



MAVEN Expert Meeting

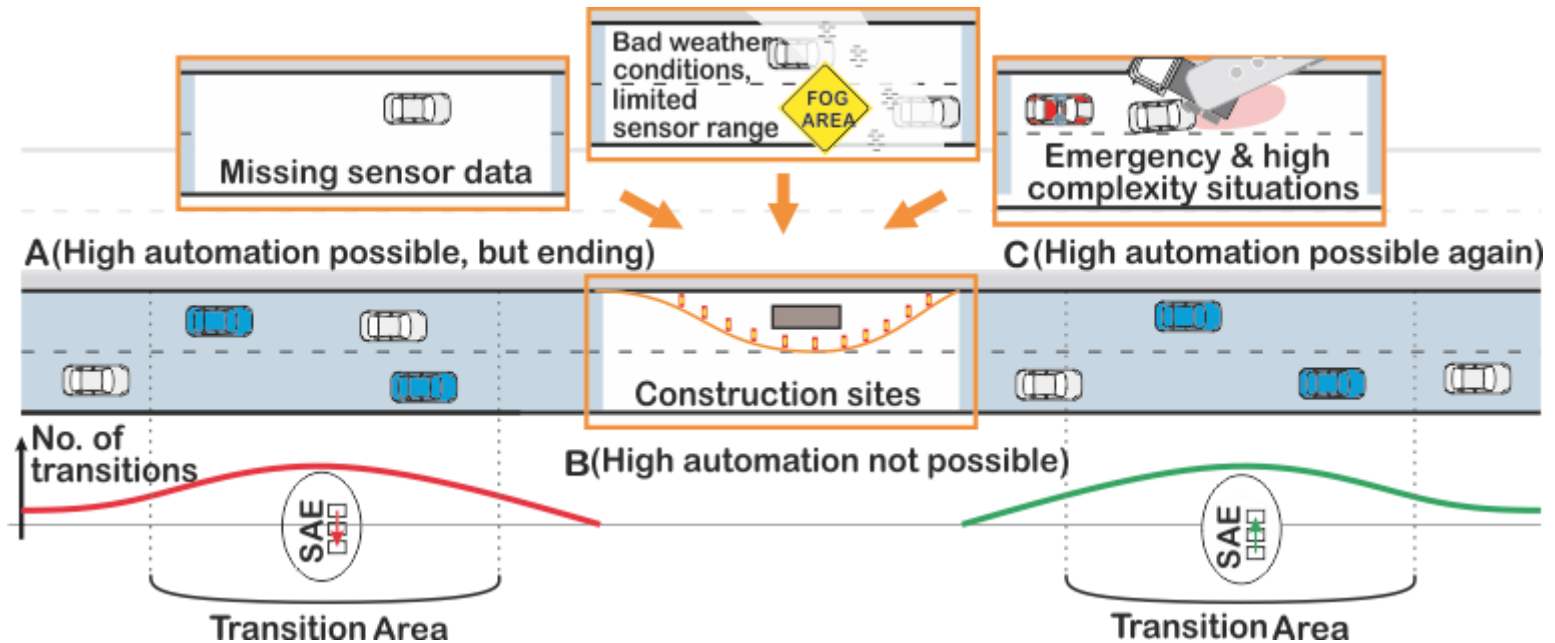
Julian Schindler

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723390



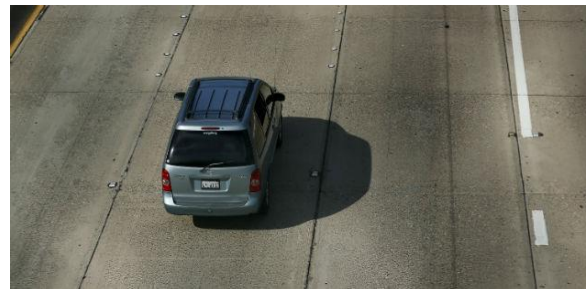
Transition Area



Transition Areas are areas on the road where many highly automated vehicles (blue) are changing their level of automation due to various reasons.

What if...

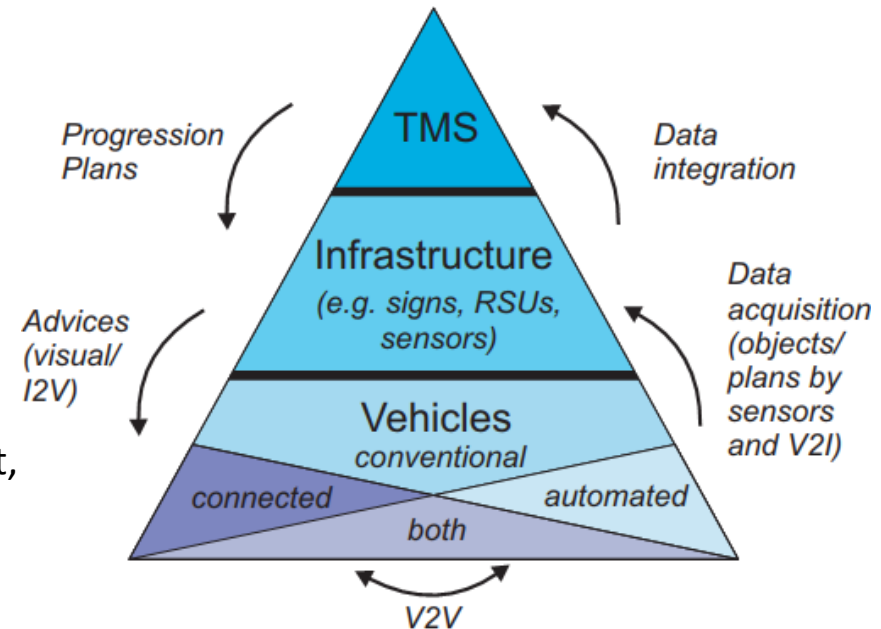
- ...your automated vehicle is not able to solve the situation ahead?



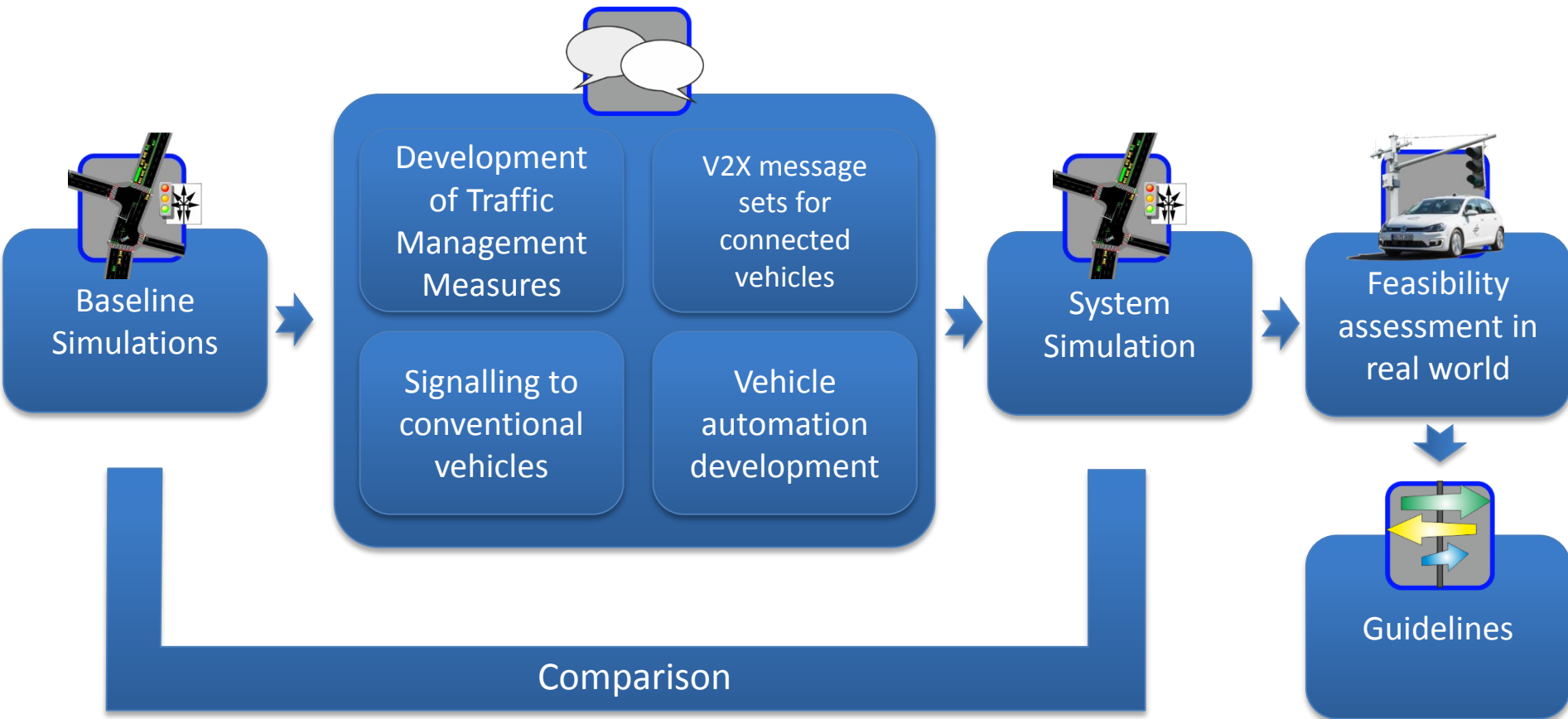
- ...this happens not to single vehicles only, but to several?
- ...it always happens on the same location?

Hierarchical Traffic Management

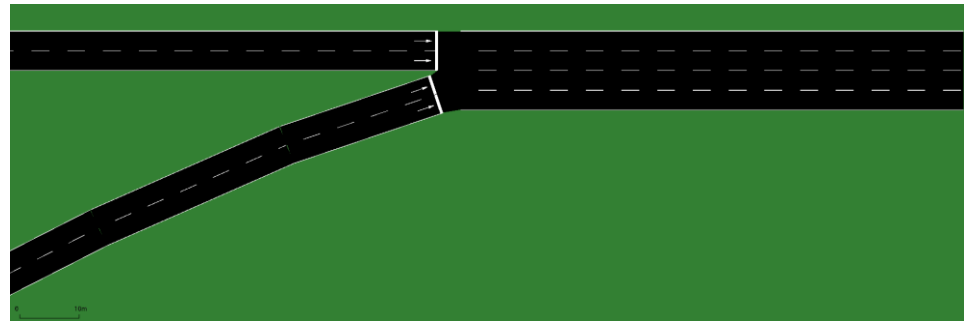
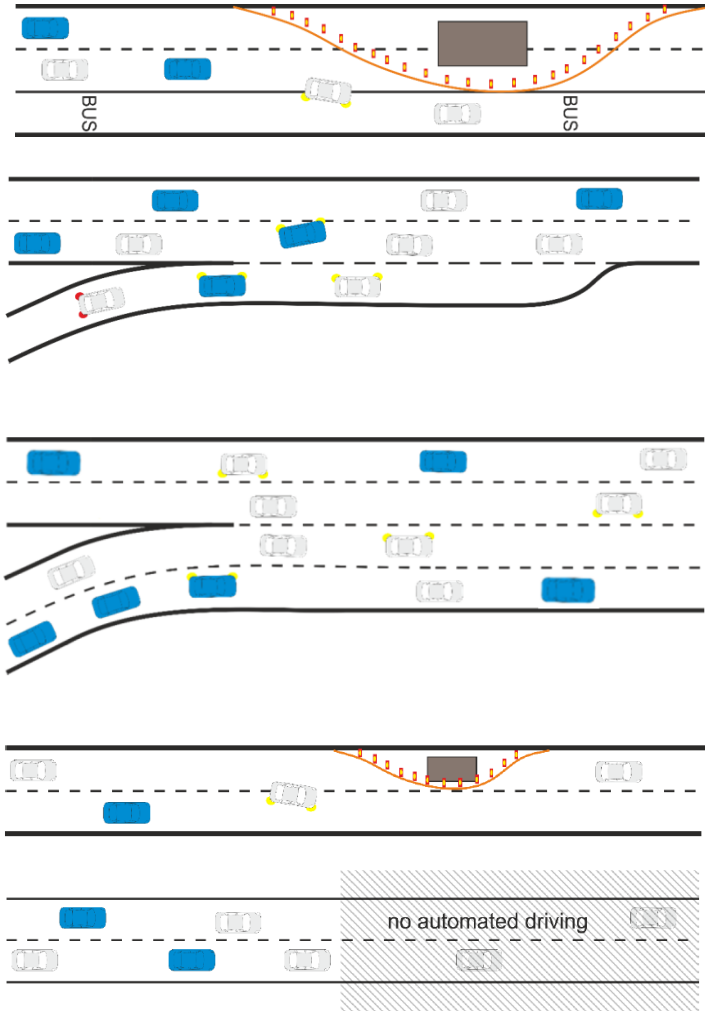
- For the transition performing connected automated vehicle:
 - Early advises
 - Advising stopping areas
 - Advising maneuvers or trajectories
 - Maximizing safety
- For the others:
 - How to avoid problems
 - Maximizing safety and efficiency
 - Individual (V2I) vs. General advices (Traffic light,



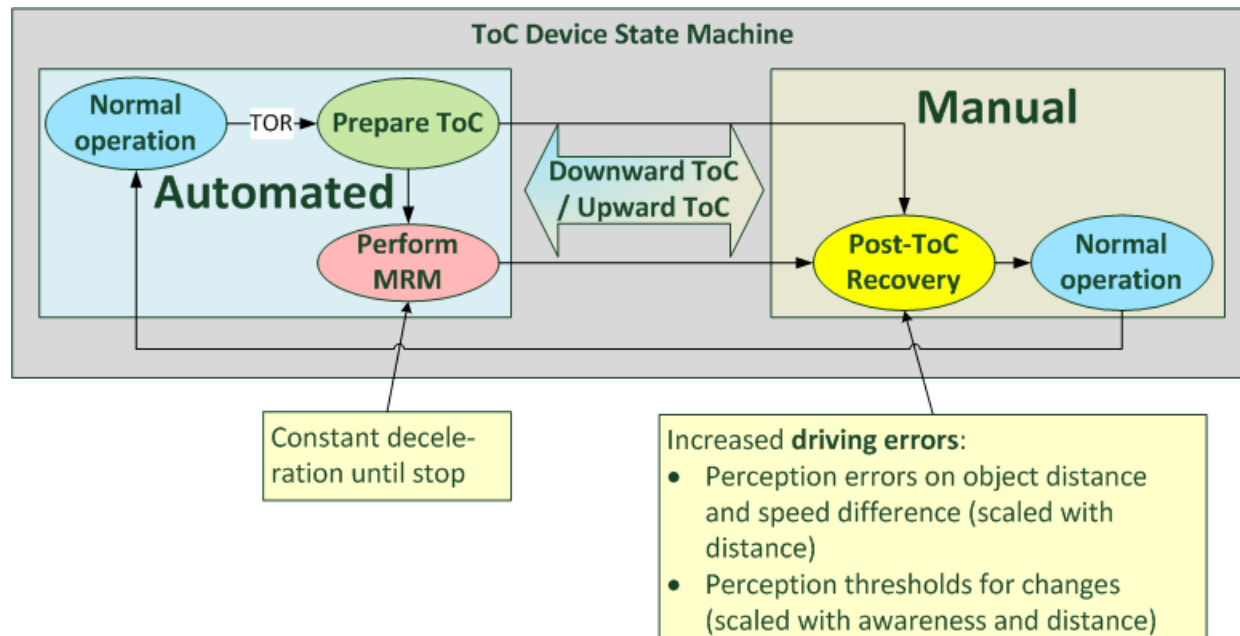
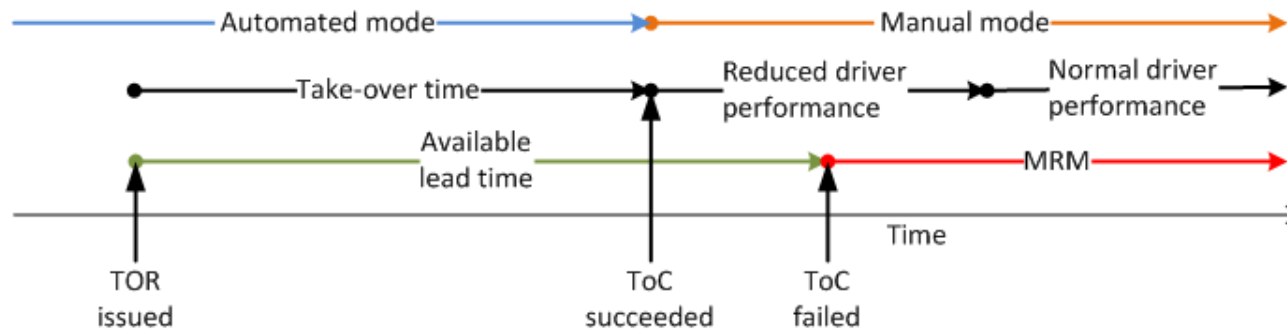
Procedure



Scenarios – and transfer to SUMO Simulation



Transitions of Control - Modelling



State-of-the-art of traffic management

(<https://www.transaid.eu/deliverables/>)

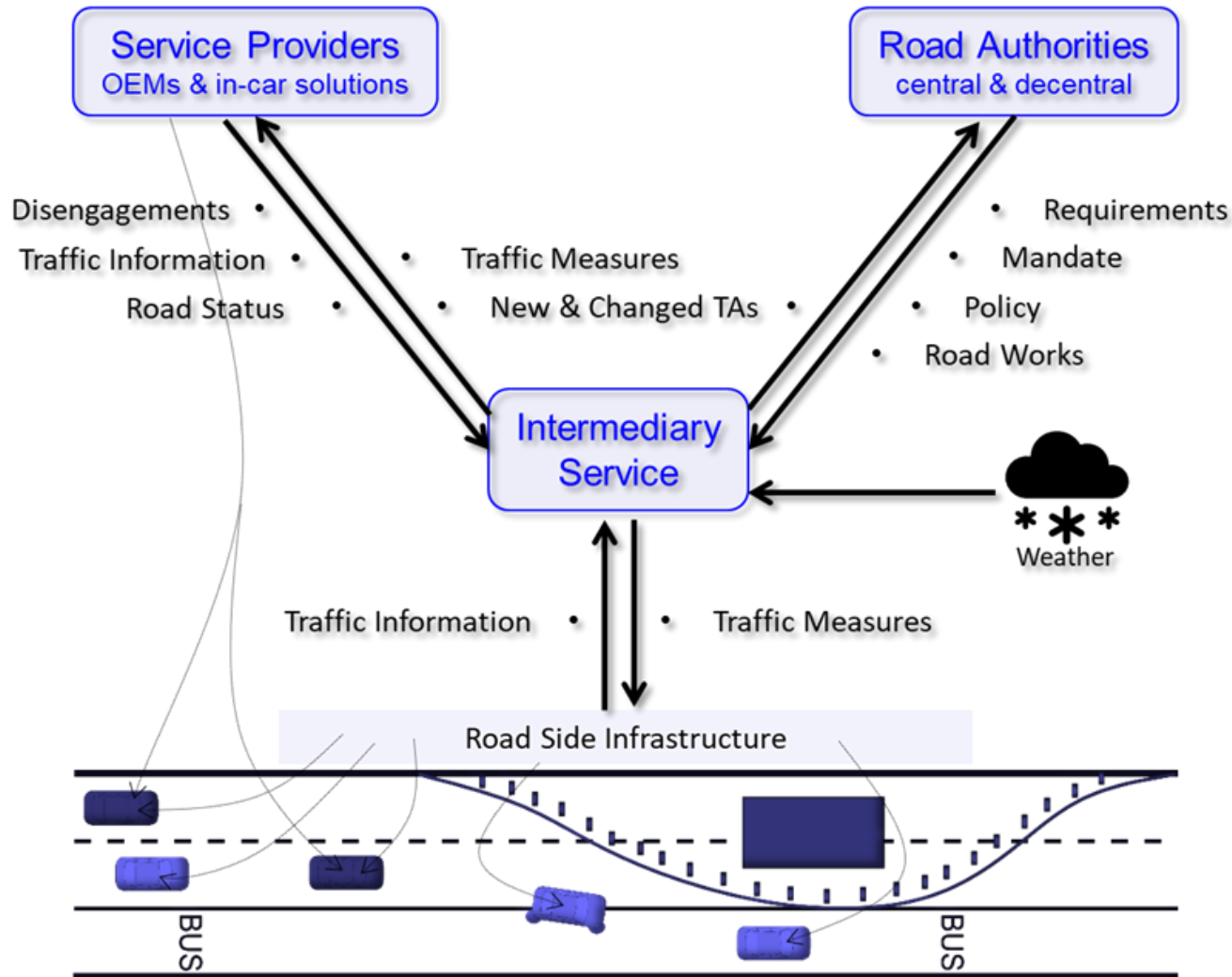
• Main topics

- General approaches
 - Coordinated network-wide traffic management
 - Using KPIs, hierarchical controls via layered architectures, TMaaS
- Cooperative systems
 - V2X / VANETs / C-ITS
- Artificial intelligence
 - Mostly machine learning techniques
 - Traffic light control and congestion / queue length predictions

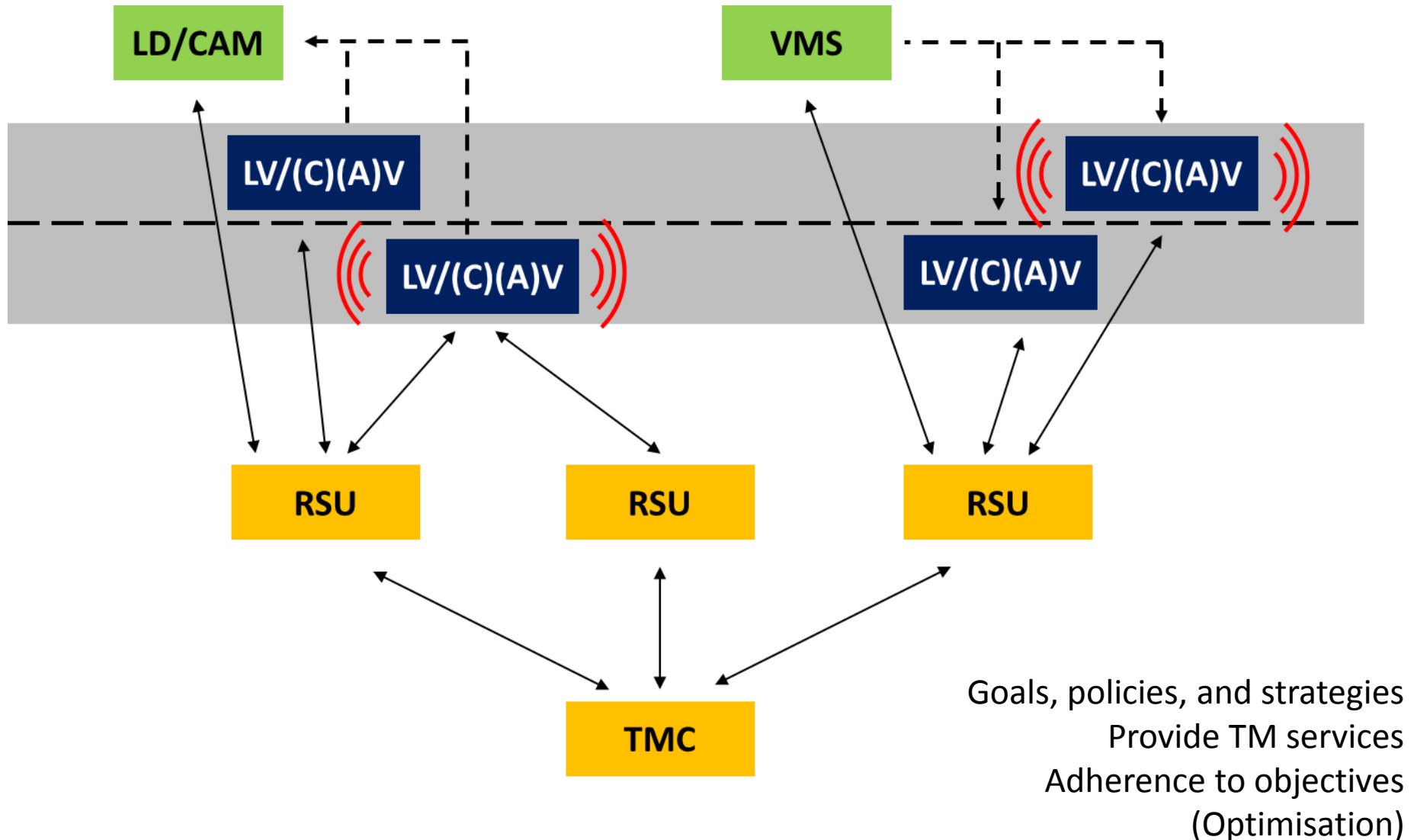
• Conclusion

- No (readily available) implementations of more advanced TM schemes
- Focus on solving partial problems with specific measures

TransAID as a third-party intermediary service provider



Hierarchical traffic management



Discussion/attention points

- How to reach all types of vehicles?
 - LVs → VMS, in-car HMI, ...
 - C(A)Vs → V2X
 - AVs → similar to LVs?
- Non-compliance of automated vehicles to traffic laws?
 - Off-ramp queue spillbacks cause hard shoulder lanes queues
 - Dynamic lane assignments and overtaking on the right
 - Different (non-official) lane markings at road works
- How to select the 'right' traffic management service at any given time?



Any questions?

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