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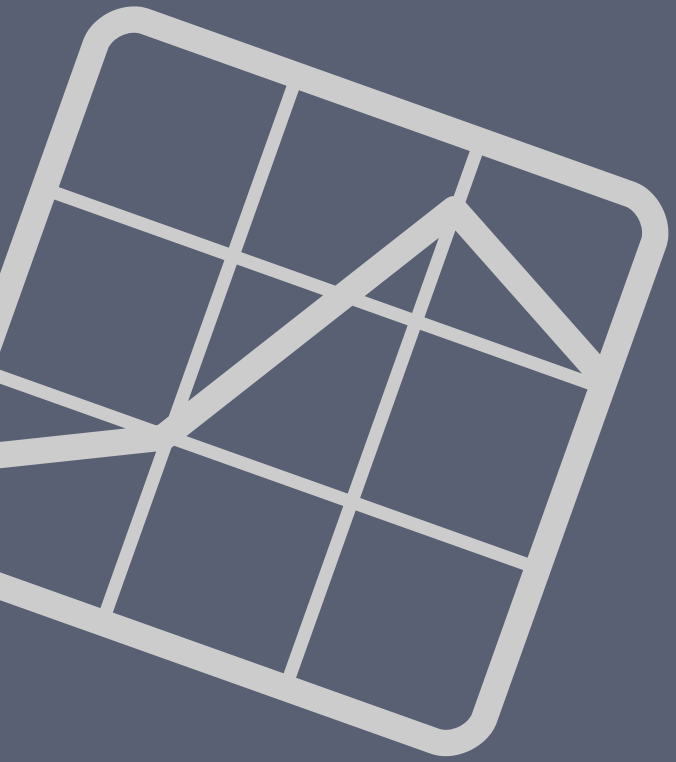
Data Collection Framework

M. Kundegorski, Antananarivo, May 2018



Plan

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- **Part 1: Preparing simple questionnaire** for a study using the same tools as used in IEES.
- **Part 2: Using mobile app and data collection server** to test more complex forms.
- **Part 3: Complex forms with external datasets.**

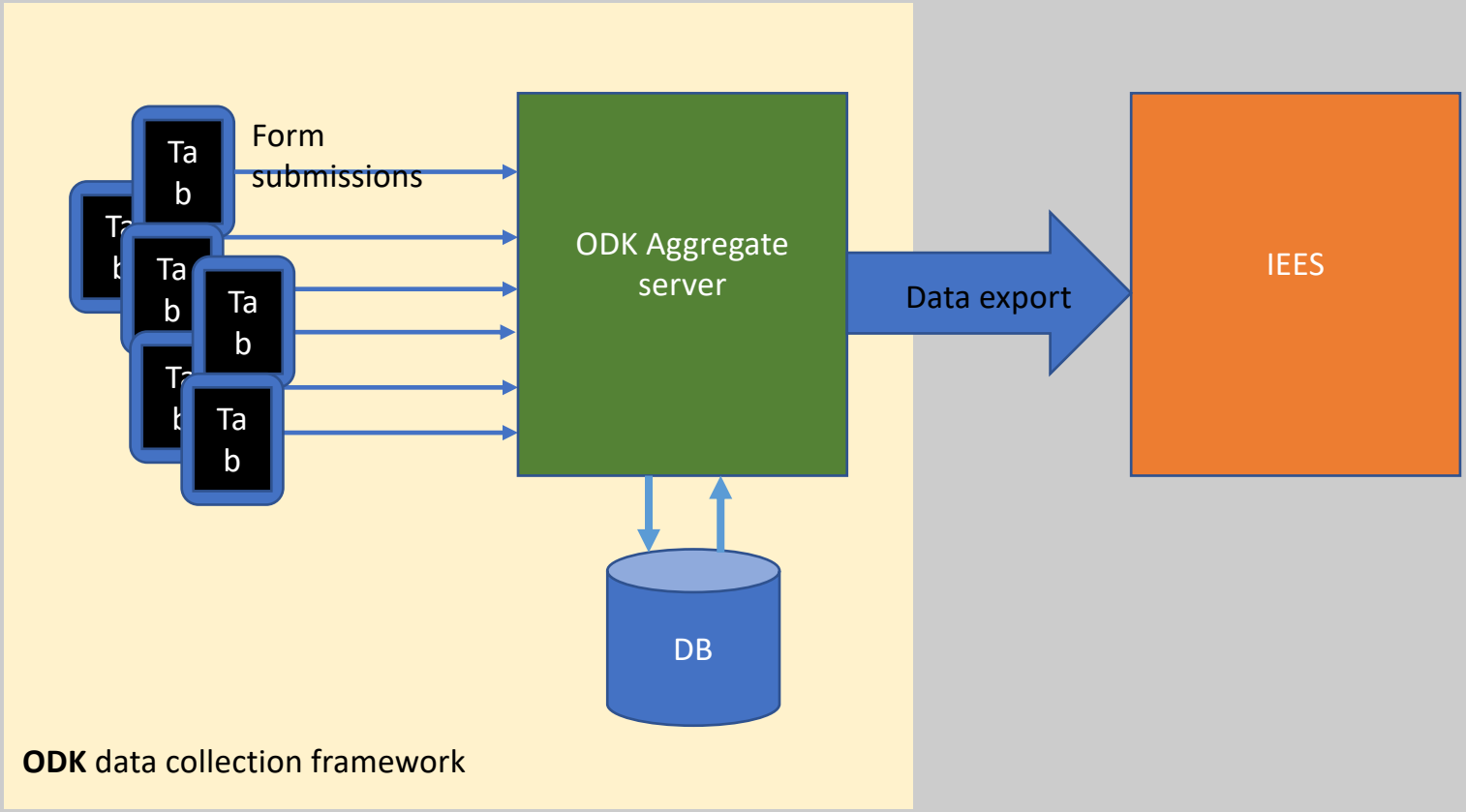
Optional:

- Part 4: Using Github to exchange and collaborate on forms.
- Part 5: Editing existing, challenging, forms of the program.

Data collection framework

part 1

Data collection within IEES



ODK data collection framework

ODK: Open Data Kit

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- One of the most popular frameworks (set of computer programs for servers, computers and mobiles) for gathering survey data.
- Used by many governments, UN agencies and NGOs
- Uses Xforms format which is **the** most popular format to store survey questionnaires
- The most flexible and fairly easy way to generate Xforms is using XLSForms which allow creating definitions in Excel

The simplest form…

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Let's make a study
about this training attendees!

Simple forms with Excel

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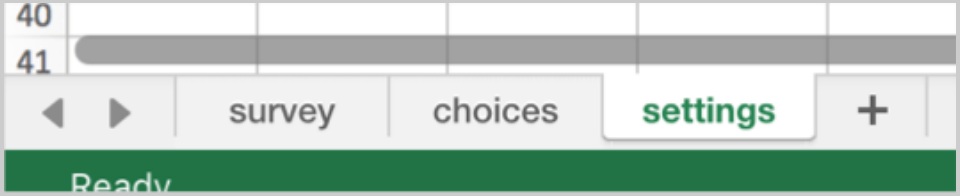
1. Create a new xlsx file and save it as *YOURNAME_simple_form.xlsx*
2. Create three sheets in it named “**survey**”, “**choices**” and “**settings**”:



3. All names are **CaSe seNsiTive**! Please mind **“_”** in names.

“Settings” tab

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- In this tab we specify a form **title**, **id** and **version.**
- **form_title** is a friendly name for a user
- **form_id**, lowercase, unique name. Please use your name in it.
- **version**, up to 10 numbers. For instance: YYYYMMDDxx where xx is the version number after the date of form preparation.

	A	B	C
1	**form_title**	**form_id**	**version**
2	Training attendance form	mix_simple_form	2017092401
3			
4			
5			

“Survey” tab

- This is the main spreadsheet including your questions.
- There are many columns, but three main ones are **type**, **name**, **label.**
- **type:** Defines what kind of information is gathered in a field.
- **name**: a *unique* name used for data analysis.
- **label:** a question name displayed to a user.

	A	B	C
1	**type**	**name**	**label**
2	text	person_name	What is your name?
3	integer	person_age	What is your age?
4	select_one professions_list	profession	What is your profession?
5	note	thank_you_note	Thank you for filling this form!
6			

"Choices" tab

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- every list of choices needs a **list_name** which is referenced in **survey**
- every choice needs a **name** and **label**

	A	B	C
1	**list_name**	**name**	**label**
2	professions_list	programmer	Programmer
3	professions_list	sysadmin	System Administator
4			
5			

What's the name of your form?

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GOOD:

- jonathan_simple_form_version1.xlsx
- toavina_training_survey_v2.xlsx
- case_report_v3rev3.xlsx
- active_case_finding_v12_2017sep.xlsx
- malaria_surveyMay18.xlsx

BAD

- My Form.xlsx
- MoH Surveillance Form Case.xlsx
- CaseReporrts.xlsx
- enquête_nationale.xlsx

Generate XML (Xform) and preview.

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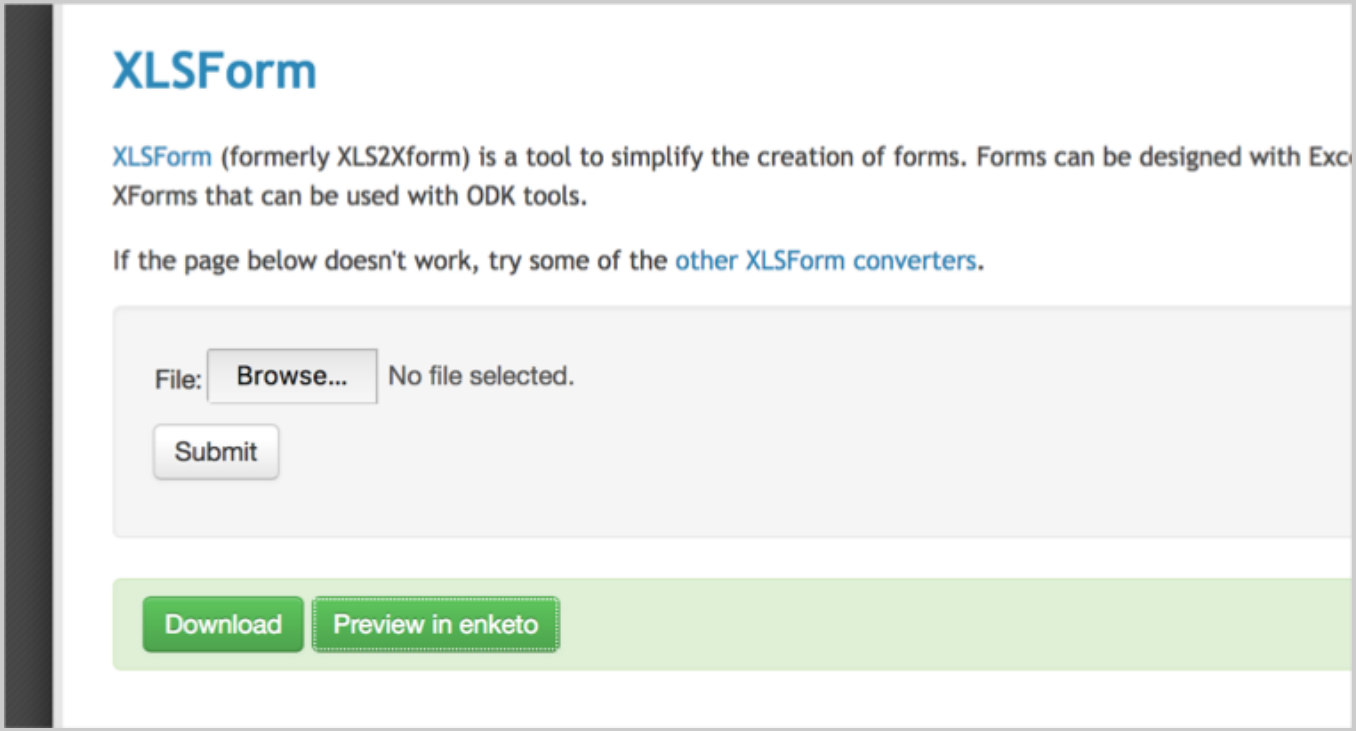
- Online form converter: http://opendatakit.org/xiframe/



Form preview (in Enketo)

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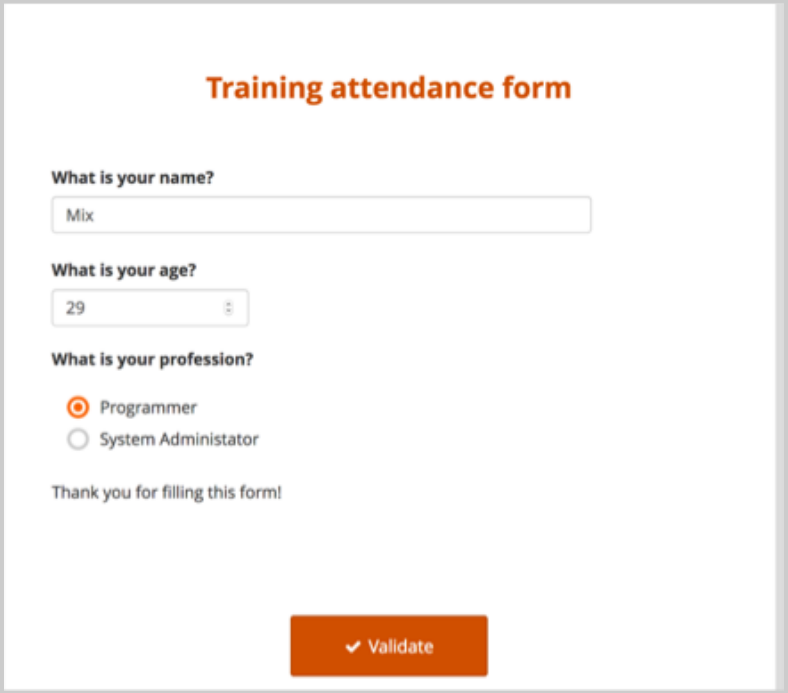

XForm in XML

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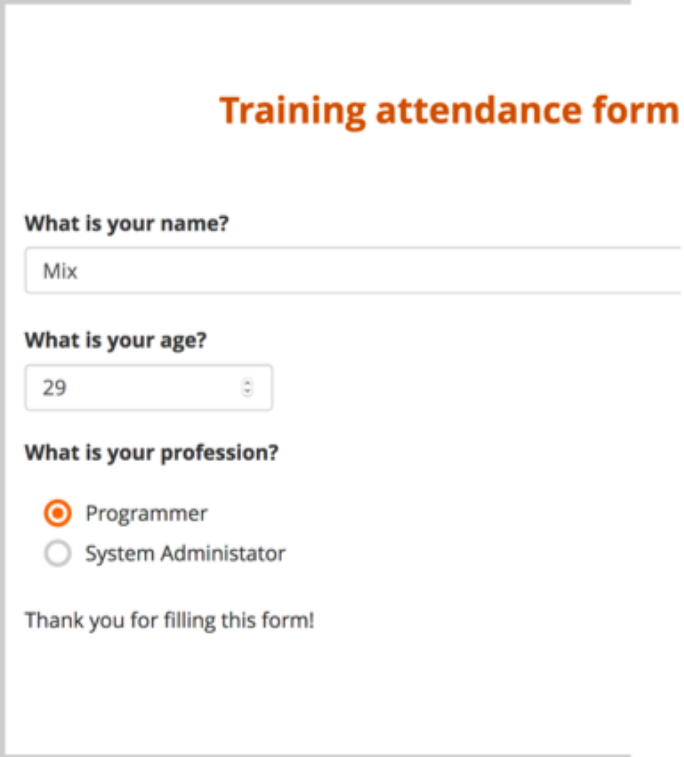


```
<h:body>
  <input ref="/mix_form_v01rev1/person_name">
    <label>What is your name?</label>
  </input>
  <input ref="/mix_form_v01rev1/person_age">
    <label>What is your age?</label>
  </input>
  <select1 ref="/mix_form_v01rev1/profession">
    <label>What is your profession?</label>
    <item>
      <label>Programmer</label>
      <value>programmer</value>
    </item>
    <item>
      <label>System Administator</label>
      <value>sysadmin</value>
    </item>
  </select1>
  <input ref="/mix_form_v01rev1/thank_you_note">
    <label>Thank you for filling this form!</label>
  </input>
</h:body>
```

XForm: model

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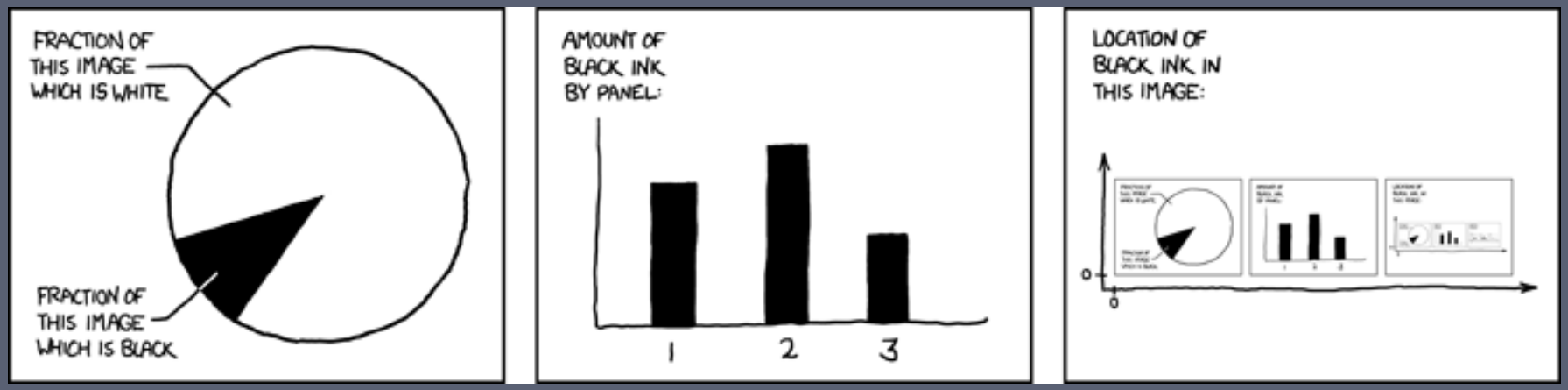
```
<h:head>
  <h:title>Training attendance form</h:title>
  <model>
    <instance>
      <mix_form_v01rev1 id="mix_form" version="2017092401">
        <person_name/>
        <person_age/>
        <profession/>
        <thank_you_note/>
        <meta>
          <instanceID/>
        </meta>
      </mix_form_v01rev1>
    </instance>
    <bind nodeset="/mix_form_v01rev1/person_name" type="string"/>
    <bind nodeset="/mix_form_v01rev1/person_age" type="int"/>
    <bind nodeset="/mix_form_v01rev1/profession" type="select1"/>
    <bind nodeset="/mix_form_v01rev1/thank_you_note" readonly="true()" type="string"/>
    <bind calculate="concat('uuid:', uuid())" nodeset="/mix_form_v01rev1/meta/instanceID" readonly="true()" type="st
  </model>
</h:head>
<h:body>
```

Time for a break!

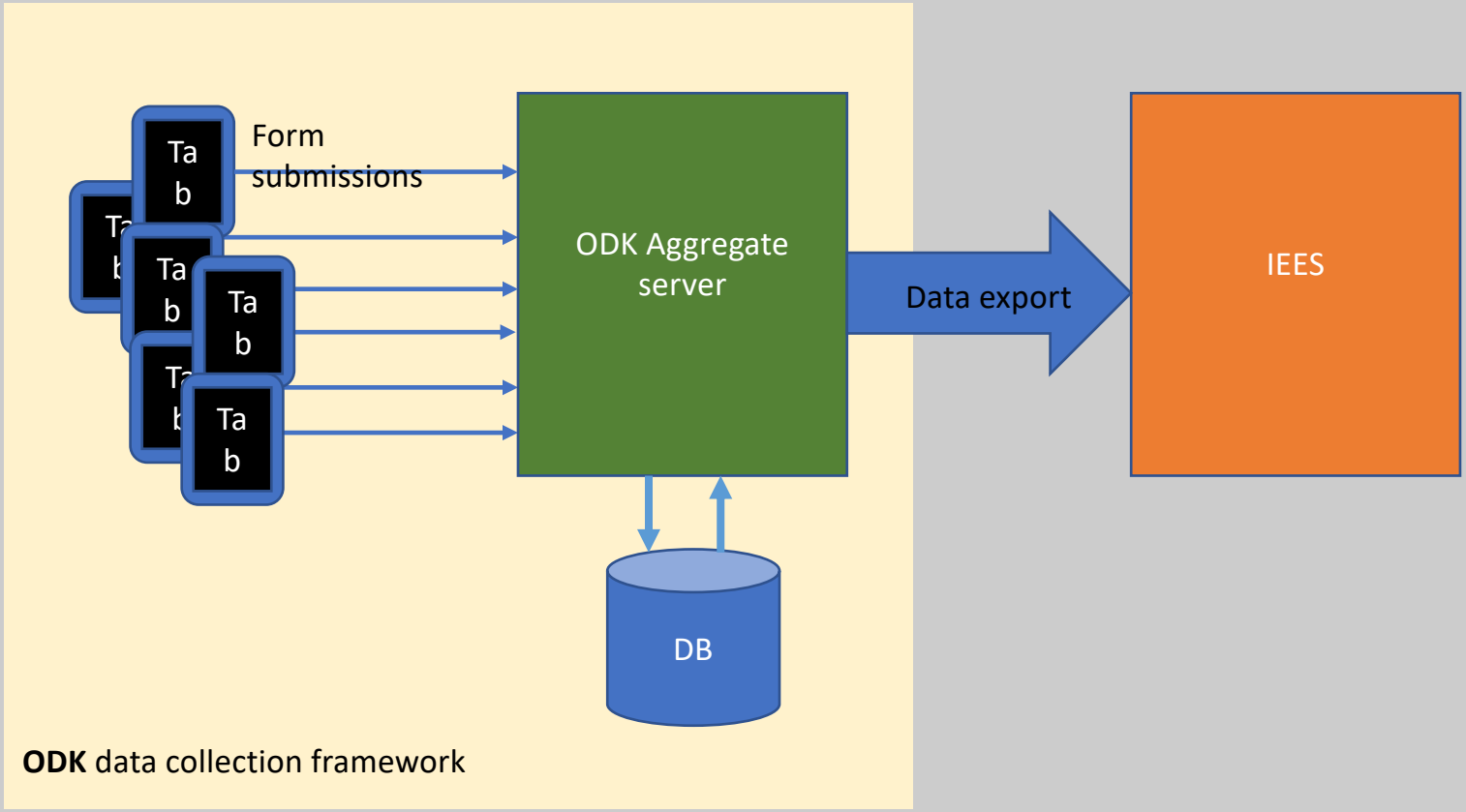
Data collection framework

part 2



https://xkcd.com/688/

Data collection within IEES



ODK data collection framework

Demo App / ODK Collect

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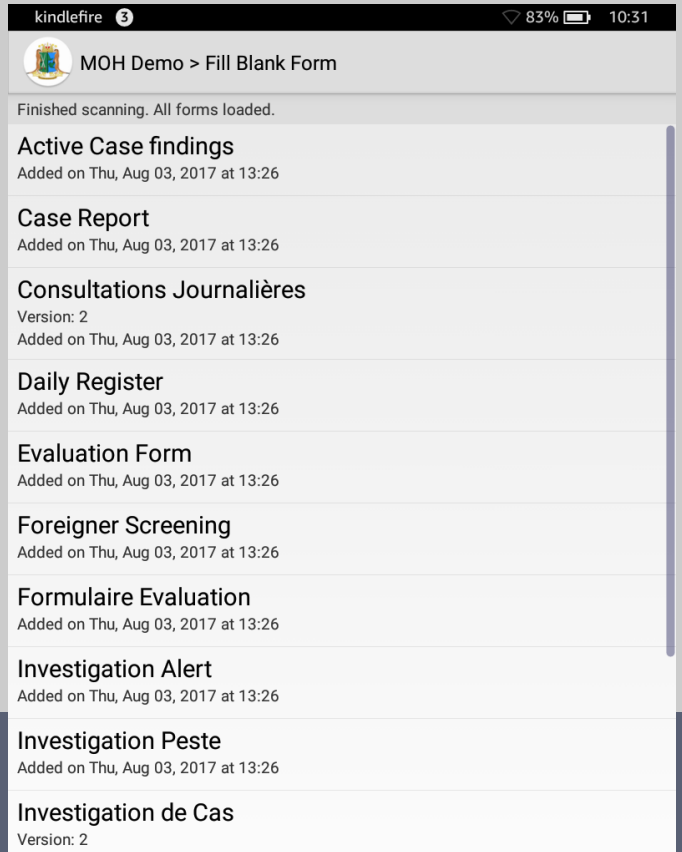
- Android app working on phones and tablets
- Displays forms and connects to ODK Aggregate
- Let's install it on our phones/tablets
- Admin Password: `1005`



ODK Aggregate

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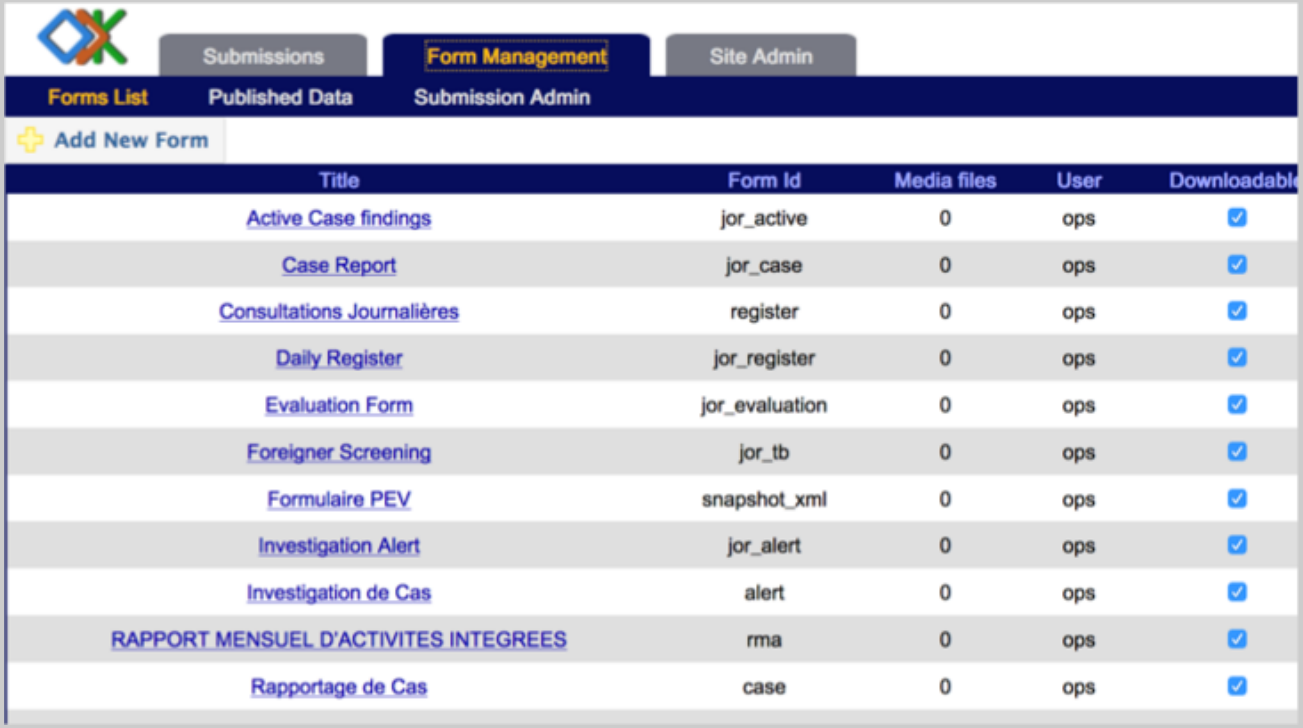
- Demo aggregate: https://odkdemo.emro.info/ [user:`training` password:`trainingtana`]



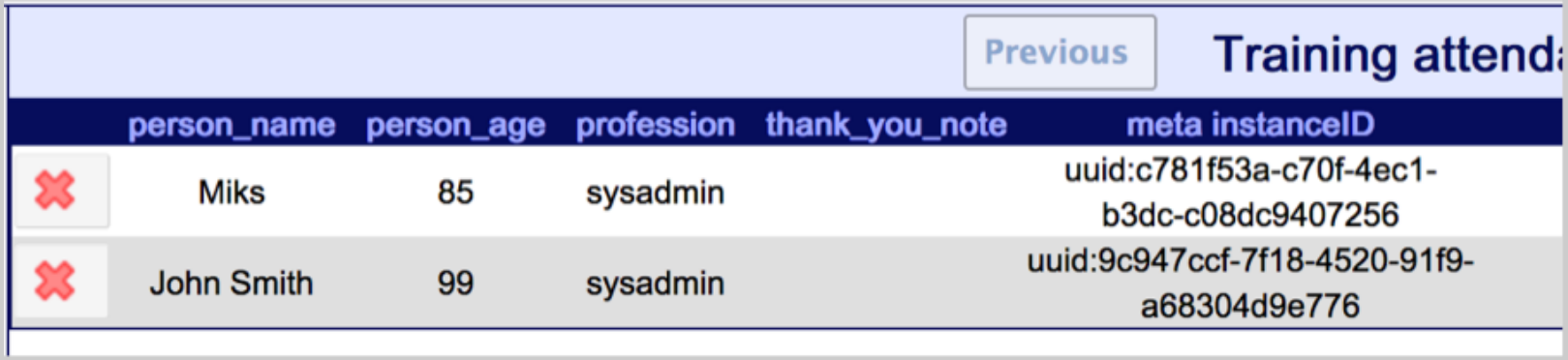
Title	Form Id	Media files	User	Downloadable
Active Case findings	jor_active	0	ops	☑
Case Report	jor_case	0	ops	☑
Consultations Journalières	register	0	ops	☑
Daily Register	jor_register	0	ops	☑
Evaluation Form	jor_evaluation	0	ops	☑
Foreigner Screening	jor_tb	0	ops	☑
Formulaire PEV	snapshot_xml	0	ops	☑
Investigation Alert	jor_alert	0	ops	☑
Investigation de Cas	alert	0	ops	☑
RAPPORT MENSUEL D'ACTIVITES INTEGREES	rma	0	ops	☑
Rapportage de Cas	case	0	ops	☑

Our simple form with the app

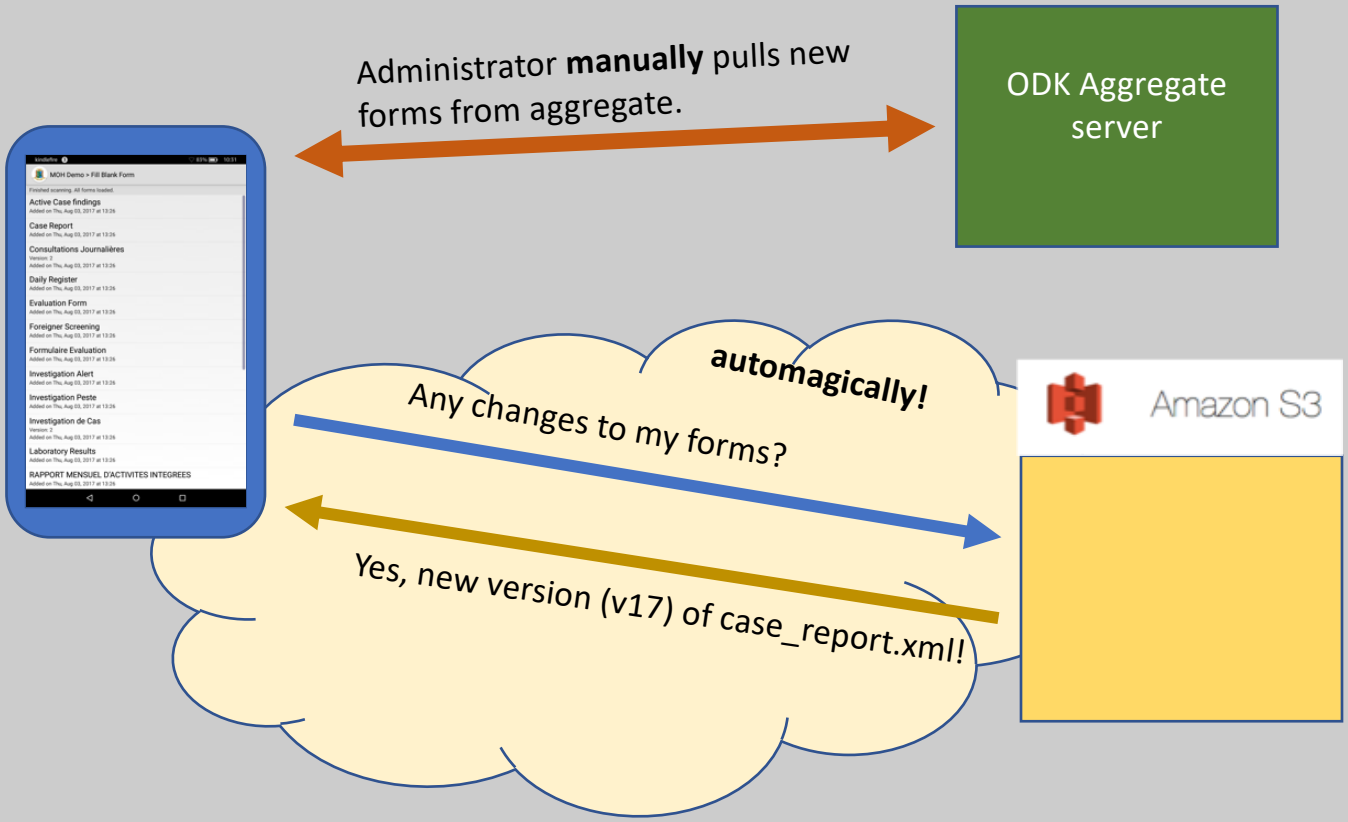
- Get the form on your device:
  - **Publish** the form to the Aggregate and **pull** on your mobile

or

  - **Copy** the *xml form* file to the `/odk/forms`
- Send your submission!



Note: How we update forms in IEES?



Analysing simple data

- Pull the following form: "Training Opinion Form"/training_opinion_form.xml
- Fill it in (you can do it multiple times as different people) and submit the answers
- Log in to the aggregate and analyse the data

Designing a form

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- All relevant information and more examples at http://xlsform.org/
- use XLSForms program to convert forms on your computer. Test on your device.
- Often mobile application is not compatible with XLSform methods: make changes gradually and see if they work. (e.g. group within group, grid list appearance, text formatting are not working)
- Automatic tools (**kobo, Ona**) for form creation might generate difficult to fix, incompatible forms

Metadata

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XLSForm has a number of data type options available for meta data collection:

Metadata type	Meaning
start	Start date and time of the survey.
end	End date and time of the survey.
today	Day of the survey.
deviceid	IMEI (International Mobile Equipment Identity)
subscriberid	IMSI (International Mobile Subscriber Identity)
simserial	SIM serial number.
phonenumber	Phone number (if available).

Field properties

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column	meaning	example
type	type of the field (or a question)	text
name	name of the variable to which users answer will be assigned to	user_name
label	Displayed name of the question	What is your user name?
required	Field can be empty if question is not compulsory	yes
appearance	Applies to groups of questions only to show them on one page	field-list
relevant	What condition must be fulfilled to show this question?	${user_age} < 18
default	pre-fill the field with a value for quicker completion	0
calculation	create a variable with the output of one or more previous field's answers	if(selected(${smoking}, "yes"), "risk", "no-risk")

Main field types

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Question type	Answer input
integer	Integer (i.e., whole number) input.
decimal	Decimal input.
text	Free text response.
select_one [options]	Multiple choice question; only one answer can be selected.
select_multiple [options]	Multiple choice question; multiple answers can be selected.
note	Display a note on the screen, takes no input.
geopoint	Collect a single GPS coordinates.
date	Date input.
time	Time input.
dateTime	Accepts a date and a time input.
image	Take a picture.
calculate	Perform a calculation; see the Calculation section below.
acknowledge	Acknowledge prompt that sets value to “OK” if selected.

Now, let's analyse training_opinion_form.xls

Time for a break!

Data collection framework *part 3*

https://xkcd.com/303/

Creating your own form

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- Gather persons age, education level and a region where he or she lives.
- Ask if a person was vaccinated against Influenza within last year
- If yes, ask for the date of the vaccination and a dose.
- Ask the person to list diseases he or she had in the last 10 years.
- Make sure that a person won't send a form without acknowledging that all the data gathered will be now owned by the MOH

Improve your form!

- Add translations to French/English
- Add constraints on the answers to help correct obvious mistakes (can a person have 200 years?
- Allow a person to choose from a list of diseases read from a csv file.

Constraints

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survey				
	type	name	label	constraint
	integer	age	How old are you?	. <= 150

In this example, the formula `. <= 150` is saying that the value entered `.` for the question must be less than or equal to 150. If the user puts 151 or above as the answer, s/he will not be allowed to move on to the next question or submit the form.

Translations

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- instead of *label* use *label::english* and *label::french*
- As an example, see "translated" version of a previous form "Training Opinion"
- You can also translate *constraint* column

Reading an external data from a CSV file

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http://xlsform.org/#pre-loading-csv-data

How to pull data from CSV

You can be able to pull data from .csv file by including one or more .csv files in your form during the survey time. For each data field that you want to pull into your survey:

- Add a **calculate field** to your survey.
- Give that field a **name**
- Then in its **calculation** column, call the **pulldata()** function, indicating which field to pull from which row of which .csv file.

See below for an example:

survey				
	type	name	label	calculation
	calculate	fruit		pulldata('fruits', 'name', 'name_key', 'mango')
	note	note_fruit	The fruit ${fruit} pulled from csv.	

Modifying forms during the study

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- Changing labels, descriptions displayed for the user
- Adding new options to the questions
- Adding new validation
- Adding and removing questions
- Changing questionnaire flow (groups)

Thank you! ;)