Open Data Kit (ODK)
Collecting data with smart forms on mobile phones

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Hi, I'm Yaw.

I run a software company called Nafundi. Our expertise is in software designed for challenging environments -- places with no power, unreliable connectivity. Places like rural Kenya or post-hurricane New Jersey.

Nafundi is best known for our work on Open Data Kit, which is a platform that I helped to create as part of my Ph.D. work at U.W.

I've got two goals today. I want to convince you that ODK is fantastic for anyone who wants to collect data accurately, quickly, offline and at scale.

I also want to convince you that technology can help solve important problems -- even in the most challenging environments.

For this short presentation, I'm going to focus on what problems motivated ODK, I'll show what ODK actually is, and I'll also give you a few examples of ODK use.

Collecting data in places with no infrastructure is really hard.

This is a village on the edge of Lake Victoria in Eastern Uganda I worked in.

I think it's a good example of the places where groups like Doctors without Borders needs to provide services.

You can see in a place like this there is almost no infrastructure. No good roads. No running water. No electricity.

So if for example, Doctors Without Borders needs to do a survey in this area to find out where illness are, how will they do that?

Paper is common practice, but limits scale and impact.

They will use paper. This is common practice but it really limits your scale.

If I want to find out how many people in these forms shown here have malaria, that's hard to accurately.

If I want to map where an outbreak is occurring in realtime, that's even harder.

And imagine doing this across an entire region from paper records.

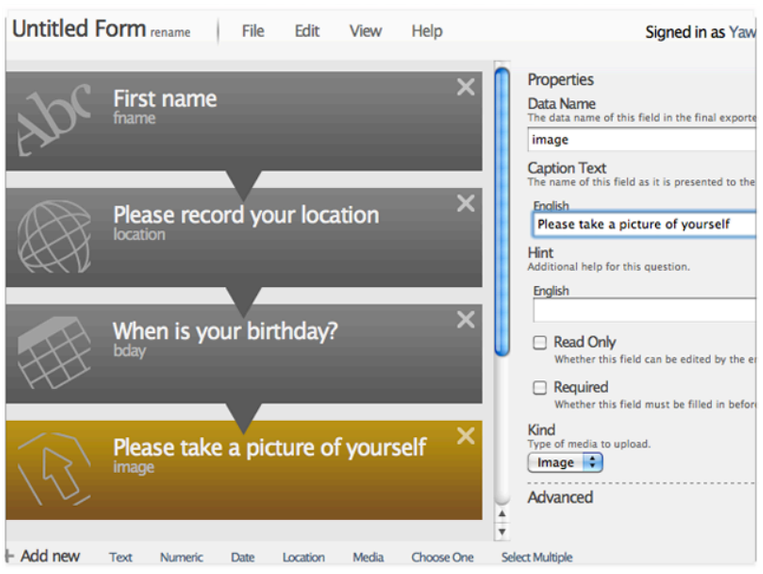
Basically impossible because all this useful data isn't digitized. It's trapped on paper and that isn't scaleable.

These problems where driving motivation behind my Ph.D. work addressing these limitations of paper through technology.

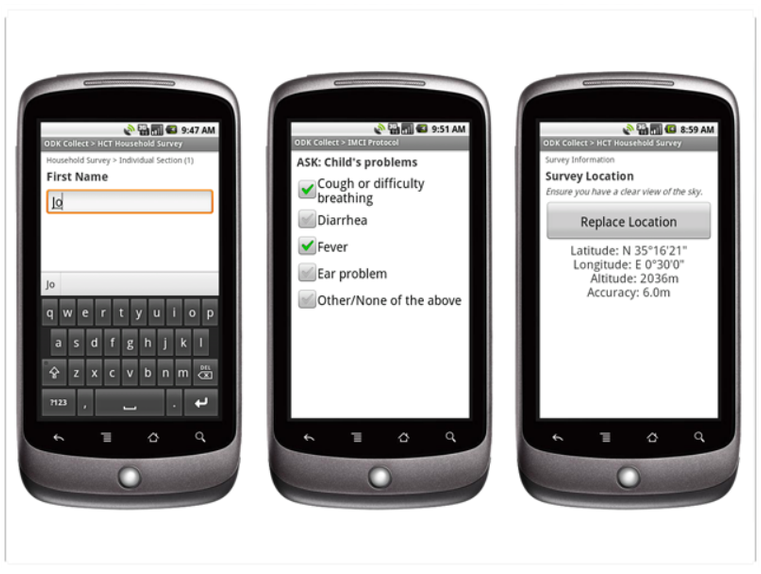
That's why ODK was created.

ODK replaces paper forms with smart forms on phones.

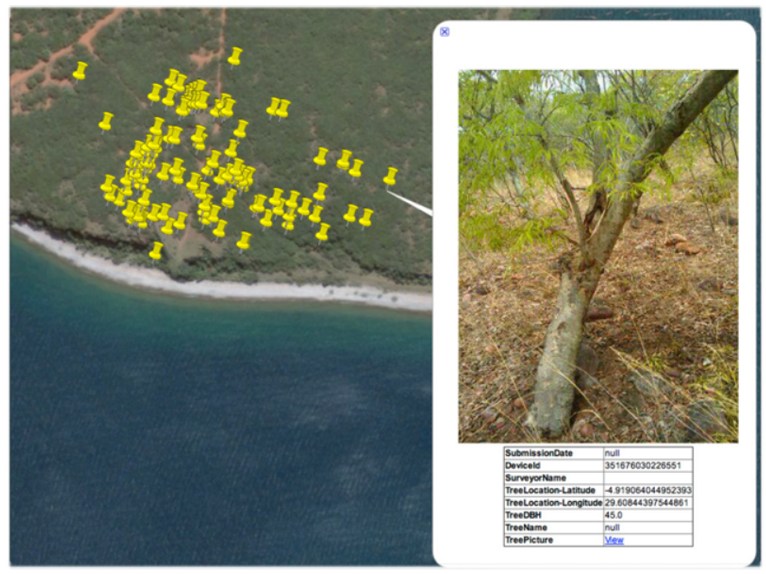
1. Build form



2. Collect data



3. Aggregate results



ODK replaces paper forms with smart forms on a phone or tablet. ODK provides an out-of-the-box solution for users to:

1. Build a data collection form;

2. Put that form and a mobile device to collect that data;

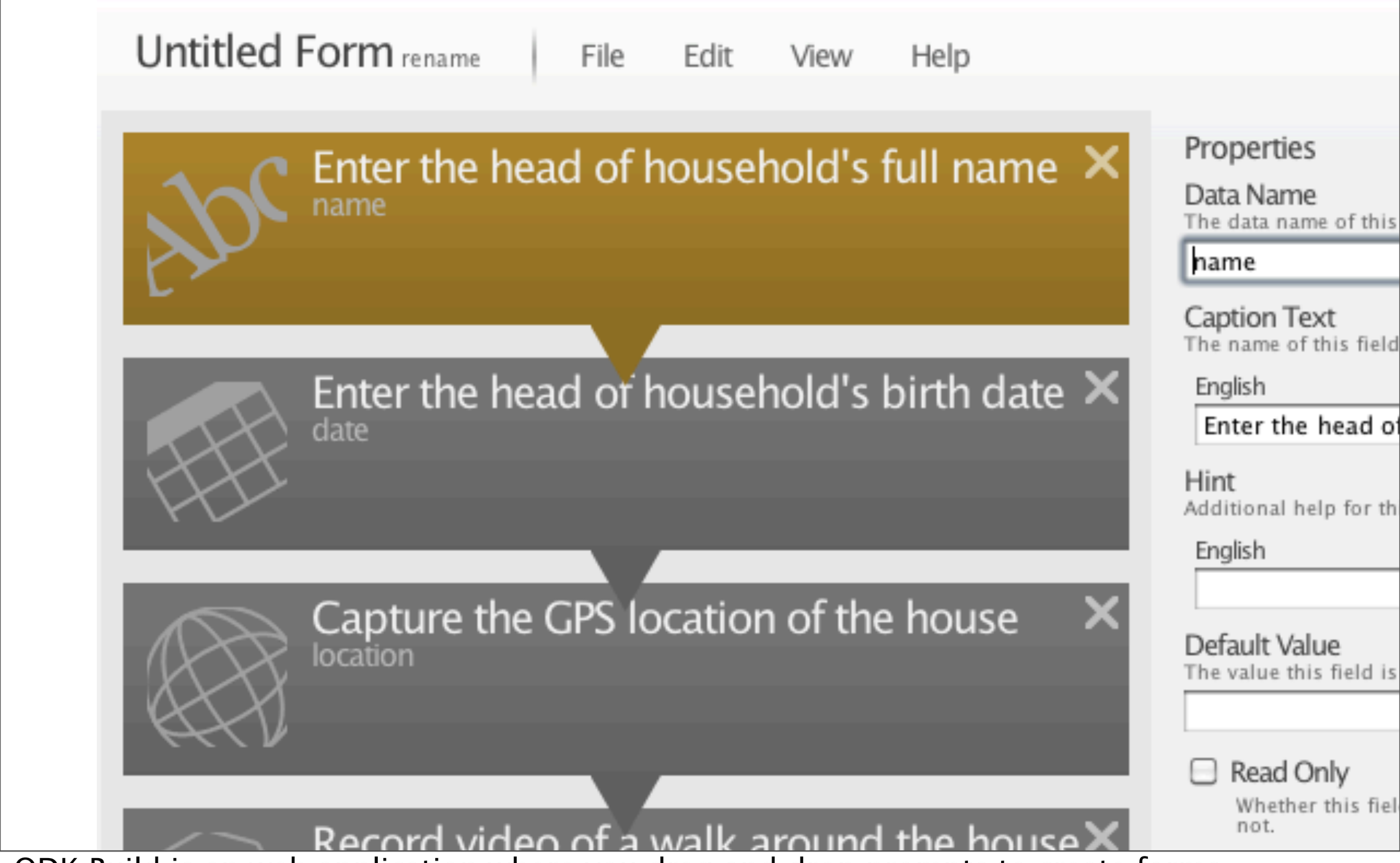
3. Send that data to a server where the results are aggregated;

It's great for mobile workers (e.g., census takers, community health workers, building inspectors) who need to collect data accurately and report results instantly.

And the best part? It’s completely free and open source.

Let me show you what it looks like.

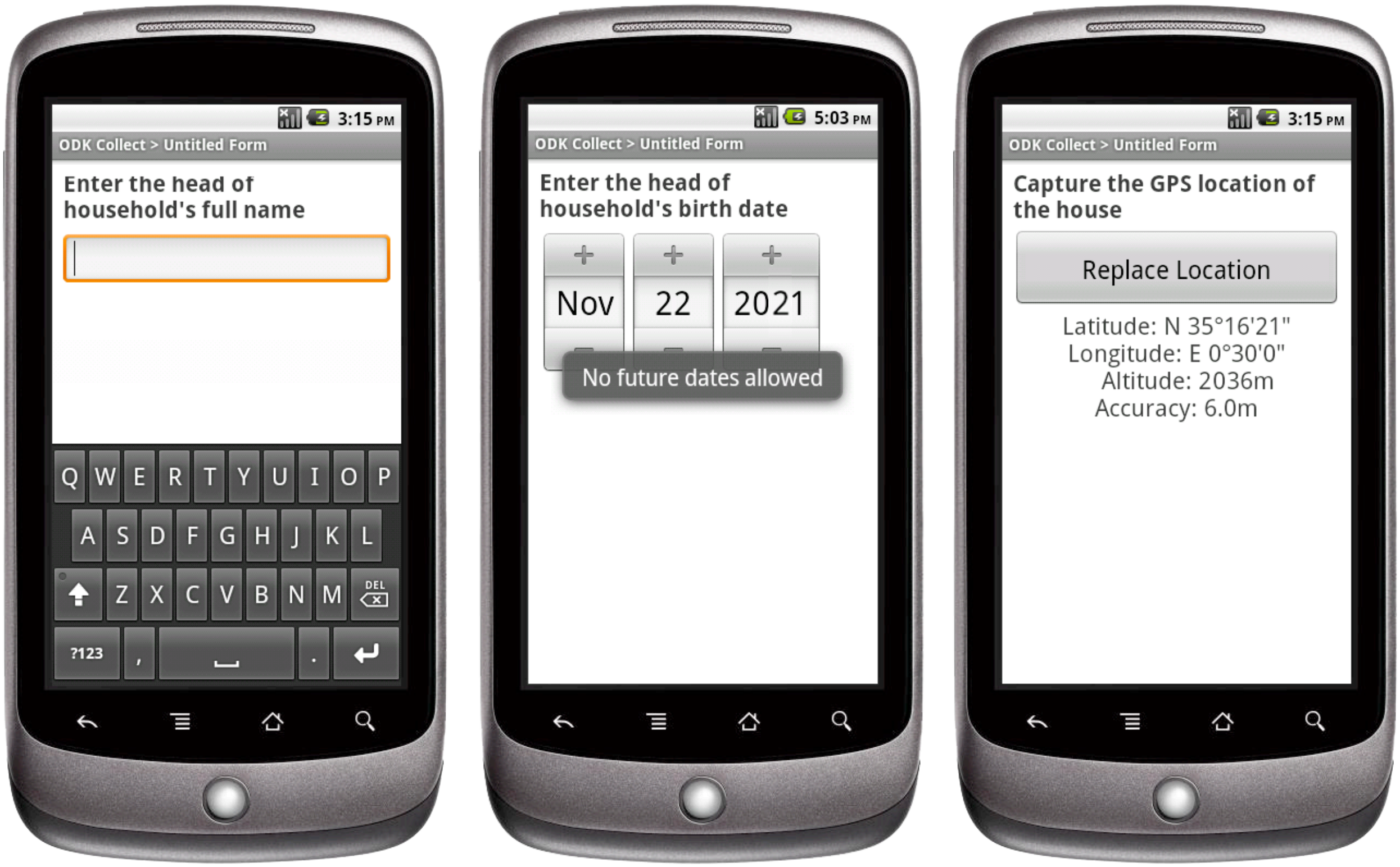
ODK Build: Design your form using drag and drop.



ODK Build is an web application where you drag and drop prompts to create forms.

And so the form will have these four questions.

ODK Collect: Display prompts for data collection.



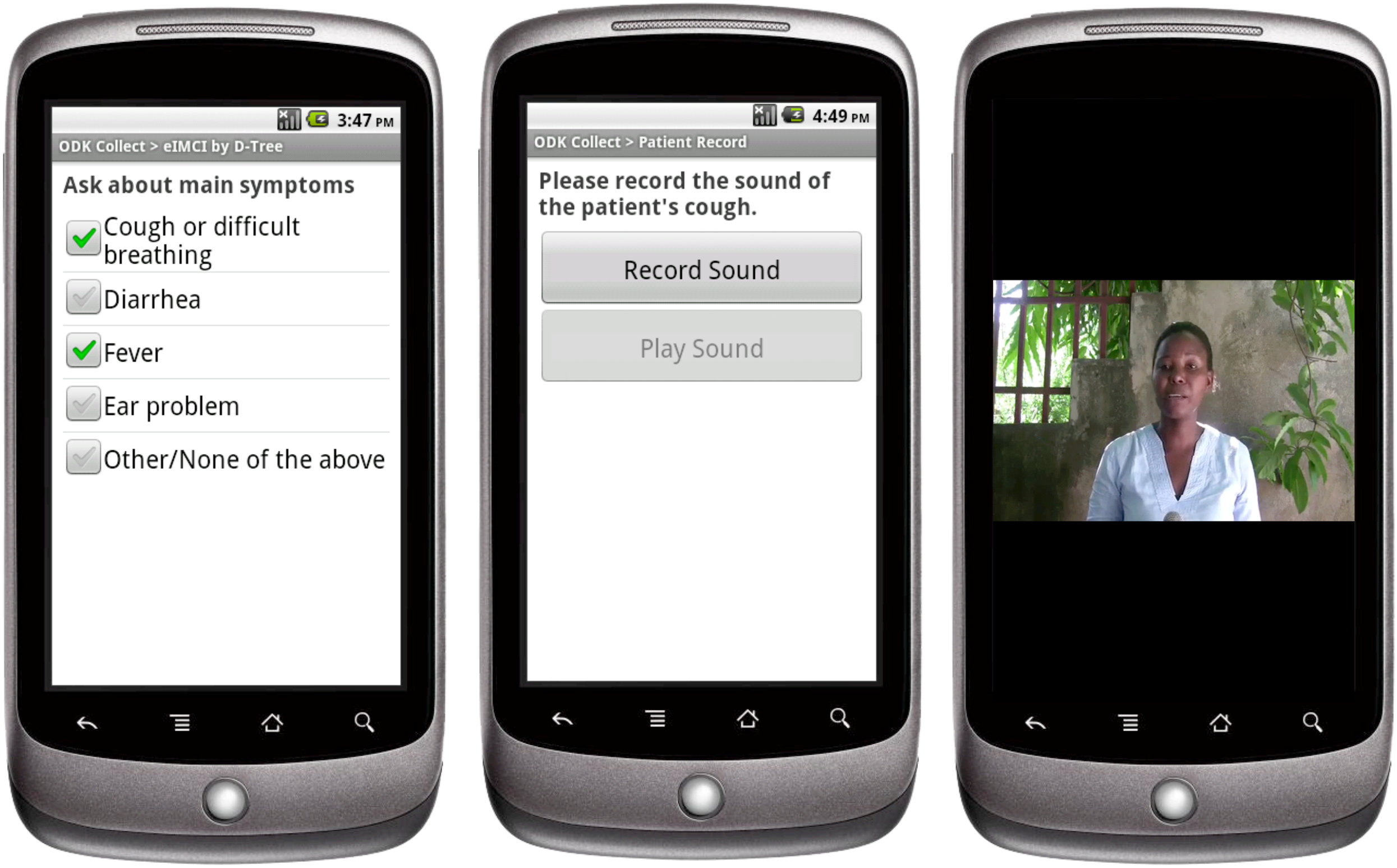
When you give the form to ODK Collect on the phone, it looks like this.

You can collect text, numbers, dates.

To improve accuracy, you can put validation checks on all prompts. So for example, birth dates can't be in the future.

You can also capture GPS location using one click.

ODK Collect: Form logic used for multimedia and diagnosis.



The forms themselves are really powerful. So here is an example of IMCI in swahili.

IMCI is the integrated management of childhood illnesses. It's basically a triage protocol for children under five.

My Swahili is weak, so let's switch to English. With ODK Collect you can do this on the fly.

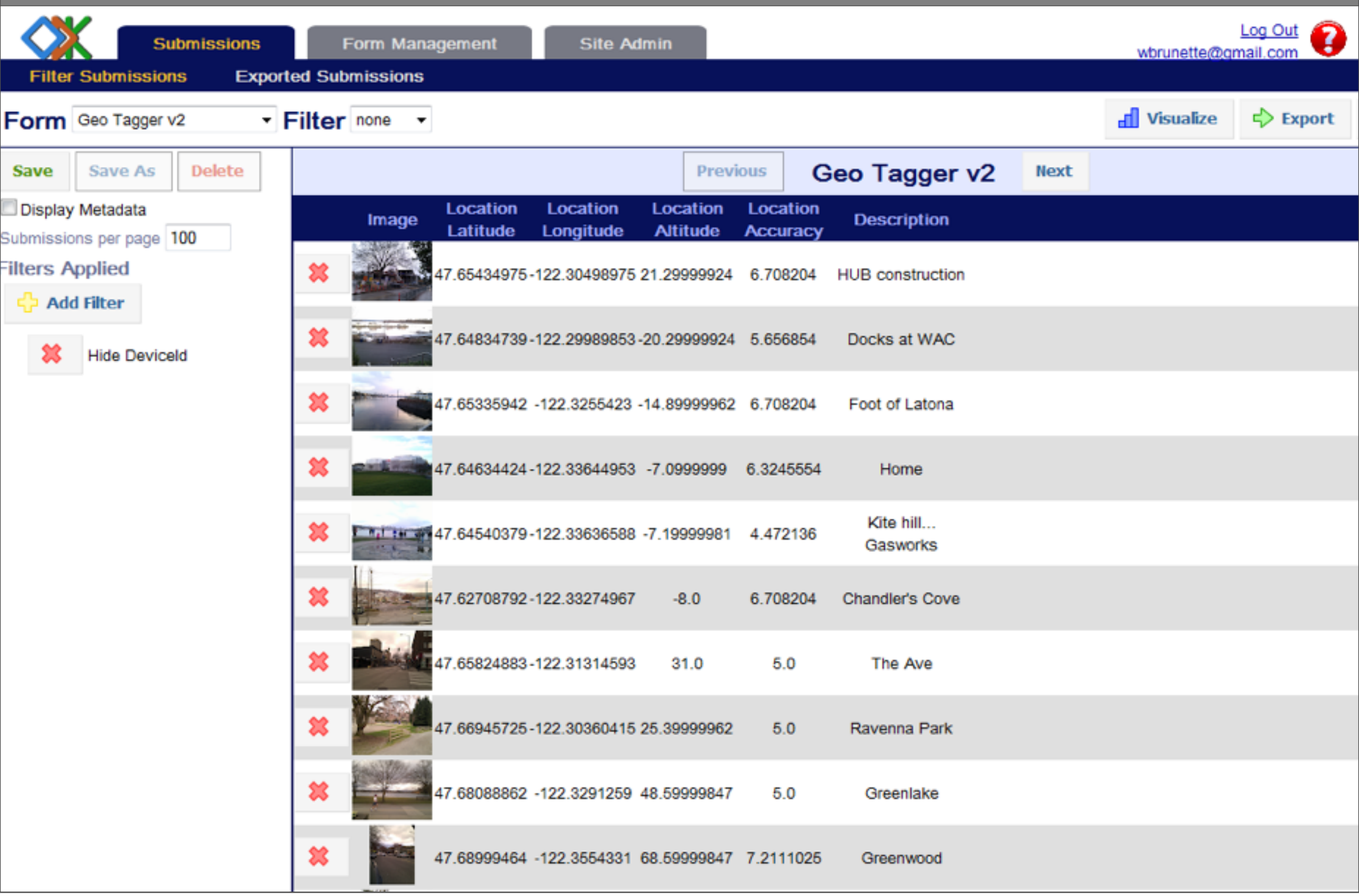
And if I enter that the child is coughing and has a fever, in the next screen, I can record the sound of the cough and then I can show the nurse a video about how to treat fever.

And as the nurse use the form, it can take the inputs and figure out a likely diagnosis and treatment. It's pretty powerful stuff.

Any data I gather can be stored offline and then be sent off to a server.

So where does the data go?

ODK Aggregate: Store data locally and on the cloud.



ODK Aggregate hosts the submitted data locally or in the cloud.

We don't run one big server, you download an installer, and it configures one for you locally or on the cloud.

It can provide interfaces such as spreadsheets for you to get your data out.

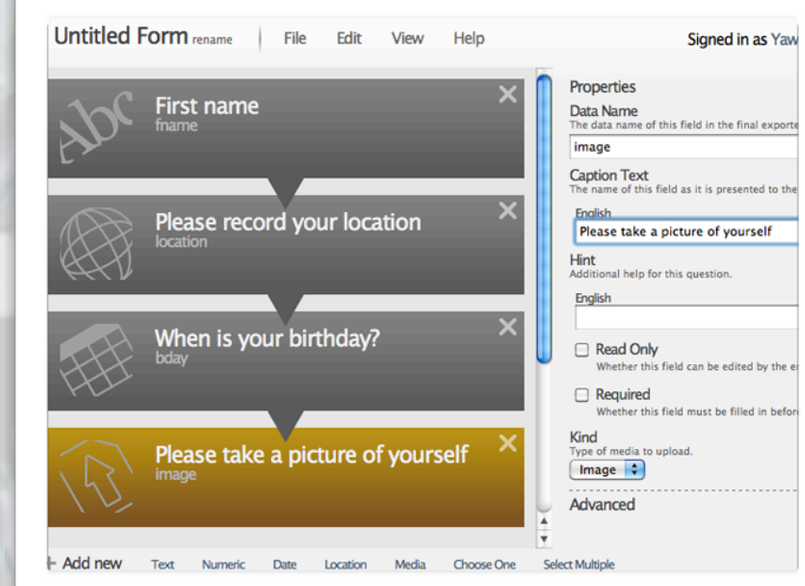
ODK Aggregate: Stream data to other systems.

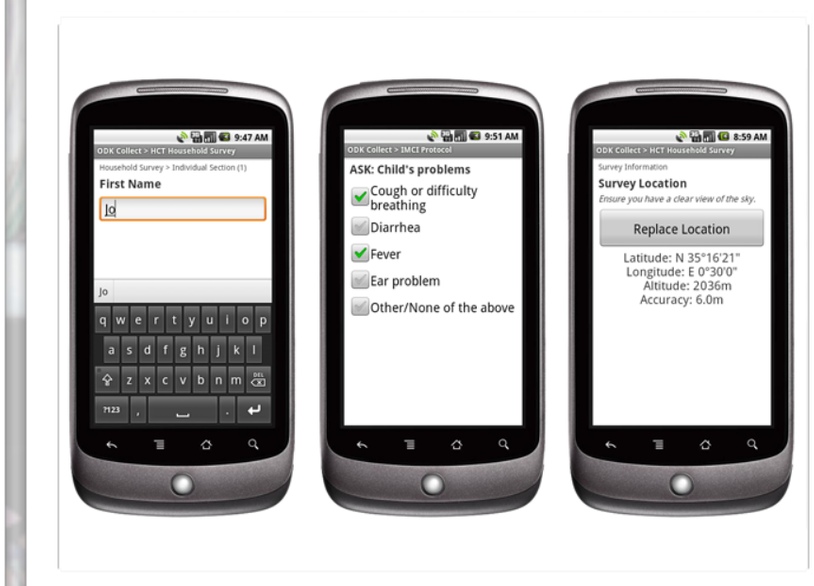
DeviceId	351676030226627
SurveyorName	Shadrack
TreeLocation-Latitude	-4.9192410707473755
TreeLocation-Longitude	29.60762321949005
TreeDBH	57.0
TreeName	Myombo
TreePicture	View

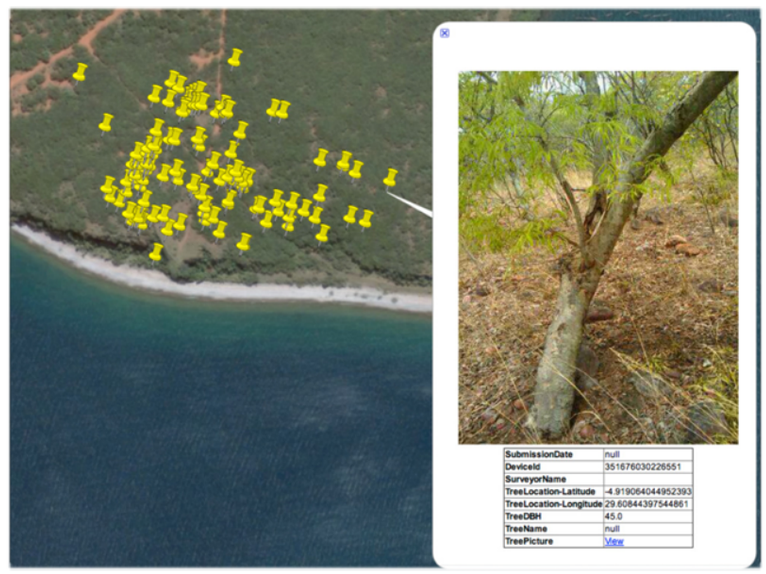
ODK Aggregate can also stream your data to other systems, like Google Earth.

In this example, forestry workers with the Jane Goodall Institute in Tanzania, submitted data from Collect to Aggregate and then exported to Google Earth.

Managers could then click on each yellow point and get the data that was submitted.







So that's what ODK is. A platform that will help you build a form, collect data, and aggregate some results.

Now that's nice and all, but when people find out that this came out of an academic research project, they start asking if the software actually works.

Well, yeah! We have 10s of thousands of users. Let me give you some examples.

The thing I want to stress here is that these most of these projects found and deployed ODK by themselves.

Kiva uses ODK to get borrower information.

I think most people know about Kiva. They do micro-finance.

A few Kiva partners collect data using ODK. So when you see pictures and borrower information, some of that was collected using ODK.

Carter Center uses ODK for monitoring elections.

So if you remember the Egyptian elections, Jimmy Carter was there, and he and his team used ODK to collect and report data.

Carbon For Water collected over 1,000,000 forms with 4,000 ODK-powered phones in 6 weeks. This was to track and monitor water filtration devices.

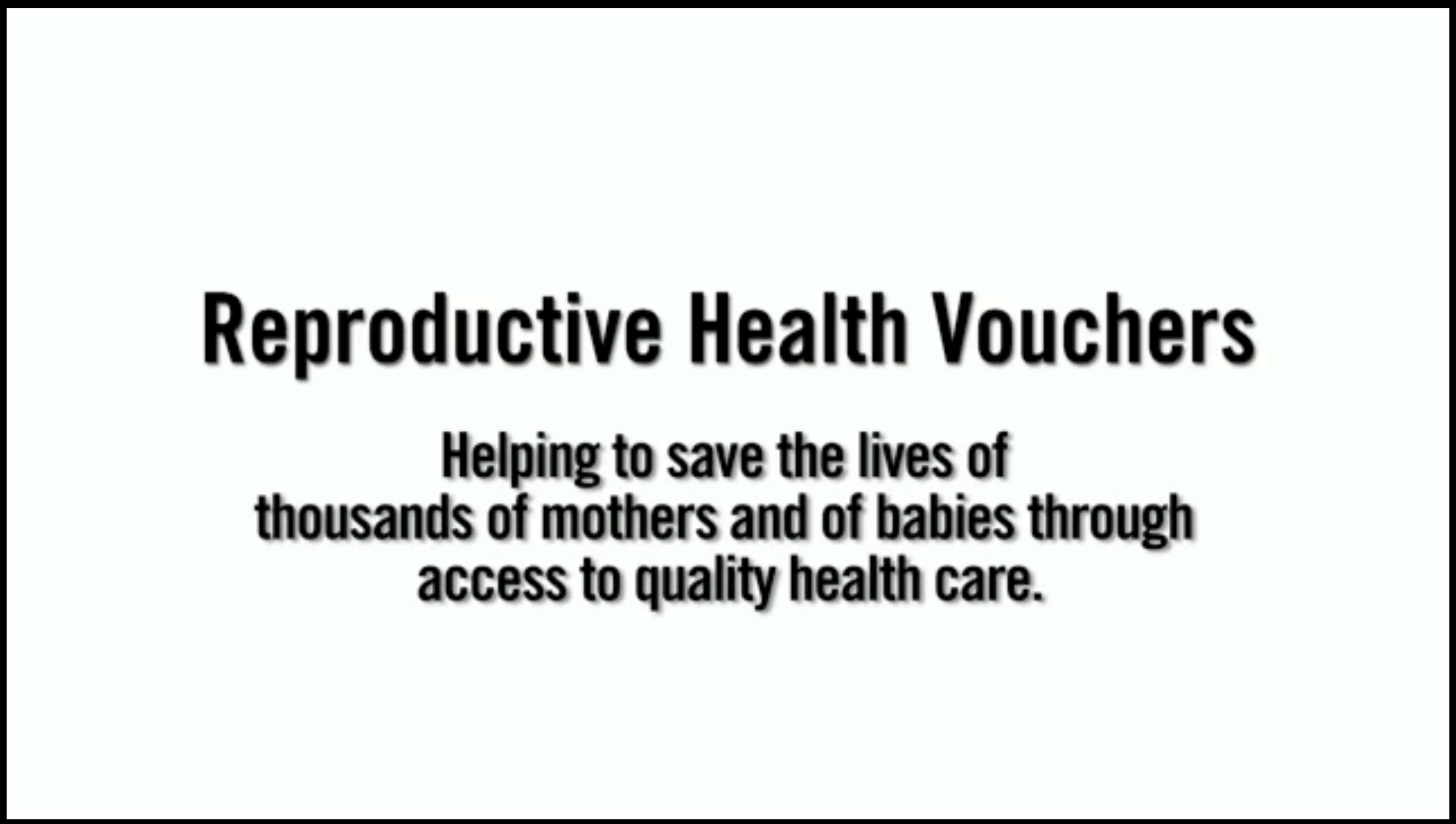
At their peak they were doing 40k forms a day! 40k images a day. 40k GPS locations a day.

Pretty incredible.

AMPATH's health workers have used ODK to counsel and test over 775,000 people for HIV over the last 2 years.

ODK helps the counselors collect socio-economic data.

The phone also helps counselors decide if someone, based on their answers, is at risk for for HIV and if they should be tested.



I want to use RHVouchers as a last example. These guys made a video, so I will just show that.

http://youtube.com/watch?v=0vw_5sVYj-A

Collecting data accurately and quickly on paper is difficult.
ODK replaces paper forms with smart forms on phones.

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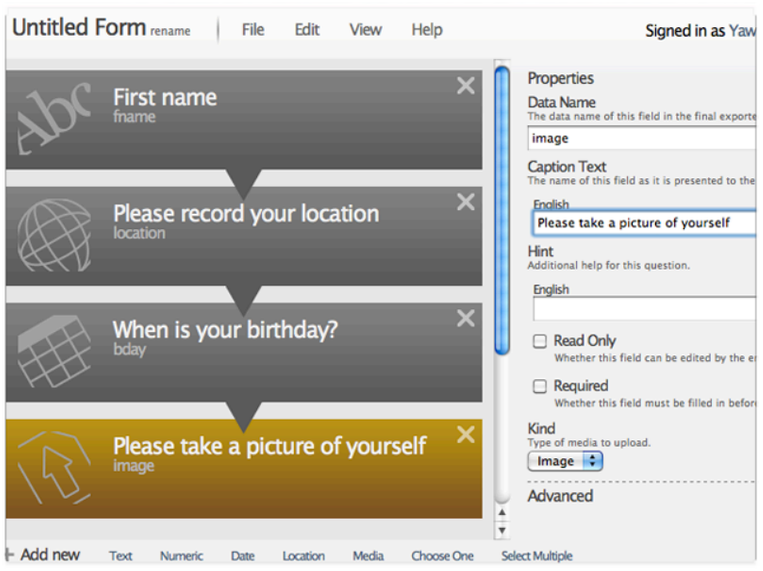

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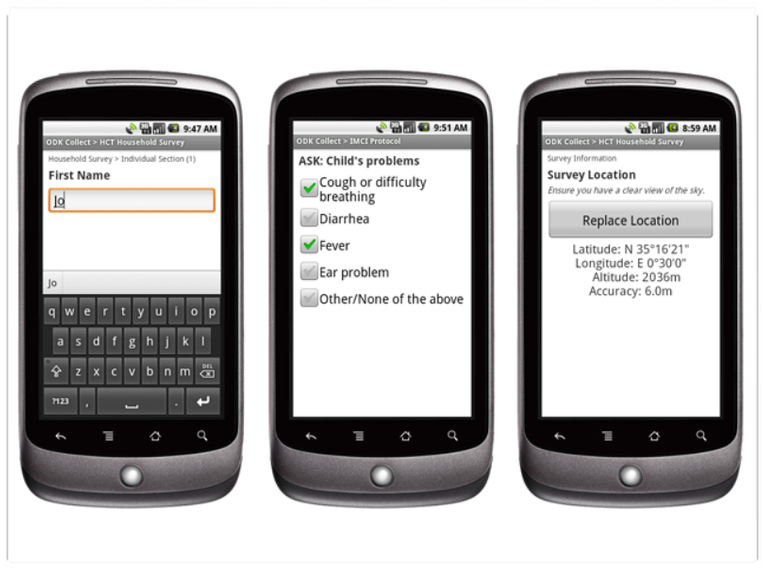

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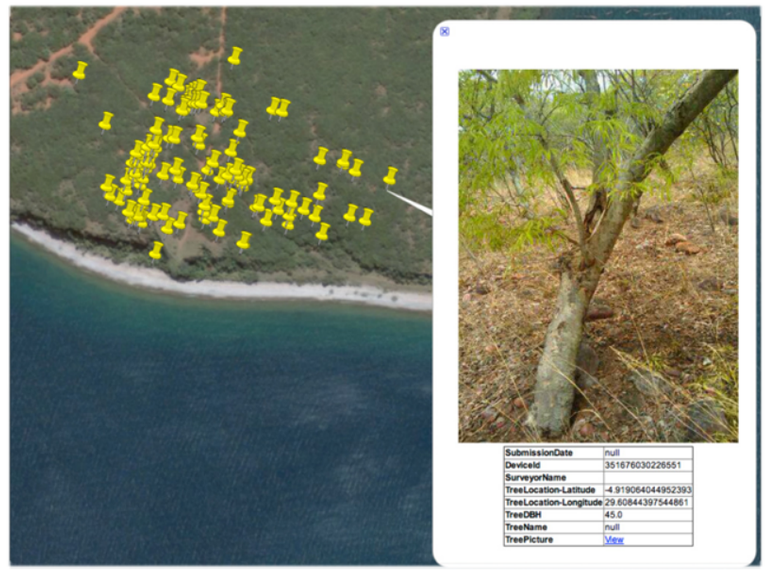

http://opendatakit.org (@opendatakit)

http://nafundi.com (@nafundi)

So summarize.

Using paper to collect data is difficult and inefficient.

ODK replaces paper forms with smart forms on a phone or tablet. ODK provides an out-of-the-box solution for users to:

1. Build a data collection form;

2. Use mobile device to collect that data;

3. Aggregate the collected data on a server;

It's great for mobile workers who need to collect data accurately and report results instantly.

Besides collecting text and numbers, ODK can be used to take pictures, capture GPS location, scan barcodes, get signatures, and even play videos. ODK supports branching logic, repeating sections, multiple languages, and data encryption.

And the best part is that it’s free and open source.