

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

- Disorganised 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>

The screenshot shows the Tasking Manager web interface. At the top, there's a navigation bar with links: EXPLORE PROJECTS, MY CONTRIBUTIONS, MANAGE, LEARN, and ABOUT. The user profile 'ramyaragupathy' is visible in the top right. The main heading is '#8990 | HOT' and 'COVID-19 - SAINT JAMES, JAMAICA'. Below this, there are tabs for TASKS, INSTRUCTIONS, and CONTRIBUTIONS. A 'Project Specific Mapping Notes' section contains several bullet points: 'Imagery: Please use Bing Imagery...', 'Existing mapping does not match imagery...', 'Alternative imagery is better...', and 'Buildings' section with a two-minute tutorial link. A map on the right shows a grid of tasks with a legend: 'Available for mapping' (light blue), 'Ready for validation' (medium blue), 'More mapping needed' (yellow), 'Finished' (green), 'Unavailable' (grey), 'Priority areas' (orange), and 'Locked' (red). A 'Validate selected task' button is at the bottom right.

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.





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

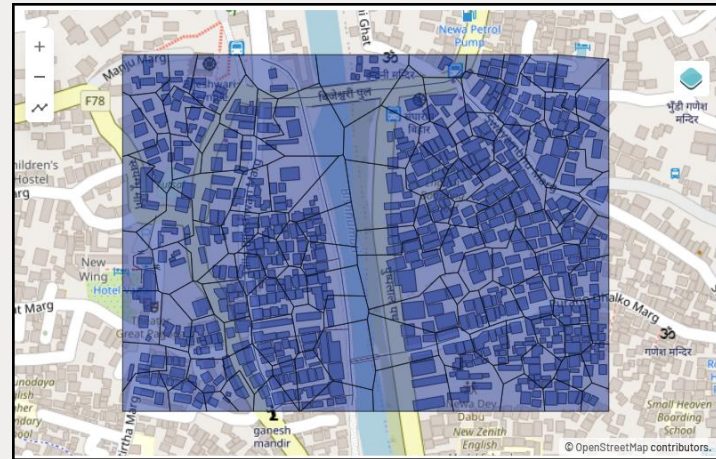
After data is collected, FMTM includes a validation step where project managers or **validators** can assess the quality of the data submitted. This step ensures data accuracy and completeness, identifies any gaps, and determines if additional mapping or corrections are required.



Field Mapping Tasking Manager - how it works

Project managers requires three things:

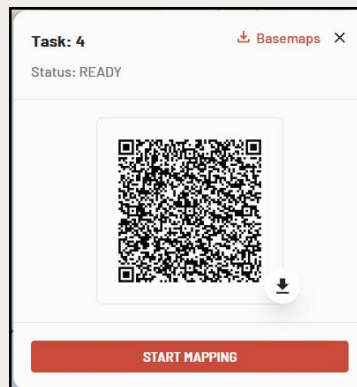
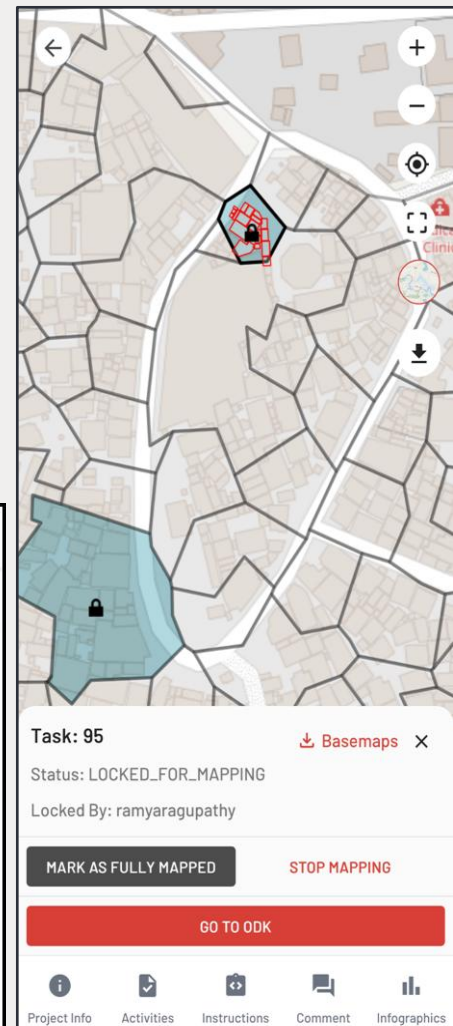
- Map Features: a collection of features to map (example: building polygons).
- ODK XLSForm: the survey for mappers on the ground to fill out for each feature.
- Divided task areas: manageable chunks for mappers, that do not require traversing rivers and roads.



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.

A screenshot of the FMTM survey form for 'buildings'. It includes a 'Verification' section with the question '* Is the digitized location for this feature correct?' and two radio button options: 'Yes' and 'No'. Below this is a 'Take A Picture' section with two buttons: 'Take Picture' (with a camera icon) and 'Choose Image' (with a photo gallery icon).

Field Mapping Tasking Manager - how it works


Mapping our world together

photosm.org


 **FMTM**

EXPLORE PROJECTS

MANAGE ORGANIZATIONS

 ramyaragupathy


SIGN OUT





Nyerere B - Resiliency Initiatives Africa (SDI) > Dashboard


Nyerere B - Resiliency Initiatives Africa (SDI)


Created On: 2024-10-22
Last active: 2024-10-28


 Tasks
12


 Contributors
3



 Submissions
100



















 FILTER 0

 UPLOAD TO JOSM

 DOWNLOAD

 REFRESH

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 IMPEME...		POINT (32.9152...	5	 
2	Recieved	2024-10-28 09...	2024-10-28 09...	2024-10-28		collect:VwpeL...	johanespeter9	NOT IMPEME...		POINT (32.9154...	5	 
3	Recieved	2024-10-28 09...	2024-10-28 09...	2024-10-28		collect:VwpeL...	johanespeter9	NOT IMPEME...		POINT (32.9159...	5	 
4	Recieved	2024-10-28 09...	2024-10-28 09...	2024-10-28		collect:VwpeL...	johanespeter9	NOT IMPEME...		POINT (32.9165...	5	 
5	Recieved	2024-10-25 10:...	2024-10-25 10:...	2024-10-25		collect:P4YYz...	johanespeter9	NOT IMPEME...		POINT (32.9176...	11	 
6	Recieved	2024-10-25 09...	2024-10-25 10:...	2024-10-25		collect:P4YYz...	johanespeter9	NOT IMPEME...		POINT (32.9174...	11	 
7	Recieved	2024-10-25 09...	2024-10-25 09...	2024-10-25		collect:P4YYz...	johanespeter9	NOT IMPEME...		POINT (32.9172...	11	 
8	Recieved	2024-10-24 18:...	2024-10-24 18:...	2024-10-24		collect:YCUMy...	johanespeter9	NOT IMPEME...		POINT (32.9165...	9	 
9	Recieved	2024-10-24 18:...	2024-10-24 18:...	2024-10-24		collect:puvvdL...	johanespeter9	NOT IMPEME...		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.

The screenshot displays the FMTM (Field Mapping Tasking Manager) interface. At the top, the header reads 'Mapping our world together' and includes navigation links for 'EXPLORE PROJECTS' and 'MANAGE ORGANIZATIONS'. The user profile 'ramyarakupathy' is visible in the top right corner.

The main content area shows a submission for the project 'nyerere_b._resiliency_initiatives_africa_(sdi)' under the 'Submissions' tab. The submission details are as follows:

nyerere_b._resiliency_initiatives_africa_(sdi)	
Task:	5
Submission Id:	uuid:55b20145-88c0-4be0-b200-cb2095adc603
Update Review Status	
Start	End
2024-10-28, 09:56:50.608+04:00	2024-10-28, 10:11:04.495+04:00
Today	DeviceId
2024-10-28	collect:VwpelchNmRXANLin
Username	
johanespeter9	
Email	
NOT IMPLEMENTED	
Warmup	
Point (32.8952967,-2.5259998,1138.19995171875)	
Accuracy	
3.62	
Task_filter	
5	
Feature	
70dcb187-8560-44a1-a7d9-1e5531478f7f	

On the right side of the dashboard, there is a map view showing a street map with various markers. A red box highlights a specific location on the map.

An 'Update Review Status' modal is open in the foreground, allowing the validator to update the submission status. The modal includes three buttons: 'Approved', 'Has Issue', and 'Rejected'. Below these buttons is a text area for 'Note & Comments'. At the bottom of the modal are 'Cancel' and 'Update' buttons.

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 to



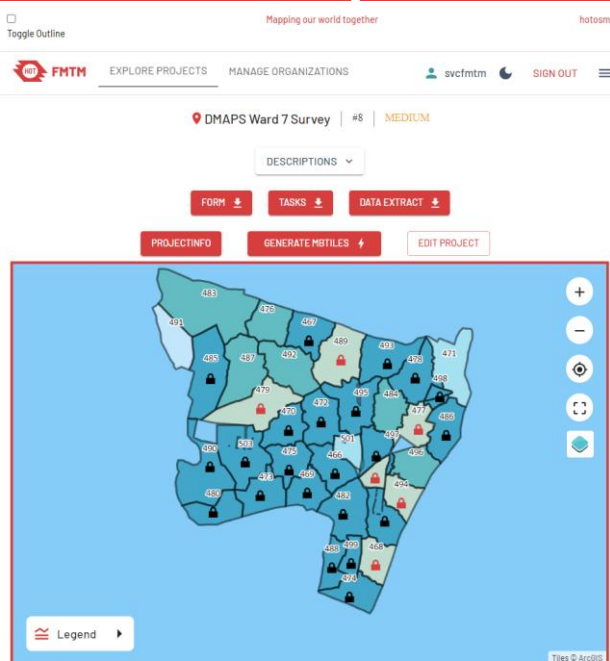
Participants collecting field data using FMTM, Asking house owners for the information

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



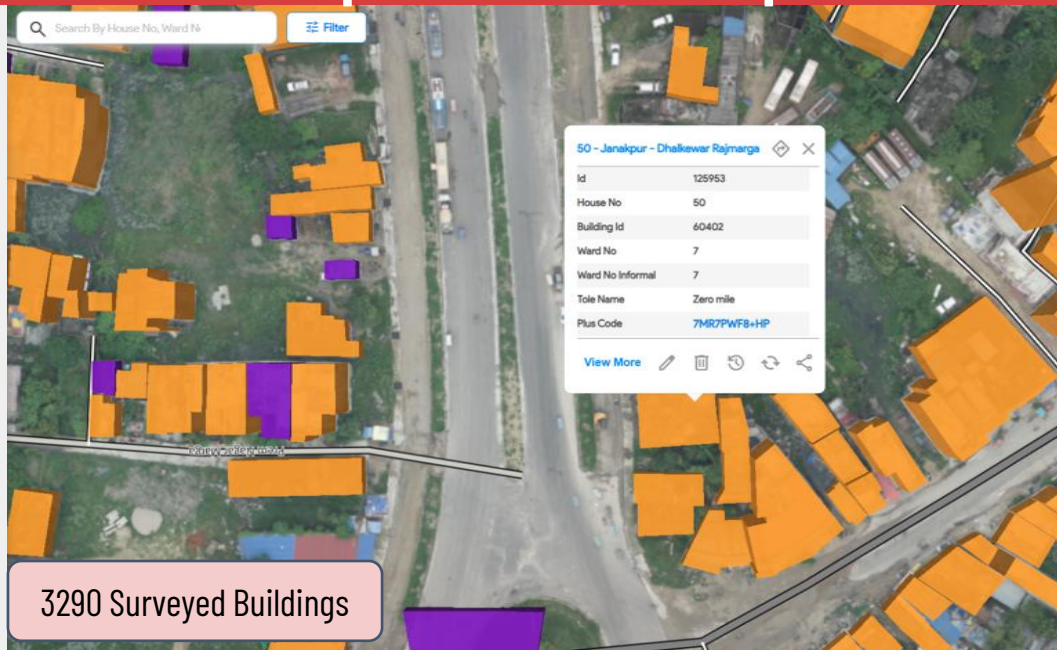
Nepal: Janakpur Household Survey



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.

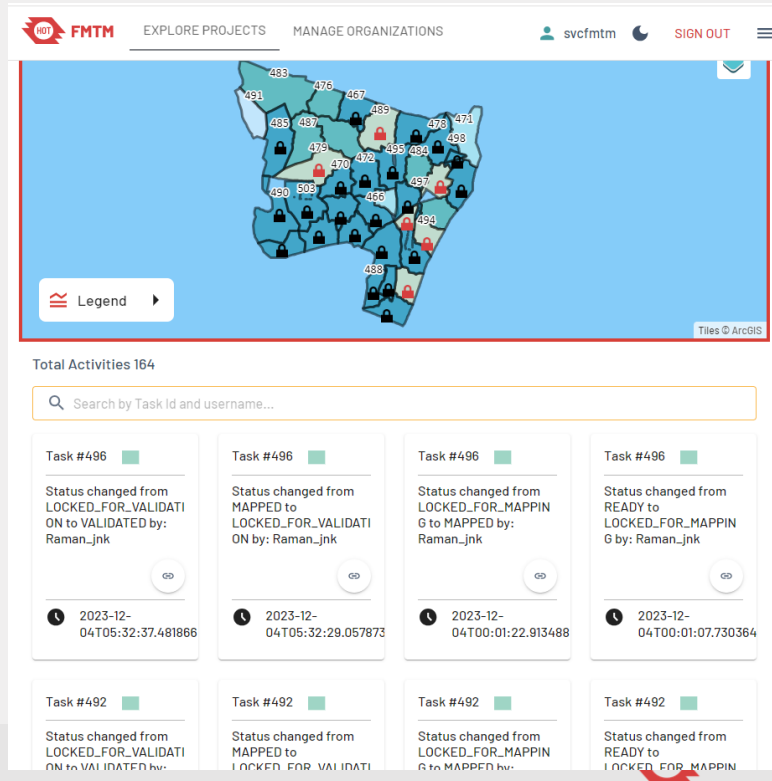
Nepal: Janakpur Household Survey



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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Developer



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Woodcock
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GitHub: <https://github.com/hotosm/fmtm>



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 **conflating 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](https://github.com/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?



HOT