

Un monde de données géographiques avec OpenStreetMap

Adrien Pavie
Breizh Data Day
19 octobre 2017

Des questions géo

 \sum 

?

A



B

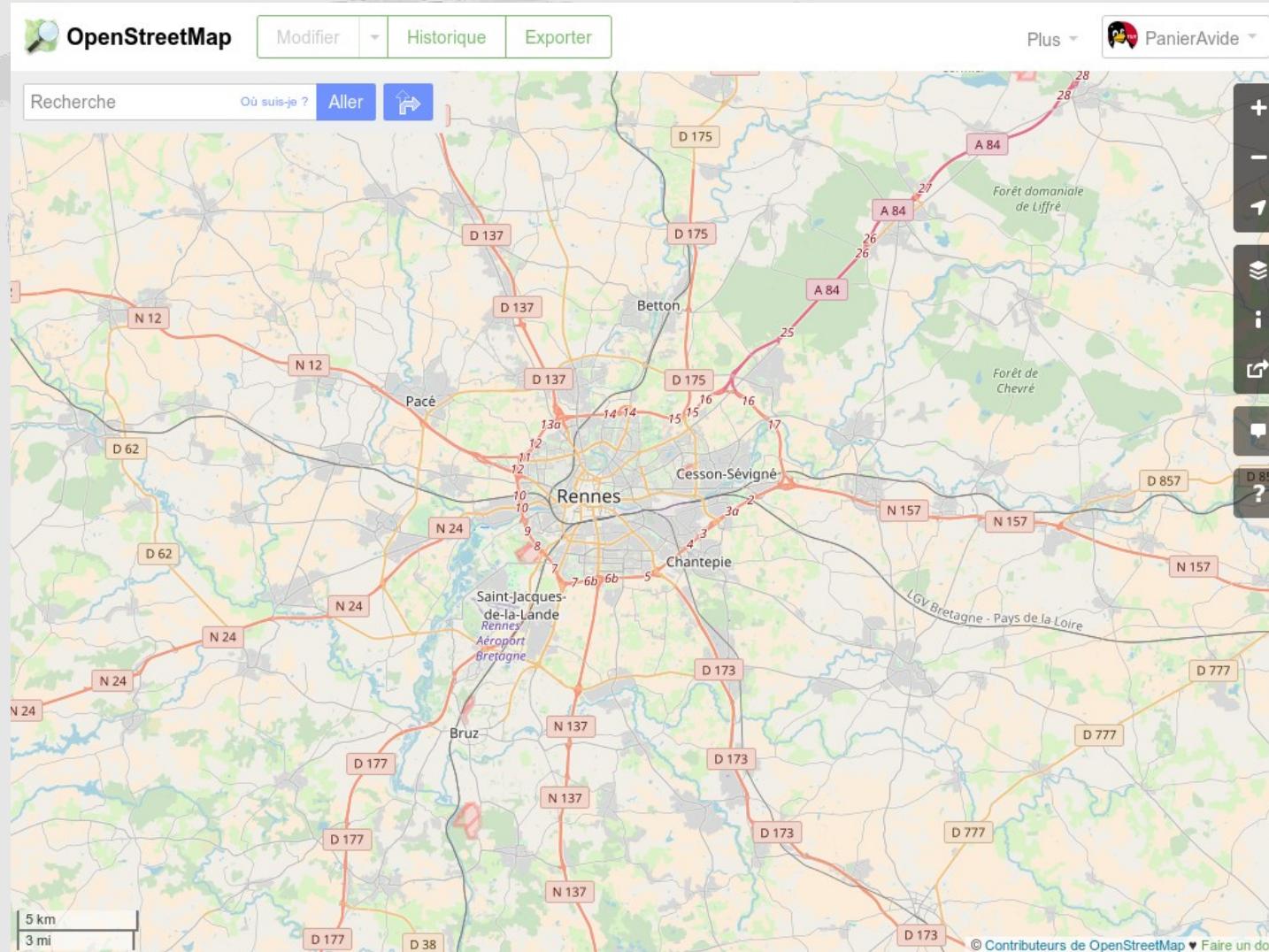
?

 \sum 

?



OpenStreetMap



[OpenStreetMap](#)

Taginfo

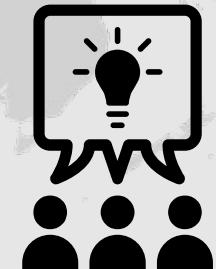
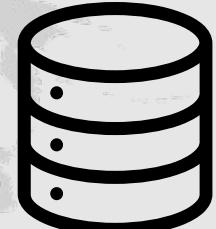
PgRouting

Overpass



Qu'est ce que c'est ?

- Base de données géographique
- Libre de droits
- Collaborative



En résumé

± Concept de **Google Maps**

mais avec l'esprit de



WIKIPÉDIA
L'encyclopédie libre

[OpenStreetMap](#)

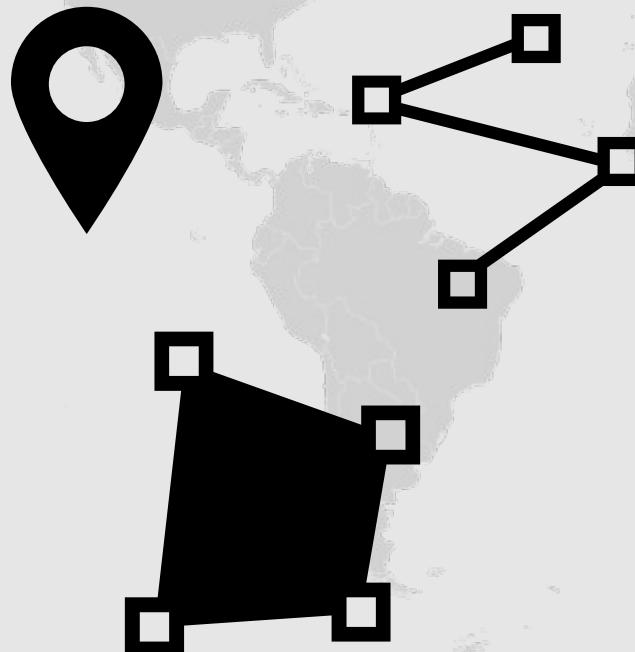
Taginfo

PgRouting

Overpass

Données géographiques ?

Géométrie



Attributs

highway=residential
name=Grande Rue
oneway=no

Concrètement

OpenStreetMap

Modifier Historique Exporter

Plus PanierAvide

< Modifier l'élément X

Boîte aux lettres

Tous les champs

Exploitant
La Poste

Horaires de collecte
Inconnu

Service Drive
 Non

Code d'identification
A0Q4W0

Sources
data.gouv.fr:LaPoste - 05/2016 x
Ajouter...

Accès en fauteuil roulant
 yes

Visualiser sur openstreetmap.org

Point Ligne Polygone Marc John Sauvegarder...

Rue Châteaurenault

1123746

Finsbury La Clara Léonidas

Rue de l'Hermine

A0Q4W0

Rue de l'Horloge

Bing © 2017 DigitalGlobe, ©CNES (2017) Distribution Airbus DS, © 2017 Microsoft Corporation

10 m

A 2.4.3

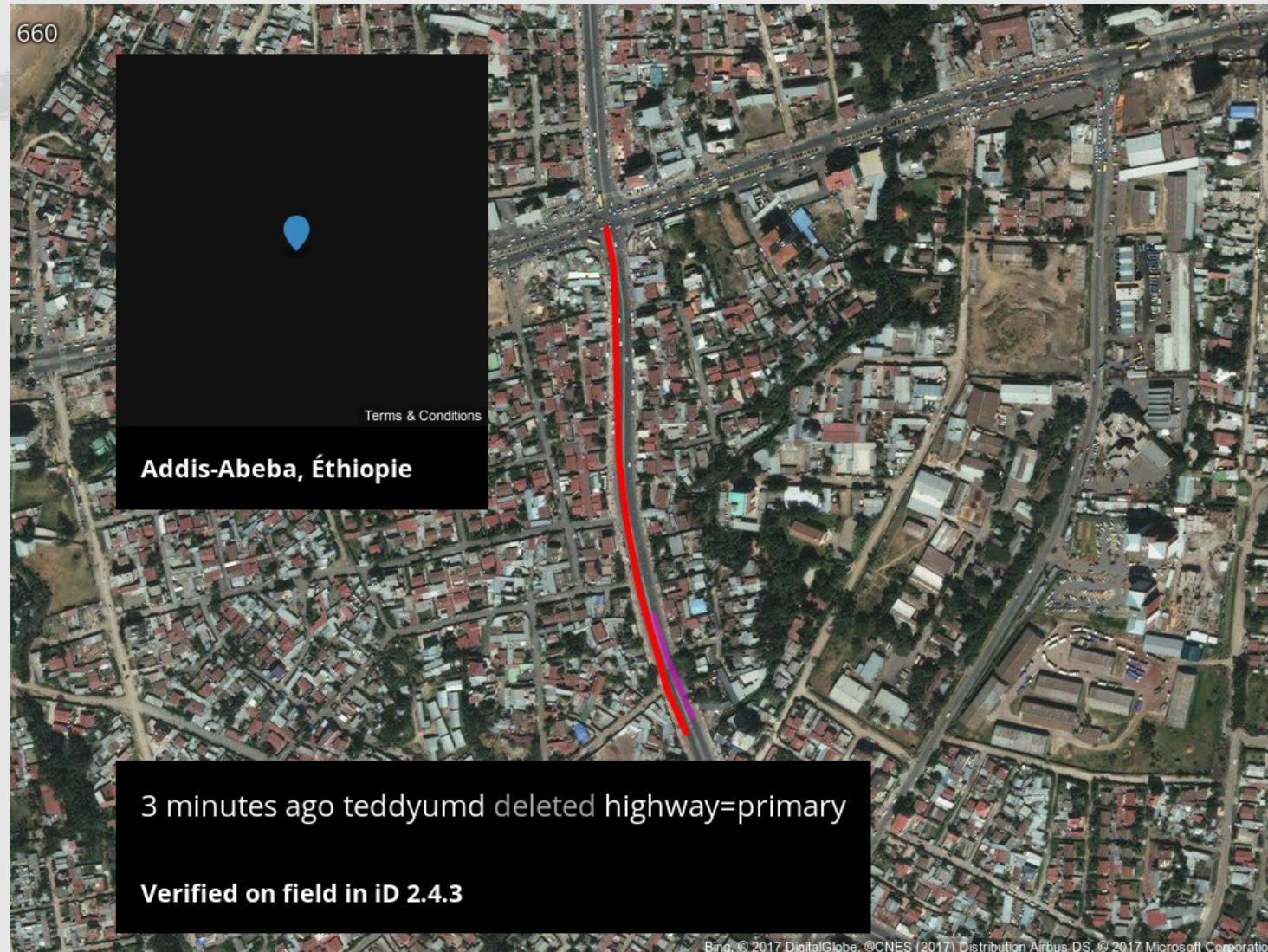
OpenStreetMap

Taginfo

PgRouting

Overpass

Des données récentes



[OpenStreetMap](#)

Taginfo

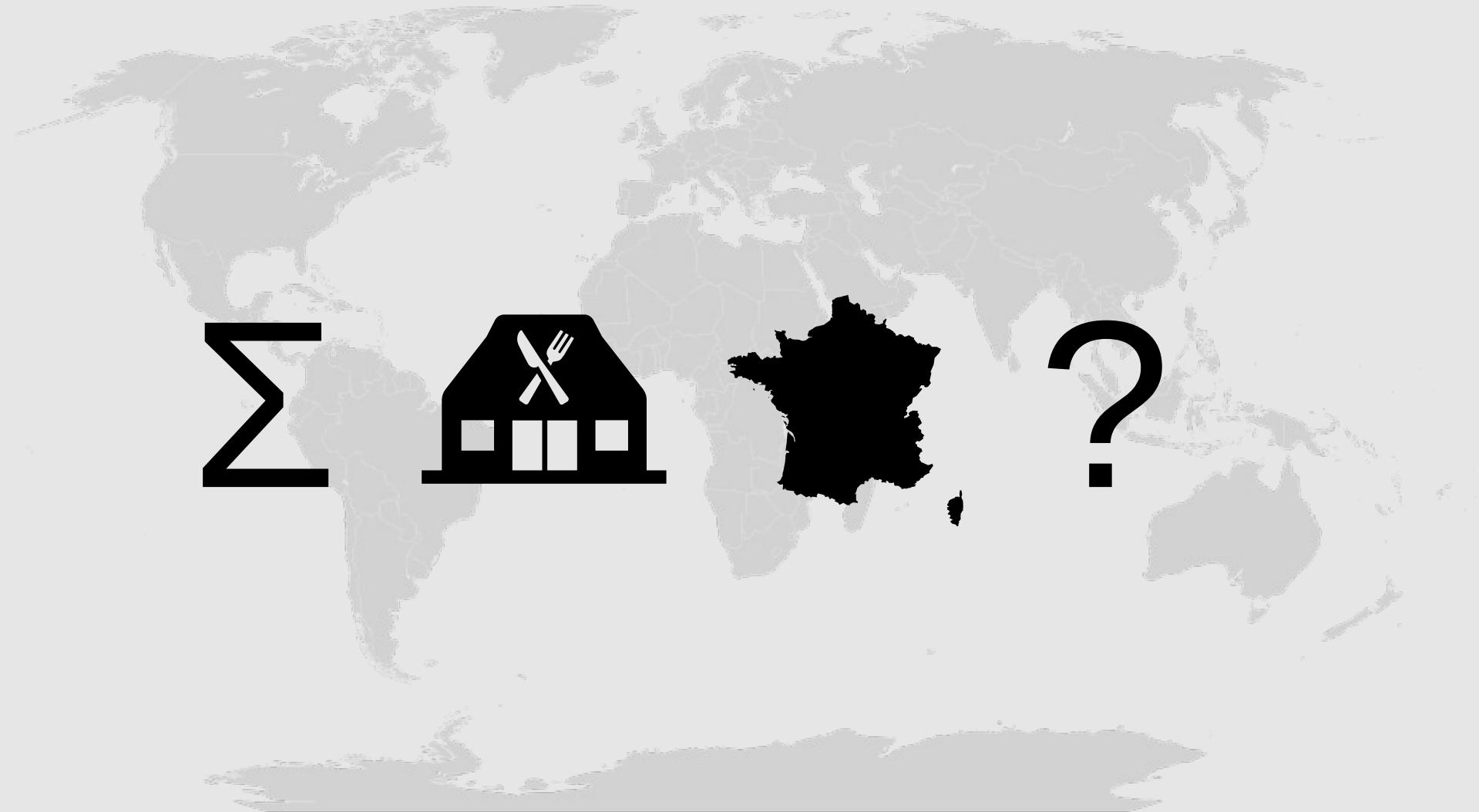
PgRouting

Overpass



Comment utiliser
ces données ?

Restaurants



OpenStreetMap

[Taginfo](#)

PgRouting

Overpass

Éléments cartographiques

The screenshot shows the OpenStreetMap Wiki homepage. A red arrow points from the sidebar menu to the 'Map Features' link, which is circled in red. The main content area displays a world map and a table for the 'amenity=restaurant' tag.

Wiki

Accueil Discussion

Afrikaans • asturianu • azərbaycan dilı • kreyòl gwadloùpèyen • Kurdi • македонски • русский • українська

Welcome to OpenStreetMap! This is a place where people can come together to improve the map, their use, holding back people

More about OpenStreetMap

Accueil The map Map Features Contributors Aide Blogs Shop Donations Modifications récentes Outils

voir aussi [amenity=cafe](#) et [amenity=bar](#)

amenity	restaurant		<p>Restaurant Ajouter <code>name=*</code> pour le nom du restaurant + <code>cuisine=*</code> pour le type de cuisine (ethnique, régional, etc) Voir amenity=fast_food pour la restauration rapide.</p>   
---------	------------	--	--

Éducation [modifier le wikicode]

Etablissement d'enseignement

OpenStreetMap

Taginfo

PgRouting

Overpass

Taginfo



taginfo.osm.org

taginfo.openstreetmap.fr



OpenStreetMap

[Taginfo](#)

PgRouting

Overpass

Recherche

Données du: 2017-10-10 22:05 UTC

Français amenity=restaurant

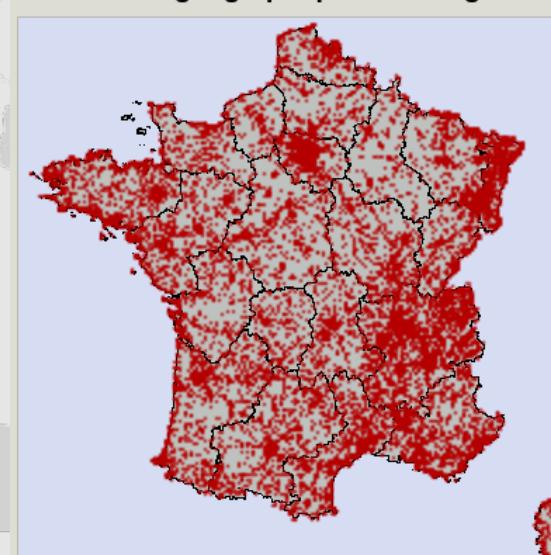
RÉSULTATS DE LA RECHERCHE

Vous recherchez: amenity=restaurant

Tags

Quantité	Clé	Valeur
52 144	amenity	restaurant
on	discused:amenity	restaurant

Distribution géographique de ce tag.



amenity=restaurant
Lieu où on est généralement assis, où on achète des repas complets servis par des serveurs et qui a souvent l'autorisation de vendre des boissons alcoolisées.

Liste de comparaison (0 éléments) Filtre : Aucun filtre XAPI JOSM Level0 Editor Overpass turbo

Vue d'ensemble Combinaisons Carte Wiki Projets

Vue d'ensemble

Type	Nombre d'objets	Pourcentage
Tous	52 144	0.01%
Noeud	42 999	0.37%
Chemin	9 069	0.02%
Relation	76	0.02%



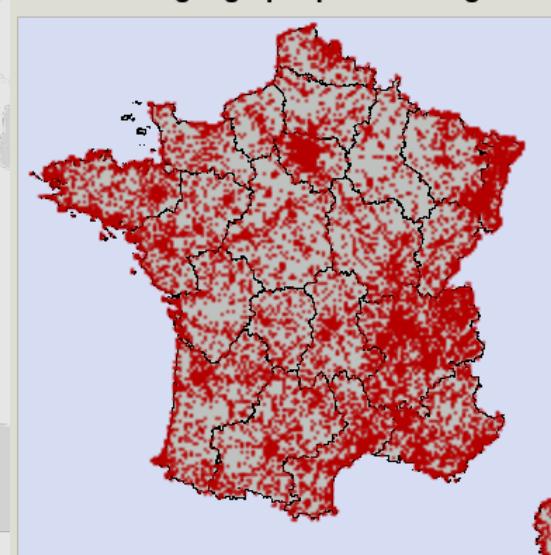
RÉSULTATS DE LA RECHERCHE

Vous recherchez: amenity=restaurant

Tags

Quantité	Clé	Valeur
52 144	amenity	restaurant
on	discused:amenity	restaurant

Distribution géographique de ce tag.



OpenStreetMap

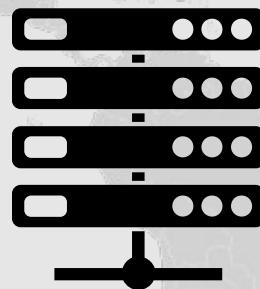
Taginfo

PgRouting

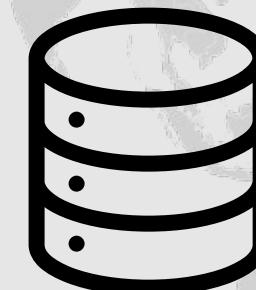
Overpass

Et aussi...

Base de données



API



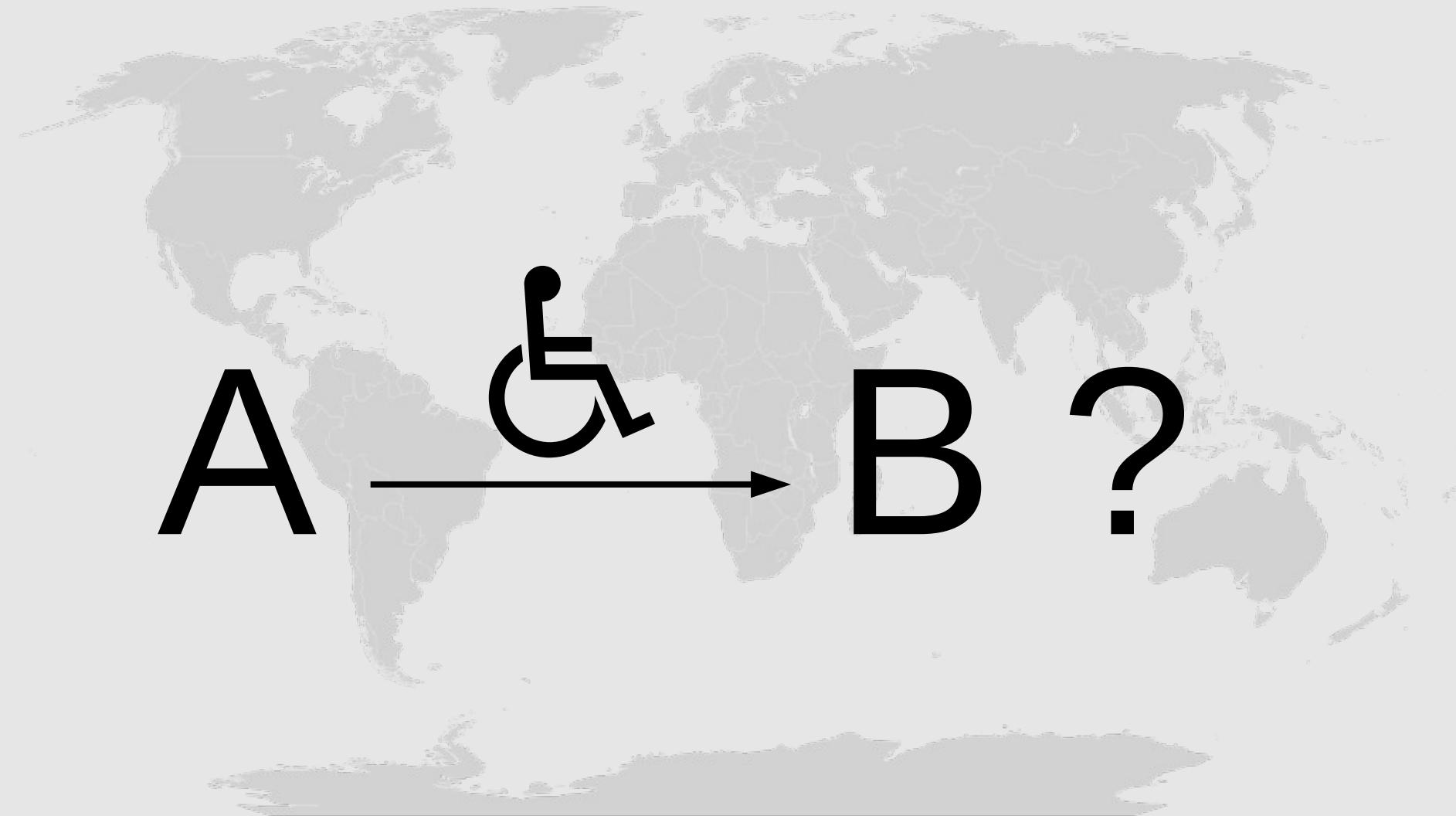
OpenStreetMap

Taginfo

PgRouting

Overpass

Accessibilité



OpenStreetMap

Taginfo

PgRouting

Overpass

Extraits Geofabrik

download.geofabrik.de

OpenStreetMap Data Extracts

Welcome to Geofabrik's free download server. This server has data extracts from the [OpenStreetMap project](#) which are normally updated every day. Select your continent and then your country of interest from the list below. (If you have been directed to this page from elsewhere and are not familiar with OpenStreetMap, we highly recommend that you read up on OSM before you use the data.) This download service is offered for free by Geofabrik GmbH.

Willkommen auf dem Geofabrik-Downloadserver. Hier gibt es Daten-Auszüge aus dem [OpenStreetMap-Projekt](#), die normalerweise täglich aktualisiert werden. Wählen Sie aus dem Verzeichnis unten den Kontinent und ggf. das Land, für die Sie Daten benötigen. (Wenn Sie von anderswo auf dieser Seite gelandet sind und von OpenStreetMap nichts wissen, dann ist es empfehlenswert, sich mit dem Projekt vertraut zu machen, bevor Sie mit den Daten arbeiten.) Diese Downloads werden von der Geofabrik GmbH kostenlos angeboten.

Click on the region name to see the overview page for that region, or select one of the file extension links for quick access.

Sub-Region	Quick Links		
	.osm.pbf	.shp.zip	.osm.bz2
Africa	[.osm.pbf]	✗	[.osm.bz2]
Antarctica	[.osm.pbf]	[.shp.zip]	[.osm.bz2]
Asia	[.osm.pbf]	✗	[.osm.bz2]
Australia and Oceania	[.osm.pbf]	✗	[.osm.bz2]
Central America	[.osm.pbf]	✗	[.osm.bz2]
Europe	[.osm.pbf]	✗	[.osm.bz2]
North America	[.osm.pbf]	✗	[.osm.bz2]
South America	[.osm.pbf]	✗	[.osm.bz2]

[Technical details](#) about this download service.

GEOFABRIK  downloads



 Not what you were looking for? Geofabrik is a consulting and software development firm based in Karlsruhe, Germany specializing in OpenStreetMap services. We're happy to help you with data preparation, processing, server setup and the like. [Check out our web site](#) and contact us if we can be of service.

 Nicht das Richtige dabei? Die Geofabrik ist ein auf OpenStreetMap spezialisiertes Beratungs- und Softwareentwicklungsunternehmen in Karlsruhe. Gern helfen wir Ihnen bei der Datenaufbereitung, Datenkonvertierung, Serverinstallation und ähnlichen Aufgaben. [Besuchen Sie unsere Webseite](#) und sprechen Sie mit uns, wenn wir Ihnen helfen können.

OpenStreetMap

Taginfo

PgRouting

Overpass

Ingestion

- OSM2pgRouting
- PostgreSQL + PostGIS + pgRouting



[OpenStreetMap](#)

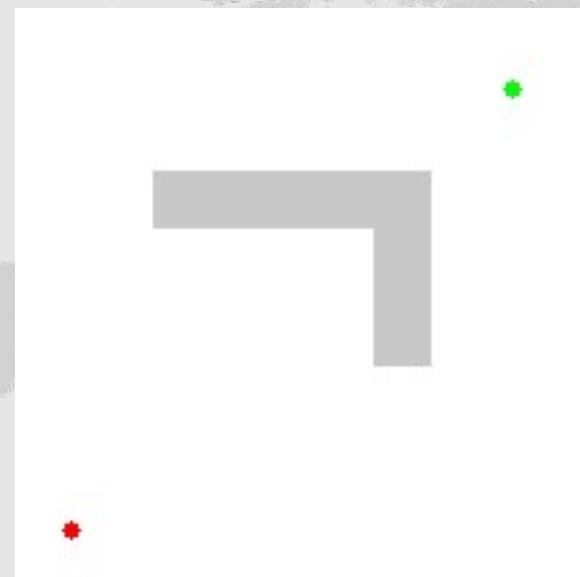
[Taginfo](#)

[PgRouting](#)

[Overpass](#)

Itinéraire

Algorithme A*
(A star)



OpenStreetMap

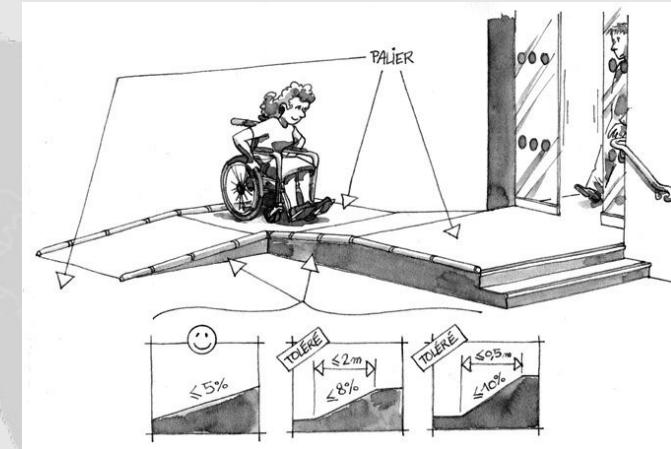
Taginfo

PgRouting

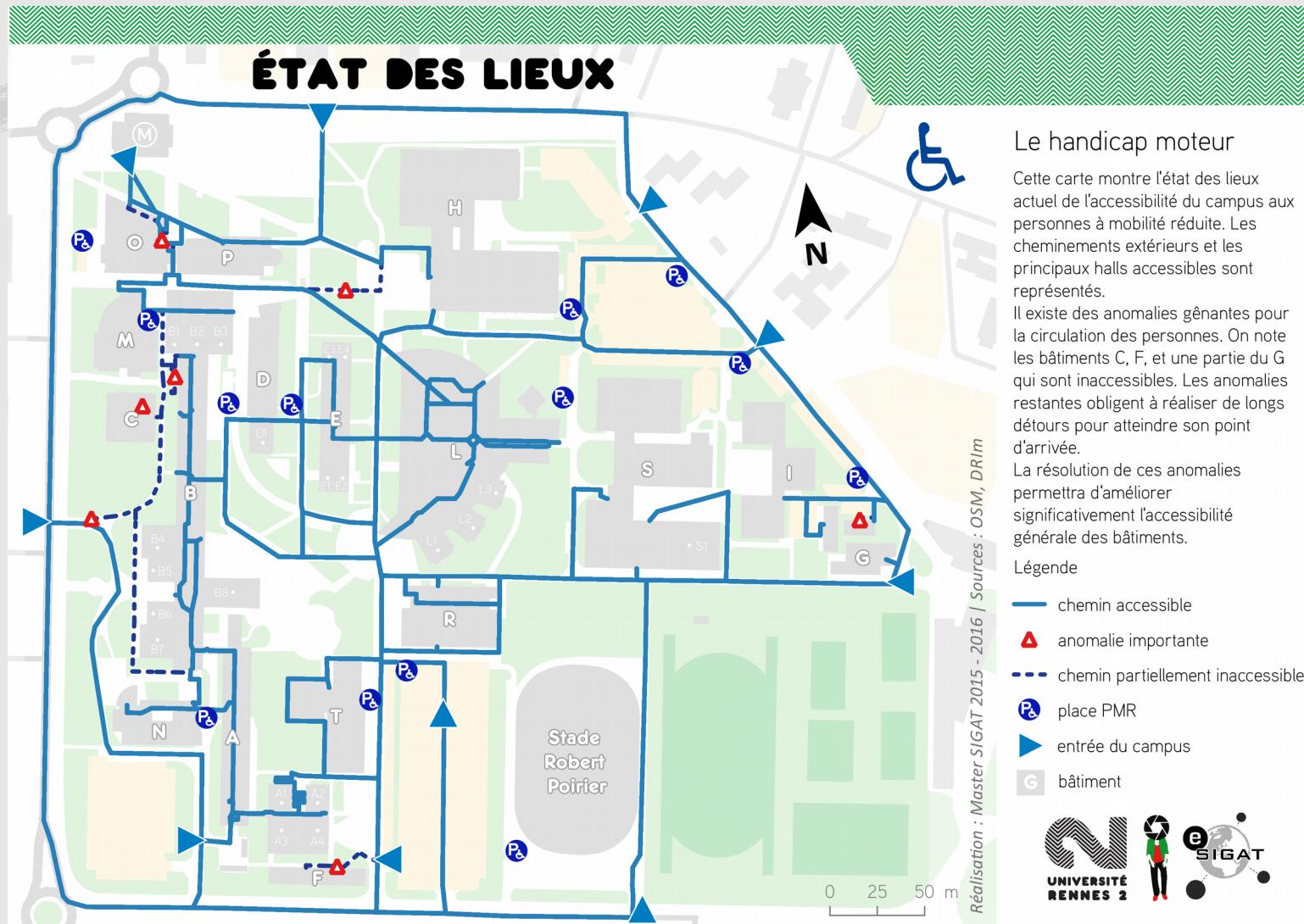
Overpass

Coût de traversée

- Si pente à 0 %
 - coût = longueur
- Si $0 < \text{pente} \leq 5\%$
 - coût = longueur * 1.1
- Si $5 < \text{pente} \leq 8\%$ et longueur $\leq 2\text{ m}$
 - coût = longueur * 1.2
- Si $8 < \text{pente} \leq 10\%$ longueur $\leq 0.5\text{ m}$
 - coût = longueur * 1.3
- Sinon
 - coût = -1



Résultat



OpenStreetMap

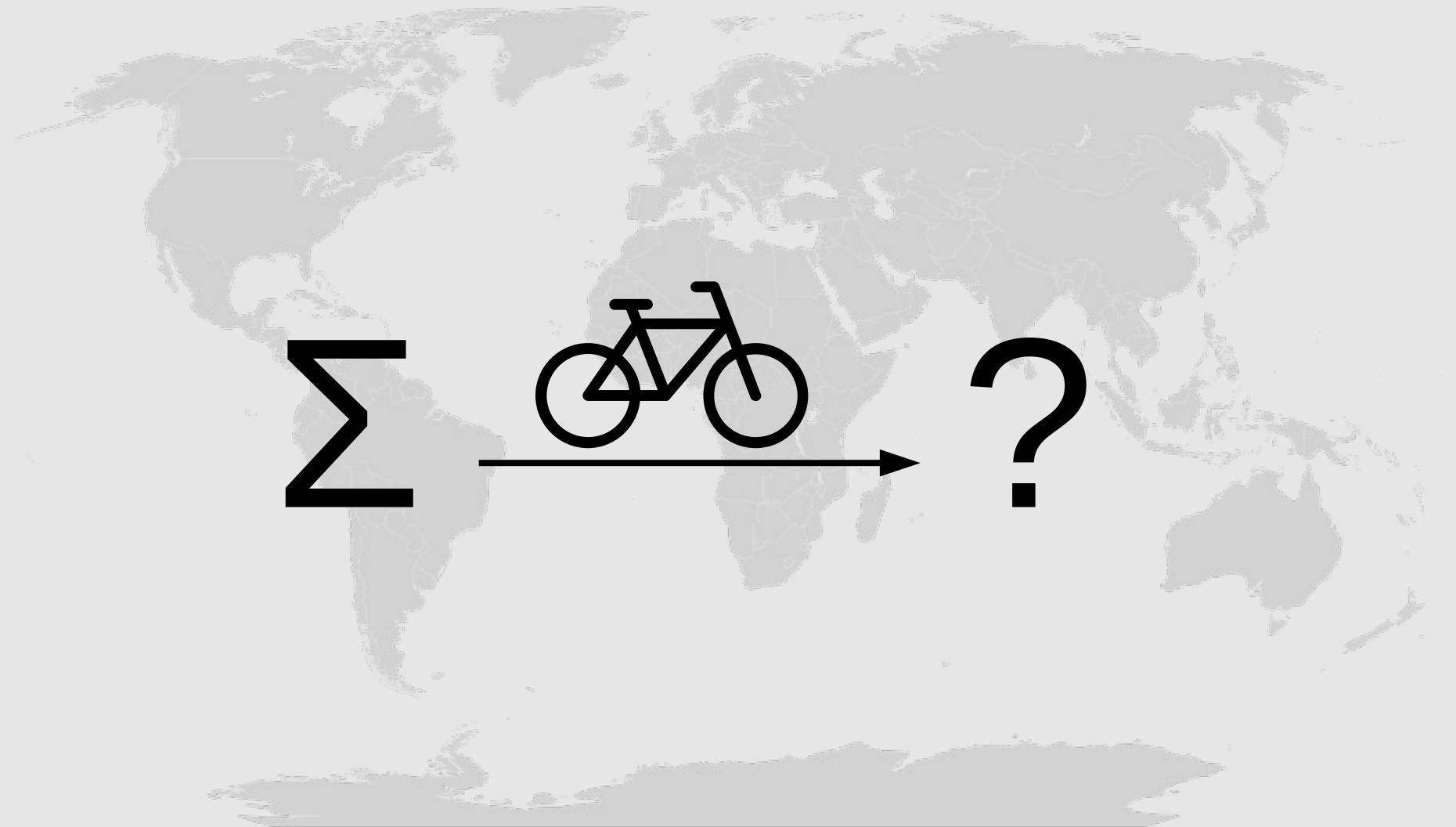
Taginfo

PgRouting

Overpass



Pistes cyclables



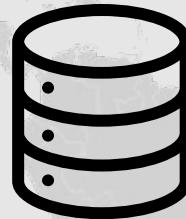
OpenStreetMap

Taginfo

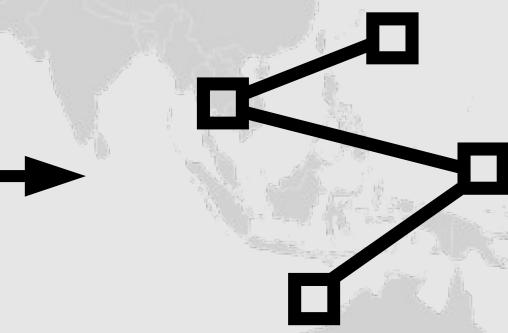
PgRouting

Overpass

Overpass API



Overpass
Query Language



Données
thématiques

OpenStreetMap

Taginfo

PgRouting

Overpass

Overpass Turbo

overpass-turbo.eu

The screenshot shows the Overpass Turbo web application. At the top, there's a navigation bar with buttons for "Exécuter" (Execute), "Partager" (Share), "Exporter" (Export), "Assistant" (Assistant), "Enregistrer" (Save), "Charger" (Load), "Paramètres" (Parameters), "Aide" (Help), and "overpass turbo". To the right of the map, there are links for "Carte" (Map) and "Données" (Data). A "Flattr this!" button is also present.

The main area consists of two parts: a code editor on the left and a map on the right. The code editor contains the following OSM query:

```
/*
This has been generated by the overpass-turbo wizard.
The original search was:
"(type:node or type:way)
and shop=bakery
in
rennes"
*/
[out:json][timeout:25];
// fetch area "rennes" to
search in
{{geocodeArea:rennes}}>.
searchArea;
// gather results
(
    // query part for:
"shop=bakery"
    node["shop"="bakery"]
(area.searchArea);
    // query part for:
"shop=bakery"
    way["shop"="bakery"]
(area.searchArea);
);
// print results
out body;
>;
out skel qt;
```

The map shows the city of Rennes with numerous blue circles indicating the locations of bakeries found by the query. The map includes labels for various streets, landmarks, and rivers. At the bottom of the map, there are status messages: "Chargé – nœuds: 176, chemins: 13, relations: 0" and "Affiché – points d'intérêt - POIs: 77, lignes: 0, polygones: 13".

OpenStreetMap

Taginfo

PgRouting

Overpass



Requête

The screenshot shows the Overpass Assistant interface. At the top, there is a menu bar with "Assistant" highlighted (circled in red). Below the menu is a toolbar with icons for zooming, saving, loading, parameters, and help. The main area has two panes: a left pane showing a zoomed-in map of a street area with several blue circles indicating points of interest, and a right pane showing a larger map of Rennes with many blue circles and a red line highlighting a path or route. A central window titled "Assistant" contains the search query "type:way and highway=cycleway in rennes". Below the query, there is a section titled "L'assistant vous aide à créer des requêtes Overpass. Voici quelques exemples d'utilisation :" followed by a list of examples. At the bottom of the central window are three buttons: "construire la requête", "Construire et exécuter une requête", and "annuler".

OpenStreetMap

Taginfo

PgRouting

Overpass



Traitement SIG

- Calcul de la longueur de chaque tronçon
- Puis somme des longueurs

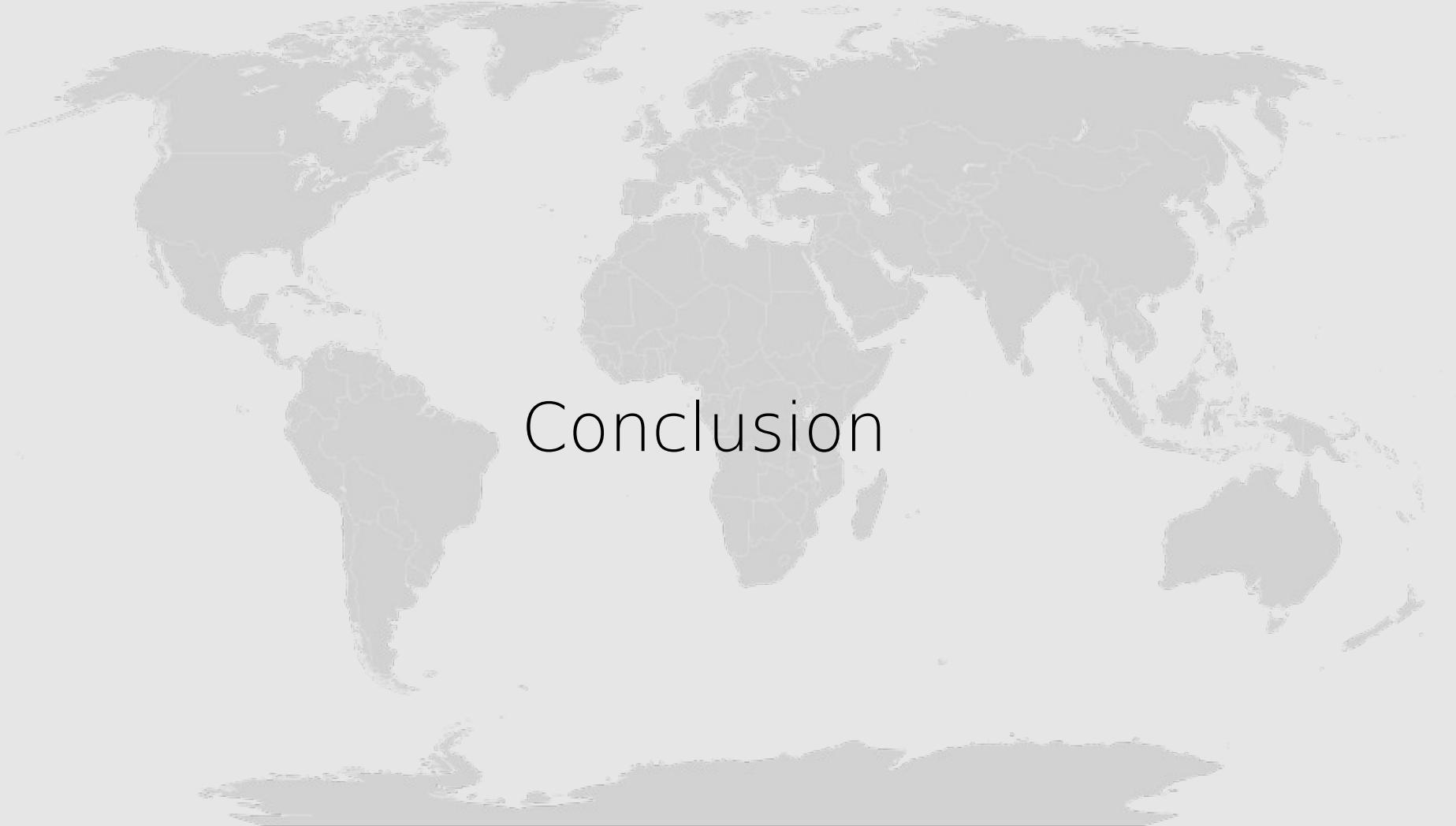
→ 30,7 km de pistes cyclables

(piste non partagée)

Autres requêtes

- Recherche par nom approximatif
- Objets ajoutés après une date donnée
- Objets parents/enfants
- Et bien d'autres...





Conclusion

- Des données riches, au-delà de la carte
- Des cas d'usages concrets
- Une source de choix !



« L'information veut être libre »
Stewart Brand

Merci de votre attention !



Entrepreneur en géomatique
& développement logiciel

adrien@pavie.info
<http://pavie.info/>