

HIGHLY AUTOMATED DRIVING - HOW WE GET THERE

Reflections and challenges



Mohammad Ali – Chief Architect

FUTURE NETWORKED CAR SYMPOSIUM



THE CHALLENGE

Driver out of the loop (no engineer supervising)





AD vehicles must be able to handle all situations (and prove that it can!)

This puts unique requirements on the vehicle, its **software**, sensors, actuators and electrical architecture.

High impact on vehicle architecture

AD Vehicles require:

- Redundant sensing
- Redundant high-end control units
- Redundant brake system
- Redundant steering
- Redundant signaling paths
- Clustered power distribution
- Safety critical HMI



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Complete redesign of software – pixels to torque































How to verify?



Infeasible to verify by driving billions of kilometers!

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Kalra, Nidhi and Susan M. Paddock. Driving to Safety: How Many Miles of Driving Would It Take to Demonstrate Autonomous Vehicle Reliability?. Santa Monica, CA: RAND Corporation, 2016.

Efficient machinery required

















Evaluate















How to scale for continuous improvement?



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Make it real.