



# Digital Technology in the Ebola Response and Recovery Efforts

U.S. GLOBAL  
DEVELOPMENT  
**LAB** <sup>1</sup>  
Powered by **USAID**



**USAID**  
FROM THE AMERICAN PEOPLE

# About the Global Development Lab

## **Mandate:**

- Integrating Science, Technology, Innovation, and Partnerships (STIP) Agency-wide
  - Institutionalize within USAID the ability to harness science and technology

## **Dual Mission:**

- Support breakthrough innovation
- Transform development



**USAID**  
FROM THE AMERICAN PEOPLE

# Digital Development Work streams



## Digital Finance

Leveraging the growing digital infrastructure to **extend financial services to the very poor**

- Better than Cash Alliance
- Digital Finance Handbook



## Digital Inclusion

Addressing the **gaps in access to digital technologies**, products, and services

- Alliance for Affordable Internet (A4AI)
- Global Broadband and Innovation (GBI) initiative
- Connected Women



## Real-time Data Systems

Facilitating the **use of mobile-enabled real-time data** for adaptive program delivery that is sensitive to performance metrics and citizen feedback

- mSTAR and Mobile Hub
- Principles for Digital Development
- Mobile Data Toolkit



**USAID**  
FROM THE AMERICAN PEOPLE

# Real-time Data Systems Strategy: 3 Pillars



## 1. Co-investments in global 'building blocks'

Co-investments in the global 'building blocks' of compatible platforms and the integration of these building-blocks with other critical systems.



## 2. In-country partnerships that use 'building blocks'

Facilitate multi-stakeholder partnerships that use these building blocks to enable large-scale deployments through national governments and/or stitch together a patchwork of sub-national programs.



## 3. Catalyze behavior change toward adaptive management

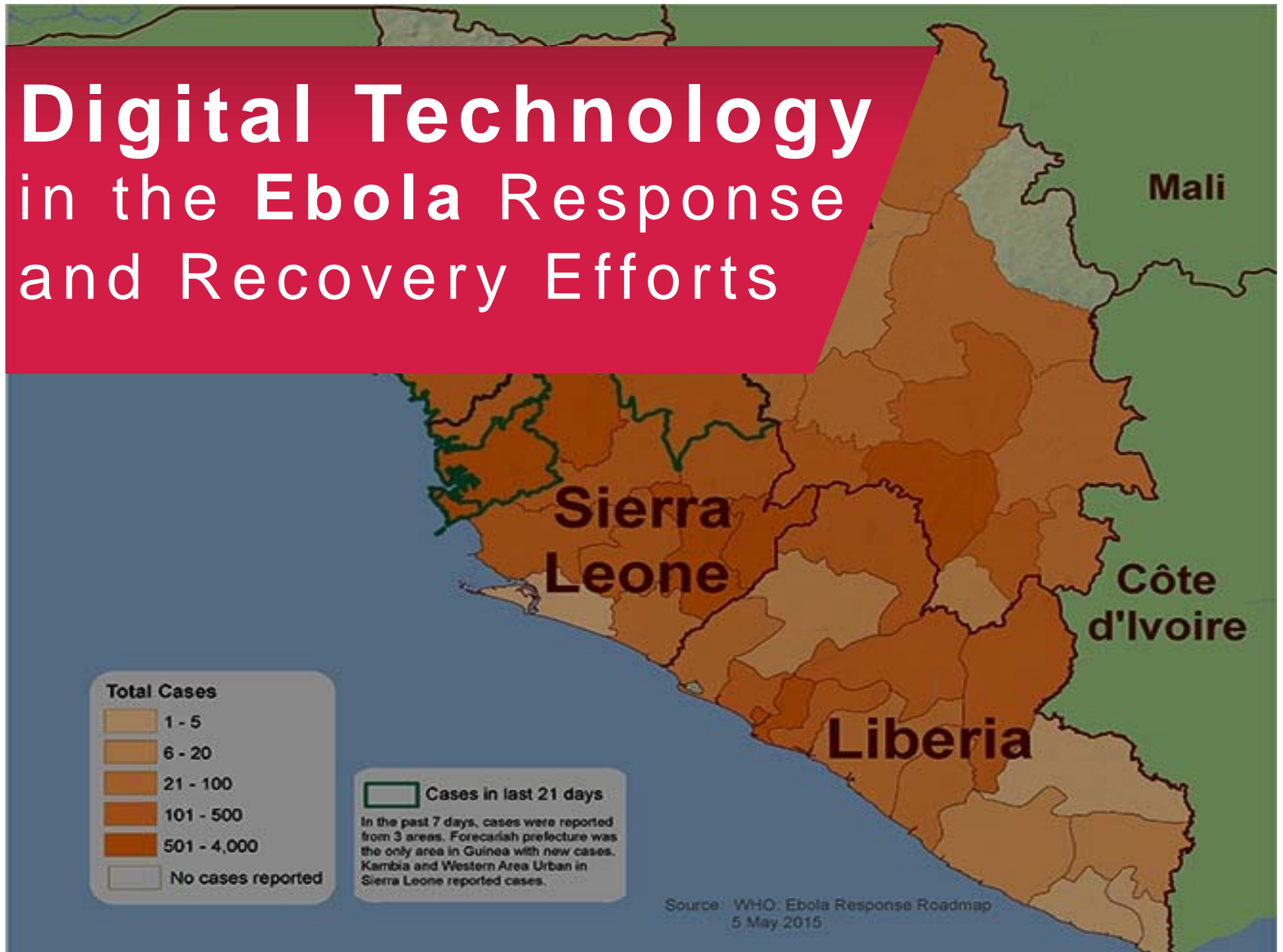
Catalyze internal (USAID) and external behavior change (e.g. donor community) toward adoption of RTD systems and adaptive program management

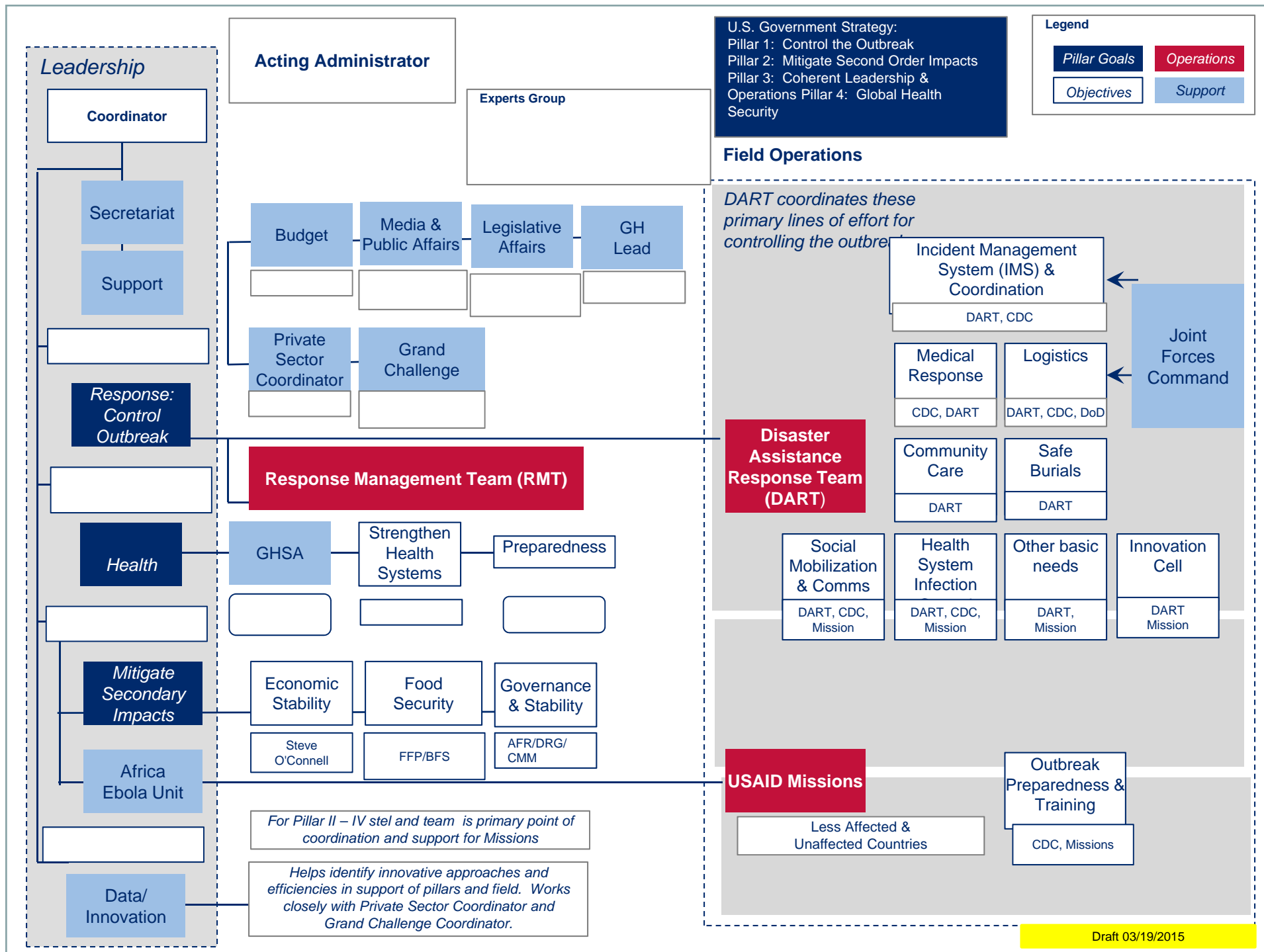
---

### Why USAID?

- As a **donor**, USAID has the interest and ability to fund the technology 'building blocks' that no one institution has the economic incentive to fund but that can be combined and recombined to transform service delivery.
- As the **development policy arm of the USG**, USAID can engage with policymakers to construct national ICT strategies that ensure interoperability, privacy, security, and best practice design of RTD systems.
- As a **convener**, USAID can facilitate the multi-stakeholder partnerships required in-country to scale RTD systems.
- As a **leading development agency**, USAID can model the importance and impact of adaptive programming.

# Digital Technology in the Ebola Response and Recovery Efforts









# Lab Contributions to the Ebola Response

## Real-time Data Systems

- ✓ Led USG/partner data coordination
- ✓ Mapping of major HIS investments in West Africa
- ✓ Established a National HIS Technical Working Group in Liberia MoHSW
- ✓ Detailed a data expert to the DART to improve systems for: lab diagnostics, food distribution, social mobilization, and cross border epi-surveillance
- ✓ Worked with UNICEF to broker short codes from MNO for two-way communications for Health Care Workers
- ✓ Regional consensus around eHealth architecture—draft common standard for interoperability

## ICT

- ✓ Completed a rapid ICT/data assessment in Liberia, which laid out a strategic course for Liberian government
- ✓ Draft Digital Infrastructure PPP fund concept note and SOW
- ✓ Communication and coordination with multiple partners within and outside the USG regarding ICT connectivity
- ✓ Appreciation from GOL Minister of Finance and Development Planning for ICT Assessment

## Partnerships and Innovation

- ✓ Helped stand up GCD in weeks, soliciting and reviewing 1,500 ideas from around the world
- ✓ Managed 100+ inquiries from private sector
- ✓ Collaborated with the inter-Agency to mobilize private sector through a White House event
- ✓ Drafted InterAgency private sector fact sheet, and distributed to 100K+ individuals/companies

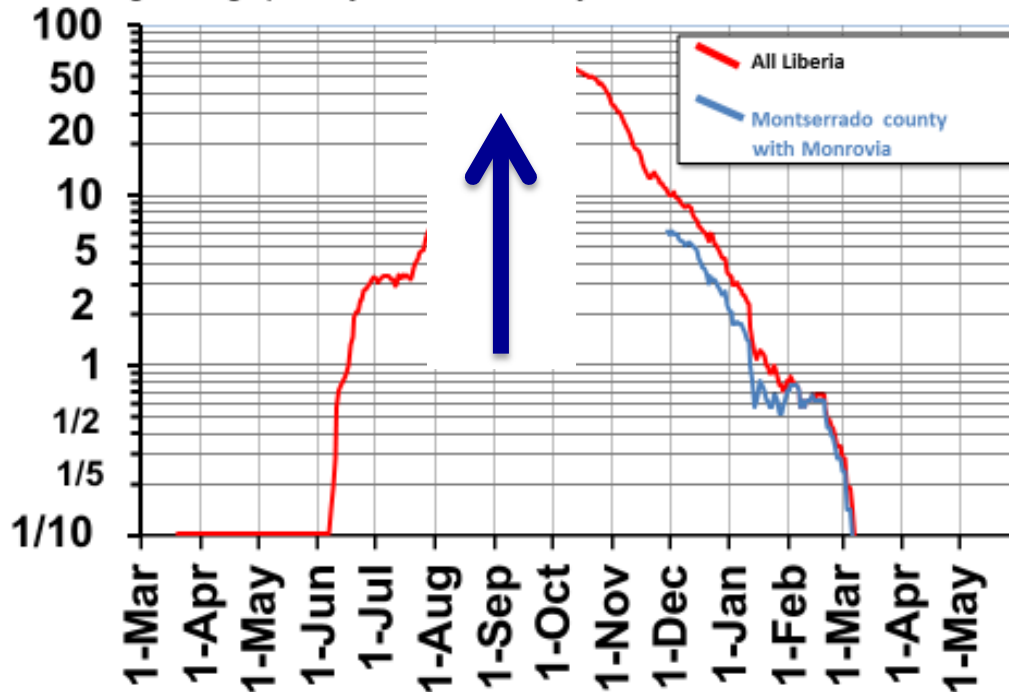


**USAID**  
FROM THE AMERICAN PEOPLE

# Lab Contributions to the Ebola Response

## Timeline!

Number of Confirmed Ebola Cases/Day up to 5th March 2015  
as moving average per day in the last 21 days



**September 2014!**

!

Asked to look into data coordination/quality!

!

Started 2x weekly data coordination calls with colleagues in the field!



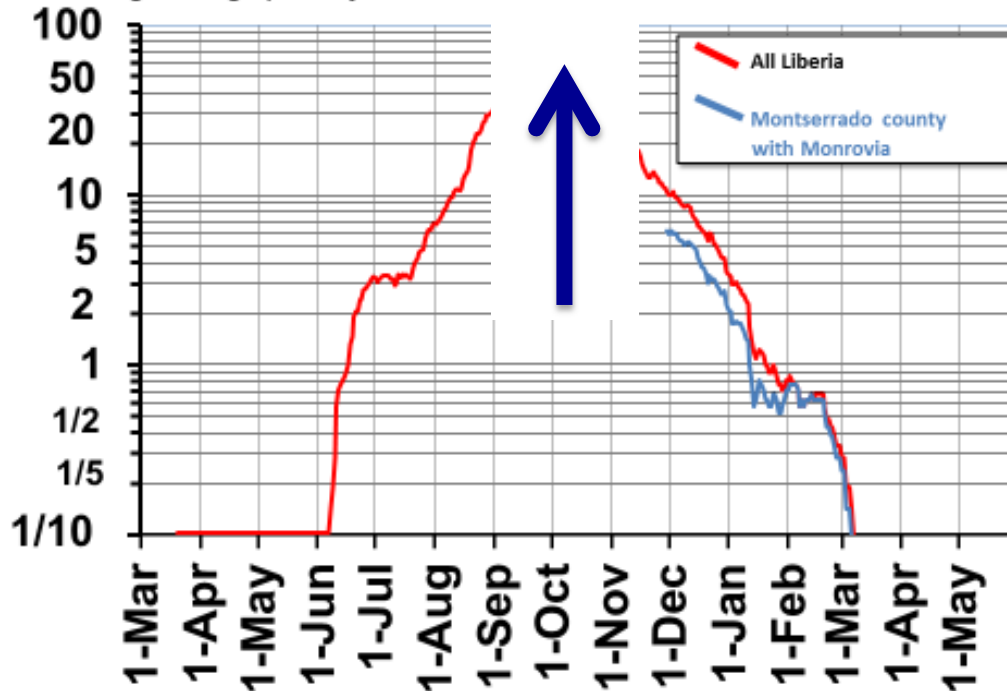


**USAID**  
FROM THE AMERICAN PEOPLE

# Lab Contributions to the Ebola Response

## Timeline!

Number of Confirmed Ebola Cases/Day up to 5th March 2015  
as moving average per day in the last 21 days



**October 2014!**

!

Published “Information  
Communications  
Technology Assessment”  
with NetHope!

!

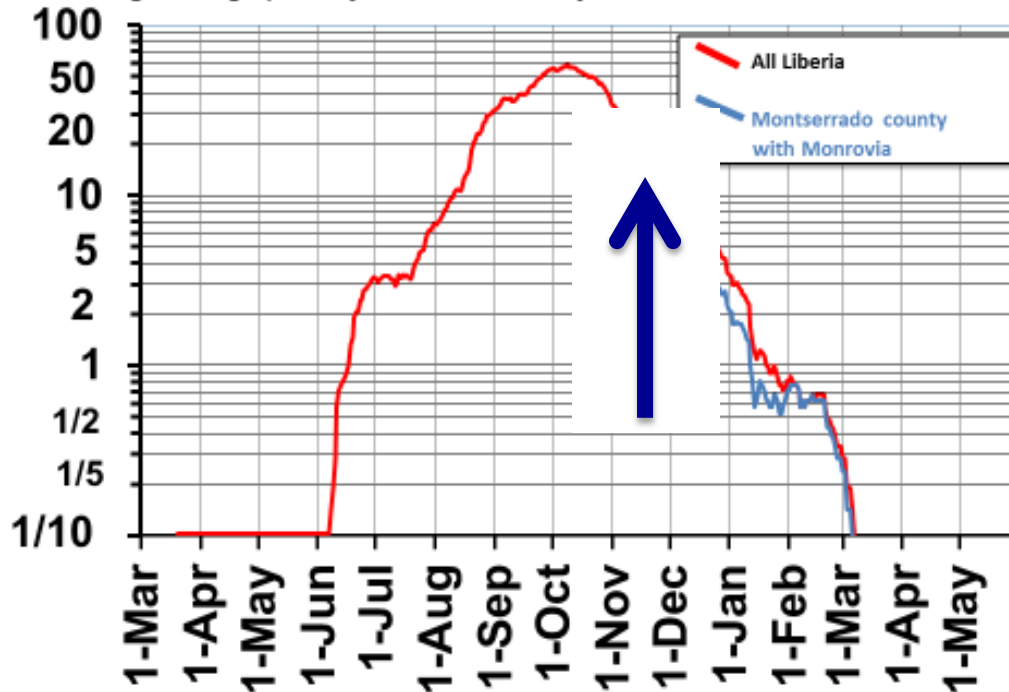


**USAID**  
FROM THE AMERICAN PEOPLE

# Lab Contributions to the Ebola Response

## Timeline!

**Number of Confirmed Ebola Cases/Day up to 5th March 2015**  
as moving average per day in the last 21 days



**November 2014!**

!

Data and  
telecommunications TDY to  
Liberia Mission!

!

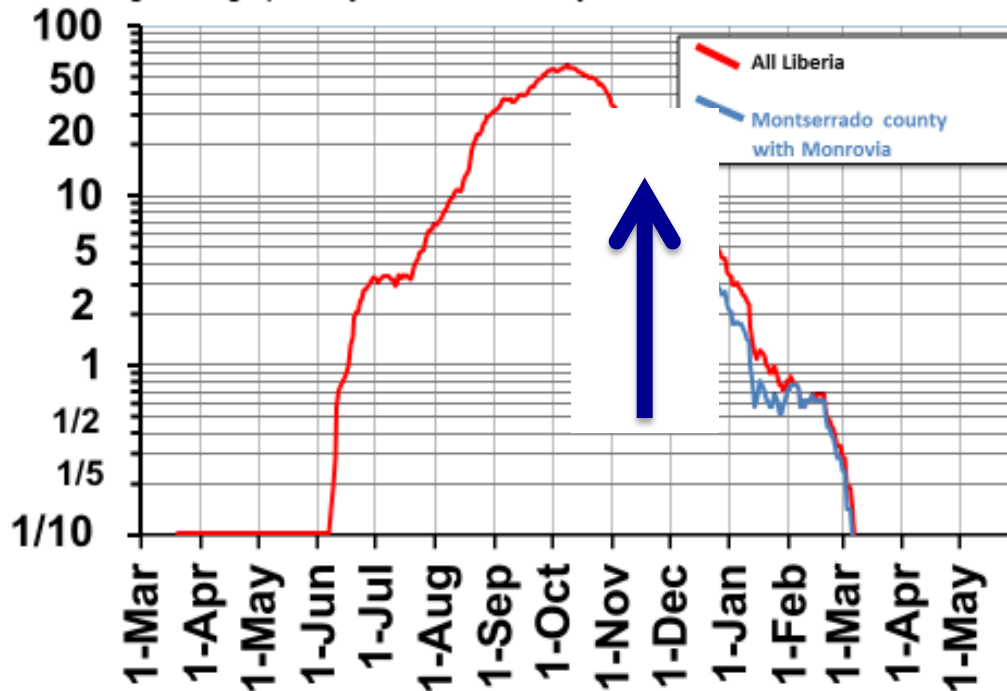


**USAID**  
FROM THE AMERICAN PEOPLE

# Lab Contributions to the Ebola Response

## Timeline!

**Number of Confirmed Ebola Cases/Day up to 5th March 2015**  
as moving average per day in the last 21 days



**November 2014!**

!

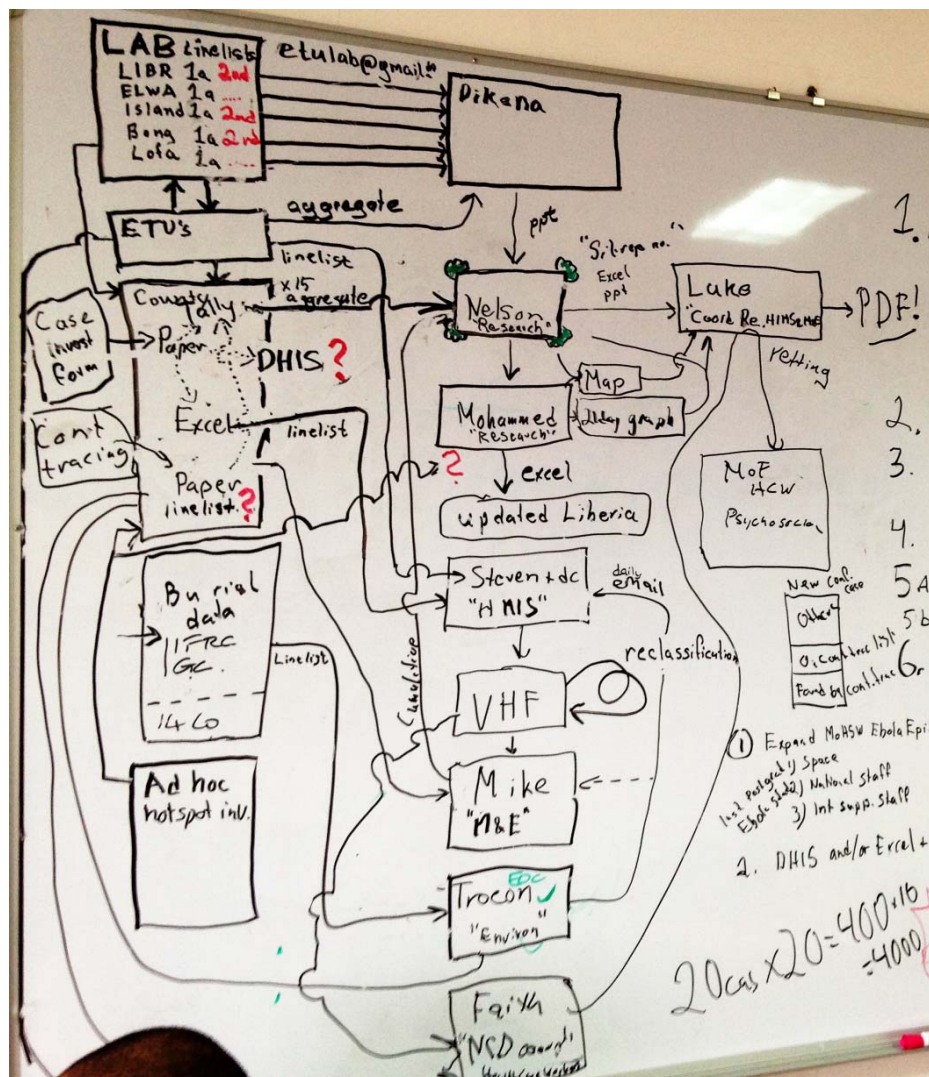
Data and  
telecommunications TDY to  
Liberia Mission!

!



**USAID**  
FROM THE AMERICAN PEOPLE

# Lab Contributions to the Ebola Response

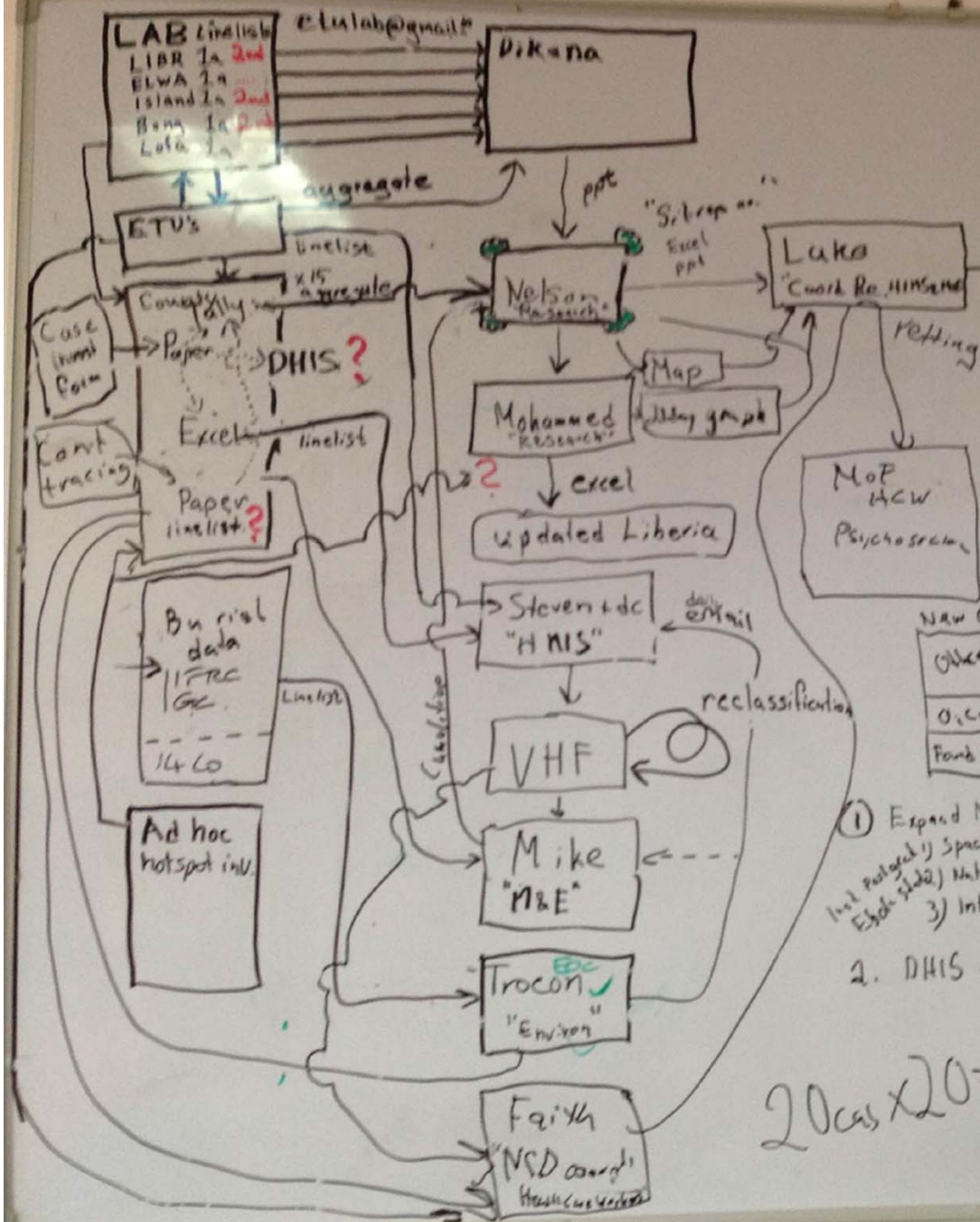


## November 2014: Mapping the Flow of Information!

!  
!

Epi-surveillance team!  
Ministry of Health!  
Liberia





## PRIORITY

(1 Nov →)

1. Assign pos. lab results to counties

- 1 Line list Lab **Done**
- 2 " " ETU **Not Done**
- 3 " " County Case Finding **Not Done**
- 4 " " County burial team **Not Done**
- 5 Storage place, Google Drive!

2. Separate pos lab results by DEAD/ACTIVE

3. List and Map Hotspots/outbreak to Subcounty level

4. % new confirmed <sup>cases</sup> on contact monitoring lists

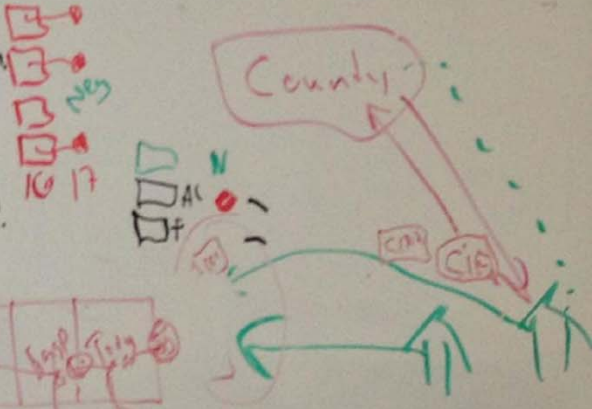
5A Geo2time viz format aggregate

5B Map each case!

6 "Split" Nelson? = Move data entry staff

- 1 Expand MoHSW Ebola Epi Sur team
  - 1a) National staff
  - 2a) National staff
  - 3a) Int supp. staff
2. DHIS and/or Excel+phone!

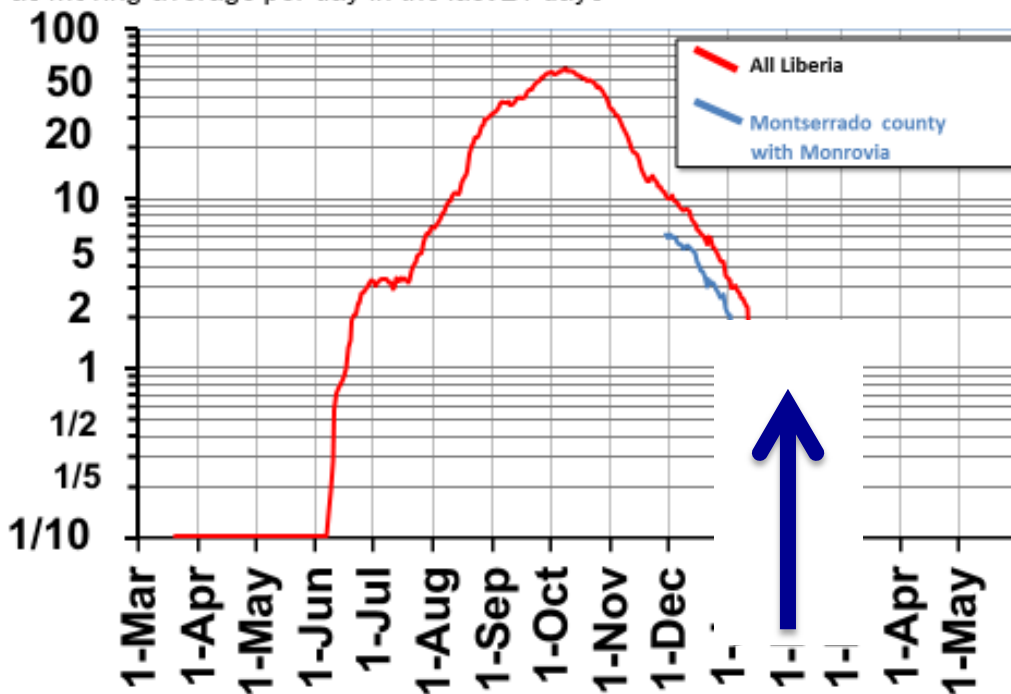
$$20 \text{ cas} \times 20 = 400 \times 10 = 4000$$



# Lab Contributions to the Ebola Response

## Timeline!

**Number of Confirmed Ebola Cases/Day up to 5th March 2015**  
as moving average per day in the last 21 days



**February 2015!**

!

Data detail to DART!

!

Less about volume and speed, more about smart data coordination!

!





**USAID**  
FROM THE AMERICAN PEOPLE

## 3 Areas of Focus for STIP Ebola Efforts

### Data Systems

*Real-time Data  
Systems for health  
and other sectors*

### ICT

*Connectivity, e-  
Payments,  
Connections to Data  
Platforms, Human  
Capacity*

### Innovation & Partnerships

*Grand Challenge &  
Additional Innovation  
Approaches, Private  
Sector, University &  
Scientific*

**Pillar 1**  
*working with  
RMT/DART/GH*

**Pillar 2 & 4**  
*working with GH, AFR, Missions, FFP, E3, CDC, private sector, and others*

# Results Framework – Ebola Tech Response Team

Development Objective: Faster, more reliable access to health information and financial services for health workers and rural communities in the West Africa region

IR 1. Enhanced use of data for disease surveillance and health service delivery through real-time data systems to of the West Africa region

IR 2. Improved payment systems through mobile money (for health worker compensation and to support social mobilization) in the Ebola affected countries

IR 3. Increased coverage of mobile networks to hard-to-reach health facilities and rural communities areas in the Ebola affected countries

## Key Outputs

1. Regional consensus on cross-border health information systems, data coordination, standards and interoperability
2. Institutional and human capacity of health workers and managers in HIS governance, leadership, and data-driven management is strengthened
3. Key open source real-time data software platforms for routine health services (HMIS), disease surveillance (IDSR), and health workers (HRIS) are interoperable
4. Systems processes for gathering, analyzing, and sharing critical disease surveillance information (e.g., case tracking, lab results, contact tracing) through the central MOH is improved

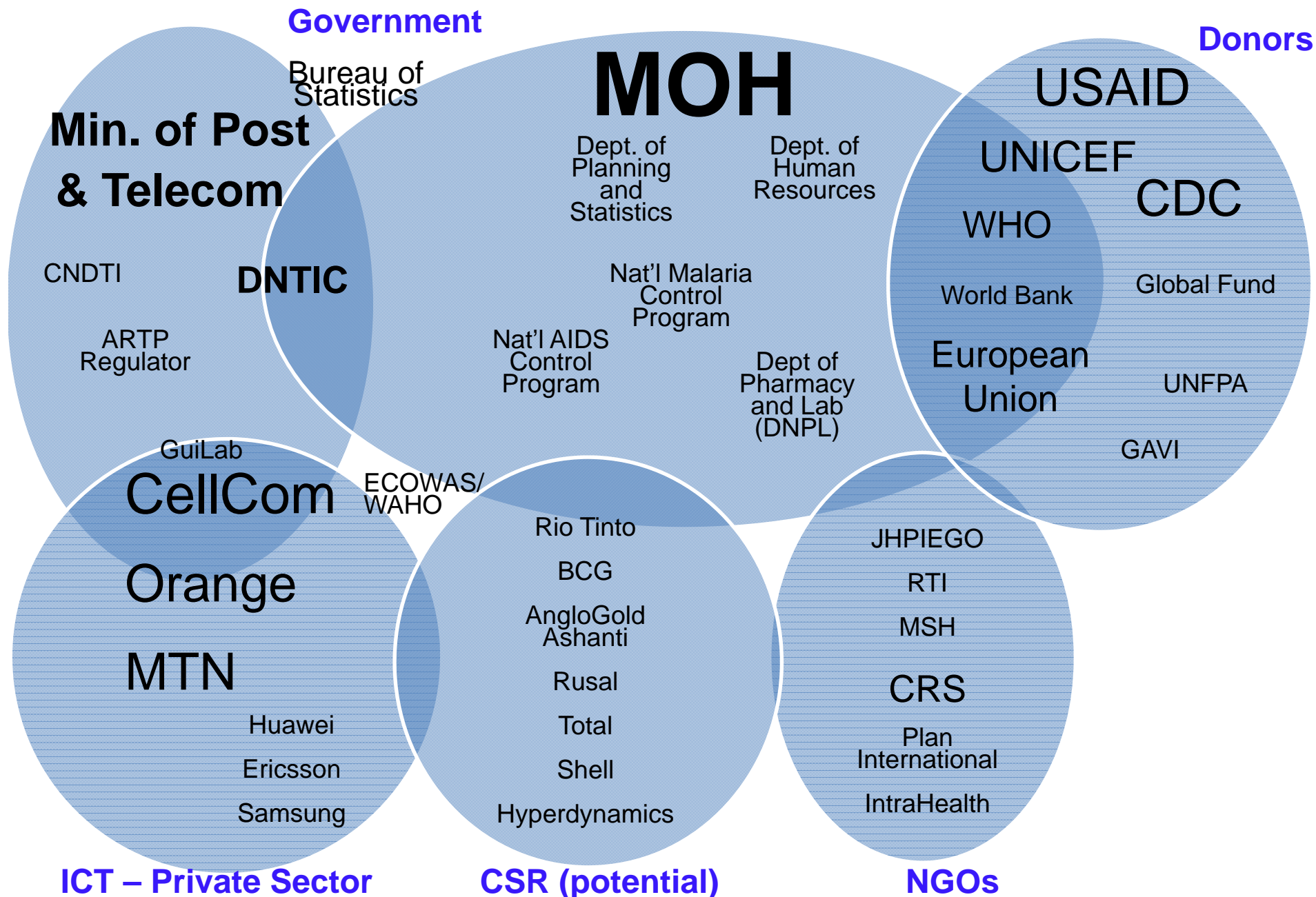
## Key Outputs

1. Frontline health workers are paid their salaries, supplements and benefits on time and in a manner most-convenient to them
1. Social protection payments to EVD affected households and communities
1. Full transparency and accountability in payments to health workers and social protection beneficiaries;
2. Foundation for a national digital payments ecosystem is established to drive economic recovery and integration across rural and urban zones.

## Key Outputs

1. Appropriate microwave and fiber backhaul linkages are installed to ensure sufficient connectivity for EVD response and recovery
2. Critical infrastructure established to ensure the efficient use of existing broadband and telecommunications through Internet Exchange Points (IXP) and multiplexor equipment
3. Existing broadband and cellular networks are extended through local MESH network distribution
1. Human resource capacity is strengthened to manage public good investments and physical ICT infrastructure through short courses and longer term support to local university-based ICT departments

# Guinea HIS/eHealth Stakeholder Mapping



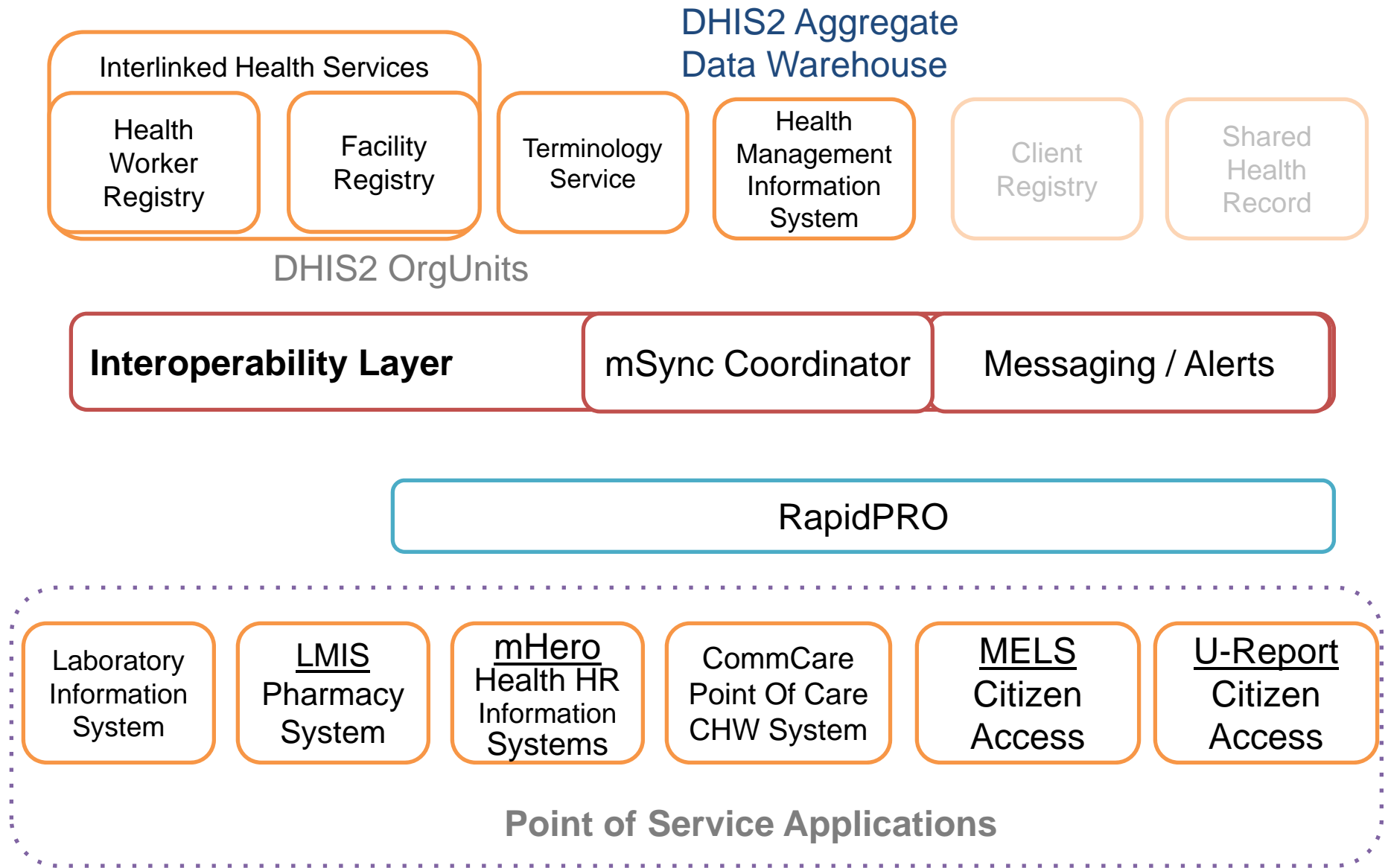
# Mapping HIS/eHealth Platforms in West Africa

Country	Platform	Primary Purpose	Lead Implementers	Lead Developers	Programming Language	Operating Systems	Open Source	Coverage/Scale - est. number of sites (districts, facilities)	Contact Person (POC)	Email Address of POC	Web address for more info
Benin	DHIS2.0	Aggregate and patient tracking	HISP West Africa	HISP	Java	Linux	yes	in 8 pilot districts. Rollout to start in april	Edem Kossi	ekossi@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Benin	CommCare	patient/individual data & supp	Dimagi, URC	Dimagi	Xforms, Java, Python	Android, Linux	yes	10 zones, 600 relais communaitaires	Mohini Bhavsar, Dimagi	mbhavsar@dimagi.com	
Benin	CommCare	patient/individual data	Vaxtrac	Vaxtrac & Dimagi	Xforms, Java, Python	Android, Linux	yes		Lucina Tse, Dimagi	ltse@dimagi.com	
Burkina Faso	DHIS2.0	aggregate service data	HISP West Africa	HISP	Java	Linux	yes	countrywide implementation	Edem Kossi	ekossi@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Burkina Faso	CommCare	patient/individual data	Dimagi, Terre des Hommes	Dimagi	Xforms, Java, Python	Android, Linux	yes	45 districts, 400 facilities	Rowena Luk, Dimagi	rluk@dimagi.com	
Chad	IHRIS	health workforce	WHO/FSD	IntraHealth	LAMP (PHP)	Linux	yes	National public sector: ~3,439 records	Kayode Odusote	odusote.kayode@gmail.com	<a href="http://www.ihris.org">www.ihris.org</a>
Chad	CommCare	patient/individual data	Dimagi, World Vision	Dimagi	Xforms, Java, Python	Android, Linux	yes	8 facilities	Nick Nestle, Dimagi	nnestle@dimagi.com	
Cote d'Ivoire	DHIS2.0	Aggregate and patient tracking	HISP West Africa	HISP	Java	Linux	yes	Currently in 5 regions. Rollout to other region underway	Edem Kossi	ekossi@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Cote d'Ivoire	OpenMRS	Laboratory data	CDC				yes	Ready and in use at major labs			
Cote d'Ivoire	OpenMRS	patient/individual data					yes				
Cote d'Ivoire	OpenLMIS							Pilot test at selected sites to start next month			
Ghana	DHIS2.0	aggregate service data	HISP, HISP West Africa	HISP	Java	Linux	yes	countrywide implementation	Olav Poppe	olav.poppe@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Ghana	iHRIS	health workforce	Ghana MOH/GHS	IntraHealth	LAMP (PHP)	Linux	yes	several regions (public sector) and CHAG: ~18,527	Molayo Decker	molayodecker@gmail.com	<a href="http://www.ihris.org">www.ihris.org</a>
Ghana	MOTEC	maternal/child health behavior	Grameen, Ghana Health Se	Grameen	Java	Linux	yes		David Hutchful	dthutchful@gfusa.org	
Ghana	Early Warning System	Supply chain logistics	JSI	Dimagi	Python	RapidSMS	yes	677 facilities in 10 regions	Joy Kamunyor, JSI	jkamunyor@jsi.com	
Ghana	OpenHDS	health and demographic surveillance									
Ghana	DIHPART	District Health Planning and Reporting Tool									
Guinea	IHRIS	health workforce	IntraHealth	IntraHealth	LAMP (PHP)	Linux	yes	in progress... National public sector importing ~11,000 re	Moussa Dia	mdia@intrahealth.org	<a href="http://www.ihris.org">www.ihris.org</a>
Guinea	RapidPro	social mobilization/youth engagem	UNICEF	UNICEF							
Guinea	mHero	SMS communication between MOH	IntraHealth, UNICEF	IntraHealth, UNICEF		iHRIS, RapidPro	yes	Anticipated pilot for spring 2015	TBD	TBD	<a href="http://www.mhero.org">www.mhero.org</a>
Guinea	Ramis	HMIS aggregate service delivery data									
Guinea	epiInfo7/VHF	For contact tracing during Viral	CDC								
Guinea	CommCare	patient/individual data, contact	Dimagi, Earth Institute	Dimagi	Xforms, Java, Python	Android, Linux	yes		Sheel Shah, Dimagi	sshah@dimagi.com	
Guinea	CommCare	patient/individual data, commu	Dimagi, UNMEER	Dimagi	Xforms, Java, Python	Android, Linux	yes	Pilot	Sheel Shah, Dimagi	sshah@dimagi.com	
Guinea	Chanel	supply chain logistics	UNFPA								
Guinea	Call Center	Collect Ebola / dispatch center	eHealth Africa	eHealth Africa	JavaScript	AWS	Yes	nEOC	Opu Narcisse	opu.narcisse@gn.ehealth	<a href="https://gin-call-admin.eocng.org">https://gin-call-admin.eocng.org</a>
Guinea Bissau	DHIS2.0	aggregate service data	HISP, HISP West Africa	HISP	Java	Linux	yes	countrywide implementation	Zeferino Saugene	zsaugene@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Liberia	mHero	Aggregate service data		HISP	Java	Linux	yes	countrywide implementation	Olav Poppe	olav.poppe@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Liberia	mHero	An SMS-based mHealth commun	UNICEF/IntraHealth/MoH	UNICEF/IntraHealth	open data standards based on	iHRIS, RapidPro	yes	on going pilot in 4 counties , expected national rollout 2nd quar	Lee Kironget	lkironget@unicef.org	<a href="http://www.mhero.org">www.mhero.org</a>
Liberia	iHRIS	health workforce	RBHS/JSI	IntraHealth	LAMP (PHP)	Linux	yes	National public sector: ~7,200 records	Stephen Gbanyan	mambu9@gmail.com	<a href="http://www.ihris.org">www.ihris.org</a>
Liberia	u-report	social mobilization tool	UNICEF	Nyruaka, UNICEF		iHRIS, RapidPro	yes	Pilot in four counties; 289 health workers reached through mHe	Sadat Norris, MOH Liberia	sanjr1988@gmail.com	<a href="http://www.mhero.org">www.mhero.org</a>
Liberia	RapidPro/Django	patient/individual data	eHealth Africa	eHealth Africa	Python	RapidPro, Django	yes	4 ETU's in Montserado. 1 ETU in Grand Cape Mount, 1 ETU in WAHA			
Liberia	RapidPro	Monitoring reopening of school	UNICEF				yes				
Liberia	DHIS2.0	organizational reporting	IRC								
Liberia	Sense Followup /	Contact Tracing	eHealth Africa	eHealth Africa	JavaScript	Amazon Web Services	yes	Montserrado County	David Parker	david.parker@lr.ehealthafrica.org	
Liberia	TAG	Family Finder	eHealth Africa	eHealth Africa, UNICEF	Python	Amazon Web Services	yes	6 ETUs in 3 counties	David Parker	david.parker@lr.ehealthafrica.org	
Liberia	Call Center	Call Center / Dispatch System	eHealth Africa		JavaScript	Amazon Web Services	yes	nEOC	David Parker	david.parker@lr.ehealthafrica.org	
Liberia	Logistics Informa	Track Assets being used in Emere	eHealth Africa	eHealth Africa			yes	nEOC	David Parker	david.parker@lr.ehealthafrica.org	
Liberia	LIS	Lab Information System	eHealth Africa								
Liberia	OpenMRS/ Save the Children										
Liberia	MELS	tracking social mobilization acti	Mercy Corps					In use across most counties by almost 30 partners	Mike Catalano	mike@mobilefirstinc.com	<a href="http://dashboard.ecapliberia.org">http://dashboard.ecapliberia.org</a>
Mali	DHIS2.0	aggregate service data	Measure Evaluation	HISP	Java	Linux	yes	Pilot in selected sites later this year			
Mali	iHRIS	health workforce	CapacityPlus/IntraHealth	IntraHealth	LAMP (PHP)	Linux	yes	Several regions (public sector): ~13,781 records	Mamadou Mbo	mmbo@intrahealth.org	<a href="http://www.ihris.org">www.ihris.org</a>
Mali	CommCare	patient/individual data	Dimagi, World Vision	Dimagi	Xforms, Java, Python	Android, Linux	yes	10 facilities (pilot)	Nick Nestle, Dimagi	nnestle@dimagi.com	
Niger	CommCare	patient/individual data	Dimagi, World Vision	Dimagi	Xforms, Java, Python	Android, Linux	yes	8 facilities (pilot)	Nick Nestle, Dimagi	nnestle@dimagi.com	
Niger	CommCare	patient/individual data	Dimagi, World Vision	Dimagi	Xforms, Java, Python	Android, Linux	yes	100 relais communaitaires	Nick Nestle, Dimagi	nnestle@dimagi.com	
Niger	DHIS2.0	aggregate service data	HISP West Africa	HISP	Java	Linux	yes	pilot to start in april	Edem Kossi	ekossi@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Nigeria	DHIS2.0	aggregate service data	HISP, HISP Nigeria	HISP	Java	Linux	yes	all 36 states	Dapo Adejumo	dapo_adejumo@yahoo.co	<a href="http://www.dhis2.org">www.dhis2.org</a>
Nigeria	iHRIS	health workforce	CapacityPlus/IntraHealth	IntraHealth	LAMP (PHP)	Linux	yes	3 Professional Councils - 2 states: 361,831 records	Agbonkheso Oayia	aoayia@intrahealth.org	<a href="http://www.ihris.org">www.ihris.org</a>
Nigeria	CommCare	patient/individual data									
Nigeria	OpenHDS	health and demographic surveillance		Univ. of Southern Maine							
Senegal	DHIS2.0	aggregate service data	HISP, HISP West Africa	HISP	Java	Linux	yes	Rollout in progress	Olav Poppe	olav.poppe@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Senegal	iHRIS	health workforce	HSI/IntraHealth	IntraHealth	LAMP (PHP)	Linux	yes	National public sector: ~5,138 records	Mbembra Traore	mbembatraore3000@yahoo	<a href="http://www.ihris.org">www.ihris.org</a>
Senegal	CommCare	patient/individual data	Dimagi, Africare	Dimagi	Xforms, Java, Python	Android, Linux	yes	30 districts, 350 matrones and 100 nurses	Carla Legros, Dimagi	clegros@dimagi.com	
Senegal	CommCare	supply chain logistics	Dimagi, Intrahealth	Dimagi	Xforms, Java, Python	Android, Linux	yes	national scale among family planning operators that deliv	Fiorenzo Conte, Dimagi	fconte@dimagi.com	
Senegal	CommCare	SMS reporting	Dimagi, Abt	Dimagi	Xforms, Java, Python	Android, Linux	yes	4 districts, 113 field staff, 52 abt staff overseeing malaria	Gillian Javetski, Dimagi	gjavetski@dimagi.com	
Sierra Leone	mHero	SMS communication between MOH	IntraHealth, UNICEF	IntraHealth, UNICEF		iHRIS, RapidPro	yes	No funding to date; MOH is extremely interseted in implementi	Shane O'Connor, UNICEF	sieoconnor@unicef.org	<a href="http://www.mhero.org">www.mhero.org</a>
Sierra Leone	MOTEC	vaccine clinical trial support, fac	Grameen, J&J, World Vision	Grameen	Java	Linux	yes	Mary Jo Kochendorfer, G-mkochendorfer@gfusa.org			
Sierra Leone	CommCare	timed and targetted counselling	Dimagi, World Vision	Dimagi	Xforms, Java, Python	Android, Linux	yes	3 districts, 30 villages	Nick Nestle, Dimagi	nnestle@dimagi.com	
Sierra Leone	Sense ID	Vaccine clinical trial administrat	eHealth Africa	eHealth Africa	Javascript	Web based, Android	yes		David Parker	david.parker@lr.ehealthafrica.org	
Sierra Leone	RapidPro	aggregate service data	UNICEF	UNICEF		RapidPro	yes	all community care facilities	Shane O'Connor, UNICEF	sieoconnor@unicef.org	
Sierra Leone	DHIS2.0	aggregate service data	HISP, HISP West Africa	HISP	Java	Linux	yes	countrywide implementation	Johan Sæbø	johansa@ifi.uio.no	<a href="http://www.dhis2.org">www.dhis2.org</a>
Sierra Leone	iHRIS	health workforce	WHO/Consultant	IntraHealth	LAMP (PHP)	Linux	yes	Western Region public sector - 1,756 records	Gerald Thomas	gerald17006@gmail.com	<a href="http://www.ihris.org">www.ihris.org</a>
Sierra Leone	DHIS2.0 - IRC										
Sierra Leone	Sense Followup /	Contact Tracing		eHealth Africa							
Sierra Leone	EOC Logistics system			eHealth Africa							
Sierra Leone	OpenMRS /Save the Children										
Sierra Leone	OpenMRS/ MSF										
The Gambia	DHIS2.0	aggregate service data	HISP West Africa	HISP	Java	Linux	yes	countrywide implementation	Edem Kossi	ekossi@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Togo	DHIS2.0	aggregate service data	HISP West Africa	HISP	Java	Linux	yes	Currently in 1 region out of 5	Edem Kossi	ekossi@gmail.com	<a href="http://www.dhis2.org">www.dhis2.org</a>
Togo	iHRIS	health workforce	WHO/FSD	IntraHealth	LAMP (PHP)	Linux	yes	National public sector: ~11,093 records	Kayode Odusote	odusote.kayode@gmail.c	<a href="http://www.ihris.org">www.ihris.org</a>
	mHero						yes				
	CommTrack	supply chain logistics					yes				
Regional	Terra/Red Cross										
Regional	GeoPoll										
Regional	HDX	Emergency Coordination	UNMEER	UN OCHA	Drupal						

# Mapping HIS/eHealth Platforms in Guinea

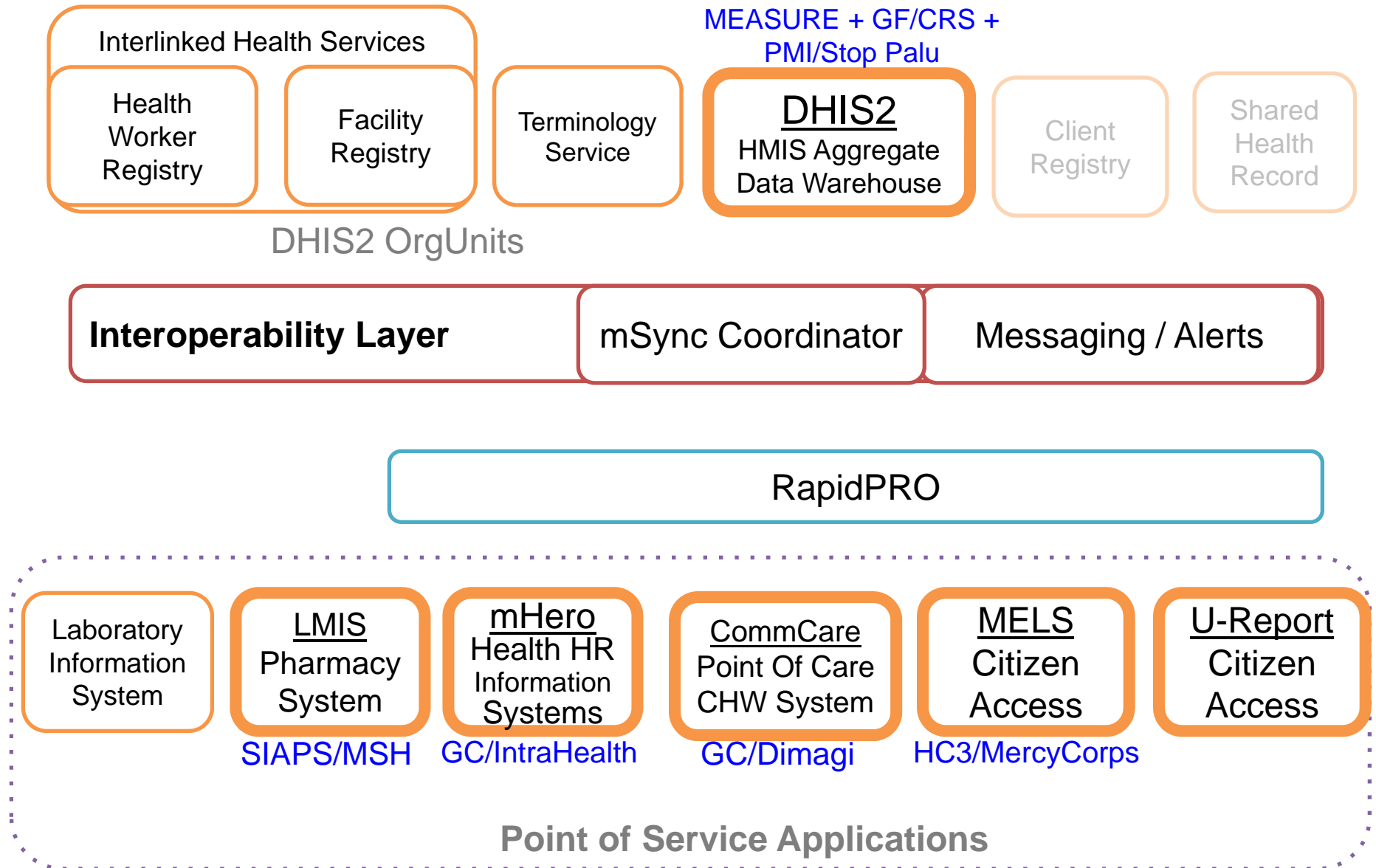
Platform	Primary Purpose	Lead Implementer
iHRIS	health workforce	IntraHealth
RapidPro	social mobilization/youth engagement	UNICEF
mHero	SMS communication between MOH and health workers	IntraHealth, UNICEF
Ramis	HMIS aggregate service delivery data	
EpilInfo7/VHF	for contact tracing during Viral Hemorrhagic Fever	CDC
CommCare	patient/individual data, contact tracing	Dimagi, Earth Institute
CommCare	patient/individual data, community leader id	Dimagi, UNMEER
Chanel	supply chain logistics	UNFPA
Call Center	collect Ebola / dispatch center data	eHealth Africa

# Guinea HIS Architecture (Draft)





# Guinea HIS Architecture (Draft)



# Early Lessons Learned

---

## Data

- The overall response was **handicapped by lack of reliable and comparable data** with necessary geographic specificity
- Need to **integrate different data systems for humanitarian operations** in the response with **epi-data systems**
- Importance of **pre-existing networks and relationships** in the response, as crucial in moving quickly and getting a clear picture of what programs are actually being implemented on the ground

## Internal to USAID

- Duplication of efforts across external partners and within USG InterAgency **can be managed, coordinated** or mitigated
- Interface with OFDA given the **newness of the Lab** and **the lack of pre-existing formal institutional connections** or relationships between the two entities

## ICT Infrastructure

- **Exclusion of the digital infrastructure** and systems harmonization as critical assets in the emergency **impeded** coordination and effectiveness of **the response**
- MNOs negatively affected by the **withdrawal of technical staff**, and the rapid ramp up of the international response efforts (e.g., loss of revenue due to economic slowdown and increased operating costs)
- **Short-term connectivity fixes** (e.g., VSATs and BGANs in the ETUs and care centers) are **at odds with long-term government** connectivity plans and strategies

# Next Steps in Ebola Recovery

---

## Data

- Facilitate the development and adoption of **common standards for software interoperability** to improve HIS data quality and cost effectiveness by enabling increased, more rapid information sharing
- In a select number of West African Countries, accelerate the integration and scaling of: **real-time SMS disease surveillance as routine HIS reporting**, logistics data systems for key health commodities and two-way communication for health workers

## ICT connectivity

- **Increased last-mile connectivity** in highly populous rural areas, health clinics and schools for improved ability to prevent, detect and respond to future epidemics

## e-Payments

- Increase continuity of operations and efficiency and reduce corruption and leakage by deploying and expanding **mobile payments/ vouchers for HCW compensation and social protection** in the Ebola affected countries

## Innovation & Partnerships

- Measurably **increase sustainability & post 2016 continued impact of Ebola programs** through private sector partnerships
- **Support Agency's ability to deploy rapid innovation approaches** to improve programs and solutions, and effectively collaborate with private sector and scientific/ university partners in our Ebola response, recovery and resilience work



**USAID**  
FROM THE AMERICAN PEOPLE

# Digital Development Opportunities and Resources

## Opportunities

- GDA Ebola Addendum – Annual Program Statement
- Paul Allen Foundation – Call for Proposals on Ebola Innovation
- Real-time Data Coordination Call (weekly)

## Resources

- USAID Mobile Data Toolkit
- USAID Digital Financial Services Handbook
- USAID Mobile Data Course
- ICT4D Principles