



**Report of Digital Health Convergence Workshop in
Tanzania, Shared Implementation Plan andTAHIA
Launching**

*The Roles of Health Informatics Workforce in
Strengthening the Health System in Tanzania*

July 31 - August 4, 2023

Protea Hotel Dar es Salaam Courtyard





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Acronyms

Acronym	Definition
TAHIA	Tanzania Health Informatics Association
CW	Convergence Workshop
WHO	World Health Organization
ITU	International Telecommunications Union
PORALG	President's Office Regional Administration and Local Governments
MoH	Ministry of Health
ICT	Information and Communication Technology
DICT	Director Of Information and Communication Technology
HELINA	Health Informatics in Africa
HJFMRI	Henry Jackson Foundation Medical Research International
UCSAF	Universal Communications Service Access Fund
PHC	Primary Health care
USSD	Unstructured Supplementary Service Data
TzHEA	Tanzania Health Enterprise Architecture
GoTHoMIS	Government of Tanzania Hospital Management Information System
USAID	United States Agency for International Development
KOICA	Korea International Cooperation Agency
UNICEF	United Nations International Children's Emergency Fund
IDSR	Integrated Diseases Surveillance and Response
eIDSR	Electronic Disease Surveillance and Response
e-EBS	Electronics Event Based Surveillance
AI	Artificial Intelligence
CPD	Continuing Professional Development

GHSC	Global Health Supply Chain
MUHAS	Muhimbili University of Health and Allied Sciences
KEHIA	Kenya Health Informatics Association
eLMIS	Electronic Logistics Management Information Systems
MSD	Medical Stores department
ICD	International Classification of Diseases
EMR	Electronic Medical Records
NACTE	National Council for Technical Education
TCU	Tanzania Commission for University
API	Application Programming Interface
HSSP V	Health Sector Strategic Plan V
FFARS	Facility Financial Accounting and Reporting System
IMES	Integrated Monitoring and Evaluation System
EAC	East Africa Community
MCT	Medical Council of Tanganyika
TNMC	Tanzania Nursing and Midwifery Council
HRHIS	Human Resources for Health Information Systems
IMIS-CHF	Insurance Management Information System- Community Health Fund
CPD	Continuing Professional Development
NECTA	National Examinations Council of Tanzania
HRH	Human Resources for Health

Foreword

In 2019, Tanzania embarked on a transformative journey to revolutionise its healthcare system by implementing a comprehensive digital health strategy (2019 to 2024). The strategy aimed to leverage digital technologies and data-driven solutions to ensure better health outcomes through a digitally enabled health system. As the implementation of the strategy nears its end, the Ministry of Health (MoH), with financial support from HELINA and other partners through the Tanzania Health Informatics Association (TAHIA), in collaboration with different stakeholders, conducted a Convergence Workshop (CW) to discuss the priorities, assess implementation progress, challenges and barriers encountered and provide recommendations for fast-tracking the implementation, identify new opportunities, and priorities and investment for the next five years.

The Tanzania Digital Health Strategy stipulates five strategic goals and ten strategic objectives. The CW provided a platform for digital health stakeholders to critically review each

of the stipulated strategic objectives to determine progress made, opportunities and potentials for harnessing emerging digital technologies in addressing health system challenges and facilitating health service delivery in Tanzania. Thus, the CW was conducted for three days, providing ample time for stakeholders to collaboratively devise an implementation and investment plan to address the identified gaps and the prioritised digital health initiatives in the health system. Alongside the CW was a very significant event which saw the official launching of TAHIA. The Deputy Minister of Health officiated this event, Dr. Godwin Molllel (MP), on behalf of the Tanzania Minister for Health. This report presents highlights of the CW and the TAHIA launching event, with more than 124 participants from around Tanzania in attendance. The theme of the Convergence Workshop and TAHIA launch event was: ***“The Role of Health Informatics Workforce in Strengthening the Health System in Tanzania”***.

The Tanzanian Government (MoH & PORALG) wishes to express profound gratitude to the executive sponsor: HELINA, and the premium sponsors: Henry Jackson Foundation Medical Research International (HJFMRI), the German Agency for International Cooperation (GIZ), and Universal Communications Service Access Fund (UCSAF) for their invaluable financial support, which has played a significant role in making the event a resounding success. Likewise, the organising committee for the CW and TAHIA launching event extends their gratitude to all participants for their contributions and unwavering support that led to the event's success. We trust that you found the event captivating, enlightening, and filled with optimism for promoting digital health innovations for achieving improved health outcomes in Tanzania.



Silvanus S. Ilomo
Director of ICT, Ministry of Health



Dr. Godwin Molllel (MP), the Deputy Minister of Health and guest of honor, showcasing TAHIA's Constitution and Bylaws during the official launch of TAHIA. On his left is Steve Wanyee, the President-Elect of HELINA, and on his right is the representative from

Executive Summary

This summary reports on the key presentations and discussions at the launch event for the "CW and TAHIA" initiatives. The focus was on Tanzania's digital health efforts, exploring their progress, achievements, hurdles, and future plans.

- ✚ **National Digital Health Strategy 2019-2024:** The Ministry of Health (MoH) outlined a comprehensive strategy with five goals for strengthening digital health in Tanzania. These include improved governance, information exchange, data-driven decision making, resource availability, and better patient experiences. While implementation is ongoing, a full assessment is pending. However, the MoH estimated the overall implementation status to be over 50%;
- ✚ **Tanzania Health Enterprise Architecture (TZHEA):** This initiative aligns technology investments with healthcare goals. Achievements include implementing the Health Information Mediator (HIM) and the Muungano Gateway. Challenges involve technical expertise, resource limitations, and outdated systems;
- ✚ **Primary Health Care (PHC) Digital Transformation:** A roadmap for PHC digitalization outlines six priorities, including data management, digital systems, integration, infrastructure, rollout, and workforce capacity. While GOTHOMIS, a digital health information system, has been adopted in over 25% of facilities, resource constraints and low technology uptake remain obstacles;
- ✚ **Disease Surveillance and Response:** The electronic Integrated Disease Surveillance and Response (eIDSR) system is crucial for timely reporting of infectious diseases. Challenges include limited integration with other systems and low use of electronic Event-Based Surveillance (EBS);
- ✚ Opportunities exist for improvement using artificial intelligence (AI) and community engagement.
- ✚ **Health Supply Chain Management:** The redesigned electronic Logistics Management Information System (eLMIS) aims to improve data use in managing health supplies. Challenges include scaling up electronic medical records (EMRs) and the need for better analytics;
- ✚ **Digital Client Feedback Systems:** A system to capture feedback from mothers on their experiences during pregnancy and childbirth is operational in five regions, with plans for expansion to 14 more regions and Zanzibar;
- ✚ **Data Use and AI in Healthcare:** The MoH emphasized the importance of reliable data systems, data interoperability, and clear guidelines for data use to enhance decision-making. The discussion also highlighted the growing role of AI in areas like cancer screening, with challenges including the lack of AI regulations and limited AI expertise in Tanzania;
- ✚ **Digital Solutions for Health Workforce:** The Human Resources Health Information System (HRHIS) is a web-based system for managing health workforce data. Data quality remains a challenge due to issues with source systems;
- ✚ **Interoperability and Standards:** The adoption of FHIR (Fast Healthcare Interoperability Resources) and WHO SMART (Standards-based, Machine-readable, Adaptive, Requirements-based, and Testable) guidelines for interoperability was presented as a best practice. The World Health Organization (WHO) plans to collaborate with local partners on capacity building in this area;
- ✚ **Importance of Health Informatics Professionals and Associations:** The vital role of health informatics professionals and associations like TAHIA in building capacity, conducting research, and fostering collaboration was acknowledged. Challenges include a limited number of qualified professionals; and
- ✚ **Digital Health Leadership and Governance:** Collaboration between local stakeholders and capacity building were highlighted as crucial for successful digital health initiatives.

Overall, the event provided valuable insights into Tanzania's digital health journey. There's a clear focus on leveraging technology and data to improve healthcare delivery. However, challenges remain, and continued

collaboration, capacity building, and stakeholder engagement are essential for successful digital health transformation.



Erick J. Kitali
Director of ICT, PORALG

Workshop Objectives

The Chairman of the Digital Convergence Workshop, Dr. Felix Sukums, shared the workshop objectives where he emphasised the need to align digital health interventions with the WHO health systems building blocks and align with the WHO-ITU National eHealth Strategy Toolkit recommendations. The process should employ the Principles for Digital Development while contextualising it to the Health Systems in Tanzania.

Goals

- ✚ Enhance understanding and implementation of the National Digital Health Strategies.
- ✚ Develop strategies for strengthening the capacity of health informaticians in Tanzania. Promote collaboration in the digital health transformation in Tanzania.
- ✚ To review progress on the implementation of the Tanzania digital health strategy 2019-2024 and the digital health investment roadmap and PHC digital transformation.

The 2023 Digital health convergence workshop focused on bringing together health informatics professionals, development partners, government and the digital health community at large so that we can think and reflect together on the implementation of the National Digital Health Strategy (2019-2024). Alongside the CW was the official launch of the Tanzania Health Informatics Association (TAHIA).

CW Objectives

The objectives of the CW included the following:

- ✚ To review and update the inventory of current and planned digital health interventions using the Tanzania Digital Health Atlas.
- ✚ To sensitise partners and stakeholders on the importance of digital health governance, architecture, program management, and standards.
- ✚ Promote dialogue among health informaticians, government representatives, industry leaders, and academia.
- ✚ To discuss the roles of health informaticians in contributing to the implementation of National Digital Health Strategies
- ✚ Identify key competencies and skills needed in the health informatics workforce to strengthen the health system.
- ✚ To develop an action plan on how the TAHIA, in collaboration with partners, can contribute to enhancing the capacity and role of health informatics in strengthening the health system.

Expected Outputs:

The following are the expected outputs from the five days convergence workshop:

- ✚ Agree on priority areas and an approach for addressing identified Digital Health Strategy implementation gaps
- ✚ Ministry of Health implementation plan, which clearly articulates the priorities and timelines
- ✚ An investment plan with preliminary commitments from partners and stakeholders to support the implementation.

Executive Sponsors



Premium Sponsors



Day 1 - Summary & Highlights

31st July 2023

Opening of the Workshop

Mr. SOSTHENES BAGUMHE, the TAHIA President, commenced the event by expressing his gratitude to the organising committee for their dedication and commitment to making the workshop happen. He also extended thanks to HELINA, GIZ and other partners for their financial and technical support. Mr Bagumhe emphasised the significance of said convergence workshops, as they create a platform for gathering ideas from diverse stakeholders. He highlighted that recommendations from the convergence workshop will help the government and development partners to enhance their strategies in digital health transformation. Following his address, Mr Bagumbe warmly welcomed the Guest of Honour, Mr. Tumaniel Macha, Assistant Director for Policy and Planning at the Ministry of Health, to officially open the first Digital Health Convergence Workshop in Tanzania.



Mr. Macha expressed his heartfelt appreciation to the TAHIA leadership and organising committee for their professionalism and dynamism in preparing the workshop. He praised the team work and the spirit of unity which made the event possible. In his welcome speech, he highlighted the crucial role of Health Informatics in strengthening the health system in Tanzania.

Furthermore, Mr. Macha conveyed his gratitude to the TAHIA leadership for extending an invitation to be a guest of honour at this significant event. He emphasised the potential of TAHIA in aiding digital health initiatives to effectively monitor and evaluate the health information system, enabling the government to make informed decisions. Mr Macha urged TAHIA to focus on initiatives that strive to enhance the quality of care across all healthcare system levels.

“We should engage individuals involved in data and reporting right from the start of the digital solution development process.”

Mr. Macha highlighted a significant issue of fragmented health information systems, emphasising that TAHIA should lead in addressing this challenge. He insisted on the importance of involving all stakeholders, including data consumers from monitoring and evaluation teams and health facilities, as they are the end users of the digital solutions.

To illustrate the current situation, Mr. Macha gave an analogy of a water pipe and water. He said

“the digital solutions are the pipes, and data are the water, so the current situation is the same like having a good network of water pipes but people are complaining there is now flowing out of the pipe”.

Welcome speech

Remarks from the Director of ICT - MOH

Silvanus Ilomo, ICT Director MOH is one of the founding members of TAHIA, he expressed his dedication to working closely with TAHIA by making an inclusion with private sector, academicians, implementers, innovators and other digital health key stakeholders. He emphasised the importance of collaboration among stakeholders to effectively implement digital health initiatives. Also he did emphasise in all engaged stakeholders to follow government strategic direction set by MOH and eGA, also align to deployed digital health frameworks like Digital Health Strategy, Enterprise Architecture, Investment recommendations roadmap etc.

Remarks from the Director of ICT - PORALG

As one of the founding members of TAHIA, the representative from PO-RALG expressed his dedication to working closely with TAHIA to achieve the country's vision in digital health. He emphasised the importance of collaboration among stakeholders to effectively implement digital health initiatives across Tanzania.

PO-RALG has taken significant steps in this regard by preparing a Primary Health Care (PHC) digital health Implementation Roadmap. This roadmap will serve as a comprehensive guide to facilitate the successful implementation of various digital health projects and initiatives. By having a well-defined plan in place, they aim to streamline the adoption of digital health technologies and ensure that these innovations contribute meaningfully to the improvement of primary healthcare services throughout the country.

Remarks from the GIZ Representative

In his remarks, the GIZ Representative expressed a strong commitment to ongoing collaboration with TAHIA in utilising digital health to strengthen the healthcare system. GIZ's focus for the upcoming health project will be on Korogwe district hospital in Tanga region. The goal is to transform the hospital into a case study by providing comprehensive support for full digitalisation across all points of service delivery and governance.

Through this partnership, GIZ aims to conduct digital health activities and research that will benefit the hospital and contribute to advancing digital health solutions in Tanzania. By embracing digital technologies, the hospital can improve healthcare service efficiency, data

management, and decision-making processes, ultimately enhancing the overall quality of care for patients and communities in the region.

Remarks from HELINA President-elect

During his address, the HELINA President-elect conveyed the organisation's technical support to TAHIA in the preparation of the convergence workshop. HELINA's assistance has been instrumental in ensuring the success of this event, which aims to bring together experts and stakeholders in the field of digital health.

The HELINA President-elect proudly referred to TAHIA as the Tanzanian think tank in digital health. He highlighted that TAHIA comprises individuals from diverse disciplines, sectors, and backgrounds, bringing together a wealth of experience and expertise. This diversity within TAHIA allows for a comprehensive and multifaceted approach to tackling the challenges and opportunities in digital health in Tanzania.

By fostering collaboration and knowledge-sharing among professionals with different perspectives, TAHIA is well-positioned to drive innovative solutions and advancements in the digital health landscape, ultimately benefiting the healthcare system and the population of Tanzania.

Remarks from the Director of ICT Ministry of Health, Zanzibar

In his speech, the DICT Zanzibar MoH revealed that Zanzibar has been actively implementing its digital health strategy since 2020. As they progress, they have scheduled a midterm review to assess the impact and progress of their digital health initiatives.

He expressed gratitude for the opportunity to be part of TAHIA, acknowledging the privilege of collaborating with the think tank in digital health. The government of Zanzibar considers digital transformation a top priority, and being part of TAHIA allows them to work in tandem with other experts and stakeholders in this field.

The representative emphasized the importance of involving data professionals in evaluating various digital health initiatives. By having data experts participate in the evaluations, TAHIA can ensure that the assessments are thorough, accurate, and data-driven, leading to better decision-making and improvement in digital health implementation.

He sincerely thanks the Ministry of Health and PO-RALG for their invaluable support in Zanzibar's digital health transformation journey. He stressed the strength of unity and collaboration, declaring that together, they form an informatics family, and through collective efforts, they can achieve great strides in advancing digital health in Tanzania.

Remarks from Senior Health Officer (Digital Health) at the East Africa Community (EAC)

Eng. Andrew Kajeguka emphasised the publicity of what we do/innovate as Tanzanians.

“Tanzanians, we do a lot in Research and Innovation, but we don’t publish and register patent rights of our innovation products.”

He also explained that the EAC commitment to strengthening human resources that the community is ready to second digital health experts to the Ministry if the need arises is justified.

Convergence Workshop Presentation Sessions

Presentation 1: Tanzania Digital Health Strategy 2019-2024: Priorities, Achievements and Challenges

Presenter: Walter Ndesanjo, Ministry of Health, Assistant Director of ICT

Mr. Ndesanjo explained the journey of the development of the National Digital Health Strategy 2019-2024 and its current status that the process to develop the strategy included desk review of various documents and consultative meetings with various stakeholders.

The strategy has five strategic goals:

- ✚ Strengthened digital health governance and leadership
- ✚ Standardized information exchange
- ✚ Health providers and managers empowered to take evidence-based actions
- ✚ Sustained availability of health resources
- ✚ Improved client experience through efficient provision of quality health services



Figure 1: Tanzania Digital Health Strategic Priorities

He also expounded that the comprehensive implementation status of the strategy is awaiting the assessment expected to be conducted later this year. Though, basing on the previous National eHealth Strategy 2013-2018 and its implementation assessment report indicated that 55.5% of the planned targets were achieved.

Presentation 2: Tanzania Health Enterprise Architecture Blueprint

Presenter: Oswald Luoga, PATH

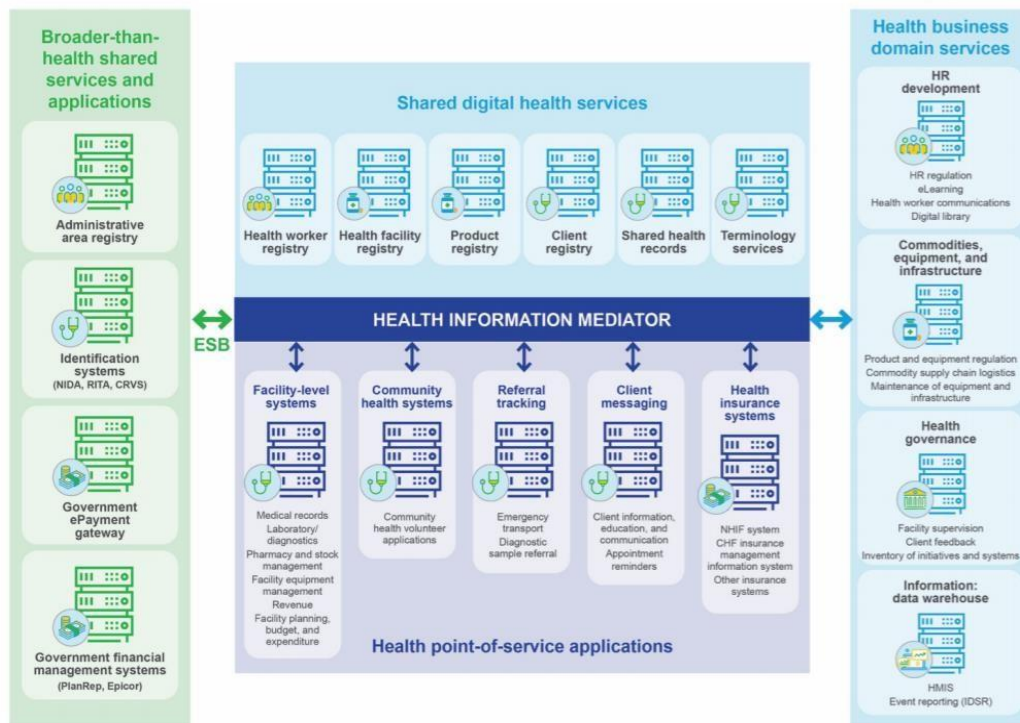
Mr. Luoga presented the status of the Tanzania Health Enterprise Architecture (TZHEA) implementation as one of the priorities set in the Digital Health Strategy. TZHEA helps an organisation achieve its business strategy by providing a clear view of how ICT investments should align with the business to achieve the organisation's goals.

He pointed out the success of TZHEA implementation as one of the digital health strategy priorities. The following are the benefits of TZHEA implementation in Tanzania:

- ✚ Improved client experience or satisfaction
- ✚ Efficient processes
- ✚ Reduced costs
- ✚ Attainment of strategic goals
- ✚ Standardized the exchange of health information

He also highlighted the achievements of Tanzania Health Enterprise Architecture so far that include

- ✚ Implementation of Health Information Mediator (HIM), a Health Information Exchange (HIE) platform, implemented in-line with the Application Architecture blueprint (See Figure 2) as presented in the TZHEA document.
- ✚ Muungano Gateway - An information exchange platform implemented in line with the TZHEA facilitating interoperability of several different information systems under PORALG.



Abbreviations: CHF = community health fund; CRVS = civil registration and vital statistics; ESB = enterprise service bus; HMIS = Health Management Information System; HR = human resources; IDSR = integrated disease surveillance and response; NHIF = National Health

Figure 2: Tanzania Health Information Exchange Architecture

He also highlighted some of the challenges that hinder the full operationalisation of the TZHEA that, include:

- ✚ Capacity of the technical team to implement the standards recommended by TZHEA
- ✚ Resource required to implement the recommended standards
- ✚ Most of the projects require a very short time to complete; hence technical team decide to proceed without standards
- ✚ Existence of legacy systems which does not aligns with the recommended Architecture

Presentation 4: Primary Health Care Digital Transformation in Tanzania: Priorities, Achievements and Challenges

Presenter: Baltazar Melchior, PORALG

Mr. Baltazar started by presenting the Primary Health Care (PHC) digital transformation roadmap in Tanzania (2023-2027). The roadmap is built along the National Digital Health Strategy priorities. The roadmap set out six (6) main priorities that include:

- ✚ Data Governance and Policy
- ✚ PHC digital systems
- ✚ Integration with digital systems

- ✚ Digital and data infrastructure
- ✚ Information systems rollout
- ✚ Health workforce capacity

He also highlighted the achievements made during the execution of the roadmap; these include

Over 1,555 (25%) facilities using GOTHOMIS out of around 6,271 facilities countrywide

Three active main versions of the GOTHOMIS in use include ver. 3, ver. 4 standalone, and ver. 4 centralised. The mobile version is suited for low-resourced (manpower, equipment & connectivity) facilities.

The supporting partners for these GoTHoMIS improvements include GIZ, USAID, KOICA, UNICEF, Global Fund, etc. He further explained the challenges that hinder digitalisation at the PHC level. These include:

- ✚ Limited resources
- ✚ Limited or inadequate healthcare infrastructure
- ✚ Inequality and disparities in the health workforce
- ✚ Limited information sharing
- ✚ Lack of emergency care and referral systems
- ✚ Low patient engagement and compliance

Presentation 5: Digitalization of disease surveillance and response in Tanzania

Presenter: Fidelis Ronjino, Ministry of Health

Mr. Fidelis presented on the digitalisation of disease surveillance and response in Tanzania. Disease surveillance is the process of watchfulness over the healthcare system for early response. He explained the importance of surveillance for notifiable diseases as stipulated by the WHO Integrated Disease Surveillance and Response (IDSR), *WHO, 1998*. WHO insists that member countries develop systems that will enable notifiable diseases to be reported daily and as they occur. Tanzania adopted the WHO guidelines, such that now the reporting frequency and timelines for the notifiable diseases are as follows:

- ✚ Immediate reporting - Immediate notifiable diseases - reported once they happen.
- ✚ Weekly reporting: By Monday before 3:30 PM every week.

The weekly reporting includes programmes or diseases e.g. Malaria. Now the Government has developed an electronic Integrated Disease Surveillance and Response (eIDSR) system. The system is accessible through the web, Android Apps, and Unstructured Supplementary Service Data (USSD).

Implementation of eIDSR

The system is rolled out countrywide, covering 26 regions (184 districts) and over 8,200 health

facilities in the country reported through eIDSR in Tanzania Mainland.

Challenges

- ✦ Limited integration with other sources of other early warning systems, e.g. climate changes, animal surveillance e.tc
- ✦ The use of artificial intelligence in detecting outbreaks comes not only from aggregate data trends but also from alerts from various sources such as climate change, events, and social media.
- ✦ Lack of integration and interoperability of eIDSR and other data systems, e.g. Laboratory systems and hospital management information systems (HoMIS)
- ✦ Low utilisation of electronic Event-Based Surveillance for early detection.
- ✦ Lack of awareness and community engagement in identifying new events in their community.
- ✦ Lack of a centre for data manipulation and analysis of various data from different sources to enhance decision-making.

Way forward

- ✦ Engagement of other sectors to facilitate early warning systems.
- ✦ The use of Artificial Intelligence (AI) in detecting various alerts and outbreaks from routine aggregate data and other areas of data collection.
- ✦ Integration of eIDSR with other digital systems.
- ✦ Mobilization of funds from partners to support IDSR.
- ✦ Roll out of Electronic Event-based Surveillance (e-EBS).
- ✦ Improve the linkage of early warning sources such as climate change and animal surveillance.
- ✦ Create awareness in the community on the identification of public health threats.

Questions and Answers

1. Why do we have the eIDSR while we have PHC and community-based systems?
Response: *The eIDSR is for notifying diseases as they occur in the community, while another community-based system is extended to routine systems at the facilities.*
2. Why private health facilities are not integrated with the eIDSR?
Response: *This is a gap that will need to be worked upon in future plans of implementation*
3. WHO is moving to ICD 11. Are there updates in our systems?
Response: *Yes, some systems are already using ICD 11; the remaining need to prepare for an upgrade.*
4. Why is supply an issue regardless of the presence of eLMIS?
Response: *There is still a need for improvement of eLMIS and the health supply chain processes*
5. How can government systems capture data generated by private health facilities?
Response: *Need to be integrated and guidelines put in place*
6. How can we reduce fragmented Health Information systems in Tanzania?
Response: *Through integration and interoperability*
7. Though there are many data systems, data availability to the top decision-makers is still a challenge. Why? For example, GoTHoMIS and AfyaCare do not send data to the DHIS2 system. Why?
Response: *There is still an issue of harmonisation of indicators and systems lacking interoperability.*

Presentation 6: Digital solutions for health supply chain in Tanzania

Presenter: Alfred Mchau, USAID GHSC-TA

Mr. Mchau presented the status of the implementation of the redesigned eLMIS, and he reiterated that the implementation responds to strategic objective six of the digital health strategy, which aims to improve data use for evidence-based actions at all levels of the health systems. The initiative has saved a lot of time and material resources. Getting this data centrally required field visits and paper tools generation which took longer. The quantification teams can now readily access this data once aggregated & shared by health facilities themselves in eLMIS, hence increasing accountability. The team also build assumptions using data from other systems, like DHIS2, for mobility data.

More effort has been vested in improving data entered into eLMIS from the health facilities

- ✚ Moved from quarterly to bi-monthly report and request
- ✚ Monthly reporting of stock-on-hand data
- ✚ MSD also deliveries six times a year, meaning more access to health commodities by health facilities.

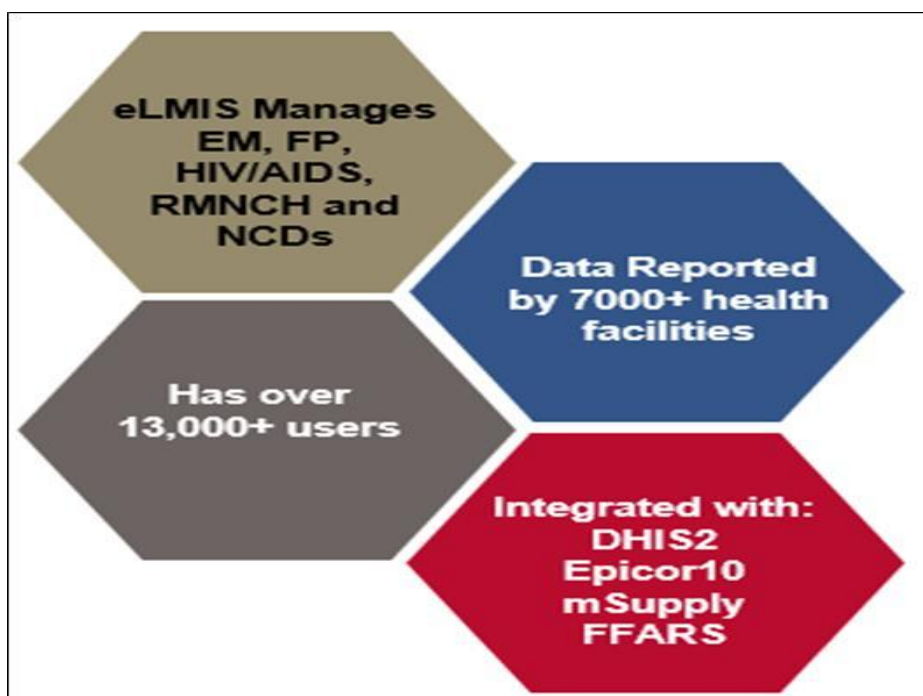


Figure 3: Integration of various health supply chain data systems

Challenges and Way forward

- ✚ Support scaling up of Electronic Medical Records (EMRs) at lower-level health facilities

- ✚ Investing in analytical tools to enhance data use and interactive reporting capabilities

Presentation 7: Implementation of Community and Client feedback systems for improved health client experiences

Presenter: Mr. John Matiko, UNICEF

The digital client feedback system captures mothers' experiences of care during pregnancy and after childbirth. Mothers register on any mobile phone and answer questions while at home, reducing the bias seen in traditional "exit interviews".

Implementation progress

- ✚ 68,088 mothers registered July 2022 – June 2023
- ✚ Five Regions covered include Kigoma, Mbeya, Songwe, Dodoma, Dar es Salaam

Way forward

- ✚ Expansion to an additional 14 mainland and Zanzibar regions in 2023

Presentation 8: Implementation of digital solutions for improved health financing and financial management

Presenter: James Mtafitikolo, PORALG

The government focuses on developing systems across health and other sectors that work together to manage facilities, collect revenue, and monitor budgets. These systems include PlanRep, FFARS, LGRCIS/TAUSI, EPICOR/MUSE, GOTHOMIS, IMES, and IMIS-CHF.

Implementation status

- ✚ PlanRep and FFARS have been rolled out to all facilities close to 28,000 public health facilities and schools.
- ✚ Established a framework to develop 21 websites for regional and local governments.
- ✚ Set up user support centres that has generated more than 15,000 tickets and calls
- ✚ Improved ICT Infrastructure to Local Government Authorities (LGAs) & health facilities
- ✚ Improve Muungano Gateway that supports systems integration

Way forward

- ✚ Digital Local Government- facilities, Mtaa and Villages
- ✚ Continuous improvement – people centred systems
- ✚ Improve ICT infrastructure at the facility level, in particular, network connectivity
- ✚ Embed AI and robotics in health care services provision.
- ✚ Create data use culture among healthcare workers and stakeholders.

Group Discussions

Moderators: Zabron Abel, TTCIH; and Dr. Felix Sukums, MUHAS

After the series of informative presentations, attendees gained valuable insights into the Tanzania digital health strategy and the diverse digital health initiatives the Government and its partners led. Subsequently, the participants were divided into five groups to meticulously review and discuss the strategic objectives and initiatives outlined in the Tanzania digital health strategy covering the thematic areas that is in line with the WHO health system building blocks.

Then a group of at least ten people were formed and discussed the five thematic areas.

Group 1: Health service delivery 1 - facility-based healthcare services

Group 2: Health service delivery 2 - community-based health services

Group 3: Health supply chain and health financing

Group 4: Health information sharing and use

Group 5: Leadership and Governance and workforce management

The groups were given the task to discuss and summarise their discussions using this form:

TDHS Initiatives/Priorities	Implementation Status	Gaps/Challenges	Opportunities	Recommendations

End of Day One

Day 2 - Summary & Highlights

1st August 2023

Convergence Workshop Presentation Sessions

Presentation 1: Data use in the health sector in Tanzania

Presenter: Tumainiel Macha, Ministry of Health

Mr. Tumainieli Macha presented the importance of having reliable data systems as an important part of improving healthcare services. He stressed the challenge of having too many systems that need to be interoperable for data sharing.

Current status

- ✚ The Ministry has developed a “Data use tool kit”, which will be used by all levels.
- ✚ The Ministry encourages all new interventions to use the existing data collection systems through HIS guideline.
- ✚ The Ministry is rolling out a training program on M&E/data use to all health care providers at different levels.

Challenges

- ✚ There is no official published guideline for data use at all levels
- ✚ Presence of multiple systems leads to difficulty for service providers in making decisions when those systems provide inconsistent information
- ✚ The concept of data use seems to be unclear to many data users/healthcare providers

Presentation 2: Role of Artificial Intelligence (AI) in Strengthening the Health System in Tanzania

Presenter: Dr. Eng. Deogratias Mzurikwao, MUHAS

Eng. Mzurikwao explained the meaning of AI: the development of computer systems to perform tasks that normally require human intelligence. He highlighted that there is a growing focus on AI in health sector. This is attributed to exponential data growth, whereas health data is projected to contribute more. This attracts investment in AI in the health sector, particularly health services delivery.

Implementation status

- ✚ Using Artificial Intelligence for screening breast cancer.

- ✚ Using Artificial Intelligence to detect rabies epidemic.
- ✚ Predicting outcome of sickle cell patients using Hydroxyurea.
- ✚ Using Artificial Intelligence for screening of cervical cancer.
- ✚ TB screening for people living with HIV
- ✚ AI in the health Policy Framework

Challenges

- ✚ No guidelines govern the use of AI in the health sector.
- ✚ Limited capacity building initiatives on AI technologies, e.g. few AI experts and limited understanding of the potential benefits of Artificial Intelligence
- ✚ Myths on AI within the community

Presentation 3: Digital solutions for the health workforce in Tanzania

Presenter: Minde, University of Dar es Salaam

Mr. Minde explains the HRHIS, a web-based information management system for managing HRH data.

Implementation status

The system is integrated with training institutions systems and other systems that capture HRH data e.g

- ✚ NACTE, NECTA, TCU,
- ✚ Professional councils MCT, TNMC,
- ✚ HCMIS
- ✚ Health facility Registry (HFR)
- ✚ These is no directly data entry all is through API

Challenges

- Quality of data from source systems
- Limited data exchange among the systems

Presentation 4; Implementation of interoperability and standards-driven digital health architecture: Case of FHIR/SMART Guidelines

Presenter: Steven Wanyee, President-elect of HELINA

Mr. Steve presented the best practices for implementing digital health initiatives in the health sector.

Integration vs Interoperability can reduce costs compared to peer-to-peer integration; the cost of integration over time is exponential and complex to maintain.

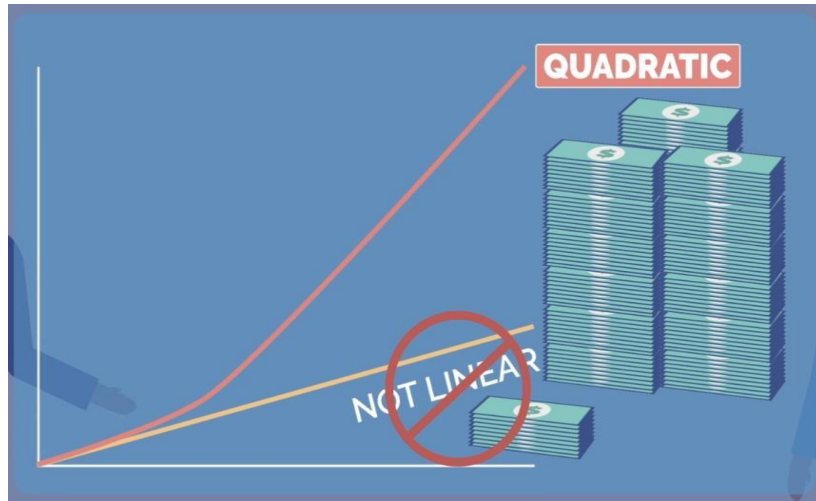


Figure 4

There are emerging technologies for interoperability in the field of digital health. WHO currently has approved the use of FHIR over HL7 technology. To ensure the achievement of this technology adoption, WHO has developed SMART guidelines to guide the deployment.

Way forward

- ✚ WHO, in collaboration with HELINA and TAHIA, will conduct WHO Digital Health Atlas (DHA) clinics to build capacity for professionals in Tanzania.
- ✚ TAHIA members to participate in WHO digital health community of practice and training

Group Work Sessions and Results

Tanzania Digital Health Strategy (TDHS) Implementation

Table 1: Group Work Results

Strategic Objectives	Implementation Status	Gaps/Challenges	Opportunities	Recommendations
SP 1: Strengthen digital health governance and leadership to facilitate better coordination and implementation of digital health initiatives				
<p>Strengthen the governance structures to enable effective coordination, management oversight, and implementation of digital health initiatives across the health sector.</p>	<ul style="list-style-type: none"> • Strengthen of National Digital Health Steering Committee (NDHC) to RHMT/CHMT and Health Facility level • Formulation of Institutional Digital Health Committees • Developed TZ Enterprise Architecture • Development and implementation of Investment recommendation roadmap • Implementation of an integrated Health Facility Electronic Management System • Development of National PHC Rolling Digital transformation road map (2023-2027) • Development of standardised business processes for RRHs and PHC • Development of Policy framework for artificial intelligence in Tanzania Health sector: February 2022 • Implementation of Health Management information system guideline • Implementation of Digital Health Strategy (2019-June2024) 	<ul style="list-style-type: none"> • The NDHC does not meet as per strategy and operationalisation of the steering committee charter • There is no better way to monitor if the RHMT/CHMT and Health Facility steering committees are operational • Lack of ICT/Digital Health experts at the facility level • Slow dissemination of the guidelines and policies are being developed 	<ul style="list-style-type: none"> • Leaders' readiness for the use of Digital Health Systems • Improved infrastructure from national to facility level, e.g., last mile connectivity, LAN, WAN etc. 	<ul style="list-style-type: none"> • Emphasis on Digital Health Agenda in their meetings at RHMT/CHMT and Health Facility Level • Introducing a module in teaching institutions on digital health systems • Adhere to WHO SMART Guideline • Guidelines need to be reviewed/ updated i.e integrated Health Facility Electronic Management System and Digital Health Strategy • Need to have a guideline for Data collection, dissemination and use • Govt to recruit/add cadre for health informatician to support implementation of digital health solutions • Govt has to increase/ widen dissemination of guidelines and policies that are being developed

Strategic Priority 2: Improve efficiency, accessibility (including the use of telehealth), patient safety, and quality and continuity of care through digitalisation of health service delivery in a holistic manner.

<p>Digitalize health care services at health facility levels.</p>	<ul style="list-style-type: none"> • Various digital health system has been implemented e.g; [25% of PHCs with GoTHOMIS], AfyaCare, Jeeva, EHMS, Care2x, AfyaPro, MedPro, etc. 	<ul style="list-style-type: none"> • Limited resources [Infrastructure, human resources, finance] • Electronical Power • Internet Connectivity • Resistance to change • Digital Health Literacy • Management • Fragmented Health Information Systems • Client engagement • Available systems are not Integrated or interoperable and lack a user-centred design • Parallel application of digital systems and paper-based 	<ul style="list-style-type: none"> • better data management for improved decision making • streamlined workflows • more accurate and up-to-date patient records • Reducing medical errors • Telemedicine services 	<ul style="list-style-type: none"> • Assess the effectiveness and efficiency of existing systems. • Engage stakeholders in mobilising resources • Human resource capacity building (data scientists, ICT specialists) • Invest in Robust IT Infrastructure • Transition from paper based to fully electronic health information system • Promote Interoperability • Prioritize Data Security and Privacy
<p>Implement standardised e-Prescription</p>	<ul style="list-style-type: none"> • Implemented (different between health information systems) 	<ul style="list-style-type: none"> • Policy (limits scaling) • Interoperability • Infrastructure • Data Privacy and Security • Data standards 	<ul style="list-style-type: none"> • Improved Patient Safety • Enhanced Clarity and Legibility • Efficient Pharmacy Processing • Consistent Quality of Care • Reduction in Medication Errors • Simplified Medication Management • Adherence to Regulatory Requirements 	<ul style="list-style-type: none"> • Establish Clear Guidelines • Engage Stakeholders • Use of Decision Support Systems • Regular Auditing and Monitoring • Create data standards
<p>Implement standardised insurance eClaim</p>	<ul style="list-style-type: none"> • Implemented [e.g NHIF, Strategis Insurance Tanzania] 	<ul style="list-style-type: none"> • Fraud Detection and Prevention • Scalability 	<ul style="list-style-type: none"> • Faster Claims Processing • Reduced Administrative Burden • Improved Accuracy • Real-Time Claim Status • Enhanced Claim Tracking and Reporting • Faster Reimbursement • Increased Revenue Cycle Efficiency • Enhanced Fraud Detection 	<ul style="list-style-type: none"> • Select Appropriate Standards • Engage Stakeholders Early • Training and Education • Improve IT infrastructure

Implement integrated eReferral solutions.	<ul style="list-style-type: none"> • Implemented 	<ul style="list-style-type: none"> • Policy • Interoperability Challenges • Fragmented IT Infrastructure • Data Security and Privacy Concerns • Limited Inter-Organizational Collaboration • Workflow Integration • Standardization of Referral Content 	<ul style="list-style-type: none"> • Streamlined Referral Process • Improved Patient Access to Specialists • Enhanced Care Coordination • Reduced Referral Errors • Centralized Referral Information • Telehealth Integration 	<ul style="list-style-type: none"> • Interoperability Considerations • Data Security and Privacy • Address Workflow Integration • Collaboration with Referral Partners
Digitalize community-based health services	<ul style="list-style-type: none"> • Implemented Unified Community System, currently being rolled out. 	<ul style="list-style-type: none"> • Uncoordinated Systems • Digital Infrastructure • Digital Literacy • Affordability and Access • Language and Cultural Barriers • Privacy and Security Concerns • Data Standardization and Interoperability • Integration with Existing Systems • Regulatory and Legal Challenges • Sustainability 	<ul style="list-style-type: none"> • Increased Healthcare Access • Efficient Referral and Coordination • Epidemiological Surveillance • Mobile clinics and outreach • Chronic Disease Management 	<ul style="list-style-type: none"> • Assess Community Needs • Develop a Clear Strategy • Collaborate with Stakeholders • Choose User-Friendly Technology • Privacy and security • Integrate Data Systems • Sustainability Planning • Customize Solutions to Community Needs
Implement a digital platform for managing clients' feedback on service quality at the health facilities.	<ul style="list-style-type: none"> • Implemented (Minimum Viable Product level e.g Mama na Mwana) 	<ul style="list-style-type: none"> • Digital Literacy (clients) • Limited Access to Technology • Language and Cultural Barriers • Data Privacy and Security Concerns • Data Analysis and Utilization • Sustainability and Long-term Support 	<ul style="list-style-type: none"> • Real-Time Feedback • Improved Patient Engagement • Enhanced Data Collection and Analysis • Identifying Areas for Quality Improvement • Early Detection of Issues • Promoting Accountability 	<ul style="list-style-type: none"> • User-Centered Design • Multiple Feedback Channels • Privacy and Data Security • Real-Time Notifications • Technical support • Improve health education and digital literacy • Feedback Loop Closure

Strategic Priority 3: Improve health workforce competency and use of technology to provide specialised care to under-served facilities.

<p>Implement telemedicine services.</p>	<ul style="list-style-type: none"> • Availability of telemedicine apps for consultation, training, emerging, medical ordering e.g; Pigia Daktari app-Agha Khan hospital, Afya Imara-CSSC, Muhimbili Telemedicine • Availability of community closed user group for child and maternal health promotion- Experience in USAID Afya Yangu-RMNCAH 	<ul style="list-style-type: none"> • Limited coverage • Connectivity/internet bundle challenges 	<ul style="list-style-type: none"> • To engage various experts on telemedicine technology that can be easily adopted. 	<ul style="list-style-type: none"> • Scale up countrywide • Harmonization of the available telemedicine apps to comprehensive-national wise. • To adopt and apply telemedicine technology on reducing congestion in the facilities for minor cases.
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Strategic Priority 4: Promote healthy behaviour through access to relevant health information, education, and communication

<p>Implement interactive digital platforms for health IEC.</p>	<ul style="list-style-type: none"> • Implementation of mama na mwana client feedback system using sms. • Engagement of Mobile Service Providers in participation in notification and prevention of Outbreak. • The use of AfyaChap app available on Android and IOS to get education issues on various health problems 	<ul style="list-style-type: none"> • Existing systems e.g Mama na Mwana client feedback, does not support client registration using USSD and social media. • Existing systems e.g AfyaChap has no government involvement 	<ul style="list-style-type: none"> • Expand Mama na Mwana client feedback to be expanded to accommodate client registration using USSD and social media as it uses Rapid Pro. • AfyaChap to involve the government for awareness and implementation 	<ul style="list-style-type: none"> • Adopt existing technology to involve communities in the behaviour change process. • Adapt existing knowledge to share success stories of individuals or communities who have adopted the desired behaviours.
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Strategic Priority 5: Enhance seamless and secure information exchange

<p>Finalize and institutionalize the Tanzania Health Enterprise Architecture.</p>	<ul style="list-style-type: none"> • The Tanzania Health Enterprise Architecture (TzHEA) is already in place. • Health Information Mediator (HIM) in place with a number of systems such as DHSI2, HFR, ELMIS, UCS, HRHIS Registry, eLearning System, etc., exchanging information. • 	<ul style="list-style-type: none"> • Operationalization challenge for the TzHEA subcommittee to guide and enforce TzHEA implementation • Some Client-level systems have yet to be integrated through the HIM • Existing systems are not readily available to support integration and standards (most systems require upgrades/enhancement to support integration) • Limited awareness and technical expertise of the existing or recommended standards • Inadequate involvement and engagement of the business owners in the process (structural issues in place creates fragmentation). 	<ul style="list-style-type: none"> • Availability of TzHEA blueprint guiding digitalization process • Flexible and scalable interoperability layer 	<ul style="list-style-type: none"> • Publish national systems API guidelines for use by the private-public providers (Health Facilities, Pharmacies, etc.) • Operationalization of the TzHEA subcommittee to ensure its use/guide the implementation • Integrate client-level systems with other systems, such as DHIS2, eLMIS, etc. via HIM • Create awareness and build capacity on existing and recommended standards such as FHIR, SNOMED, etc.
<p>Implement terminology services for standardized health terminologies, codes, data elements, and value sets.</p>	<ul style="list-style-type: none"> • Not yet implemented • It is a step towards standardization 	<ul style="list-style-type: none"> • There is very little awareness of the use and importance of the terminology registry • Standardization of terminologies not yet done 	<ul style="list-style-type: none"> • Different systems with different codes, and terminologies ready for centralized use • Availability of Interoperability layer 	<ul style="list-style-type: none"> • As a step towards standardization, we recommend the implementation of the terminology services registry • Need to increase awareness and importance of the terminology services,
<p>Strengthen interoperability across different systems within health and other sectors.</p>	<ul style="list-style-type: none"> • Implemented the Health information mediator HIM; different systems have been integrated through HIM, including within the health sector HFR, DHIS2, eSRS, DDR, HRHIS etc. and outside the health sector NECTA, GEPG 	<ul style="list-style-type: none"> • Resource for interoperability may not cover the three parts (of integration, that is, source, interoperability layer and destination) • 	<ul style="list-style-type: none"> • To enhance data exchange standards to simplify the availability of data by implementing shared work 	<ul style="list-style-type: none"> • Implementation of the recommended standards to simplify the interoperability

Implement client and health worker registries.	<ul style="list-style-type: none"> • HRHIS, which acts as a health worker registry, is in place • NHCR development started but has stalled 	<ul style="list-style-type: none"> • NHCR is not in use • Some work-flows are not implemented, like the synchronisation of the health workers' information to the point of care systems • Lack of interoperability between the NHCR with the point-of-care systems 	<ul style="list-style-type: none"> • Availability of HRHIS as a health worker registry • Availability of the NHCR platform that needs to be finalised and rolled out 	<ul style="list-style-type: none"> • Finalization of NHCR and integration with the point-of-care systems • Integration of the HRHIS with the point-of-care systems • Conduct training and sensitisation of the systems
Strengthen the Health Facility Registry (HFR) and health commodities registries.	<ul style="list-style-type: none"> • There is a medical device and health commodity portal developed by TMDA • No health commodities registry • HFR strengthened with additional features 	<ul style="list-style-type: none"> • Health commodities portal exists but does not share the information with other digital health tools • There is no health commodities registry 	<ul style="list-style-type: none"> • Availability of TMDA health commodity portal 	<ul style="list-style-type: none"> • Develop and implement a health commodity register • Integrate with health commodity registry with point of service applications, eLMIS, MSD ERP, and the TMDA health commodity portal
Strengthen standards and guidelines for secure data storage, processing, information exchange, and dissemination.	<ul style="list-style-type: none"> • Existence of TZHEA, which provides the guideline and standards for data exchange 	<ul style="list-style-type: none"> • Limited awareness of the standards • Lack of common interpretation and understanding of the available guidelines • Limited implementation of the standard in the developed digital tools 	<ul style="list-style-type: none"> • Existence of the standards • Existence of the smart guidelines 	<ul style="list-style-type: none"> • Implementation of the standards • Sensitize the stakeholders on the available standard • Conduct capacity building to the technical team

Strategic Priority 6: Improve data use for evidence-based actions at all levels of the health system

Strengthen the use of data, application, and technology standards (e.g., International Classification of Diseases, 10th	<ul style="list-style-type: none"> • There exist different dashboards from different systems such as DHIS2, eIDSR, HFR, etc • There is developed data use toolkit 	<ul style="list-style-type: none"> • Use of outdated standards e.g. use of ICD 9&10. • Some standards are yet to be implemented such as FHIR standards • Limited monitoring and evaluation of 	<ul style="list-style-type: none"> • Existence of defined standards • Availability of partners to work together • Implementation of the developed data use toolkit 	<ul style="list-style-type: none"> • Capacity building on data use at all levels of health systems • Rollout the developed data use toolkit
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Revision; Health Level-7; Digital Imaging and Communications in Medicine; Logical observation identifiers Names and Codes; and service codes).		digital systems implementation.		
Implement shared client health records.	Does not exist	<ul style="list-style-type: none"> • No continuum of care • Existence of system with local instances 		<ul style="list-style-type: none"> • Implementation of the shared health record • Development of the guideline for data sharing for share health record
Strategic Priority 7: Improve supply chain management of health commodities at all levels of the health system				

Strengthen logistics MIS	<ul style="list-style-type: none"> All public health facilities are reporting and requesting health commodities through the eLMIS There is progress in the interoperability of systems where the eLMIS is integrated with FFARS; to increase the visibility of supplemental sources of funds for procuring health commodities. And integration with DHIS2 	<ul style="list-style-type: none"> Lower-level facilities, such as dispensaries, are left behind since the ordering is still paper-based, and some are sent to the district levels for assistance due to a lack of supportive infrastructure and personnel. There is resistance among healthcare workers to the use of digital supply systems due to knowledge barriers. Use of ICT infrastructure. Data from private facilities are not well traced through the existing logistics MIS 	<ul style="list-style-type: none"> eLMIS is a centralised system that enables anyone to access it. The use of EMR can facilitate the use of the system in a wide range The availability of the internet can enhance the use of smartphones and tablets to facilitate the use of EMRs like GoTHoMIS and AfyaCare as well as eLMIS at low-level facilities 	<ul style="list-style-type: none"> There should be a strong emphasis on the use of the digital supply platform, eLMIS, at all levels of service provision There should be capacity building for the end users to enable them to cope with the digital pace. To further improve the interoperability experience, clear roles and responsibilities and communication strategies need to be enforced. Integrate private health sector data into eLMIS
Implement digital solutions for tracing and tracking health commodities.	<ul style="list-style-type: none"> Tracing and Tracking are done at the central level by MSD through distribution and Proof of Delivery (POD) confirmation and at the regional and district levels through the use of eLMIS for commodities reported or requested through eLMIS 	<ul style="list-style-type: none"> Limited tracking to the level of the consumer (Facilities without EMR cannot track who consumed what medicine) eLMIS to cover private health facilities 	<ul style="list-style-type: none"> The use of electronic medical records within the facilities that use digital systems in health provision would enable the workers to track commodities to the end users and make this a better success. 	<ul style="list-style-type: none"> More digitalisation at the health facility Need to have more visualisation dashboards to show overall supply chain performance beyond the deployment of systems.
Integrate the national product registry of medicines, medical supplies, medical devices, and cosmetics.	<ul style="list-style-type: none"> No digital system has been deployed yet 	<ul style="list-style-type: none"> Not deployed yet 	<ul style="list-style-type: none"> The availability of eLMIS, NHIF item codes, MSD item codes, and STG treatment guidelines (NEMLIT) can act as a baseline for developing a national product registry of medicines and medical supplies 	<ul style="list-style-type: none"> Teams can learn from what NHIF has done as well as TMDA since they have a regulatory mandate to register. Funds should be allocated to develop and deploy the system
	<ul style="list-style-type: none"> TMDA has a mobile app (Safety and Quality Reporting Tool) for adverse drug reaction reporting 	<ul style="list-style-type: none"> The App is not well known to healthcare workers and the community 	<ul style="list-style-type: none"> The availability of the TMDA App for reporting drug reactions as a starting point Availability of EMRs that can support tracking and reporting adverse drug reactions 	<ul style="list-style-type: none"> We need to validate if the existing EMRs have this requirement or functionality to enable HCW to report on ADR

Strategic Priority 8: Improve management of human resources at all levels of the health system

<p>Strengthen Human Resources for Health development to support implementation of digital health interventions</p>	<ul style="list-style-type: none"> • Government recruit every year • Developed and implement Task sharing policy • 300 health information systems graduate • Developed national eLearning Platform • National eLearning Platform Integrated with HRHIS, and Professional Council systems 	<ul style="list-style-type: none"> • Shortage of HRH stands at 53% • Limited resources and uptake of the task sharing policy • Limited production of health informatics graduates • Lack of scheme of service for health informatics professionals • Lack of motivation among healthcare workers to use eLearning for CPD 	<ul style="list-style-type: none"> • Availability of stakeholders to support digital health professionals • Availability of Task sharing policy, and digital health strategy • Decreasing number of computer literacy among healthcare workers • Availability of partners to support development of eLearning CPD activities 	<ul style="list-style-type: none"> • Introduce more health informatics programmes • Strengthen Continuing Professional Development among (CPD) for healthcare workers • Utilize eLearning for HCWs to access CPD
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Strategic Priority 9: Improve management of financial resources

<p>Improve digital solutions for planning, budgeting, revenue collection, accounting, auditing, and reporting at all levels</p>	<ul style="list-style-type: none"> • District councils and health facilities using improved planning and reporting system (PlanRep) 	<ul style="list-style-type: none"> • Most of the facilities have no internet connectivity or infrastructure 	<ul style="list-style-type: none"> • Wide adoption of mobile phones countrywide 	<ul style="list-style-type: none"> • More infrastructure investment is needed (Computers and the Internet)
<p>Integrate electronic revenue collection systems in all public health facilities and institutions with the Government ePayment Gateway (GePG)</p>	<ul style="list-style-type: none"> • Public health institutions and facilities using revenue collection systems that are integrated with GePG 	<ul style="list-style-type: none"> • Most Facilities still use manual collection 	<ul style="list-style-type: none"> • The availability of reliable internet can enhance the use of smartphones and tablets to facilitate • The availability and use of EMRs like GoTHOMIS and AfyaCare could rectify the needs 	<ul style="list-style-type: none"> • Digitalization at the facility level is needed for all HFs that are paper-based.
<p>Strengthen digital solutions for health insurance management</p>	<ul style="list-style-type: none"> • NHIF has successfully implemented NHIF Portal (Biometric validation is in progress) 	<ul style="list-style-type: none"> • Most Facilities still use manual validation of NHIF cards 	<ul style="list-style-type: none"> • Wide adoption of mobile phones countrywide • Availability of network and 	<ul style="list-style-type: none"> • More digitalisation investment is needed at the lower-level facility

Strategic Priority 10: Strengthen disease prevention, surveillance, detection, reporting, response, and control at all levels of the health system

<p>Strengthen diseases prevention, surveillance, detection, reporting, response and control at all levels of the health system</p>	<ul style="list-style-type: none"> ● Availability of public messaging that allows all citizens to report any rumours, i.e., TETESl, messages to 199. ● Availability of Unified Community System for case-based management. ● Availability system to facilitate booking and vaccination of COVID-19 vaccine. ● Availability of system to capture birth and death using CRVS system. ● Availability of m-mama platform to facilitate travels of pregnant women from the community to health facilities 	<ul style="list-style-type: none"> ● Awareness of reporting rumours using public messaging -199. ● Unified Community Systems does not capture Self-test HIV results. ● Unified Community System is not linked with existing Electronic Medical Records. ● Unified Community System does not capture immunisation data. ● M-mama has not been in all regions 	<ul style="list-style-type: none"> ● Digital promotion of awareness of using public messaging - 199. ● Expand the Unified Community system to report Self-test HIV results. ● Unified Community System to be linked with existing Electronic Medical Records for continued care. ● Unified Community System to be enhanced to capture immunisation data. ● To facilitate the rollout of the m-mama platform to all regions. 	<ul style="list-style-type: none"> ● Use media houses and digital influencers to create awareness and promote services to a wide range. ● Utilize interoperability standards to enhance the timely sharing of information. ● Take advantage of IoT devices and wearables to collect health-related data continuously. ● Implement real-time alert systems to notify authorities of potential outbreaks.
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End of Day Two

Day 3 - Summary & Highlights

2nd August 2023

Convergence Workshop Presentations & TAHIA Launching

Presentation 1: Overview of Tanzania Health Informatics Association (TAHIA)

Presenter: Edwin Nyella, TAHIA Treasurer

Mr. Nyella presented an overview of the TAHIA; the association is registered as a society of health informatics experts in Tanzania, focusing on ensuring effective skills and knowledge sharing, advocacy, research and innovation on health informatics for health system strengthening to improve the quality of health services delivery.

Vision: "To be a leading organisation that nurtures a collaborative, innovative Health Informatics community that promotes and supports local and international initiatives to improve health."

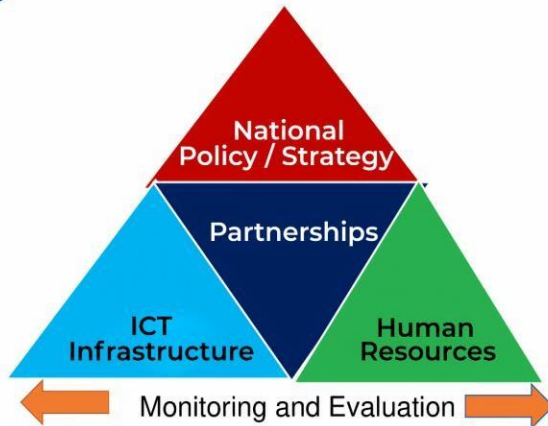
Presentation 2: Role of Health Informatics Workforce in Strengthening the Health System in Tanzania

Presenter: Zabron Abel , TAHIA

Mr. Zabron presented the role of health Informatics in strengthening the Tanzania health system. Six building blocks need to be efficiently implemented for an efficient and successful eHealth initiative.



Successful eHealth Initiative



TANZANIA HEALTH INFORMATICS ASSOCIATION (TAHIA).

The human resource for digital health, the Health Informatics profession, is the cornerstone of the five building blocks. This plays a vital role in the effective implementation of digital solutions. Currently, healthcare workers at the facilities are health informatics professionals through the task-sharing policy. The production of health informatics professionals is limited; only one university (University of Dodoma) offers a degree in health information systems, which has produced about 300 graduates.

He also highlighted that two main challenges hinder efforts to have a better-performing health system. These challenges include:

- ✚ Shortage of HRH in Tanzania, which stands at 53 percent
- ✚ Lack of unskilled health informatics professionals

Way forward

Need for training institutions to produce health informatics professionals.

The Government through

Presentation 3: Role of health informatics associations in promoting capacity building, research and networking in the digital age

Presenter: Mr. Steve Wanyee, HELINA President-elect

The HELINA President-elect stipulated the role of health informatics associations in supporting health informatics professionals. Their contribution is reflected in the improved performance of the health system. He highlighted the following roles of any association that TAHIA should align.

Capacity building

TAHIA should collaborate with training institutions to develop and review pre-service training curricula to produce health informatics professionals that match the demand of the market and technology advancements. Also, TAHIA should participate in developing Continuing Professional Development (CPD) activities that will enable in-service healthcare workers to update their knowledge and skills at their workplace. The capacity-building framework involves four levels of the health system, i.e. the patients' level (level 1), Health practitioners (operationalisation), Digital health level (tactical level), and Policymakers (Strategic level).

Research

Research is one of the focus areas of TAHIA, and the association should establish research agenda based on local needs. This is through creating contextually relevant informatics evidence and knowledge that bridge the know-do gap in health informatics.

Networking

Also, this is one of the objectives of an association, Vertical Networking- for example, TAHIA as a local association, collaborate with HELINA and International Medical Informatics Association (IMIA)

Within Tanzania, TAHIA networks with other professional associations, e.g., the Medical Association of Tanzania (MAT), Tanzania Nursing Association (TANNA) etc. The horizontal networking includes networking with regional associations, e.g. Kenya Health Informatics Association (KEHIA) and Uganda Health Informatics Association (UgHIA).

Presentation 4: Digital Health Leadership and Governance

Presenter: Makunda Kassongo, USAID

Mr. Makunda highlighted the importance of developing a pool of local experts in implementing digital health initiatives. He reiterated the commitment of USAID to supporting in training young talents available in Tanzania. He insisted on working collectively to sustain the confidence and commitment of all stakeholders participating in this workshop. He said we need to involve the stakeholders from the beginning to get the buy-in of stakeholders.

“If we are determined to succeed in digital health, we need to integrate people first before integrating systems.”

Mr. Makunda insisted that capacity building of human resources is critical to successful digital health initiatives. This can be achieved through pre-service and in-service workforce training, i.e. Continuing Professional Development (CPD) for the health workforce. He insisted that

USAID is committed to supporting the development of health informatics professionals, particularly incubating young talents.

To conclude, he suggested the following:

- ✚ Advancing the National Unified Health Information system
- ✚ Ensure Cohesive, Interoperable, and Integrated digital systems
- ✚ Meeting the Government, Development partners, Implementing Partner and other stakeholders' data needs.
- ✚ Advocating for National, Integrated, Longitudinal Person level data.
- ✚ Analysis of central level and reduce duplication of data and efforts.
- ✚ Strengthened tracking of treatment interruption and contact tracing.
- ✚ Ensure Data meet the need of all stakeholders.
- ✚ Barrier to daily/ weekly decreases
- ✚ Ensure a working and reliable technical support system
- ✚ Mobile resources for ongoing operations
- ✚ Good plan for end-of-life hardware

Presentation 5: Research, Innovation and Development in Digital Health

Presenter: Prof. Bruno Sunguya, MUHAS

Prof. Sunguya highlighted the importance of research in fostering the impact of digital health initiatives in strengthening the health system. He insisted that digital health cuts across all the six-health system building blocks. Now that we are winding up the second Digital health strategy, we need to ask ourselves why there is low achievement in digital health implementations. He emphasised the use of implementation research to foster attaining the set targets of digital health strategy.

“Implementation research is like fixing a jet while it is flying.”

Currently, MUHAS is developing a centre of excellence in innovations and technology that will act as a catalyst in accelerating the improvement of health services in Tanzania. MUHAS is ready and committed to collaborating with TAHIA to advance digital health's impact in the health sector. He invited the workshop attendees and all participants of the launching ceremony to the 3rd MUHAS Digital Health and Innovation Week from 13th to 17th November 2023.

Speech from Deputy Minister for Health, Hon. Dr. Godwin Molllel (MP)

The Minister thanked TAHIA leadership, HELINA and other partners for organising this important event. He reiterated the importance of digital health in achieving Health Sector Strategic Plan V (HSSP V) goals. He points out that Her Excellence Dr. President Samia

Suluhu Hassan is concerned about the mushroom of digital systems that need to be interoperable and integrated, that result in poor data quality. He said he believes TAHIA invented a vital forum that will provide significant assistance to ensure the interoperability of digital health systems. He insisted on the need for improved visibility, accessibility and use of high-quality health data for evidence-based planning and decisions.

“Think of having a unified health Information system that will cut across the health sector.”

Wrap-up

Recommendations

- ✚ Improve the capacity of lower-level health workers on digital health
- ✚ Develop introductory courses on digital health to certificates and diploma
- ✚ Strength human interoperability
- ✚ To have an EAC-based digital health officer and EAC digital health council
- ✚ Consider integrating EMRs with insurance funds and financial information systems

Resolutions:

- ✚ TAHIA will request to host the HELINA conference in November 2024
- ✚ All participants were encouraged to register to be TAHIA official members
- ✚ Report for the Convergence workshop should be ready before 11th August 2023. On 4th August 2023, the first draft should be shared for stakeholders' input.
- ✚ Participants were encouraged to visit TAHIA's social media and subscribe.
- ✚ TAHIA to engage the Ministry of Information and Information Communication Technology, the Prime Minister's office and more stakeholders in the coming workshops/meetings
- ✚ TAHIA to establish Digital health community of practice platform
- ✚ TAHIA in collaboration with Government and implementing partners to conduct assessment of digital health initiatives implementation.
- ✚ Next TAHIA conference will be held in collaboration with MUHAS on November 2023

Day 4 - Report Writing

3rd August 2023

After the Digital Health Convergence workshops and the TAHIA launch, the small team began report writing. The report comprises a summary and highlights that emerged from the presentations, Questions and answers, the outline of presentations and welcome remarks from key partners invited and group discussions on Day One, Day Two, and Day Three.

The report writing team was led by the following individuals:

1. Dr. Felix Sukums
2. Mr. Edwin Nyella
3. Mr. Zabron Abel

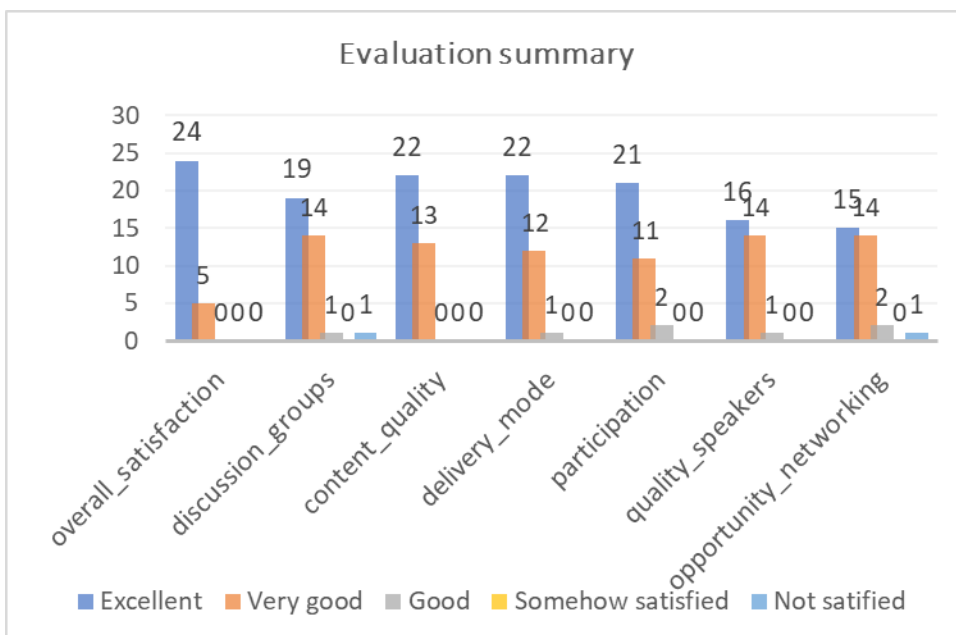
Day 5 - Finalization of the Implementation Plan

Day 5– 4th August 2023

Day five focused on working with Government officials to scrutiny the Digital Health Convergence workshops report. The ultimate output is the implementation matrix that will guide the Government in reaching the last mile in implementing the National Digital Health strategy (2019-2024). So, the implementation plan focused on the areas that need to be finalised before developing a new Digital health strategy. See the implementation matrix (Annex 1)

Participants Evaluation

A total of 35 participants gave feedback in the evaluation survey provided at the end of the workshop. Out of 35 participants 69 percent satisfied with the conference rating as excellent whereas 14 percent rated as very good.



Contact Us

Plot 168/R, Morogoro Road,
Kinondoni District,
P. O. Box 7248
Dar es salaam, Tanzania
E-mail: info@tahia.or.tz
Website: www.tahia.or.tz

Facebook: #tahiatazania

LinkedIn: #tahiatazania

YouTube: #tahiatazania

Instagram: #tahiatazania

Twitter: #tahiatazania

Annex 1: The Shared Implementation Plan Matrix

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
Strategic Priority 1: Strengthen digital health governance and leadership to facilitate better coordination and implementation of digital health initiatives						
Strengthen the governance structures to enable effective coordination, management and oversight of digital health initiatives across the health sector	1	Revitalize and operationalize the National Digital Health Steering Committee as per strategy and the steering committee charter by Dec 2023	National Digital Health Steering Committee revitalized, and regular meetings convened as per the committee charter.	Dec 2023	MoH & PORALG, PMO, MICT, Stakeholders (e.g TAHIA, CSSC, etc)	MoH & PORALG, PMO, MICT, Stakeholders (e.g TAHIA, CSSC, etc)
	2	Introduce digital health agenda in RHMT/CHMT and Health Facility meetings by Jan 2024	Digital Health discussed in the RHMT/CHMT and Health Facility meetings.	Jan 2024	DICT, MoH & PORALG, CSSC, etc	MoH & PORALG, CSSC
Development of a new digital health strategy, revision of outdated guidelines, and dissemination of the same.	1	Conduct a detailed assessment of the Digital Health Strategy 2019/2024 implementation by Dec 2023	DHS 2019/2024 implementation Assessment report in place	Dec 2023	DICT, MoH & PORALG	MoH, PORALG, GIZ etc
	2	Development of the new Tanzania Digital Health Strategy 2024/2029 by June 2024	Tanzania Digital Health Strategy 2024/2029 developed	June 2024	DICT, MoH & PORALG	MoH, PORALG, GIZ etc?
	3	Revise the guidelines for integrated Health Facility electronic Management System(iHFeMS) implementation by Dec 2023	Guidelines for integrated Health Facility Electronic Management System (iHFeMS) implementation reviewed	Dec 2023	DICT, MoH & PORALG, PMO, MICT, and other stakeholders	DICT, MoH & PORALG, PMO, MICT, and other stakeholders
	4	Conduct assessment of digital health systems that exist in health sector including private	Inventory of digital systems and improved integration and interoperability. All	Dec, 2023	MoH, PORALG	MoH, PORALG, other

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
		health sector.	digital systems to be housed at the Centre for Digital Health (CDH)			stakeholders
Create awareness of the top-level managers on the WHO smart guidelines, standards and other related inventories	1	Conduct awareness sessions to health sector managers and decision makers on the WHO smart guidelines, standards and other related inventories such as Digital Health Atlas (DHA), GDHI, etc. by Dec. 2023	Health sector managers and decision makers well informed of the WHO smart guidelines, standards and other related inventories such as DHA, GDHI	Dec 2023	GoT, TAHIA, HELINA, & WHO, PMO, MICT and other stakeholders	WHO
	2	Conduct DHA clinic in Tanzania in collaboration with TAHIA and HELINA by Sept 2023. Parallel to that Develop Digital Adaptation Kit (DAK) of HIV ,ANC and immunization.	DHA Clinic conducted as per the WHO requirements Also Develop Digital Adaptation Kit (DAK) of HIV ,ANC and immunization.	Sept. 2023	GoT, TAHIA & HELINA, WHO	WHO
Strategic Priority 2: Improve efficiency, accessibility (including use of telehealth), patient safety, and quality and continuity of care through digitalization of health service delivery in a holistic manner.						
Digitalize health care services at health facility levels.	1	Roll out GoTHOMIS to at least 15% more PHC facilities by August 2025	15% more PHC facilities with GoTHOMIS	August 2025	DICT PORALG & DICT MoH	USAID, GIZ, KOICA, other stakeholders
	2	Finalization of the Integration of AfyaCare with DHIS2, eIDSR and eLMIS and rollout to all RRH by May 2024	AfyaCare integrated with DHIS2, eIDSR, and eLMIS	May 2024	DICT MoH	
	3	Rollout (for adoption) of the standardized regional referral hospital business processes to all RRH by Dec 2023	All RRH adopted the standardized business processes	Dec 2023	DICT MoH	GoT
	4	Scale up AfyaCare to the remaining RRHs (Musoma, Arusha, etc.) by Sept. 2023	All RRH using AfyaCare	Sept. 2023	DICT MoH	Global Fund

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
	5	Enhance the AfyaCare Lab and RCH modules by Jan 2024	AfyaCare lab and RCH modules enhanced	Jan 2024	DICT MoH	GIZ
	6	Develop Case-management systems e.g IMCI	Case management system rolled out to health facilities.	June, 2024	PORALG, MoH	UNICEF, WHO?
Digitalize community-based health services	1	Enhance the Unified Community System (UCS) to capture immunization, maternal health, and HIV self-test data by March 2024	UCS capturing immunization, maternal health and HIV self-test data	March 2024	MoH & PORALG	USAID, Global Fund,
	2	Roll out the digital client feedback system that captures mothers' experiences of care during pregnancy and after childbirth to 14 more regions including Zanzibar by Dec 2023	Digital client feedback system rolled out to 14 more regions and Zanzibar	Dec 2023	MoH & PORALG	UNICEF
Roll out the m-mama platform to all regions to facilitate travels of pregnancy women from community to health facilities	1	Roll out the m-mama platform to all regions by August 2025	m-mama platform rolled out to all regions	August 2025	MoH & PORALG	GoT, USAID, Vodafone Foundation & Vodacom Tz
Strategic Priority 3: Improve health workforce competency and use of technology to provide specialized care to under-served facilities.						
Develop guidelines to streamline implementation and operationalization of telehealth services	1	Finalize the guidelines and SoPs to streamline telehealth services by Feb 2024	Guidelines and SoPs to streamline tele-health services in place	Feb 2024	MoH & PoRALG	
	2	Dissemination of the telehealth services guidelines and SoPs by July 2024	Telehealth services guidelines and SoPs disseminated to users	July 2024	MoH & PoRALG	

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
Build capacity of HCWs on digital health	1	Conduct training sessions to build HCWs capacity on the existing digital health systems and services to optimize their use by Sept. 2024	Number of HCWs trained on the use of digital health systems and services	Sept. 2024	MoH & PoRALG	USAID
Strategic Priority 5: Enhance seamless and secure information exchange						
Institutionalize the use of the Tanzania Health Enterprise Architecture (TzHEA) blueprint to guide digital health implementations	1	Operationalize the TzHEA subcommittee to guide the use of the blueprint by Nov 2023	TzHEA subcommittee guiding the use of the blueprint	Nov 2023	MoH DICT & PORALG DICT	GoT
	2	Conduct capacity building sessions with the MoH/PORALG ICT team & implementors on the use of the TzHEA by Jan 2024	The MoH/PORALG ICT team & implementors capacity on the use of the TzHEA built.	Jan 2024	MoH DICT & PORALG DICT	GoT,
Create awareness and build local ICT team capacity on existing and recommended standards, and guidelines such as FHIR, SNOMED, ICD 11, LOINC, WHO smart guidelines, etc	1	Conduct training sessions to build the capacity of the ICT technical team on existing/recommended standards, and guidelines by March 2024	Capacity of the ICT technical team built on existing/recommended standards and guidelines	March 2024	GoT, TAHIA & HELINA, WHO	HELINA?
	2	Publish national systems API guidelines for use by the private and public providers (Health Facilities, Pharmacies, etc.) by April 2024	National systems API guidelines published for use by the private and public providers	April 2024	MoH DICT & PORALG DICT	GoT
	3	Implement recommended and updated versions of standards (ICD 11, FHIR, etc.) into client level systems by Nov 2024	Recommended and current versions of standards implemented	Nov 2024	MoH DICT & PORALG DICT	

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
Integrate client level systems with other systems such as DHIS2, eLMIS, etc. via HIM	1	Integrate all regional, and district hospitals client level systems with other systems through the HIM by July 2024	Number of Regional, and district hospitals client level systems integrated with other systems through the HIM	July 2024	MoH DICT & PORALG DICT	
	2	Define, disseminate and enforced clear roles, responsibilities and communication strategies to improve interoperability experience by Feb 2024	Clear roles, responsibilities and communication strategies in place and in use to improve the interoperability experience	Feb 2024	MoH DICT & PORALG DICT	USAID?
Implement terminology services for standardized health terminologies, codes, data elements, and value sets.	1	Implement health terminology services registry by August. 2025	Terminology services registry in place and in use	August. 2025	MoH DICT & PORALG DICT	
Finalize the National Health Client Registry (NHCR) and integrate it with the point of care systems	1	Finalize the National Health Client Registry (NHCR) and integrate it with the point of care systems by August 2024	Point of care application integrated with NHCR	August 2024	MoH DICT & PORALG DICT	
Integrate HRHIS (provider registry) with point of care systems	1	Integrate HRHIS (provider registry) with point of care systems by Jan 2025	Point of care application integrated with HRHIS	Jan 2025	MoH DICT & PORALG DICT	

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
Implement a Shared Health Record (SHR) to facilitate continuity of care	1	Implement a Shared Health Record by Dec 2025	SHR in place and in use for at least one selected use case such as HIV program	Dec 2025	MoH DICT & PORALG	
Integrate the Unified Community System (UCS) with existing EMRs	1	Integrate UCS with existing EMRs through the HIM by Sept 2024	UCS integrated with existing EMRs	Sept. 2024	MoH & PORALG	
Strategic Priority 6: Improve data use for evidence-based actions at all levels of the health system						
Build data use capacity at all levels of the health system from the high-level leadership to technocrats	1	Conduct data use capacity building sessions for leaders, managers and Health workers at all levels by Nov 2024	Number of Leaders, managers and HCWs trained	Nov 2024	MoH & PORALG	
	2	Develop and disseminate data use guidelines by July 2024	Data use guidelines in use	July 2024	MoH & PORALG	
Strategic Priority 7: Improve supply chain management of health commodities at all levels of the health system						
Strengthen logistics Management Information Systems (MIS)	1	Integrate private health sector data into eLMIS by June 2024	Private health facilities data integrated in the eLMIS	June 2024	MoH ICT, MSD, PSU APHFTA	USAID via GHSC
	2	Build capacity of healthcare workers on the use of digital supply systems (eLMIS, etc) by July 2023	Capacity of healthcare workers on the use of digital supply systems built	July 2024	MoH ICT, PORALG ICT, MSD, PSU & GHSC	USAID via GHSC
Implement digital solutions for tracing and tracking health commodities	1	Develop visualization dashboards to show overall supply chain performance by March 2024	Visualization dashboards to show overall supply chain performance in place	March 2024	MoH ICT, PORALG ICT, MSD, PSU & GHSC	USAID via GHSC

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
Develop and integrate the national product registry of medicine, medical supplies, medical devices, and cosmetics	1	Develop a national product registry of medicines, medical supplies, medical devices, and cosmetics by August 2024	National products registry in place	August 2024	MoH ICT, PORALG ICT, MSD, PSU & GHSC	USAID via GHSC
	2	Integrate the National product registry with existing registries such as TMDA, NHIF etc. by Nov 2024	National product registry integrated with existing registries	Nov 2024	MoH ICT, PORALG ICT, MSD, PSU & GHSC	USAID via GHSC
	3	Disseminate the TMDA safety and quality reporting mobile App tool for adverse drug reaction reporting by April 2024	TMDA safety and quality reporting mobile App tool known and used by healthcare workers and the public	April 2024	MoH, PORALG, TMDA,	TMDA
Strategic Priority 9: Improve management of financial resources						
Integrate electronic revenue collection systems in all public health facilities and institutions with the Government ePayment Gateway (GePG)	1	Conduct requirements gathering exercise for Public health facilities with EMRs which are not yet integrated with GePG by Dec 2023	Requirements document in place	Dec 2023	MoH ICT, PORALG ICT	
	2	Integrate the Public health facilities EMRs with GePG by May 2024	All Public health facilities with EMRs integrated with GePG	May 2024	MoH ICT, PORALG ICT	
Strategic Priority 10: Strengthen disease prevention, surveillance, detection, reporting, response, and control at all levels of the health system						

Strategic Initiative	SN	Target	Milestone	Timeline	Responsible	Funding
Enhance diseases surveillance, detection, reporting, response and control through implementation of an electronic Event-Based Surveillance (e-EBS) system	1	Roll out the Electronic Event-based Surveillance (e-EBS) to at least ten (10) more regions by Dec 2024	e-EBS rolled out to ten (10) more regions	Dec 2024	MoH ICT, and DPS PORALG ICT, and HSU	CDC & AMREF
	2	Create awareness through TV adverts, social media, and radio the mobile number (199) for reporting rumors using public messaging by May 2024	The public aware of the mobile number for sending rumors of an outbreak	May 2024	MoH ICT, and DPS PORALG ICT, and HSU	GoT, CDC & AMREF
Integrate eIDSR with existing digital systems via the HIM	1	Integrate the eIDSR with existing digital systems via the HIM such as EMRs, Lab systems, UCS, etc. by June 2025	eIDSR integrated with existing systems via the HIM	June 2025	MoH ICT, and DPS PORALG ICT, and HSU	USAID
Implement Directives of Deputy Minister of Health given at the Convergence Workshop of Harmonizing Information Systems in Tanzania	1	<ol style="list-style-type: none"> Coming up with Digital Health Harmonization Roadmap. Implementation of the Road map Dissemination of the roadmap to policy makers in a round table discussion 	<ol style="list-style-type: none"> Harmonization roadmap Implementation of the Roadmap. Dissemination 	Feb 2024	TAHIA MOH PORALG MOCIT PMO	
Implement Artificial Intelligence (AI) solutions for Prediction, detection and curation of various disease alerts and outbreaks	1	Explore and identify Artificial Intelligence (AI) solutions for prediction, detection and solutions which support curation of various disease alerts and outbreaks from routine aggregate data and other types of data sources	Proposed AI solutions that can be used to detect disease alerts and outbreak	July 2024	MoH, MUHAS, and TAHIA	

	2	Implement Artificial Intelligence (AI) solutions for detection , Prediction and LLM of various disease alerts and outbreaks from routine aggregate data and other types of data sources.	AI solutions implemented and used to detect disease alerts and outbreak	April 2025	MoH, MUHAS, and TAHIA	
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