



# Introduction to GBFS

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# Isabelle de Robert



Director of Product



Montreal (relocating to Barcelona in March)



Engineering and data science background



French & English

# General Bikeshare Feed Specification

- Designed to standardize the way shared bike systems communicate with trip planning applications
- Also used for dashboards / analytics
- Traveler-centric

- 2014 Created by [Mitch Vars](#)
- 2015 Adopted by [NABSA](#)
- 2019 NABSA chooses MobilityData to govern & improve GBFS
- 2022 MobilityData becomes the maintainer of GBFS



# Who we are



## The organization

- Global nonprofit organization dedicated to developing the open-source data formats that provide traveler information
  - ◆ Headquarters: Canada
- 120+ members
- 20 employees

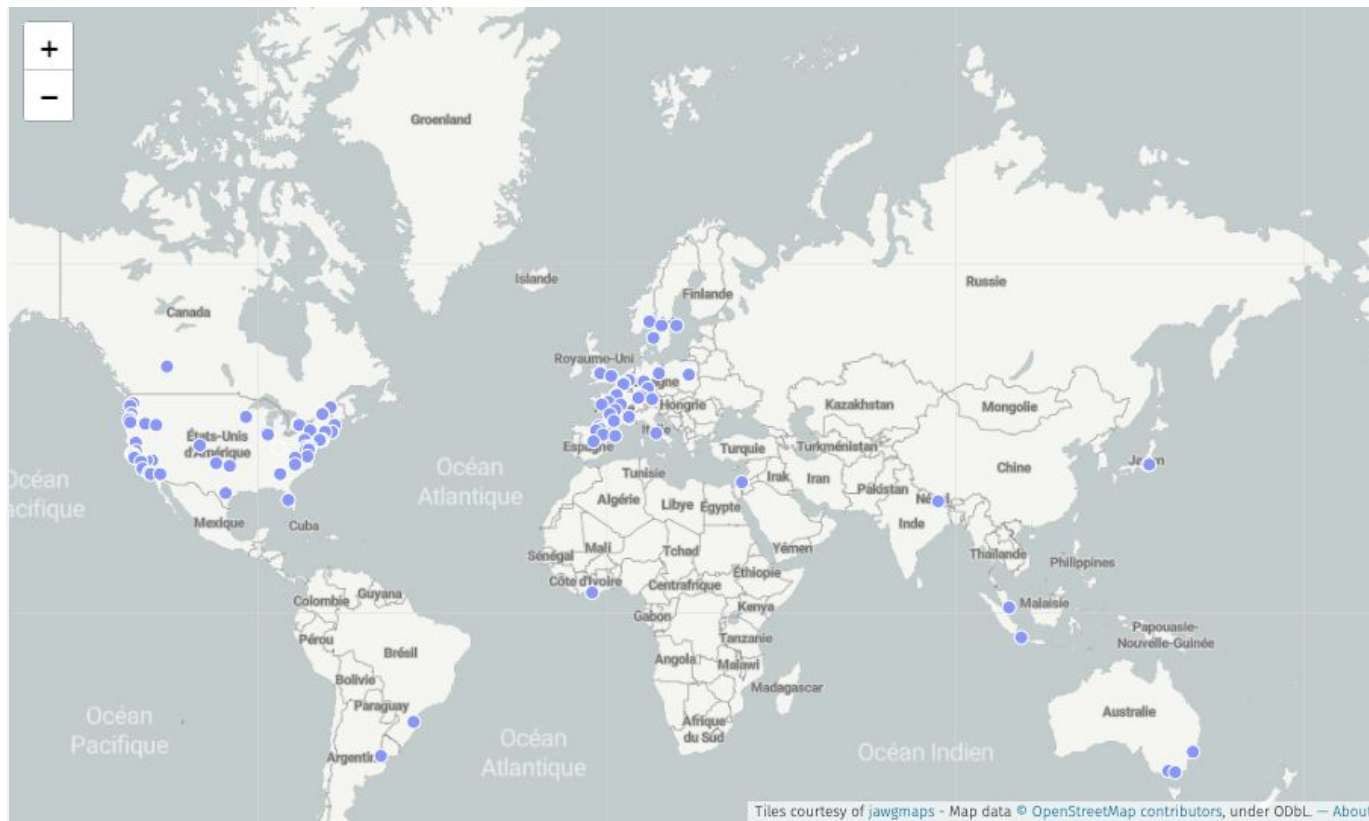
## Our mission

- Better transportation through data

## What we do

- **Steward open data specifications**
  - ◆ GBFS
  - ◆ GTFS Schedule
  - ◆ GTFS Realtime
- **Develop free open-source tools and documentation** to ensure data consistency and high quality throughout every stage of data transmission.
- **Advocate** for
  - ◆ Data standardization
  - ◆ Data quality
  - ◆ Data sharing

# Our members' map



# GBFS: Core Areas



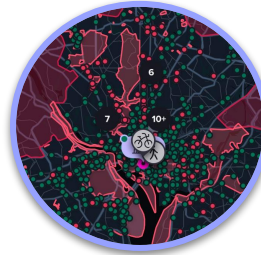
System



Stations



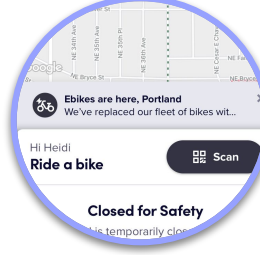
Vehicles



Travel Rules



Pricing



Alerts

## 4 modes



(e-)Bikes



(e-)Scooters



(e-)Mopeds



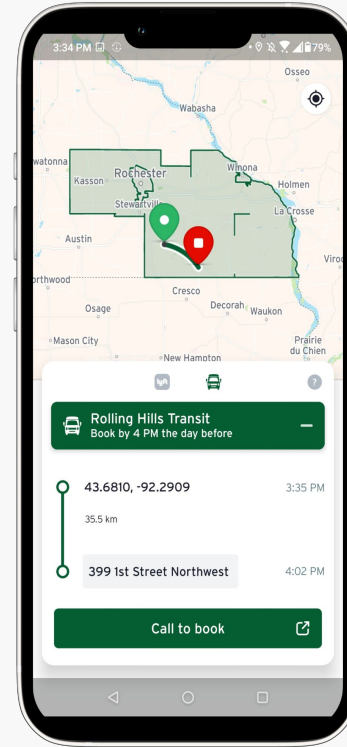
Car-sharing

# What about other on demand modes?

Other on demand modes such as shuttle bus, dial-a-ride or taxi can be represented with:

- [GTFS Flex](#)
  - Will be adopted officially in the next few weeks
- [GTFS-OnDemand](#)
  - Created by a working group with 31 international stakeholders
- [GOFS-lite](#)
  - an offshoot of GTFS-OnDemand, is meant to be compatible with while offering more restricted functionalities
  - created by TransitApp

Zones



Route deviations

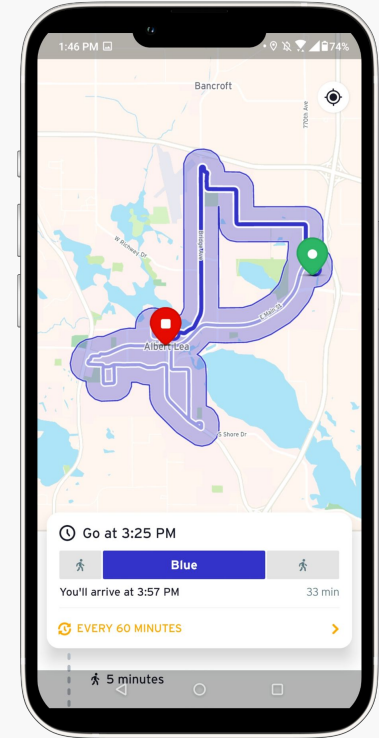
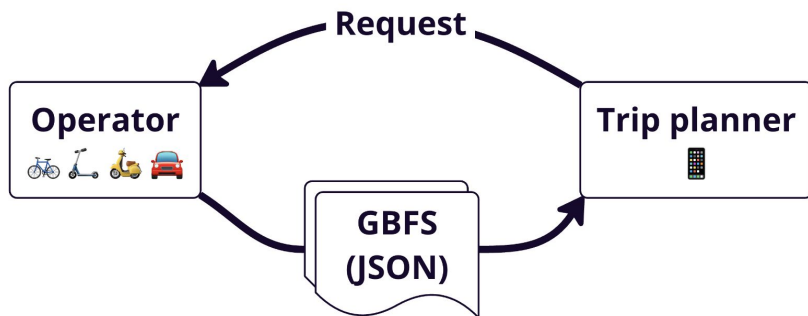


Image source: TransitApp

# General Bikeshare Feed Specification

- **Real-time, pull-based**, data specification.
- Describes the **current status of a mobility system**.
- Composed of a series of **JSON files**
- The details of each file are available in the [GBFS reference](#) with examples.



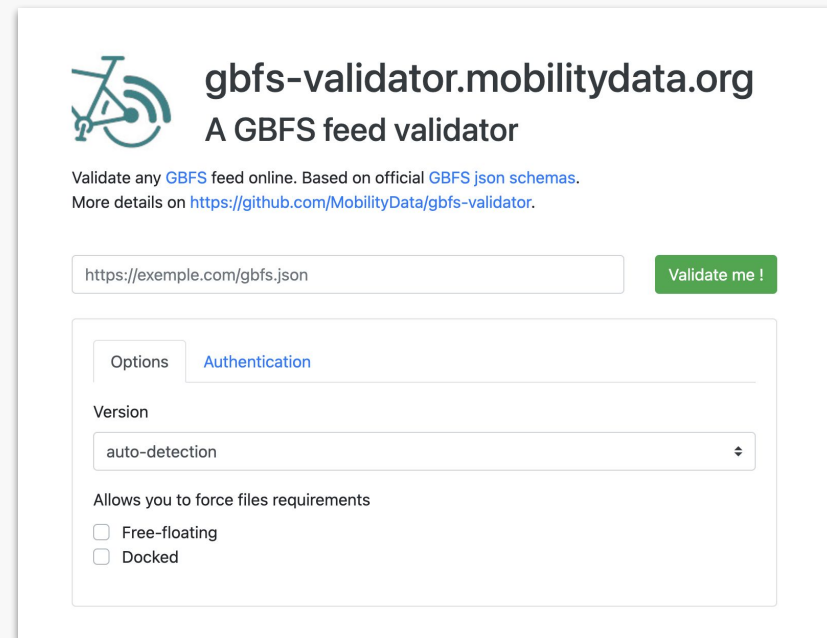
The screenshot shows the homepage of the **General Bikeshare Feed Specification** website. The header includes a navigation bar with links for Home, Specification, Data Quality, Toolbox, Learn, and Participate, along with a search bar and a GitHub link. The main content area features the title **GBFS: A Common Language for Shared Mobility** and five buttons: Specification, Data Quality, Toolbox, Learn, and Participate. Below these buttons, the text states: "GBFS provides a common language for shared mobility operators to share information about services available to travelers. GBFS includes information about vehicles (bicycles, scooters, moped, and cars), stations, pricing and more:" followed by a bulleted list of data points: Vehicle, station, and dock locations and availability; Vehicle characteristics – form factor, type of power, distance that can be traveled; Service pricing and rental terms; and Geofenced areas for rules related to speed, parking, and prohibited zones. Further text explains that GBFS data is used by trip planning and Mobility as a Service (MaaS) applications to provide information for travelers and that public GBFS APIs enable integration with public transportation. A final note mentions that GBFS provides a standardized way for municipalities and agencies to ingest, analyze, and compare data.

[gbfs.org](https://gbfs.org)



# General Bikeshare Feed Specification

- Open-source tools maintained with the community for the community
  - Official validator
  - Dataset catalog
  - JSON Schema
  - Online visualizers
  - Feed contact e-mail tracker
  - And more!

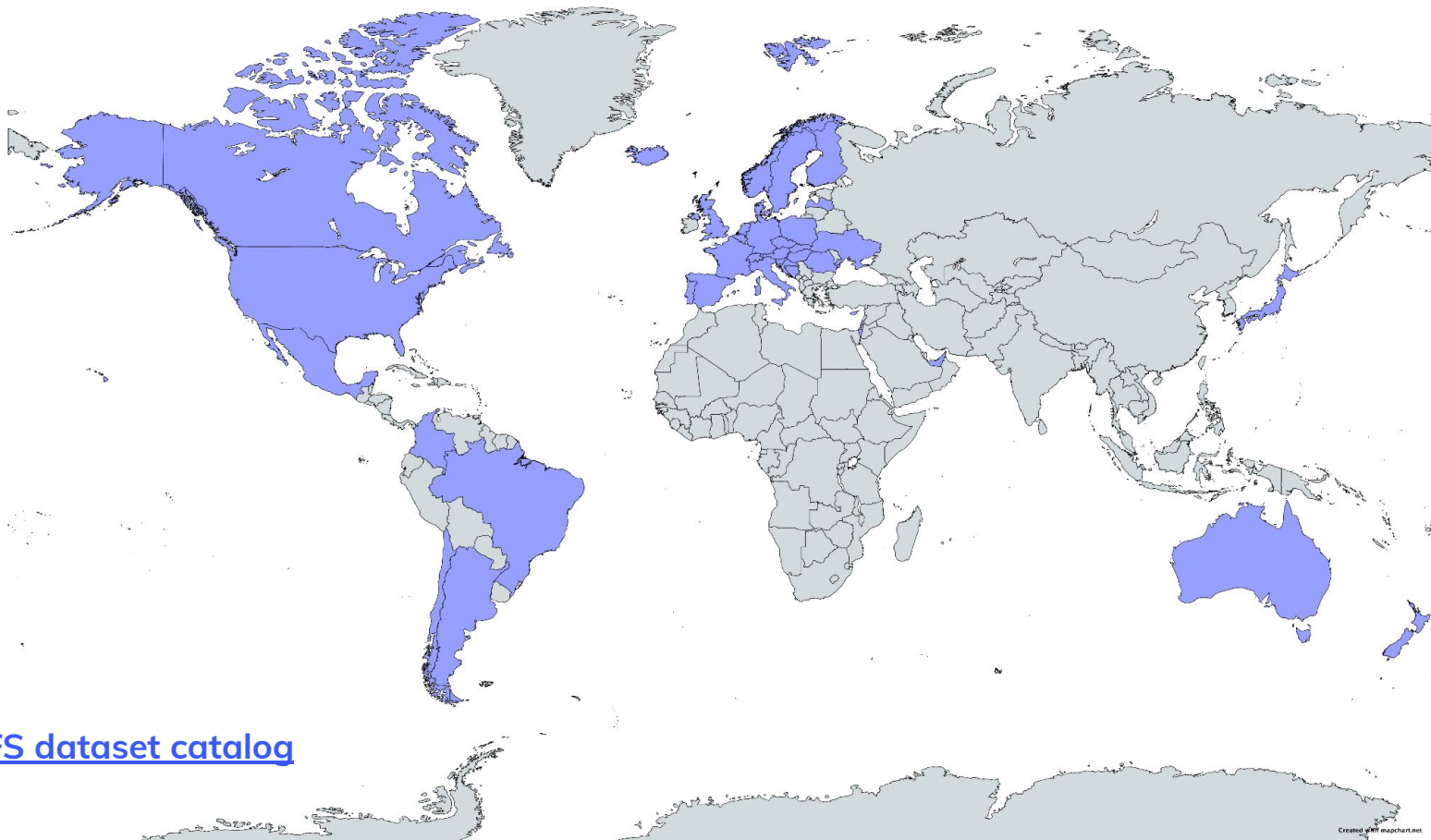


The screenshot shows the web interface of the GBFS validator. At the top left is a logo of a bicycle with a Wi-Fi signal. To its right is the text "gbfs-validator.mobilitydata.org" and "A GBFS feed validator". Below this is a line of text: "Validate any GBFS feed online. Based on official GBFS json schemas. More details on <https://github.com/MobilityData/gbfs-validator>." Below the text is a text input field containing "https://exemple.com/gbfs.json" and a green button labeled "Validate me !". Below the input field is a section with two tabs: "Options" and "Authentication". The "Options" tab is active. Inside the "Options" tab, there is a "Version" label above a dropdown menu showing "auto-detection". Below the dropdown is a section titled "Allows you to force files requirements" with two radio buttons: "Free-floating" and "Docked".

Thank you Fluctuo!

 [gbfs-validator.mobilitydata.org](https://gbfs-validator.mobilitydata.org)

# 900+ systems in 40+ countries and 700+ cities



# GBFS Governance

Any stakeholder can:

- Suggest a modification or extension
- [Open a vote](#)

Any GBFS producer or consumer (incl. cities) can:

- [Vote](#)
- Veto = blocks the process

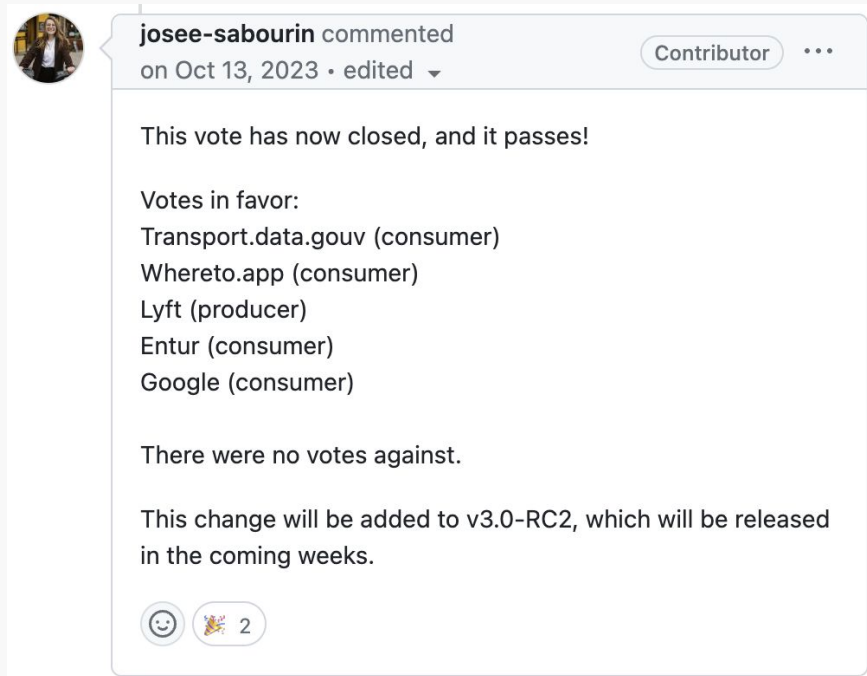
For the proposal to become part of a release candidate:

- At least three positive votes, including:
  - ◆ A producer
  - ◆ A consumer
- No veto

For a release candidate to become an official release:

- Each change must be implemented by at least 1 producer and 1 consumer

Guiding principles are [simplicity](#) and [ease of data production](#).



# Compatibility with other standards

## MDS requires publication of a public GBFS dataset

- Only for mobility providers and overseeing public agencies (required by 130+ regulatory agencies)

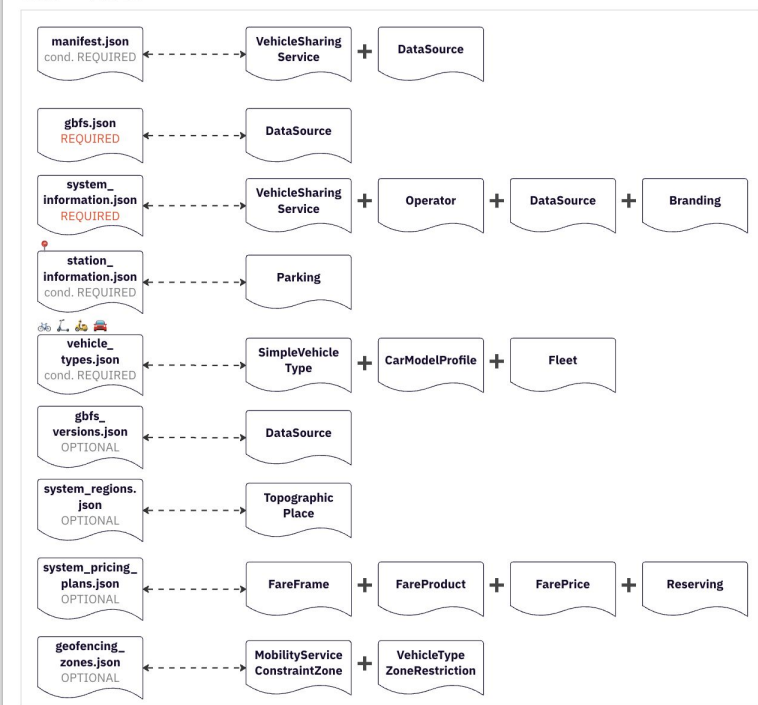
## TOMP-API was designed to work with GBFS

- Intended for transport operators to connect their data to different MaaS applications

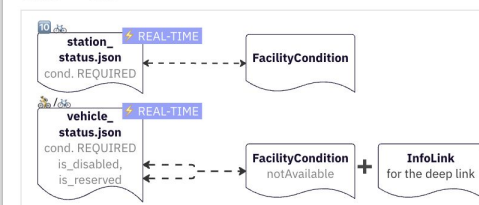
## NeTeX / SIRI is fully interoperable with GBFS

- For GBFS up to v2:2:
  - Each GBFS v2.2 element maps to a single NeTeX/SIRI element
  - One NeTeX/SIRI element maps to more than one GBFS element (SIRI *notAvailable*)
- However, GBFS v2.3 and v3.0-RC introduced new fields that may not be represented in NeTeX/SIRI yet.

GBFS <> NeTeX



GBFS <> SIRI



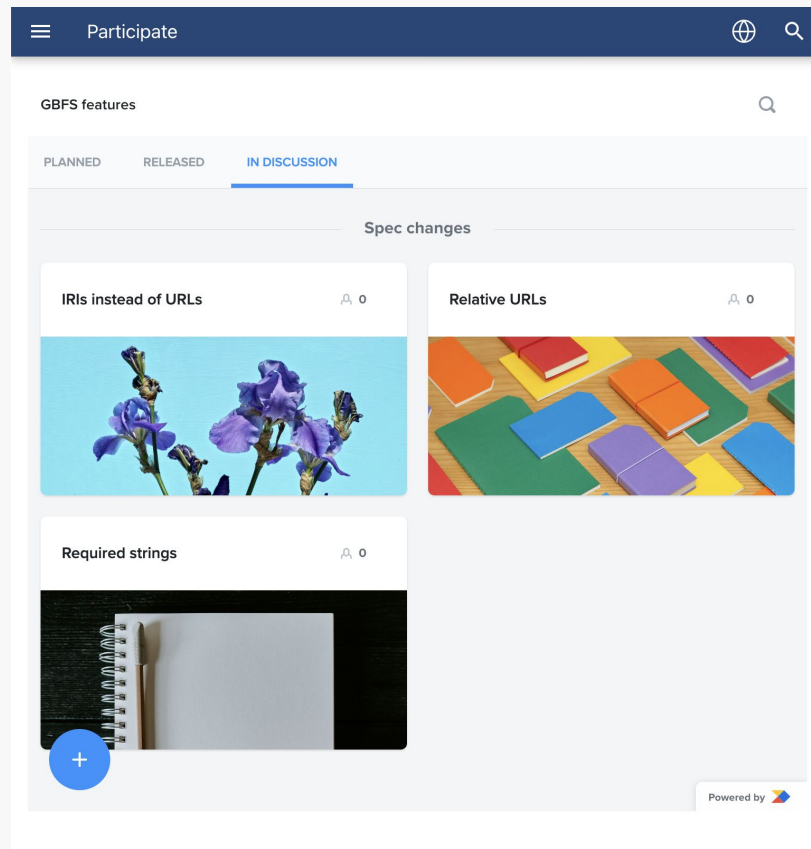
# What's next

## Short term

- Select feeds based on the user location (PR [#572](#))
- Add vehicle future availability for carsharing (proposal to come)
- Spec polishing (issues in discussion)
  - IRIs instead of URLs (issue [#543](#))
  - Relative URLs (issue [#544](#))
  - Required strings (issue [#600](#))

## Longer term

- Limiting publishers' server load from requests
- Reducing GBFS response size (filtering, paging, etc)



 [gbfs.org/participate](https://gbfs.org/participate)

# Recap

## General Bikeshare Feed Specification

- Traveler-centric
- 900+ systems in 40+ countries and 700+ cities
- For (e-)bikes, (e-)scooters, (e-)moped & car-sharing
- Interoperable with other standards: MDS, TOMP-API and NeTeX/SIRI

Questions?



Photo by [CardMapr.nl](#) on [Unsplash](#)