The impact of shared and autonomous robo-taxis on future urban mobility

Uno Sguardo al futuro: l'impatto della guida autonoma nel Car-Sharing
I robo-taxi nella mobilità urbana del 2030 a Milano

Oliver Wohak, d-fine
Milan, 09.04.2019

d-fine is a leading European consultancy for business analysis and technology services

Our unique consulting approach combining business and IT consulting

Our study with AMAT: The impact of shared and autonomous robo-taxis on future urban mobility

A Simulation-Based Approach for Milan 2030

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Innovative mobility concepts use the elements of CASE to provide efficient and ecological mobility solutions

Challenges faced

- Urbanisation
- Limited infrastructure
- Emissions
- Inefficient utilization

Innovative trends

- **C**onnected
- **A**utonomous
- **S**hared Services
- **E**nergy

The innovative mobility concepts are **enabled by digitization** and can sustainably **increase the living quality** in urban and rural areas through efficient connectivity and infrastructure utilization.

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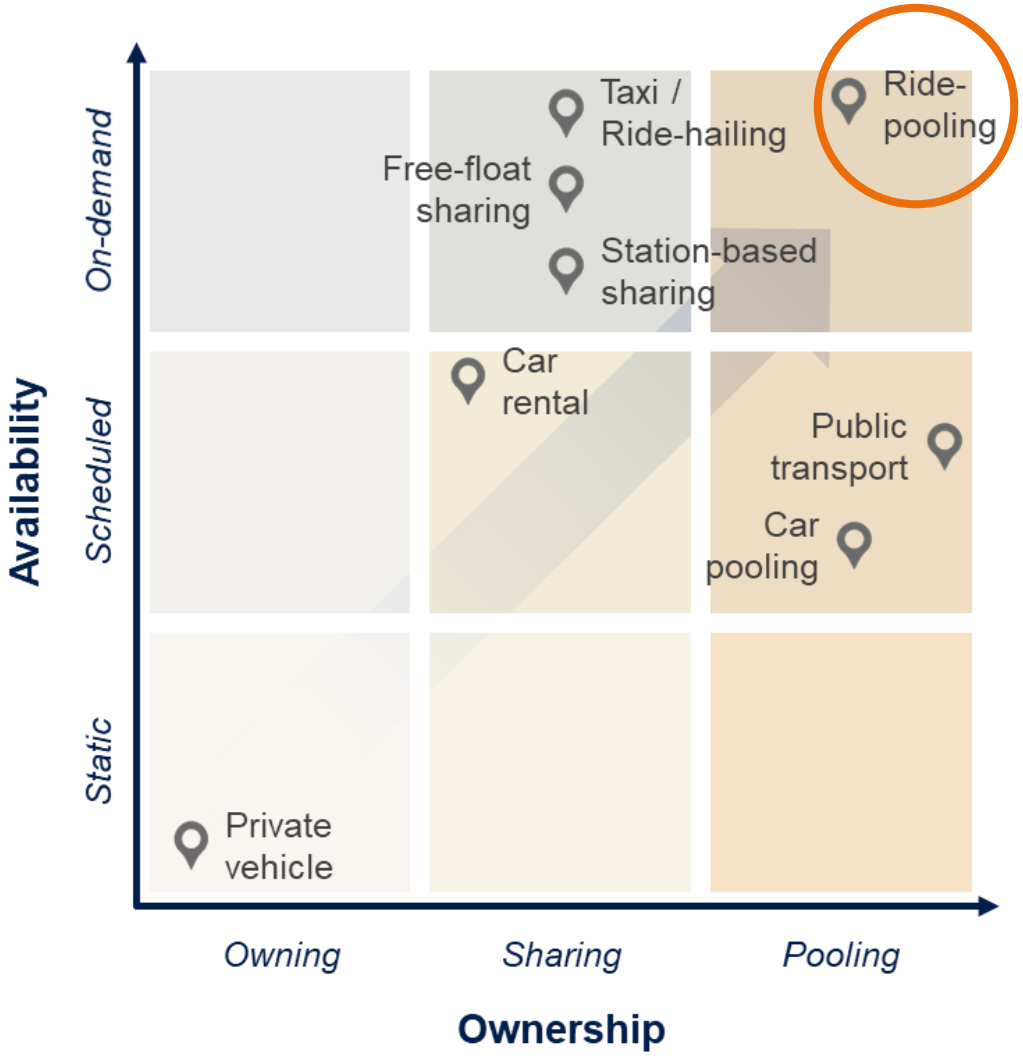
Our study focuses on robo-taxis as a ride-pooling service and analyses the potential benefit for traffic flow and emissions through traffic simulations



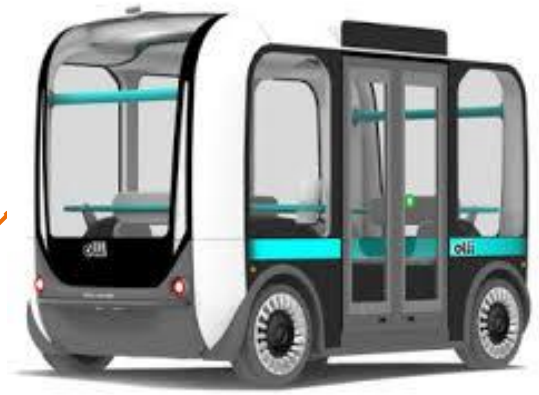
Ride-pooling is an innovative concept in urban mobility

Our simulations compare traditional traffic to traffic with integrated robo-taxi fleets assuming level 5 automation

DRIVER

LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
DRIVER ONLY	DRIVER ASSISTANCE	PARTIAL AUTOMATION	CONDITIONAL AUTOMATION	HIGH AUTOMATION	FULL AUTOMATION

AUTOMATION



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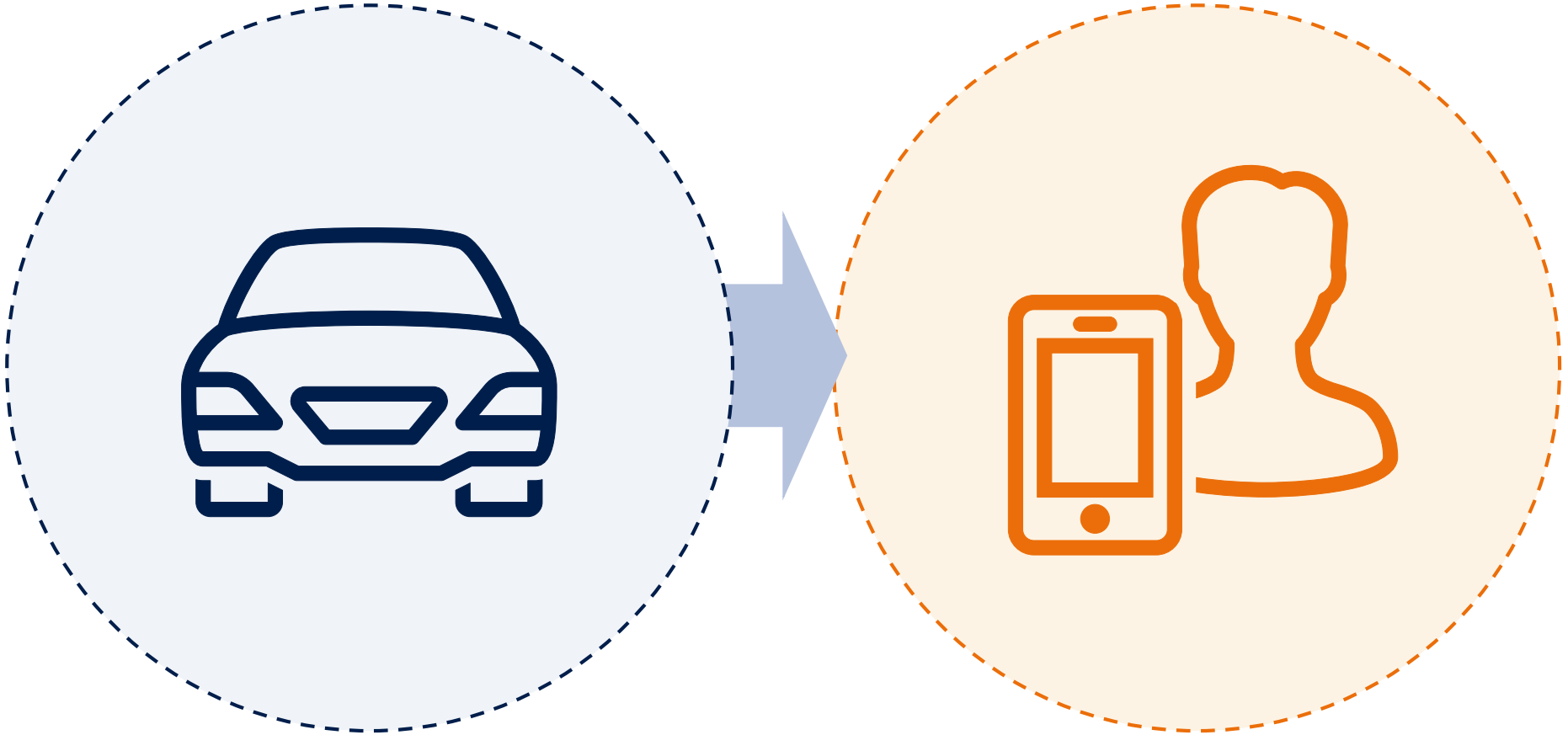
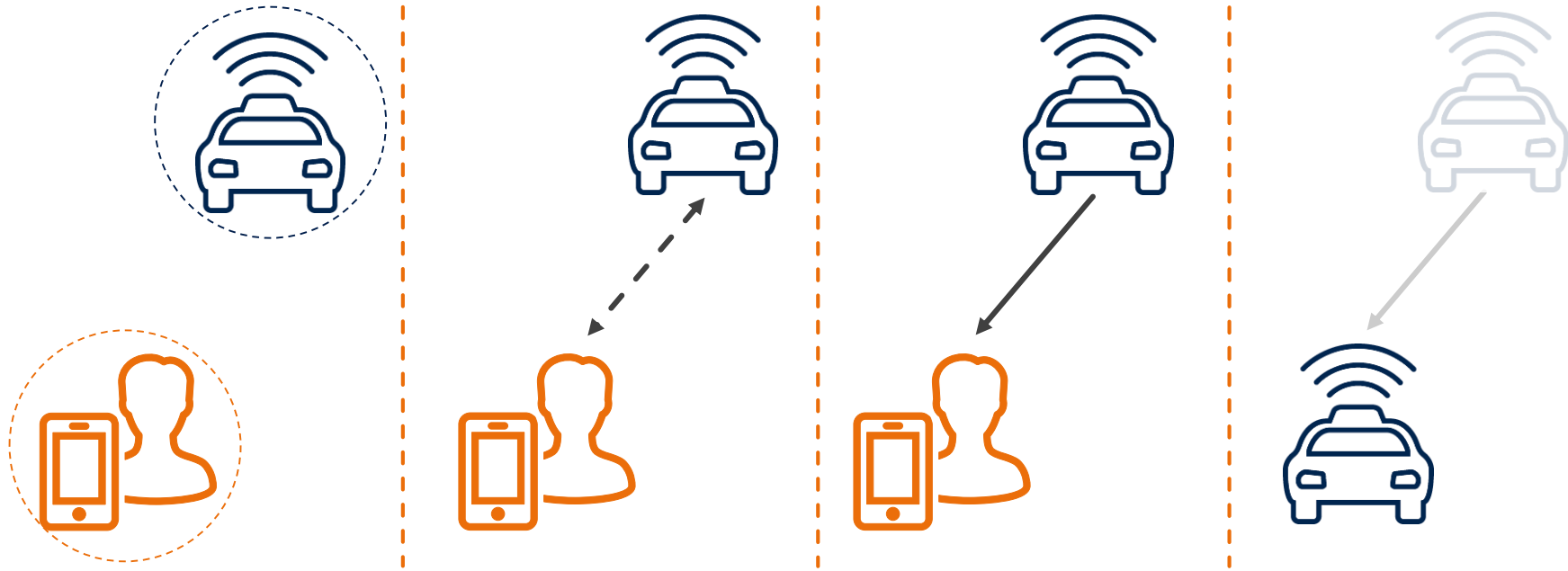
Comparing traditional traffic to modern mobility, the perspective is shifting from the vehicle to the person



Our simulation approach focuses on the mobility demand of the individual and integrates the four steps of ride-pooling

1 Identification
2 Matching
3 Route adaptation
4 Driving



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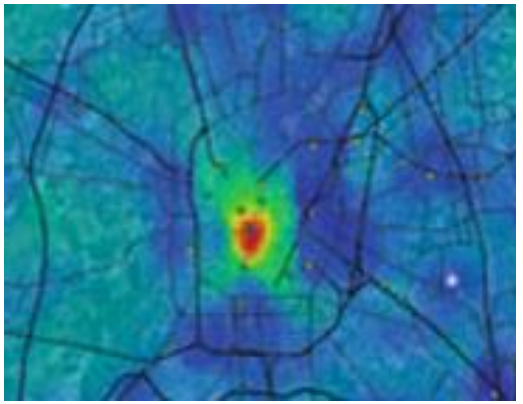
The modular simulation framework makes use of various data sources and enhancing functionality to derive outcomes

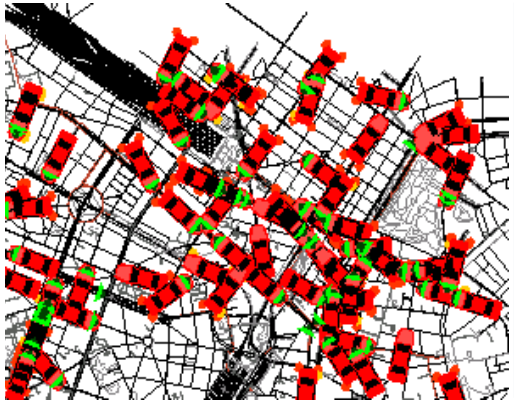
Network map

Mobility data

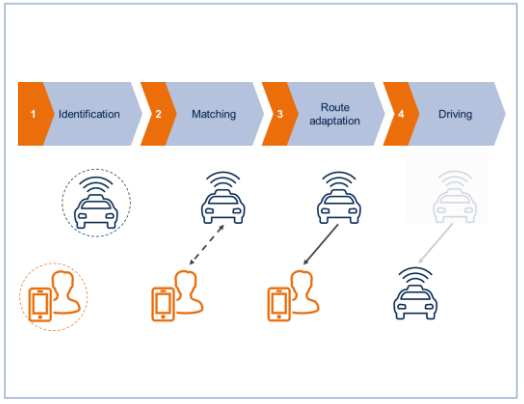


Robo-taxi simulation

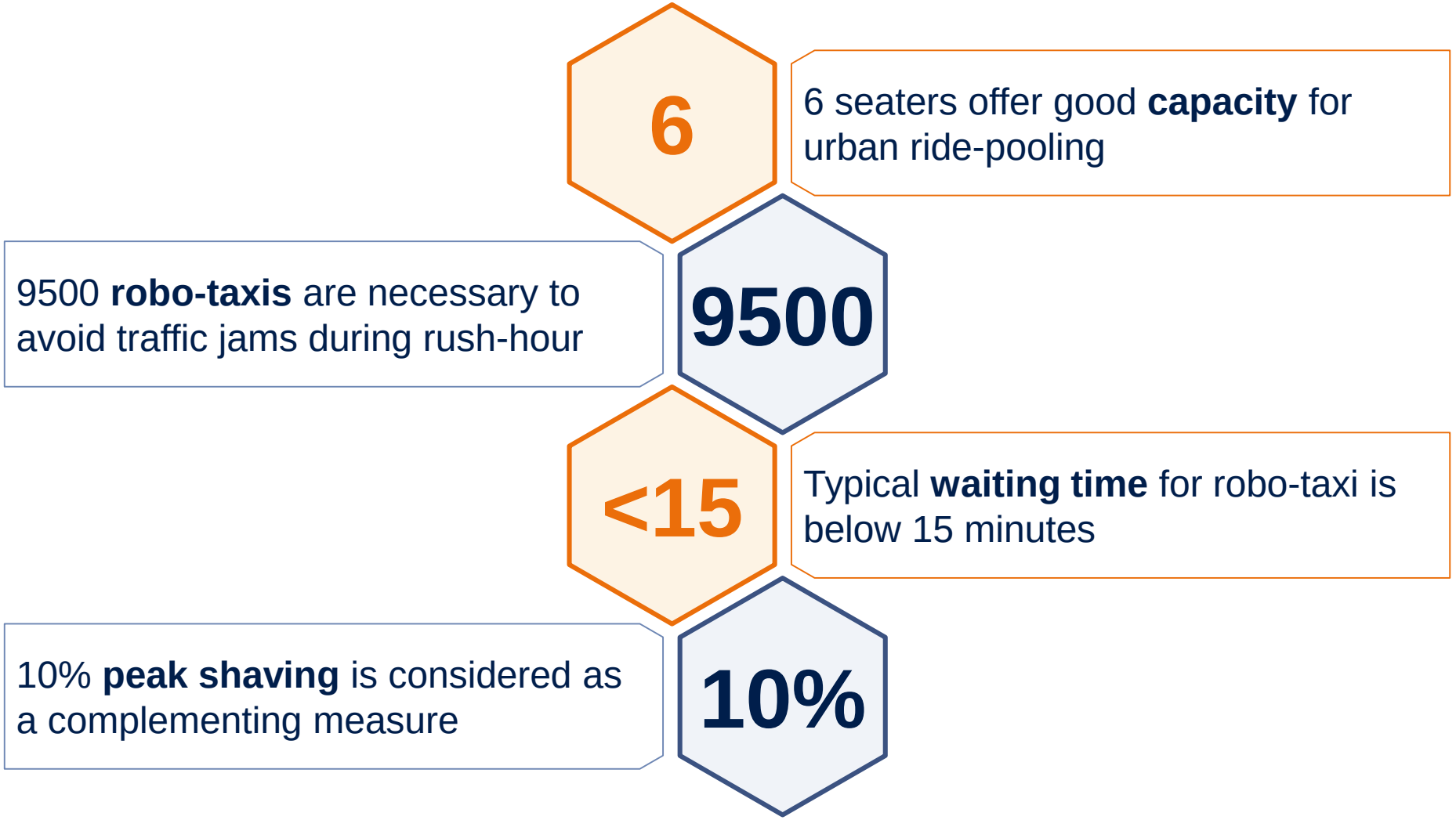
Routes



Robo-taxi module



Microscopic traffic simulation enables bottom-up analysis: Our results in numbers



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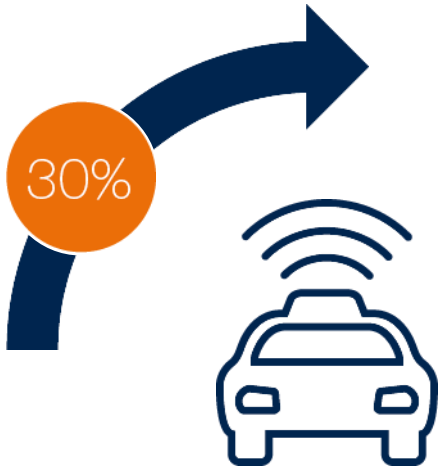

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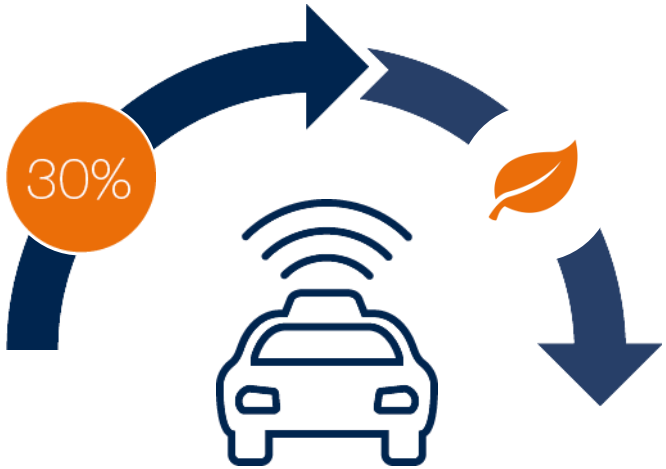

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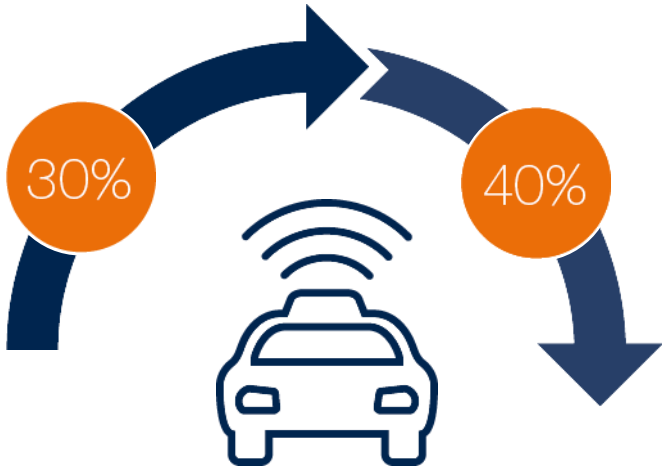

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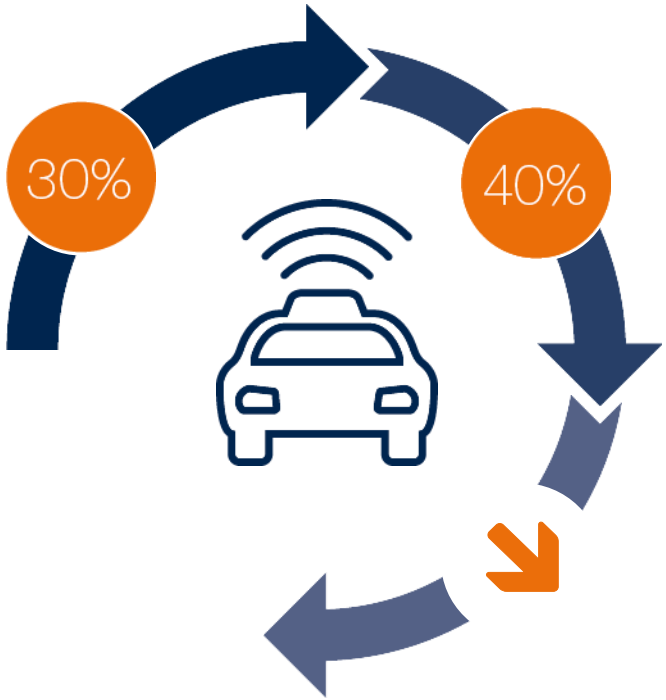

Emissions will be reduced sustainably and kept below thresholds.

Fewer **parking spaces** will be needed.

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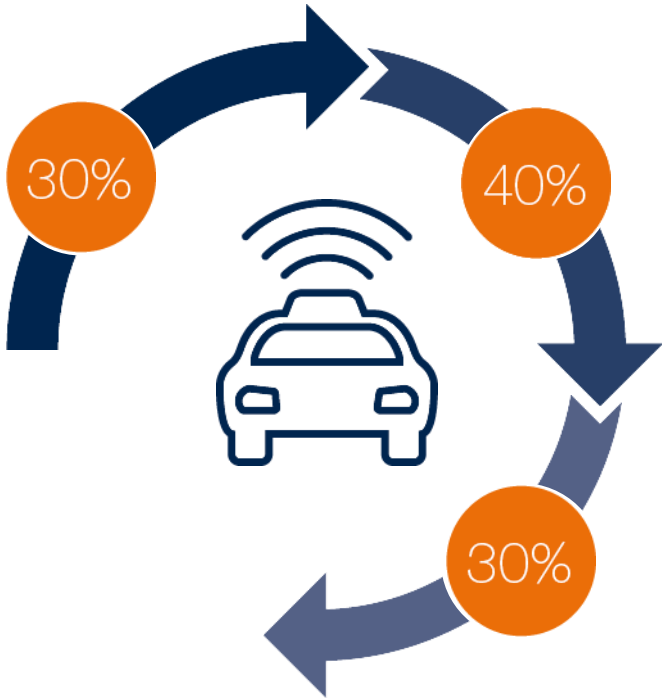

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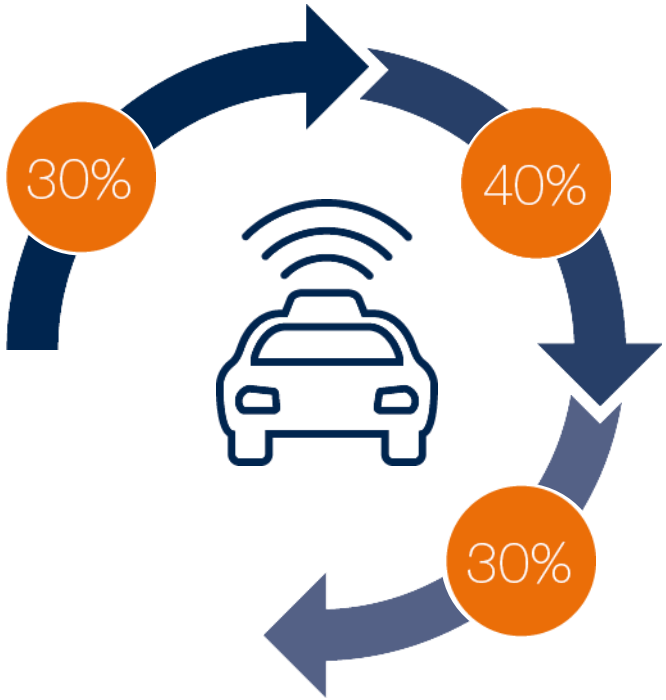
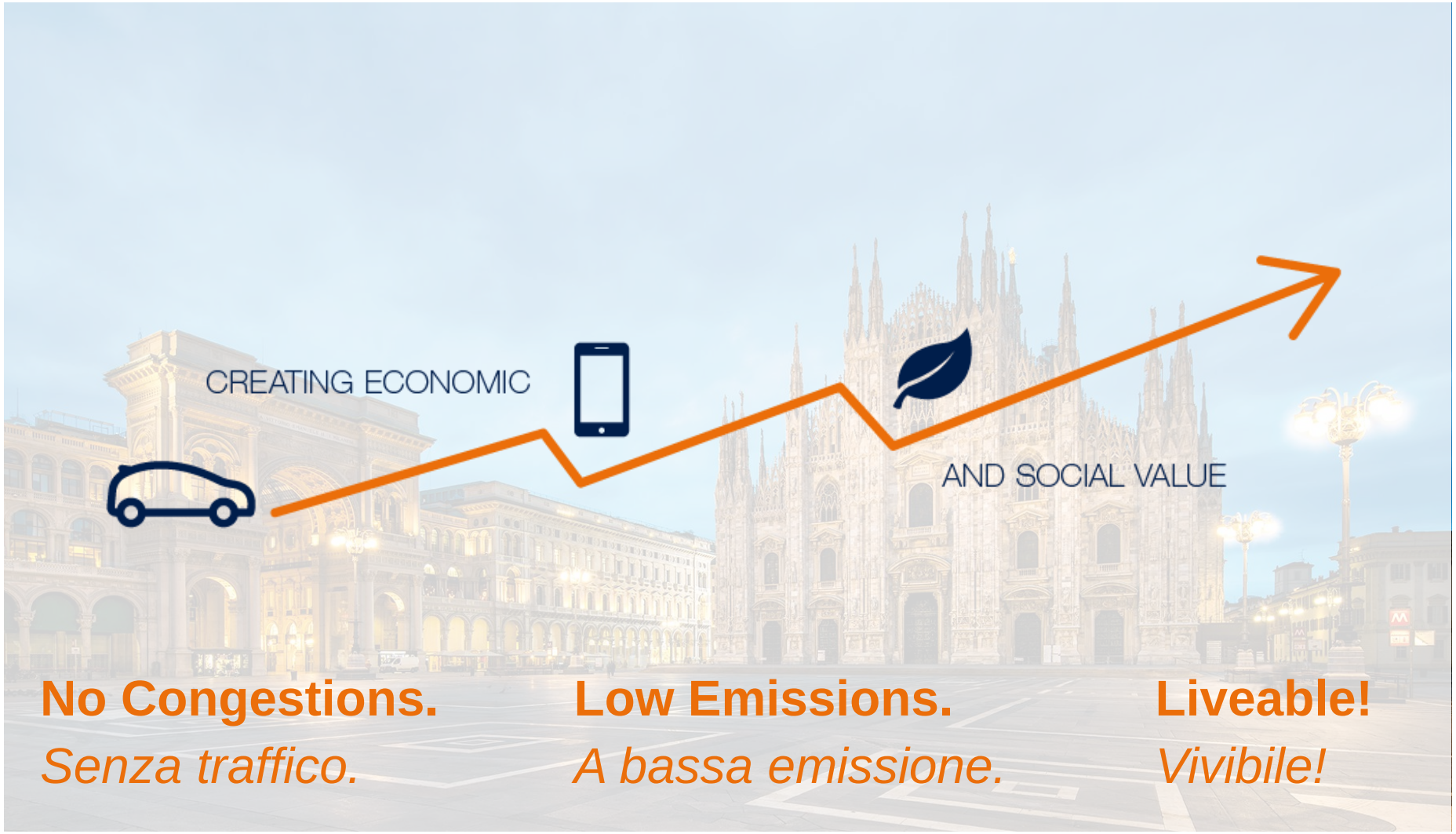


Emissions will be reduced sustainably and kept below thresholds.

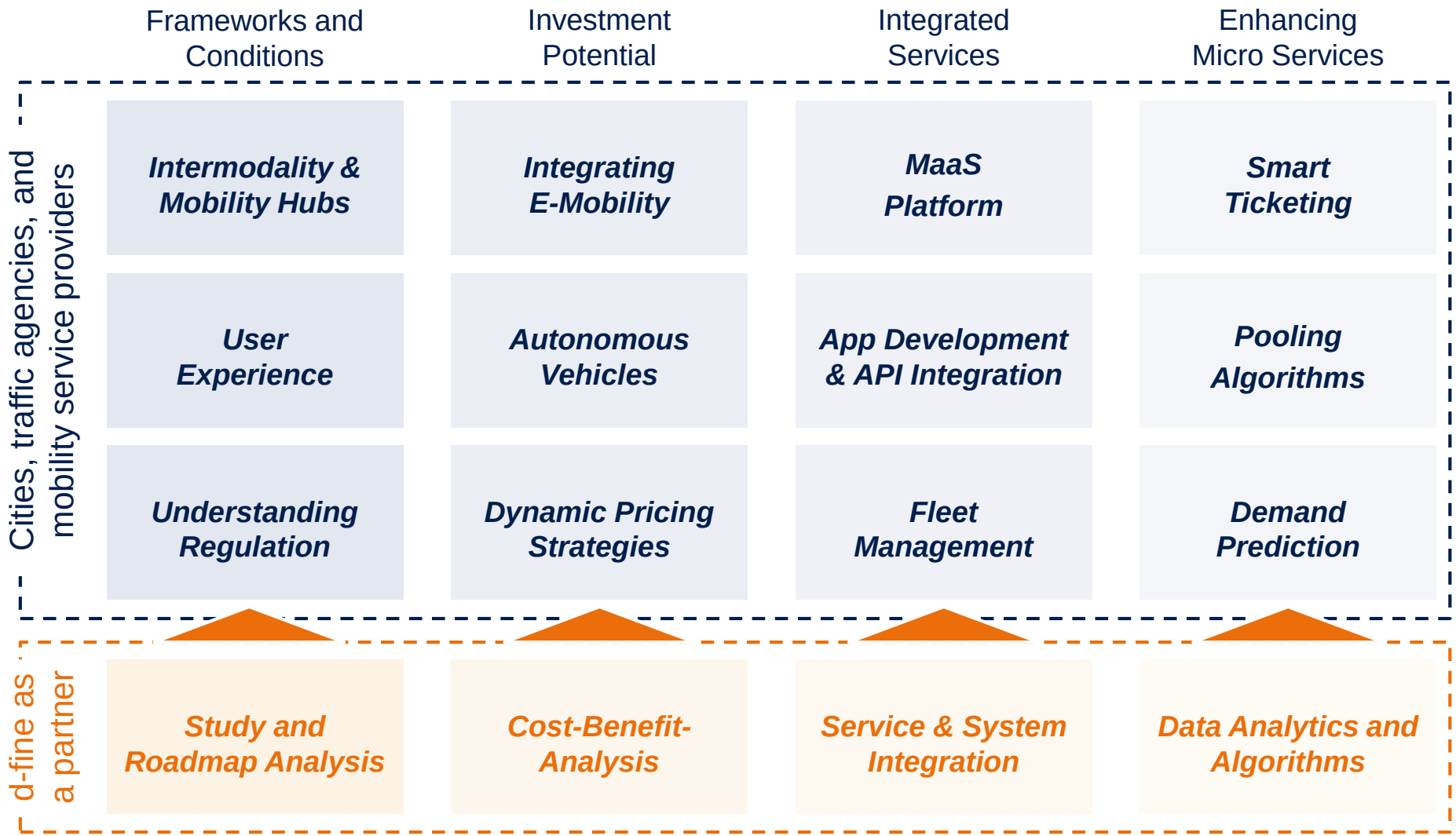
Freed space can be reallocated to the **public** or used for modern **infrastructure!**

Fewer **parking spaces** will be needed.

Efficiently shaping mobility and promoting public life: Milan 2030



Cities, traffic agencies, and mobility service providers face both challenges and potential in respect to innovative mobility solutions



Get in touch!

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