The Digital Health Atlas for Inventories and Routine Registration of Digital Health Investments

Dr. Garrett Mehl, Scientist
Digital Health Interventions Research
Problems w/ Digital innovation

- Uncoordinated investment and development, and reinvention of tools;
- Poor understanding of existing goals, functionality, and maturity of existing digital systems;
- Inability to compare digital systems in standardized way
- Inadequate registry mechanisms that offer value to all stakeholders
Global web-platform to **curate digital health intervention** and shared asset info-structure investments, supporting governments, donors, technologists and implementers to map, monitor, and foster digital health investments planning to meet Government health goals.
Welcome!

(Editable) This Digital Health Atlas aims to strengthen the value and impact of digital health investments, improve coordination, and facilitate institutionalization and scale.

Sign up

Whether you are an implementer, government, or financial investor, sign up below.

1. SELECT YOUR ROLE

- I’m an “Implementer”
  How can I better scale-up my implementation? Are there tips and resources that I should consider to improve my implementation? Sign up to complete the digital version of the MAPS toolkit and track the performance of your implementation.

- I’m a “Financial Investor”
  What are the different projects within your portfolio? Sign up to access a visual dashboard displaying the performance metrics of projects within your portfolio.
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### Questions

<table>
<thead>
<tr>
<th>When is mHealth applied along the life course?</th>
<th>Illustrative Options</th>
<th>Example</th>
<th>Visual on Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescence</td>
<td>Pregnancy</td>
<td>Birth</td>
<td>Childhood</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What Health Interventions are being enhanced?</th>
<th>Example</th>
<th>Visual on Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria treatment</td>
<td>Postpartum care</td>
<td></td>
</tr>
<tr>
<td>PMTCT, breastfeeding, micronutrient supplementation, tobacco cessation</td>
<td>Postpartum care</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Which health constraint(s) are being overcome?</th>
<th>Example</th>
<th>Visual on Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic inaccessibility, poor demand for services, client-side expenses</td>
<td>Low Demand for Services</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How is mHealth applied (technology function, use, purpose)?</th>
<th>Example</th>
<th>Visual on Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client education and behavior change, sensors and point of care diagnostics</td>
<td>SMS reminder messages about upcoming vaccinations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Where does mHealth implementation engage actors (facilities, providers, clients)?</th>
<th>Example</th>
<th>Visual on Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home, PHC, district facility, client, provider, laboratory, national health information system</td>
<td>SMS reminder message about upcoming appointment is sent to client's phone</td>
<td></td>
</tr>
</tbody>
</table>

Leverages WHO Digital Health Framework for Health System Strengthening to define focus on health goals
Foundational Digital Shared Assets of the Health Information System

- A. Electronic Medical Record
- B. Physical Asset Information Systems
- C. Laboratory Systems*
- D. Diagnostic Systems*
- E. Knowledge Management*
- F. Facility Management Information Systems
- G. Payroll Management* Systems
- H. Health Management Information Systems
- I. Disease Surveillance*
- J. Client registry**
- K. Facility Management Information System
- L. Learning and Training Systems
- M. Pharmacy Systems*
- N. Human Resource Information Systems
- O. Civil Registration and Vital Statistics*
- P. Client Communication Systems
- Q. Routine Health Information Systems*
- R. Data collection and research systems
- S. Logistics Management and Information System*
- T. Geographic Information Systems (GIS)
- U. Terminology service**
- V. Shared health record**
- W. Facility registry**
- X. Health worker registry**
- Y. Medical devices
What functions does the digital system perform?
### Draft WHO Digital Health Functionality Framework

<table>
<thead>
<tr>
<th>Health Tracking</th>
<th>Client Health Records</th>
<th>Provider Based Decision Support</th>
<th>HR Management</th>
<th>Referral Coordination</th>
<th>Data Collection Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track client's health and services within a longitudinal care plan</td>
<td>Manage client's structured records</td>
<td>Guide through process algorithms according to clinical protocol</td>
<td>List health workforce cadres and related information</td>
<td>Coordinate emergency response and transport</td>
<td>Routine health data collection management</td>
</tr>
<tr>
<td>Monitor diagnostic by event</td>
<td>See client's risk or health status</td>
<td>Provide checklist according to clinical protocol</td>
<td>Monitor health worker performance</td>
<td>Manage referrals between points of service within health sector</td>
<td>Non routine collection manager</td>
</tr>
<tr>
<td>Mapped to HL7 EMR-S Functional Categories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Work Planning and Scheduling</th>
<th>Targeted Provider Communication</th>
<th>Health Worker Training</th>
<th>Data Synthesis Visualization</th>
<th>Automated Analysis and Data Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule clients appointments based on clinical care plan</td>
<td>Transmit routine news and updates to health workers</td>
<td>Provide training content to health workers</td>
<td>Record health worker work</td>
<td>Data correlation</td>
</tr>
</tbody>
</table>
DHA Inventory Approach

- Supports Government led mechanisms to **conduct** inventories
- Allows for trusted partner to **uniquely identify and categorize** specific investments using minimum data set, and then hand over to project to add details
- Additional **data fields and customization** will be added throughout 2017 with input from Governments, donors, and technologists
<table>
<thead>
<tr>
<th>Project name</th>
<th>Country</th>
<th>Organization name</th>
<th>Donor name</th>
<th>I'm following</th>
<th>I've funded</th>
</tr>
</thead>
<tbody>
<tr>
<td>eHealth Africa</td>
<td>Sierra Leone</td>
<td>Organization name</td>
<td>Donor name</td>
<td></td>
<td></td>
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<tr>
<td>GOAL International</td>
<td>Sierra Leone</td>
<td>Adipisci Elit</td>
<td>Adipisci Sed Magna</td>
<td></td>
<td></td>
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<tr>
<td>Helen Keller International</td>
<td>Sierra Leone</td>
<td>Sed Eiusmod Tempor</td>
<td>Sed Eiusmod</td>
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<tr>
<td>Lorem ipsum dolor</td>
<td>Sierra Leone</td>
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<td>Et Dolore Magna</td>
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<td>Et Dolore Magna</td>
<td>Sierra Leone</td>
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</tr>
<tr>
<td>Aliqua Lorem</td>
<td>Sierra Leone</td>
<td>Lorem Ipsum</td>
<td>Donor name</td>
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</table>
Use Case: projects to systematically assess and monitor the maturity of digital health implementations

- Leveraging the WHO mHealth Assessment and Planning for Scale (MAPS) toolkit indicators of maturity

- Allows projects to improve potential to scale, integrate, and institutionalize within national eHealth architectures
mHealth Assessment and Planning for Scale (MAPS) toolkit for Maturity Assessment

- MAPS provides **actionable information** to improve mHealth projects’ capacity to scale up

- Informed by WHO, UN IWG Catalytic Grant Mechanism for mHealth projects

- MAPS has **two main goals**:
  1. Assess Maturity
  2. Plan
DOMAIN 8: DATA (43 points)

Efforts to ensure that a number of elements of the mHealth technology and system are appropriate to data needs throughout all stages of the scaling-up process, including access, transmission, storage and security.

8-1. Does the application have features that aim to improve data accessibility and quality? (9 Points)

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
<th>DOCUMENTED</th>
<th>POINTS EARNED</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) The application includes data quality assurance measures, such as validation rules and logic checks, to reduce data entry errors and increase accuracy</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
<td>1 points</td>
</tr>
<tr>
<td>ii) A user-appropriate dashboard allows the data to be accessed and monitored in real time</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
<td>1 points</td>
</tr>
</tbody>
</table>

iii) There is a process in place for testing and extracting the data that are appropriate to...
Curated guidance and knowledge sharing

Planning & Guidance

Specific examples demonstrating how different implementers have approached and addressed some of the major challenges to scaling up.

WHO M&E toolkit

In Monitoring & Evaluation - Evaluation Research

• Supports digital health **coordination**, documentation, and planning

• Addresses country and implementer unfamiliarity with other technologies that are already being used locally, which could be **adapted and reused**

• Documents orphaned and **abandoned technology investments** when projects end or funding stops

• Supports country investment planning, and evaluation of technologies and solutions for tackling **interoperability challenges** (future)

• Facilitates Governments’ efforts to **review data elements and indicators** for monitoring achievements related to UN SDGs and the UN Global Strategy for Women’s Children’s and Adolescents’ Health. (future)
<table>
<thead>
<tr>
<th>digital health intervention</th>
<th>Implementing partners</th>
<th>Geographical coverage</th>
<th>mHealth interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant women and mothers, allows visit by CHWs, and educational messages at CHWs can use when seeing clients.</td>
<td>MoHS, Health for all coalition and DHMT</td>
<td></td>
<td>Primary Care, Maternal health, Nutrition/Food Security</td>
</tr>
<tr>
<td>Electronic data entry and time data collection and to guide CHWs in better care and filling correctly. To identify patients more and more efficiently To facilitate and support-based programs</td>
<td>Wellbody Alliance, Directorate of Primary Health</td>
<td></td>
<td>Tuberculosis, HIV/AIDS</td>
</tr>
<tr>
<td></td>
<td>Directorate of Food and Nutrition; Directorate of RCH</td>
<td></td>
<td></td>
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Number of Projects in sierra-leone: 3

Apply filters to map:

- **Continuum (7)**
  - Detection and diagnosis
  - Follow and retention to care
  - Health promotion and intervention
  - Identify target populations
  - Linkage to care & Coordination
  - Management and quality of Care
  - Reporting and Planning

- **Interventions (40)**
  - Adobe Forms
  - Bamboo
  - Captricity
  - Commcare
  - Crowd Map
  - Data Winners
  - DHIS2
  - emocha
Use Case: Country Planning

- **Use Case:** Understanding current assets against future state, to develop digital health investment plan

- DHA is being developed as a complement to WHO guidelines and online digital health implementation Guide due in Q4 2017

- The inventory will link to country level planning and costing tools that are currently being developed
**DHA Status**

- Version 0.5 is fully functional and can be used for project registration, geographic scope, maturity assessment, and scalability progress tracking.

  - **Version 1.0 will be released at end of May**, focused on inventory use case: detailing country digital health investment functions and health focus.

- Target countries are starting to pilot the DHA for country level inventory of digital HIS investments.

- Version 2 will incorporate results of requirements gathering and capacity building from Asian, West African and HDC countries - in Q2 2017. Incorporate WHO eHealth Observatory data.

- Additional v2.5 functionality related to data and indictors, and interoperability will be built in Q3 2017. Broad mainstreaming campaign.
For more information

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