Big Data for Health
Malawi Internet Governance Forum

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Agenda

1. COMPELLING WORKS
   - Who we are
   - What we do
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2. BIG DATA FOR HEALTH
   - What is Big Data
   - Why Big Data for Healthcare?

3. Big Data Examples
   - Estonia eGovernment
   - Kenya m-Pesa
   - Rwanda Center for Fourth Industrial Revolution (C4IR)

4. MALAWI OPPORTUNITY
   - MOH Interoperability Architecture
   - PALMS Data Pipeline
   - Data for Development Initiative (D4D)
   - The need for a transition
1  Who we are
## Overview

### Mission
Promoting health, wellbeing, and development through practical digital solutions

### Core Values
Integrity, Competence, Transparency, Respect, Contribution, Excellence (ICTRCE)

### What we do
- Deploying practical digital solutions for development
- Powering the management of development projects
- Generating knowledge for development
- Bridging the gap between digital professionals and clients

### Key projects
- Blantyre Prevention Strategy
- Viral Load Results Return
- E-Register Platform Strengthening
- AI Suite enhancement
Our Team

- **Dr Simon Ndira**
  Founder, CEO
  Chief of TAS

- **Harold Mugeni**
  Co-Founder, CIO

- **Michael Ochieng**
  Finance Controller

- **Angelica KIwumnuolo**
  Senior Manager R&D

- **Patricia Khomani**
  Deputy TAS

- **Jacob Mziya**
  Senior Solutions Developer

- **Chris Mwase**
  Deputy R&D Manager

- **Chris Kulanga**
  Senior HIS Advisor

- **Ipyana Mwambila**
  Senior Finance & Admin Officer

- **Maganizo Monawe**
  Senior HIS Advisor

- **Chimwemwe Mputeni**
  Senior HIS Advisor

- **Pike Msonda**
  Senior Software Engineer

- **Lughano Mwaisunga**
  Senior Infrastructure Engineer

- **Vercy Mkandawire**
  Finance & Admin Officer

- **Nicholas Ondowa**
  Finance & Admin Officer

- **Jackie Umuganwa**
  Project Support Officer

- **Cynthia Nkosi**
  R&D Officer
Our partners and donors include

COOPER/SMITH

m4h

jembi health systems NPC

maha

Mapping & Analytics for Health Activities

BILL & MELINDA GATES foundation

giz

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Key Partners

Compelling.Works
2 Big Data for Health
What is Big Data?

- NYSE generates 1TB / daily
- Facebook ingests 500+ TB daily
- 2.5 quintillion \((10^{18})\) bytes of data are created daily. That's 2.5 million terabytes, or 2.5 million computers with 1-terabyte hard drives.
- 90% of the data in the world today created in the last two-three years.
- 7,000 scientific papers are published each day, of which approximately 1,900 are medical papers.

“One doctor can read a medical journal maybe twice a month. Cortana can read every cancer study published in history before noon and by 3 p.m. is making patient-specific recommendations on care plans and improving outcomes.” -- CEO John Damgaard, MatrixCare
Why big data for health care?

Save lives, improve the quality of life in general

Reduce cost of treatment, avoid medical errors

Predict outbreaks of epidemics; avoid preventable diseases

Big Data Types

Diagnostic
Descriptive
Prescriptive
Predictive

Examples of big data applications in healthcare by DataPine
3 Big Data Examples
Example: Estonia eGovernment

- A well-functioning eGovernment
- Sparked off by the banking system and the need for personal identification for e-payment – 98% of transfers are electronic
- 2007 – launch of mobile ID, digital signature on par with regular
- Central infrastructure
- Freedom to develop own system, but compatibility endorsed by permit from Min. Of Econ. Affairs and Communications (MEAC)
- eServices brought to people e.g., purchase of car insurance from gas stations, road traffic systems linked to health facilities emergency units
Examples in Kenya, Rwanda

- Over 48 million subscribers as of 31st Mar 2021
- Leveraging big data to understand consumer behaviours
- **Fuliza** – complete your M-Pesa transactions when you have insufficient funds (mobile overdraft); $3.1bn credit portfolio - **$12m credit daily**; Standard Bank MW advanced ca. $202.6m in 2021 translates to **$564,000 daily** (Audit Dec 2021)
- **M-TIBA** – put funds aside for healthcare; managed by UAP Insurance; **4.7 million** subscribers as of Jan 2021; MASM membership **145,450** (MASM, June 2021)

- Passed law protecting personal data on 21st October 2021
- **C4IR Rwanda** – brings together key actors to (gov, industry, CSO, academica) to co-design, test, and refine policy and governance frameworks for 4IR
- Leveraging **Chatbots RESET**, a framework for governing responsible use of conversational AI in healthcare, deployed the **Babylon** platform handles more than **4,000 consultations** daily using an AI triage system (WEF, Mar 2022)
- Universal health coverage reaching 90+% of the population linked to **Babylon**.
4 Malawi opportunity
OPENHIE ARCHITECTURE:

A roadmap to full interoperability consistent with international standards using locally developed open-source software:

- Sustainability and value depend on this structure
- Functioning data exchange between systems = data are related and used in new, meaningful ways for HIV programming
Access to Data Sources

- Community Health
- Social Media
- Help Centre by Phone
- LAHARS
- SDM
- CBO Mapping
- Population Surveys
- PLAC E DH S
- CLOVE
- Biological & Behavioral Surveillance Survey (BBSS Survey)
- DHAMIS
- LMIS
- DHIS2
- DHIS Mobile Network Operator
- EMR
- OpenSR P
- Food Security
- Weather
- Census
- VMMC Coverage
- Modelled
- NAOMI (UN Estimates)
- Mastercard
- HIV PREVENTION DATA PIPELINE

Legend:
- Access Acquired
- Partial/Most Recent Data
- To Acquire
Prevention Adaptive Learning and Management System (PALMS):

The Blantyre Prevention Strategy is combating new HIV infections in Blantyre district.

PALMS integrates and analyses data from all relevant sources to support decision making along the HIV prevention cascade of prevention targeting, demand creation, service delivery, and sustained use.
Data 4 Development (D4D): LEVERAGING DATA FOR DEVELOPMENT THROUGH A MULTI-SECTORAL APPROACH

September 16, 2021
OVERVIEW – THE NEED FOR A DATA FOR DEV’T TWG

Global trend in tackling world issues towards peace and prosperity for all

MDGs -> Program-specific, silos e.g., goals 4, 5

- Routine data collected regularly e.g., monthly
- Denominator estimates decennial (Census)
- Sector specific data analysis
- Sector-specific custodianship

Implications on program design

- Sector-specific, siloed programs, BPS HIV
- Sector-specific actors and stakeholders
- Limited use of MNO data

Trend in data use for decision support

MDGs -> Multi-sectoral approach e.g., 3, 6, 7, 2

- Real time data e.g., daily updates on Covid-19
- Estimates with MNO data complements Census
- Multi-sectoral approach to data use
- National custodianship (NSO)

- Consideration of the multi-sector
- Institutionalization of data use at the national level
- Increased role of regulatory bodies and TELCOs

COOPERSMITH.ORG
The need for a transition

eGovernance is the foundation for success

Where we are today ...
- Non-existent or unenforced digital policies and regulations
- Fragments / siloed systems
- Sector-specific approach - eHealth
- High Internet / data costs
- Health insurance gaps
- Lack of cross-borderer data flow

Where we need to be ...
- Functional and practical digital policies and regulations
- Interconnected systems
- Multisectoral approach – eGovernment
- Zero-rated Internet for key services
- Universal health insurance
- Crossboard data flow