Intelligent Traffic Systems in Asia Pacific
Fred Kalt, Managing Director of ITS APAC, Siemens Mobility
Four trends on our roads will boost “the next Mobility revolution” in and between cities.

**Today**
- Owned
- Stand-alone
- Combustion
- Driver

**Tomorrow**
- Shared
- Connected
- Electric
- Autonomous
Our vision – cities will manage the complete mobility ecosystem to achieve its throughput, pollution, safety and energy targets

Cities will manage and inspire…

Centrally managed traffic towards city strategy and KPIs

Point-to-point connectivity seamless across all modes

Demand responsive with flexible routes and schedules

Fully automated SDVs only differentiated by user groups and capacity

Mainly shared fleets, as a service and open to various fleet operators

All electric with 100% renewable power
The “smart crossing” brings together:
- Traffic lights and controller
- Detection systems
- Variable message signs
- Dynamic prioritization for different vehicles such as public transport, bikes and emergency vehicles
- Dynamic green wave
- Adaptive street lighting
- In-vehicle information for drivers (e.g. Time-to-Green)

→ Providing full connectivity, proactive control and maximum IT security at the same time

For an intersection this vision could mean the intelligent integration of various systems into one „smart crossing“
Activities in APAC

**China**
- Zhuhai: traffic management system incl. UTC, real-time data, traveler information system, LRT prioritization
- Suzhou: V2X test field

**India**
- Video-analytics-based vehicle counting

**Australia & New Zealand**
- SCATS certification for sX controller
- Rail2X trial for approaching rail crossing warning

**Vietnam**
- Hanoi: running PoC for video-analytic based traffic management

**Singapore**
- Development for tunnel management for North South Corridor
- Research collaboration agreement with LTA and A-STAR for CRUISE
PoC: Hanoi’s growing population requires investments in traffic infrastructure to avoid worsening of traffic congestion

**Population**

Hanoi has ~8 mio. Citizens, growing up to 9.2 million by 2030

**Traffic volume**

5.8 mio. vehicles, thereof 90% motorcycles, increase of cars due to restriction of motorcycles from 2030

**Traffic Congestion**

Annual cost of congestion are estimated to be 1.2 billion USD, loss of more than 1 million working hours per year\(^1\)

**Air pollution**

Hanoi’s air pollution index is 4x higher than recommended by the World Health Organization\(^2\)

**Infrastructure**

Only 800 out of 3,300 intersections are equipped with traffic signals\(^3\)

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1 Vietnam Investment Review; 2 VN Express; 3 DoT Hanoi
Objectives of Project VAST
(Video Analytics for Smart Traffic)

- Detecting vehicles in non-lane-based traffic by applying AI-based video analytics on video streams from existing CCTV
- Optimizing the traffic flow & increasing the intersections’ throughput by simulation and feeding detection data into a cloud-based traffic management system, managing the on-site sX controller
- Reducing electricity consumption by installing state-of-the-art road infrastructure (1 Watt sX controller and traffic lights)
PoC: AI-Enabled Vehicle Detection & Classification

Functional with non lane-based traffic patterns
Can be trained to include different vehicle classes
Compatible with regular HD CCTV cameras
PoC: Technical architecture with CCTV via Scala

**In the Cloud**
- **GPU**
- **Traffic Dashboard**
  - Transfer of video statistics to traffic dashboard
  - Sends output data, such as number and type of vehicle, etc.

**On Site**
- **CCTV**
- **sX Controller**
  - Monitors and handles signal programs of sX controller
  - Send status
- **Traffic & Pedestrian Lights**
  - Controls

**ASP Traffic Mgmt**
- TASS-traffic actuation signal plan selection

**ASP**: Application Service Provisioning
PoC: Traffic Statistics Dashboard

- Traffic Density vs Time
  - Comparing live data with historical data from: 26/06/2019
  - Traffic Density up by 13%

- Average speed: 9 Km/hr
Results of the PoC – in brief

>15% average increase of traffic throughput at the intersection

Ease of traffic density towards the city centre

30-50% energy savings through the deployment of 1 Watt technology

Roll-out of the solution throughout the city will multiply these benefits
Thank You