HASH NETWORK STRATEGIC PLAN 2025-2030

UK International Development
Partnership | Progress | Prosperity

IDRC · CRDI
International Development Research Centre
Centre de recherches pour le développement international
Canada

ARTIFICIAL INTELLIGENCE FOR DEVELOPMENT AFRICA

MARI

MAKERERE UNIVERSITY

IDI INFECTIOUS DISEASES INSTITUTE

ESTABLISHMENT OF THE CONSORTIUM

The World Health Organization (WHO) estimates that poor reproductive health accounts for up to 18% of the global burden of disease, and 32% of the total burden of disease for women of reproductive age (1). In Sub-Saharan Africa, death and disability resulting from reproductive health causes remain unacceptably high. The adult lifetime risk of maternal death has been estimated to be highest in Africa (1 in 26), while developed countries have been estimated to have the smallest lifetime risk (1 in 7,300). (1) The prevention and control of reproductive tract infections is another area of concern;(2) for example, Congenital Syphilis is the second leading cause of preventable stillbirth globally, preceded only by malaria. (3) Evidence shows that vulnerable populations such as adolescents in Africa continue to be more susceptible to STIs, HIV, unwanted pregnancies and unsafe abortions. (4)(5)

Recently, there has been an explosion in available health data in Africa due to improved infrastructure for electricity and internet (7) as well as the widespread adoption of digital health technologies in the Fourth Industrial Revolution. (8) This provides a huge opportunity for data driven strategies and innovations. However, there is currently limited research capacity to make use of this valuable resource for improving health of the population. (9) This data explosion and enhanced computer power now available has led to advances in machine learning and artificial intelligence. It is vital that Africa is not left behind in the opportunities that these technologies provide in management of health in the future.

The Academy for Health Innovation Uganda at Infectious Diseases Institute, the Makerere University AI lab and Sunbird AI formed a multi-disciplinary consortium to implement an African Artificial Intelligence (AI) Hub for Maternal, Sexual and Reproductive Health (MSRH). The Hub, titled HASH, is funded by the International Development Research Centre (IDRC.CRDI), Ottawa, Canada and the Swedish International Development Cooperation Agency (Sida) for a grant period of 3 years. The Hub commenced on 1st November 2021. Based on research justification, the thematic priority areas for the HASH project were determined as AI for Vulnerable populations, Maternal Health, and Sexually Transmitted Infections (STIs). (6)

The Hub focuses on harnessing the opportunities available partly by establishing a critical HASH Network, composed of pan-African anglophone and francophone researchers, organizations, innovators and other stakeholders working to enhance the use of Responsible AI and data technologies for MSRH. We aimed to gain insight into the usage of new and existing data and how AI and data technology can be leveraged to solve African health challenges and increase impact in the four key thematic areas.

By collaborating with new and existing contacts, knowledge institutes and experienced researchers in the field of AI and MRSH, the HASH Network planned to form a community of practice with sufficient capacity to not only promote research in AI for MRSH, but also to develop data products that inform decision making in the local context of Africa.

Objectives

To lay the groundwork for the Hub, Phase 1 focused on several foundational objectives aimed at building a robust structure and capacity for the consortium. These objectives included

Providing a platform for stakeholder engagement, collaboration and partnerships among stakeholders in AI and MSRH

Facilitating production and communication of research outputs from Network members.

Building capacity among Network members to create responsible AI solutions to Maternal, Sexual and Reproductive Health challenges in Sub Saharan Africa (SSA).

Working to advance the visibility of AI for MSRH in the policy space in SSA.

The project's strategy and evaluation framework was as below;

Figure 1: HASH phase 1 strategy and evaluation framework

Type of Network

Members
3 consortium
8 sub-grantees
Up to 9 invitees

Resources
Subgrants $10-50k

Governance
3 Consortium PIs
Subgranting Committee

Stakeholders
S,E,W African governments
Multi-lateral donors
Innovators/Researchers
Public

Processes
Subgrant management
Capacity Building
Research Technical Support
Health Innovations
Conference and meetings

Network Objectives
1) To **improve** the understanding of the opportunities, risks, limitations and best practices for responsible **AI applications in MSRH** in SSA while informing AI policy discussions and practices.

2) Build the capacity of African innovators and researchers to develop, deploy and scale responsible Artificial Intelligence (AI) applications in MSRH and rights while strengthening health systems.

3) Increase the number of homegrown **AI innovations** aimed at improving MSRH and rights while strengthening health systems in SSA and informing a wide audience including the general public

Network Deliverables and Strategies

1) Stakeholder engagement around AI and priorities in MSRH.
- Workshop at Health Innovations Conference
- Baseline priorities paper/policy brief
- Results dissemination

2) Member workshops and peer sharing on best practices in AI
- Themes e.g. maternal health, adolescent
- Technical e.g. NLP, responsible AI, gender
- Career support
- Organizational capacity building

3) Network Subgrantees selected and start projects
- 8 subgrantees
- Monitoring meetings

Evaluation Matrices for Network

1)   Stakeholders
- No. and type of external communication activities
- No. of communication documents
- Funding opportunities made available

2) Members
- No of capacity building sessions given as part of the research network
- No. of subgrantees with future funding

3) Network
- No. of subgrantee applications
- No. of subgrantees onboarded
- No. of governance meetings
- No. of publications
- No. of AI innovations developed and deployed for improving MSRH in SSA

HASH PROGRESS SO FAR

Phase 1 laid a solid foundation for the consortium achieving significant milestones that have set the stage for future growth. These include successfully establishing a multidisciplinary network of researchers and innovators, developing AI-driven solutions tailored to MSRH, and creating an open-access dataset to support the training of LLMs. Through capacity-building workshops and stakeholder engagements, HASH fostered knowledge sharing and strengthened collaboration across the continent. Most importantly, Phase 1 emphasised the integration of gender-sensitive approaches in AI innovations, advancing inclusivity in health solutions.

SWOT Analysis

At the end of HASH Phase 1, we developed this SWOT analysis with input from 10 individuals. The SWOT analysis was conducted by collecting insights from reports, meetings, and other HASH engagements. Key themes were identified and categorized into strengths, weaknesses, opportunities, and threats. A draft analysis was then developed and shared with stakeholders, including HASH subgrantees, the Project Advisory Committee, and Principal Investigators, for review and feedback to ensure accuracy and relevance.

Their analysis highlighted strengths such as collaborative leadership and robust research capacity, as well as challenges like funding dependency and limited policy engagement. Opportunities, including the growing interest in AI for health were identified.

Strengths

- Collaborative Leadership through a co governance model ensures shared decision making.
- Established Support Base backed by leading organisations (IDI, Mak, and Sunbird AI)
- Seed funding for pioneering members.
- Diverse multi-national, multidisciplinary membership strengthens cross-sectoral insights and research.
- Expertise and capacity through high-level research and innovation capacity among members.
- Health Innovation Conference (HIC) - A platform for showcasing advancements and engaging stakeholders.
- Integration with AI4D Programme including branding, collaboration, networking, and funding opportunities.
- Ability to conduct regional studies addressing Africa-specific challenges.
- Experience sharing where members contribute unique insights and best practices.

Weaknesses

- Administrative gaps due to the absence of a full-time secretariat limits operational efficiency.
- Sustainability concerns due to undefined plans for long-term viability beyond initial funding.
- Policy Influence due to limited engagement with policymakers impacts advocacy efforts.
- Innovations may not persist post-funding due to project-based teams.
- Varied interpretations and approaches among multidisciplinary members.
- Funding dependency due to a reliance on a single funder increases financial vulnerability.

Challenges

- Lack of AI regulations and limited policy engagement hinder innovation adoption.
- Limited availability of trustworthy datasets affects AI/ML applications.
- Network solutions risk obsolescence in a fast-changing AI landscape.
- Similar hubs may duplicate efforts, leading to competition for stakeholder attention and resources.
- Ill-defined needs and unclear adoption pathways pose challenges for innovation uptake.

Opportunities

- Multidisciplinary and multi-national membership fosters cross-learning and innovation.
- Platform for Stakeholder Engagement - HIC facilitates connections with stakeholders and potential collaborators.
- Regional Partnerships - Linkages with other AI4D hubs enable benchmarking, resource sharing, and joint projects.
- Value recognized by IDRC and AI4D enhances credibility.
- Subgrantees are proactive in participating and scaling research outputs.
- Supported research has yielded products that could be advanced through further validation, regulation, and deployment.
- Growing global interest in AI for health offers opportunities to shape policies and frameworks in Africa.

HASH Network Membership

Through a competitive sub-award targeting novel research and innovations in AI for MSRH, HASH onboarded 10 sub-grantees from Uganda, Kenya, Tanzania, Ethiopia, Nigeria, Ghana and Namibia. The Hub has supported these subgrantee innovators to research and validate their ideas in key thematic areas. These subgrantees, along with the HASH secretariat, have formed the founding membership of the HASH Network, which is led by a committee of leaders who steer the activities of the network so as to ensure that they align with the needs of Network members and provide value to the membership as a whole.

Figure 2: Geographical distribution of HASH phase 1 subgrantees and their innovations
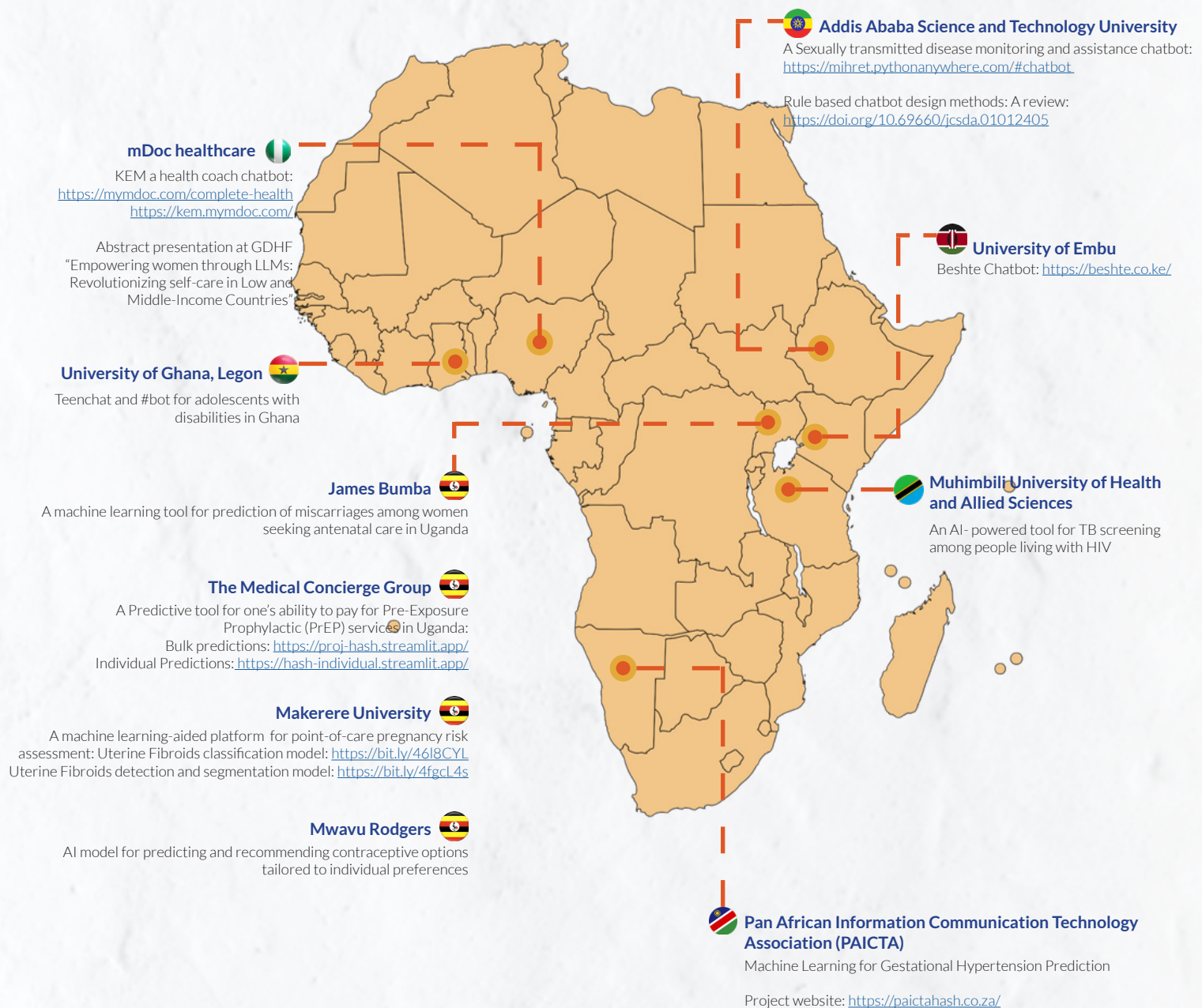
mDoc healthcare
KEM a health coach chatbot:
https://mymdoc.com/complete-health
https://kem.mymdoc.com/

Abstract presentation at GDHF
"Empowering women through LLMs:
Revolutionizing self-care in Low and
Middle-Income Countries"

University of Ghana, Legon
Teenchat and #bot for adolescents with
disabilities in Ghana

James Bumba
A machine learning tool for prediction of miscarriages among women
seeking antenatal care in Uganda

The Medical Concierge Group
A Predictive tool for one's ability to pay for Pre-Exposure
Prophylactic (PrEP) services in Uganda:
Bulk predictions: https://proj-hash.streamlit.app/
Individual Predictions: https://hash-individual.streamlit.app/

Makerere University
A machine learning-aided platform for point-of-care pregnancy risk
assessment: Uterine Fibroids classification model: https://bit.ly/46l8CYL
Uterine Fibroids detection and segmentation model: https://bit.ly/4fgcL4s

Mwavu Rodgers
AI model for predicting and recommending contraceptive options
tailored to individual preferences

Addis Ababa Science and Technology University
A Sexually transmitted disease monitoring and assistance chatbot:
https://mihret.pythonanywhere.com/#chatbot

Rule based chatbot design methods: A review:
https://doi.org/10.69660/jcsda.01012405

University of Embu
Beshte Chatbot: https://beshte.co.ke/

Muhimbili University of Health and Allied Sciences
An AI- powered tool for TB screening
among people living with HIV

Pan African Information Communication Technology Association (PAICTA)
Machine Learning for Gestational Hypertension Prediction

Project website: https://paictahash.co.za/

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Value Proposition

The HASH 1 inception meeting included a network value proposition development. The sub-grantees were asked to work in teams to come up with a value proposition for the network; to think about how the network could provide value to them, in terms of addressing their pains and creating gains for them. The goal of this exercise was to identify and articulate the key value that the network can provide to its members and customers. From this brainstorming session, the following value proposition statements were proposed from the four teams:

1	**2**	**3**	**4**
HASH provides a collaborative platform for resource mobilization and AI expertise towards co designing solutions for MSRH	**Creating a collaborative network for developing resilient and sustainable systems for Maternal, Sexual and Reproductive Health (MSRH) through responsible AI.**	**An African wide collaborative network to solve MSRH challenges using AI and contextual knowledge and skills**	**HASH exists to strengthen collaborative and capacity building in AI to achieve resilient innovation in MSRH in Africa.**

These were then rotated among the teams for input and refining after which, the sub-grantees were asked to select one which related best with HASH. From this exercise, the Value Proposition Statement was agreed to be, "**Creating a collaborative network for developing resilient and sustainable systems for Maternal Reproductive and Sexual Health (MSRH) through responsible AI**."

HASH Network Organogram

The HASH Network is our platform for community, collaboration, and learning. Five clubs emerged as part of this initiative and they conduct regular events around common areas of interest.

Figure 3: HASH network leadership structure
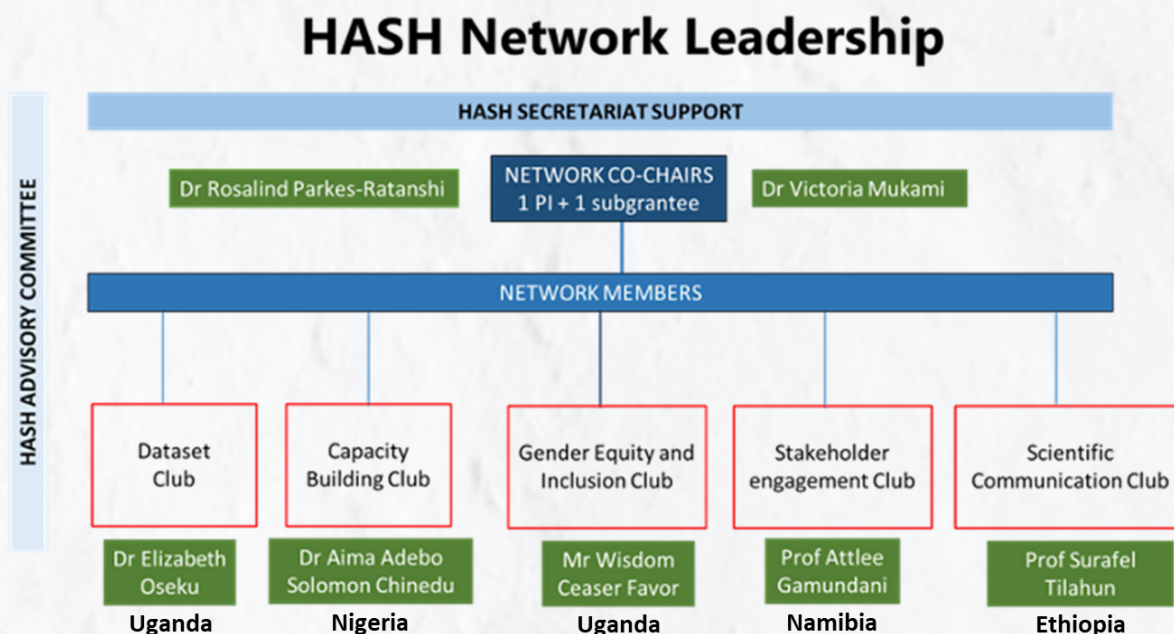
HASH Network Clubs

To effectively drive the HASH Network's mission of harnessing Responsible AI and data technologies for Maternal, Sexual, and Reproductive Health (MSRH), the following clubs have been established. Each club plays a critical role in advancing the network's strategic objectives and ensuring multidisciplinary collaboration.
The clubs were established following the initial inception meeting to address specific challenges and capitalize on opportunities related to MSRH. Each club's achievements during the first phase are outlined.

1. Dataset club

The Dataset club addresses data-related challenges and opportunities within the HASH Network.

Achievements

- Webinar titled, "The Role of Data in Artificial Intelligence" in April 2024. The webinar targeted a non-technical audience.
- The club has conducted a crowdsourcing activity to collect questions from the general public about Sexual Health - Sexually Transmitted Infections in particular. What started as a 3-day interactive workshop at the 2023 AfricAI conference, eventually obtained full ethical approval to conduct a study to do contextualised Sub-Saharan Africa-wide crowdsourcing of question-and-answer (Q&A) pairs. The Q&A pairs collected as a result of this workshop have been processed to create a dataset of over 5,000 Q&A pairs. This dataset will be published as open-access and made available to the general public for training and development of AI-enabled health information tools. The study has also submitted its protocol for publication to share this innovative process with others.
- A HASH repository on Harvard Dataverse has been created where we will publish datasets as open access https://dataverse.harvard.edu/dataverse/HASH. The crowdsourced data above will be published in this repository. This repository will also be made available to HASH Network members who would also like to publish datasets under the HASH Datasets umbrella.

2. Capacity building club

The Capacity Building club strengthens the skills and knowledge of HASH Network members and stakeholders.

Achievements

- ECHO Webinar titled, "HIV: Overview and Prevention of Mother-to-Child Transmission," was conducted in December 2023. Participants left the session equipped with updated knowledge and resources to enhance their clinical practices and patient care approaches related to HIV.
- Webinar titled, "AI for Clinicians, Leaders, and Policy Makers; Introducing Artificial Intelligence for Effective Healthcare Delivery" in October 2024. The webinar educated health workers and policymakers on basic AI concepts and how AI can be used in healthcare.

3. Scientific communication club

The Scientific Communication club focuses on disseminating the network's research outputs and insights.

Achievements

- Submission of HASH Book concept to Springer Nature. Unfortunately, this was rejected but will be resubmitted.
- Call for submissions for a special issue of research outputs from sub-grantees in the Journal of Computational Science and Data Analytics.

4. Stakeholder engagement club

The Stakeholder Engagement club bridges the gap between the HASH Network and its diverse stakeholders.

Achievements

- Community Showcase of the HASH Network at Deep Learning Indaba in September 2024. This event consisted of a panel session and a booth where more information was shared with attendees about the HASH Network.

5. Gender Inclusion and Engagement club

The Gender Inclusion and Engagement club ensures that gender equity is at the core of the HASH Network's activities.

Achievements

- GEI Club Lead won a Junior Researcher grant as part of the Gender and Inclusive AI Research and Innovation Challenge under the AI4D Gender Support Team. This grant supported more GEI-focused fine-tuning of a previously developed model to predict Dolutegravir-Induced Hyperglycemia among people living with HIV. The work culminated in a manuscript that has been submitted to PLOS Digital Health for peer review.
- Peer Learning Journey Webinar on Maternal Sexual and Reproductive Health (MSRH) Predictive Modelling with a Gender Equity and Inclusion Lens, in December 2023.
- A framework for how to apply a Gender Equity and Inclusion lens in Maternal, Sexual and Reproductive Health is in development.

HASH II STRATEGIC PLAN DEVELOPMENT

Stakeholder consultation

At the end of HASH phase 1, we conducted 26 closeout interviews among all invited guests; HASH phase 1 subgrantees, the secretariat, the management committee and policymakers. An analysis of these interviews highlighted several key themes central to the HASH initiative of impact and progress. These included the transformative role of AI in enhancing maternal, sexual, and reproductive health (MSRH) outcomes, as well as the program's emphasis on knowledge sharing through structured capacity-building sessions and webinars. Strong collaboration among implementing partners and stakeholders emerged as a critical enabler of success, fostering a robust network of professionals dedicated to advancing healthcare innovation. Participants also appreciated the transparency and effectiveness of communication channels such as regular meetings and structured updates.

The interviews further revealed notable strengths, such as the HASH program's ability to enhance skills in AI application for MSRH, increase project visibility, and engage stakeholders meaningfully. Exceptional achievements included the development of innovative AI-driven solutions and a focus on gender equity in AI project design. However, areas for improvement were also identified, including the need for expanded funding to scale impactful initiatives, broader geographic inclusivity, better data accessibility, and improved intra-team communication. Based on these findings, recommendations for future phases include exploring innovative funding strategies, expanding the geographic reach of the program, establishing centralized data hubs, and incorporating advanced AI techniques to deepen the analytical rigor of projects. These insights, as illustrated in Figure 1 below, provide a foundation for strengthening the HASH Network, informing its progress and future activities, and ensuring its long-term sustainability and global relevance.

Figure 3: Summary of Findings from HASH Phase 1 Closeout Interviews

KEY THEMES

- AI in Healthcare
- Knowledge sharing & capacity building
- Collaboration and Engagement
- Funding for scale-up
- Effective communication
- Future collaboration opportunities

KEY FINDINGS

Strengths
- Collaboration
- Knowledge dissemination
- Skill development
- Stakeholder engagement
- Funding
- Project visibility

Exceptional achievements
- Innovative use of AI
- Visibility & recognition
- Capacity building
- Gender equity in AI

AREAS OF IMPROVEMENT

- Funding gaps
- Broader inclusivity
- Data access
- Intra-team communication

RECOMMENDATIONS

- Broaden geographic reach and funding mechanisms
- Improve data accessibility through centralized hubs
- Standardize communication and enhance training
- Include policymakers for advocacy and broader impact
- Improve monitoring frameworks to measure short and long-term project outcomes

THE HORIZON FOR AI IN HEALTH IN AFRICA

Emerging Trends in AI for Health in Africa

During the lifetime of the HASH project, we have seen a massive expansion in activity around AI in Africa, especially for health. The step change in this area has been due to the release of the large language models (LLM) in 2023, which has allowed a massive expansion of conversational agents. These are being increasingly used to enhance existing digital health and AI tools, as well as an explosion of new tools. Funding such as the Bill and Melinda Gates Foundation generative AI grants have supported over 100 innovators in AI for development, many of these are focused on health (AI equity: Ensuring access to AI for all | Bill & Melinda Gates Foundation).

Continued digitalisation of health data on the continent and expansion of digital health tools, is providing opportunities for AI-supported tools. This is supported by large funding bodies such as USAID who support the OpenMRS - Health Management Information System (HMIS) tools to expand in African Ministries of Health. OpenMRS is an excellent example of the drive for digital global goods for all (What it means to be a global good — Digital Square) which provide a platform for creative strategies to use health data on the continent. Opportunities for AI work include integration with mHealth tools, telemedicine and remote monitoring and image analysis for diagnostics.

African languages are at risk of being left behind in the LLM expansion; only 700 of the world's 2,138 languages have machine translation support. Africa is home to between 1,250 and 2,100 languages, with Nigeria alone having over 500 languages. Supporting the expansion of these languages within AI tools is urgent and important, to ensure that the continent has access to these tools. John Quinn - Practical translation and speech models for African languages It is also a great opportunity as the LLMs are very good at learning new languages, and with careful and comprehensive collection of data, we can ensure a representative of African languages in AI tools. Funders are increasingly investing in this work.

Opportunities for AI in Maternal, Sexual, and Reproductive Health

Within the wider health opportunities, MSRH is particularly useful for MSRH, in part due to the large burden of need for MSRH as everyone needs quality information for their reproductive health. We undertook a baseline survey in HASH on possible uses of AI in MSRH as shown in figure 3. The survey targeted practitioners, academics, policymakers and experts in Artificial Intelligence (AI) and/or in Maternal, Sexual Reproductive Health (MSRH) on the African continent. The survey attracted 107 responses from 25 African countries.

Figure 4 : Summary of the results from the baseline survey

Generally speaking, which pillars of health care provision do you think can be supported/improved by Artificial Intelligence?

- 01 Risk prediction of negative health outcomes
- 02 Analysis of electronic medical records
- 03 Patient communication and education
- 04 Disease surveillance
- 05 Data visualisation
- 06 Diagnostics
- 07 Health care worker communication and education

The HASH team were privileged to be included as experts in the development of the WHO technical brief on The role of artificial intelligence in sexual and reproductive health and rights.

Figure 5: Highlights current patterns of AI use in sexual and reproductive health.

AI purpose	SRH domain [a]										
	Comprehensive sexuality education	Sexual health	STIs, including HIV	Reproductive cancers	Comprehensive abortion care	Intimate partner and sexual violence	Infertility and fertility care	Contraception and family planning	Antenatal, intrapartum and postnatal care	Menopause	General/ multi-purpose SRH [b]
Health information, education and promotion											
Screening and diagnostics											
Treatment and care management											
Personal health monitoring											
Understanding health trends											
Health systems management											
Clinical research and drug discovery											

[a]   SRH domains are based on the UHC Compendium of interventions. Female genital mutilation is an SRH domain in the UHC Compendium, but no studies were found for this area *(1)*.

[b]   Focus on nonspecific and multiple SRH domains (e.g. AI for gynaecological issues) without specifying the areas.

Source: adapted from WHO, 2021 *(1)* and WHO, 2017 *(2)*.

Number of studies

	0
	1–100
	101–200
	201+

Challenges in AI Adoption

Ensuring responsible and inclusive AI is a goal of the HASH project. This is a theme running through the wider AI for Development group. The Global Index on Responsible AI from the Centre for Global Governance provides information on Responsible AI readiness, and national strategies/ policies that provide an enabling environment for responsible AI.

Continued data availability and quality is an ongoing challenge with limited access to accurate, representative, and annotated datasets. This is an important area, which groups such as the Home - Lacuna Fund are trying to address.

Infrastructure Gaps, especially in rural areas, and investment in infrastructure is vital in addressing inadequate digital and technological infrastructure.

Ensuring long-term funding and operational continuity is essential to ensure project and AI tool sustainability**.**

THE WAY FORWARD - HASH NETWORK 2025-2030

In 2024 IDRC, together with the UK FCDO launched the phase II of the AI4D programme. HASH was included in this programme extension, with the aim of scaling AI solutions developed in Phase I.

Figure 6 : AI4D theory of change
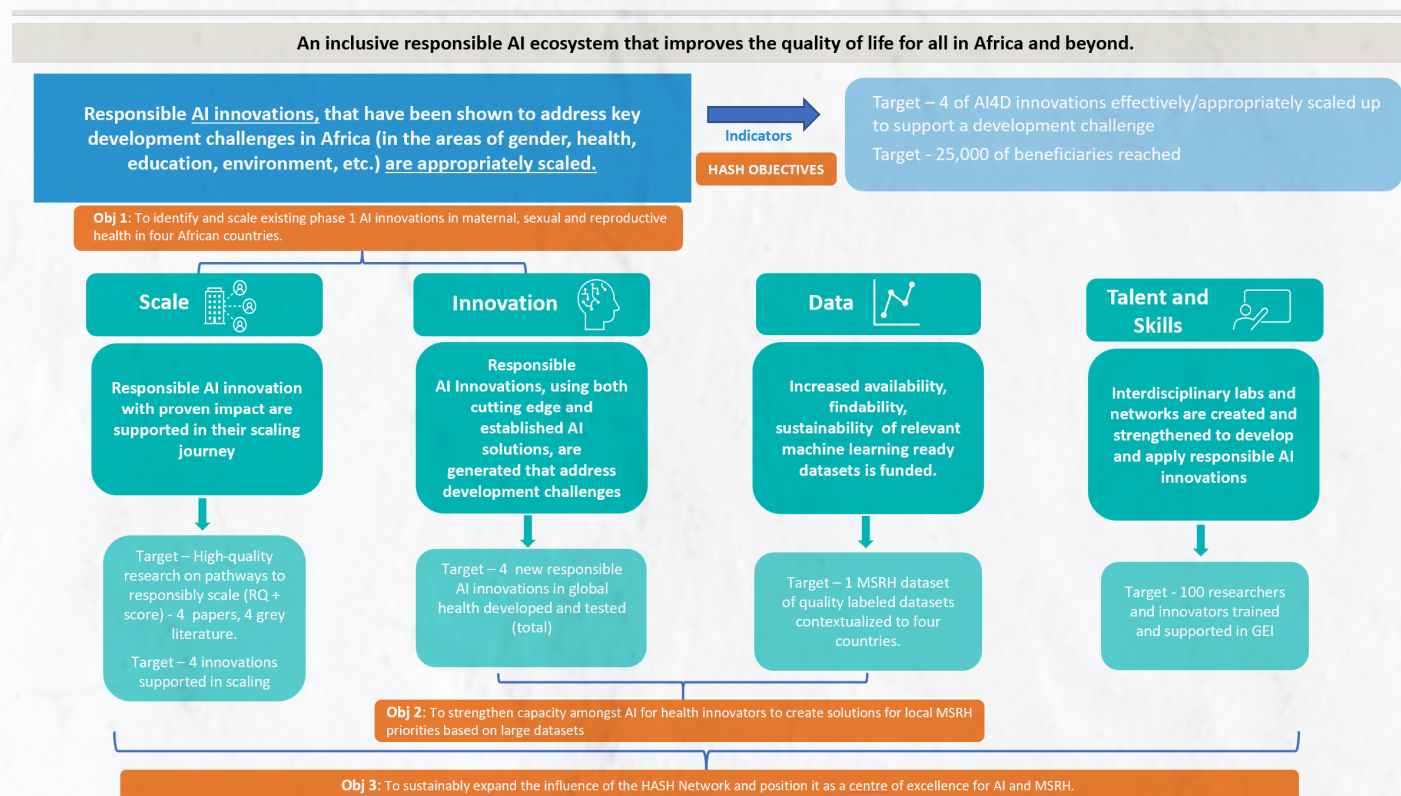
HASH phase II was funded from October 2024 and will run through to September 2026.

HASH Phase 2: Goals and Objectives

Building on the successes of Phase 1 and the insights from the SWOT analysis, Phase 2 aims to catalyse the development and scale of responsible AI solutions that address MSRH challenges in SSA. The objectives of Phase 2 include:

1. To identify and scale existing phase 1 AI innovations in maternal, sexual and reproductive health in four African countries.
2. To strengthen capacity amongst AI for health innovators to create solutions for local MSRH priorities based on large datasets.
3. To sustainably expand the influence of the HASH Network and position it as a centre of excellence for AI and MSRH

Figure 7: An illustration of how focus areas lead to the measurable outcomes, and how they connect to the objectives of HASH
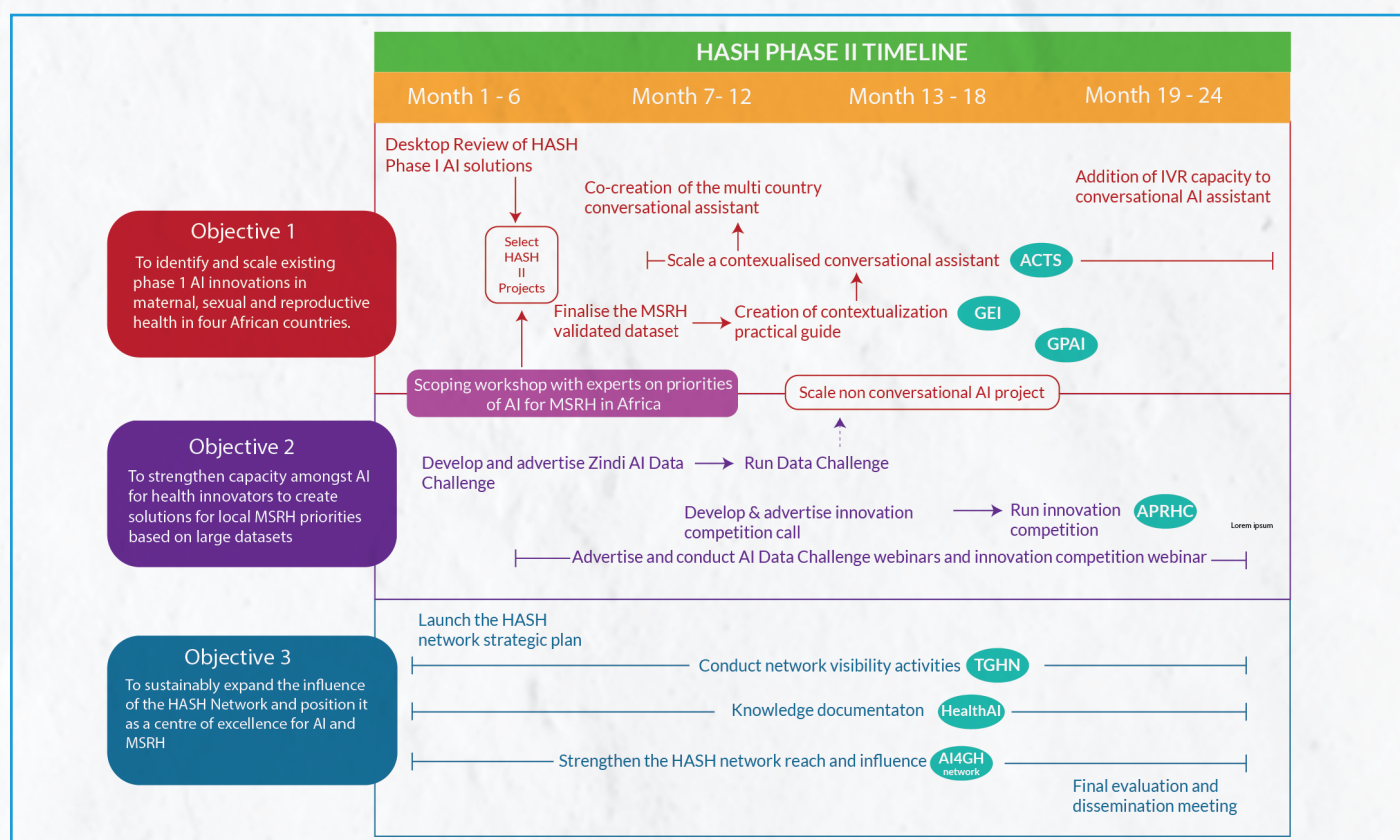
PHASE II NETWORK PRIORITIES AND FOCUS AREAS

As HASH Phase II progresses, a set of priorities and focus areas for the network have been identified through the stakeholder consultations. These aim to build on the successes of Phase I while addressing the pressing needs in MSRH. These priorities and focus areas reflect a forward-looking approach that emphasises an inclusive, sustainable, responsible, and contextualised AI ecosystem which improves the quality of life for all in Africa and beyond as outlined below.

- **Improving Access to health AI**

  We aim to address disparities in rural and urban healthcare delivery as well as expand care for vulnerable populations. By leveraging AI, HASH II seeks to address barriers to healthcare access through scalable and sustainable innovations.

- **Customization for Local Contexts**

  Recognizing the diversity of cultures, languages, and sexual health practices across SSA, HASH II prioritizes the development of AI solutions tailored to local needs. For instance, conversational AI tools will incorporate culturally sensitive and context specific sexual health language, and localized content to ensure their relevance and effectiveness.

- **Capacity Building**

  Strengthening the capacity of local researchers and practitioners is central to HASH II. This will involve targeted training programs, mentorship opportunities, and data challenges to upskill local researchers, practitioners and innovators in designing, deploying, and scaling AI technologies.

- **Scaling AI Tools**

  A key focus is the scale-up of AI-driven innovations to build interoperable systems that unify efforts across multiple countries. HASH II will emphasize collaboration between stakeholders to ensure the solutions are robust, adaptable, and beneficial across different health systems across the continent.

- **Knowledge Documentation and Dissemination**

  HASH II will also consolidate insights from AI solutions and foster knowledge-sharing through peer-reviewed publications, policy briefs, toolkits, stakeholder engagements, and the HASH Network platform, positioning the initiative as a thought leader in AI and MSRH.

Target Membership

Initially, the HASH Network comprised the HASH Secretariat, the HASH sub-grantees, the Management Committee, and the Project Advisory.

The HASH Network seeks to support the growth of responsible AI for MSRH in SSA. This mandate is at the intersection of two distinctly different yet interconnected fields of AI and health. Additionally, responsible AI, by definition, requires the input of a wide range of stakeholders, including ethicists, technologists, medical professionals, legislators, and community representatives. Therefore HASH seeks to benefit from a multidisciplinary membership ranging from students - particularly those in tertiary institutions who are eager to learn about and contribute to the growing field of AI for health, researchers, practitioners, middle managers and C-suite leadership.

Within the field of AI and computer science, this will include

| **Computer scientists** | **Data scientists** | **Software engineers** | **Engineers** |
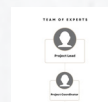
HASH will also engage vulnerable and underserved populations as indirect beneficiaries by ensuring that AI tools are contextualised to address specific MSRH challenges in diverse communities. This includes youth, women, and rural populations who are often disproportionately affected by poor reproductive health outcomes.

By fostering this multidisciplinary and inclusive network, HASH aims to create sustainable, locally relevant, and ethically designed AI solutions that improve MSRH outcomes across the SSA region and beyond.

Implementation Strategy

Main Activity	Sub activities
Monitoring the impact and influence of the HASH network among external partners	1. Monitoring and documenting mentions, citations, and recognition of the HASH Network in events, publications, and media. 2. Tracking the download and usage of HASH network open-access materials (e.g., datasets, frameworks) by external stakeholders
Operationalising the HASH Network Clubs	Gender, Equity and Inclusion club 1. Organizing writing workshops and mentorship sessions to support members in developing and submitting manuscripts focused on GEI in MSRH 2. Conducting collaborative meetings with experts to refine and implement a framework for applying GEI principles in MSRH research and practice. Stakeholder engagement club 1. Organizing and participating in strategic events to amplify the HASH Network's impact and visibility 2. Conducting outreach efforts to connect with and involve key stakeholders in HASH initiatives 3. Fostering new partnerships and collaborations through networking and showcasing activities. 4. Establish a stakeholder engagement strategy framework that includes stakeholder mapping, engagement frequency, outcome indicators, and mechanisms for policy dialogue. 5. Introducing a structured feedback mechanism to assess the effectiveness of engagement events and improve future outreach (e.g. short surveys, debrief meetings, or feedback forms). 6. Formalising a Youth and Emerging Innovators Forum within the Network. This platform could amplify the voices and contributions of students and early-career professionals and strengthen the talent pipeline for AI in MSRH.

Main Activity	Sub activities
	Scientific Communication Club 1. Preparing and submiting high-quality concepts and proposals to reputable publishers to advance AI and MSRH research. 2. Leading efforts to establish special issues or calls for research submissions focused on HASH-related themes. 3. Facilitating the publication of HASH-related research in journals, books, and special issues to enhance knowledge dissemination. Capacity Building Club 1. Conducting training sessions for clinicians, leaders, and policymakers to enhance their understanding of AI and MSRH. 2. Ensuring high attendance, assessing satisfaction, and measuring knowledge improvement through feedback and evaluation. 3. Create and share relevant materials to support learning and application during training sessions. Dataset Club 1. Curating and making datasets available in the HASH repository for public and research use. 2. Gathering, refining, and sharing question-answer datasets to enhance knowledge accessibility. 3. Ensuring all studies and data-gathering efforts meet ethical standards and receive necessary approvals. 4. Facilitating data collection through community participation across diverse geographic regions and populations. 5. Submiting and publishing studies, guidelines, and methodologies to advance data-driven research.
Expanding funding Opportunities for HASH Network Innovations	1. Exploring grants, partnerships, and alternative funding sources beyond initial seed funding. 2. Supporting HASH Network innovators in securing financial resources to scale their solutions.
Fostering Strategic Partnerships and expanding Collaboration within the HASH Network	1. Initiating and managing partnerships across various clubs and organizations to promote innovation and knowledge exchange. 2. Actively recruiting new members from diverse disciplines to enhance the network's expertise and broaden its influence.. 3. Facilitating HASH Network members' involvement in organizing and contributing to AI-focused conferences and workshops.
Ensure Responsible AI Implementation and Ethical Compliance	1. Developing a comprehensive, standardized guidelines of ethical principles and practices for assessing AI projects. 2. Organizing training sessions on AI ethics for subgrantees to ensure understanding and adherence to responsible practices. 3. Implementing annual audits to assess the ethical compliance of AI projects, ensuring alignment with established guidelines.

ACTIVITY 1
HASH Network Clubs

Responsible partner - Club leads overseen by Network co-Chairs

The HASH network activities will be actualised through activities led by the HASH network clubs. During the HASH Phase 1 closeout meeting held in October 2024, Network club leads had the opportunity to pitch their ideas to attract new members to their clubs. They also used this opportunity to meet with their members and draw up plans for their activities. The way forward for each club is as follows:

Dataset club

- Facilitate access to trustworthy and high-quality datasets for AI and machine learning applications.
- Advocate for ethical and responsible data collection, storage, sharing, and usage practices.
- Explore partnerships to enhance data availability and interoperability in the African context.
- Develop guidelines and protocols to ensure datasets align with AI4D principles and health-sector requirements.

Capacity building club

- Organize training programs, workshops, and mentorship opportunities focused on AI, data technologies, and MSRH.
- Enhance the research and implementation capabilities of members across various disciplines.
- Creating resources and tools to support knowledge sharing and skill development.
- Build a pipeline of African talent proficient in AI for health.

Scientific communication club

- Translate complex research findings into accessible formats for diverse audiences, including policymakers, practitioners, and the public.
- Develop and implement strategies for publishing in reputable journals, presenting at conferences, and sharing via digital platforms.
- Promote HASH Network's brand and amplify its contributions to AI and health on the global stage.
- Foster internal communication to ensure members are updated on ongoing projects, findings, and opportunities.

Stakeholder engagement club

- Identifying and engaging with stakeholders, including governments, NGOs, healthcare providers, researchers, and communities.
- Building partnerships to support the adoption and scalability of AI-driven health solutions.
- Facilitating dialogue to ensure that the network's activities are aligned with stakeholder needs and priorities.
- Organizing forums, consultations, and events to foster collaboration and co-design initiatives.

Gender, Inclusion & Equity club

- Integrate gender-sensitive approaches in all phases of research, innovation, and implementation.
- Address barriers to gender equity in AI and data technology applications for MSRH.
- Promote the active participation of women and underrepresented groups within the network.
- Develop tools, frameworks, and policies to advance gender inclusivity in health interventions.

ACTIVITY 2
Resource Generation

Responsible persons - HASH secretariat, supported by Network Committee & HASH Advisory Committee

In order to support ongoing network activities HASH needs to generate funds. This could be for specific network clubs, for example funding for training and capacity building. We will look for opportunities such as US NIH funding for capacity development and data science in order to support further training.

HASH is in a good position to be a regional African partner for global research activities. IDI has strong grants management and sub-granting experience. This gives the opportunity for HASH to become a hub for managing other funding grants coming to the continent and manage these. An example of this is a recently awarded Bill and Melinda Gates grant for Maternal Ultrasound data collection to NAMII Nepal as the main grantee and HASH being the African partner to support Nigerian, Kenyan and Ugandan data collection.

Individual projects may commercialise their tools and then become sustainable through their own grant funding beyond HASH. We will work with the AI4D wider team to support this commercialisation skills and capacity building.
The HASH secretariat will regularly review funding organizations' websites and subscribe to their newsletters to be informed about upcoming funding opportunities. Additionally, we will engage with other global networks and attend relevant conferences such as AI in Africa to provide insights into new funding avenues and collaborative possibilities.

ACTIVITY 3
Partnerships and Collaboration

Responsible persons - HASH secretariat, supported by Network Committee & HASH Advisory Committeeory Committee

The HASH Network recognizes that creating impactful AI innovations that improve health outcomes and using AI responsibly in health systems requires strong partnerships and teamwork. . By collaborating with universities such as the University of Lagos and the University of Embu, research groups like Research ICT Africa, and global organizations like NAAMII—all based in the Global South, HASH hopes to build a network that encourages sharing knowledge, resources, and ideas to solve health challenges in low- and middle-income countries (LMICs).

HASH has and actively seeks to develop partnerships and collaborations that align with its value proposition of ''Creating a collaborative network for developing resilient and sustainable systems for Maternal Reproductive and Sexual Health (MSRH) through responsible AI''. These collaborations have been pivotal in expanding the network's influence and capacity to support the development of impactful and responsible AI innovations.The network's collaborative efforts span across various regions, fostering partnerships that drive AI innovations in health systems. The following are examples of our active collaborations that will continue through this strategic plan to help us realise our objectives.

Figure 8: Geographical Distribution of HASH Network Partnerships and Collaborations
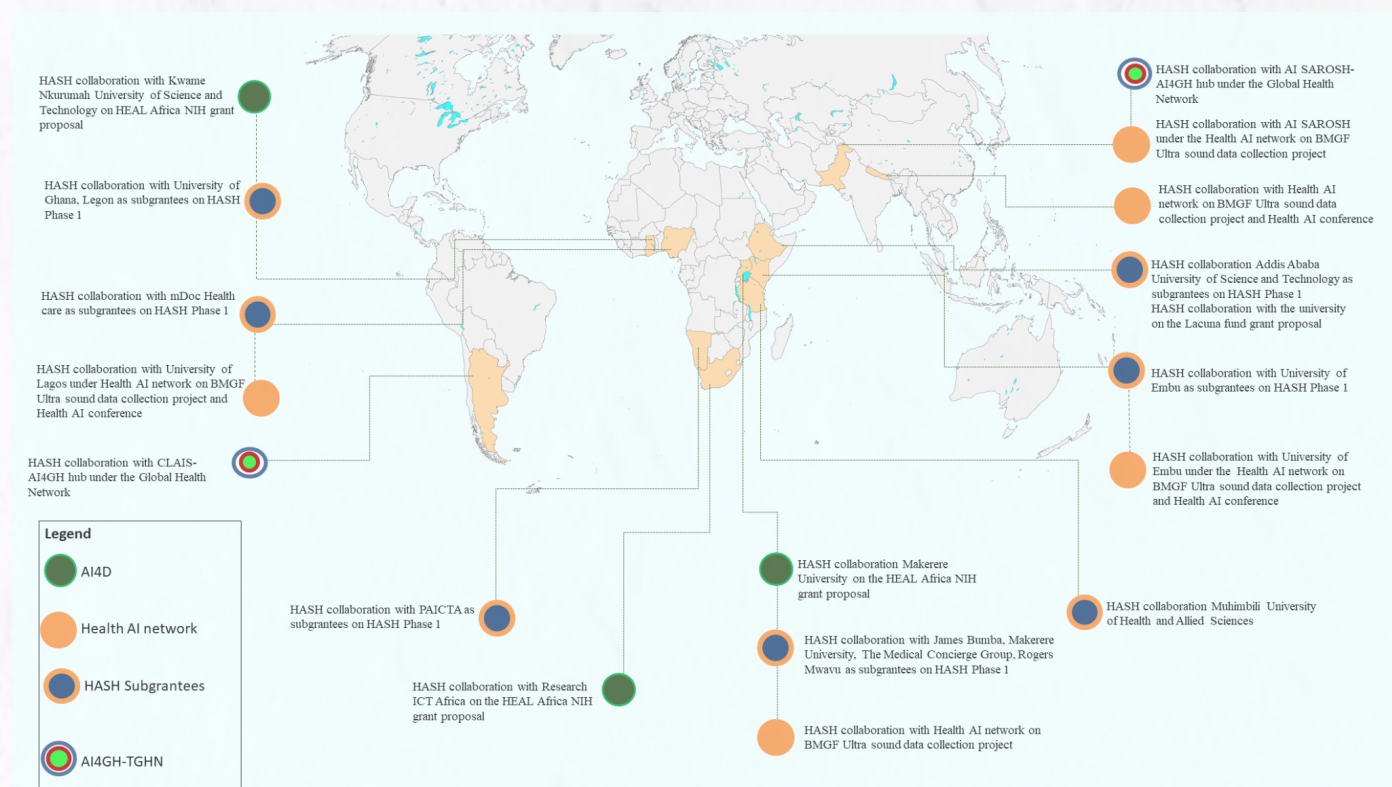
1. AI4D Hubs Collaboration

Following the AI4D Inception Workshop in Dakar in November 2023, HASH formed strong networks with other AI4D hubs. This led to a joint grant application for the Global Health Policy and Systems Research (HPSR) Call under the National Institute for Healthcare and Research (NIHR).

- The consortium included HASH members—Infectious Diseases Institute (IDI) and Makerere University College of Computing and Information Science—alongside Kwame Nkrumah University of Science and Technology (RAIL) and the University of Cape Town (African Observatory on Responsible AI).
- While the application advanced to the second stage, it was unsuccessful. The group, however, remains committed to refining the concept for future opportunities.

2. HASH Subgrantee collaboration Initiatives

In June 2023, HASH facilitated a grant application to the Lacuna Fund involving IDI and three HASH subgrantees: mDoc Healthcare (Nigeria), Addis Ababa Science and Technology University (Ethiopia), and the University of Embu (Kenya).

- The proposal aimed to conduct community engagement and collect chatbot Q&A pair datasets in English, Luganda, Swahili, Amharic, and Pidgin to support the development of multilingual chatbots.
- Although the application was not successful, this initiative underscored HASH's commitment to multi-country collaborations and capacity building for AI-driven healthcare solutions.

3. Collaboration with The Global Health Network (TGHN) and AI4GH Hubs

With support from the International Development Research Centre (IDRC), HASH has cultivated strong ties with The Global Health Network (TGHN) and other IDRC regional hubs within the AI4GH group.

- HASH members have actively participated in global platforms such as Women Deliver 2023, the Canadian Conference on Global Health 2023, and the IDRC Brown Bag meeting in October 2023.
- In November 2023, HASH joined representatives from other AI4GH hubs in Nairobi to strengthen inter-hub collaboration and explore synergies for future projects. HASH co-organised contributions to the 2024 8th Symposium on Health Systems Research with the SRH hubs AI-SAROSH, GHAIN-MENA, and CLIAS.

4. AI in health Conference collaborations

HASH has actively partnered with AI4D, AI4GH regional hubs, and other organizations to host workshops, co-host events, and participate in panel discussions at AI-focused health conferences.

GITEX Africa Conference 2024, Marrakech, Morocco:HASH facilitated a certified workshop titled, "Championing Responsible AI for Healthcare in Africa" targeted non-technical individuals with interest in AI for Healthcare. The workshop comprised a series of sessions that aimed to educate and empower participants to engage with and advocate for responsible AI principles in their work and spheres of influence.

8th Symposium on Health Systems Research in Japan in November 2024: With support from IDRC, HASH partnered with other AI4GH hubs to organise and co-host two panel discussions.

HASH has actively participated in key health and AI conferences, including the Health Innovations Conferences in Uganda (2022 & 2024), AfricAI Conference in Kigali (2023 & 2024), Deep Learning Indaba in Senegal, 2024 and Health AI for All Conference in Nepal,2025, leveraging these platforms to share knowledge, strengthen collaborations, and expand its network. These engagements have enabled HASH to connect with strategic partners such as the Bill & Melinda Gates Foundation, GE Healthcare, and Africa CDC, fostering opportunities for innovation, advocacy, and the responsible adoption of AI in healthcare. These initiatives reflect HASH network's leadership in advocating for AI solutions that transform health systems in LMICs.

Moving forward, HASH will continue to strengthen partnerships and collaborations that promote responsible development of AI solutions and their in healthcare. The network are founder members of the Health AI Network (HAInet) a global South led initiative promoting development of south owned AI tools in health and an annual Health AI Conference (HAIcon). The network will work with global and regional AI in health hubs, research institutions,innovators, communities and policymakers to drive innovation, support responsible AI development and use, and ensure lasting impact.

ACTIVITY 4
Ensuring Responsible AI Ethical Guidelines & Compliance

Responsible persons - Club leads overseen by Network Co-Chairs and grantee project leads

Responsible AI is a core network value. We will work with our membership to build capacity and create awareness of responsible AI in the following ways.

Data Ethics

The HASH Network emphasises the importance of data ethics in its operations. Data collection processes must involve obtaining informed consent from all participants, with clear explanations regarding how the data will be used, stored, and shared. Privacy and confidentiality are paramount, necessitating anonymising and securely storing all data, particularly sensitive health information. The data-sharing protocol must prioritize ethical considerations, respect data sovereignty, and comply with international and local laws. Transparency in data sourcing, usage, and algorithms is also essential, with an emphasis on disclosing any biases or limitations in datasets or AI models.

Responsible AI Development

AI models developed within the HASH Network should be free from gender, racial, and cultural biases to ensure equity in healthcare applications. Efforts must be made to ensure that datasets and AI models are representative of diverse populations, especially vulnerable and underserved groups. Accountability mechanisms should be clearly defined, ensuring that humans remain in control of decision-making, particularly in critical health scenarios. Additionally, AI solutions must be interpretable and understandable by end-users, including healthcare providers and patients, to maximize their usability and trustworthiness.

Equity and Inclusivity

Equity and inclusivity are at the core of HASH's mission. The network integrates gender equity in AI solutions, prioritizing the health challenges faced by women and addressing MSRH concerns. Solutions are designed to meet the needs of marginalized and vulnerable groups, ensuring equitable access to AI-driven interventions. The HASH Network also promotes diversity by involving members from different disciplines, regions, languages (Anglophone and Francophone), and levels of expertise, fostering a truly inclusive environment.

Compliance with Regulations

The HASH Network adheres to national and regional regulations, including Kenya's Data Protection Act, Nigeria's NDPR, and South Africa's POPIA, among others. Furthermore, its activities align with international ethical frameworks such as the GDPR for data protection and WHO guidelines for health innovation. The network also advocates for the development of AI regulations and standards across Africa while adhering to emerging best practices for ethical AI implementation.

Community Engagement & Social Responsibility

Community engagement is a fundamental principle of HASH's approach. The network actively involves communities in the design and implementation of AI solutions to ensure they are relevant and culturally appropriate. Efforts are focused on reducing disparities in health outcomes through targeted interventions that prioritize underserved communities. Additionally, HASH ensures that communities and stakeholders share in the benefits of AI innovations, including financial, technological, and social gains

Research Ethics

All research activities conducted by HASH must receive necessary ethical approvals from recognized Institutional Review Boards (IRBs) or ethics committees. Potential conflicts of interest among network members and collaborators should be identified and addressed. It is also critical to ensure that AI technologies developed for health applications are not repurposed for harmful uses, such as surveillance or discrimination.

Sustainability & Environmental Responsibility

HASH aligns its activities with relevant Sustainable Development Goals (SDGs), particularly those focusing on health (Goal 3), gender equality (Goal 5), and reduced inequalities (Goal 10). To minimize environmental impact, the network encourages the use of energy-efficient algorithms and infrastructure in AI development, promoting sustainable innovation.

Continuous Monitoring & Improvement

To ensure ongoing adherence to ethical guidelines, HASH will establish an internal ethical review process for sub-grantee projects; we will consult network members on whether this should be a new club, or part of the usual M&E process. Mechanisms will be implemented to enable stakeholders to provide feedback on ethical issues, fostering continuous improvement in practices. Regular audits will also be conducted to evaluate compliance with ethical guidelines and regulations, ensuring the network maintains the highest standards of integrity.

CONCLUSION

It is vitally important that African voices are represented in the global race to integrate AI into our lives. Health provides an excellent opportunity for this for several reasons. The ethical structures around health innovation are well developed and regulated; there is an increasing amount of health digital data available in africa; our populations are growing and therefore there is a huge need gap for health solutions. Through implementation of this strategic plan the HASH network aims to be a key player in the development and scale of context appropriate AI technologies in MSRH in Africa through partnerships, capacity building and implementation research.

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NAME	ORGANISATION	COUNTRY
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Dr Aima Adebo	mDoc Healthcare	Nigeria
Caesar Wisdom Favor	Infectious Diseases Institute	Uganda
Elizabeth Oseku	Infectious Diseases Institute	Uganda
Dr Martin Balaba	Infectious Diseases Institute	Uganda
Eva Nakibuuka	Infectious Diseases Institute	Uganda
Joshua Beinomugisha	Infectious Diseases Institute	Uganda
Moreen Nanyonjo	Infectious Diseases Institute	Uganda
Petra Mariaria Kerubo	Infectious Diseases Institute	Uganda
Tracy Nansamba	Infectious Diseases Institute	Uganda
Veronica Hope Asibo	Infectious Diseases Institute	Uganda
Clare Kahuma Allelua	Infectious Diseases Institute	Uganda
Henry Semakula	Infectious Diseases Institute	Uganda
Hillary Kaluuma	Infectious Diseases Institute	Uganda

APPENDIX

1. Key Performance Indicators (KPIs)

The following indicators will be used to monitor HASH Network activities. While a general review of these indicators will be conducted quarterly, critical assessments will be carried out based on the specific measurement frequency of each indicator. The KPIs apply both to the overall network and individual clubs.

Activity	KPI	Target	Data Source	Frequency of measure
Activity 1: Monitoring the impact and influence of the HASH network among external partners				
General HASH Network	Number of mentions, citations, or recognition of the HASH Network in events, publications, or media.	At least two mentions, citations or recognitions per quarter	Event summaries, publication tracking tools	Bi-annually
	Number of open-access materials (e.g. datasets, frameworks) downloaded or utilized by external parties	At least two network resources cited in external works annually	HASH website repository analytics, feedback forms	Annually
Activity 2: Operationalizing the HASH Network Clubs				
GEI Club	Number of manuscripts submitted or published with focus on GEI in MSRH	At least two publications every year	Journal records, internal reports	Annually
	A developed framework for applying GEI in MSRH	Completed framework document	Club reports, document repository	Bi-annually
	Number of webinars or learning sessions conducted focusing on GEI themes.	At least one session per quarter	Webinar reports	Quarterly
Stakeholder Engagement Club	Number of events attended or organized	At least one event attended every quarter	Event reports, attendance lists	Quarterly
	Number of stakeholders engaged	At least 15 stakeholders engaged every quarter	Event documentation, Attendance lists	Quarterly
	Number of partnerships or collaborations initiated as a result of showcasing activities	One signed MoU, collaboration agreement	Partnership records	Annually
	Proportion of stakeholder activities with completed feedback assessments	At least 70% of activities	Event documentation or reports	Quarterly

Scientific Communication Club	Number of concepts or proposals submitted to reputable publishers	At least one proposal submitted per quarter	Grant portals, internal tracking tool, Grant register	Quarterly
	Number of special journal issues or calls initiated	One special issue initiated	Publisher records, newsletters	Annually
	Number of HASH-related publications or accepted contributions to journals, books, or special issues.	At least two publications every year	Indexed journal databases	Annually
Capacity Building Club	Number of webinars or workshops organized for clinicians, leaders, and policymakers.	At least one session per quarter	Webinar logs, attendance lists	Quarterly
	Number of attendees per training session	At least 10 trainees engaged per session	Attendance lists	After each event
	Participant satisfaction scores & knowledge improvement	Feedback survey report	Post-event survey reports	After each event
	Number of resource materials created and disseminated during sessions	At least two training materials disseminated	Online resource repositories	Annually
Dataset Club	Number of datasets published as open access in the HASH repository	One HASH priority dataset published	Repository database	Annually
	Total number of Q&A pairs collected and processed for public use.	At least 5000 Q&A pairs collected	Internal reports, Dataset	Bi-annually
	Number of studies and activities receiving ethical approval.	One study conducted	Ethics review boards, Approval letters	Annually
	Number of participants in crowdsourcing activities	At least 15 participants engaged in the activities	Crowdsourcing database, Participant list	Quarterly
	Number of geographic regions represented in crowdsourced data.	At least two Francophone and Lusophone countries engaged	Crowdsourcing reports	Annually

	Number of protocols or datasets-related studies submitted or published	One protocol submitted or published every two years	Journal databases	Annually

Activity 3: Expanding funding Opportunities for HASH Network Innovations

Resource Generation	Number of additional funding streams identified	At least one funding opportunities identified every quarter	Grant databases, finance reports	Bi-annually
	Proportion of the innovators in the HASH network who receive funding for scaling their innovations	At least 30% innovators receiving funding	Internal records	Bi-annually

Activity 4: Fostering Strategic Partnerships and expanding Collaboration within the HASH Network

Partnerships and Collaborations	Number of partnerships or collaborative projects across clubs	One Signed MoUs, collaboration agreement	Partnership records	Annually
	Percentage increase in the number of members and disciplines represented across the HASH Network.	At least 20% increase in member growth per year	Membership database	Annually
	Number of AI conferences where HASH network members support the organization	At least two conferences every year	Event documentation	Bi-annually

Activity 5: Ensure Responsible AI Implementation and Ethical Compliance

Responsible AI Ethical Guidelines & Compliance	An established standardized guidance document for assessing responsible AI	An approved guidance document	Internal records	At the end of the strategic plan year period
	Number of training sessions conducted on AI ethics for subgrantees	At least two sessions bi-annually	Training logs, feedback surveys	Bi-annually
	Percentage of AI projects audited for ethical compliance annually	100% audited rates	Compliance review reports	Annually

2. The Hash Subgrantee Inception Meeting Report 2022

Scan the code below to access the report. You can also read it <u>HERE</u>

3. Hash Network Stakeholder Interview Guide For Those Who Don't Know Hash

Presentation on HASH

1. We will start by collecting some demographic information:
- Country
- Profession

2. Are you aware of or are you working on any AI in MSRH projects?

3. What do you think the future of AI in MSRH might look like?

4. How might an AI4MSRH network contribute to this? E.g. structure, scope of work, membership, resources, value offered to members, products, services, etc

5. What other Networks or communities do you belong to or know of that are similar to HASH?

6. What might HASH be able to learn from those other Networks?

7. What suggestions do you have for us regarding:
- Increasing collaboration for AI innovators?
- Increasing collaboration between the AI and healthcare communities
- Increasing collaboration between AI innovators and policy makers
- Increasing visibility of AI research outputs developed within our Network to encourage future opportunities

8. Do you have any questions for us?

4. Hash Network Stakeholder Interview Guide For Those Who Know Hash

Presentation on HASH

1. We will start by collecting some demographic information:
- Country
- Profession
- Affiliation to HASH

2. Are you aware of or are you working on AI in MSRH projects?
3. What do you think the most impactful activities of the HASH Network have been?
- e.g. giving visibility to members, capacity building,

4. What is going well?
- Generally e.g. leadership, value offered to members, clubs, Network objectives etc.
- Communications e.g. website, visibility of Network and members, etc.
- Scale up funding
- Stakeholder engagement e.g. frequency and forms of engagement with members, membership, opportunities for collaboration and networking, etc
- Capacity building

5. What do you think the future of the HASH Network should look like? E.g. structure, reach, scope of work, membership, resources, products, services, etc.

6. What new ideas would you like us to explore?
- Are there any new activities would you like us to explore?

7. What suggestions do you have for us regarding:
- Increasing collaboration for AI innovators?
- Increasing collaboration between the AI and healthcare communities
- Increasing collaboration between AI innovators and policy makers
- Increasing visibility of AI research outputs developed within our Network to encourage future opportunities

8. What other Networks or communities do you belong to or know of that are similar to HASH?

9. What might HASH be able to learn from those other Networks?

10. Do you have any questions for us?