rica with more than 1500 employees must have a physical clinic in the facilities. During the implementation of the APP, the health care providers of the companies monitored the vital signs in the dashboards reported by the workers via the APP and provided an immediate response in cases where was needed. After the pandemic, the App was upgraded and adapted to report other vital signs and be able to monitor diabetes and hypertension. With the support of dietitians, nurses, physicians, and psychologists the app become an extension of the clinic and allowed to monitor and educate workers in the companies. The key features of the APP are 1) Usability: the easy way of integrating medical devices and sharing the data to the cloud. 2) Possibility to push educational messages and reminders to the patients. 3) The possibility to create support groups incorporating telehealth meetings with the healthcare providers.</p>
<p>3:30 pm-4:00 pm</p>	<p>Poster Session: <b>Using smart paper technology for COVID 19 Vaccination Data Management in data backlog clearance and cleaning: Lessons and experiences from Bukwo District, Eastern Uganda</b>  Emmanuel Khaukha Wangota, IntraHealth International</p>

	<p>My abstract is about efficient COVID-19 data management in Bukwo district in Eastern Uganda. My topic is about using smart paper technology for COVID 19 Vaccination Data Management in data backlog clearance and cleaning that has led to proper planning and analytics. Like other districts in the country, paper-based registers for COVID-19 data capture were being used. This was ineffective because of the long durations and costly manual data capture leading to slow data analysis and real time reporting that affects decision making. In a bid to achieve the WHO recommended 70% full dose coverage by end of September 2022, the government of Uganda through the ministry of health employed routine immunization and accelerated mass vaccination campaigns (AMVCs) for maximum yield and high uptake that eventually led to accumulated data. The IntraHealth led USAID RHITES-E Activity supported 16 districts in its catchment area such as Bukwo District to migrate from paper-based registers to digital platforms for better data management to better address the data back. Use of SPT in COVID-19 data management as a digital technology for capturing, monitoring and analysing data has reduced the cost associated with manual data entry, prolonged and slow data backlog clearance and real time access to accurate data to inform decision making in terms of quantification of vaccines, planning for logistics and targeted interventions in the shortest time. Additionally, initial steps promulgated into the SPT procedures such as those employed by Bukwo above improve the efficiency and accuracy of the data capture using the new digital technologies. I believe the abstract submitted accounts for the Innovations in global digital health solutions expected by the session participants.</p>
3:30 pm-4:00 pm	<p>Poster Session: <b>Digital Documentation of COVID-19 Certificates: Technical Specifications and Implementation Guidance</b> Sunny Ibeneme, UNICEF EAPRO</p> <p>According to WHO the Digital Documentation of COVID-19 Certificates: Vaccination Status (DDCC:VS) is proposed as a mechanism by which a person’s COVID-19-related health data can be digitally documented via an electronic certificate for continuity of care or as proof of vaccination for purposes other than healthcare. DDCC:VS are electronic immunization records that are accessible and can be used in the same way as the paper card. The development of DDCC:VS is based on cost-benefit assessments of its uses, the advantages and disadvantages of the proposed infrastructure, in comparison with other potential or existing ways to record, validate and verify vaccination records. DDCC:VS implementation guide contains standards-compliant (HL7, FHIR) specifications, privacy and confidentiality. The implementation guide explicitly encodes computer-interoperable logic, including data models, terminologies, and</p>



	<p>logic expressions, in a computable language sufficient for the implementation of continuity of care and proof of vaccination. Where a paper vaccination card is used, it should be associated with a health certificate identifier (HCID). Multiple forms of digital representations of the DDCC:VS may be associated with the paper vaccination card via the HCID. The HCID should appear on any paper card in both a human-readable and a machine-readable format. Thus, the implementation of DDCC:VS should be communicated in a transparent manner to promote of public trust and acceptance. This communication should include how a DDCC:VS would work to benefit individuals and public health, the policies and mechanisms in place to limit access to and use of a DDCC:VS by third parties, and whether DDCC:VS data are linked to other types of data and the purposes of any data linkage. Post implementation, it is also important to monitor the effects of DDCC:VS in terms of positive and negative outcomes and to consider potential interventions to mitigate negative outcomes.</p>
4:15 pm-5:30 pm	<p>Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K  <b>Switchpoint – Intrahealth</b></p>
4:15 pm-5:30 pm	<p>Interactive Worksop: Room 1 Salon C  <b>How can guidelines for reporting on implementations improve digital health knowledge management? An interactive workshop</b>  Caroline Perrin, Geneva Digital Health Hub; Cheick Oumar Bagayoko, CERTES, Pramendra Prasad, B.P.Koirala institute of Health Sciences; Salim Azzabi Zouraq, WHO; Mirana Randriambelonoro, gdhub</p> <p>The rise of digital health, and the emergence of new technologies, has been a major catalyst in transforming healthcare, further accelerated by the Covid-19 pandemic. While digitalization is a great opportunity for health systems to become more efficient and equitable, many of these potential changes have not been realized as numerous digital health implementations stagnate in the pilot phase or have failed to live up to their potential. Reasons for this are mostly not health sector-specific but are related to implementation difficulties, for example, due to underestimating human factors. And as there is no effective documentation of implementation knowledge, it is difficult to reliably study and understand global trends for the success or failure of digital health implementations. As a result, similar and preventable mistakes are frequently repeated. The need for improved documentation and exchange of implementation knowledge is a long-standing challenge, and to accelerate the progression of digital health, it's important that knowledge management is embraced. Knowledge is critical to inform innovation. And when that knowledge is shared,</p>

	<p>greater levels of collaboration can happen within and across organizations. The Geneva Digital Health Hub (gdhub) has set up a multi-stakeholder expert group to develop guidelines on how to report on digital health implementations to support the advancement of knowledge management in digital health. This workshop aims at collecting feedback from the broader digital health community on the preliminary set of recommendations as well as to test and apply these guidelines to scenarios proposed by participants' to ensure providing practical and easy-to-use guidelines.</p>
<p>4:15 pm-5:30 pm</p>	<p>Breakout Session: Room 2 Salon H  <b>Using biometrics to ensure clean, accurate data // Preventing duplicates and ensuring clean data using biometrics //</b>  Toby Norman, Alexandra Grigore</p> <p>Duplicate records are common in all digital systems that rely on collecting personal identifiers such as names, telephone numbers or scanning / distributing QR codes. Fuzzy matching algorithms for deduplicating the data are the norm, however they often rely on a manual, time consuming adjudication process which is still prone to error. Matching biometric data can significantly speed up the process and bring another level of accuracy to any digital system. During this session, we will cover the technical details of biometric deduplication with practical information. Topics: Biometrics 101 This introduces basic biometric concepts Deduplication process Biometrics can be used both for preventing duplicates entering the system as well as flagging existing duplicates. Real time deduplication needs a matching algorithm running on the device that is used for data collection and requires a certain level of trust in the operator. Offline deduplication is usually done after the registration process is complete and does not rely on the operators to prevent duplicates entering the system. We will cover how a typical deduplication is done using only demographic data, followed by how the addition of biometric information can speed up the process. Real time versus offline deduplication will be explained with a deep dive into common issues like self enrollment, double enrollments and multi enrollments. Threshold setting and clustering For any analysis, the most critical step is finding a suitable comparison score threshold. This section will cover examples of how different thresholds influence the results as well as best practices on how to set them up. Additionally several techniques for analyzing the data such as clustering will be discussed. Use cases and examples Duplicate rates between 10% and 44% were discovered in several digital health programs. This section covers 2 use cases where biometric deduplication has provided significant value.</p>

4:15 pm-5:30 pm	<p>Breakout Session: Room 3 Salons D-E  <b>Human-centered approach to the national digitization of community health in Senegal</b>  Amadou Fall, Digital Square/PATH</p> <p>To reduce the uncontrolled introduction of digital tools, the Senegalese Ministry of Health and Social Action, supported by the US President’s Malaria Initiative (PMI) and implemented by PATH’s Digital Square project, is leading a human centered design approach to define a digital community health vision and strategy to ensure all health actors’ needs are accounted for in a single, national action plan for community health digitalization. We will present 3 presentations that are contributing to its development: 1. An extensive user needs assessment with health workers and supervisors from the community and established a User Advisory Group of these stakeholders to shape the system design. We will present the results of the assessment, the user profiles including their work, workload and needs. 2. We combined this with the Collaborative Requirements Development Methodology (CRDM), convening stakeholders representing the government; User Advisory Group; district, and regional health workers; the development sector; and a telecommunications provider. The approach resulted in the development of: 03 user personas, a comprehensive set of 13 processes (including malaria, acute respiratory infection, malnutrition, and diarrhea) for disease and human resource management, and 213 system requirements, which drive development of a national digital tool to be used for CH. 3. To ensure that the country select the appropriate tool to support the initiative, we conducted a collaborative tool selection process. We shortlisted 6 tools that we evaluate with HMIS specialist from the key departments of the Ministry of Health and Digital Square. The panel will discuss an overview of the results, their use in tool development, and implications for future activities, as well as learnings from this process and how it can be applied to other use cases, as well as the governance required for such initiatives. They will discuss Senegalese multi sector model, successes, opportunities and challenges.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Reveal - Increasing Campaign Coverage through Spatial Intelligence</b>  Alinda Lauer, Akros, Inc.; Anna Winters, Akros, Inc.</p> <p>Reveal is an open source (Apache 2.0 license) digital public good certified by Digital Square and the Digital Public Goods Alliance that strengthens end to end delivery of field based health interventions. Health campaigns be it for malaria, vaccine preventable disease or neglected tropical disease provide consistently low population coverage. Life saving</p>

	<p>interventions are often required in rural environments where there are no maps, road names, or reliable population data. These factors make it challenging for teams to find rural populations; more than 40% of households are routinely missed. If teams do not find the houses, those populations go without the interventions. In 2017 only 31% of mass drug administration for neglected tropical disease reached intended targets. The Reveal platform leverages the power of maps and spatial intelligence to drive efficient planning, targeted delivery, and reliable monitoring and evaluation before, during, and after field campaigns. Reveal assists managers to generate operational plans aligned with GIS datasets, task teams into action, and remotely monitor field progress against robust population and/or structure estimates. Reveal makes it easy for field teams to reach the last mile and achieve coverage targets through offline maps and dashboards. There are many field data collection applications within the health data collection ecosystem, yet none leverage GIS data (gridded population numbers, geospatial risk models, settlement footprints, household enumerations) to command and control field operations like Reveal. Key features include offline functionality, peer to peer sync to allow field teams to coordinate even without connectivity, colorful map dashboards on web and mobile clients which show coverage against all targeted households, dashboard dials to measure progress, and help desk availability. Reveal has supported IRS, MDA, SMC, vaccination campaigns and focus investigations in 11 countries across Africa and SE Asia, improving the delivery of health services to over 3 million people.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <a href="#">OpenSRP FHIR Core</a>  Matt Berg, Ona Systems, Inc; Peter Lubell-Doughtie; Ona Systems, Inc</p> <p>OpenSRP FHIR Core is an updated version of OpenSRP that has been developed to be natively compliant with the WHO SMART Guidelines. The WHO Smart Guidelines are a framework for computable healthcare guidelines that use FHIR to define the recommended algorithms for health protocols, such as antenatal care. Based on Google's FHIR SDK, OpenSRP FHIR Core is able to natively ingest the form definitions and clinical logic as defined by the SMART Guidelines and output FHIR encoded data. OpenSRP FHIR Core is currently being used by Ona's and partners to develop community and facility health systems that will be rolled out in partnership with the MoH in a number of countries. Our goal within a year is to be able to provide a Ministry of Health the ability to run all the clinical modules needed in a primary health facility on a mobile device based on WHO guidelines. In the solution demonstration, we will provide an overview of how OpenSRP FHIR Core works and how it can quickly be adapted using WHO's SMART Guidelines to meet a health implementors needs. We will also demonstrate and discuss the emergent ecosystem of tools and platforms that are being developed around this emergent FHIR ecosystem. This includes how the ability to collected standardized data</p>

	<p>unlocks the ability to develop and implement AI/machine learning at scale for things like risk detection and health work force optimization.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Optimizing COVID-19 vaccine allocation in West Africa using open-source data-science tools</b> Anubhuti Mishra,Palladium Group; Jonathan Friedman, Palladium Group</p> <p>Beginning 2021, we have seen several reports that developing countries have struggled to administer COVID-19 vaccines before their expiration date resulting in wastage of thousands of doses. Timely administration to most of the adult population in face of crippling supply chain challenges continues to be a problem in 2022. While investments in supply chain and infrastructure are the first line of defense, data-based decision-making tools can help address the immediate need by optimizing for real-time constraints. Vaccine Allocation app addresses an urgent need to rapidly increase COVID-19 vaccine coverage while reducing vaccine wastage. We combine public data sources with country-specific data using GIS modeling and build an optimization model to efficiently allocate COVID-19 vaccines. We have developed this app in collaboration with USAID and the Ministry of Health in Cote d’Ivoire and are currently rolling out the beta version. Prior to the rollout of the vaccination allocation app, stakeholders, in the country, had been using simple priority population maps or ad hoc information for allocating vaccines. The lack of a systematic method that factors in the healthcare infrastructure, vaccine supply limitations, and demand challenges has led to haphazard decision-making. Further, vaccination data reports, stock data, and allocation plans exist in disparate data tools, which results in delays when using data to inform decision-making. This app processes and combines data across several different sources and data types such as vaccination data from DHIS2, stock data from an excel-based tool, and vaccine sites’ location data. The app is built using open-source programming tools like R, QGIS, MapBox, and Shiny. Using open-source data-science tools we have built a cheap and easy-to-use app that is replicable across countries. Mock version with simulated and public data is hosted here: <a href="https://palladiumgroup.shinyapps.io/ModelApp/">https://palladiumgroup.shinyapps.io/ModelApp/</a></p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>SIMBIHealth: Sexuality Information Mental and Behavioural Initiative for Health Mobile App</b> Miracle Adesina, Isaac Olufadewa, Ruth Oladele, Toluwase Olufadewa</p> <p>According to UNICEF, one in four girls and one in ten boys in Nigeria had experienced sexual violence before the age of 18, also, according to a survey by Positive Action for Treatment Access, over 30 per cent of girls i.e 3 out of 10 said that</p>

	<p>their first sexual encounter had been raped or forced sex of some kind. Furthermore, WHO estimated that depression has a significant public health problem, and at a prevalence rate of 3.9%, with an outrageous 7 million Nigerians currently suffering from it. SIMBIHealth is a conversational Artificial Intelligence driven Chatbot (automated response Messenger bot) that delivers reliable health messages to young people. It aims to improve access to sexuality and mental health information to young people by leveraging on the immense power of Artificial Intelligence (AI) and social media to connect them with the right and reliable health information to ensure healthy relationship and lifestyle. It helps to break the socio-cultural, religious and other systemic barriers to sexuality and mental health information for adolescents. It connects young people with the appropriate sexuality and mental health services education in Nigeria and Africa by leveraging on the immense power of social media Chatbots and mobile technology to help them in developing healthy relationships, leading responsible lives and stay mentally healthy. It was the number one trending medical application on Google play store for one week after its launch and has thousands of downloads and users across the globe. team. The artificial intelligence-driven chatbot component has had over 50,000 conversations since the application was officially launch on March 8th 2020. Also, more than 2,000 certifications on sexual and mental health have been provided to users who complete the mental and sexual health education programs/courses on the mobile app.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>A demonstration of the Data Observation Toolkit (DOT) - an open source solution for monitoring inconsistent or problematic data in digital community health information systems</b>  Matthew Harris, DataKind; Chrisgone Adede, Medic</p> <p>Improving data quality and trust has been identified as critical to building confidence in data collected at the community level as it underpins the ability for a health system to improve policy response and provide equitable, data-driven, optimized health service delivery. Input from the GDHF community over the last three years has informed a data quality and data trust initiative between DataKind and Medic and the development of an open source solution that leads to higher quality community level datasets. With the collaboration of established frontline health partners, and through sustained support of key donors over this period, we have developed the Data Observation Toolkit (DOT) which we will showcase in this demonstration. DOT enables automated observation of data generated by community health workers using Medic’s digital health platform, the Community Health Toolkit (CHT). It scans data as it enters the underlying data management system and runs a series of user-selected tests. DOT reports any inconsistent or problematic results which enable health system managers to target and investigate the issues and implement effective, rapid remediation. DOT is being launched in production on the CHT to support deployments with government and non-government partners.</p>

	<p>DataKind will demonstrate the key features of DOT, how it works, and current deployment options. We invite the GDHF community to, as always, contribute valuable questions and feedback to inform further development of DOT into an open source, platform agnostic, digital public good.</p>
<p>5:45 pm-7:00 pm</p>	<p>Appy Hour: <b>Improving effectiveness and consistency in the delivery of health information by the healthcare workforce: A digital job aid approach</b>  Susan Letting, Population services international</p> <p>A Digital Job aid is a tool or set of instructions that allows an individual to quickly access information they need to perform a task. Job aids come in handy when performing a complex task, a task that is performed infrequently or a task, that if performed incorrectly can have dire consequences. Some forms of job aids are: checklists, flowcharts, infographics. PSI’s digital job aids are used by community health workers to support the consistent delivery of complex information to the target audience. It serves as a quick reference material/manual for health providers to promote quality, effective and efficient healthcare service delivery. Why digitize job aids? Digitization of job aids help break barriers to health information delivery and dissemination by ensuring: Engaging content: Digitization supports access to interactive job aids in different formats and provide the ability for the tool to grab the viewers’ attention and keep them interested and spark emotional reaction and call to action (Videos, Quizzes, Interactive decision support tools). Offline access: Once the resource is downloaded, the job aids will be accessible for use in areas with limited to no connectivity. Quicker &amp; easier access: Digital job aids can eliminate the clutter of printed tools while saving time by enabling CHWs to quickly find the exact information they need. Insights on user’s behavior: The data captured during the session is saved and can be used to track user health behavior for better health outcomes. Discrete and safe: CHWs no longer need to worry about the safety and privacy of these tools as they are stored digitally. The digitization exercise was executed using a user centered design approach where a select group of end users were involved in focused group discussions during needs assessment, prototyping and testing, and whose outcome was used to design the end product.</p>
<p>5:45 pm-7:00 pm</p>	<p>Appy Hour: <b>Reveal - Increasing Campaign Coverage through Spatial Intelligence</b>  Alinda Lauer, Akros, Inc.; Anna Winters; Akros, Inc.</p>

	<p>Reveal is an open source (Apache 2.0 license) digital public good certified by Digital Square and the Digital Public Goods Alliance that strengthens end to end delivery of field based health interventions. Health campaigns be it for malaria, vaccine preventable disease or neglected tropical disease provide consistently low population coverage. Life saving interventions are often required in rural environments where there are no maps, road names, or reliable population data. These factors make it challenging for teams to find rural populations; more than 40% of households are routinely missed. If teams do not find the houses, those populations go without the interventions. In 2017 only 31% of mass drug administration for neglected tropical disease reached intended targets. The Reveal platform leverages the power of maps and spatial intelligence to drive efficient planning, targeted delivery, and reliable monitoring and evaluation before, during, and after field campaigns. Reveal assists managers to generate operational plans aligned with GIS datasets, task teams into action, and remotely monitor field progress against robust population and/or structure estimates. Reveal makes it easy for field teams to reach the last mile and achieve coverage targets through offline maps and dashboards. There are many field data collection applications within the health data collection ecosystem, yet none leverage GIS data (gridded population numbers, geospatial risk models, settlement footprints, household enumerations) to command and control field operations like Reveal. Key features include offline functionality, peer to peer sync to allow field teams to coordinate even without connectivity, colorful map dashboards on web and mobile clients which show coverage against all targeted households, dashboard dials to measure progress, and help desk availability. Reveal has supported IRS, MDA, SMC, vaccination campaigns and focus investigations in 11 countries across Africa and SE Asia, improving the delivery of health services to over 3 million people.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Optimizing COVID-19 vaccine allocation in West Africa using open-source data-science tools</b>  Anubhuti Mishra, Palladium Group; Jonathan Friedman, Palladium Group</p> <p>Beginning 2021, we have seen several reports that developing countries have struggled to administer COVID-19 vaccines before their expiration date resulting in wastage of thousands of doses. Timely administration to most of the adult population in face of crippling supply chain challenges continues to be a problem in 2022. While investments in supply chain and infrastructure are the first line of defense, data-based decision-making tools can help address the immediate need by optimizing for real-time constraints. Vaccine Allocation app addresses an urgent need to rapidly increase COVID-19 vaccine coverage while reducing vaccine wastage. We combine public data sources with country-specific data using GIS modeling and build an optimization model to efficiently allocate COVID-19 vaccines. We have developed this app in collaboration with USAID and the Ministry of Health in Cote d'Ivoire and are currently rolling out</p>



	<p>the beta version. Prior to the rollout of the vaccination allocation app, stakeholders, in the country, had been using simple priority population maps or ad hoc information for allocating vaccines. The lack of a systematic method that factors in the healthcare infrastructure, vaccine supply limitations, and demand challenges has led to haphazard decision-making. Further, vaccination data reports, stock data, and allocation plans exist in disparate data tools, which results in delays when using data to inform decision-making. This app processes and combines data across several different sources and data types such as vaccination data from DHIS2, stock data from an excel-based tool, and vaccine sites' location data. The app is built using open-source programming tools like R, QGIS, MapBox, and Shiny. Using open-source data-science tools we have built a cheap and easy-to-use app that is replicable across countries. Mock version with simulated and public data is hosted here: <a href="https://palladiumgroup.shinyapps.io/ModelApp/">https://palladiumgroup.shinyapps.io/ModelApp/</a></p>
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5:45 pm-7:00 pm	<p>Appy Hour: <b>Implementome: a multidimensional and evolutive digital health knowledge platform</b> Mirana Randriambelonoro, gdhub</p> <p>Digital health is not just a buzzword. It is a movement that has been transforming the way people have access to healthcare and how they manage their health. This revolution is happening because of the convergence of three major trends: digitization, connectivity, and data analytics, which are transforming healthcare by enabling patients to take control of their own care and empowering providers with real-time insights. It can help with the shortage of doctors and nurses, the lack of medical equipment, and the lack of medical knowledge in rural areas. Despite its potential, the use of digital health in LMICs to overcome barriers to health service delivery has faced challenges in achieving scale and is characterized by fragmentation. But we cannot hope to solve big problems without first understanding them. That is why the Geneva Digital Health Hub (gdhub) developed a knowledge management platform, called Implementome, which aims at documenting knowledge and facilitating the identification of determinants for the success or failure of digital health implementations. The Implementome provides a multidimensional and evolutive digital health knowledge base of people, projects, publications, evaluations, lessons learned, and evidence. Based on a formal ontology and structured terminologies, the tool can be explored and enriched both by humans and AI-enabled automated processes. The main goals of the Implementome are to better connect actors active in the digital health field to mobilize their expertise and know-how, to encourage and facilitate collaborative processes, to inform and facilitate decision-making for stakeholders in the field, and to provide a continuous overview of the global digital health ecosystem. The digital transformation in healthcare is challenging, but knowledge management might be the key to sustainable solutions. The implementome aims at closing the implementation science gap and enabling science-based decision making.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Patient-level electronic medical record system Tamanu and free and open source software</b> Megan Lane, Beyond Essential Systems</p> <p>Tracking longitudinal patient data is a challenge throughout the Western Pacific region due to geographic isolation of health service points, poor digital and communications infrastructure, and low digital literacy among health staff. Beyond Essential Systems creates and implements open-source software solutions for health systems in the Western Pacific, and our patient-level electronic medical record system Tamanu is specifically designed to address these problems. Tamanu allows health workers to track individual patients over time, providing clinical support and enabling</p>

	<p>consistent, long-term management of patient conditions. Designed specifically for low resource and highly remote settings such as the Pacific context and available in desktop, tablet, and mobile phone versions, Tamanu allows health workers to monitor patients in hospitals, health centres, clinics and even out in the field. The system is offline-first, with syncing capabilities allowing users to work seamlessly in settings with unreliable internet access. Tamanu is a Digital Square Global Good and is implemented in 6 countries. Tamanu is also a free and open-source software (FOSS). Advantages of FOSS include transparency, avoiding vendor lock-in, cost savings, the potential to develop and disseminate contextually appropriate features and the democratisation of the software itself. FOSS has the potential to transform sectors including health, education, finance and trade in low and middle-income countries. This session aims to increase awareness and understanding of working FOSS within the aid community and across partner countries, and how, in practical terms, it can be used to support the efficient, effective, scalable and financially sustainable delivery of development initiatives.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>iDeliver - The future of digital maternity care</b>  Paul Amendola, VecnaCares; Jackline Cheruiyot, VecnaCares</p> <p>iDeliver is an advanced instance of OpenMRS that has been developed to provide a real-time clinical decision support module that follows a patients journey through the continuum of maternity care. The session will explore the timeline, resources, lessons, and impact of developing a purpose-built application for low-resource settings. The iDeliver project goal was to create a digital solution to assist with clinical decision-making by guiding decisions in real time. The tool would also capture diagnosis and treatment data, streamline data reporting processes, and inform quality improvement efforts at facility, district and national levels, with the ultimate objective of improving maternal health outcomes. User feedback collected on-site and during off-site interactive workshops helped set the agenda for subsequent phases of design and development work. In addition to the highly intuitive user interface, other key features build for iDeliver include: Clinical Decision Support Algorithm: iDeliver’s WHO-compliant open-source system which offers real-time clinical decision support solutions for facility-based skilled birth attendants. Its evidence-based algorithm continuously mines and monitors patient data to rapidly identify possible complications. Triage Algorithm: Evidence-based algorithm that continuously mines and monitors patient data to rapidly identify possible complications, alert users, update patient records, and provide recommended next steps. A non-linear workflow: iDeliver was developed with the end-user and reflects the true daily activities of a provider in low-resourced settings. Users can engage with the system at any phase</p>

	<p>of the continuum of care and receive real-time guidance. The use case for the session will be an iDeliver deployment in Mnazi Mmoja hospital in Tanzania. For the past twelve months, iDeliver has been sole electronic medical records system used in their maternity ward, with a 100% user adoption rate, and over 36,000 births assisted.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Improving Health Information Management Through The Digitization Of The Mother-Child Health Handbook (Moh 216 Kenya)</b>  Nelly Nyaga, IntelliSOFT Consulting Ltd; Jacqueline Njeri, IntelliSOFT Consulting Ltd; Moses Thiga, IntelliSOFT Consulting Ltd; Pamela Kimeto, IntelliSOFT Consulting Ltd; Steven Wanyee, IntelliSOFT Consulting Ltd</p> <p>Despite global efforts to improve maternal health, the socioeconomic burden of maternal mortality and morbidity is significantly high in low and middle-income countries. The Ministry of Health (MOH) in Kenya, through coordinated efforts with private and public organizations, is working towards the achievement of Sustainable Development Goal 3 (SDG 3), which aims to achieve Universal Health Coverage through equitable access to healthcare services for all and reduction of maternal mortality to 70/100,000 by 2030. Different ICT solutions have been implemented to improve maternal and child health, which is evident through reduced under-five mortality from 102 in 1990 to 33 per 1000 in 2022 and decreased maternal mortality from 707 in 2000 to 362 per 100,000 in 2021. Kabarak University, through funding from the National Research Fund of Kenya (NRF), is implementing a Maternal Health Information System (MHIS) dubbed the 'Mama's Hub,' which is designed for use in low-resource healthcare facilities to support the delivery of antenatal care (ANC) primarily. 'Mama's Hub,' which is under development by IntelliSOFT, focuses on digitizing the mother-child health handbook (MOH 216) by the Ministry of Health (MOH) in Kenya. The MOH 216 handbook contains information on safe pregnancy, delivery, and child health and also serves as a health record. 'Mama's Hub' is a mobile and web-based application consisting of one (1) patient-facing and two (2) provider-facing applications for use by both facility-based and community-based health care workers for last mile data collection, storage, processing, and reporting. Embracing the Digital Development Principles and WHO SMART guidelines, the solution is built with the end user at the core to ensure the inclusion of mothers and health workers across the board. Open source development has lowered the costs, enhanced inclusion, and strengthened the product through input from the community.</p>

5:45 pm-7:00 pm	<p>Appy Hour: <b>DHIS2 Open Source Program Configuration App (PCA)</b> Amber Sheets, PSI Zimbabwe</p> <p>Originally designed to configure clinical quality improvement checklists based on PSI’s HNQIS (Health Network Quality Improvement System) methodology, the Program Config App (PCA) can be used as a generic DHIS2 Program Configuration wizard that simplifies the process of creating, editing, and maintaining DHIS2 programs and all related metadata. Users are presented with a unified interface from which they can add pre-existing or new Data Elements or Attributes to a program individually or in bulk, add or edit options sets, apply org unit assignment, share across all related metadata objects, backup/ restore configurations, as well as import/export program configurations. The PCA allows the community to rethink how configuration can be approached by reducing barriers to DHIS2 program configurations. It is an approach that could inspire conversations for the next generation of the DHIS2 maintenance app. DHIS2 administrator and other staff responsible for the configuration of DHIS2 Programs. The PCA app should allow more users the flexibility to maintain and update their DHIS2 programs while reducing the need for advanced technical support for small changes. This can help reduce the backlog of support requests and allow more users with some training to engage with DHIS2. The program config app, in line with digital principles was designed directly with end users across multiple countries; was built with an identified need in the existing ecosystem in mind; was designed for rapid scale up; built for sustainability, and crucially is open source. (<a href="https://github.com/psi-org/hnqis2/wiki/PCA-Release-History">https://github.com/psi-org/hnqis2/wiki/PCA-Release-History</a>). With the open-source publishing of the PCA, all participants will be able to take and apply this app.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Optimizing Clinical Decision Making In Newborn Health And Nutrition Through Data Collection And Visualization</b> Stella Chelagat, IntelliSOFT Consulting Ltd; Sue Wairimu, PATH - Living Labs; Susan Gathu, IntelliSOFT Consulting Ltd; Nelly Nyaga, IntelliSOFT Consulting Ltd; Steven Wanyee, IntelliSOFT Consulting Ltd</p> <p>It is estimated that 15 million infants are born prematurely each year, most of whom require care in the neonatal unit. Up to 40% of admitted newborns do not have access to mother’s own milk at any given time requiring alternatives. Currently, the nutrition tracking of vulnerable infants is suboptimal due to lack of systems supporting mother’s milk feeding upon mother infant separation. Data to track nutrition and troubleshoot feeding of vulnerable infants to enhance clinical decision making is also insufficient. Through funding from Philips Foundation, PATH applied a user</p>

	<p>centered design approach to design and develop a data system for decision making called the Newborn Nutrition Digital Adaptation Kit (NNDAK). A reference application was subsequently developed and tested in collaboration with IntelliSOFT Consulting Ltd. It is the first of its kind to be built across the world guided by WHO guidelines and fully embracing the Principles for Digital Development. It actively tracks, measures and troubleshoots feeding of vulnerable babies through data collection and visualization. The visualized data informs the optimal provision of lifesaving milk to vulnerable infants while tracking their health and growth. The application is developed on top of Google's Android Fast Healthcare Interoperability Resources Software Development Kit, an open source application intelligently designed to support healthcare delivery. The major innovation includes the babies growth chart, leveraging on the publicly available data on InterGrowth Chart 21 specifically, fetal weight. The reference application has undergone thorough usability testing with the healthcare workers from Pumwani Maternity Hospital against hospital workflows. It is now ready for piloting for eventual use by the estimated 150 healthcare workers to support feeding of approximately 36,000 newborns per year. The application is also anticipated to scale up to neonatal units across the globe by making it open access to be tailored uniquely for each setting.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Ask-a-Question: a Standardized NLP Tool to Automatically Match Citizen's Health Questions with Accurate Health Content</b> Ben Brockman</p> <p>Ask a Question, is a software module that helps non profits and governments operating large scale chatbot lines use natural language processing (NLP) to automate the matching of incoming questions to official health content. As demonstrated by COVID 19, public health misinformation spreads rapidly on the internet and official government health guidance can be hard to access. Public hotlines are commonly built to answer citizen's health questions; however, there are frequently thousands of messages per overwhelmed help desk operator. Menus on chatbots are often too cumbersome to navigate to accurate, relevant content. To solve this problem, we have built a software package that allows operators of large scale chatbot lines (for example, over WhatsApp) to automate the matching of incoming questions to a database of health content with &gt; 60% accuracy. This algorithm takes a substantial burden off help desk workers and enables them to focus on tougher or more urgent questions. Users simply load hundreds of pieces of approved health content, add a few corresponding example questions for each to train the algorithm, and then can train and test the algorithms before deployment. We aim to opensource this solution before the GDHF conference in</p>

	<p>December and work with others to expand its use. We have built and deployed the AAQ solution in collaboration with partners at Praekelt.org in three different health contexts (COVID 19, maternal and child health, and sexual and reproductive health for adolescents) in South Africa benefitting more than 30,000 question askers on public WhatsApp lines. This is expected to grow to several hundred thousand soon. This work builds on a decade plus of Praekelt.org's work to use chat to bring high quality health information to those who have historically been on the margins. We hope others will benefit from this tool to bring similar benefits.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Swaasa AI platform as a screening tool and diagnostic aid in the assessment of respiratory diseases</b> Venkat Yechuri, Salcit Technologies Private Limited</p> <p>Swaasa is the Google Photos for cough sounds. It can identify underlying respiratory lung conditions by analyzing a 10 second (solicited) cough sound recording. In near real time, it provides a general lung health read (Spirometry+) and identification of any respiratory diseases. Health outcomes: By bringing respiratory assessments to places and times where health workers are unavailable, we bring the highest quality care to the underserved populations where there is none.Helps close the prevalence-diagnosis gap (in India, two of three PTB cases are missed). It also allows earlier diagnosis of lung conditions. Allows monitoring in between interactions with healthcare workers to allow for timely interventions. Relevance: Product hits all of the objectives of the GDHN in general and those of the current conference in particular (a)Accessibility (b)(Better) high quality assessments where none exist (c)Real time results (d)Sustainable and scalable owing to its simplicity and all digital format Application: Can be used by PHCs, CHWs or physicians in low resource settings. Can be used remotely or in person. CWCs can assess people on the spot and direct them based on results. Physicians have detailed information to determine future actions. Evidence: Seven prospective registered clinical (five completed) validations with premier research institutions Regulatory approvals CE (EU); India (completed) Innovation: Data privacy &amp; security: HIPAA, ISO 27001, SOC2 compliant QMS: ISO 13485/IEC 62304. Advancing the field: Brings high quality assessments to remote, underserved populations. Advances detecting conditions early and mitigating under diagnosis.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>SPICE: Data Driven Population Health for Primary Care</b> Kelly Shelden, Medtronic LABS</p>

	<p>Medtronic LABS develops community based, tech enabled solutions for underserved patients, families, and communities across the world. We bridge hyper local services with cutting edge technology to produce measurable patient outcomes for all. In this session, we will provide an overview of SPICE, our technology platform that enables care delivery to underserved communities in Sub Saharan Africa and Asia. To date, 4,000+ health workers have used SPICE to screen over 230,000 people for chronic diseases and manage the care of 120,000 enrolled patients. The demonstration will provide an overview of the SPICE application, share best practices for development with users, and discuss context driven design for low connectivity settings. SPICE is an offline first, secure, scalable, flexible digital health platform designed to be used by patients, community health workers, and healthcare providers in low resource settings to support a new era of data driven community healthcare delivery. By linking community level data with facility level data, the platform enhances health system strength to enable longitudinal patient management. SPICE leverages features such as risk based referral and treatment algorithms, Red Alerts, and prescription management to enable community health workers to move from survey based data collection to meaningful disease management. The workflow is supported through patient engagement wrap around services such as SMS reminders and patient support groups. We build technology that prioritizes safety, privacy, and security. SPICE complies with all major international standards including GDPR, HIPAA, and all regional regulations where we operate. The technology is built to standards (HL7, FHIR) that allow for interoperability, as well as integrations with DHIS2, OpenMRS, and more to provide aggregated data with national medical data systems. We have conducted multiple rounds of user acceptance testing (UAT) with our high fidelity prototypes to receive and incorporate feedback from end users into our application design.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Using a batch patient scoring tool to equitably design treatment interventions</b>  Ameera Hamid, Palindrome Data; Kieran Sharpey-Schafer, Palindrome Data</p> <p>Reaching 95 95 95 goals requires differentiated models of care (DMoC) to address the needs of a diverse population. Over the last four years we have been building risk scoring tools using machine learning and advanced analytics tools. We have translated these models into simple to use, point of care scorecards, which allow HCWs to quickly measure a patient's likelihood of having an adverse outcome (e.g. IIT or HIV Viremia). Through partnering with HIV development partners in South Africa and Nigeria, we went further to include recommendations to assist HCWs with allocating interventions to reduce or prevent an adverse outcome. Our newest tool aims to assist facility managers or program</p>



	<p>implementers to design or invest in interventions that meet the specific needs of their catchment population, by allowing them to bulk load an anonymised patient file (csv format) into a predictive analytics portal. The portal will output the following information: Patient population risk groupings (RYG high, medium or low risk), Confidence value in the prediction, Descriptions of likely drivers of risk (For example: treatment duration, time since last visit). The portal will be available for low resource settings as a desktop application. The prioritised list can be used to target patients most in need of attention and shift scarce resources to optimise DMOc. Palindrome will present these tools and engage participants in using them to determine the needs of their patient population and allocate resources in a way that allows individuals to thrive and live their best lives. The following use cases of the tool could be demonstrated during the workshop: Prioritised list of must see patients, Balancing caseload per case manager (Matches patients to case managers), Automate case manager reporting, Specifically addresses the set of next upcoming appointments, Activity indicator tracking, Track patient outcomes, Monitor Intervention ROI.</p>
<p>5:45 pm-7:00 pm</p>	<p>Appy Hour: <b>Interoperable Omnichannel Digital Identity For Healthcare</b>  Candy Chen, Fundacion Conciencia Ciudadana; Massiel Mewa, Central American Health Informatics Network (RECAINSA)</p> <p>Healthcare organizations are experiencing increase in cyberattacks, data breaches and compliance incidents where a digital identity is key to protecting medical information, authenticate users in access management solutions, lowering the risk of fraud activities. Financial institutions across the globe are the first and starting to implement trust through digital identity as they understand the urgent problem and the significant opportunity in the lack of verified users. By implementing a Digital Identity solution, the conversion rate of financial and health inclusion is proven to increase and even reach 3-13% of a country's GDP according to McKinsey. Benefits of a digital identity for healthcare organizations include such as: - Patient data protection, consent and control before the data has been used registered logs of each data view and transaction - Interoperability of healthcare systems across states and countries regardless of technology, systems, and devices - Eliminate fraud activities by authenticating all users within the healthcare ecosystems including health insurance companies, external pharmacies, hospital staff and many more - Reduce healthcare institutions' financial burdens by saving time, boosting accuracy and improving user satisfaction in all the digital channels, applications and systems with all the highest level of security, e.g. wait times and procedures within hospital departments such as laboratories, radiology, pharmacy and external agents such as insurance companies. Worldwide interoperability in compliance with open standards is completely possible with an interoperable omnichannel digital</p>

	<p>identity as it solves the current issues of the existing technologies and systems. The solution delivers trust and verification together that simply put, can allow for example, in insurance-related use cases such as delivery of digital proof of insurance, and access to risk data securely. It can also provide improved data to enhance and extend the delivery of quality health services to all races, genders, ages and income level users.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Aviro Pocket Clinic: a digital solution for chronic medication delivery in response to the COVID-19 lockdown in South Africa</b>          Luke Shankland, Aviro Health</p> <p>In response to COVID-19 lockdown restrictions in South Africa, Aviro customised their existing WhatsApp HIV testing support tool to provide up-to-date information and linkages to key services for patients, including chronic medication delivery, call-backs for clinic guidance and appointments for non-urgent care. Over 18 months, 17,000 users completed 6,500 digital medication orders and almost 2,000 clinic call-backs. The repurposing of an existing platform allowed the Pocket Clinic to go live a few weeks after the initial request from the Western Cape Department of Health (WCDH), and the platform was able to push data to the already existing WCDH health system, which is traditionally a huge challenge for public-private partnerships. The tool was useable and accessible by a wide range of ages and locations. While completion rates were good, opportunities for improvement were identified to reduce drop-off and increase uptake. These included the ability to order for other people, feedback fields to 'close the loop', live dashboards for HCWs and stakeholders and improved demand generation strategies. The technology was generally usable, although potential improvements the in use of NLP and data validation were noted. It was impressive to integrate data with the government systems in such a short time, but more scalable/sustainable technical solutions are required for scale. Public-Private partnerships to support digital health can be very beneficial, bringing focussed expertise to solve problems quickly and well. While this project served as a proof of concept, showing usability, feasibility and health impact, sustainability will benefit from government clarity on digital health engagement processes that can guide future projects.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Using the BornFyne-PNMS platform to train health providers on the WHO digital adaptation kit for ANC Experience from Cameroon</b></p>

	<p>Miriam Nkangu, University of Ottawa; Ronald Gobina, Denis and Lenora Foretia Foundation; Mwenya Kasonde, Liverpool School of Tropical Medicine; Odette Kibu, Denis and Lenora Foretia Foundation; Sanni Yaya, University of Ottawa</p> <p>BornFyne-prenatal management system (PNMS) is a two-way interactive digital platform that supports clinical care at primary and secondary and facilitate referrals. The PNMS is designed to use geo spatial information by establishing a real-time digital connection between the pregnant woman and the doctor to geo navigate and geolocalized distress patients or pregnant women during emergencies. The digital health landscape requires innovative platform that can support clinical care decision-making and improve the quality of maternal health care delivery especially in subSaharan Africa. BornFyne-PNMS facilitates referrals during emergency, increase access and utilization, create awareness, and improve the quality of care and enhance equity in access for maternal health services. BornFyne innovation prompts behavior changes mechanisms from both the user (BornFyne) perspective and providers (PNMS) perspective. Health care providers including community health workers (CHW)are direct beneficiary as it will improve on their skills in using content from the WHO digital adaptation kit for antenatal care to support clinical decision making, and to deliver care, improved on their digital skills and capacity building and overall quality of care delivery and performance. The process of transforming health providers mindset from using paper to electronic health system for data collection and decision support can be challenging and requires constant training and capacity building. Sharing lessons learnt, pain areas and facilitators is part of the digital health development process and important to inform the digital ecosystem for sub-Saharan Africa.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Improving Blood Management in Crisis through the use of digital health solution (BISKIT: Blood Information System for Crisis Intervention and Management)</b> David Akpan, Francis Ayo, Abdulhamid Yahaya, Jamil Galadanchi, Juliet Odogwu</p> <p>WHO estimates that about every one hour, a minimum of 2 persons needs blood with cases of trauma, undergoing surgery, or with conditions that require blood transfusions, accidents, such as sickle cell disease. In low-income countries, up to 65% of blood transfusions are given to children under 5 years of age. Every donation is critical and can make a lifesaving difference. eHA initiated a digital solution to manage evidence-based, data-supported decision-making for supplying the South African population with blood and blood products in the event of a crisis. This digital tool described as BISKIT (Blood Information System for Crisis Intervention and Management) is a new addition to the</p>

	<p>digital health space as one of the laudable innovations to strengthen blood donation services in Africa which operate in fragmented systems that are not compatible with each other. For instance, the health information systems in South Africa (SA) allow real-time retrieval of stock levels and incoming blood donations but challenged with the capacity to process data relating to a crisis, such as the prioritised distribution. BISKIT aligns with global health emergency response with the ability to advance incoming blood supply management and regulate existing stock in response to an emergency. BISKIT is in a pilot stage in SA and final deployment will improve blood and blood products management in crisis situations by an estimated 25% change in response time. The analysis of existing IT applications in the blood donation field and findings from past crises have shown that BISKIT is the future digital solution with the ability to quickly switch to emergency mode, which allows faster action and alternative release methods of blood reserves as well provide data from multiple sources and from multiple vendors in the health emergency value chain.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Integrating Biometrics to increase program efficiency / Integrating biometric to verify impact in your programs</b>  Alexandra Grigore</p> <p>During this session, we will give participants a full demo of our biometric solution so that they can see how it could increase efficiency within their health programme, as well as produce clean data in order to help program staff. Simprints' product comprises three main elements: A modality - a mode of biometric capture, either Fingerprint or Facial recognition An Android app - Simprints ID A Server - A cloud-hosted back end Each of these elements can be configured specifically to meet the needs of each project. Vero fingerprint scanner collects a good quality beneficiary's fingerprint template: A field worker scans a beneficiary's finger using Vero. The scanner checks the quality of the fingerprint image, and if it is a low quality prompts the field worker to retake the scan. Vero generates a unique fingerprint template (string of numbers) and transmits the template to Simprints ID (via Bluetooth). Vero 2.0 can capture and transmit the image as well as the template. Vero has a flexible and interoperable system: Fingerprint templates extracted using Vero is based on ISO template standards. This means that Simprints is interoperable with other biometric systems. For example, if a client had fingerprint templates from a different provider that were ISO compliant, they will be able to transfer and integrate the data with Simprints. With the wide range of proprietary templates it is critical that we can also support image interoperability, which is now offered in Vero 2.0.</p>

5:45 pm-7:00 pm	<p>Appy Hour: <b>Digital Health Solution in Improving Access and Convenience to Healthcare Service towards Healthier Community</b>  Taufiq Hamzah, University of Oslo; Ratih Syabrina, Castellum Digital Indonesia; Popy Meilani, HISP ID; Saldi Yusuf, Department of Nursing Informatics, University of Utah</p> <p>Access to health services is exceedingly essential for people to get treatment or maintain their health and wellbeing. Along with developing and expanding access to health services in Indonesia, various health services in the form of clinics and other primary services are already available in the midst of the community. However, sometimes people have difficulty identifying existing healthcare facilities, and it takes a long process to make an appointment with a doctor due to overcapacity. In addition, people's access to health services is limited in terms of the time and distance that needs to be prepared to commute between their house and healthcare facilities. Therefore, with the current pattern of people's mobility and seeing the proximity of the people to digital technology, it is possible to leverage digital health technology to bring services closer to the people in the community. JumpaDokter is a solution that aims to make people easier to get access to health services more conveniently. Besides being used as an intermediary to obtain health services in various clinics, it also allows people to obtain health services directly at home, where doctors will come to conduct examinations, perform procedures, and provide therapy or treatment directly. It is expected to improve access and enhance convenience towards a healthier community.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Population and Catchment Mapping With DHIS2</b>  Scott Russpatrick, University of Oslo</p> <p>The University of Oslo has partnered with Grid3, Crosscut, WHO, and Google Earth Engine, to enable high resolution population mapping in DHIS2. DHIS2 also support custom catchment areas for facilities. This enables implementers to attribute population figures with age and sex desegregations to facility catchments for planning and data use. This new technology is currently being piloted in one district in Zambia and is planned to be implemented in Kenya and Mozambique by UNICEF for immunization microplanning.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Patient Management Tool to Support Clubfoot Patients and their Families</b>  Jeremy Macias, Hope Walks</p>

	<p>Hope Walks, working with Akros, has developed a DHIS2 Tracker Capture program for the purpose of managing clubfoot patients, collecting M&amp;E data, and improving follow-up and appointment compliance through to the end of the typical 5-year clubfoot treatment schedule. We began implementing this tool in Ethiopia and are now working on implementing in the remaining 14 countries in Africa and Latin America in which we operate. The tool enables patient advocates, known as "Parent Advisors" to quickly and easily look up patients, see their clinic visits, schedule appointments, follow-up on patients' missed appointments, and keep track of family-counseling sessions with the overall goal to improve overall quality of treatment as well as adherence to the entire 5-year treatment schedule. Session participants will see the importance of creating custom digital health tracking programs, even for niche treatments such as that of clubfoot, see how one system can be used for patient management, program management, and stakeholder reporting, and how such a tool can be used for connecting medical treatment and psycho-social support. Digitization of health records is becoming the global standard and in the case of managing the clubfoot treatment process, the long treatment schedule makes it even more important to not rely on the keeping and storing of paper records. Having each patient along with their appointment schedule, easily accessible on a mobile device, helps the treating clinicians and the Parent Advisor be more efficient in their work and record-keeping. In total we now have over 7,600 individual patient records in the system. This includes historical patient files from previous systems.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Premise: Crowdsourcing technology for real-time health data</b>          Ellie Turner, Premise</p> <p>Global health programs require local, up-to-date data to inform program design and adaptive management but in most contexts, the right data are not available at the right time, and field data collection can be costly and time consuming. By leveraging the power of the gig economy and cloud technology, Premise has put in place a global network of over four million data contributors and local citizens with smartphones who use its app to perform structured data collection tasks and earn money. Global health partners use this network to gain real-time visibility into local health systems, communities, and behaviors. In this interactive workshop, we will explore lessons from building and managing this network, as well as the features required for ensuring the quality of crowdsourced health data. We will cover best practices for when crowdsourcing is (and is not) the appropriate solution for data capture in public health; offer guidance for implementers interested in adding crowdsourcing to their monitoring, evaluation, and learning toolbox; and share some of the challenges we face as we continually test new applications for the software. The technology</p>

	<p>demonstration will feature case studies which have helped implementers improve health outcomes by getting access to better data, faster, to inform and adapt their programming. The featured case studies will all related to the COVID-19 vaccine rollout and demonstrate how Premise has been used to understand vaccine demand and hesitancy and test behavior change strategies to increase vaccine uptake; monitor misinformation related to vaccines; and conduct health facility and cold chain validation to accelerate microplanning efforts and minimize vaccine waste and stockouts.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>SanDi Integrated Digital Health Solution for Mali last mile facilities</b>  Ousmane Ly, Hammadoun DIA, (Consultant); Natalia Torres Orozco, CIDIS; Gabriel Blouin Genest, CIDS; Oumar Tamboura, PNUD</p> <p>The Solar Energy, Telehealth and Social Protection to Transform Community Health in Mali (SanDi Project for Digital Health) project contributes to the Government of Mali's ambition to provide quality health to all and achieve SDG3 (good health and well-being) by 2030 and the ambition to guarantee access for all to reliable, sustainable and modern energy services at an affordable cost (SDG7). SanDi is designed to be the first phase of a progressive approach to generalize the deployment of solar energy and telehealth in all referral and community health centers in Mali. In the first initiation phase of the 12-month pilot project, a critical mass of reference health centers - CSRef (5) and CsCom (15) will be equipped with solar energy and digital health tools - telemedicine ( Integrated digital health solution for the first line). In addition, the capacity of the various health structures will be strengthened at all levels (local and national) to exploit the solution in a sustainable way. It includes the following tools: -Solar energy, -Distributed Servers, -Patient record software, -Clinical Decision Support System, -Telemedicine Smart Glasses, -National data warehouse with dashboard. The solution is based on digital health development principle and use global goods module. The first outcome of the deployment of this solution is the improvement of Universal Health Coverage program in rural area, by best accountability by digitalization of claim process. The second outcome is the best access to specialized care by use of telemedicine. The innovation is the integration of different tools adapted to local context.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Breaking down the silos: OpenHexa in DRC under the IHP program</b>  Anthony Connor, Bluesquare; Nicolas De Borman, Bluesquare</p>

	<p>Siloed data is often the biggest obstacle to an efficient exploration and analysis process. It makes collaboration difficult, and many data analysts working on health data end up developing ad hoc scripts and visualizations on their own laptops and communicating their results in scattered publications with no unified insights. Understanding health issues often requires combining complex and heterogeneous data sources, even when working in single country interventions. Data can come from Open source platforms such as DHIS2, from individual tracking systems, from custom software built to address specific issues, or from various Excel reports provided by health experts. OpenHexa is used by USAID's integrated health program (IHP) to enable the government to extract, transform and output data in bulk. IHP collects hundreds of thousands of data points every quarter from various sources like HMIS, the National Essential Drug Supply Program DHIS2 based data platforms, mobile data collection apps, consortium's Excel files and IHP internal M&amp;E platform. OpenHexa facilitates data extraction and transmission in the different formats used in the program and makes the sequential execution of several scripts that crunch the program's data much more user friendly, and reducing human errors. Furthermore the platform's flexibility allows for the configuration of independent parallel workflows, in this case either aggregating data for quarterly snapshots or continuous monitoring of the program. The IHP data are fed via OpenHexa to visualization dashboards that are refreshed and updated on a daily basis, which reduces the lag time between data generation and the decision making process and facilitates more informed, more timely decisions. It serves as a common source of reference for in field staff, IHP Kinshasa, US based Technical adviser and USAID DRC Mission health team. The report file speeds interactions as it can be used by actors without access to the raw data themselves.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>Managed Hosting of the iHRIS Workforce Management Platform</b> Richard Stanley, IntraHealth</p> <p>This demonstration shares the new hosted iHRIS health workforce solution as a software-as-a-service (SaaS) which provides easy-to-use integrations and interoperability with facility registries, mHero, and other platforms. iHRIS is a human resources platform that helps track and manage a country's health workforce to help users make evidence-based, effective plans for deploying human resources where they're needed most. Its user-friendly interface and powerful data dashboards help decision-makers see and understand the current status of their health workforce by accessing data such as: which healthcare workers are currently employed, who are qualified but not employed, and who are in training. Ministries of health, professional health councils, training institutions, and similar organizations then use this data to identify health workforce challenges and plan interventions accordingly. iHRIS supports the</p>



	<p>transform of population health by taking advantage of interoperability with other analytical systems to predict a specific population's needs and proactively solve for workforce constraints. Knowing where care is provided, especially during emergencies and in resource-constrained environments, gives organizations the opportunity to truly transform population health.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>IASO: Using Geographic data as essential for health and social programs in DRC</b>  Anthony Connor, Bluesquare;, Nicolas De Borman, Bluesquare</p> <p>In order to develop their case study on data collection around Community Health Site (SSC), the USAID Integrated Health Program (USAID IHP) chose to use Iaso. Iaso provides a number of core features in support of data collection, validation and management. Sharing functionalities across data collection, geo-registry and micro-planification domains, Iaso allows IHP to collect specific quantitative data and geospatial information. Iaso is articulated around two essential components : the central georegistry web-based interface and the data collection tools web and application based. Those tools integrated seamlessly with each other to provide an interface allowing to manage, update, merge and validate multiple data sources of various organizations units. The data collection tools are focused on collecting structured information linked to those organizations units from their GPS location to service availability or population estimates. Those capabilities are set up and exploited by IHP in their ongoing SSC app in the Democratic Republic of Congo. Iaso is a platform with a deep focus on integration from and in the current HMIS environment. Providing a seamless bidirectional integration with DHIS2 and an API providing data science teams the resources to set up bi-directional data analysis, Iaso positions itself as bridge between information systems and provide opportunities for data science teams to develop algorithms for better master list management and validation. Iaso's data collection tools can be used to support surveys and routine data collection processes. Its seamless integration with District Health Information System 2 (DHIS2) makes it a very attractive instrument for supporting programs supported by DHIS2 (in DRC the national health database is DHIS2 based). As a result, the geo-registry is continuously enriched by data coming from routine data collection carried out by health programs.</p>
5:45 pm-7:00 pm	<p>Appy Hour: <b>medAL-suite: a software solution for creating and deploying clinical decision support algorithms in low-resource settings</b>  Alexandra Kulinkina, Swiss Tropical and Public Health Institute; Rainer Tan, Swiss Tropical and Public Health Institute;</p>

	<p>Ludovico Cobuccio,Unisante; Alan Vonlanthen,Unisante; Valerie D'Acremont; Unisante</p> <p>Existing digital platforms used to deploy clinical decision support algorithms meet user needs as front-end applications, but fall short in their flexibility for modifying clinical content. Often, advanced programming skills are required, slowing the development pathway from narrative guidelines to a machine-readable and executable format. To address these limitations, we developed the medAL-suite open-source software solution. Clinicians create algorithms themselves in medAL-creator using a drag-and-drop interface and automatic terminology/code sets. The algorithms are executed on medAL-reader, the front-end tablet-based application. Allowing clinicians to be able to create, view, validate, and update algorithms increases transparency and agility of clinical decision support systems. medAL-suite and the associated clinical content for managing children below the age of 15 in a routine outpatient setting are currently trialed in 72 health facilities in Tanzania and Rwanda as part of a pragmatic cluster-randomized study. Its primary goal is to reduce antibiotic prescriptions without compromising on clinical cure. Preliminary results, based on 30,000+ consultations, show an intervention uptake of approximately 75% in both countries. Antibiotic prescription reduced significantly from 68% to 33% in Tanzania and from 74% to 36% in Rwanda. Quality of care has also improved according to objective observation of consultations against the IMCI checklist. The software is also being used in another large research study in 160+ health facilities in Senegal, Kenya, India, and Tanzania. This topic is relevant to the digital health community in light of the recent WHO recommendations on digital clinical decision support for health system strengthening. Reducing the complexity of IT programming in deploying and maintaining digital health tools is in line with the principles of digital equity. We conclude with an outlook to further advance medAL-suite to facilitate the integration of CDSS into the health system.</p>
8:00-11:00 pm	<b>Dimagi Happy Hour</b> , HighlineRXR 2010 Crystal Dr. Arlington, VA
<b>Tuesday December 6, 2022</b>	
9:00 am-10:15 am	Sponsor Plenary: MAIN STAGE (will stream) Salons A/B/J/K: <b>Plenary: PSI</b>
10:30 am-11:45 am	Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K: <b>Elevating women leaders in digital health</b>

	<p>Lauren Wall, PATH; Joseline Carias Galeano, Central American Health Informatics Network (RECAINSA); Olivia Velez, IntraHealth International; Nadine Karema, Partners In Health/Inshuti Mu Buzima</p> <p>Mobile internet is the primary, and sometimes singular, way people access the internet in lower- and middle-income countries (LMICs), especially women. But according to the GSMA Mobile Gender Gap Report 2022, women’s uptake of mobile internet continues to increase in LMICs, but the rate of adoption has slowed. In LMICs, where mobile internet is a key access point to health, women are 18% less likely to own a smartphone than men and 16% less likely than men to use mobile internet. Policy research has shown that compared to male counterparts, women in leadership are more likely to respond to community concerns, prioritize the needs of women and other marginalized groups, and increase research on women’s health. At the leadership level, women must have representation in governing bodies, strategy development, implementation, and evaluation of digital health initiatives to ensure that women’s needs and experiences inform and shape investment and implementation decisions that can support equitable digital health transformation. This all-women panel will explore three approaches to supporting women’s leadership in digital health, their impact or intended impact (for nascent programs), and shared themes: 1. The Digital Health Applied Leadership Program, a year-long program to equip mid- and senior-level leaders with the skills needed to lead digital health transformation 2. RECAINSA Women Leaders in Digital Health program, a 12-week distance-based program created to strengthen LAC women professionals’ skills in leadership, digital transformation, and digital health 3. WomenLift’s Leadership Journey, a twelve-month program, provides mid-career women the tools and support to use their leadership skills for health impact.</p>
10:30 am-11:45 am	<p>Breakout Session: Room 1 Salon C</p> <p><b>Effectiveness of collaborative partnerships in developing a comprehensive digital community health system in Zambia</b></p> <p>Chewe Mulenga, D-tree International; Nkandu Chikonde, AMP Health; Mandy Dube, PATH; Sylvia Chila, Ministry of Health; Sam Phiri, MOH</p> <p>The Ministry of Health (MOH) has made great strides to strengthen community infrastructure and address barriers to accessing quality care so that all citizens have access to essential health services. The MOH laid out a 2026 National Community Health Strategy (NCHS), building on the 2021 NCHS with a vision for strengthening community health</p>

	<p>infrastructure and professionalizing the community health workforce to address fragmentation and improve the use of community health data to advance Zambia’s progress towards Universal Health Coverage. However, there are still various challenges that are faced by MOH in the digital health landscape including lack of coordination amongst partners, fragmentation in service delivery and lack of digital tools. These challenges faced in Zambia are common across countries in Africa. In 2022, D tree collaborated with PATH and offered support to the MOH in addressing these challenges and unifying all key players in the digital health space in Zambia. D tree and PATH are supporting MOH in developing a comprehensive digital community health system that will improve the availability of timely community health data for decision making, strengthen community health systems and service delivery models. A system that is based on local needs, brings in global best practices, and has full government buy in and ownership. In this panel, representatives from the MOH, D tree and PATH will discuss the importance of collaboration amongst partners in supporting work with government ministries. The session will highlight causes of fragmentation and disadvantages of NGOs and organizations working in silos. Participants will leave with an understanding of how Zambia is engaging organizations with local and international experience, and how this approach can help governments design digital health systems that are tailored to their local needs, but also consider global best practices, resulting in robust systems that are locally adapted and government owned.</p>
10:30 am-11:45 am	<p>Breakout Session: Room 2 Salon H</p> <p><b>Effective engagement on chat platforms to drive health outcomes</b></p> <p>Debbie Rogers, Praekelt</p> <p>Over the past 8 years, IP messaging platforms have changed the face of mobile communications for all of us and become a critical channel in many digital health interventions. One need only look at the proliferation of RFPs published that mention the development of a Chatbot to understand that these channels are only going to become more important in years to come. But Chatbot is a nebulous term and the options for creating different experiences through conversational design are truly endless. So how do we design impactful IP messaging services that drive health outcomes? Drawing from over 8 years of experience in designing programmes for chat platforms and supported by results from 3 Randomised Control Trials on IP Messaging services in the areas of Maternal and Child Health, Intimate Partner Violence and COVID-19, this panel will discuss a variety of different engagement techniques that can be deployed through chat interfaces and the effectiveness of these techniques in driving behaviour change and health</p>

	<p>outcomes. The pre-formed panel will be made up of representatives from the Behavioural Insights Team (BIT), IDInsight, Praekelt.org and Meta who'll each bring different perspectives to this conversation, and will ensure that attendees leave with a deeper understanding of the potential and effectiveness of IP Messaging based health interventions.</p>
<p>10:30 am-11:45 am</p>	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>A Story of Two Developers: A Human-centered Design Approach to Standards-based Development for COVID-19</b> Abha Patil, PATH</p> <p>The goal of the session will be to share process, outcomes, and lessons learned of a mobile health development initiative that took a human centered design and standards based approach. The dSTARR (digital Solutions to Support Antigen RDT Rollout) project is focused on developing standards and enhancing interoperability of patient and diagnostic data collection platforms, driving the incorporation of these standards into leading mobile health tools to support health care workers with COVID 19 antigen rapid diagnostic testing in low and middle income settings. PATH and FIND have been working closely with relevant partners to develop context driven solutions including, 1) an India specific mobile application developed by Connection Loops, an India based digital health developer, 2) a Senegal specific application and 3) a customizable mobile application both by Dimagi, an open source digital health developer. Each application leverages the same core data model but has varied workflows and additional data elements based on extensive user and health facility requirements mapping in the respective contexts. This project is anchored in a human centered design approach with the PATH Living Labs team supporting the development and evaluation of solutions through 5 workshops with healthcare workers in Senegal, Zambia, and India. Ultimately, the building blocks of a similar mobile application will be in reach of other developers and implementors through the creation of a Software and User Requirements Framework (similar to a WHO Digital Adaptation Kit) which provides technical guidance leveraging refined requirements based on iterative feedback through facility visits and end user shadowing, usability workshops, and development sprints in addition to an implementation guide based on outcomes of pilot evaluations in Senegal and India. This session will allow for a critical discussion of how to approach standards based tool development, build in human centered design into each process.</p>

<p>10:30 am-11:45 am</p>	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Implementing a large scale community digital health platform in Mozambique to drive surveillance and health equity</b></p> <p>Poppy Farrow, Malaria Consortium; Edson Zandamela, Malaria Consortium Mozambique</p> <p>The upSCALE digital health platform has been developed to improve quality and coverage of health services at the community level by addressing the following community health programme challenges: inadequate adherence to clinical guidelines; insufficient supply of commodities; and lack of access to community health information. Thanks to its collecting data in real time, and geographic information system (GIS) locations to identify where challenges are taking place, upSCALE supports subnational and national level stakeholders with data informed decision making to deliver more equitable healthcare . This has additionally strengthened surveillance and response to diseases “ including malaria ” and the early detection of disease outbreaks. The programme is currently being implemented in seven out of 11 provinces, with over 3,200 and 299 supervisors using the app to date. The MoH is planning to roll out the platform to all 8,800 APEs and 1,300 supervisors nationally by the end of 2023. A full data integration plan with DHIS2 is ongoing to optimise strategic decision-making, with support from Malaria Consortium to lead on this integration and capacity development at the national level. The new CommCare and DHIS2 integration currently enables the MoH to access community-level data at the district, provincial and national levels: the data collected from each community are fed back to it in the form of improved and tailored services. In 2022, full integration of upSCALE into HMIS/SISMA will take place so that decision makers beyond the national APE programme staff will be able to access community data for full use.</p>
<p>10:30 am-11:45 am</p>	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Governing the Emerging Digital Silo Tools: A Transition to Sustainability Experience from Ethiopia</b></p> <p>Rabeal Tadesse,JSI/DHA; Loko Abraham,USAID DHA</p> <p>Governing the rapid expansion of parallel digital tools was a major challenge for Ethiopia's Ministry of Health (MOH), which necessitated intensive stakeholders' technical support. According to the MOH inventory, more than 70 digital tools have been deployed, and this digital presence is growing in volume and complexity; thus, a structured governance framework was required to ensure communities' expectations through system stability. Digital Health Activity (DHA) is a project funded by USAID and implemented by John Snow Inc. (JSI) to build a sustainable health information system</p>

	<p>(HIS) in Ethiopia. DHA provides technical support to establish a collaborative and transparent process governing the implementation of digital tool initiatives. To that end, DHA employed interventions including strengthening government-led governance platforms such as technical working groups; detailed the need for digitization, infrastructure, data use, and governance support to oversee digital services/products in accordance with MOH priorities; and speculated MOH investment capabilities in workforce, technical, process/tool, and financial resources. As a result, DHA successfully supported the development of 25 governance documents, of which 48% (12) are endorsed by the government. Including the "Ethiopian Digital Blueprint", a 10-year digital health roadmap, providing guidance for digital transformation, governance, and HIS/digital health investment in the country; "National Standard for Electronic Health Record System (EHR)" to govern standardized EMR implementations; "Overarching Maturity Assessment" providing pathways for improving Ethiopia's health information systems; and "Digital Health App Inventory", a clearing house and certification platform for digital health solutions. These governance frameworks are critical in developing transparent and effective protocols to break silos, and manage digital products and services in a controlled and orderly-way, thereby delivering operational certainty and stability to the health system. This experience shares the governance steps that Ethiopia has followed on its journey to the digital transformation of the health sector challenges and interventions taken.</p>
10:30 am-11:45 am	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Telemedicine and Conflict: Strengthening the Ukrainian Healthcare System</b></p> <p>Vitaliy Karanda, LHSS Ukraine</p> <p>The USAID funded Local Health System Sustainability (LHSS) Project supports the Government of Ukraine (GOU) to develop a sustainable, accountable, and resilient healthcare system leveraging telemedicine. Russia's invasion has seriously disrupted Ukraine's healthcare system, destroying healthcare facilities and depleting their workforce. Moreover, gunshot wounds have become the most common emergency case, yet doctors have little experience with this form of trauma. In this active conflict context, telemedicine represents an effective tool to mitigate disruption of health services, in particular through supporting emergency care. LHSS works with the Ministry of Health (MOH) directly and through a multi sectoral interagency working group to develop financing arrangements for telemedicine services, engage with private sector partners to reach vulnerable populations with telemedicine services, and provide implementation support for newly rolled out telehealth solutions. LHSS helps support Ukraine to improve health</p>

	<p>outcomes by increasing access to healthcare using telemedicine in an active war environment. The activity's results can inform other countries experiencing disruptions in healthcare provision due to war, conflict or other crises. Ukraine's experience implementing telemedicine and the lessons distilled will be broadly applicable in using telemedicine to address inequities in healthcare access related to crises, particularly among vulnerable populations such as internally displaced people (IDPs). While this is not an entirely novel application, few telemedicine interventions have been as ambitious in addressing healthcare provision in active war contexts at this scale, with the intent of strengthening the health system's capacity to sustainably provide services post war. The approach LHSS and the MOH adopted is as innovative as it is grounded in prior experience. LHSS supports the MOH in testing telemedicine solutions from international private sector partners, adapting priority solutions to the Ukrainian environment, training and supporting medical institutions in using these TM solutions.</p>
12:00 pm-1:00 pm	<p>Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K  <b>Avoiding Tragedy of the Commons: Open Source Governance Models</b></p> <p>Mary Rocheleau, Dimagi, Inc.; Yaw Anokwa, Nafundi; Taylor Downs, OpenFn</p> <p>Software Global Goods are by definition Free and Open Source Software (FOSS) packages, maintained by stewarding organizations, teams of volunteers or individual contributors. Ensuring that those software projects are maintained to a technically high standard is necessary to provide strong protections for the sensitive health data being collected and stored. However, keeping the software up to date, including adopting security best practices, addressing technical debt and ensuring that the code is easy to contribute to for all members of an open source community, is critical but often overlooked. One way to address these challenges is to consider a Software as a Service (SaaS) model, unlocking long term software maintenance activities while running and sustaining an open source community. This panel will explore the governance models around both SaaS and Open Source communities, considering Global Goods at different points along this journey. We will discuss key considerations when moving from a proprietary codebase into an open source model, and how to cultivate a community of implementation organizations working with and around an open source software project. We will explore staffing models which benefit being both a sustainable business and also a responsible open source community. In addition, we will consider how to avoid common issues which may occur when open source communities aren't incentivized to address software and operational sustainability.</p>



12:00 pm-1:00 pm	<p>Breakout Session: Room 1 Salon C</p> <p><b>The Digital Transformation of the Health System in Indonesia: Achieving Interoperability Through the Development of Integrated and Standardized Big Data Platforms</b></p> <p>Aang Abu Azhar, Setiaji Setiaji, Ministry of Health, Digital Transformation Office;; Reza Rudyanto Pramono,Ministry of Health, Digital Transformation Office; Dandy Masyaril Handoko, Leah McManus</p> <p>The COVID-19 pandemic demonstrated the imperative need to integrate and standardize the 400+ existing information systems for a responsive and resilient health system in Indonesia. As a result, the Ministry of Health (MOH) prioritized catalytic investments in the digital transformation of the health system, focusing on health technology and biotechnology. To lay out the vision for this transformation, the MOH launched the Digital Health Transformation Strategy 2024. This Strategy provides a business process-based blueprint for governance, systems and interoperability, and data use, with a focus on two key big data platforms: a centralized health data platform (SatuSehat), and a biomedical and genomics platform (BGSI). These platforms, developed by the MOH, support the secure and efficient sharing of individual health data, allow health workers to easily access and input data, and ensure comprehensive and personalized health services. To date, 41 hospitals and 31 companies have successfully integrated their data using SatuSehat, and by the end of 2024, the MOH is targeting to collect 10,000 bio-genome sequences for integration. During this session, representatives from the MOH will reflect on lessons learned during development of these platforms. Specifically, the panelists will present on the development of governance structures to engage the wide-ranging public and private stakeholders in this process. Panelists will also dive deep into the enterprise architecture of the digital transformation, with a focus on the SatuSehat platform and the use of FHIR standards. Finally, panelists will highlight how data analytics from these systems will enable individuals, health workers, and policy makers to take action using data to improve the health of Indonesians. It is expected participants will not only learn key insights from the Indonesian experience but that discussions will be ignited for future coordination as they endeavor on their digital health transformations.</p>
12:00 pm-1:00 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>Practical examples of DEI efforts in Digital Health</b></p> <p>Steve Ollis, JSI; Joseline Carias, Central American Health Informatics Network (RECAINSA); Barakissa Tien-Wahser, GIZ</p>

	<p>The idea of increasing diversity equity and inclusion in digital health is not a new one, but once we move beyond the high level statements of support, tangible examples of how this is being done become harder to find. In this session, panelists from the HDC DH&amp;I working group DEI small working group: The Central American Health Informatics Network (RECAINSA), the Country Health Information Systems and Data Use (CHISU) project and Deutsche Gesellschaft Internationale Zusammenarbeit (GIZ) will share practical examples of programs they have undertaken to contribute to the reduction of inequalities in access to decision-making positions in organizations linked to the digital transformation process in the health sector. GIZ will present the work they have done to encourage DEI in local entrepreneurs by collaborating with Pan-African Network of Associations to analyze existing business models of at least 20 small and medium enterprises and digital health global public goods. Following these analyses, a selection of best practices will be published to facilitate knowledge sharing with the global community. RECAINSA will share their program to increase gender diversity in digital health leadership, a 12 week certified program created to strengthen the competencies of women professionals in Latin America and the Caribbean working both in the health sector and in the sector of digital technologies, providing them with training to enhance their capabilities in three areas: Leadership, Digital Transformation and Digital Health. CHISU will share how they have approached incorporating gender into their programs through the development and use of a Gender Considerations tool, which can be used to analyze workplans and provide clear questions to ask for each activity. Additionally, CHISU will describe the monitoring and evaluation approach used to ensure that these are not just one time activities but routinely measured with learnings shared back across countries.</p>
12:00 pm-1:00 pm	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Review and validation of Global Digital Health Index (GDHI) design proposals and indicators</b></p> <p>Emeka Chukwu, HealthEnabled; Mand Mory Bah, Dalberg Design; Patricia Mechael, HealthEnabled; Joanne Ke Edelman, Global Digital Health Index; Nouman Memon</p> <p>This workshop is aimed to present, discuss, and validate the Global Digital Health Index (GDHI) indicators update and design proposals. The Global Digital Health Index (GDHI) is a multi-partner-led web platform that ranks country maturity and benchmarks by digital health enabling environment components based on the WHO/ITU eHealth strategy toolkit. The GDHI is used by the digital health community - researchers, donors, development partners, and countries for diverse decision-making. Before the pandemic, 25 countries' information was captured and published in the GDHI. After</p>

	<p>the pandemic pause, the WHO global digital health strategy launch, and other digital health developments, the GDHI is now undergoing a year-long redesign and review process to improve its usefulness to the Digital health community. The review and redesign process involved desk review, country engagement and assessments, and regional and global workshops. Through the process, indicators were updated, and new design concepts were also developed. The first half of the workshop will be used to present participants with the process and these updates. The second half will be used to interactively discuss and validate the design (data capture, workflow, and visualizations) and proposed indicator changes. The workshop will equally expose this important tool to participants new to the GDHI.</p>
12:00 pm-1:00 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Overcoming critical digital transformation challenges in community health program: Lessons from Ethiopia’s eCHIS implementation</b></p> <p>Netsanet A. Nigussie; Loko Abraham, USAID DHA; Ruth Nigatu, Ministry of Health; Jonathan Jackson, Dimagi, Inc.; Mesfin Tilaye, USAID Ethiopia Mission</p> <p>Ethiopia has made significant progress over the past few years in digitizing the community health information system using mobile technologies. The eCHIS initiative has cultivated both a shared understanding in its importance in the country’s digital health ecosystem and a common belief in its potential to impact the community health program across the country. The eCHIS development and implementation have been going on for over three years with mixed results. On one hand, a robust and user friendly digital tool has been developed and implemented in over 7000 health posts with government and all HIS stakeholders making significant investments. On the other hand, despite the scale of implementation, the system is far away from meeting its original programmatic goals related to serving as a job aid during service delivery and community level health data management. Many of the challenges that have been encountered in the course of implementation have generated a strong foundation for the eCHIS moving forward. These challenges include increased complexity in the digital platform, lack of change management strategy, continued evolution of program needs resulting in scope creep, low level of digital literacy of users, weak IT support system, resource constraints, and cultural mindset. The steps that have been taken to accomplish the milestones and address these challenges, including platform optimization activities, establishing donor and partner coordination mechanisms, have been informative and set a pace that demonstrates the high priority of implementing a digital tool for HEWs. While the MOH has made progress towards an eventual implementation, core components of a comprehensive eCHIS strategy remain as critical next steps. These require continued exploration to come up with critical strategic</p>

	components requiring additional effort, such as defining programmatic goals with corresponding M&E criteria, long term roadmaps for product and implementation, costing and funding plans, and establishing partnerships.
1:15 pm-2:00 pm	Lunch Sponsors
2:15 pm-3.30 pm	<p>Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K</p> <p><b>Impact of Large-Scale Digital Health Interventions on Monitoring Quality and Community Health Outcomes: Lessons learned from Three Evaluation Studies in Maternal and Child Health in LMICs</b></p> <p>Lena Kan, Johns Hopkins university; Smisha Agarwal, Johns Hopkins university; Arisa Kiyomoto, Johns Hopkins university</p> <p>Despite the proliferation of many digital health based solutions, especially in LMICs, robust evaluations have not kept pace. To encourage evidence based decision making, more studies are needed that focus on the impact of large scale digital health interventions (DHI) on local health systems. This includes monitoring data quality and timeliness or examining the association of DHIs with community health worker (CHW) performance and community health outcomes. Johns Hopkins Bloomberg School of Public Health, in partnership with local implementers in Bangladesh, Burkina Faso, and Kenya, has recently undertaken three large scale evaluations of DHIs to improve maternal, newborn, and child health (MNCH). All three programs highlight important unique topics within the evaluation stages of a DHI. mCARE II, a 4 year (2016 2020) randomized controlled trial of targeted text messaging and CHW support workflows (OpenSRP) in rural Bangladesh, has shown to significantly improve stillbirth and perinatal mortality rates compared to a standard of care. On the other hand, the evaluation of the 2 year (2019-2021) Terre des Hommes (TDH) digital health job aid to improve MNCH services quality at primary healthcare facilities in rural Burkina Faso did not find any significant differences in routine reporting data (DHIS 2) quality between the intervention district compared to the control. Finally, the Living Goods Program in Kenya (2021 2024) which evaluates an intervention package where CHWs are Digitally enabled, Equipped, Supervised, and Compensated (DESC) has captured early results on CHW performance and tool utilization. In summary, this session will present analyses of data quality, CHW performance, and changes in health outcomes. It will offer novel approaches to assess and improve the quality, fidelity, and effectiveness of future DHIs as</p>

	<p>well as the practical use of existing evaluation tools and guidelines, such as the WHO Data Quality Review Report across LMICs.</p>
2:15 pm-3.30 pm	<p>Breakout Session: Room 1 Salon C</p> <p><b>#MyDataOurHealth: Building public demand for equitable and stronger governance of health data</b></p> <p>Neira Budiono, Young Experts Tech for Health (YET4H); Beatrice Okech, Transform Health</p> <p>To harness the potential and manage the risks of health data sharing within and across borders, countries must work together to develop a set of common standards for the governance of health data. A global health data governance framework, underpinned by equity and human rights based principles, is vital to help maximise the public value of health data whilst protecting individual rights. It would establish an agreement between nations around a set of common standards for the governance of health data, which would help guide and inform the development of national health data governance legislation/regulation. As a key step towards a global framework (and to underpin its development), earlier this year Transform Health launched a set of equity and rights-based Health Data Governance Principles, which were developed through an inclusive and consultative process. Principles are framed around core objectives of protecting people, promoting health value, and prioritising equity. They have so far been endorsed by over 100 organisations. Transform Health and Young Experts: #Tech4Health are launching a mobilisation campaign to raise awareness and galvanise action on the issue of health data and how it is regulated. The aim of this popular movement is to start a public debate driven by engaged groups of citizens calling for greater government action to ensure stronger governance of health data. At the heart of this campaign is the question of trust, with those collecting and using our health data (including government departments), and in government authorities, to ensure they establish the laws and regulations that will ensure our data is used to keep us healthy now and in the future. Transform Health’s approach to mobilisation is focused on supporting small community groups and organisations interested in or affected by the issue, in particular youth, women and marginalised groups.</p>
2:15 pm-3.30 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>AI in health?</b></p> <p>Olasupo OYEDEPO, African Alliance of digital health networks</p>

	<p>Recent events have highlighted and made the case for the application of Artificial Intelligence in healthcare. At the beginning of 2020, the World Health organization released a list of urgent, global health challenges for the next decade which included, amongst others, Preparing for epidemics such as Ebola or SARS; increased demand for healthcare as the human race lives longer than our ancestors; and the ever-persistent scarcity of resources as health expenditure grows. Unfortunately, by the end of 2020, the dire warning regarding epidemics had been confirmed as the global death toll from the Covid 19 pandemic hit 2.06 million. These challenges also present opportunities - such as better, greater &amp; faster use of data; drugs; robotic nurses; connected care; enhanced diagnosis; improved telemedicine; remote robotic surgery; improved patient monitoring; and proactive/ predictive healthcare - to leverage digital technologies, such as artificial intelligence, to address them. However, the application of these Artificial Intelligence technologies has also suffered challenges of confidence, particularly centred around issues of bias, privacy, confidentiality and the potential for some of the technology interventions to aid a police state, especially in view of the personal data that these applications collect and process. In recognising the potential of Artificial Intelligence and other technologies to drive and influence better health outcomes towards achieving Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs), there is a critical need to address some key concerns regarding the ethical and proper application of these exponential technologies. In this session, I would share early findings from my research into the ethical use of AI, in healthcare to discuss some of these critical concerns and hopefully stimulate the thought process needed to appropriately address them.</p>
2:15 pm-3.30 pm	<p>Breakout Session: Rm 2 Salon H  <b>What has AI have to do with supply chain efficiency and resilience?</b>  Ruth M'kala, Macro Eyes</p> <p>While supply chains are known to be the backbone of many industries, they remain the most challenging optimization problem in the world. Optimizing supply and demand networks means more people can access what they need and what they want, and in health, it can ultimately save lives. Eliminating stock-outs and wastage of life saving commodities. Macro-Eyes is an AI company with a mission to create more from less. At the core of our work is our product, STRIATA - a sector-agnostic machine learning product that has been tested and proven in healthcare for supply chain optimization. STRIATA provides centralized commodity and logistics intelligence for the distribution of goods and services, giving users new capabilities to forecast consumption, assess infrastructure, predict behavior and accurately allocate supply.</p>

	Link to the brief lighting talk - <a href="https://www.loom.com/share/2a0fbbe2ca7a4b738fd43a87485a5bd5">https://www.loom.com/share/2a0fbbe2ca7a4b738fd43a87485a5bd5</a>
2:15 pm-3.30 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>The Model is the Message - Advances in AI portend a dangerous future for digital equity unless we can find our voice</b></p> <p>Clayton Sims, Dimagi, inc</p> <p>You are probably not surprised to hear what the cutting edge DALL-E1 image generator AI spits out to visualize a lawyer. Six remarkable photorealistic images of older white men. Implicit bias in AI technologies isn't exactly breaking news. Authors of prominent AI systems frequently share public examples of the limitations of the tool they've built, along with the work they are doing to improve them. In fact, based on those efforts a newer version of DALL-E2's output includes a woman among the imaginary attorneys. It is great that DALL-E2's model now knows that women can be lawyers. What it still doesn't know, though, is what an ASHA looks like. Not just by diversity of demographics, the AI/ML model doesn't know what an ASHA is at all. No careful training can't overcome the fundamental limitation of AI systems. What these remarkable AI's are capable of depends on what excesses of arbitrary data are produced in overwhelming magnitude by unrelated market actors. We should expect it to be as realistic to shape into a specific purpose as it would be to insist that toothbrushes be made of silver. For the populations worldwide who are underserved by consumer technologies today, the incorporation of AI tools risks a spiraling feedback loop placing value further and further away. As AI capabilities become more integral, readily-available context relevant datasets have become a form of scarce infrastructure like power, water, or connectivity. In this talk we will present some of the unexpected ways that the ongoing incorporation of AI systems may impact equitable access to digital technologies, whether they are adopted by digital health programs or not. We will outline some of the ways that practitioners can prepare for these impacts, and how the industry as a whole can plan ahead to avoid getting left behind.</p>
2:15 pm-3.30 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>A DASH to the finish line: using patient-level data to achieve HIV epidemic control</b></p>

	<p>Erin Kim, ICF</p> <p>The spillover effects of COVID-19 to other disease areas like HIV has highlighted the importance of strengthening whole health systems that can quickly respond to emerging threats, while at the same time remain resilient to provide essential health services. As PEPFAR and its partner countries continue to make progress towards epidemic control, there is a focus on ensuring that investments strengthen the national digital health architecture by supporting the development and deployment of digitally-enabled solutions. With the digitization of patient health records, there is an opportunity to access and analyze patient-level data to advance patient-centered care. By analyzing data obtained from point-of-care systems such as electronic medical records (EMRs), decision-makers can better identify at-risk populations, strategically allocate limited resources, and proactively respond to emerging threats. The Data Aggregation Service for Health (DASH), developed with support from PEPFAR, is a suite of open source software applications that allows the user to efficiently aggregate patient-level data for reporting purposes. Based on the World Health Organization’s SMART guidelines framework, it facilitates indicator reporting via dynamic data aggregation of patient-level data based on a set of indicator definitions (i.e. PEPFAR MER guidance) and Health Level 7 (HL7) interoperability standards. DASH adds value to the health informatics reporting workflow by reducing the burden for preparing data sets, and streamlining the process for reporting into multiple systems. It does this by converting the minimum data set for an indicator into an aggregated and standardized message that can be shared with a Health Management Information System (HMIS) like DHIS2. As DASH moves beyond the proof of concept stage, the goal is to create a customizable digital tool that can be used to improve national health information systems (HIS).</p>
2:15 pm-3.30 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>READI: A System for Rapid, Efficient, and Data-Driven Implementation at IntraHealth International</b></p> <p>Amy Finnegan, IntraHealth International</p> <p>What is the monthly trend of family planning uptake in IntraHealth’s projects, how does it vary by age, and does it correlate with other indicators? This is a question we could only answer quarterly (and with a lot of manual extraction) across IntraHealth’s portfolio of family planning projects until we built the READI System. READI is an enterprise data warehouse - it stands for Rapid, Efficient, and Data-Driven Implementation. In this engaging lighting talk, I’ll share specific examples of the value that the READI System has added to IntraHealth’s implementation, how READI was</p>



	<p>developed according to international principles that safeguard data, the lessons we've learned along the way, and where we are going next on our roadmap.</p> <p>Link to video: <a href="https://intrahealthinternational-my.sharepoint.com/:v/g/person/afinnegan_intrahealth_org/ER30xT-8KWxGrwGVr-9cw50BTaAcF9nXaLX1vdLA7PrpJA?e=XcyNbq">https://intrahealthinternational-my.sharepoint.com/:v/g/person/afinnegan_intrahealth_org/ER30xT-8KWxGrwGVr-9cw50BTaAcF9nXaLX1vdLA7PrpJA?e=XcyNbq</a></p>
2:15 pm-3.30 pm	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Empowering Patients And Enhancing Access To Healthcare In Kenya Through Afya Guide - An Artificial Intelligence Enabled Symptom Checker</b></p> <p>Nelly Nyaga, IntelliSOFT Consulting Ltd; Susan Gathu, IntelliSOFT Consulting Ltd; Julius Oyugi, Institute of Tropical and Infectious Diseases (UNITID), Steven Wanyee; IntelliSOFT Consulting Ltd</p> <p>Afya Guide is a web-based Artificial Intelligence-powered symptom checker and online triage tool built on Neural networks and Deep learning algorithms to accurately relate the symptoms entered by the user to the diagnosis. It allows laypersons to key in their disease symptoms and receive feedback on the next steps based on the severity and urgency. It is adapted from the Swiss Medical Assessment System (SMASS) and tailored to suit the epidemiological disease patterns in the Kenyan health system. The first disease module to be built in Afya Guide is the COVID 19 module, designed as a triage solution for COVID 19 and influenza-like illnesses. Afya Guide is entirely built upon the Principles for Digital Development. The solution was shared with intended users and stakeholders at different development stages to get feedback on the user experience, including relevance, ease of use, and helpfulness, and this feedback was used to streamline the solution further. SMASS developers and experts have been key partners in this solution's design, offering insights from their experience with the system. Afya Guide, a digital health triage guide built using standardized protocols, will offer trusted alternatives to patient-provider face-to-face consultations in Kenya, a country with limited skilled health care workers resulting in overcrowding of the limited medical facilities. It is expected that by reducing the number of visits to health care facilities, patients and hospitals will save time and monetary resources that could be directed to other needs. It is also expected that through this solution, patients with severe and life-threatening conditions will be alerted to seek medical care in good time to save their lives and ultimately lower mortality and morbidity from prevalent diseases.</p>
2:15 pm-3.30 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Digital Financial Services for Health - Developing a DFS Training Session</b></p>

	<p>Sherri Haas, USAID; Merrick Schaefer, USAID</p> <p>Digital financial services (DFS) for health consist of financial transactions, including payments, savings, loans, credit, insurance, remittances, and transfers, through digital channels such as mobile phones, USSD, electronic cards, computers, and other electronic instruments in a health systems context. DFS for health provide health systems and programs with opportunities to achieve global health goals and outcomes, including supporting progress toward universal health coverage, reducing inequities, and improving transparency of financial payments in the health space. DFS for health are a growing space in the digital health field, and one that countries, implementers, and donors need to consider in national strategy and enterprise architecture design as well as in planning digital health implementations. This interactive workshop will introduce some of the key considerations in DFS for Health, cover potential benefits for the health system, discuss the enabling environment for DFS for health and factors which can support or hinder implementation, as well as considerations for incorporating DFS in an enterprise planning approach. Participants will engage in an interactive hands-on session with their colleagues and facilitators to examine a country DFS for health context, identify potential challenges, and collaborate on developing solutions to mitigate them. This workshop is expected to also provide insight into the design of a DFS for Health module being integrated into the Digital Health Planning National Systems course which is widely implemented with ministries of health and digital health advisors around the world.</p>
3:30 pm-4:15 pm	Coffee Break And Poster Session
3.30 pm-4:15 pm	<p>Poster Session: <b>Youth and Adolescent Digital Health</b> Anaclet Ahishakiye, COMMUNITY HEALTH BOOSTERS</p> <p>Our digital health application is named YAhealth App which is a bilingual (Kinyarwanda and English), user and age centered (age groups 10 14, 15 19, and 20 24) offline online Mobile, Web, and USSD/SMS Application Code which aims to rapidly increase demand and sustainably improve youth and adolescent access to and uptake of Sexual and Reproductive Health and Rights (SRHR)/Family Planning (FP) and Mental Health services. The Application improves health outcomes by increasing awareness and service seeking behavior amongst youth and adolescents through providing audio visual and written information on different SRHR and Mental Health topics and connects youth to</p>

	<p>available services through service location tracker. In addition, it contributes to prevention of unwanted/teenage pregnancies through fertility awareness, and proper menstrual hygiene management using its Menstrual Cycle Tracker. Has Mental Health Status Self Assessment System for early and easy detection of mental health issues, Private Chat that allows youth to chat with experts, and Discussion Forum as a room for peers to discuss and interact freely which reduces stigma and embarrassment, and isolation, discrimination, anxiety, and depression that may arise from loneliness and other factors. In addition, the app is constructed in a way it can be scaled in other domains, countries, or regions. This only requires the content translation into any language of interest and customizing some of its features. Moreover, the development, design, and implementation of this application are guided by humanitarian principles in every context, conflict affected or not. Some of them include Humanity, Impartiality, Neutrality, and Independence. With existing initiatives considered, YAhealth is uniquely an easily affordable, time saving, stigma, judgment free, confidential and youth friendly sustainable solution. So far, the App has 5000+ users since February 2022 and the number of young people seeking services has been drastically increasing mainly in reached regions of country.</p>
3.30 pm-4:15 pm	<p>Poster Session: <b>An open-source mobile platform for returning HIV viral load results directly to patients and healthcare providers in Malawi</b> Christopher Mwase,Cooper/Smith</p> <p>We have developed an open-source application that leverages accessible technology for all mobile phone users (SMS and USSD) to return HIV viral load results directly to patients and healthcare providers (clients). Malawi has about 986,000 people living with HIV with over 850,000 on lifelong antiretroviral therapy (ART). Viral load testing is the gold standard for monitoring ART adherence and treatment response. Currently, viral load results are physically returned to health facilities by couriers and then communicated to patients. Only 15% of results are ever communicated to patients within the recommended period of 4 weeks (28 days) using this approach. We have implemented a viral load result return application (VLRR) at 4 health facilities to expedite the return of results to clients. VLRR is integrated with the laboratory information management system (LIMS) and specimen transportation system (CommCare). VLRR sends an SMS alert to consenting patients when a result is received from LIMS. A client uses a sample barcode to securely check their results through a USSD channel. The application is currently being tested (April to October 2022). 558 patients have been registered thus far and 60 results have been received from LIMS and sent to clients. The average days to receive results is 8.5 days thus far (from sample collection to USSD open), a decrease of 19.5 days compared to the shortest return time in the physical process. A key challenge we have faced is low access to mobile phones among</p>

	<p>patients and low stock of viral load tests. Despite this, clients are very excited about the application. Viral load was designed using open-source technology and ensures users with basic feature phones can use the application. The back-end architecture will also be shared freely (through GitHub) to the global community for implementation wherever useful.</p>
<p>3.30 pm-4:15 pm</p>	<p>Poster Session: <b>Developing digital tools for health surveys in developing countries: comparing findings of two mobile phone surveys with a nationally representative in-person survey in Bangladesh</b>  Gulam Kibria, Johns Hopkins University; Julian Fernandez Nino, Johns Hopkins Univeristy; Saifuddin Ahmed, Johns Hopkins University; Iqbal Ansary Khan, Institute of Epidemiology, Disease Control and Research; Dustin Gibson, Johns Hopkins University</p> <p>The growing prevalence of noncommunicable diseases (NCD) in developing nations has heightened the need for recent data on their risk factors. However, in-person surveys are expensive and labor intensive. We compared the representativeness and prevalence estimates of two mobile phone survey (MPS) methods, interactive voice response (IVR) and computer assisted telephone interview (CATI), to a large nationally representative in-person household survey, STEPwise approach to NCD risk factor surveillance (STEPs) 2018 in Bangladesh. CATI and IVR participants were recruited by random digit dialing. We used inverse proportional weighting to compute MPS weights using STEPs as the reference. After describing demographics, prevalence of NCD risk factors (i.e., tobacco use, diet, alcohol, and hypertension) were reported. These were compared by prevalence differences (PD) and prevalence ratios (PR). We included 2355 (57% males), 1942 (62% males), and 8185 (47% males) respondents in CATI, IVR, and STEPs, respectively. CATI (28%) and IVR (52%) had a higher proportion of people with secondary/above education than STEPs (13%). Most prevalence estimates were higher in STEPs than both MPS; however, CATI estimates were closer to STEPs than IVR. For instance, in CATI, IVR, and STEPs, respectively, the prevalence was 41%, 36%, and 44% for current tobacco use; 23%, 26%, and 24% for current smoking; and 23%, 15%, and 28% for current smokeless tobacco use. Among 15 studied indicators, current smoking', only smoking', and known hypertension diagnosis' had similar prevalence in all surveys (&lt; 5% PD). Compared to STEPs, the PD ranged from 57% to 1%' in CATI and 41% to 2%' in IVR; the PR ranged from 0.3 to 1.1' in CATI and 0.3 to 2.0' in IVR. Although both MPS obtained large samples, we were unable to generate nationally representative samples and estimates like STEPs. More research is required to obtain nationally representative MPS.</p>

3.30 pm-4:15 pm	<p>Poster Session: <b>The Impact of mHealth Interventions in low and middle income countries: Protocol for a Systematic Review of Systematic Reviews</b></p> <p>Felix Holl, Neu-Ulm University of Applied Sciences; Marjan Arvandi,UMIT-Tirol - University for Health Sciences, Medical Informatics and Technology; Walter Swoboda,Neu-Ulm University of Applied Sciences</p> <p>mHealth applications have a strong potential of improving care. This is especially true for low- and middle-income countries (LMICs), where access to care is often limited, but the mobile phones are broadly accessible. A large number of studies with mHealth applications for a number of health domains have been conducted. The findings of these studies were synthesized in a number of systematic reviews. The aim of this systematic review of systemic reviews is to synthesis the evidence of mHealth interventions in low- and middle-income countries across health domains. The protocol follows the Cochrane Handbook. The results will be reported using the PRISMA guidelines. We have defined the following PICO criteria: Patient characteristics. Patients diagnosed with chronic non-communicable diseases in Low- and Middle-Income Counties (LMICs), according to World Bank definition. Intervention/comparator, Mobile Health applications, Any other comparator Outcome data, Any health outcome Time frame, Published between January 1st 2010 to September 30th 2022 Study type, Randomized controlled trials First results will be available by the time of the conference and will be shared with the poster.</p>
3.30 pm-4:15 pm	<p>Poster Session: <b>From paper based to electronic register: The digital transformation of TB/HIV patient monitoring in Haiti</b></p> <p>Jhonson Charles, RTI/CHISU; Roody Thermidor,CHISU-Haiti/Ministry of Health</p> <p>Ten years ago the TB/HIV data collection processes were all paper based in Haiti, health facilities struggled to manually compile data from different patient forms and manually aggregate these data to produce the required reports. During this process, data quality was impacted due to the number of manual steps involved. The availability of reliable TB data was an issue for the national TB program (PNLT) as they struggled to report to the Ministry of Health and donors in a timely manner. The increased demand for more reliable TB data led to the implementation of a DHIS2- based TB patient monitoring system and digitalization of all TB registers. An increasing number of patients are now being monitored through the system, from 30,000 in mid 2019 to more than 64,000 as of today. All 283 TB sites are electronically monitoring patients and use data for clinical decision making, program management, TB drug forecasting and reporting purposes. All aspects of TB treatment monitoring are included within the system including TB Sensible, MDR TB, Prophylaxis to INH, and TB contact tracing, and the ability to monitor TB vaccinations among children is in development.</p>

	<p>There are 100 active users of this system; 40 non ministry users from 9 different NGOs and international organizations. The system supports specific donor reports/indicators including those for WHO, PEPFAR and Global Fund. It is also configured for data synchronization with SISNU, Haiti's national health information repository and the carte sanitaire. The PNLT has come a long way in its digital transformation, but the journey continues. The program is integrating nurses and doctors in the management and operations of the system in order to ensure data quality and sustainability, and plans of an extension to all TB sites by the end of the year.</p>
<p>3.30 pm-4:15 pm</p>	<p>Poster Session: <b>Quantifying the accuracy of smartphone capture and interpretation of RDT images as compared to frontline health worker and expert interpretation and gold-standard PCR based diagnostic results</b>  Meg McLaughlin, THINKMD; Nirmal Ravi, EHA Clinics</p> <p>THINKMD has been strategically partnering with other digital health entities to increase the value of our clinical decision support application with a focus on improving a frontline health care worker's workflow, the benefit to a patient, and increasing the application's value proposition in digital health systems, globally. In 2020 to 2021, THINKMD partnered with EHA Clinics, a private health care clinic based in Kano State, Nigeria, and Audere, a Seattle based digital health nonprofit developing software to improve global health, to study the integration of THINKMD's application with the Audere's OpenRDT Universal Reader. The study implementation and activities were led by EHA in Kano State. The goal of this study was to perform a field test to quantify the accuracy of smartphone capture and interpretation of mRDT images as compared to frontline worker acquisition and interpretation, expert reading interpretation, and gold standard PCR based diagnostic results. By acquiring field based mRDT images using Audere's image capture application, research partners were able to, perform a comparative analysis of malaria risk vs mRDT interpretation; develop and perform a statistical comparative analysis between supervised random forest Machine Learning (ML) clinical malaria assessment algorithms to non ML based digital mHealth based algorithms based on clinical and mPCR field based truth data; and apply ML principle and application to improve both clinical (THINKMD) and mRDT image analysis (OpenRDT) algorithms. Findings from this study indicate that integrating a reliable RDT reader into a clinical decision support tool can support a frontline health care worker by automatically interpreting an RDT result and providing proof of this result digitally. Ultimately, having record of both the symptoms and confirmatory test results will allow for better population health surveillance, an understanding of the accuracy of RDTs, improved clinical algorithms, better supported frontline health workers, and improved surveillance of antimicrobial stewardship.</p>

3.30 pm-4:15 pm	<p>Poster Session: <b>Centering Community Perspectives to Develop a Mobile HIV Prevention App for Black Women in the Southern United States</b></p> <p>Dominique Guillaume, Johns Hopkins University; Natalie Hernandez, Morehouse School of Medicine; Andrea Parker, Georgia Institute of Technology; Oluyemi Farinu, Emory University; Rasheeta Chandler; Emory University</p> <p>Although mobile health (mHealth) applications have demonstrated efficacy in promoting health outcomes, there has been a lack of mobile health interventions specifically developed for Black women in the United States to address HIV disparities and promote the uptake of preventative measures. This is concerning as Black women have a higher rate of HIV and sexually transmitted infections (STIs) compared to any other female group in the United States. Currently, the majority of HIV prevention mHealth interventions target men who have sex with men. Black women are likely to perceive apps developed for men who have sex with men as being incongruent with their HIV prevention concerns and needs. The development of culturally relevant mHealth technology that targets HIV prevention and broader sexual and reproductive health concerns amongst Black women is paramount to reduce health disparities.</p>
3.30 pm-4:15 pm	<p>Poster Session: <b>The case for health record tracking of national-level population by mHealth system</b></p> <p>Monzur Patwary, BRAC; Naimul Islam</p> <p>The case for health record tracking of national level population by mHealth system Introduction: mHealth is an openSRP mobile app deployed in Bangladesh since 2020 by BRAC, an international NGO. It has replaced traditional, paper-based record keeping by Community Health Workers (CHW) under BRAC health program which caters to 75 million disadvantaged population across 61 districts. Presently, 4100 CHWs use mHealth on their tablets to provide preventive, curative, referral and health counseling support. This digital transformation has enabled BRAC to address health care needs of women, men, adolescents in near real time. Objectives: mHealth was the first step in BRAC’s journey towards the digital transformation of its nationwide health program that has a special focus on maternal, neonatal and child health. It aimed to achieve automation of processes, increased efficiency, quality service provision, and capacity for predictive analysis in support of targeted interventions to achieve better health outcomes. Methods: CHWs have been using mHealth to collect real time demographic and health data which are verified and updated every 12 months. Individuals (such as pregnant mothers) at risk are automatically identified as per pre-set parameters in the app. Dynamic</p>

	<p>dashboard enables the managers to make informed decisions. Result: 64 million people in 18 million households have been registered on the mHealth app. 3.5 million under 5 children, 14.6 million adolescents, 14.7 million eligible couples and 21.5 million adults have been registered through mHealth. CHWs are able to digitally record service provision data (i.e., 100,000+ ANC services, 10,000+ PNC services within 48 hours, 30,000+ NCD services) on a monthly basis through mHealth. Conclusion: mHealth contributes to improved health outcomes in communities by supporting national level health programs through efficiently addressing at-risk groups with real time data and subsequent identification.</p>
3.30 pm-4:15 pm	<p>Poster Session: <b>Use of Interactive Voice Response system to provide comprehensive knowledge on HIV/AIDS, and sexual reproductive health to youth living with HIV</b></p> <p>Agnes Bwanika Naggirinya, Academy for Health Innovations Uganda - The Infectious Diseases Institute; Annet Nannungi, Academy for Health Innovations Uganda - The Infectious Diseases Institute</p> <p>Call for Life Interactive Voice Response tool (CFL-IVR), a patient facing mHealth solution. CFL-IVR provides health messages, and allows patients to report symptoms through an interactive voice response system (IVR) using a simple analogue phone. Globally, only one in three young people demonstrate accurate knowledge of HIV prevention. Basic knowledge of HIV impacts on risky sexual behavior. Structural and induced barriers to school attendance, impact on knowledge of HIV prevention strategies and sexual behavior. Access to high-quality, gender-responsive, age-appropriate comprehensive sexuality education programmes, must be urgently strengthened to ensure young people have the knowledge they need to prevent new HIV infections (UNAIDS 2021). In Uganda, less than half of young people have comprehensive knowledge on HIV/AIDS. Delivering knowledge through digital health systems are a promising type of intervention to reduce adolescent sexual risk behaviors and improve knowledge on HIV/AIDS among young people. CFL provides an alternative to expensive physical classes through remote knowledge sharing, thus a reduction of travel, time for patients and less burden on health facilities. CFL can execute calls in a matter of minutes to thousands of people simultaneously. Based on the practical experiences, we believe that CFL shows potential for improving knowledge.</p>
3.30 pm-4:15 pm	<p>Poster Session: <b>Development of Interactive Voice Response (IVR) system for COVID Impact Survey</b></p>



	<p>Annet Nanungi, Academy for Health Innovations Uganda - The Infectious Diseases Institute; Agnes Bwanika Naggirinya, Academy for Health Innovations Uganda - The Infectious Diseases Institute</p> <p>Governments seek to understand the impact of COVID19 on their people to provide appropriate support. COVID 19 impact surveys can be used to collect such data. The surveys must be widely distributed to obtain data which represents the entire population. The Interactive Voice Response (IVR) system is a plausible solution to collect data from diverse people within a short time. Through the IVR, users can receive and respond to the surveys by using any phone type including feature phones. Therefore, the development of IVR system for COVID impact survey provides a digital solution that can potentially improve the quantity and quality of COVID impact data. High quality data informs policies and provides guidance on the implementation of appropriate interventions to support the community. The impact of COVID 19 on people's lives is a global health challenge. Therefore, this information can provide insight into the adoption of IVR to promote effective COVID 19 impact surveys and improve the quality of data for informing policies and support measures in any country which is beneficial to session participants. The IVR will be developed using FHIR to ensure that its data can be exchanged with other systems like data analytics and decision support systems. This aligns with the global principle of creating interoperable system to ensure secure data exchange. Previously, the IVR system was used for COVID19 surveillance and Psychosocial support to report symptoms and emotional/social effects. Both systems were so effective at monitoring COVID19 patients and survivors, that Ministry of Health Uganda has adopted them to be used in COVID 19 management across the country. For example, 37% of registered COVID19 patients reported at least one emotional/social challenge after recovering, through Psychosocial IVR system. This solution seeks to use the IVR in a new domain of effectively collecting COVID impact and informing policy.</p>
3.30 pm-4:15 pm	<p>Poster Session: <b>Patient Portal Utilization Over Three COVID-19 Pandemic Time Periods at Johns Hopkins Medicine</b> Zoljargal LKhagvajav, JHU Institute for Computational Medicine; Casey Overby Taylor, Johns Hopkins Institute for Computational Medicine</p> <p>Along with the rapid increase in synchronous telehealth adoption due to the COVID-19 pandemic, patient portal utilization and adoption also surged. Although patient portals offer extensive benefits, there has been a long-lasting</p>

	<p>disparity in their utilization. Objective: To identify patterns of patient portal utilization during different periods of the COVID-19 pandemic, characterize groups that used the patient portal differently, and compare patient portal utilization between two pandemic periods when telehealth was the only option and when both telehealth and in-person options were available. Design and Participants: This was an observational cohort study of patients at Johns Hopkins Medicine (JHM). We analyzed patient portal utilization among eligible patients from 03.16.2019 to 12.31.2020. Main Measures: Average weekly numbers of patient portal messages were compared between in-person only (IO), telehealth only (TO), and in-person and telehealth (IT) periods using unpaired z-tests Key Results: Patient portal utilization across all demographic and socioeconomic groups increased since the pandemic started. In the IT period, in three groups (Aged 0-24, Male, Asian) patient portal utilization increased less; and in two groups (Aged 45-64, Female) patient portal utilization increased more than the total population. Four groups (Black, People from higher unemployment, lower education &amp; less vehicle possession area) had consistently greater increase in patient portal utilization, while four groups (White, People from lower unemployment, higher education &amp; more vehicle possession area) had consistently lower increase in patient portal utilization in both periods. Conclusions: Four groups with a higher increase in patient portal utilization were all demographically and socioeconomically disadvantaged groups. In contrast, groups that had a lower increase in patient portal utilization during the pandemic were socioeconomically advantaged and previously had higher patient portal utilization during the pre-pandemic era.</p>
3.30 pm-4:15 pm	<p>Poster Session: <b>Drones and mobile data collection use for complementary vector control</b>  Roman De Stefanis, Abt Associates</p> <p>The PMI VectorLink Madagascar team, National Malaria Control Programme and the Institut Pasteur de Madagascar conducted an operational research study to evaluate larval source management as a complementary vector control approach to reduce the burden of malaria using drone technology and digitally enabled solutions. Partnering with Aerial Metrics, the team mapped the intervention areas with photo-enabled drones and conducted airborne delivery of the larvicide with carrier drones to targeted rice paddies in the remote districts of Morombe and Ankazobe. Mobile data collection was used to inform near real-time decision making in a cost and time sensitive way. The outcomes from this study can potentially expand the vector control toolbox to further reduce the burden of malaria, particularly in hard-to-reach areas. Audiences will learn the PMI VectorLink approach to implement larviciding for vector management via drone and understand the study's findings to apply in their own vector control efforts. Critical aspects of the role of</p>

	<p>digital solutions in planning, mapping, implementation, and monitoring will be on display and explained by the presenters along with technological challenges and recommendations. The early entomological data results show net reduction in the larvae density compared to baseline immediately after the first day of larvicide drone delivery intervention. This delivery method may be a practical solution for the World Health Organization’s recommendation for reaching the last mile in malaria burden reduction where traditional vector control methods may not be sufficient.</p>
<p>4:15 pm-5:30 pm</p>	<p>Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K  <b>Digital Health Infrastructure a Necessity for Digital Health Adoption in LMICs - Stories in the Making</b>  Sameer Kanwar, PATH</p> <p>LMICs and even other countries have similar issues with the Digital health ecosystem which is not cohesive where tools are developed to solve isolated problems; partnerships are formed with little overall alignment to national policies; and citizens do not possess the capacities to understand or use digital to its intended potential. There is a need to ensure that digital health becomes an enabler to achieve UHC and equity, rather than leading to further inequity, for which a thought through digital health backbone architecture is essential. The digital health architecture should grow out of a larger digital infrastructure. Availability and penetration of stable internet, data connectivity at the field level, alongwith smart devices, are essential infrastructure to ensure the adoption of digital health. A unique identifier (health or social) for every citizen is a foundational need for establishing digital health infrastructure. Unique ID, ensures that no one gets omitted, based on programs, services can be delivered directly to the beneficiaries and traced, leading to inclusivity, equity and continuum of care. Digital as part of Policy - advocacy for policy development that promotes the adoption of digital and normalizes the use of technology in the health ecosystem is essential. Digital as part of policy framework to ensure systems strengthening, cutting across health, nutrition, disease landscape, ensures sustainable continuum of care. The inclusion of digital as part of policy should lead to a Country specific Digital Architecture which cuts across sectors and ensure availability of data for overall social inclusion. Availability of a universal payment gateway and unique citizen IDs can ensure seamless &amp; transparent social financial transactions from the government to the citizens. Digital Literacy &amp; Capacities capacities of the leadership, health workforce, along with the citizens need to be built for adoption, effective use and sustenance of digital health.</p>
<p>4:15 pm-5:30 pm</p>	<p>Breakout Session Rm 1 Salon C</p>

	<p><b>Findings From A USAID Analysis Of Map And Match Data</b>  Elise Garton, US National Cancer Institute Center for Global Health; Merrick Schaefer, USAID</p> <p>The Map &amp; Match project is a USAID funded, Digital Square implemented initiative intended to help countries, donors, implementers, and the global digital health community to leverage and adapt existing digital tools in response to the COVID 19 pandemic. The project collected a list of over 2900 digital tool deployments across 156 countries and matched those tools to potential COVID 19 use cases, resulting in one of the largest known datasets of digital health tool deployments globally. The Map &amp; Match data was leveraged for country specific technical assistance during the immediate COVID 19 response and was analyzed to identify patterns and trends among documented digital tool deployments, inform continued digital health investments and collaboration by USAID and partners, and convey insights for future data collection and sharing efforts. Findings include comparisons of donor funding priorities, geographic analyses of tool deployments, assessments of duplication and fragmentation of systems within countries, and analysis of the proportion of global goods used. The results of the Map &amp; Match project have already been used by USAID and partners to drive change in their own context. The German Agency for International Cooperation (GIZ) used the Map &amp; Match data model to develop the Digital Pandemic Preparedness Assessment (DPPA), UNICEF and the World Bank use the data to in national digital landscape assessments prior to providing technical assistance, and Digital Square has used Map &amp; Match data in Tanzania to investigate root causes of a backlog of COVID 19 vaccination data. This session will provide an overview of findings from this analysis and describe their implications for digital health donors, developers, implementers, and system owners. The session will also discuss the challenges of identifying and tracking digital health investments and provide recommendations for future digital tool data collection and sharing.</p>
4:15 pm-5:30 pm	<p>Breakout Session Rm 1 Salon C</p> <p><b>Emergency Response Digital tool: A bridge to Routine Health Information Reporting Experience from Ethiopia</b>  Hailemariam Kassahun, JSI/DHA; Loko Abraham, USAID DHA</p> <p>The conflict in northern Ethiopia disrupted access, availability, and provision of essential health services to the needy, and significantly impacted health and nutrition outcomes resulting in more frequent disease outbreaks and internal displacements. Health management information system (HMIS) infrastructure and tools were either damaged or looted, making health care and programmatic decisions tougher. The Digital Health Activity (DHA) is a five-year USAID-</p>

	<p>funded flagship Activity that supports the government of Ethiopia in building a resilient health information system (HIS) through digitalization, data use, and governance pillars. DHA designed and deployed an Emergency Response Digital tool to increase the availability and utilization of high-quality data in conflict areas and among internally displaced persons (IDP) in order to provide timely and tailored health services. The following interventions were achieved: (1) Damage assessment carried out at 1,222 health facilities in 3 conflict-affected Regions. (2) Critical health service datasets captured from the Essential Health Service packages. (3) Data collecting and reporting tools designed to assist mobile clinics functioning in IDP sites. An assessment revealed that, of the 1,222 health facilities assessed, the health information system infrastructure of 478 (39%) and 205 (17%) facilities in the 3 conflict Regions, excluding health posts, were completely and partially damaged, respectively. As a result, routine health information system reporting and health service delivery was impeded. The Emergency Response Reporting Tool (ERRT) is an open-source Metabase software customized for data analytics, visualization, and generating reports serving as a bridge until routine services are restored. Conflict-affected health facilities are able to effectively submit weekly data using mobile phones to the central emergency response database via the Open Data Kit platform (ODK). The Ministry of Health's emergency task force and health experts are utilizing this interim digital solution for monitoring and tailored interventions to improve health.</p>
4:15 pm-5:30 pm	<p>Breakout Session Rm 1 Salon C</p> <p><b>Leveraging Electronic Immunization Registry to monitor the two-year impact of COVID-19 on uptake of routine immunizations in children under 2 years of age in Sindh, Pakistan: insights from big data analysis with &gt; 6.9 million children</b></p> <p>Mariam Mehmood,IRD Global; Sundus Iftikhar, IRD Global;Mubarak Taighoon Shah,IRD Global; Danya Arif Siddiqi, IRD Global; Subhash Chandir, IRD Global</p> <p>COVID 19 pandemic has affected routine immunizations globally, with LMICs struggling to achieve their pre COVID 19 immunization rates despite the deployment of extensive post lockdown strategies. We leveraged the real time immunization records of &gt;6.9m children from the Sindh Government's EIR in Pakistan to quantify the pandemic's lasting impact on childhood immunizations and the success/inclusiveness of strategies. We calculated the change in coverage rates, identified hotspots of children who missed immunizations during the COVID 19 lockdown, and the impact heterogeneity across gender and geographic areas. Furthermore, to contextualize our findings with respect to post COVID 19 strategies, we examined the coverage rates and the success of catch up interventions for missed children</p>

	<p>through the gender, geographic, and vaccination modality (fixed/outreach) lens at the two year mark (Mar 22, 2022). We found a 33.9% (21,830/33,001) decline in the weekly average number of vaccine doses administered during COVID 19 lockdown (Mar 23 May 9, 2020) as compared to the two year baseline (Mar 23, 2018 Mar 22, 2020). Out of those children who missed their scheduled immunization visits during the COVID 19 lockdown, 84.0% (429,099/510,847) were covered as of Mar 22, 2022. Catch up coverage was higher among boys as compared to girls (52.0% vs 48.0%) and children belonging to rural vs. urban areas (53.1% vs 46.9%). Despite COVID 19 disruptions, coverage rates at the two year mark have surpassed the baseline rates in Sindh (primarily due to outreach), indicating efficient usage of real time EIR data in mitigating the impact of the pandemic. Our session demonstrates EIRs have become an integral component of the digital health landscape and exhibit potential, especially during the critical times of COVID 19. Pakistan is among the pioneers in leveraging EIRs to monitor immunization trends and our session will provide evidence backed examples to audience.</p>
<p>4:15 pm-5:30 pm</p>	<p>Breakout Session: Room 2 Salon H</p> <p><b>Developing context and age-relevant digital tools to drive positive care seeking behaviors amongst adolescent mothers in urban settings</b></p> <p>Laura Wotton, Jacaranda Health; Sathy Rajasekharan, Jacaranda Health</p> <p>This session, developed by Jacaranda Health through Kuboresha Afya Mitaani (a USAID funded implementation research project), will explore how digital tools can be adapted to address social, economic, and geographic barriers to health seeking amongst adolescent mothers in Nairobi’s informal settlements. Participants will learn about data collection approaches on sensitive topics, inclusive digital technologies to drive care seeking amongst hard to reach groups, and scaling and sustaining these tools in fragmented health systems. In Kenya, adolescent pregnancy is a health and social concern because of its association with higher morbidity and mortality for mother and child and adverse social consequences. In Nairobi’s informal settlements, these mothers bear a double burden; (i) direct health implications related to difficulties navigating a fragmented health system, and (ii) wider social implications like forced cohabitation, missed education, and social stigma. These implications, combined with limited access to information, contribute to poor health seeking behavior. Drawing on primary data from qualitative focus groups and interviews, Sathy Rajasekharan will explore the lived experiences of adolescent mothers across multiple social layers (individual, family, community, health system), and their emotional, informational, and primary care based needs. Participants will learn how this data informed the development of context/age specific messages on Jacaranda’s digital health tool,</p>

	<p>PROMPTS, to empower these mothers with information and refer them to adolescent relevant counseling services. Participants will learn how digital health tools can be made accessible to groups with unique needs through inclusive technology, engagement strategies, and providing channels for their feedback on experiences of care to give them agency within the health system. Participants will hear best practices for scaling and sustaining digital health tools in urban health environments, including catalyzing political interest in their adoption to serve adolescent mothers at scale, including making a case for an adolescent MNCH health policy in Kenya.</p>
<p>4:15 pm-5:30 pm</p>	<p>Breakout Session: Room 2 Salon H</p> <p><b>Sustainable community-based digital health: addressing the needs of older persons in resource-constrained settings in Panama</b></p> <p>Arletty Pinel, Genos Global Consulting; Victor Lopez-Cabrera, Technological University of Panama; Gloria Osorio, Junta Comunal de Betania</p> <p>By 2040, there will be 116 persons over 60 for every 100 children younger than 15 in Latin America and the Caribbean (LAC). This demographic shift and changing societal dynamics (e.g., rising number of unmarried adults, smaller family size, work demands) are progressively straining the caretaking capacity of families especially women, the presumed caregivers and governments alike. This session will present a community-based digital health initiative aimed at preparing communities, social services, and health systems for an aging population. A multisectoral coalition local government, Ministry of Social Affairs, community-based organizations (CBOs), Catholic Church, universities, private sector was formed in 2021 to pilot a digital health initiative in a neighborhood in Panama with the highest percentage of persons over 60 years in the country. The participatory needs assessments with seniors revealed that financial constraints and food security, not just health, were priorities. The initiative was redesigned using a silver economy perspective to address these unique needs through sustainable and inclusive growth. The program has four pillars: 1) Digital literacy; 2) Integrated digital and hybrid health solutions; 3) E-marketplace of products and services for and by seniors; and 4) Community-based incubator for creation of local, intergenerational SMEs. All services are united by a single sign-on digital identity. The digital health platform is designed for seniors and has two components: telehealth and cognitive stimulus. The healthcare delivery is being tested in the following environments: 1) Four Telekiosks in 3 senior-led CBOs and a church that provide telemonitoring, digital literacy and health promotion activities; and 2) Telemonitoring and cognitive stimulus at home using individual tablets or cell phones. The incubator focuses on</p>

	community-led solutions (e.g., meal on wheels). The evaluation includes usability, UX, behavioral patterns, health outcomes, and replicability.
4:15 pm-5:30 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>Designing a person-centred review system to improve the quality of care in the Nigerian health system</b></p> <p>Ayoposi Ogboye, mDoc Healthcare; Christopher Ayorinde, mDoc Healthcare; Chiagozie Abiakam, mDoc Healthcare; Favour Ayidu, mDoc Healthcare, Nneka Mobisson, mDoc Healthcare</p> <p>Research has shown that online healthcare facility rating platforms may be useful in complementing national assessments of healthcare facilities. However, these platforms often offer a subjective view of healthcare which may not align with objective measures of healthcare quality. In Low and Middle Income countries, where investment in public healthcare services is low, there is an opportunity for digital health innovation to allow healthcare users to provide more objective measures of the quality of healthcare facilities by aligning reviews with the 6 domains of quality. In this session, we will describe our design process for NaviHealth., a geo coded digital healthcare directory for healthcare services, facilities, and providers which aims to address information asymmetry and empower end users to access quality health services within their location. It harnesses digital technology to connect end users with health facilities and providers within their geographical reach. Through its unique geocoding feature, NaviHealth. supports a technology-enabled health system that helps users overcome the hindrance of a physical search. A facet of this directory is its person-centred review system which uses person-centred thinking tools to explore what is important to healthcare users. Our patient-centred review system uses quality assessment questions that are based on the six dimensions of quality care. This ensures that the reviews are encompassing, providing relevant details on the overall experience of each user at the healthcare facility or provider's office. There have been 5000+ reviews of facilities across Nigeria, with 2298 reviews across 23 facilities in Abuja and 2892 reviews across 80 facilities in Lagos State. Through care linkage meetings with the facilities the data garnered from these ratings help measure the overall quality of care and inform quality improvement initiatives. This presentation will show how we aligned the rating system with the domains of quality.</p>
4:15 pm-5:30 pm	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Evaluating Effectiveness of FHIR-based Health Information Exchange Components using Automated Quality Assurance Processes</b></p>



	<p>Piotr Mankowski, University of Washington; Jan Flowers, University of Washington; Moses Mutesasira, University of Washington; Tom Lere, University of Washington</p> <p>Statement of Purpose: Ministries of Health are often in a position of selecting and implementing a health information system that will be part of a national eHealth architecture and health data exchange. Synchronizing data movement in a national level Health Information Exchange (HIE) is complex, and each component needs to perform correctly. Open standards and specifications exist for various such components, maintained by global organizations such as IHE, OpenHIE, or WHO. Ministries of Health need to easily understand the abilities of various solutions, and trust they adhere both to international standards and local health data exchange requirements and policies. We present an approach to automatically evaluate the adherence of HIE systems to testable published specifications, and describe a case study application of this approach in Botswana. Methods: Our HIE implementation follows Version 5 of the OpenHIM Architecture Specifications and FHIR based workflows documented in FHIR Implementation Guides (IGs), which contain published functional and technical specifications for a given domain, e.g. managing patient identity. We import relevant information from IGs, including workflows, transactions, and test data, into our automated testing pipelines. Quality assurance reports generated from the test results can inform stakeholders about HIE components functionality and support eHealth compliance programs. Results: We apply these methods in a Case Study on HIE Development and Implementation in Botswana, We use a testable IG for laboratory workflows to validate the functionality of HIE components involved in LIS EMR laboratory order and result exchange. Discussion: Testable specifications and automated validation processes facilitate the certification of open source global goods for HIE workflows, improving both quality and trust in this quality. Such trust is crucial when using open source global goods to manage sensitive health information. The described automated QA processes would allow Ministries to more easily validate compliance, choose quality HIE components, and implement.</p>
4:15 pm-5:30 pm	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Is it good to rush? Lessons from digital health on fast forward in South Africa during Covid</b></p> <p>Peter Benjamin, HealthEnabled</p>

	<p>This presentation will cover the lessons of the last 2.5 years of rapid development of digital health systems in South Africa, some impressive and others chaotic. The very fast rollout of new systems took the sector forward significantly, but also, in some areas, increased fragmentation and duplication. It is important to learn lessons after such a turbulent time to be able to develop more coherent systems that will be ready for universal health coverage, and have the ability to respond to any future health shocks. The digital health innovations in SA during Covid directly improved health outcomes, such as improving supply chains to get oxygen to less resourced health facilities and increasing vaccination uptake. Also SA's genomic sequencing capacity identified some significant variants and with hospital data systems could provide globally-significant information on severity. The integration of many of these systems was the innovative development. This presentation can be applied in other Low and Middle Income Countries that have implemented digital health systems, but without full interoperability and standardisation. SA's experience during Covid increased many collaborations, such as between the public and private health sectors, and the crisis led to new forms of partnership to deliver information demanded by the Minister of Health, though sometimes through cutting corners. This work shows the importance of many of the Principles of Digital Development, especially Understanding the existing ecosystem; Design for scale; Be data driven; Use open standards; Address privacy and security; and Be collaborative. The presentation builds from previous initiatives and investments in digital health, such as the national Department of Health's DHIS2 system, as well as systems used by the private sector. However, in the rush to get necessary information to manage the pandemic, other systems were built rapidly from scratch, such as the Electronic Vaccination Data System.</p>
4:15 pm-5:30 pm	<p>Breakout Session: Room 3 Salons D-E  <b>e-Immunization Card: empowering parents and caregivers to take charge of their children's immunization</b>  Sang Dao, PATH</p> <p>As electronic medical records have come into more general use, medical information has become increasingly portable, personalized, and participatory. This has begun to stimulate patients to become more involved in their own health care. Immunization is an area for which a mobile solution could be very useful. Studies have suggested that mobile immunization records are feasible and may be an acceptable complement to existing paper methods. In this time of growing mobile applications (apps), many independent developers are bringing immunization information system solutions to market, providing them directly to the consumer. While these stand-alone mobile apps can be developed</p>

	<p>rapidly to address an immediate need, their added value will often only be realized through connection to the wider health system. Integration of a mobile app into servers or platforms at the regional or national level can slow the diffusion of the app in the short term, but in the longer term, such integration yields benefits through the flow and exchange of data across systems. The extensive use of such a tool can increase the chances of its longevity. In Vietnam, an e-Immunization card application was developed as an ancillary function of its electronic immunization registry system, the National Immunization Information System (NIIS) and piloted in two provinces through PATH's IDEAL Vietnam project. While the NIIS has been successfully implemented nationwide, the e-Immunization card should be amplified throughout the country. Our findings show that the mobile app can contribute to the continuity of care for each child throughout the immunization schedule. Empowering caregivers/parents with knowledge and useful tools will help improve overall immunization coverage.</p>
4:15 pm-5:30 pm	<p>Breakout Session: Room 4 Salons F-G  <b>Digital Approaches to Data-Driven Supportive Supervision</b>          Leona Rosenblum, JSI</p> <p>Supportive supervision, the process of mentoring staff to improve their own work performance continuously, is undertaken to ensure health workers have the support and resources they need to do their work, to measure and improve quality of care, and to identify gaps to be able to solve problems as they arise. Supportive supervision has been implemented widely across a variety of health areas, but often lacks structure, continuity from prior visits, and fails to be data driven. There is ample opportunity for digital tools to improve supportive supervision and health service delivery, such as making supervision data more accessible and actionable, and ensuring the correct supervision protocols are followed. To provide a standard approach for these tools, the USAID funded Country Health Information Systems and Data Use program (CHISU) has developed a framework and global guidance document, to standardize the approach and language for digital health actors to discuss the wide array of digital interventions that can strengthen supportive supervision systems and make them more data driven. This framework is designed to support country decision makers in identifying and selecting which digital interventions are appropriate in their context. The CHISU framework focuses on three user personas the supervisor, the provider (supervisee), and the program manager who oversees the supervisor. Breaking up the phases of the supportive supervision system into: 1) preparation, planning, budgeting; 2) direct observation of care, inspection, interviews, 3) problem solving, feedback, coaching, joint consensus,</p>

	<p>4) training, 5) reporting, 6) follow up, the framework identifies digital components that can be used to strengthen each of these phases individually or holistically. This activity is well aligned with the components of the USAID Vision for Digital Health including supporting country level capacity in digital health and the development of global goods. The development and utilization of improved supportive supervision tools.</p>
4:15 pm-5:30 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Using Global Goods and Standardized Metadata to Facilitate Cross-Project Learning</b></p> <p>Christina Villella, Rodrigo Gramajo, Rodolfo Melia, Romain-Rolland Tohour</p> <p>The USAID-funded MOMENTUM suite has a joint monitoring, evaluation, and learning (MEL) framework to facilitate learning across the awards work to improve MNCH/FP/RH outcomes. As part of this framework, awards collect data on common indicators in MNCHN/FP/RH service delivery, quality of care, and health outcomes. Given that each award has its own data system, the MOMENTUM Knowledge Accelerator sought to identify a data platform that would allow for ease of data exchange. DHIS2 was chosen for the data platform because of its use globally as a health management information system (HMIS), its data model transferability and adaptability (metadata import/ export), and standardized import/export routines and flexible API allowing for data exchange. Given that most MOMENTUM awards access program data from national HMIS, or collect data in their DHIS2 instances, using a system with a similar data structure was important. MKA created a metadata package, allowing the awards to use the same UIDs for their data elements in their systems, facilitating the data sharing process. MOMENTUM awards have been encouraged to adopt the national system’s organizational structure and metadata to reduce the need for mapping of locations across systems. Additionally, MOMENTUM Private Healthcare Delivery developed open source tools to facilitate the management of organizations units and data exchange from its reporting system and the MOMENTUM Data Platform. Furthermore, they also shared details about how they use validations and DHIS2 acceptance and approval workflows in their implementation. This collaborative approach demonstrates the value of using global goods, shared metadata packages, and open source tools even in project settings to help facilitate reuse of tools and reduced duplication of effort. We hope that this model can be adopted by others seeking to facilitate data exchange across different entities for the purpose of adaptive learning and program monitoring.</p>
4:15 pm-5:30 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>FASTER: A Framework to Evaluate the Unfettered Growth of Mental Health Apps</b></p>

	<p>Ritu Sharma, Johns Hopkins Bloomberg School of Public Health; Karen Robinson, Johns Hopkins Bloomberg School of Public Health; Holly Wilcox, Johns Hopkins Bloomberg School of Public Health; Smisha Agarwal; Johns Hopkins Bloomberg School of Public Health</p> <p>Mental health mobile applications (apps) have the potential to expand the provision of mental health and wellness services to traditionally underserved populations. Over the last decade, there has been an unfettered growth in the market of such apps without much guidance on how to choose wisely from the thousands of mental health apps without clear evidence of safety, efficacy, and consumer protections. This poses a significant risk to potential users and lost opportunities for the healthcare system to connect patients to a critical resource. We used a systematic process of literature reviews, interviews with key stakeholders, and iterative testing to develop the Framework to Assist Stakeholders in Technology Evaluation for Recovery (FASTER) to Mental Health and Wellness to systematically evaluate mental health apps based on their efficacy, safety, and technical features. FASTER comprises three sections: Section 1: Risks and Mitigation Strategies, assesses the integrity and risk profile of the app; Section 2: Function, focuses on descriptive aspects related to accessibility, costs, developer credibility, evidence and clinical foundation, privacy and security, usability, functions for remote monitoring of the user, informed consent, cultural competency, access to crisis services and AI; and Section 3: Mental Health App Features, focuses on specific features and functions of the app that could align with and facilitate therapeutic goals. The framework can be used by mental health organizations to provide a curated list or library of safe and effective mental health apps for use by consumers, family members, peer supporters, and health care providers to review and select apps. It can be leveraged by employee health plans, health system leaders, and public and private insurance providers, to review and provide guidance for apps relevant to their members; and by app developers as guidance to communicate about the potential benefits/risks of their apps.</p>
6:00-8:00 pm	TechChange Reception, San Antonio Bar & Grill 1664 A Crystal Dr. Arlington, VA
<b>Wednesday December 7, 2022</b>	
9:00 am-10:15 am	<b>PEPFAR Plenary: MAIN STAGE (will stream) Salons A/B/J/K</b>
10:30 am-11:30 am	Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K

	<p><b>Harnessing Digital Health for UHC: Making the Case for Increased and Better Coordinated Investment</b>          Joseline Carias Galeano, RECAINSA; Jai Ganesh Udayasankaran, Asia eHealth Information Network (AeHIN); Osama El Hassan, GCC Taskforce on Workforce Development in Digital Healthcare (ZIMAM); Neira Budiono</p> <p>The digital transformation of health offers the potential to improve the quality, coverage, affordability and accessibility of health services, to help accelerate progress towards Universal Health Coverage. While countries and other stakeholders have begun to step up their investments in digital technologies for the health sector, many investments have so far been short term and often focused on stand alone solutions for specific health challenges rather than strategic investments to strengthen digitally enabled health systems. Fragmented, short term approaches place significant transaction costs on the health system and often fail to deliver the long term sustainable changes that are needed. Increased and coordinated investment is critical to support the equitable, inclusive, and sustainable digital transformation of health systems. This requires various stakeholders to step up their investment, including governments, donors, development partners and the private sector. It is vital that this investment is aligned with national plans and that the right mechanisms are in place to ensure better coordination across stakeholders. To help make the case for increased investment, Transform Health and its partners (the Joep Lange Institute, PATH/Digital Square, and regional and youth partners), are developing a Conceptual Framework to provide a global cost estimate for the digital transformation of health systems in LMICs and to demonstrate to governments and investors that increased and coordinated investments can catalyse and dramatically accelerate progress, to help achieve universal health coverage. The Conceptual Framework will be launched in October at the World Health Summit. This GDHF session, co hosted by Transform Health and partners, Young Experts Tech for Health (YET4H), the Asia eHealth Information Network (AeHIN), the Pan African Health Informatics Association (HELINA), RECAINSA and the GCC Taskforce on Workforce Development in Digital Healthcare (ZIMAM) will bring together regional perspectives on the need for increased investment and opportunities to advance this.</p>
10:30 am-11:45 am	<p>Breakout Session: Room 1 Salon C</p> <p><b>Digital Transformation: Moving beyond digital health solutions, to a whole of government approach</b>          Leona Rosenblum – Moderator, JSI; Setiaji Setiaji; Dr. Ruth Ethiopian, MOH; Jenny Nelson</p> <p>After years of talking about mHealth, eHealth, and then digital health, we are adapting our discussion to digital transformation. Government digital transformation is the change in corporate culture, organizational models, methods,</p>

	<p>and processes that takes advantage of information and communication technologies (ICT) to enable public institutions to meet the needs of citizens and businesses in an efficient, transparent, and secure manner. Join JSI for a fireside chat with global leaders who are pushing their programs, their governments, and their regions to shift their focus from digitizing particular digital tools to unleashing the full transformative capabilities. This session will examine the key stakeholders, governance, management and human resource considerations that must work in concert to achieve this vision. Discussants will share success stories, approaches and challenges that are applicable across a diverse set of geographies, and look at the ways that the health sector can take a leading role in this whole of government approach. As more individual components of health systems are digitized, what does it take to move from a series of digitized systems, to a true transformation of the way public health services are designed to meet population needs?</p>
<p>10:30 am-11:45 am</p>	<p>Breakout Session: Room 2 Salon H</p> <p><b>Changing the Culture of Technology in Niger: How an ICT Assessment is An Opportunity for Change?</b></p> <p>Diby Konan, JSI-CHISU; Stephanie Watson-Grant, CHISU; Romain-Rolland Tohouri, JSI / Center for Digital Health; Micol Stock, CHISU; Aida Mounkaila, Directorate of Statistics / MOH</p> <p>Information and Communication Technologies (ICT) are key for data collection, analysis, and quality improvement in a health information system (HIS). Many countries such as Niger often lack an adequate ICT infrastructure that requires appropriate hardware, software, connectivity, power source, governance policies, finance, and skilled human resources. Niger is a vast, landlocked country with limited cell phone coverage and internet access, along with ongoing difficulties in accessing electricity. These issues, combined with limited information available on the current state of Niger’s HIS ICT infrastructure, make work to improve availability and interoperability of quality health data information systems very difficult. Also, in their culture, accepting change can sometimes be difficult. For example, they implemented the DHIS2 at all District levels in 2017 compared to Burkina Faso which has fully used DHIS2 since 2011. In Niger, the Country Health Information Systems and Data Use (CHISU) program conducted an assessment to understand the state of the HIS ICT infrastructure. The assessment utilized the ICT Infrastructure Assessment Tool (ICTIAT), developed by MEASURE Evaluation. This was the first ICT assessment of its kind in Niger. Results identified challenges across all domains of communications networks, equipment availability, equipment security and maintenance, power supply, governance, and finance. This assessment will help guide the strategic planning process to develop an ICT architecture of the HIS that accounts for the realities of Niger’s context. It will help bring together various stakeholder interventions and help move towards an integrated, reinforced, and ultimately resilient HIS in the regional</p>

	<p>health directorates, national directorates, and central level programs. But most importantly, this assessment will help to change the perception of ICT in Niger. ICT can contribute to improved data quality, particularly timeliness. As more ICT is used in Niger, the perceptions will be changed. This could be an opportunity for broader acceptance of technology.</p>
10:30 am-11:45 am	<p>Breakout Session: Room 2 Salon H  <b>Dear Jeff Bezos, We Need More Data Centers in LMICs. Please and Thank You</b>  Jonathan Friedman, Palladium Group</p> <p>Hey, we'd love to give this modeling work a try. What do you need to make it happen? Well, the datasets are quite large, and the models require pretty substantial computing power to run in a reasonable timeframe. If I could do this on AWS, it would be much smoother. I hear you, that would be great. Tell me, you know that data must stay in the borders of the country by law. When data is hosted on AWS, will it be stored here? Unfortunately, Amazon doesn't have a data center here, so, no. No problem. Does Microsoft have a data center here? No. Google? Negative. Does this conversation sound familiar to you? If not, expect to hear it more and more as countries increase the scale and scope of their digital health and data interventions. If you're sitting in Nairobi, Lagos, or Dakar, and looking to benefit from cloud storage and computing, you'll find yourself storing your data in South Africa or on another continent entirely. Major cloud providers increasingly are looking for talent in LMICs, but they are not providing cloud infrastructure in these countries that enable machine learning and efficient big data storage that comply with local laws and regulations. This situation and the push for personal and health data storage within countries has intensified with increased attention to and investment in cybersecurity. In this lightning talk, I'll quantify the issue and make a plea to major cloud providers to stop ignoring this critical issue and build data centers in countries.</p>
10:30 am-11:45 am	<p>Breakout Session: Room 2 Salon H  <b>Improving Honest Reporting of COVID-19 Symptoms</b>  Rachel Jones LuSava, IDinsight; Debbie Rogers, Praekelt</p> <p>Following the outbreak of the first cases of COVID 19, the National Department of Health (NDOH) in South Africa, in partnership with Praekelt.org, launched HealthCheck. HealthCheck helps users assess their COVID 19 risk via WhatsApp or USSD. The platform takes users through a COVID symptom checker and provides appropriate health behavior</p>



	<p>recommendations in return. HealthCheck was then adopted by HigherHealth, the national agency in South Africa which supports the health and wellbeing of universities and colleges across the country. HigherHealth mandated that all university goers (students, staff, and lecturers) must repeatedly complete the COVID risk self assessment via HealthCheck on a daily or near daily basis and produce a low risk result to gain entry to college campuses across South Africa. IDinsight led an RCT to test whether different messaging framing can lead users to more truthfully responding to the COVID 19 symptom questions on HealthCheck. The data collection took place from March 23, 2022 April 24, 2022 and used data from 19,689 unique users. We hypothesized that over time responses on HealthCheck were likely to become less truthful on average, with a higher proportion of low risk users relative to the true prevalence of low risk symptoms in the population. We tested three message framings focused on honest reporting 1) an honesty commitment before the HealthCheck, 2) pro social appeal, and 3) salience of consequences. The results showed that being in any treatment group increased the number of days per week users avoided campus. The messaging framing that highlighted the "salience of consequences" of dishonesty had the largest effect, with users in that arm avoiding campus 3 more days per semester. We suggest that highlighting the salience of consequences is an effective way of increasing honesty in digital interventions.</p>
<p>10:30 am-11:45 am</p>	<p>Breakout Session: Room 2 Salon H  <b>Invoking the Digital Principles to ensure Sustainability of Guatemala's National Contraceptive Assurance Indicator Monitoring System</b>  Julio Vargas, The Palladium Group</p> <p>The National Contraceptive Security Commission (CNAA) in Guatemala was established to ensure the availability of contraceptives and to guarantee the population's access to family planning. Representatives of public organizations, civil society, and trade associations participate in the group, however, the integration of representatives from different areas, with different responsibilities and interests, has posed a challenge. The Contraceptive Assurance Indicator Monitoring System is an integrated system to visualize data and provide understanding and decision-support related to the delivery and benefits of contraceptive commodities, with special consideration that the delivery of contraceptives is done by four institutions that form a commission. The information provided by the tool has been used for different advocacy processes and presented to different key actors including the Congress of the Republic of Guatemala. Also, the information has been analyzed for the use by members of CNAA in order to promote strategies for extending the coverage of family planning methods nationwide. In the context of Guatemala, it is a big achievement</p>

	<p>that the main providers of family planning services provide updated information to analyze the family planning coverage at the national level. The tool facilitated the collection of data and automated the generation of dashboards. This lighting talk will focus on describing the process to design, develop, and implement a comprehensive data-driven information system in Guatemala, the Contraceptive Assurance Indicator Monitoring System. The session will focus on the importance to create multisource data integration systems to display key indicators That allow decision-making based on data. Key points: This was in support to a Guatemala-driven initiative, which is a great push to success and sustainability. Information as a key determinant for action-driven improvements. Emphasis on the use of the principles for digital development as a key guidance.</p>
<p>10:30 am-11:45 am</p>	<p>Breakout Session: Room 2 Salon H  <b>I need that! What digital health can learn from digital development and vice versa</b>  Liz Nerad, Palladium</p> <p>Both the digital development and digital health sectors have evolved greatly over the last decade and exponentially during the COVID-19 pandemic. From the early days of mobile development to ICT4D and now to digital ecosystems, the field has progressed from siloed, singular solutions to a greater focus on ecosystems and systematic applications of technology is transforming the ways business services are inclusively delivered. Likewise, the digital health community has followed a similar progression from one off eHealth and mHealth applications to enterprise architectures that facilitate interoperability to drive more holistic and comprehensive digital health strategies that emphasize people-centered health solutions backed by good digital health governance and stewardship. Whether you consider digital health to be a subset of digital development or consider the two as a Venn diagram, the reality we're now experiencing is that true digital transformation in health cannot take place without the broader enabling environment of digital development. At the same time the digital development sector has a lot to learn from digital health in order to make the needed progress to enable inclusive and productive digital societies and economies to thrive and improve development outcomes overall. This talk with explore what the broader digital development sector can learn from progress and pitfalls within digital health and vice versa. From cybersecurity to connectivity to global goods to digital literacy to change management and governance, there are many lessons learned and approaches that can be leveraged. Further, the talk will propose ways that all sectors can come together to take a more holistic approach to enabling digital transformation. Through better exchange of lessons and coordination digital technology can fulfill its full potential to accelerate the achievement of the sustainable development goals.</p>

10:30 am-11:45 am	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Optimizing Electronic Health Record Design, Implementation and Evaluation: Useful Toolkits from the Technical Assistance Platform</b></p> <p>Elizabeth Dunbar, Digital Initiatives Group at I-TECH, Department of Global Health, University of Washington; Jan Flowers, University of Washington; Jennifer Antilla, OpenMRS Director of Community; Carol Levin, Department of Global Health</p> <p>The Technical Assistance Platform (TAP) is a global initiative to strengthen health information systems (HIS) through open-source global goods, supported by US Centers for Disease Control and Prevention as part of the US President’s Emergency Plan for AIDS Relief (PEPFAR). TAP supports the development of open-source reference technologies for unique client identification, managing client-level health data, and data exchange across the HIS ecosystem. TAP implementing partners have also developed a new Electronic Health Record packaged called OpenMRS HIV Reference Implementation (OHRI) that is designed to enhance digital tools for point-of-care HIV Care using the latest OpenMRS technologies. TAP also supports the development of resources for successful governance and leadership of HIS that can be adapted and used by various countries. This workshop will introduce and provide attendees opportunities to test several, interrelated TAP toolkits to support HIS implementers in low- and middle-income countries as they design, implement and evaluate large-scale HIS projects, such as implementation of Electronic Health Records (EHR) systems. While much research has been done, pragmatic toolkits to gather and disseminate best practices in large-scale digital transformation projects remain limited. This session will showcase and continue co-designing tools implementers can adapt to support their translational science efforts. The toolkits include: 1) the Health Information Systems Project Management (HIS PM) Toolkit; 2) the OHRI Toolkit; and 3) the Health Information Systems Budgeting and Costing Toolkit. Attendees will leave with a set of tools they can immediately use and ways to contribute their own best-practices to design, implementation and evaluation of HIS and EHR implementations at regional and national scales. They will also see how various countries are applying these tools.</p>
10:30 am-11:45 am	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Strengthening your Geospatial data to prepare the future</b></p> <p>Elie Khalil, Bluesquare; Mortiz Lennert, Bluesquare; Yann Forget, Bluesquare; Claire Halleux, Bluesquare</p>

	<p>Data quality has always been a struggle since the first data system integration. Depending on their sources, how they have been collected, integration on the current system can be painful. Geospatial data are still recent in their use and collection across global health and those datasets are facing the same challenges and others specific to their nature. This workshop aims to show and provide methodology and tools on how to : Assess the data quality of geospatial information from polygons to GPS location Approach geospatial data from a topological point of view using FOSS and industry-standard tools as GRASS GIS/QGIS Provide an approach to multi-sources integration in the geospatial context with the support of Bluesquare georegistry platform laso (also open source). Approach the bidirectional integration of laso allowing to interact with DHIS2 and HMIS in general to be able to improve geospatial data already existing. In all countries, the integration and update mechanism of the geospatial data from health district contours to health facility location in order to allow for the creation of Master Facility Registry providing a source of truth but also to allow the development of geospatial oriented indicators. Errors in topology and geometry can induce heavily biased or simply wrong indicators in systems designed to provide strategic support for health administration. This workshop will be based and prepared to focus on industry standard tools as QGIS and GRASS GIS and our own georegistry oriented platform laso. Focusing on tools accessible to all and providing a generic approach that can be applied by participants in their own projects. Also focused on integration with DHIS2 through laso.</p>
12:00 pm-1:00 pm	<p>Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K  <b>Beyond pandemic response: how donors and investors are co-developing and co-financing digital health for stronger, sustainable health systems</b>  Amanda BenDor, PATH; Fred Hersch, Google; Sherri Haas, USAID</p> <p>Over the past two and a half years, the world has seen firsthand how digital tools can be used to combat the Covid-19 pandemic, from innovative artificial intelligence chatbots available to answer questions 24 hours a day, to improved tracking of individual patients who receive multi-dose vaccines. Existing tools have been adapted and scaled in countries, accelerating how digital technologies can respond to needs through the many phases of the global pandemic. While making sure resources are available to support the ongoing needs of Covid-19 and other epidemic and pandemic</p>

	<p>threats, donors and investors are also working to support countries to harness these digital advances beyond the pandemic, integrating improved digital tools to strengthen all facets of the health system. Digital Square supports countries to achieve digital transformation and, as a multi-donor initiative, provides a mechanism to foster alignment and coordination among investors, implementers, and innovators to reinforce one another in hearing, understanding, and supporting country priorities. Moderated by Digital Square, this session will convene a mix of investors in the digital health ecosystem to articulate how they are supporting countries to prioritize sustainability of digital technologies, ensuring that broader health systems can integrate improvements in digital health beyond Covid-19 response. This session will also feature a discussion about how donors are co-creating and supporting activities in partnership with actors across the ecosystem to meet country needs, and what is needed beyond financial investments to ensure digital technologies are accessible and scalable across health domains. This session aligns with other donor coordination panels proposed for the Forum (i.e. sessions proposed by DICE and USAID), and will bring a specific lens on partnership and alignment broader than the Covid-19 pandemic.</p>
12:00 pm-1:00 pm	<p>Breakout Session: Room 1 Salon C  <b>Conformance Testing of Digital Health Tools and the WHO Digital Clearinghouse</b>          Carl Leitner, World Health Organization (WHO); Smisha Agarwal, Johns Hopkins Bloomberg School of Public Health; Chris Haskew, World Health Organization; Alexander Berler; IHE Catalyst AISBL</p> <p>With an increasingly complex and rich ecosystem of digital health tools available, it can be difficult for ministries of health, donors and other purchasers of digital health tools to determine which products will meet their needs. With improving governance on the development and implementation of country digital health roadmaps, it is critical for decision makers to have appropriate information and evidence on the suitability of various digital health tools to meet their needs. In particular, knowing what the current, verifiable capabilities of a digital health solution are, improves the trust of purchasers in the marketplace. The WHO Digital Clearinghouse is designed to provide a transparent and consistent framework to test and share information around digital health tools for decision makers. In this workshop, the audience will take a hands-on learning approach in applying the Digital Clearinghouse framework to a digital health tool. The audience will come away being able to provide evidence to answer five key questions: * Is the health and data content captured in the digital health solution consistent with WHO clinical and public health recommendations? Is the</p>

	<p>solution able to exchange data with national systems through specified open interoperability standards? How well does the solution address implementation requirements and constraints of low-resource settings? How well does the solution uphold specified standards related to data privacy, data security, and patient safety? How well does a solution fulfill assessment criteria for a specific use case ? The specific use cases that will be covered will be based on digitized records for routine immunizations and the digital documentation of COVID-19 certificates.</p>
12:00 pm-1:00 pm	<p>Breakout Session: Room 2 Salon H</p> <p><b>How Immunization will achieve a global digital standard for an interoperable personal electronic health record: evidence and emerging standards</b></p> <p>Garrett Mehl, World Health Organization (WHO); Carl Leitner, World Health Organization (WHO); Rajesh Menon, eGovernment Foundation; Nga Nguyen, PATH</p> <p>This panel will detail the state of digitalization and optimization of the personal immunization record, drawing from successful innovative deployments in Vietnam and India, as well as WHO scientific meetings that highlight foundations necessary for adoption of a global standard (defined interoperability standards and a trust architecture). Home based records are personal health documents held by individuals intended to record essential patient health information, and to complement facility based and provider focused health information system record systems. Home based records including those used for routine immunization facilitate documentation of health status, drive timely visits to a health care provider, and help individuals track vaccinations due and received, including verifiable credentials related to the beneficiary, the health provider, the health facility, and the vaccine. Historically, patients retain a paper record of immunization for their own benefit, and also in the interest of different providers to facilitate continuity of care. Digital immunization certificates for COVID 19 demonstrated the viability of electronic personal health records for immunization, and many countries have now established national and global goals for innovating toward globally interoperable digital cards / eWallets for immunization; and in parallel, requested WHO to digitalize the Yellow Card and ICVP. Under the Indonesia presidency, G20 countries have engaged in a WHO supported piloting of a global gateway trust architecture and an interoperability standard for immunization records based on HL7 FHIR and the International Patient Summary (IPS). Participants will learn of WHO’s SMART guidelines for immunization which provide interoperability standards and functional requirement specifications, findings from the G20 pilot around innovating the digital immunization card standards and trust architecture, and the outcomes of WHO meetings on standards for digital</p>

	immunization cards; as well as learn about the software global goods, interoperability standards, and lessons learned that made it possible for successful national deployments.
12:00 pm-1:00 pm	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>How Can We Protect Patients while Ensuring Equitable Benefit from Health Data?</b></p> <p>Julianna Kohler, USAID</p> <p>Data governance is a topic of increasing interest, as evidenced by the recent release of the Health Data Governance Principles. In addition, health programs like PEPFAR emphasize collecting individual level data, which makes privacy &amp; security more critical, due to the sensitive nature of health data. Diseases that are highly stigmatized, like HIV, have extra considerations required to protect individual level data. We invite panelists to discuss the tension between two co-equal principles of health data governance: (1) protecting people by ensuring data security and (2) privacy and prioritizing equity by promoting equitable benefit from health data. How do Ministries, donors, and implementers weigh the benefit of data use answering critical questions such as which patients are at highest risk for interruption of HIV treatment, or how to support highly mobile, vulnerable populations to access treatment while still ensuring that those same communities are well-protected, and their data are secure? Panelists will be drawn from countries with a variety of legal frameworks for data protection and governance, with representatives from Ministries, USAID, and implementing partners (conversations are underway to identify panelists).</p>
12:00 pm-1:00 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Implementing a Pregnant Women And Birth Registry in Karachi, Pakistan to achieve universal immunization coverage through identification of all newborns and unregistered children</b></p> <p>Mubarak Taighoon Shah, IRD Global; Nida Aslam, IRD Global; Danya Arif Siddiqi, IRD Global; Sundus Iftikhar, IRD Global; Subhash Chandir, IRD Global</p> <p>Despite the concerted efforts to achieve universal and equitable immunization coverage, many children are still missed since they have no formal record of existence, making it difficult to track these invisible children'. In order to address this problem, we developed an electronic Pregnant Women and Birth Registry (PWBR) module that enrolls pregnant women and newborns visiting birthing facilities into a centralized database, connected to the Provincial Electronic</p>

	<p>Immunization Registry (Zindagi Mehfooz; ZM) in Sindh province of Pakistan. This session will outline results from our 12-month study whereby we implemented the PWBR module at 15 birthing facilities situated in the areas that have been classified as the Super High-Risk Union Councils (SHRUCs)', based on the prevalence and circulation of poliovirus and low routine immunization coverage. Between November 10, 2020 and December 31, 2021, we enrolled 33,000 pregnant women and 99.5% (17,942/18,021) of the children born at the birthing facilities into the PWBR module. 91% (16,329/17,942) of the newborns were administered the birth dose of polio vaccine of which 95.94% (15,666/16,329) were vaccinated within 24 hours of birth. We also observed that coverage rates and timeliness of subsequent vaccines for children at 11 months were higher for children enrolled through the PWBR compared to those enrolled in the immunization system through other modalities (immunization centers, outreach vaccination posts, etc.) Our session will demonstrate the process and value of implementing and integrating a birth registry in existing LMIC health systems to provide newborns with a digital identity and connecting them to the health system. In particular, we will also elaborate on lessons learnt from implementing such an intervention across both public and private health facilities, as well as how to effectively mobilize the Health Department to sustain these digital interventions in the long run.</p>
<p>12:00 pm-1:00 pm</p>	<p>Breakout Session: Room 4 Salons F-G  <b>Acceptability, usability, barriers and facilitators of electronic community health information system in Ethiopia</b>  Tariku Nigatu, JSI/DHA; Tadesse Alemu, JSI/Digital Health Activity (DHA); Jonathan Metzger, JSI Research &amp; Training (JSI); Loko Abraham, USAID DHA</p> <p>Background: electronic community health information systems (eCHIS) have been increasingly developed and deployed to quantify and support services delivered by community health workers. However, the success and failure of eCHIS depends on the acceptability of the technology among its users. This study explored the acceptance and utilization of eCHIS among Health extension workers (HEWs) and other health workers in Ethiopia. Methods: A concurrent mixed methods approach (QUANT + QUAL) was used to answer the research objectives. Based on the Technology Acceptance Model (TAM) as a theoretical framework, quantitative data was collected from 587 HEWs. A total of 54 in depth interviews were conducted among HEWs, their supervisors, health service providers and managers. Descriptive statistics, structural equation modeling and principal component analysis was used to analyze the quantitative data. Thematic analysis was used to summarize the qualitative data using OpenCode 4.03. Result: The acceptance of eCHIS was very high ranging from 94.4% to 97.4%. However, utilization was considerably low at 50%. HEWs and other eCHIS users reported lack of infrastructure and resources, poor quality of training, follow up and supervision, policy and</p>



	<p>implementation gaps and workload as barriers explaining the acceptance-utilization gap. Data quality, retrievability, traceability of results, tablet portability, cost-effectiveness, encouragement from supervisors and image were mentioned as facilitators of eCHIS use. Perceived usefulness has direct and positive effect on acceptability (<math>\hat{\beta}^2=0.415</math>, <math>p &lt; 0.001</math>). Perceived ease of use has both direct and indirect positive effect on eCHIS acceptability (<math>\hat{\beta}^2=0.340</math>, <math>p &lt; 0.001</math> and, <math>\hat{\beta}^1 * \hat{\beta}^3=0.289</math>, <math>p &lt; 0.001</math>, respectively). Acceptability has a direct and positive effect on utilization of eCHIS (<math>\hat{\beta}^2=0.297</math>, <math>p &lt; 0.001</math>). Conclusion: Even though acceptability of eCHIS is very high among HEWs, actual utilization is considerably low. Removing barriers and reinforcing motivators is important to close the acceptance-use gap.</p>
12:00 pm-1:00 pm	<p>Breakout Session: Room 4 Salons F-G</p> <p><b>Implementing an AI for Health Maturity Assessment Model in 3 Countries of LATAM</b></p> <p>Luis Otzoy, RECAINSA; Daniel Otzoy, Central American Health Informatics Network (RECAINSA)</p> <p>The artificial intelligence maturity model in health is a methodology created by the Digital Health working group of the Broadband Commission, which was created in 2020 with the participation of several organizations worldwide, with the intention of establishing the state of the adoption of AI in the health sector at the national level and from this, to be able to define a roadmap for the acceleration in its use to promote the use of data, structured and unstructured, both for the support for decision-making in public health and in the improvement of health care for populations. The maturity model has 6 pillars to be assessed: 1. People &amp; workforce; 2. Data &amp; technology; 3. Governance &amp; regulatory; 4. Design &amp; processes; 5. Partnerships &amp; stakeholders; 6. Business models. The stages of maturity are three: 1. Exploring; 2. Emerging/activating; 3. Integrated ecosystem. With the support of the Novartis Foundation and the Digital Square coordination, the AI for health maturity model was rolled-out by RECAINSA in three countries in South America, Argentina, Chile and Uruguay, during 2020-2021, with the participation of different stakeholders from the key sectors in the AI ecosystem like the government, private sector, academia and civil society. During this session, we'll present the lessons learned after the maturity model rolled-out including the challenges identified, the more relevant achievements and the action plans to be adopted by the countries.</p>
1:15 pm-2:15 pm	<b>Lunch Sponsors</b>
2:15 pm-3:30 pm	<p>Breakout Session: MAIN STAGE (will stream) Salons A/B/J/K</p> <p><b>Bringing WHO SMART Guidelines to life through FHIR-native digital apps</b></p>

	<p>Fred Hersch, Google; Matt Berg, Ona Systems, Inc, Chris Haskew, WHO; Carl Leitner, WHO</p> <p>The SMART Guidelines are a new approach for WHO to systematize and accelerate the consistent application of recommended, evidence based, life saving interventions in the digital age. Key to realizing the potential for SMART guidelines to enable better quality care is the development of new tooling. In collaboration with Google and a community of developers the Android FHIR Software Development Kit (SDK) has been developed. The SDK provides developers with a rich set of features for building offline capable mobile first applications that leverage the benefits of FHIR for data collection, generating patient centric health records and executing FHIR CQL for enabling workflow. This work is intended to make it easier for developers everywhere to adopt FHIR and support a diversity of implementing partners building next generation solutions and applications capable of meeting local country needs. Two such examples being developed are the WHO Em Care project and OpenSRP FHIRCore. The Em Care project is led by WHO in partnership with SwissTPH and Argusoft, and with inputs from a range of other UN, NGO and academic partners. It is one of the first digital platforms through which WHO recommendations published as SMART Guidelines can be delivered at the point of care and regularly updated. It will initially focus on improving health outcomes for mothers and children in emergency settings, with plans to expand to more age groups and health conditions. OpenSRP FHIRCore (FHIRCore) is a new FHIR compliant version of OpenSRP. FHIRCore provides a rich set of additional features and capabilities to enable implementers to easily deploy new FHIR content including SMART Guidelines, and enable workflow and task based care delivery for frontline health workers in a coordinated manner. Participants will learn about HL7 FHIR, its importance to the future of Global Digital Health and how it is being implemented.</p>
2:15 pm-3:30 pm	<p>Breakout Session: Room 1 Salon C</p> <p><b>Leveraging National Digital Health Enterprise Architecture for Improved Health Information Exchange and Coordinated Digital Health Investment</b></p> <p>Nebyou Azanaw, JSI- Data Use Partnership; Gemechis Melkamu, Ministry of Health; Amanuel Biru, JSI/DUP; Oli Kaba Eba, Ministry of Health</p> <p>Achieving the Sustainable Development Goals (SDGs) for health require well managed health systems supported by dynamic digital health solutions with proper governance and investment among others. Ethiopia's first and second Health Sector Transformation Plans (HSTP I and II) - the sector's strategic plan - identified information revolution (IR) - strategic document for investments into digital health systems - as one of the key priority areas. These documents</p>

	<p>stressed the need for an enterprise architecture framework that promotes coordinated digital health investments and data management through exchange and interoperability among the systems. Following this vision, the Ministry of Health (MOH) developed a national digital health enterprise architecture (EA) that outlines and governs existing and planned business processes, data management, systems and technologies. In this presentation, we will discuss the key contributions of having enterprise architecture at national level and how it helps to optimally align business outcomes whilst also identifying opportunities and risks. First, we will highlight how the EA guides the implementation of foundational and national registries including Master Facility Registry (MFR), National Health Data Dictionary (NHDD) and other shared services. Then we will describe how the EA process framework used as a guiding document for the development of new digital health applications and future investments. We will also highlight how the enterprise architecture document used as a reference document for national level strategic documents (national digital health blueprint and electronic health record (EHR) standard document) and guides priority interoperability solutions among multiple digital health applications. Finally, we will discuss how the MoH and its partners encourage EA adoption, the need to invest in internal capacity building and senior management training to systematically identify and address the barriers to adopting EA.</p>
2:15 pm-3:30 pm	<p>Breakout Session: Room 1 Salon C</p> <p><b>Ensuring that the Ministry of Health Owns the Digital Health Solution - A Success Story from Malawi</b></p> <p>Simeon Yosefe, Malawi Ministry of Health; Mercy Kaluwa, Save The Children; Hussein Chikalimba, Save the Children International</p> <p>Between 2020 and 2022, Save the Children implemented a groundbreaking Digital Health Care for Children (DHC4C) project to improve access to quality integrated Community Case Management services, targeting under-five children in Hard to Reach Areas of Blantyre and Thyolo districts. In this intervention, Community health Workers based in hard to reach communities are trained on how to use a mobile app to diagnose, treat or timely refer a sick child with minimal support from doctors. The project used a Digital mobile application and reached 319,135 with treatment for fever, diarrhea, fast breathing, red eye and other conditions through village clinics. With the use of this Digital mobile application, 96% of the cases were correctly managed at the village clinic whilst the remaining 4% were correctly referred to nearest health facility. Other digital health apps have done similar work. How is this one different? Save the Children partnered with the Malawi Ministry of Health but not just the IMCI unit, to ensure that the technical components were in line with Ministry guidelines, but also with the Digital Health Division, to ensure that the</p>

	<p>technology could be subsumed into the Ministry of Health system, with trained personnel and sufficient infrastructure. Results from this project have led to a partnership between Save the Children and the Malawi Government to expand the use of this application in line with the Ministry of Health’s integrated Community Health Information System (iCHIS) which is a harmonized digital solution that hosts all community health interventions. The MoH will adapt the mentorship and supervision modules in the Save the Children’s ICCM Digital app to include in the iCHIS module which only had the sick child recording form so as to have a complete ICCM module in the government’s Digital Health Solution App.</p>
<p>2:15 pm-3:30 pm</p>	<p>Breakout Session: Room 1 Salon C  <b>Tele-education a catalytic tool to strengthen health systems and revitalize health care at scale in Africa</b>  Olabisi Dabiri, mDoc Healthcare; Adaora Odukwe, mDoc Healthcare</p> <p>The Tele education for Clinicians and Leaders in Africa (TeCLA) project was created by mDoc (Nigeria) in partnership with the Making More Health (an initiative by Boehringer Ingelheim &amp; Ashoka), social enterprises Chronic Drugs Medical Scheme (CDMS) and Jacaranda Maternity (both in Kenya) to improve the quality of care across Africa. The pandemic brought with it limited in person education and in person service provision. The suboptimal pre service and in service training for healthcare providers coupled with the existing poor quality of healthcare services especially around non communicable diseases and maternal and child health across the continent has left Africans in danger of receiving poor healthcare. Many health workers and leaders in Africa including in hard to access communities lack the expertise, confidence and support needed to provide quality care for patients with NCDs, putting attainment of UN SDG 3, which contains targets to reduce premature mortality from NCDs by one third, at risk. TeCLA leverages the University of New Mexico’s project ECHO<sup>®</sup> model to build capacity and create south south and north south learning opportunities for clinicians, leaders and specialised people groups. Through its pilot on NCDs care and its intersection with reproductive health, TeCLA reached over 1,000 healthcare professionals and leaders, over 600,000 patients and showed a knowledge gain of over 8%, leading to an improvement in the ability of clinicians, mid level managers and leaders to provide quality care to patients across the continent. At the GDHF, the session will Showcase the power of collaboration to drive transformational change in healthcare using TeCLA as a case study. Share challenges encountered in the development and implementation of the collaborative and mitigation strategies for digital learning networks in low cost settings. Foster the decolonization of health and democratization of learning by providing capacity building opportunities for healthcare workers.</p>

2:15 pm-3:30 pm	<p>Breakout Session: Room 2 Salon H  <b>Improving health campaign effectiveness through the health campaign digital gateway</b>  Wycliffe Waweru, POPULATION SERVICES INTERNATIONAL</p> <p>Background: Health campaigns rely on microplanning to estimate population size in the target localities. The current approach relies on: (1). Census data: often leading to inaccurate estimation of population since they are not granular enough to accurately support microplanning. (2) Paper based household registration that has no secondary source to compare against, resulting in un-validated data that are used for a single campaign before being discarded. This results in incomplete coverage of health campaigns. There are novel geospatial datasets that can enhance the planning for health campaigns and facilitate improved targeting of campaign resources. The digital gateway was conceptualized to bring together traditional and novel datasets to enable campaign planners’ access high quality, real time data for planning and execution of health campaigns. Intervention: We worked with the Kenya MOH to co-design and test the prototype by replicating the Malaria Mass Net distribution campaign as a proof of concept in 2021. CHWs conducted digital household registration in selected villages. These household data were then analyzed through the Digital Gateway by comparing them against population distribution data in a one square kilometer grid to identify grids that had inaccurate estimates. The outputs of the concept testing showed strong utility and we are working on plans to scale the implementation. Presentation: We will present our progress to date, highlighting some of the outputs and roadmap to scale, which will include digitization of household registration. This is relevant to the public health community given the gateway can potentially be utilized for different health campaigns (including immunization, net distribution or drug administration campaigns). It can be used by different implementers and can promote data sharing and reuse that can reduce duplication of efforts and improve targeting of resources. This will ultimately improve coverage of health campaigns, thus yielding equitable health impact.</p>
2:15 pm-3:30 pm	<p>Breakout Session: Room 2 Salon H  <b>DHIS2 for Cold Chain Monitoring</b>  Scott Russpatrick, University of Oslo</p>

	<p>The DHIS2 core development team at the University of Oslo HISP Center has integrated a cold chain application with the DHIS2 platform ecosystem, answering the global need for better Cold chain monitoring. In late 2021 and early 2022 we developed an Android application developed in Java, using Bluetooth Low Energy (BLE) to communicate with Bluetooth temperature sensors through the UART protocol. The application captures temperature readings, uploading temperature data to the tracker capture tool as events on a Tracked entity instance. The application is using standard DHIS2 SDK and API and is freely available on the DHIS2 app hub and the google play store. The application automatically pushes data to DHIS2 which can be viewed in standard dashboards, trigger alerts, and easily detect temperature alarms. The application can connect to a range of blue tooth temperature sensors. Most are available for under \$15 and can simply be placed in any type of refrigerator. The application and monitors are currently being scaled to 174 health facilities in Zambezia Province in Mozambique.</p>
2:15 pm-3:30 pm	<p>Breakout Session: Room 2 Salon H  <b>RISE Nigeria Experience: Fingerprint Biometrics Enrollment</b>  Ifeanyi Duruanyanwu, Jhpiego</p> <p>Nigeria currently lacks a robust and complete national identity management system with multiple siloed national databases. In addition, there is a non uniformity of patient unique identification numbers across facilities and sub national units, although prescribed standard formats exists. HIV patient monitoring and case surveillance requires a unique anonymous identifier. In line with the WHO recommendation of a Unique identifier for HIV and health monitoring as part of a consolidated system for patient care and reporting, the RISE team designed and integrated a fingerprint biometric system into the Electronic Medical Record (EMR) System in use (LAMIS) at the 130 supported facilities in four states. The use of fingerprint biometric identifier that is unique to a particular individual has been universally accepted as a positive identifier. RISE developed and implemented a fingerprint biometrics system utilizing license free Secugen HamsterPlus scanning device for capture. The Secugen Software Development Kit (SDK) was used to develop the biometric module which conforms to the INCITS 378, ISO/IEC 19794 2, ISO/IEC 19794 4 standards and linked to LAMIS via an interoperability layer software. A minimum of six fingers and a maximum of ten fingers are permissible during registration. Deduplication, profile search, and patient identification at the time of registration or revisit are among the system's features. A total of 118,841 clients have had their fingerprints taken, accounting for 87% of all clients (136,220) receiving treatment at the end of July 2022. Since the rollout, fingerprint biometric data has proven to be more convenient and efficient than unique number IDs in client identification, authentication and access</p>

	<p>to electronic patient information during visits, and an elimination of duplicate counting. This session will describe the biometrics development, integration and implementation journey and lessons learnt in client enrollment among recipients of care in insecure, inaccessible and resource constrained settings.</p>
<p>2:15 pm-3:30 pm</p>	<p>Breakout Session: Room 3 Salons D-E</p> <p><b>Designing ‘with’ rather than solely ‘for’ the user. A Human Centered Design approach to create a newborn nutrition digital application</b></p> <p>Sue Wairimu, PATH - Living Labs; Grace Nyokabi, PATH; Steve Osumba, PATH; Kimberly Mansen, PATH; Christopher Obong'o, PATH</p> <p>We propose a workshop that immerses the participant in the development experience of a digital solution to address inpatient clinical decision making for supporting maternal lactation and newborn nutrition, called the Newborn Nutrition Digital Adaptation Kit (NNDAK). This workshop will equip participants with Human Centered Design (HCD) tools and processes that support co-designing and developing digital health solutions to ensure they are feasible, viable, and scalable in different contexts. It is estimated that 15 million infants are born prematurely each year, many of which require care in the neonatal unit. Up to 40% of admitted newborns do not have access to mother’s own milk at any given time and alternative feeding is often required. Current systems are not meeting the specialized needs to support breastfeeding and lactation when mothers and infants are separated; further data gaps in tracking and troubleshooting feeding prevent optimal clinical decision making when supporting vulnerable infants and their mothers. By incorporating use of HCD approach we managed to: first, identify the right problem to focus on; second, co-design with key stakeholders; third, integrate the workflows with clinical and hospital workflows; and lastly, evaluate and test the system with key stakeholders. Without performing the steps above, poorly designed systems risk failing to address functional and emotional needs in the healthcare system. The NNDAK has been designed within the Digital Adaptation Kit architectures recommended by the WHO and guided by globally and national recognized guidelines, including the WHO UNICEF Baby Friendly Hospital Initiative for small, sick and preterm newborns and the Kenya Comprehensive Newborn Care protocol. The NNDAK now ready for piloting for eventual use by about 150 healthcare workers to support the feeding of approximately 36,000 newborns per year. The application is open source and anticipated to scale up to neonate units across the globe.</p>

2:15 pm-3:30 pm	<p>Breakout Session: Room 3 Salons D-E  <b>How Digital Solutions Can Help Scale &amp; Support Mental Health Care in LMICs</b>          Lauren Magoun, Dimagi, Inc.</p> <p>There is a staggering unmet need for mental health care and it is intertwined with almost all other global development goals. These conditions are common -- at any time nearly 1 in 8 people have one -- and yet 75% of people living with depression (one of the most common conditions) in LMICs receive no treatment at all. The COVID-19 pandemic further increased rates of anxiety and depression, and even those without diagnosable conditions have felt strain in their mental well-being. Thankfully, there exist effective treatments for common conditions like anxiety and depression that don't require specialists, who are rare in much of the world. This session will describe why and how Dimagi is developing digital solutions to improve mental health and psychological wellbeing in Lower- and Middle-Income Countries (LMICs). It will cover how digital solutions can support improved outcomes by helping those delivering care, improving program operations, and supporting clients themselves. I will outline digital solutions we have developed, or in the process of developing, that support the scaling and effectiveness of mental health interventions, in particular those led by non-specialist providers such as CHWs, ASHAs or peers. We will review how the open source CommCare platform can support such programs, and explain an innovative tool for peer-supervision we developed using CommCare for EMPOWER, a Harvard Medical School initiative to scale the mental health workforce, where we are a technical partner. Dimagi, EMPOWER, Sangath (India) and the University of Toronto are presently piloting this app in India. We will also discuss a client-facing chatbot, PracticePal, to help clients practice CBT-based and other well-being and self-care techniques as part of their care between sessions with their providers.</p>
2:15 pm-3:30 pm	<p>Breakout Session: Room 4 Salons F-G  <b>Digital health inclusion through comprehensive digital systems</b>          Desderi Wengaa, Abt Associates Inc. TANZANIA PS3+ PROJECT</p> <p>GOTHOMIS's expansion allows GoT to integrate previously siloed health program areas like HIV, malaria. Tanzania's digital health landscape builds on case-specific systems, causing health workers to use multiple systems, consuming precious time. Expanding GOTHOMIS in facilities to cover all program areas improves efficiencies and equitable access to digital health benefits to more healthcare workers, demonstrating how GOTHOMIS's comprehensiveness drives</p>



	<p>equity in digital health. The session exemplifies principles of digital development: PS3+ worked within Tanzania’s existing digital ecosystem with GoT. Thanks to strengthened systems, health facilities are equipped to use data to improve health outcomes. The PS3+ Project leveraged previous investments by USAID and GoT, upcycling existing systems and software, including GOTHOMIS. GOTHOMIS’s plan connects to GoT’s previous digital health strategy investments. PS3+ partners to transition all support activities to GoT and health facilities for sustainability and use. This transition demonstrates how adopting WHO’s global strategy on digital health (2020-2025) for transition works; participants with similar interventions can apply guidelines to their settings. PS3+’s experience demonstrates how facilities using comprehensive, holistic digital systems have more robust data than those using siloed, manual tools, which are slow and prone to data discrepancies. PS3+ supports the GoT in implementing GOTHOMIS in more than 1800 primary healthcare facilities reaching more than 30% off all recipients of health. This helps to centralize digital data and generating data for decision-making in a timely manner. Coverage of the entire healthcare system brings digital inclusion to health workers with a wider reach than ever before.</p>
3:30-4:15	Coffee Break
4:15 pm-5:30 pm	Closing Plenary

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