TransportPlanningSociety

TRANSPORT
PLANNING
DAY 2023

Welcome to
Transport Planning Day 2023

BURO HAPPOLD

IOKI
DIGITAL PUBLIC TRANSPORT

Stantec

Believ

HEURISTIC

Kestrel SURVEYS

CS CHARGE SURVEYS

@TransPlanSoc / #TPDay2023

Professor Glenn Lyons –
University of the West of England

@TransPlanSoc / #TPDay2023

Fair shares – how equitable is the current transport system and would a decarbonised system be more or less equitable?

Glenn Lyons
Mott MacDonald Professor of Future Mobility, UWE Bristol
Vice-President, Chartered Institution of Highways & Transportation

UWE Bristol | University of the West of England

M | MOTT MACDONALD

A presentation in conversation with my imaginary person from beyond the sphere of transport planning

how equitable is the
current transport system?

not very

and would a decarbonised system
be more or less equitable?

**It couldn't be any worse
(or maybe it could)**

Could you start by offering up a succinct response to the exam question please

How equitable is the current transport system?

✦Tofu-eating eco-zealot wokerati warning✦

Is the current transport system fair to everyone **locally, regionally, nationally in the UK**?

Sensible

Is the current transport system in the UK fair to everyone **globally**?

Don't push it

Is the current transport system fair to **future generations**?

You're pushing it

Is the current transport system fair to **flora and fauna**?

You've pushed it too far

What do you make of this part of the question?
Is it unambiguous? Fair for who (or even what)?

"To keep the 1.5-degree limit agreed in Paris within reach, we need to cut global emissions **by 45 percent this decade**" (below 2010 levels)

UN Secretary General, 4 April 2022

24%

Share of global emissions from **transport** (fuel combustion only)

So you're saying the current transport system is front and centre in the climate crisis – and we're being unfair to future generations if we don't change it, and fast?

Carbon emissions from global SUV fleet outweighs that of most countries

Popularity of sport utility vehicles driving higher oil demand and climate crisis, say experts

"In the poorest economies, a large part of the population depends directly on activities that may be the most affected by climate change, notably, the agricultural, forestry, and fisheries sectors. People with the lowest incomes are the most likely to depend for their survival on resources provided by nature."

"**Climate risks disproportionately affect the poorest countries** and people, who are more exposed and more vulnerable to their impacts."

"the richest countries represent only 16 percent of the world population but almost 40 percent of CO emissions"

Are you now guilt tripping me that I shouldn't enjoy what our economic growth is offering because it is not fair on the poorest economies?
It's not my fault that I'm a driver.

Transport has played its part in growing our economy and improving standards of living leaving a better society for our children and their children – and for future generations everywhere.

Hasn't it? Well, hasn't it?

The UK is only responsible for around 1% of global annual emissions (territorially)

(please don't mention historic emissions, the industrial revolution, or off-shoring)

Stop being mean –
little old Blighty can hardly be answerable to those big questions, can it?
Please can we remain focused on the UK in the present, for goodness sake!

2002

Transport and social exclusion: investigating the possibility of promoting inclusion through virtual mobility

Susan Kenyon [a,*], Glenn Lyons [a], Jackie Rafferty [b]

[a] Transportation Research Group, Department of Civil and Environmental Engineering, University of Southampton, Southampton SO17 1BJ, UK
[b] Centre for Human Service Technology, Department of Social Work Studies, University of Southampton, Southampton SO17 1BJ, UK

see later

"We define mobility-related exclusion as:

The process by which people are prevented from participating in the economic, political and social life of the community **because of reduced accessibility** to opportunities, services and social networks, **due in whole or in part to insufficient mobility in a society and environment built around the assumption of high mobility**."

That's better.
But hang on, why all this old stuff – isn't it out of date?

**Making the Connections:
Final Report on Transport
and Social Exclusion**

SUMMARY

*Social
Exclusion
Unit*

"Recent years have seen a growing recognition that **transport problems can be a significant barrier to social inclusion**"

"Rising car use has provided greater opportunity for travel. But **nearly one in three households do not have access to a car**, for reasons that include cost, disability and choice"

"Before the Government introduced a new approach in 2000, **the social costs of poor transport were not given any real weight in transport project appraisal**"

"The [Government's] strategy has two main pillars:
- A new framework of '**accessibility planning**'. This will ensure that there is clear responsibility and accountability for identifying accessibility problems and deciding how to tackle them.
- National policy changes to enable **improved public transport, better land-use planning**, safer streets, and improved specialist support to help people get to work, learning, healthcare and food shops."

I said, why all this old stuff? Surely in the last 20 years we've addressed all this?

Over 3m people in north of England 'face social exclusion due to poor transport'

Fifth of region's population prevented from taking part in opportunities and communities around them, research finds

Robyn Vinter
North of England correspondent

🐦 @robynvinter
Thu 22 Sep 2022 06.00 BST

September 2022

"A fifth of people living in northern England are **prevented from participating in the opportunities and communities around them because of poor mobility and connectivity**"

That's better – much more up to date.
Wait, what?? It doesn't look like much has changed?

A societal context of
Poverty, multiple deprivation, and income inequality.
Inequalities relating to disability, gender, caring, ethnicity, and LGBTQ identities.
Alongside a transport system that features
Car-dominated environments with poor conditions for walking, cycling, and wheeling.
Fragmented, infrequent, and unreliable public transport services.
High costs of public transport, particularly for multi-mode and cross-boundary trips.

The combination of which leads to
A large gap in access to opportunities, key services, and community life between those with unconstrained car access, and those relying on public transport and active travel.

Alongside
High levels of car dependency, including forced car ownership.

Which results in social exclusion through
Limited access to opportunities, key services, and community life for those reliant on public transport and active travel.
Alongside the wider impacts of
Using the transport system for key journeys causing significant stress and anxiety.
The money spent on transport causing significant financial hardship.
The time spent travelling for key journeys crowding out leisure & recreation.

Which reinforces and leads back to
Poverty, multiple deprivation, and income inequality.
Inequalities relating to disability, gender, caring, ethnicity, and LGBTQ identities.
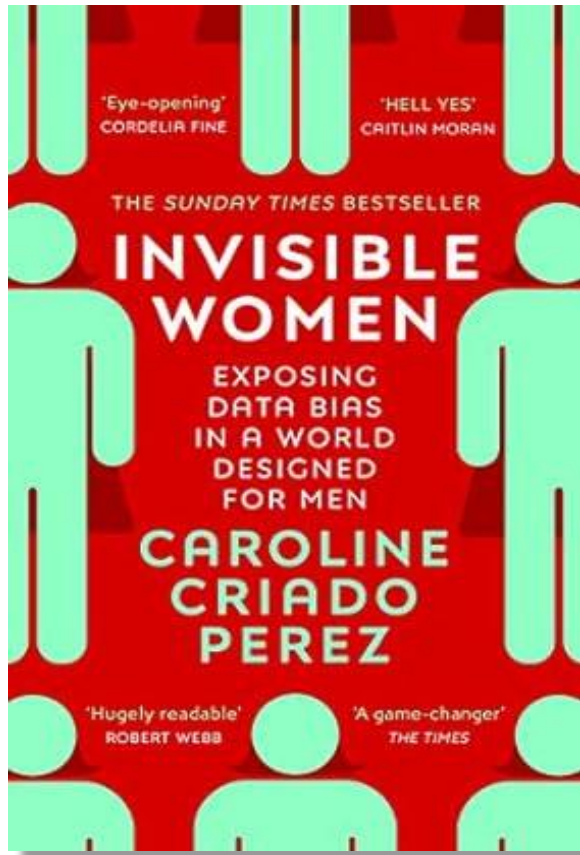Transport and spatial planning decisions that prioritise car use.

Transport-related social exclusion in the North of England

September 2022

TRANSPORT FOR THE NORTH
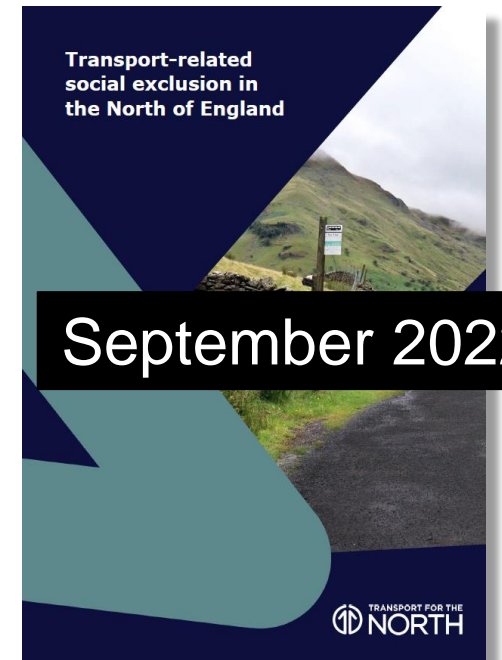
Ch 9 - '**A sea of dudes**' - equitable road safety anyone?

Cars are, in the main, not designed for women to be (as) safe in:

"when a woman is involved in a car crash, **she is 47% more likely to be seriously injured** than a man, and 71% more likely to be moderately injured".

"for decades they [crash test dummies] were **based around the fiftieth percentile male**".

INVISIBLE WOMEN

EXPOSING DATA BIAS IN A WORLD DESIGNED FOR MEN

CAROLINE CRIADO PEREZ

'Eye-opening' CORDELIA FINE

'HELL YES' CAITLIN MORAN

THE *SUNDAY TIMES* BESTSELLER

'Hugely readable' ROBERT WEBB

'A game-changer' THE TIMES

I suppose you're going to want to consider women, the elderly and disabled next? Oh, right. Gosh, it's a bit grim isn't it? We seem to be all talk and not much action?

how equitable is the
current transport system?

not very

OK. That's all a bit depressing.
So remind me, what's your answer to the first part of the exam question?

Would a decarbonised system be more or less equitable?

Would a decarbonised system be more or less equitable?

I don't know.
But I do know that it
could be more or less equitable.

Do we need to clarify what this part of the question means too? Of course.

Decarbonising Transport — A Better, Greener Britain

Department for Transport

July 2021

Foreword:

"It's not about stopping people doing things: **it's about doing the same things differently**. We will still fly on holiday, but in more efficient aircraft, using sustainable fuel. We will still drive on improved roads, but increasingly in zero emission cars. We will still have new development, but it won't force us into high-carbon lifestyles."

"Through good design and proper consideration of the needs of our communities, **we can better connect people, making communities more accessible, inclusive, safe, and attractive as well as promoting the principles of 20-minute neighbourhoods**."

p.157 (one of three instances of 'inclusive' in the document)

So what is the UK Government's plan?
Doing the same things differently sounds like a perpetuation of inequity?

Department for Transport

The Plan for Drivers
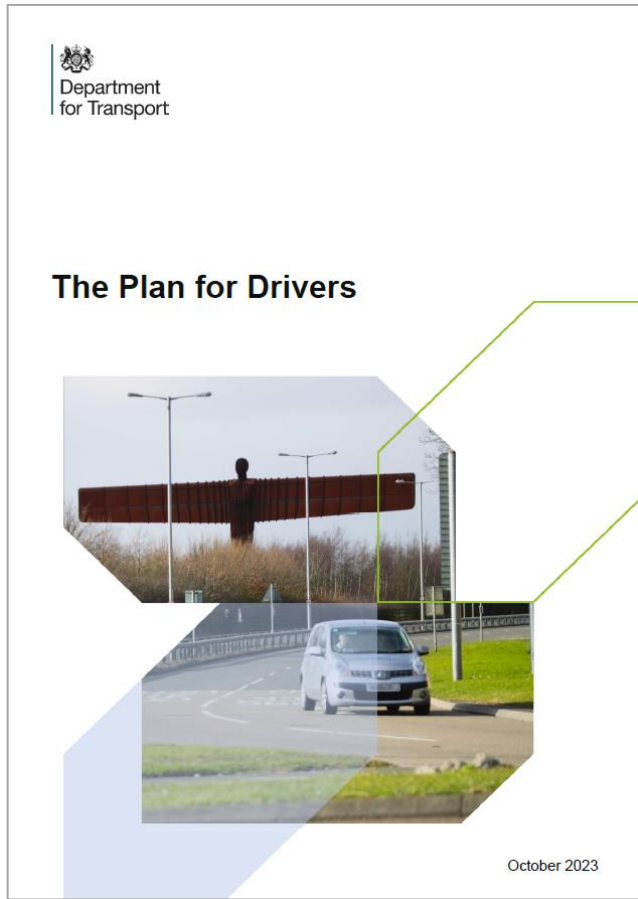
October 2023

October 2023

Foreword:

"There's nothing wrong with driving. **Most of us use a car** and, for many, life would not be liveable without their car."

"We will explore **options to stop local councils using so-called "15-minute cities""**

"None of this replaces the significant investment we've made in public transport and active travel. It sits alongside them as part of our long-term plan **to help people across our country travel in the way that works best for them**."

And nothing's changed in terms of intentions since then? Oh.
20-minute neighbourhoods were good, 15-minute cities now bad.
I'm a bit confused.

June 2023

"The Government has made **no progress on our recommendations on clarifying the role for car demand reduction** and ensuring that key enablers (road-building decisions and taxation) are aligned to delivering this."

"over 5 MtCO2e/year of abatement that had been attributed to modal shift from cars to more sustainable modes of transport is no longer quantified. While these policies are still referenced in the Government's plan, making a choice not to quantify them signals **a lack of commitment to modal shift**. A pathway that is **almost exclusively technology-dependent** is likely to be less cost-effective, entails higher delivery risk (see Chapter 3) and **risks missing out on opportunities to realise co-benefits to society**".

"Delivering the **2030 phase-out** of new conventional car and van sales **is vital** to meeting the UK's decarbonization pathway."

So how are we doing on decarbonising the transport system?
The UK Government doesn't seem keen on 'Avoid' or 'Shift' does it?
But it's pushing hard on 'Improve' right?

"Our **confidence** in the achievement of the UK's 2030 target and the Fifth and Sixth Carbon Budgets **has markedly declined from last year**"

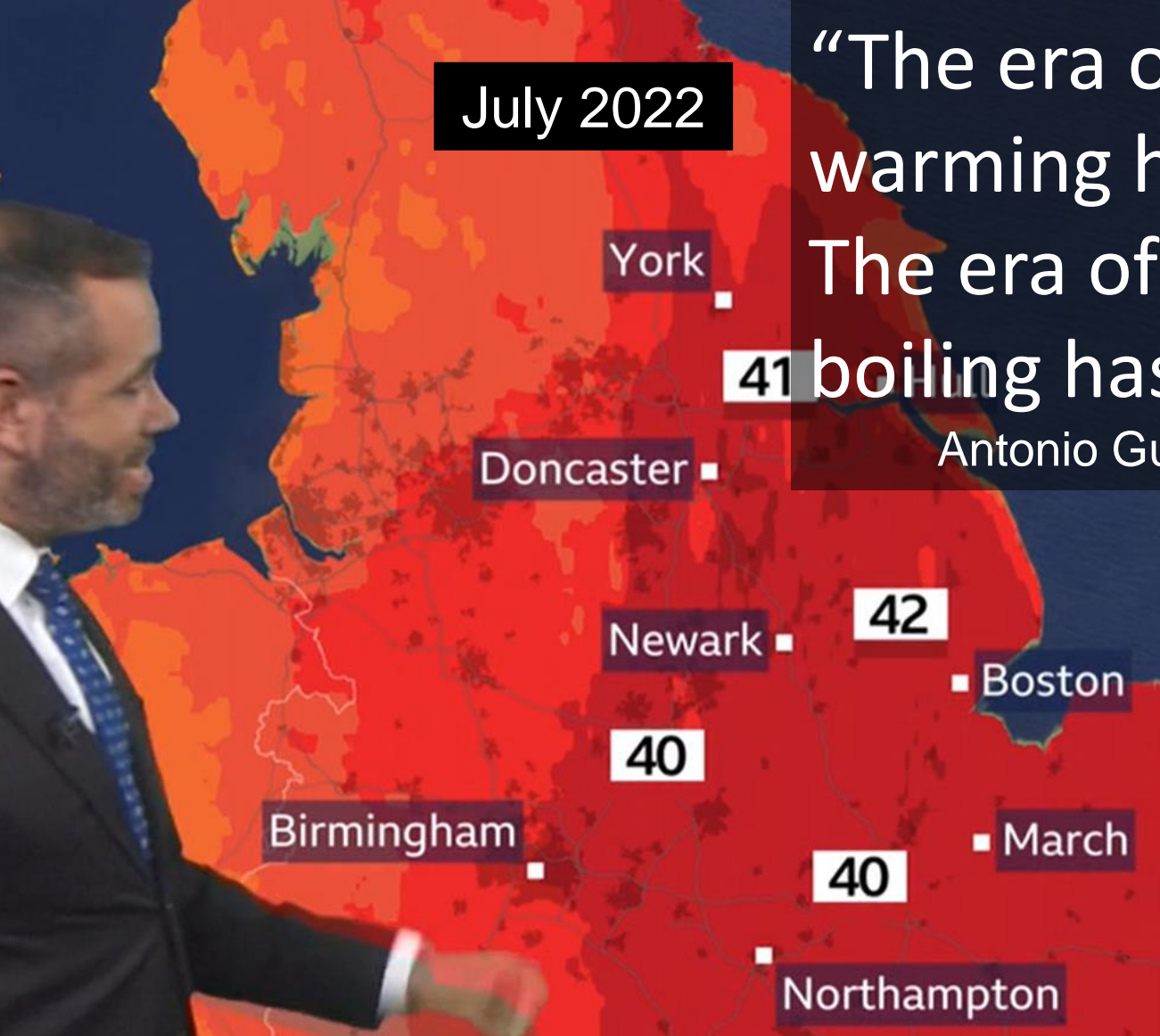The Government intends to be "partly or fully **acting upon 85% of the CCC's priority recommendations**"

"**not taking forward CCC recommendations** on policies that force families to make costly or burdensome changes to their lifestyles"
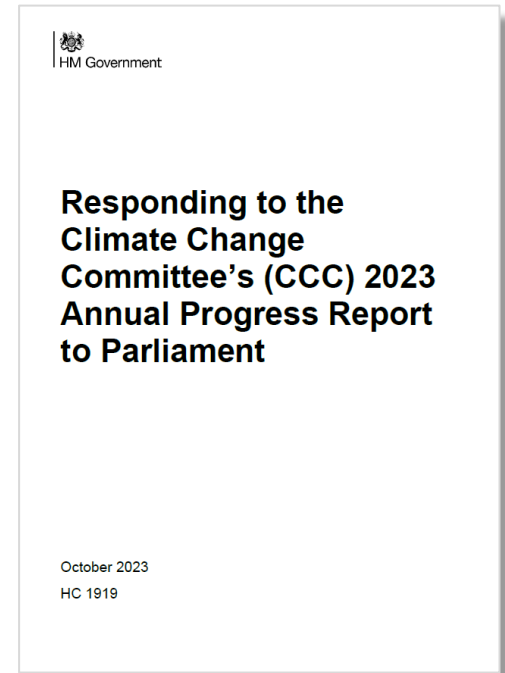
So in the round, how does the CCC think we're doing and is Government still up for it?
Oh heck. If confidence has markedly declined, is 85% going to cut it?
Will we actually have a decarbonised transport system, equitable or not, by 2050?

July 2022

June 2023

York

41

Doncaster

42

Newark

Boston

40

Birmingham

March

40

Northampton

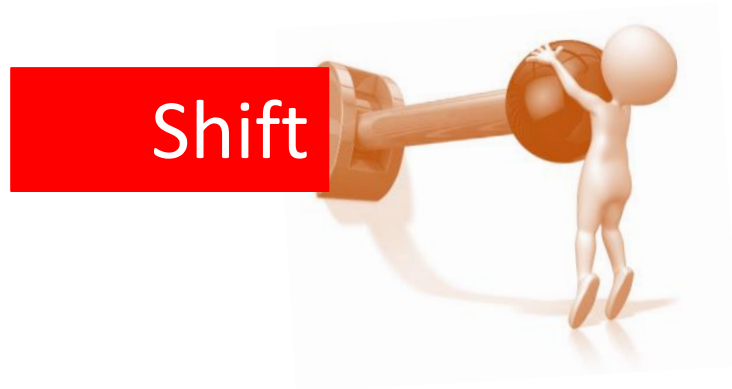"The era of global warming has ended. The era of global boiling has arrived"

Antonio Guterres, July 2023

What if global society fails to galvanise its efforts soon, equitably or not? Could there be big trouble ahead for **all** of us?

Avoid

Shift

Improve
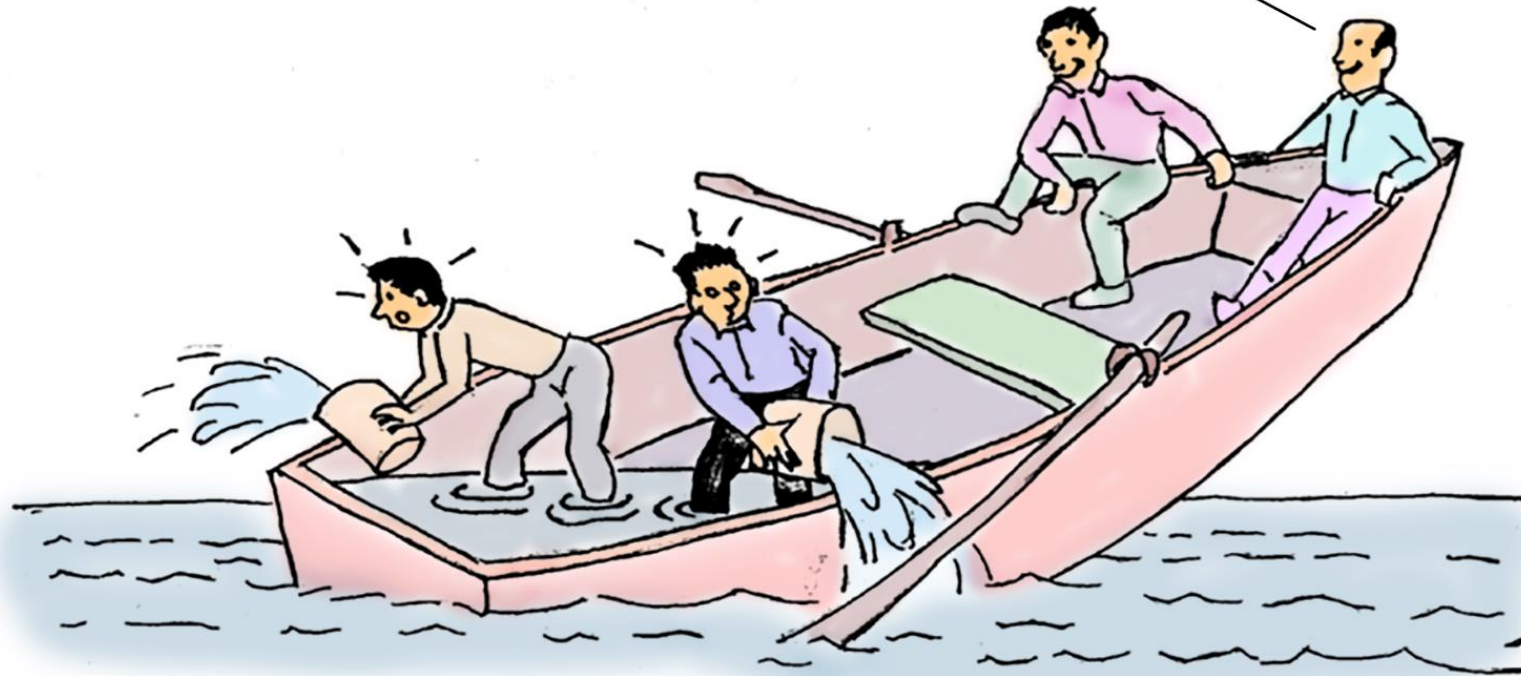
OK, cheer me up – can we decarbonise transport in time AND make it more equitable?
I see, so we have the levers to shape future transport
but we're just afraid to use them?
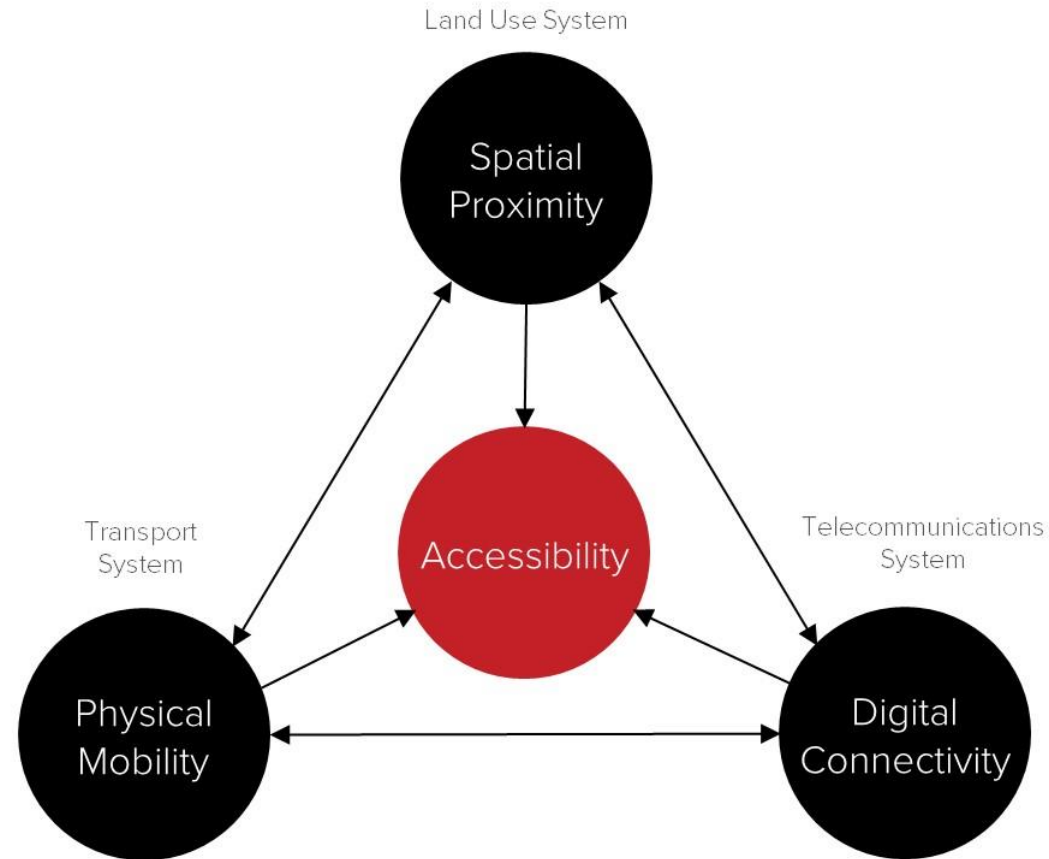
0	1	2	3	4	5
No Automation	**Driver Assistance**	**Partial Automation**	**Conditional Automation**	**High Automation**	**Full Automation**
Zero autonomy; the driver performs all driving tasks.	Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.	Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.
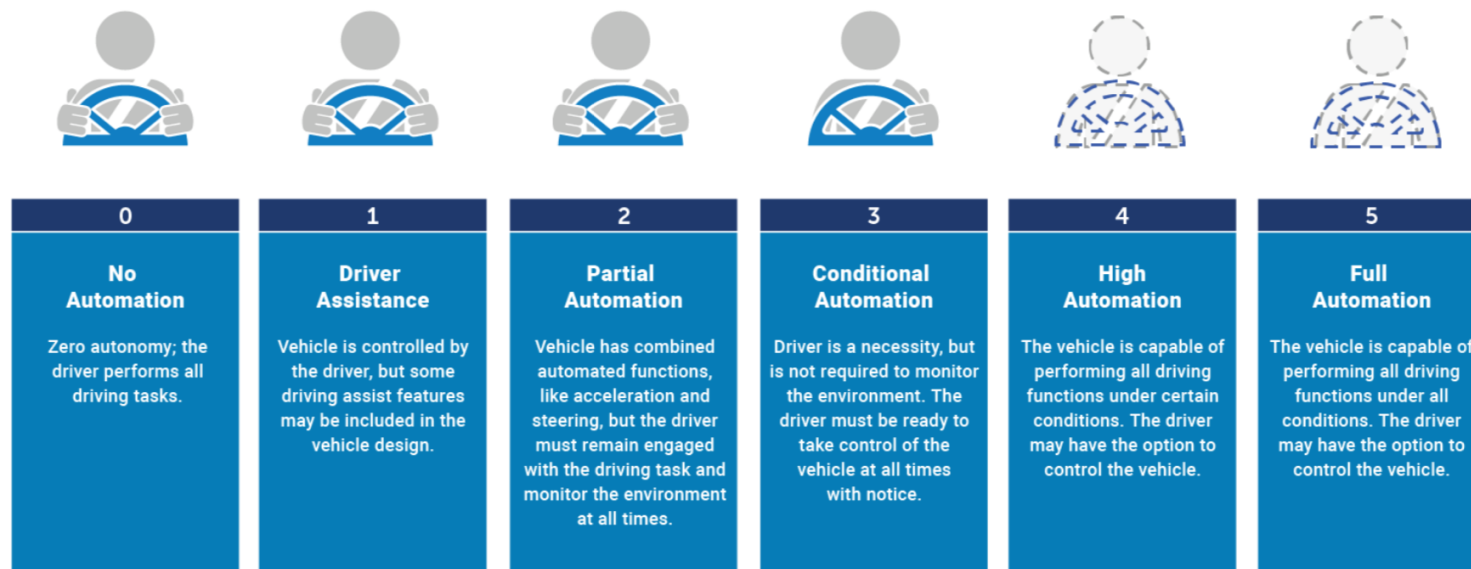
6

Smart Automation

The vehicle is capable of preventing its use for an intended car trip where the user should have the sense not to make the trip or to make it using public transport or active travel.

And, to finish, do you have any technological innovation to offer? Ah – **Level 5 automation means mobility for all?** Not exactly? Beyond Level 5 you say? Oh. Now I like the sound of that!

and would a decarbonised system
be more or less equitable?

It couldn't be any worse
(or maybe it could)

And it could be **more** equitable

So to finish, what was your answer to the second part of the exam question?

Thank you

Glenn.Lyons@uwe.ac.uk / Glenn.Lyons@mottmac.com

https://www.linkedin.com/in/glenn-lyons/

Emma Griffin – Vice chair of London Living Streets and Co-Founder of Footways

Emma Griffin

Co-founder, Footways
Vice-chair, London Living Streets
Trustee, Foundation for Integrated Transport

emma@footways.london

Rapid decarbonisation requires seamless integration of all modes.

Every step matters.

"Transport is pre-eminently a human rights issue — people without access to transport can't function properly in the society we have built." Simon Norton, 2018

"Urban design is something owned and practised by architects and city planners rather than by neuroscientists or psychologists. This is a great pity."
Shane O'Mara, *In Praise of Walking,* 2019
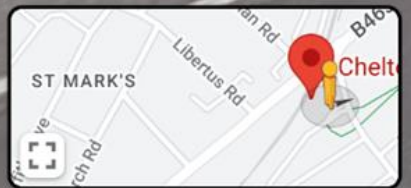
Sheaf Square outside Sheffield Station invites people to walk.

"Future Crossrail passengers will judge the success of the railway not only by the service and the stations but also by the experience of using the spaces outside the stations."
Places and Spaces, Urban Realm on the Crossrail Route, 2016

Opportunity to create an alluring gateway into Central London from Euston Station
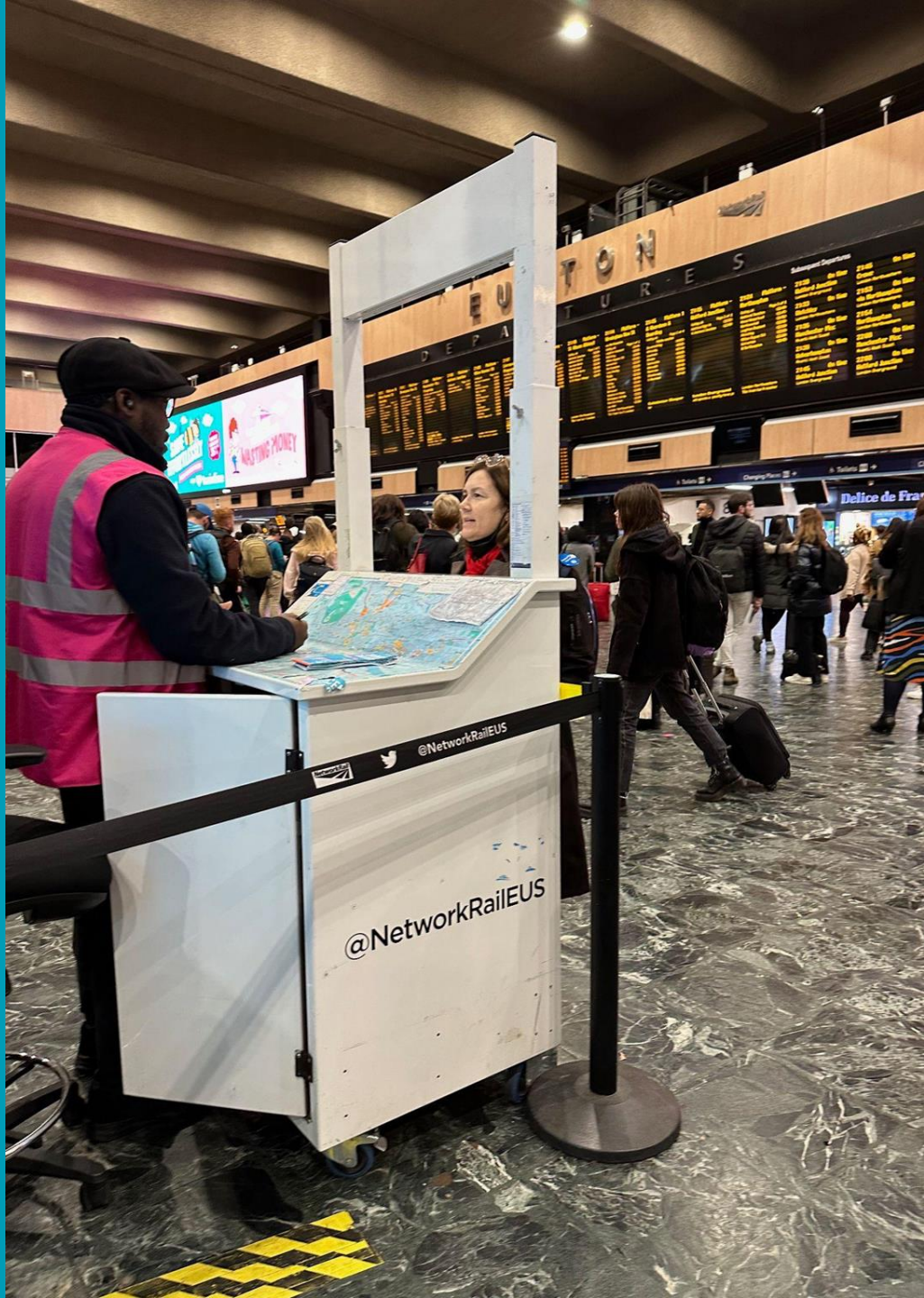
Infrastructure is key, but transport choices are also shaped by habit and knowledge.

- **50k Footways maps distributed by Network Rail from rail stations**
- **2 million+ views of digital map**

- **Paper: free active travel maps at every UK station**
- **Digital: exploring a pilot to add Footways maps to a new real-time journey information service by Network Rail and Whoosh**
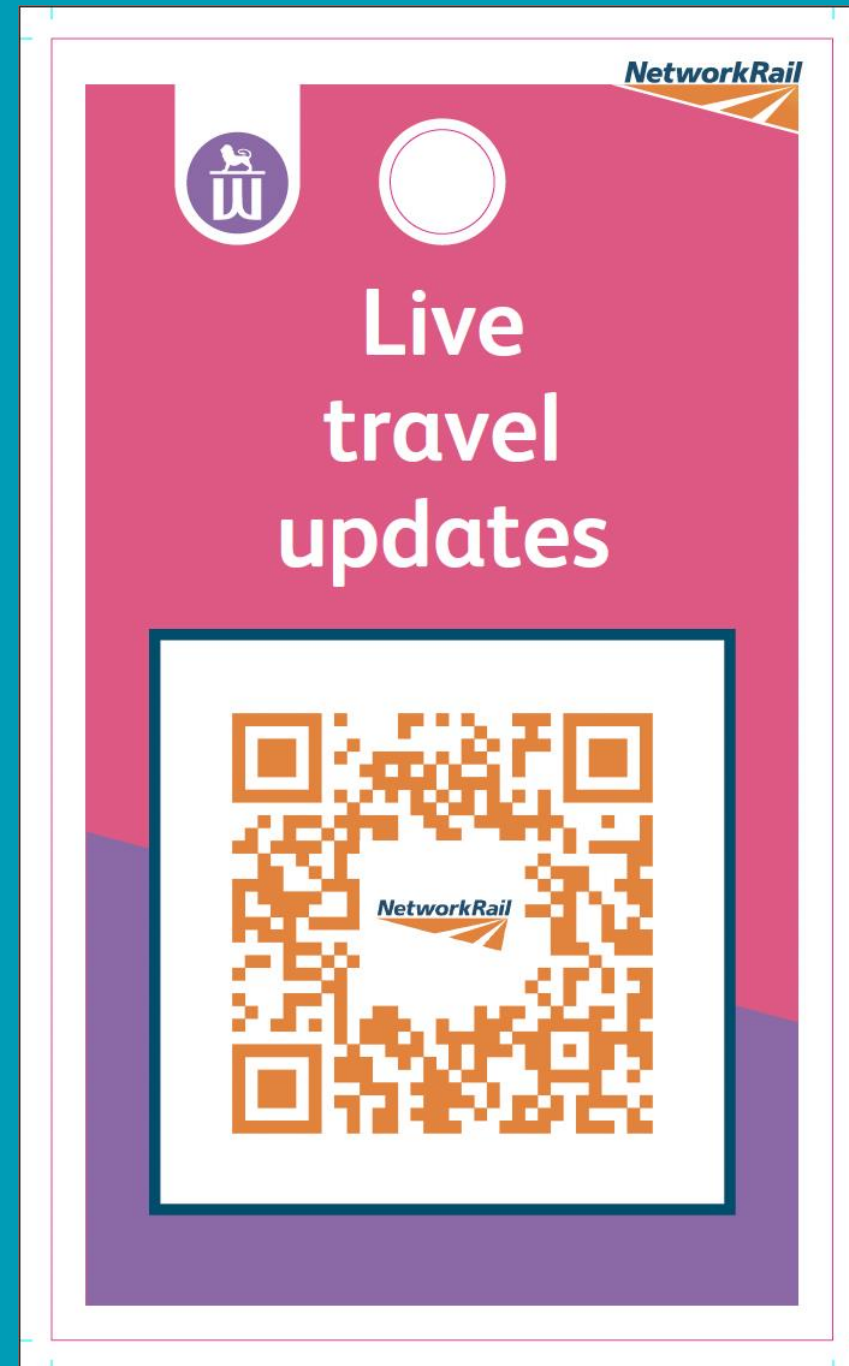
ONCE YOU'RE AT THE MUSEUM

Walking map for the opening of Strand Aldwych.
Currently designing a billboard for Homerton Hospital.

Get in touch

emma@footways.london

@FootwaysLondon
footways.london
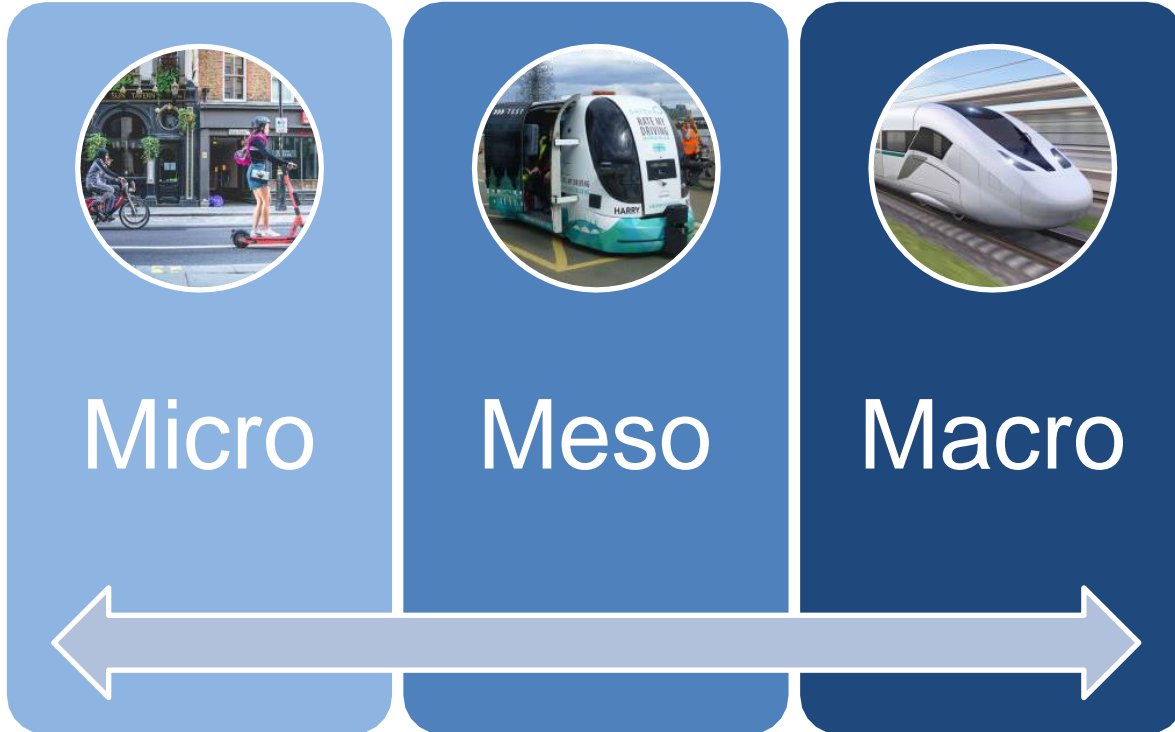
Federico Cassani – Buro Happold,
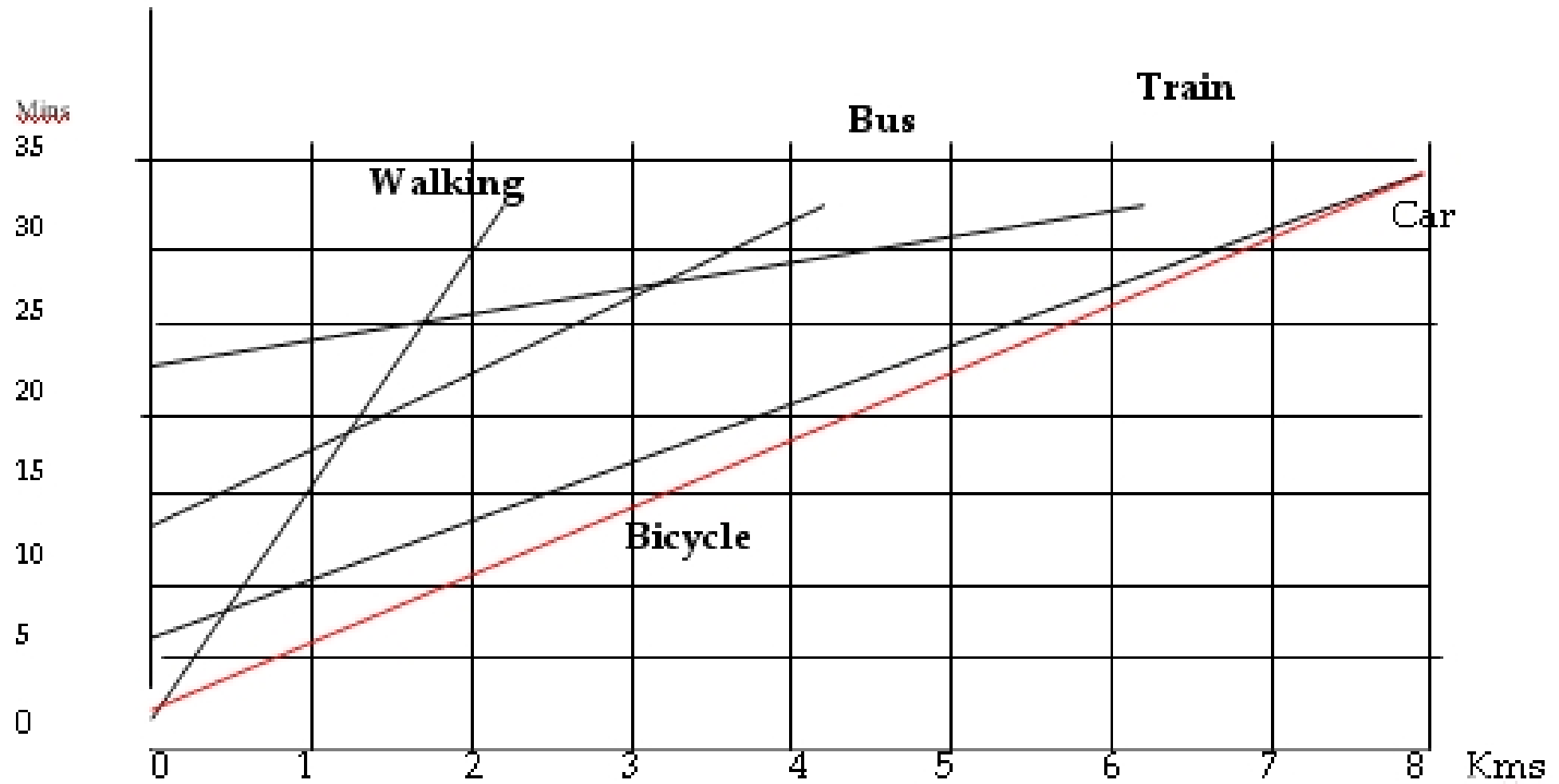Global Director of Transport & Mobility

"Infrastructure in the age of Mobility as a Service, do we still need to invest in physical infrastructure?"

Macro Scale

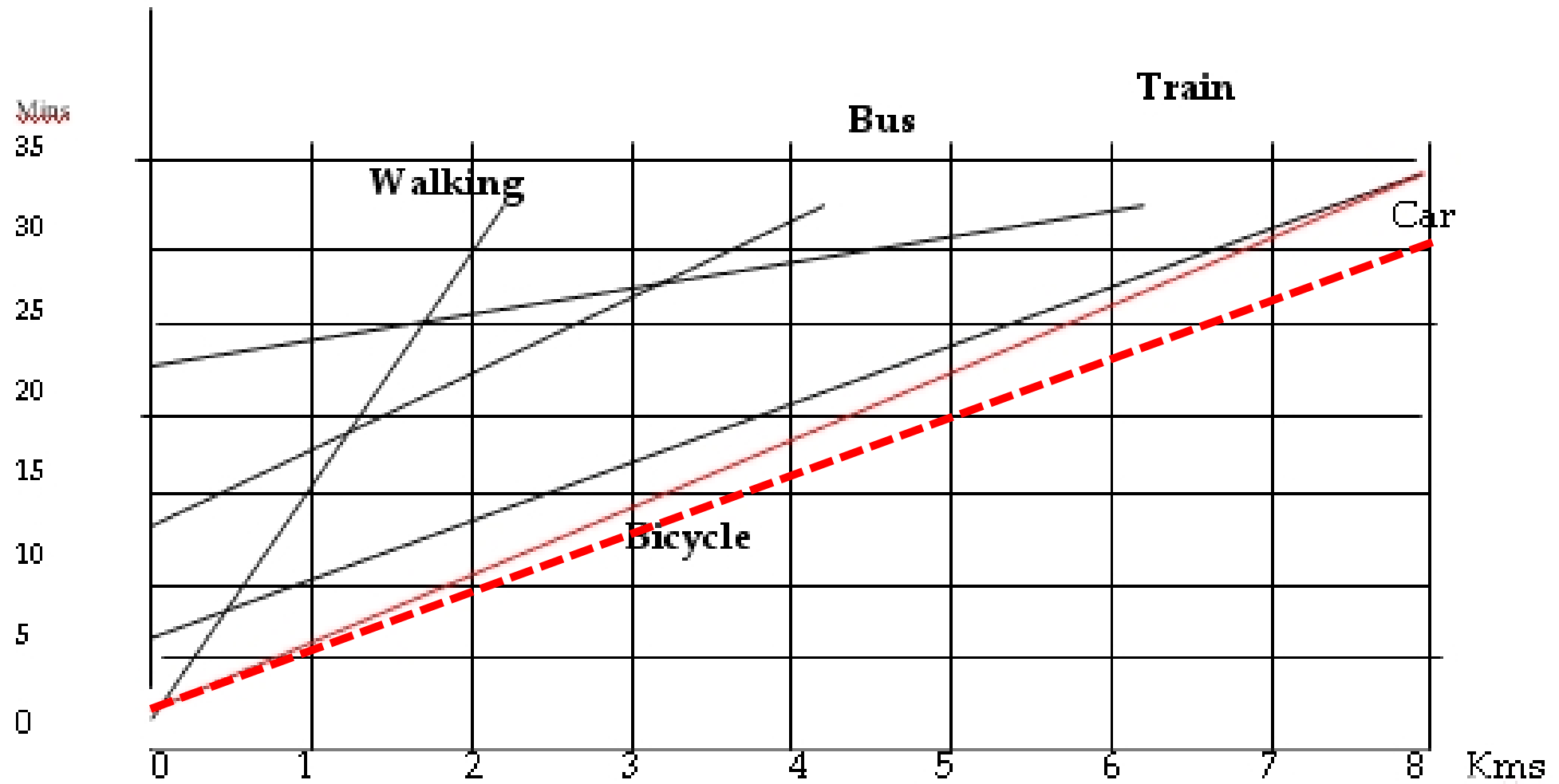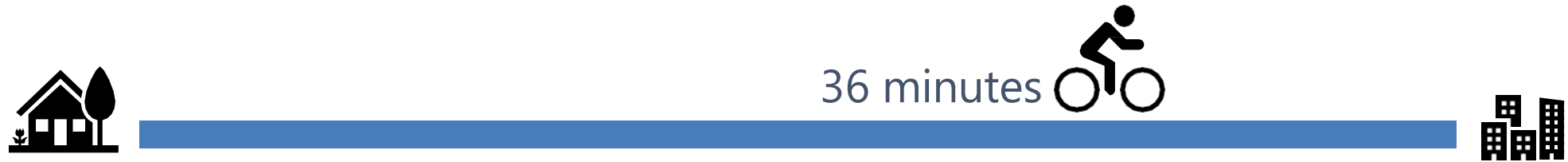Different scales need different responses

Micro

Meso

Macro

Micro Scale

Microscale

Microscale

Microscale

8 miles distance

36 minutes

42 minutes

50 minutes

Microscale: Invest in active travel

Pages from Micromobility manual

Designing IN Micromobility

Paris — Avenue des Champs-Élysées, Paris

London — Camden High Street, London

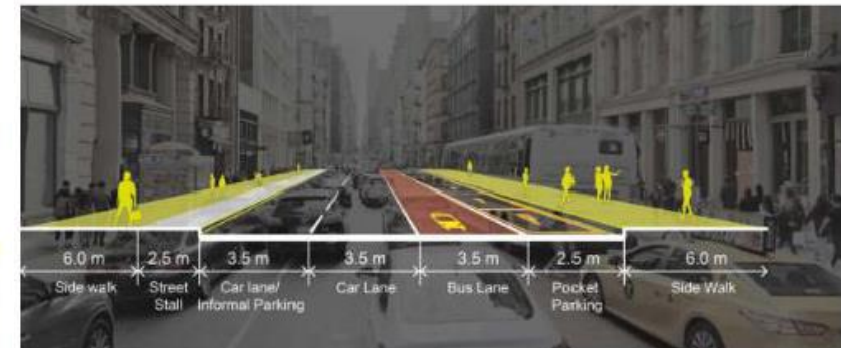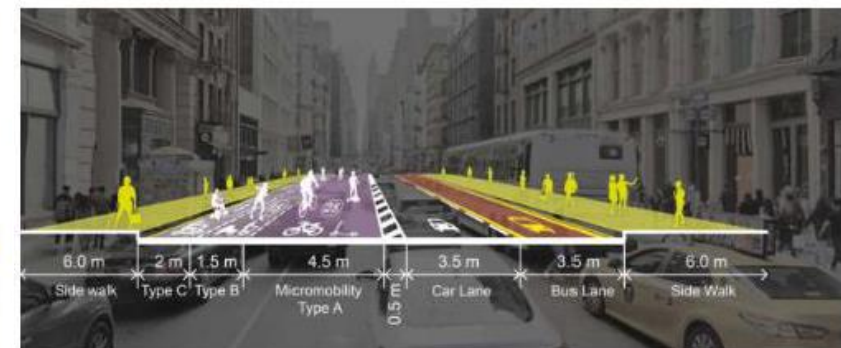New York — Broadway, Lower Manhattan, New York City

Existing scenario (Paris): 20.0 m Side walk | 1.5 m Bike Lane | 2.0 m | 3.0 m Car Lane | 3.0 m Car Lane | 3.0 m Car Lane

Existing scenario (London): 3.0 m Side walk | 3.5 m Bus Lane | 3.5 m Car Lane | 3.5 m Car Lane | 2.5 m Parking | 3.7 m Side walk

Existing scenario (New York): 6.0 m Side walk | 2.5 m Street Stall | 3.5 m Car lane/ Informal Parking | 3.5 m Car Lane | 3.5 m Bus Lane | 2.5 m Pocket Parking | 6.0 m Side Walk

Proposed vision (Paris): 18 m Side walk | 2.0 m MM Type C | 1.5 m MM Type B | 4.0 m Micro Mobility Type A | 3.5 m Bus Lane | 3.5 m Car Lane

Proposed vision (London): 3.5 m Side walk | 1.5 m Type C | 3.0 m Micromobility Type B | 3.0 m Micromobility Type A | 3.5 m Bus Lane | 5.2 m Side walk

Proposed vision (New York): 6.0 m Side walk | 2 m Type C | 1.5 m Type B | 4.5 m Micromobility Type A | 3.5 m Car Lane | 3.5 m Bus Lane | 6.0 m Side Walk

Micromobility Parking

On-Street

Transport interchange

Residential

Macro Scale

Macro Scale

Micro   Meso   Macro

Milan – Bologna
Road traveltime 2h 30'

• Low reliability arrival time due to congestion in
  peak hours on the road (±45min)
• HIGH CO2 emissions per person
• Low quality of the ride (stress, attention, safety)
• Low value of time: either busy driving or difficult
  to multitask as passenger

Milan – Bologna - Florence
HS Rail + Transit traveltime 2h 30'

• High reliability arrival time (±5min)
• LOW CO2 emissions per person
• High quality of the ride
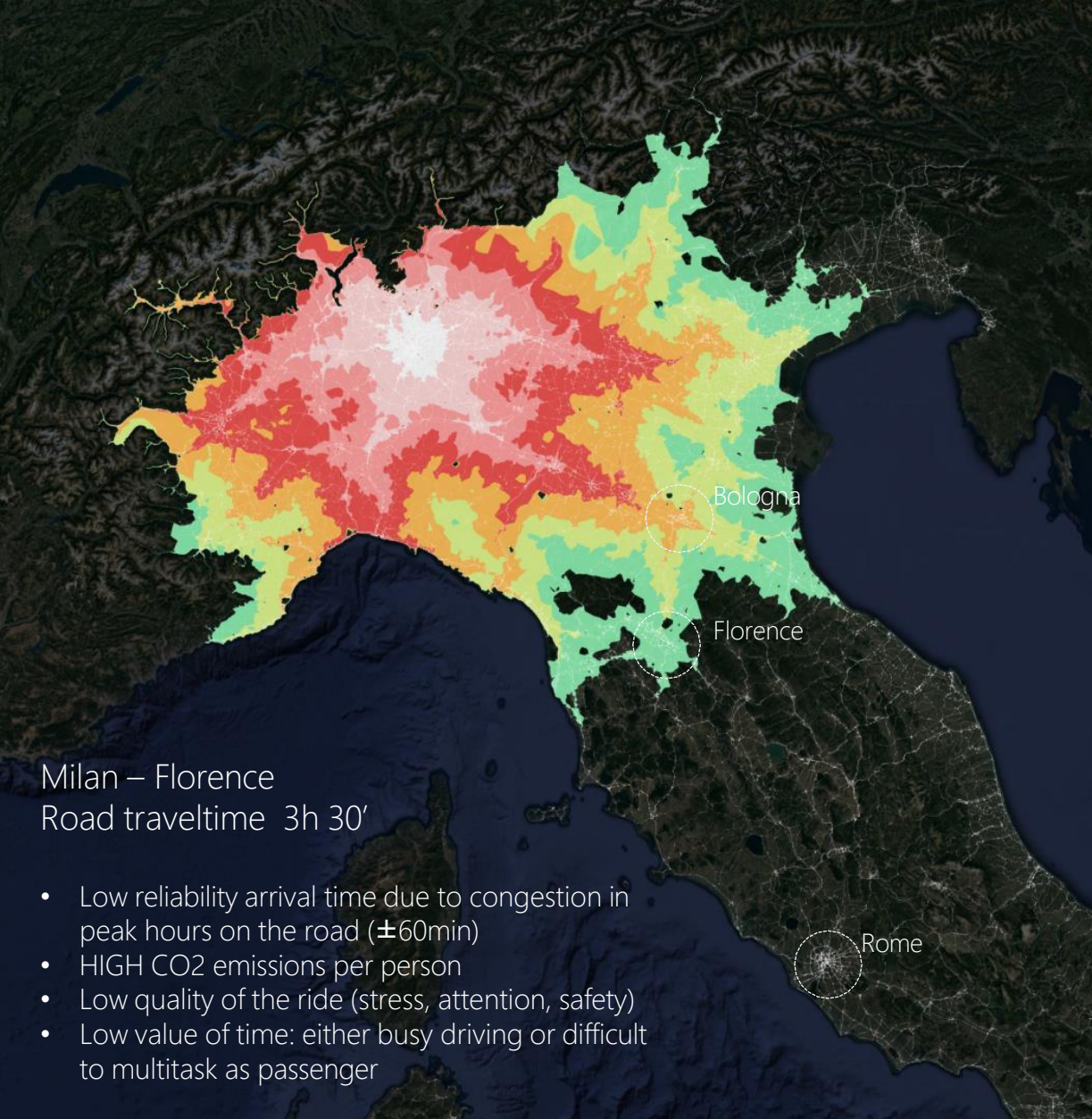• High Value of time: 2 hrs on the train for
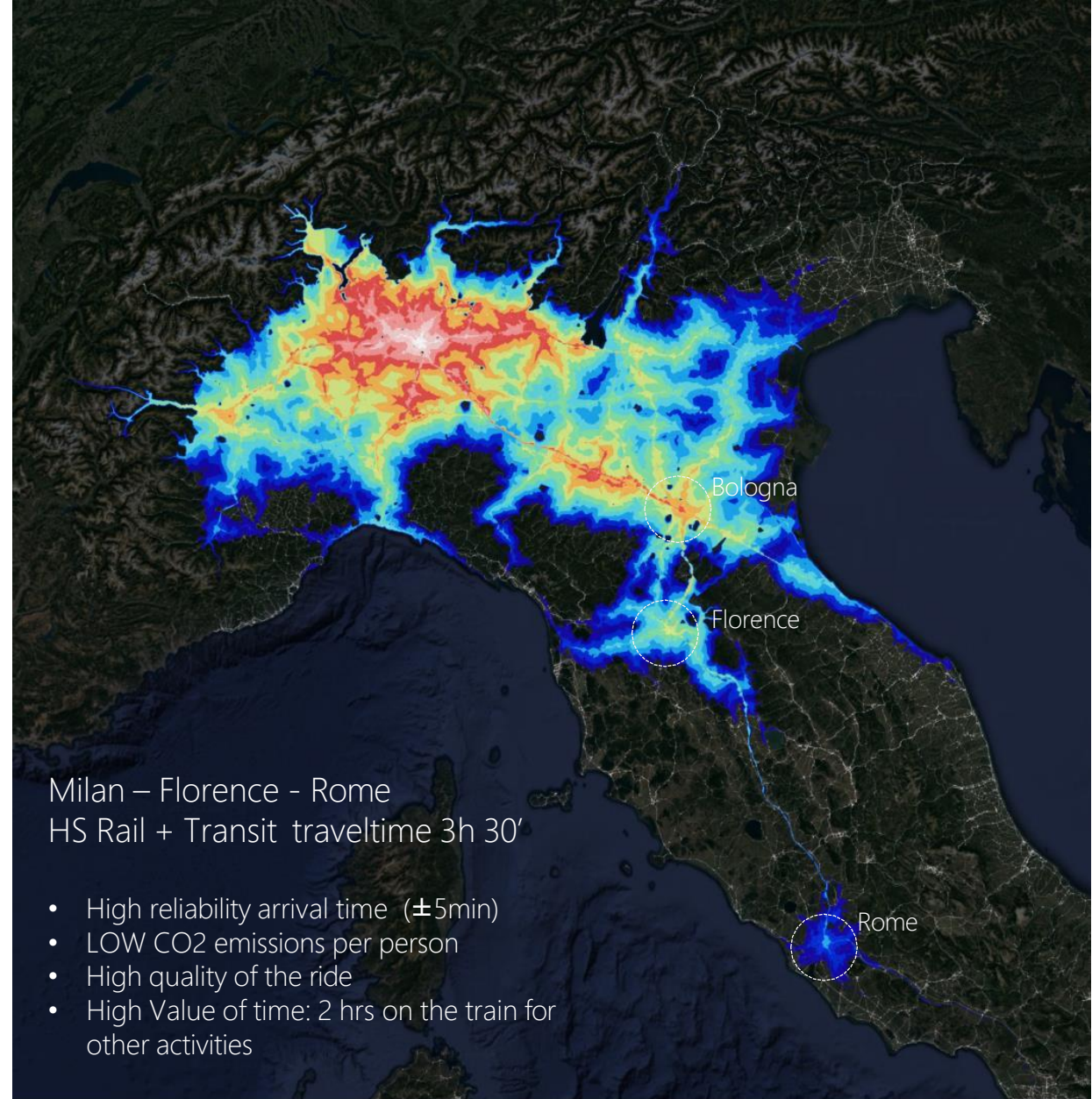 other activities

Road traveltime
2h 30'
Low reliability arrival time

HS Rail + Transit traveltime
2 30'h
Reliability

Milan – Florence
Road traveltime 3h 30'

- Low reliability arrival time due to congestion in peak hours on the road (±60min)
- HIGH CO2 emissions per person
- Low quality of the ride (stress, attention, safety)
- Low value of time: either busy driving or difficult to multitask as passenger

Milan – Florence - Rome
HS Rail + Transit traveltime 3h 30'

- High reliability arrival time (±5min)
- LOW CO2 emissions per person
- High quality of the ride
- High Value of time: 2 hrs on the train for other activities

Road traveltime
3h 30'

HS Rail + Transit traveltime
3h 30'

Milan – Florence
Road traveltime 3h 30'

- Low reliability arrival time due to congestion in peak hours on the road (±60min)
- HIGH CO2 emissions per person
- Low quality of the ride (stress, attention, safety)
- Low value of time: either busy driving or difficult to multitask as passenger

Milan – Florence - Rome
HS Rail + Transit traveltime 3h 30'

- High reliability arrival time (±5min)
- LOW CO2 emissions per person
- High quality of the ride
- High Value of time: 3 hrs on the train for other activities

Road traveltime
3h 30'

HS Rail + Transit traveltime
3h 30'

HOW TO CONNECT THE CORES
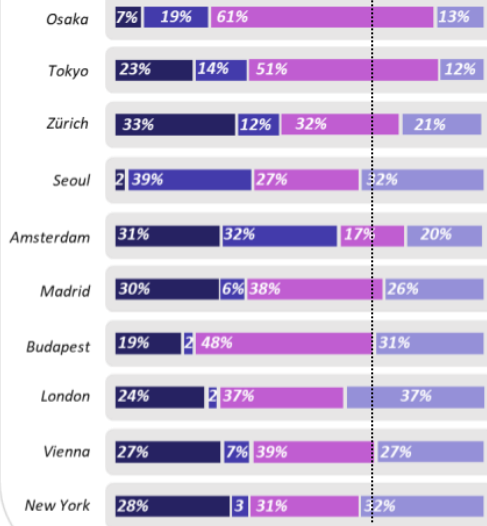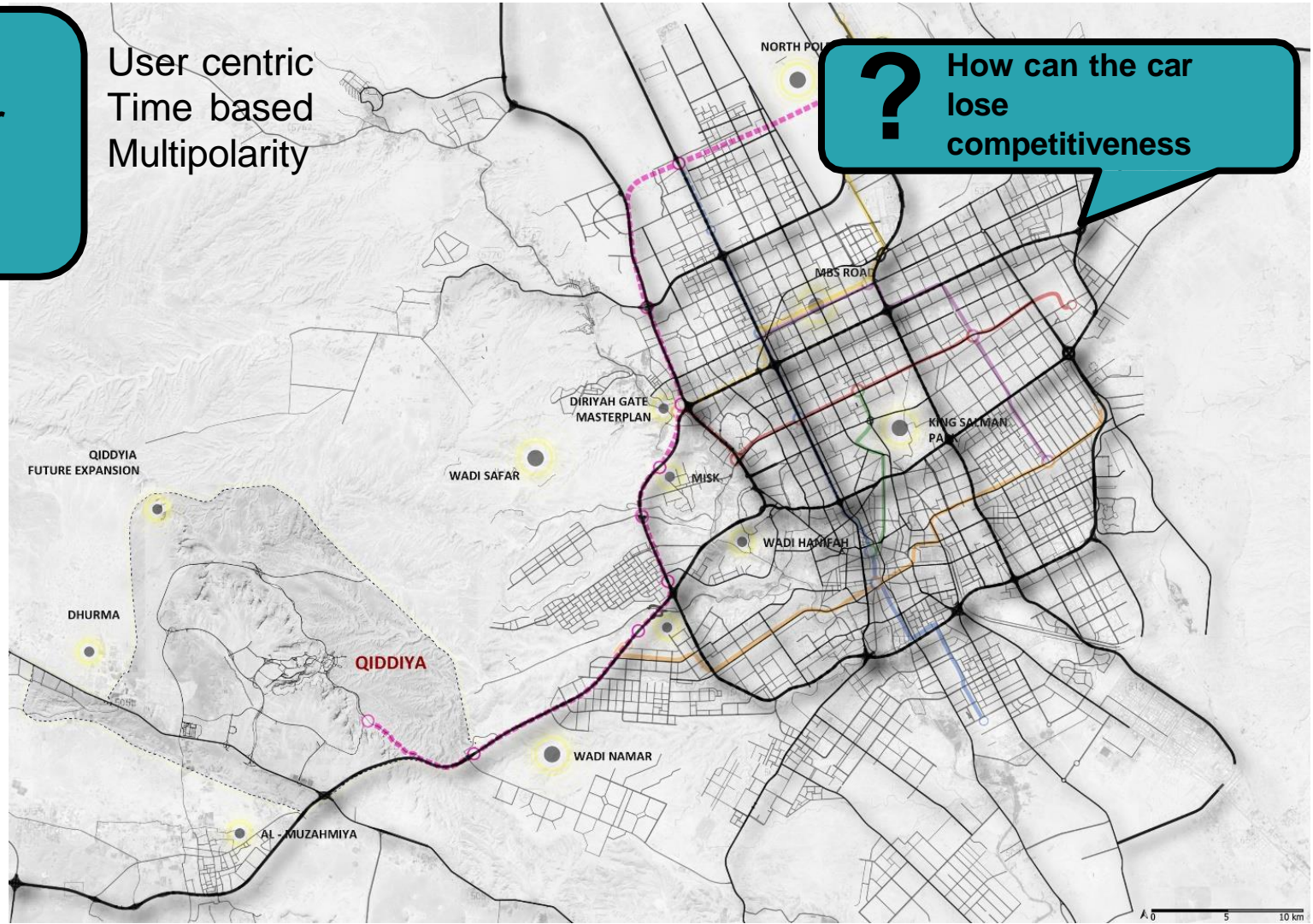## User centric connections

Priority

3 Minimise car dependency

User centric
Time based
Multipolarity

? How can the car lose competitiveness

Top Liveable Cities

City	🚶	🚲	🚌	🚗
Osaka	7%	19%	61%	13%
Tokyo	23%	14%	51%	12%
Zürich	33%	12%	32%	21%
Seoul	2%	39%	27%	32%
Amsterdam	31%	32%	17%	20%
Madrid	30%	6%	38%	26%
Budapest	19%	2%	48%	31%
London	24%	2%	37%	37%
Vienna	27%	7%	39%	27%
New York	28%	3%	31%	32%

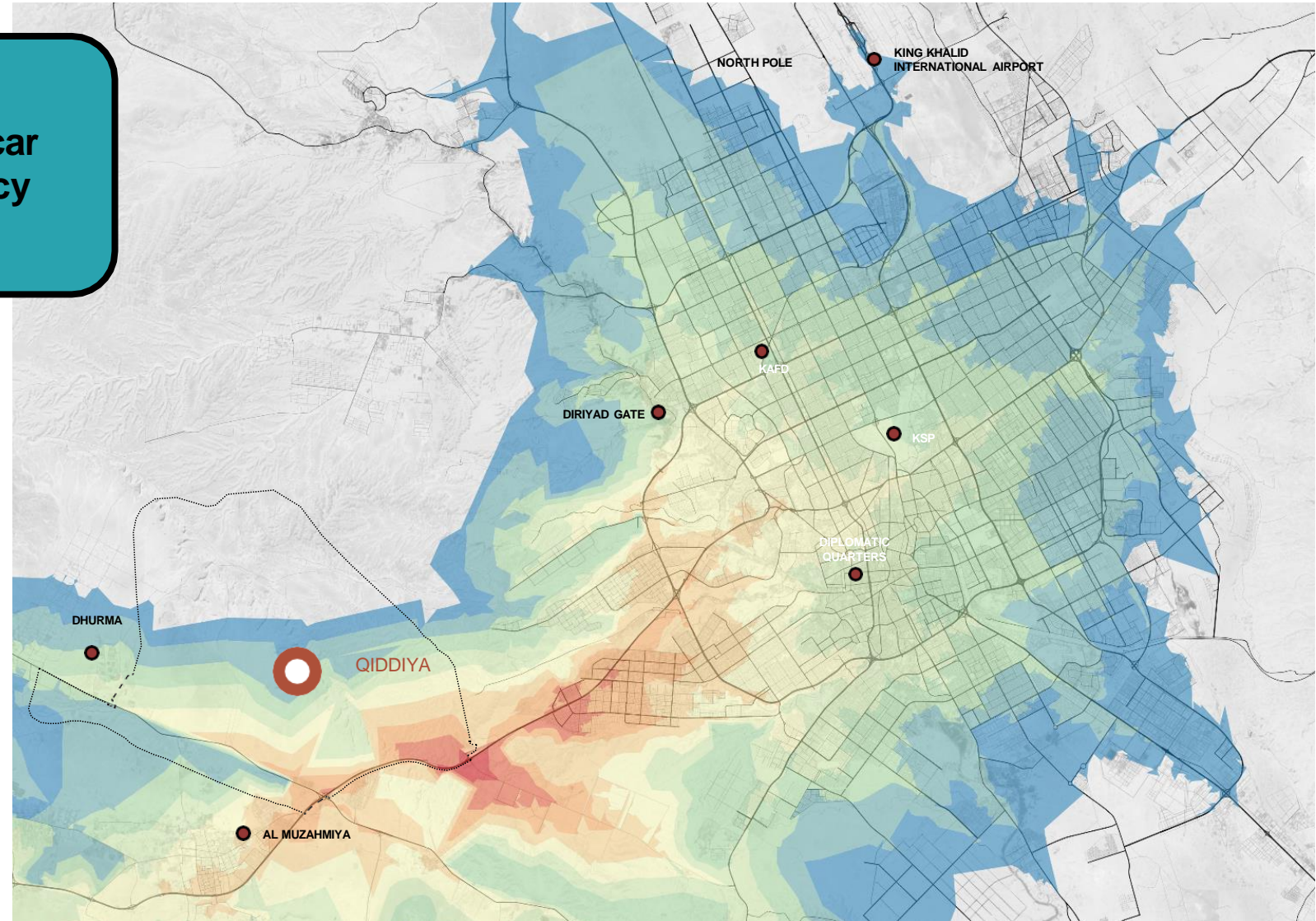30% car modal share

HOW TO CONNECT THE CORES
Private Car connections

Priority

3 Minimise car dependency

Private Car to/from Qiddiya
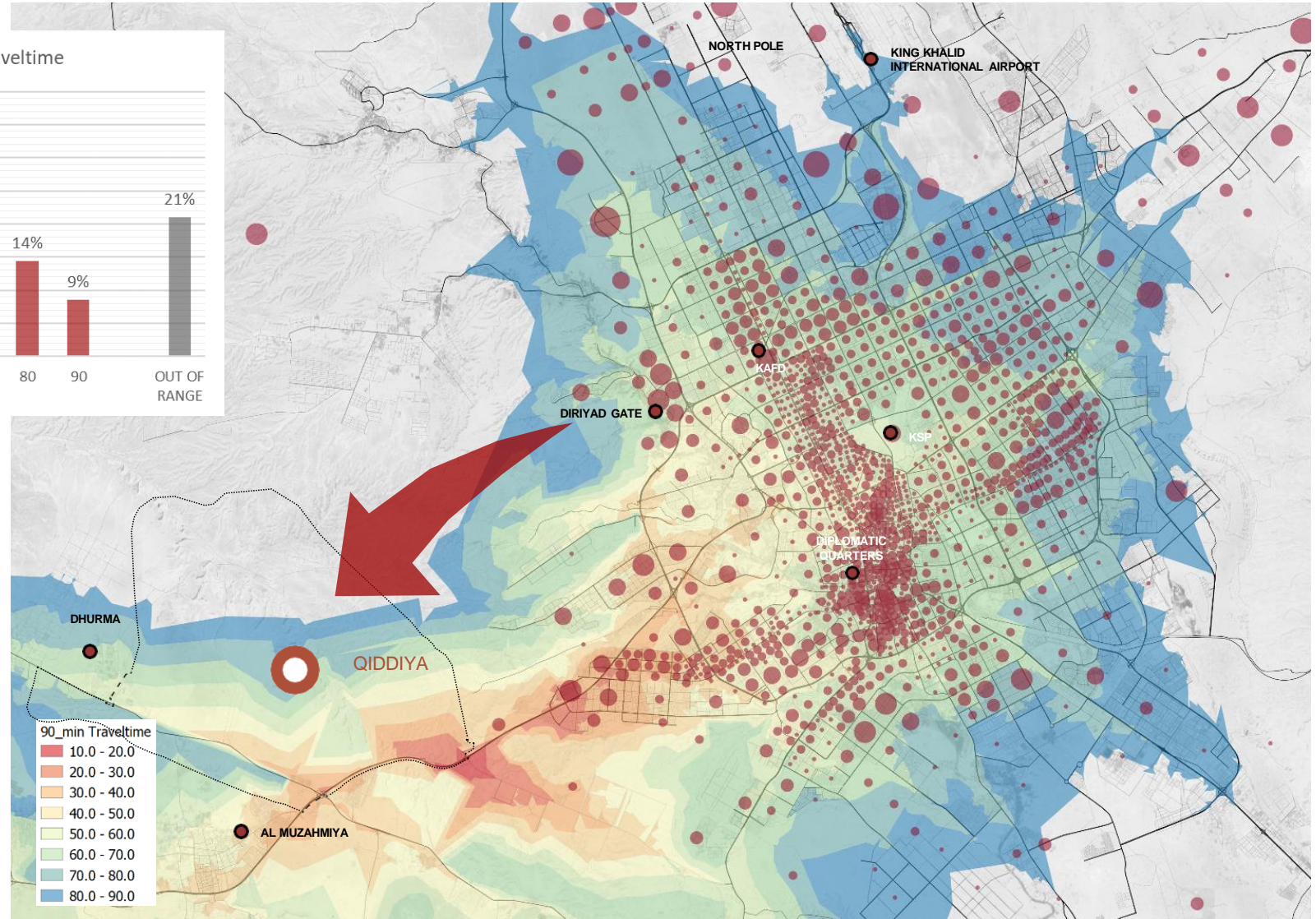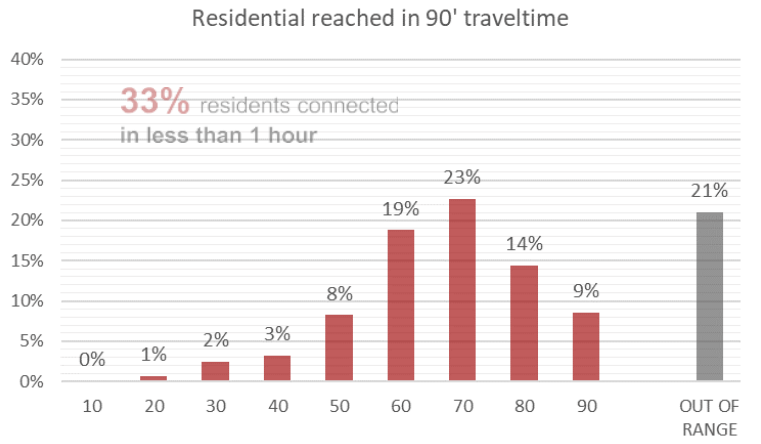**90' traveltime**

90_min Traveltime

- 10.0 - 20.0
- 20.0 - 30.0
- 30.0 - 40.0
- 40.0 - 50.0
- 50.0 - 60.0
- 60.0 - 70.0
- 70.0 - 80.0
- 80.0 - 90.0

HOW TO CONNECT THE CORES
Visitors from Riyadh (by car)

Residential reached in 90' traveltime

33% residents connected in less than 1 hour

10	0%
20	1%
30	2%
40	3%
50	8%
60	19%
70	23%
80	14%
90	9%
OUT OF RANGE	21%

Connection to Riyadh residents by Car from Qiddiya

Residents are weighted based on the total amount of trips generated during the morning peak hour.
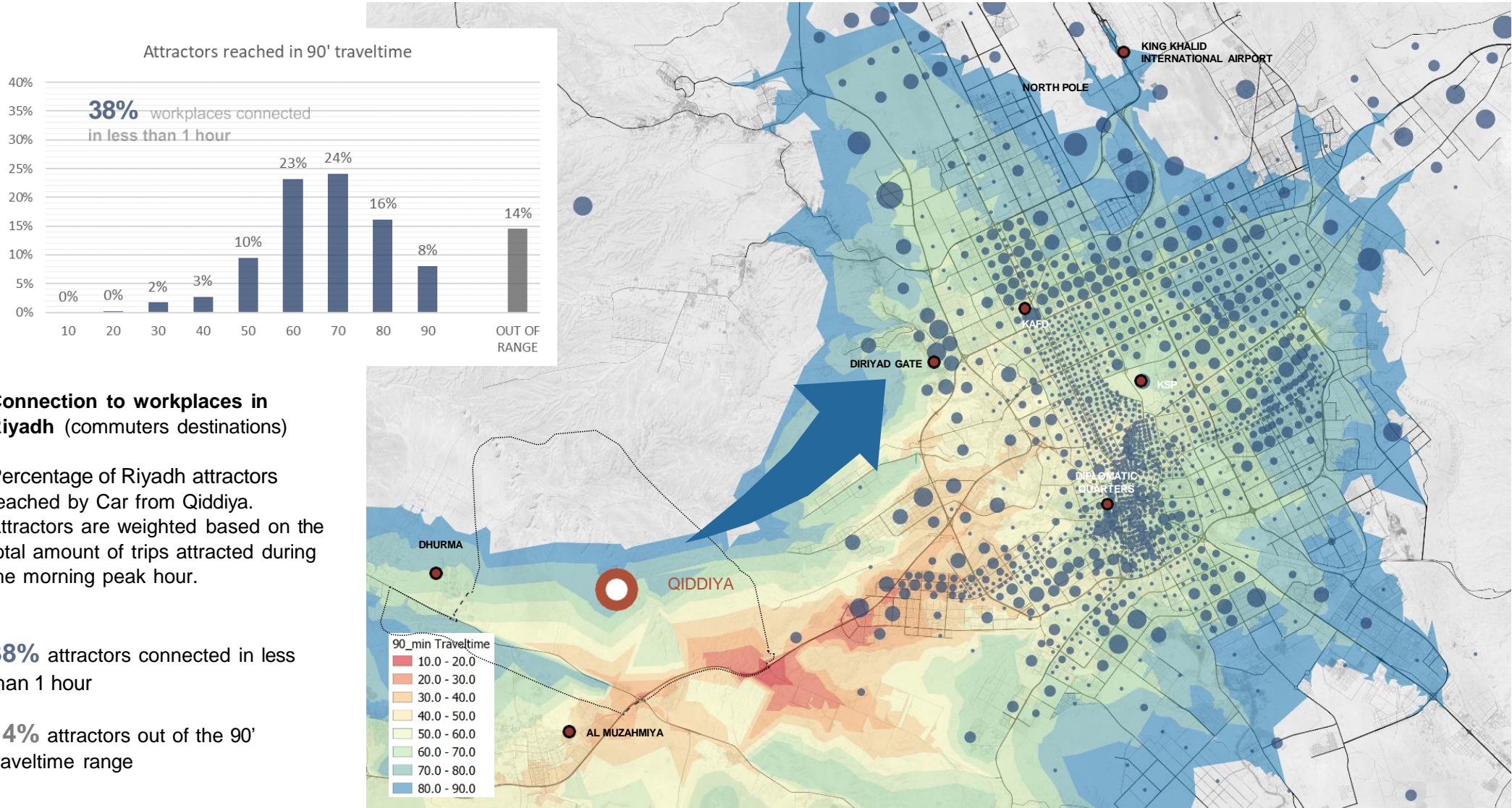
33% residents connected in less than 1 hour

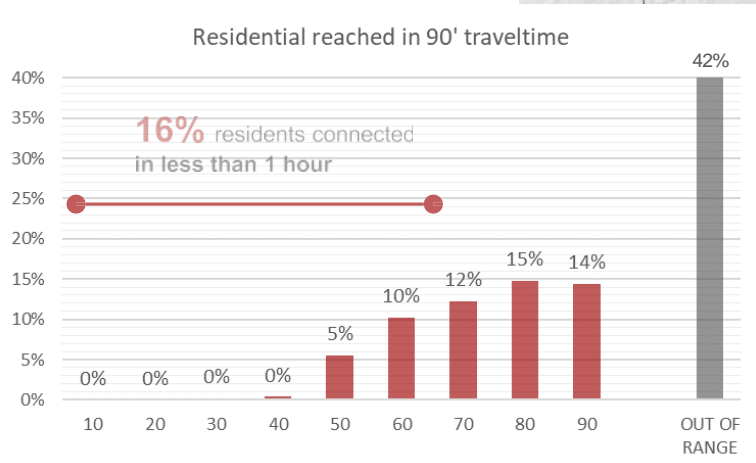**21%** residents out of the 90' traveltime range

90_min Traveltime
- 10.0 - 20.0
- 20.0 - 30.0
- 30.0 - 40.0
- 40.0 - 50.0
- 50.0 - 60.0
- 60.0 - 70.0
- 70.0 - 80.0
- 80.0 - 90.0

HOW TO CONNECT THE CORES
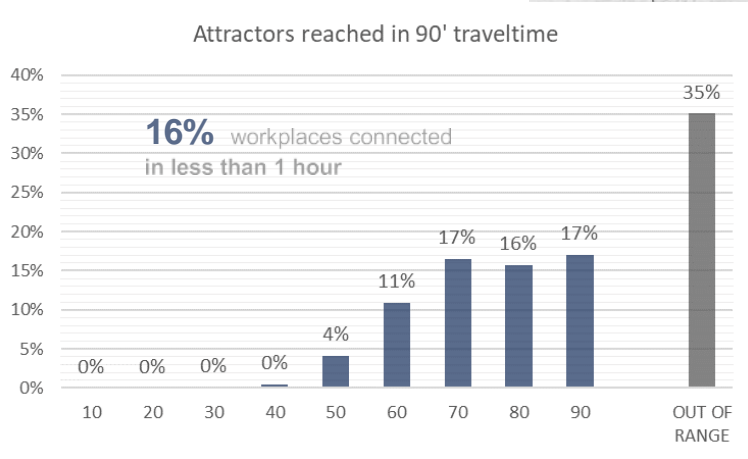## Connection to workplaces in Riyadh (by car)

Attractors reached in 90' traveltime

38% workplaces connected in less than 1 hour

Chart values: 0% (10), 0% (20), 2% (30), 3% (40), 10% (50), 23% (60), 24% (70), 16% (80), 8% (90), 14% (OUT OF RANGE)

Connection to workplaces in Riyadh (commuters destinations)

Percentage of Riyadh attractors reached by Car from Qiddiya. Attractors are weighted based on the total amount of trips attracted during the morning peak hour.

38% attractors connected in less than 1 hour

14% attractors out of the 90' traveltime range

90_min Traveltime
- 10.0 - 20.0
- 20.0 - 30.0
- 30.0 - 40.0
- 40.0 - 50.0
- 50.0 - 60.0
- 60.0 - 70.0
- 70.0 - 80.0
- 80.0 - 90.0

Map labels: KING KHALID INTERNATIONAL AIRPORT, NORTH POLE, KAFD, DIRIYAD GATE, KSP, DIPLOMATIC QUARTERS, DHURMA, QIDDIYA, AL MUZAHMIYA

HOW TO CONNECT THE CORES
Public Transport Isochrone

Traveltime to/from Qiddiya via Public Transport

Planned Public Transport network 2030

Public Transport Multi modal Isochrone

90' traveltime

90_min Traveltime

- 10.0 - 20.0
- 20.0 - 30.0
- 30.0 - 40.0
- 40.0 - 50.0
- 50.0 - 60.0
- 60.0 - 70.0
- 70.0 - 80.0
- 80.0 - 90.0

KING KHALID INTERNATIONAL AIRPORT

NORTH POLE

KAFD

DIRIYAD GATE

KSP

DIPLOMATIC QUARTERS

DHURMA

QIDDIYA

Line 7

AL MUZAHMIYA
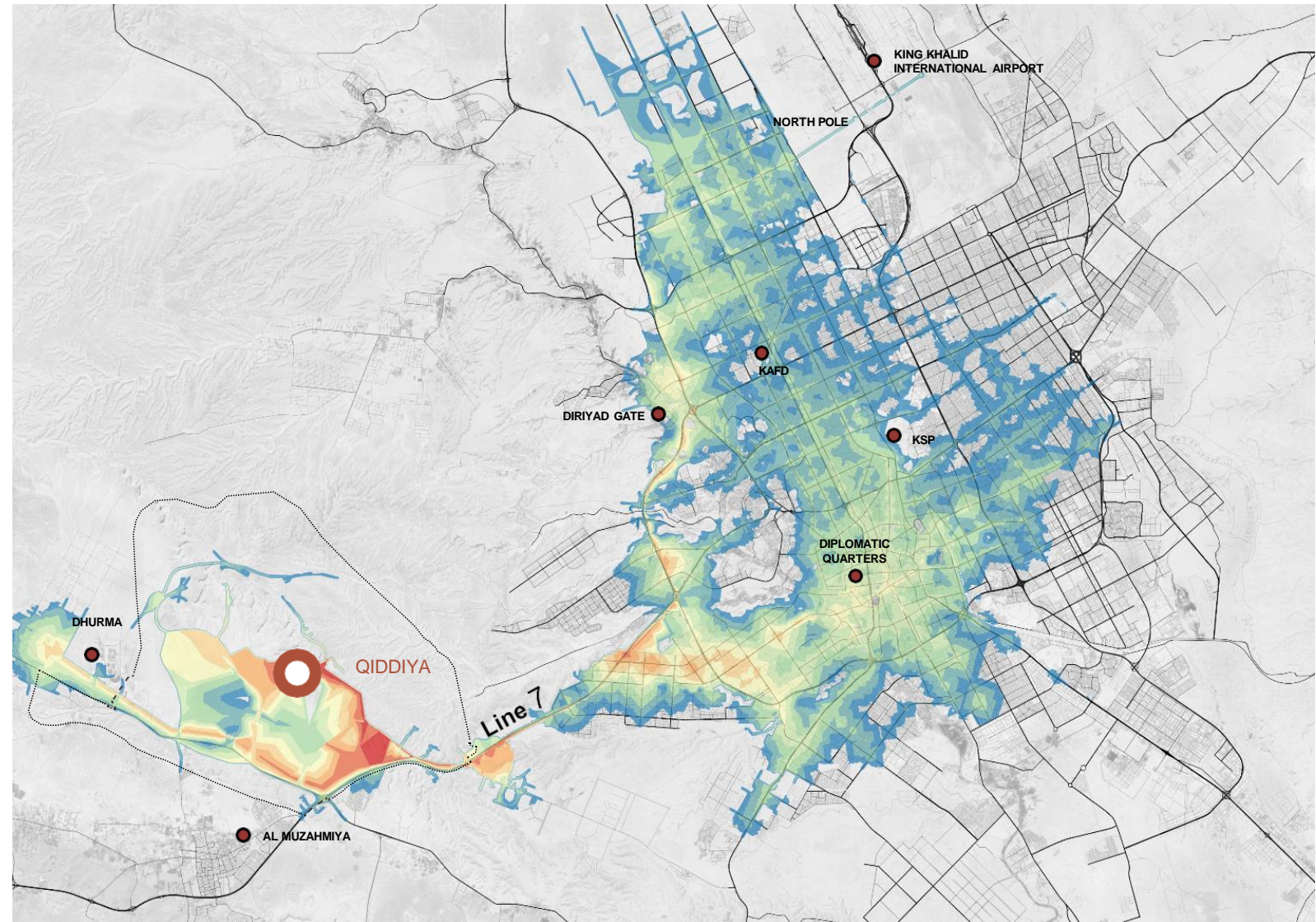
HOW TO CONNECT THE CORES
Visitors from Riyadh (by public transport)

Public Transport Isochrone 90'

Residential reached in 90' traveltime

16% residents connected in less than 1 hour

42%

Connection to Riyadh Residents by Public Transport from Qiddiya

Residents are weighted based on the total amount of trips generated during the morning peak hour.

16% residents connected in less than 1 hour

42% residents out of the 90' traveltime range

Slow ! How can we create a more competitive PT offer

?

90_min Traveltime
- 10.0 - 20.0
- 20.0 - 30.0
- 30.0 - 40.0
- 40.0 - 50.0
- 50.0 - 60.0
- 60.0 - 70.0
- 70.0 - 80.0
- 80.0 - 90.0

QIDDIYA

Line 7

DHURMA

AL MUZAHMIYA

NORTH POLE

KING KHALID INTERNATIONAL AIRPORT

KAFD

KSP

GATE

DIPLOMATIC QUARTERS
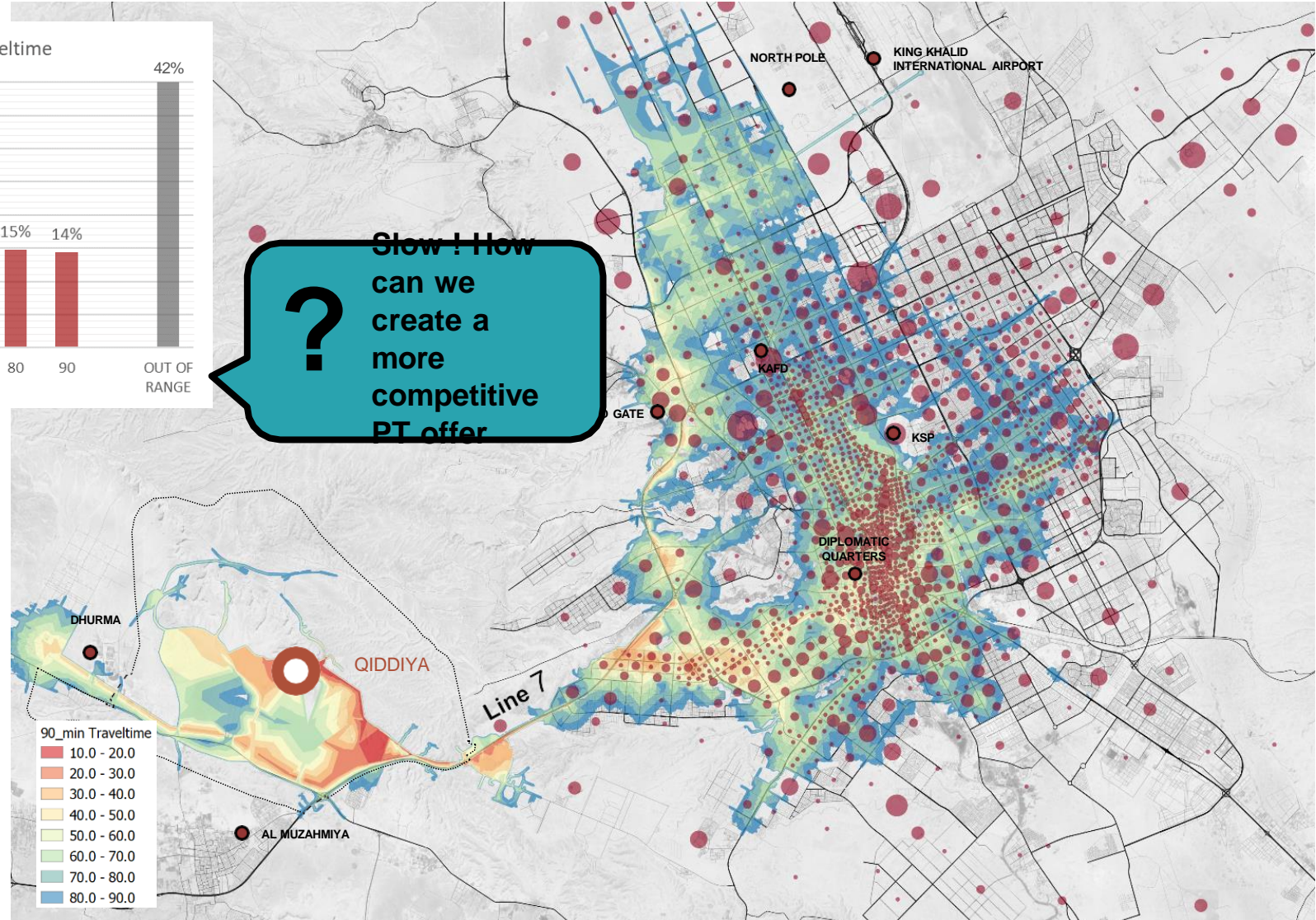
HOW TO CONNECT THE CORES
Connection to workplaces in Riyadh (by PT)

Public Transport Isochrone 90'

Attractors reached in 90' traveltime

16% workplaces connected in less than 1 hour

Connection to workplaces in Riyadh (commuters destinations)

Percentage of Riyadh attractors reached by Public Transport from Qiddiya. Attractors are weighted based on the total amount of trips attracted during the morning peak hour.

16% attractors connected in less than 1 hour

35% attractors out of the 90' traveltime range

Slow ! How can we create more competitive PT offer
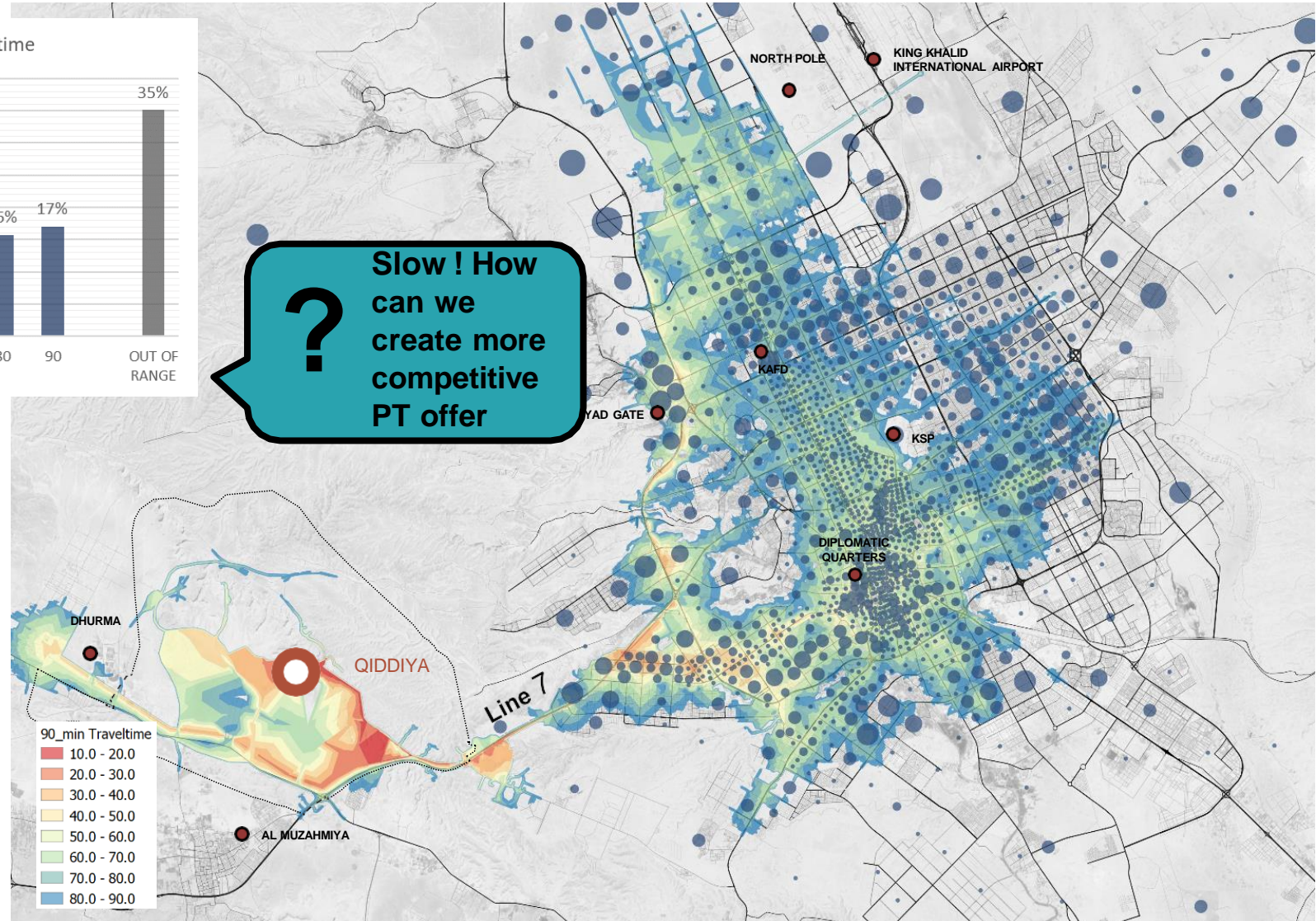
HOW TO CONNECT THE CORES
8 minutes travel time – Option 1

Shift the balance of time
Shrink the distance
Change the geography

SPEED:
400 Km/h

SYSTEM CAPACITY:
+ 6,000 PPL/H/D

Maglev systems can operate on higher ascending grades (up to 10 percent) than traditional railroads (limited to about 4 percent or less)

HOW TO CONNECT THE CORES
User centric connections

Percentage of Attractors reached by Public Transport from Qiddiya

Attractors are weighted based on the total amount of trips attracted during the morning peakhour.

46% attractors connected **in less than 1 hour** (compared to 36% Car)

28% attractors **out of the 90' traveltime range**

NORTH POLE

KING KHALID INTERNATIONAL AIRPORT

KAFD

DIRIYAD GATE

KSP

Q-Xpress

DIPLOMATIC QUARTERS

DHURMA

QIDDIYA

Line 7

AL MUZAHMIYA

HOW TO CONNECT THE CORES
User centric connections

Public Transport Isochrone 90' - <u>FOR COMPARISON</u>

Public Transport from Qiddiya

Planned Public Transport network 2030

Public Transport Multi modal Isochrone

90' traveltime

90_min Traveltime

- 10.0 - 20.0
- 20.0 - 30.0
- 30.0 - 40.0
- 40.0 - 50.0
- 50.0 - 60.0
- 60.0 - 70.0
- 70.0 - 80.0
- 80.0 - 90.0
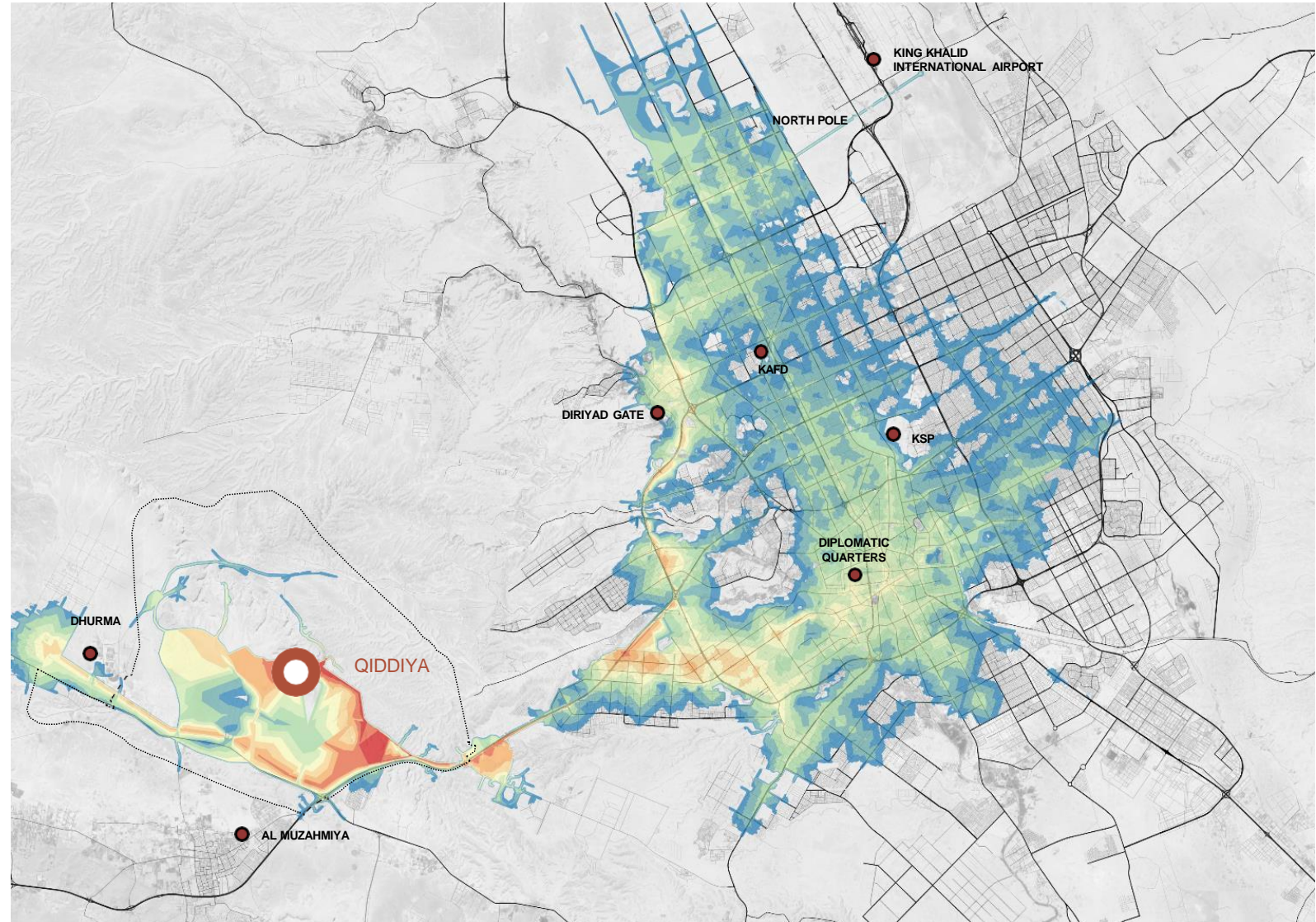
VISITORS
From Riyadh to Qiddiya

15 million Riyadh metropolitan city 2030

QIDDIYA
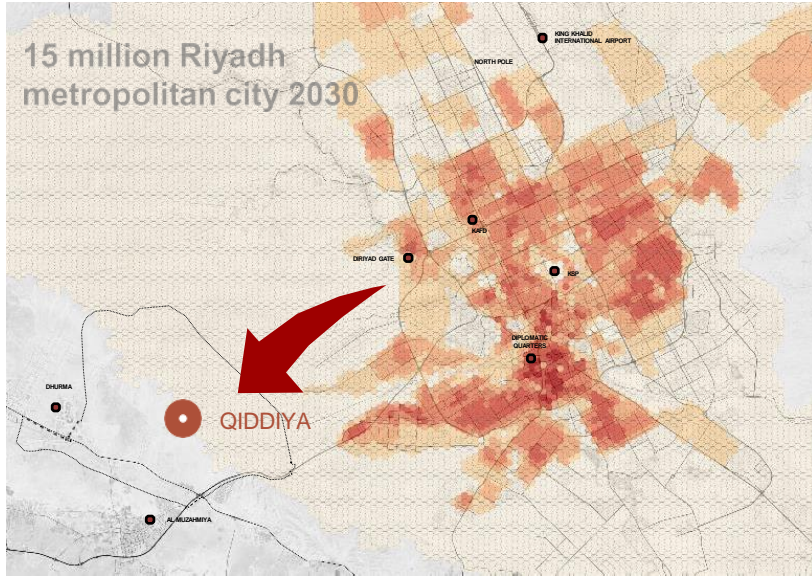
time	CAR	PT	MAGLEV
10	0%	0%	0%
20	1%	0%	0%
30	2%	0%	1%
40	3%	0%	8%
50	8%	5%	13%
60	19%	10%	15%
70	23%	12%	11%
80	14%	15%	14%
90	9%	14%	4%
OUT OF RANGE	21%	42%	34%

CAR 33% residents connected **in less than 1 hour**

Residential reached in 90' traveltime

Line 7 16% residents connected **in less than 1 hour**

Residential reached in 90' traveltime

Q-XPRESS 38% residents connected **in less than 1 hour**
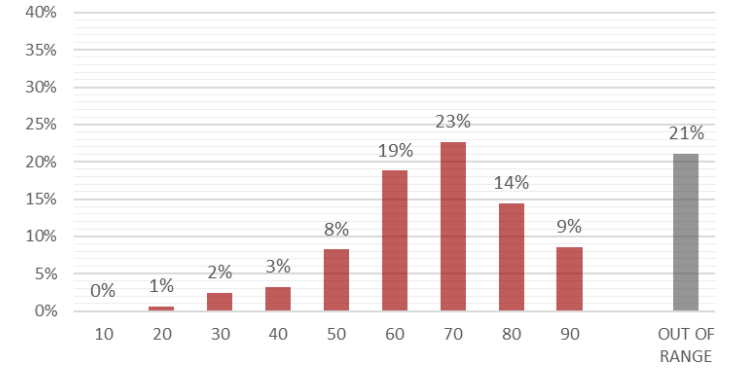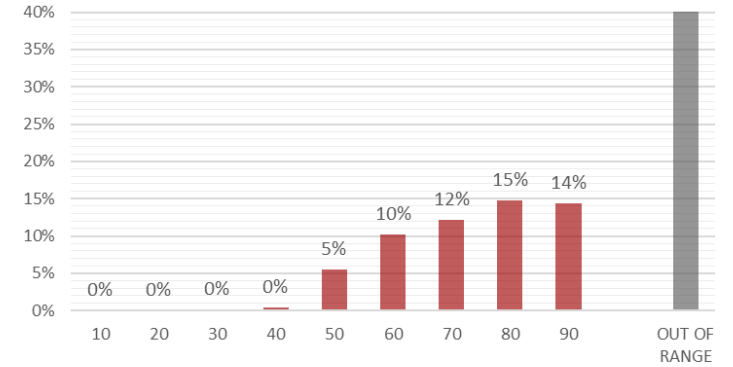
Residential reached in 90' traveltime
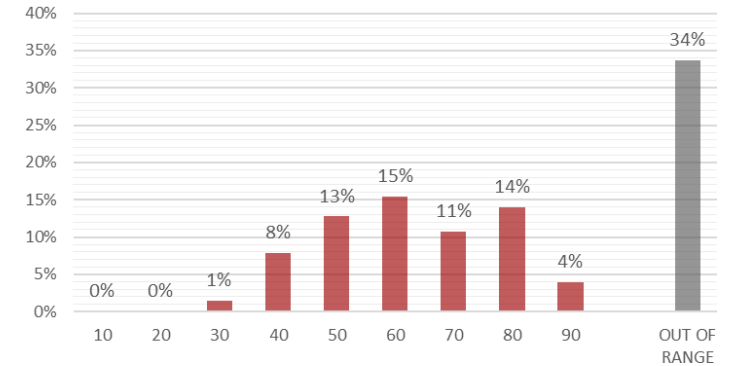
COMMUTERS
From Qiddiya to Riyadh

15 million Riyadh metropolitan city 2030
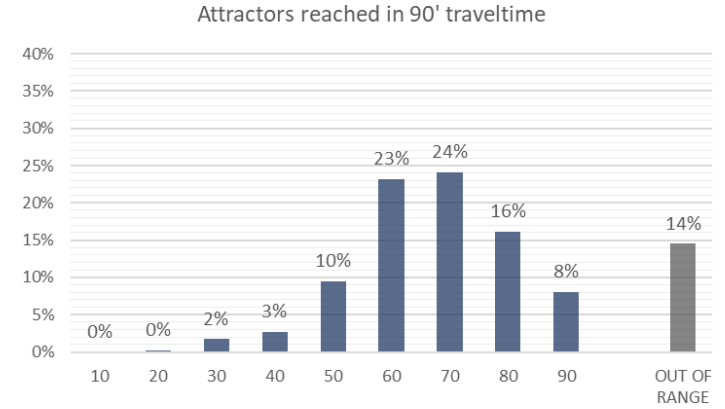
QIDDIYA
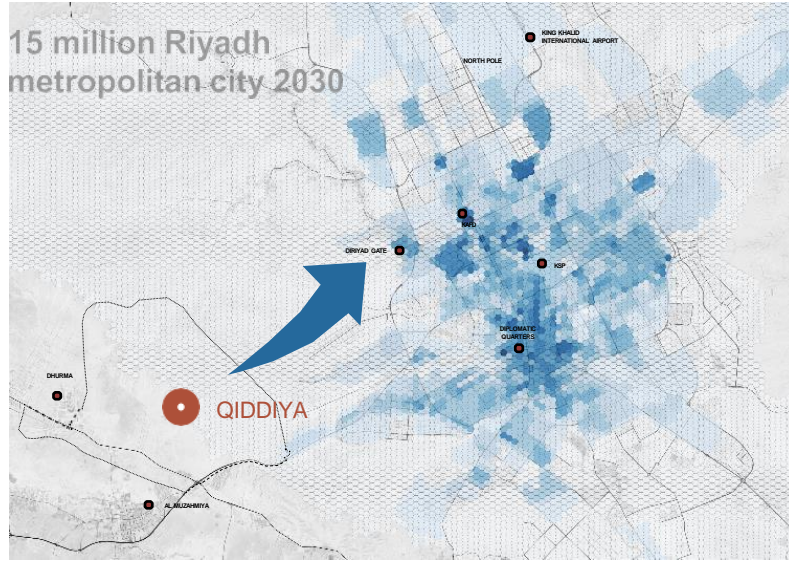
time	CAR	PT	MAGLEV
10	0%	0%	0%
20	0%	0%	0%
30	2%	0%	2%
40	3%	0%	9%
50	10%	4%	15%
60	23%	11%	18 %
70	24%	17 %	13%
80	16%	16 %	13%
90	8%	17 %	4%
OUT OF RANGE	14%	35%	27%

CAR
37%
workplaces connected **in less than 1 hour**

Attractors reached in 90' traveltime

Line 7
16%
workplaces connected **in less than 1 hour**

Attractors reached in 90' traveltime

Q-XPRESS
43%
workplaces connected **in less than 1 hour**
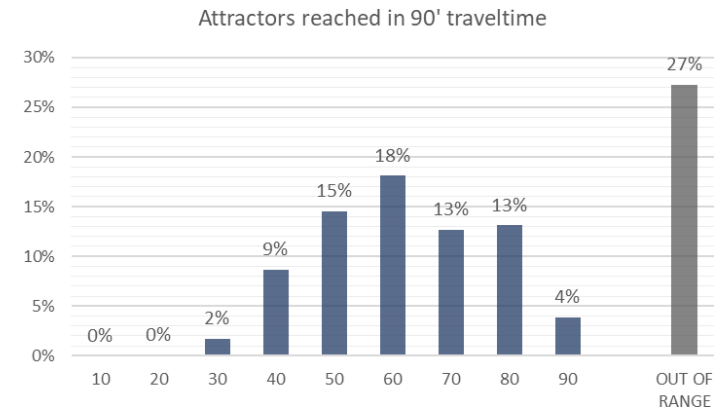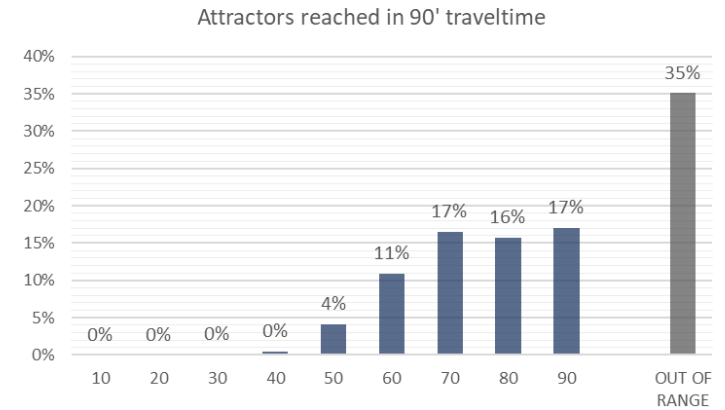
Attractors reached in 90' traveltime

Meso Scale

Meso Scale

Note: this section is less concerned with distance-based scale (i.e. 3-5 miles) – more it is contextual based (i.e. rural setting, or areas poorly connected via current transport offerings)


Micro

Meso

Macro
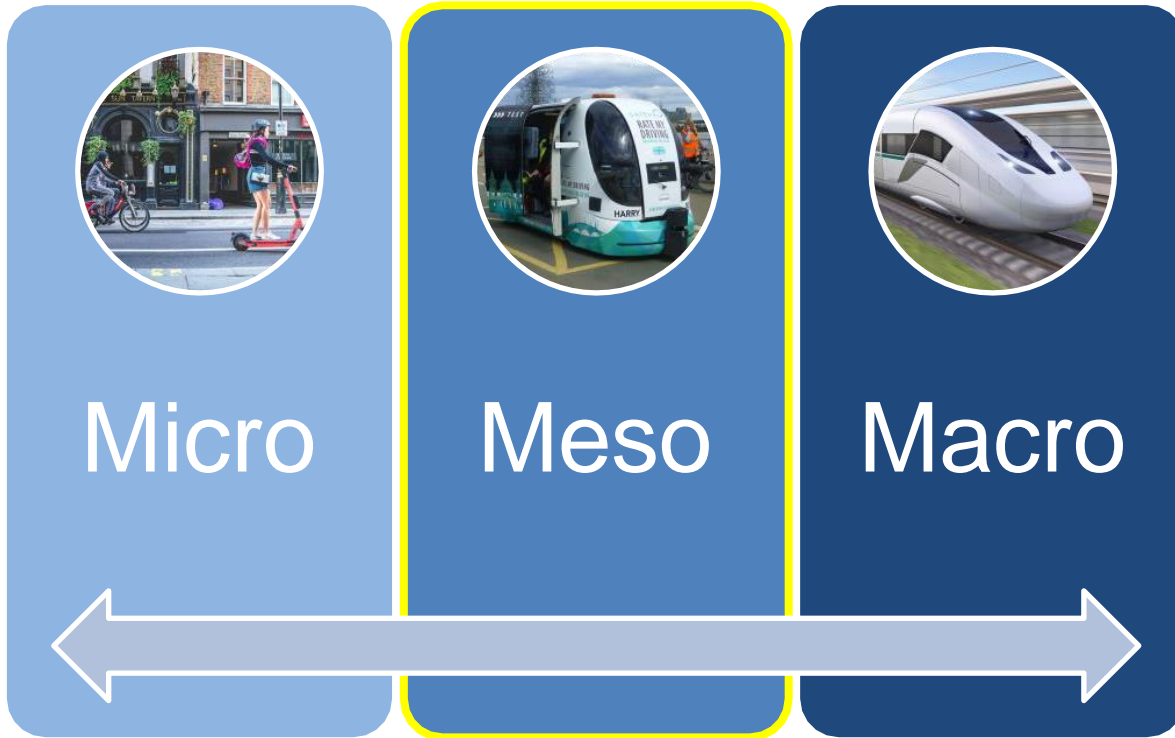
Publication on Autonomous Vehicles

Purpose

- Autonomous vehicles are close to wide-scale rollout in the UK - supposedly **2/3** years away
- **Multitude of unknowns** that need answering
- Important London gets autonomous technology right, for there is potential for radical optimisation of mobility in cities through AVs but also cause for concern
- Buro Happold want to be active in this space

Findings

- Clearest use case is Outer London boroughs where public transport network is less well connected
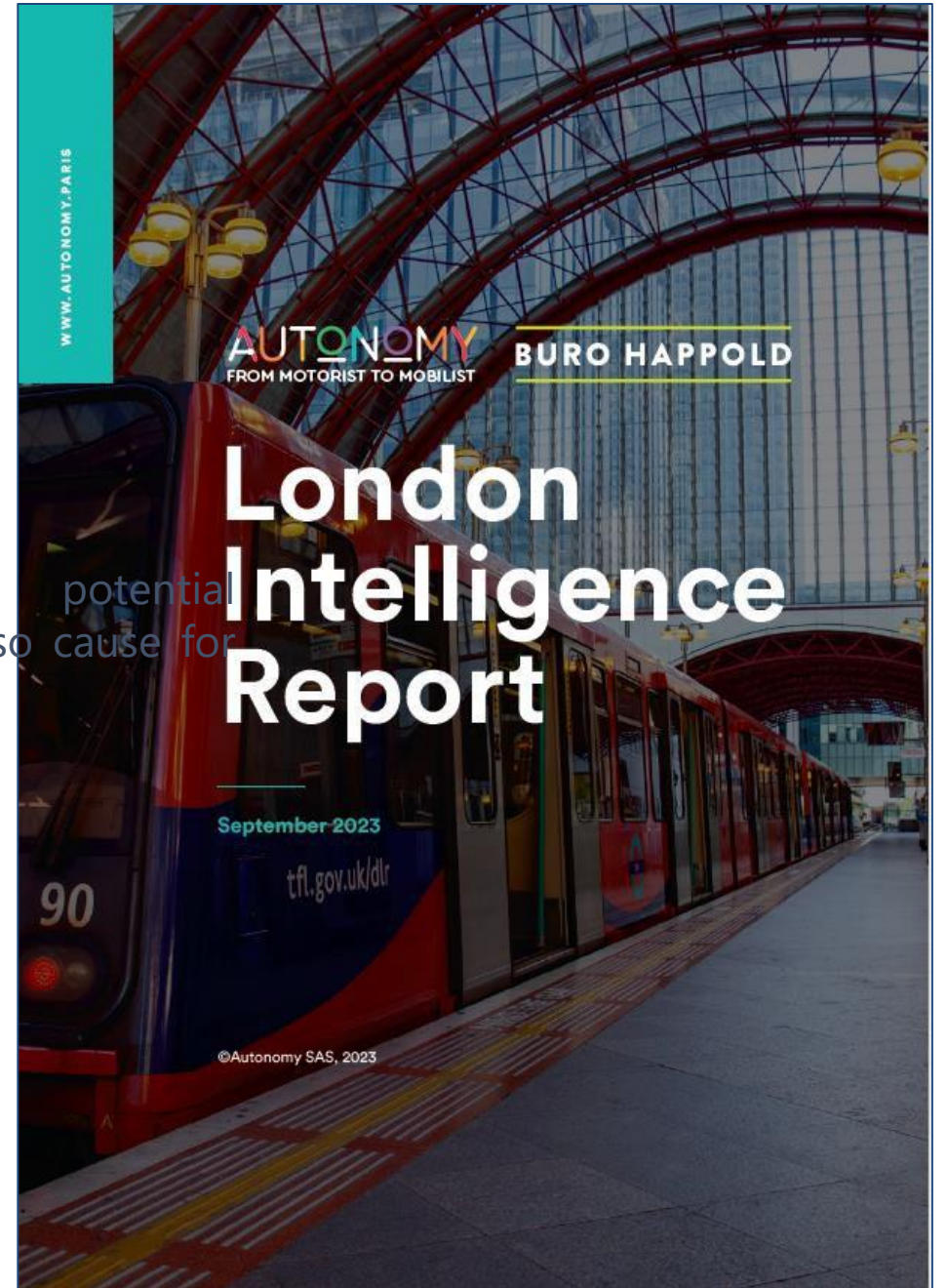
Expected Operation

Existing autonomous application

Docklands Light Rail (DLR) has been operating with fully driverless technology since 1987
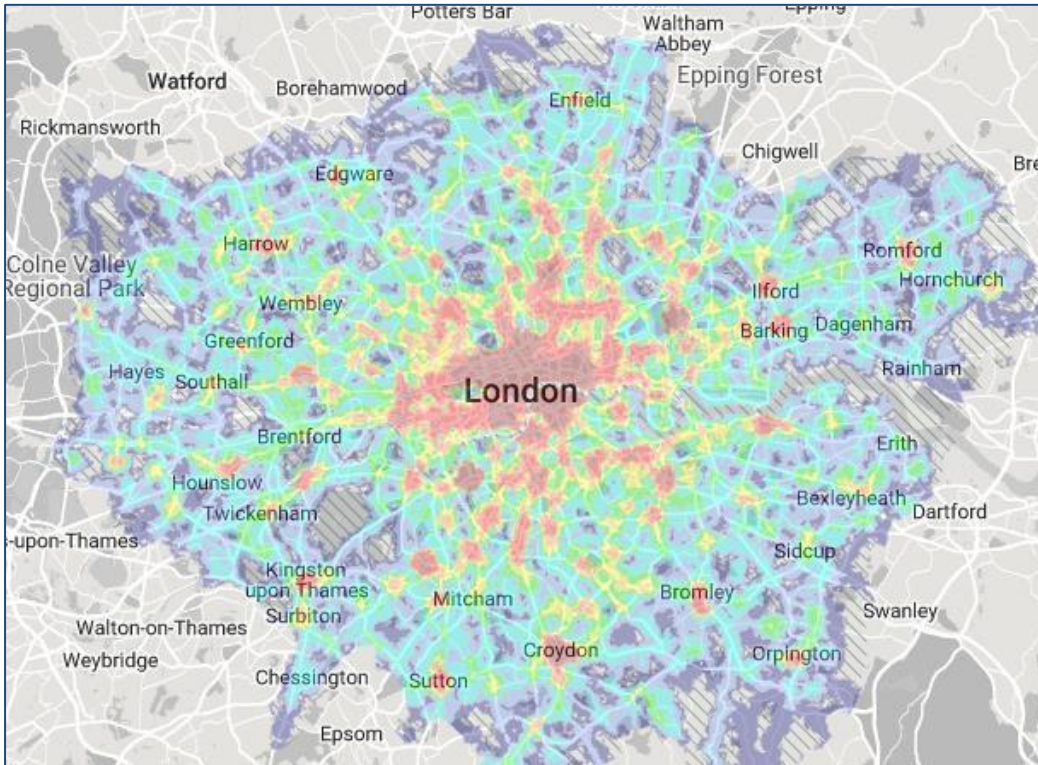
Proposed *shared* AV operation

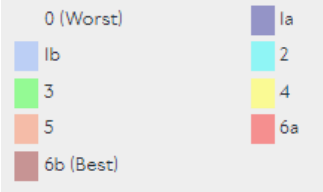Can we expected shared AV offering that's incorporated within TfL's diverse fleet?

Where will shared AVs operate? Part I

PTAL Map (PTAL)

Map of London Car Ownership (Centre for London)

Map key – PTAL

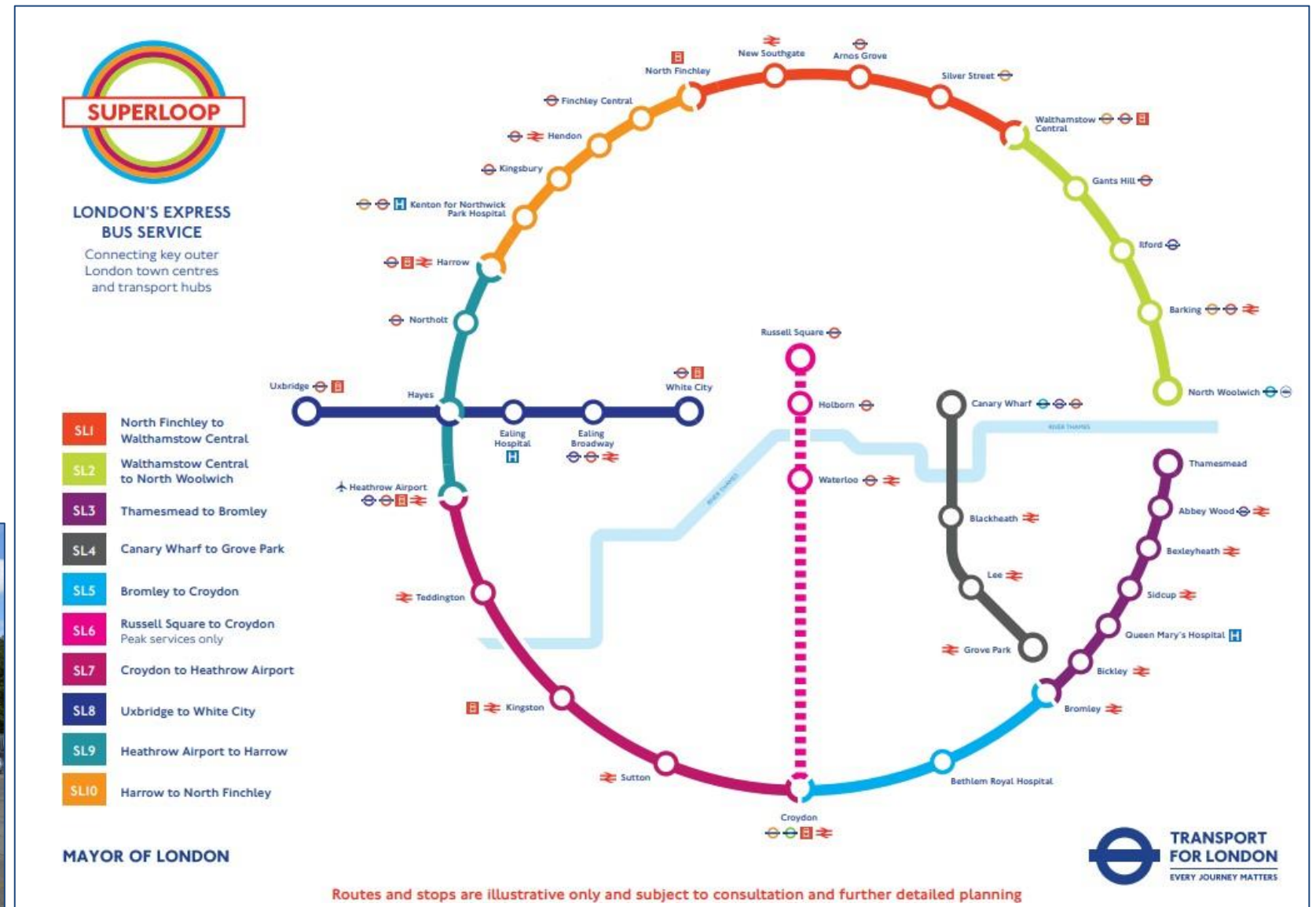|			
0 (Worst)		Ia	
Ib		2	
3		4	
5		6a	
6b (Best)			
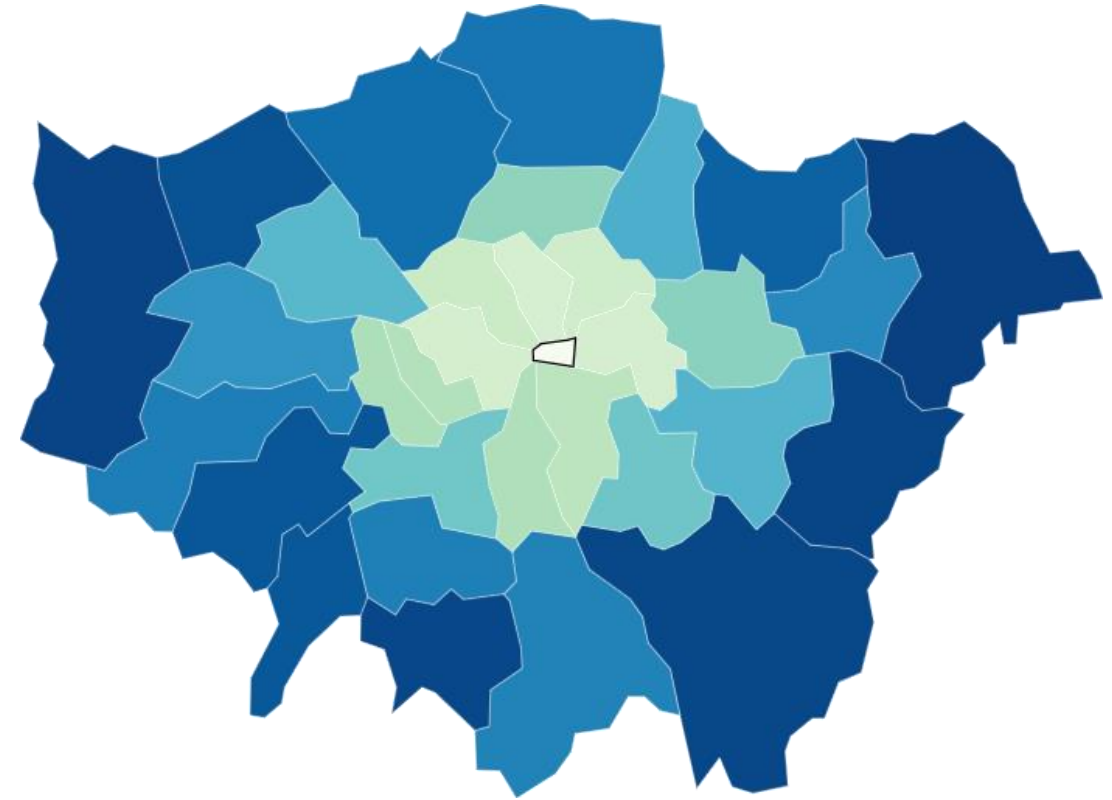
22.8%   78.47%

Connecting Outer London to Outer London

Key Stats (Centre for London)

- 69% of households in outer London have access to or own a car, compared to 42% in inner London
- Twice as many journeys in outer London are by car than in inner London (38% vs 19% of journeys)
- Over half of car trips in outer London are less than two miles long

SUPERLOOP

LONDON'S EXPRESS BUS SERVICE

Connecting key outer London town centres and transport hubs

SL1	North Finchley to Walthamstow Central
SL2	Walthamstow Central to North Woolwich
SL3	Thamesmead to Bromley
SL4	Canary Wharf to Grove Park
SL5	Bromley to Croydon
SL6	Russell Square to Croydon — Peak services only
SL7	Croydon to Heathrow Airport
SL8	Uxbridge to White City
SL9	Heathrow Airport to Harrow
SL10	Harrow to North Finchley

MAYOR OF LONDON

TRANSPORT FOR LONDON — EVERY JOURNEY MATTERS

Routes and stops are illustrative only and subject to consultation and further detailed planning

Where will shared AVs operate? Part II

Segregated Environments (e.g. airports)

Mixed with Road Traffic

**Dedicated Traffic Lane**

Infrastructural Requirements: Beyond the Vehicle

A V2X-Communication
   (e. g. barriers, traffic lights)
B Charging station
C Operation and maintenance facilities
   (including control room and workshop)
D Autonomous shuttle
E Connectivity services
   (via GNSS, LTE, 5G, Wifi, Bluetooth)
F Fleet management
G Operation support
H Magnet localization
I Monitoring cameras
J Information terminal
K Stop
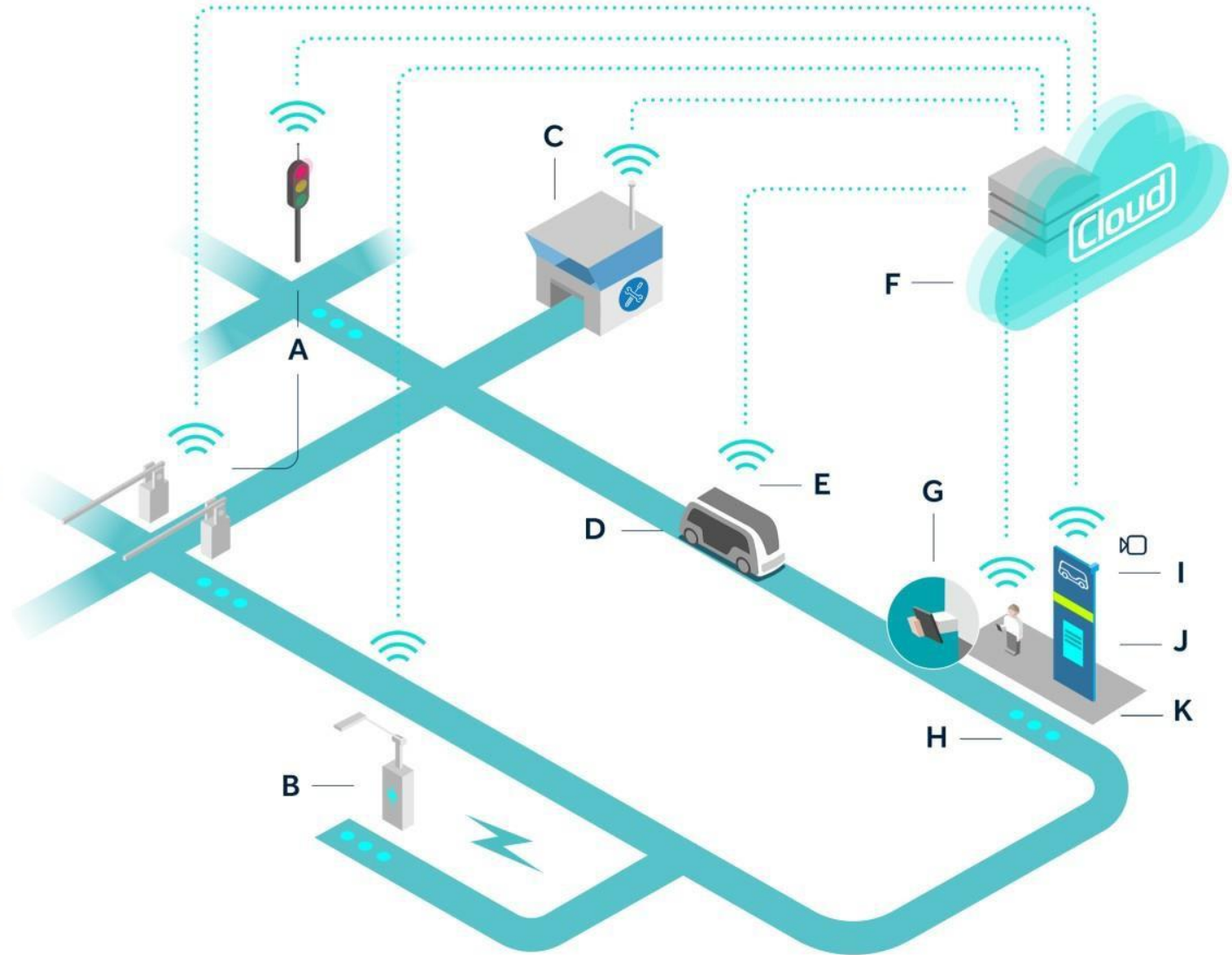
Elements of an autonomous transport system (ZF)

Critical take on AVs

Competing with Active Travel ❌
Concern that, rather than reducing the need to drive and own a car, a fully-functioning AV service reduces the need to move around via active travel.

Suitability to the meso scale ✅
Important to acknowledge AVs are not the only "middle distance" travel offering.

Inclusivity-centred roll-out ✅
If applied carefully, shared AV operations could remove current accessibility voids in city transport systems.

"Our cities don't need driverless cars, they desperately need more carless drivers" - Marco Te Brömmelstroet, Urban Cycling Institute

PLUG!

MIND THE GAP

"Think about giving all individuals, including those with limited mobility, the elderly, children, and those who live in rural or suburban regions, access to inexpensive, sustainable, and easy mobility alternatives" - Guido di Pasquale, Managing Director of PAVE Europe

Combining the Scales

Enabling multiscalar interchange through MaaS

'When the era of connected and automated vehicle[s] comes, MaaS systems and autonomous vehicles will exist in symbiosis. MaaS users will only need one account to access the autonomous vehicle services supplied by different public transport and shared mobility providers. MaaS could prepare the transport ecosystem for a smooth transition to autonomous vehicles' (MaaSLab, 2018:5).

Which scale should we be prioritising with our investment?

Is it all about investing in new infrastructure?
Or retrofitting old infrastructure too?

Large parts of London's rail & tube network are still not step-free

There are now more than 200 step-free access stations across the TfL network. These include 92 Tube stations, 62 London Overground stations, all DLR stations and all Tram stops More than a third of the 272 London Underground stations are step-free with 24 new step-free access stations since 2016

TransportPlanningSociety

TRANSPORT PLANNING DAY 2023

Michael Evans-Ford – ioki

Caroline Stickland – Transport for All

BURO HAPPOLD

IOKI DIGITAL PUBLIC TRANSPORT

Stantec

Believ

HEURISTIC

Kestrel SURVEYS

CS CHARGE SURVEYS

@TransPlanSoc / #TPDay2023

Shireen Ali Khan –
Women in Transport

Michael Solomon Williams –
Campaign for Better Transport

TransportPlanningSociety

TRANSPORT
PLANNING
DAY 2023

Maya Singer – IPPR

Aoife Dudley – City Science

BURO HAPPOLD

IOKI
DIGITAL PUBLIC TRANSPORT
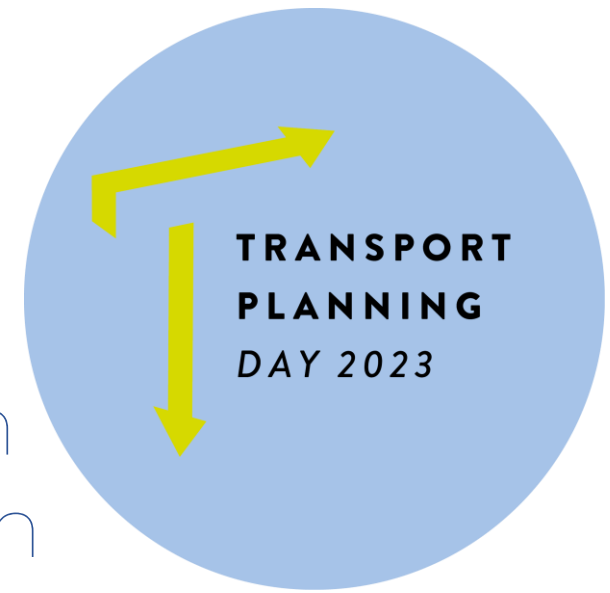
Stantec

Believ

HEURISTIC

Kestrel
SURVEYS

CHARGE
SURVEYS

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