

# Semi-Autonomous Vehicles – State of Play

April - 2021

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**STRATEGY ANALYTICS**

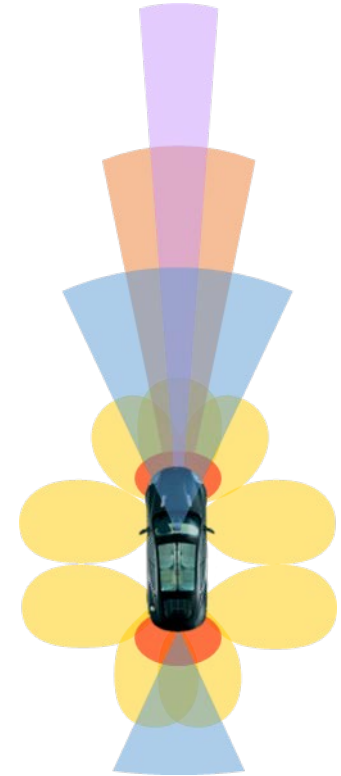


WASHINGTON STATE  
**AUTONOMOUS VEHICLE  
WORK GROUP**



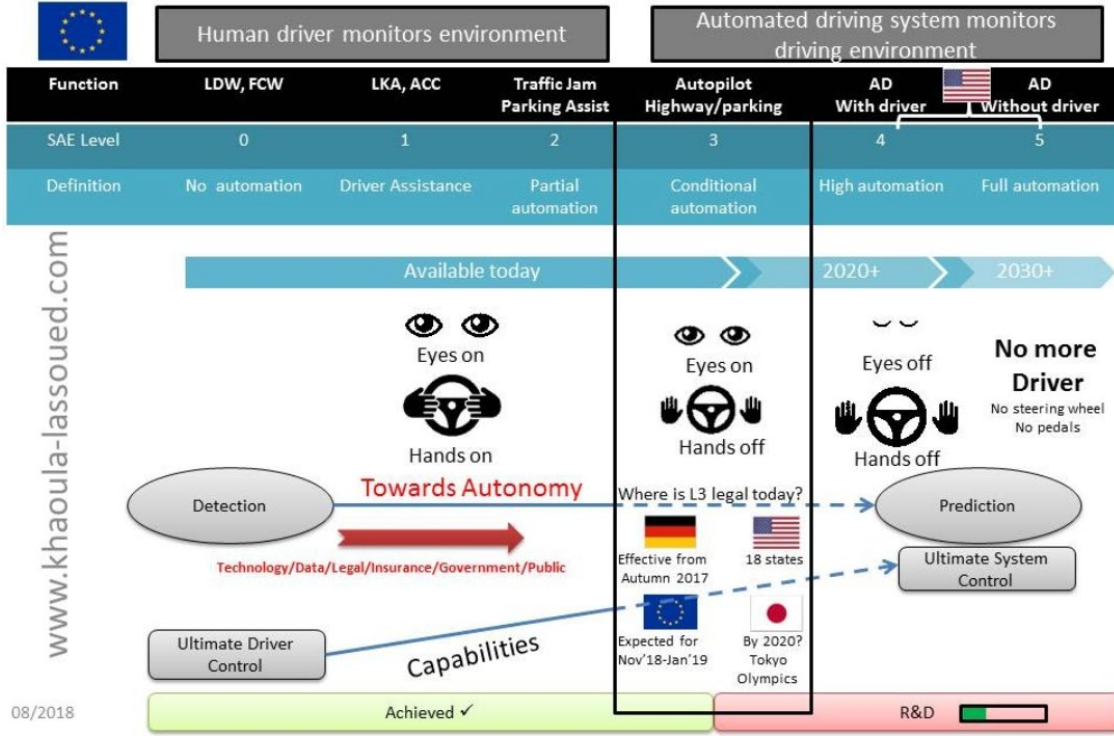
# TODAY'S DISCUSSION

- Current status and thinking of auto makers regarding Level 3 Automation
  - GM Cadillac Super Cruise
  - Tesla Autopilot & FSD
  - Nissan ProPilot
  - Toyota TeamMate
  - Honda Sensing Elite
  - Hyundai Highway Driving Assistant II
- Enabling regulation (UNECE WP.29, Euro-NCAP drive monitoring)
  - Potential consumer confusion – Existing consumer delight
- Reality – the onset of collaborative driving – something really new/different
- What is teleoperation? – Why is it necessary?



# WHAT WE'RE TALKING ABOUT

## ADAS/AD Roadmap SAE Definitions of levels of Autonomy



www.khaoula-lassoued.com

08/2018

## SAE 1016™ LEVELS OF DRIVING AUTOMATION



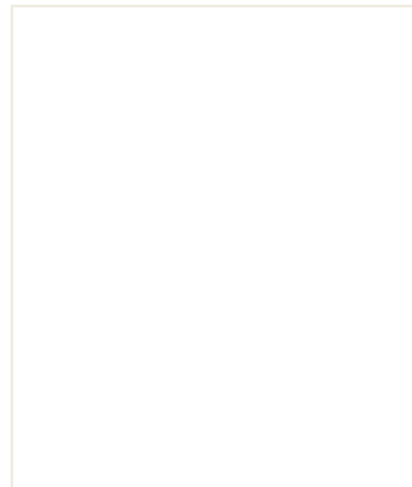
For a complete description, please download a free copy of SAE J3016: [https://www.sae.org/standards/content/J3016\\_201806/](https://www.sae.org/standards/content/J3016_201806/)

## GM's Super Cruise Self-Driving Tech Will Be on 22 Vehicles by 2023

The impressive hands-free system is currently only available in the Cadillac lineup.



BY ROBERTO BALDWIN FEB 6, 2020



## Nissan's ProPilot 2.0 advances, frustrates



HANS GREIMEL




Asia Editor, based in Tokyo, overseeing coverage from Japan, China and South Korea for Automotive News

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# TOYOTA TEAMMATE

## Toyota Launches LS and Mirai Equipped with "Advanced Drive" that Enables Drivers and Cars to Drive Together in Japan

Achieving human-centric driving assist in accordance with Toyota's ultimate goal of reducing fatalities from traffic accidents

[News Release](#), [Models](#), [Toyota](#), [Mirai](#), [Lexus](#), [LS](#), [Innovation](#), [CASE](#), [Autonomous/Automated](#), [Safety Technology](#)

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Toyota City, Japan, April 8, 2021—Toyota Motor Corporation (Toyota) seeks, as a mobility company, to enrich people's lives through mobility. As a part of this effort, Toyota has positioned safety as a top-priority issue in accordance with its ultimate goal of reducing fatalities from traffic accidents to zero and is developing safety and automated driving technologies to offer unrestricted mobility to all. Toyota will review once again what true safety is for customers and what customers believe is true convenience and will link the results of its inquiries to people's happiness.

The approach for achieving this is the Mobility Teammate Concept—an automated driving concept unique to Toyota that seeks to enhance communication between drivers and cars, enable them to reach out to each other for mutual assist, and enable coordinated driving similar to that by close friends. Rather than cars taking over driving from people and taking their



# HONDA SENSING ELITE

## Honda launches next generation Honda SENSING Elite safety system with Level 3 automated driving features in Japan

[RELEASE](#)[PHOTOS](#)[VIDEO](#)

March 4, 2021 – TOKYO, Japan

- *Honda launches new Honda SENSING® Elite safety system*
- *Fitted to Honda Legend Hybrid EX available for lease in Japan*
- *Honda SENSING Elite features 'Traffic Jam Pilot' function, first Level 3 automated technology to be approved by Japanese authorities*
- *Other features include 'Hands-off' and 'Emergency Stop Assist'*

Honda Motor Co., Ltd. announced that it will begin leasing in Japan of the Honda Legend EX equipped with Honda SENSING® Elite on March 5, 2021.

Striving to realize a collision-free society based on its global safety slogan, "Safety for Everyone," Honda has long been at the forefront of the research and development of safety technologies. The introduction of the Legend equipped with Honda SENSING Elite represents the next step forward in the area of advanced safety technology.

Honda SENSING Elite is a variation of Honda SENSING, a suite of advanced safety and driver-assistive technologies currently available on Honda vehicles around the world. The name "Elite" represents the outstanding and "elite" technologies included in this latest variation.

# HYUNDAI HIGHWAY DRIVING ASSISTANT II

**2021** TOP SAFETY PICK+

**2021 Genesis GV80**

MIDSIZE LUXURY SUV / 4-DOOR SUV







# FORD BLUECRUISE

## BlueCruise Coming later this year to the 2021 Ford F-150 and all-electric 2021 Mustang Mach-E

- Following 500,000 miles of development testing, Ford embarked on a 110,000-mile “Mother of All Road Trips” across the United States and Canada to prove out BlueCruise hands-free highway driving technology in a wide range of driving and weather conditions
- 2021 Ford F-150 and 2021 Mustang Mach-E vehicles equipped with the available Ford Co-Pilot360™ Active 2.0 Prep Package can receive BlueCruise later this year through over-the-air software update.
- BlueCruise will give drivers the comfort and confidence of hands-free driving on prequalified sections of divided highways called Hands-Free Blue Zones that make up more than 100,000 miles of North American roads
- Additional Ford vehicles to receive BlueCruise technology in coming years as Ford continues to add additional highways and deliver new hands-free driving capabilities to F-150, Mustang Mach-E and more

# TESLA AUTOPILOT, FSD





## The Regulation defines safety requirements for:

- Emergency Manoeuvres, in case of an imminent collision;
- Transition Demand, when the System asks the driver to take back control;
- Minimum Risk Manoeuvres - when the driver does not respond to a transition demand, in all situations the system shall minimise risks to safety of the vehicle occupants and other road users.

The Regulation includes the obligation for car manufacturers to introduce Driver Availability Recognition Systems. These systems control both the driver's presence (on the driver's seats with seat belt fastened) and the driver's availability to take back control (see details below).

It also introduces the obligation to equip the vehicle with a "black box", so called Data Storage System for Automated Driving (DSSAD), which will record when ALKS is activated (see details below).

The Regulation sets out clear performance-based requirements that must be met by car manufacturers before ALKS-equipped vehicles can be sold within countries mandating the Regulation. A number of major automotive manufacturers are expected to apply the Regulation upon entry into force. The Regulation includes provisions governing type approval, technical requirements, audit and reporting, and testing.

ALKS functionalities will also have to be compliant with the cybersecurity and software update requirements laid out in the two new UN Regulations adopted on the same day.

## ALKS activation criteria:

The driver is in the driver seat with safety belt fastened;

The driver is available to take over control of the driving task;

No failure affecting the safe operation or some functionality

DSSAD is operational;

Positive confirmation of system self-check; and

The vehicle is on roads where pedestrians and cyclists are prohibited

The environmental and infrastructural conditions allow the operation;

## Driver Availability Recognition System:

Driver presence;

Driver availability;

Actions taken when driver is deemed unavailable.

Criteria for deeming driver availability:

The driver deemed to be unavailable unless at least two availability

Actions taken when driver is deemed unavailable.

## Data Storage System for Automated Driving (DSSAD)

The system will record the following events:

Activation of the system;

Deactivation of the system (e.g. override on the steering wheel);

Transition Demand by the system (e.g. planned, unplanned etc.);

Reduction or suppression of driver input;

Emergency Manoeuvre;

...

## **Euro NCAP to Mandate Driver Monitoring Systems For Safety Ratings** **NTSB Recommends DMS For Semi-Autonomous Vehicles**

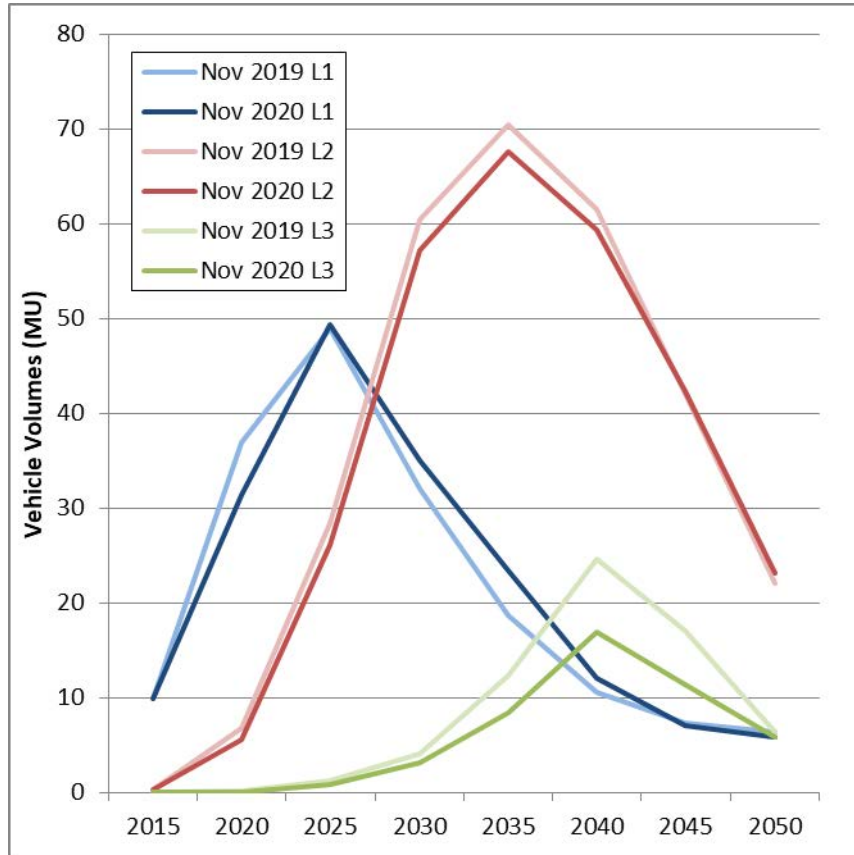
**24 October 2017**

Driver Monitoring Systems (DMS) technology is becoming a core element in the next generation of intelligent vehicles to augment drivers, enabling better and safer driving, as well as underpinning the safe migration to Highly Autonomous Vehicles (HAV).

Automotive and transport regulatory, rating and investigative bodies around the world have begun to issue new recommendations for DMS as an integral part of new vehicle designs including those with Advanced Driver Assistance Systems (ADAS). These bodies are recommending deployment of advancing DMS technology to deal with the deadly threat of driver distraction and fatigue, as well as mitigation of the risks associated with the migration toward HAV. Effective DMS is being identified as essential to a safe “co-pilot” functionality in HAVs to ensure that drivers remain sufficiently engaged and/or ready to re-assume control as and when required.



# COVID-19 AUTONOMOUS IMPACT – L2 & L3

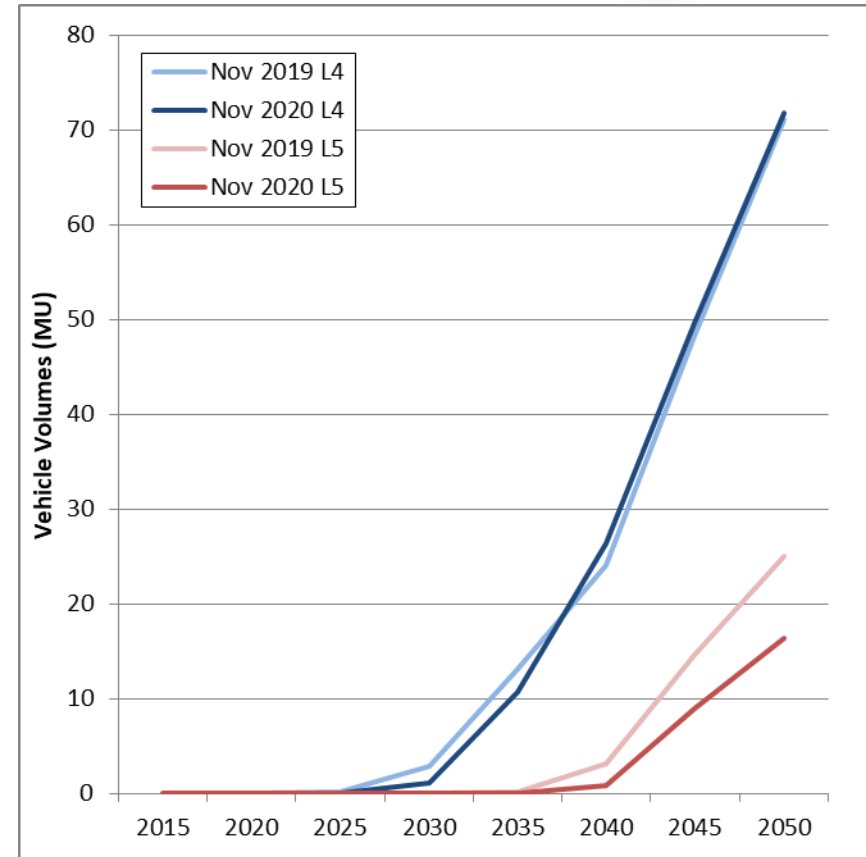


- L1 and L2 still expected to follow very similar paths post-COVID
  - ADAS mandates are not going away
  - Delays in L3/L4/L5 most likely to reappear as high functioning L2-type systems
- L3 demand also hit
  - Still much industry debate on how achievable L3 is
  - Much depends on implementation/HMI
- Remember that vehicle volumes have also been hit!



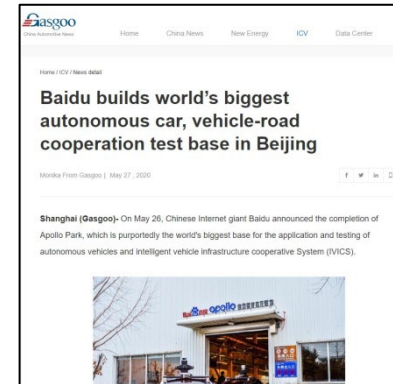
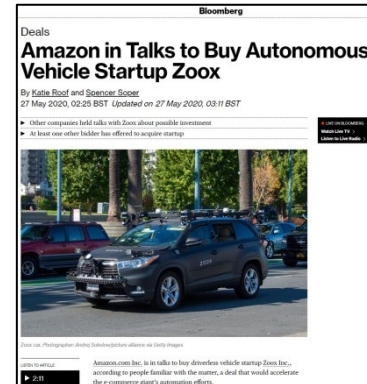
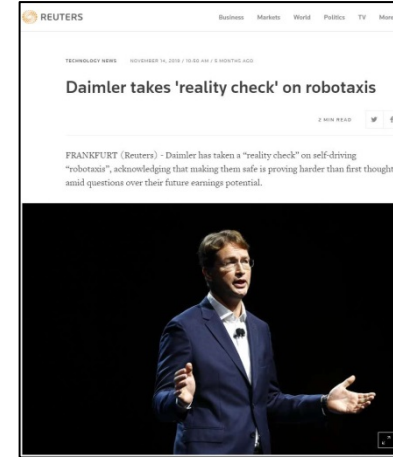
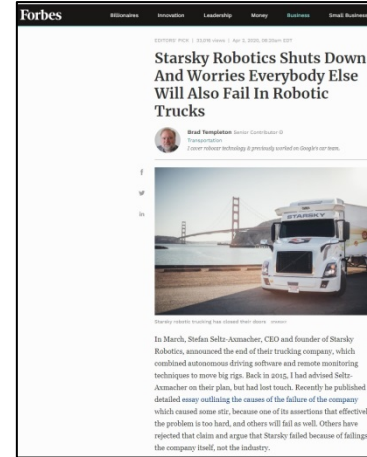
# COVID-19 AUTONOMOUS IMPACT – L4 & L5

- Significant delays now seen to overall L4 and L5 introduction
  - Path more closely follows that of the “delayed” scenario in November 2019 report
- Similar long-term demand for L4 is still achievable
  - Big challenges to “conventional” automotive industry from relative newcomers...



# ECO-SYSTEM CHANGES

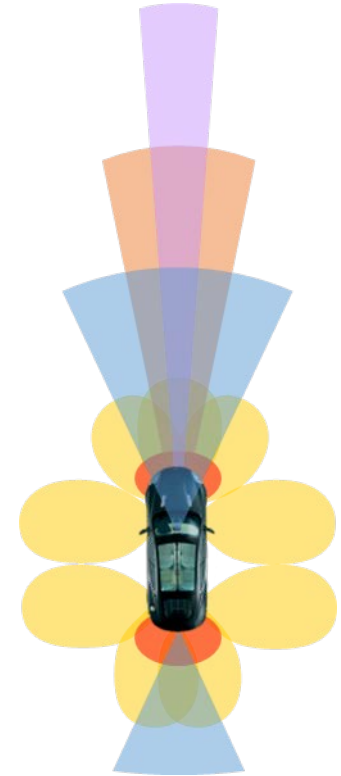
- Strong signs of **“reality”** breaking out at many companies, even before COVID-19
- Expect **many more** JVs / mergers / acquisitions and re-focusing – especially when it comes to **monetizing AV development** for ADAS
  - E.g. Volvo / Zenuity / Veoneer
  - Amazon / Zoox
- A falling car market and static ADAS market will put **severe pressure on investment** levels in 2020 and beyond
  - But big tech firms still have money...





# WHY IS EVERYONE TALKING L2+ ?

- Over the past 12 to 18 months, more and more industry players, from software and semiconductor players, through Tier 1s to automakers, have been stressing the importance of developing “L2+” or “L2 Max” solutions
- This emergence of L2+ is widely seen as one response to the industry’s failure to bring more highly automated solutions to market
- The formal **SAE J3016 definition of L2** is that:
  - You are driving whenever the driver support features are engaged – even if your feet are off the pedals and you are not steering
  - You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety
  - These features provide steering AND brake/acceleration support to the driver
- Currently deployed L2 typically only offers these features at either **highway speed** (as in Tesla Autopilot) or **parking speeds** (as in many automated parking solutions)
- The vision for so-called “L2+” is perceived by Strategy Analytics to be that the envelope of operation is increased to **potentially encompass every operational design domain**, from the beginning to the end of a journey
  - All parts of driving could be automated – but with the huge caveat that the driver still remains legally responsible for the safe maneuvering of the vehicle
- There is no standards-based or industry-agreed definition of L2+ !







# WHY IS STRATEGY ANALYTICS CONCERNED?



- So-called **L2+** now seen as a path-to-market by many:
  - **Optimist's view:** Let's make cars as safe and automated as possible under current legal frameworks
  - **Cynic's view:** We've spent all this money, how on earth are we going to get a return this side of 2030?
- There is a **real danger** that this is being pushed as technology-for-technology's-sake, and with insufficient understanding of the consumers' wants and needs
- How many consumers **will pay** for this functionality, which requires them to still be in legal control of the vehicle?
- Remember:
  - L2+ has no formal definition
  - In many cases it appears to be L3/L4-style technology (**and hence cost**), but with the driver still required to supervise on a continuous basis

# Any Questions?

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