



**kapsch** >>>  
challenging limits

Kapsch TrafficCom

# **1<sup>st</sup> Institutional Investors' Day.**

*Dr.-Ing. Alexander Lewald: Market & Product Strategy Update.*

*January 11, 2017*

# Imagine a world in which...

## Zero congestion



- > Traffic jam becomes a rarity as sensors govern distance between vehicles and manage traffic patterns.

## Zero emission



- > Tailored vehicles enable more efficient and environmentally friendly mobility.

## Zero accident



- > Vehicles hardly ever crash once human error is removed from the equation.

**Frictionless, automated, personalized travel on demand:  
That's the dream of the future of mobility.**



***We target two markets.***

# ETC

Electronic Toll Collection



- > Enables drivers to pay toll fees without stopping at toll stations.
- > Relatively mature, stable market,
- > Limited number of suppliers.

# IMS

Intelligent Mobility Solutions



- > Support and optimize transportation, including infrastructure, vehicles, users and industry.
- > Connected mobility & individual mobility services.
- > Mutation of the car industry into a mobility business.
- > Developing market, new innovative applications, many different players.

# Let us start with ETC.

## ETC

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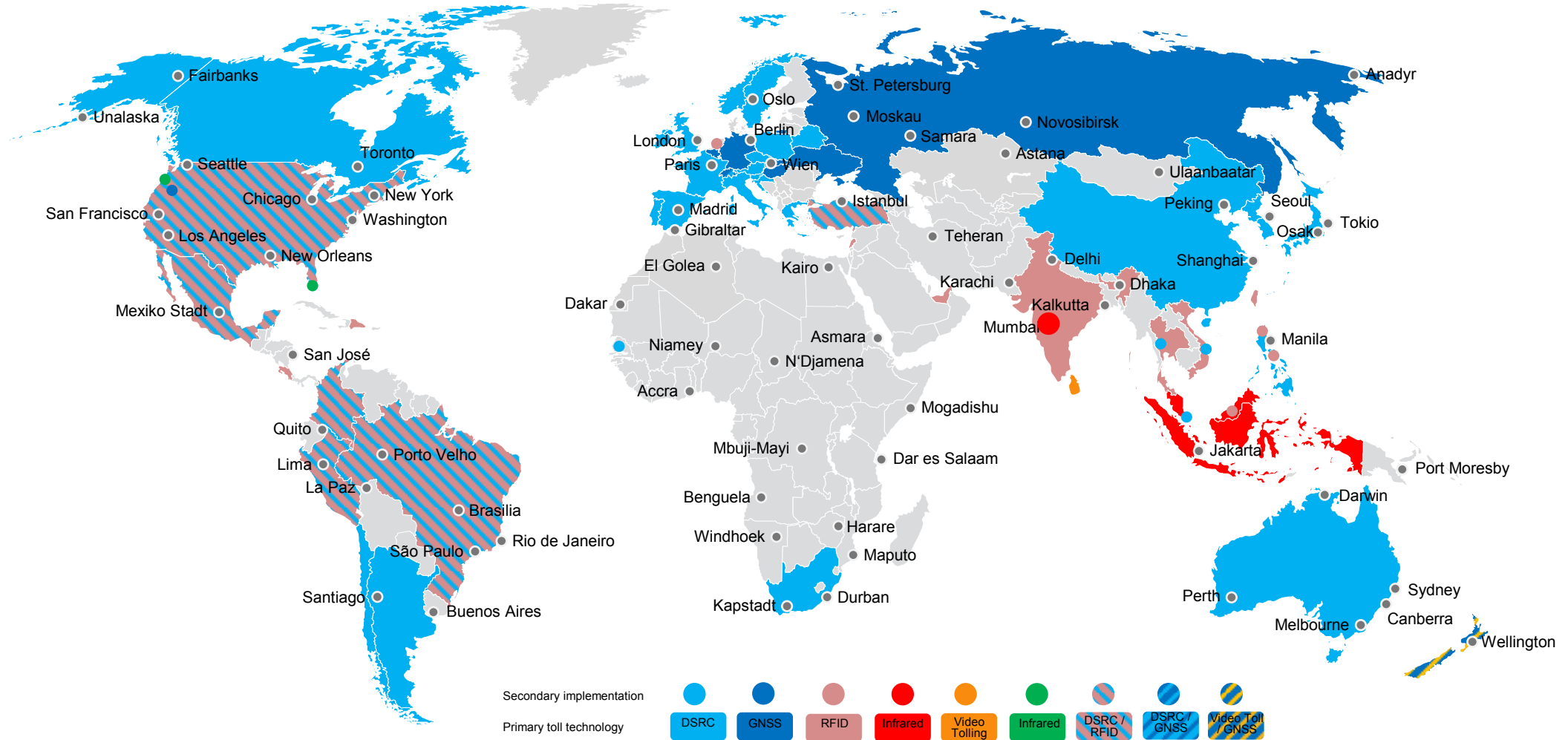
## IMS

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# ETC: Multi-technology approach required to be leading solutions provider globally.





# Exemplary applications.

## Multi-Lane Free-Flow Tolling



- > All type of roads: mainly highways, expressways and other main roads.
- > All type of vehicles: e.g. HGVs, all vehicles.
- > DSRC\* and/or ANPR; Managed lanes.

## Satellite Tolling



- > All type of roads from highways to rural roads.
- > All type of vehicles: e.g. HGVs, all vehicles.
- > GNSS, GSM, GPRS.

## Mobile Tolling



- > All types of roads: mainly highways, expressways and other main roads.
- > All types of vehicles: e.g. HGVs, light vehicles.
- > Adding smartphones as a new tolling product apart from DSRC\* and/or ANPR; Video correlation.

## eVignette



- > All type of roads, mainly on high category roads, highways.
- > Light vehicles.
- > ANPR.

## City Tolling



- > Urban areas.
- > All type of vehicles.
- > ANPR, DSRC\*, GNSS, but mainly ANPR based.

## Plaza Tolling

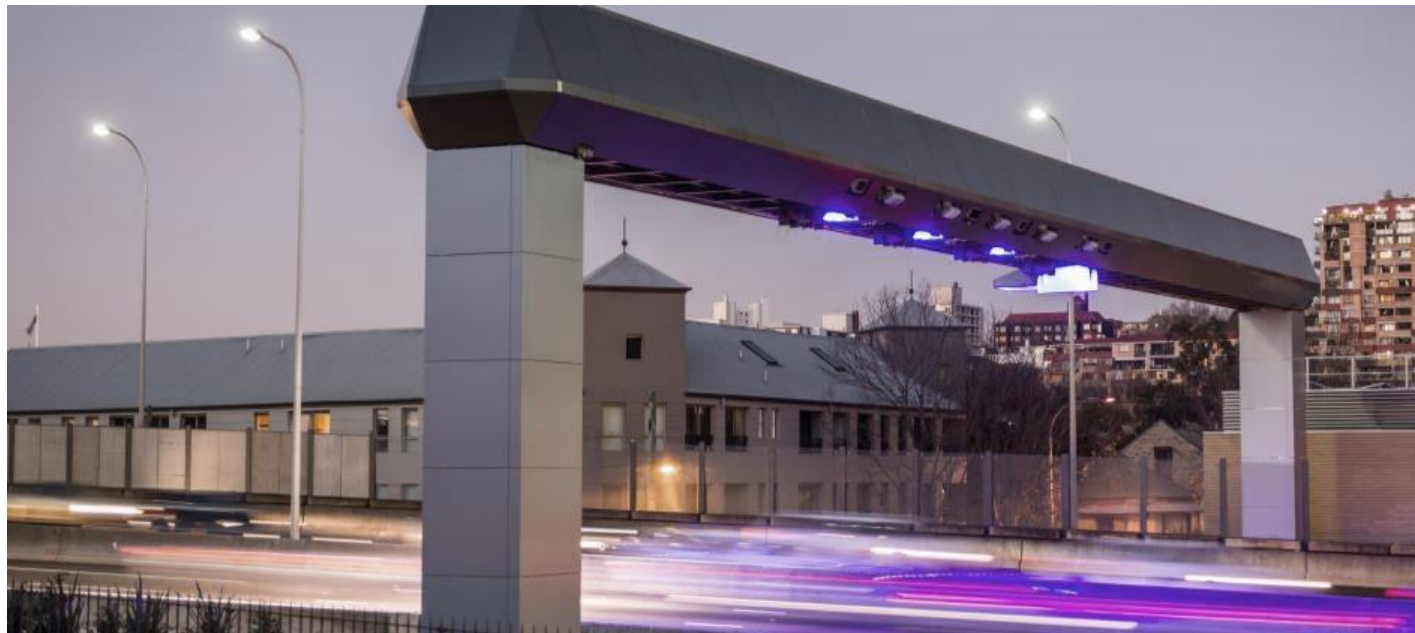


- > Concessions toll roads, high category roads, bridges and tunnels.
- > All type of vehicles.
- > DSRC\* and/or ANPR.

\*Standardized DSRC (dedicated short-range communication for RFID 915 MHz, ISO 18000-63, CEN 5.8 GHz, G5/WAVE 5.9 GHz).

# Vision based sensor technology.

Next-generation vehicle detection and classification sensor.



## Solution Description

- > 3D stereo streaming video sensor and processor.
- > Designed to detect, track, trigger and classify vehicles in real-time.

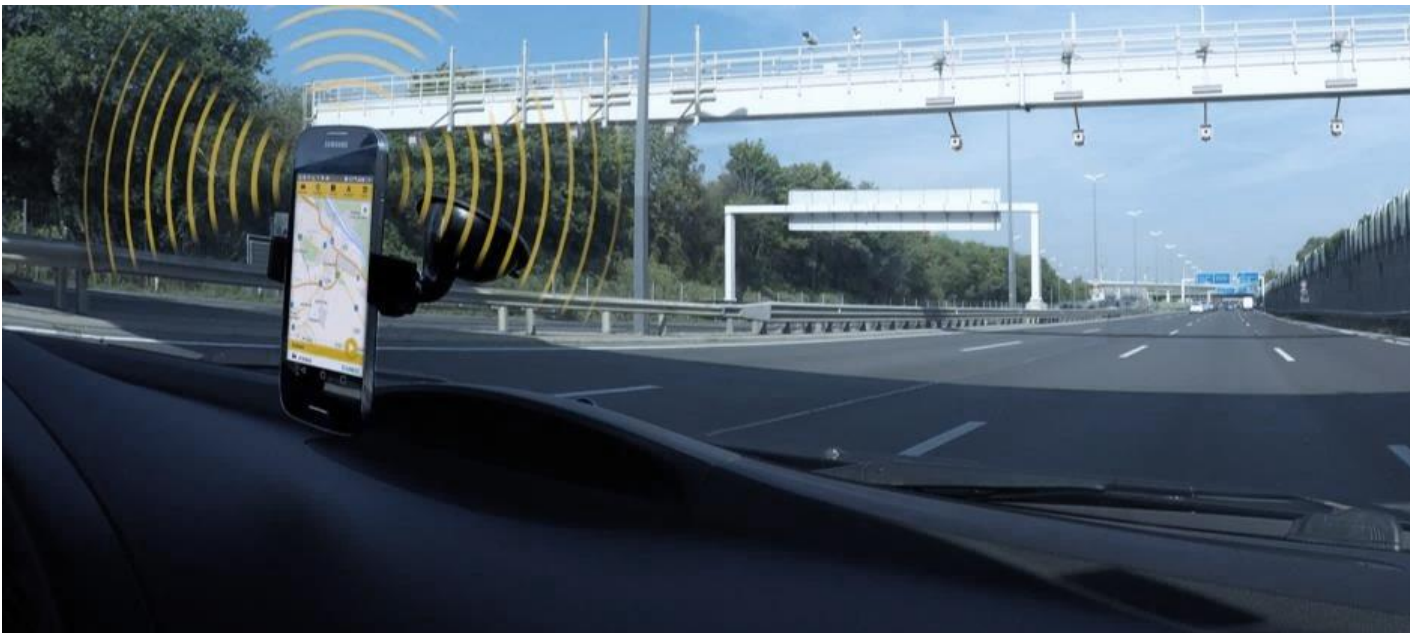
## Competitive Edge

- > Cost efficient single gantry geometry.
- > Strong performance in all traffic and weather conditions.
- > No embedded roadway sensors required.

# Mobile tolling services.



It is more than just an app.



## Solution Description

- > Smartphone as tolling device for occasional drivers.
- > Correlation of ANPR and GNSS transactions.

## Competitive Edge

- > Improves the customer journey.
- > Reduces operational costs.
- > Seamless integration into existing video toll collection systems.

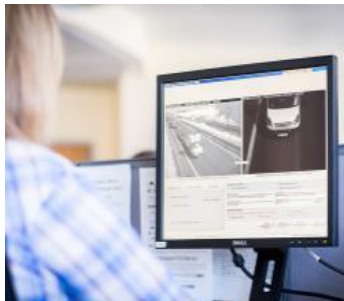


# Next generation back office system.



### Commercial Back Office

- > All customer related tasks.
- > CRM functionality.



### Operational Back Office

- > IPS for video toll + violation processing.
- > Validation of transactions & their rating.



### Image Processing Solution

- > Enhancing automatic validation rate by 2nd ANPR, Fingerprinting and image reference database.



### Enforcement Back Office

- > Involving external enforcement agencies.
- > Support by mobile enforcement.

## Solution Description

- > Integrated set of interconnected modules supporting automation of core tolling processes.

## Competitive Edge

- > Multimodal capability.
- > Web-based modern UI.
- > Extensive experience in delivering new and upgraded back office solutions.

# ETC

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# IMS

Intelligent Mobility Solutions

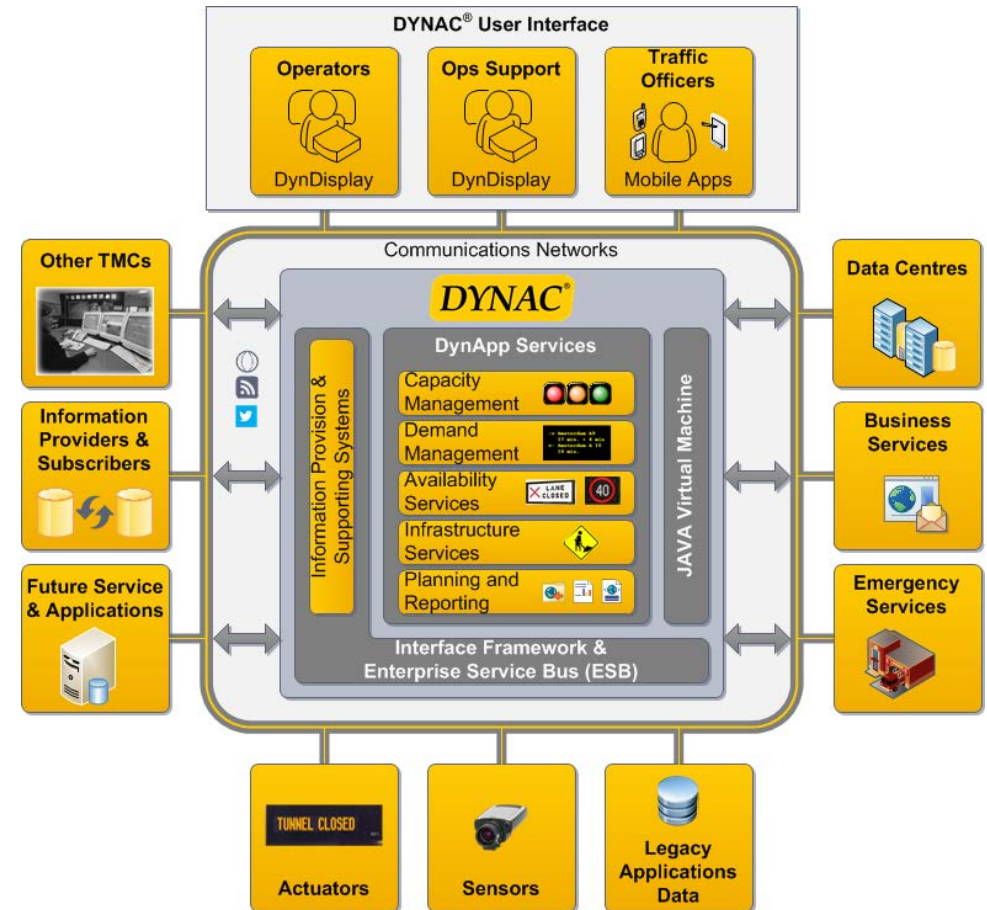


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# Traffic management a core IMS application.

DYNAC: Advanced Traffic Management Software (ATMS).

- > High-performance, integrated software suite.
- > Deployed for motorways and at vital transportation facilities around the world.
- > Collects real-time traffic data and delivers it to Traffic Management Control (TMC) centers allowing operators to detect and respond to congestion, incidents, emergency situations, and other conditions.
- > Travel times, incidents, roadway and weather conditions, and other messages can be quickly disseminated to the public allowing motorists to make informed travel decisions.
- > DYNAC used in collaborative CHARM program: ATMS for Highways England (UK) and Rijkswaterstaat (NL).





# Further IMS applications.



Smart Parking



Urban Traffic Management



Multimodal Mobility Service



Connected Vehicles



- > Smartphone based user guidance\*.
- > Parking availability inference via data analytics and IoT.
- > City parking management and enforcement apps.

\* enabled by Streetline



- > EcoTrafIX™ traffic management software for city\*.
- > Advanced event management tools.
- > Data Analysis and Data Mart.

\* enabled by Kapsch TrafficCom Transportation



- > Software solution for efficient and fast implementation of mobility services\*.
- > Output for travellers via all major channels and operating systems, e.g. smartphones, tablets, web, smartwatch.

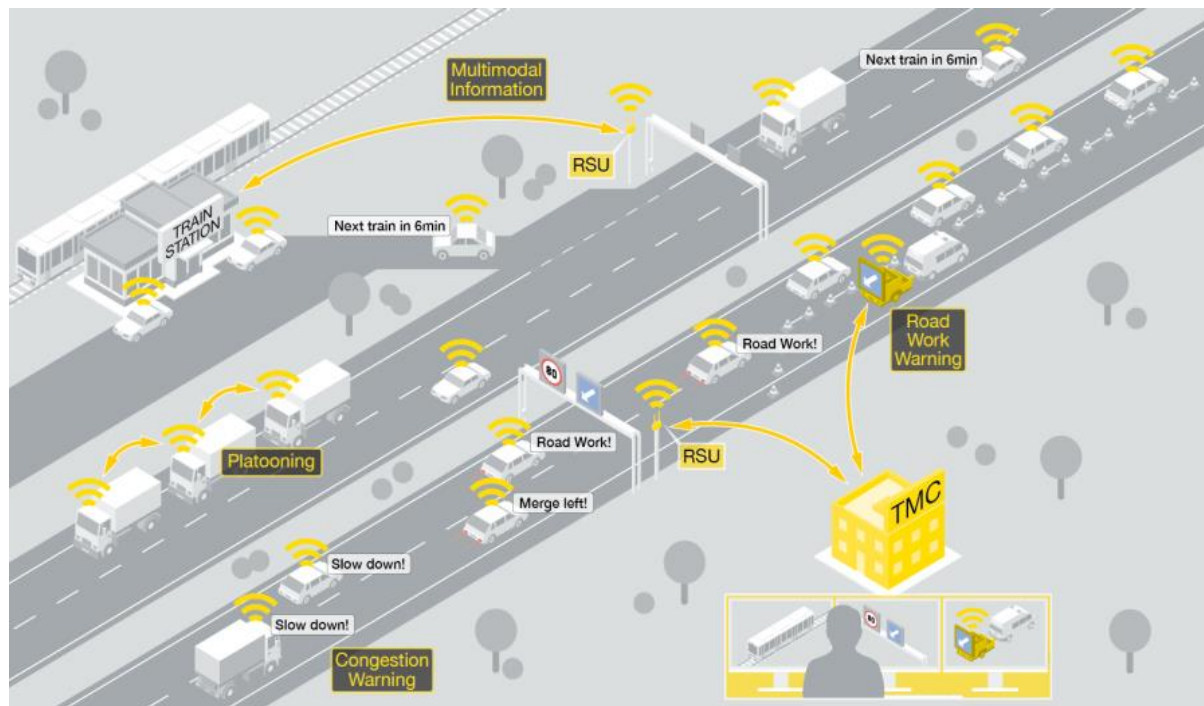
\* enabled by Fluidtime



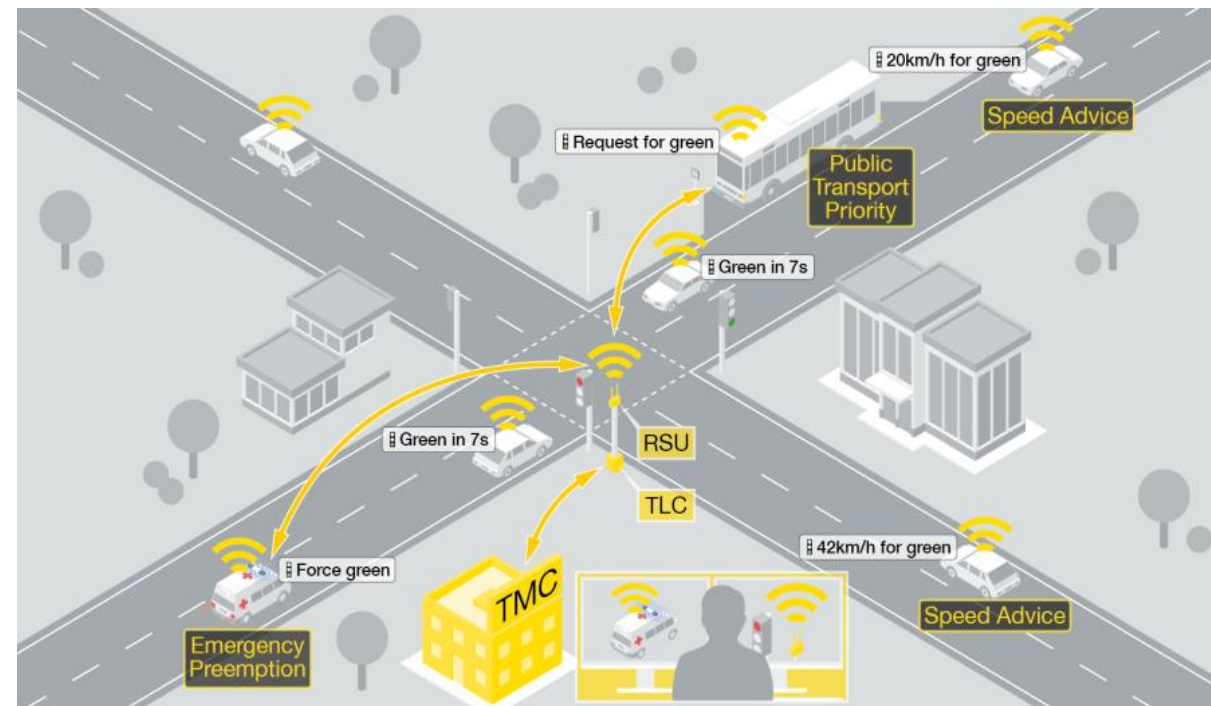
- > V2X roadside products.
- > V2X for ADAS.
- > V2X for efficiency.

# V2X use cases.

## Highway



## Urban






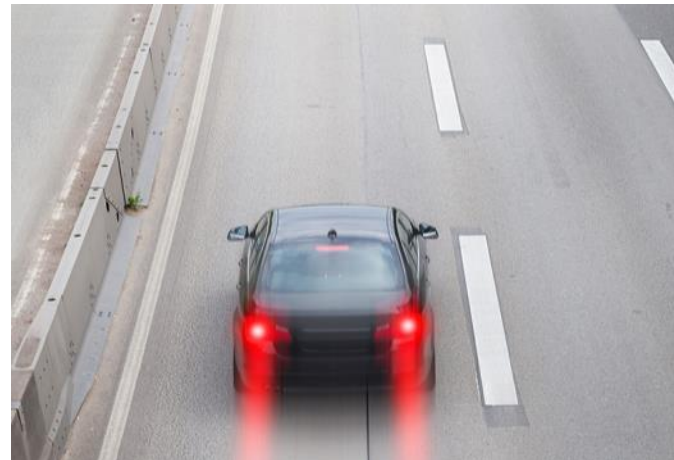
# V2X exemplary applications.

 V2X Roadside Products




- > 5.9 V2I localization and –non-localized Roadside Units.
- > 5.9 parking antennas.

 V2X for ADAS



- > Automatic Emergency Break.
- > Collision Warning.
- > Do not pass warning.

 V2X for efficiency



- > HGV Platooning.





***Solution Center Concept.***

# Solution Center organization.

**Solution Centers**  
(structured by economic buyer)

Tolling Solutions



Back Office Solutions



Highway & Tunnel Traffic Management Systems



Urban Traffic & Mobility Management Solutions



Intelligent Mobility Services



Connected Vehicles



**R&D**

- > Explore technology breakthrough innovation.
- > Harmonize technology frameworks and drive the consolidation of the product portfolio.
- > Standardize and enforce commonly used tools, guidelines etc.
- > Develop products and sub-systems on request of the Solution Centers.

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

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