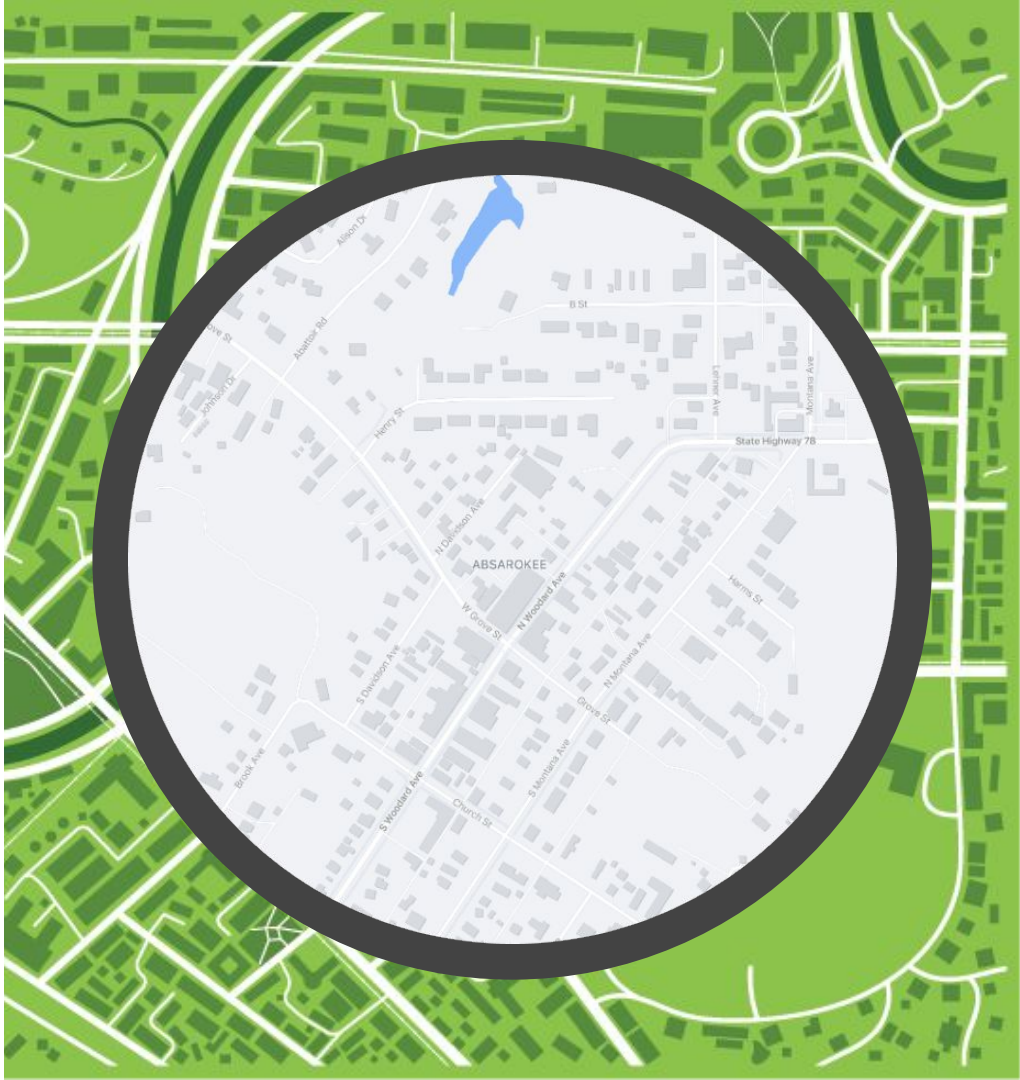
Mapping a Small Town

Christopher Beddow

REALITY LABS

Mapillary



Full Test of Mapping and AI Tools + Open Data

RapiD

mapwith.ai/rapid

QGIS

qgis.org

JOSM

josm.openstreetmap.de

Mapillary

mapillary.com

Absarokee, MT, USA

Ab-ZOR-kee “children of the crow”

- Small population

Has basic amenities:

- supermarket, gas stations
- restaurants, bars
- churches and schools

- In 2020, lightly mapped:
  - most buildings are missing
  - most businesses are unmapped
  - Mapillary on the main street

Area of Interest

Map with AI & open data!

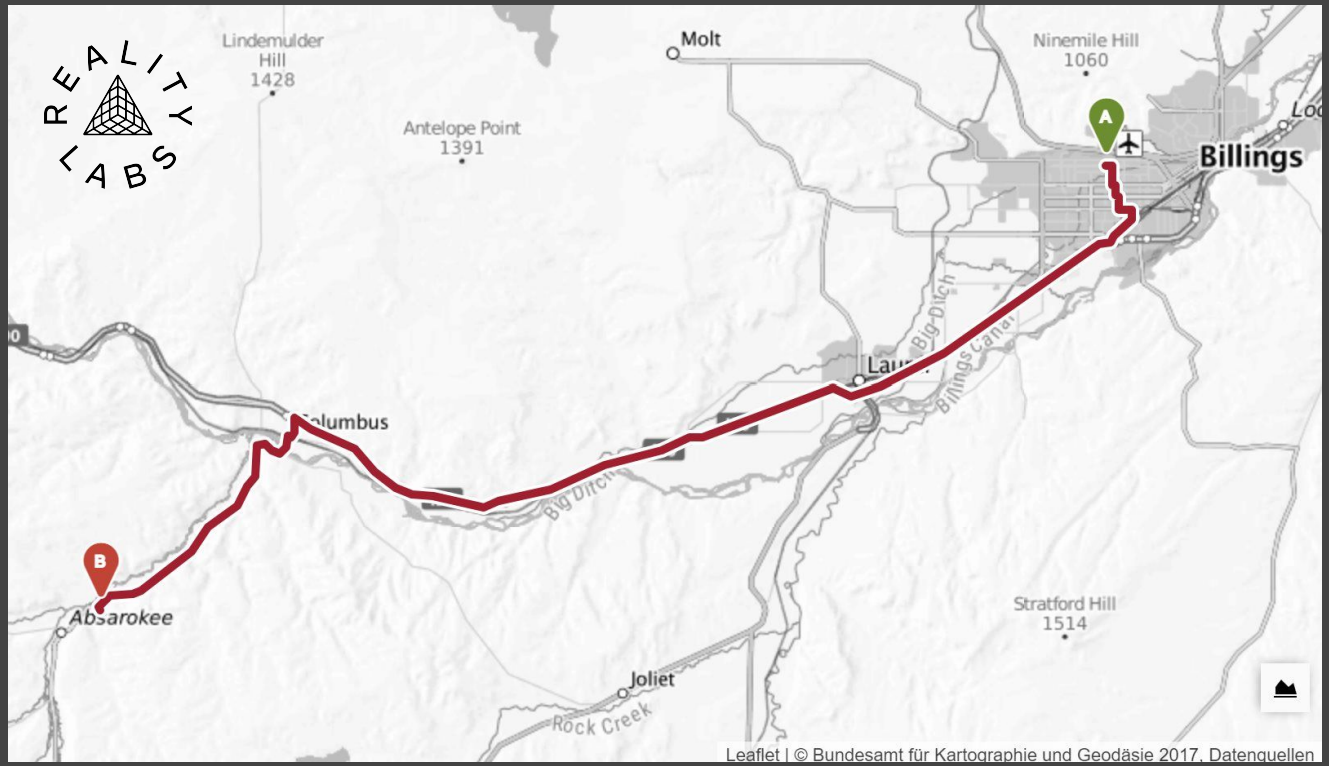
Sources

- MapWithAI buildings
- MapWithAI roads
- Mapillary map features
- Mapillary traffic signs
- Mapillary imagery
- Satellite imagery

Goals

Add all MapWithAI Buildings	Capture extra forward facing imagery	Add all stop signs from Mapillary	Add all infrastructure from Mapillary	Add parks and recreation infrastructure from satellite
Add all missing roads from MapWithAI	Add speed limit to all roads from Mapillary	Add all sidewalks from Mapillary + satellite	Add businesses from Mapillary sign detections	Add land use from satellite
Capture complete 360 degree imagery	Add any other missing Buildings	Add all crosswalks from Mapillary + satellite	Add any POIs visible in Mapillary imagery	Add parking and miscellaneous data

Road Trip


Lindemulder Hill 1428
Molt
Ninemile Hill 1060
Antelope Point 1391
A
Billings
Big Ditch
Billings Canal
Columbus
B
Absarokee
Stratford Hill 1514
Joliet
Rock Creek
Leaflet | © Bundesamt für Kartographie und Geodäsie 2017, Datenquellen

Mapping Vehicle

OSMAnd app (Android)

Garmin VIRB 360

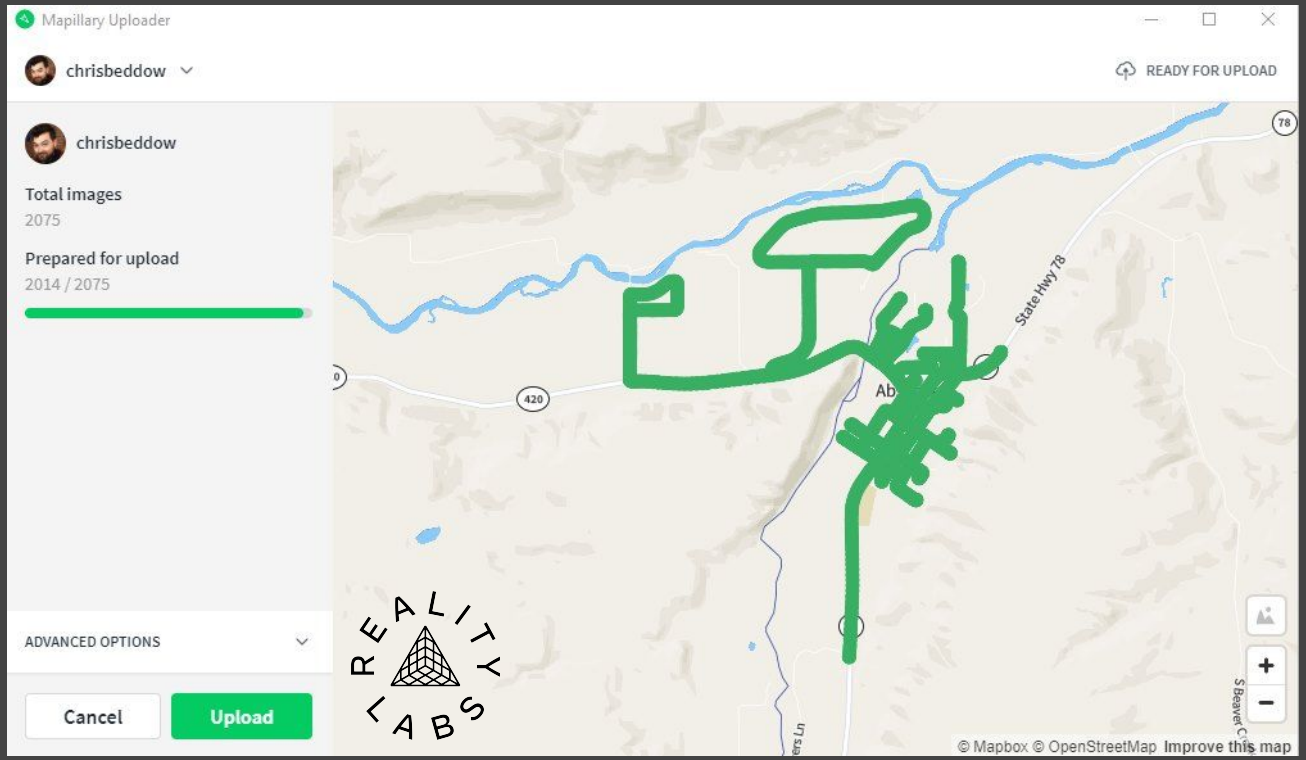
GoPro Hero6

Mapillary

REALITY LABS

Camera close-up

Upload to Mapillary

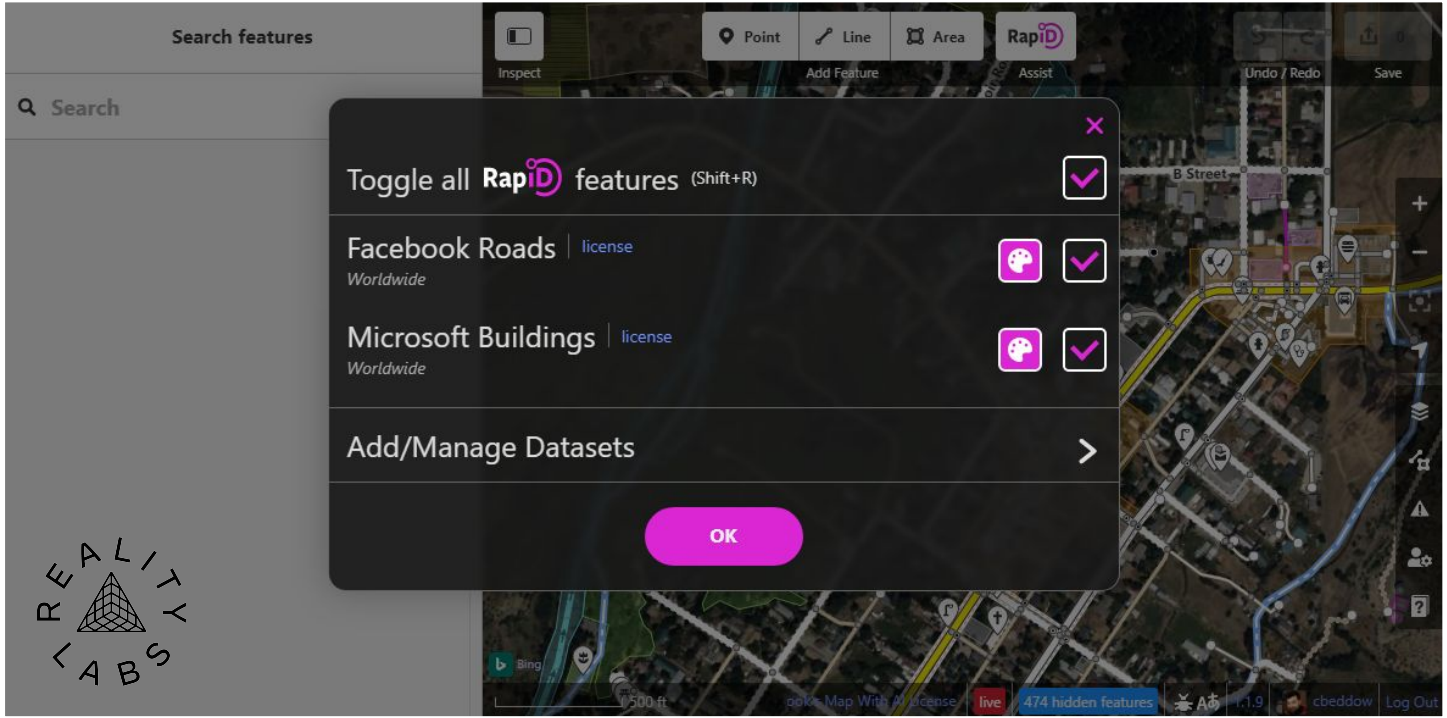


mapillary.com/desktop-uploader

Mapillary done!

mapillary.com/desktop-uploader

Mapping Buildings



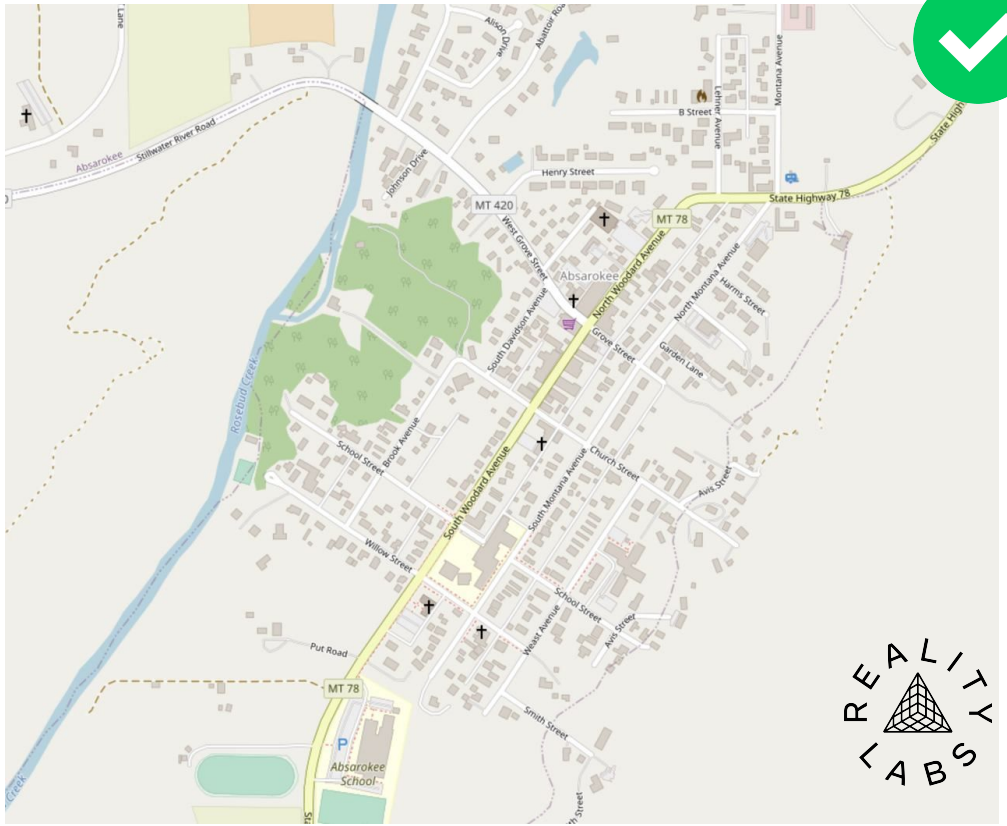
https://mapwith.ai/rapid

Mapping Buildings

Accept, reject, copy

- Accept accurate ones
- Adjust the shape slightly
- Rotate, square off
- Copy/paste missing ones!
- Check closely under trees
- Try all satellite layers

Buildings done!



Land Cover

Parking lots = easy win

- Trace boundary
- Add public/private
- No fees here
- Often *customers only*

Land Cover

Tennis courts

- Easily spotted
- Map as 1 polygon
- Add public/private

Land Cover

Pool

- Public/private?
- Parking nearby
- Operator? (city)

Land Cover

Farms and football

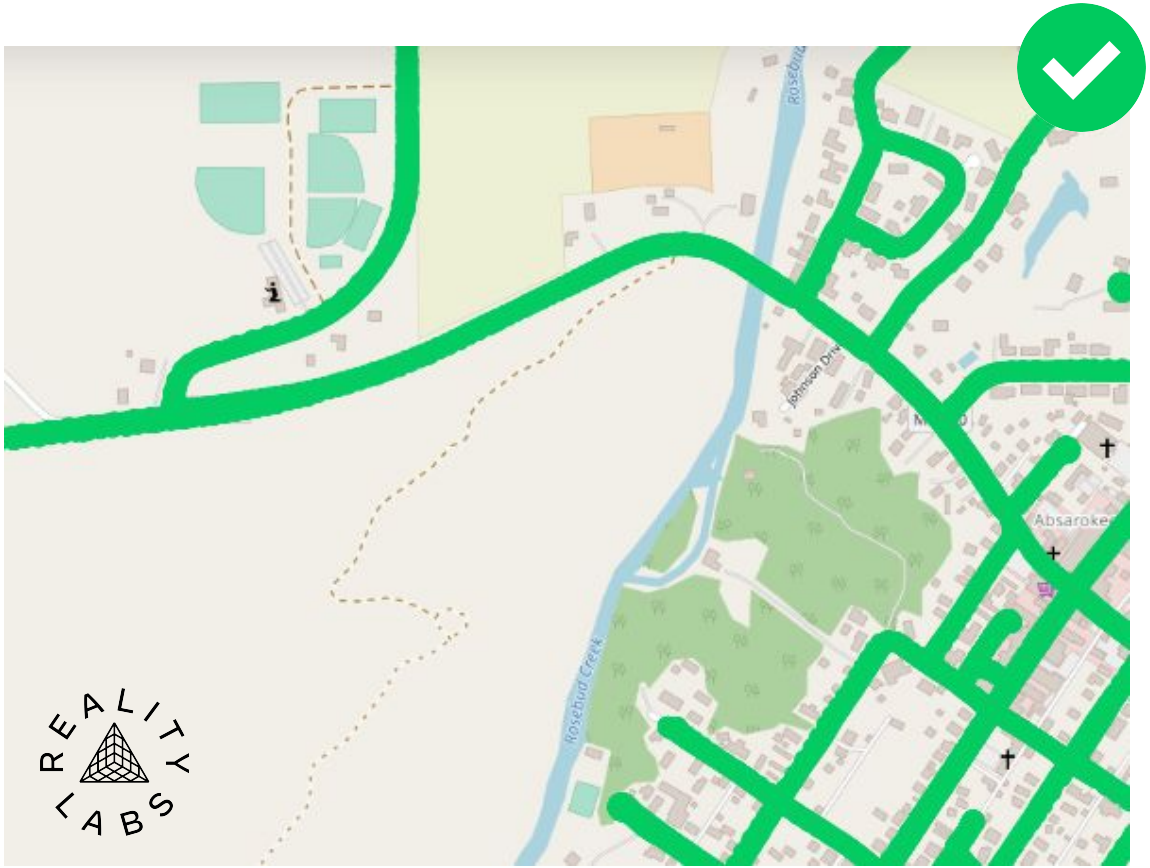
- Mark operator (high school)
- Name of stadium?
- Trace running track
- Bleachers?
- Add crop type

Land Cover

Natural features

- Forest boundaries
- Tree type?
- Fix river shape
- Cliffs, beach, wetland?

Land Cover done!



Sidewalks & Crosswalks

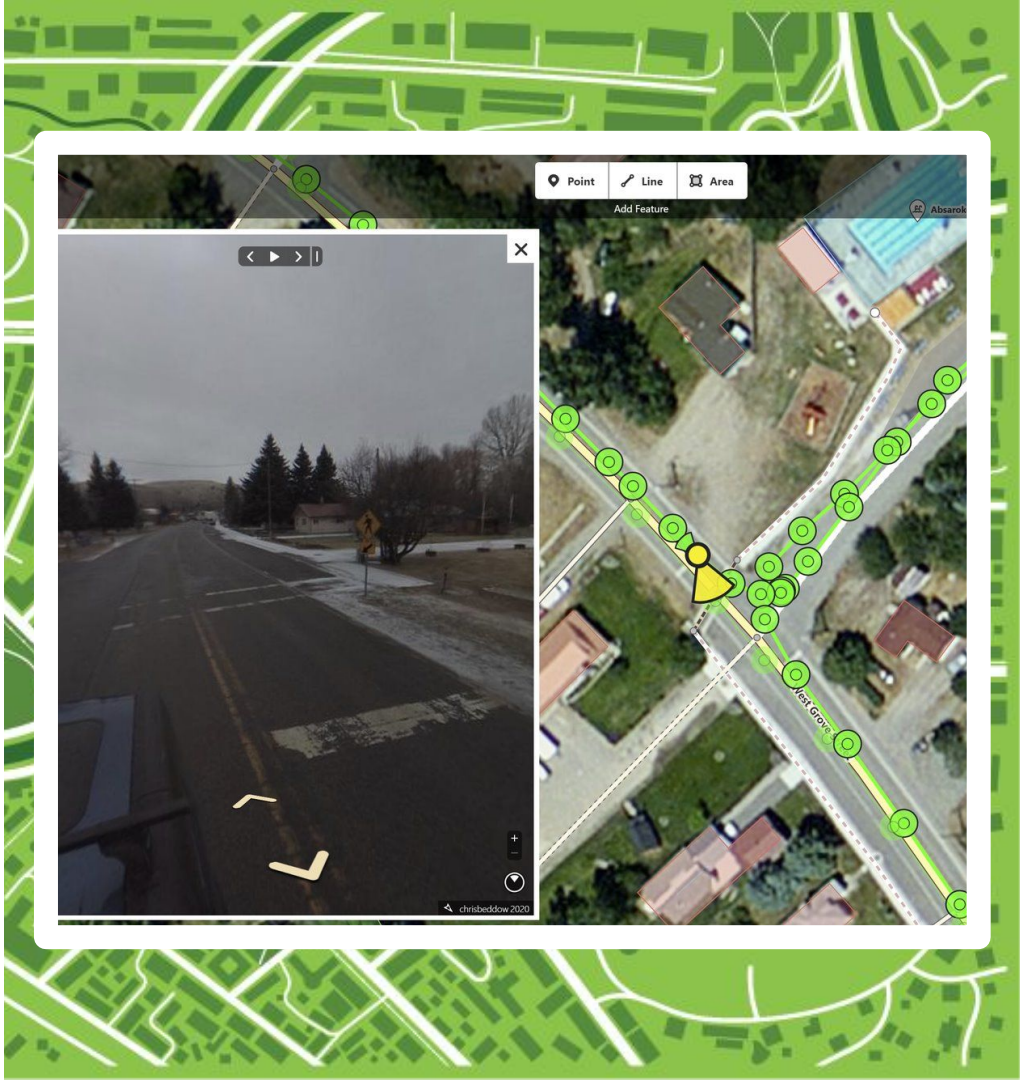
Mapillary images w/sidewalk

- AI detects sidewalks
- Almost every street!
- Easy to manually trace

Validate and Verify

Use Mapillary + satellite

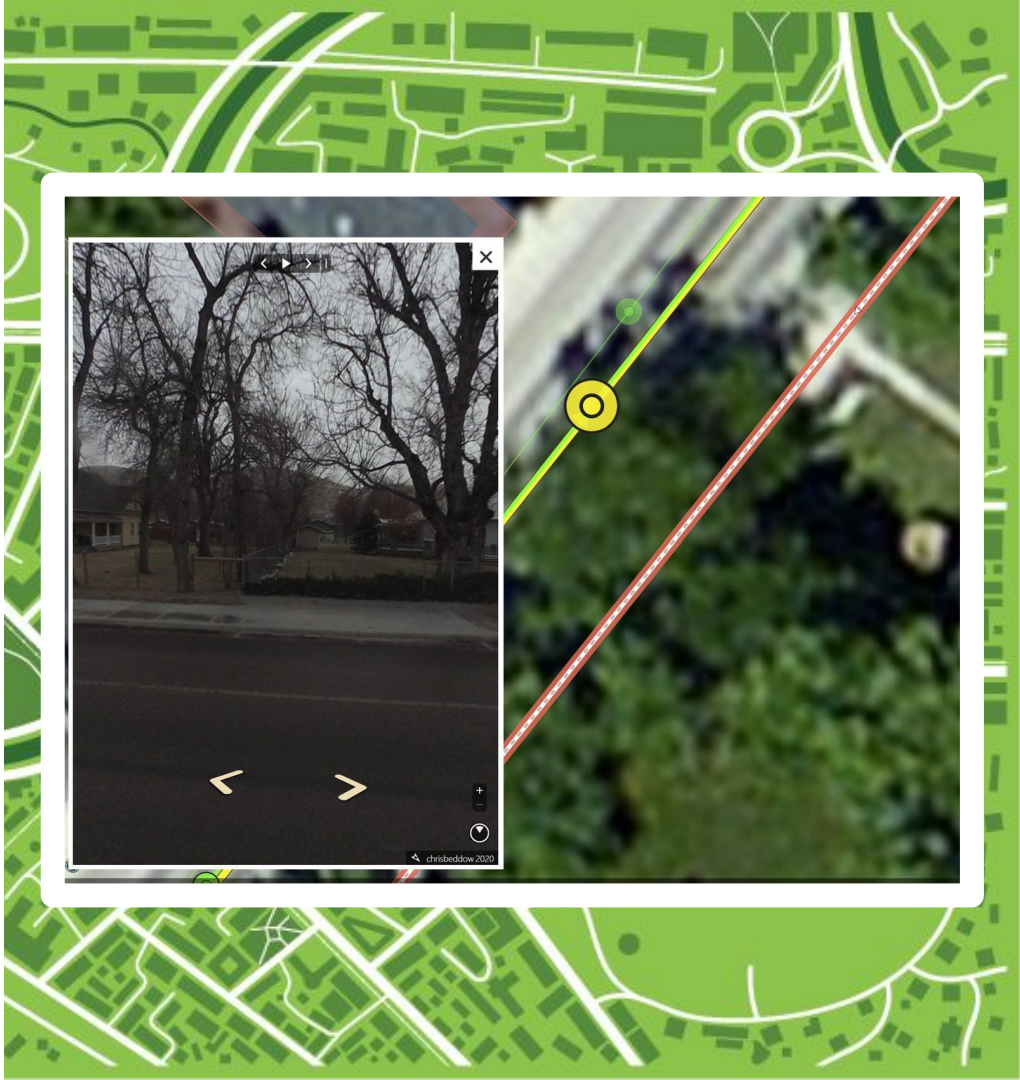
- Crosswalks visible in satellite
- Mapillary also detects them
- Trace unique lines for footways
- Use satellite as guide



Validate and Verify

Use Mapillary + satellite

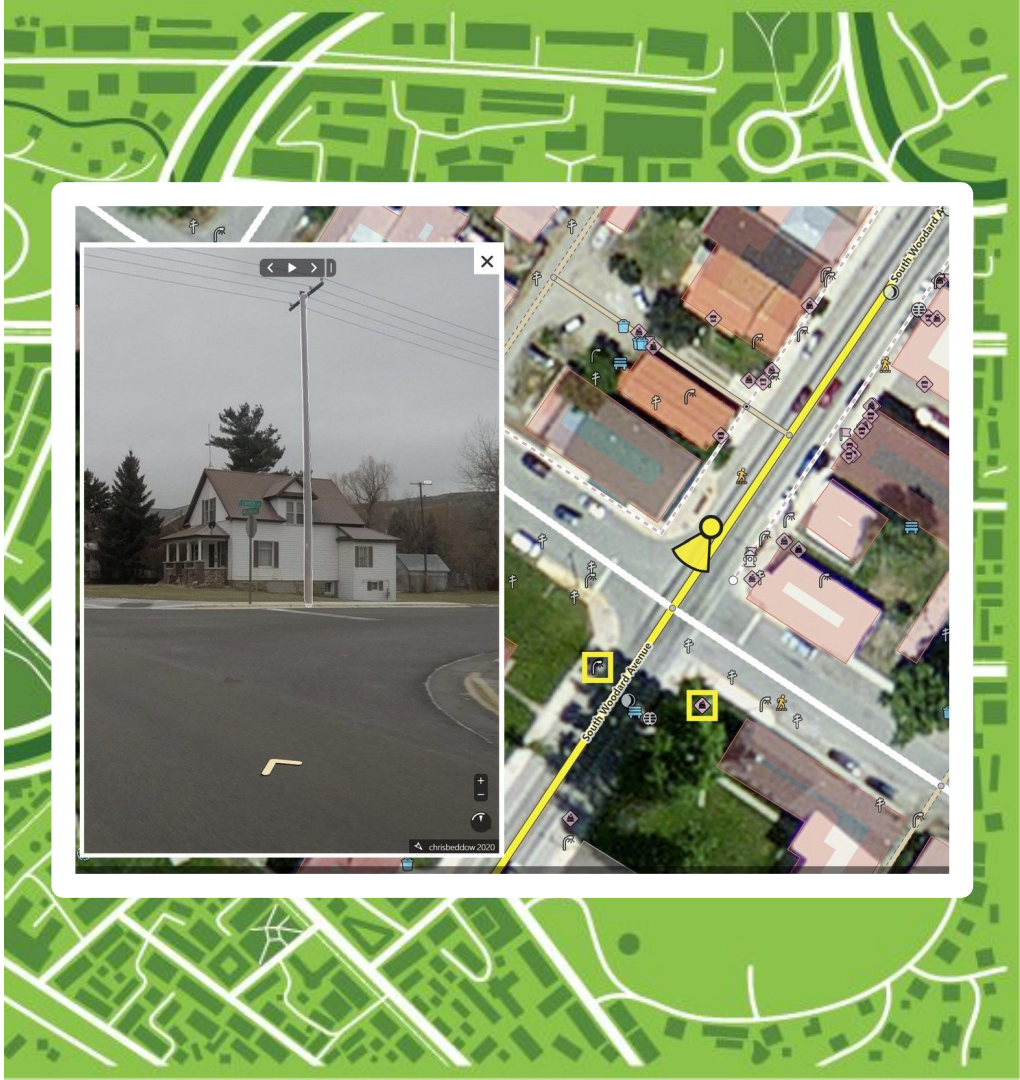
- Mapillary can see under trees
- Use satellite to estimate sidewalk distance from road



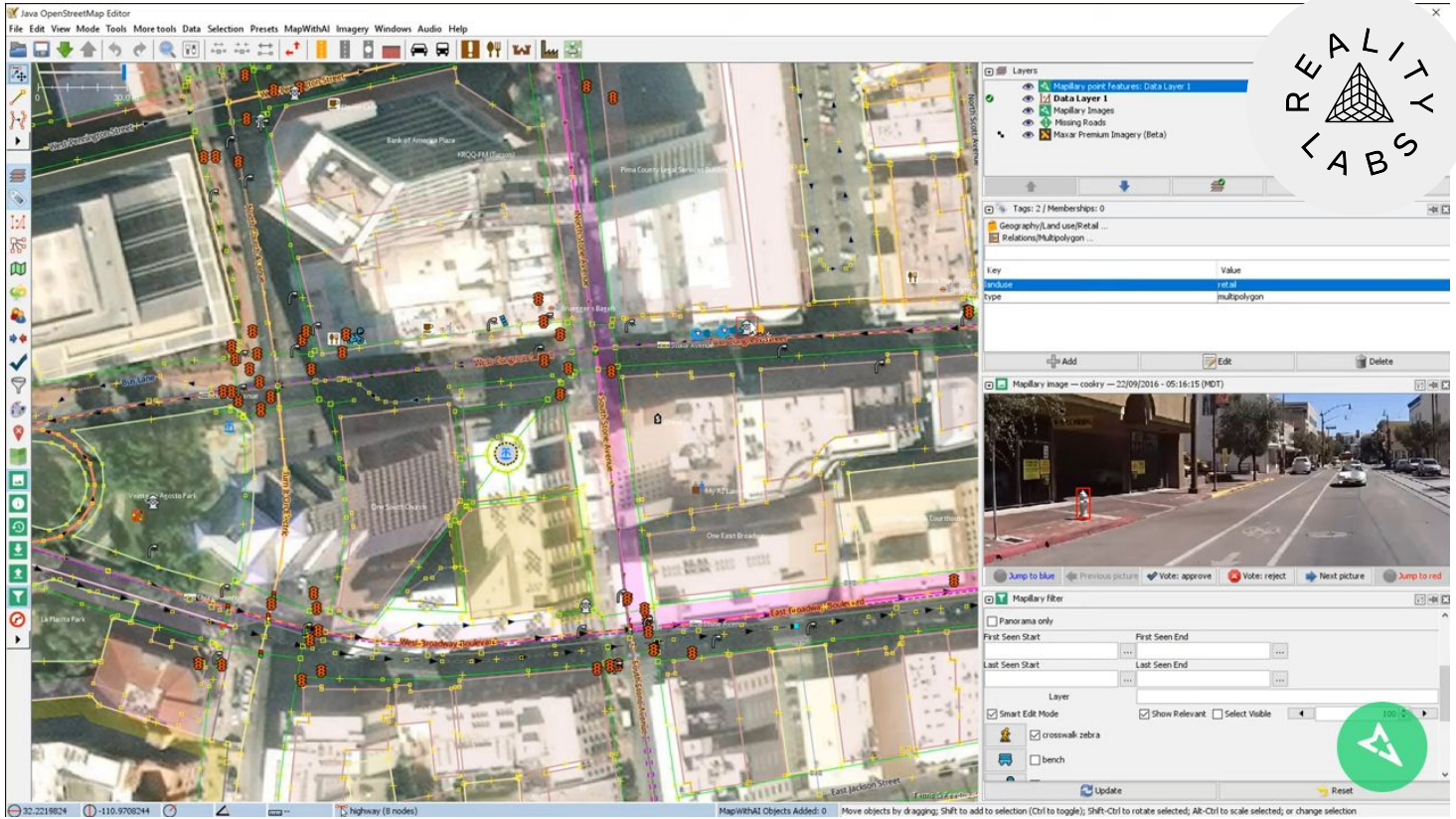
Utilities

Power / Utility Poles

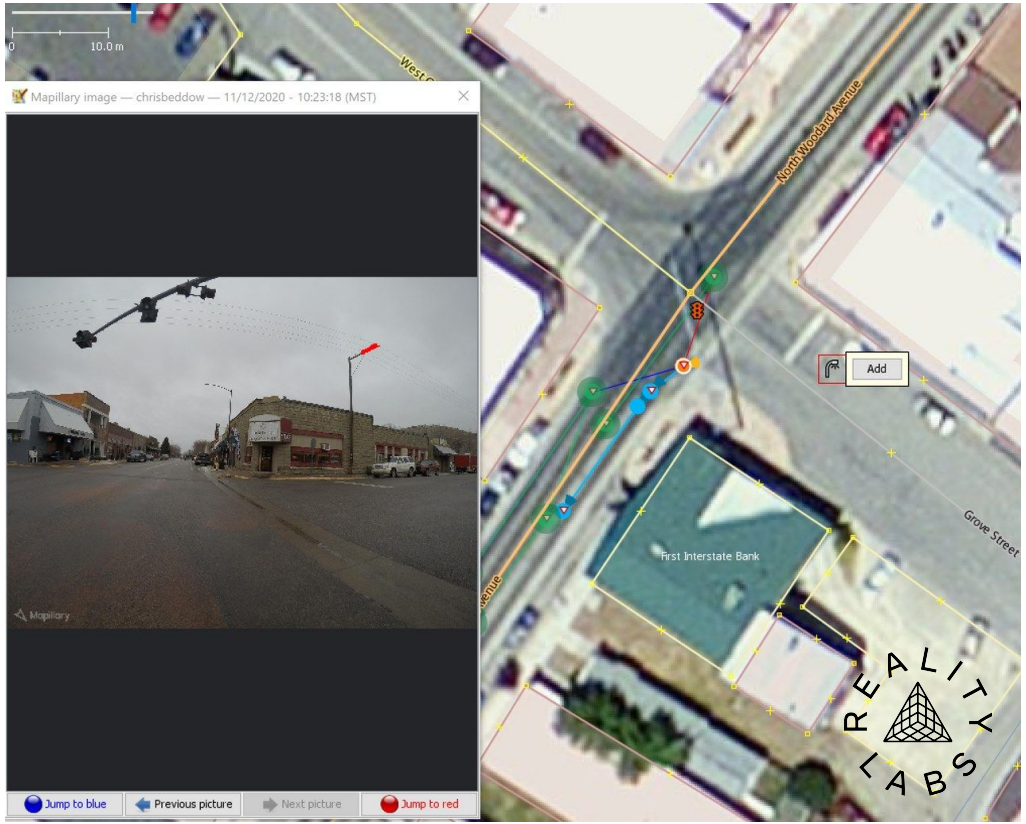
- Mapillary detects poles
- Can see wire connections
- Shadows sometimes visible on satellite



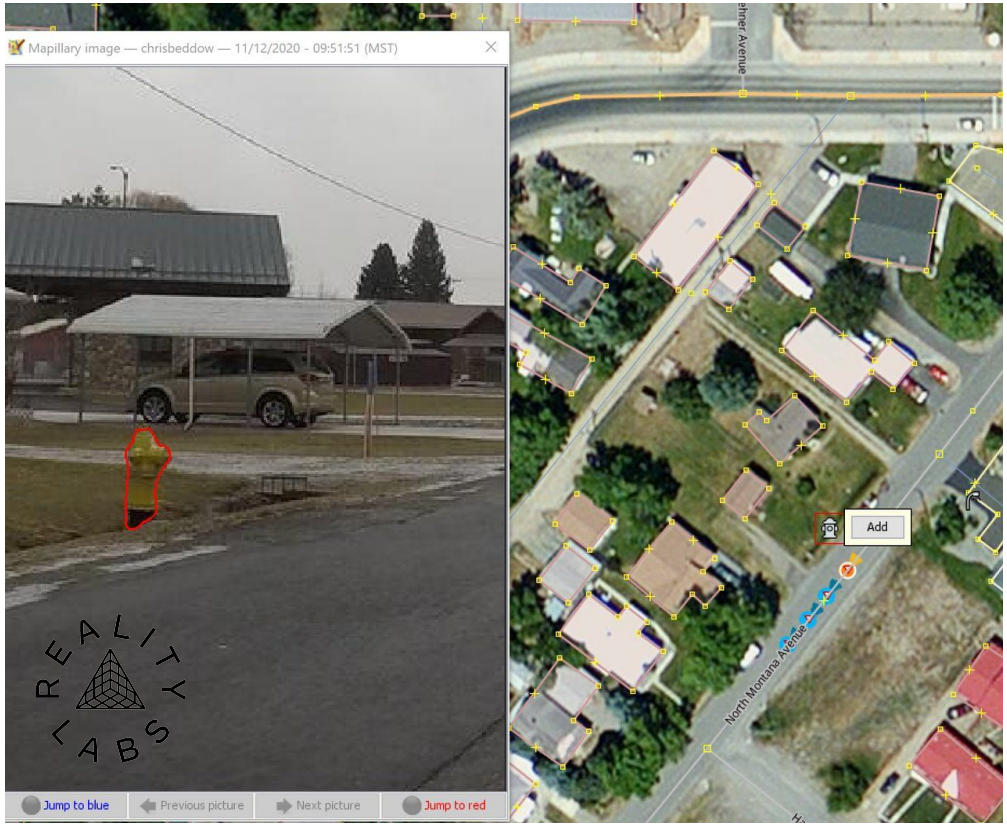
Utilities (JOSM)



Utilities (JOSM)



Utilities (JOSM)

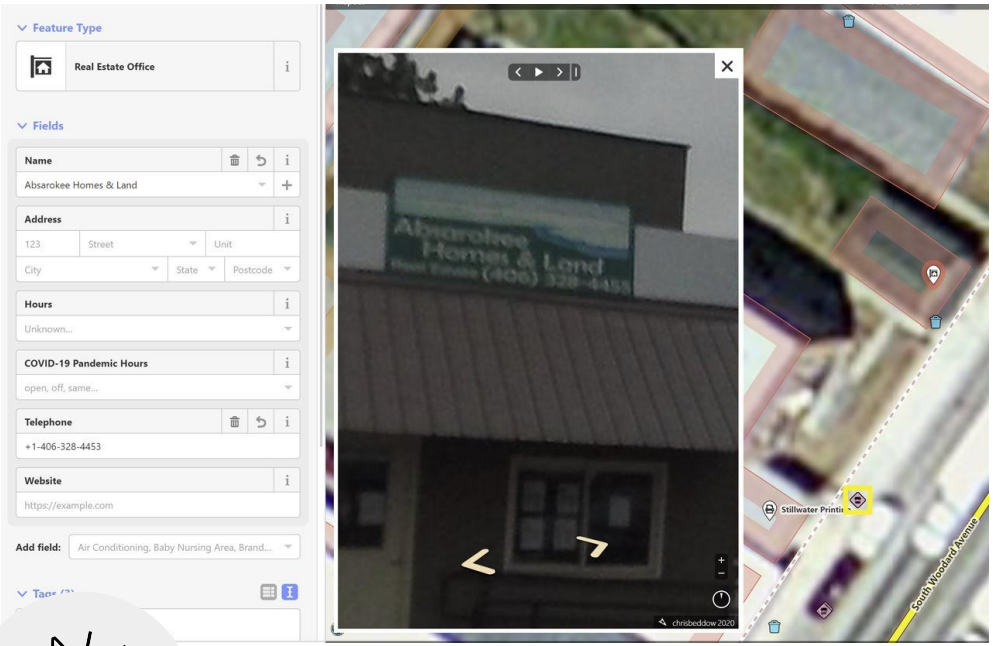


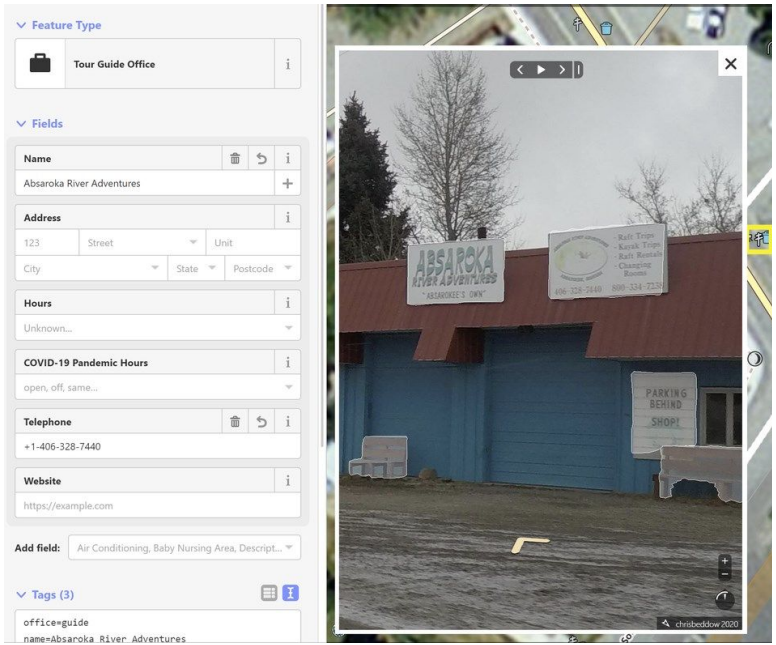
Traffic Signs

Stop sign

- Detected by Mapillary
- Approx position
- Satellite shows stop lines
- Add directional tag

Points of Interest





REALITY LABS

Points of Interest

Commercial/retail clusters

- Get `object--store--sign` from Mapillary API
- 73 items, DBSCAN cluster
- Visible main street clusters

Points of Interest

Mapping done!

Conclusion

One mapper, big impact

- It takes 1 person to map a town
- Same, for neighborhoods
- Mapillary is an excellent tool:
    - Capture images on the go
    - Review the images on the computer
- MapWithAI:
    - Use satellite, street-level detections
    - Always add detail and fixes too

Next steps

The future of craft mapping

- Drones + OpenAerialMap
- MapWithAI Tasking Manager
- Mapillary Missions
- StreetComplete, Every Door
- Use all tools that can enhance one mapper's impact

Q&A

@cbed32

cbed@fb.com

cbeddow

REALITY LABS