AN OPEN-SOURCE FIELD GUIDE

FROM FIELD DATA COLLECTION TO PUBLIC DASHBOARD

ODK is a data collection platform for researchers, field teams and other professionals. This guide follows that data from the phone to a public dashboard, using only open-source tools.

THE PIPELINE ALWAYS RUNS IN THIS ORDER

01 PLAN STORAGE	02 DESIGN FORM	03 DEPLOY	04 ODK COLLECT
05 REVIEW IN KOBO	06 ANALYSE IN QGIS	07 BUILD DASHBOARD	08 PUBLISH

Start at 01, not 02.

EVERY STEP, FROM PHONE TO PUBLIC MAP →

WHERE I STARTED

2020

HOW I MET ODK

I was first introduced to ODK in 2020, while doing freelance work with a geologist.

WHAT A PHONE FORM GIVES A FIELD TEAM

- Works offline
- A GPS point on every record
- Photos attached to the record
- No paper sheets to re-type

THIS GUIDE PUTS THE SAME TOOLS TO WORK FOR FIELD DATA COLLECTION

ODK = Open Data Kit. KoboToolbox is built on it.

THE STACK

FOUR TOOLS, ONE PIPELINE

Each tool does one job and hands the data to the next.

1 **KOBOTOOLBOX** WEB
Design forms, receive and review submissions

2 **ODK COLLECT** ANDROID
Offline data collection with GPS and photos

3 **QGIS** DESKTOP
Clean, join, analyse and style the data

4 **DASHBOARD** STREAMLIT OR LEAFLET
Built in Streamlit. A light Leaflet page works for a simple public map.

WHY OPEN SOURCE?

Proprietary suites work well together, but hosting public content gets expensive. An open stack costs little, scales to many visitors, and can be handed over, forked and reused.

KoboToolbox also works with its own app, KoboCollect.

STEP 1 · PLAN STORAGE

PHOTOS WILL EAT YOUR STORAGE

Every Kobo plan has a storage limit. Text submissions are tiny. Photos are what fill it up.

THE SUM TO DO BEFORE YOU START

SUBMISSIONS you expect × **PHOTOS** per submission × **PHOTO SIZE** from your phones = **STORAGE** you need

Take a test photo on the phones your team will use and check its file size. Compare the total with your plan's limit, and leave some headroom.

To shrink photos before they upload, add one setting to the photo question:

```
maxpixels=1024
```

It caps the longest side of each photo at 1,024 px. Over the limit anyway? Archive and clear (slide 08), or buy more storage from Kobo.

DO THE MATHS BEFORE FIELDWORK, NOT DURING IT

STEP 2 · BUILD THE FORM

ONE ROW, ONE QUESTION

Start in the drag-and-drop Formbuilder. Past a dozen questions, switch to XLSForm: a spreadsheet that is easier to version, share and fix in bulk.

TYPE	NAME	LABEL
select_one yesno	consent	Data will be published openly. Continue?
select_one_from_file sites.csv	site_id	Which site are you at?
geopoint	location	Stand at the site
select_one yesno	solid_waste	Is there solid waste?
image	photo	Photo of the site `maxpixels=1024`

GEO QUESTIONS

geopoint = point, geotrace = line, geoshape = polygon. Start with points.

SKIP LOGIC

The relevant column hides a question until a condition is met, like consent.

CLEAN NAMES

Short, lowercase, underscores. They become column headers in QGIS and your dashboard.

KEEP START, END, TODAY

Timestamps expose rushed or duplicate submissions.

Excerpt from a sample field form.

STEPS 3–4 · DEPLOY AND CONNECT

CONNECT EVERY PHONE TO YOUR SERVER

When you sign up, Kobo asks you to pick a server: Global or EU. It decides where your data is stored. Note which one you chose, because every phone must point to it.

DEPLOY makes the form live. After every edit, Redeploy, then update the form on every phone.

IN ODK COLLECT OR KOBOCOLLECT

01 Choose **Configure server manually**, or go to Settings → Project Management → Server.

02 Paste the **server URL** from your project, under Form → Collect data. It looks like:

`https://kc.kobotoolbox.org/your_username`

03 Sign in with a **dedicated data-collection account**, or allow anonymous submissions. Never share your main login.

04 **Download the form** and send one test submission from home.

On the EU server the URL is different. Always copy it from your own project.

STEP 5 · COLLECT IN THE FIELD

BRIEF THE TEAM BEFORE THEY GO OUT

BRIEF VOLUNTEERS ON FOUR THINGS

- **Stand at the site.** The GPS records where you are. Save once accuracy drops below 5–10 m.
- **Finalise each form.** Don't leave it as a draft.
- **Tap Send** once you're back on a network.
- **Charge the phone** before going out.

ONCE IT'S LIVE, NEVER RENAME A QUESTION

You can add questions mid-collection. Renaming or deleting old ones splits your data into mismatched columns.

STEPS 6–7 · REVIEW, THEN ARCHIVE

ARCHIVE BEFORE YOU DELETE

Use Kobo's Map view as a quick GPS check. Mark each record Approved, Not approved or On hold. That status travels into every export, so the dashboard can show approved records only.

DELETED SUBMISSIONS AND PHOTOS CANNOT BE RECOVERED FROM KOBO

BUNDLE · 1

GEOJSON EXPORT

Geometry and attributes in one open file. Loads straight into QGIS.

BUNDLE · 2

MEDIA ZIP

The photo files. The photo column holds each file name, so they match.

VERIFY, THEN DELETE

01 Record count in the export matches Kobo

02 Photos in the ZIP match the non-empty photo values

03 A random handful of records show the right photo

04 Two copies in two places, like a local drive and the cloud

Keep a CSV too. Or skip deleting: Kobo sells monthly storage plans.

STEPS 8–9 · ANALYSE AND PUBLISH

FROM POINTS TO A PUBLIC DASHBOARD

Drag the GeoJSON or CSV onto the QGIS map. Then:

- **Join** collected points to your base layer by a shared ID
- **Summarise** conditions per site or ward
- **Overlay a DEM** to see which problems sit in low-lying ground
- **Flag** poor GPS precision and Not approved records

KEEP THE ARCHIVE UNTOUCHED. WORK ON COPIES.

QGIS ANALYSIS	GeoPackage: geometry, attributes and styles in one file
DASHBOARD	GeoJSON for Leaflet, GeoParquet for faster Python
WEB PHOTOS	Resized JPGs
OPEN DATA	CSV + GeoJSON + the XLSForm as data dictionary, personal information removed

01
SKETCH CHARTS IN COLAB

02
SET THE KPIS

03
BUILD IN STREAMLIT OR LEAFLET

LEAFLET
A public map of finished data. One HTML file, free hosting.

STREAMLIT
Filters, charts, or live data from the Kobo API.

Dashboard order: prototype, decide what to measure, then build.

IF YOU REMEMBER TWO THINGS

PLAN THE BORING STEPS FIRST

1 PLAN STORAGE BEFORE THE FORM

Resize photos to 1024 px and a 1 GB plan goes a long way.

2 ARCHIVE BEFORE YOU DELETE

GeoJSON plus the media ZIP, verified, in two places.

Everything else in the pipeline can be fixed later. These two can't.

THE TOOLS

KoboToolbox · kobotoolbox.org

ODK · getodk.org

QGIS · qgis.org

Streamlit · streamlit.io

Leaflet · leafletjs.com

All tools are open source. Kobo storage limits vary by plan.