PTOLEMUS
Consulting Group

2017 EDITION

THE AUTONOMOUS VEHICLE GLOBAL STUDY

Free abstract

The most thorough report on driverless vehicles

A perfect storm ready to wipe out risk

ABOUT PTOLEMUS CONSULTING GROUP

from Ptolemy, the Egyptian savant who built the 1st map of the world

PTOLEMUS is the first international strategy consulting & research firm specialised in the connected vehicle and the Internet of Things (IoT).

We help our clients apply strategic analysis to this fast-moving ecosystem, across all its industries (automotive, insurance, assistance, fleet management, road charging, mobile telecoms, etc.) and on an international basis.

PTOLEMUS, founded by Frederic Bruneteau, operates worldwide and is present in 9 countries: Belgium, Canada, France, Germany, Italy, Russia, South Africa, the UK and the US.

PTOLEMUS has performed 90 consulting assignments related to connected and autonomous vehicles.

For any enquiry, please send a message to contact@ptolemus.com

Our consulting services

Strategy definition

Investment assistance

Innovation management

Procurement strategy

Business development

Deployment

Our fields of expertise

Mobility services	Car pooling, Car sharing, Smart parking	Multimodal mobility, Ride hailing	Road side assistance, Tax refund
Vehicle services & telematics	bCall, eCall, FMS, SVT / SVR	Tracking, VRM, In-car Wi-Fi, Fuel cards	Parking, Navigation, Speed cameras, Traffic information
Usage-based charging	Car As A Service, Electronic Toll Collection	Mobility-as-a-Service, Road charging	UBI / PAYD, Vehicle rental, Vehicle leasing
Vehicle data & analytics	AI, CAN-bus, Crowd-sourcing, Data protection	Driving behaviour, OBD, Predictive analytics	Remote diagnostics, xFCD
Vehicle automation	ADAS	Autonomous cars	Autonomous trucks
Enabling technologies	Positioning (GNSS / WiFi / cellular)	M2M / connectivity, Smartphones	Telematic devices, V2X

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THE 10 AUTHORS OF THIS REPORT

Frederic Bruneteau, Managing Director, Brussels

MS, Management, HEC Paris and CEMS Master, University of Cologne

Mr. Bruneteau has accumulated 20 years of experience including 17 years of experience of the mobility domain and 8 years of strategic and financial advisory for company such as **Arthur D. Little**, **BNP Paribas, SFR Vodafone** and **TomTom.**

Having assisted dozens of clients such as Allianz, Generali, Telit, Michelin, Qualcomm and Toyota, he has become **one of the world's foremost experts in the field of telematics**, quoted by numerous publications such as *The Economist* and *the Financial Times*. He has spoken at more than 40 international conferences on the subject.

Within PTOLEMUS, he has **led 70 assignments related to connected & autonomous vehicles** for leaders such as Aioi Nissay Dowa, Allianz, AXA, Bridgestone, CNES, Generali, HERE, Kapsch, Liberty Mutual, Michelin, Octo Telematics, Pioneer, Qualcomm, Telit, Thales Alenia Space and Toyota.

- He assisted one of the world's largest **insurance groups** in designing its **telematics strategy & business plan across Europe;**
- **Led a global analysis of the market for cloud-based in-vehicle platforms**, involving interviews with automotive OEMs worldwide;
- **For one of the largest global car makers,** he defined the insurance telematics and fleet management **specifications of their future embedded device;**
- For a space agency, assessed the **market potential of autonomous vehicles** for the satellite industry;

Frederic performed a complete review of this report.

Thomas Hallauer, Research Director, London

BA, International Business, South Bank University, London

Thomas Hallauer has gained 15 years of strategy, research and marketing experience in the domain of telematics and location-based services from companies such as **Admiral, DriveFactor, Liberty Mutual, Michelin, Mobile Devices, Octo Telematics and Wunelli.**

He is expert at highlighting new trends, unearthing profitable niches and marketing new products and services notably in the automotive, motor insurance, LBS, navigation and positioning industries.

Before PTOLEMUS, Thomas held management responsibilities with **Mobile Devices**, a leading provider of telematics technology platform and devices and with **TU Automotive**.

Thomas is the lead author of the ETC Global Study, the most thorough review of the Electronic Toll Collection and Road Charging market published in May 2015.

Thomas also **reviewed and published the Connected Insurance Analytics Report and the UBI Global Study 2016,** interviewing dozens of insurance companies.

Thomas led the research, writing and publishing of this report.

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Matthieu Noël, Manager, Paris

MS Automotive Engineering & Project Management, ESTACA, Paris and MS Marketing, HEC, Paris

Matthieu Noël has gained **6 years of consulting experience in the automotive sector** primarily helping car manufacturers such as **BMW, PSA Peugeot-Citroën, Renault-Nissan** and **Faurecia**.

Within PTOLEMUS, he has advised numerous clients such as **Admiral, Airbiquity, Allianz, Kapsch, Octo Telematics** or **Vodafone Automotive** in defining and implementing their strategy. He holds expert knowledge of domains such as connected vehicle data & analytics, OBD dongles, vehicle repair and maintenance, fleet telematics, fuel card services, ETC, UBI, autonomous vehicles, etc.

He led or participated in **more than 20 consulting assignments**, particularly in Usage-based Insurance (UBI), fleet management (FMS) and vehicle OBD data analytics for numerous applications such as vehicle remote diagnostics, eco-driving and driving behaviour analysis. He also recently contributed to the publication of the Insurance Telematics Global Study and Electronic Toll collection Global Study. He also regularly speaks at conferences.

Matthieu regularly speaks and moderates panels on automotive, mobility and telematics services at conferences. He recently presented the future of the UBI market at **Telematics India conference in Bangalore**.

Matthieu performed a complete review of this report.

Claire Elnécavé, Senior Expert, Brussels

MSc Management, Toulouse Management School

Claire Elnécavé has gained 12 years of experience for companies such as Accor, Arthur Andersen, Baloise Insurance, Baupost Group, Carrefour, CIC Securities, Coyote System, Pioneer, Sara Lee and Solvay.

She is expert at auditing and developing business models, financial statements, business plans, financial models and market models.

She built a 10-year forecast of the European telematics fleet management market for a $40 billion American hedge fund.

Claire also recently built the **5-year insurance telematics business model** of a leading European connected car services operator. She also contributed to the organisation of a series of strategic workshops on telematics for an insurance company and built its telematics business plan.

She also recently investigated the UBI analytics strategic landscape and built detailed profiles of 10 major suppliers including Lexis-Nexis, Octo Telematics, Willis, Towers Watson, Verisk Analytics, etc.

She is also **leading the creation of the Autonomous Club**, a think tank focused on industry and regulatory evolutions driven by the emergence of autonomous vehicles.

For this report, Claire contributed to our analysis of major AV technology suppliers.

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Alberto Lodieu, Senior Consultant, Paris

MBA, HEC Paris - BSc Industrial Engineering, Instituto Tecnologico y de Estudios Superiores de Monterrey

Alberto has gained 7 years of experience in strategic and operations consulting, helping organisations such as **CNES, Danlaw, Europ Assistance, the European Commission and Liberty Mutual.** He has specialised in the **financial services and transport** industries in projects related to corporate and competitive strategy, operations excellence and business analytics.

Alberto has participated in more than 20 projects to help organisations identify, define and implement the initiatives needed to achieve or preserve their leadership position.

In his last 5 assignments, Alberto has helped multinational companies, willing to succeed in the connected vehicle market, to define their **global go-to market strategies**.

Before joining PTOLEMUS, Alberto worked for Deloitte Consulting in their strategy and operations practice. Additionally, he has participated as a strategic and financial advisor in investment projects both in **Europe and Latin America**.

For this report, Alberto analysed the evolution of the relationship between drivers and cars and the acceptance of AVs by customers.

Sahand Malek, Consultant, Brussels

PhD, Automotive Engineering, University of Bath, & MS, Mechanical Engineering, University of Birmingham

Sahand Malek has gained almost 5 years of experience in automotive research and development projects on vehicle On-Board Diagnostics (OBD), data management and analytics, Usage-Based Insurance (UBI) and Advanced Driving Assistance Systems (ADAS).

He notably conducted an extensive academic study on the effect of driving behaviour on fuel consumption and road safety that led to the development of various frameworks and post-processing methods to analyse driving data. He managed to identify, classify, and model driving behaviour differences from real-world data from fleet drivers.

He also gained extensive experience in **conducting projects that are using on-board diagnostics tools (OBD)**, portable emission measurement systems (PEMS) and location-based sensors.

He has in-depth knowledge about many aspects of traffic and transportation science, as well as automotive engineering. He has proficient statistical and technical knowledge, and he is capable of providing advice on both managerial and technical levels.

Sahand recently **led the writing of our recently published Connected Insurance Analytics Report.**

For this report, Sahand built our bottom-up market forecasts and scenarios of the ADAS and AV markets globally.

Philippe Brousse, Senior Business Analyst, Brussels

MSc Eng., ENSIMAG & MS Strategy ESSEC, Paris

Philippe has gained 3 years of experience in strategy and market research for companies such as **CGI Business Consulting, Danlaw, Europ Assistance, the European Commission, Kapsch, Octo Telematics and Safran Morpho.**

He has performed multiple assignments in the connected mobility domain such as:

- The definition of a global payment provider's connected services strategy for the consumer market,

- An assessment of the Benelux fleet telematics management market for a North American TSP,

- The evaluation of the EU fleet telematics management market for a $40 billion US hedge fund,

As part of our Connected Mobility Forecast, he conducted the analysis and 5-year forecasts of the markets for bCall, UBI, fleet management, and in-vehicle WiFi hotspots worldwide.

For this report, Philippe contributed to the building of our bottom-up market forecasts of the ADAS and AV markets globally.

Justin Hamilton, Senior Business Analyst, London

BA, Politics, Univ. of East Anglia and M.Litt. International Relations, University of St Andrews

Justin has more than 4 years of experience within the transportation, mobility and road user charging market. He conducts quantitative and qualitative analysis of global trends and developments in mobility, electronic road pricing and intelligent transport solutions.

Before joining PTOLEMUS, Justin launched Road User Charging Magazine and is frequently published in journals such as *Thinking Highways*, *Tolling Review* and *Tolltrans*.

His recent projects include:

- **A comprehensive ranking of global ETC service providers**, systems integrators and technology suppliers worldwide,

- For one of the world's largest roadside assistance companies, investigated **new digital assistance models** and analysed their breakthrough impact on the value chain,

- The writing of our UBI Global Study 2016, the reference research on the connected insurance market, quoted by *Fortune*, *Forbes*, the *Financial Times*, *Reuters*, *Corriere della Serra*, etc.

- A **global analysis of the car sharing, car pooling, car leasing and car rental markets** for our recently published Connected Mobility Forecast 2016.

For this report, Justin explored the relationship between autonomous cars and mobility and evaluated the factors driving the timeline of automation.

Yaron Steinfeld, Business Analyst, Paris

MSc Sustainable Development, HEC Paris and BBA, Business Administration, University of South California

Yaron Steinfeld has gained experience in strategy and market research for organisations such as Cleia, CNES, HERE, LafargeHolcim and Octo Telematics.

Yaron has worked on several connected mobility projects related to vehicle data, UBI, roadside assistance, car pooling.

For example he recently participated to the UBI market review of a major insurance telematics solution provider. He also participated to the global analysis of the market for cloud-based in-vehicle platforms, involving interviews with car makers worldwide.

Yaron brings a unique perspective to PTOLEMUS through his interest and experience related to smart cities. His focus is on analysing how technology merges with transportation to create solutions for better functioning, more liveable urban environments.

Finally, Yaron contributes to the research and analysis for our **quarterly quantitative dashboard of the global UBI market.**

For this report, Yaron led our analysis of the impact of ADAS and AV technologies on the number of accidents and their severity.

Matthew Cobbold, Business Analyst, London

MEng (Hons) in Civil and Environmental Engineering, Imperial College London

Matthew has gained 2 years of strategy and research experience for companies such as Strategy& (PWC group), Ernst & Young and WS Atkins.

He holds a strong experience in computational modelling and mathematical analysis.

Matthew has **performed several research and market modelling projects** for construction, pharmaceutical and telecommunication industries.

He recently participated to the commercial due diligence of a cyber security solution provider. Matthew conducted researches and interviewed experts to size the hardware security modules market.

For this report, Matthew contributed to our model of the impact of AVs on insurance claims and premiums.

FOREWORD

When discussing autonomous cars, Mary Barra, GM's CEO, stated: "**The auto industry will change more in the next 5 to 10 years than it has in the last 50**."

The most insightful portion of this quote is not necessarily the use of the word change, nor the timeline attached. Rather, it is the inclusion of the automotive industry as a whole.

Reflecting the way we have approached this report, **change will not be limited to just car manufacturers, suppliers or dealers.** Change will be wholesale. It will have an impact far beyond the great motor cities of Detroit, Wolfsburg, Aichi, Birmingham and Turin. The shock waves will be felt equally by financial districts, insurance hubs, political centres and technology clusters across the globe.

Today, vehicle automation is somewhat limited to Advanced Driver Assistance Systems (ADAS) such as automatic emergency braking and lane keeping assist. These level 2 autonomous features began appearing in cars many years ago and their incorporation in new models has steadily increased amid competition among OEMs and occasional regulatory mandates.

Yet, **despite their potential to reduce accidents, these features have been mostly ignored by insurers so far** and have had little effect on premiums.

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In the last 12 months, we have seen an acceleration in autonomous development, supported by a large number of ground-breaking announcements, deals and partnerships from all major players across the autonomous vehicle value chain, including:

• **Intel's $15 billion acquisition** of leading vision-sensing provider Mobileye;

• **GM's $1 billion acquisition** of the 40-person strong software and artificial intelligence developer Cruise Automation;

• **Ford's $1 billion investment** in unknown start-up ARGO-AI, accompanied by a joint $150 million investment in lidar manufacturer Velodyne and investment in Civil Maps;

• **Apple's $1 billion investment** in Chinese ride hailing platform Didi Chuxing;

• **Uber's $680 million acquisition** of self-driving start-up Otto;

• **Daimler, BMW and Audi's joint $3 billion acquisition** of HD map provider HERE;

• **Intel's acquisitions** of deep learning developer, Nervana Systems and vision processor Movidius;

• **Microsoft's partnerships** with Toyota, Renault Nissan and Volvo;

• Google's decision to spin-off and re-brand their self-driving car division **Waymo and the subsequent partnerships with Honda and Fiat Chrysler;**

• **Mobileye's** partnerships with GM, Intel, Wabco, BMW, Delphi and Volkswagen;

• **Nvidia's** emergence as a key supplier of deep learning and processing components to Tesla, Honda, Volvo, Audi, Daimler, BMW, VW and Baidu;

• **Allianz**' launch of insurance policies for semi-autonomous and driverless cars;

• The UK Government's proposed **Vehicle Technology and Aviation Bill**, which mandates insurance coverage for autonomous cars both when the drivers are in control and when they are not.

All are examples of different **players moving to ensure they are not let behind in the race to develop and deploy highly automated vehicles (HAVs)**. The scale of some of these transactions underlines the seriousness with which all stakeholders are approaching the issue. What was once though to be science fiction is likely to become a reality much sooner than most people are aware.

"Speeding, officer? You'll have to ask the self-driving car."

Car manufacturers are undoubtedly in the eye of the autonomous vehicle storm, but they are not alone. At each step of the way they are accompanied by **a growing ecosystem of players**, consisting of insurance companies, regulators, suppliers, mobility providers, investors, cities, telematics service providers and, of course, the drivers themselves.

With this in mind and reflecting on the magnitude of adjustment which will necessarily take place across numerous industries - many of which have enjoyed decades of stability - we felt the time was right to publish this report. The scope of this study reflects this, with 600 pages of crucial analysis covering the evolution and future of the technology and the risk management it will involve.

Crucially, **the report considers the implications all levels of automation will have on accident risks**. By leveraging our experience as global thought leaders in Usage-Based Insurance (UBI) and insurance analytics, we have considered the impact of ADAS (level 2), through to level 3 automation and finally fully autonomous and driverless (level 4) vehicles.

Using the building blocks outlined below, interviewing the marketplace and leveraging our skills in forecasting and analysis, we are confident we have constructed **the most comprehensive and insightful report on autonomous vehicles available today**.

The AV Global Study 2017: methodology and key outputs

Source: PTOLEMUS

This report further benefits from:

- 18 months of desk research in the connected mobility market,

- The insights from 90 consulting assignments on connected & autonomous driving;

- Interviews with over 40 executives from across the automotive landscape,

- A review of worldwide mergers, acquisitions and strategic undertakings by applicable companies.

It has been a pleasure for us to write this report. We hope that you will enjoy reading it. If your company plays a role in this business and has not been mentioned in our report, please let us know so that we can update it in the coming months. Please send your comments to thomas@ptolemus.com.

Sincerely,

Frederic Bruneteau

Managing Director

PTOLEMUS
Consulting Group

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"You'll never own a car again. I have two and a half year old boys. They're not going to drive when they turn 18. They're going to have an autonomous car driving them around."

Peter Diamandis, Founder, XPRIZE Foundation

Representative of the German Federal Office for Motor Vehicles (KBA) discussing Tesla's *Copilot* function

"If the word beta-phase means an incomplete status of the software, the KBA would not authorise (such) a functionality."

"When the steam engine arrived, the horse wasn't just killed off, it became a hobby for enthusiasts.

And that's what will happen to cars, and I will continue to drive cars because I like driving cars."

Jeremy Clarkson, Broadcaster

"We don't want driverless to be the next GM food."

David Williams, Technical Director, AXA Insurance

"The autonomous age has dawned and Honda, like all automakers, is working to refine and advance this technology to achieve our goal for a collision-free society in the 2040 timeframe."

Frank Paluch, President, R&D Americas

"You can't be half-pregnant or partially pregnant and a car can't be partially autonomous."

Jochen Haab, Head of Active Safety, Mercedes Benz - discussing Tesla's Autopilot

The growth in features like automatic braking and lane assistance systems may give drivers a false sense of security that they can relax while their car looks after them.

James Dalton, Director of General Insurance Policy, ABI

"Developing a fully autonomous car is an end-to-end systems problem – from the in-car supercomputer, to AI algorithms, to an always-updated 3D map in the cloud"

Jen-Hyun Huang CEO Nvidia

Travis Kalanick, CEO, Uber

So if that's happening, what would happen if we weren't a part of that future? If we weren't part of the autonomy thing? Then the future passes us by basically, in a very expeditious and efficient way."

LIST OF FIGURES

LIST OF PROFILED COMPANIES

In this report, we assessed 23 companies looking at their core strategy on automation, their active and planned tests and trials, the technology used, the relevant market activities (such as partnership)

They have then been ranked using 6 criteria: ADAS development, testing programmes, published patents, relevant market activities, R&D spending and strategic focus.

Profiles, assessments, sub-criteria definitions and ranking per criteria can be found in Section III. 4

OEMs		Technology suppliers
BMW	NAVYA	BOSCH
DAIMLER	PSA PEUGEOT CITROËN	Continental
FCA (Fiat Chrysler Automobiles)	RENAULT NISSAN	DELPHI
Ford	TESLA	HARMAN
GM	TOYOTA	MOBILEYE
HONDA The Power of Dreams	VOLKSWAGEN GROUP	NVIDIA
HYUNDAI	VOLVO	Valeo
JAGUAR / LAND-ROVER	WAYMO Alphabet Google	

LIST OF COMPANIES MENTIONED IN THE STUDY

During the last 18 months, **PTOLEMUS research team interviewed 60 executives in organisations** such as Allianz, Continental, Daimler, GM, Harman, HERE, Mobileye, PSA, TomTom, Valeo, Volkswagen, Volvo, Swiss Re, Toyota, etc.

We list below **all 250 companies mentioned in the Autonomous Vehicle Global Study**.

Company	Type	Company	Type
Association of British Insurers	Insurer	**Lyft**	Mobility Services Provider
Advanced Scientific Concepts	Automotive supplier	**Magna Electronics**	Automotive supplier
Ageas	Insurer	**Magneti Marelli**	Automotive supplier
Aisin AW	Tier-1 supplier	**Mahindra**	OEM
Alfa Romeo	OEM	**Maserati**	OEM
Allianz	Insurer	**Maven**	Mobility Services Provider
Alphabet	Software/AI developer	**Maybach**	OEM
Alpine	Automotive supplier	**Mazda**	OEM
Amazon	Software/AI developer	**Mercedes Benz**	OEM
AND Products	Mapping provider	**Metromile**	Insurer
Apple	Software/AI developer	**Micron**	Automotive supplier
ARGO AI	Software/AI developer	**Microsoft**	Software/AI developer
ARUP	Research/ standards institute	**MINES Paris Tech**	Research/standards institute
Athlon	Mobility Services provider	**Mini**	OEM
Atkins	Research/ standards institute	**Mitsubishi Electric Automotive Europe**	Automotive supplier
ATZuche	Mobility Services Provider	**Mitsubishi Motors**	OEM

Company	Type	Company	Type
Audatex	Software developer	Mobileye	Autonomous systems developer
Audi	OEM	MOIA	Mobility Services Provider
Autoglass	Breakdown services	Moovel	Mobility Services Provider
Autoliv	Automotive supplier	Movidius	Automotive supplier
Autonavi	Mapping provider	Movimento	Software developer
Autonomos	Software/AI developer	Multicity	Mobility Services Provider
Autotalks	Automotive supplier	Munich RE, NA	Insurer
AXA	Insurer	MyTaxi	Mobility Services Provider
BAE Systems	Automotive supplier	NASA	Software/AI developer
Baidu	Software/AI developer	National Highway Traffic Safety Administration	Regulator/ Government agencies
Belron International ltd	Breakdown services provider	Nauto	Automotive supplier
Blacklane	Mobility Services Provider	NavInfo	Mapping provider
BMW Group	OEM	Navya	OEM
Bolloré	Mobility Services Provider	Nexteer	Automotive supplier
Bosch	Automotive supplier	Nicigo ADAS	Automotive supplier
BYD Co.	Automotive supplier	Nirenberg Neuroscience	Software/AI developer
Capgemini	Software developer	nuTonomy	Software/AI developer
Car2Go	Mobility Services Provider	NVIDIA	Automotive supplier
Careco	Mobility Services Provider	NXP	Automotive supplier
Careem	Mobility Services Provider	O2	Telecom infrastructure
Carglass	Breakdown services	Octo Telematics	Telematics service provider

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Company	Type	Company	Type
CATAPULT UK	Research/standards institute	Ola	Mobility Services Provider
Centro Tecnologico de l'Automocion Galicia (CTAG)	Research/ standards institute	Opel	OEM
CESVIMAP	Research/ standards institute	Otto	Software/AI developer
Chariot	Mobility Services Provider	Ottomatika	Software/AI developer
Chrysler	OEM	OuiCar	Mobility Services Provider
Cisco	Telecom infrastructure	Oxbotica	Autonomous systems developer
Cite lib	Mobility Services Provider	Panasonic	Automotive supplier
Civil Maps	Mapping provider	Paravan Industry	Autonomous systems developer
Cloud made	Software/AI developer	Pearl Auto	Autonomous systems developer
Co-op	Insurer	Peiker	Automotive supplier
Cohda Wireless	Automotive supplier	Peloton	Autonomous systems developer
Comma.ai	Autonomous systems developer	Pepperl+Fuchs	Automotive supplier
Communauto l'autonomie	Mobility Services Provider	Perrone Robotics	Autonomous systems developer
Continental	Automotive supplier	Pilot Automotive	Autonomous systems developer
Control-Tec	Software developer	Pioneer	Automotive supplier
Cruise Automation	Software/AI developer	PPZuche	Mobility Services Provider
CTAG	Research/standards institute	PSA Peugeot Citroen	OEM
CVTA	Automotive trade association	QNX	Software developer
DAF Trucks	OEM	Qualcomm	Automotive supplier
Daimler AG	OEM	Quanergy Systems	Automotive supplier
Daimler Insurance Services	Insurer	RAC	Breakdown services

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Consulting Group

Company	Type	Company	Type
Delphi	Automotive supplier	RDM Group	Automotive supplier
DeNA	Software/AI developer	ReachNow	Mobility Services Provider
DENSO	Automotive supplier	Renault Nissan Alliance	OEM
DfT	Regulator/ Government agencies	Renesas Electronics Corporation	Automotive supplier
Didi Chuxing	Mobility Services Provider	Ridecell	Mobility Services Provider
Dodge	OEM	RideScout	Mobility Services Provider
Drive.ai	Autonomous systems developer	Rolls Royce	OEM
DriveNow	Mobility Services Provider	RSA	Insurer
Drivy	Mobility Services Provider	Safe drive systems	Automotive supplier
Elektrobit	Mapping provider	Safran	Research/standards institute
Engineering and Physical Sciences Research Council	Research/standards institute	SAIC (UK)	Automotive supplier
Enjoy	Mobility Services Provider	SAIPS	Software/AI developer
Ericsson	Telecom infrastructure	Samsung	Automotive supplier
Ertico	Research/standards institute	Savari	Automotive supplier
Euro NCAP	Research/standards institute	Seeo	Automotive supplier
European Commission	Regulator/ Government agencies	Siemens	Automotive supplier
Facebook	Software/AI developer	Sixt SE	Mobility Services Provider
Faraday Future	OEM	Skoda	OEM
Farmers Insurance	Insurer	Smart	OEM
Fiat Chrysler Automobiles	OEM	SMMT	Automotive trade association
First Direct	Mobility Services Provider	SoftBank	Software/AI developer

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Company	Type	Company	Type
Folksam	Insurer	STMicroelectronics	Automotive supplier
Ford	OEM	Subaru	OEM
Ford Carsharing	Mobility Services Provider	Sunfleet	Mobility Services Provider
Free2Move	Mobility Services Provider	Suzuki	OEM
Freescale	Automotive supplier	SWECO	Research/ standards institute
Fujitsu Ltd.	Automotive supplier	Swiss Reinsurance Company Ltd	Insurer
Garmin	Mapping provider	Takata Corporation	Automotive supplier
General Motors	OEM	Tata	OEM
Getaround	Mobility Services Provider	Tesla	OEM
Gett	Mobility Services Provider	Texas Instruments	Automotive supplier
Global NCAP	Research/standards institute	Thatcham Research	Research/standards institute
GoDrive	Mobility Services Provider	The Alliance for Transportation Innovation	Automotive trade association
Google	Software/AI developer	The Floow	Telematics service provider
Grab	Mobility Services Provider	Times Car Plus	Mobility Services Provider
Greenwheels	Mobility Services Provider	TomTom	Mapping provider
HailO	Mobility Services Provider	TorcRobotics	Autonomous systems developer
Harman International	Automotive supplier	Toshiba	Automotive supplier
Hella KGaA Hueck & Co	Automotive supplier	Towersec	Software developer
HERE	Mapping provider	Toyota	OEM
Highways England	Regulator/ Government agency	TriQuint	Automotive supplier
Hitachi Automotive systems	Automotive supplier	TRL	Research/standards institute

Company	Type	Company	Type
Honda	OEM	TRW	Automotive supplier
Horiba Mira	OEM	Tula	Automotive supplier
Horizon Robotic	Autonomous systems developer	Turo	Mobility Services Provider
Huawei	Telecom infrastructure	Uber	Mobility Services Provider
Hyundai	OEM	Uisee	Software developer
Ibeo automotive	Automotive supplier	UNECE	Regulator/ Government agencies
IBM	Software developer	Valeo	Automotive supplier
IBM Watson	Software/AI developer	Vedecom	Research/standards institute
If P&C Insurance	Insurer	Velodyne	Automotive supplier
Infineon	Automotive supplier	Visteon	Automotive supplier
Infiniti	OEM	Vodafone	Telecom infrastructure
InMotion	Mobility Services Provider	Volkswagen	OEM
Insurance Europe	Insurer	Volvo Car Group	OEM
Insurance Institute for Highway Safety	Research/standards institute	Voxx international	Automotive supplier
Intel	Automotive supplier	Wabco	Automotive supplier
Jaguar Land Rover	OEM	WaiveCar	Mobility Services Provider
Jeep	OEM	Waymo	OEM
Karhoo	Mobility Services Provider	Yandex	Software/AI developer
Koolicar	Mobility Services Provider	Zenrin	Mapping provider
leddartech	Automotive supplier	ZF Lenksysteme	Automotive supplier
LG Electronics	Automotive supplier	ZF TRW	Automotive supplier

Company	Type	Company	Type
Lincoln	OEM	**Zipcar**	Mobility Services Provider
Local Motors	OEM	**Zoomcar**	Mobility Services Provider
		Zurich Insurance Company	Insurer

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Disclosure

The recommendations and opinions expressed in this study reflect PTOLEMUS' independent and objective views. However, PTOLEMUS cannot provide any guarantee as to the accuracy of the information provided or the reliability of its analyses and forecasts.