AUGMENTED MOBILITY 2030

Global Study

2019
EDITION

The first quantified analysis of 18 transport modes worldwide

From transport to user-centric multimodal mobility

The first strategy consulting & research firm entirely focused on augmented mobility & automation

Strategy consulting services

- Strategy definition
- Investment assistance
- Procurement strategy
- Innovation management
- Business development
- Project management

Market research services

- Off-the-shelf reports
- Subscription services
- Custom market research

Fields of expertise

Mobility services	Car pooling Car sharing MAAS	Micro-mobility Ride hailing Roadside assistance	Shared mobility Smart parking 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	In-vehicle payments 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 New energies	Smartphones Telematic devices V2X

Our clients come from across the mobility ecosystem

Analytics, maps & applications providers

AAA, arity, BMJ Group, CarPay Diem, CCC Information Services Inc., Cognizant, Coyote, Dynamic Map Platform, Google, here, ESRI, Increment P, RMS, LexisNexis, PASCO, sas, sentiance, tdf, TomTom, Towers Watson, TrueMotion, Verisk Analytics, wejo, ZENRIN

Device & location suppliers

Andrew, cnes, Location Smart, Navizon, Nokia Connecting People, gmv, Huawei, Samsung, ThalesAlenia Space, Telespazio, Deveryware, Sysnav, TruePosition

Automotive manufacturers & suppliers

AGC, Audi, Bosch, Bridgestone, Continental, Cox Automotive, Daimler, Delphi, Directed, Ford, Harman, Hino, Honda, intel, Isuzu, Mazda, Michelin, Mitsubishi Motors, Navya, Nissan, Pioneer, Qualcomm, Qoros, Renault, Scania, Sierra Wireless, Suzuki, Telit, Toyota

Telematics solution providers

Air, Airbiquity, Arkan, arvento, Danlaw, DigiCore, Cambridge Mobile Telematics, drivefactor, drust, Eliocity, FleetComplete, Fleetmatics, LoJack, Mobile devices, Octo, Himex, IMS, Meta System, SafeFleet, s:mobil, Sistema, Orion, Quartix, Queclink, Scope Technologies, Tantalum, Viasat, Watchstone.

Insurers, aggregators & assistance providers

AAA Insurance, Admiral, Agero, Aioi Nissay Dowa Insurance, Allianz, Allstate, American Family Insurance, Aviva, AXA, Baloise, carrot, Covea, Crédit Agricole Assurances, Desjardins, europ assistance, Farmers, FIA, Generali, The Hartford, IAG, intact, Inter Mutuelles Assistance, Ingosstrakh, HUK, Liberty Mutual, MACIF, Matmut, Menora, Mondial Assistance, Munich RE, Sompo Japan, Nationwide, OUT Surance, Promutuel Assurance, RAC, RSA, smile direct, Société Générale, StateFarm, Swiss Re, telesure, Tokio Marine, youi, Zurich

Mobile telecom operators

AT&T, SFR, SK telecom, Sprint, Telekom Austria Group, Telefónica, verizon, vodafone

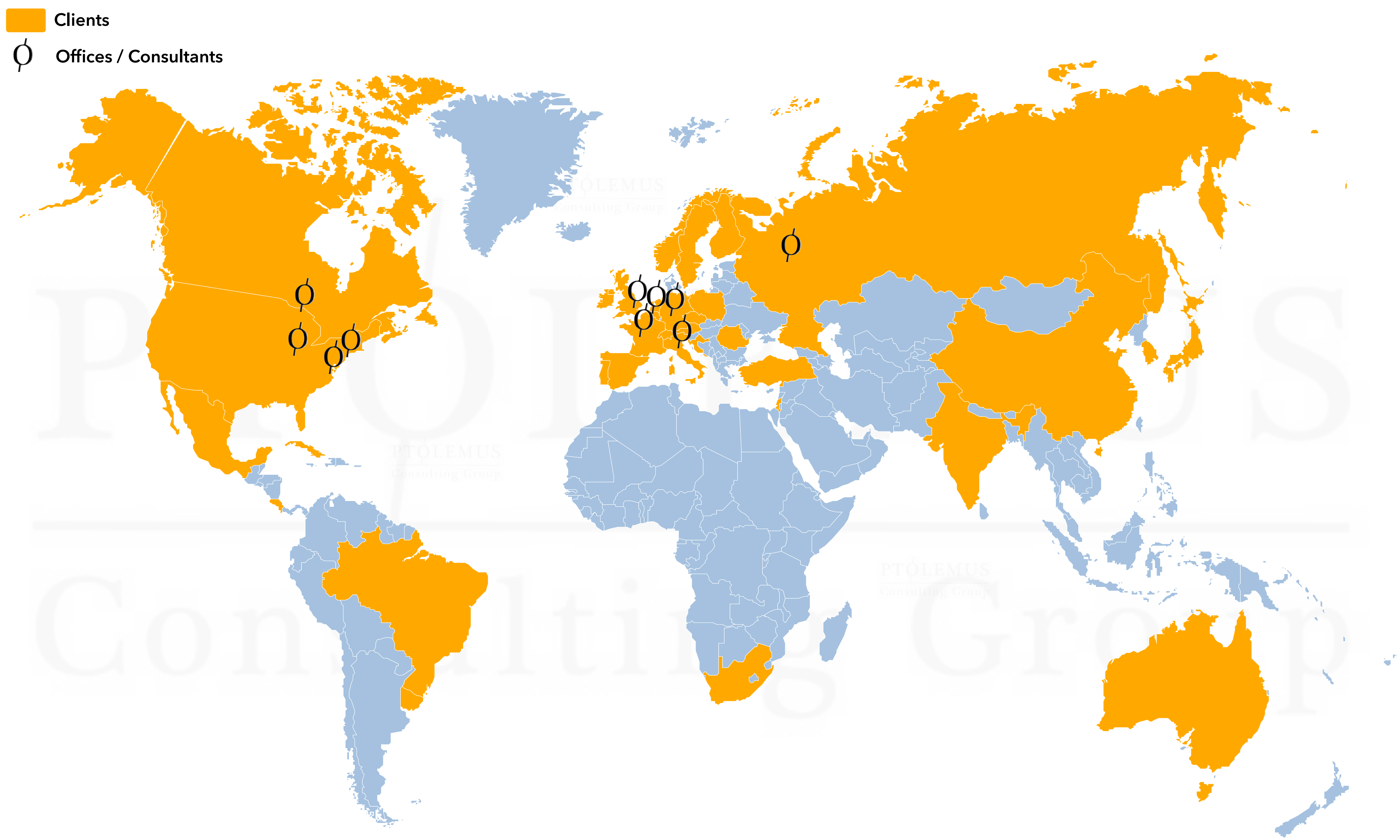
Fleet & fuel, ITS & regulators

abertis, ALD Automotive, ARAL, Arval, autostrade, AVIS, Axxès, bp, Brisa, CGI, DKV, Edenred, Efkon, egis, eni, Euromaster, ew, European Commission, FleetCor, Kapsch, OMV, mouchel, Nomad Digital, Norbit, Routex, Shell, SICK, Sofico, Toll Collect, Telepass, Thales, T-Systems, Vitronic, wex, zipcar

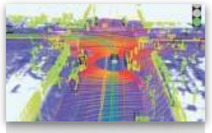
Banks & private equity investors

Amadeus Capital, Amundi, Bain Capital, Barclays, The Baupost Group, Cinven, citigroup, CVC, Disruptive, Hellman & Friedman, J.P.Morgan, Goldman Sachs, Intek Group, Investcorp, Hutton Collins, Leonardo & Co., Montezemolo & Partners, New Amsterdam Growth Capital LLC, Nomura, Renova Group, Pamplona Capital Management, SilverLake, Time for Growth, Thoma Bravo

A team of 30 consultants, experts & researchers with 17 nationalities serve our clients worldwide



120 consulting assignments to help our clients innovate in the mobility domain

	Assessed the global trends and built forecasts of 14 connected mobility services	Leading Telematics Service Provider
	Defined its future vehicle connected services global strategy	Global roadside assistance group
	Conducted a survey of 15 OEMs worldwide on their connected mobility solution needs	Tier-1 automotive supplier
	Defined connected vehicle data strategy for innovative telematics services provision & monetisation	Vehicle data aggregator
	Built 5-year strategy & go-to-market plan in EU mobility services market	Global electronic tolling supplier
	Detected opportunities from connected & autonomous vehicles for the space industry	cnes
	Identified market opportunities & defined strategic plan in connected mobility services	Road & infrastructure operator
	Evaluated the market potential of HD maps for autonomous vehicles	Consortium of OEMs & map makers
	Conducted the due diligence of VTraffic, a leading traffic information provider	Leonardo & Co.
	Advised on the optimal structuring of its upcoming tolling scheme	Ministerie van Infrastructuur en Waterstaat
	Defined our client's strategic positioning in the field of connected vehicle services	egis
	Defined its global data & analytics strategy to predict incidents	Major road operator

PTOLEMUS can help your organisation define and achieve its mobility strategy

- **Strategy definition**
  - Future vision in mobility
  - Board coaching
  - Market entry
  - Data analytics strategy
  - Data monetisation strategy
  - Multimodal mobility design and planning
  - Strategy shaping workshops
- **Investment assistance**
  - M&A strategy
  - Commercial due diligence
  - Technology due diligence
  - Feasibility studies
  - Market sizing
  - Business case development
  - Cost benefit analyses
  - Post-merger integration
- **Innovation strategy**
  - Mobility value proposition
  - Mobility plan design
  - Product definition
  - Go-to-market strategy
- **Innovation delivery**
  - Proof of Concept design & launch
  - Architecture definition
  - Project management
- **Procurement**
  - Sourcing strategy
  - Specifications
  - Supplier selection
  - Assistance to tenders
- **Business development**
  - Partnership strategy definition
  - Assistance to tender response

This study is the first research to analyse the global shift from transportation to mobility

The first quantified analysis of 18 transport modes worldwide

A rigorous, in-depth analysis…

- **Over 500+ pages**, the report measures the **combined impact of mega-trends on the mobility ecosystem**
  - Assesses the **underlying driving factors** defining the importance of each trend on mobility
  - Analyses the key trends' impact on **market volumes**
  - The result is a **demand forecast** for 18 different land transport modes and the evolution of their market shares
- **Based on 10 years of experience in strategy consulting in mobility**, it leverages:
  - **Over 40 interviews** with OEMs, cities, mobility service providers, infrastructure providers and big data service providers
  - Desk and primary research by a team of 8 consultants and analysts
  - **Insights from 120 consulting assignments** on mobility markets, technology and strategy
- For each market, the report provides:
  - **Driving factors**
  - Triggers and inhibitors
  - Value chain
  - Case studies from **best practice** demonstrators

… that combines many firsts:

- The **combined impact of 12 mega-trends on**
  - **16 stakeholder categories**
  - **18 transport modes**
  - **18 regions**
- **A true user-centric, multimodal approach**, combining a qualitative and quantitative methodology
- **18 real world case studies** demonstrating best practices in each mobility markets
- A deep-dive assessment of the evolution of core **mobility markets** and their effect on the demand
- **Strategic guidelines** on withstanding the upcoming trends
- **2018-2030 global mobility demand forecasts**
  - Excel forecast outputs
  - 11 transport modes forecast
  - Global volume forecasts in passenger/km
  - 18 countries / regions
  - AVs and EVs volume projections

It was written by a team of European, American and Asian mobility experts

Frederic Bruneteau
Managing Director
Brussels

Frederic Bruneteau is the **founder** of PTOLEMUS Consulting Group.

He has accumulated **20 years of experience of the mobility / transport domains** and 15 years of strategic and financial advisory.

He has become **one of the world's foremost experts of connected mobility & automation** and is interviewed on the subject by publications such as the *Financial Times*, the *Wall Street Journal* and *The Economist*.

Frederic has spoken at more than 50 related conferences worldwide.

He has helped numerous organisations define their strategic & innovation plans and implement them including Abertis, Admiral, AGC, Aioi Nissay Dowa, Allianz, Axa, Baloise, BP, Bridgestone, Brisa, Coyote System, Danlaw, Egis, ENI, ESRI, Europ Assistance, the European Commission, Generali, HERE, Kapsch, Liberty Mutual, Macif, Matmut, Nationwide, Michelin, the Netherlands' Ministry of Transport, Octo Telematics, Pioneer, Qualcomm, Scania, Sentiance, Société Générale, Telit, Thales Alenia Space, TomTom, Toyota, Vodafone and WEX.

Frederic directed the research for this report.

Alberto Lodieu
Manager, Paris

Alberto has **9 years of experience in strategy and operations consulting** with organisations such as Abertis, AGC Automotive, AXA Partners, CNES, the French space agency, CVC Capital Partners, DMP, Europ Assistance, the European Commission, Liberty Mutual, Silver Lake, Société Générale, Telespazio and ZirconTech.

He participated in **over 30 projects** to help organisations identify and implement the set of initiatives needed to achieve or preserve their leadership.

Alberto has managed this mobility research project and has led our work to build a global picture and forecast of mobility trends: new players, new vehicle types, new business models, smart city initiatives, etc.

Dr. Sahand Malek
Senior Consultant, Brussels

Sahand Malek has gained **5 years of experience in strategy & R&D projects** on **mobility data and analytics**, on-board diagnostics (OBD), Usage-Based Insurance (UBI) and Advanced Driving Assistance Systems (ADAS).

He has helped clients such as **Abertis**, **Baloise Insurance**, **Bridgestone, CVC Capital Partners**, **Pioneer, Sentiance** and **ZirconTech**.

Sahand reviewed our global quantitative mobility forecasts.

Apoorv Swarup
Business Analyst, Paris

Apoorv has 5 years of strategic and operational experience across India and Europe in mobility.

He has **helped organisations such as AvisBudgetGroup**, **Bharat Petroleum**, **Michelin, Renault Nissan and the World Bank.**

For Renault, he mapped the competitive landscape including product and pricing strategies for EV and connected services.

For this report, Apoorv **led the research on electric vehicles, Big data and AI**.

In addition, he built **our global for BEV and PHEV forecasts until 2030**.

Annie Reddaway
Research Analyst, London

Annie Reddaway has over 4 years of experience in the connected vehicle industry, specifically in the areas of **connected car, cybersecurity and mobility services**.

She has researched and run various events and webinars on these topics.

In 2018, Annie was awarded "Best New Mobility Leader, Analyst or Spokesperson" in the Tech Cars Awards from Auto Connected Car News.

For this report, **Annie analysed the impact of mobility trends on 16 stakeholder categories**.

We respond to numerous strategic questions

How will the change in mobility behaviour in cities affect the overall car market?

How will present and future trends affect your company's strategy?

How will the combined impacts of key changes impact mobility stakeholders?

Will Uber kill taxis or will electric scooters kill Uber?

How will each of the 18 transport modes evolve in my market?

What will be the share of private cars in 2030 mobility?

What will be the nature and volume of AVs in 2030?

Who in the new value chain will 'own' the end-customer?

Will OEMs retain control over the mobility services platform?

Will AVs replace or increase the total number of urban trips?

What will be the role of cities and governments in the new mobility value chain?

Who will bill for mobility, insurance or tolling in 2030?

Up to now, future mobility has been predicted in a far too simplistic way

- Unconsciously, we all expect the future of mobility "to be like the past, just bigger"
- We assume that we understand the mega-trends (automation, MaaS, etc.)
- We analyse and forecast the mega-trends separately
- Our models are generally vehicle-centric

Mobility has been predicted as a series of straight, non connected lines

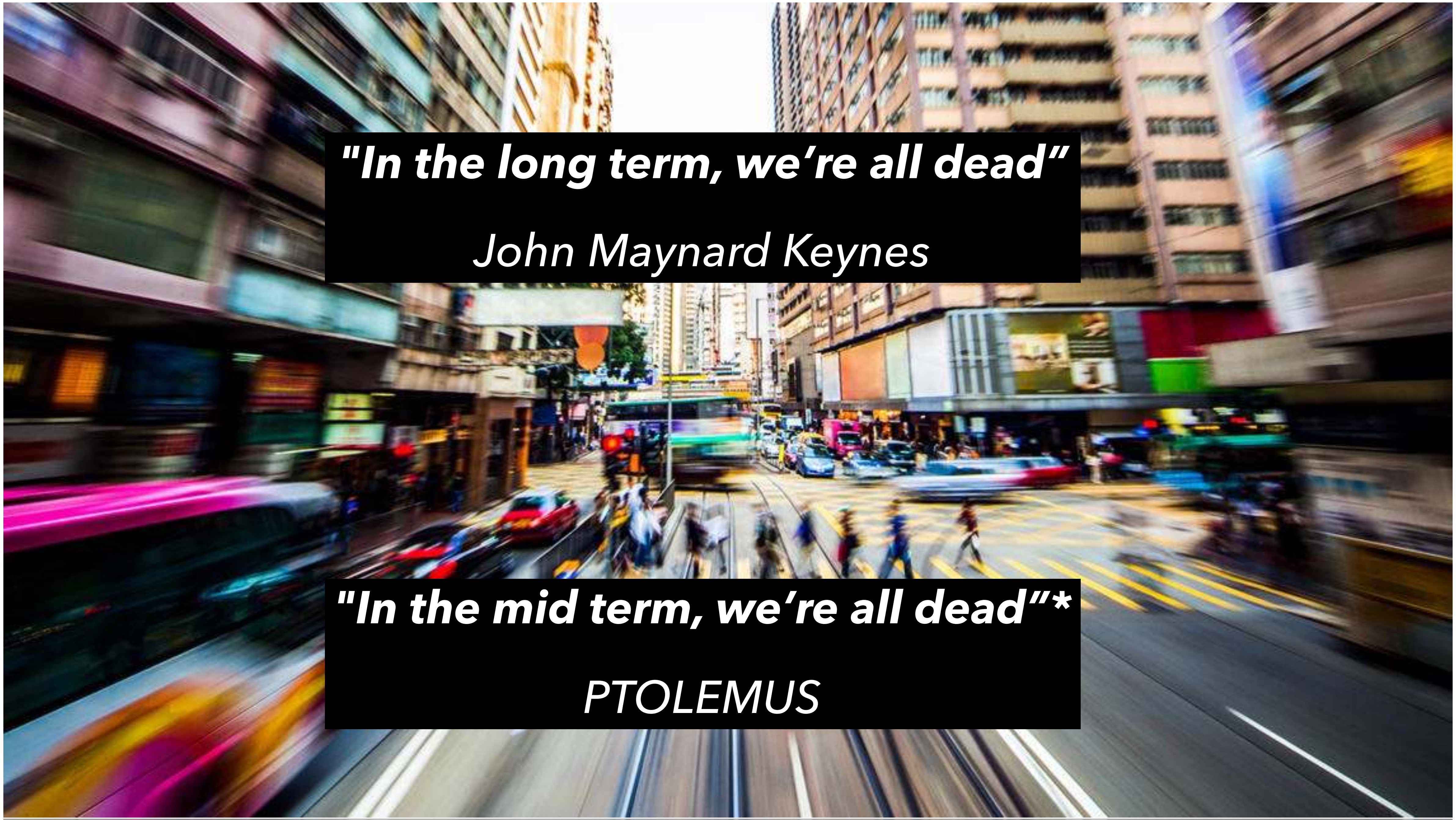
To really understand the future of mobility, our analysis must capture and combine all key trends

- **Mega-trends are not linear**
  - New things arise
  - Others die
- **Trends are like waves**
  - The beginning of the trend is benign
  - The second part is the tsunami
- Trends impact each other and **must be assessed in combination**
- **We must adopt a user-centric view**

The future of mobility is blurred, messy, cluttered with high noise levels.

And we do not see the sky (or the sun) to orientate ourselves.

Mobility will disrupt all of us before we expect it



Note: * If we don't change ourselves

Mobility is changing gear, just press "RESET" and move fast!

Harald Krueger
CEO, BMW

"Future mobility will connect every area of people's lives. And that's where we see new opportunities for premium mobility."

"The electric vehicles not only have beneficial effects on the air quality, but the car sharing principle itself also helps cities manage traffic and parking problems. A recent study showed that each shared electric vehicle replaces up to 15 private cars."

Olivier Reppert
CEO, car2go

Dara Khosrowshahi
CEO, Uber

"We are now thinking of Uber as a mobility platform. We want you to come to Uber, we'll get your car, we will encourage you to share it, hopefully we will get you an electronic vehicle or a bike."

"Mobility as a Service is set to make the biggest change in transport since affordable cars came to market"

Sampo Hietanen
CEO, MAAS Global

Mary Barra
CEO, General Motors

"Creating a zero congestion world starts with sharing. With an average of 95% of cars sitting idle each day, maximise the utilisation of your car. This is the future of mobility."

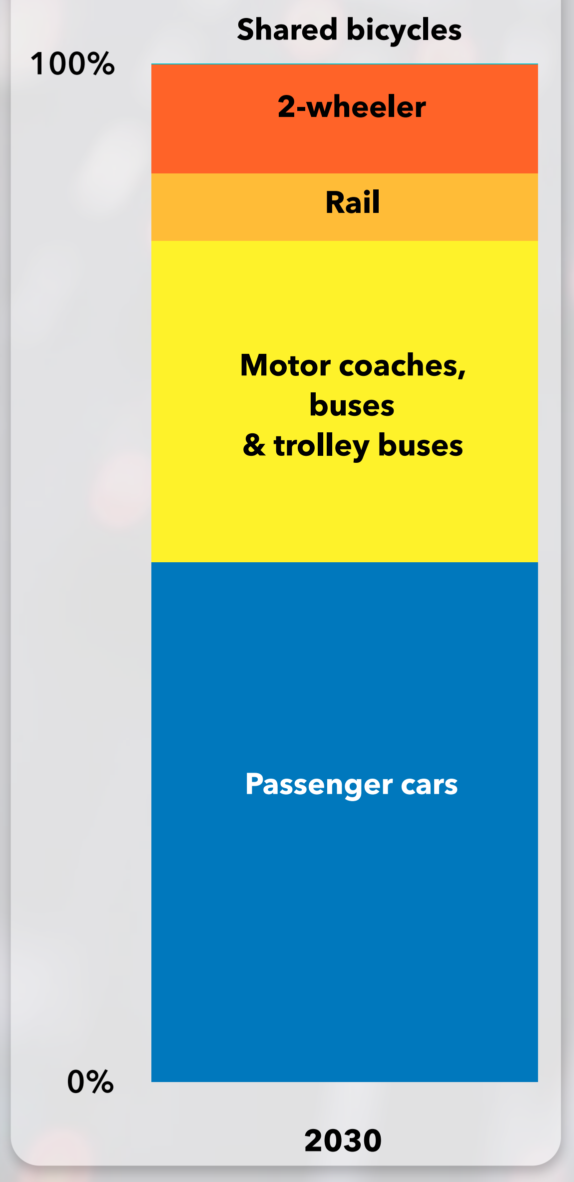
Noam Bardin
CEO, Waze

"Our mission is much larger than just a navigation app. As a mobility provider, we want to end traffic."

The global demand for mobility will grow by 55% by 2030, mostly absorbed by cars!

- Global mobility will represent **70** trillion passenger km in 2030, a 55% increase
  - The growth will be facilitated by **rapid vehicle sophistication brought by developments in automation, electrification and connectivity**
  - As a result, **the number of passenger kilometres driven by cars will further increase by 35% from 2020 to 2030**
- The new **mobility models** enabled by smartphonisation and machine learning will continue to **transform urban mobility**
  - **Car pooling will grow by 22% per annum**
  - **Ride hailing alone will generate 50% of the revenues of car-centric mobility in 2030**
  - **Shared mobility will add 60 billion passenger km** into global traffic, **mainly from cars**
- Urban mobility demand will be **heavily influenced by the deployment of level 4 (L4) autonomous vehicles (AVs), starting in 2021**
  - **15 million L4 AVs** are expected on the road by 2030
- **Automation will lead the ownership model to rapidly switch from owned to shared**
  - Today using a taxi is typically 5 times more expensive than using one's private car
  - By 2030, on average, it will be **20% cheaper to use an autonomous taxi than to use a privately-owned AV**
- Despite fleet electrification growing at 35% annually, only **90 million electric vehicles (EVs) will be on the road by 2030**
- **Old fashion transport modes will take off faster than alternative and new vehicles. They will not solve the congestion problem by 2030**
  - Motor **buses and coaches** will become one of the fastest growing transport modes with **22 trillion passenger km** in 2030
  - **Shared electric mopeds** will see the fastest growth of all mobility modes and are expected to represent **8 million passenger km** by 2030

Modal split of passenger transport



Mega-trend #2: Smartphones will become the sole (2-way) interaction mechanism with mobility users

"People tapped, swiped and clicked on their smartphone a whopping 2,617 times each day, on average"

*Michael Winnick, CEO, dscout**

- Smartphones have become one the **most powerful computing devices and integrators** for applications
- The rapid technological advancement of smartphones will give **complex functionalities to even low-end smartphones**
- **Smartphones bring intelligence to the edge:**
  - The system becomes smart as it leaves the old, top-down, command-and-control model
  - It can adjust dynamically without the centre controlling it
- **Fundamentally, thanks to services such as Waze or TomTom, any user can becomes as smart as the old traffic management centre!**
- Emerging markets, notably China, will move their transport interactions to mobile even faster than Europe and North America
- **Suppliers of traditional systems will gradually disappear,** including ticketing and access systems, supplier of tolling devices, etc.

Source: PTOLEMUS - Note: * Research made on 94 Android users in 2016 by dscout, a research firm

Mega-trend #3: The battle for vehicle data will rapidly expand into a war for mobility intelligence

"In an autonomous and multimodal mobility future, the focus of the data battleground will move from the vehicle to the user."

*Toon Vanparys, CEO, Sentiance**

- **Mobility data generation is exploding** thanks to smartphones, increased connected vehicles, mandates such as eCall and open transport datasets and AVs
- **Most OEMs have deployed / are deploying their own cloud platforms**, often based on technology giants' infrastructure
- **As a result, Google, Amazon and Microsoft are now firmly positioned in the vehicle data value chain**
- However, the **real battlefields of the future** will be different:
  - How to smoothly exchange and monetise vehicle data
  - How to go beyond vehicle data and towards a complete understanding of people's mobility
  - How to integrate each transport mode data into transactional MaaS platforms
  - How to create smart systems, using AI
- **Regulators will play a key role in forcing open access to data if the market does not make it happen**

Source: PTOLEMUS - Note: * Sentiance is a Belgian analytics platform provider

Mega-trend #4: Usage-based insurance and road usage tolling will make the cost of mobility variable

""The acquisition of PayTollo is exciting… as we continue to expand our consumer convenience and safety offerings"

Joe Verbrugge, EVP & GM, Emerging Business, SiriusXM

- **The UBI market has grown 2.5 fold in the last 3 years**
  - UBI is **growing out of traditional markets** to new segments and new markets such as APAC
  - It is driven by **device cost decreases and smartphone-enabled programmes**
- We expect **global UBI premiums to reach €180 billion by 2030**
- **Electronic road tolling subscriptions** have reached 310 million in 2018 and will continue to expand rapidly, driven by:
  - Increasing gaps in infrastructure funding
  - Worsening traffic congestion
  - Growing external costs
  - Smartphone- and in-vehicle tolling
- **Both will expand in parallel, making the cost of mobility variable:**
  - Increasingly GNSS will enable a distance-based road and insurance-charging system…
  - Which we expect to become commonplace with shared autonomous vehicles

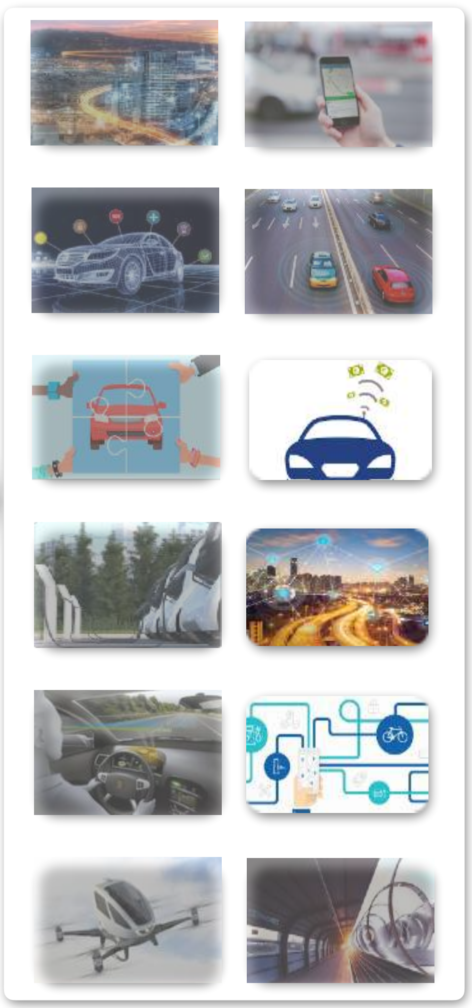
Source: PTOLEMUS - Note: SiriusXM is a US satellite radio broadcaster - Paytollo is a US mobile tolling provider

Augmented Mobility 2030 is the first ***holistic*** analysis of future mobility

1 DRIVING FACTORS

- External factors
- Behavioural
- Infrastructure
- Car business transformation
- New delivery models
- Technological advances

2 KEY TRENDS



3 MODES

4 IMPACT ON PLAYERS

- Automotive OEMs
- Mobility platform providers
- Cities
- Parking operators
- Energy companies
- Payment providers
- Fuel card operators
- Public transport operators
- Insurance companies
- Road operators
- IoT technology suppliers
- Roadside assistance
- Leasing and rental operators
- Tech giants
- MNOs
- Tier-1 suppliers

5 MOBILITY DEMAND

DEMAND FORECAST

We considered a wide array of factors that have an impact on the future of mobility

1 DRIVING FACTORS

Behavioural

- Smartphone development and massive adoption
- High mobile engagement
- Rapid adoption of shared service models
- Increasing vehicles underutilisation

Infrastructure

- Increasing penetration of smart urban infrastructure
- Adoption of wireless sensors in road infrastructure
- Rise of edge computing and 5G technologies
- Network technologies rapid development
- Increase in data transfer speed via new wireless networks

Technological advances

- Data processing and storage's increasing capacity
- Low-cost and efficient sensors
- Improvement in GNSS positioning
- AI and machine learning used for analytics and prediction
- Lower battery and EV production costs
- Open APIs

Car business transformation

- Car data monetisation
- Proliferation of connected & traceable transportation
- Rise of OEM data hubs
- Fleet electrification

External factors

- Environment regulations and incentives
- Increasing traffic and congestion in growing cities
- Global population growth
- Waves of increase in car safety requirements

New delivery model

- New fair pricing models
- Smartphone as a channel to mobility services
- Shared & open data
- New cashless payment options
- Rise of cashless payment and mobile banking platforms

We identified the 12 mega-trends shaping future mobility

2 MEGA-TRENDS

Connectivity


Smartphonisation


Data & AI


Usage-based charging


On-demand & shared services


Electronic payment


Smarter infrastructure


Mobility as a Service


Automation


Electrification


New land vehicles


New air vehicles

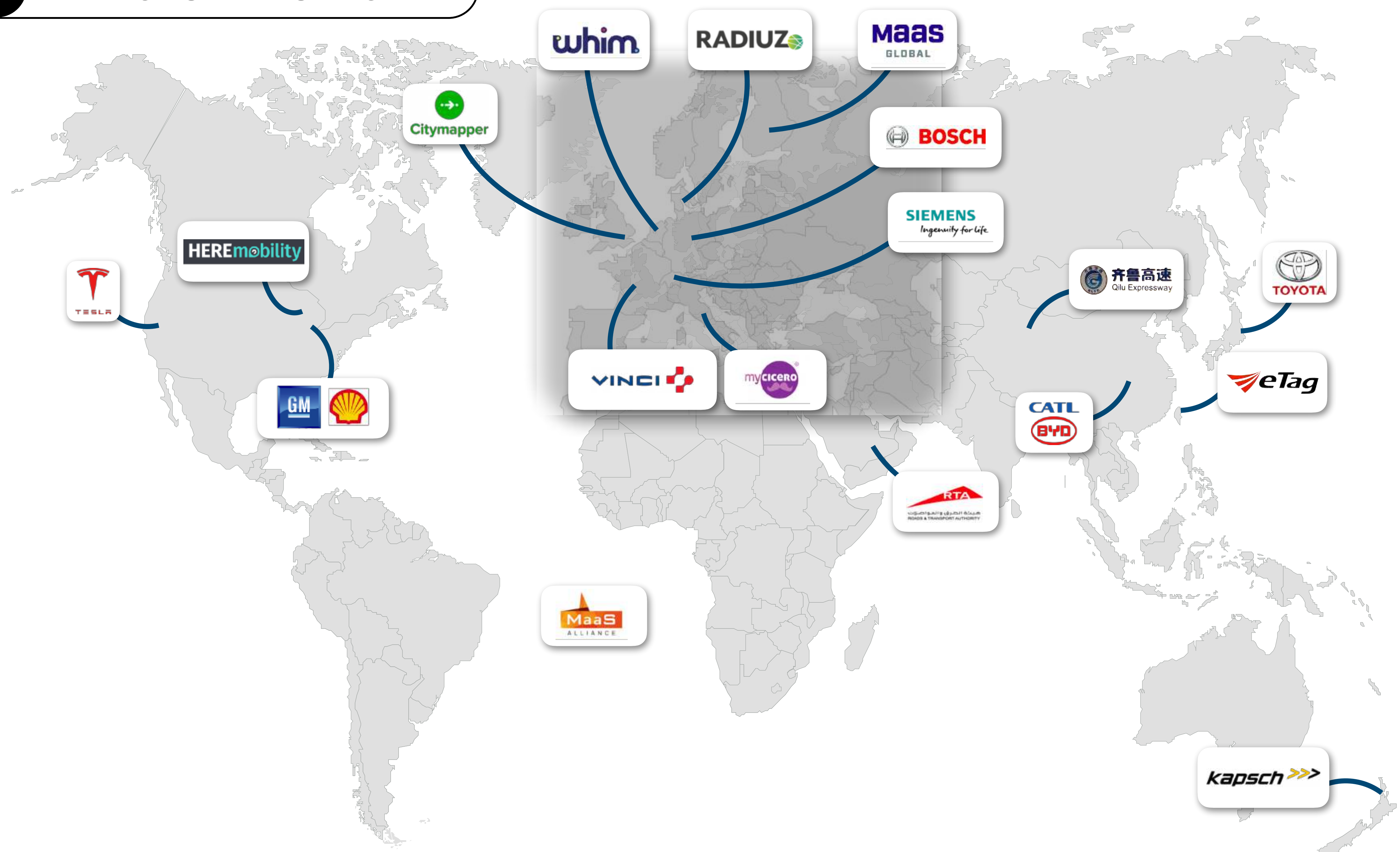

We analysed 18 transport modes, from metro to e-bicycles

3 TRANSPORT MODES

- Car sharing
- Ride hailing
- Car pooling
- Taxi
- Car rental
- Own vehicle for personal use
- Autonomous car sharing /ride hailing
- Own AV for personal use
- Bus/motor coach
- AV buses & shuttles
- Tram & metro
- Train
- Shared 2-wheeler
- Shared bicycle
- New land vehicles
- New air vehicles
- Walking

We investigated how multimodal mobility is delivered in practice

3 TRANSPORT MODES



We then analysed how each trend will impact 16 categories of mobility stakeholders

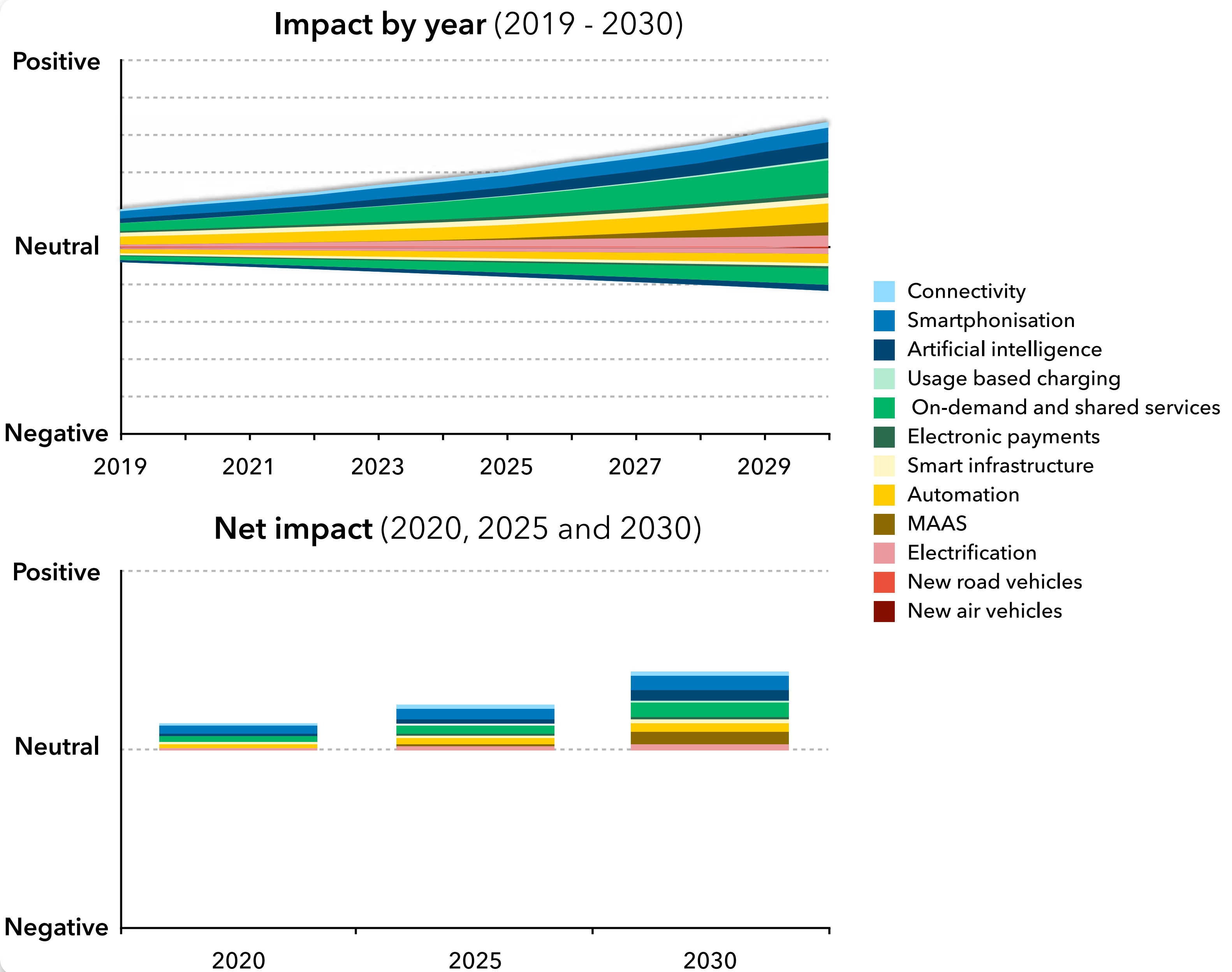
4 IMPACT ON KEY PLAYERS

AUTOMOTIVE OEMs	CITIES	ENERGY COMPANIES	FUEL CARD OPERATORS
INSURANCE COMPANIES	IoT TECH. SUPPLIERS	LEASING / RENTAL OPERATORS	MOBILE OPERATORS
MOBILITY PLATFORM PROVIDERS	PARKING OPERATORS	PAYMENT PROVIDERS	PUBLIC TRANSPORT OPERATORS
ROAD OPERATORS	ASSISTANCE COMPANIES	TECH GIANTS	TIER-1 AUTO. SUPPLIERS

For example, we measured both positive and negative impacts of mobility on cities

4 IMPACT ON KEY PLAYERS

Mobility trends' impact on cities (2019 - 2030)



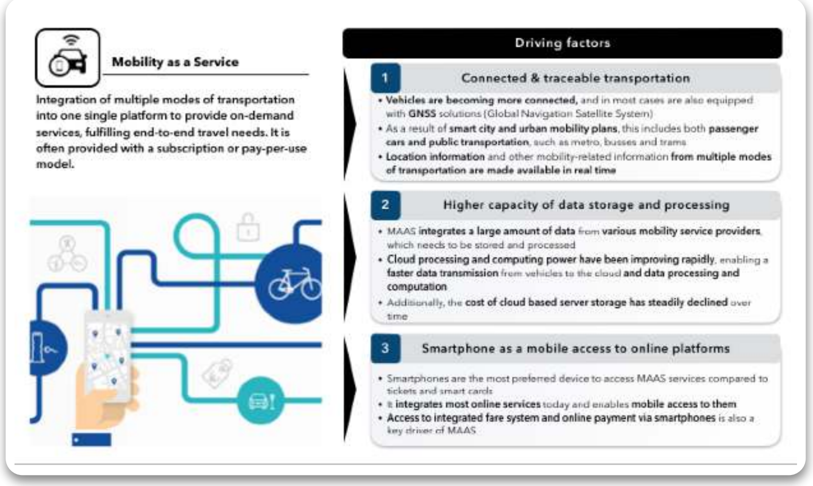
- **The impact of mobility trends is already visible** in most major cities
  - **Smartphones** have enabled **shared and on-demand urban transportation to flourish,** plus transport data aggregators and routing apps
  - **Smartphone payments are likely to fully replace cash**
- We expect that mobility trends **will bring even more benefits to citizens in the next decade**
  - ADAS will dramatically reduce the frequency of accidents with pedestrians and bicycles
  - Cleaner energies will contribute to improved air quality and noise reduction
  - Smart infrastructure will enable monitoring of e.g. traffic and improve safety through V2V and V2I
  - MaaS schemes will improve commuting times and lower the cost of traveling
  - Shared mobility has the potential to dramatically reduce the number of vehicles and the need for parking space
  - Central platforms will collect and analyse massive amounts of data in real time, enabling incident prediction and better resource management
  - L4 AVs are expected to make vehicles an integral - and safer - part of the city's collective transportation by the end of the next decade
- The impact of these trends will continue to grow in the long term
- However, it is difficult for cities to make long term plans around new or untested technologies

To order the study or enquire about our new subscription model, contact contact@ptolemus.com

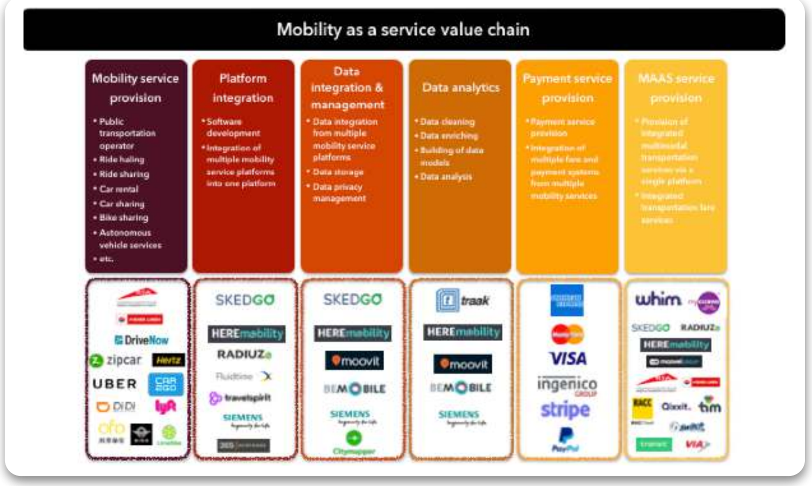
We then forecast the demand for each mobility market

4 MOBILITY DEMAND

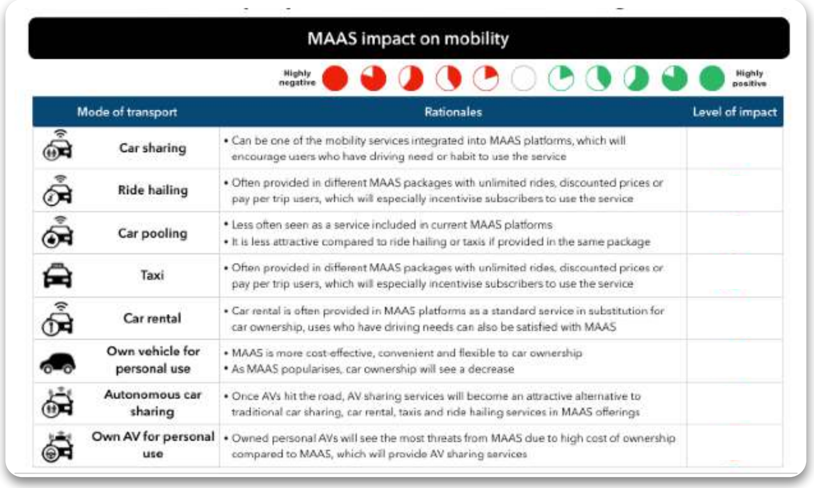
We identify the driving factors



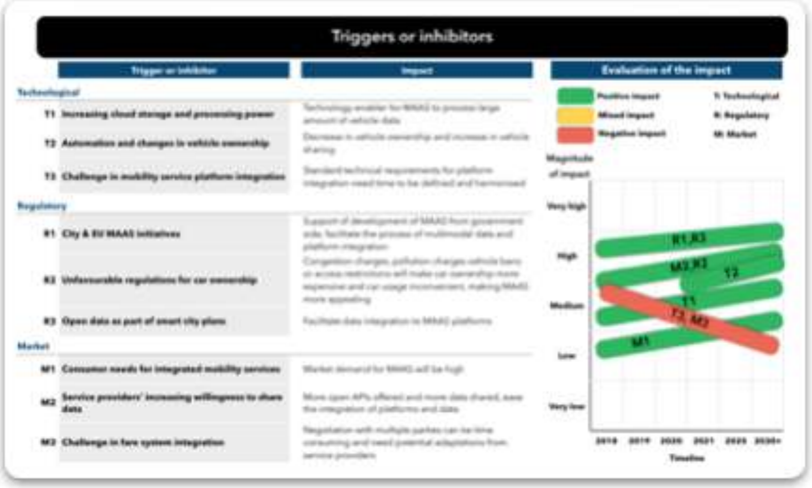
… we analyse the value chain



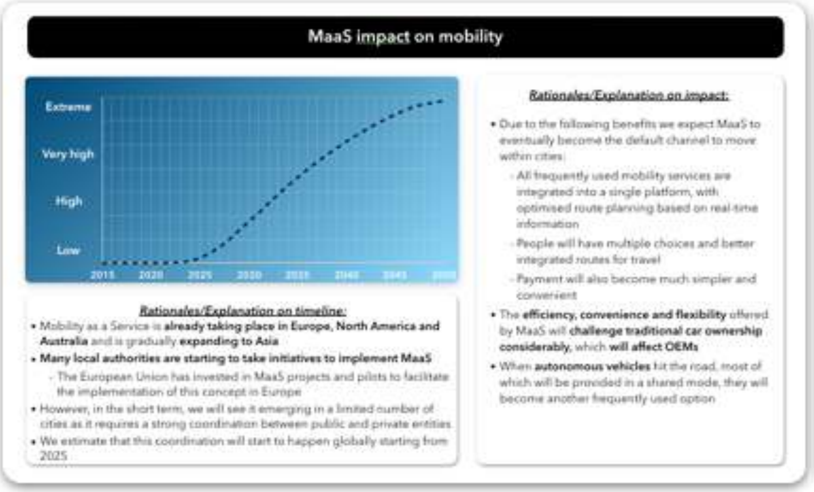
… we appraise the impact of each trend on each transport mode



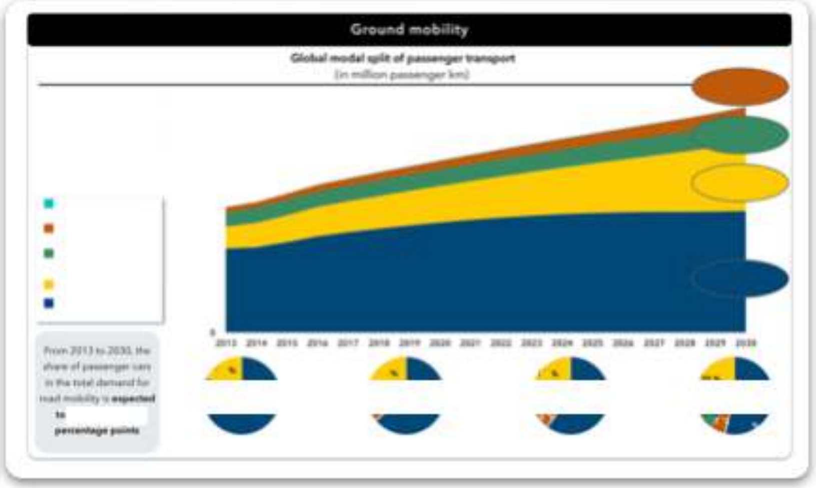
… we pinpoint the main triggers and inhibitors



… we identify the level of impact vs. other factors / trends



…finally, we present validated forecasts



The study bring the first ever bottom-up forecast of 11 land transport modes in 18 regions until 2030

4 MOBILITY DEMAND

- Timescale: 2018 - 2030
- Unit of volume: million passenger km

Transport modes projected:

- Passenger cars
  - Own vehicles for personal use
  - Car sharing
  - Ride hailing
  - Car pooling
  - Car rental
  - Taxi
- Coaches, buses & trams (incl. sub-categories)
- Rail
- Two-wheelers (incl. sub-categories)
- Bicycles
- New vehicles

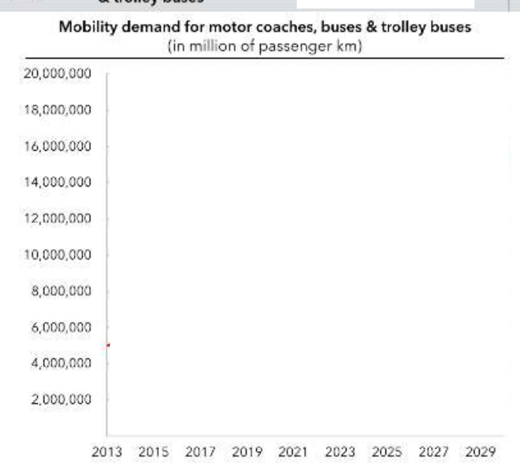
Also included:

- Global new electric passenger car registrations
- Electric passenger cars in use (5 key markets)
- Autonomous passenger car registrations (L2, L3, L4)
- Autonomous cars in use (L2, L3, L4)

Each transport mode is forecast over 3 time horizons: from 2018 until 2020, 2025 and 2030

Mode	Graph	Units	CAGR 2013 - 2017	CAGR 2017 - 2030
Passenger cars		Millions of passenger km	x %	x %
Own vehicles for personal use		*Millions of passenger km*	x %	x %
Car sharing		*Millions of passenger km*		
Ride hailing		*Millions of passenger km*		
Car pooling		*Millions of passenger km*		
Car rental		*Millions of passenger km*		
Taxi		*Millions of passenger km*		
Motor coaches, buses & trolley buses		Millions of passenger km		
Rail		Millions of passenger km		
2-wheeler / shared e-scooter		Millions of passenger km		
Shared bicycles		Millions of passenger km		
New vehicles				

Mode	Graph	Units	CAGR 2013 - 2017	CAGR 2017 - 2030
Motor coaches, buses & trolley buses		Millions of passengers km		



Validation

Geographic scope

European Union
- France
- Germany
- Italy
- Spain
- UK
- Rest of EU

Rest of Europe

Russia

North America
- USA
- Canada

Latin America

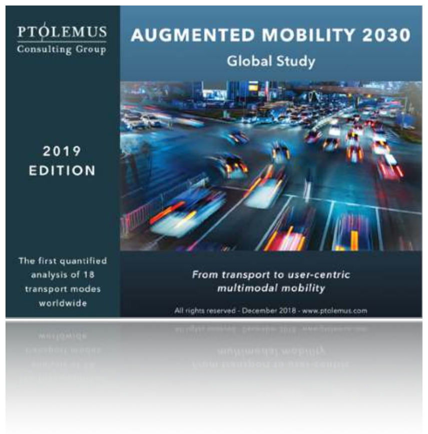
Asia Pacific
- China
- India
- Japan
- Australia
- Rest of APAC

South Africa

Rest of Africa

Global

The first comprehensive analysis of the global mobility market is now available as a single, worldwide company licence



The first quantified analysis of 18 transport modes worldwide

	Augmented Mobility 2030 Global Study Buy direct (Invoice)	Augmented Mobility 2030 Global Study Buy online (Visa or MasterCard)	Forecast	Mobility strategy workshop
Contents	• **500-page analysis of the mobility market** through the key factors and trends impacting mobility • An assessment of the future strategies of each stakeholder type • Global mobility demand projections to 2030 • All-in-one searchable and interactive document (PDF format, password-protected)		• Forecast of mobility passenger km by country and transport mode through 2030 • Autonomous Vehicle volume forecasts through 2030 • Electric Vehicle volume forecast through 2030	• The full study presented to your board or strategy team • Half-day workshop in your offices*
Company-wide licence	**€ 3,995** *Approx. $4,530*	**€ 4,200** *Approx. $4,760*	**€ 2,000** *Approx. $2,670*	**€ 2,000** *Approx. $2,670*
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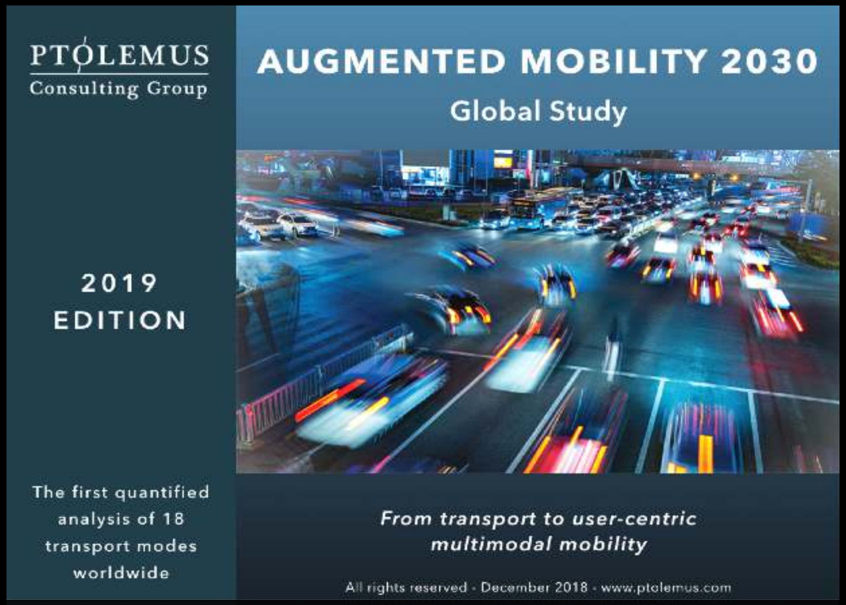
As transportation is morphing into mobility, strategists must adopt a user-centric, multimodal approach

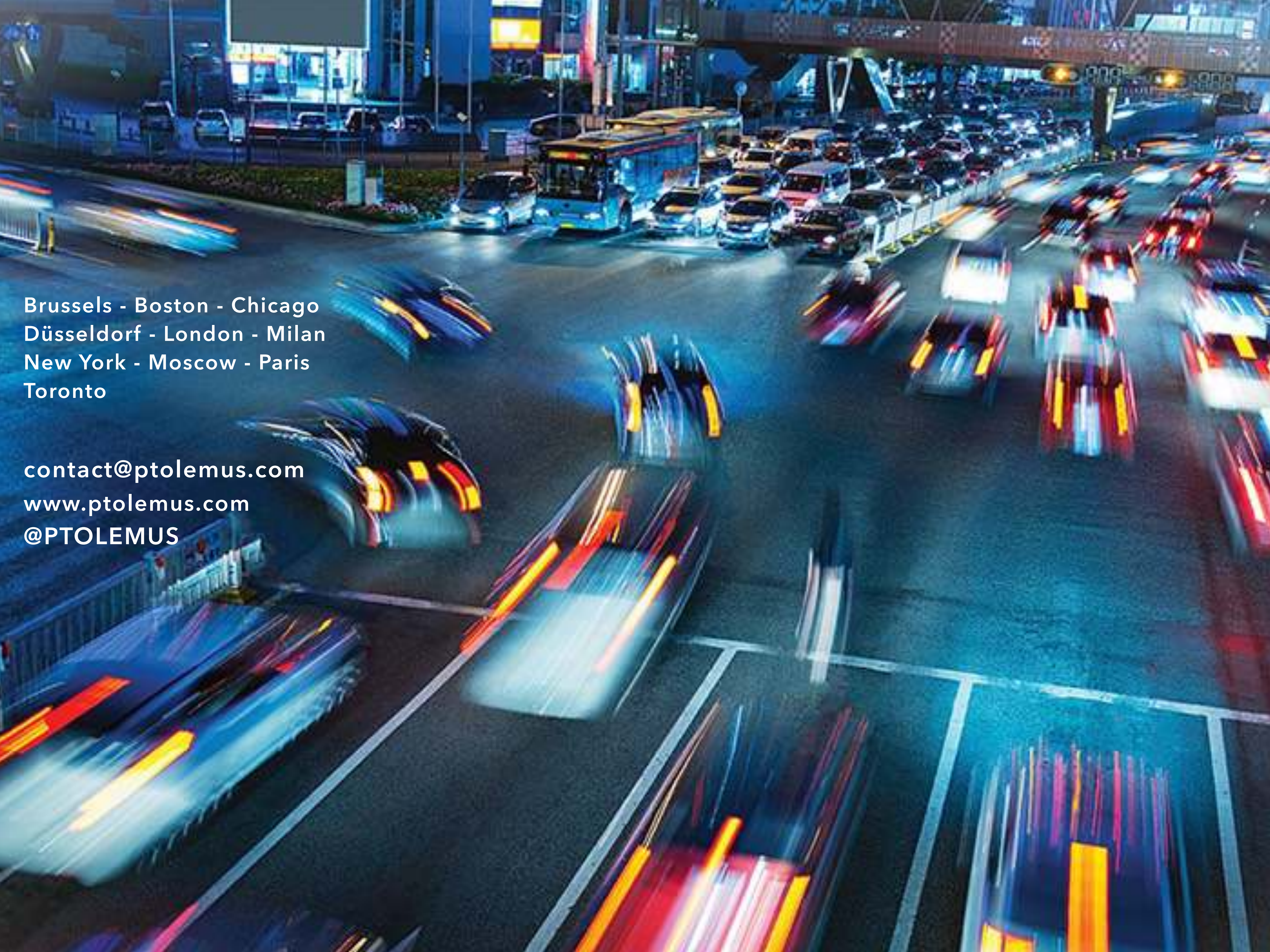


"Everybody has a plan until they get punched in the face"

Mike Tyson

Thank you!

- **Global transportation will continue to grow**, making urban congestion & pollution even more acute
- The whole **mobility industry has been put to task** but mono-mode transport categories and models are outdated
- **Augmented Mobility 2030 Global Study offers the first holistic analysis to redefine mobility strategies**
  - From mono- to multi-modal
  - From supply-driven to user-centric
- **It is the tool to make it happen:**
  - A deep analysis of what is about to come
  - 18 modes forecast until 2030



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The report covers the activities of over 300 companies

Company	Type
365 Response	Platform integration
99 Taxis	Mobility Platform Providers
A-to-Be	Mobility Platform Providers
A1	MNO
A123 Systems	Battery Production
AA	Roadside Assistance
AAA	Roadside Assistance
Abertis	Road infrastructure provision and operation
ACTA	Roadside Assistance
ADAC	Roadside Assistance
AEG	Energy Company
Agero	Insurers, aggregators and assistance providers
Aioi Nissay Dowa Insurance	Insurers, aggregators and assistance providers
Airbiquity	Telematics Solution Providers
Airbus	Tier-1 Suppliers
Aisin	Tier-1 Suppliers
ALD Automotive	Leasing & Rental Operator
Alibaba	Tech Giant
Alphabet	Aftersales Services

Company	Type
Amadeus Capital	Banks & Private Equity Investor
Amazon	Tech Giant
American Express	Payment service provision
Amundi	Banks & Private Equity Investor
Andrew	Device and Location Supplier
APCOA Parking	Road infrastructure provision and operation
Apple	Software Development
Aral	Fleet & Fuel, ITS & Regulators
ARC Europe	Roadside Assistance
ARI	Leasing & Rental Operator
Arkan	Telematics Solution Providers
Arm	Iot Hardwate provision
Arrend Leasing	Leasing & Rental Operator
Arval	Leasing & Rental Operator
AT&T	MNO
Atlantia	Road infrastructure provision and operation
ATM	Public Transport Operators
Atzuche	Mobility Platform Providers

Company	Type
Audi	OEM
AutoCorp	Leasing & Rental Operator
Automotive Energy Supply Corporation	Battery Production
AutoNation	Vehicle Distributor
Autostrade	Road Operators
AVAG Holding	Vehicle Distributor
Avis	Leasing & Rental Operator
Avla Networks	Iot system integration
Baidu	Tech Giant
Bank of America Merrill Lynch	Banks & Private Equity Investor
Barclays	Banks & Private Equity Investor
Base	MNO
Beclib	Charging station providers
BEM BILE	Data analytics
Bemobile	Mobility Platform Providers
Bird	Bikes
Blablacar	Mobility Platform Providers
Blockbuster	Video Rental Service
Bluegogo	Bikes
BMJ Group	Analytics Maps and Application Provider
BMW Group	OEM
BorgWarner	EV specific Tier 1

Company	Type
Bosch	Tier-1 Suppliers
BP	Energy Company
Bridgestone	OEM/Supplier
Brisa	Road Operators
Brussels Metro	Public Transport Operators
By My Car	Vehicle Distributor
BYD	Battery Production
Cabify	Mobility Platform Providers
Car2Go	Mobility Platform Providers
CATL	Battery Production
CCC Information Services	Analytics Maps and Application Provider
CCV	Tech firms
CGI	Fleet & Fuel, ITS & Regulators
Chargemaster	Charging station providers
Chase	Banks & Private Equity Investor
China Grand Auto	Vehicle Distributor
China Mobile	Mobile Network Operator
Cinven	Banks & Private Equity Investor
CISCO	Software Development
Citigroup	Banks & Private Equity Investor
Citroen	OEM
Citymapper	Maps & Navigation
Clubauto	Roadside Assistance

The report covers the activities of over 300 companies

Company	Type	Company	Type	Company	Type	Company	Type
Cnes	Device and Location Supplier	EasyTaxi	Mobility Platform Providers and Software development	Eurostat	Statistics Agency	GM	OEM
Comovee	Mobility Platform Providers	Edenred	Fuel Card Operators	EW	Fleet & Fuel, ITS & Regulators	GMV	Device and Location Supplier
Connecteast	Road Operators	EE	Mobile Network Operator	Facebook	Tech Giant	Goldman Sachs	Banks & Private Equity Investor
Continental	Tier-1 Suppliers	Egis	Fleet & Fuel, ITS & Regulators	Faurecia	Tier-1 Suppliers	Google	Tech Giant
Cox Automotive	OEM/Supplier	Elavon	Card Payment Provider	FiA	Insurers, aggregators and assistance providers	Grab	Mobility Platform Providers
Coyote	Analytics Maps and Application Provider	Eliocity	Telematics Solution Providers	Fiat - Chrysler	OEM	Grabhitch	Mobility Platform Providers
Credit Agricole	Insurance Companies	EMC	Iot system integration	First Data	Banks & Private Equity Investor	Group 1 Automotive	Vehicle Distributor
Daimler	OEM	Eni	Energy Company	Fleetcomplete	Telematics Solution Providers	GSA	Space Agency
DAMTC	Roadside Assistance	Enterprise carshare	Leasing & Rental Operator	Fleetcor	Fuel Card Operators	GVB	Public Transport Operators
Danlaw	Telematics Solution Providers	Eon	Charging station providers	Fleetmatics	Telematics Solution Providers	Harman	OEM/Supplier
Dell	Iot system integration	Ericsson	Mobile Harware & Software Provider	Flex	Iot system integration	Hellman & Friedman	Banks & Private Equity Investor
Delphi	OEM/Supplier	Erkon	Fleet & Fuel, ITS & Regulators	Fluidtime	Platform integration	HERE mobility	Mobility Platform Providers and Software development
Denso	EV specific Tier 1	ESRI	Analytics Maps and Application Provider	Flybrid	EV specific Tier 1 and 4	Hertz	Leasing & Rental Operator
Didi Chuxing	Mobility Platform Providers	Estradas Portugal	Road Operators	Ford	OEM	HHI	Road Operators
Distruptive	Banks & Private Equity Investor	Euromaster	Fleet & Fuel, ITS & Regulators	Andrew	Device and Location Supplier	Hino	OEM/Supplier
DKV	Fuel Card Operators	Europ Assistance	Insurance Companies	FUJITSU	Computer harware & Software	Hitachi Vantara	IoT Technology Companies
Drive/Reachnow	Mobility Platform Providers	EuroPark	Parking Operators	Garmin	Maps & Navigation	Hitch	Mobility Platform Providers and Software development
Drust	Telematics Solution Providers	European Commission	Fleet & Fuel, ITS & Regulators	Gazprom	Energy Company	Honda	OEM
DubaiRTA	Road Operators			GE	Energy Company	Honeywell	IoT Technology Companies
Dynamic Map Platform	Analytics Maps and Application Provider			Generali	Insurance Companies	HSBC	Banks & Private Equity Investor
				Genivi	Automotive Alliance		
				GLONASS	Satellite Navigation		

The report covers the activities of over 300 companies

Company	Type
Huawei	IoT Technology Companies
Hutton Collins	Banks & Private Equity Investor
Hyundai	OEM
IAG	Insurers, aggregators and assistance providers
Iber	Mobility Platform Providers
IBM	Tech Giant
IDIS	Surveillance Systems
Imperial College London	Education
Indigo	Parking Operators
Ingenico Group	Payment Providers
Inrix	Connected Car Analytics
Intek Group	Banks & Private Equity Investor
Intel	OEM/Supplier
Invers	Carsharing technology
Investcorp	Banks & Private Equity Investor
Ionity	Charging station providers
IOXUS	Ultra capacitor production
iParkit	Parking Operators
Isuzu	OEM/Supplier
J.P. Morgan	Banks & Private Equity Investor
Jaguar	OEM

Company	Type
Jatco	EV specific Tier 1
Johnson Controls	EV specific Tier 1
Johnson Matthey Battery Systems	Battery Production
JustPark	Parking Operators
Kapsch	Road infrastructure provision and operation
Kodak	Tech Giant
Konux	IoT Technology Companies
Landrover	OEM
Leonardo & Co	Banks & Private Equity Investor
LG Chem	Battery Production
LimeBike	Shared Bike Provider
Location Smart	Device and Location Supplier
LoJack	Telematics Solution Providers
LoRa	Wireless Data Alliance
Los Angeles	Cities
Lukoil	Energy Company
Lyft	Mobility Platform Providers
Magna	Tier-1 Suppliers
Marie de Paris	Service provision
Mastercard	Payment Providers
Matmut	Insurers, aggregators and assistance providers

Company	Type
Maven	Software Development
Maxwell	Ultra capacitor production
Mazda	OEM
Mcvelc	Analytics Maps and Application Provider
Mercedes Benz	OEM
Meta System	Telematics Solution Providers
Metrobus	Public Transport Operators
Metropolitan Transportation Authority	Public Transport Operators
Michelin	OEM/Supplier
Microlise	Fleet Telematics System
Microsoft	Aftersales Services/ Tech giant
Mirror link	Integration Software
Mitsubishi	OEM
Miveo	Carsharing technology
Mobike	Bike Sharing Provider
Mobileye	Software Development
Mondial Assistance	Insurers, aggregators and assistance providers
Montezemolo & Partners	Banks & Private Equity Investor

Company	Type
Moovel group	MaaS service provision
moovit	Data analytics
Muncipal Parking	Parking Operators
mycicero	Transport Platform
myTaxi	Mobility Platform Providers
Navitia.io	Transport Data Provider
Navizon	Device and Location Supplier
NESSCAP	Ultra capacitor production
NetObjex	IoT Technology Companies
NETS	Tech firms
New Amsterdam Growth Capital LLC	Banks & Private Equity Investor
New York City	Cities
Newland	AIDC Manufaturer
Nissan	OEM
Nokia	Device and Location Supplier
Nomura	Banks & Private Equity Investor
NTT	Telecom Operator
nuTomy	Automobile service provider
Nvidia	Software Development
NYC OpenData	Service provision
Octo	Telematics Solution Providers
Ofo	Bikes
Ola	Mobility Platform Providers

The report covers the activities of over 300 companies

Company	Type
Omoove	Mobility Platform Providers
Onstar	In-Vehicle Safety Software
Opel	OEM
Oracle	Tech firms
Orange	Mobile network operator
Orion	Telematics Solution Providers
Ouicar	Mobility Platform Providers
Outsurance	Insurers, aggregators and assistance providers
Palm Monorail	Public Transport Operators
Pamplomoma	Banks & Private Equity Investor
Panasonic	Battery Production
Park'n Fly	Parking Operators
ParkNow	Parking Operators
Particle	IoT Technology Companies
Pasco	Analytics Maps and Application Provider
PayLane	Payment Providers
PayPal	Payment Providers
Pendragon	Vehicle Distributor
Penske	Vehicle Distributor
Petrobras	Energy Company
PetroChina	Energy Company
Pioneer	OEM/Supplier
PPZuche	Mobility Platform Providers

Company	Type
Preferred Networks	Iot system integration
Promutuel	Insurers, aggregators and assistance providers
Protean	Motor production
Proximus	MNO
PSA	OEM
PSD2	Payment Providers
Qilu transportation Group	Road Operators
Qixxit	MaaS service provision
Qoros	OEM/Supplier
Qpark	Parking Operators
Qualcomm	OEM/Supplier
Qucit	Iot system integration
Quelink	Telematics Solution Providers
RAC	Insurers, aggregators and assistance providers
RACC	MaaS service provision
Radiuz	Platform integration
RATP	Public Transport Operators
Reliance	Energy Company
Remy	Motor production
Renault-Nissan	OEM
Renova Group	Banks & Private Equity Investor

Company	Type
Ridecell	Mobility Platform Providers
RingGo	Parking Operators
Rockwell Automation	IoT Technology Companies
RTA	Road Operators
SafeFleet	Telematics Solution Providers
Samsung	Device and Location Supplier
SANEF	Road Operators
SAP	Data analytics and IoT Technology Companies
Sas	Analytics Maps and Application Provider
Scania	OEM
SCOOP@F	ITS Pilot Project
SFR	MNO
Shell	Energy Company
Shopify	eCommerce Solutions
Sick	Fleet & Fuel, ITS & Regulators
Sigfox	Wireless Network Provider
Sistema	Telematics Solution Providers
Sixt	Leasing & Rental Operator
SK Telecom	MNO
Skedgo	Mobility Platform Providers
Skeleton Technologies	Ultra capacitor production

Company	Type
Smile	Insurers, aggregators and assistance providers
Smobil	Telematics Solution Providers
SNCF	Public Transport Operators
Socar	Mobility Platform Providers
Sofico	Fleet & Fuel, ITS & Regulators
Sprint	Mobile Telecom Operators
Sproverein	Public Transport Operators
Square	Payment Providers
Stripe	Payment Providers
Suzuki	OEM
Swiftly	Connected City Big Data
Switch	MaaS service provision
Sysnav	Device and Location Supplier
T Mobile	Aftersales Services
Telefonica	MNO
Telekom Austria	Mobile Telecom Operators
Telesure	Insurers, aggregators and assistance providers
Telit	OEM/Supplier
Telstra	Mobile Telecom Operators

The report covers the activities of over 300 companies

Company	Type	Company	Type	Company	Type
Tencent	Banks & Private Equity Investor	Valeo	OEM	YouGov	Research Body
Teradata	Data analytics	Velib	Bike Sharing Provider	youi	Insurers, aggregators and assistance providers
Tesla	OEM	Verdeva	Fintech	Yueqi	Bikes
ThalesAlenia Space	Device and Location Supplier	Verizon	MNO	Zendrive	Transport Data Provider
theParkingSpot	Parking Operators	VIA	MaaS service provision	Zipcar	Mobility Platform Providers
Tim	MaaS service provision	Viasal	Telematics Solution Providers	Zoomcar	Mobility Platform Providers
Time for Growth	Banks & Private Equity Investor	Vinci	Road infrastructure provision and operation		
TomTom	Software Development	Visa	Payment Providers		
Total	Energy Company	Vodafone	MNO		
Touring	Roadside Assistance	Volkswagen	OEM		
Toyota	OEM	Volvo	OEM		
Traak	Data analytics	Vulog	Mobility Platform Providers and Software development		
Transit	MaaS service provision	Wawa	Fuel Card Operators		
Transport for London	Public Transport Operators	Waymo	Aftersales Services		
Transurban	Road Operators	Waze	Mobility Platform Providers		
Travelspirit	Platform integration	Weiner Linien	MaaS service provision		
Turo	Mobility Platform Providers	Wex	Fuel Card Operators		
Uber	Mobility Platform Providers	Whim	Mobility Platform Providers		
UnionPay	Payment Providers	Williams hybrid power	EV specific Tier 1 and 7		
UQM	Motor production	Wipro	Iot system integration		
US Hybrid	Motor production	worldpay	Payment Providers		
USA Bureau of Transport Statistics	Statistics Agency				
UTA	Fuel Card Operators				