

# Where are we at with



## MapTCHA

SoTM EU Dundee  
15 November 2025



**What it starts  
from**



**How we brew it**



**What it will be**



# CAPTCHA

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From Wikipedia, the free encyclopedia

A **CAPTCHA** (/kəp.tʃə/ *KAP-che*) is a type of challenge–response Turing test used in computing to determine whether the user is human in order to deter bot attacks and spam.<sup>[1]</sup>

The term was coined in 2003 by Luis von Ahn, Manuel Blum, Nicholas J. Hopper, and John Langford.<sup>[2]</sup> It is an acronym for "Completely Automated Public Turing test to tell

Computers and Humans Apart."<sup>[3]</sup> A historically common type of CAPTCHA (displayed as reCAPTCHA v1) was first invented in 1997 by two groups working in parallel. This form of CAPTCHA requires entering a sequence of letters or numbers from a distorted image. Because the test is administered by a computer, in contrast to the standard Turing test that is administered by a human, CAPTCHAs are sometimes described as reverse Turing tests.<sup>[4]</sup>

Two widely used CAPTCHA services are Google's reCAPTCHA<sup>[5][6]</sup> and the independent hCaptcha.<sup>[7][8]</sup> It takes the average person approximately 10 seconds to solve a typical CAPTCHA.<sup>[9]</sup> With the rising application of AI making it feasible to defeat the tests and the appearance of scams disguised as CAPTCHAs, their use risks being outmoded.

## Purpose

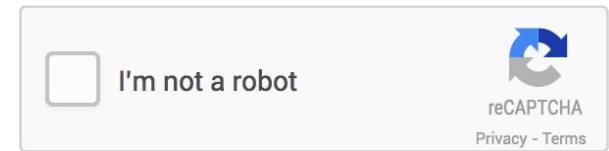
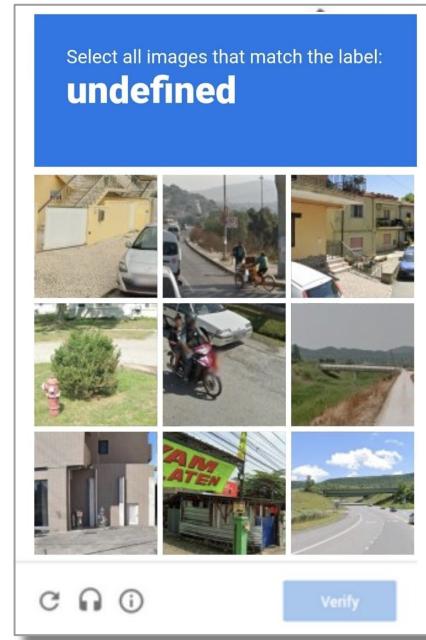
The purpose of CAPTCHAs is to prevent spam on websites, such as promotion spam, registration spam, and data scraping. Many websites use CAPTCHA effectively to prevent bot raiding. CAPTCHAs are designed so that humans can complete them, while most robots cannot.<sup>[10]</sup> Newer CAPTCHAs look at the user's behaviour on the internet, to prove that they are a human.<sup>[11]</sup> A normal CAPTCHA test only appears if the user acts like a bot, such as when they request webpages, or click links too fast.



This CAPTCHA (reCAPTCHA v1) of "smwm" obscures its message from computer interpretation by twisting the letters and adding a slight background color gradient.



following finding



Making sure you're not a bot! × +

https://lore.kernel.org Incognito :

## Making sure you're not a bot!



Loading...

▶ Why am I seeing this?

Sadly, you must enable JavaScript to get past this challenge. This is required because AI companies have changed the social contract around how website hosting works. A no-JS solution is a work-in-progress.

Protected by [Anubis](#) from [Techaro](#). Made with ❤ in CA.

Mascot design by [CELPHASE](#).

<https://github.com/TecharoHQ/anubis>

**Bots** scraping the internet for AI training content > CAPTCHA

**Anubis** challenges incoming requests to complete a computationally expensive task or “weighs the soul of your connection”

Prohibitively **expensive** for bots but not humans browsing.



## Issues with proprietary Captchas

**Transparency &  
Control**



**Data Privacy &  
Surveillance**



**AI Training &  
Corporate Benefit**





## Issues with proprietary Captchas

### Transparency & Control

**Closed-source nature** – The code and algorithms are not publicly available, meaning users and developers cannot audit how data is handled or how decisions (like pass/fail) are made.

**Lack of accountability** – Because the inner workings are opaque, there's limited oversight on security practices, data collection, or potential biases.

**Vendor lock-in** – Websites become dependent on Google's infrastructure and terms of service, making migration to alternative CAPTCHA systems difficult.

### Data Privacy & Surveillance



### AI Training & Corporate Benefit

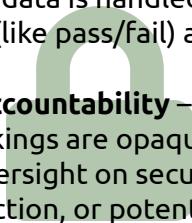




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## Data Privacy & Surveillance

**User tracking** – reCAPTCHA often collects extensive behavioral data (mouse movements, clicks, browsing history, cookies) to assess whether a user is human.



**Cross-site data collection** – Integrating reCAPTCHA connects your site to Google's wider tracking network, effectively feeding Google data about users across the web.

**Lack of consent clarity** – Users are rarely aware of how much data is being collected or how it's used beyond the stated purpose of bot prevention.

## AI Training & Corporate Benefit

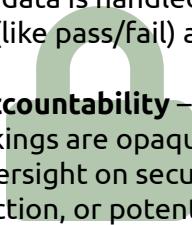




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## AI Training & Corporate Benefit

**Free labor for AI training** – reCAPTCHA historically used human input (e.g., identifying street signs, cars, or text) to label data that trained Google's AI systems, such as for self-driving car vision models.



**Unequal value exchange** – Users are compelled to solve these tasks to access services, effectively performing unpaid work for corporate AI development.

**Ethical concerns** – The blending of security functions with commercial data labeling raises questions about informed consent and exploitation of user effort.



## Existing open source alternatives



**hCaptcha**

<https://www.hcaptcha.com/>



**Altcha**

<https://altcha.org/open-source-captcha/>



## ReMAPTCHA: A Map-based Anti-Spam Method that Helps to Correct OpenStreetMap

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This contribution was double-blind reviewed as extended abstract.

### Abstract

This is a report about a prototype software called ReMAPTCHA, which is a map-based anti-spam method. In fact, it is a self-contained variant of a reCAPTCHA. It can also serve to correct topological errors ("almost connections") in OpenStreetMap.

### 1 Introduction

A CAPTCHA (AHN et al. 2003, AHN et al. 2004) is a software that prevents automated bots from registering themselves in online systems, where they aim to leave unwanted web links or initiate, or collect unsolicited mails. It's an acronym for "Completely Automated Public Turing test to tell Computers and Humans Apart". A CAPTCHA generates images with distorted text and asks user to type in the original one. Since computers can't read the distorted text while humans can (CHELLAPILLA et al. 2005), bots cannot intrude to sites protected by CAPTCHAs.

HSR

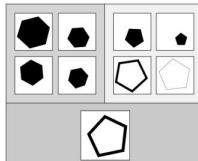


Fig. 1: Typical CAPTCHA image with distorted letters (here: "HSR")

Fig. 2: A BONGO image. To which side does the block on the bottom belong? (BONGARD 1970)

### 2 Method

A ReMAPTCHA consists of two "control words" and a part of a satellite image showing the situation. The two "Control words" are distorted and label the roads in the ReMAPTCHA (see Figure 4 and 5).



Fig. 4: A case in which 2 roads are connected



Fig. 5: A case in which 2 roads are not connected

Figure 4 shows the prototype of the ReMAPTCHA project. The user is asked a security question like this: "Type two words by the car and flag if there is a direct way, else type only the word by the car.". In the case of figure 4, so the correct answer would be "TRANSC ou" because the two roads look like connected. So the answer contains the two labels on the direct route from the car to the flag. Another acceptable answer would be just "TRANSC" (without "ou"). With this answer, the user would state that the two roads are unconnected. This fact is the "unknown part" of the ReMAPTCHA. Whatever the user answers, his answer must contain at least one "control word" in order to pass the challenge. Just in case, there is a button on the upper right showing the OSM map as an additional source of information.

In the other case, as shown in figure 5, the roads are not connected in reality, so the correct answer would be "unwave" (without "she").



Build something that reliably can  
tell the **difference** between a  
**human** and a **bot**



Generate **good validation data** for  
improving models and eventually  
suggest for mapping in OSM





**RUN PREDICTION**

Current Zoom: 20

Response: 0 sec

**Config**

Use JOSM Q:

Confidence: 90 %

Vectorization Config :

Tolerance: 0.3 Area: 4

**Feedback**

Initial Predictions: 0

Total feedbacks count: 20

**Loaded Model**

ID: 51

Name: fair demo model

kakuma

Last Modified: 11/04/2024,  
15:51:17

**Published Training**

ID: 364

Description:

Zoom Level: 19, 20, 21

Accuracy: 97.60 %

Model Size: 123.85 MB

**RUN PREDICTION**

Current Zoom: 20  
Predicted on: 20 Zoom  
Response: 12 sec

**Config**

Use JOSM Q:

Confidence:  90 %

Vectorization Config :

Tolerance: 0.3 Area: 0

**Feedback**

Initial Predictions: 360  
Total feedbacks count: 20

**Loaded Model**

ID: 51  
Name: fair demo model  
Kakuma  
Last Modified: 11/04/2024,  
15:51:17

**Published Training**

ID: 364  
Description:  
Zoom Level: 19, 20, 21  
Accuracy: 97.60 %  
Model Size: 123.85 MB

**Options****REMOVE OSM FEATURES****OPEN WITH JOSM**



[← Back](#) [≡](#) [eye icon](#)

 Anna Zanchetta  
@ciupava@en.osm.town

Introducing 🍵 Maptcha 🌎  
the #opensource CAPTCHA that improves #OpenStreetMap !

Maptcha is at its alpha stage, and we are testing it on potential users. To take part in the test, please follow this link:  
[maptcha.crown-shy.com](http://maptcha.crown-shy.com)

You have ~one week time to take part and give us some feedback.

We'll present the results at #fosdem2025 in the Geospatial devroom

with @grischard @soporificoctopus  
#OSM #fosdem

 [maptcha.crown-shy.com](http://maptcha.crown-shy.com)  
**Vite + Lit + TS**

Search or paste URL

 Anna Zanchetta  
@ciupava

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<https://maptcha.crown-shy.com>

Welcome to MapTCHA  
The opensource CAPTCHA that improves OpenStreetMap

Bots and spam are challenges for online platforms. Traditional CAPTCHAs help block bots, but often involve improving proprietary maps and software, while exposing user information to third-party CAPTCHA providers.

OpenStreetMap (OSM) has many objects remaining to be mapped, but the quality of AI-generated objects is not high enough for direct inclusion.

We introduce here "MapTCHA", a CAPTCHA that leverages the uncertainty of interpreting imagery with computer vision, and provides human verification for AI predictions: you are asked to identify images containing correctly interpreted objects, e.g. building outlines.

MapTCHA is still a work in progress. We are testing it now on potential users. In the following interface you will be shown what looks like a typical CAPTCHA interface, both in grid and swipe format.

Please try a few identification tasks (you'll be shown 9 images per session) until you get to a short success rate of 50% or higher, and you will be able to use the service.

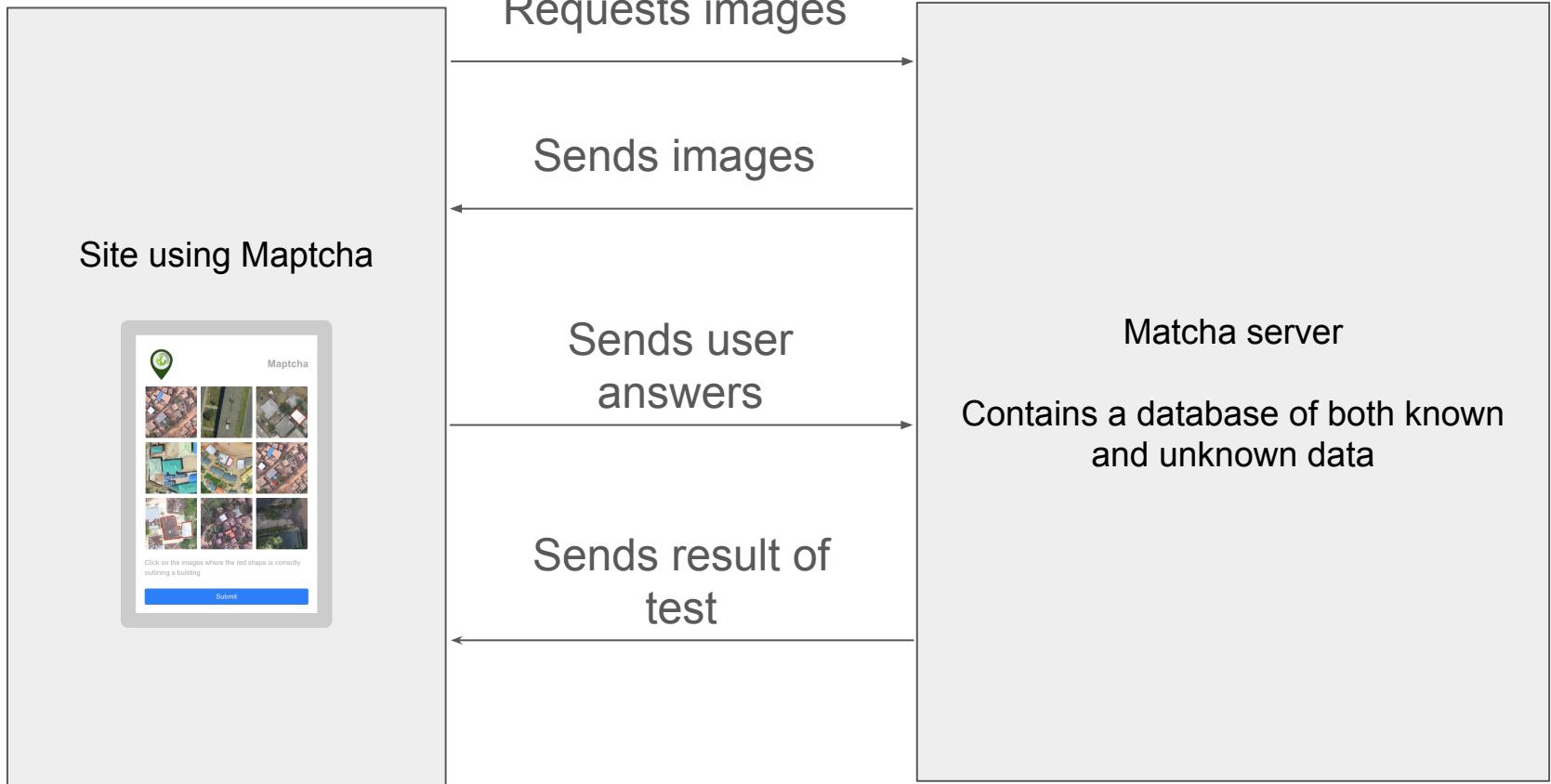
**Start**



## WEB COMPONENTS



[https://github.com/ciupava/maptcha\\_dev](https://github.com/ciupava/maptcha_dev)





# SWIPE

Swipe right if the red shape is correctly outlining a building. If not swipe left

Incorrect    Correct

# GRID

Click on the images where the red shape is correctly outlining a building

Submit

Participants randomly assigned interface type when they first come to the site



# SWIPE

Swipe right if the red shape is correctly outlining a building. If not swipe left

Incorrect      Correct

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Start

<https://maptcha.crown-shy.com>

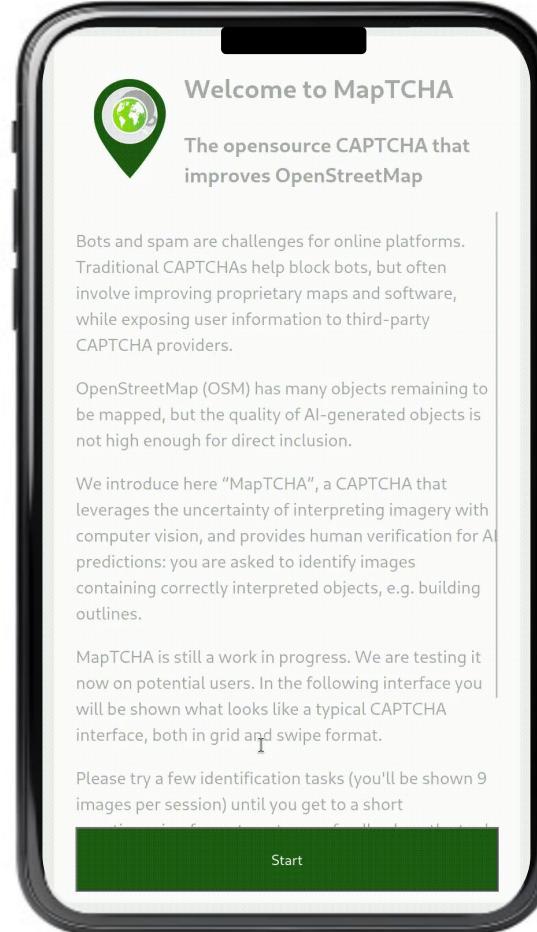


# GRID

Maptcha

Click on the images where the red shape is correctly outlining a building

Submit



<https://maptcha.crown-shy.com>



# MapTCHA

The open source CAPTCHA that  
improves OpenStreetMap

FOSDEM 2025



FOSDEM 25



0:20 / 26:42





**758**

Users



**398**

Images

**206**



**21 514**





▲ MapTCHA, the open-source CAPTCHA that improves OpenStreetMap [video] ([fosdem.org](https://fosdem.org))

291 points by raybb 9 months ago | hide | past | favorite | 45 comments

Presentation Video: <https://fosdem.org/2025/schedule/event/fosdem-2025-5879-mapt...>

Repo: [https://github.com/ciupava/maptcha\\_dev](https://github.com/ciupava/maptcha_dev)

Demo: <https://maptcha.crown-shy.com/>

I didn't make this I just wanted to share here before I add it to my weekly urbanism roundup newsletter

<https://urbanismnow.com>

▲ neilv 8 months ago | next [-]

Comments in case the demo developer sees this:

\* The swiping in the demo was a rough for me, on a laptop with Firefox. One of the tricks was to be sure to release the mouse button before the pointer hits the edge of white rectangle fake screen. Swiping off the edge without a button-up event doesn't seem to be handled.

\* At the end of a swipe that registers, after you mouse-up, there's a noticeable lag of sometimes up to approx. one second, during which the card is frozen in place, before it finishes sliding off.

\* The rotation effect on the card as it's being swiped wasn't intuitive, IMHO. It doesn't follow the vertical movement in the swipe, and there's no obvious physical metaphor for why it's doing that. Perhaps especially with the other roughness going on, the rotation confuses things a little bit more; but maybe, if the other behavior was perfect, the rotation would be fine.

▲ fragebogen 9 months ago | prev | next [-]

Fun and potentially useful project, love it! When I tried it though, it was quite often hard to see whether the bounding box is "really" correct, as it hides what's underneath. Maybe some slight opaqueness could help.

Also, my first image had no bounding box at all. Being met by "Swipe right if the red shape is correctly outlining a building. If not swipe left", it felt like the wording or the UX could be improved by filtering for images that are guaranteed to have such a box.



# What's needed



## Accessibility

- Choice of the outline color (RED)
- Visual impairment
- Translation



## Clarity of the question

- Swipe right/left
- Add instructions
- Tiles with no outline



## Images quality

### DATA

- Centered on building
- Clearer outlines (toggle on/off)



## Backend

- Callback service:
  - check a users answers
  - determine if they are human
  - inform the service.



## Bot deterrence

- We need to do rigorous testing on how much of a deterrent this is to bots.

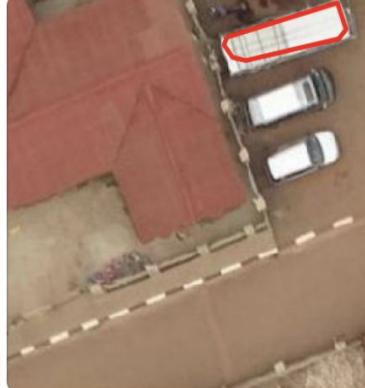


## Production

- Integration with OSM
- Usage in platforms



Predictions  
on labelled  
data

T		
P		
N		



T

F

P

Is the red shape correctly  
outlining a building?

N





T

F

P

YES



NO



N

NO

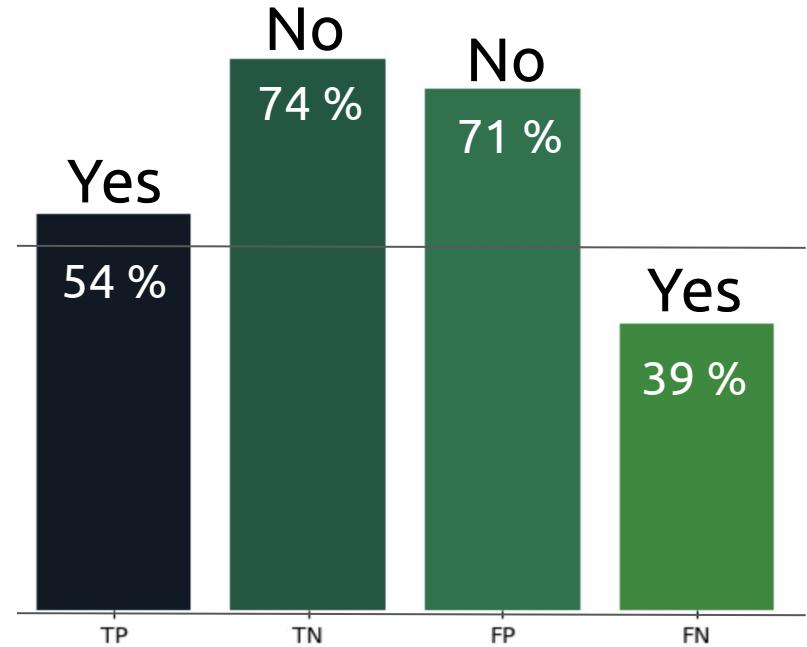


YES

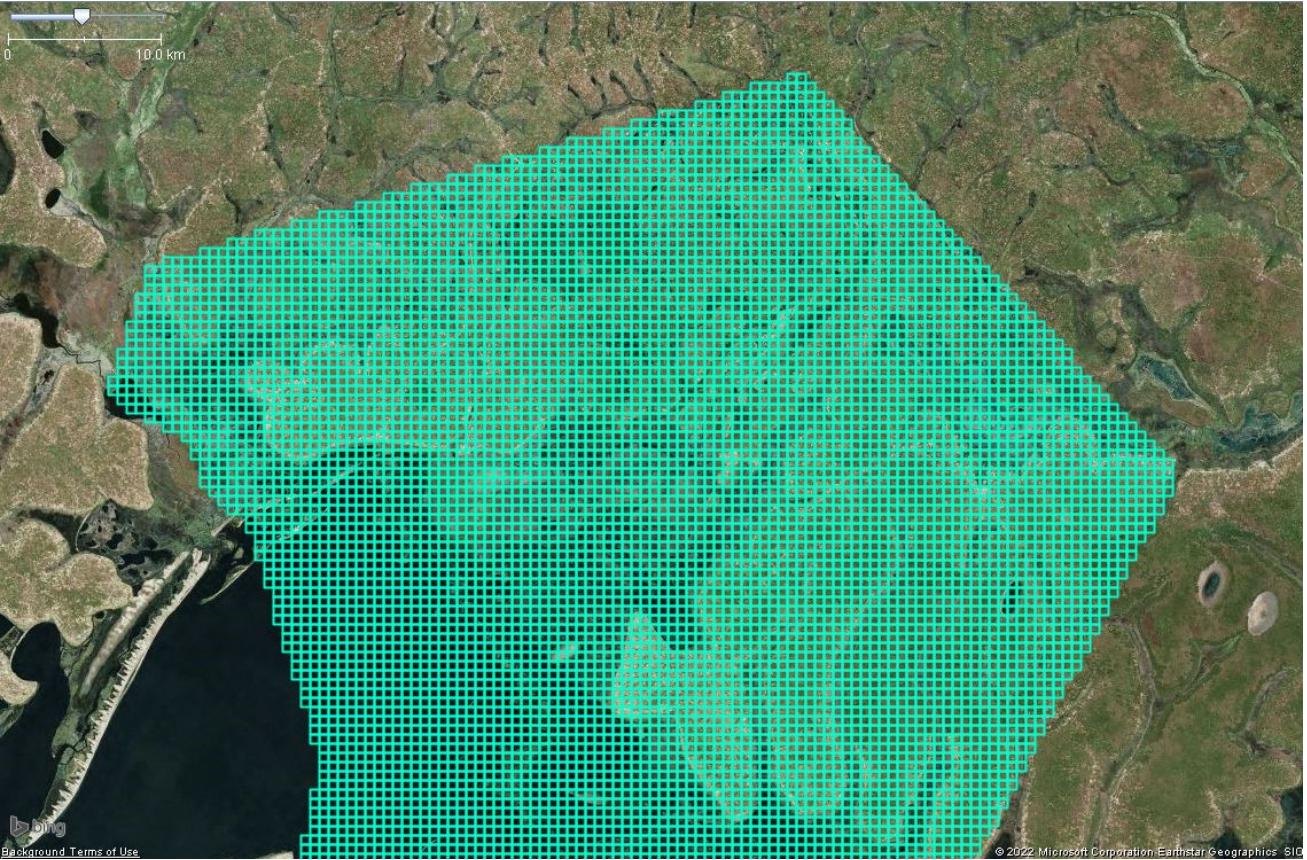




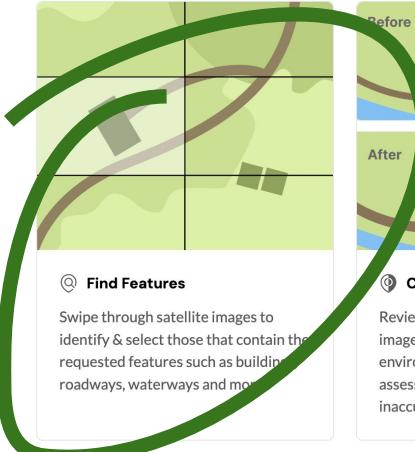
Images  
ratio



Users responses



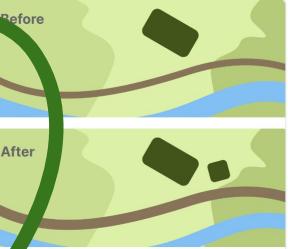






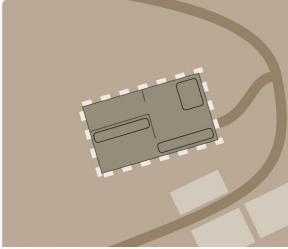
**Find Features**

Swipe through satellite images to identify & select those that contain the requested features such as buildings, roadways, waterways and more.



**Compare Dates**

Review before and after satellite images to detect changes in the environment that help inform damage assessment, climate change, or inaccurate data.



**Validate Footprints**

Assess building footprints for accuracy where buildings have been previously traced by remote mappers or through AI to identify where remapping is needed.



**Check Completeness**

Check an overlay layer (e.g. mapped buildings) against aerial imagery to identify areas that are not completely mapped.



**Assess Image**

Review photographs to identify the presence of a feature or validate detections as part of mapping workflows and to improve machine learning tools.



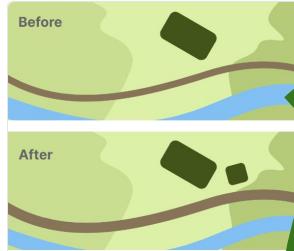
**View Streets**

Explore ground-level photos to find relevant features and capture more detailed information on communities.



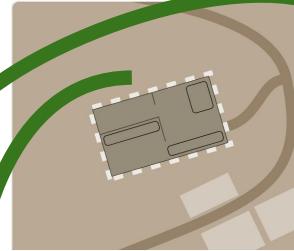
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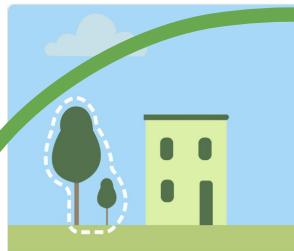
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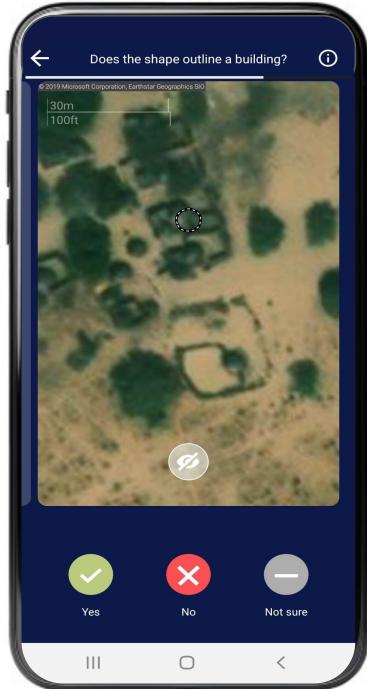
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<https://web.mapswipe.org/>



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**Want to get involved?**



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<https://maptcha.crown-shy.com>



#maptcha

