

Digital Health in low resource settings of our world with an emphasis on health system strengthening



Source: © Andrea S Winkler



Source: <https://www.myjoyonline.com/lifestyle/2017/may-17th/newly-refurbished-ridge-hospital-opened-to-the-public.php>

Source: http://www.tradearabia.com/news/REAL_332790.html

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The definition of “Global Health”

- Takes care of health issues transcending boundaries
- Multidisciplinary work at its core
- Health issues of low and middle income countries as important as health issues of high income countries
- Partnership is key

Further reading: Kaplan et al. 2009 Towards a common definition of Global Health; The Lancet





Millennium Development Goals



2000-2015

Goal 1: Eradicate extreme poverty and hunger

Goal 2: Achieve universal primary education

Goal 3: Promote gender equality and empower women

Goal 4: Reduce child mortality

Goal 5: Improve maternal health

Goal 6: Combat HIV/AIDS, malaria & other infectious diseases

Goal 7: Ensure environmental sustainability

Goal 8: Develop a global partnership for development

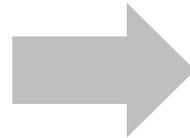


New Development Agenda

Millennium
Development Goals
2000-2015

The 8
Millennium
Development
Goals

 1 ERADICATE EXTREME POVERTY AND HUNGER	 2 ACHIEVE UNIVERSAL PRIMARY EDUCATION	
 3 PROMOTE GENDER EQUALITY AND EMPOWER WOMEN	 4 REDUCE CHILD MORTALITY	 5 IMPROVE MATERNAL HEALTH
 6 COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES	 7 ENSURE ENVIRONMENTAL SUSTAINABILITY	 8 GLOBAL PARTNERSHIP FOR DEVELOPMENT



Sustainable
Development Goals
2015-2030



«Ensure healthy lives and promote well-being for all at all ages»



Sustainable Development Goals



- A set of 17 goals for the world's future, through 2030
- Three main pillars: social, economic and environmental
- Backed up by a set of 169 detailed targets
- Negotiated over a two-year period at the United Nations
- Agreed to by nearly all the world's nations, on 25 Sept 2015



Sustainable Development Goals



HEALTH IN THE SDG ERA



Sustainable Development Goals and Digital Health

InfoInternet
From Health and EDU to SDG 2030 targets



4 QUALITY EDUCATION
Education & Lifelong

3 GOOD HEALTH AND WELL-BEING
Health & Well-Being

5 GENDER EQUALITY
Empower Women & Girls

8 DECENT WORK AND ECONOMIC GROWTH
Growth & Employment

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Infrastructure & Innovation

10 REDUCED INEQUALITIES
"digital divide"

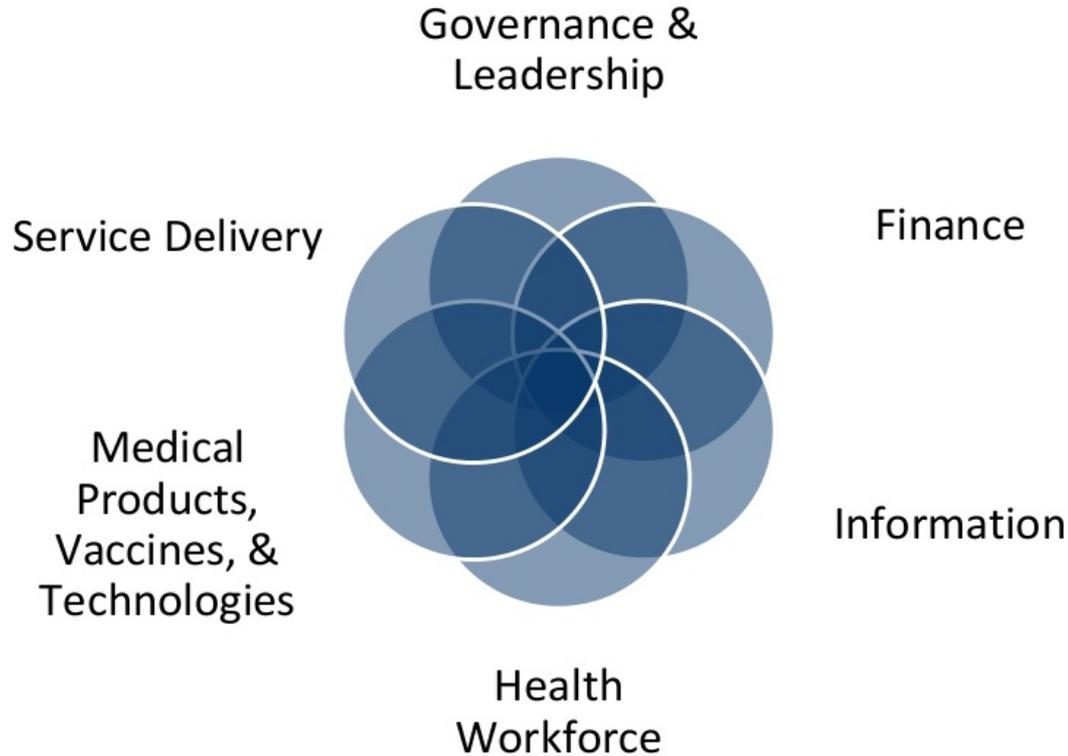
16 PEACE AND JUSTICE STRONG INSTITUTIONS
Peace and Justice

17 PARTNERSHIPS FOR THE GOALS
Partnership

Web BasicInternet.org Basic Internet @Basic4all Digl.BasicInternet.no Feb2017, Josef Noll 11



Strategic priorities for inter-related health system functions



Karen Cavanaugh USAID 10-16-14

<https://image.slidesharecdn.com/karencavanaugh-141021121022-conversion-gate01/95/where-in-usaids-health-systems-strengthening-hss-approach-is-the-communitycavanaugh-3-638.jpg?cb=1413893462>



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München



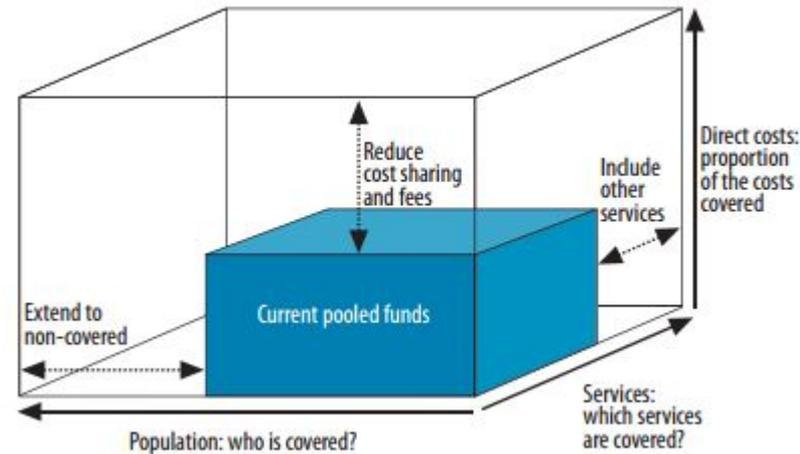
National Health Systems

Currently a global push toward **universal health coverage** and part of the SDGs

Defined as “all people receiving the quality health services they need, without being exposed to financial hardship”^a

Many countries have made national plans and already experienced progress^b

But many pressing questions about how to make further progress most fairly and effectively^c



^a WHO and World Bank (2015). Tracking universal health coverage: First global monitoring report

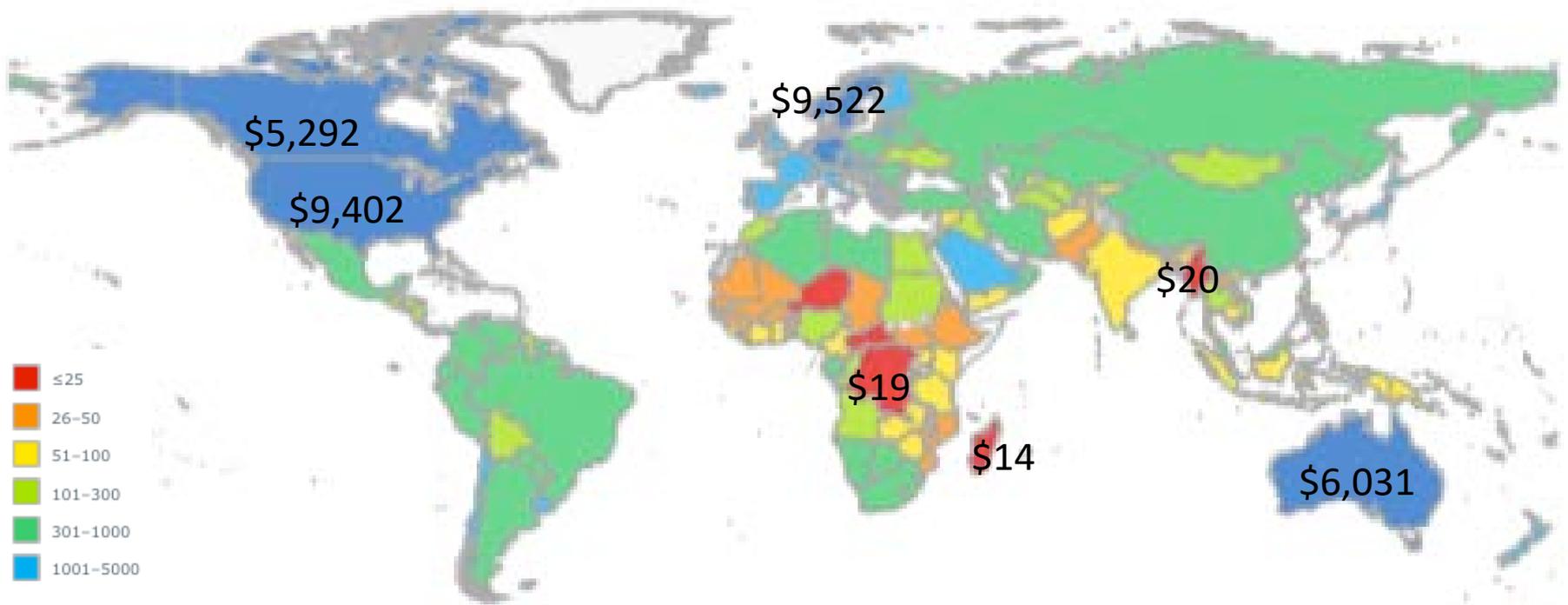
^b World Bank (2015). Going universal: How 24 developing countries are implementing universal health coverage reforms from the bottom up

^c WHO (2014). Making fair choices on the path to universal health coverage



Global Health Financing

Per capita total expenditure on health at average exchange rate (US\$) 2014



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Three areas of financing: example health systems



Domestic financing of
national health systems



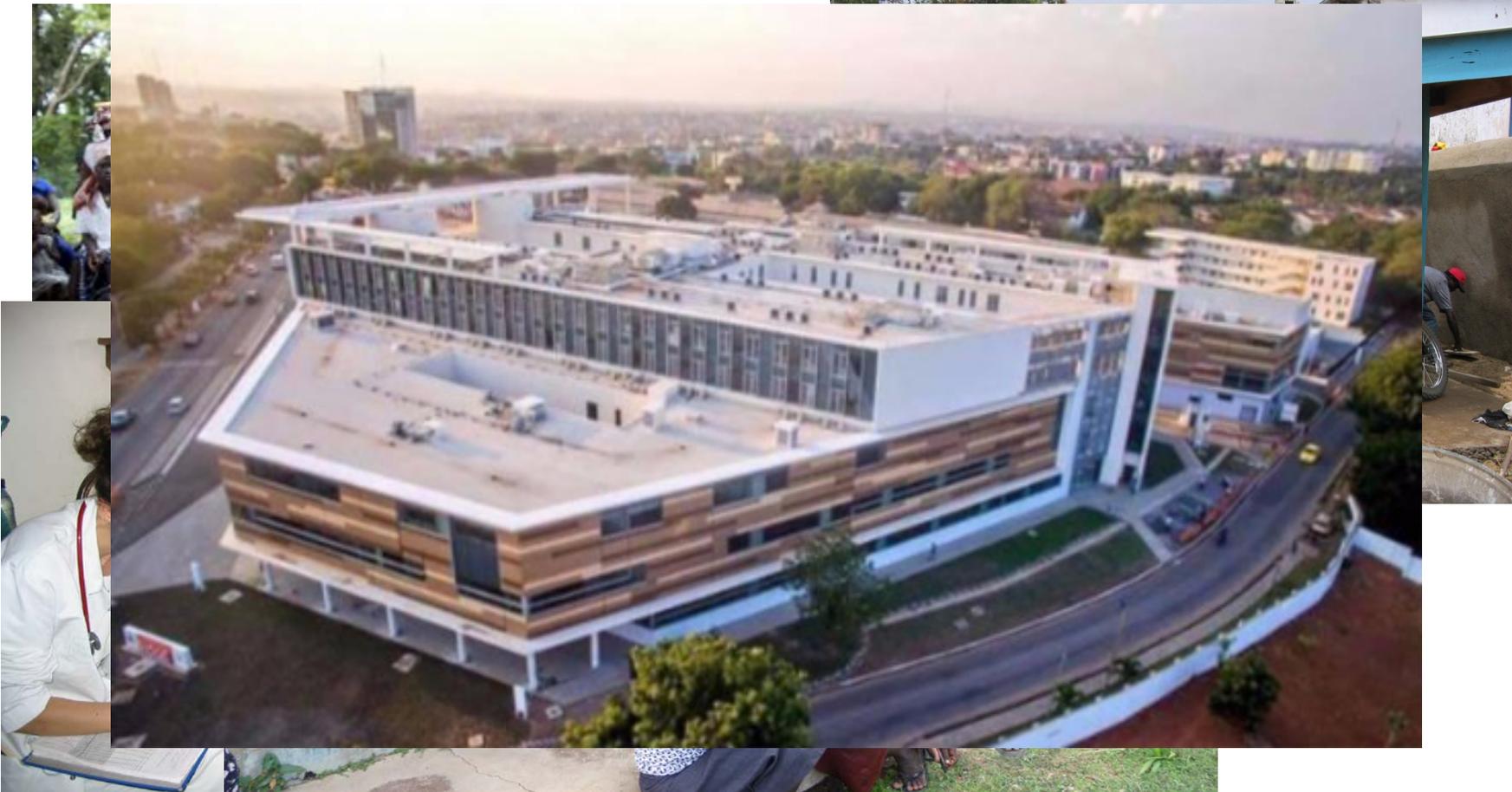
Joint financing of global
public goods



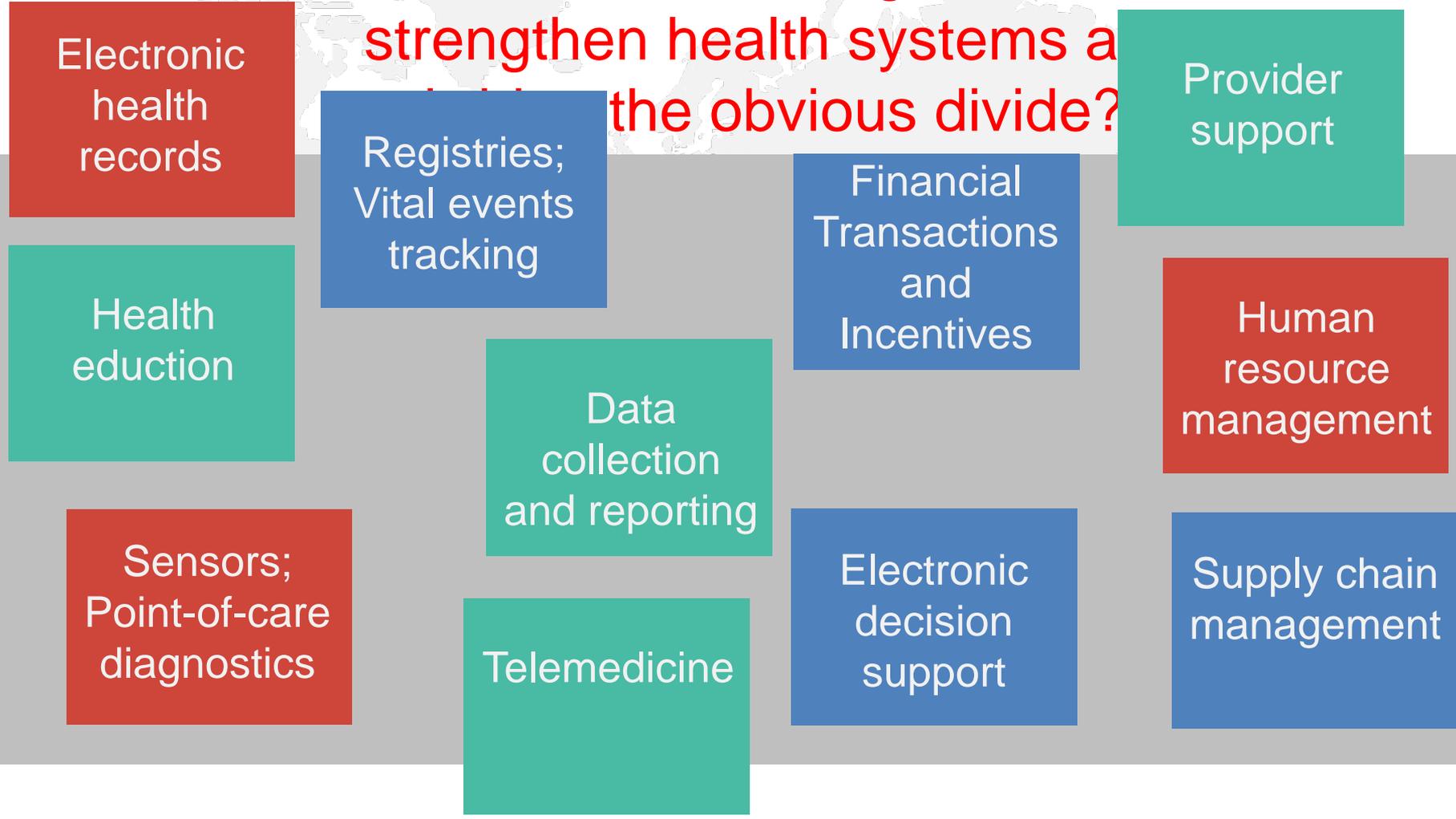
External financing of
national health systems



Health systems in Africa



How can Global Digital Health strengthen health systems and bridge the obvious divide?



Source: Labrique et al. *mHealth innovation as health system strengthening tools: 12 common applications and a visual framework. Global Health: Science and Practice 2013, Volume 1, Number 2, pp 160-171*



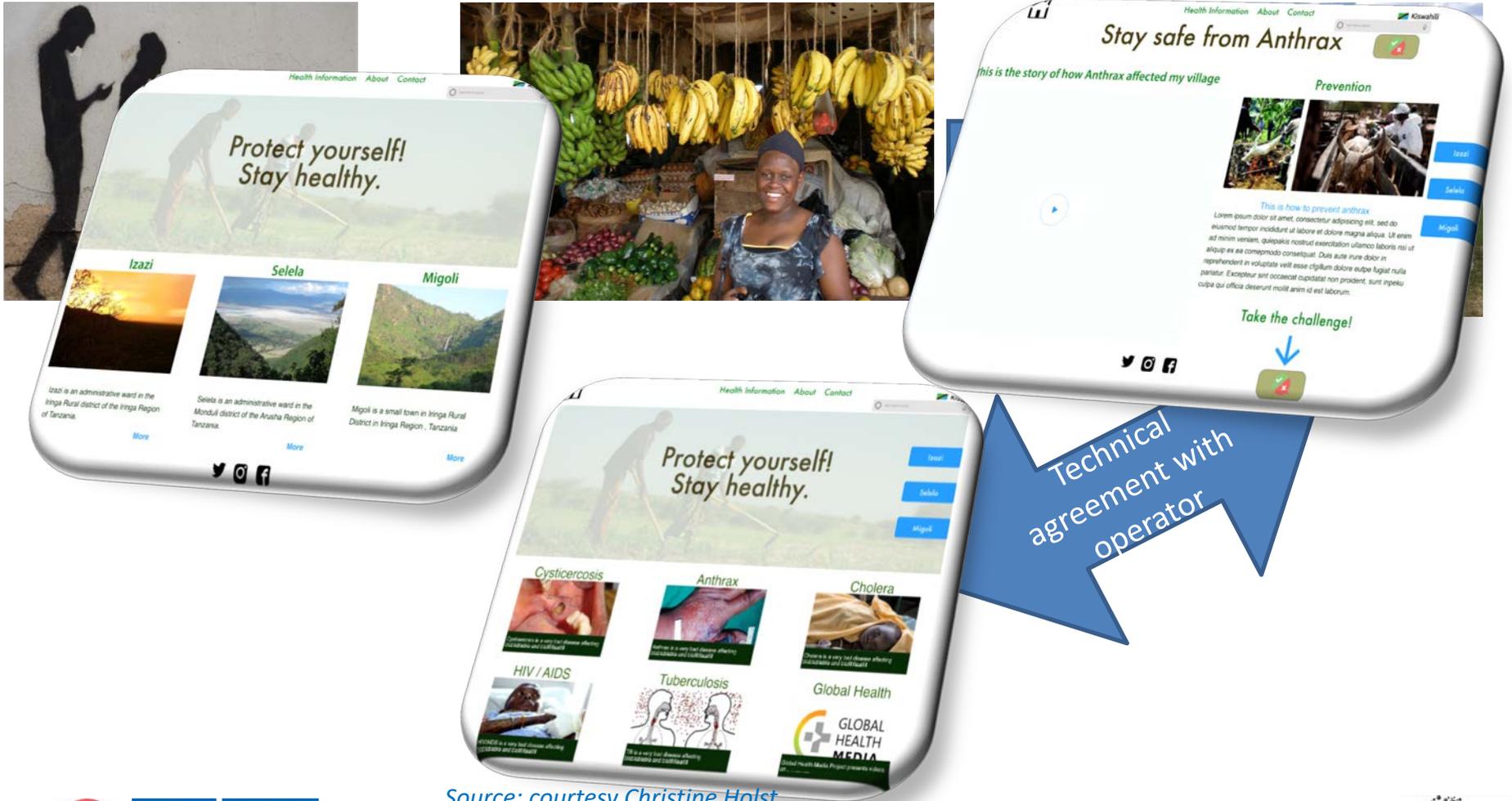


Free access to health information in Tanzania – A Digital (Health Education) Intervention

- Developing appropriate health messages to address:
 - HIV / AIDS
 - Tuberculosis
 - One-health diseases, *Taenia solium* (neuro)cysticercosis / taeniosis (TSCT)
 - Anthrax
- Providing access to the free digital health information
- Testing the effect of the digital health intervention



The intervention – in the village



Technical agreement with operator



Health Information Systems Program (HISP)

- HISP is a **global network of people, entities and organisations** that design, implement and sustain **Health Information Systems**.
- **Aim:** support the improvement of health care systems in **LMIC** by increasing the capacity of healthcare workers to make decisions based on **accurate information**.
- Started in **South Africa** in the 1990s with emphasis on community information systems with input from the **University of Oslo (UiO)** that later on established the **HISP network**.
- HISP at UiO supports **in-country capacity building** and implementation support, **research**, a **PhD** program, and hosting the core **DHIS2 software** development team.

Source: <http://www.hisp.org/>
<http://www.mn.uio.no/ifi/english/research/networks/hisp/hisp-groups.html>
<http://www.mn.uio.no/ifi/english/research/networks/hisp/>



District Health Information System 2 (DHIS2)

- HISP developed the first version of **DHIS** in **early 1997** rolled out at various levels in **South Africa** and later on exported to other countries.
- A completely **re-designed DHIS 1.4** was developed during 2003-04, which in turn formed the basis for the first version of the **web-based DHIS2** from 2005-06.
- **DHIS2** is an **open source software platform** enabling governments and organizations to **collect, manage** and **analyse** data in the health domain and beyond developed by the Department of Informatics, UiO.



The screenshot displays the DHIS2 web application interface for Sierra Leone. The main map shows a satellite view of the country with numerous facility markers. A 'Facility layer' dialog box is open, allowing users to filter facilities by 'Organisation unit group set' (Type) and 'Organisation unit level / parent' (PHU). The dialog also includes a 'Surrounding areas' section with a checkbox to 'Show circular area with radius (m): 5000'. The right sidebar shows a 'Layer stack / transparency' panel with options for Facility layer, Thematic layer 2, Thematic layer 1, Boundary layer, OpenStreetMap, Google Hybrid, and Google Streets. A legend for 'Sierra Leone / PHU' lists facility types: CHC, CHP, Clinic, Hospital, and MCHP.



District Health Information System 2 (DHIS2)

- **Runs on everything:** With DHIS 2 you can capture data on **any type of device**, including desktops, laptops, tablets, smartphones and feature phones. Most solutions **work-offline**, enabling improved reach in locations with poor connectivity. DHIS2 provides a wide range of solutions based on HTML5, SMS and Java.



District Health Information System 2 (DHIS2)

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UiO : Global Health Palestine RMNCH eRegistry



dhis2 Matlab eRegistry (মডলব e রেজিস্ট্রি) Apps Michael Frost

Menu Fatemah Mohammad Khan - Age 18 * High risk pregnancy EDD 2017-12-06 * Unmanaged condition Gest. age: 20+3 G/P/Ab: 2/1/0

Antenatal care visit

2017-04-12 (GA 6) Community Booking visit (Open) → 2017-07-22 (GA 20) Community Antenatal care ... (Completed) → 2017-09-05 Community Antenatal care ... (Scheduled)

Report date: 2017-04-12 Appointment: 2017-07-22

Current pregnancy

Data element	Value
Is this a home visit, or at the health clinic?	Clinic
LMP Status	Known date of first day of LMP
LMP Date	2017-03-01
Gestational age	6
Is this the woman's first pregnancy (PG)?	No
Vaccinated for TT according to guidelines	Sufficiently immunized

Clinical examination

Data element	Value
Systolic blood pressure (mmHg)	120
Diastolic blood pressure (mmHg)	80
Body weight (kg)	77.3
Height (meters)	1.6

Risks related to obstetrical history

- Previous preterm birth

Bar Chart: Births attended by skilled health personnel

Gerehun CHC

Category	Percentage
Births attended by skilled health personnel (registered live births)	98.8
Births attended by skilled health personnel (estimated pregnancies)	54.1

To increase SBA:

- Use list of [estimated deliveries next month](#) to call each pregnant woman and discuss birthing plan

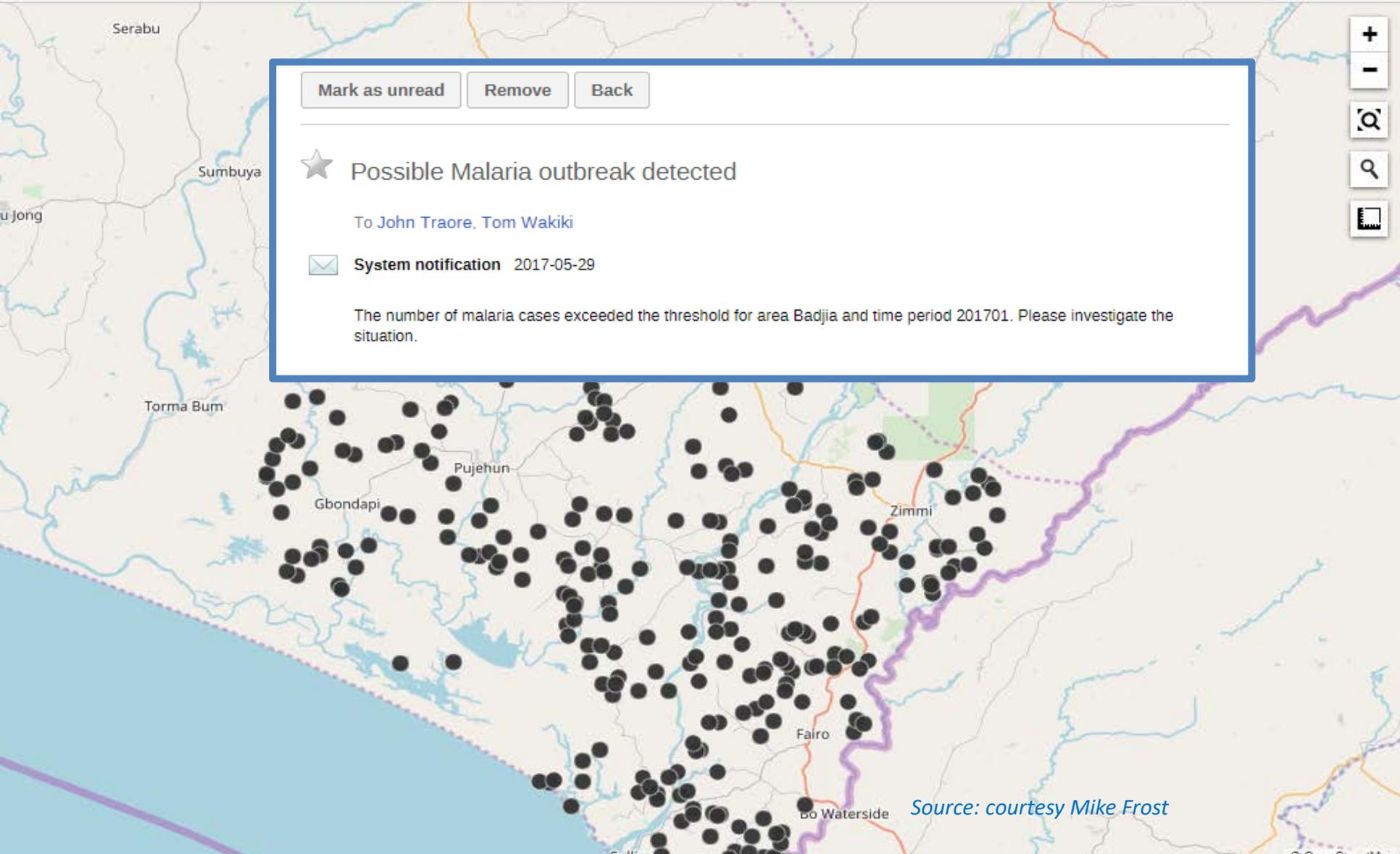




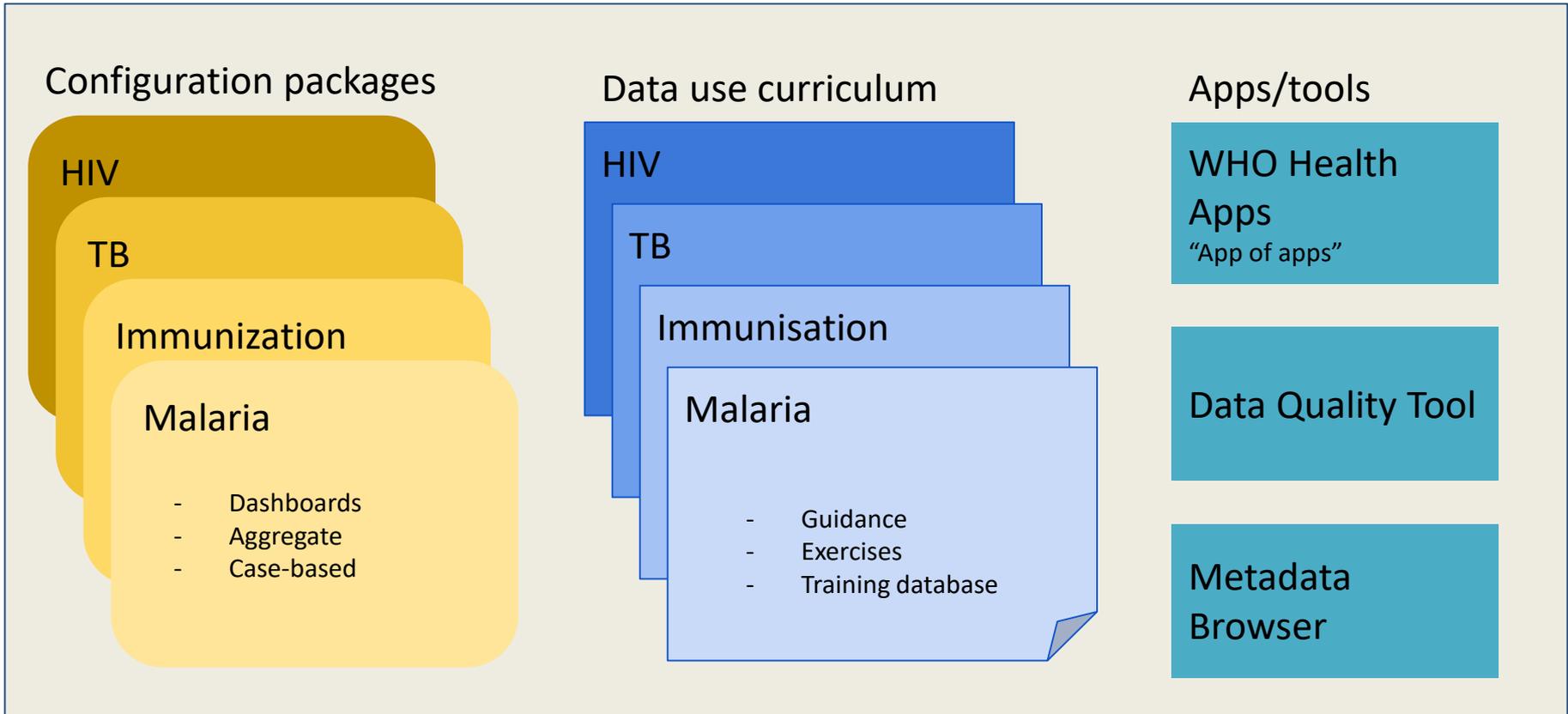
- Introduced in 2016, the MCH eRegistry has been used in **40,000 maternal health visits across 220 clinics** in the West Bank and Gaza
- **Three ongoing RCTs** to determine impact and effectiveness
- The success of the eRegistry has led the Ministry of Health to **adopt DHIS2 for routine reporting and disease surveillance**

Disease Surveillance and Elimination

Navigation bar with icons for Favorites, Share, Table, Chart, Map, About, Home, and a right arrow.



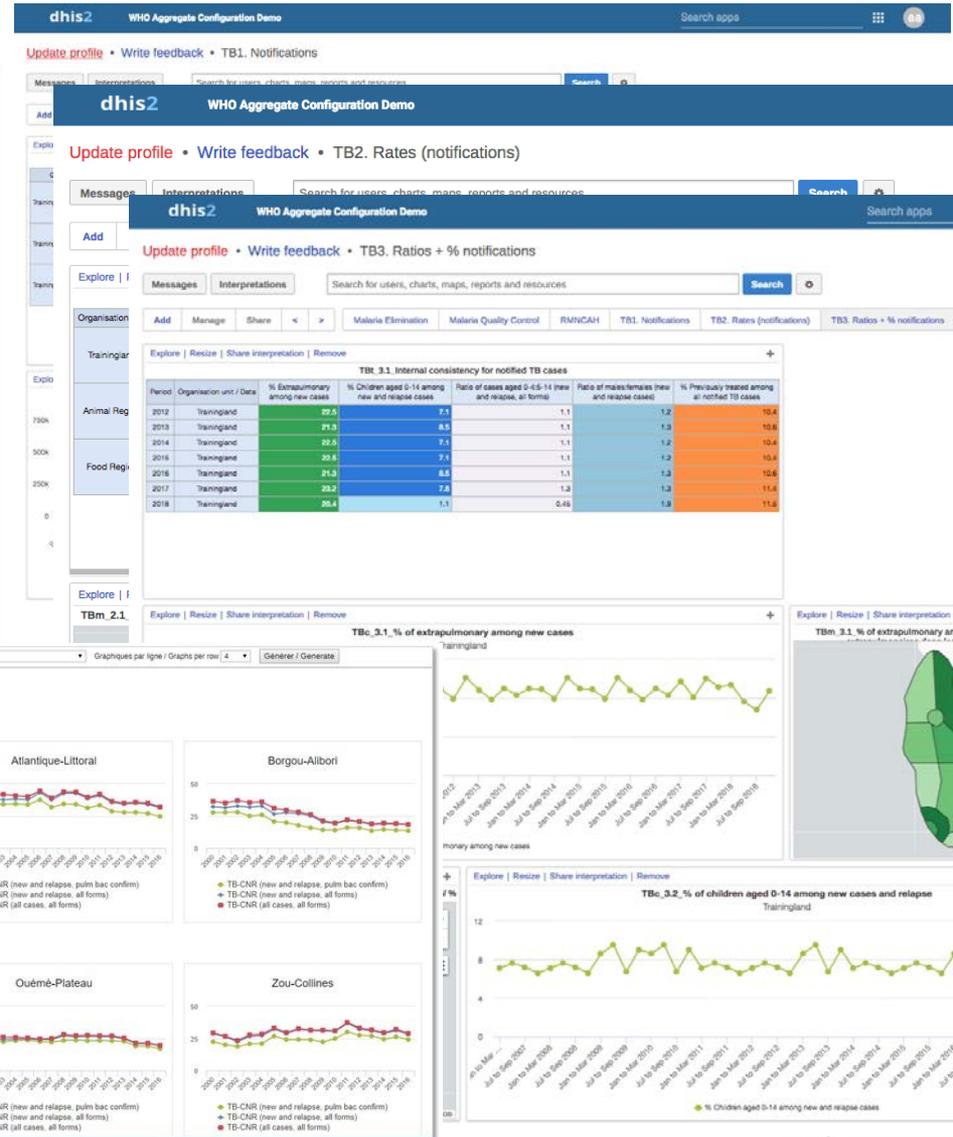
The WHO Health Apps



Definitions and reporting framework for tuberculosis – 2013 revision (updated December 2014)



UNDERSTANDING AND USING TUBERCULOSIS DATA



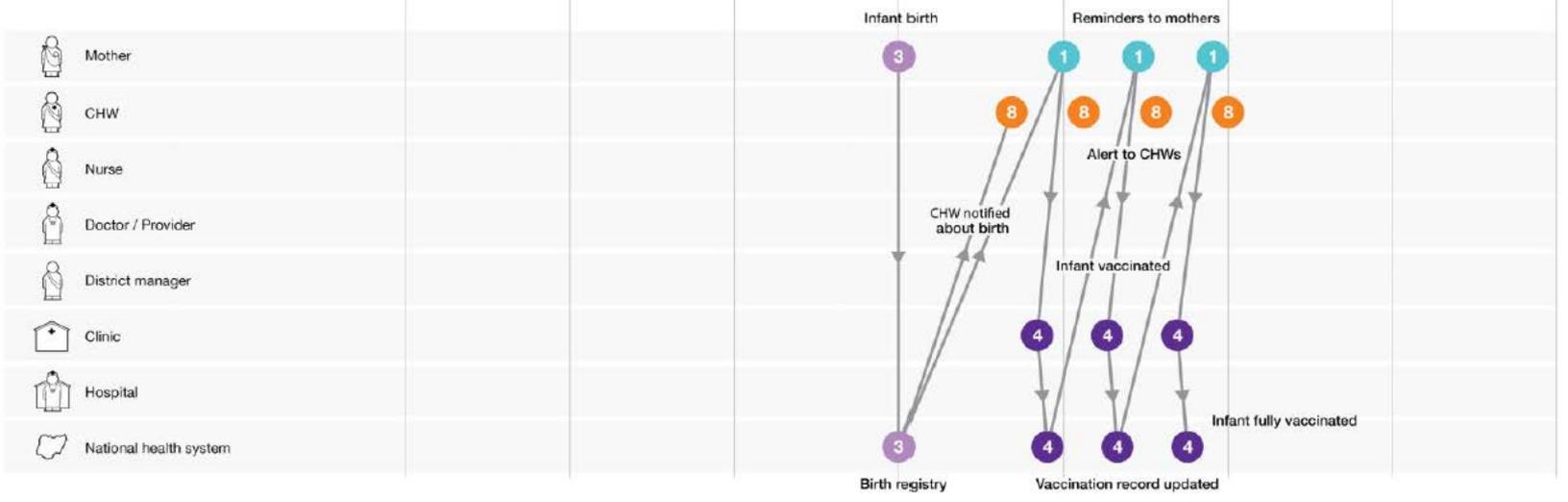
COMMONHEALTH & ICT APPLICATIONS

HEALTH SYSTEM CONSTRAINTS

- Information
- Availability
- Cost
- Efficiency
- Quality
- Utilization



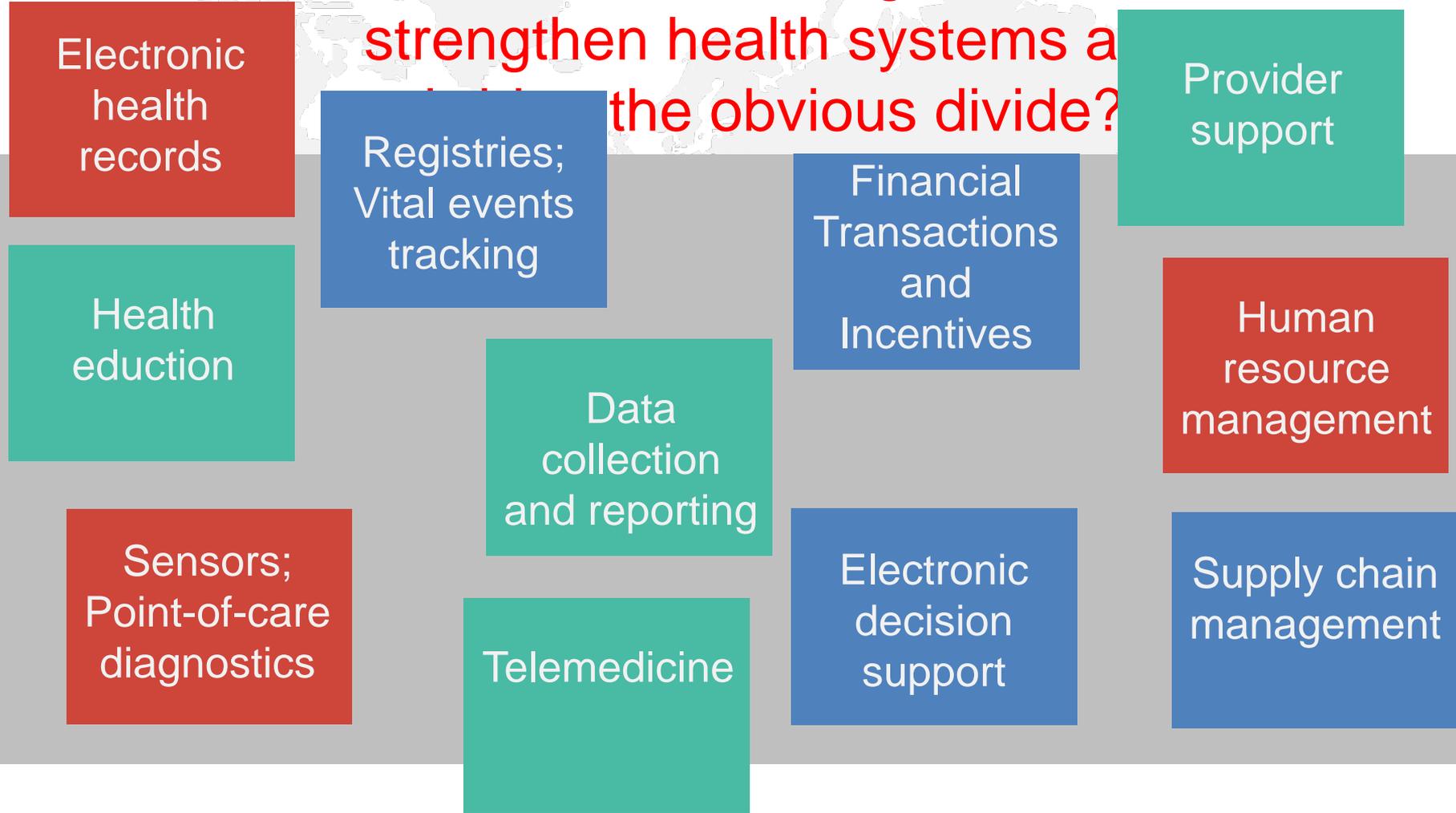
SPECIFIC TOUCH POINTS AT DIFFERENT LEVELS OF THE HEALTH SYSTEM



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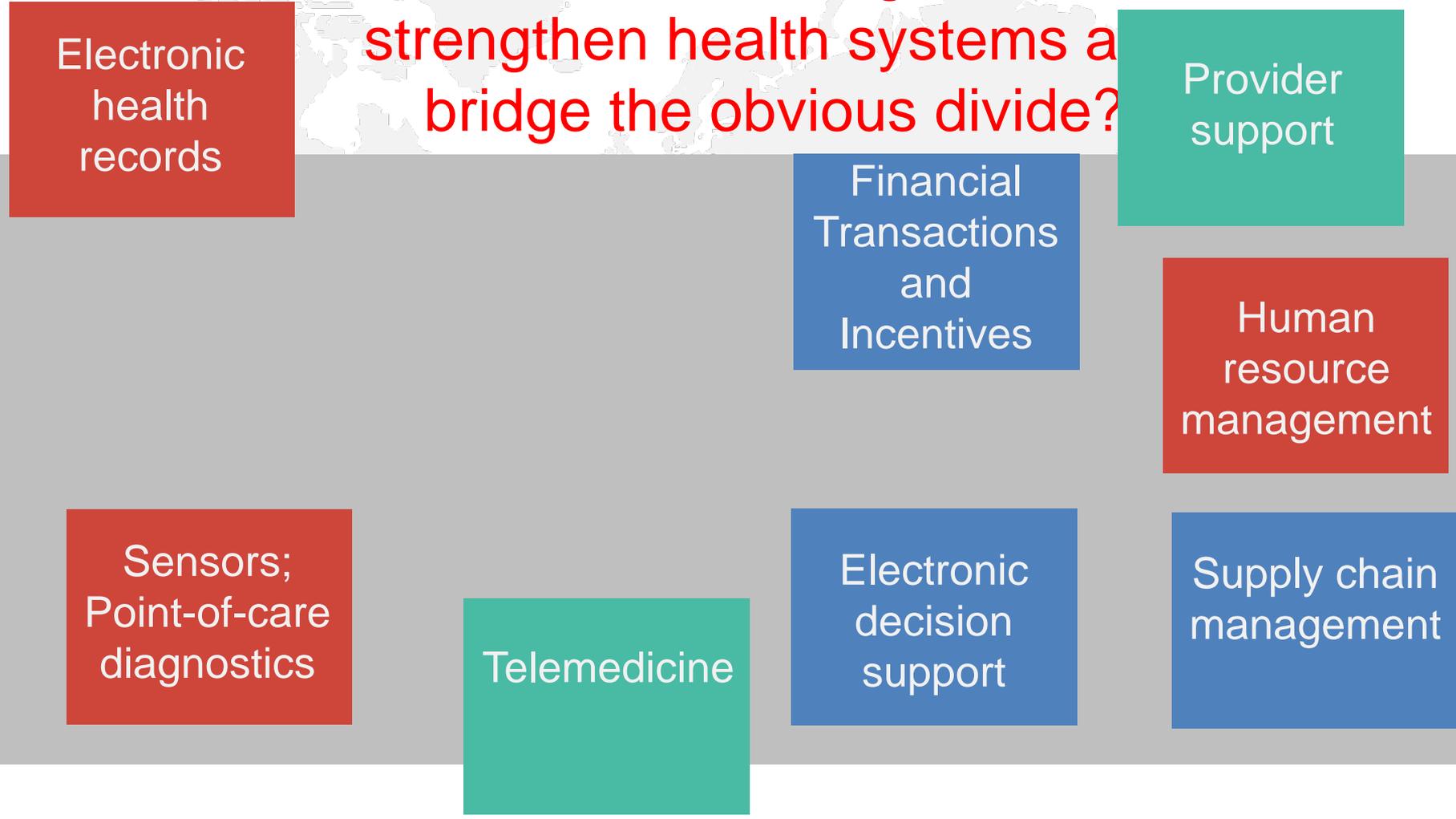
How can Global Digital Health strengthen health systems and bridge the obvious divide?



Source: Labrique et al. *mHealth innovation as health system strengthening tools: 12 common applications and a visual framework. Global Health: Science and Practice 2013, Volume 1, Number 2, pp 160-171*



How can Global Digital Health strengthen health systems and bridge the obvious divide?



Sustainable Development Goals

1 NO POVERTY 	2 NO HUNGER 	3 GOOD HEALTH 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 
7 RENEWABLE ENERGY 	8 GOOD JOBS AND ECONOMIC GROWTH 	9 INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION 
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE AND JUSTICE 	17 PARTNERSHIPS FOR THE GOALS 	 THE GLOBAL GOALS For Sustainable Development

