



**Actuaries
Institute**

AUTONOMOUS CARS – WHAT DOES THE FUTURE LOOK LIKE? – UPDATE 2016

I Drive



We Drive



Car Drives



First some back ground.

DAIMLER



Well...

Aug. Frizen
Riga

SHANKS
LONDON

Binder
Paris

Kaufmann
Basel

J.M.Mayer
Munich

Flandrau & Co.
New York

Müller
Thun

Passaglia
Firenze

B. Iselin
Glarus

Yves & Miller
New Haven



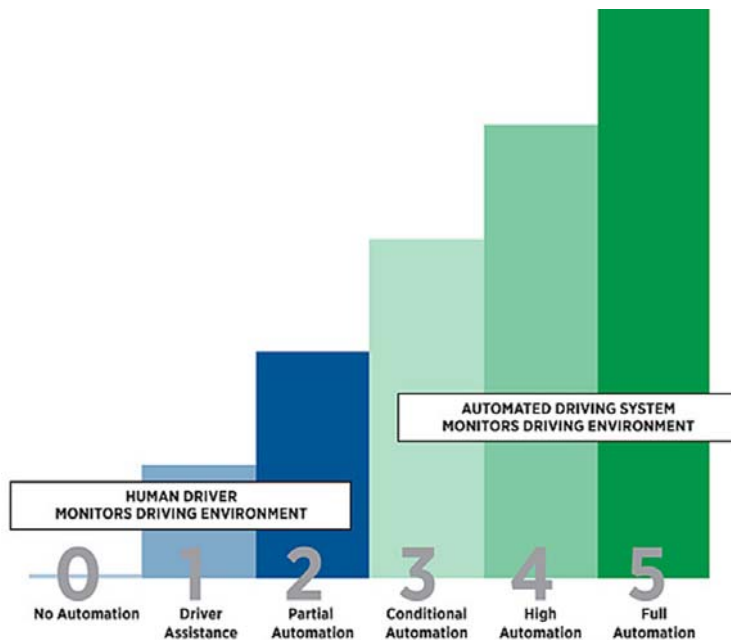
Some more back ground.

- Work started early last century – 20's, 30's, right through the decades
- DARPA really kicked things up a notch with the Grand Challenges from 2004
- Tier 1's join the race mid 00's
- Google goes public in May 2012 – Toyota Prius – Nevada
- Today AV's are a global race with Academia, Governments and Industry all racing ahead



The Automation levels.

- SAE-A proposed a set of automaton levels from 0 to 5
- OEM's suggested a 4 level rating system.
- Tesla a L2 or L3 – Auto Pilot
- Milton Keynes Pods – L4 / L5



LEVELS OF AUTOMATION

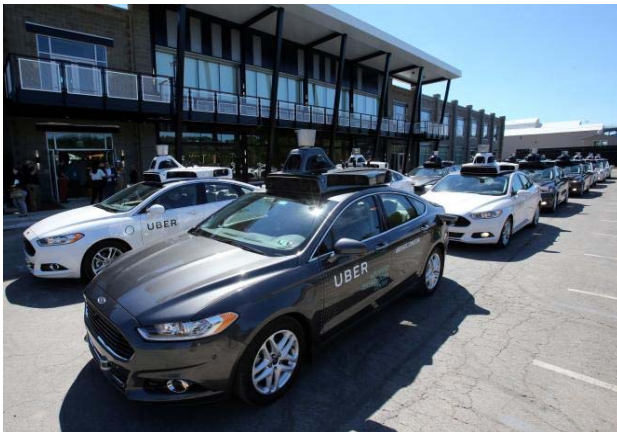


Emerging sectors

- Peloton – Huge backers – Platooning to self Drive
- OTTO – Self Drive
- Others



Some of the recent news.



- Apple rumored to be scaling back project Titan
- OTTO – Uber
- Uber – Pittsburgh
- Ford CEO: Affordable Driverless Cars to Be in Showrooms in 10 Years
- Delphi & Mobileye to build a self-driving system by 2019, CES 2017
- The employment market in the US for any Autonomous Related fields is super hot with bidding wars emerging for talent.

Some of the recent news.



- Tesla “improving” Auto Pilot
- Ford planning Affordable AV for the masses
- Michigan passes laws to allow vehicles without humans to operate on public roads
- French City Debuts world first driverless bus service
- Australian driverless bus demo in WA severely oversubscribed



Tesla – Auto Pilot

- Crashes and 1 death – So far
- DOT & NHTSA investigating
- Handbrake moment?
- Humans will exceed design limitations.



What's ahead for Insurers?



Some expectations –

- Size and Frequency may begin to decrease as we move through vehicles fitted with L3 > technology.
- Customers expectations on cost of insurance may present a challenging environment.

From 12 months ago-

- Will this be the end of personal ownership of vehicles?
– More say yes
- Will vehicles still need coverage – What could that be?
Or will Manufacturers provide coverage? More OEM's say yes
- Will accidents still occur, what might these look like?
Tesla an example?
- When will the legal liability issue be resolved?
Still the hot topic.

ADVI

|State of the nation (as at August 2016)

National

- Austroads projects on:
 - Road safety
 - Registration and licensing
 - Road infrastructure
- NTC review of Australian legislation
- Draft National ITS Strategy prepared for Ministerial Council
- Numerous trial projects not listed here that are in early stages of development
- IMOVE CRC bid

Western Australia

- RAC Intellibus trials

South Australia

- ADVI autonomous vehicle demonstration in November 2015 with multiple ADVI partners
- Legislation passed by SA Government
- Defence Science and Technology Group led research and development in most eastern states with ADVI partners such as AOS
- Autonomous vehicle integration with new city centre development sites (in development)

Northern Territory

- Interest in trials & deployment

Queensland

- EOI by TMR for connected vehicles
- TMR led automated vehicle trials projects with QUT and Bosch and others

New South Wales

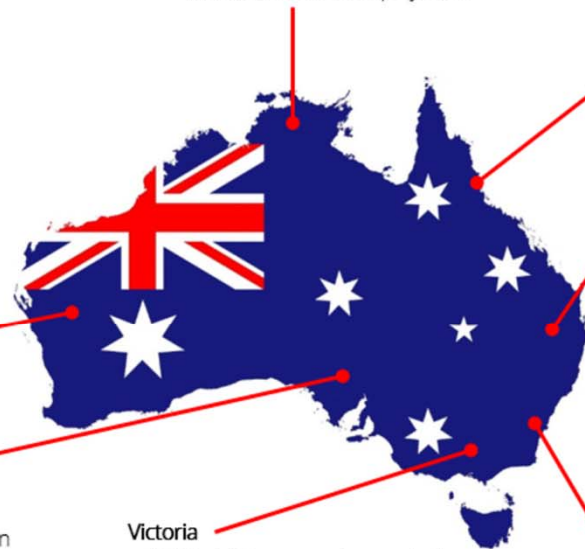
- NSW Premiers' Future Transport Initiative
- C-ITS Freight Priority Trial with Cohda
- CITI trial led by TfNSW
- Smart Transport Technology Centre coordinated by TfNSW
- Trials in development starting 1st quarter 2017 with multiple ADVI partners
- ACFR automated vehicle development
- UNSW automated vehicle simulation project supported by ARC and multiple ADVI partners

Australian Capital Territory

- Legislation changes under consideration

Victoria

- ITS World Congress demonstrations
- Bosch Automated Vehicle Research Centre
- ITS innovation road certification project underway with several ADVI partners (ARRB, ConnectEast, and others)



| ADVI PARTNERSHIP | 6 September 2016



Thank You.

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