



OpenStreetMap Tools You Can Use

Mapillary, RapiD and MapRoulette

Martijn van Exel
SLUG meeting 2022-11-17

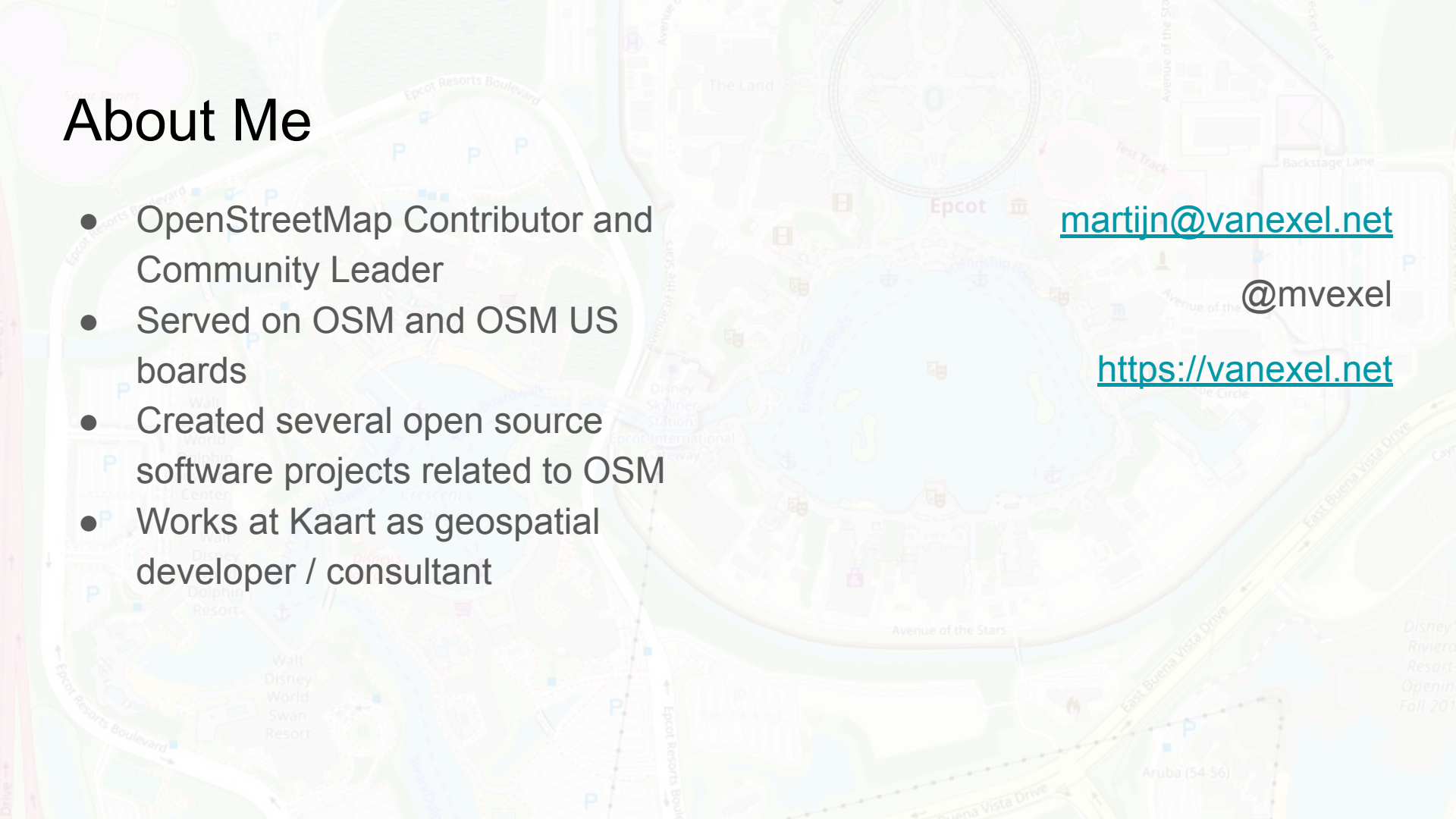
About Me

- OpenStreetMap Contributor and Community Leader
- Served on OSM and OSM US boards
- Created several open source software projects related to OSM
- Works at Kaart as geospatial developer / consultant

martijn@vanexel.net

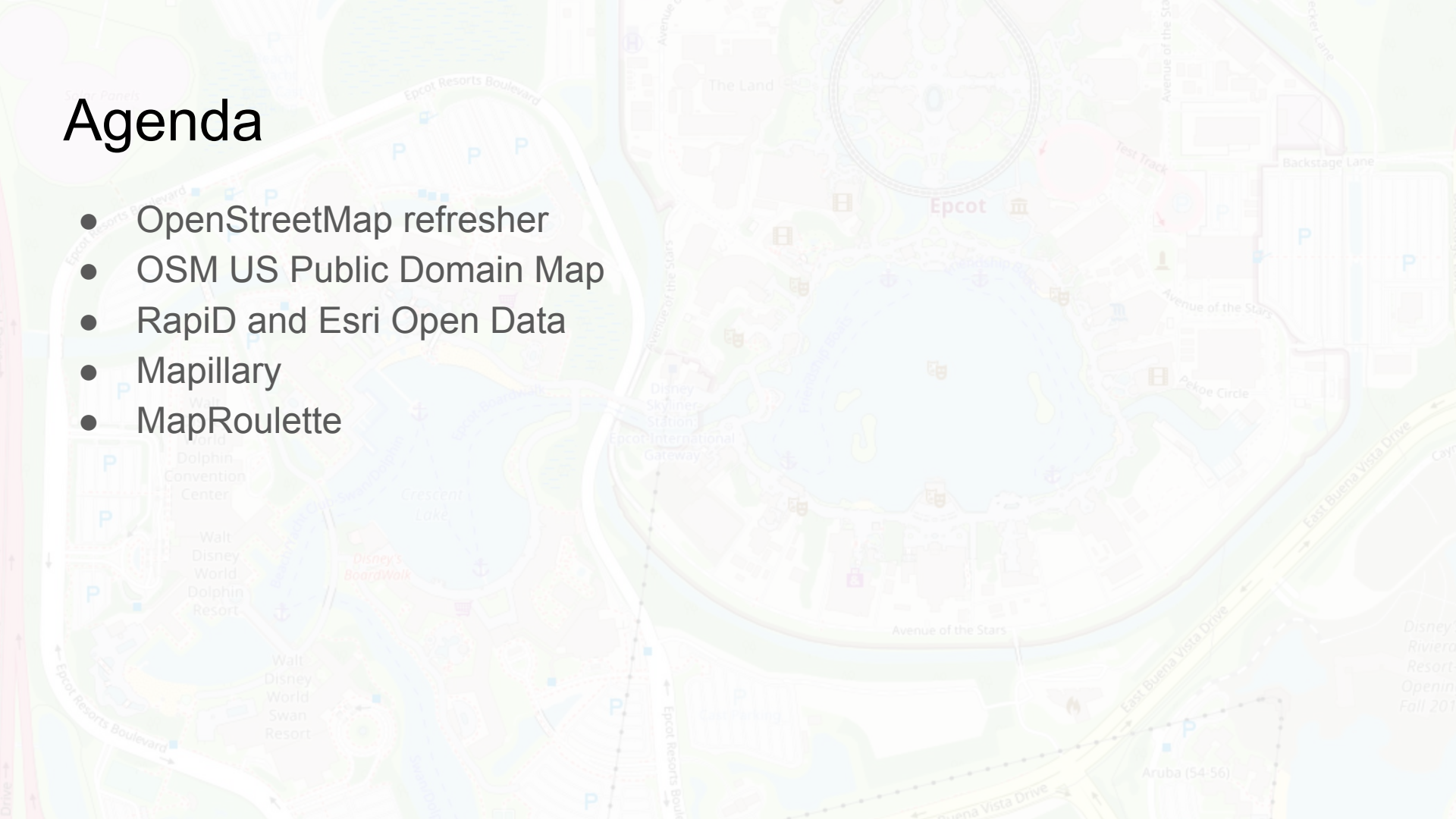
@mvexel

<https://vanexel.net>



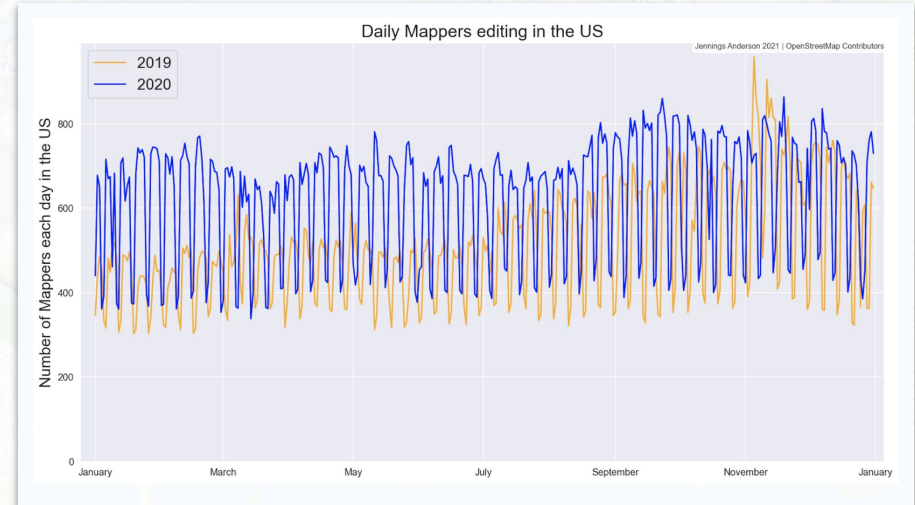
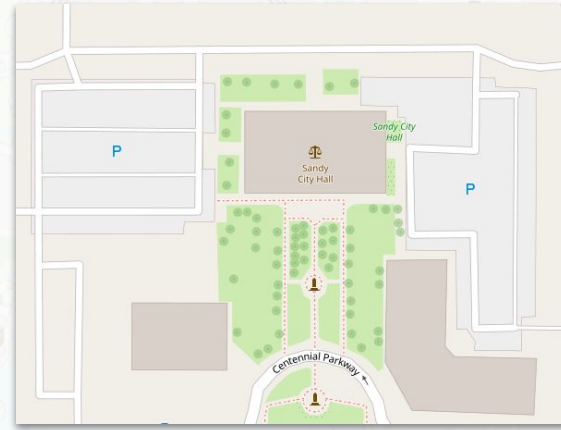
Agenda

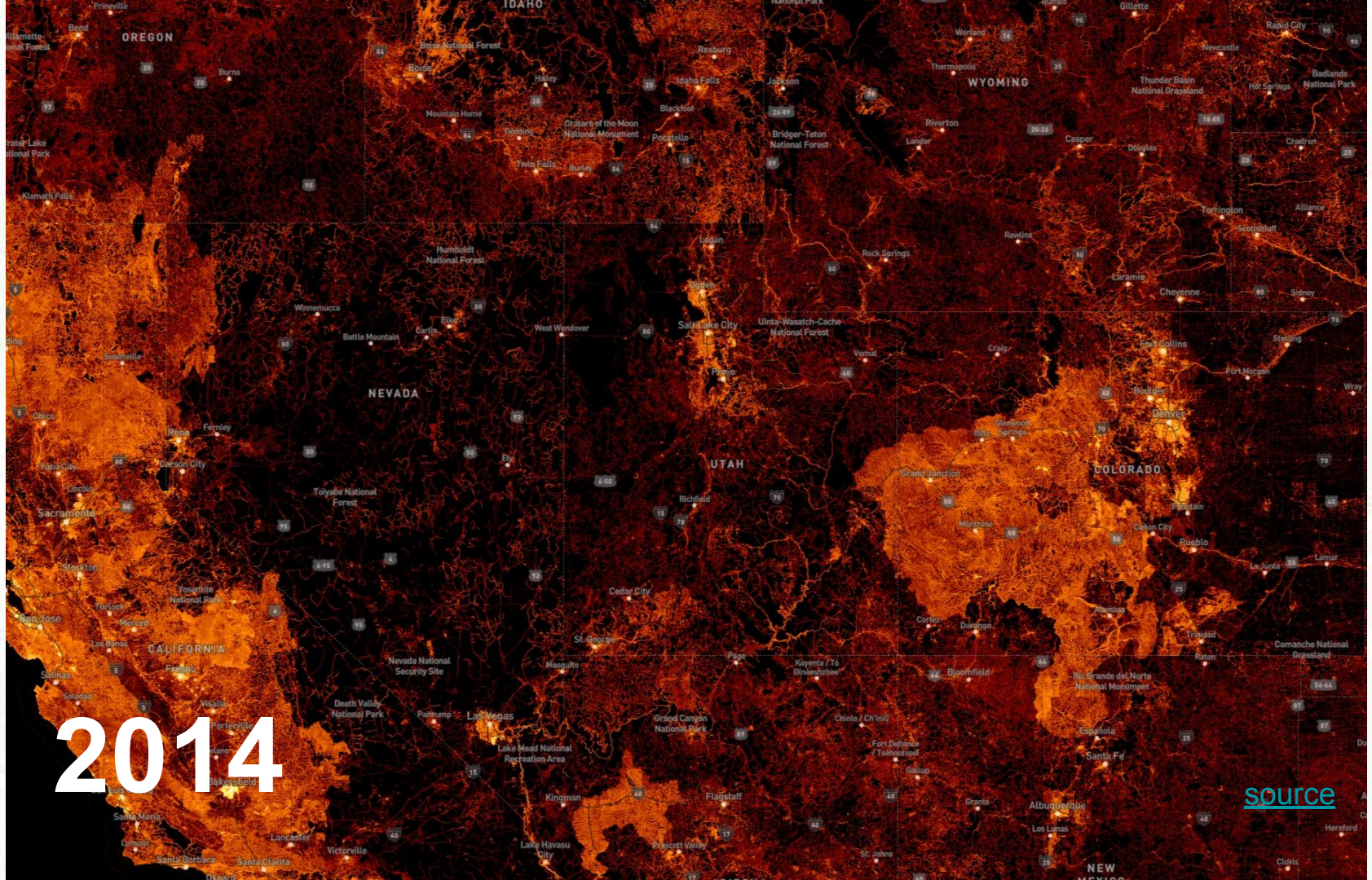
- OpenStreetMap refresher
- OSM US Public Domain Map
- RapiD and Esri Open Data
- Mapillary
- MapRoulette



OpenStreetMap

- Founded in 2004 by Steve Coast
- Out of frustration with lack of freely available data
- “Wikipedia of Maps”
- Openly licensed (ODbL)
- You can use it commercially
- You can adapt and modify
- But derivative data products need to be openly licensed as well

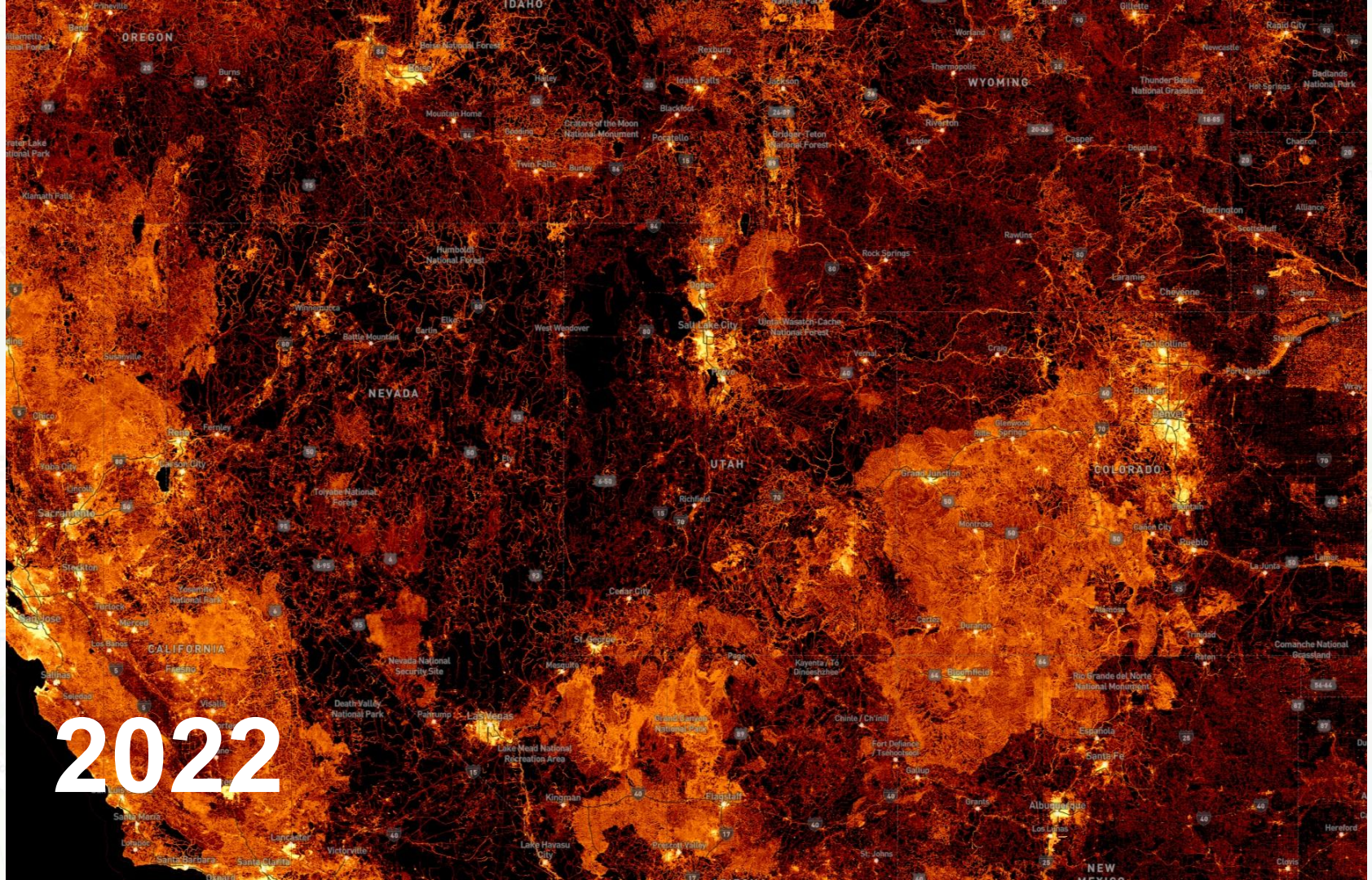




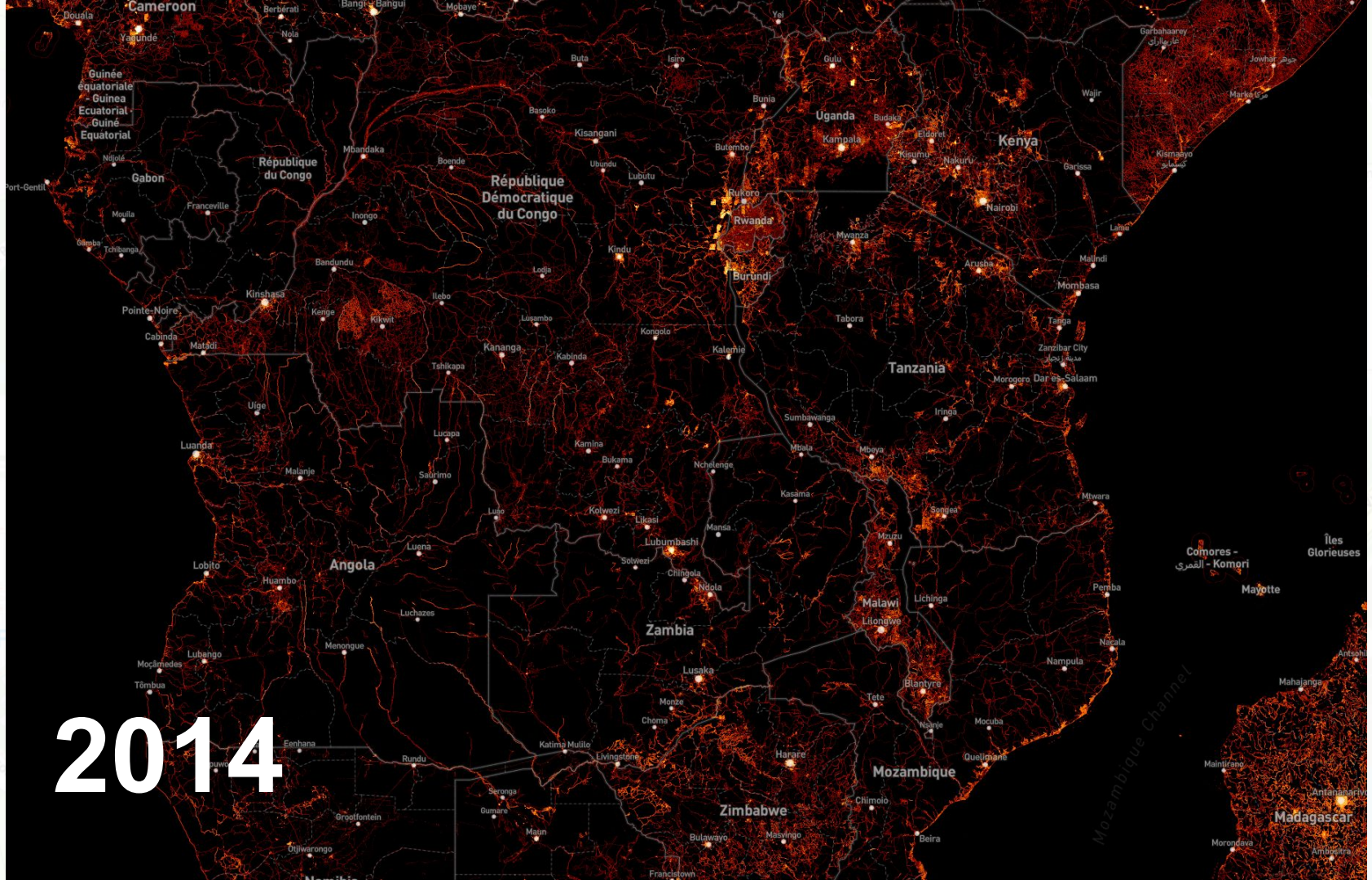
2014

[source](#)

Disney
Riviera
Resort
Opening
Fall 2014

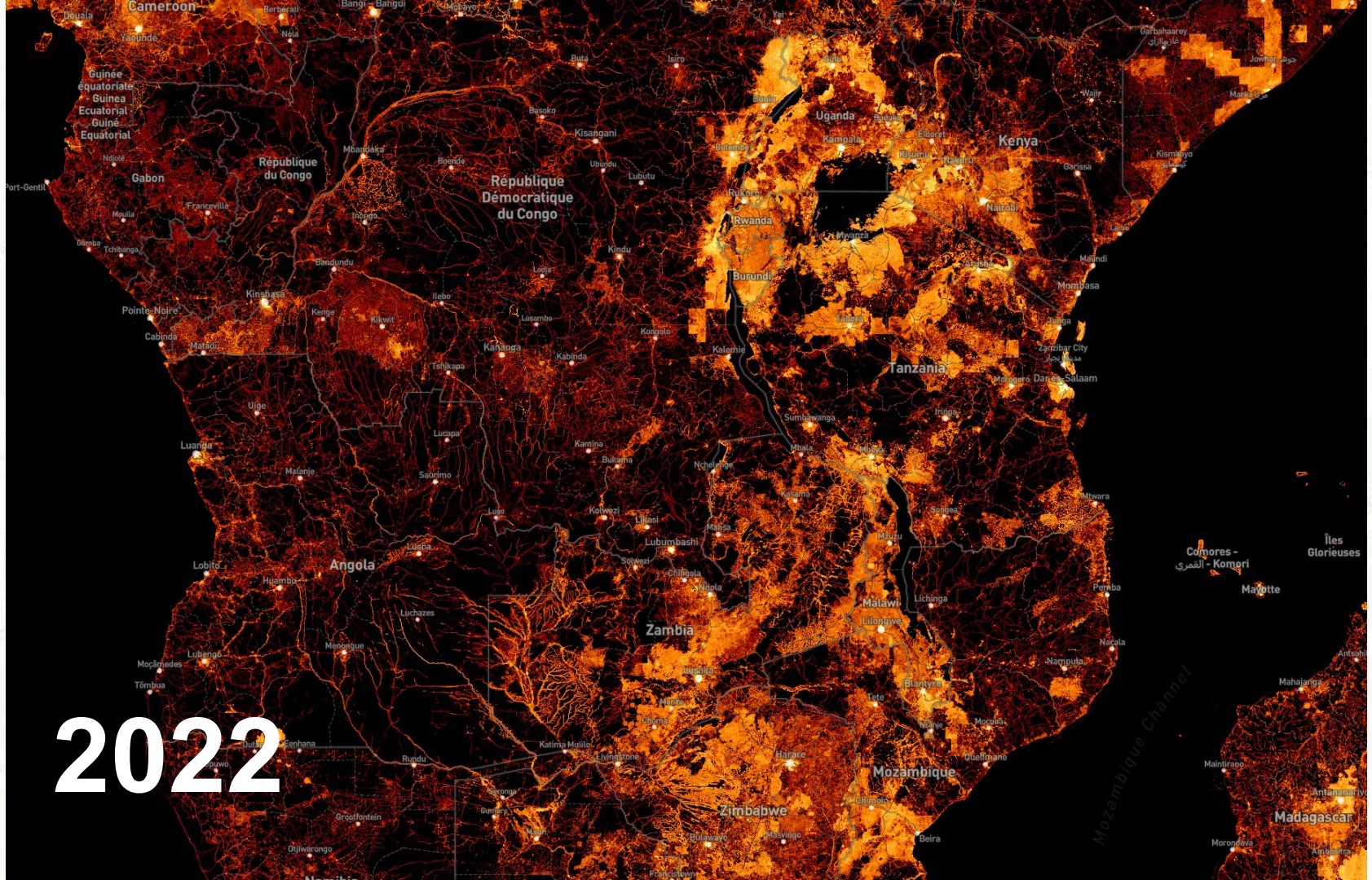


2022



2014

Disney
Riviera
Resort
Opening
Fall 2014

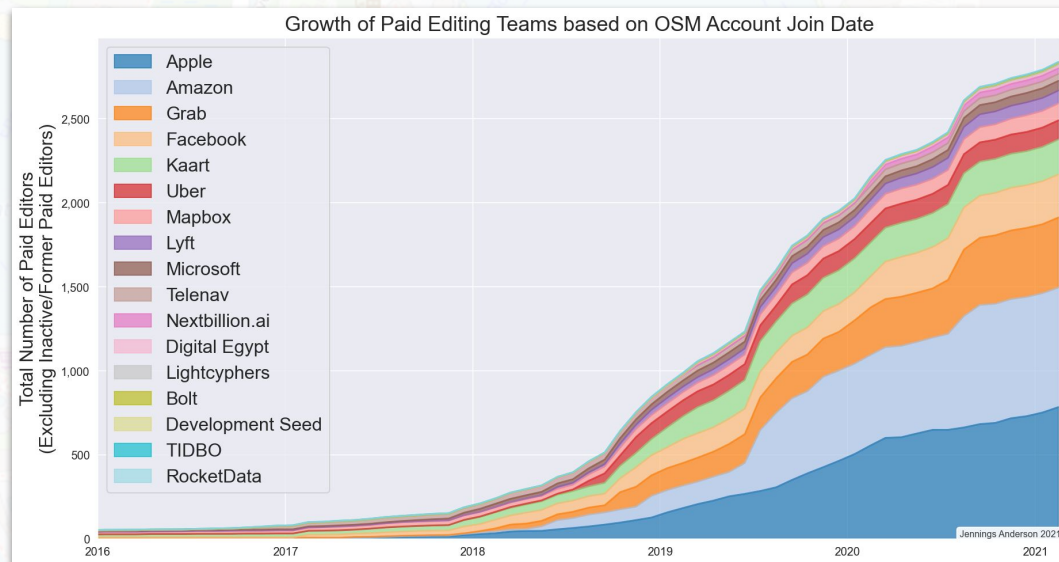
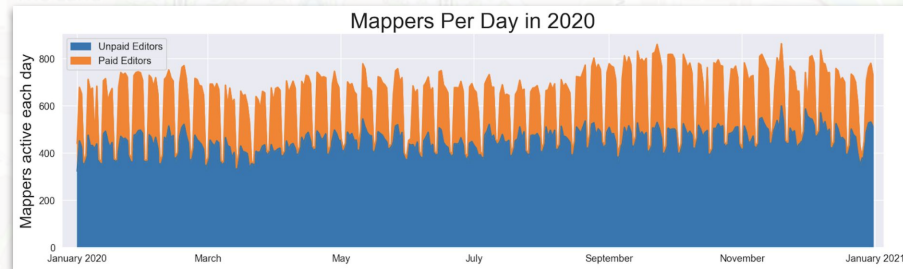


2022

Disney
Riviera
Resort
Opening
Fall 2022

Corporate use of OSM

- Apple
- Microsoft
- Meta (Facebook)
- Uber
- Amazon
- Mapbox
- Snapchat
- Lyft
- Craigslist
- Grab

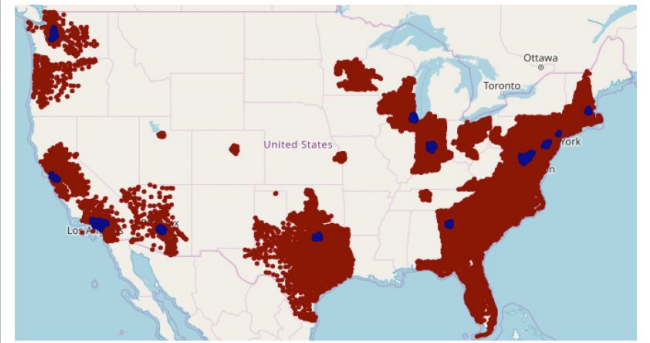


Example: Amazon

- Same Day Shipping to 72% of U.S. population
- Logistics of the **Last Mile**



Exhibit 13: Same-day/1-day Amazon coverage in 2014 (in blue) vs. 2018 (expanded coverage areas in maroon)



Source: RBC Capital Markets, RBC Elements, Amazon website



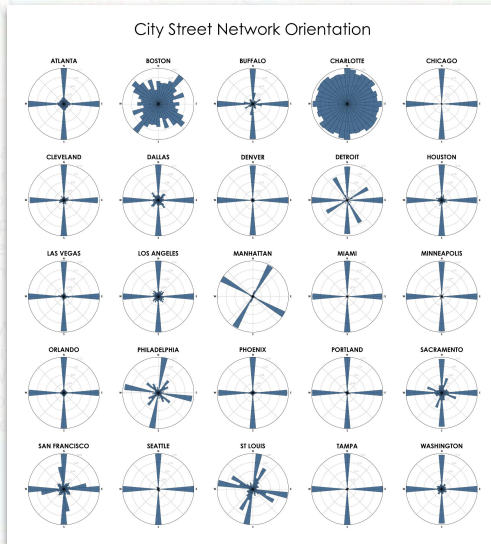
Amazon

- Need for hyper-accurate maps
 - Access roads
 - Driveways and Entryways
 - Gates and Barriers
- 250+ OSM editors
- 250,000 OSM contributions in 2019



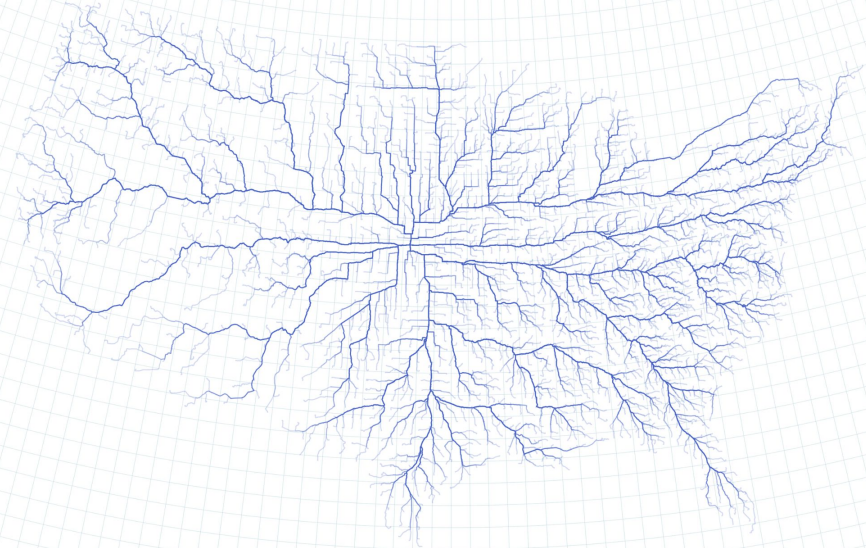
Creative Uses of OSM Data

Made possible by the open license and richness of data



Street Network Orientation

OPTIMAL ROUTES BY CAR FROM THE GEOGRAPHIC CENTER OF THE CONTIGUOUS UNITED STATES TO ALL COUNTIES

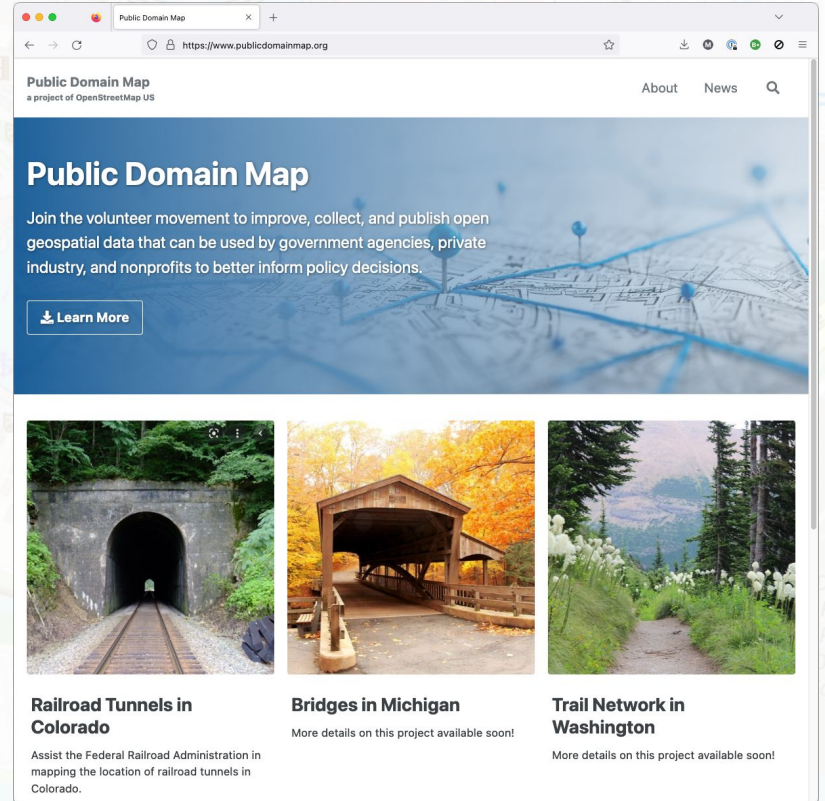


https://tjukanov.org/roads_of_america/

BY @TJUKANOV
DATA: © OPENSTREETMAP CONTRIBUTORS
POWERED BY GRAPHHEPPER

OSM US Public Domain Map

- OSM and government both have great geodata and “communities” maintaining it
- Incompatible licensing makes it hard to exchange data and create mutual benefits
- OSM US created a Government Committee in 2019 to explore solutions



The screenshot shows a web browser window displaying the Public Domain Map website. The browser's address bar shows the URL <https://www.publicdomainmap.org>. The website header includes the title "Public Domain Map" and the subtitle "a project of OpenStreetMap US", along with navigation links for "About" and "News". The main content area features a large blue banner with the title "Public Domain Map" and a paragraph: "Join the volunteer movement to improve, collect, and publish open geospatial data that can be used by government agencies, private industry, and nonprofits to better inform policy decisions." Below this banner is a "Learn More" button. The lower section of the page contains three featured project images: "Railroad Tunnels in Colorado" (a stone tunnel entrance), "Bridges in Michigan" (a wooden covered bridge), and "Trail Network in Washington" (a dirt trail in a forest). Each image has a caption and a note that more details are available soon.


Public Domain Map
a project of OpenStreetMap US

About News

Public Domain Map


Join the volunteer movement to improve, collect, and publish open geospatial data that can be used by government agencies, private industry, and nonprofits to better inform policy decisions.

[Learn More](#)




Railroad Tunnels in Colorado

Assist the Federal Railroad Administration in mapping the location of railroad tunnels in Colorado.



Bridges in Michigan

More details on this project available soon!



Trail Network in Washington

More details on this project available soon!

OSM US Government Committee: Goals

01

Fill gaps in US data - for both
OpenStreetMap & US Government

02

Improve interoperability between data
and user groups

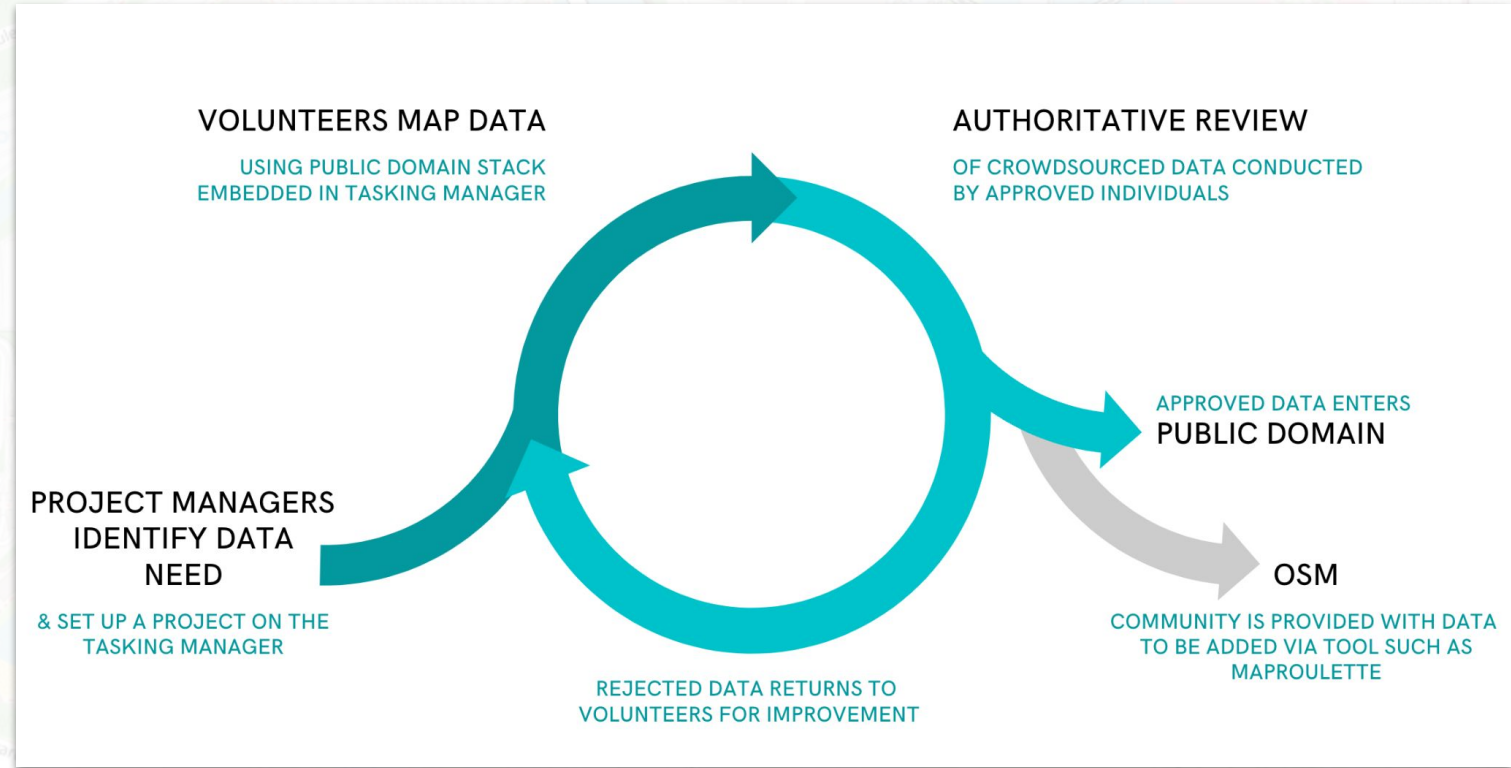
03

Provide an avenue for Authoritative
Review of data

04

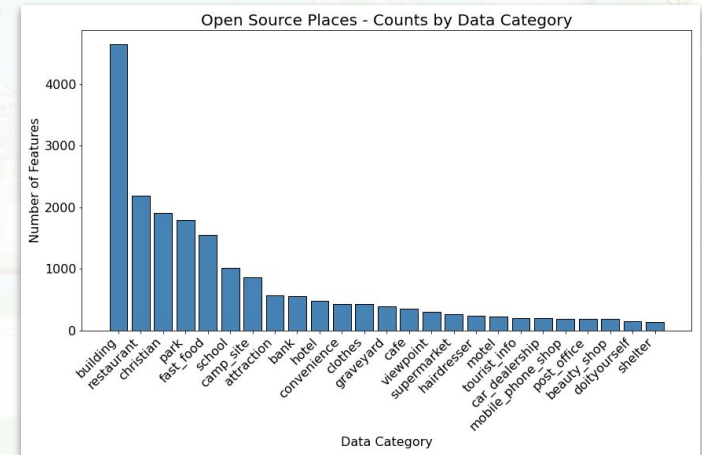
Respect and work with both the ODbL
& Public Domain Licenses

OSM US Government Committee: Process



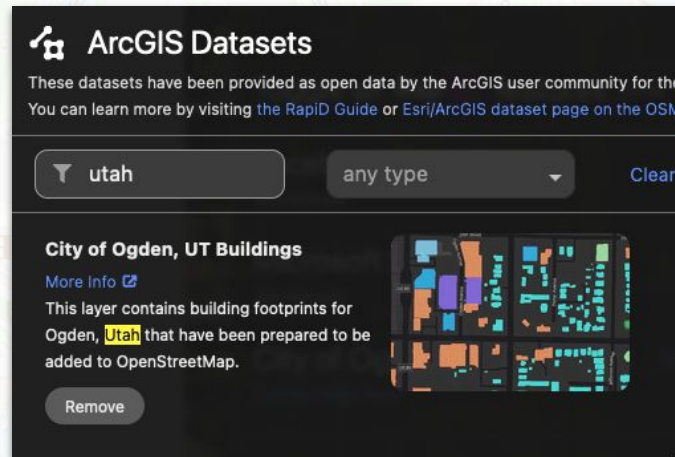
Local Collaboration: UGRC Open Source Places

- Greg Bunce, Erik Neemann (UGRC)
- Places of interest in the state of Utah
- Custom UGRC Python code takes care of filtering, normalization, conflation
- Available for download [on gis.utah.gov](https://gis.utah.gov)
- Erik [presented at UGIC 2022](#)
- [Blog post](#)



RapiD and Esri Open Data

- RapiD is an alternative web-based OSM editor maintained by Meta
- RapiD contains additional layers that can easily be incorporated into the OSM map
 - Machine Learning generated Road Segments
 - Microsoft Open Data Building Footprints
 - [ArcGIS Open Datasets](#)
- You can [contribute](#) your data



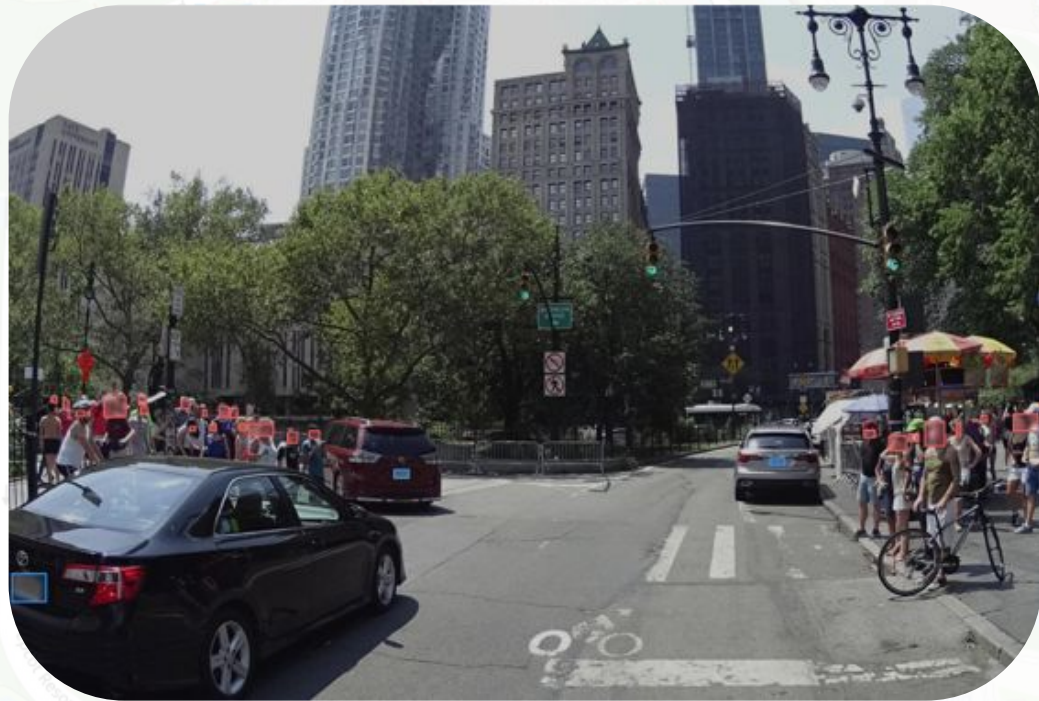
Mapillary



- Mapillary is the **street-level imagery platform that scales and automates mapping**
- Started in Europe 2013, acquired by Meta 2019
- 1.8 billion + images contributed
- Now free to use, see <https://www.mapillary.com/terms>

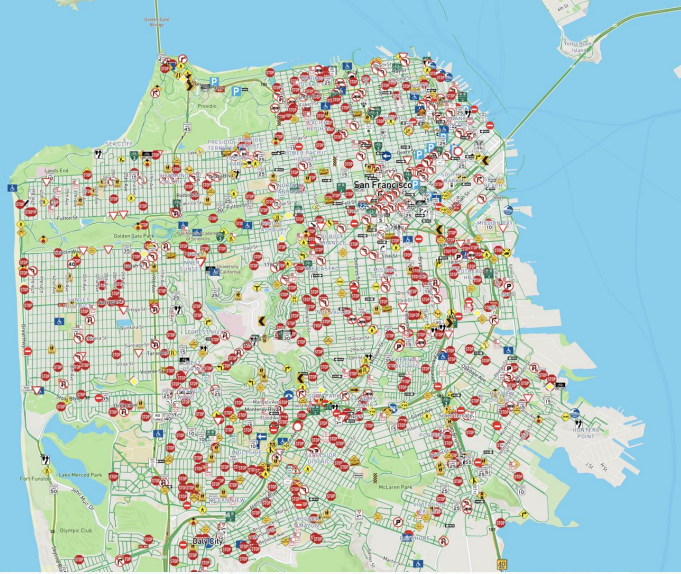


Mapillary: Privacy



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Mapillary: Computer Vision: Signs

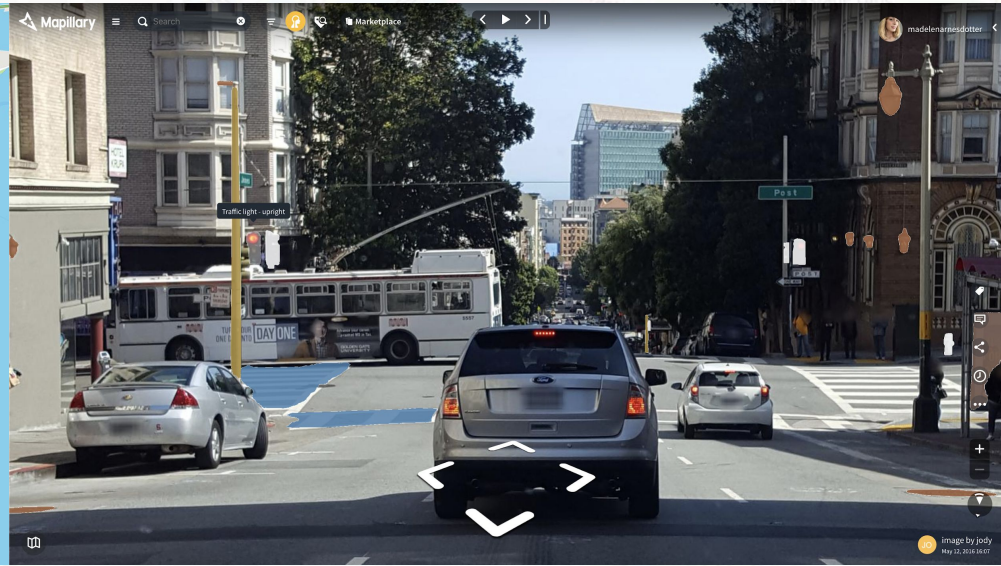
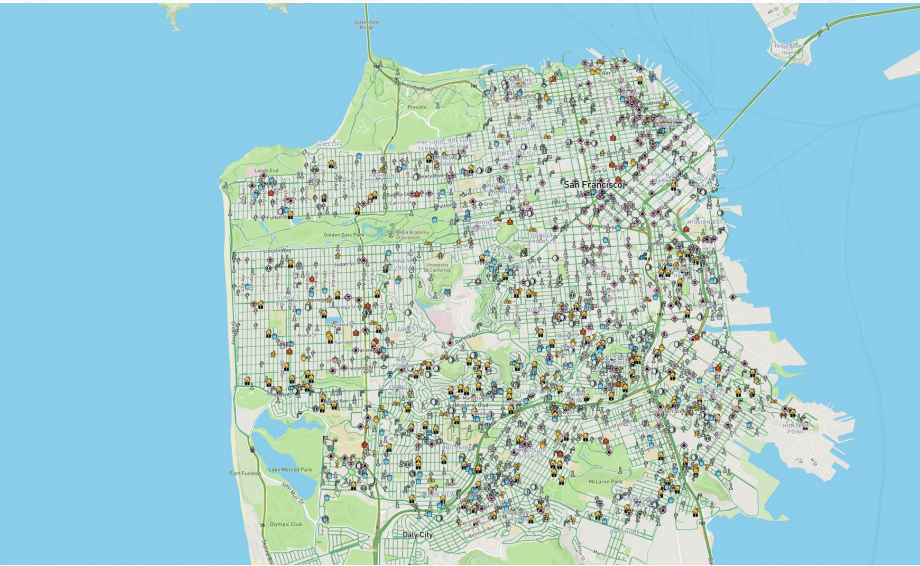


Geolocated traffic signs

1,500 traffic sign classes from 100 countries

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Riviera
Resort
Opening
Fall 201

Mapillary: Computer Vision - Street Assets



Geolocated street assets

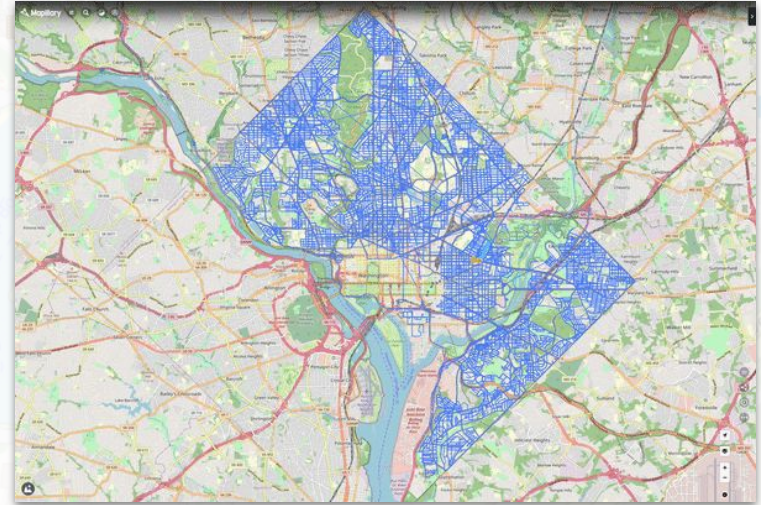
42 object types globally

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Riviera
Resort
Opening
Fall 201

Mapillary Case Study: Washington, DC



- Android app + custom camera based collection on 10 pilot project vehicles
- 1 Million images collected in '18/'19 leaf collection season
- Analyzed before / after with Mapillary ArcGIS plugin
- After success, continued use planned



Many more to explore at
<https://www.mapillary.com/showcase>



Any camera, anywhere



Smartphone



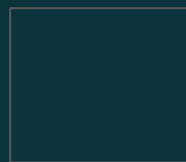
Action cam



Dashcam

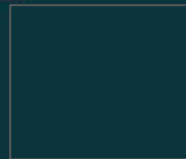
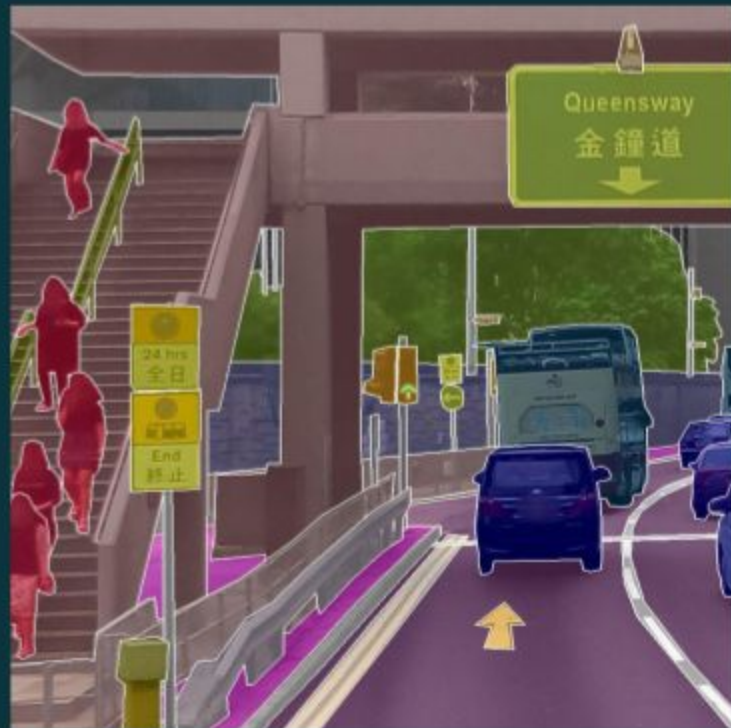
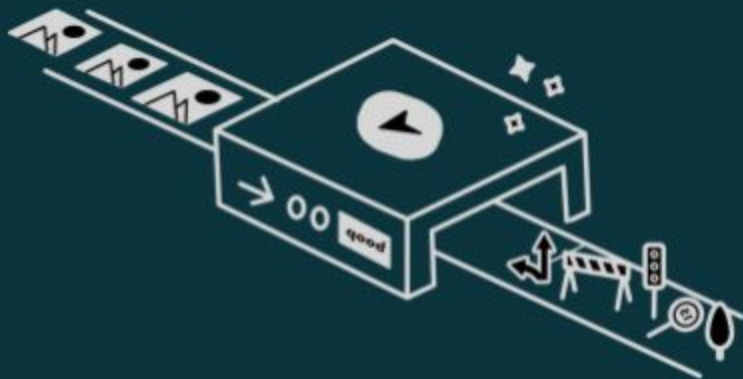


360 cam



Create open data

- Imagery in
- Map data out
- All open for improving maps



Recommend cameras



GoPro 10 Black

\$400



GoPro Max

\$500



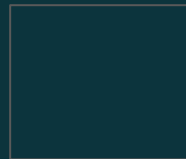
Labpano Pilot Era

\$2,800



Insta360 Pro 2

\$4,500



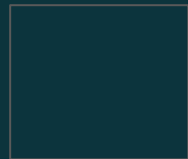
Upload tools



MapillaryTools









MapillaryUploader



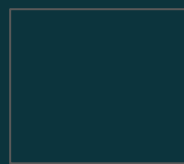
Desktop Uploader

Select the account you wish to upload to

 larrymappengauer	Individual account 
 Lemon County	Organization account
 Geocity	Organization account
 Geocity	PRIVATE Organization account

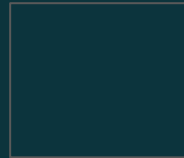
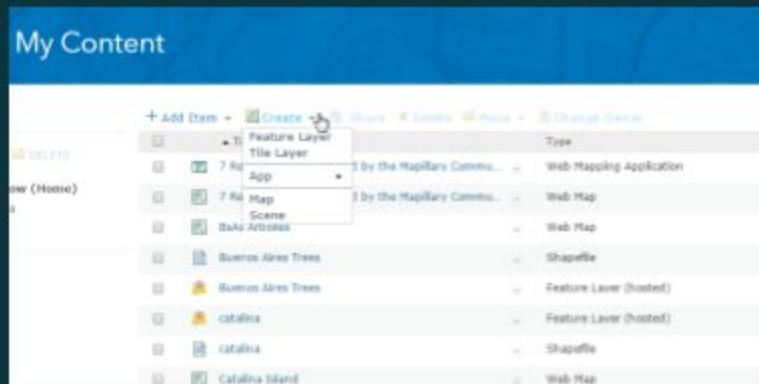
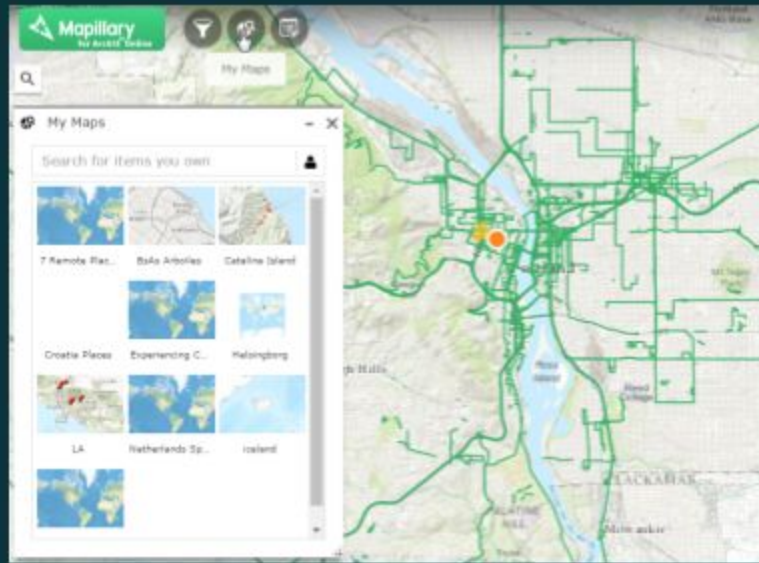


Drop a folder containing images here or [browse for a folder](#)



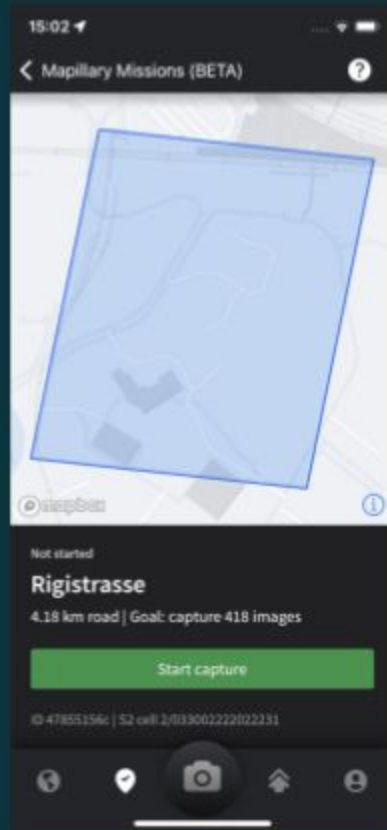
ArcGIS

- WebApp Builder
- ArcGIS Pro
- ArcGIS Online (coming soon)
- ArcGIS Urban

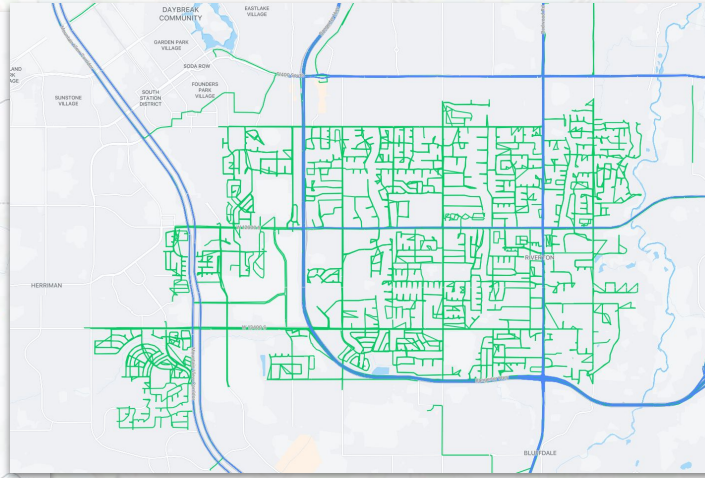
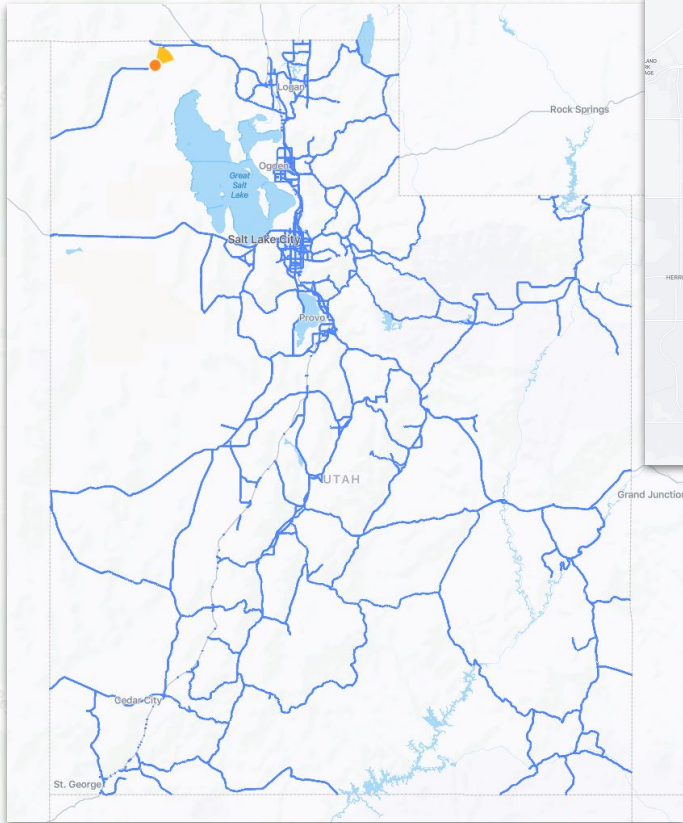


Missions (iOS)

- Beta feature, iOS only
- Areas with high potential
- Retail, commercial (OSM)
- POI density
- Urban Areas
- Public transit stations
- Pedestrian friendly



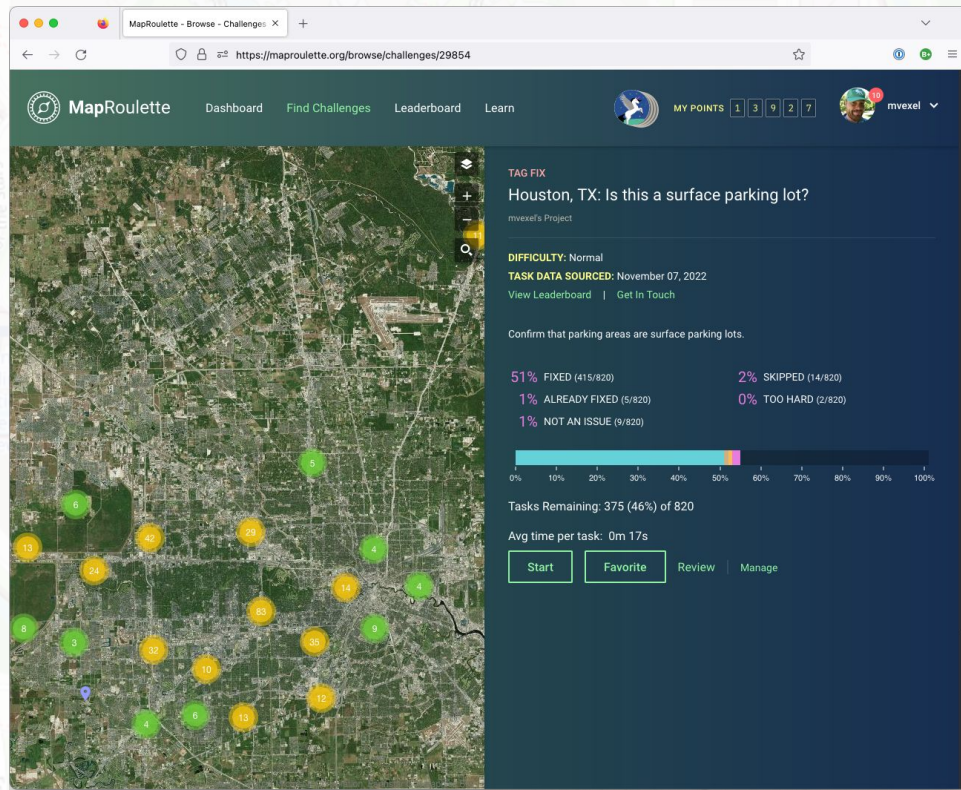
UDOT contributions to Mapillary



- UDOT / Community
- Mostly (?) State-maintained roads

MapRoulette

- Breaking up contributions to OSM into simple tasks
- Can be used to “trickle” external data into OSM.
- Make tasks public to crowdsource to OSM community, or keep them private to your organization
- Can be as simple as 1-click confirmation of attribute value



The screenshot shows the MapRoulette web interface. The browser address bar displays the URL <https://maproulette.org/browse/challenges/29854>. The page header includes the MapRoulette logo and navigation links for Dashboard, Find Challenges, Leaderboard, and Learn. A user profile for 'mvexel' is visible in the top right corner with 10 MY POINTS.

The main content area features a satellite map of Houston, TX, with several numbered task markers (1-20) overlaid. To the right of the map, the task details are displayed:

- TAG FIX:** Houston, TX: Is this a surface parking lot?
- DIFFICULTY:** Normal
- TASK DATA SOURCED:** November 07, 2022
- Confirm that parking areas are surface parking lots.**
- Progress:** 51% FIXED (415/820), 2% SKIPPED (14/820), 1% ALREADY FIXED (5/820), 0% TOO HARD (2/820), 1% NOT AN ISSUE (9/820)
- Tasks Remaining:** 375 (46%) of 820
- Avg time per task:** 0m 17s
- Buttons:** Start, Favorite, Review, Manage

Example: Confirm Parking area is Surface Parking

- OpenStreetMap has around 5000 parking area features with unknown type
- With MapRoulette, contributors can look at aerial images and confirm it is surface parking with 1 click
- Contribute with your OSM account: <https://bit.ly/parking-osm>



PROPOSED OSM TAG CHANGES

Show all Tags Edit Tags

Current	Proposed
+ parking	surface

Are the proposed OSM tag changes correct?

Yes	No
Skip	Other...

OpenStreetMap Utah

- Monthly Meetups since 2011
- [meetup.com/openstreetmap-utah](https://www.meetup.com/openstreetmap-utah)
- Sometimes informal socializing and learning
- Sometimes we get out and survey!
- 1st Wednesday of the month

Join us!

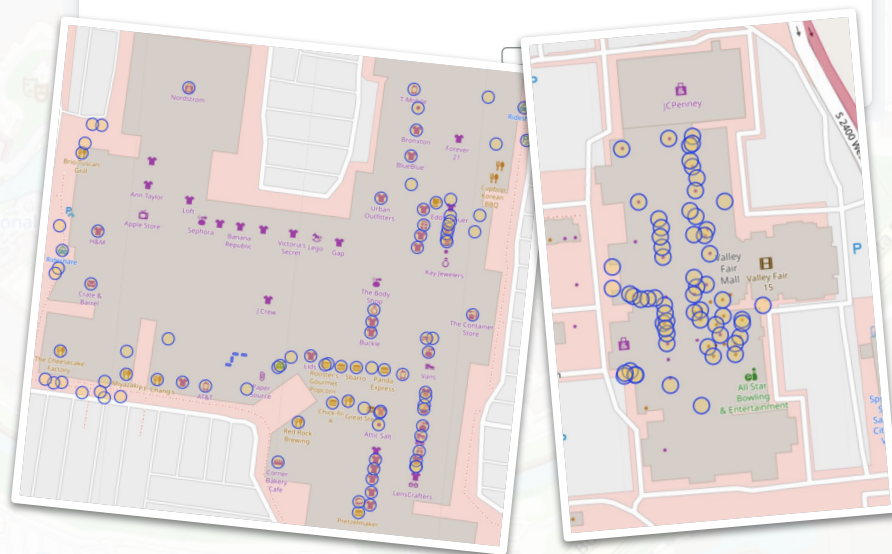
WED, NOV 9, 2022, 6:00 PM MST

Mall Mapping with the Every Door app

Valley Fair Mall



We will head out to West Valley to map all the things in the Valley Fair Mall using the Every Door app, or any other survey method you prefer. Bring your smartphone and some mapping energy! We'll meet at the food court at 6pm.



OSM Utah Mall Mapping, November 2022

Thank You

- Get in touch: martijn@vanexel.net
- OpenStreetMap US PD Map: publicdomainmap.org
- RapiD: mapwith.ai
- Mapillary: mapillary.com
- MapRoulette: maproulette.org
- These slides: <https://bit.ly/slug-2022> → →

