Transport Planning *Society*

Transport Planning Day 2020

North East Region Event

13/11/2020 – 12:30pm

Transport Challenges in the North East

Speakers:

Graham Grant – Newcastle City Council

Martijn Gilbert – Go North East

Dr Robert Palacin – Newcastle University

Transport Challenges in the North East

Agenda:

Event Introduction – **Gavin Snowball**

TPS Chair Introduction – **Stephen Bennett**

Graham Grant – Newcastle City Council

Martijn Gilbert – Go North East

Questions – **Nicola Hill**

Dr Robert Palacin – Newcastle University

Questions – **Nicola Hill**

Close

Join in the conversation:
#TPDay2020

TransportPlanningSociety

The bus and climate change, including decarbonisation and Covid-19

A presentation to the Transport Planning Society's regional Event for Transport Planning Day 2020

Martijn Gilbert, Managing Director Go North East (and Chair NEBus Operators Association) – 13th November 2020

Why buses?

More people use buses than any other public transport mode!

Tyne and Wear has the
4th highest
bus use per household in England

outside of London

90.3%

Overall customer satisfaction with buses in the North East

(2018/19 Transport Focus Bus Passenger Survey)

NEbus
North East bus operators working together
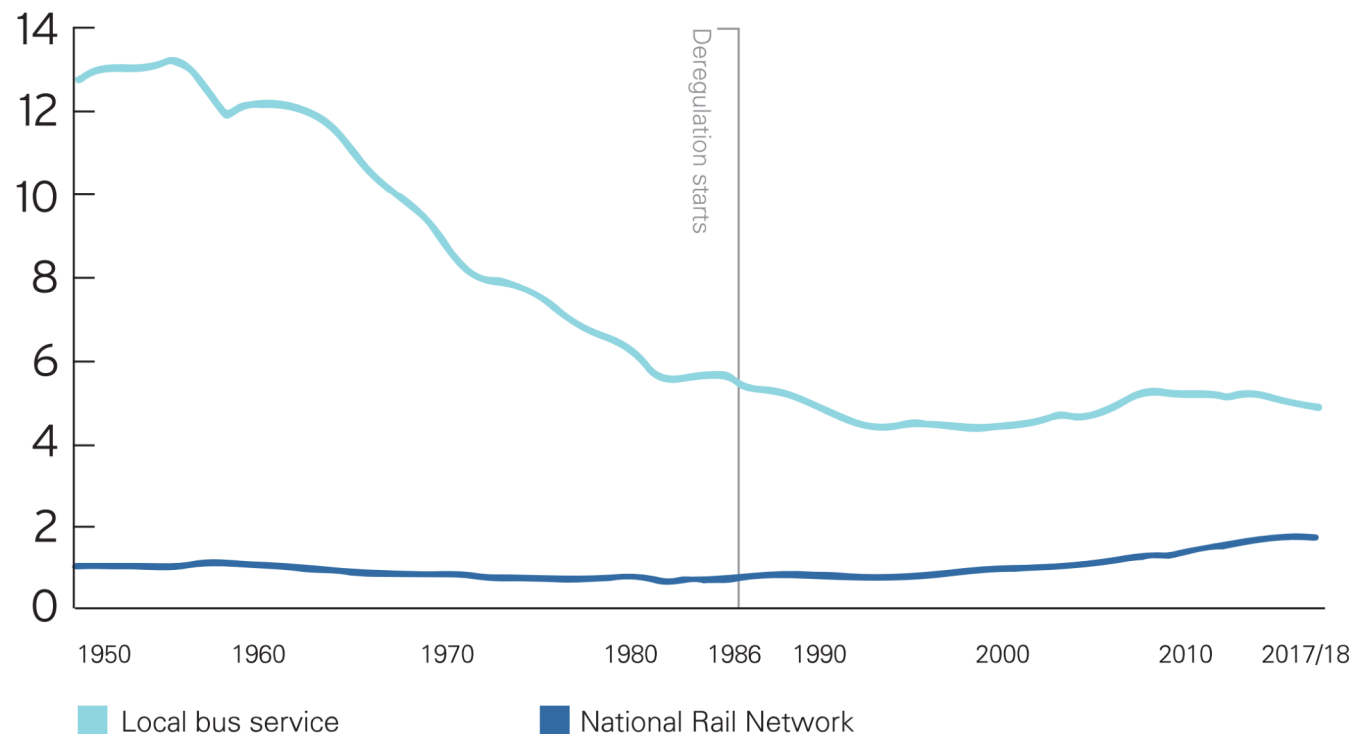
Where have buses in our region come from?

over
6,000
employees

81
apprentices over
the last 3 years

Changes to bus use over the past 40+ years

More people use buses than rail - number of journeys (bn)

Deregulation starts

Local bus service
National Rail Network

Source: Department for Transport Annual Bus Statistics

- De-regulation of Britain's buses in 1986

- Socio-demographics

- Economy (including LA services)
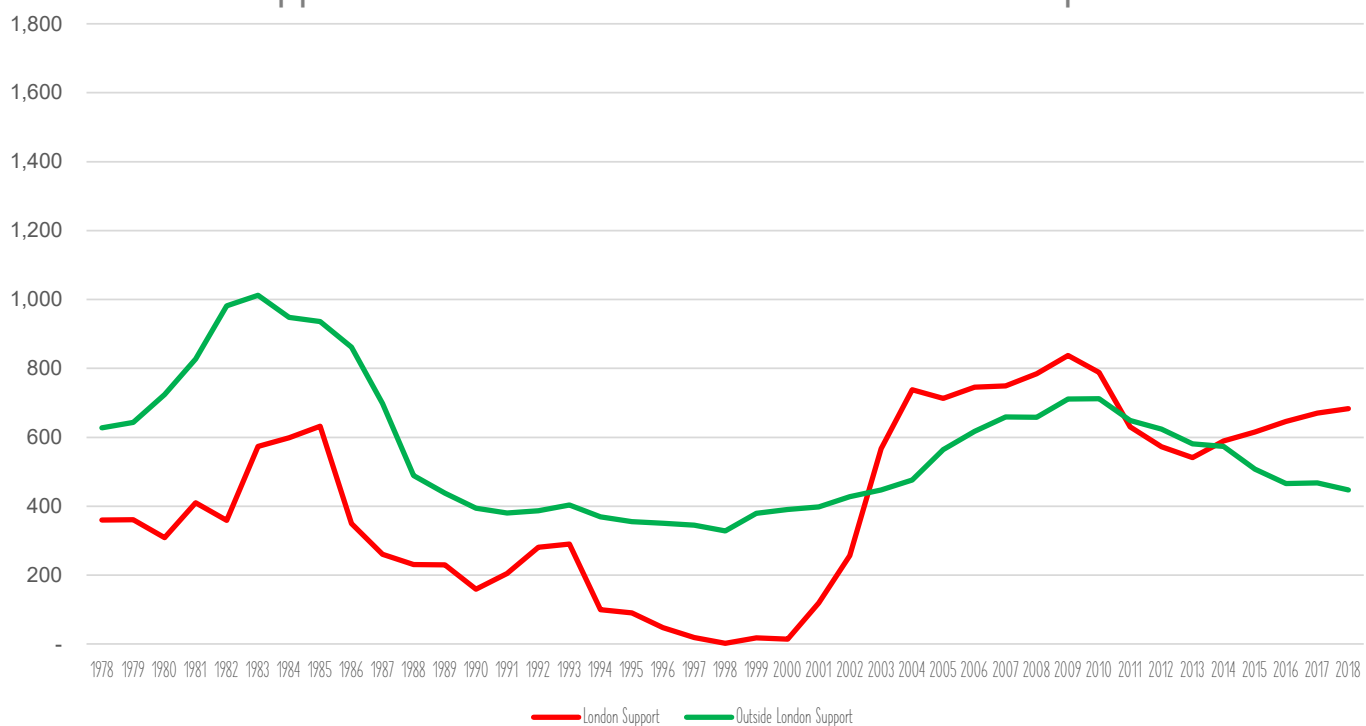
- Congestion
  - Journey speeds
  - Cost/fares

NEbus

North East bus operators
working together

Changes to public subsidies for buses

GB support for bus services in £m at constant 17/18 prices

- Excludes ENCTS (not a subsidy) and FDR/BSOG

- De-regulation of Britain's buses in 1986

- London costs again greater than the rest of GB now

Source: Department for Transport Annual Bus Statistics 1991/92 et seq.   © Passenger Transport Intelligence Services Limited 2019

NEbus
North East bus operators
working together

Two ways to move 75 people on our congested roads...

Bus commuters generate

£64bn

worth of goods and services

Bus users make 1.4 billion shopping trips spending an estimated

£27bn

on retail goods

NEbus
North East bus operators working together

Corbridge
Heddon-on-the-Wall
Newcastle
309 310 to the coast
Hexham
Metrocentre
Gateshead
Heworth
West Boldon
Rowlands Gill
Sunniside
Sunderland
Washington
Chester-le-Street
Shotley Bridge
Houghton-le-Spring
Seaham
Stanley
Consett
Lanchester
Easington Lane
Durham
Peterlee
Spennymoor
Bishop Auckland
Billingham
Middlesbrough

X lines
from Go North East

express network

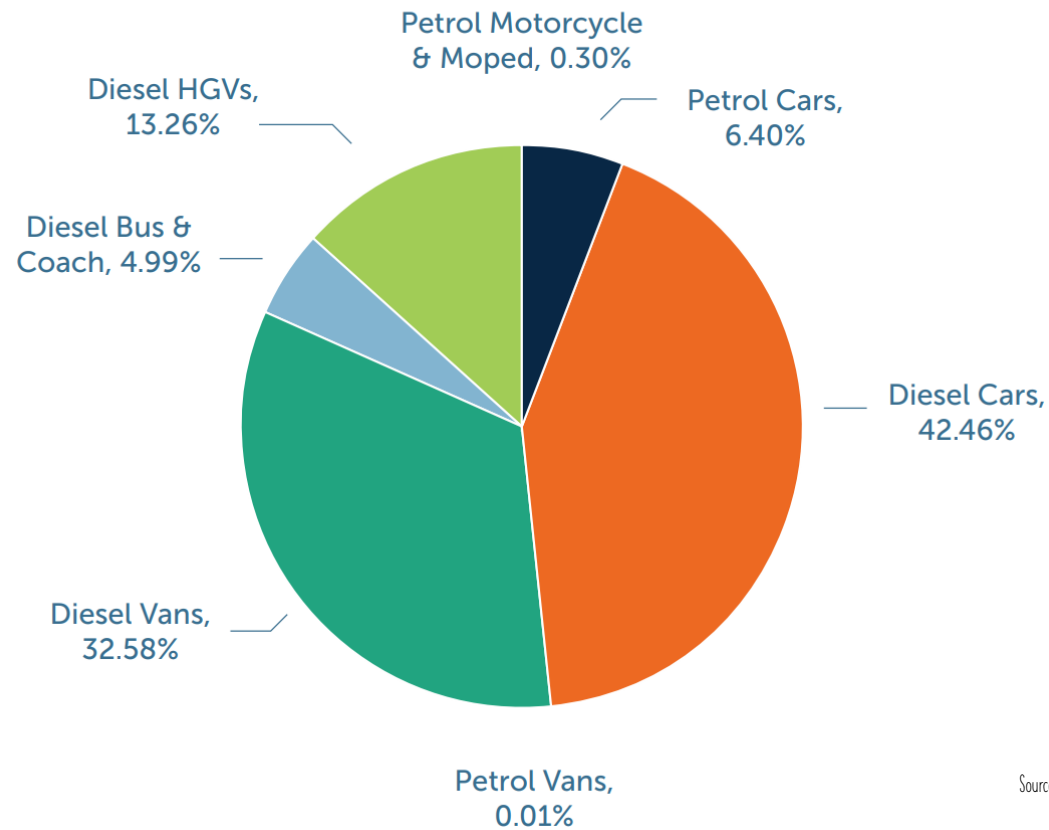|	
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▬	**X5 X15**
▬	**X20**
▬	**X21**
▬	**X30 X31**
▬	**X45 X46 X47**
▬	**X70 X71**
▬	**X84 X85**

fast & direct
comfy high back seats
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"THE NEXT STOP IS…"
contactless payments

Sources of emissions - "road transport the largest source"?

Figure 1: Breakdown of average roadside sources of NO$_x$ emissions by vehicle type. (NAIE, 2018)


- Petrol Motorcycle & Moped, 0.30%
- Petrol Cars, 6.40%
- Diesel HGVs, 13.26%
- Diesel Bus & Coach, 4.99%
- Diesel Cars, 42.46%
- Diesel Vans, 32.58%
- Petrol Vans, 0.01%

Source: LowCVP

Cleaner buses – even diesel ones

Euro 6 produces 75% lower levels of NOx, with the PM10 also reduced at around 95%, of Euro 5 bus engines

(Euro 6 legislation means that all NOx emissions are reduced to 0.46 g/kwh (some 75% down on Euro 5 limits), and PM down to 0.01 g/kwh, but with added limits, this in effect means permitted levels of PM will be around 95% lower than Euro 5)
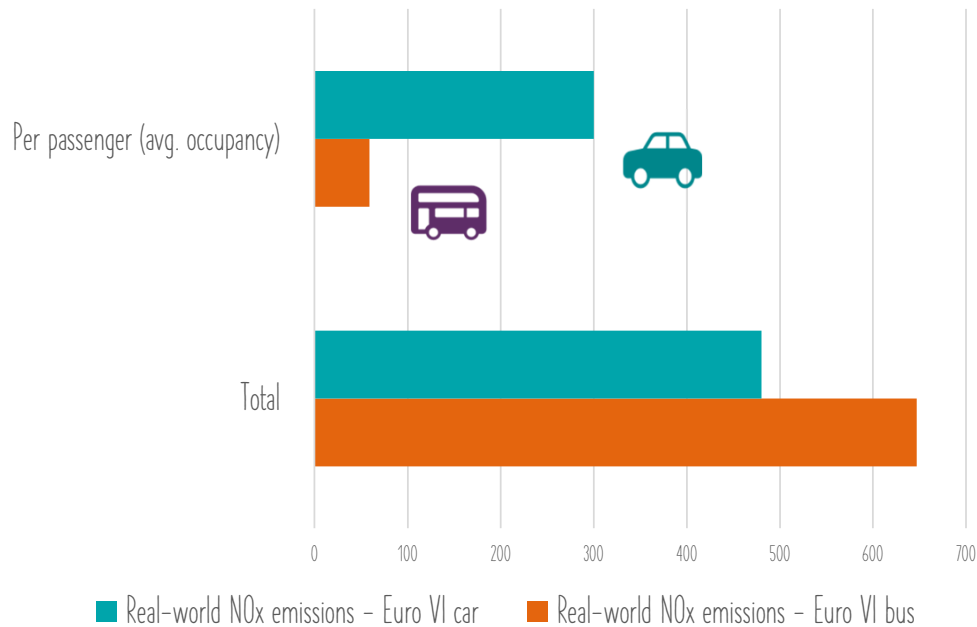
Average NOx emissions, Euro II to Euro VI

Nox (g/km)
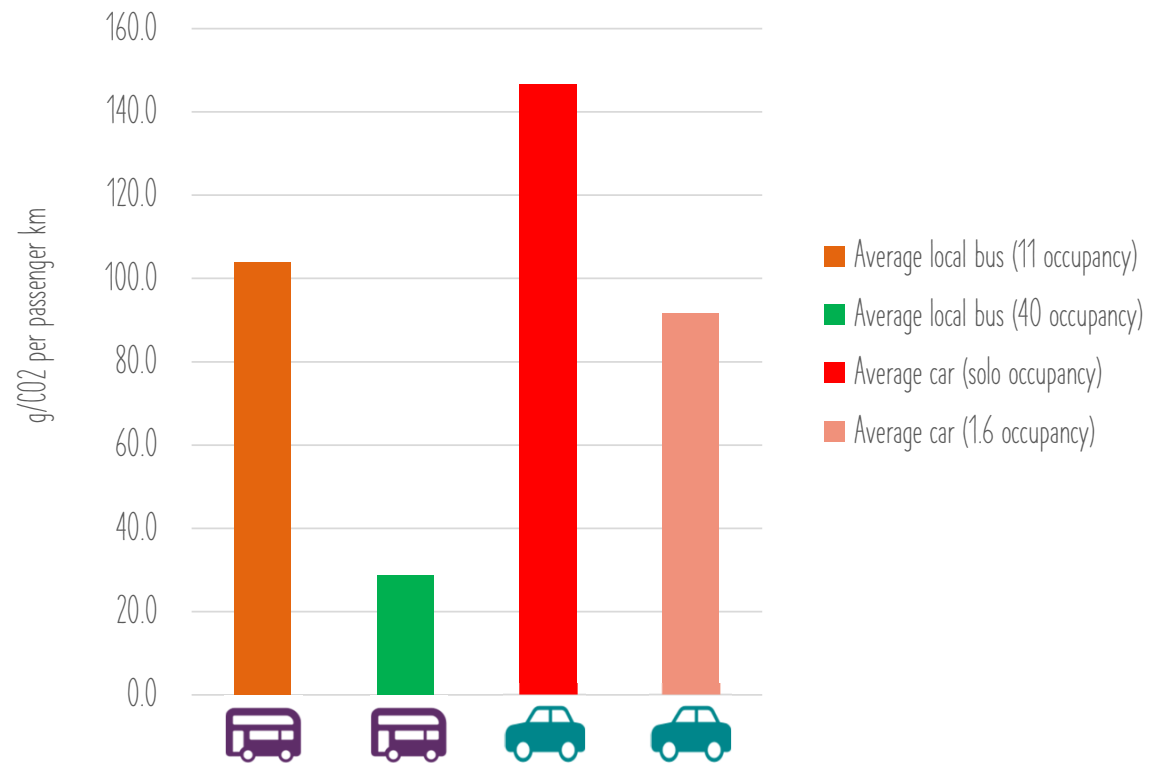
■ Diesel single-deck   ■ Diesel double-deck
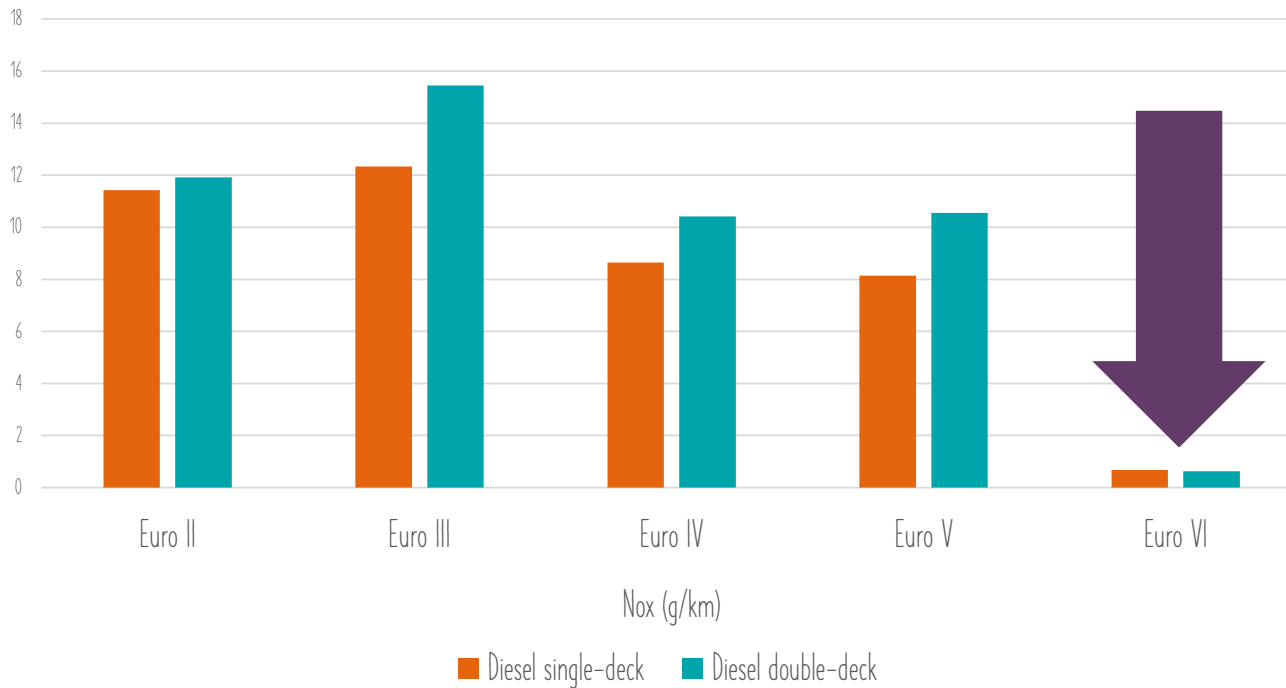
A standard 5 door car with 4 passengers in produces twice as much CO2e / passenger km compared to a fully laden bus

(SMMT average g CO2 /km for cars produced in 2017 : 121 g CO2/km - SMMT 2008 Co2 report)

NOx emissions, Euro VI diesel bus compared to Euro VI diesel car (mg/km)

Legend:
- Real-world NOx emissions – Euro VI car
- Real-world NOx emissions – Euro VI bus

Categories: Per passenger (avg. occupancy), Total

CO2 g per passenger km, comparison between bus and car

y-axis: g/CO2 per passenger km

Legend:
- Average local bus (11 occupancy)
- Average local bus (40 occupancy)
- Average car (solo occupancy)
- Average car (1.6 occupancy)

Data from:

https://tfl.gov.uk/corporate/transparency/freedom-of-information/foi-request-detail?referenceId=FOI-2096-1718

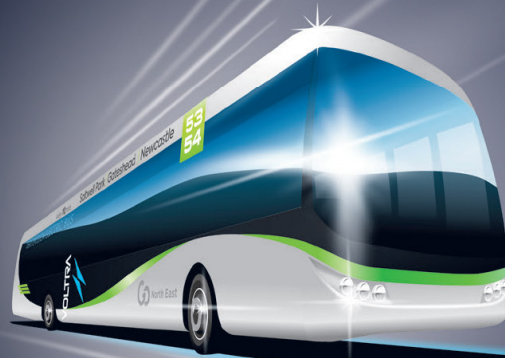https://theicct.org/sites/default/files/publications/Euro-VI-versus-6_ICCT_briefing_06012017.pdf

BE THE CHANGE

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wind and hydro, by choosing Voltra
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making the right choice.

VOLTRA

FLIP THE SWITCH

gonortheast.co.uk

Congestion – the biggest threat to buses and air quality

Covid – a further ticking timebomb?

Example North East bus patronage as a percentage of pre-pandemic levels

100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%

14 March 2020   14 April 2020   14 May 2020   14 June 2020   14 July 2020   14 August 2020   14 September 2020   14 October 2020

■ Total Pax (%)
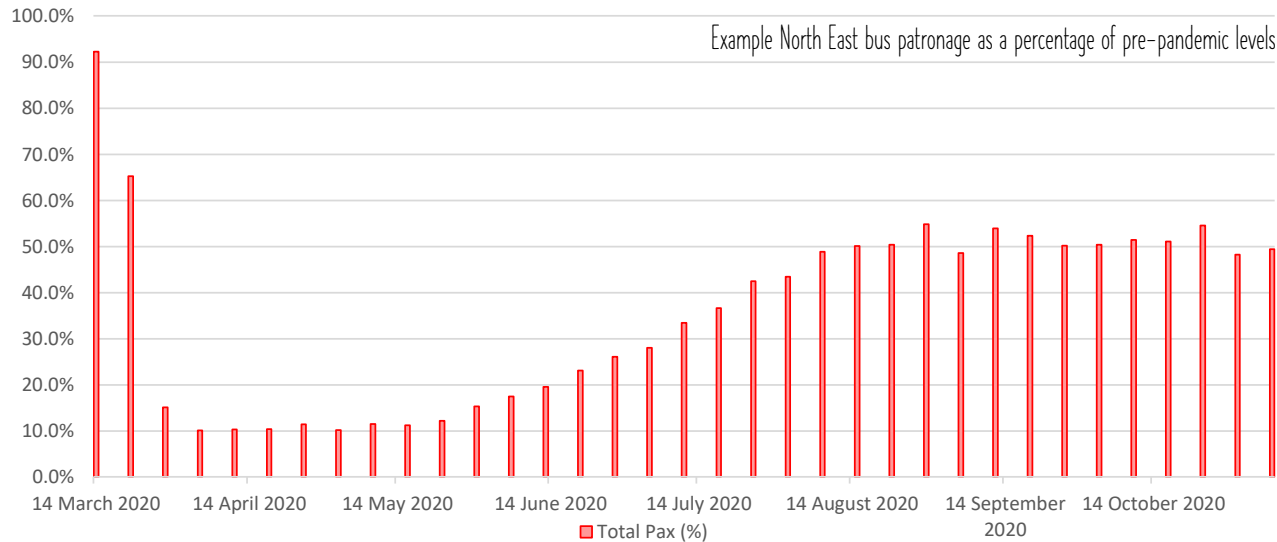
10% DURING THE DEPTHS OF THE PANDEMIC

65% RECOVERY BETWEEN LOCKDOWNS

45% AVERAGE TO DATE IN LOCKDOWN 2

⚠ But car traffic is returning far quicker ⚠

If it's assumed that 50% of the non-recovered journeys have switched from public transport to solo-occupancy car journeys, and remain so, then this could mean an extra 29 tonnes of CO^2 a day being emitted into the local atmosphere!

Based on:

- An extra 34,000 car journeys a day that were previously public transport journeys
- Each journey being on average 5.7kms (the average bus journey length in the UK)
- Average CO^2 emissions from a car being 147g per kilometre

...and it doesn't stop there - health impacts too

Particular concerns around the health impacts of shifts to private car usage and reduction in public transport, given that the North East already has the poorest health outcomes of all English regions

- A substantial body of evidence demonstrating that active commuters have better health outcomes compared to non-active commuters, including:
  - Lower risk of all-cause mortality
  - Lower risk of cardiovascular disease incidence
  - Lower risk of diabetes
  - Healthier body composition and fitness amongst youth

- Research from Australia (n=37,570) demonstrates positive associations between longer driving time and higher odds for:
  - Smoking
  - Insufficient physical activity
  - Obesity
  - Poorer mental and physical health

- Public transport use associated with reductions in depressive symptoms and feelings of loneliness in older-age adults
  - Access to public transport increases social interactions

https://link.springer.com/article/10.1007/s40279-018-1023-0
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0094602
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0069912
https://ijbnpa.biomedcentral.com/articles/10.1186/1479-5868-8-5
https://jech.bmj.com/content/72/5/361

What can we do about it?

- Buses are the most efficient use of road space – they need supporting

- We must tackle congestion to keep our towns and cities moving

- We have a climate emergency where low carbon transport has to be part of the solution, not the problem

- Continued evolution of lower carbon and zero emission commercial vehicle technologies (and cost!)

- Better integration - not always in the gift of bus operators alone

- Delivering high quality, sustainable public transport is a shared responsibility between operators, local authorities and central government - No one partner has all of the solutions

- There's a role for wider stakeholders to play too!
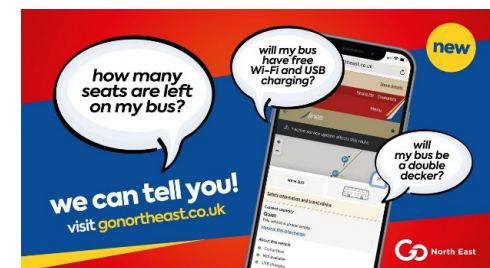
Thank you!

CONTENTS

What is MaaS?

MyCorridor research project (www.mycorridor.eu);

   Approach;

   Key areas of focus and impact;

   Pilots overview;

   Business models

Conclusion (plus https://ride2rail.eu)

From Newcastle. For the world.

WHAT ARE THE PROBLEMS?

Complex journeys;

Multiple stages that are difficult to coordinate;

Multiple tickets;

A lack of resilience during disruption;

For short journeys

       Private car, urban gridlock

For longer journeys

       Use of short haul air travel

NEW CAPABILITIES

Mobile devices

Power

Location

Multi-modal routing algorithms

Shared mobility

Micro mobility

Ticket bundling and pricing

Computing (e.g. cloud) architecture

Google Maps

voi.

WHAT IS MAAS?

revolution

transformation

User-centric

digitalisation

paradigm shift

seamless

Intelligent mobility

technology

First and last mile

WHAT IS
MAAS?

Transport models based around access rather than ownership

Service is core…modally agnostic;

Integrating private into public transport;

Service beyond purely mobility

opportunities in other areas e.g. retail

Scalable door-to-door mobility services without owning a car

A DEFINITION OF

MAAS

combines different transport modes, in end-to-end journeys;

offers a tailored mobility package (e.g. pay monthly for all travel, or pay-per-trip);

includes other complementary services, such as trip planning, reservation, and payments, through a single interface;

can include micro-mobility and shared travel modes ;

a shift away from the existing ownership-based transport system toward an access-based one;

a tailored hyper-convenient mobility solution, promising perspective to substitute the private car;

WHAT IS MAAS?

MaaS Process

Registration
- Tailored mobility packages
- Personalised travel options

Journey planning
- Intelligent routing
- Combining modes
- Support (e.g. parking)
- Comparison (e.g CO_2)

Booking
- One-stop shop
- Optimised best price

Payment
- Single travel token
- Mobile enabled

Journey
- Journey assistance-planning
- In vehicle assistance-planning
- Re-planning
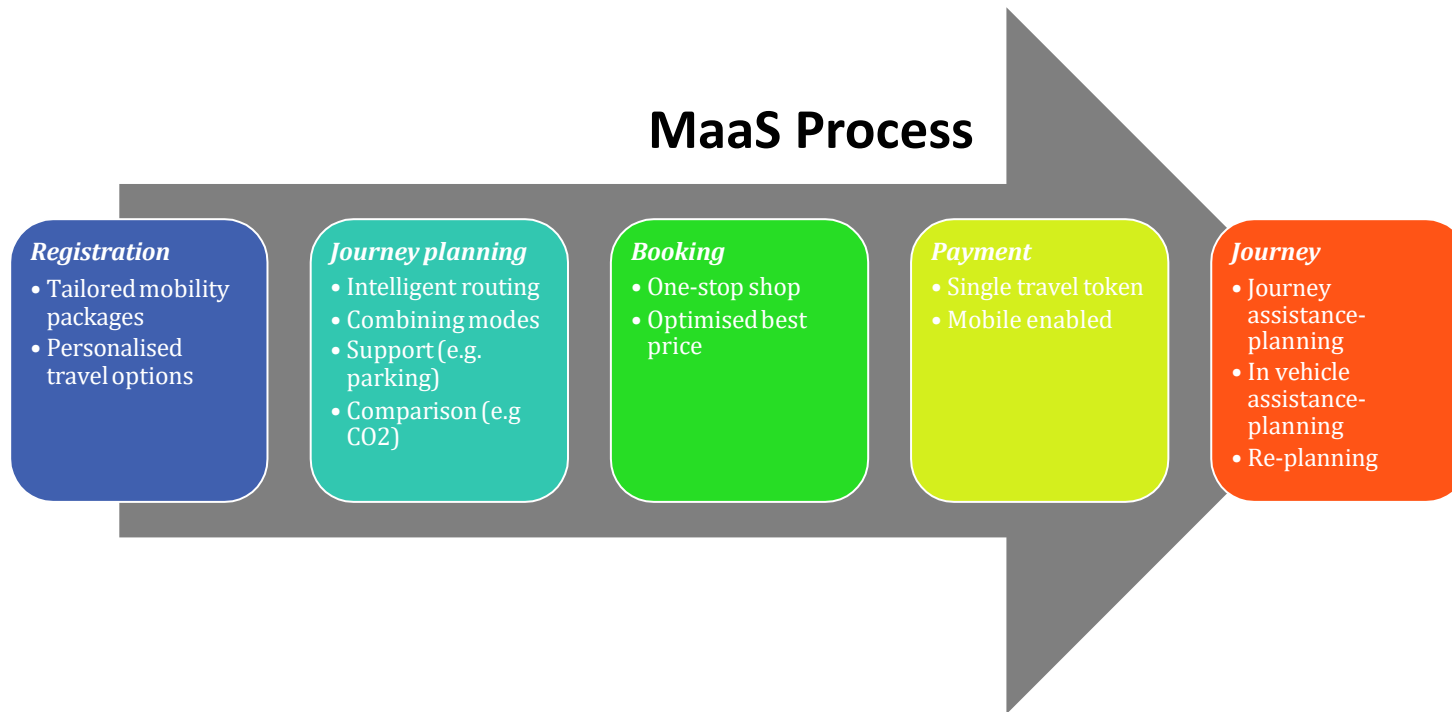
WHAT IS MAAS?

Benefits

Operators and Public transit

- Better optimisation of assets
- Better use of public transit
- Better data about how people are travelling
- Targeting MaaS to communities that need it most
- Better revenue

Users

- Better travel and mode flexibility
- Personalisation
- End to end journey
- Cost effective
- Reduced complexity

Mobility as a Service (MaaS):
Thoughts and research output
MyCorridor overview

CONSORTIUM

Newcastle University
UK | Malaysia | Singapore

CERTH THE CENTER FOR RESEARCH & TECHNOLOGY HELLAS

Coordinator   **Technical & Innovation Manager**

swarco
SWARCO MIZAR S.r.l.

TomTom

Industrial Partners

swarco
SWARCO HELLAS A.E.

chaps

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MAP TRAFFIC MANAGEMENT

amco Inspired Technologies

HaCon Traffic • Software • Service

Viva wallet

Mobility Market SME's

mobilità ROMA

TTS ITALIA

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ UNIVERSITY OF PATRAS

salzburg research

Osborne Clarke

IRU PROJECTS

Mobility Agency   **ITS Association**   **Research Organisations**   **Legal firm**   **Association (Liaison to MaaS Alliance)**

AIM

to develop a technological and business platform to make MaaS a sustainable reality, seamlessly integrating public and private transportation means as needed, into a cross-border travel chain, without owing any of them!

My CORRIDOR

MYCORRIDOR APPROACH UNDERPINNED BY FOUR KEY ASPECTS:

1. Definition of the disruptive nature of MaaS;
2. Practical implementation of TM2.0 and foundations towards TM2.1;
3. Definition, development and testing of an integrated architecture based on mobility tokens and one-stop shop suitable for roaming aspects
4. Evidence-based recommendations on
   - End-user acceptability;
   - Business models;
   - Integration of MaaS through interopearbility of different city platforms and modes in the MyCorridor ecosystem;
   - Potential incentives;
   - Policy

THIS ALSO MEANS...

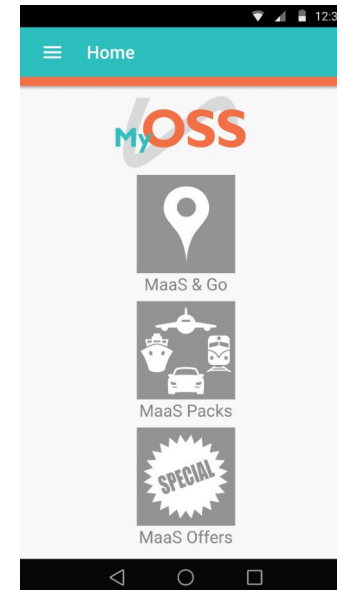**Building a one-stop-shop for MaaS** ➡️ *Integrate several types of services to offer in a MaaS pattern.*
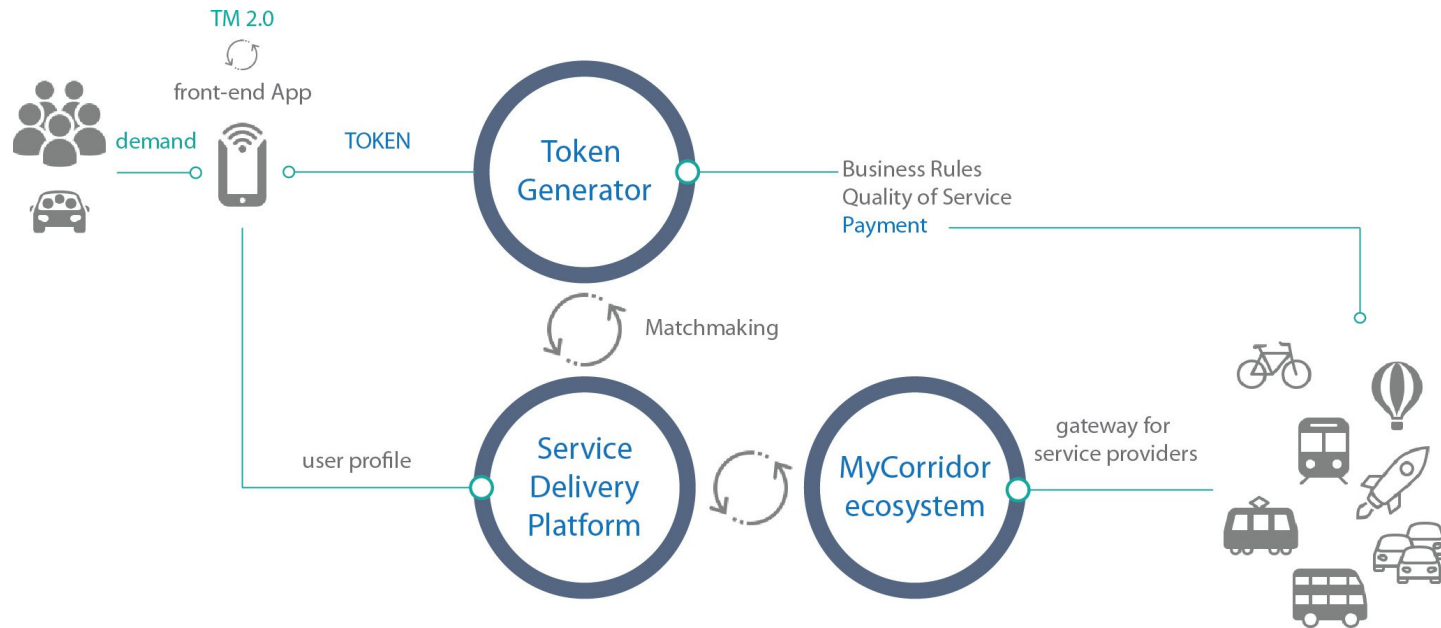
Services (multimodal):
- ✓ **Mobility services**
- ✓ **Infomobility services**
- ✓ **Traffic management services (TM2.0 ➡️ TM2.1)**
- ✓ **Added value services (cultural, sports, etc.)**

Products:
- ✓ **"MaaS & Go": MaaS coupled with trip planning**
- ✓ **"MaaS Packs": MaaS supported via multicriteria search**
- ✓ **"MaaS offers": Ready to use mobility packages**

THE ONE-STOP SHOP

TM 2.0
front-end App

demand

TOKEN

Token Generator

Business Rules
Quality of Service
Payment

Matchmaking

user profile

Service Delivery Platform

MyCorridor ecosystem

gateway for service providers
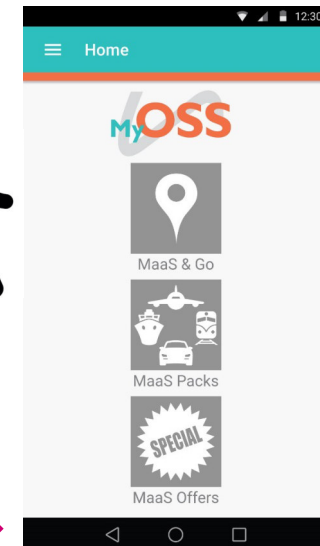
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THIS ALSO MEANS...

Service Providers:

Registering their service to MyCorridor via the
Service Registration Tool

Travellers:

Using the mobile
app. available on
Android & **iOS**

MYCORRIDOR (RESEARCH) APP UNIQUE CHARACTERISTICS

Cross-border seamless service provision

If necessary, an automatic shift to the authorised local aggregator will be made.

One Mobility Token

Validation tickets for all mobility products purchased in one digital form.
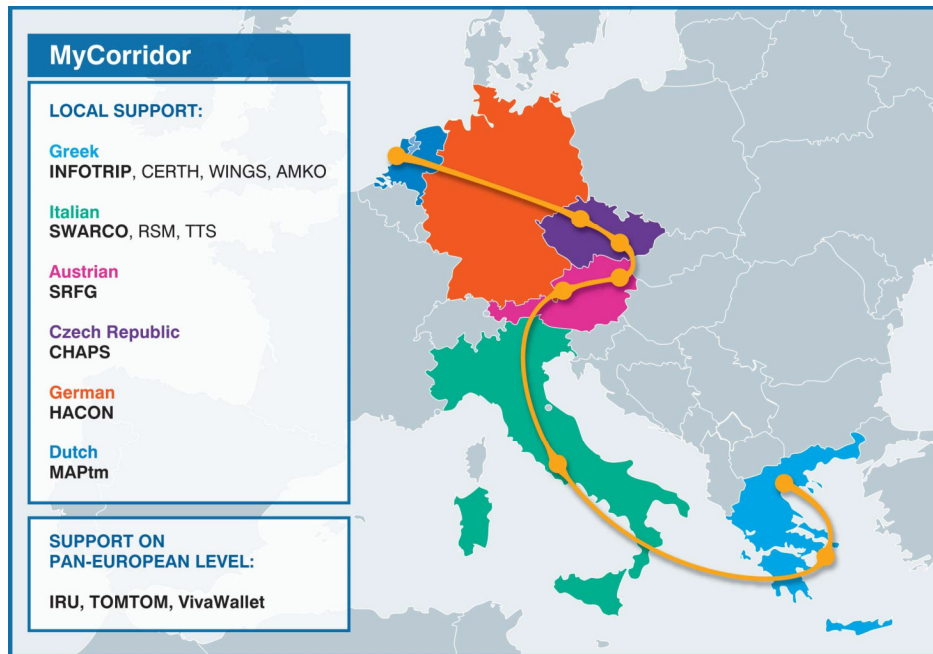
Traffic Management services

TM2.0 services will be offered as a new paradigm in MaaS (towards TM2.1).

Hybrid Trip Planner

Individual trip leg mapping of available products through a user-centric matchmaking process.
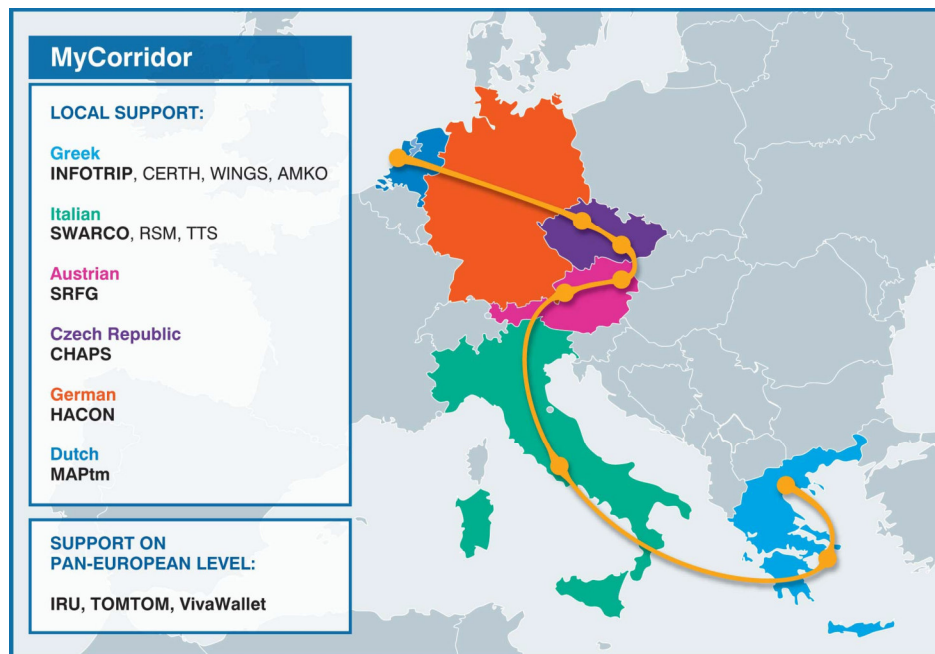
Personalisation

Static & dynamic feedback from traveller trips, providing an all-inclusive experience

MyCorridor

LOCAL SUPPORT:

Greek
INFOTRIP, CERTH, WINGS, AMKO

Italian
SWARCO, RSM, TTS

Austrian
SRFG

Czech Republic
CHAPS

German
HACON

Dutch
MAPtm

SUPPORT ON
PAN-EUROPEAN LEVEL:

IRU, TOMTOM, VivaWallet

Six pilots:
Greek
Italian
Austrian
Czech
German
and
Dutch

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MyCorridor

LOCAL SUPPORT:

Greek
INFOTRIP, CERTH, WINGS, AMKO

Italian
SWARCO, RSM, TTS

Austrian
SRFG

Czech Republic
CHAPS

German
HACON

Dutch
MAPtm

**SUPPORT ON
PAN-EUROPEAN LEVEL:**

IRU, TOMTOM, VivaWallet

Two phases:

1. **Controlled and lab-based sessions.**

User groups clustered around two major categories: service providers and travelers;

Only selected internal service providers participating

2. **real life conditions!**

Incentives to use the platform;

user profiles where possible

- **Commuter;**
- **Tourist;**
- **Business person;**
- **Spontaneous user;**
- **Mobility-restricted user;**
- **Low IT literacy user**

925 trips

165 SINGLE USERS

as per 06.11.20

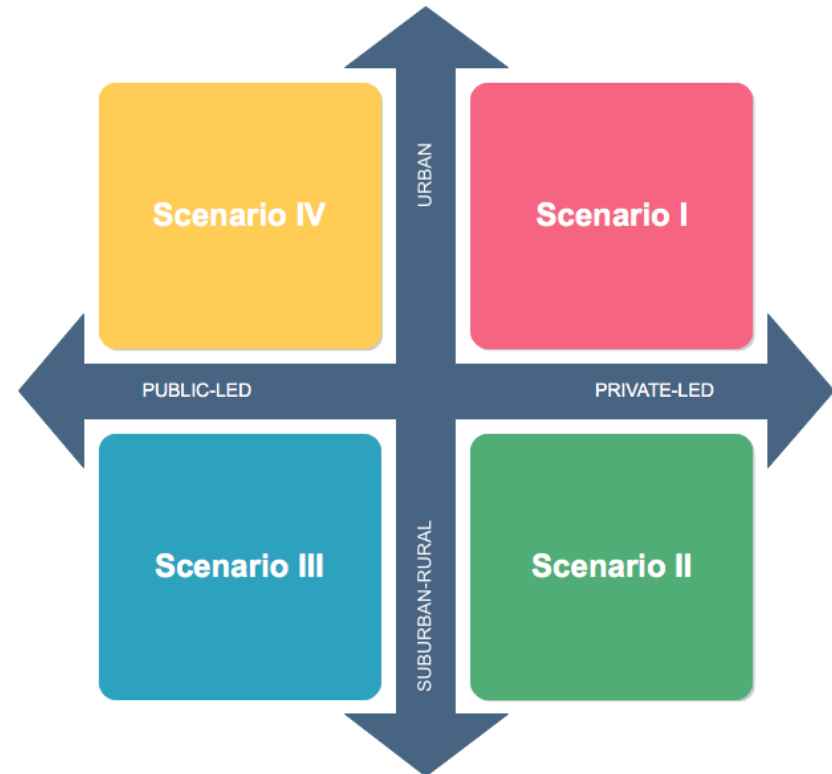From Newcastle. **For the world.**
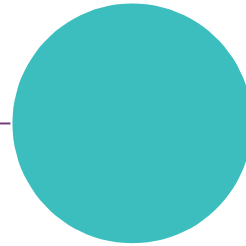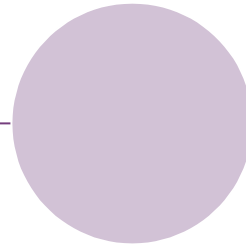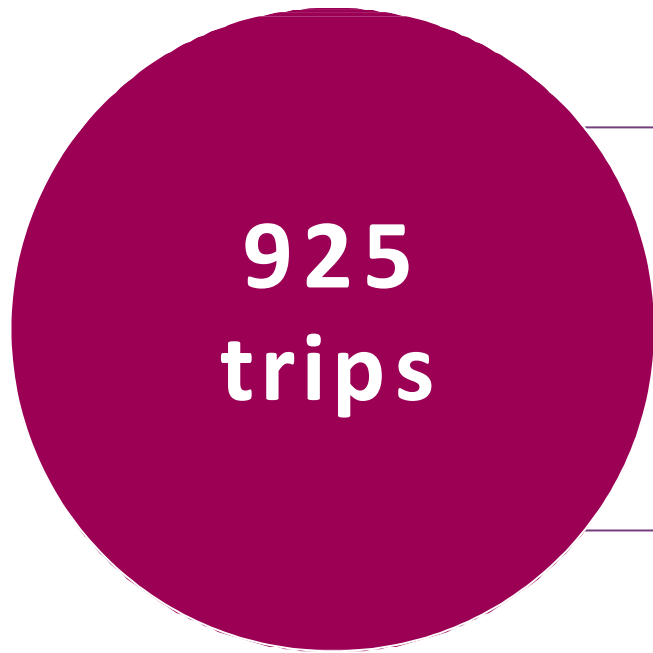
Business Models

Deployment scenarios for MaaS

Public-led governance - MaaS driven by public procurement and/or government regulation allowing decision makers to achieve *societal goals (potentially)*

Private-led governance – MaaS by private organisations, partnerships with transport operators/authorities; *revenue potential* is key

Urban scale – presence of several commercially-viable services, such as personal transport and mass transit systems, enabled by the high demand density; *ease of modal interchange* among services is key

Suburban/rural scale – limited number of services available to users; focus is *flexible and personalised solutions*, such as community transport systems, personalised carsharing services, etc.

www.mycorridor.eu

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CONCLUDING THOUGHTS

MaaS means different things to different people;

There is no universal business model but a suite of scenarios that are applicable to different combinations of characteristics such as local policy, urban form, cultural aspects;

Technical integration of diverse services into a common MaaS platform is the best (only?) way to create a mobility ecosystem that can support true integrated mobility;

Incentives have a role to play;

Policy, privacy (e.g. GDPR) and suitable regulation are essential components to a successful MaaS deployment

…for info on research into ride-sharing and public transport with a focus on rural areas please cleck **https://ride2rail.eu**

From Newcastle. For the world.

ROBERTO.PALACIN@NCL.AC.UK

Director of Mechanical Engineering and Marine Technology
School of Engineering
Newcastle University

Thank you