Digital Public Health Infrastructure (DPHI) in Kenya

Implementation of eCHIS (Electronic Community Health Information System) in Kenya's Digital Public Health Infrastructure

Submitted by: Hildah Ngondoki (BSc. Computer Science, MBA, MIDS)

Date: 25/08/2024

Introduction

Several countries have embarked on the journey to implement, at-scale, digital solutions for different government functions. In Kenya, the government has embarked on digital projects across all sectors. This includes finance/treasury via tax collection systems (iTax) and treasury bidding system (DhowCSD), education systems (NEMIS) and in health through digitizing Community Health Workers (eCHIS). eCHIS (electronic Community Health System) was conceptualized in 2011 through multi-stakeholder engagement leading to the formulation of the eHealth strategy[1]. It however does not clearly highlight the requirements for digital infrastructure to support digitization of the public health sector.

The Kenya National Digital Master plan[2] fills in the gap by highlighting the major digital infrastructure pillars that are required. The infrastructure should be an enabler to achieve the main government agenda which includes affordable and accessible health care under the Universal Health Care initiatives. Within the health ecosystem, the implementation of Digital Public Health Infrastructure started in 2014 and is still ongoing[2]. This document will showcase the ongoing implementation of DPI in the health sector in Kenya and its evolution towards integrating cross-sectoral DPI components, specifically in Community Health. Finally, it will highlight the practical insights which include the challenges, mitigation strategies and lessons learned from implementing DPI in various health contexts.

Implementation of eCHIS

DHPI in health is multi-layered and complex. In Kenya, the application layer includes Community Health Worker digital tools, Client registry, Health Information Exchange and Electronic Medical Records systems (EMRs) amongst others. These applications are hosted in the National Data Center which is shared across multiple sectors and supported by the ICT Authority. The foundation of this digital health infrastructure is

[1] Ministry of Medical Services Kenya: Kenya National e-Health Strategy 2016- 2030, https://health.eac.int/resources/publications/kenya-national-ehealth-policy-2016-2030
[2] Ministry of ICT Kenya: THE KENYA NATIONAL DIGITAL MASTER PLAN 2022-2032, https://cms.icta.go.ke/sites/default/files/2022-04/Kenya%20Digital%20Masterplan%202022-2032%20Online%20Version.pdf
[3] Government of Kenya: Digital Health Act 2023, https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/2023/TheDigitalHealthAct_2023.pdf

enabled by the availability of physical infrastructure as laid out in the Kenya National Digital Master Plan[2]. Each application within the DPI is developed by different teams, leading to a decentralized approach. Cross functional Technical Working Groups have been established to mitigate the challenges across the different work streams and create a collaborative environment towards digitization.

eCHIS is a digital tool for community health workers, which through support of partners, was the first health app to scale nationally to all 47 counties. This led to the need to redefine the Client Registry, which was already being developed by the Electronic Medical Records (EMR) team. This organically led to the need for the Health Information Exchange and Shared Health Record (SHR). Therefore, it is evident that there is need for a well thought out health infrastructure that requires cross functional collaboration. Partners are actively collaborating with the government to develop a comprehensive strategy for the interoperability layer, and substantial progress has been achieved in this area.

The digitization of Community Health Workers, and commitment from government to compensate them has generated the need for a performance based digital payment system. This initiative represents a convergence of finance and healthcare, where data-driven compensation models for health workers are being explored and piloted for potential large-scale implementation.

Challenges

There are few resources with the required competencies to support the technical specifications of digital public infrastructure. Additionally, the work requires centralized financial resources to enable cross-functional pursuit of seamlessly integrated digital health system. We as partners from local and international organizations are providing support where possible, however, it is still decentralized, and integration is prioritized as per need. At-scale, there are myriads of issues that have necessitated the need to have a cross-functional support team with clear standard operating procedures (SOPs) and service level agreements (SLA). With the overarching challenges on human resources, it continues to be a challenge for the national government to support all digital health initiatives. This poses a risk of losing the gains of digital health. Despite these difficulties, a significant accomplishment has been the conceptualization and growing momentum of the DPI for health over the past two years.

There has been low system availability because observability of the infrastructure requires dedicated support, which is unavailable. Additionally, the infrastructure requires gold standard redundancies to ensure continuity of services, which has been

[1] Ministry of Medical Services Kenya: Kenya National e-Health Strategy 2016- 2030, https://health.eac.int/resources/publications/kenya-national-ehealth-policy-2016-2030
[2] Ministry of ICT Kenya: THE KENYA NATIONAL DIGITAL MASTER PLAN 2022-2032, https://cms.icta.go.ke/sites/default/files/2022-04/Kenya%20Digital%20Masterplan%202022-2032%20Online%20Version.pdf
[3] Government of Kenya: Digital Health Act 2023, https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/2023/TheDigitalHealthAct_2023.pdf

difficult to set up due to lack of resources. To address this, the government needs investment in modern infrastructure and additional resources to address networking challenges.

Additionally, with real time data, there is an influx of various data points and adaptation to a very curated view of Key performance indicators has been wanting. The infrastructure required for interactive and insightful dashboards has been out of reach for the government due to dependence on Open-Source tools. We as partners have taken on the challenge to build capacity for data driven decision making using available dashboards, however, more still needs to be done to employ model artificial intelligence tools to provide predictive analytics.

Lessons Learnt

Technical specifications for digital public infrastructure and governance are required for complex cross functional teams. The implementation of an at scale electronic Community Health Information System has catalyzed the development of other Health Information Systems and therefore standardizing the approach would ensure more efficient use of resources. In addition, the competencies and skillsets to support the digital efforts cannot be underestimated. There is a need to create a sustainable approach in collaboration with partners to transfer skills.

Cross functional and multi-sector collaboration is the secret sauce for at scale digital public systems. Scaling systems is not a new endeavor for different government entities; however, the experiences are not adequately shared across the different government entities. Working within multi-sector governance structures ensures that there is close cooperation and communication between the different government groups required to make the implementation a success.

Capacity building at different levels should not be limited to digital applications. There is a need to provide technical support training to different cadres of end users to increase awareness and effectiveness in the use of systems. Additionally, for those directly supporting the infrastructure, there is need to focus on equipping them with the necessary skillsets to support the digital infrastructure, and applications.

Conclusion

The at-scale implementation of digital health applications is entirely dependent on the available digital public infrastructure. An architecture for Digital Public Infrastructure for Health would allow governments to leverage worldwide knowledge to reduce the learning curve and mitigate infrastructure challenges.

[1] Ministry of Medical Services Kenya: Kenya National e-Health Strategy 2016- 2030, https://health.eac.int/resources/publications/kenya-national-ehealth-policy-2016-2030
[2] Ministry of ICT Kenya: THE KENYA NATIONAL DIGITAL MASTER PLAN 2022-2032, https://cms.icta.go.ke/sites/default/files/2022-04/Kenya%20Digital%20Masterplan%202022-2032%20Online%20Version.pdf
[3] Government of Kenya: Digital Health Act 2023, https://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/2023/TheDigitalHealthAct_2023.pdf