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Summary

SECTION #1
GTFS FILES

1. GTFS files (metro)
2. GTFS files (bus)
3. Methodology to collect accessibility of bus or tram stops

Pages 1 to 8

SECTION #2
PEDESTRIAN ROUTE PLANNER

1. The API interfacing
2. The API documentation to test
3. Demo of the pedestrian route planner in Lisbon
4. Demo of the multimodal route planner in Lisbon
5. Code in open source (Github)

Pages 9 to 13

SECTION #3
USER FEEDBACK

1. Social impact measurement
2. Beta user feedback

Pages 14 to 16

The GTFS files (metro)

We improved the GTFS files of the public transport of Lisbon by integrating new accessibility data (in collaboration with Willeasy)

BEFORE » **AFTER**

1 geographical position per metro station	Precision of entries and exits of each metro station
No accessible data collected	Collection of accessibility data about each entry and exit (lift, escalator, stairs …)
Empty fields (wheelchair_accessible for trips and wheelchair_boarding for stops)	Convertion of the data tp the GTFS format

M Rossio

M Rossio Entry #1

M Rossio Entry #2

M Rossio Entry #3

The GTFS files (bus)

We improved the GTFS files of the public transport of Lisbon by integrating new accessibility data (in collaboration with Willeasy)

BEFORE	AFTER

Empty field « wheelchair_accessible » for the trips.txt file	Collection of accessibility about all bus lines and convertion to the GTFS format
Empty fiels « wheelchair_boarding » for the stops.txt file	Collection of accessibility of the stops (of accessible lines) in the perimeter
No standard to collect the accessibility of stops	Creation of a methodology to provide autonomy to the Municipality of Lisbon

Methodology to collect accessibility of stops

1

Choose a bus line between the accessible lines of the Carris network

Routes with accessibility features: 701, 702, 703, 705, 714, 716, 717, 718, 720, 722, 726, 727, 728 (until 9pm), 729, 730, 732, 735, 736, 737, 738, 744, 747, 750 (until 9pm), 753, 755, 756, 759, 767, 770, 774, 778, 781, 782, 783, 794, 797, 798, 26B, 29B.
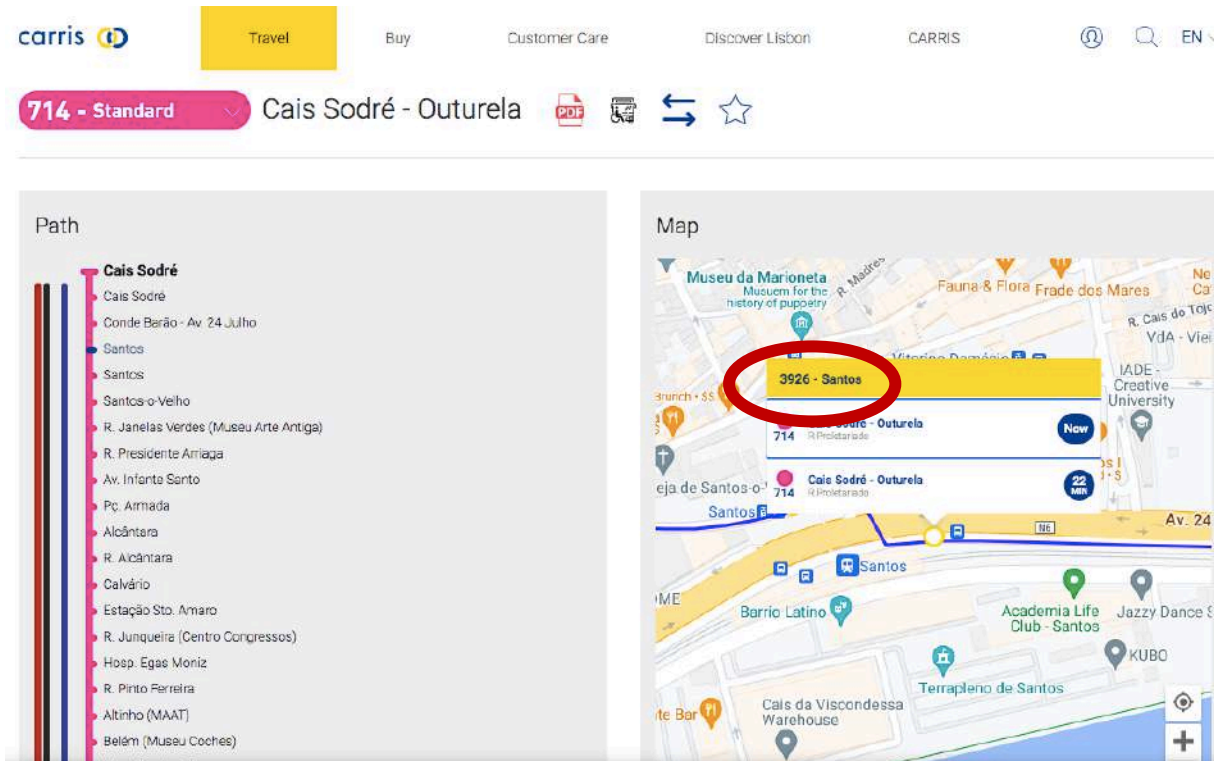
2

Find the information about the bus line

https://www.carris.pt/en/travel/carreiras/

3
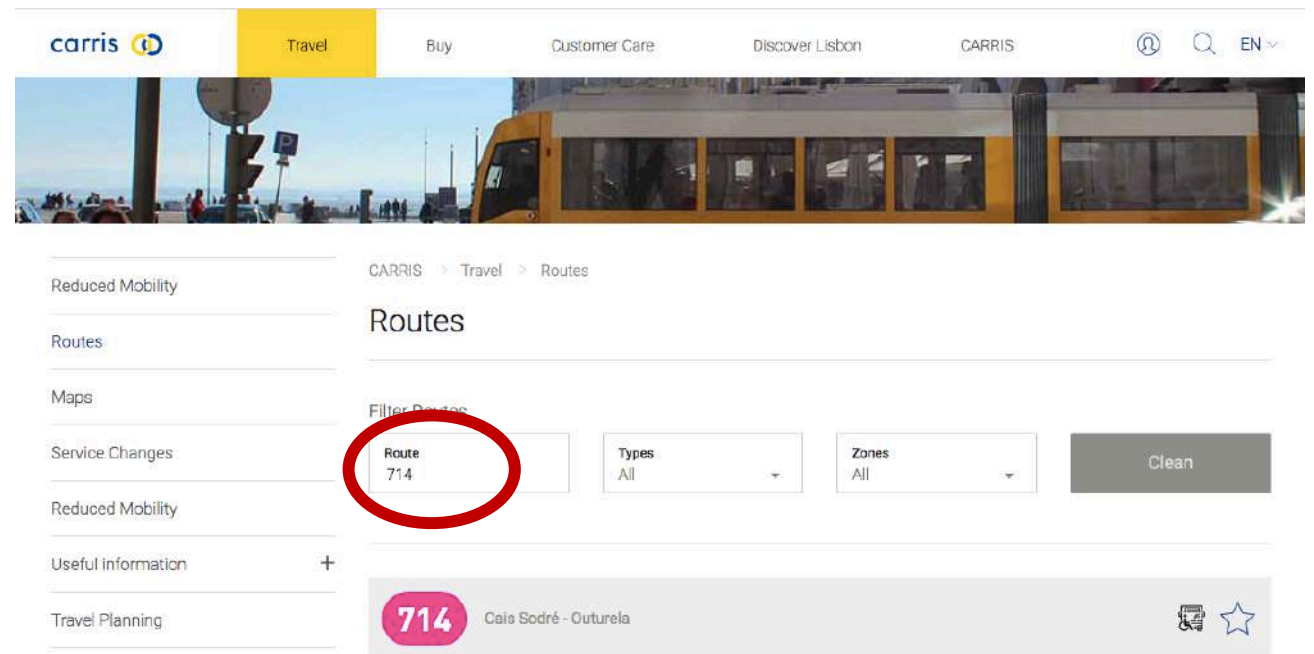
Methodology to collect accessibility of stops

3

Click on the stop on the map you want to collect the accessibility. Find the stop_id (here : 3926)
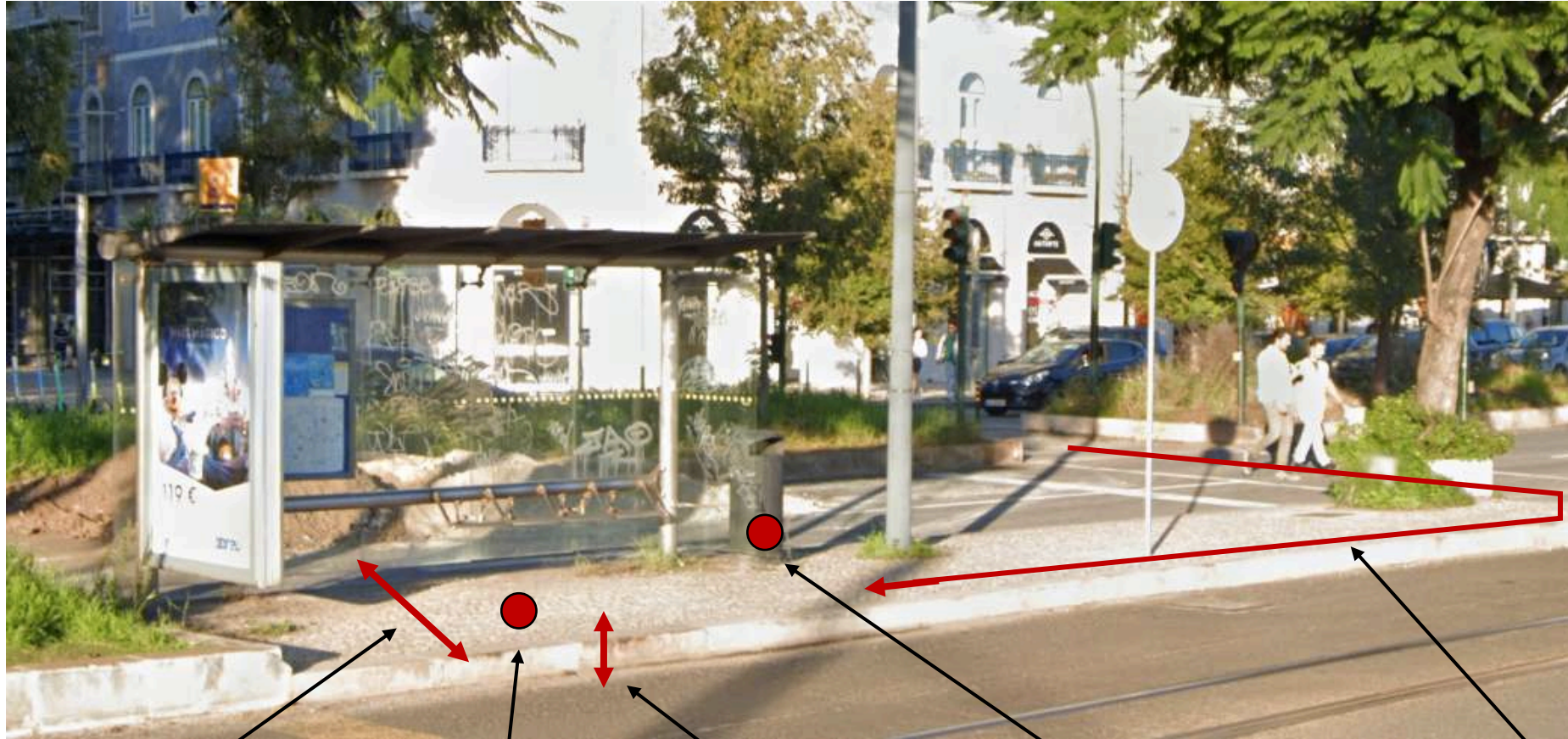
4

Go on site to collect
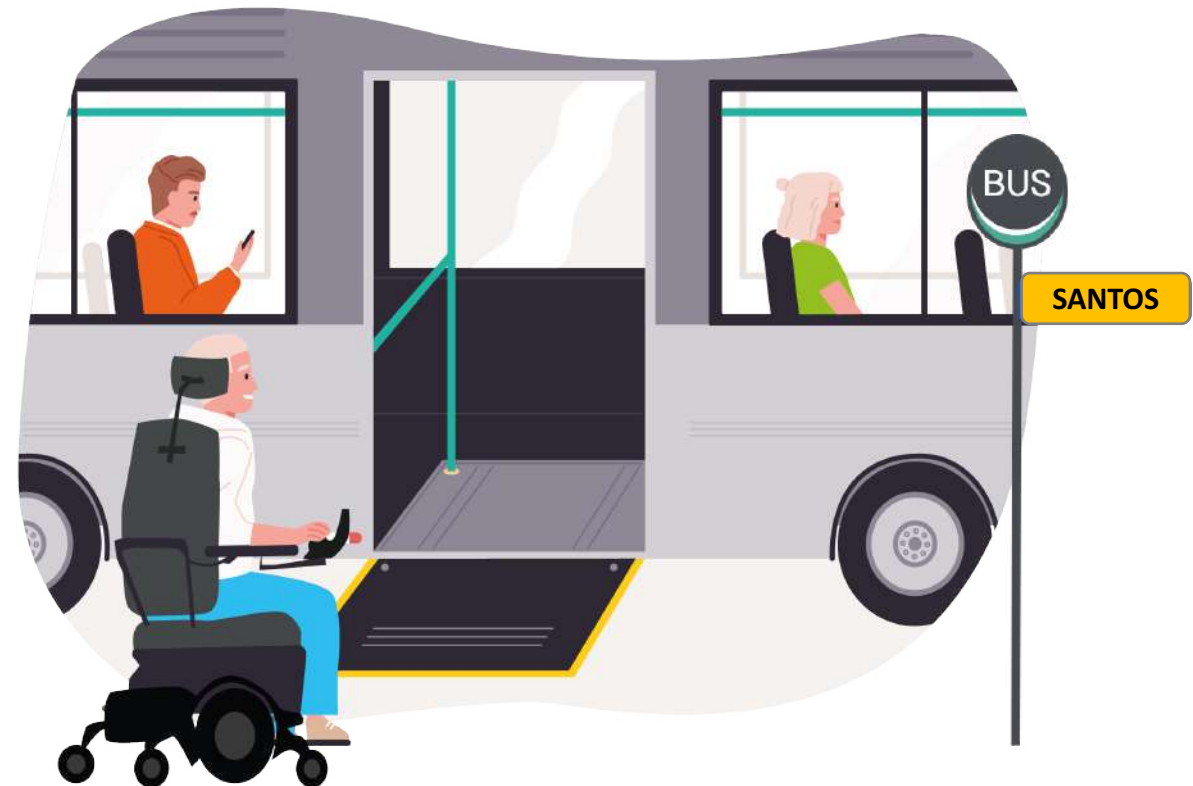
Accessibility criteria of a bus stop

With local associations and our experience, we decided to take into account the following 5 criteria

Enough space for a 360° in wheelchair ✓

- Low inclinaison (< 6%)
- Low cross slop (< 2%) ✓

Elevated sidewalk for the bus ramp (< 6% inclinaison) ✓

Absence of blocking obstacles (bin, street ramp …) ✓

Accessible pedestrian access ✓

Methodology

5 **Fill up the Excel**

GTFS Accessibility Stops Lisbon .XLSX Working offline

Type	Line Number	Stop Name	Stop Id	Elevated sidewalk for the ramp bus (< 6% inclinaison)	Enough space for 360° in wheelchair	Low inclinaison (< 6%)	Low cross slop (< 2%)	Absence blocking obstacle (bin, street lamp ...)	Accessible pedestrian acces	Stop Accessibilit (GTFS format)
Bus	714	CAIS SODRÉ	1_3804	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	714	CAIS SODRÉ	1_3802	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	714	CONDE BARÃO - AV. 24 JULHO	1_7102	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	714	SANTOS	1_3926	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	727	RATO	1_6810	Yes	Yes	Yes	Yes	Yes	No	2
Bus	727	RUA DO ARCO	1_6818	Yes	Yes	No	Yes	Yes	No	2
Bus	727	RUA DE SÃO BENTO	1_6706	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	727	PALÁCIO DE SÃO BENTO (JARDIM)	1_6704	No	Yes	Yes	Yes	Yes	Yes	2
Bus	727	ASSEMBLEIA DA REPÚBLICA	1_6702	Yes	Yes	Yes	Yes	No	No	2
Bus	727	CONDE BARÃO - AV. D. CARLOS I	1_7104	Yes	Yes	Yes	Yes	Yes	No	2
Bus	728	SANTOS	1_3901	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	728	CONDE BARÃO - AV. 24 JULHO	1_7101	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	728	CAIS SODRÉ	1_3803	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	732	RESTAURADORES	1_1006	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	732	ROSSIO	1_908	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	732	R. OURO	1_5510	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	732 & 759	Pç. Comércio	1_5502	No	Yes	Yes	Yes	Yes	Yes	2
Bus	732	SANTOS	1_3902	Yes	Yes	Yes	Yes	Yes	No	2
Bus	735	CAIS SODRÉ	1_3801	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	736	ROSSIO	1_901	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	736	RESTAURADORES	1_1010	Yes	Yes	Yes	Yes	Yes	Yes	1
Bus	736	Av. Liberdade	1_1103	No	No	Yes	Yes	Yes	Yes	2

The last colomn is automatically generated according to the GTFS format

1 = accessible
2= not accessible

6

Accessible pedestrian access to the bus stop

With local associations and our experience, we decided to pay attention to the pedestrian path
To access to the bus stops (is the pedestrian crossing or sidewalk to go up and down of the bus ?)
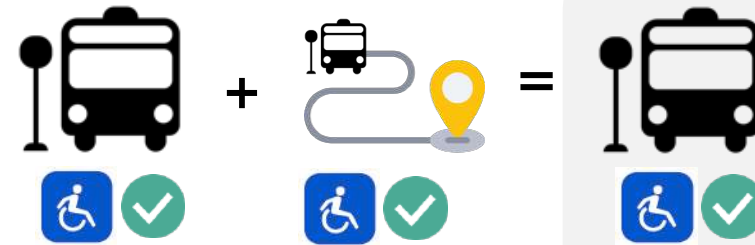
La RATP vous assure un accès piéton (rue - quai) pour rejoindre votre arrêt PMR
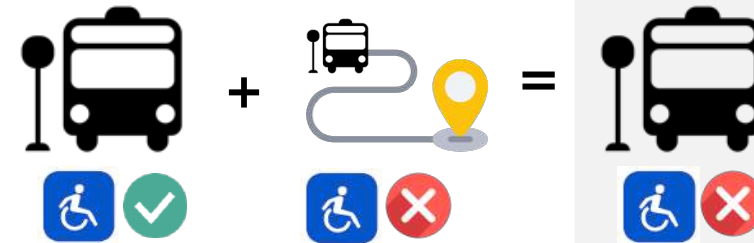
La RATP rend inaccessible un arrêt même s'il est aménagé PMR

Methodology

6

**Fill up the « wheelchair_boarding » field of the
stops.txt file with the correct value**

« wheelchair_boarding » is
the last field

Correct value
completed

8

The API interfacing

We would like to test with you an API interfacing between your Moovit app and our pedestrian route planner and together acquire more users with reduced mobility on Moovit

1 User request

2 Calculation of the public transport portions

3 ANDYAMO Calculation of the pedestrian portions

4 Full itinerary accessible in wheelchair
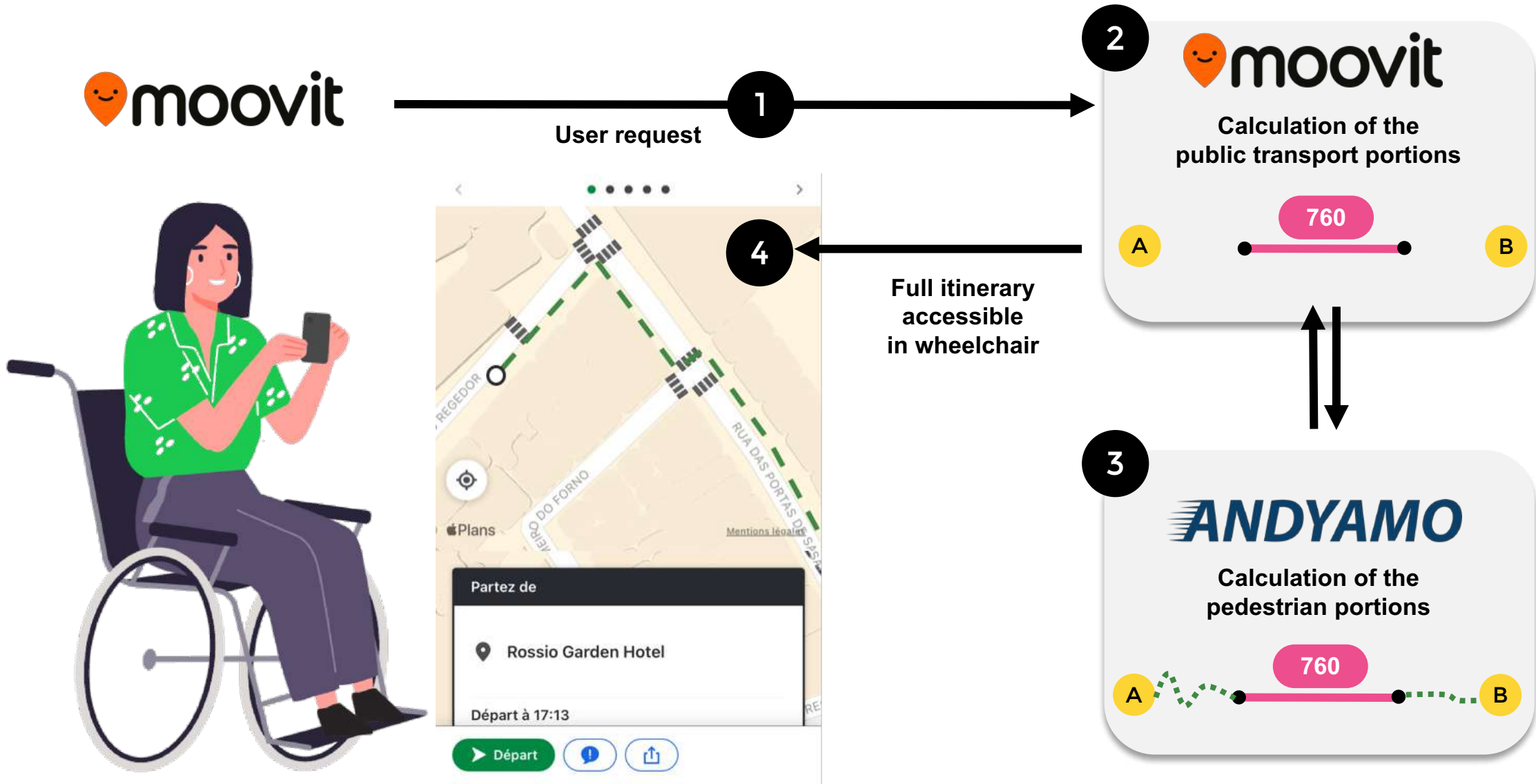
The API documentation to test in Lisbon

URL : https://lisbon.andyamo.fr/redoc
Id : admin   Password : eishohh9ahsohCheew2maithapieshie2hohxoot

10

Demo of the pedestrian route planner in Lisbon

URL : https://lisbon.andyamo.fr/demo/
Id : admin   Password : eishohh9ahsohCheew2maithapieshie2hohxoot

Choose the user profile
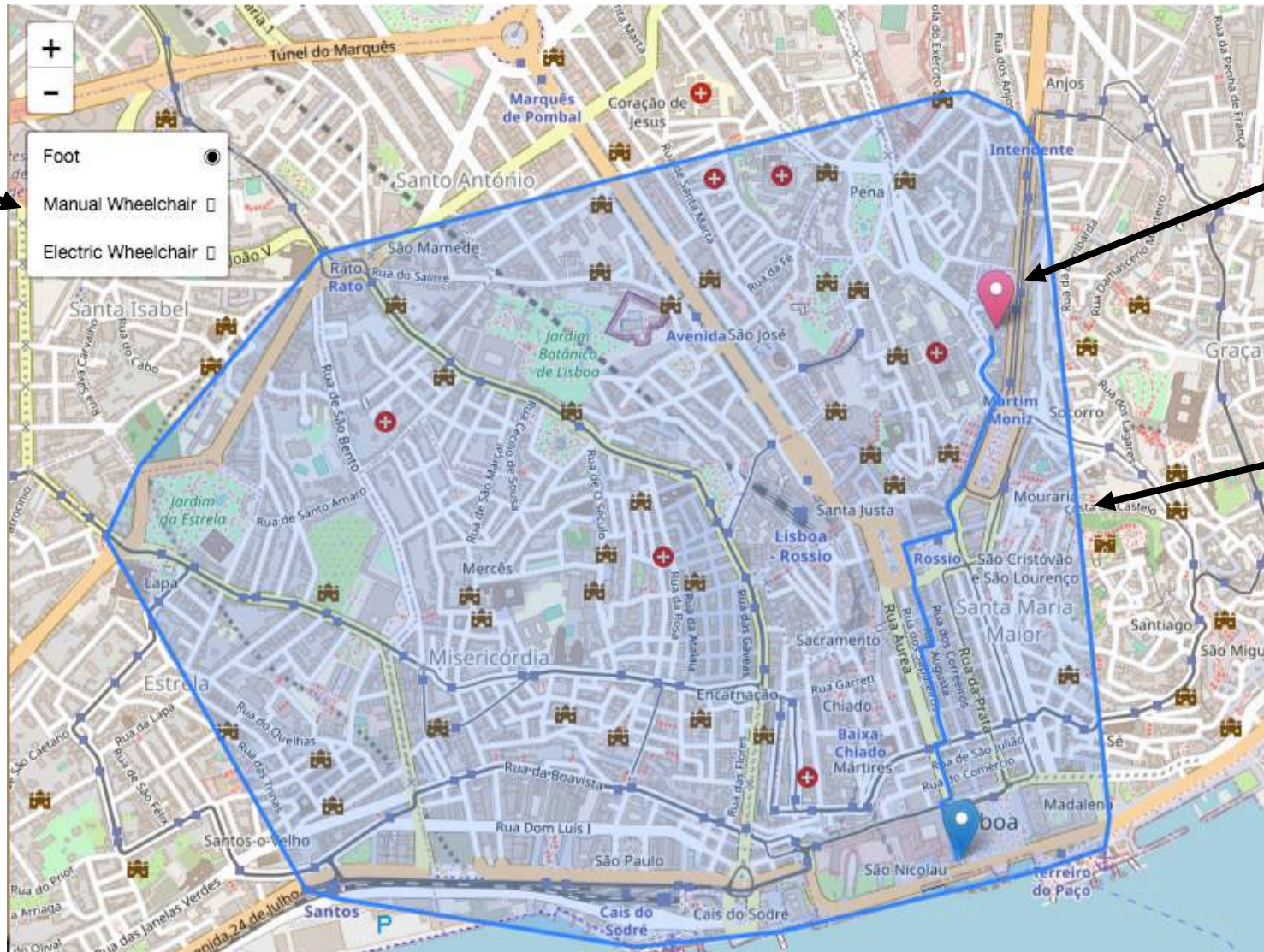
Move the 2 markers (Origin – Destination)

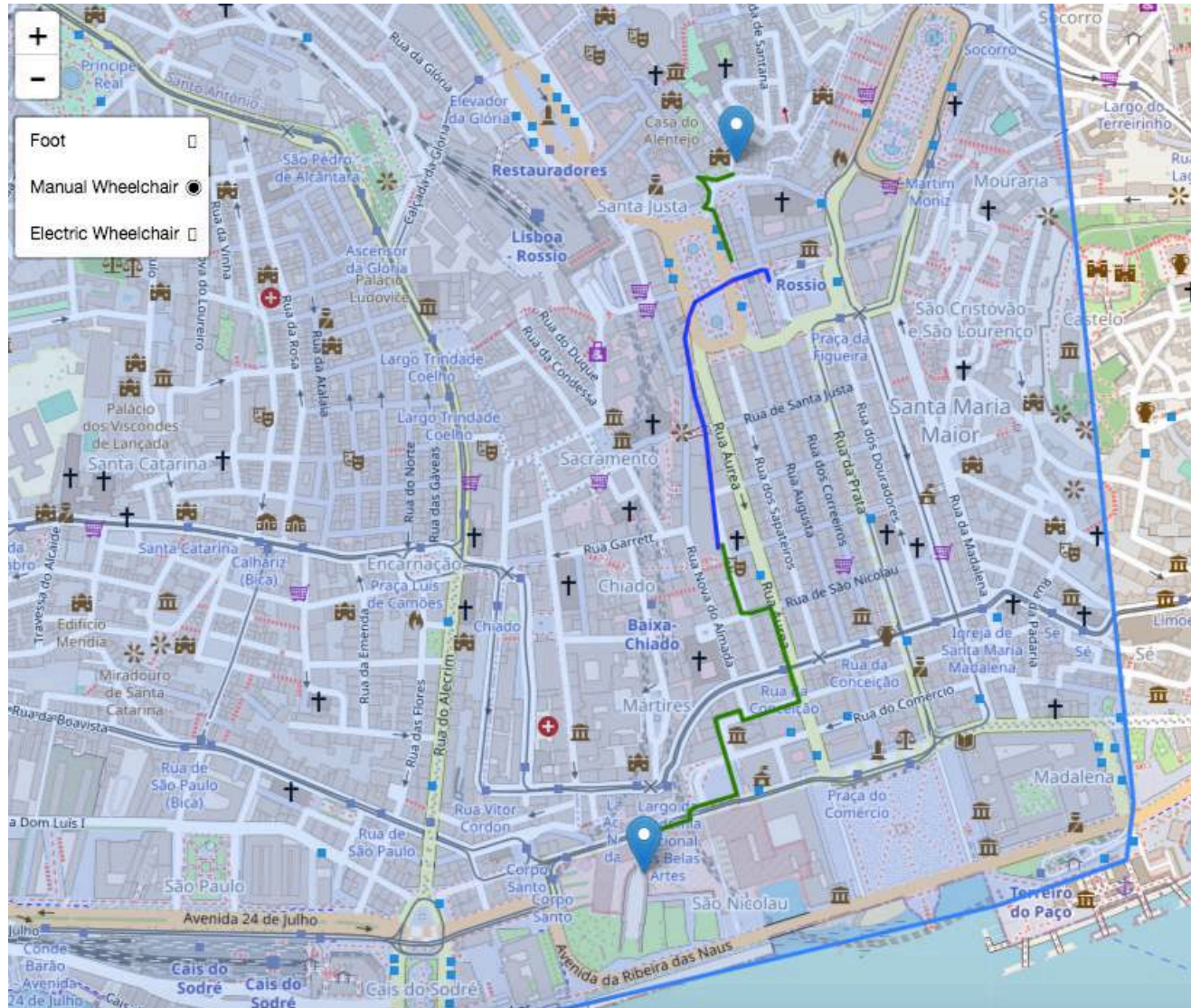Delimitation of the geographical area covered

11

Demo of the multimodal route planner in Lisbon

URL : https://multi-lisbon.andyamo.fr/demo/
Id : admin   Password : eishohh9ahsohCheew2maithapieshie2hohxoot

Pedestrian portions

Public transport portions

12

Code in open source (Github)

URL : https://git-lisbon.andyamo.fr/explore/repos

Social impact measurement

BEFORE	AFTER	IMPACT 👊
« Very often I am not able to plan my trip by bus or metro because I do not find information about accessibility. So I have to move by car even if I know it is not the most eco-friendly choice … »	« With the project, I will have more choice and options to get to my destination. I will feel better not to take every time my car. I feel more listened and taken care by the Municipality of Lisbon »	• **More choice** • **Go out more** • **Feeling of inclusion**
« Even if I can see the accessibility of the bus lines, I still have doubt if I can access with my manual wheelchair to the bus stop. It has already happened to me to be blocked at the bus station without going down because the crossing was not lowered »	« I like the fact there are also accessible pedestrian itineraries. I would feel more relax to know that my last meters by foot would be adapted in wheelchair. I start feeling I can consider public transportation as a reliable and trustworthy option »	• **More confidence** • **Trust on public transportation**
« In order to plan my trip, I sometimes ask my friend to check before going myself … but I don't like asking every time for help because I feel bad to rely every time on someone »	« I will be more independent and autonomous in my trips. And maybe I will go out without having to planifiy 1 or 2 days in advance »	• **More autonomy** • **More spontaneity**

Social impact measurement

BEFORE	AFTER	IMPACT
« I usually do the same trips because I know them by heart and I am sure I do not find blocking obstacles on my way »	« The pedestrian and bus route planner would give me more energy and confidence to discover other places or areas. I will probably go out more »	• **Get out of isolation** • **More active** • **More social interactions**
« Sometimes I check on StreetView images to check on the accessibility and determine if my trip could be OK to do in wheelchair … every time it takes a lot of time and I cannot look at all options … »	« The pedestrian and bus route planner would give me information in total transparency. I like when the planner tells me that there are no accessibles itineraries. I prefer to know that and would not waste my time to find one »	• **Gain of time** • **More energy** • **Transparency**
« I hate when someone tells me that Lisbon is a nightmare for people with disabilities. You have stairs and high slopes every where … I do not like the prejudices we have on Lisbon »	« The accessibility map you have created has the merit to show where to progress and where it is perfectly accessible. It would help people to have a better objetive opinion on the city »	• **Better image of the city** • **Against prejudices**

Beta user feedback (route planner)
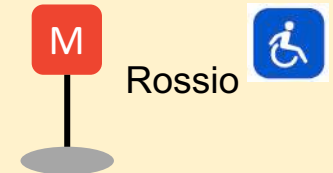
VERY GOOD / GOOD	NEED IMPROVEMENT
Precision of the pedestrian graph with sidewalks and crossings « *We can easily see which side of the street we need to go and it is helpful. Because before we were not sure if the other end of the sidewalk is flat or not lowered so blocking in wheelchair* »).	
Precision of the entries and exits of metro and their accessibility level. « *It is very usefull for us to know which entry is the best accessible in wheelchair. Sometimes we take a lot of time to find the best entry …* »	« *It would be useful to have visible outdoor signage to help us to find quickly to accessible entry* » Rossio
Information about the accessibility of the bus lines and stops. « *It is very difficult to take the bus without knowing if the bus is equiped of a ramp, if the stop is adapted and if we can go down the stop … Without these infirmation, we cannot trust on this public transportation even if we would like to take it more. Your project allows us to have more transportation choices and to take the buses more serenity.* »	« *Getting information about accessibility is very good. More and more people with reduced mobility would use buses now. But drivers need also to be trained to know better how to welcome a traveler in wheelchair. Because today they are not used to travelers in wheelchair and they do not know to react. They need training to know where to stop the bus, lower the suspensions (so that the ramp is not too incline), how to manually extend the ramp …* »

Beta user feedback (route planner)

<div style="background-color:green; color:black; font-weight:bold; text-align:center;">VERY GOOD / GOOD</div>

<div style="background-color:orange; color:black; font-weight:bold; text-align:center;">NEED IMPROVEMENT</div>

Pertinence of the accessible itinerary displayed on the map « *We will follow the itinerary step by step and thanks to the geolocalisation of the app we will know if we are on the right track* »).	**Your criteria are maybe too strict** « We cannot chose and filter according to our preferences. Maybe a slop of 8% is not difficult for an electric wheelchair … but your algorithm consider this slop as not accessible and nobody can pass there. It is the same feeling with the bus stops. The GTFS format is maybe too strict and you would impose a perception on everyone… »