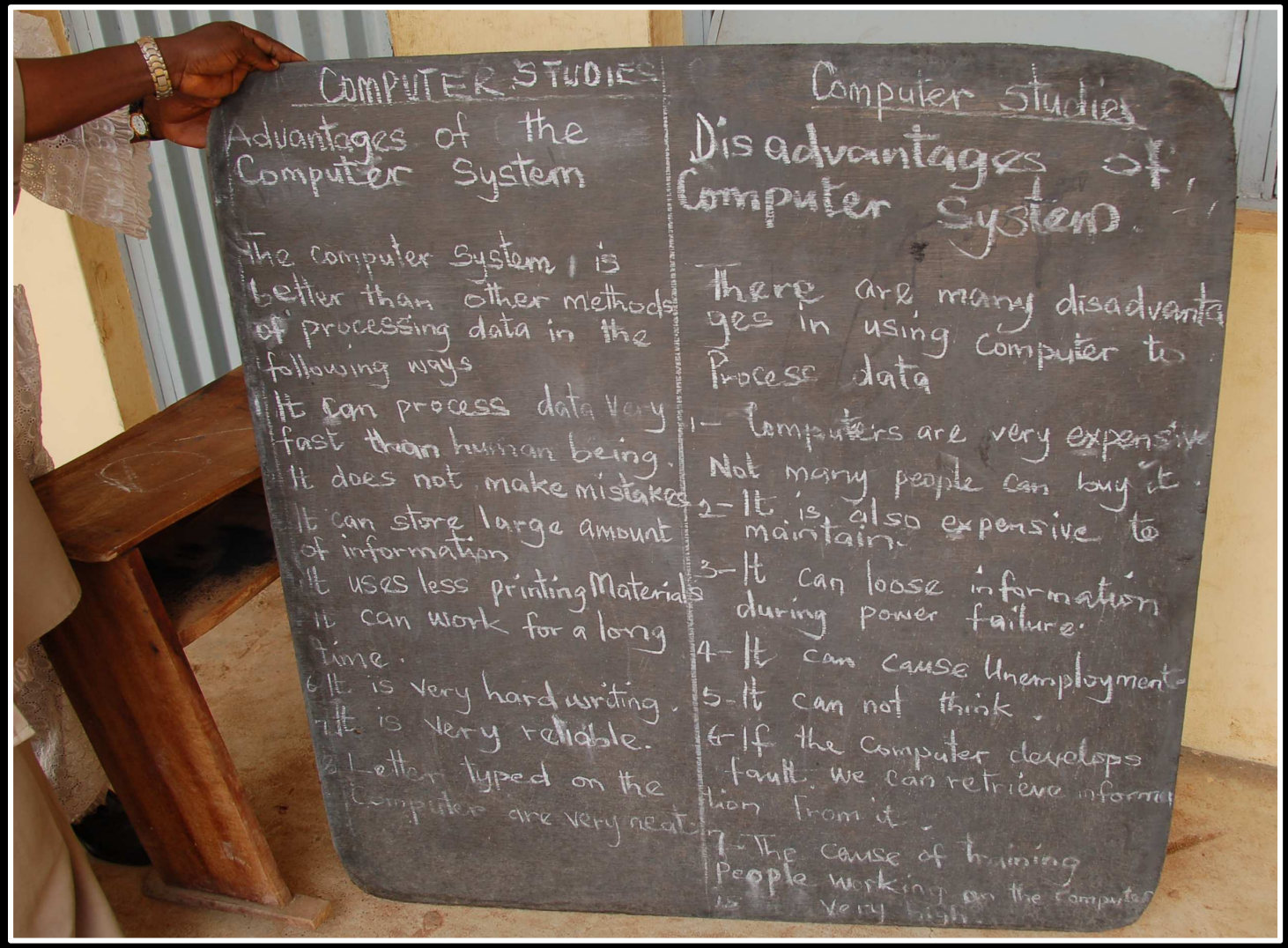
ICT4D

Merrick Schaefer, UNICEF
Jeff Wishnie, ThoughtWorks



Information and Communication Technology for Development

Application of communication and computing technology to the needs of the developing world:

Poverty

Health

Education

Relief

ICT4D
(Traditional)

Power

Connectivity

Cost/Access

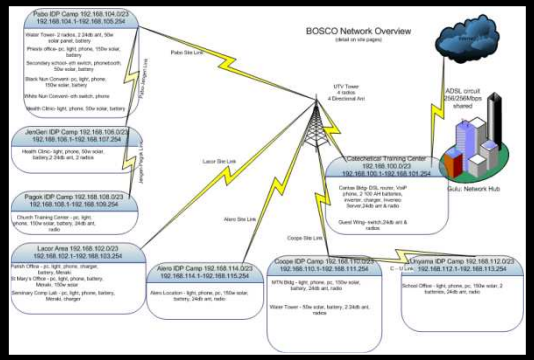
ICT4D (Traditional)

Power

- Inveneo
- OLPC
- Green WiFi
- We Care Solar

Connectivity

- AirJaldi
- BOSCO
- TIER



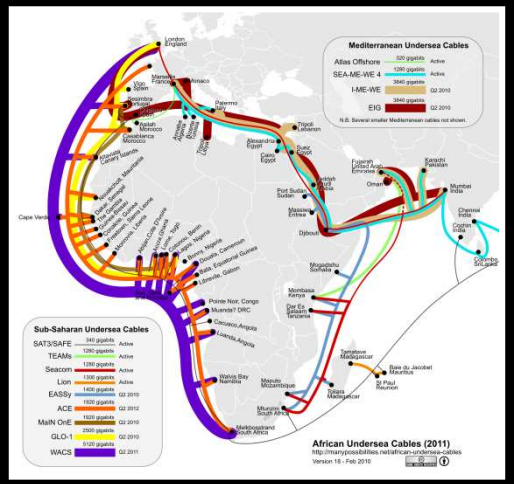
Cost/Access

- QuestionBox
- Digital Doorway
- Village Telco

Industry is now Driving Solutions

Power

Connectivity



Cost/Access

What do you think of when you think of technology in the developing world?

The pace of technical change is so rapid in most of the world that all perceptions of technology need to be rethought.

Consider:

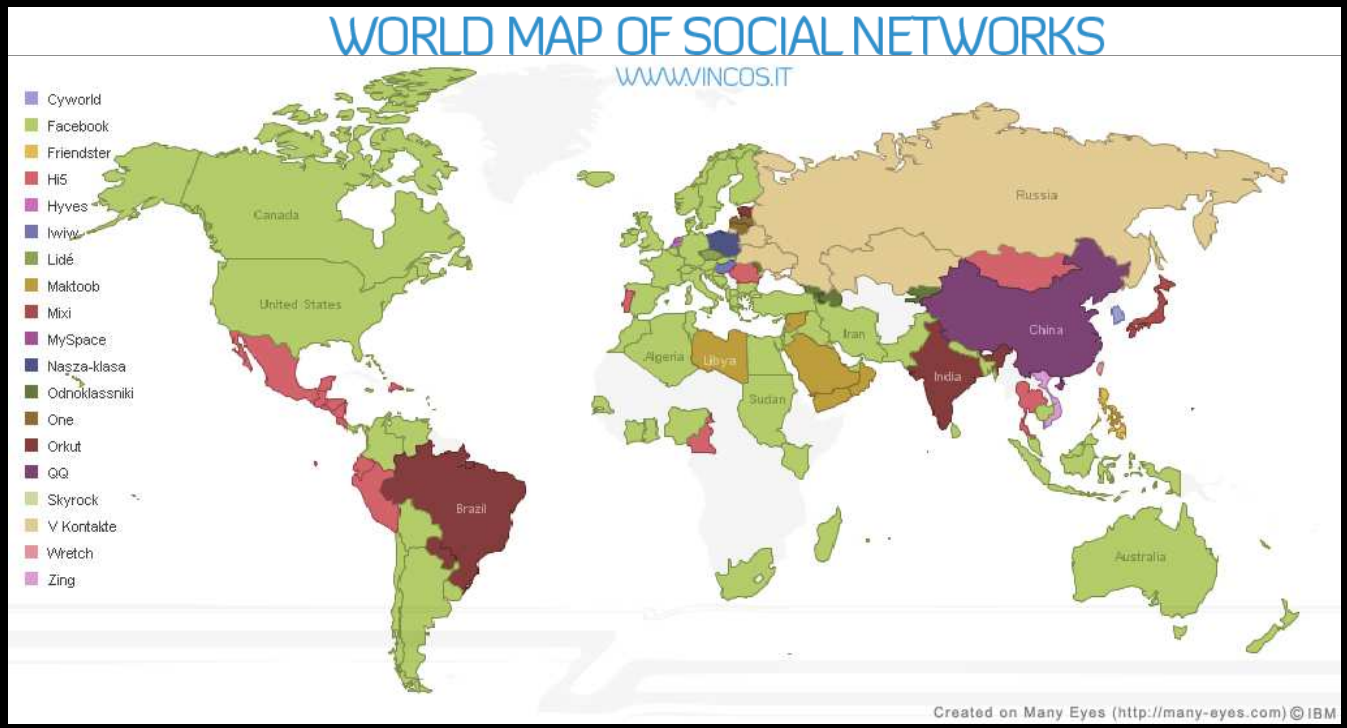
China now has the highest number of internet users globally. Over 100,000,000 more than the next highest, the USA.

Global Rank	Country	Number of Users
1	China	360,000,000
2	United States	227,719,000
3	Japan	95,979,000
4	India	81,000,000
5	Brazil	67,510,400

http://www.internetworldstats.com/top20.htm

Consider:

Social Networking is global phenomenon and growing faster in the developing world than the developed.



Consider:

Both South Africa and Nigeria are in the top ten countries consuming the mobile web.

1. Russia
2. Indonesia
3. China
4. Ukraine
5. India
6. South Africa
7. USA
8. United Kingdom
9. Nigeria
10. Poland

http://www.opera.com/smw/2009/04/

Consider:

The adoption of mobile phones has occurred at perhaps the fastest rate and to the deepest level of any consumer-level technology in history

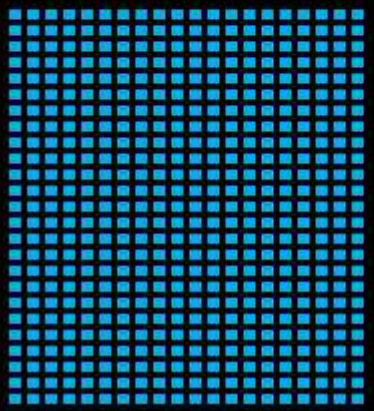
African Cell Phone Ownership Growth

1998

2 million phones

2010

500 million phones



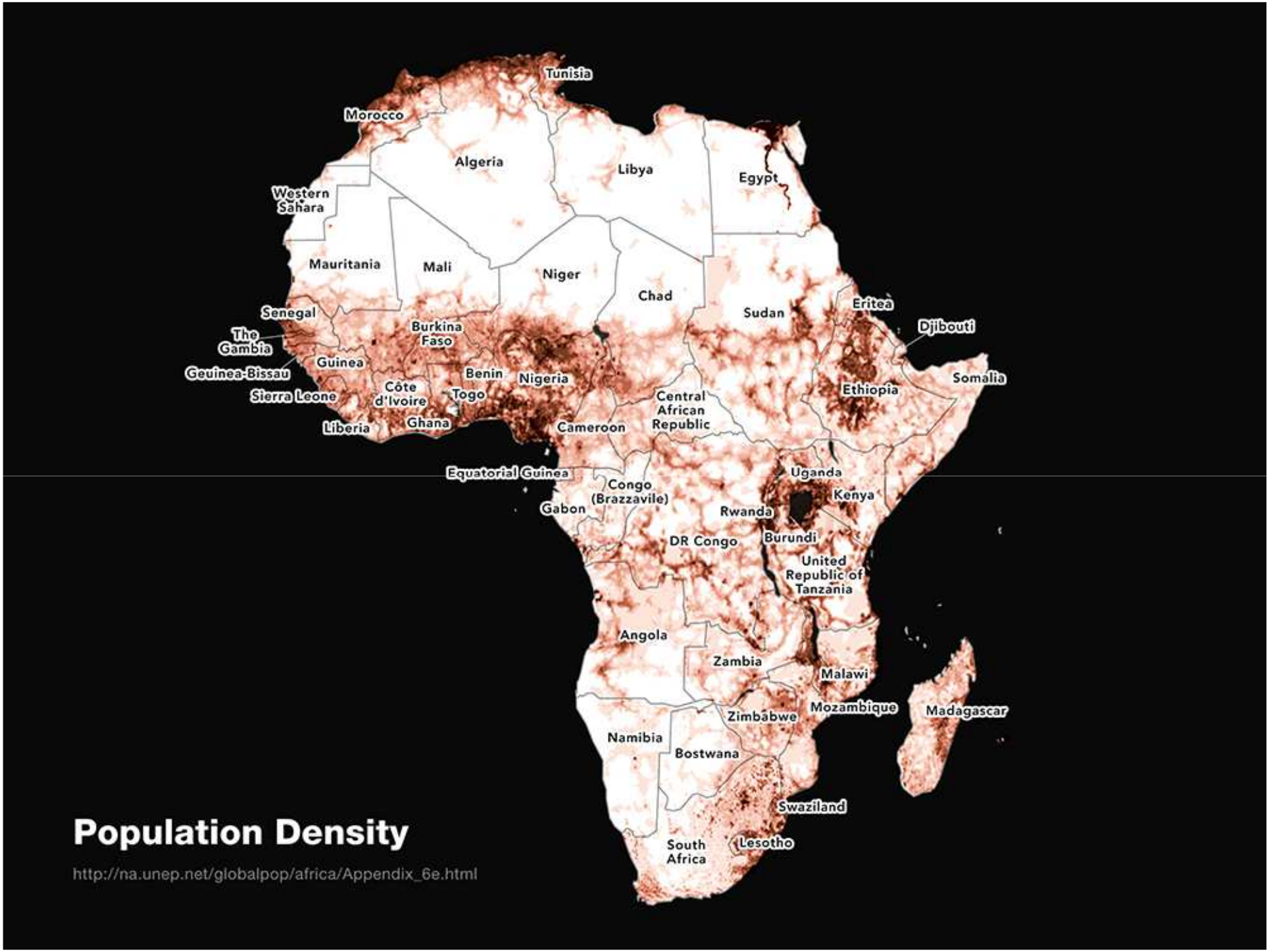
Adoption - http://www.mit.edu/~tavneet/M-PESA.pdf

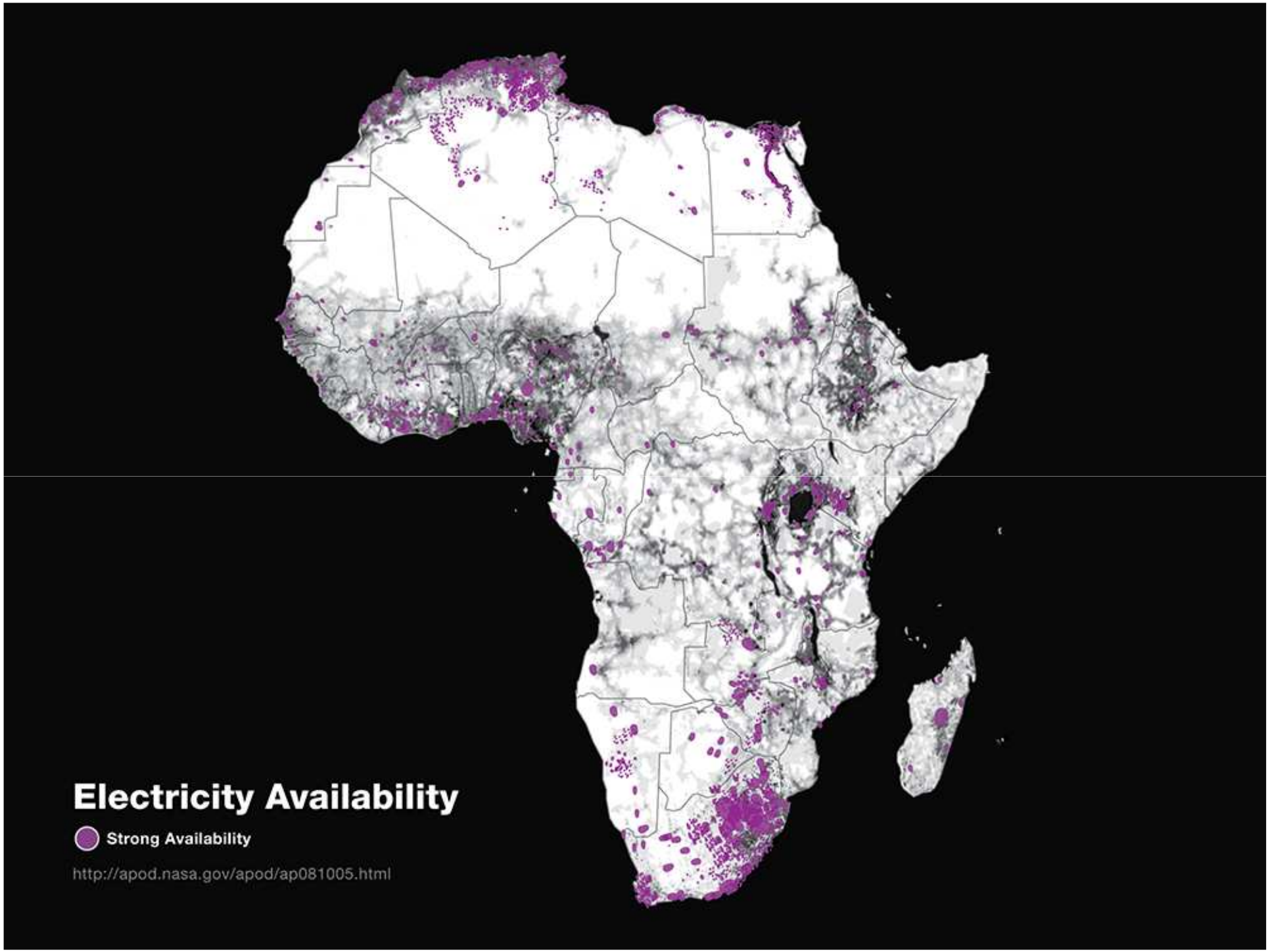
African Cell Phone Owners Growth- ITU

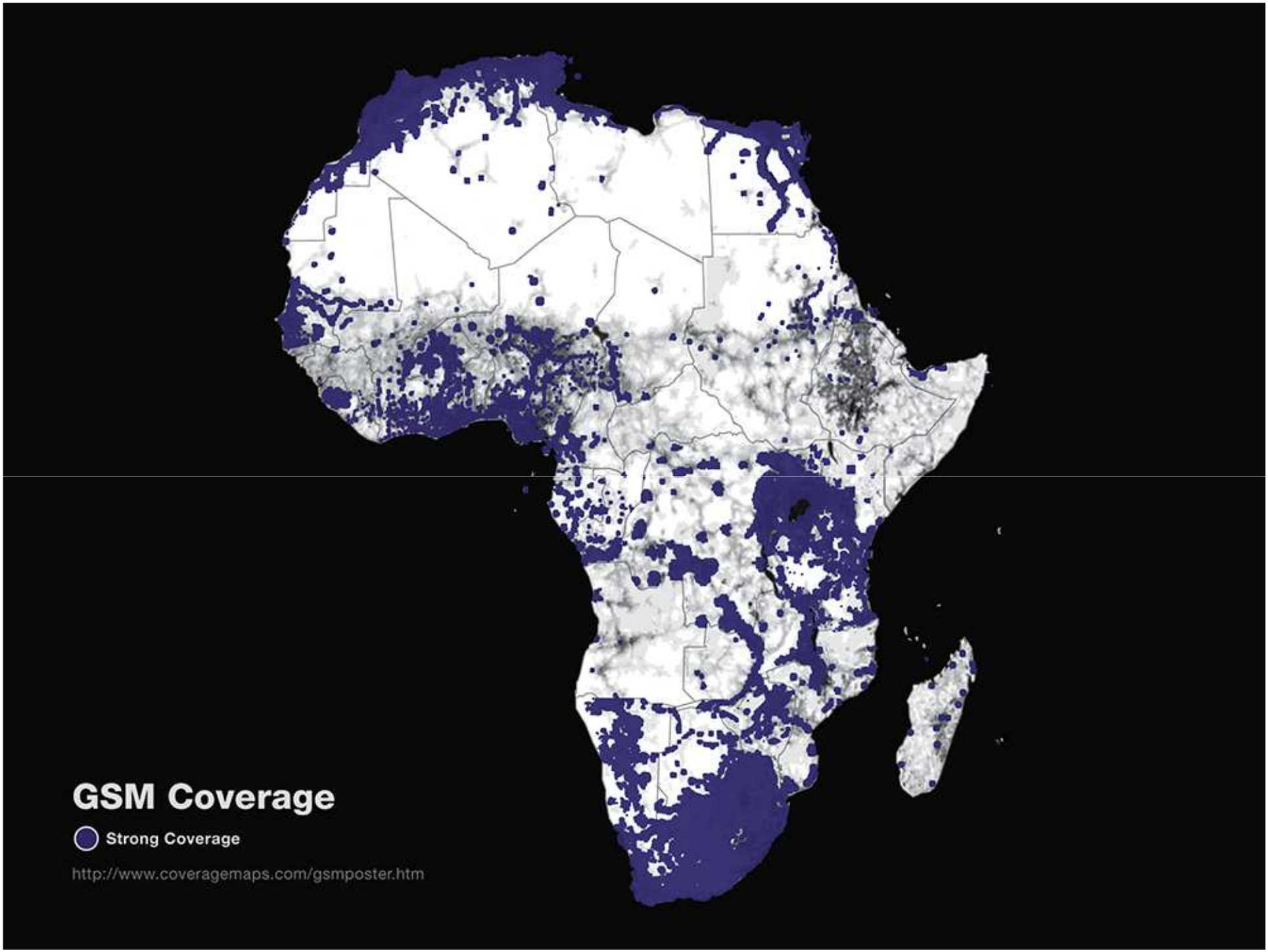
What is driving this growth?

What is limiting it?

Let’s look at Africa as an example:


Tunisia
Morocco
Algeria
Libya
Egypt
Western Sahara
Mauritania
Mali
Niger
Chad
Sudan
Eritea
Djibouti
Senegal
The Gambia
Burkina Faso
Guinea
Geuinea-Bissau
Sierra Leone
Benin
Nigeria
Côte d'Ivoire
Togo
Ghana
Liberia
Cameroon
Central African Republic
Ethiopia
Somalia
Equatorial Guinea
Uganda
Kenya
Congo (Brazzavile)
Gabon
Rwanda
Burundi
DR Congo
United Republic of Tanzania
Angola
Zambia
Malawi
Mozambique
Madagascar
Zimbabwe
Namibia
Bostwana
Swaziland
South Africa
Lesotho
Population Density
http://na.unep.net/globalpop/africa/Appendix_6e.html


Electricity Availability
Strong Availability
http://apod.nasa.gov/apod/ap081005.html


GSM Coverage
Strong Coverage
http://www.coveragemaps.com/gsmposter.htm

The explosions of cell phones is leading to the explosion of innovation around phones…new types of business around phone use, phone sales and charging phones.

Kasana Phone

Solar Powered Phone

Village Phone

New Business Models

M-pesa

Mobile Money Transfer

We Have a Platform:

- Cost/Access: Mobile phones & Shared Computers
- Connectivity: Mobile Data & Global Internet
- Power: Low-power devices & solar & batteries

And Constraints:

- SMS is lowest-common-denominator UI
- Costs remain high & access is limited
- Limited technical “capacity”

ICT4D
(New School)

Software

- OpenMRS / Baobab
- Grameen MoTeCH
- MiFOS
- RapidSMS, ChildCount…
- RapidFTR

Services

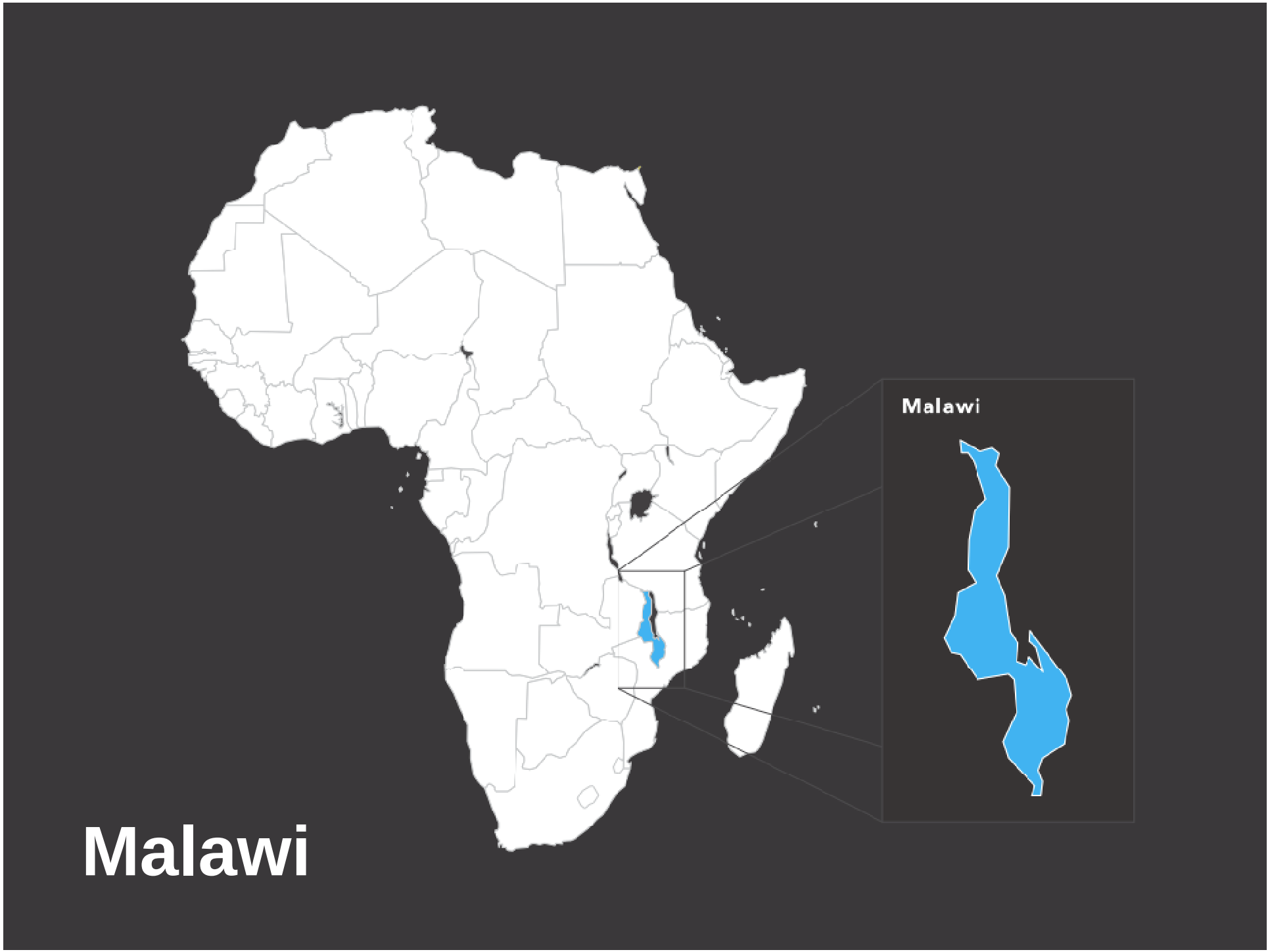
- TxtEagle
- Text To Change
- Google SMS
- Ushahidi
- Bhoomi

Cost/Access

- $10 Mobile
- UNICEF Digital Drum

Let’s look at one of these projects in detail:

UNICEF RapidSMS Malnutrition
Project in Malawi


Malawi
Malawi

Malnutrition can be accurately measured with

Age

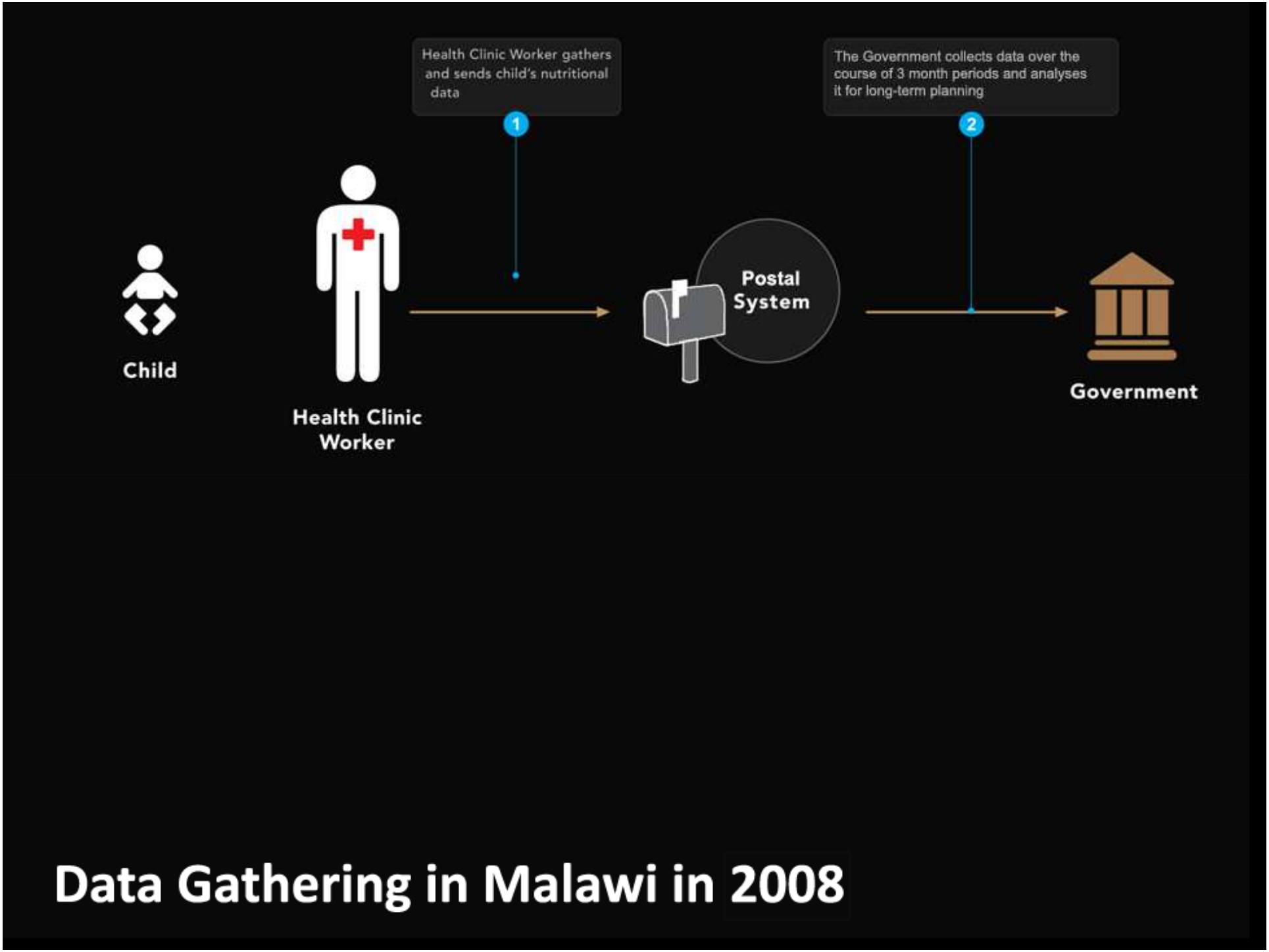
+

Height

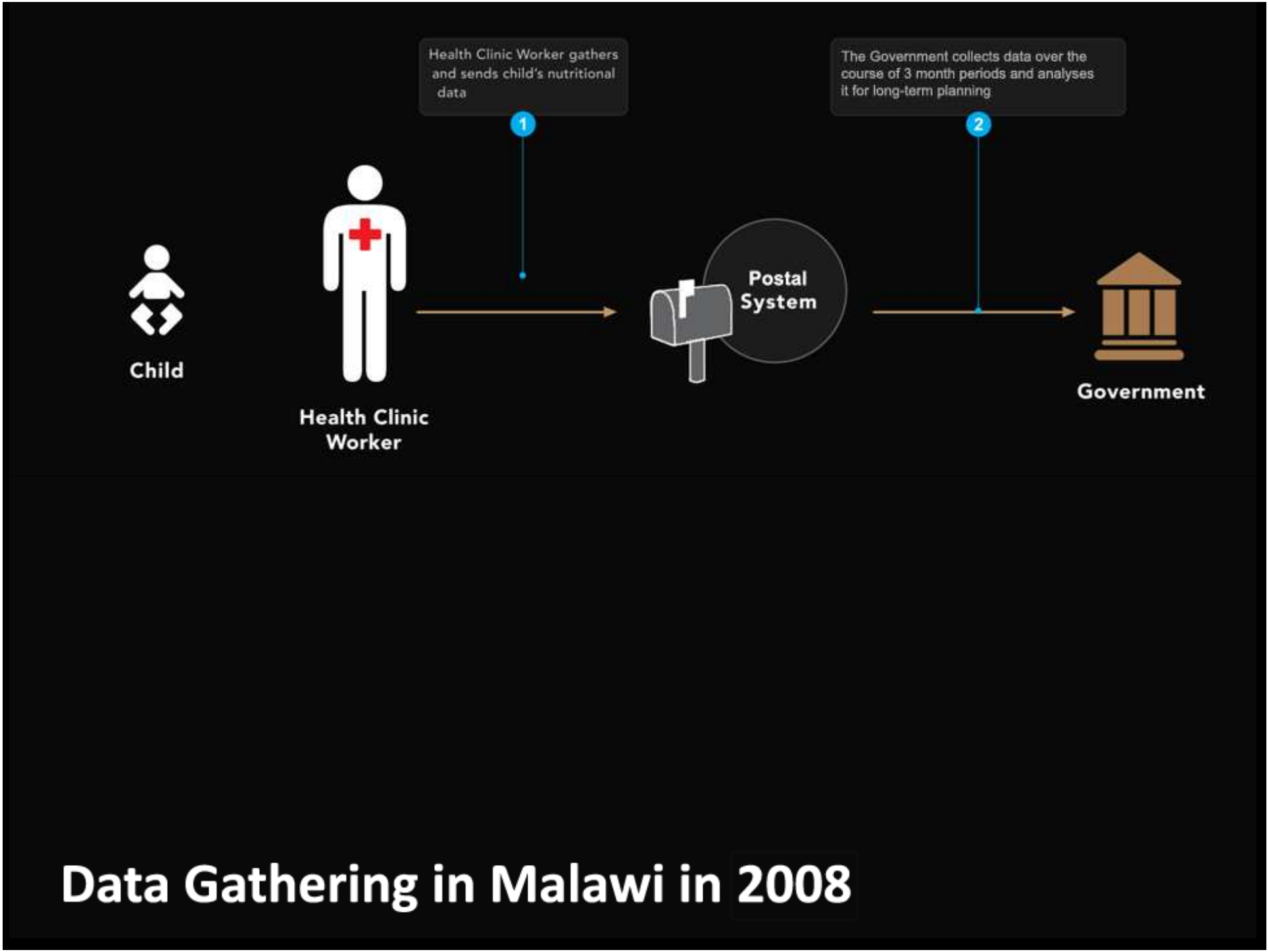
Weight

Upper Arm Circumference

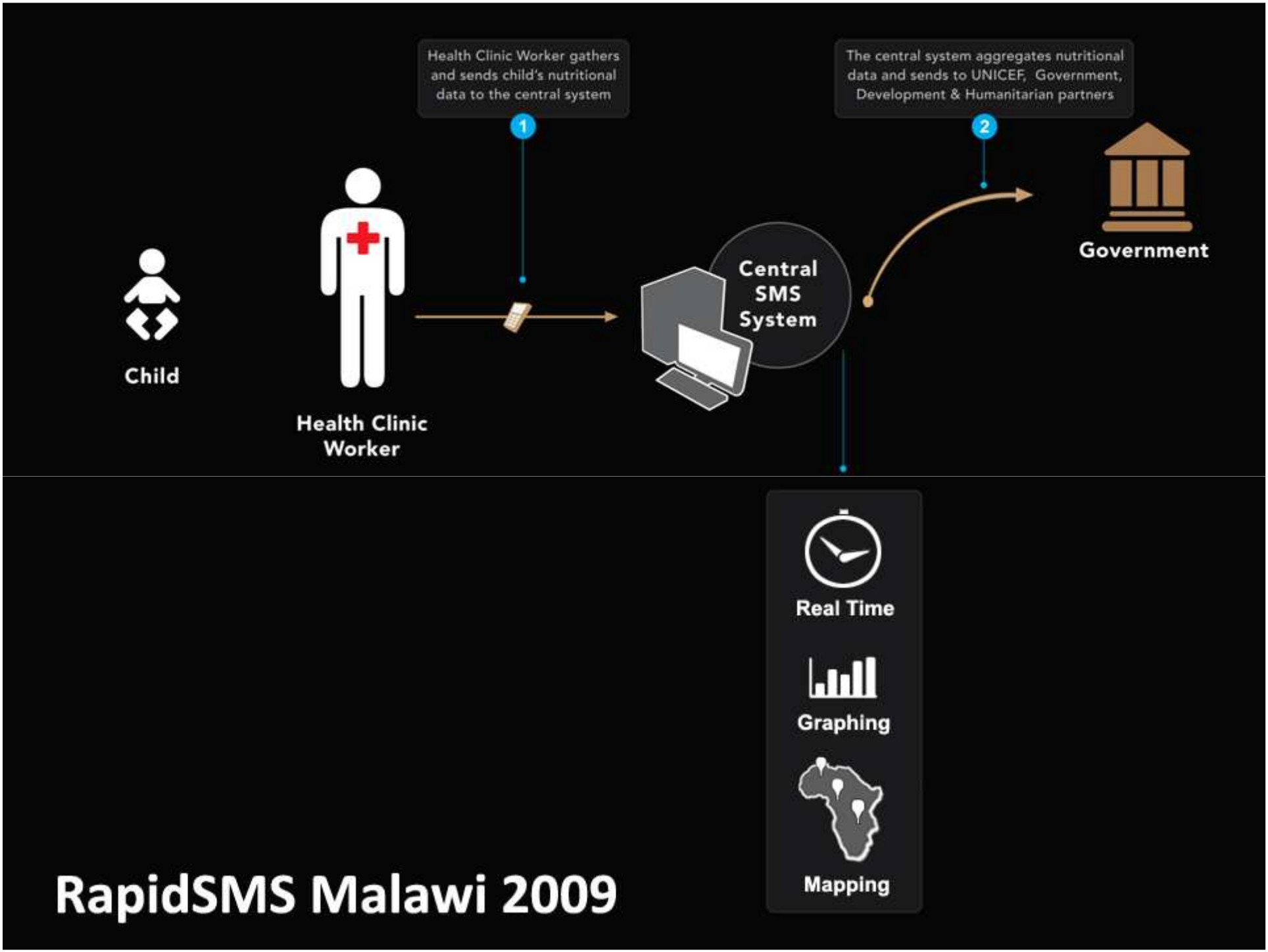
Take all children aged
9 months to 5 years
to the nearest
measles vaccination centre

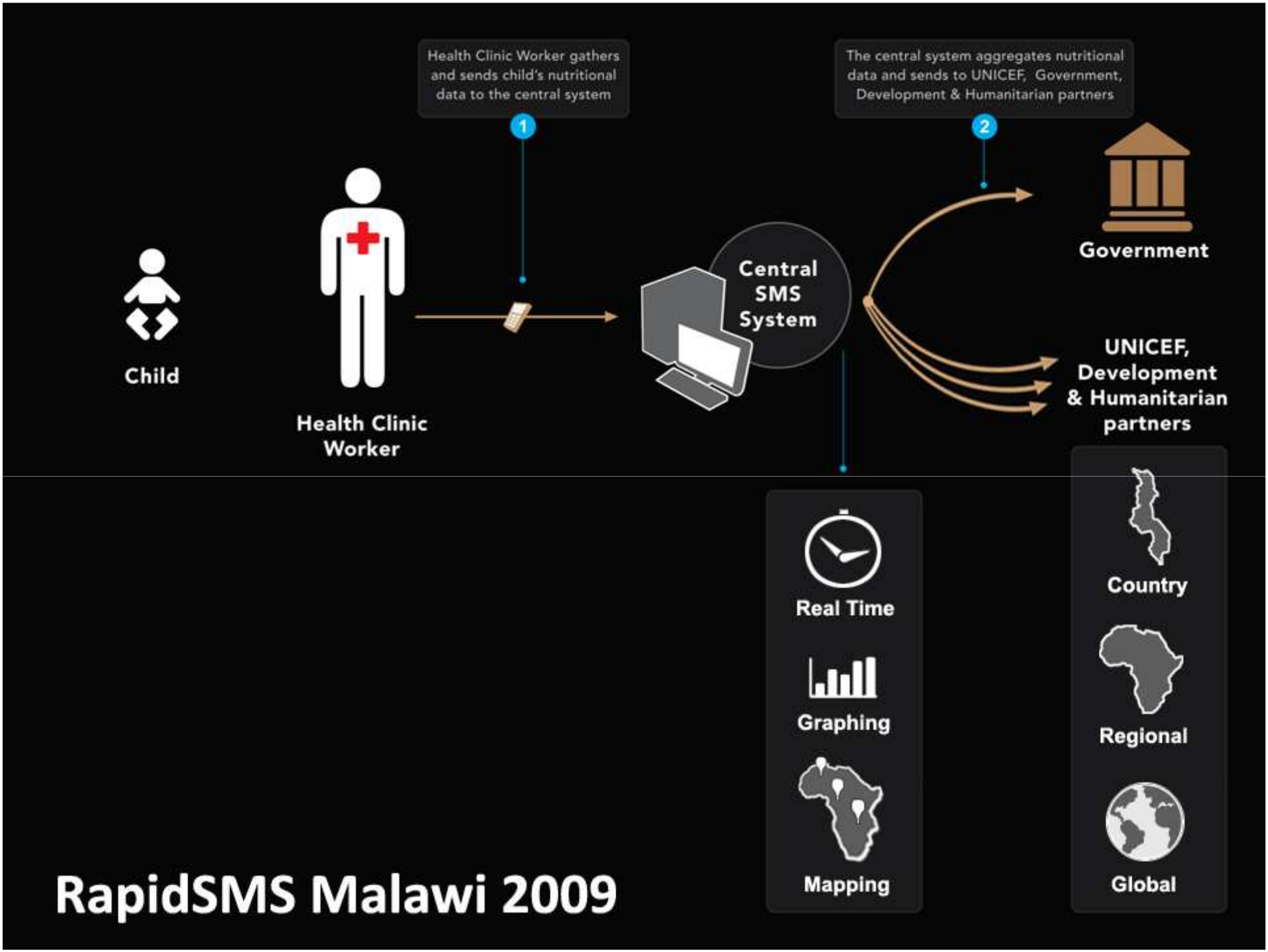


Data Gathering in Malawi in 2008



Data Gathering in Malawi in 2008


Health Clinic Worker gathers and sends child's nutritional data to the central system
1
The central system aggregates nutritional data and sends to UNICEF, Government, Development & Humanitarian partners
2
Child
Health Clinic Worker
Central SMS System
Government
Real Time
Graphing
Mapping
RapidSMS Malawi 2009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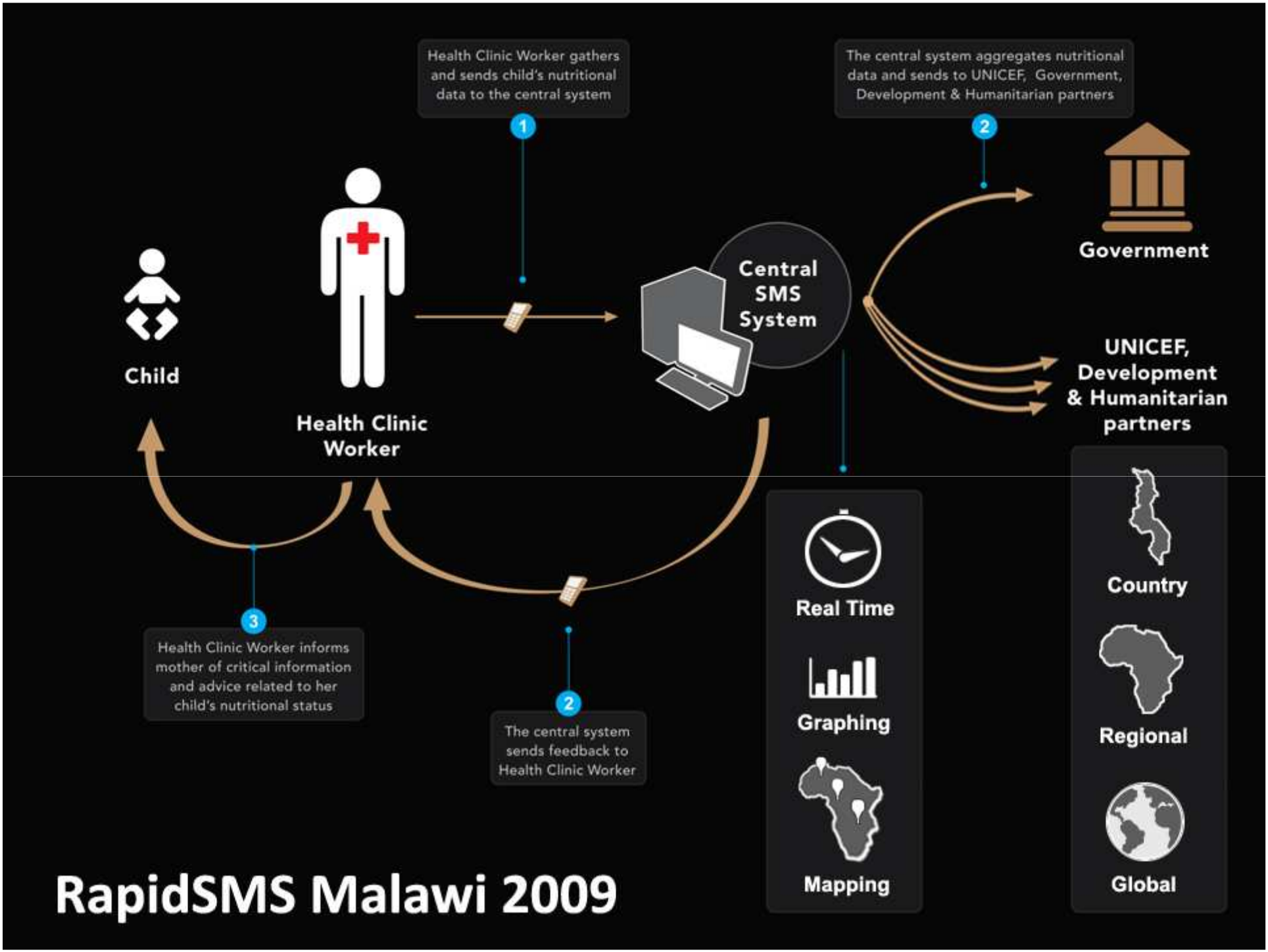
Central SMS System
Government
UNICEF, Development & Humanitarian partners
Real Time
Graphing
Mapping
Country
Regional
Global
RapidSMS Malawi 2009

A Thank You message became our best insight.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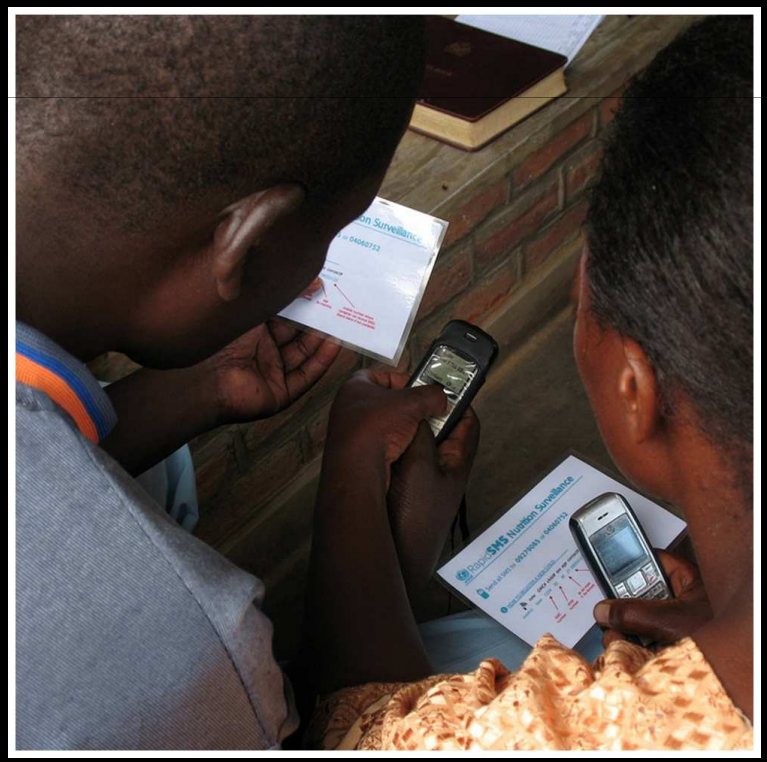
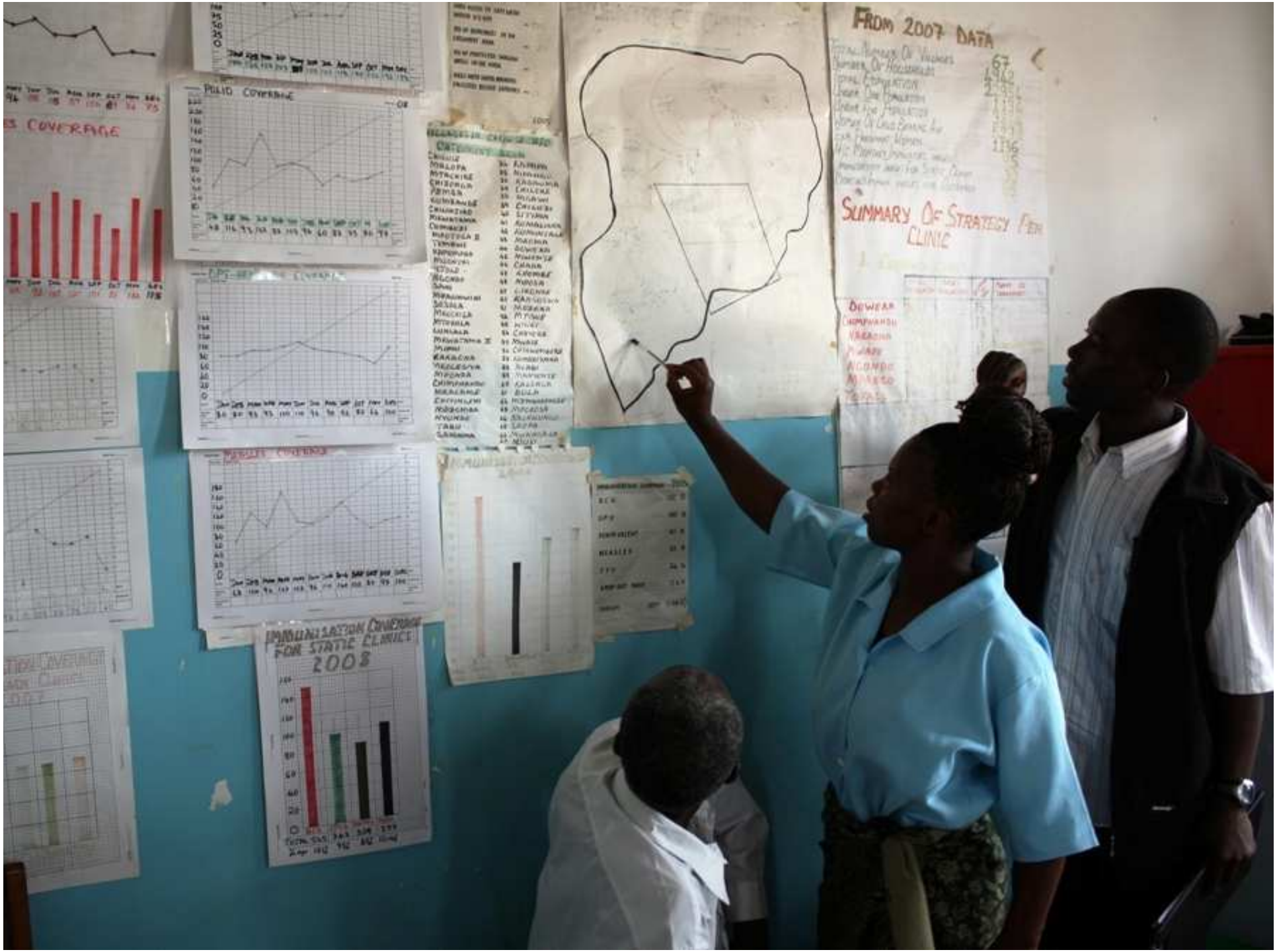
Government
Central SMS System
UNICEF, Development & Humanitarian partners
Child
Health Clinic Worker
Real Time
Graphing
Mapping
Country
Regional
Global
3
Health Clinic Worker informs mother of critical information and advice related to her child's nutritional status
2
The central system sends feedback to Health Clinic Worker
RapidSMS Malawi 2009

Costs low since health workers have cells

- Training
- Costs of SMS messages




FROM 2007 DATA
SUMMARY OF STRATEGY FOR CLINIC
IMMUNISATION COVERAGE FOR STATIC CLINICS 2008

Software made this possible. Specifically, an open-source framework called RapidSMS developed by UNICEF and many partners.

RapidSMS is:

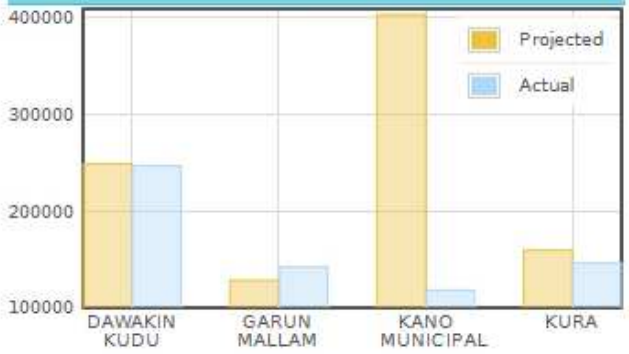
- Languages & Platform: Python, mySQL, & Linux
- Framework: Django
- Source Control: Git
- RapidSMS is more a set of libraries than an application
- Modular Architecture: Apps, Router, Backend

RapidSMS

Reports

Mobilization and Net Distribution Summaries

Beneficiaries Summary



Daily Distribution Progress

Date	Day	Reports		Net Cards		Beneficiaries	
04/05	1	61	31%	6828	1%	34659	3%
05/05	2	133	69%	34258	9%	137562	14%
06/05	3	91	47%	24557	6%	107781	11%
07/05	4	43	22%	16804	4%	86083	9%
08/05	5	76	39%	22231	5%	100605	10%
09/05	6	39	20%	12123	3%	71061	7%
10/05	7	16	8%	2810	0%	11187	1%
11/05	8	6	3%	1970	0%	9851	1%
12/05	9	19	9%	10671	2%	56352	6%
13/05	10	15	7%	6649	1%	35428	3%
14/05	11	2	1%	236	0%	1548	0%
15/05	12	2	1%	1400	0%	0	0%
16/05	13	1	0%	0	0%	800	0%
17/05	14	0	0%	0	0%	0	0%
Total				**141773**		**652919**	
% of projected demand				**37%**		**69%**	

Quick Totals

346
Reporters

226
Active Locations

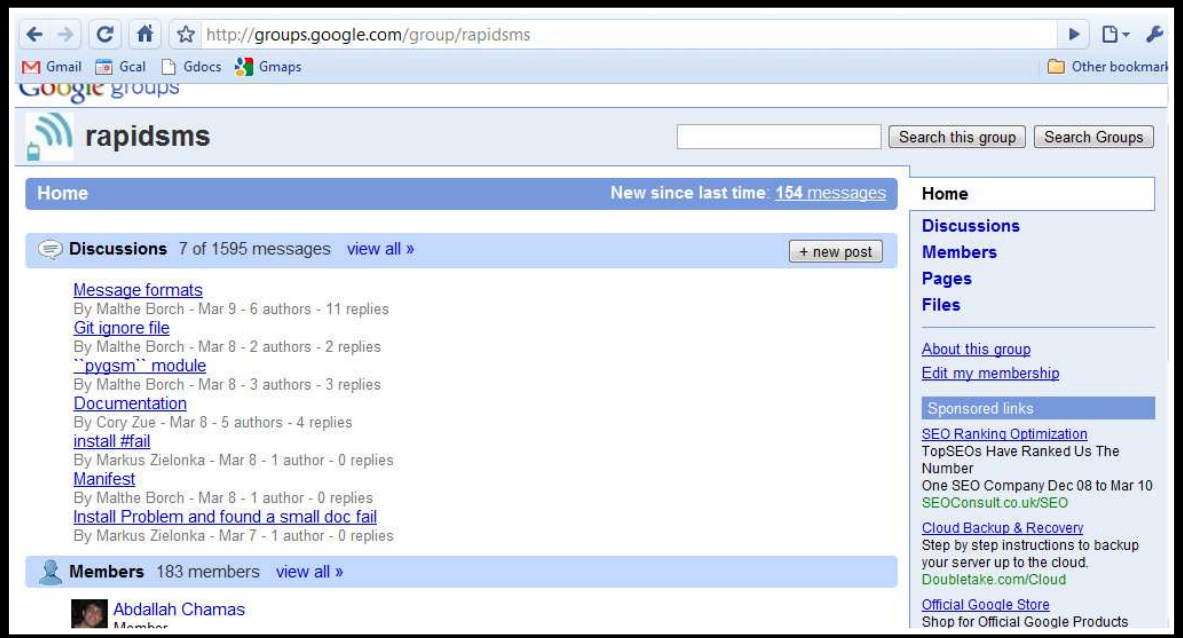
232
Stock Transfers

506
Net Card Reports

141773
Net Cards Distributed

RapidSMS also is:

- A global community of hundreds of developers
- Built to solve real world problems that NGO's, UN agencies, and governments have



The more people involved and the more we use the frame work the more use-cases we discover for SMS.

Tracking
Ready to Eat Foods
In Ethiopia

Tracking
Malarial Bednet
Distribution in Nigeria

Creating Budgeting Tools
for selling Cook-stoves
In Ghana

Teaching Literacy
Skills to Girls in
Senegal

Let’s look at one another project:

RapidFTR

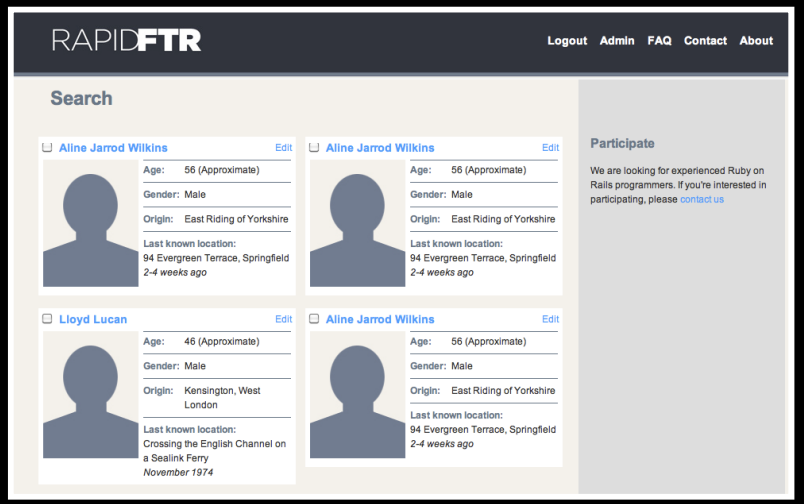
Project for Haiti

RapidFTR
(Family Tracing and Reunification)

- Collaboration among NYU ITP, UNICEF and TW
- Based on designs from the ITP
- Work began after Haiti earthquake
- Use ICTs to improve family reunification efforts

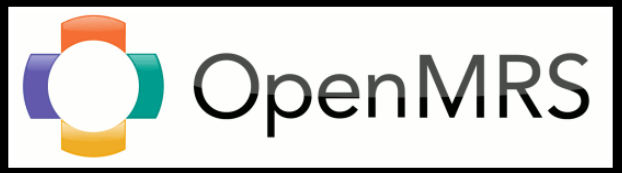
RapidFTR
(What it Does)

- Secure datastore of located children
- Web client for identifying/locating children
- Mobile clients for data collection & search
- Rails, CouchDB, BlackBerry
- It isn't done: server-side, Symbian, Android etc..



ICT4D Today

- Industry is solving basic infrastructure
- Platforms for software & services exist
- Access is improving
- Software matters *now*
- Exciting time for software developers
- Contribute to a project: RapidFTR, RapidSMS, OpenMRS



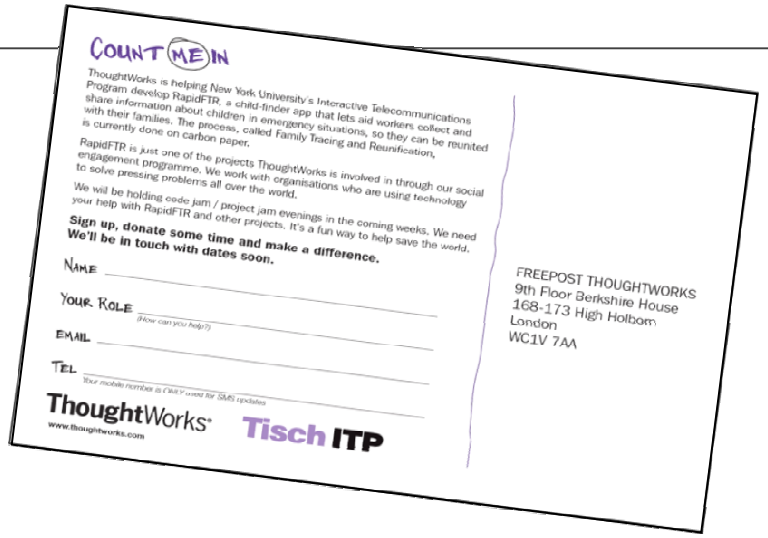
Questions?

NO—ONE KNOWS WHETHER OR NOT
HANNA HAS ANY FAMILY NOW.

ThoughtWorks®

Tisch ITP

WE THOUGHT THERE
SHOULD BE AN APP FOR THAT.



COUNT ME IN

ThoughtWorks is helping New York University's Interactive Telecommunications Program develop RapidFTR, a child-finder app that lets aid workers collect and share information about children in emergency situations, so they can be reunited with their families. The process, called Family Tracing and Reunification, is currently done on carbon paper.

RapidFTR is just one of the projects ThoughtWorks is involved in through our social engagement programme. We work with organisations who are using technology to solve pressing problems all over the world.

We will be holding code jam / project jam evenings in the coming weeks. We need your help with RapidFTR and other projects. It's a fun way to help save the world.

Sign up, donate some time and make a difference.
We'll be in touch with dates soon.

NAME _____

YOUR ROLE _____
(How can you help?)

EMAIL _____

TEL _____
Your mobile number is (only) used for SMS updates

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Tisch ITP

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168-173 High Holborn
London
WC1V 7AA

Can we count you in ?

References

AirJaldi www.airjaldi.com
Bhoomi bhoomi.karnataka.gov.in
BOSCO www.bosco-uganda.org
ChildCount www.childcount.org
CSIR/Meraka Inst. www.meraka.org.za
Digital Doorway www.digitaldoorway.org.za
Digital Drum picasaweb.google.com/terraw/TheUgandaDigitalDoorwayPrototype
Google SMS www.google.co.ug/mobile/sms
Grameen MoTeCH www.grameenfoundation.applab.org/section/ghana-health-worker-project
Green WiFi www.green-wifi.org
Malawi Nutritional Surveillance www.rapidsms.org/case-studies/malawi-nutritional-surviellence
Mifos www.mifos.org
OLPC laptop.org
OpenMRS www.openmrs.org
RapidFTR rapidftr.com
RapidSMS rapidsms.org
TIER tier.cs.berkeley.edu
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TxtEagle txteagle.com
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We Care Solar wecaresolar.com