



kapsch >>>
challenging limits

Kapsch TrafficCom

2nd Institutional Investors' Day.

Alexander Lewald: Market and Product Strategy Update.

September 18, 2018

Market Update.

Robust trend towards connected mobility solutions.



- > Today, 55% of the world's population lives in urban areas, a proportion that is expected to increase to 68% by 2050*.
- > With increasing affluence, the desire for mobility and the associated demands on transportation systems also increase.
- > Increased road traffic implies: fuel consumption, environmental impact, accidents, congestion, and investments in the maintenance and expansion of infrastructure. At the same time, public funds are limited.
- > Challenge for the next couple of decades: Solve those problems!

Products and solutions by Kapsch TrafficCom help to deal with traffic flows more efficiently, as well as to collect charges for the use of road infrastructure and thus manage traffic.

Two major building blocks drive our product strategy:

- **Enabling technology**
- **Managing demand**

*Source: UN; World Urbanization Prospects – The 2018 Revision



Enabling Technology.

- > Smart sub-systems based on **deep learning**.
- > **Connected mobility** platforms will spur innovation.
- > **Real time traffic management** based on actual traffic flow and AI.
- > Supporting the traveler and the road agency with a next **multi-modal back office**.

Smart sub-systems based on deep learning.

Deep Learning Video Processor.



Software solution applying **machine learning**



Current application:
Vehicle **classification** using custom trained classes



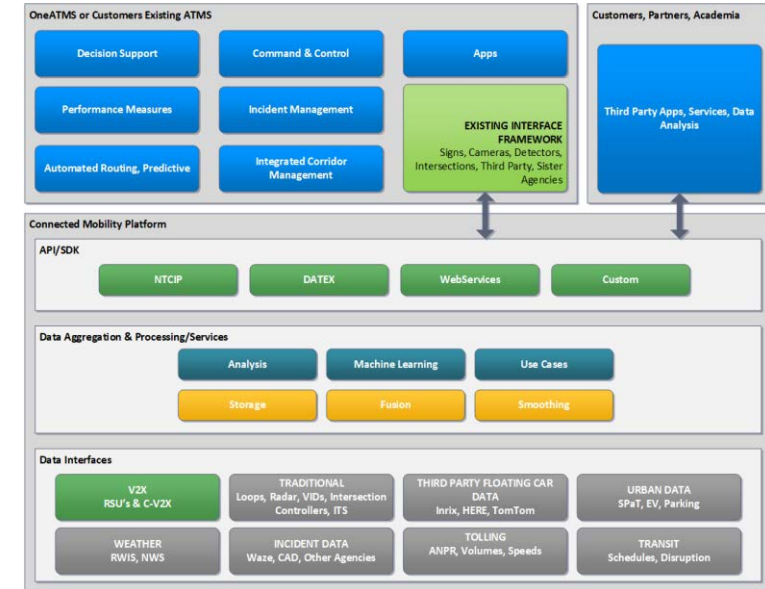
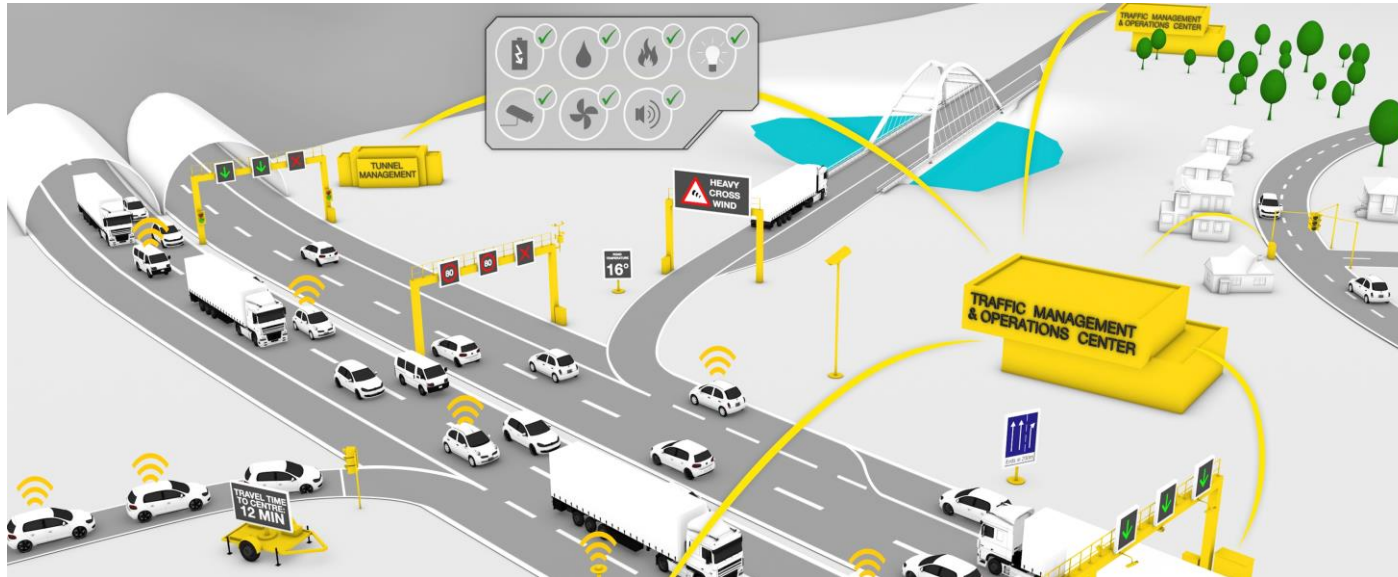
Cost advantages are **lower-tech hardware** (cheaper cameras / sensors) & **less manual intervention**



New video-based capabilities for
Lean portable **enforcement stations** or
traffic management (e.g. HOV lanes).

Connected mobility platforms will spur innovation.

Connected mobility platform is a foundational building block for the emerging mobility ecosystem.



Open data approach allows maximum benefit to citizens and transportation system managers/operators.



Enables **performance measures** to determine if public policy goals are being met.



Provides **integration** to smart city platforms and Internet of Things (IoT).

Real-time traffic management.

Based on actual traffic and Artificial Intelligence.

What it is

If cars communicate to all other cars in their surrounding in real-time, the throughput would increase by 300% (MIT study).

For the time being, we'll see a mixed mode with adverse effects.

We are an investor in TTS. The company overcomes some of the challenges caused by the mixed mode.

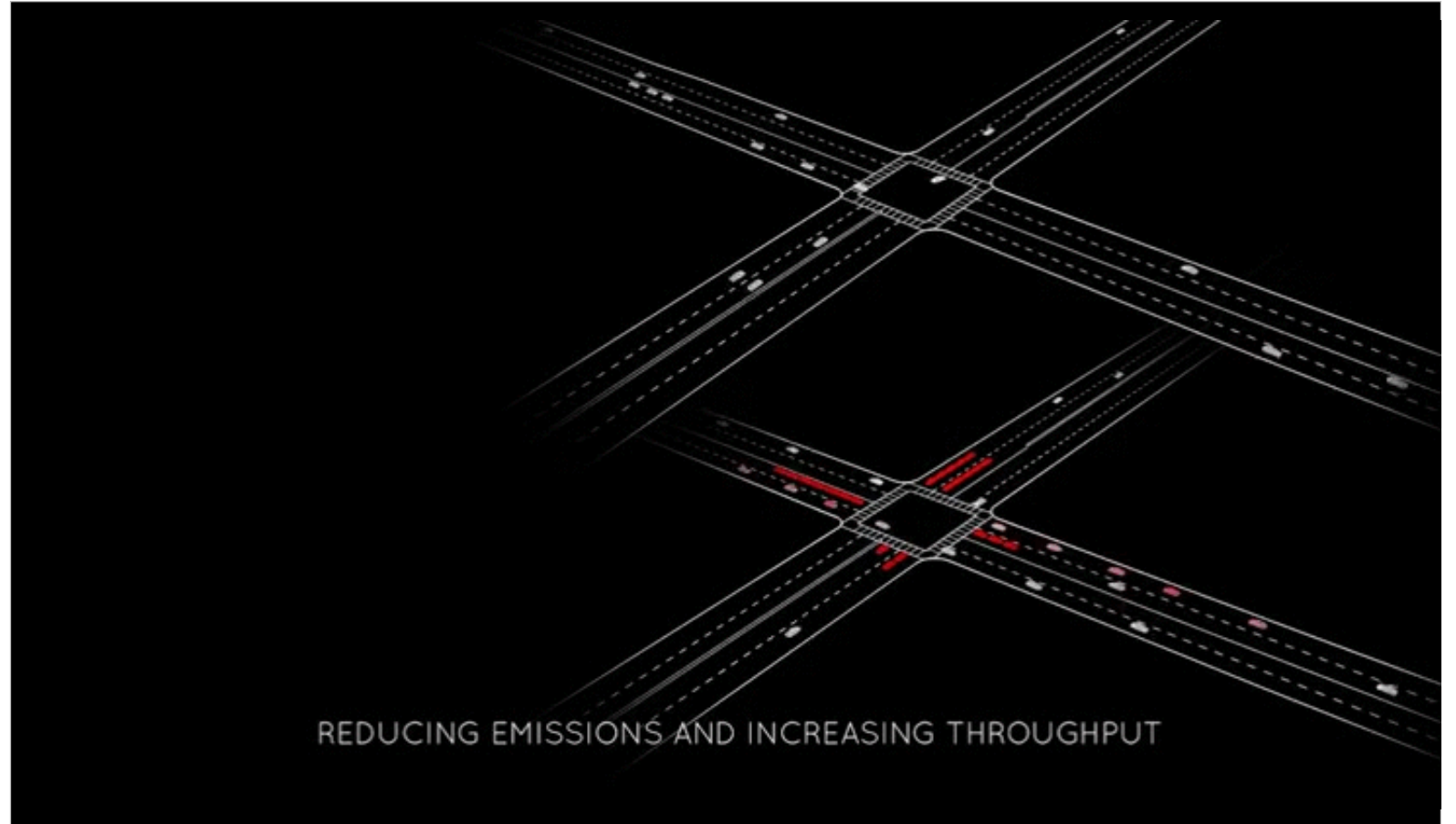
Benefits

Less environmental impact

Reduce emissions in the city by 5–10%.

Smoother traffic

Increase inner city throughput by 6–10%.



Supporting the traveler and the road agency.

The next multi-modal back office.



Purpose-built mobility/transportation **COTS platform**. We have the goal to reduce the SW development effort by 50%.

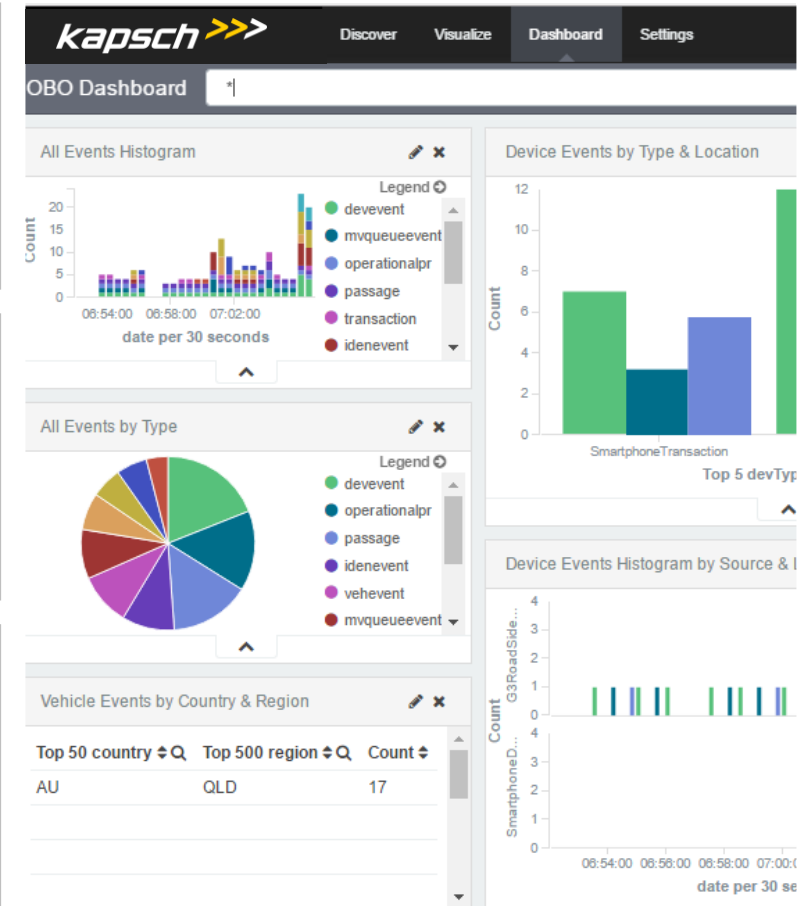
End-to-end audit. Full visibility. Kapsch “You See What We See” built in.

Cutting-edge technologies and integrated best practices to improve **operational efficiency**.

Built for **interoperability** – **expandable** via plug-ins/extension points.

Leverage to get **long-term** operational contracts (e.g. Belarus, RSA, RCTC).

Multi-modal.
Built for mobility services.

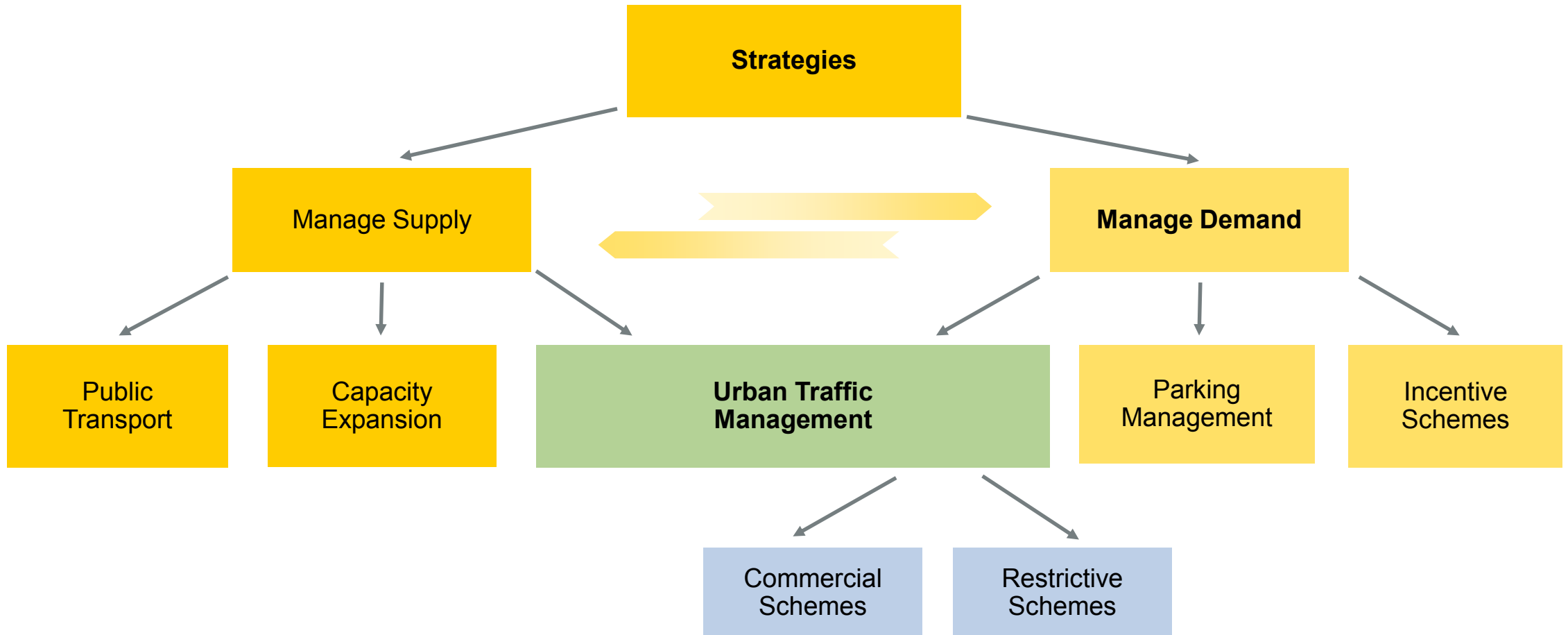




Managing Demand.

Managing demand will be a priority for our customers.

Strategies.

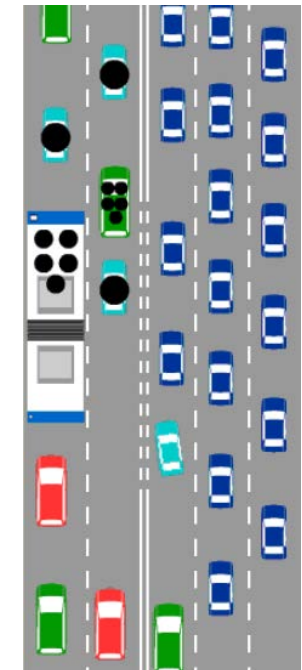
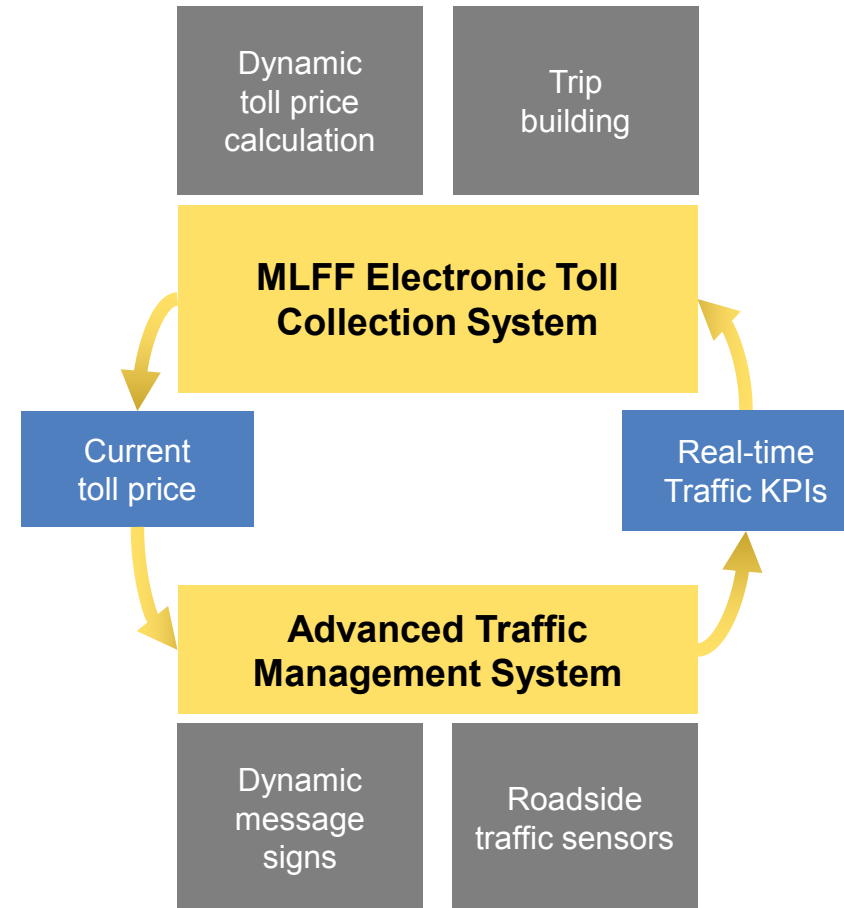


Real-time traffic management.

Based on actual traffic and Artificial Intelligence.

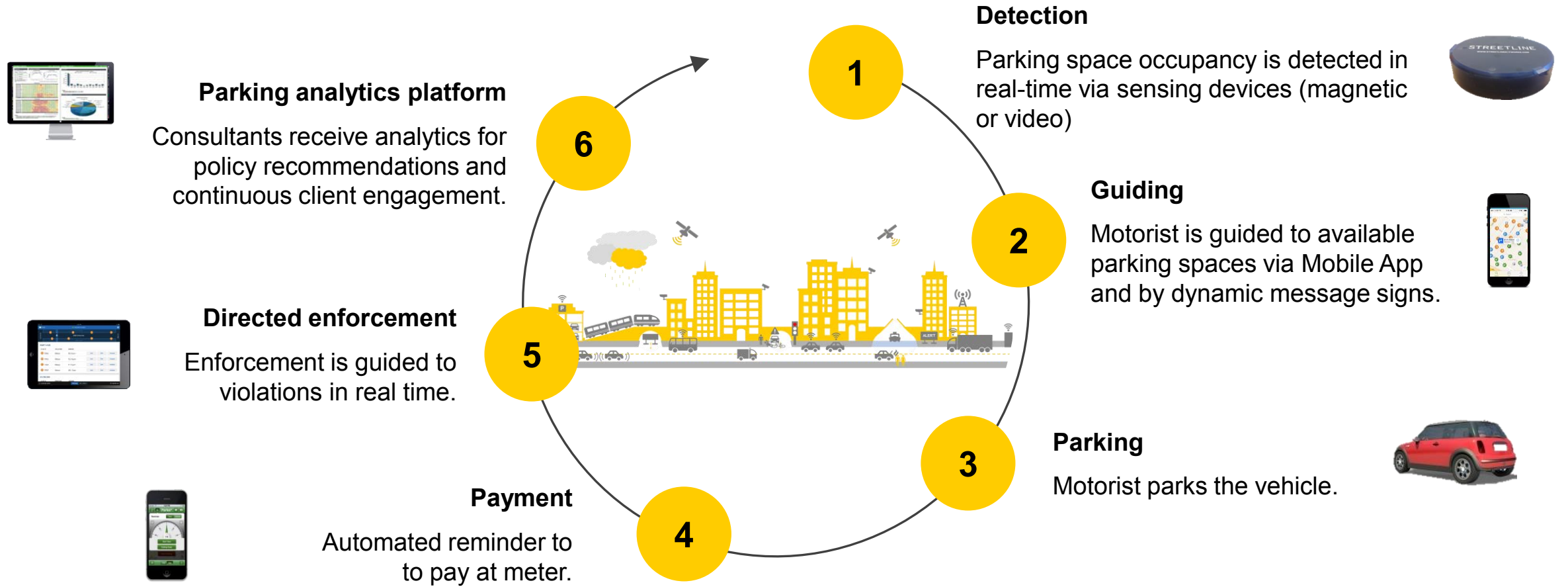
Managed lane schemes improve

- **quality of service** on congested urban roadways,
- achieving **higher traffic throughput**,
- lower air pollution
- and improved road safety.



Managed Lanes Regular Lanes
HOV 2+ Free
SOV \$ Toll

The complete smart parking solution.



Matching demand with supply.

Smart Cities & Regions

Initiate and orchestrate Mobility-as-a-Service ecosystems and regulate marketplaces.

Transport Service Providers

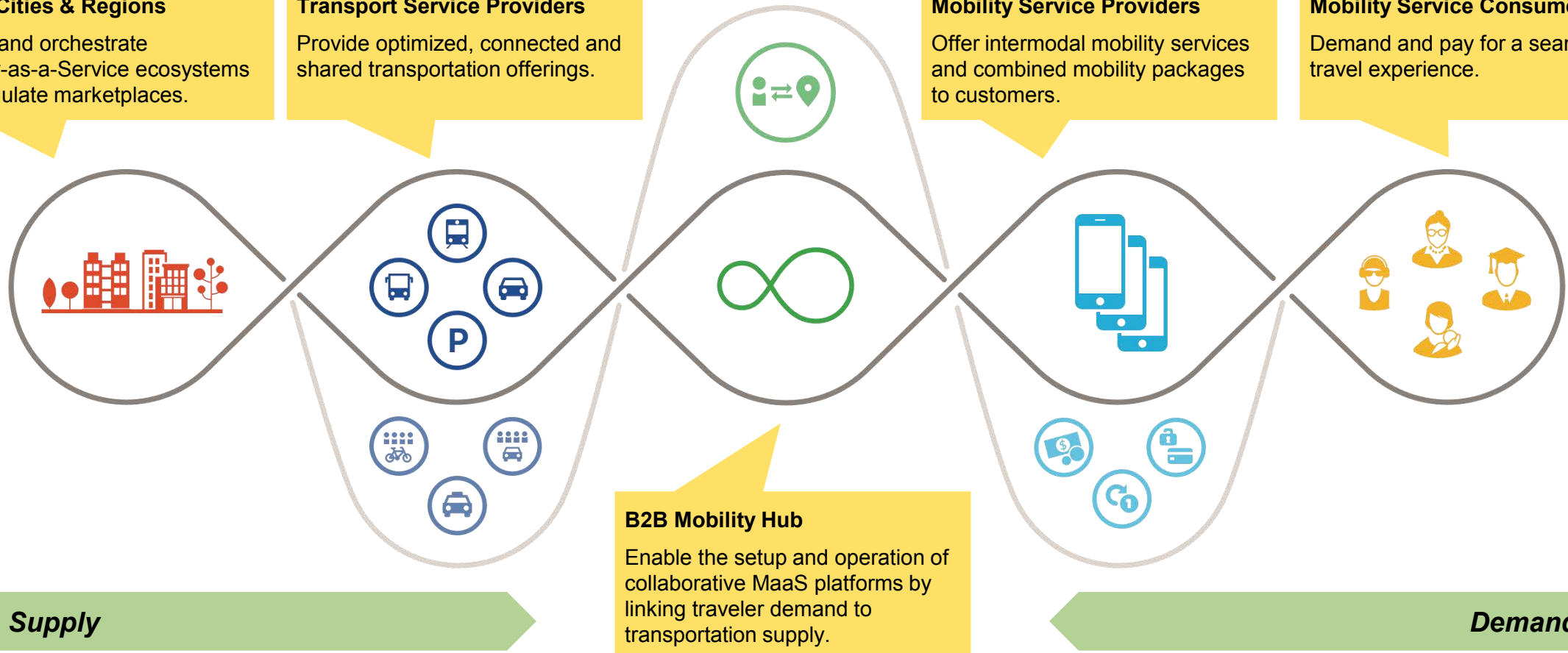
Provide optimized, connected and shared transportation offerings.

Mobility Service Providers

Offer intermodal mobility services and combined mobility packages to customers.

Mobility Service Consumers

Demand and pay for a seamless travel experience.



Supply

B2B Mobility Hub

Enable the setup and operation of collaborative MaaS platforms by linking traveler demand to transportation supply.

Demand

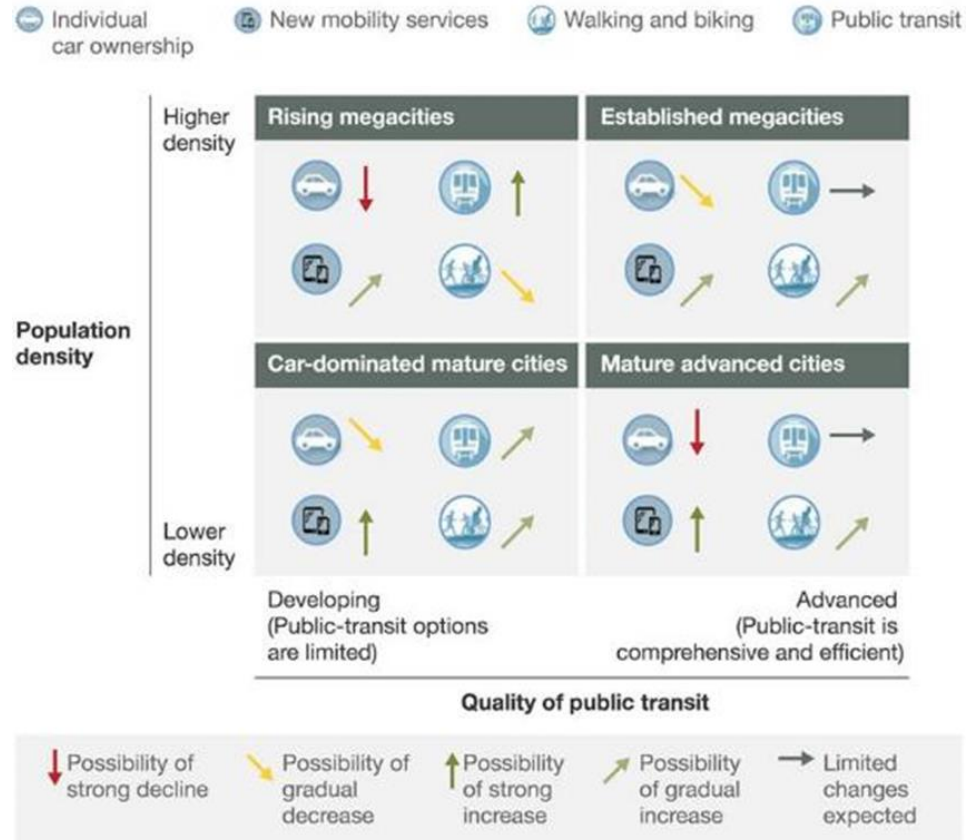
Perspective on managing demand.

Urban congestion & pollution management.



Change of mobility behavior.

Demographic, social developments drive the market.



McKinsey&Company



Society vs. individual



Mobility decision has an immediate impact on the individual but also on the environment



Change of society framework

Incentives for:

- Driving **outside of rush hours**
- Companies establishing appropriate **business models & work hours schemes**, home office
- Consumers to use **mobility services** instead to buy a vehicle
- Housing developers offer to the **residents mobility packages** instead to invest in parking spaces
- **Special mobility offers** for older people or people with disabilities, especially in rural areas

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***Thank you
for your attention.***

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