Humanitarian OpenStreetMap Team

FIELD MAPPING TASKING MANAGER

State of the Map Asia, 2024 Cox's Bazar

AGENDA

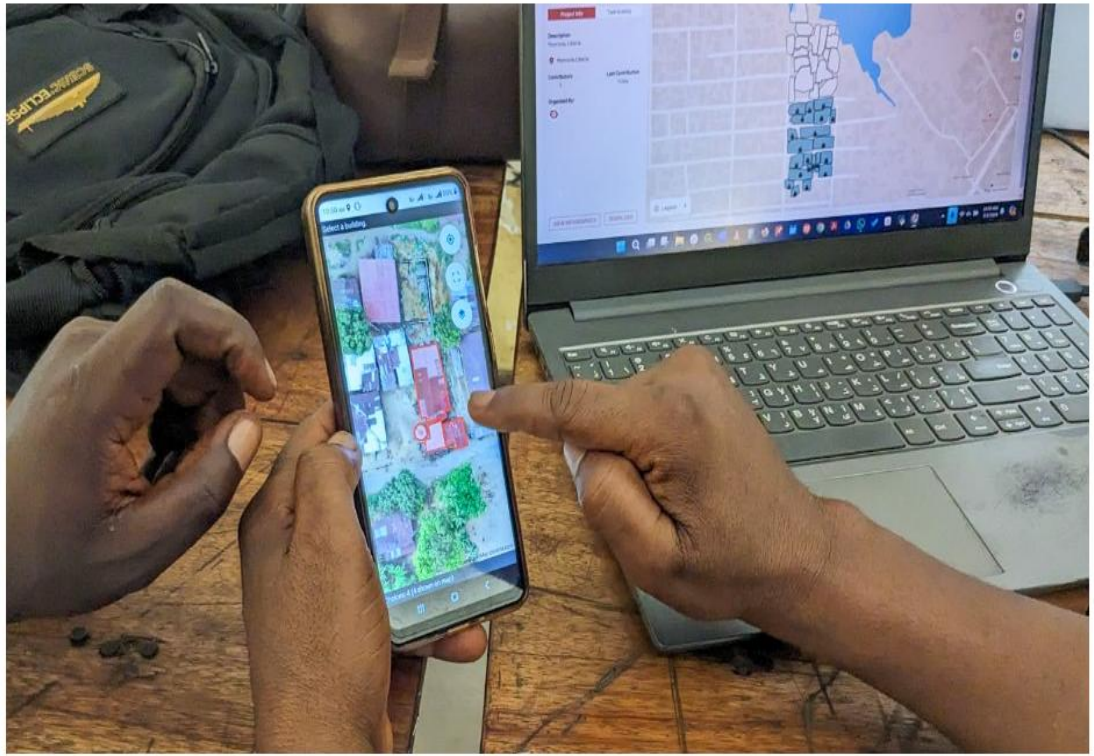
01 The Need: Challenges in Field Mapping

02 How the FMTM address the challenges and its unique features

03 Usage across geographies

04 A look at the future roadmap and how you can contribute

Challenges in Field Mapping



A project manager who has just created an FMTM project on their laptop demonstrates to a field mapper how they can select their assigned buildings on their phone

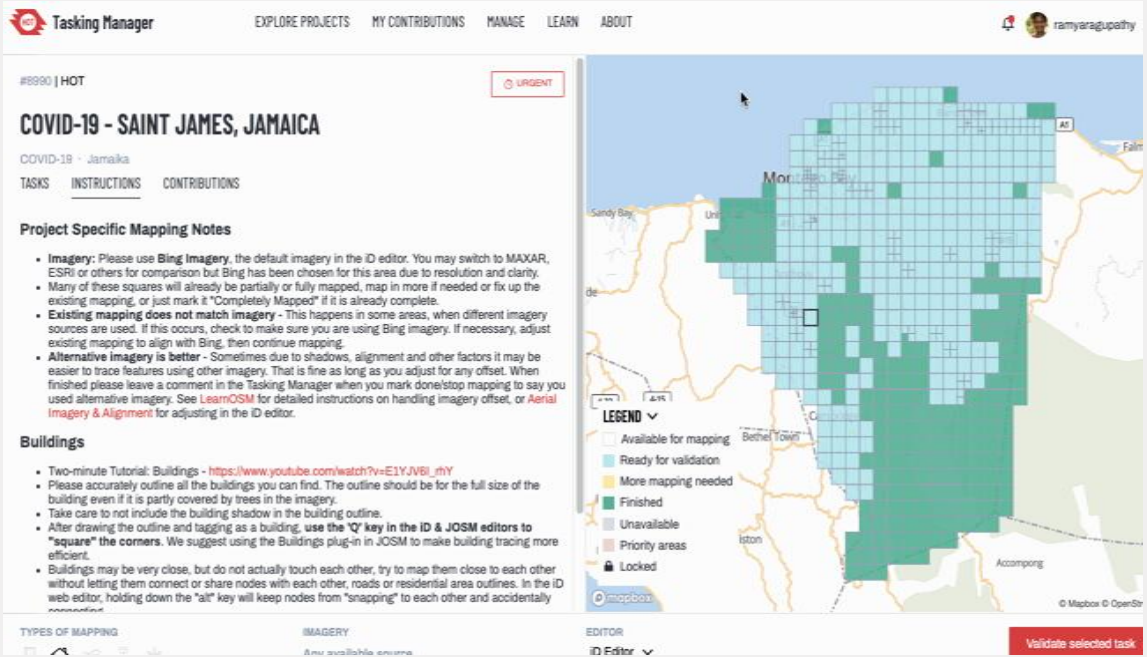
- Disorgnaised workflows with multiple field mappers
- Inconsistent data collection
- Offline access in remote areas
- Scaling the solution to a large mapping area

Extending Tasking Manager to Field Mapping

Tasking Manager is designed to divide up a mapping project into smaller tasks that can be completed rapidly with many people working on the same overall area.

It shows which areas need to be mapped and which areas need the mapping validated.

https://tasks.hotosm.org



Field Mapping Tasking Manager

*“revolutionize field data collection by ensuring seamless **coordination**, high **efficiency**, and exceptional **data quality** through streamlined communication and **management** for large mapping teams.”*

Field Mapping Tasking Manager - how it works

- FMTM is simply a coordination layer for ODK, with extra bells and whistles.

- A project area is chosen, divided into tasks, then mapped by a team **collaboratively**, using the **ODK Collect** mobile app (a mobile-based data collection survey).

- The main goal of FMTM is to keep mappers informed about **who is mapping what** features at any point in time.

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Field Mapping Tasking Manager - how it works

Project setup

FMTM allows **project managers** to create field mapping projects tailored to specific needs. This includes defining the area of interest, setting up tasks using a task-splitting algorithm, and assigning them to mappers. It provides tools to monitor project progress and make adjustments as needed, ensuring smooth coordination among teams.

Field mapping using ODK

Once tasks are assigned, **mappers** can access them via the FMTM frontend. Using tools like Open Data Kit (ODK), mappers can collect detailed data on the ground, including geographic features and survey responses. FMTM supports offline environments, enabling mappers to work seamlessly even in remote locations with downloadable basemaps and customizable data collection forms.

Validation of data

After data is collected, FMTM includes a validation step where project managers or **validators** can assess the quality of the data submitted. This step ensures data accuracy and completeness, identifies any gaps, and determines if additional mapping or corrections are required.

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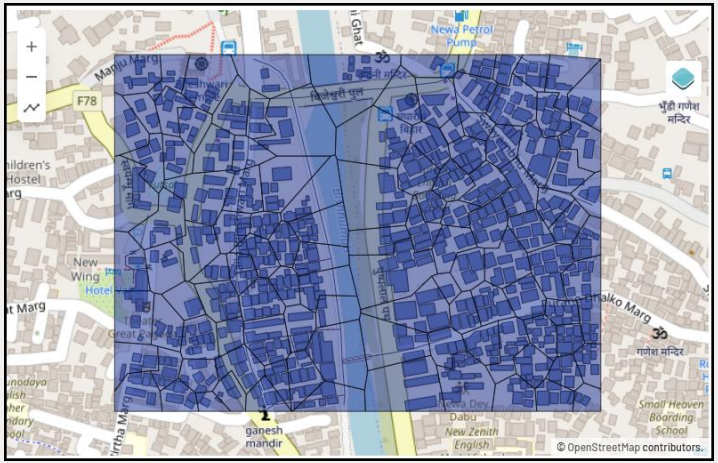
Field Mapping Tasking Manager - how it works

Project managers requires three things:

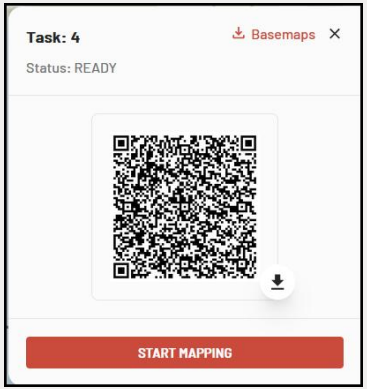
- Map Features: a collection of features to map (example: building polygons).
- ODK XLSForm: the survey for mappers on the ground to fill out for each feature.
- Divided task areas: manageable chunks for mappers, that do not require traversing rivers and roads.

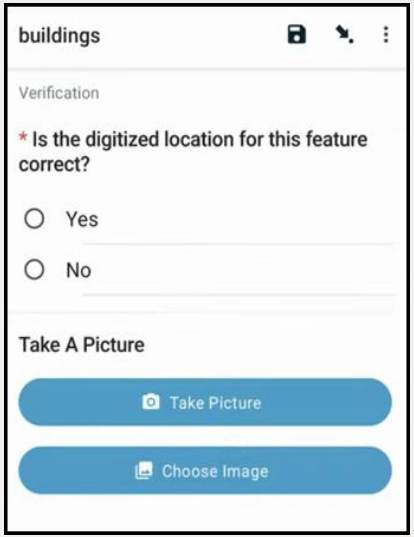


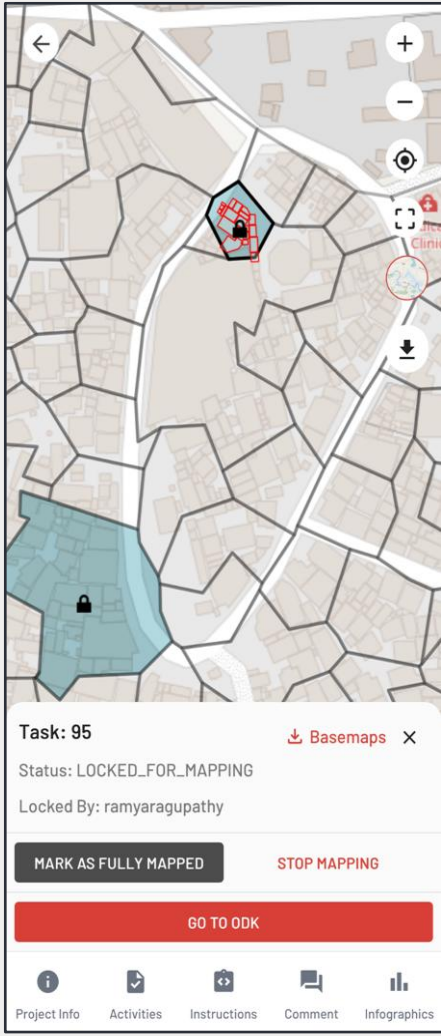
Field Mapping Tasking Manager - how it works

Mappers can then:

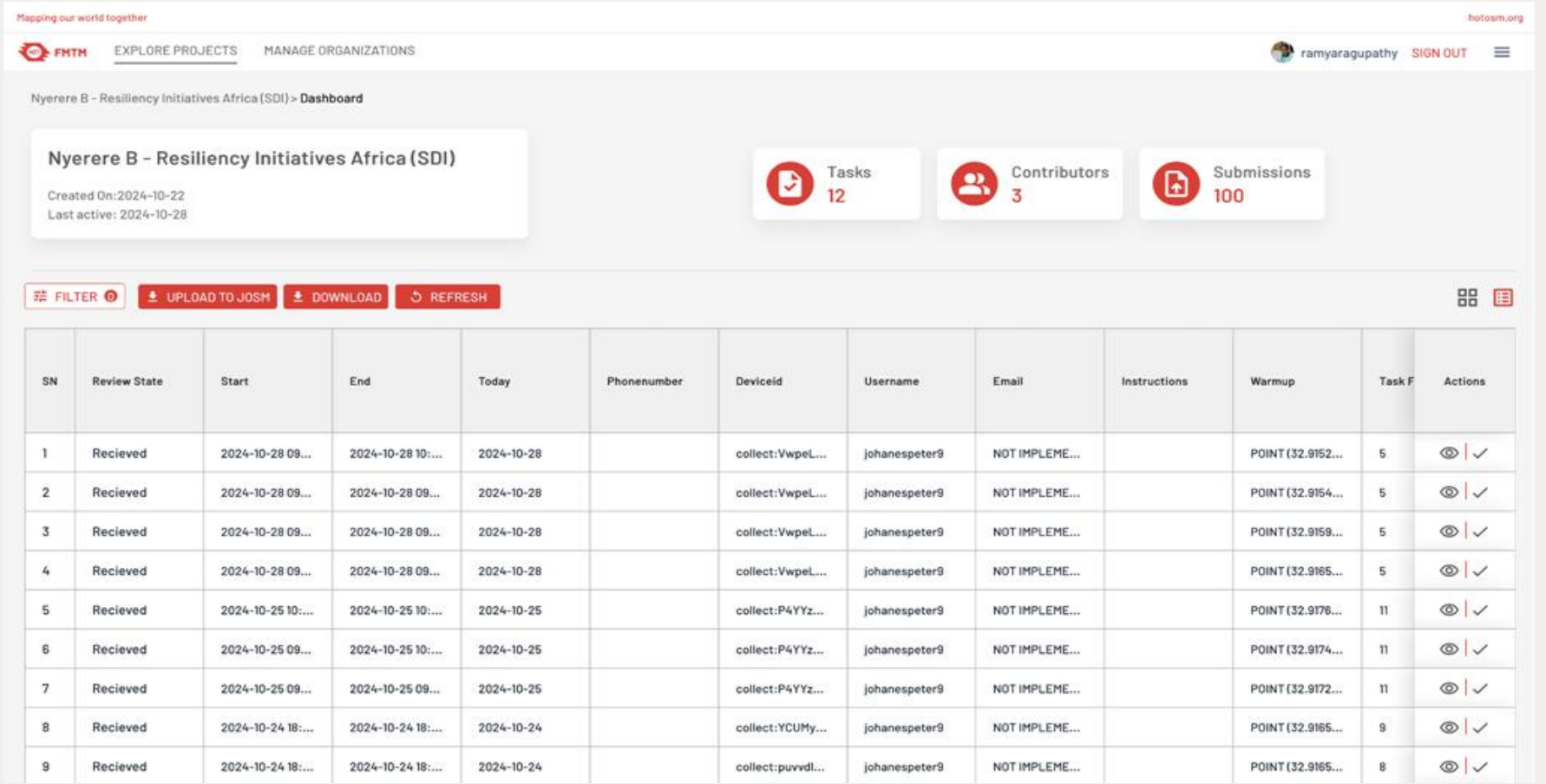
- Assign a task area for themselves, generating a QR code that is opened in ODK Collect.
- Navigate to the feature and fill out the XLSForm survey (possible entirely offline).
- Return to FMTM and navigate to the next feature in their task area, repeat.







Field Mapping Tasking Manager - how it works



SN	Review State	Start	End	Today	Phonenumber	Deviceid	Username	Email	Instructions	Warmup	Task F	Actions
1	Recieved	2024-10-28 09...	2024-10-28 10:...	2024-10-28		collect:VwpeL...	johanespeter9	NOT IMPLEME...		POINT (32.9152...	5	
2	Recieved	2024-10-28 09...	2024-10-28 09...	2024-10-28		collect:VwpeL...	johanespeter9	NOT IMPLEME...		POINT (32.9154...	5	
3	Recieved	2024-10-28 09...	2024-10-28 09...	2024-10-28		collect:VwpeL...	johanespeter9	NOT IMPLEME...		POINT (32.9159...	5	
4	Recieved	2024-10-28 09...	2024-10-28 09...	2024-10-28		collect:VwpeL...	johanespeter9	NOT IMPLEME...		POINT (32.9165...	5	
5	Recieved	2024-10-25 10:...	2024-10-25 10:...	2024-10-25		collect:P4YYz...	johanespeter9	NOT IMPLEME...		POINT (32.9176...	11	
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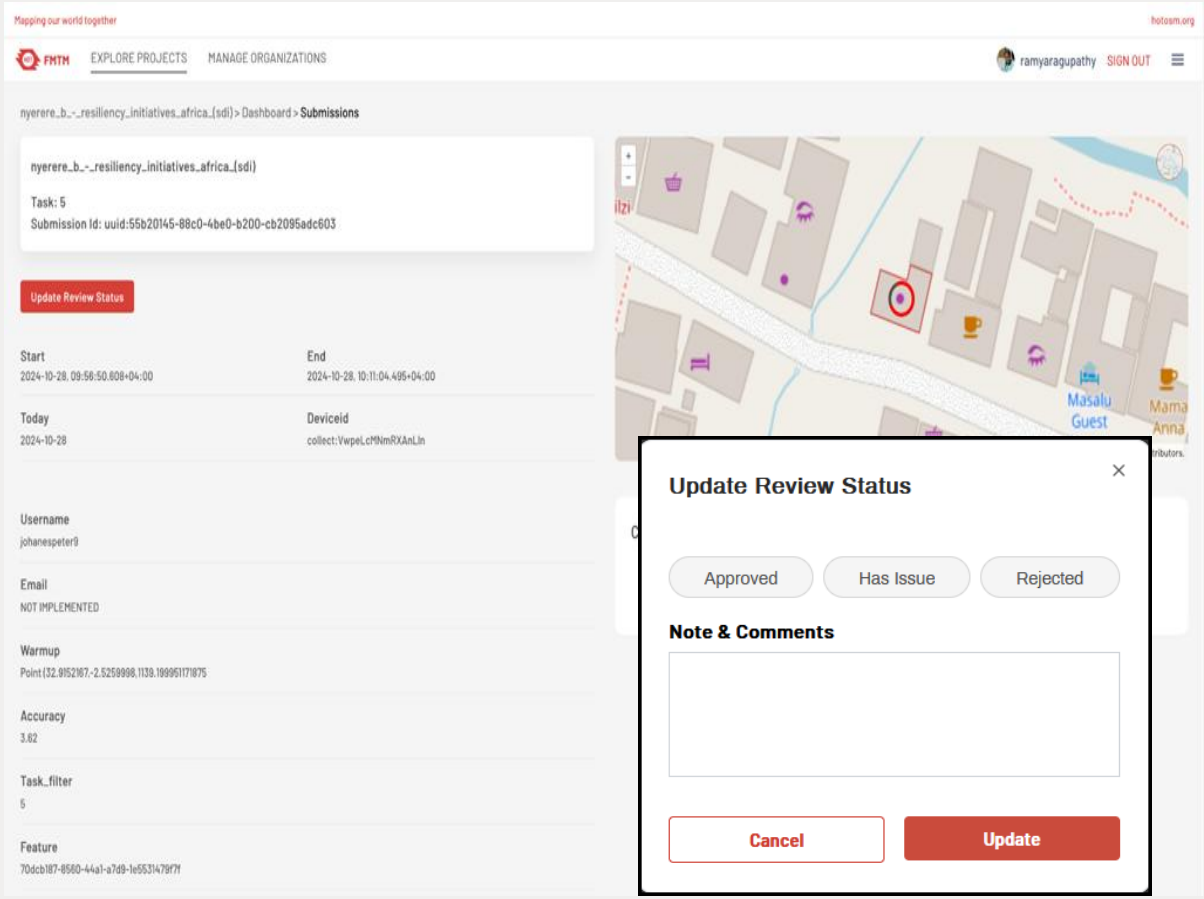
7	Recieved	2024-10-25 09...	2024-10-25 09...	2024-10-25		collect:P4YYz...	johanespeter9	NOT IMPLEME...		POINT (32.9172...	11	
8	Recieved	2024-10-24 18:...	2024-10-24 18:...	2024-10-24		collect:YCUMy...	johanespeter9	NOT IMPLEME...		POINT (32.9165...	9	
9	Recieved	2024-10-24 18:...	2024-10-24 18:...	2024-10-24		collect:puvvdl...	johanespeter9	NOT IMPLEME...		POINT (32.9165...	8	

Field Mapping Tasking Manager - how it works

Validators can then**:**

- See the submissions gathered from ODK Collect in the FMTM dashboard.
- Check the submitted information for data quality issues.



Field Mapping Tasking Manager - how it works

Finally, **project managers** can**:**

- Merge (conflate) validated submissions with existing data (example: OpenStreetMap). **WIP**

- Upload, visualize, extract the final data.

Use cases across diverse geographies

- Rwanda
- Cameroon
- Nepal
- Liberia
- Indonesia
- Dominica
- Ghana
- Tanzania
- Sierra Leone

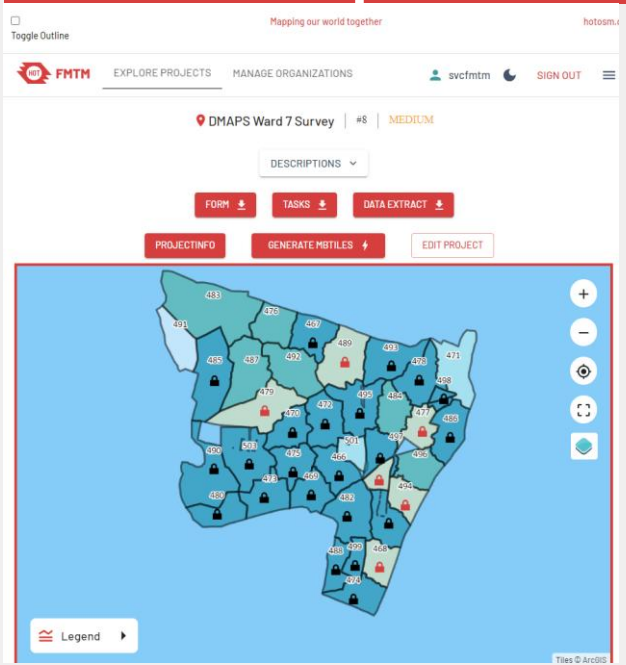
Staff of the BPBD Office and the Chief of the village, using FMTM to add context t

Participants collecting field data using FMTM, Asking house owners for the information

Rwanda building mapping exercise

- OpenStreetMap Rwanda is the first community to test FMTM - Rwanda back in July 2023 - many challenges then, but now we can see our feedback has been incorporated and FMTM improved, with challenges like locking tasks, search tasks the interface of the FMTM, logging in Issues, not working on different smartphones, etc
- Highlight: allow us to add different features and attribute information while on field
- Trained 20 volunteers in Nyabihu and integrated them into data collection for 5 days as part of engagement and local community building, etc

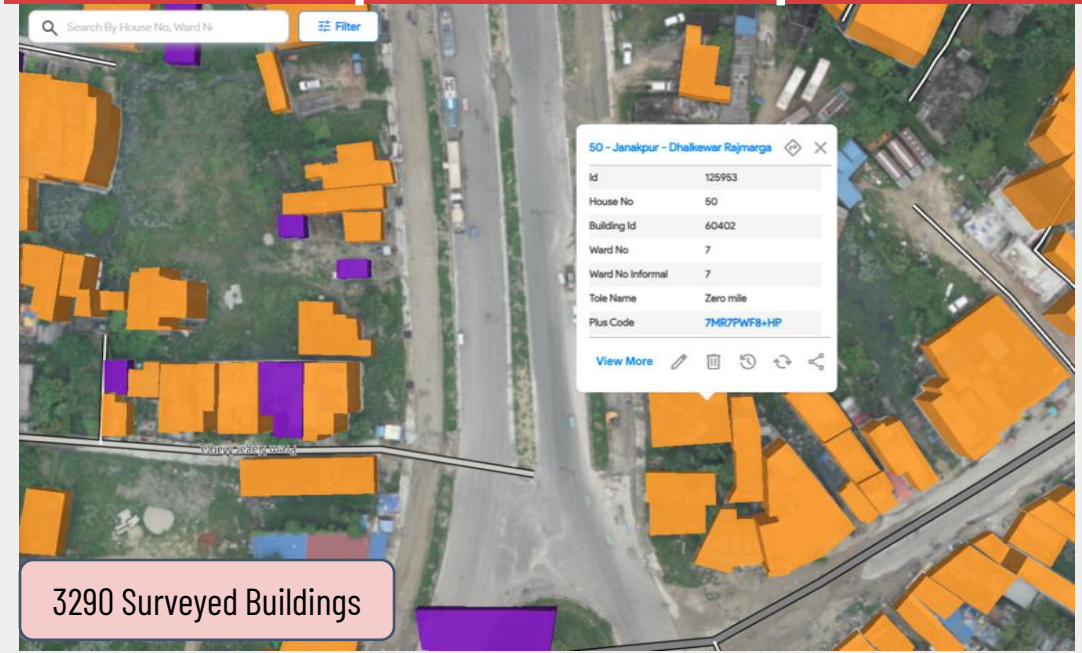
Nepal: Janakpur Household Survey



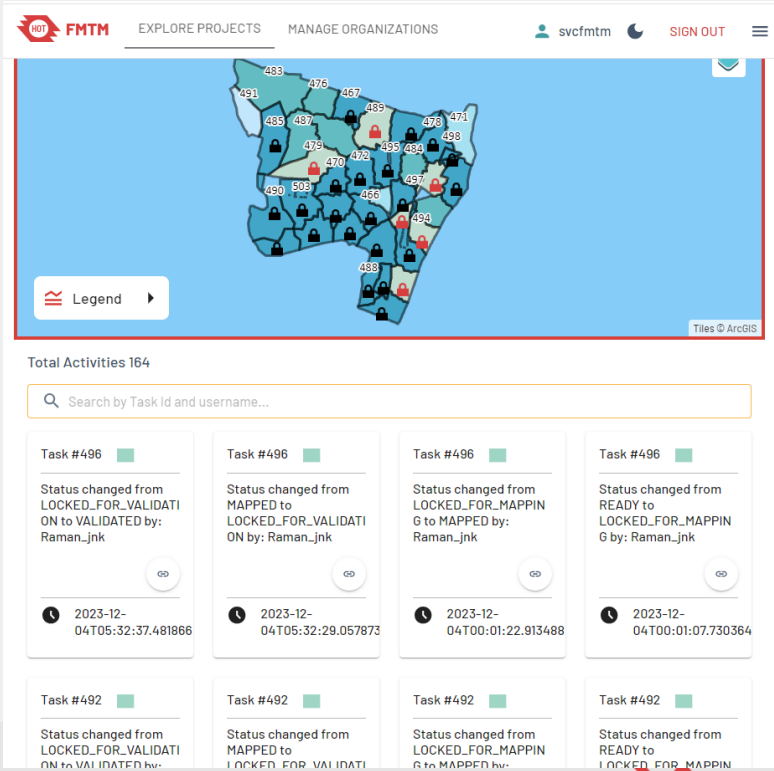
We deployed FMTM to conduct household survey in Ward-7 of Janakpur Sub Metropolitan City, that lies in Eastern Terai region of Nepal
16 local youths were trained on using FMTM for data collection.

Interesting Fact is on Day 1 of training session, they had very little knowledge on spatial digital survey. They couldn't identify the building polygons on map relative to their GPS location. But on Day 2, they were confident and were rectifying each other to precisely locate the building footprints

Nepal: Janakpur Household Survey



3290 Surveyed Buildings



The surveyed data was used to generate metric addresses for each building
The final output is open to public and is accessible via
https://janakpur.dmaps.org

Tech

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Backend
Developer

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Frontend
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Manjita Pandey
Project
Manager

Sam
Woodcock
Tech Lead

GitHub: https://github.com/hotosm/fmtm

FastAPI

React

docker

PostgreSQL

KUBERNETES

naxa

FMTM software development in 2025

- *Develop a **streamlined task transition workflow** to reduce back-and-forth between FMTM and ODK.*
- *Explore **alternate mapping apps (like Vespucci)** to expand FMTM compatibility.*
- *Validate and **standardize XLS forms** to reduce mapper issues related to form design.*
- *Implement a **user management dashboard** with options to assign enumerators, update access levels, and track enumerator progress.*
- ***Refine task-splitting algorithms** to ensure balanced feature distribution across tasks.*
- *Enable **organizations within FMTM**, allowing for role-based access, shared resources, and centralized project oversight to streamline collaborative field mapping efforts*
- *Design & Develop an intuitive interface within FMTM to streamline the process of c**onflating field-collected data with OpenStreetMap (OSM),** enabling mappers to merge, compare, and resolve data discrepancies directly within the tool*
- *Explore options for **direct messaging between users** within FMTM to improve task coordination.*

How to contribute?

- **Contribute on Github:** hotosm/fmtm: Field Mapping Tasking Manager - coordinated field mapping
- **Join Slack:** https://slack.hotosm.org
- **Blogs:** read latest updates in the News section of HOT website
- **Email:** message Ramya (ramya.ragupathy@hotosm.org) or Sam (sam.woodcock@hotosm.org)

Reach out to us if you want to set up a project!

Start using FMTM!

Questions?