

Bulletin | Nov 2020

# ADAS

Regulatory announcements, collaborative business model & funding fuel ADAS

## ADAS & AD in passenger vehicles

### What's inside ?

- To promote commercialization of Level 3 automated vehicles, Chinese & Japanese regulators are accessing the key safety standards for automated driving equipment
- Initiatives by California Public Utilities Commission (CPUC) and Waymo are exploring the possibility of the driverless vehicles in the near future
- Players are focusing to build next-generation autonomous driving architecture along with 5G connectivity capabilities
- Collaborative business models is gaining traction among players to offer state-of-the-art vision sensors suited for autonomous driving applications



HONDA  
The Power of Dreams



California  
Public Utilities  
Commission



WAYMO





MIRA



LUMINAR



Mobileye

## ADAS & AD in commercial vehicles

### What's inside ?

- Despite the pandemic, autonomous trucking technology is witnessing collaborative business models and funding to accelerate towards higher autonomy
- Players are focused on deploying advanced autonomous trucks, fast reliable connectivity and enhance safety systems at mine operations



tu simple



INCEPTIO  
TECHNOLOGY



Velodyne  
LiDAR



FORD OTOSAN



Plus




ORICA



Epiroc

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# THEMES AND KEY TAKEAWAYS IN Bulletin

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**Major developments in ADAS & AD in passenger vehicles**

02

**Spotlight: AEye's views on the importance of partnerships to manufacture IDAR sensors**

03

**Major developments in ADAS & AD in commercial vehicles**

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## Key topics covered in this scope



### Major developments in ADAS & AD in passenger vehicles

- Honda receives type designation for Level 3 automated driving in Japan
- China wants self-driving technology in half of new cars by 2025
- California allows companies to charge for autonomous car rides
- Xpeng Motors Announces its Next-Gen 5G-Powered Autonomous Driving Architecture
- Magna brings EyeQ5 front facing driver assistance camera systems to market



### Major developments in ADAS & AD in commercial vehicles

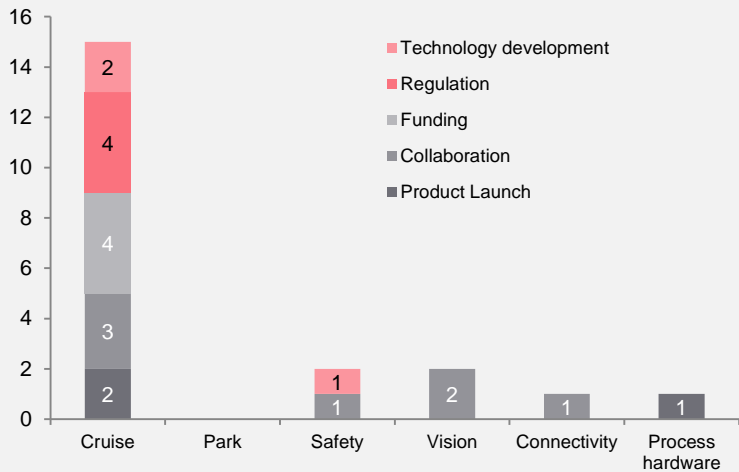
- Self-driving truck company TuSimple raises \$350M from US rail, retail and freight giants
- Velodyne LiDAR and Ford Otosan team up for development & testing of autonomous trucks
- Orica and Epiroc partner to deliver blast automation machine
- University of Pretoria's Vehicle Dynamics Group employs smart transportation technology for improved mine safety

## Key Takeaways

- To promote commercialization of Level 3 automated vehicles, regulators in China & Japan are accessing the key safety standards for automated driving equipment
- Regulators and players are working to build consumer confidence in the technological capabilities and safety measures of autonomous vehicles
- Players are focusing to build next-generation autonomous driving architecture along with 5G connectivity capabilities
- Collaborative business models & new product development is gaining traction among players to offer state-of-the art vision sensors
- Despite pandemic, investments fueled to accelerate autonomous capabilities for self-driving startups
- Players are focused on deploying advanced autonomous trucks, with advanced sensors and enhance safety systems
- New product developments & collaborative business models is gaining traction for operational efficiency & safety at mine operations

# Among 21 key industry developments, major buzz is seen in cruise, regulatory announcements, collaborative business models, and funding are the things to watch out

Summary of Key Activities in ADAS in Nov'20



LUMINAR



Velodyne LiDAR



## Cruise

18-Nov-20	<a href="#">Honda</a> receives type designation for Level 3 automated driving in Japan
22-Sep-20	<a href="#">Skoda's</a> New Autonomous Tech Has A Self-Driving Car Following A Human-Operated One
19-Nov-20	<a href="#">California</a> allows companies to charge for autonomous car rides
16-Nov-20	<a href="#">Jaguar Land Rover</a> develops smart city hub to test self-driving vehicle technology

## Process Hardware

20-Nov-20	<a href="#">Xpeng Motors</a> Announces its Next-Gen 5G-Powered Autonomous Driving Architecture
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## Vision

20-Nov-20	<a href="#">Luminar</a> teams with Intel's Mobileye unit on self-driving vehicles
13-Nov-20	<a href="#">Velodyne</a> Unveils a New Solid State LiDAR Sensor for Driver Assistance Systems & Autonomous Driving

## Connectivity

02-Nov-20	<a href="#">Vodafone</a> and HORIBA MIRA bring 5G to driverless cars
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## Safety

01-Nov-20	<a href="#">Waymo</a> reveals every collision details involving its self-driving cars in Phoenix
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# 01

## Major developments in autonomous passenger vehicles category



### Players in our coverage

Logos displayed in the 'Players in our coverage' section include: HONDA (The Power of Dreams), WAYMO, Verizon, LUMINAR, California Public Utilities Commission, X, MIRA (A HORIBA COMPANY), MOBILEYE, and MAGNA.



### What do we see happening

- Countries like China & Japan are encouraging local companies to build vehicles with partial self-driving technology
- Initiatives by California Public Utilities Commission (CPUC) and Waymo are exploring the possibility of the driverless vehicles in the near future
- Players are focusing to build next-generation autonomous driving architecture along with 5G connectivity capabilities
- Collaborative business models & new product development is gaining traction among players to offer state-of-the art vision sensors

## Countries like China & Japan are encouraging local companies to build vehicles with partial self-driving technology

To promote commercialization of Level 3 automated vehicles, regulators are accessing the key safety standards for automated driving equipment

18-Nov-2020

For regulatory activities across geographies please refer H1'20 TDD – ADAS >>

12-Nov-2020

### Honda receives type designation for Level 3 automated driving in Japan

**HONDA**  
The Power of Dreams



Disruptiveness : High  
Feasibility : Moderate  
Timeframe : Near Future  
Focus areas : Level 3

- Honda is planning to launch sales of a Honda Legend equipped with the newly approved automated driving equipment "Traffic Jam Pilot" before March 31, 2021
- This approval enables the automated driving system to drive the vehicle instead of the driver under certain conditions, such as in congested traffic on the expressway
- The car is priced for around 10 million yen (\$91,000), which would make it 40% more expensive than the standard model



#### Analyst Comment

Honda aims to mass-produce [Level 3](#) autonomous vehicles capable of performing driving tasks under certain conditions, but the driver would need to stand by to take control when needed. Under the deal with the Japanese government, the vehicle will include a data recorder to track its movements and external signage to make other road users aware of its autonomous capabilities. To promote commercialization of Level 3 automated vehicles, the Japanese Ministry of Land, Infrastructure, Transport and Tourism ([MLIT](#)) partially amended the Road Vehicle Act, and the revised act (Act No. 14 of 2019) took effect 1 April 2020. By this amendment, equipment for Level 3 automated driving was newly added to the list of motor vehicle equipment subject to the safety standards (defined in the Ministry of Transport Ordinance No.67, 1951).

Read this story

### China wants self-driving technology in half of new cars by 2025



Disruptiveness : High  
Feasibility : Moderate  
Timeframe : Near future  
Focus areas : Level 3 & above

- China aims to have vehicles with partial self-driving technology account for 50% of all new-auto sales by 2025, double its previous goal, as the country encourages local companies to pull ahead of the U.S. in the field
- New vehicles with "Level 2" or "Level 3" automation are to make up 70% of sales by 2030
- The new plan also seeks to have level 4 autonomous vehicles, which require no human input except in emergencies, on the market by 2025 and account for 20% of sales in 2030



#### Analyst Comment

On the regulatory side, with the commercialization of Level 3 vehicles on the horizon, China is considering easing rules as early as next year to allow self-driving vehicles on public roads. According to Chinese media, nearly 100 new models with [Level 2](#) technology reportedly were rolled out in the first nine months of 2020. China looks to expand use of high-level self-driving technology nationwide by 2035 and integrate such vehicles into so-called smart cities. Recently, [completely driverless cars](#) are being tested in China by AutoX up to the speed limit of 80km/hr. While U.S testing is [suspended](#), Chinese start-ups are bidding for [robotaxi licenses](#) and it has further accelerated during coronavirus. Other Chinese companies like [Baidu Appolo](#), [Didi Chuxing](#), [Pony.ai](#), [TuSimple](#), [WeRide](#) have already begun developing and carrying out trails and testing of self-driving technologies.

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# Initiatives by CPUC and Waymo are exploring the possibility of the driverless vehicles in the near future

Regulators and players are working to build consumer confidence in the technological capabilities and safety measures of autonomous vehicles

19-Nov-2020

For other robo-taxi plans by the players please refer H1'20 TDD – ADAS >>

01-Nov-2020

## California allows companies to charge for autonomous car rides



Disruptiveness : High  
 Feasibility : Moderate  
 Timeframe : Near Future  
 Focus areas : AMoD

- The California Public Utilities Commission (CPUC) approved two new programs, “**Drivered Autonomous Vehicle Deployment Program**” and the “**Driverless Autonomous Vehicle Deployment Program**,” to allow approved participants to offer passenger service, shared rides, and accepts monetary compensation for rides in autonomous vehicles
- The companies participating in the autonomous vehicle programs will have to submit a safety program and quarterly reports to the CPUC with detailed information about pickup and drop-off locations, accessibility and volume of wheelchair available rides, service amounts to disadvantaged communities, fuel type used, miles travelled, passenger kilometres travelled etc



### Analyst Comment

Regulators in [California](#) have given the go-ahead for self-driving taxis to charge riders for their services. The new programs aims to open up the driverless ride-share market and considering that autonomous vehicle technology is still very much a work in progress, chances are most of the California residents won't be getting into a [driverless](#) car any time soon. [California](#) has very strong rules for AV operators, among the most stringent in the US. It requires companies to obtain a permit for different types of testing, discloses AV accidents, lists the number of miles covered, and the disengagement numbers. Currently, [60 companies](#) have an active permit to test autonomous vehicles with a safety driver in California. [Five](#) companies; [Cruise](#), [Waymo](#), [Nuro](#), [Zoox](#) and [AutoX](#) have an additional approval that allows them to test fully driverless vehicles without human safety drivers behind the wheel on public roads

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## Waymo reveals every collision details involving its self-driving cars in Phoenix



Disruptiveness : High  
 Feasibility : Moderate  
 Timeframe : Near future  
 Focus areas : AMoD

- In its first report on its autonomous vehicle operations in Phoenix, Waymo said it was involved in 18 crashes and 29 near miss collisions during 2019 and first nine months of 2020
- These crashes included rear-enders, vehicle swipes, and even one incident when a Waymo vehicle was T-boned at an intersection by another car at nearly 40 mph
- The company said that no one was seriously injured and “nearly all” of the collisions were the fault of the other driver



### Analyst Comment

Waymo hopes that by publishing this data, policymakers, researchers, and even other companies may begin to take on the task of developing a universal framework. The intention will be to build public trust in automated vehicle technology, but it will also serve as a challenge to other autonomous vehicle competitors. All [47 incidents](#) were classified as S0 or S1 signifying no injury expected, and none of them involved in a single serious accident classified as S2 or S3. There is currently no federal rule requiring AV companies to submit information about their testing activities to the government. Earlier in September 2020, the [Automated Vehicle Safety Consortium \(AVSC\)](#) published [Data Collection for Automated Driving System-Dedicated Vehicles \(ADS-DVs\)](#) to Support Event Analysis. This best practice recommends 39 data elements to be collected for SAE Level 4 and Level 5 automated driving systems.

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## Players are focusing to build next-generation autonomous driving architecture along with 5G connectivity capabilities

Ultra-fast 5G networks allow connected cars to communicate with one another in near real-time and can react more quickly and navigate traffic efficiently

18-Nov-2020

For thematic research focus on V2X please refer Q1'20 Pulse – ADAS >>

02-Nov-2020

### Xpeng Motors Announces its Next-Gen 5G-Powered Autonomous Driving Architecture



Disruptiveness : High  
Feasibility : High  
Timeframe : Near Future  
Focus areas : V2X & Process hardware

- Xpeng announced its next-generation autonomous driving architecture 'XPILOT'
- XPILOT is offered in the company's new [P7 Smart Sedan](#), which is a strong competitor to the Tesla Model S in China
- The latest version of XPILOT will bring several autonomous driving features to Chinese customers for the first time, including Level 3 autonomous driving functions for highways, urban roads and automated parking



#### Analyst Comment

Electric vehicle startup [Xpeng Motors](#) is emerging as a strong competitor to Tesla in China with its advanced battery-powered vehicles. In addition to building advanced EVs, the company is focused on autonomous driving and vehicle connectivity. Further it has implemented LIDAR technology in [2021](#) production models. The new hardware architecture is equipped with a total of [32 sensors](#). It will also have enhanced integrated control unit, improved high precision positioning, enhanced perception fusion and increase computing power. In Nov 2019, Xpeng Motors has partnered with [China Unicom](#) on 5G application. Further the company has ambitious plans to accelerate EV production and has received funding of [\\$600M](#) from city government of Guangzhou in Sep 2020

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### Vodafone and HORIBA MIRA bring 5G to driverless cars



Disruptiveness : High  
Feasibility : High  
Timeframe : Near Future  
Focus areas : V2X & Process hardware

- HORIBA MIRA, an expert in engineering driverless technologies, is partnering with Vodafone to bring 5G to its Nuneaton HQ
- Unique 5G mobile private network will allow vehicles to communicate with each other and surrounding infrastructure, such as traffic signals
- The latest generation of mobile data networks promises ultra-low latency, which is crucial for autonomous vehicles to make real-time decisions on the road and communicate with surrounding infrastructure such as traffic lights



#### Analyst Comment

The investment will see Vodafone deploy and build a 4G and 5G mobile private network at the company's Nuneaton site, expanding its self-driving capabilities Vodafone will look to enhance performance of connected and driverless vehicles, including increasing the efficiency of communications between vehicles and surrounding infrastructure, such as traffic signals. This will enable new engineering, testing, verification and validation methods for HORIBA MIRA's client base. Horiba Mira is a member of the Automotive Council, the organization overseeing the UK's driverless vehicle strategy. The news follows the [recent announcement](#) that Vodafone has partnered with autonomous vehicle consortium, Midlands Future Mobility, [to deploy 5G on more than 300 miles of key test routes in the West Midlands](#).

Read this story



# Technological advancements in vision sensors is accelerating to offer production ready autonomous driving hardware

Collaborative business models & new product development is gaining traction among players to offer state-of-the art vision sensors

20-Nov-2020

For ADAS sensors upcoming launches in 2020-22 refer H1'20 TDD – ADAS >>

02-Dec-2020

## Luminar to supply LiDAR sensors for Mobileye's self-driving fleet



Disruptiveness : High  
Feasibility : High  
Timeframe : Near future  
Focus areas : Vision Sensors

- Luminar Technologies, the self-driving sensor startup said that it will supply laser-based LiDAR sensors to Intel Corp's Mobileye subsidiary for its test fleet of self-driving vehicles, which are being piloted in Dubai, Tel Aviv, Paris, China and Daegu City, South Korea
- Mobileye's ultimate aim is to expand its robotaxi operations and sell its self-driving stack (or AV series solution) to other companies



### Analyst Comment

[Luminar](#) said its LiDAR will be incorporated into Mobileye's self-driving hardware and software system, which also uses radar and surround-view cameras. Luminar's technology will be used to enable Mobileye's **TRUE REDUNDANCY** solution which is comprised of multiple self-contained sensor systems to enable safety and validation for Level 4 driving. Luminar had a development agreement with Mobileye for nearly two years now. This new agreement signals the next critical step for both companies. Luminar said it has development deals with a number of automakers, with [Volvo](#) among the first to use the company's LiDAR on self-driving vehicles in 2022. Recently, [Daimler](#) invested in Luminar to bring autonomous trucks on highways.

Read this story

## Magna brings EyeQ5 front facing driver assistance camera systems to market



Disruptiveness : High  
Feasibility : High  
Timeframe : Near future  
Focus areas : Vision Sensors

- The Magna Gen5 "one-box" solution is a Mobileye EyeQ5-based system – one of the industry's first where the forward-facing camera and related software are contained in a single assembly
- Benefits include lower cost, simplified installation on the assembly line, and the ability for the technology to be applied to a wider range of an automaker's lineup



### Analyst Comment

Magna says the new technology will reduce the cost of adding camera-based ADAS features, such as adaptive cruise control, automatic emergency braking and pedestrian detection, and thus make its way into more vehicles. Magna's new forward-facing camera includes the related software in one unit and which is based on Mobileye's EyeQ5 **system-on-chip** (SoC) device. The company also claims that it will perform 50% better than Magna's system that used Mobileye's **EyeQ4 SoC**. The camera features a 120-degree, 8-megapixel optical path. The improved vision will enable features required to pass Euro NCAP 2022 and 2024 safety tests as well as Level 2-plus autonomous driving functions such as Magna's Highway Pilot and Highway Chauffeur technologies.

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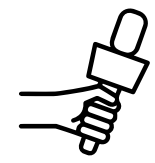
# 02

## Spotlight



Spotlight: AEye's views on the importance of partnerships to manufacture IDAR sensors

# INSIDER TV



We recently sat down with AEye's co-founder and VP of Strategy & Partnerships to discuss their IDAR technology and the future of Lidar for passenger cars, commercial vehicles and AMoD

## AEye's views on the importance of partnerships to manufacture IDAR sensors (1/2)

**AEye** : “ AEye develops advanced vision hardware, software, and algorithms that act as the eyes and visual cortex of autonomous vehicles. Its history dates back to 2013 in developing aerospace and defense-related intelligent sensors. It has a unique product called IDAR as opposed to LIDAR, IDAR stands for Intelligent detection and ranging. AEye leverages partnerships and distribution channels through its unique business model to solve issues about the passive sensors ”

**Can you please help us understand market focus of AEye for Passenger vehicle, AMOD vs Mining & Marine application?**

**AEye** : “ We have one common technology architecture that is scalable to meet different market needs. Our unique proposition is scalable software as opposed to hardware. 4SightM and 4SightA are having relatively the same platforms. We have about 75% automotive and 25% other applications as our focus for our product application but there is no reason to target another application market if it starts expanding rapidly. There are lots of benefits by leveraging automotive supply-chain, automotive reliability, and leveraging the same architecture to meet different needs. So, it's all harmonious ”

**How partnership can benefit you in terms of robustness in the perception of the product?**

**AEye** : “ The partnership strategy is key for our success because players across the value chain like OEMs, Tier-1, and Tier-2 have already established value chain based on their 100s of years of experience. The goal is to fit in this model by recreating manufacturing excellence by these Tier-1 players and leverage their expertise which helps us to reduce the CAPEX-cost and helps us to focus on designing and software. We are also announcing a new partnership soon apart from LG, Hella, and Tata Elxsi. The criterion for our tier-1 partnerships are Geographical relevance, Technology proficiency, and co-development possibilities in improving upon existing product ”

**Have you been affected by COVID-19 and what do you expect from the industry and company in the next 12 months?**

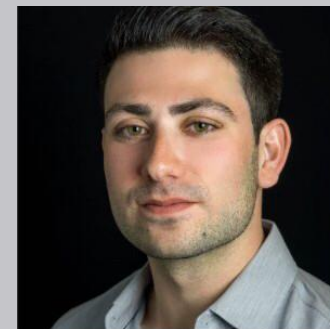
**AEye** : “ If anyone says that they were not affected by COVID initially, then they are misinterpreting of exactly what happened. Markets are doing good so we hope that its V-shaped recovery trajectory than recession. We think that automotive in particular is a very forward-thinking industry. They think on cycles for 3-20 years. The reason is because of the sourcing process. For the product of 2024, they will start sourcing from 2020. So, they can't think reactive to the market except for current production. So, a combination of the fact of the need for safety function and the longer cycle of purchasing by OEMs and tier-1s will phase-out the impact of COVID ”

**How you can achieve solid-state lidar performance by leveraging the cost?**

**AEye** : “ The solid-state lidar doesn't have to be non-moving. It has to be reliable in extreme shock, vibration, and temperature environments in a car. Solid-state lidar enables us to have a cost profile over time and volume because it can scale very well. Our solid-state lidar is simple and reliable with 1 scanner, 1 laser, 1 receiver, and 1 SOC which helps us to keep the power down, bandwidth down, heat dissipation down and ultimately cost down as a function of all ”

**What are the key challenges by carmakers for integrating Lidar into the body of the car?**

**AEye** : “ It depends on the customer, for some its cost, for some its performance and everyone, of course, the quality. Performance is the priority. Detection and acquisition of small objects are critical and have a big difference. It can be brick on a road or a tire tread on a road. Those are some of the big issues for auto-pilot coming from the customer. So, to detect that small object and perform some kind of maneuver whether to stop or change the course of the vehicle or run-over the object is critical. Our lidar can not only detect the pedestrian but also classify it. Cost depends on whether your architecture is scalable, is it solid-state or how good is your distribution channel and partnership to meet the broader market



Jordan Greene  
VP of Strategy & Partnerships at AEye  
LinkedIn: <https://www.linkedin.com/in/jordan-greene-17614030>

“We have about 75% automotive and 25% other applications as our focus for our product application but there is no reason to target another application market if it starts expanding rapidly”

## AEye's views on the importance of partnerships to manufacture IDAR sensors (2/2)

**AEye** : “ AEye develops advanced vision hardware, software, and algorithms that act as the eyes and visual cortex of autonomous vehicles. Its history dates back to 2013 in developing aerospace and defense-related intelligent sensors. It has a unique product called IDAR as opposed to LIDAR, IDAR stands for Intelligent detection and ranging. AEye leverages partnerships and distribution channels through its unique business model to solve issues about the passive sensors ”

**What are your plans to scale up going forward, can you share some critical directions for the next steps of the company?**

**AEye** : “ The decision we had earlier is that we are not going to manufacture ourselves. There are two primary reasons for it. 1. LIDAR manufacturing is a very capital intensive business. 2. To compete with Tier-1s around the globe like Bosch, Continental, Denso, Aptiv and others, is very difficult to come close to their quality, reliability and manufacturing process excellence. AEye aims to leverage the harmonious relationship by offering unique design and software to Tier1s and Tier2s which will allow us to get into the vehicles, and will help us to stay focused with a high margin and low investment business model”

**Where do you see the cost of ADAS & robotaxi technologies evolving and how it will impact on the software business model?**

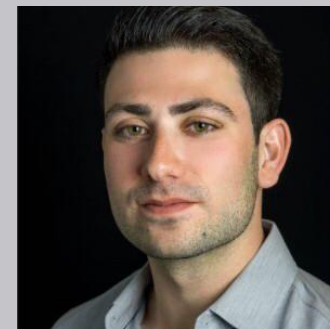
**AEye** : “ We have the unique ability to plug and play the ADAS market, the mobility market and others by using fundamentally the same product and share the common components which is very important distinction from our competitors. Other players have to create newer technologies, whereas we have the ability to actually scale our product using the software for various different markets. Going down the line we will be able to leverage the supply chain of both the ADAS and robotaxi programs, through our products. We will be able to get reliability, cost and ability to take the same system and reconfigure with the software. The customers who are having both the ADAS and robotaxi program, which are lot in the market, they have the benefit that we have one architecture that can be scaled further to different programs and is really valuable to them”

**Lot of academia, carmakers and debating on LIDARless technology for certain applications ? What are your thoughts ?**

**AEye** : “ Our background as a company – we are not necessarily the LIDAR advocates. We call ourselves as IDAR. We have the optional integrated camera, boresight aligned with agile LIDAR to generate true color point clouds. I am never going to make the case that LIDAR is better than cameras or radars, I am going to say both are harmonious. There are benefits and weaknesses to each one. There are certain applications which may not consider LIDAR say L2 or L1. When IDAR becomes pivotal is when we are trying to increase the functionality to L3 or L4. Once players start exploring L3 and L4, they will see absolute need for deterministic sensor that detects hard surfaces and measures them in the space ”

**What are your views on further consolidation of startups, level of competition to achieve autonomous capabilities ?**

**AEye** : “ Your numbers for LIDAR companies wherein you had collected information and disseminated data is 98, which is a large number. Very unlikely these 98 companies winning the market together, so it will either consolidation in form of acquisition, merger and so on or the companies will go out of the business. In my opinion there will be 4 to 5 companies that will end up winning. There are different types of LIDARs – no two LIDARs are the same, there are different use cases such as flash, short-range, scanning, FMCW and others. Probably little under 10 companies are relevant now in ADAS and mobility space which will further scale down to 5 and so on depending upon the requirements and solutions addressing those cases.”



Jordan Greene  
VP of Strategy & Partnerships at AEye  
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*“We have the unique ability to plug and play the ADAS market, the mobility market and others by having fundamentally the same product and share the common components which is very important distinction from our competitors”*

## 03

# Major developments in autonomous commercial vehicles category

## Players in our coverage










## What do we see happening

- Despite pandemic, investments fueled to accelerate autonomous capabilities for self-driving startups
- Collaborative business models is gaining traction for improving operational efficiency & safety in autonomous trucks
- New product developments & collaborative business models is gaining traction for operational efficiency & safety at mine operations

## Despite pandemic, investments fueled to accelerate autonomous capabilities for self-driving startups

Chinese players are collaborating for mass adoption of last mile of delivery of goods by autonomous commercial vehicles, with full adoption coming later

23 Nov-2020

To know more about recent funding in autonomous commercial vehicles refer H1'20 TDD – ADAS >>

09-Nov-2020

### Self-driving truck company TuSimple raises \$350M from US rail, retail and freight giants




Disruptiveness : High  
Feasibility : High  
Timeframe : Near future  
Focus areas : Autonomous CV

- Self-driving trucking company TuSimple reportedly has raised about \$350 million in a Series E round
- The funding was raised by consulting and investment firm VectoIQ, helmed by Steve Girsky, and includes additional investment from current partners Navistar and Volkswagen's Traton, a freight rail operator and grocery retailer



#### Analyst Comment

TuSimple has raised \$648 million since its founding in 2015 and has said repeatedly that it will put a fully autonomous truck on the road in 2021. It has made a series of announcements over the past six months advancing commercialization and deployment of its [Class 8](#) autonomous trucks. The company launched an autonomous freight network in July aimed at scaling deployment, and opened a hub in Dallas and formed partnerships with OEMs [Navistar](#) and the [Traton](#). Other recent developments include partnerships with transportation providers U.S. [Xpress](#) and [Penske Truck Leasing](#), and Berkshire Hathaway-owned grocery and food-service distributor [McLane](#).

Read this story 

### Chinese autonomous truck startup Inceptio raises \$120M from CATL, others for Level 3 autonomous trucks




Disruptiveness : High  
Feasibility : High  
Timeframe : Near future  
Focus areas : Autonomous CV

- China's Inceptio Technology, a startup developing self-driving trucks, has raised \$120 million in its latest funding led by top Chinese electric vehicle battery maker CATL
- The funding comes six months after a \$100 million funding in April. Logistics firm GLP, Inceptio's key strategic investor G7 and Nio Capital also invested in the new funding
- CATL, which supplies Volkswagen and Tesla, is working with truck makers to develop a business model for electric trucks using its battery-swapping technologies



#### Analyst Comment

Inceptio is focusing on Level 3 autonomous technologies, and has partnerships with [Dongfeng Motor](#) and Sinotruk Hong Kong Ltd. Inceptio is responsible for developing the full stack of autonomous software and the on-board computing platform, while the OEMs focused on engineering the drive-by-wire chassis platform. Earlier this year, [Inceptio](#) said it expects to begin production of autonomous trucks by the end of 2021. It plans to begin operating a trucking network using its proprietary technology in [2022](#). The truck manufacturing industry is expected to be an earlier adopter of autonomous driving technology than passenger vehicle manufacturing as driving on motorways is more predictable than on busy city streets.

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## Collaborative business models is gaining traction for improving operational efficiency & safety in autonomous trucks

Players are focused on deploying advanced autonomous trucks, with advanced sensors and enhance safety systems

02-Dec-2020

To know more about collaborative business model in commercial vehicles refer H1'20 TDD – ADAS >>>

10-Nov-2020

### Velodyne LiDAR and Ford Otosan team up for development & testing of autonomous trucks

Velodyne  
LiDAR



Disruptiveness : High  
Feasibility : Moderate  
Timeframe : Near future  
Focus areas : Autonomous CV

FORD OTOSAN

- Velodyne LiDAR has announced that it is collaborating with Ford Otosan on product development and testing of autonomous heavy commercial trucks
- Ford Otosan is testing and planning to use Velodyne Velarray H800 LiDAR sensors to enable safe navigation and collision avoidance in next-generation vehicles



#### Analyst Comment

Ford Otosan is already using Velodyne's [Alpha Prime](#) LiDAR sensors, which provide 360° surround-view perception technology to support autonomous mobility. Now with the addition of Velarray H800 it will help Ford Otosan to create superior autonomous driving technology. The [H800](#)'s long-range combined with a wide horizontal field of view (FOV) detects objects early enough to enable safe stopping distances in urban driving scenarios and collision avoidance on curves and turns. The H800's range enables advancements in autonomy and ADAS, from [Level 2 to Level 5](#). With a target price of [less than \\$500](#), Velodyne aims for mass production levels with broader adoption in consumer and commercial vehicle markets.

Read this story

### Plus, FAW Self-Driving Truck Passes Certification Test in China

Plus



Disruptiveness : High  
Feasibility : Moderate  
Timeframe : Near future  
Focus areas : Autonomous CV

- Plus.ai, the leading provider of self-driving truck technology, announced that China's intelligent truck, FAW J7+, powered by the self-driving technology of Plus, has successfully passed the national certification test at the China Automotive Technology & Research Center (CATARC)
- FAW J7+ has met all key safety and performance metrics to start on-road operation



#### Analyst Comment

Plus says it is the first independent certification of an automated truck in China, and called certification a critical step toward proving the commercial readiness its self-driving technology. The [certification](#) test that the FAW J7+ automated truck passed was based on China's strict highway and transportation standards and rules, including JT/T 883-2014, GB/T 26773-2011, and GB/T 33577-2017. The jointly developed FAW J7+ intelligent truck will start mass production in the first half year of 2021. Plus entered into a strategic partnership with [FAW Jiefang](#) in 2018 and joined its "Colombo Smart Transportation" program. A year later, Plus formed a joint venture with FAW to focus on the development of automated trucks. Earlier this year, Plus announced plans to operate its self-driving trucks in all continental U.S. states that permit testing.

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## New product developments & collaborative business models is gaining traction for operational efficiency & safety

Players are focused on deploying advanced autonomous trucks, fast reliable connectivity and enhance safety systems at mine operations

23-Nov-2020

To know more about ADAS in Mining refer Q3'20 Pulse >>>

04-Dec-2020

### Orica and Epiroc partner to deliver blast automation machine



Disruptiveness : High  
Feasibility : Moderate  
Timeframe : Near future  
Focus areas : Autonomous mining

- Orica and Epiroc have begun commissioning a machine that will allow an operator to execute the entire underground hard rock development cycle without ever leaving its cab
- As mines go deeper and ore bodies become more remote the case for blasting automation becomes clearer



#### Analyst Comment

The [partnership](#) will bring together the deep expertise and experience of two global industry leaders to address the growing demand from customers mining in increasingly more hazardous and challenging underground operations. The first prototype system is expected in 2020, with the first commercially available systems to enter service in [2021](#). Called [Avatel](#), the twin boom, semi-autonomous and fully mechanized development charging solution now being commissioned is built on the foundation of Epiroc's Boomer M2 carrier. It is designed to allow development operations to be carried out without a charge crew having to be exposed at the face. Avatel is equipped with the most sophisticated version of [Epiroc's Rig Control System](#). Orica had announced in November 2019 it entered a partnership with Epiroc to develop a semi-automated explosives delivery system.

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### UP's Vehicle Dynamics Group employs smart transportation technology for improved mine safety



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Disruptiveness : High  
Feasibility : Moderate  
Timeframe : Immediate  
Focus areas : Autonomous mining

- An engineering team at the University of Pretoria (UP) has pioneered an underground procedure which tests the performance of collision-avoidance systems (CAS) in an effort to improve the safety of workers on mines by reducing unwanted interaction between vehicles and pedestrians
- The Vehicle Dynamics Group (VDG) is a research unit at UP's Department of Mechanical and Aeronautical Engineering that is actively involved in the South Africa and international mining industry



#### Analyst Comment

The [VDG](#) has aided in the formulation of industry guidelines to analyze and improve the readiness level of collision avoidance offerings on the market, and has developed a standard testing procedure to evaluate both surface and underground collision-management systems based on guidelines set out by the Minerals Council South Africa. With the VDG's recent development of an [underground testing](#) system, it is anticipated that the technology readiness of current underground collision avoidance system offerings will be even more improved. The newly developed underground measurement system, complete with [LiDAR](#), cameras and automotive radars. Mining machines are becoming smarter by the day, with smart, connected vehicles promising to be the mining method of the future.

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