



Dreamwaves

See the world through your ears.

dreamwaves.io

Mar 2022

Outline

_ The Problem

_ The app

_ User testing

_ Potential

_ Final thoughts

Chapter ONE

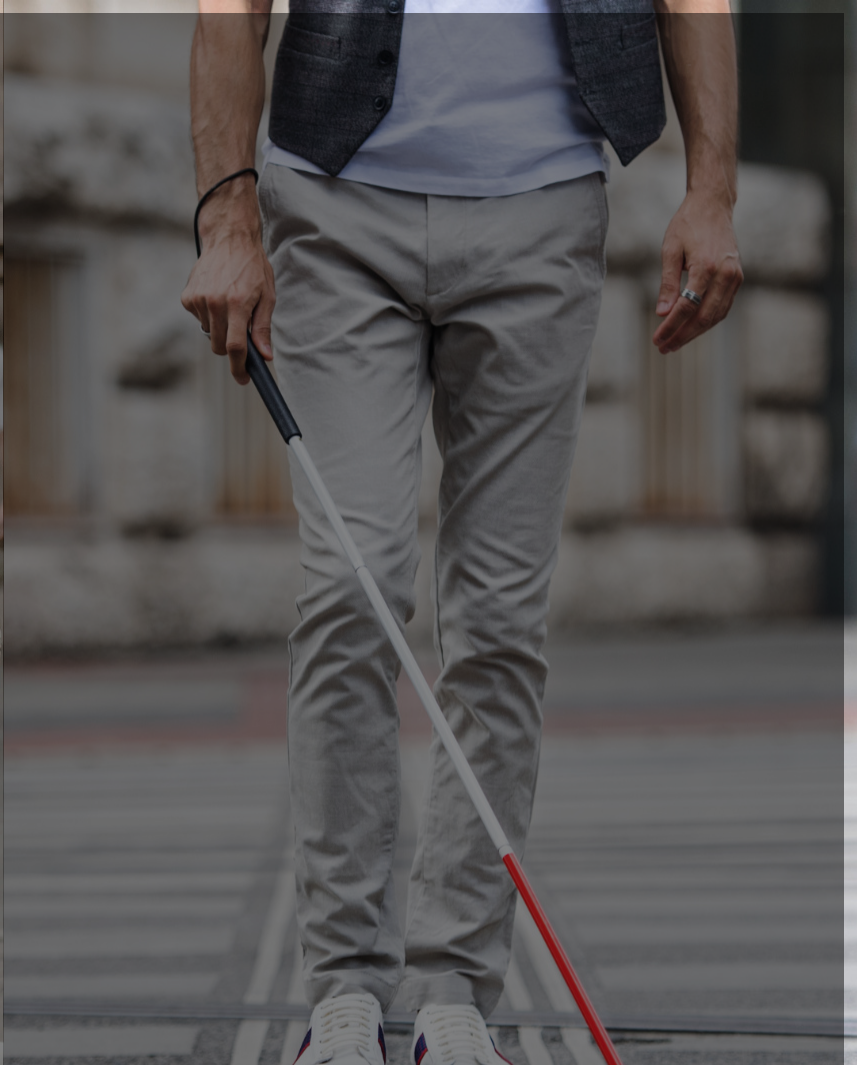
The Problem

*Where we see the challenge is
actually quite broad*



Orientation

is a fundamental challenge...



... and especially hard in specific situations.





Our mission

Make navigation easy for everyone!

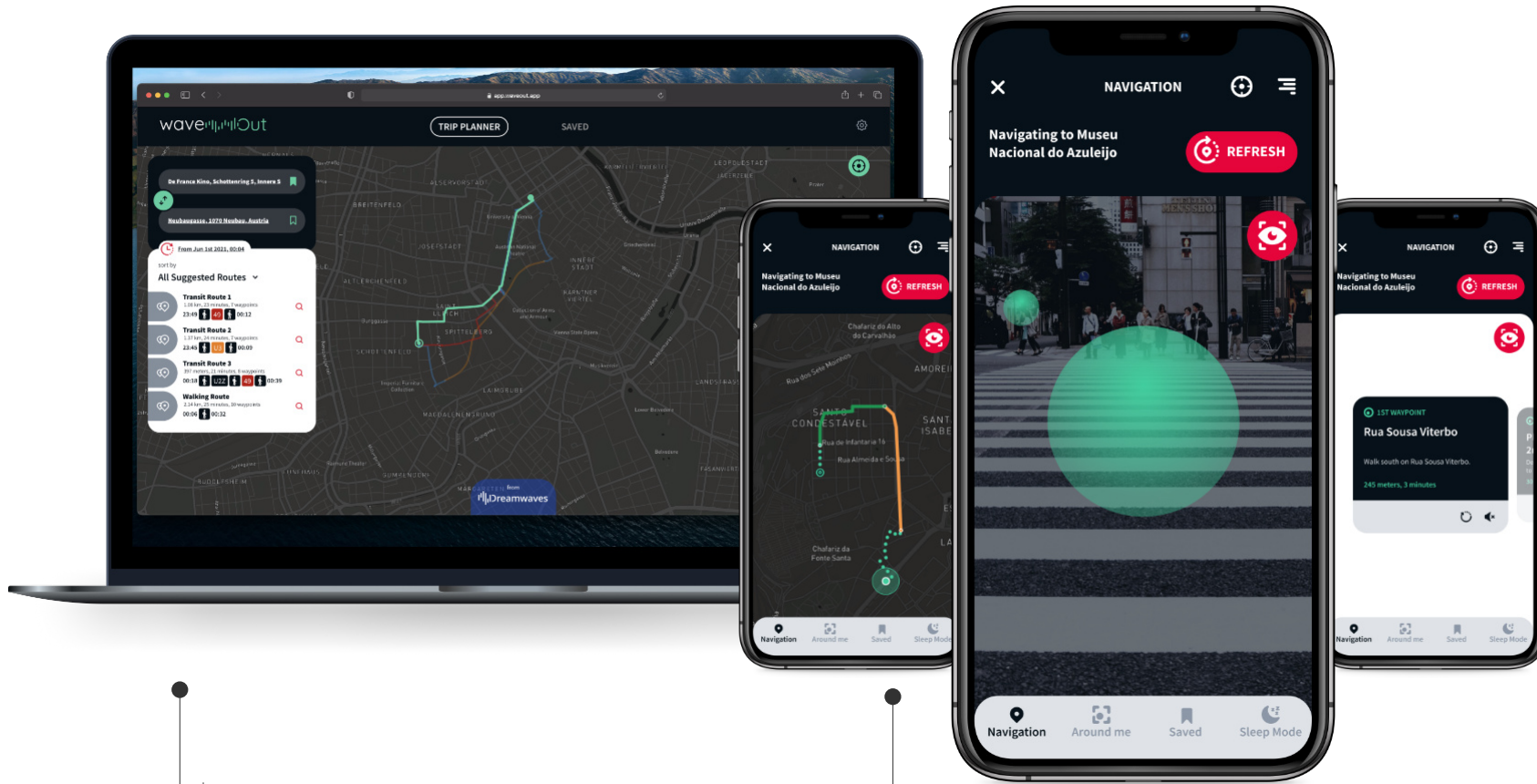
Chapter TWO

The app

What is it that we do

waveOut

Intuitive hands-free audio augmented reality navigation App



WEB PLANNER

Web based solution for pre-planning navigation save options and load later on the stand alone app

NAVIGATION SOFTWARE

Standalone app with specific features co-designed with users

Bose AR Frames



Sony InEar Duo



Spatial Audio

Simulates the way an object sounds in real life

BVA simulates real spatial audio. It renders at each ear the same sound that would be heard with a real world object.

We create the illusion that a virtual object actually exists exactly at the precise location.

AUDIO IN THE REAL WORLD

Identifying locations of real world sounds is a skill that everyone (at all ages) has and which is done without effort.

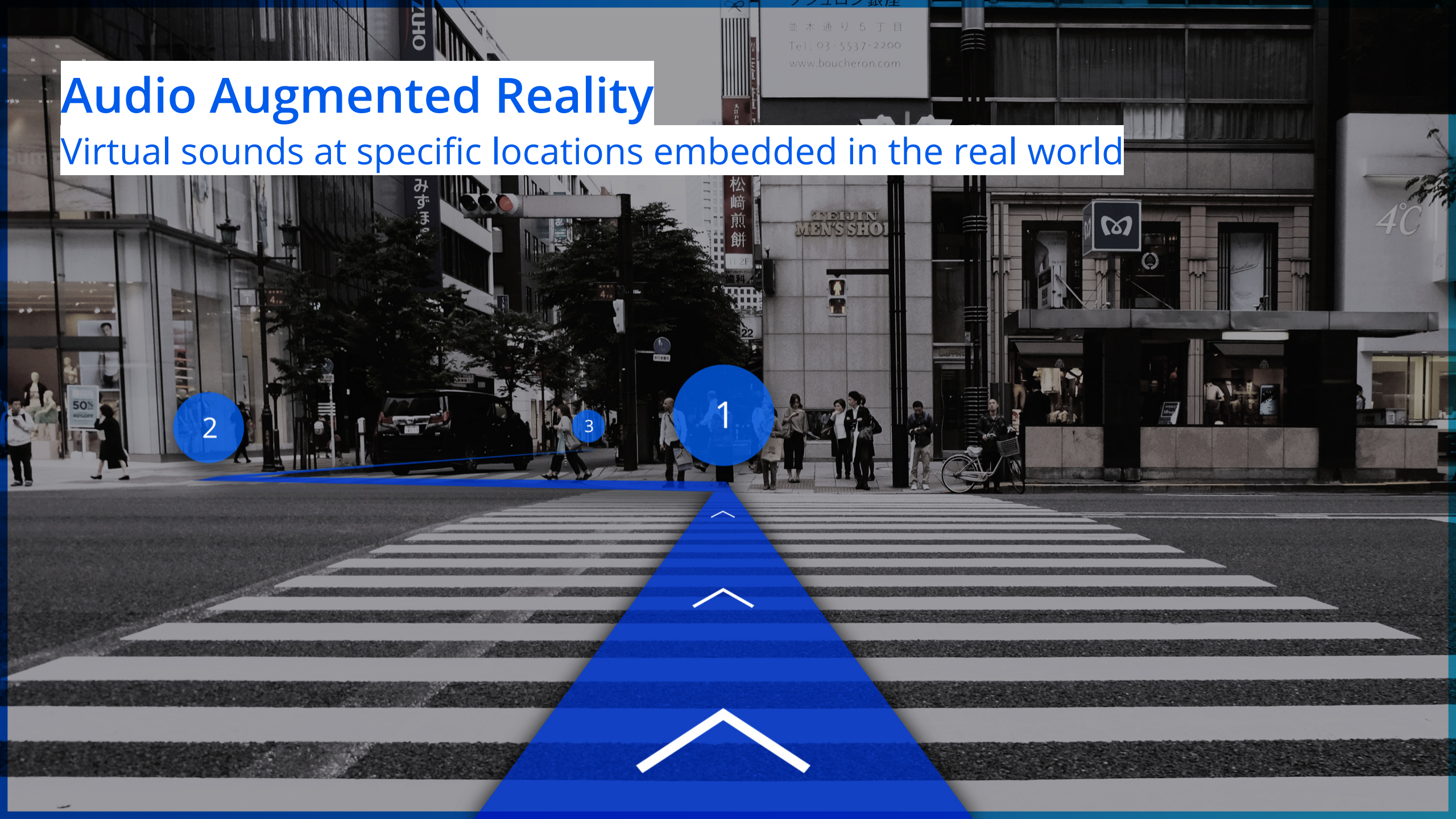
BINAURAL VIRTUAL AUDIO (BVA)

With our technology, virtual sounds can be heard like real sounds. The location of these objects can be easily understood.



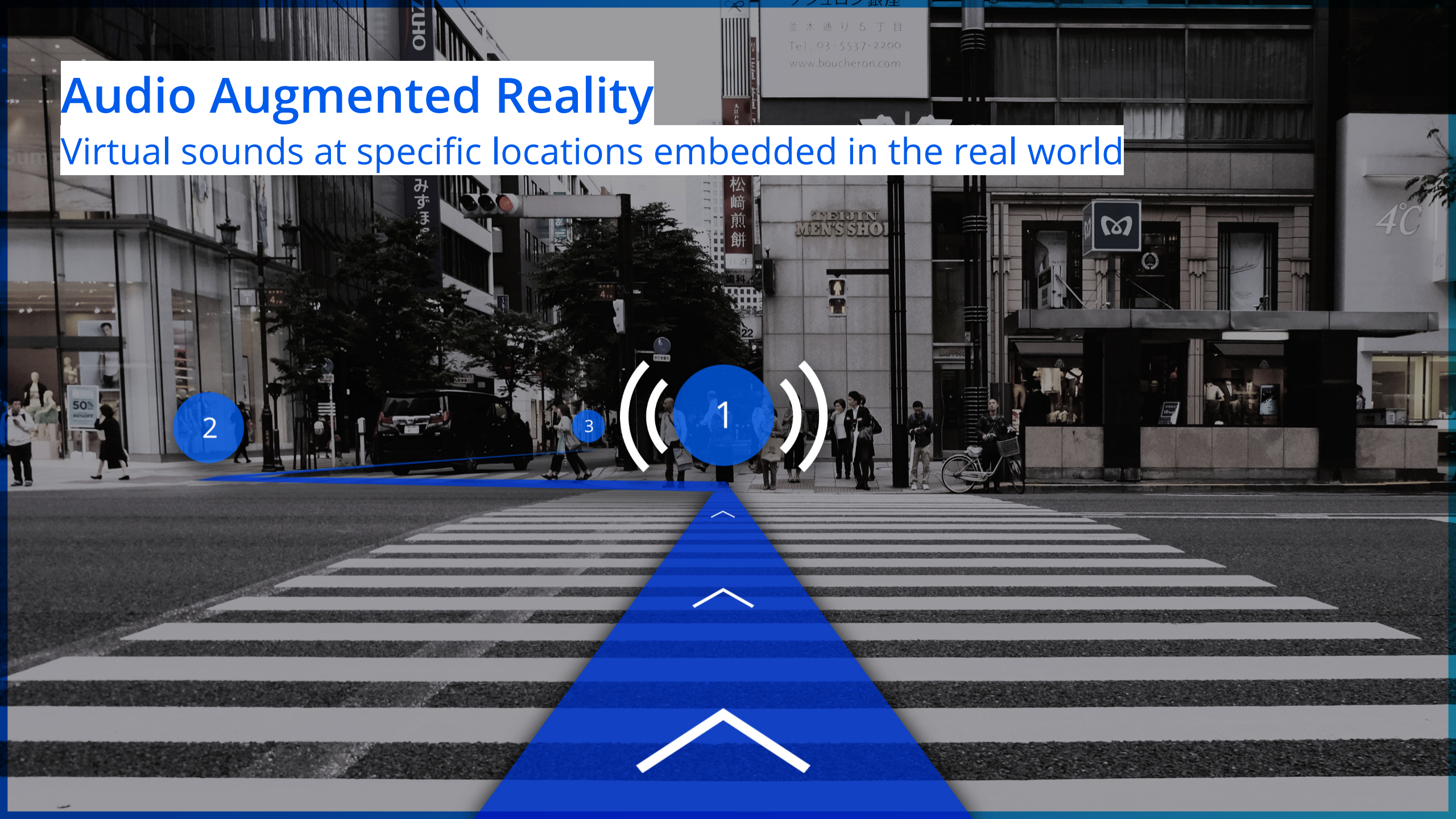
Audio Augmented Reality

Virtual sounds at specific locations embedded in the real world



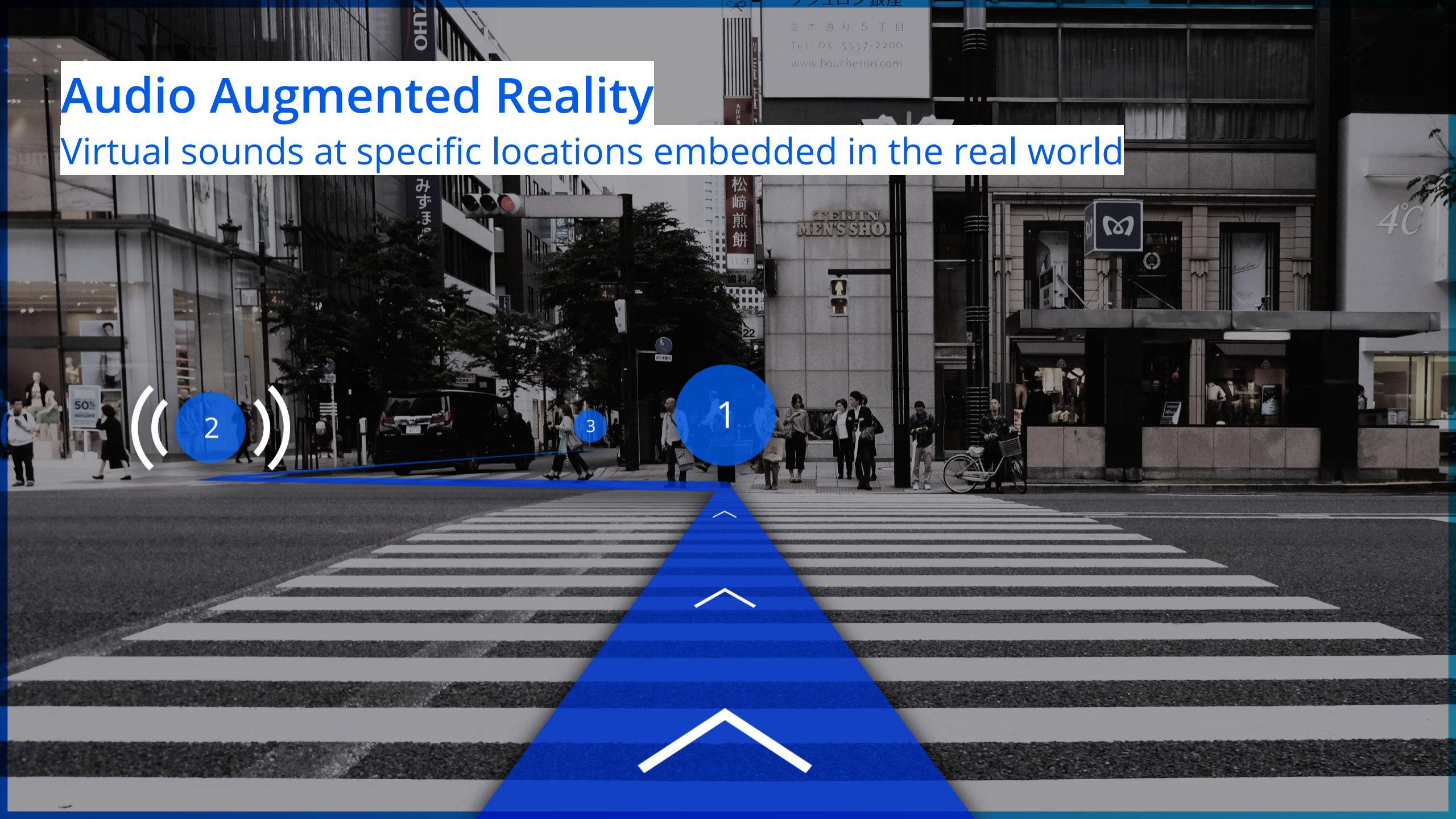
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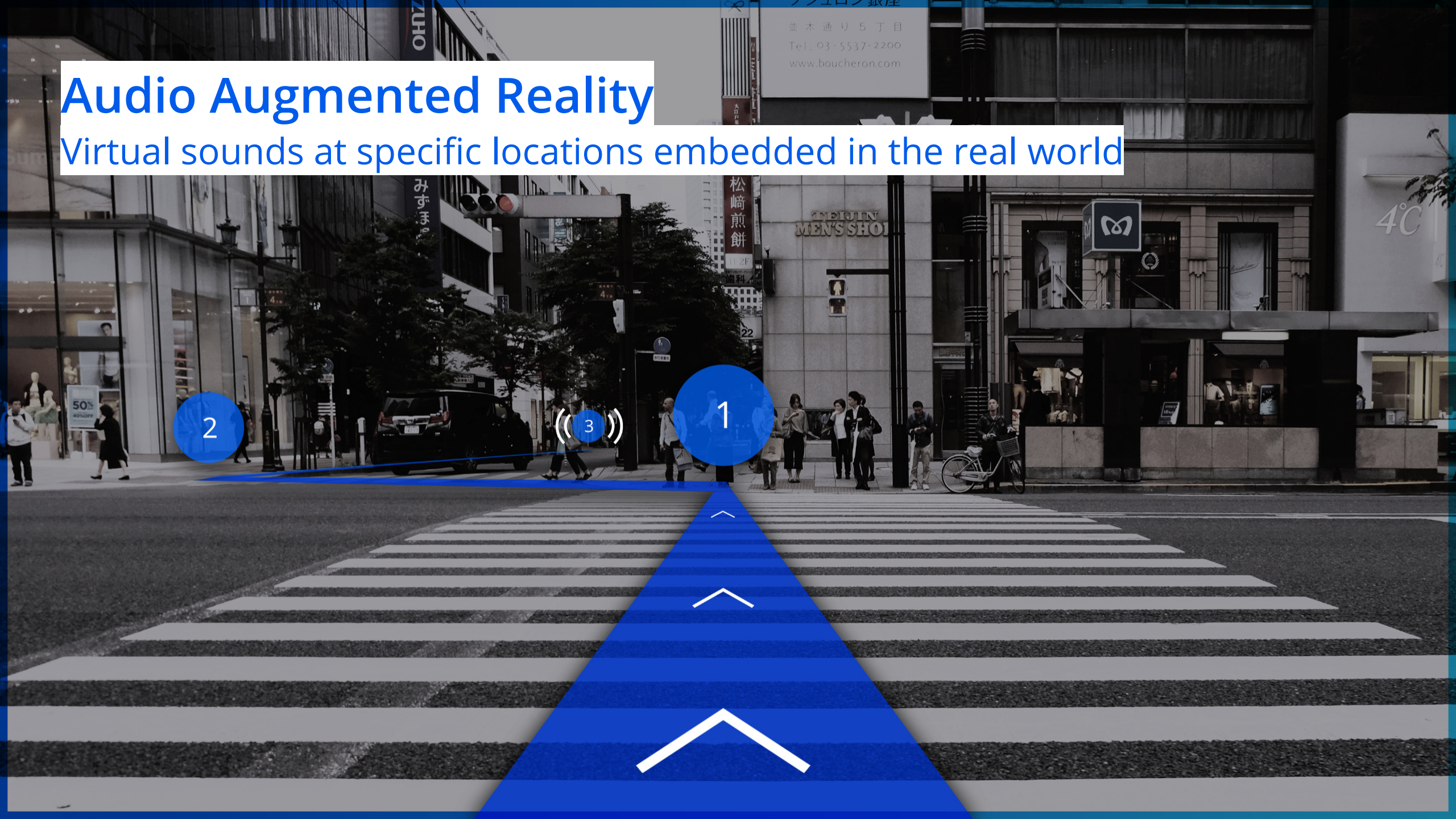
Audio Augmented Reality

Virtual sounds at specific locations embedded in the real world



Audio Augmented Reality

Virtual sounds at specific locations embedded in the real world



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松崎煎餅
11-2F

4°C

2

3

1

Demo

Offline planning

TRIP PLANNER

SAVED



Greiseneckergasse, 1200 Brigittenau, Au

Marxergasse 24, 1030 Landstraße, Austr

From Sep 7th 2020, 18:19

sort by

All Suggested Routes ▾

Transit Route 1

1.44 km, 28 minutes, 10 waypoints

19:14 19:42

Transit Route 2

710 meters, 29 minutes, 8 waypoints

19:31 20:00

Walking Route

3.66 km, 44 minutes, 16 waypoints

18:21 19:04

Offline planning

TRIP PLANNER

SAVED



IST - Instituto Superior Técnico, Av. Roví



Terminal Fluvial do Cais do Sodré, Rua C



From Sep 7th 2020, 18:19

sort by

All Suggested Routes ▾

Transit Route 1

1.03 km, 21 minutes, 8 waypoints

17:50 18:12



Transit Route 2

1.13 km, 40 minutes, 7 waypoints

17:58 18:38



Transit Route 3

520 meters, 31 minutes, 6 waypoints

18:17 18:48



Transit Route 4

1.05 km, 29 minutes, 6 waypoints

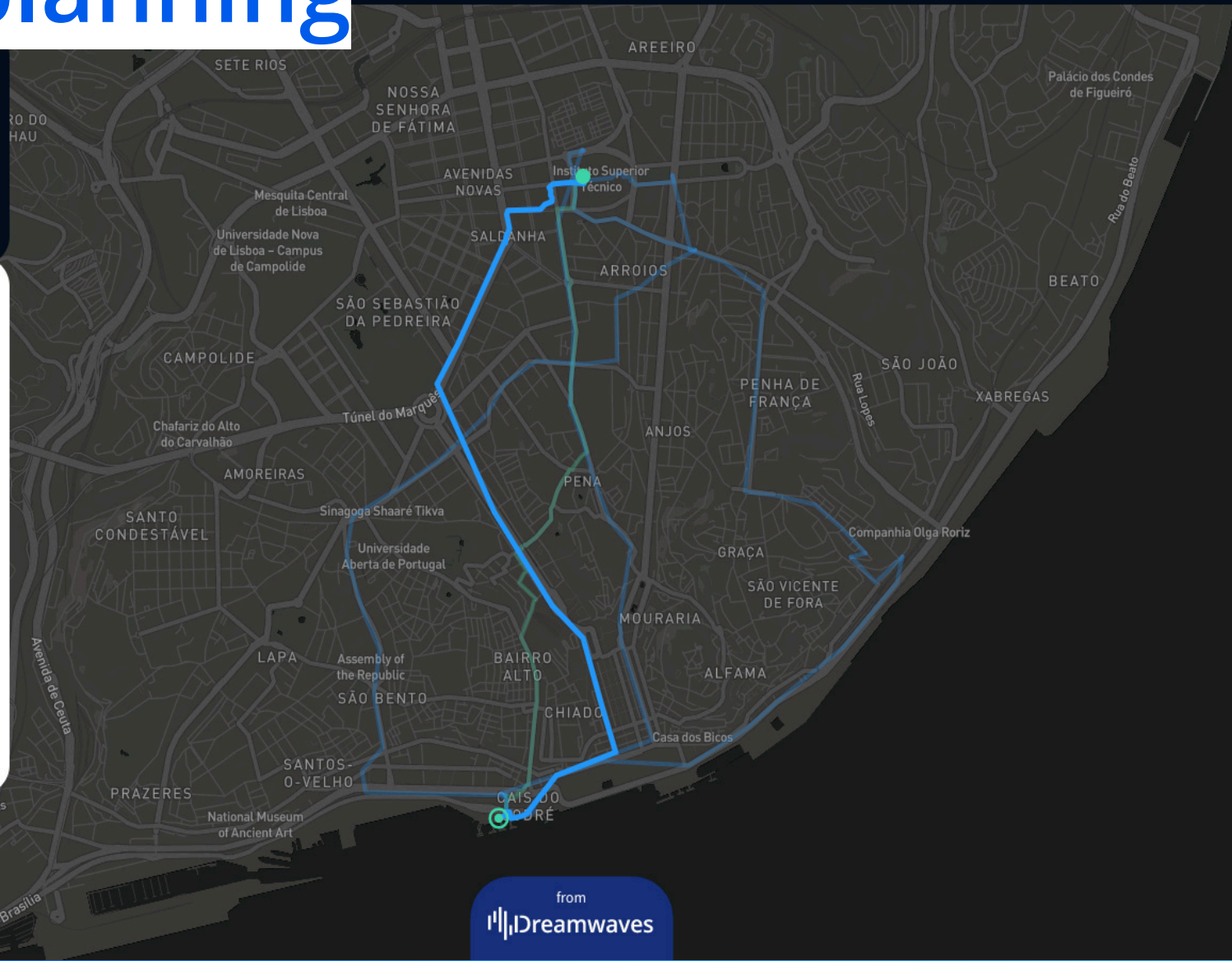
19:06 19:35



Walking Route

4.10 km, 1 hour, 34 waypoints

18:22 19:11



from

Dreamwaves

Offline planning

TRIP PLANNER

SAVED



Madison Square Park, Madison Ave, New York

14 Broadway, Queens, New York 11414, USA

From Sep 7th 2020, 18:19

sort by

All Suggested Routes

Transit Route 1

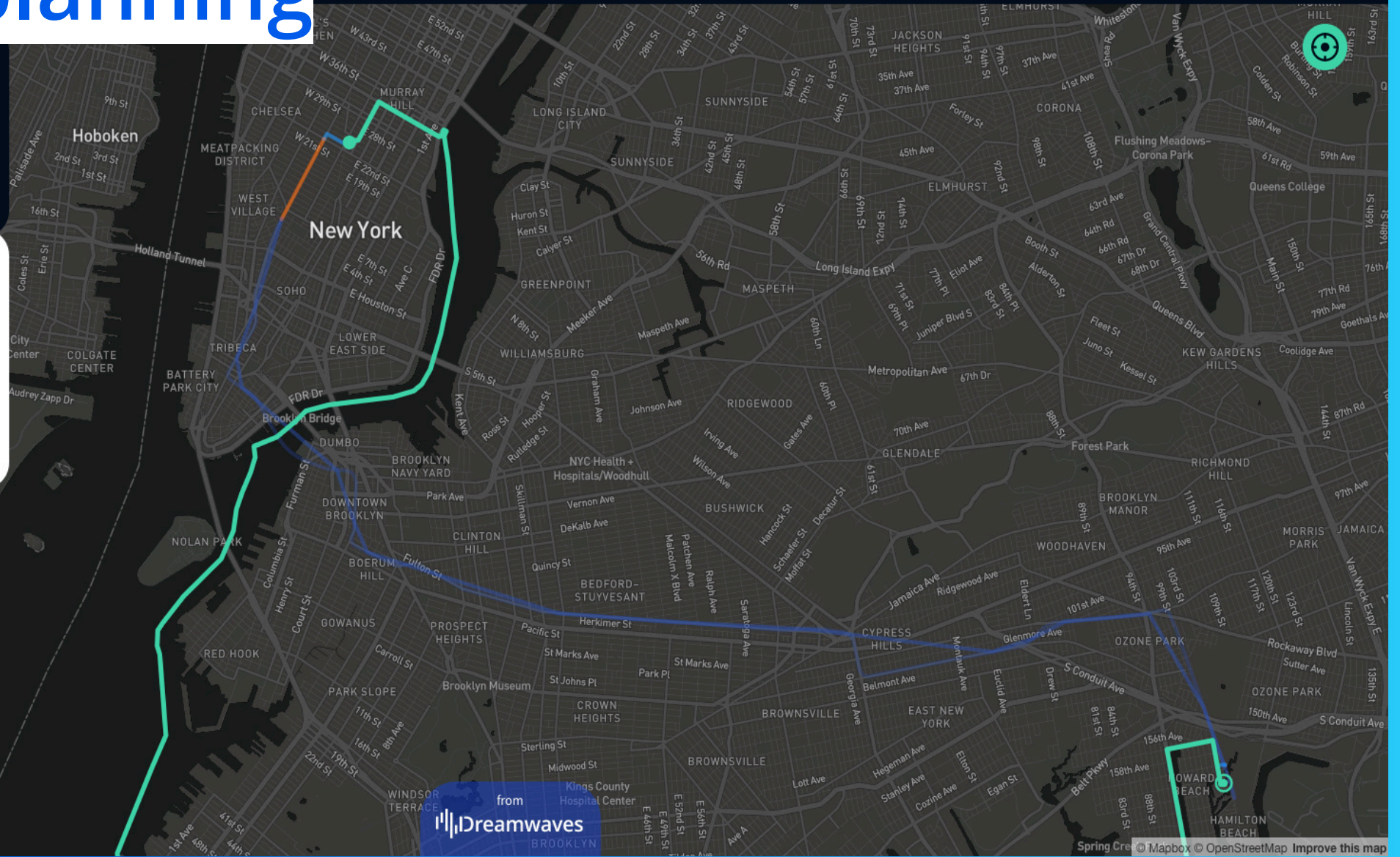
1.00 km, 1 hour, 10 waypoints

17:57 19:07

Walking Route

53.02 km, 4 hours, 24 waypoints

18:20 22:11



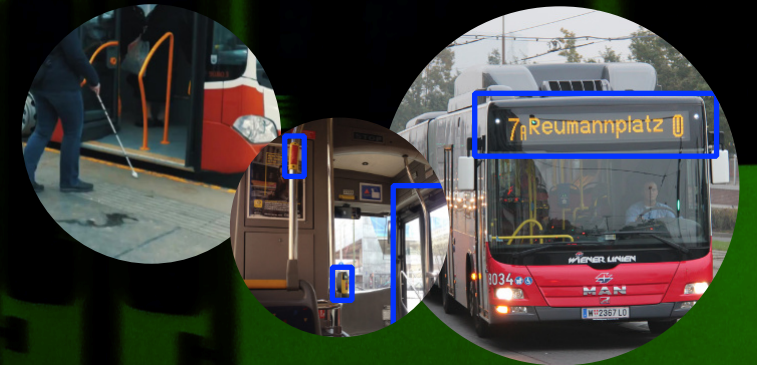
from Kings County Hospital Center
Dreamwaves

MVP

Mobility independence



MULTI MODAL ROUTING

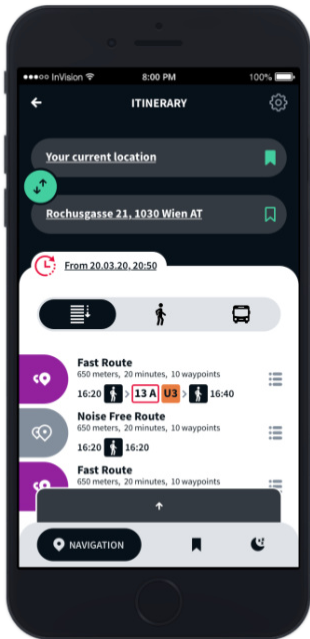


ON/OUT BOARDING ASSISTANCE

ROLL-OUT AND EVALUATION

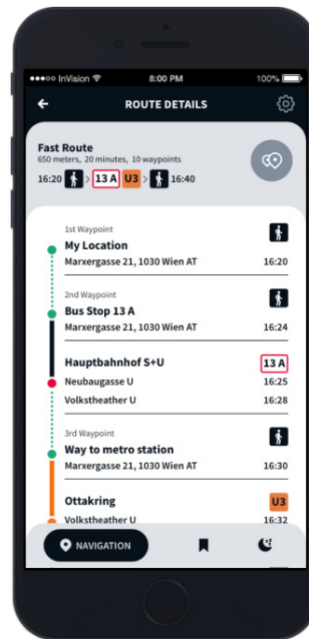
Public transport routing

UI Integration



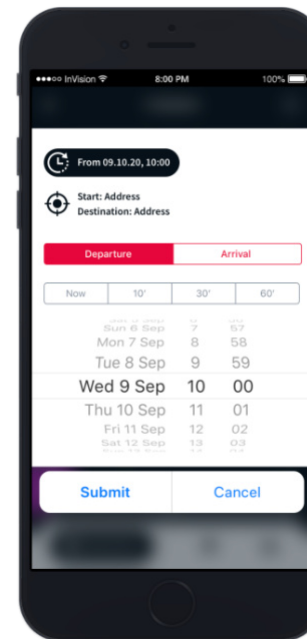
ITINERARY RESULTS

FILTER BETWEEN PT AND PEDESTRIAN
QUICK OVERVIEW OF ROUTING POSSIBILITIES



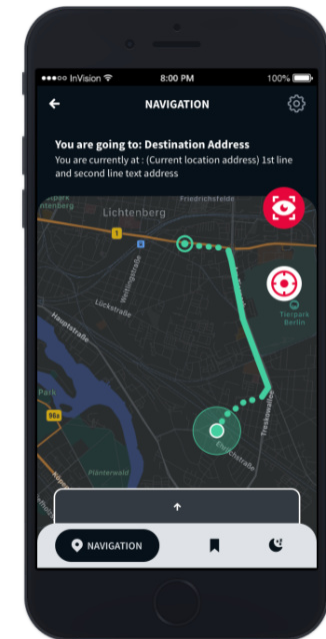
ROUTE DETAILS

DETAILED OVERVIEW OF ROUTE LEGS
SAVE ROUTE OPTION



SCHEDULE ROUTE

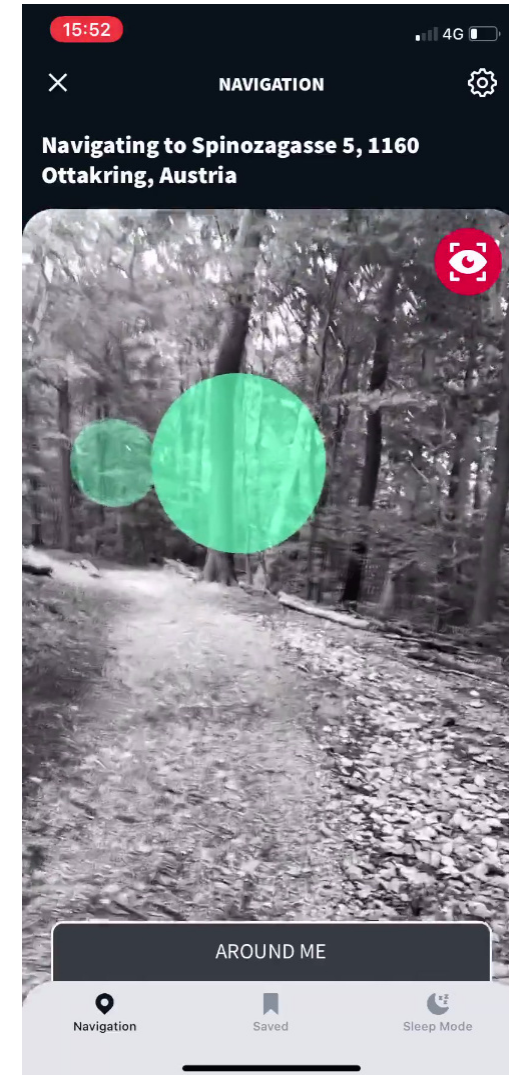
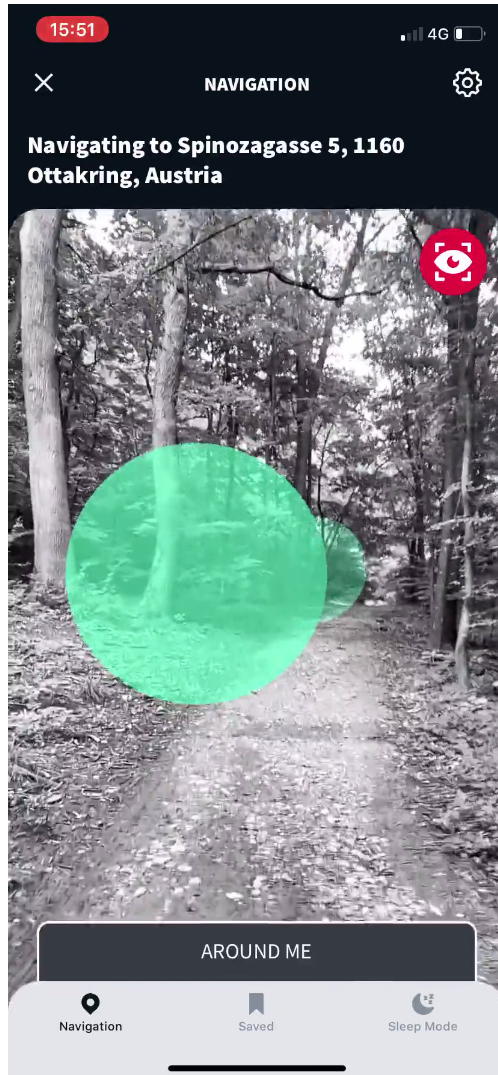
PREPLAN ITINERARY OPTIONS



NAVIGATION MAP VIEW

DISPLAY PEDESTRIAN AND PT ROUTE
SECTIONS

Works in the forest too

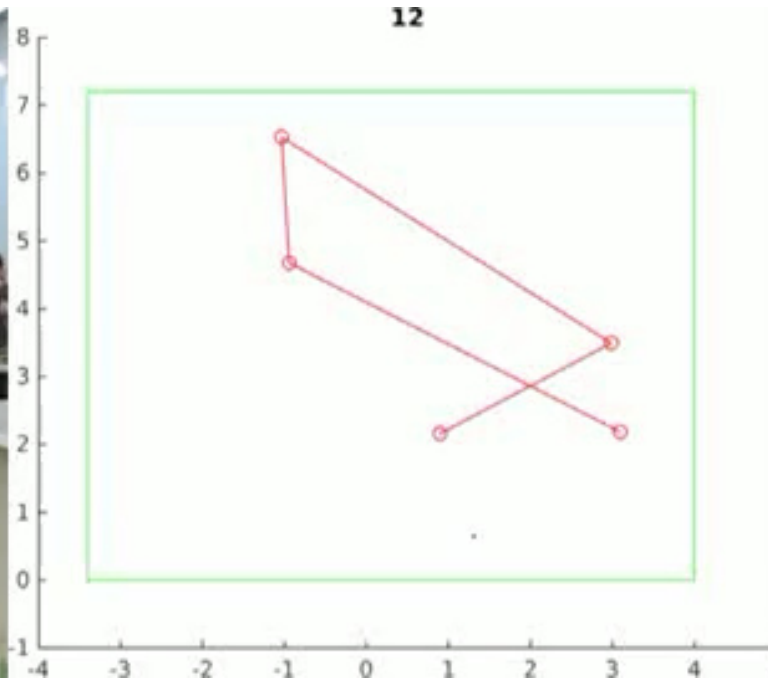


Chapter THREE

User testing

“Where we tell the story behind our app (co-)design”

First tests ever - 2018



First tests with blind people - 2018



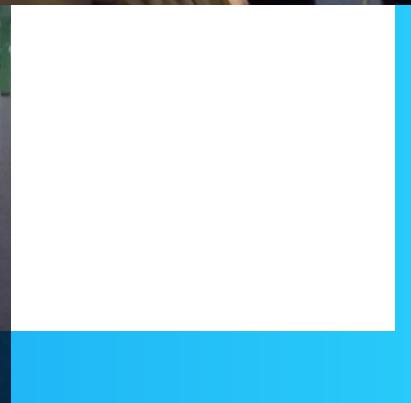
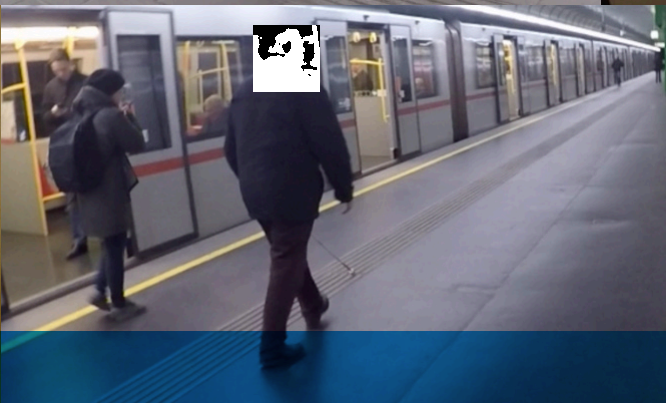
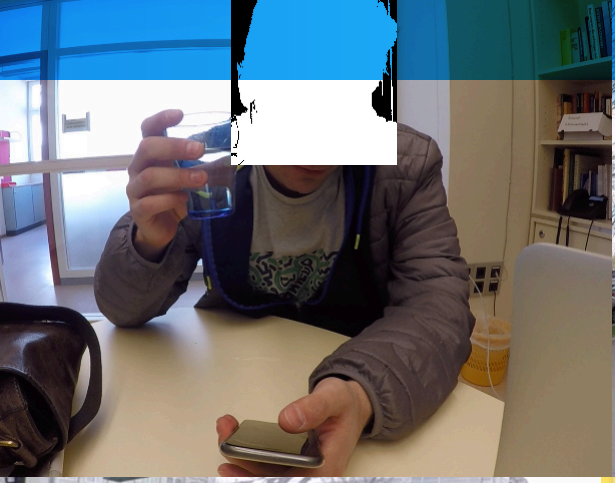
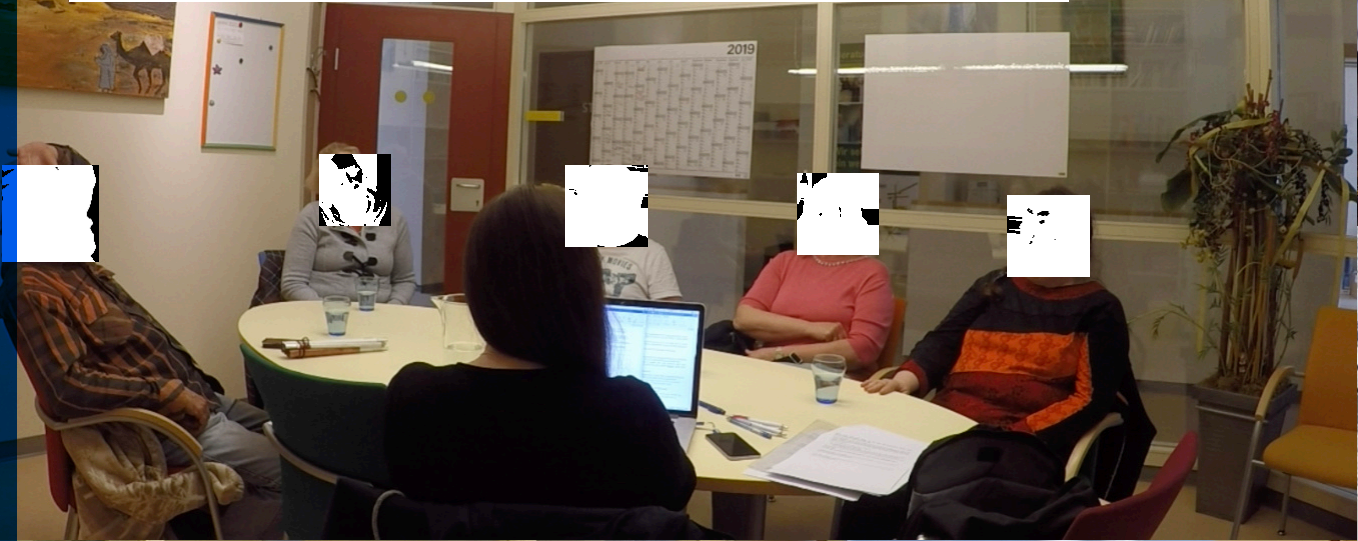
6 PEOPLE

TASK: FOLLOW AN UNKNOWN PATH

COMPARE BONE CONDUCTION WITH CLOSED
HEADPHONES

QUESTIONNAIRE FOCUSED ON USABILITY ASSESSMENT

Workshops - 2019



Sighted user testing - 2020



MVP evaluation - 2020

ACQUIRED AND PROCESSED IMAGES
FOR MACHINE LEARNING

INVITED SIGHTED BETA TESTERS

OBSERVATION WORKSHOPS



Observation workshops

7 FULLY BLIND, 1 VISUALLY IMPAIRED

1 EASY ROUTE TO UNDERSTAND THE APP

1 COMPLICATED ROUTE FOR ACTUAL TEST

OBSERVING, TAKING NOTES AND FILMED

INTERVENING AS LESS AS POSSIBLE



Results

Test
example

Results

6 COMPLETED THE ROUTES EASILY

1 HAD TECHNICAL PROBLEMS

1 COULDN'T GET THE SOUND DIRECTION

"It's a completely different paradigm of navigation"

"We get a constant feedback of where to go"

"It's a bit like seeing"



USP

Extreme intuitiveness

SAFETY



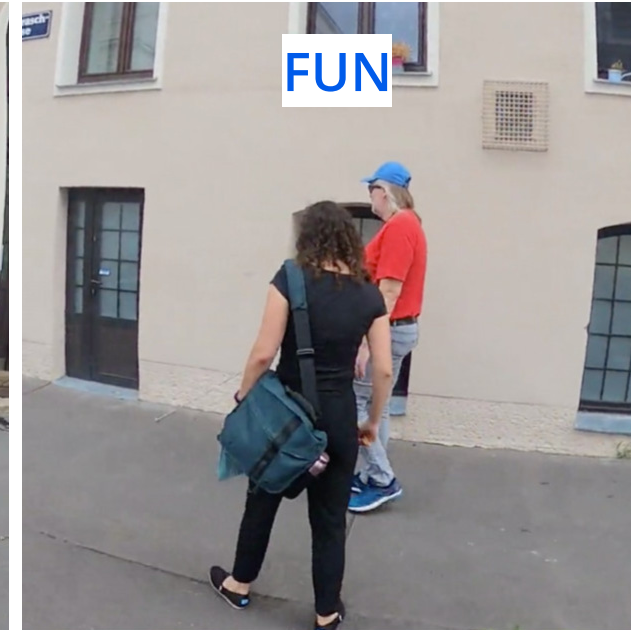
CONFIDENCE



SPEED



FUN



“It’s a bit like seeing”

“We get a constant feedback of where to go”

“It’s a completely different paradigm of navigation”

Chapter FOUR

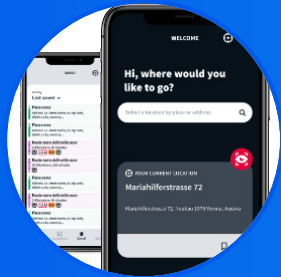
Potential

A brief discussion about why now is a good time and what's the impact

Audio Augmented Reality

Why now?

THE IDEAL AUDIO AUGMENTED REALITY PLATFORM IS ALREADY AVAILABLE NOW!



SMARTPHONE
MOBILE AR PLATFORM



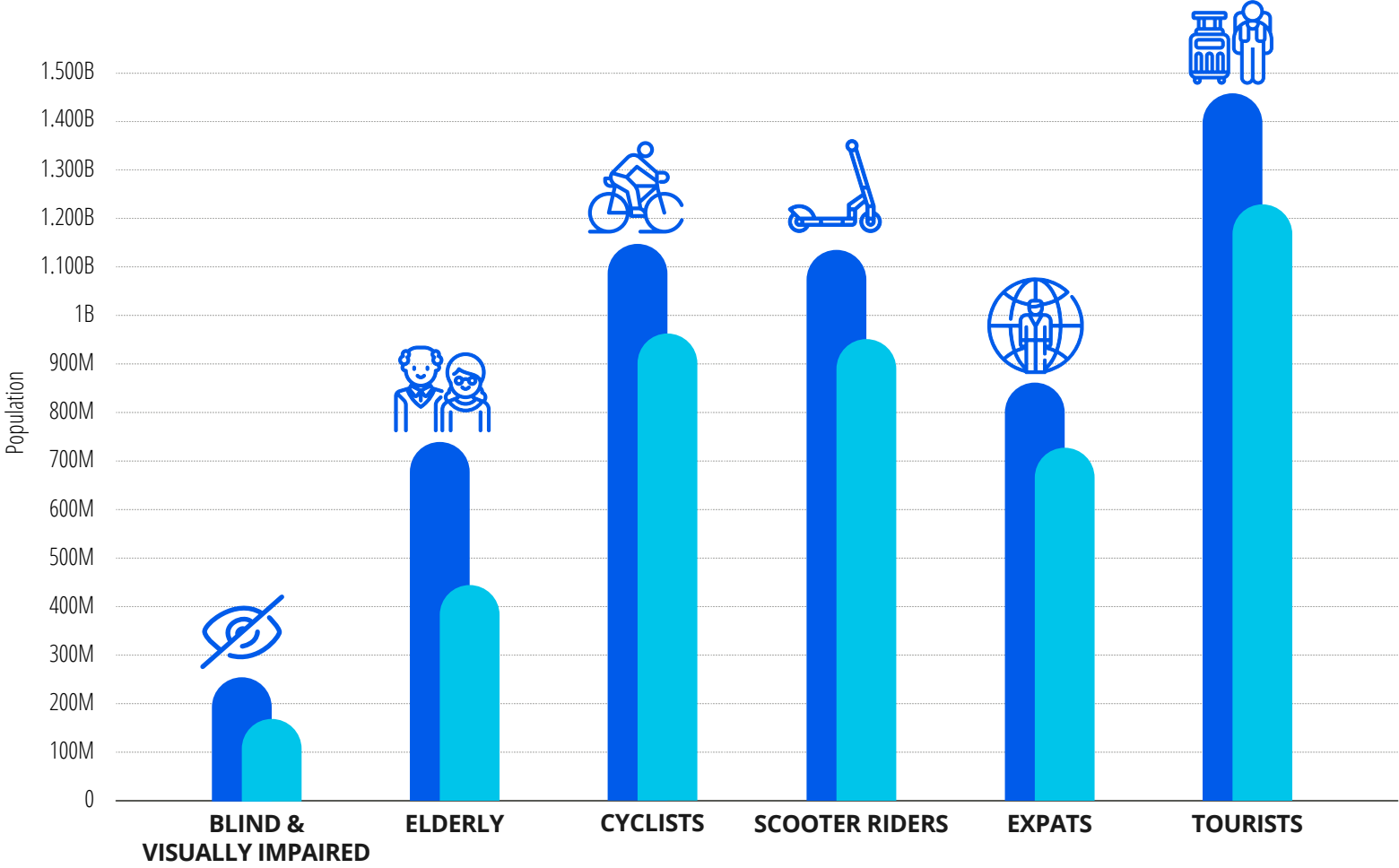
HEARABLES
AUDIO AR DISPLAY

“The computing platform for audio AR is booming”

Impact Opportunity

3B
AR READY DEVICES

2B
HEARABLES IN THE GENERAL PUBLIC



● Total ● Addressable Market - amount of people that own a smartphone

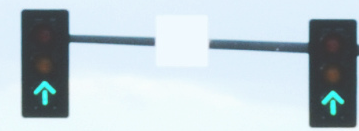
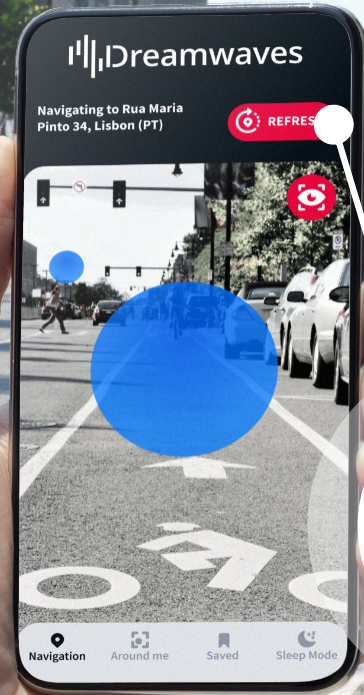
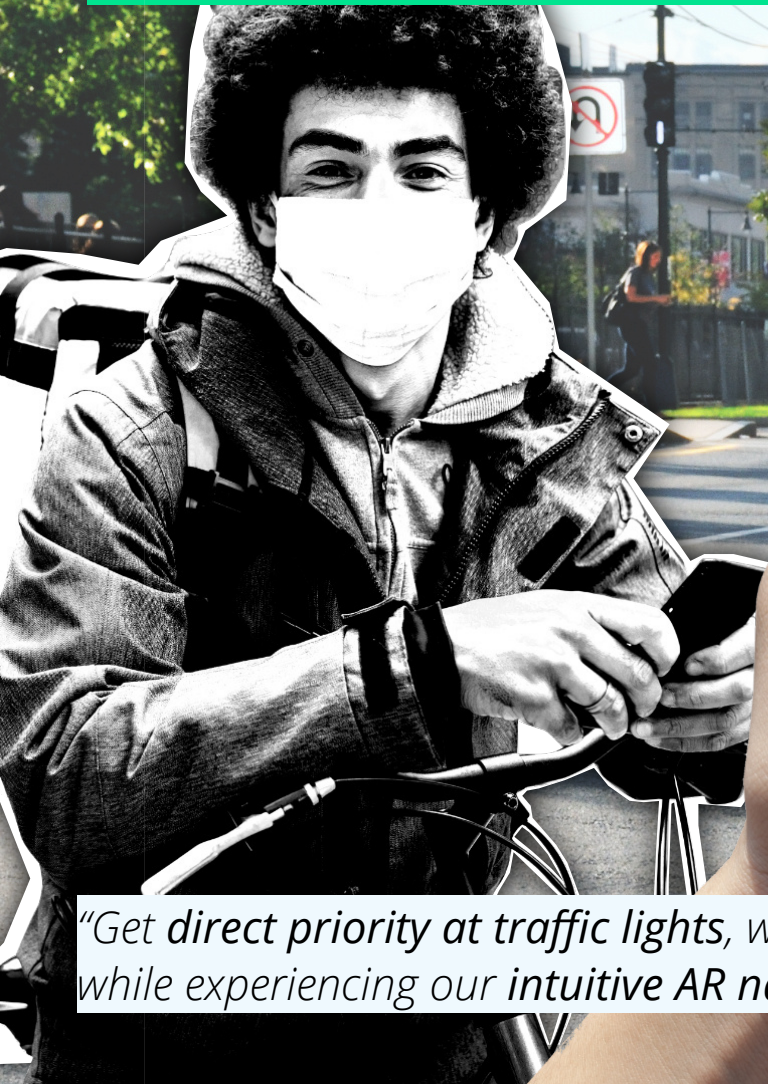
Our joint proposition

Yunex Traffic enables direct integration of intersection priority in Dreamwaves waveOut app.

YUNEX
TRAFFIC

A Siemens Business

Dreamwaves



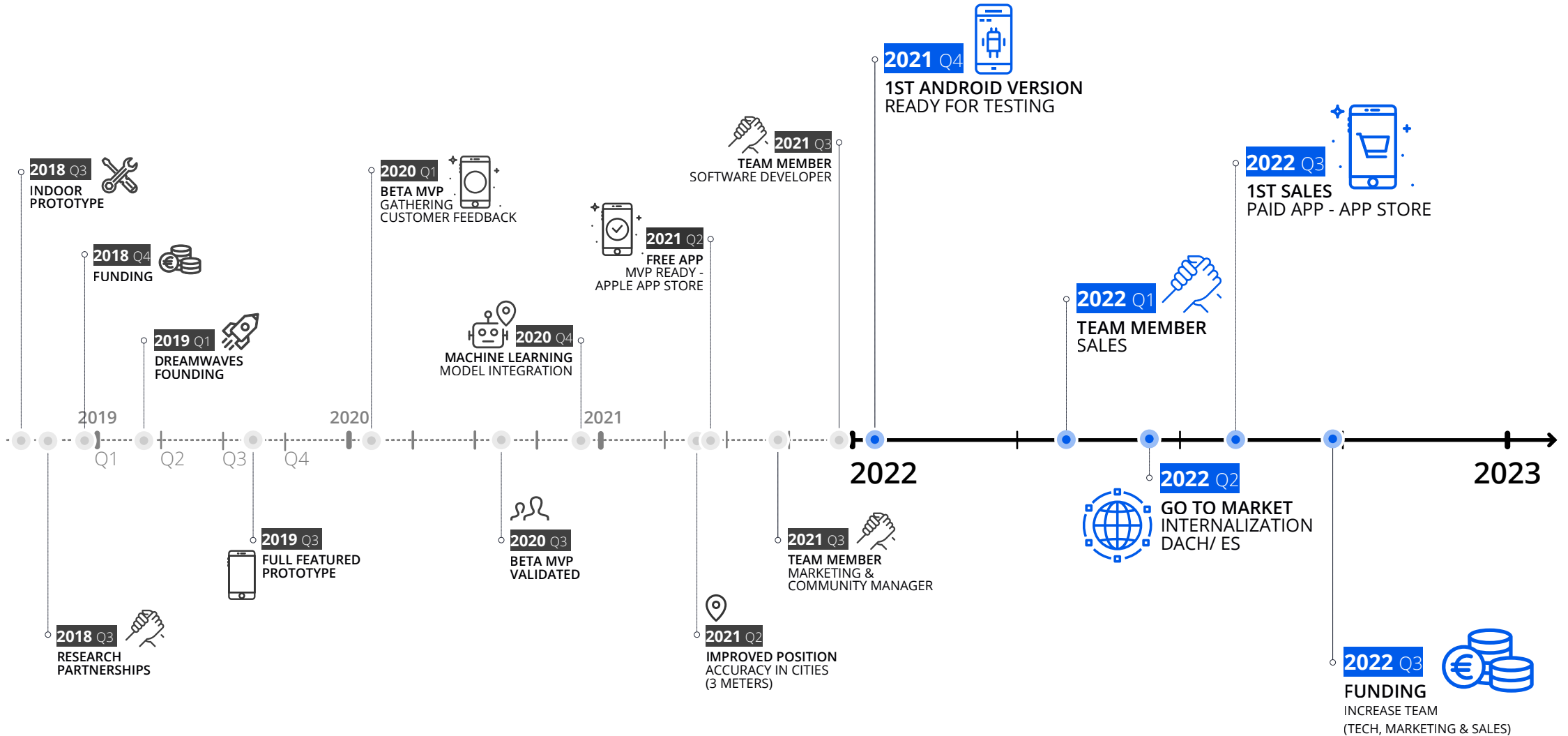
"Get direct priority at traffic lights, with our app, while experiencing our intuitive AR navigating experience."



Chapter FIVE

Final thoughts

Our Next Steps



Meet the Team



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CEO

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Software Developer @ Altitude Software (PT)
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Post-Doc @ Medical University of Vienna (AT)



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studio novo (AT)
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EUROPEAN UNION AGENCY
FOR THE SPACE PROGRAMME
Business Partner



ACOUSTICS RESEARCH INSTITUTE
Research Scientific Partner
Development of Realistic Spatial
Audio Engine



AUSTRIAN INSTITUTE OF
TECHNOLOGY
User Experience Research



HILFGEMEINSCHAFT
Partner for Technology Providing
Connection with the users



City of Vienna
Research partner

Dreamwaves

*“Lets talk
about how”*



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Watch our product video [here.](#)

Download the waveOut app [here.](#)