Smart Mobility, Empowering Cities

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A Sampling of Highlights and Observations

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Presentation

- Some Interesting Singapore Facts
- The 26\textsuperscript{th} ITS World Congress
- Voloport/Volocopter
- Special Interest Session (SIS) 24
- Technical Session (TS) 68
- A Few Other Interesting Observations and Things Heard
- Conclusion
Singapore

- Among the 20 smallest countries in the world. About half size of LA.
- One of three surviving city-states in the world (Monaco and Vatican City)
- ~90°F year-round (with about 200% humidity!)
- Chewing gum banned since 1990s. $70,000 fine for selling.
- A “fine” city! $150 for not flushing.
- Second busiest port (behind Shanghai)
- Super clean - street food - architecture - shopping!
Singapore

- Approximately 9081 lane-km of roads taking up 12% of the land
- Car ownership (Toyota Corolla Altis)
  - $70,000 initial cost
  - Price includes Certificate of Entitlement (only a limited number of certificates/quota issued by Land Transport Authority through bidding process, good for 10 years)
  - Annual insurance and maintenance costs typical to US, +$500 road tax
Singapore
26th ITS World Congress

- Extensive technical program centered around eight themes
- 148 technical, scientific paper, commercial paper and special interest sessions
- Plenary and executive sessions, demos
- up to ~14,000 participants (unofficial) from Asia-Pacific, Europe and North America
Highlights and Observations – Voloport/Volocopter

• On demand Urban Air Mobility (UAM) / Air Taxi Services
• (Congested) Intra-city commercial air transport
• Fully electric (quiet), energy efficient
• Two passengers (+pilot/attendant)
• ~20-25 mile range, speed 50-60 mph
• JFK to Midtown example
• Investors include Daimler and Intel
• Singapore final test series to validate operations for the area
Highlights and Observations – Voloport/Volocopter
Sustaining Smart City Safety and Mobility Through Traffic Incident Management (SIS 24)

• Speakers representing USDOT FHWA, State DOTs (TN, MD), Singapore Land Transport Authority (LTA), Rijkswaterstaat (Dutch DOT)

• A sampling of some of the take-aways...
Establishing the relationship between TSM&O activities and emerging Automated Driving Systems (ADS)
Sustaining Smart City Safety and Mobility Through Traffic Incident Management (SIS 24)

Using predictive analytics to take TIM to the next level by getting ahead of incidents
Sustaining Smart City Safety and Mobility Through Traffic Incident Management (SIS 24)

Singapore LTA: Integrating systems, reactive to proactive data analytics - resulting in improved TIM systems and processes
Sustaining Smart City Safety and Mobility Through Traffic Incident Management (SIS 24)

Rijkswaterstaat: Validation of TIM priorities, collaboration (Insurance Sector), “playbook” for safety/uniformity and results reporting.

- **Order of priority:**
  - Safety of the IM emergency workers
  - Traffic safety
  - Assistance to the victims
  - Evidence collection
  - Restoring traffic flow
  - Salvaging cargo/vehicle

- **IM Safety Measures**
  - **Target groups:**
    - Police
    - Fire brigade
    - Ambulance
    - Highway Authority
    - Recovery services
    - Breakdown services
  - **Goal:**
    - Safety
    - Uniformity

- **The effects:**
  - Reduction of handling time of incidents:
    - Passenger cars: 15 minutes faster
    - Lorries: approximately 60-90 minutes faster.
  - Reduction of congestion caused by incidents: approximately 35% (150 M€ society money)
  - Reduction of secondary accidents:
    - Accidents at the tail end of the traffic jam,
    - Rubbernecking accidents on the other carriageway.

- **Incident management in practice**
  - Improvement of coordination, co-operation and collaboration:
    - Noise
    - Infrastructure services
    - Fire department
    - Recovery services
    - Road authorities
    - Transportation sector
    - Insurance sector
    - Emergency call centers
Sustaining Smart City Safety and Mobility Through Traffic Incident Management (SIS 24)

North Texas Tollway Authority – Swivel DMS
ITS for Emergencies (TS 68)

Republic of Tatarstan, Russia: Integration of GLONASS data with “112” (Russia’s 911) for enhanced medical response
ITS for Emergencies (TS 68)

Australia: Improving tunnel evacuation outcomes with targeted flash (text) messages
ITS for Emergencies (TS 68)

Shutoko Expressway, Tokyo, Japan: An incident every 11 minutes! Managing tunnel disasters. Tunnel “grades”
ITS for Emergencies (TS 68)

Singapore LTA: Synergizing Project Safety Review (similar to independent audit) and use of ITS for Managing Road Tunnel Fires

**Standard Operating Procedures for Handling a Vehicular Fire**

1. **Tunnel Closure and Emergency Evacuation**
   - Variable Message Signs will advise motorists on the recommended course of actions
   - Drive out of tunnel via the nearest exit
   - If unable, stop engine and leave on foot via emergency exit (marked with strobe light)
   - Refrain from passing Lane Use Signs marked with red crosses
   - Refrain from entering tunnel

2. **Traffic Plan for a Fire Scenario at Northbound KPE**

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**Roles of Ground Responders**
- Comprises the Vehicle Recovery Service (VRS) and Land Transport Marshals (LTM) fleet
- Arrive on site within 8 mins of dispatch
- Establish safety cordon
- Direct traffic at strategic points of ingress/egress
- Provide critical information to OCC
- Liaise with partner agencies
- Facilitate SCDF arrival from the non-incident bound
- Remove burnt vehicle

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**The Land Transport Authority’s VRS and LTM Fleet**
ITS for Emergencies (TS 68)

Other Interesting Observations

Danish Road Directorate: Abandoned traffic information apps. Instead focusing on generating and providing extremely high-quality data to private-sector service providers (“who do it better”).
Other Interesting Observations (and things heard/read) – 5G

- Jovan Zagajac, Technology Manager, Ford: “5G is like a mythical creature that does not exist”
- John Hibbard, GDOT: “Density of 5G infrastructure is unlike anything we have ever seen. Not likely to show up in a small 1000 population city.”
- Tami Erwin, Verizon: “5G isn’t just another G or a sequel to 4G...5G is so powerful that the best way to think about it is as a wholly new technology” (Mobile World Congress Los Angeles 2019)
Conclusion

• Developed nations face very similar challenges as we do here in the US

• There is lots we can learn from our international peers – The ITS WC is an excellent venue for this

• Rapidly advancing technology has and will continue to provide tools to maximize transportation safety and efficiency, but beware of “hype”

• GO VISIT SINGAPORE!
Thank You!

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