

# Mobile Data Collection Using ODK

Francis Oloo, PhD



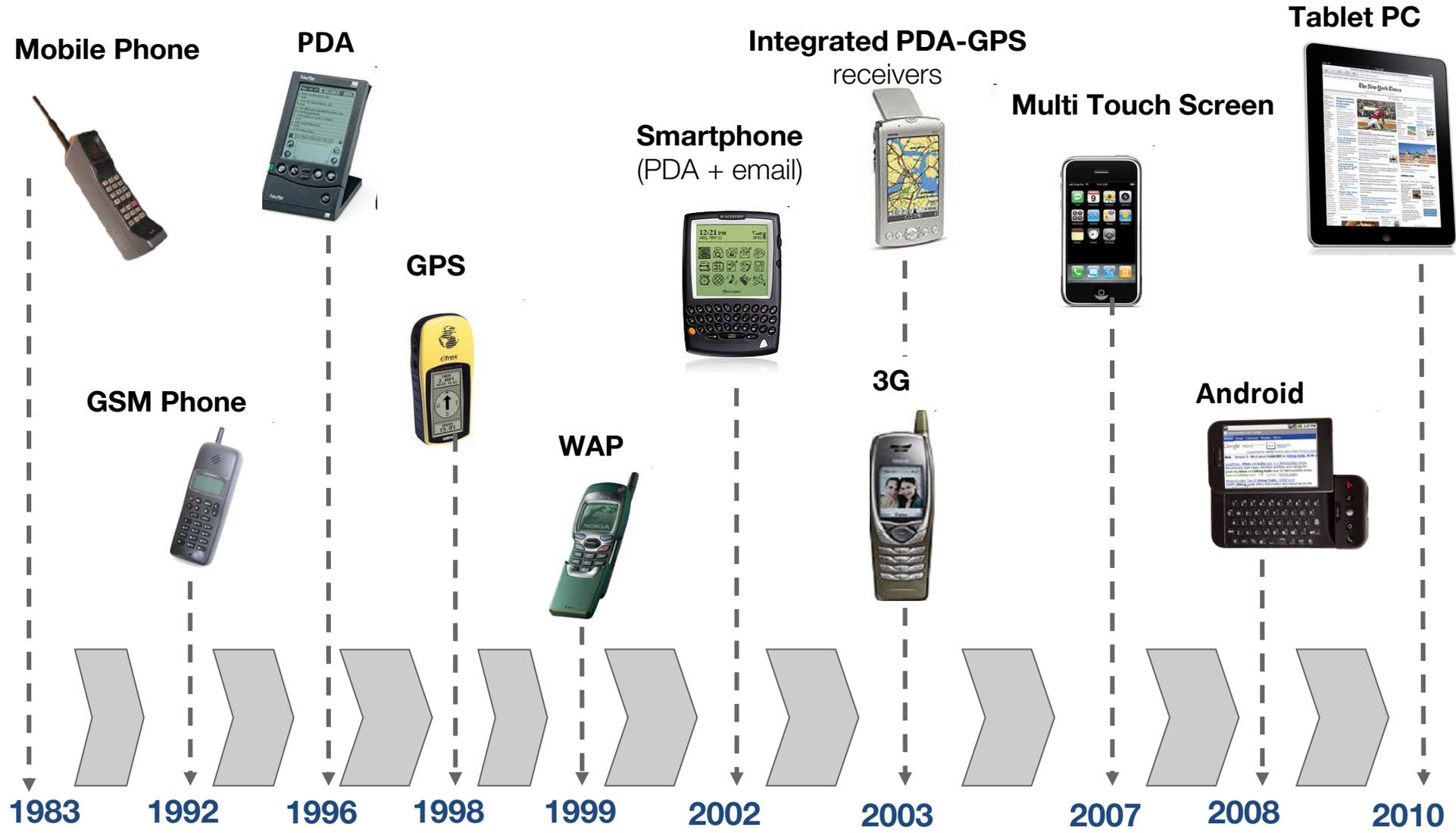
# Outline

- Motivation
- ODK Architecture
- Implementation
- Areas of application
- Conclusion

# Motivation



# Motivation



# Motivation



# 'smart' apps for GI



UTM Area Measure  
ThSoft Co.,Ltd



GPS Essentials  
mictale.com



Google Earth  
Google Inc.



Connected Farm Sc  
Trimble Navigation



KMLZ to Earth  
WrightRocket



MAPS.ME - GPS Na  
My.com B.V.



GeoODK Collect  
GeoODK



Ushahidi  
Ushahidi



# Why Mobile data collection

- Eliminates transcription errors
- Immediate access to data from server- rapid data aggregation and analyse
- Enhanced options of data types; Form + GPS + pictures + videos + string + numeric + audio + barcodes
- Cleaner data-standardization of data
- Real-time monitoring

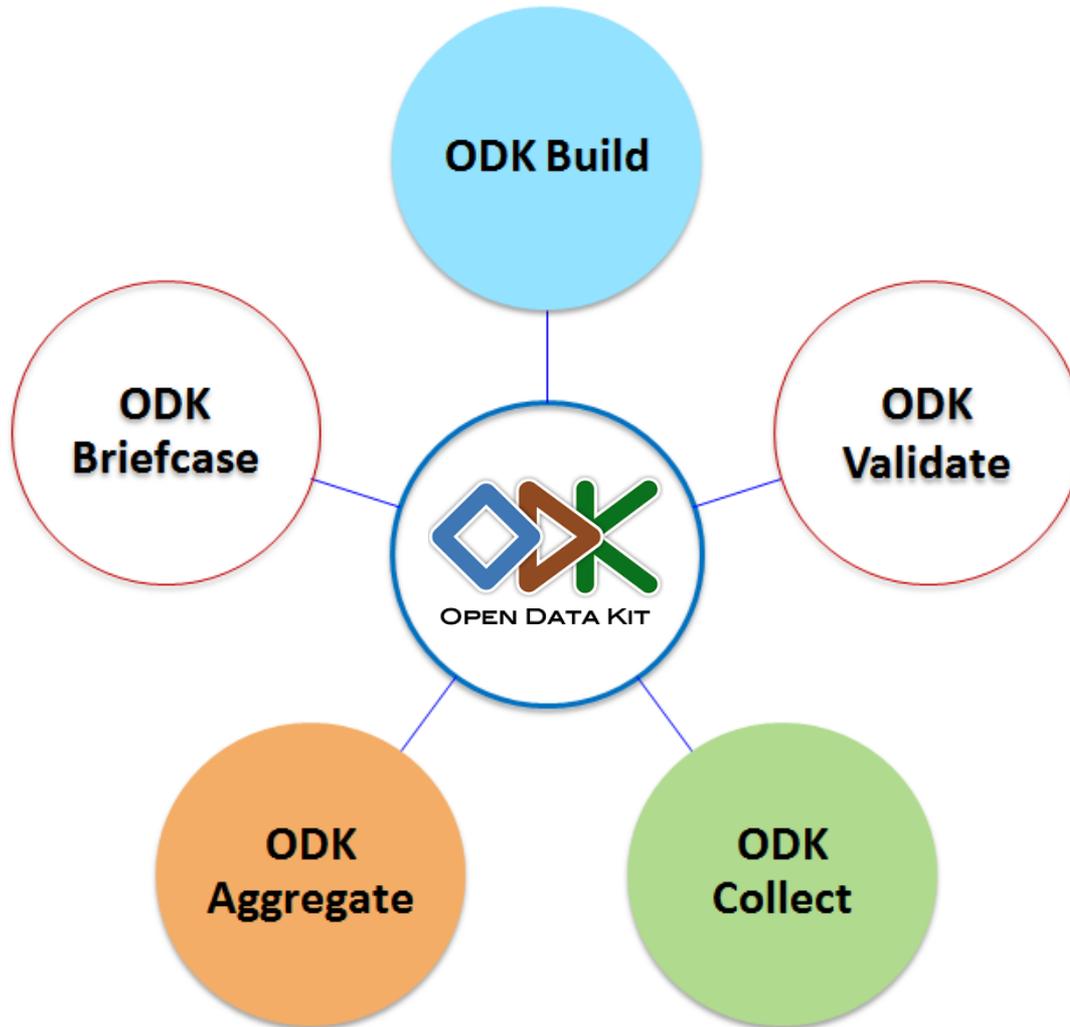
# Background of ODK

- Open Data Kit (ODK) is an open-source suite of tools that helps organizations **author**, **field**, and **manage** mobile data collection solutions
- Core developers of ODK are researchers at the Department of Computer Science and Engineering, University of Washington

# Philosophy

- ODK is designed as an **open-source and standard-based** tool that is easy to use, easy to modify and easy to scale
- As such ODK is a modular and extensible android based up that allows for **design, capture** and **management** of mobile based surveys

# Core Components



# ODK Build

- Is the component that **allows users to design survey questions as XLSForms**
- ODK build was **originally designed to allow users to design simple forms through drag and drop interface**
- More advanced forms can be created via XLS2Forms, KOBO, Vellum, PurcForms

# ODK Build (XLSForm)

	A	B	C	D	E	F	G
1	<b>type</b>	<b>name</b>	<b>label</b>	<b>relevant</b>	<b>constraint</b>	<b>appearance</b>	<b>required</b>
2	deviceid	device					
3	today	surveyDate					
4							
5	text	enumerator	What is the enumerator's name?				yes
6	date	surveyDate2	Enter date of survey?				
7	text	farmer_name	Farmer name?				
8	integer	farmer_age	Farmer age?		.>0 and .<120		
9	select one from gender	farmer_gender	Gender				
10	<b>geopoint</b>	<b>gps</b>	<b>Capture field coordinates</b>				
11	select_multiple crop_type	crop	Which crops are currently in the field?			minimal	
12	text	crop_other	If Other crop in the field, specify?	selected(\${crop}, 'Other')			
13	select one from yes_no	fertilizer_use	Did you apply inorganic fertilizer in this field?				
14	select_multiple fertilizer_typ	fert_type	Which fertilizer did you apply?	\${fertilizer_use}='1'			
15	image	field_photo	Take a photo of the field				
16	image	sign	Please sign			signature	
17							

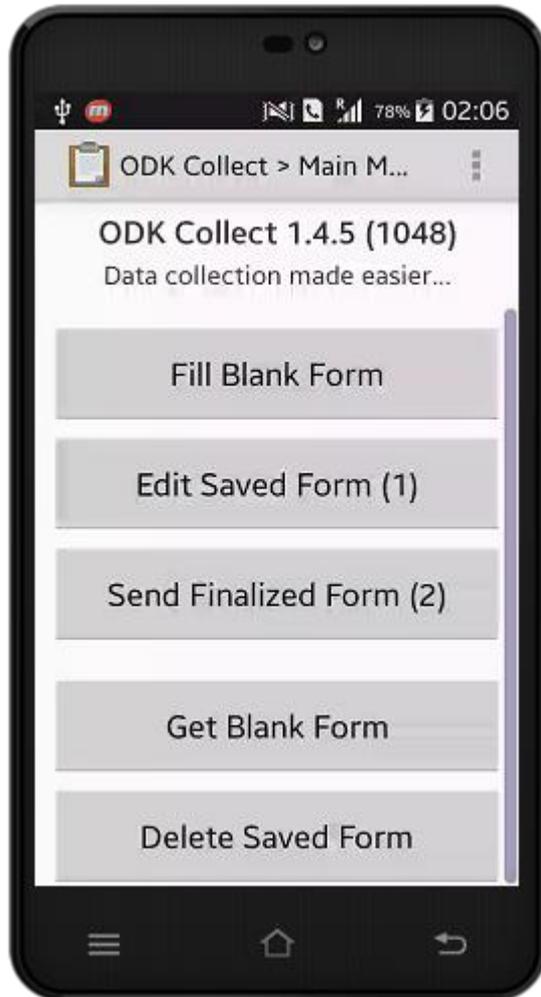
# ODK Build (Drag and Drop)

abc	What is the name of the place?	   
	Record GPS Coordinates	   
	Take a photo?	   
	▶ Type of place?	   
abc	If other place type, specify	   

# ODK Collect

- Renders forms into a sequence of input prompts that **apply form logic, entry constraints, and repeating sub-structures**.
- Users work through the prompts and can save the submission at any point.
- Finalized submissions can be sent to (and new forms downloaded from) a server.

# ODK Collect (Interface)



- **Configure server settings** to access blank survey forms and to transfer completed surveys
- **Get blank forms:** Access blank ODK forms
- **Fill Blank Forms:** Actual data entry using ODK forms
- **Edit Saved Form:** before sending
- **Send Finalized form**

# ODK Aggregate

- Provides a **ready-to-deploy server and data repository to:**
  - avail blank forms to ODK Collect (or other OpenRosa clients),
  - accept finalized forms (submissions) from ODK Collect and manage collected data,
  - visualize the collected data using maps and simple graphs,

# ODK Aggregate

- export data (e.g., as CSV files for spreadsheets, or as KML files for Google Earth), and
- publish data to external systems (e.g., Google Spreadsheets or Google Fusion Tables).

# ODK System Architecture

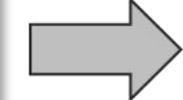
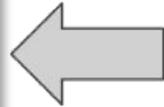
## Form Authoring



XForms

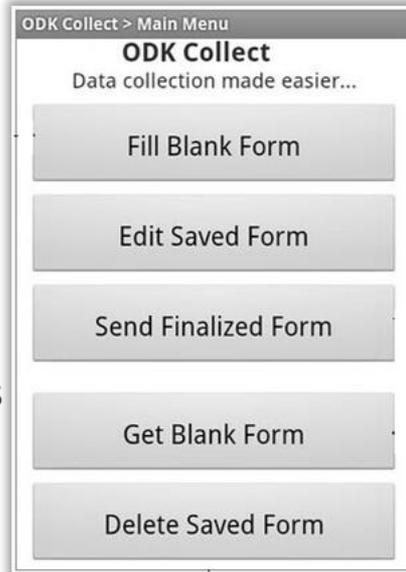


XML Data

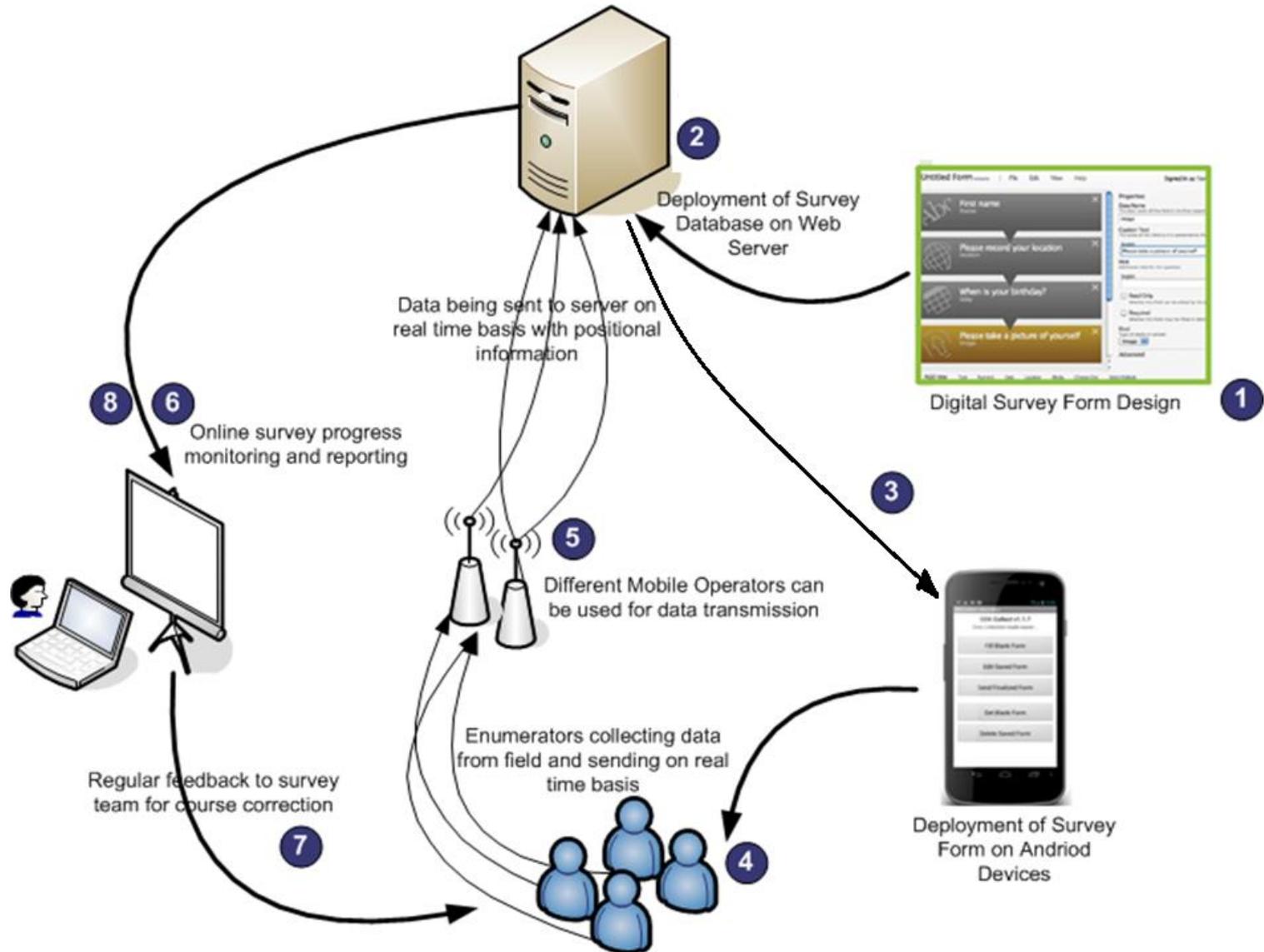


XML Forms

## Mobile Engine

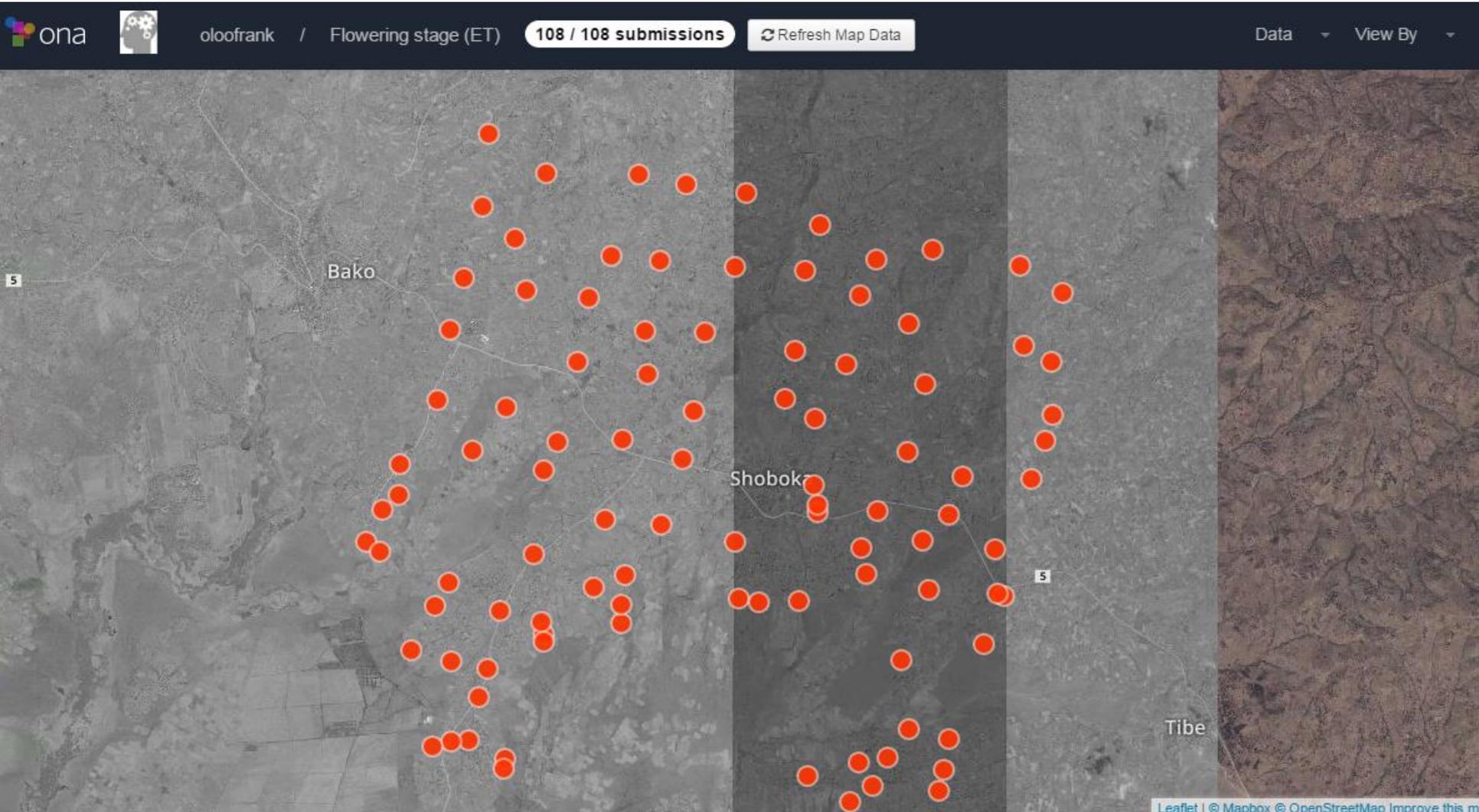


# Data Collection Framework

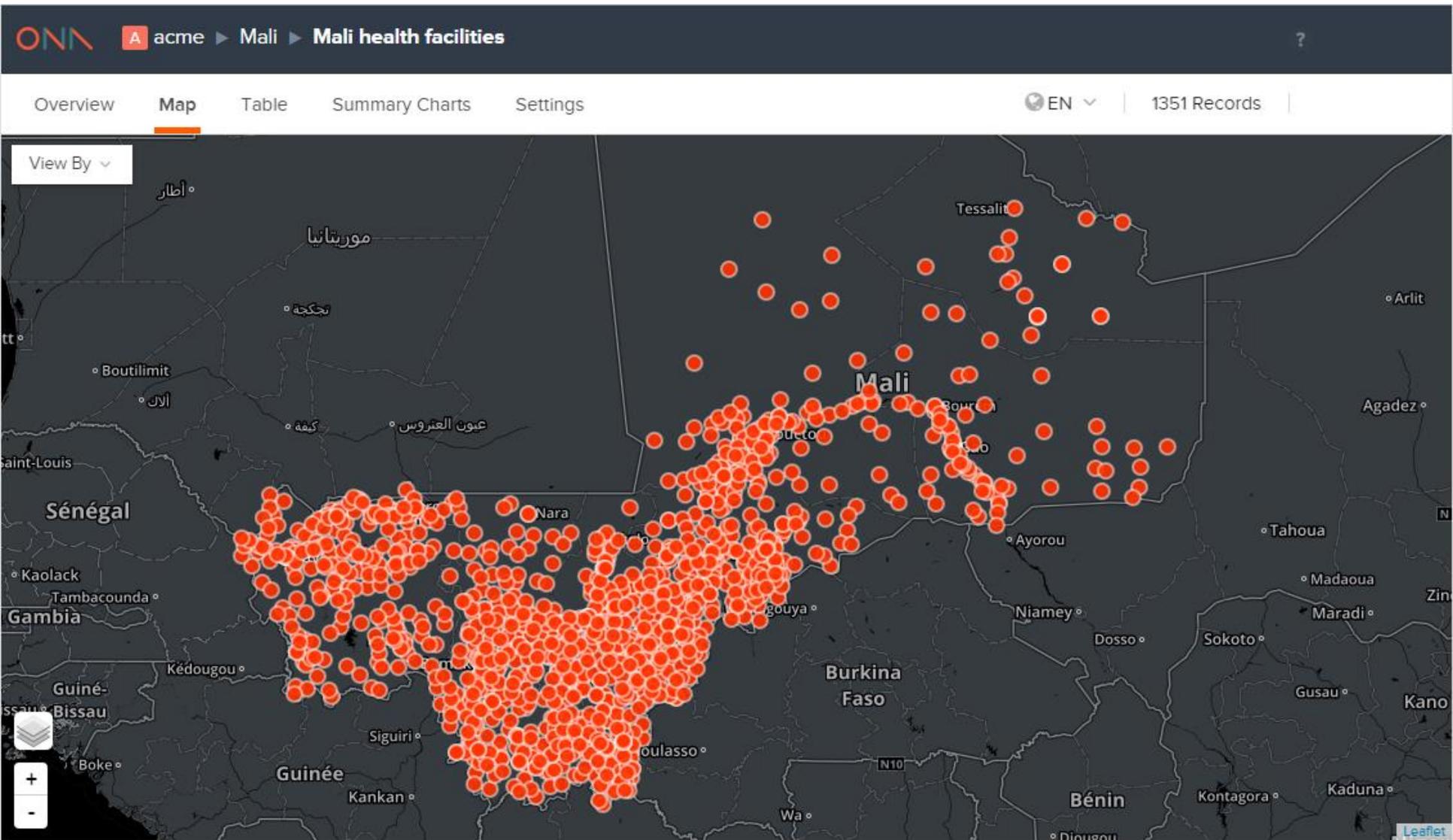




# Implementations



# Implementation



# Other Applications

- **Collection of epidemiological data** (Raja et al, 2014)(<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3959915/>)
- **Election monitoring**  
(<https://opendatakit.org/2013/07/using-elmo-odk-in-kenyas-2013-presidential-elections/>)
- **Community engagements**  
(<http://www.villagereach.org/impact/odk-open-data-kit-solutions/>)

# Other Implementations



SurveyCTO Collect  
Dobility, Inc.



EpiCollect  
Imperial College, London



KoBoCollect  
KoboToolBox



EarlySail ODK Collect  
EarlySail Software Private



KRCS Collect  
Kenya Red Cross Society



Ona Collect  
Ona Systems, Inc



GeoODK Collect  
GeoODK



Acquee ODK Collect  
Mobilieris Ltd.



# Possible areas of Application

- Primary data collection
- Monitoring and evaluation
- Participatory urban and regional planning
- Ground truthing
- Crowdsourcing/ Volunteered Geographic Information
- Infrastructure management
- Disaster monitoring/ Humanitarian response

# Concluding remarks

- ODK has proved to be a robust and efficient tool and provides the necessary building blocks to build reliable information services particularly in developing country
- Modular, extensible and open design provides an avenue for integration and implementation in geospatial workflows