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MobiSpaces Webinar
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MobiSpaces
new data spaces for green mobility

Funded by
the European Union

MobiSpaces
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Driver:

Importance of **air quality** in many areas present

The Guardian

Research studies on health impact by bad air quality

4.2 million deaths every year — World Health Organization

occur as a result of exposure to ambient (outdoor) air pollution

https://www.who.int/health-topics/air-pollution#tab=tab_1

Change in mobility due to bad air quality

Ultra low emission
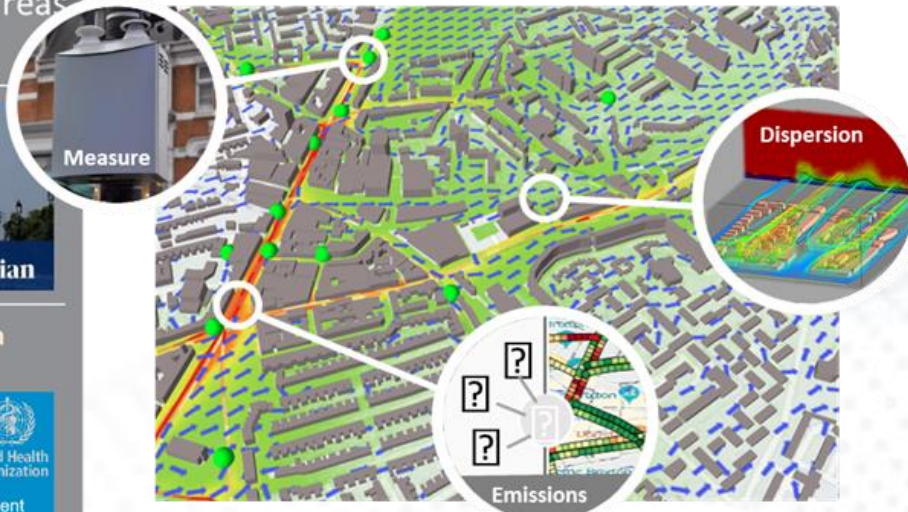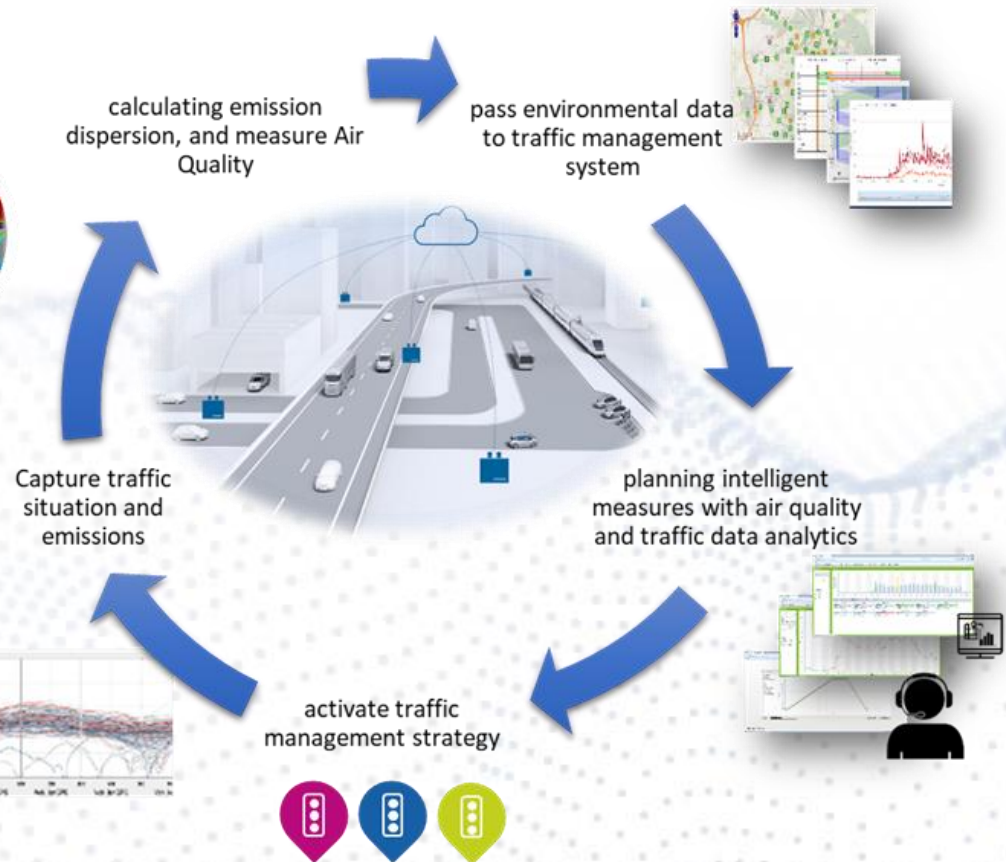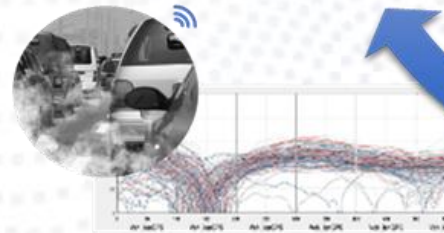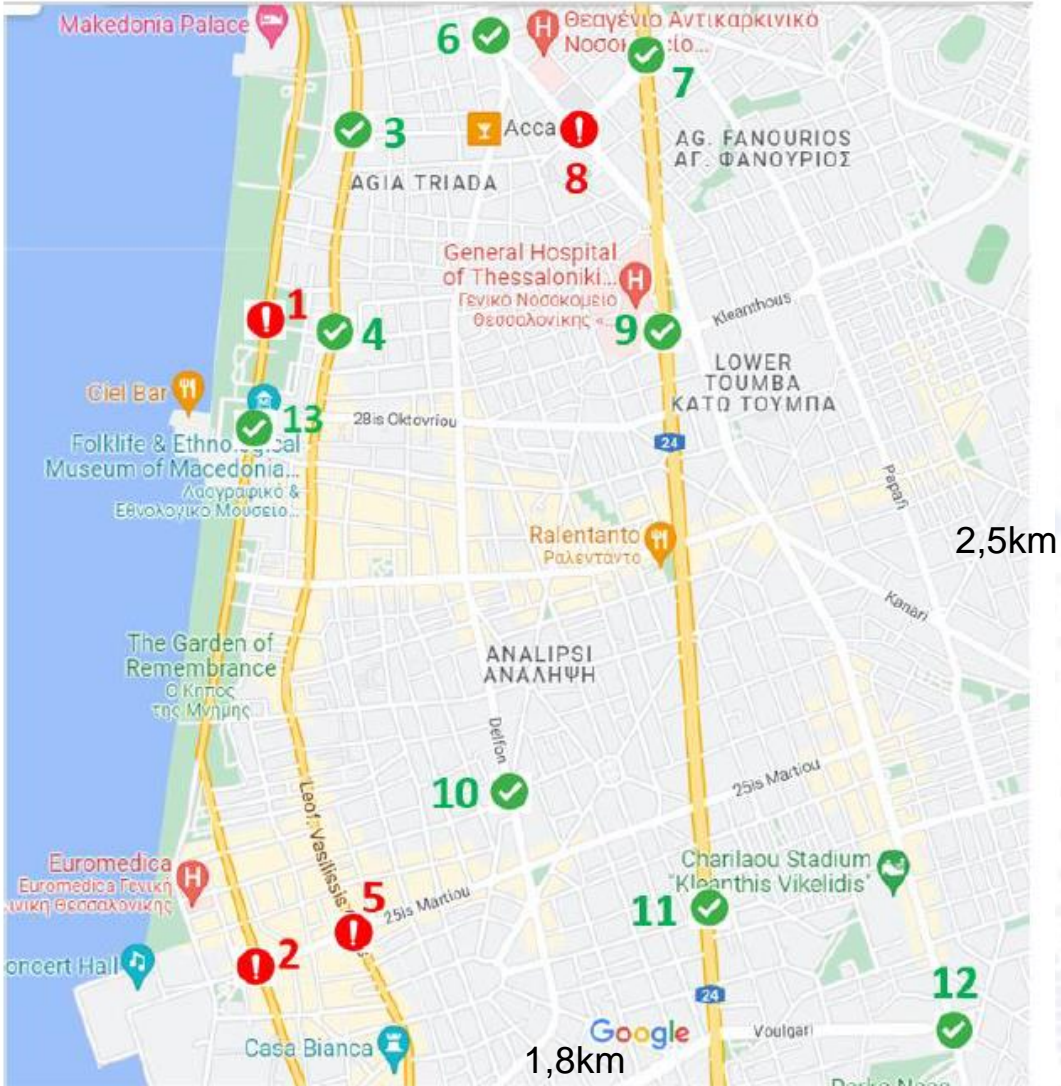ULEZ
ZONE

Umwelt
ZONE

Measure

Dispersion

Emissions

- **Modelling** the **road side traffic emission (1hr|20meter)**,
- Simulating its **dispersion** into the neighbourhood and
- Real time **air monitoring** (1hr averaged values)

calculating emission dispersion, and measure Air Quality

pass environmental data to traffic management system

Capture traffic situation and emissions

planning intelligent measures with air quality and traffic data analytics

activate traffic management strategy

Test area Thesaloniki

Parameters

Gases: NO_2, O_3

Particles: $PM_{2.5}$ and PM_{10}

Air data: relative humidity (RH), temperature, pressure

Improving traffic emissions

MobiSpaces — new data spaces for green mobility

Driving behavior as important contributor

traffic volumen
number of vehicles / h

„to much vehiles"

traffic situation
1/(average speed)

„vehicle delay"

Faktor: 1x

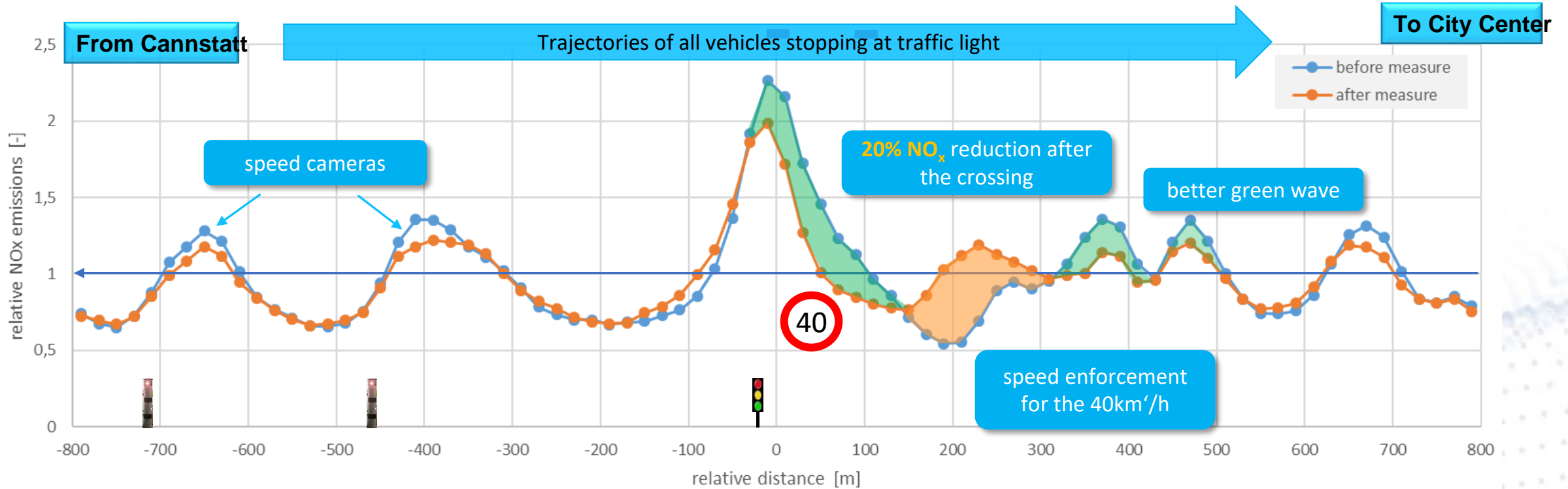### vehicle dynamic
Emissionen / Sekunde

„bad driving behavior"

Faktor: 4-10x

Mean values of NO$_x$-emissions

	Mittelwerte						
	Constant driving between 20 and 40km/h	Constant driving between 40 and 140km/h	Constant driving >140km/h	All accelera-tion states	Acceleration states between 0 and 40 km/h	Acceleration states between 40 and 100 km/h	Acceleration > 100 km/h
	[mg/km]	[mg/km]	[mg/km]	[mg/km]	[mg/km]	[mg/km]	[mg/km]
Fahrzeug 1 / Fahrzeug 2 / Fahrzeug 3	100%	69%	<200%	490%	>650%	>400%	>400%

Example reducing emissions

Main Challenges

- Accurate air quality measurements with low cost sensors (concentrations ppb)
- Comprehensive modelling of traffic emissions
- Complex air dispersion in urban areas (street canyons)
- Analyze huge amount of air quality and emission data
- Improve traffic to reduce emissions by 10-20%

Expected outputs to be achieved

- Improved accuracy and reliability of air quality measurements by using MobiSpaces platform

- More efficient processing of emissions and air quality data

- Derive further insights on effects and possible measures to improve air quality

- Prove of emission reduction in test area of Thessaloniki

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