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The Future of Mobility – Self-Driving Vehicles

Kaminabend | ITS Bavaria

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The level of complexity and automatization for transportation systems increases significantly

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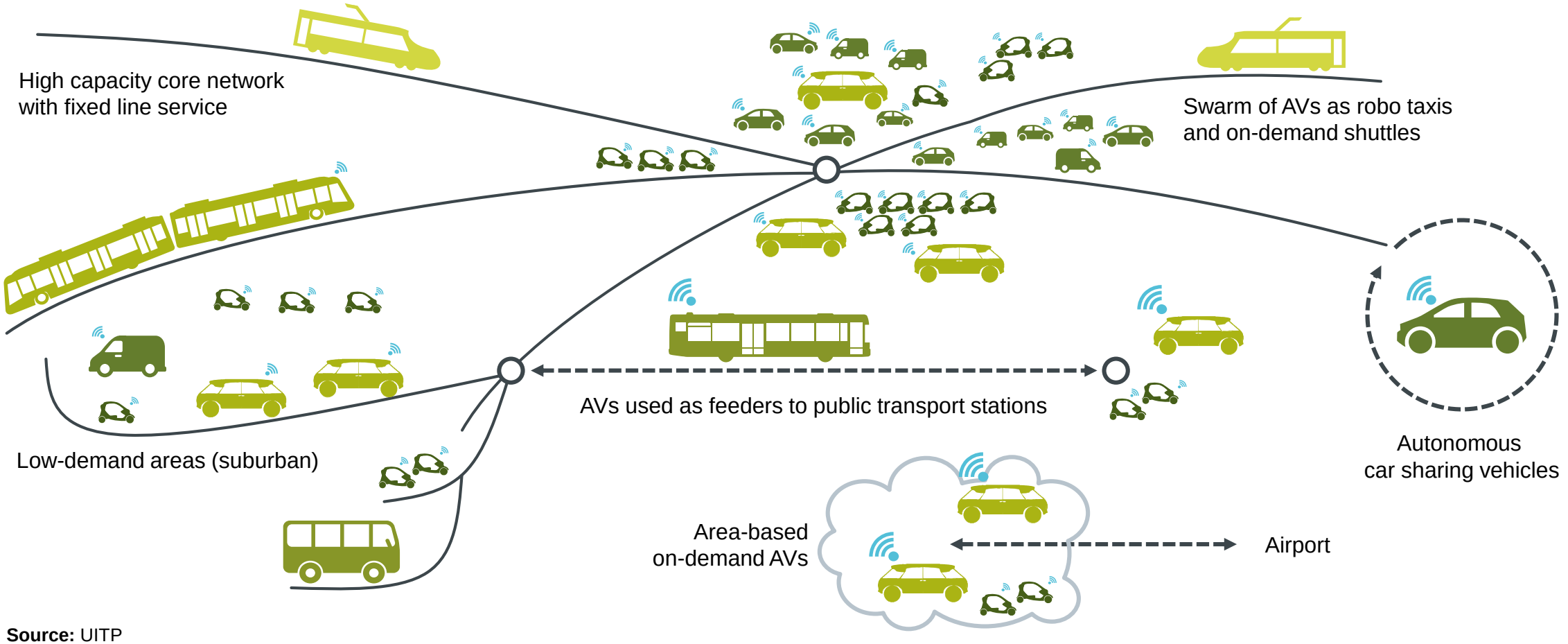

Source: UITP

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An Optimized Transport System supported by self-driving vehicles will help to master the future of mobility

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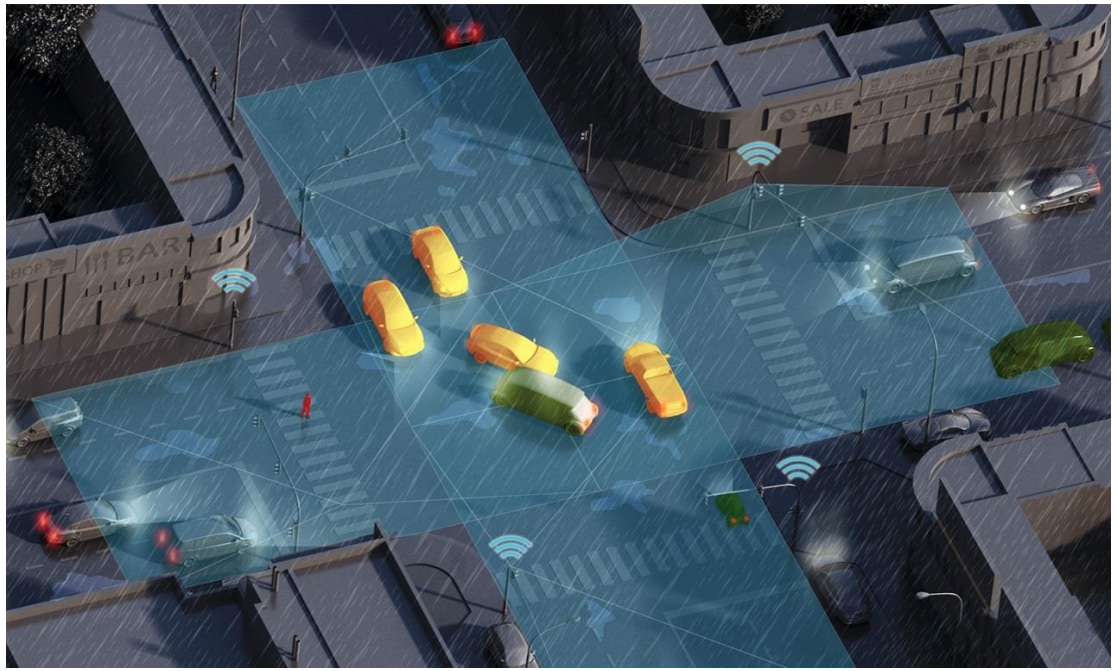
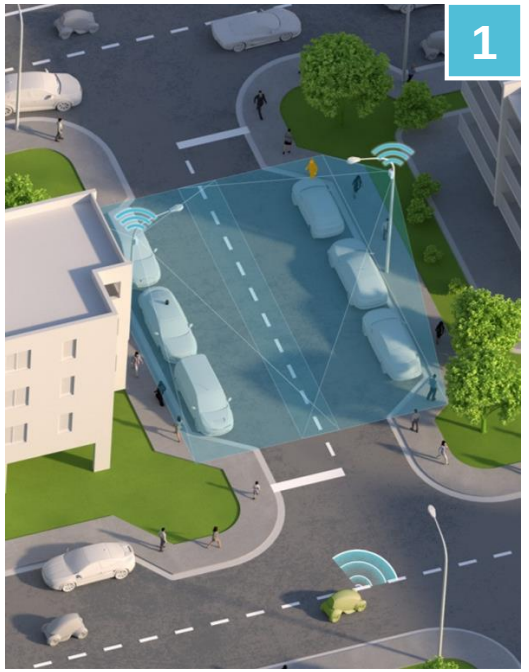
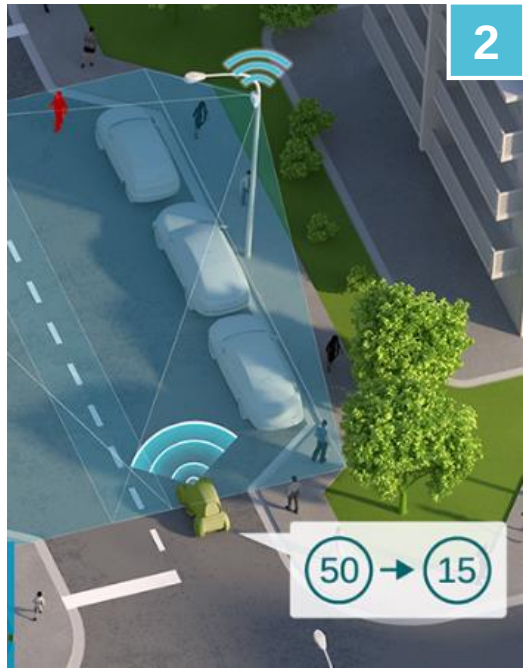
Road safety – safe and efficient transport even in complex traffic situations



- Infrastructure works reliably, even in the case of changing weather and light conditions (rain, snow, fog or glaring sunlight)
- Self driven vehicles get support in complex traffic situations

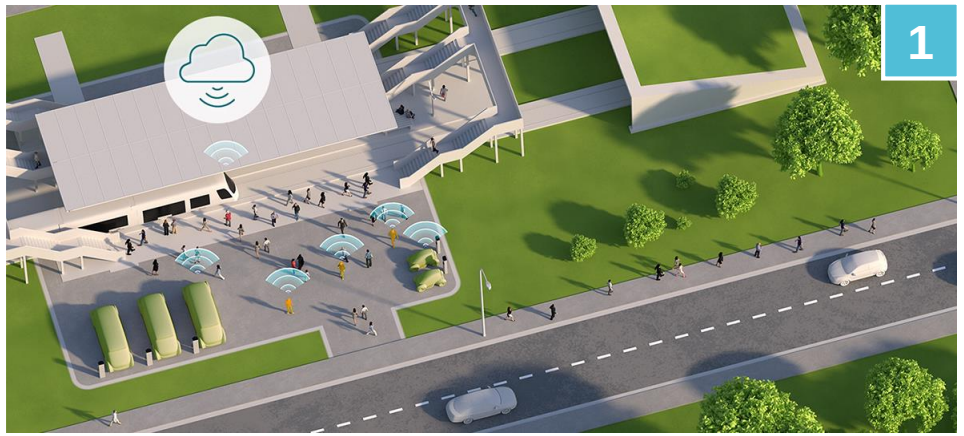


Infrastructure identifies risks – even if they are not in the immediate surrounding of the vehicle



Vehicle reduces its speed to avoid critical situations

Individual public transport – advanced platooning system and first/last mile



1

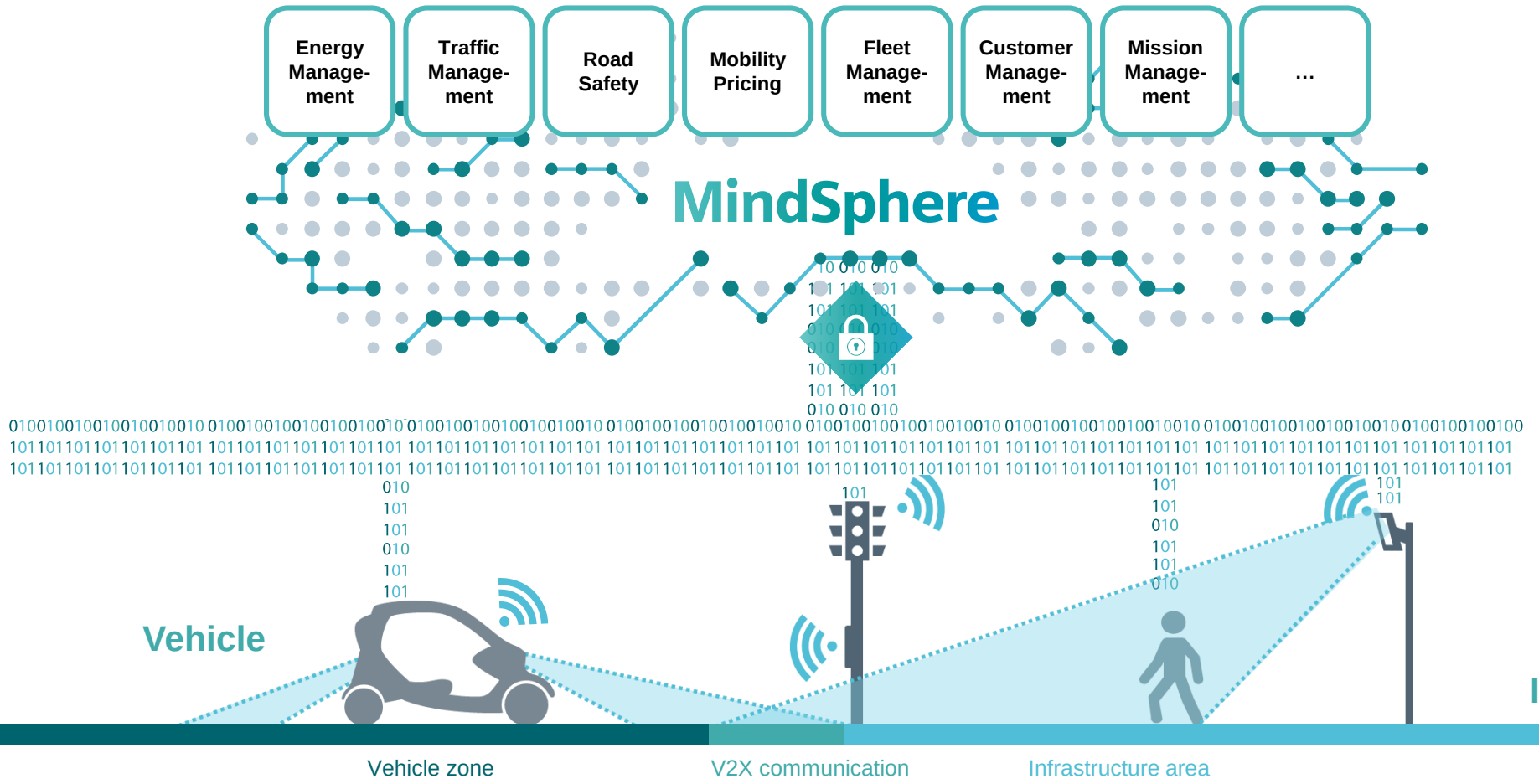
Backend collects passenger requests and calculates transport recommendations in real time traffic → pools passenger requests into dynamic routes and ensures availability of right amount of shuttles

2

- Shuttles could be coupled into platoons
- Safe and regulated drive through the city
- For optimal individualization of mobility, platoons could be decoupled on the last mile

- Solving the first and last mile
- Connecting also areas with lower demand by mobility on demand solutions
- Smooth and efficient trips across all modes of transportation

SDV Suite provides MindSphere compatible services



Customer Layer
- Mobile Apps
- Web Frontends
- …

MindSphere
- Identity and Access Management
- IoT/Device Management (diagnosis, update, configuration, …)
- Messaging Event Stream
- Analytics
- Work Flow Management
- …

Fog Layer
- Traffic cell control computer

Edge/Device Layer
- SDV/AV
- IoT devices, e.g. sensors (Radar, LiDAR, Camera, RSU)
- Mobile Devices
- …

Infrastructure

From hours to milliseconds **From macro to micro traffic management** **From public transport to public individual traffic**

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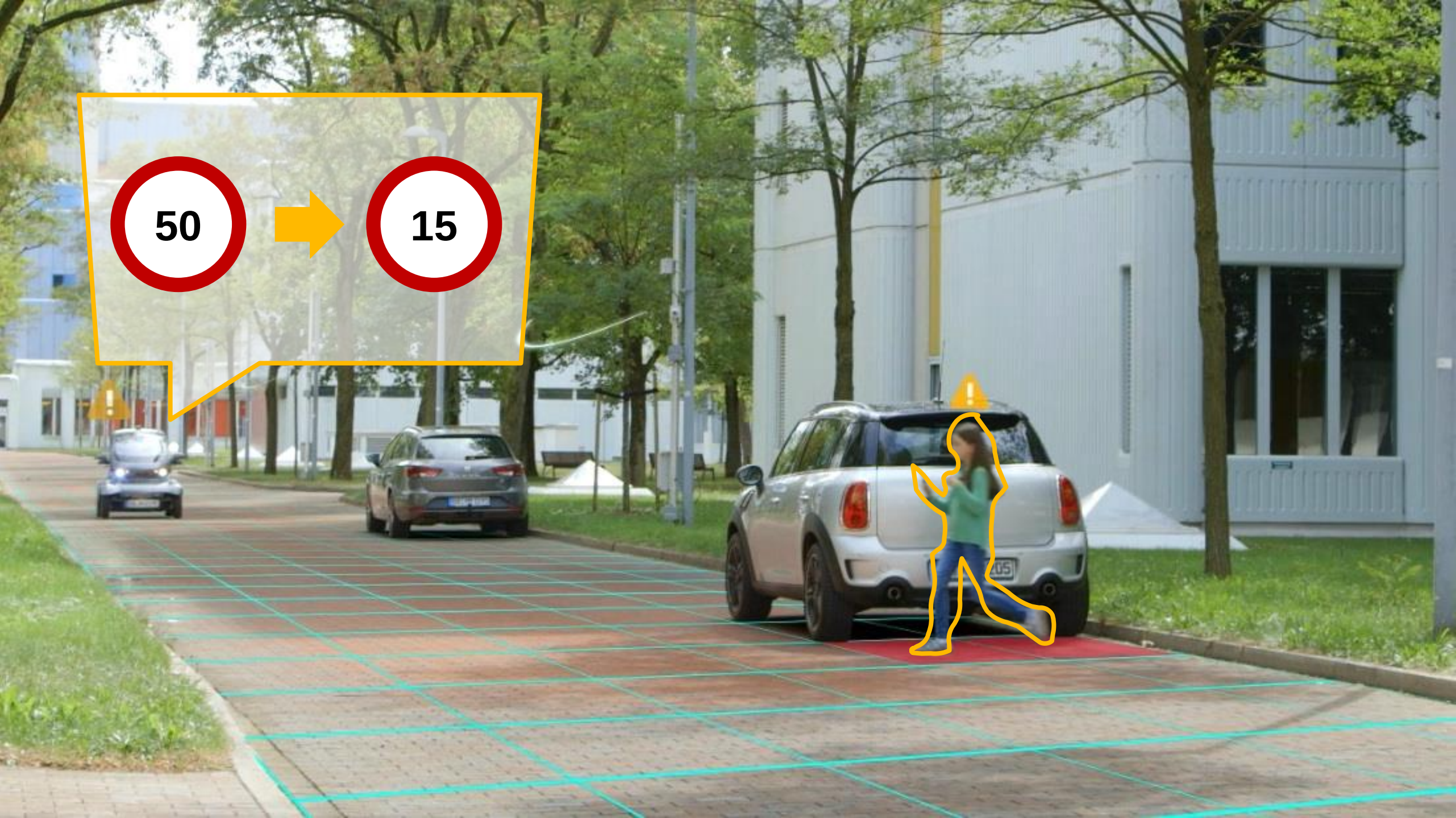
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Coordination Layer – Cloud-based micro-services of SDV Suite

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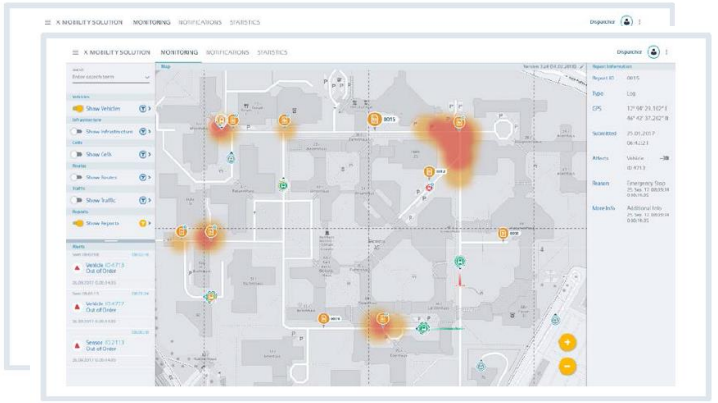
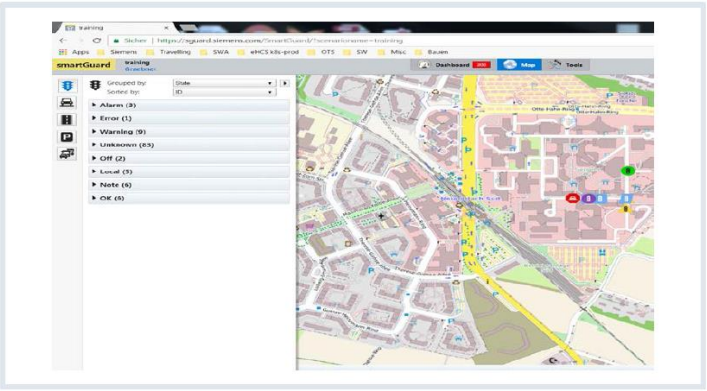
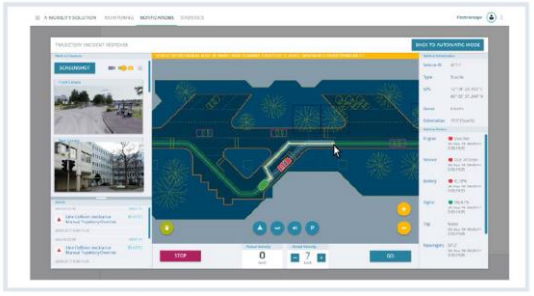
Mobility System Planning



Mobility Service Planning

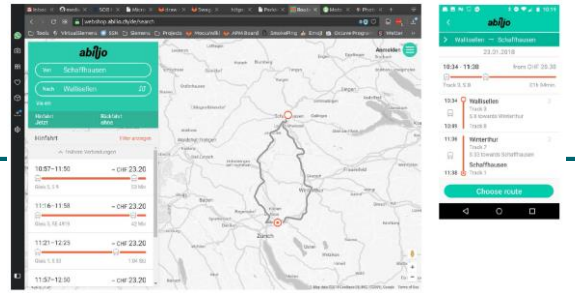


ITS Traffic Management



Fleet Management

Passenger Management



Intermodal Trip Management

Shuttle Passenger Information

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ILO 1 prototype generates insights into infrastructure, vehicle and applications/backend

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Measurement car

- Independent from OEM, open interfaces for control system
- Tests of different infrastructure compo-nents: Communication, positioning, perception
- Outcomes can be immediately imple-mented into system developments

Commissioning of pilot tracks

- To design and commission future test tracks
- Demonstration of pre-defined use cases
- Analysis of faults through all levels of functionalities