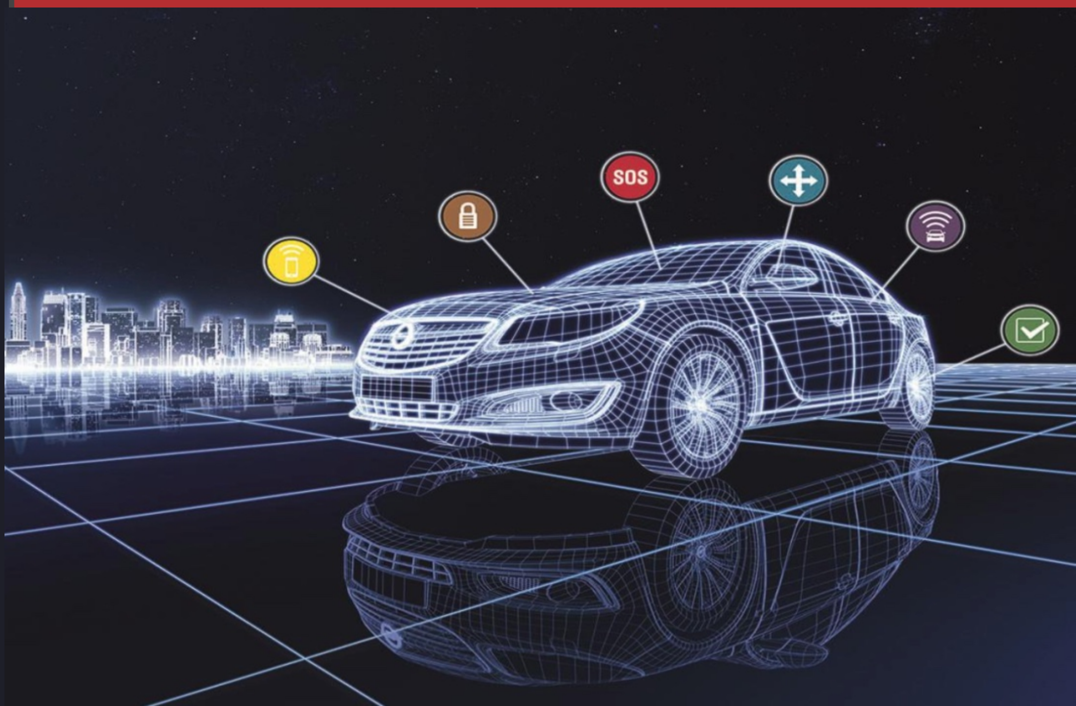
PTOLEMUS
Consulting Group

# CONNECTED CAR SERVICES GLOBAL FORECAST

**FREE ABSTRACT**




Reference figures & forecasts for 14 automotive markets

***Quantifying future connected car services***

# ABOUT PTOLEMUS CONSULTING GROUP

PTOLEMUS Consulting Group

*from Ptolemy, the Egyptian savant who built the 1st map of the world in the 2nd century*

PTOLEMUS is the first international strategy consulting 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, consumer electronics, insurance, mobile telecoms, etc.) and on an international basis.

PTOLEMUS, founded by Frederic Bruneteau, operates worldwide and is present in 7 countries: Belgium, France, Germany, Italy, Russia, the UK and the US.

PTOLEMUS has performed 70 consulting assignments related to connected vehicle services.

For any enquiries, please send a message to [contact@ptolemus.com](mailto:contact@ptolemus.com)

## Our consulting services

**Strategy definition**
Vision creation, strategic positioning, business plan development, board coaching & support

**Investment assistance**
Strategic due diligence, market & technology assessment, M&A, post-acquisition plan

**Procurement strategy**
Specification of requirements & tender documents, launch of tenders, supplier negotiation & selection

**Innovation management**
Value proposition definition, product & services development, architecture design, assistance to launch

**Business development**
Partnership strategies, detection of opportunities, ecosystem-building, response to tenders

**Implementation**
Deployment plans, complex project & programme management, risk analysis & mitigation strategy

## Our fields of expertise

**Car infotainment & navigation**
Connected services (Traffic information, fuel prices, speed cameras, weather, parking, points of interest, social networking), driver monitoring, maps, smartphone integration, smartphone-, PND- or embedded navigation,

**Usage-based charging**
Connected insurance, road charging / electronic tolling, fleet leasing & rental, car sharing, Car As A Service, etc.

**Telematics & Intelligent Transport Systems**
ADAS, connected vehicle, crowd-sourcing, fleet management, eCall, bCall, SVR, tracking, vehicle data analytics (OBD / CAN-bus), VRM, V2X, xFCD

**Positioning / Location enablement**

**M2M & connectivity**

# YOUR PTOLEMUS CONTACTS


**BRUSSELS**

**Frederic Bruneteau, Managing Director**
+32 487 96 19 02
fbruneteau@ptolemus.com

**CHICAGO**

**Valerie Shuman, Senior Expert**
+1 (312) 972-0220
vshuman@ptolemus.com

**PARIS**

**Matthieu Noël, Senior Consultant**
+33 6 13 34 70 56
mnoel@ptolemus.com

**MILAN**

**Sergio Tusa, Associate Partner**
+39 33 51 02 19 95
stusa@ptolemus.com

**LONDON**

**Thomas Hallauer, Research Director**
+44 7973 889 392
thallauer@ptolemus.com

**MOSCOW**

**Denis Gavrilov, Associate Partner**
+7 903 1552683
dgavrilov@ptolemus.com

**HANOVER**

**Hartmut Albers, Associate Partner**
+49 175 16 500 16
halbers@ptolemus.com


And follow PTOLEMUS on Twitter:
**@PTOLEMUS**

# THE AUTHORS OF THIS REPORT

## Frederic Bruneteau, Managing Director, Brussels

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

Mr. Bruneteau has accumulated nearly 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 *Reuters*. He has spoken at more than 20 international conferences on the subject.

Within PTOLEMUS, he has led **70 assignments related to connected vehicle services**:

- He assisted one of the world's largest **insurance groups** in designing its **telematics strategy & business plan across Europe;**
- **For one of the largest global car makers,** he defined the insurance telematics and fleet management **specifications of their future embedded device,**
- He defined the **5-year device roadmap** of a major Telematics Service Provider (TSP),
- He assisted a **global automotive tier-1 supplier in defining its UBI strategy**,
- He helped an insurance & data aggregation group detect **future breakthroughs in the connected car value chain** and their impact on the insurance market.

## Thomas Hallauer, Research Director, London

BA, International Business, University of London

Thomas Hallauer has gained 12 years of marketing experience in the domain of telematics and location-based services. He is an expert in new products and services notably in the telematics, motor insurance, electronic tolling and positioning industries.

Before PTOLEMUS, Thomas held management responsibilities with **Mobile Devices**, a leading provider of telematics technology platform and devices and with FC Business Intelligence (**Telematics Update**).

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.
Mr. Hallauer co-wrote the **2013 and 2016 versions of the** UBI Global Study and interviewed dozens of companies from AAA, Admiral, Ageas, Allianz, Liberty Mutual,

Mapfre USA to Zurich as well as telematics suppliers such as Danlaw, DriveFactor, Geotab, Himex, IMS, The Floow or Verizon Telematics.

For this report, Thomas led the research on each of the sector's trends, environments and sizing, edited and published the final document.

### Denis Gavrilov, Associate Partner, Moscow

BA in Political Science and MA in Management, Higher School of Economics of Moscow

Denis has gained more than 10 years of strategic and operational experience in insurance within international and local companies in Russia.

He is expert at **designing telematics products for insurance companies** with more than 6 years of expertise, dealers and car manufacturers. He is also an **expert of the digitalisation** of the insurance business: from online sales to online- and mobile-claims handling, electronic workflows and innovative business-processes settlement.

Denis notably

- Co-founded **Vazhno**, a UBI start-up using an online sales and mobile claims handling delivery model,
- Assisted several leading Russian insurance companies to develop their strategy to enter the motor UBI insurance market and their UBI product portfolio,
- For **Allianz Russia**, initiated a number of major partnerships and products such as the development of the joint Allianz - BMW UBI initiative.

A regular speaker at conferences on telematics and insurance digitalisation, Denis Gavrilov conducted our research for the Russian market.

### Matthieu Noël, Senior Consultant, Paris

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

Matthieu Noël has gained 6 years of experience in the automotive industry covering technical, strategy, marketing and business development, including more than 4 years in consulting.

Mr Noël has performed more than 20 assignments in the automotive and telematics industries. He understands the business and strategic implications of new technologies in the mobility eco-system and can adapt quickly to new industries and situations.

He has gained strong expertise in telematics, 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.

Before PTOLEMUS, Matthieu acquired consulting experiences with 7M Consulting, a strategy consulting firm specialised in the automotive industry and with Deloitte, within the Industry Strategy & Operation branch.

For this report, Matthieu led our market forecasting work for the 14 connected services.

### Alberto Lodieu, Senior Consultant, Paris

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

Alberto has more than 6 years experience in strategic and operations consulting. 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 LATAM**.

For this report, Alberto researched and analysed four of the markets.

## Philippe Brousse, Business Analyst, Brussels

MSc Eng., ENSIMAG & MS Strategy ESSEC, Paris

Philippe has gained experience in strategy and market research for companies such as Altai Consulting, CGI Business Consulting and Safran Morpho.

He has performed multiple market research projects in the connected mobility domain such as:

- The assessment of the Benelux fleet telematics management market for a North American TSP,
- The evaluation of the European fleet telematics management market for a $40 billion US hedge fund,
- The forecast of the European and North American UBI and fleet management markets for a smartphone Telematics Service Provider (TSP),
- The **bottom-up sizing of the global UBI market** for one of the largest TSPs,
- For a global insurance company, a **global analysis of smartphone apps** for UBI data collection and customer acquisition.

For this report, Philippe led the research and analysis to quantify and forecast 3 of the services market size.

## Justin Hamilton, Business Analyst, London

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

Justin has more than 3 years of experience within the transportation, road user charging and connected mobility markets, with a particular focus on national tolling and road user projects and related policy development.

A native of the UK, Justin conducts quantitative and qualitative analysis of global trends and developments in usage-based charging and connected mobility.

Before joining PTOLEMUS, Justin was Editor of Road User Charging magazine and Head of Content Research at Akabo Media and served as an in-house writer for various UK government departments. His articles on road charging have been **published in more than half a dozen leading print and online publications**. Recent assignments include:

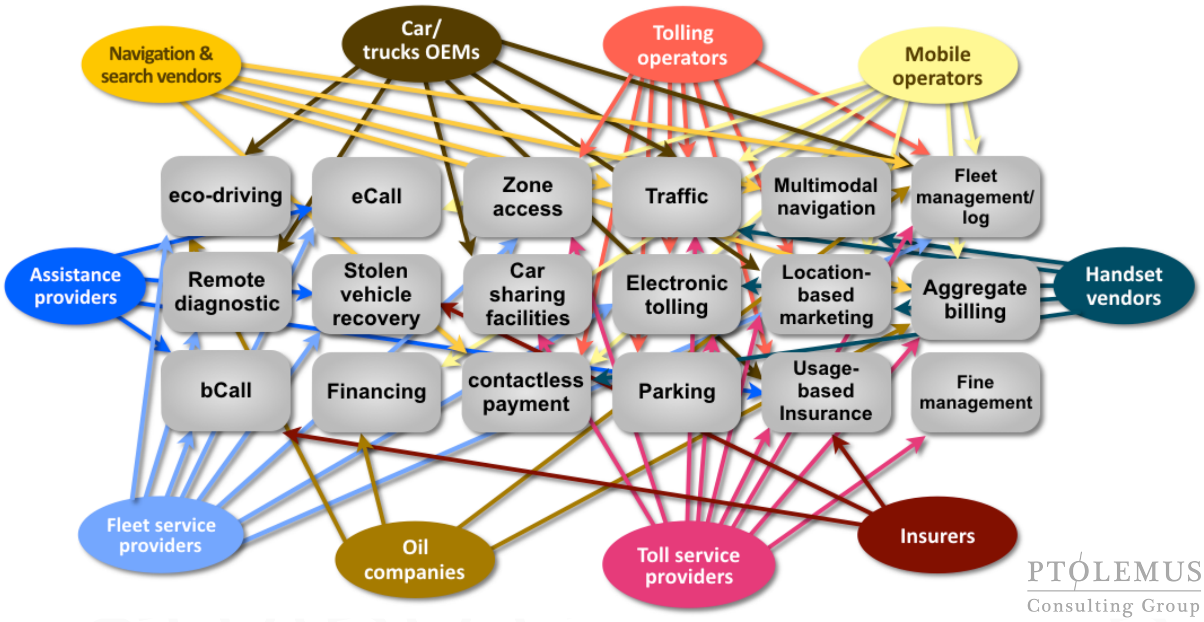
- An analysis of road charging opportunities across Europe, North America and Asia,
- A comprehensive ranking of global ETC service providers, systems integrators and technology suppliers.

For this report, Justin conducted market analyses and quantitative forecasting across 4 of the services.

# FOREWORD

**We live in the era of Big Data**, it has affected all services and none less so than those concerning the vehicle. Yet, finding a broad and all-encompassing view of what those services are and how they are evolving is a challenge.

Both our Usage-Based Insurance and Electronic Toll Collection reports have been a resounding success. Within these and other previous studies, we have **repeatedly demonstrated the growing links between mobility services** and the threats these will pose to legacy operators who remain bound within a single silo. The figure below, taken from our previous reports, outlines the increasing crossover:




Much has already been written concerning the disruptive influence of mobility service unicorns[1] such as Uber, BlaBlaCar and Waze.

Less exposed is **the pace of change and the unification of services** this disruption has led to, not to mention how the introduction of telematics and connectivity will affect the market inexorably.

Understanding these changes will result in tremendous opportunities for astute companies to cross silos and package multiple functions.

[1] A Unicorn is a start-up company valued at over $1 billion from investments in its first 5 years

To assess the scale of this opportunity, PTOLEMUS is pleased to bring you a complete **analysis and global forecast of 14 connected mobility services:**

- **Convenience services**: Car sharing, car pooling, car rental, navigation, in-vehicle Wi-Fi hotspot,
- **Safety & security services**: Stolen vehicle tracking & recovery (SVT/SVR), emergency assistance (eCall), usage-based insurance (UBI),
- **Maintenance services**: Remote diagnostics and connected breakdown assistance (bCall),
- **Cost management & finance-related services**: car leasing, electronic road charging, fuel payment and fleet management services.

Over the past year, we have seen **real shifts in the connected mobility landscape**, arguably led by the car manufacturers, who see visceral threats to their existence:

- **Ford** announced the launch of ***Ford Smart Mobility***, ***GoDrive*** (car sharing), ***Game Challenge*** (multi-modal transportation platform using gamification) and ***FordPass*** (mobility platform utilising partnerships with ***ParkWhiz*** and ***FlightCar***, among others),
- **General Motors** (GM) invested $500 million in ***Lyft*** and has begun leasing cars to Lyft drivers at little or no cost. GM also introduced ***Maven***, an amalgamation of car sharing schemes which use the ***OnStar*** embedded telematics platform and signed insurance telematics partnerships with ***Verisk*** in the US and ***Octo Telematics*** in Europe,
- Like many OEMs, **BMW** has long been active in the car leasing market. As part of its 'Vision Next 100' strategy, it is investing heavily in its own car sharing platform, ***DriveNow***, which will also be integrated into the ***Alphabet*** leasing service as a corporate service, ***AlphaCity,***
- **Daimler** acquired transportation app ***RideScout*** and booking platform ***MyTaxi*** - both of which have been integrated into the comprehensive mobility application ***Moovel***. The world's largest B2C car sharing company, ***Car2Go***, also sits within this division of Daimler,
- **Fleetcor** signed the first contract with ***Uber*** to provide fuel card services to Uber drivers in the US. The service will automatically deduct fuel expenses from each driver's weekly earnings. They will also benefit from fuel discounts following a 3-way partnership with

***ExxonMobil.*** Shortly after, Fleetcor announced the purchase of the Brazilian road toll services provider, ***Sem Parar***,

- Leasing giant **Arval** launched its own branded fleet management system, ***Active Link***, which will compete directly with providers such as ***TomTom Telematics***, which is itself a major player in connected navigation software,
- **Google** acquired navigation provider and road community app ***Waze***, which is also trialling its own car pooling service, ***RideWith***,
- Telematics insurance provider **Intelligent Mechatronic Systems (IMS)** was selected to deliver technology and account management for the California road usage charging pilot,

***"GM is at the forefront of redefining the future of personal mobility"***

Dan Ammann, President

***"We are driving innovation in every part of our business to be both a product and mobility company"***

Mark Fields, CEO

***"The value creation is in shifting from the actual hardware toward software and services"***

Harald Krueger, CEO

The mobility landscape is changing at an incredibly rapid pace and we feel it is time to bring a **unified view of the future market for connected mobility services** and examine its global evolution.

Like so many others, the mobility services market is becoming dominated by technology and is thus increasingly **moving at the speed of the technology market**. To inform strategic and investment decisions over the coming years, we have built a comprehensive, bottom-up forecast for each of the 14 connected services to the year 2020.

To write this study and deliver these forecasts, we have leveraged experience from:

- **7 years** of primary research in the connected mobility market,
- The insights from **70 consulting assignments** in the field of connected mobility,
- Interviews with over **60 executives** from across the mobility spectrum,
- 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 one of these sectors which you feel has not been mentioned, please let us know so that we can update future iterations. Please send your comments to thomas@ptolemus.com.

We hope that this publication will aid all players in the connected car market make strategic decisions, helping them merge and integrate many of these services together.

Sincerely,

Frederic Bruneteau
Managing Director

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# EXECUTIVE SUMMARY

***The mutation of the car industry into a mobility business is underway!***

- From approximately $100 billion today, the car mobility services market will cover 400 million cars and generate $350 billion by 2020.

- By 2020, 45 million of the 80 million cars sold worldwide will come pre-connected, against 20 million today. In Europe and North America, 90% of new cars will be sold with embedded connectivity.

- **Are car manufacturers as we know them facing extinction?** The result of our investigation is striking. While a third of connected services are controlled by the OEMs today, their control over the connected car services market and value chain will dwindle. In 5 years, aftermarket service providers will generate 84% of the mobility market revenues.

- With an estimated 3 billion active units by 2020, **smartphones will become the central delivery platform for most consumer mobility services.**

- In cities, **the car parc will gradually cease growing or even begin shrinking** due to the explosion of apps that optimise the use of cars through sharing or pooling. With no alternative, most OEMs are now embracing the sharing revolution.

- The race to access connected car data will have three consequences:
  - Successful Mobility Service Providers (MSPs) will strive to incorporate as many services as possible on their platform,
  - **None of the 14 services studied in this report will be** provided **independently by 2020!** They will all become part of a larger bundle of services,
  - Service providers unable to **access and analyse dynamic customer data** covering a single market will retreat rapidly. Some of them will disappear altogether.

- Digital map data, which has lost significant value, will become a strategic asset once again, as **3D maps become necessary for autonomous vehicles.**

- Success will not come purely from access to data, which will be commonplace, rather from the **smart analytics** derived from this data and the integrated customer experience delivered along with it. **The Apple of connected car services will be the company able to control its own hardware, software, data and solutions**, while remaining open to third party developers.

### *Individual mobility services will grow 2 to 5 fold*

- Today, there are roughly 100,000 connected vehicles in use for **car sharing** worldwide - **by 2020 we expect this to rise to over 2 million**, driven in part by the introduction of connectivity and remote access to the P2P parc.

- **Car pooling** is a nascent and dynamic market with, as yet, only limited connectivity. However, where connectivity is introduced, the growth can be phenomenal. **In each city where it has been launched, Uberpool now accounts for over 25% of all Uber bookings** and as much as 50% in both Paris and San Francisco.

- The introduction of real-time connectivity will enable P2P car pooling services such as BlaBlaCar to **compete directly with established B2C players** and other taxi hailing platforms, and to provide **a lower cost alternative to public transportation** over longer distances.

- By 2020, nearly **100 million vehicles globally will be insured with telematics policies** - this will grow to nearly **50% of the world's vehicles by 2030**, generating more than €250 billion in premiums for insurers.

- Volumes in the **bCall** / connected roadside assistance market are also set to grow 4 fold, accelerated by OEMs and independent apps as well the effective integration with insurance, remote diagnostics, parking or traffic.

- Connected services integrated in leasing contracts are seeing rapid growth as large-scale leasing providers have begun introducing their own, low-cost, FMS solutions.

- Road user charging (RUC) is taking off worldwide, driven by traffic congestion and infrastructure financing needs. We expect the **market to double from 200 million electronic tolling subscriptions in 2016 to over 400 million by 2025.**

- Connected navigation services represent **an ideal platform on which to integrate other mobility solutions such as car pooling, electronic toll payments and bCall**. Google-owned Waze has already integrated a car pooling service in Israel.

- The number of aftermarket mobility services based on OBD dongles will result in a battle for port access, **forcing providers to offer a broader suite of solutions.**

# LIST OF FIGURES

## Overview



## Car sharing



## Car pooling



## Car rental

Total number of connected rental passenger cars in use (thousand)
Total number of connected rental passenger cars in use in Europe (thousand)
Rental passenger car market total revenues generated by MSP ($ in millions)
Connected rental passenger cars market revenues generated by MSP ($ in millions)
Connected rental passenger cars market revenues generated by European MSP ($ in millions)

## Connected navigation

Number of active navigation devices by type (thousand)
Total number of connected navigation on passenger cars in use (thousand)
Passenger cars connected navigation total revenues generated by MSP ($ in millions)
Passenger cars connected navigation total revenues generated by CSP ($ in millions)

## In-vehicle Wi-Fi hotspot

Total number of passenger cars in use with active Wi-Fi hotspot (thousand)
Passenger Wi-Fi hotspot subscriptions total revenues generated by CSP ($ in millions)
Fleet passenger Wi-Fi hotspot hardware revenues generated by MSP ($ in millions)

## Remote diagnostics

Total number of remote diagnostics service active subscriptions (thousand)
MSP revenues generated by remote diagnostics active subscriptions ($ million)
CSP revenues generated by remote diagnostics active subscriptions ($ million)

## Connected breakdown assistance (bCall)

Roadside assistance policies for passenger cars (thousands)
bCall market size for passenger cars (thousands)
Roadside assistance total revenues for passenger cars ($ in millions)
bCall revenues for passenger cars ($ in millions)

## Stolen vehicle tracking & recovery

SVR & SVT total market size for passenger cars (thousands)
Total SVR / SVT revenues generated by CSP ($ in millions)
Total SVR / SVT revenues generated by MSP ($ in millions)

## Emergency assistance (eCall)

eCall market size for passenger cars (thousand)
eCall revenues from passenger cars for MSP ($ in millions)

eCall revenues from passenger cars for CSP ($ in millions)

## Usage-based insurance (UBI)

Number of active UBI policies in passenger cars (thousand)
Number of active UBI policies in European passenger cars (thousand)
Total UBI premiums from private passenger cars ($ million)
Total UBI premiums from European private passenger cars ($ million)
TSP revenues from UBI policies in private passenger cars ($ in millions)

## Car leasing

Total number of leased fleet passenger cars in use (thousand)
Total number of connected leased fleet passenger cars in use (thousand)
Fleet passenger cars leasing market, total revenues generated ($ in millions)
Fleet passenger cars connected leasing market, revenues generated ($ in millions)

## Road user charging (RUC)

Total number of tolling transactions from passenger cars (million)
Total number of passenger cars equipped with ETC (thousand)
Total revenues from passenger car tolling ($ million)
MSP revenues from passenger car ETC transactions ($ million)
MSP revenues from European passenger car ETC transactions ($ million)

## Fuel card services

Total number of active fuel cards on company cars (thousand)
Total number of connected active fuel cards on company cars (thousand)
Total revenues from active fuel cards on company cars including fuel transaction amounts ($ million)
Fuel card provider revenues from active fuel cards on company cars - Only transaction & subscription fees ($ million)
Total revenues from connected active fuel cards on company cars including fuel transaction amounts ($ million)
Fuel card provider's transaction & subscription revenues from connected fuel cards on company cars ($ million)

## Fleet management services (FMS)

FMS solutions in use in fleet passenger cars (thousand)
Global Fleet Management Systems revenues ($ million)
Europe Fleet Management Systems revenues ($ million)

# LIST OF COMPANIES MENTIONED IN THIS REPORT

| | | | |
|---|---|---|---|
| 3M | RUC systems integrator | Alba Leasing | Leasing company |
| 666GPS | Telematics service provider | Alcatel | Mobile hotspot supplier |
| AAA | Automobile club | ALD Automotive (Société Générale) | Leasing company |
| Abcfinance | Leasing company | Allianz | Insurance company |
| Abertis | Road operator | Allstate | Insurance company |
| ABN AMRO Lease | Leasing company | Alphabet (BMW) | Leasing company |
| Accenture | Analytics & data provider | Altech Netstar | Telematics service provider |
| ACE | Car rental | AMA (Mexico) | Automobile club |
| ACI (Italy) | Automobile club | American Express | General payment card company |
| Actia | B2C dongle & telematics provider | Amigo Express | P2P car pooling |
| ADAC (Germany) | Automobile club | Amodo | Mobile-centric TSP |
| Advantage | Car rental | Amovens | P2P car pooling |
| Agero | Telematics service provider | An Ji (China) | Automobile club |
| Agip | Oil company | AND | Navigable maps |
| Agnik | Analytics & data provider | Anhui Expressway | Toll agency / toll charger |
| Ainoring | P2P car pooling | Ants | P2P car pooling |
| AIPS | Analytics & data provider | ANWB | Automobile club |
| Airbiquity | RSA telematics service provider | Anydata | Telematics technology provider |
| AirIQ | Telematics service provider | Aplicom | Telematics technology provider |
| Airmax Group | Telematics service & technology provider | Apple | Navigation software |
| AKF Leasing | Leasing company | Arkan | SVT/SVR telematics service provider |
| Alamo | Car rental | Arnold Clark | Car rental |
| Alarm Trade | SVT/SVR telematics service provider | Arval (BNP Paribas) | Leasing company |

| | | | |
|---|---|---|---|
| Arvato | RUC systems integrator | Autostrade per l'Italia | Road operator |
| Arvento Mobile | Telematics service provider | Autotrac | SVT/SVR telematics service provider |
| Arya Omnitalk | Telematics service provider | Avis | Car rental & leasing |
| Asfinag | Toll agency / toll charger | Axa Assistance | eCall filtering / assistance company |
| Astrata | Fleet TSP integrating fuel cards | Axxès | Toll service provider |
| AT&T (US) | Independent RSA | Baidu | Navigation software |
| ATG Risk Solutions | Analytics & data provider | Baltic Leasing | Leasing company |
| Atlantia | RUC systems integrator | Baseline Telematics | Telematics service provider |
| Atlas Choice | Car rental agent | Beijing Zhongdou Technology | Telematics service provider |
| ATrack Technology | Telematics technology provider | Bessermitfahren | P2P car pooling |
| ATZuche | P2P car sharing | Big Road | Smartphone-centric TSP |
| Audi | OEM | Bipoolen | B2C car sharing |
| Audiovox | Telematics technology provider | BlaBlaCar | P2P car pooling |
| Auto Escape | Car rental agent | BlancRide | P2P car pooling |
| Auto Europe | Car rental | Blink Roadside Assistance (US) | Independent RSA player |
| Autobleue | B2C car sharing | Blom | 3D maps |
| Autobot | B2C dongle solutions provider | Blue Tree | Telematics service provider |
| Autolib | B2C car sharing | BMW | OEM |
| Autoliv | eCall key system components | Bosch | Automotive technology supplier |
| Autolocator | SVT/SVR telematics service provider | BP | Oil company |
| Automatic | B2C dongle solutions provider | Breeze | Car rental |
| Automile | OBD-centric B2C TSP | Brisa | Road operator |
| AutoNavi | Navigation software | Broadcom | Automotive supplier |
| Autonet | Automotive supplier | Budget | Car rental |

| | | | |
|---|---|---|---|
| Business Lease Group | Leasing company | Carzonrent | Car rental |
| C2G Logic | Car sharing technology provider | Cavalry (UK) | Independent RSA player |
| CAA (China) | Automobile club | CCS | Fleet TSP |
| CalAmp | Telematics technology provider | CDL | Analytics & data provider |
| Caldrons | Toll agency / toll charger | CEABS | Telematics service provider |
| Cambio | B2C car sharing | Cellocator | Telematics technology provider |
| Cambridge Mobile Telematics (CMT) | Mobile-centric TSP | Censio | Mobile-centric TSP |
| Car next door | P2P car sharing | Centra | Toll agency / toll charger |
| Car2Go (Daimler) | B2C car sharing | Cesar Satellite | SVT/SVR telematics service provider |
| Car4Use | B2C car sharing | CGI | Analytics & data provider |
| CarAmigo | P2P car sharing | Chainway | Telematics technology provider |
| Careco | B2C car sharing | Chevron | Oil company |
| Carhood | P2P car sharing | China Auto Rental | Car rental & leasing |
| Carma | Car sharing & pooling | China Communications Construction Co. Ltd. | Toll agency / toll charger |
| Caronetas | P2P car pooling | Cintra | RUC systems integrator |
| Carpool King | P2P car pooling | Cite lib (Toyota) | B2C car sharing |
| Carpool Mates | P2P car pooling | Citroën Contract Motoring | Leasing company |
| Carpool World | P2P car pooling | City Car Club | B2C car sharing |
| Carrot (Mexico) | B2C car sharing | Citygo | B2C car pooling |
| Cars-scanner | Car rental agent | ClickSoftware | Telematics service provider |
| Carsystem | SVT/SVR telematics service provider | Co-Wheels | B2C car sharing |
| Cartrack | Telematics service provider | Cognizant | Analytics & data provider |
| CarTrend | Independent fuel card service provider | Communauto | B2C car sharing |

| | | | |
|---|---|---|---|
| Collision Management System (CMS) | Analytics & data provider | Didi Chuxing | B2C car pooling |
| Comovee | Car pooling technology | Digiparts | Car sharing technology provider |
| Comparte | P2P car pooling | DigitalGlobe | 3D maps |
| Complete Innovation | Telematics service provider | DKV | Independent fuel card service provider |
| Continental | Automotive technology supplier | Dollar | Car rental |
| Convadis | Car sharing technology provider | Dolphin Technologies | Telematics service provider |
| Coride | P2P car pooling | Drive Smart | Telematics service provider |
| Corral Labs | Car pooling technology | DriveFactor (CCC) | Telematics service provider |
| Coseats | P2P car pooling | DriveJoy | P2P car sharing |
| Coyote System | Navigation devices | Driven Lower | Telematics technology provider |
| Credit Suisse AG | Leasing company | DriveNow (BMW) | B2C car sharing |
| Ctrack (Novatel Wireless) | Telematics service provider | Driver's Alert | Telematics service provider |
| Cubic | RUC systems integrator | Driveway Software | Mobile-centric TSP |
| Daimler | OEM | Drivy | P2P car sharing |
| Daimler Fleetboard | Telematics service provider | Drust | B2C dongle solutions provider |
| Danlaw | Telematics technology provider | DVB LogPay | Toll service provider |
| Dash | B2C dongle solutions provider | E-covoiturage | P2P car pooling |
| De Lage Landen International | Leasing company | E-Drive Technology | Telematics service provider |
| Delphi | Telematics technology provider | E6GPS | Telematics service provider |
| Denso | eCall embedded OBU / TCU provider | Ease simulation | Automotive supplier |
| Detector | Telematics service provider | Easy Car Club | P2P car sharing |
| Deutsche Lending | Leasing company | Easytrip | Toll service provider |

| | | | |
|---|---|---|---|
| Easyway | P2P car pooling | ETrans | Telematics service provider |
| Ebbon-Dacs | Independent fuel card service provider | Europ Assistance | eCall filtering / assistance company |
| Echelon | SVT/SVR telematics service provider | Europcar | Car rental |
| Ecofrotas | Independent fuel card service provider | Eurotoll (Sanef) | Toll service provider |
| Economy Car Rentals | Car rental agent | Eurowag | Toll service provider |
| Edenred | Independent fuel card service provider | Expedia | Car rental agent |
| Efkon | RUC component & device supplier | EZ-Pass | Toll agency / toll charger |
| Egis Projects | RUC systems integrator | eZway | B2C dongle solutions provider |
| Eileo | Car sharing technology provider | Fastrack | Toll agency / toll charger |
| Eiver (SaveCode) | B2C dongle solutions provider | FETC (Far Eastern Electronic Collection) | Toll agency / toll charger |
| Element Financial Corporation | Leasing company | Ficosa | eCall embedded OBU / TCU provider |
| Elift Club | P2P car pooling | Findalift | P2P car pooling |
| Eliocity (Mobivia) | Device manufacturer | Finder | Telematics service provider |
| Embratec | Independent fuel card service provider | Firefly | Car rental |
| EMG | Navigation software | Fleet on Demand | Independent fuel card service provider |
| Emixis | Telematics service provider | FleetCor | Independent fuel card service provider |
| Encamello | P2P car pooling | Fleetmatics | Fleet TSP integrating fuel cards |
| Encontrack | Telematics service provider | Fleetster | Car sharing technology provider |
| Engis Technologies | Navigation software | Flinc | P2P car pooling |
| ENI | Toll service provider | Flinkster | B2C car sharing |
| Enjoy (Fiat) | B2C car sharing | FMG Support | Telematics service provider |
| Enterprise | Car rental | Ford | OEM |
| ERM | Telematics technology provider | Foursquare | Location-based content & services |
| EROAD | Tolling and fleet technology provider | Frotcom | Telematics service provider |

| | | | |
|---|---|---|---|
| G.E.A. | RUC component & device supplier | GreenRoad | Telematics service provider |
| G4S Telematix | Telematics service provider | Greenwheels (VW) | B2C car sharing |
| Garmin | Navigation devices | Gurtam | Telematics service provider |
| Gemalto | RUC component & device supplier | HaHa Pinche | P2P car pooling |
| Generali | Insurance company | Hame Technology Co. | Mobile hotspot supplier |
| Geotab | Telematics technology & service provider | Harman | Navigation software |
| Getaround | P2P car sharing | Hazens Automotive | Navigation devices |
| GM | OEM | Heetch | B2C car pooling |
| GM OnStar | OEM telematics platform | HERE | Location-based content & services |
| GMV | RUC component & device supplier | Hertz | Car rental & leasing |
| GoCar | B2C car sharing | Hitachi Capital Vehicle Solutions | Leasing company |
| GoCatch | P2P car pooling | Hitch-a-ride | P2P car pooling |
| GoDrive (Ford) | B2C car sharing | Hochtief | Toll agency / toll charger |
| GoFleet | Telematics service provider | Holiday Autos | Car rental agent |
| GoMore | P2P car sharing & pooling | Honk (US) | Independent RSA player |
| Gomyway | P2P car pooling | Huawei Technologies | Mobile hotspot supplier |
| GoodCard | Independent fuel card service provider | Hubio | Telematics service provider |
| Google (Alphabet) | Technology & software supplier | Hyundai Mobis | eCall embedded OBU / TCU provider |
| GoSafe | Telematics technology provider | Ibilek | B2C car sharing |
| GPS Buddy | Telematics service provider | IBM | Analytics & data provider |
| GPS Colombia | SVT/SVR telematics service provider | icarsclub | B2C car sharing |
| Grabhitch | B2C car pooling | ID Systems | Telematics service provider |
| Green Flag (Direct Line) | White label RSA service provider | Identifix | Automotive supplier |

| | | | |
|---|---|---|---|
| IHS Automotive | Location-based content & services | Koolicar | P2P car sharing |
| iMetrik | Telematics technology & service provider | KT Kumho | Car rental |
| IMS | Telematics service provider | Kuantic | Telematics technology provider |
| Infrasure | Mobile-centric TSP | La route verte | P2P car pooling |
| Inosat | Telematics service provider | lastminute.com | Car rental agent |
| Inrix | Location-based content & services | LAT Assistance (Russia) | Automobile club |
| IntelliTrac | Telematics service provider | Launch Tech | B2C dongle solutions provider |
| Inter Mutuelles Assistances (IMA) | eCall filtering / assistance company | Leaseplan | Leasing company |
| Intermap Technologies | 3D maps | Let's Drive (GM) | B2C car sharing |
| Interrent | Car rental | Lex Autolease | Leasing company |
| Invers | Car sharing technology provider | Lexis-Nexis / Wunelli | Analytics & data provider |
| ITURAN | Telematics service provider | Liftshare | P2P car pooling |
| JAF (Japan) | Automobile club | Locomute | B2C car sharing |
| Jaguar Trackstar | OEM SVT/SVR | Lojack (now CalAmp) | Telematics technology provider |
| Jet Cost | Car rental agent | Lyft Line | B2C car pooling |
| Jiangsu Expressway | Toll agency / toll charger | Lysanda | Telematics technology provider |
| Jooycar | B2C dongle solutions provider | m2m Telefonica | Telematics service provider |
| Joycar | B2C car sharing | Macquarie | Toll agency / toll charger |
| Kangaride | P2P car pooling | Magellan | Navigation devices (PNDs) |
| Kapsch | RUC component & device supplier | Magneti Marelli | Telematics technology provider |
| Karma | Mobile hotspot supplier | Mail.ru | Navigation software |
| Kayak | Car rental agent | Mapfre | Insurance company |
| Keep Truckin | Smartphone-centric TSP | MapmyIndia | Navigation software |

| | | | |
|---|---|---|---|
| Mappy | Location-based content & services | Mix Telematics | Telematics service provider |
| MapQuest | Navigation software | Mobile Devices | Telematics technology provider |
| Market IP | Telematics technology provider | mobileObjects AG | Telematics service provider |
| Marvell | Automotive supplier | Mobility | B2C car sharing |
| MasterCard | General payment card company | Mobiliz | Telematics service provider |
| Masternaut | Telematics and fleet service provider | Modo | B2C car sharing |
| Matcha | B2C car sharing | Modus | Telematics service provider |
| Matrix (part of Mix Telematics) | eCall aftermarket device provider | Mojio | B2C dongle solutions provider |
| Maven (GM) | B2C car sharing | Mondial Assistance | eCall filtering / assistance company |
| MCC Ukraine | SVT/SVR telematics service provider | MoveAbout | B2C car sharing |
| Mechanics Advisor | B2C dongle solutions provider | Movelo | Mobile-centric TSP |
| Mediamobile | Location-based content & services | MTS | Telematics service provider |
| Mega-F | SVT/SVR telematics service provider | Multi Service Tolls | Toll service provider |
| Meta System (Deren Electronic) | Telematics technology provider | Multicity (Citroën) | B2C car sharing |
| Metavera | Car sharing technology provider | Mycartracks | Smartphone-centric TSP |
| MiCar | B2C car sharing | MyDrive Solutions (Generali) | Mobile-centric TSP |
| Michelin Travel Partners | Location-based content & services | Myles (India) | B2C car sharing |
| Microlise | Telematics service provider | MylesCar | Car rental |
| Micromax | Mobile hotspot supplier | Nabobil | P2P car sharing |
| Micronet Enertec Technologies | Telematics technology provider | National | Car rental |
| Mireo | Navigation software | NATIXIS Lease | Leasing company |
| Mitsubishi Heavy Industries | RUC component & device supplier | NavInfo | Navigable maps |
| Miveo | Car sharing technology provider | Navitime | Navigation software |

| | | | |
|---|---|---|---|
| Navmii | Navigation software | Oocar | B2C dongle solutions provider |
| NDrive | Navigation software | OpenFleet | Car sharing technology provider |
| Nebula Systems (RAC) | Automotive supplier | OpenStreetMap | Navigable maps |
| Netgear | Mobile hotspot supplier | Orange Business Services | Telematics service provider |
| NexTraq | Telematics service provider | Orix Auto Corporation | Car leasing & sharing |
| Nissan Connect | OEM SVT/SVR | Oskando | Telematics service provider |
| NNG | Navigation software | Ouicar | P2P car sharing |
| Norbit | RUC component & device supplier | Parkopedia | Location-based content & services |
| Nordea Finance | Leasing company | PayGo Systems | Telematics technology provider |
| Noritomo | P2P car pooling | People's Uber | B2C car pooling |
| Nova car hire | Car rental agent | Petron | Oil company |
| Novatel Wireless | Telematics technology provider | Petronas | Oil company |
| Novera | Automotive supplier | Pinnacle Actuarial Resources | Analytics & data provider |
| Novero | eCall embedded OBU / TCU provider | PIT | SVT/SVR telematics service provider |
| $O_2$ | B2C dongle solutions provider | PKO Leasing | Leasing company |
| ÖAMTC | Automobile club | Plextek | Telematics technology provider |
| Octo Telematics | Telematics service provider | Pointer | Telematics service provider |
| OJSC VEB Leasing | Leasing company | Porsche | OEM |
| Ola | P2P car pooling | PPZuche | P2P car sharing |
| Olive Trips | P2P car pooling | Procon | Telematics technology provider |
| OmniComm | Fuel level sensing system provider | PSA Peugeot Citroën | OEM |
| Omnitracs | Telematics service provider | Q-Free | RUC component & device supplier |
| OMV | Oil company | Q8 | Oil company |

| | | | |
|---|---|---|---|
| Qualcomm | Automotive supplier | Ridemix | P2P car pooling |
| Quanta Tecnologia | Telematics technology provider | Road Vikings | B2C dongle solutions provider |
| Quartix | Telematics technology & service provider | Roadnet | Telematics service provider |
| Queclink | Telematics technology provider | Rostec | RUC systems integrator |
| Quicar (VW) | B2C car sharing | Route 66 | Navigation software |
| QuickQ | RFID gas station system provider | Ryde | B2C car pooling |
| RAC | Roadside assistance provider | Rydes | P2P car pooling |
| RACE (Spain) | Automobile club | Safefleet | Telematics service provider |
| Radius | Independent fuel card service provider | Safety Connect (Toyota) | OEM SVT/SVR |
| RAM Mobile Data | Telematics service provider | Samsung | B2C dongle solutions provider |
| RAMK (Russia) | Automobile club | Sanef ITS | RUC systems integrator |
| RAT (Russia) | Automobile club | Santander Espana | Leasing company |
| Raxel | Telematics service provider | SAS | Analytics & data provider |
| RCI Banque | Leasing company | Sascar | Telematics service provider |
| Rdvouz | P2P car pooling | Sascar (Michelin) | Telematics service provider |
| Redtail / Plextek | Device manufacturer | SatData | Telematics service provider |
| Redtail Telematics | Telematics technology provider | Satellic (T-Systems) | RUC systems integrator |
| Rental Car Group | Car rental agent | Schneider Electric | RUC systems integrator |
| Rentalcars.com | Car rental agent | Scoop | Car pooling technology |
| Ressa | Toll service provider | Scope Technologies | Telematics service provider |
| Rhino Car Hire | Car rental agent | Segsat | SVT/SVR telematics service provider |
| Ridebuzz | P2P car pooling | Share transport | P2P car pooling |
| Ridefinder | P2P car pooling | Share Your Ride | P2P car pooling |

| | | | |
|---|---|---|---|
| Shell | Oil company | SPX | Automotive supplier |
| Shenzhen Huabao Electronics Technology | Telematics service provider | Squarell | Telematics technology provider |
| Shenzhen Weitongda Electronics | Telematics service provider | SSP | Analytics & data provider |
| Siemens | RUC systems integrator | Starline | Telematics technology provider |
| Sierra Wireless | Telematics technology provider | Statoil | Oil company |
| Singu | Car pooling technology | STP | Independent fuel card service provider |
| Sinocastel | Telematics technology provider | Strabag | RUC component & device supplier |
| Sirit | RUC component & device supplier | StrandD (India) | Independent RSA player |
| SiriusXM (Agero) | SVT/SVR telematics service provider | Subaru Starlink | OEM SVT/SVR |
| Sixt | Car rental & leasing | Sunfleet (Volvo) | B2C car sharing |
| Sky Patrol | Telematics technology provider | SunPass | Toll agency / toll charger |
| Skybitz (Telular) | Telematics service provider | Sygic | Smartphone-centric TSP |
| Skyscanner | Car rental agent | Takata | eCall key system components |
| SmartFuel | Fuel level sensing system provider | Tantalum (Lysanda) | Telematics technology provider |
| SnappCar | P2P car sharing | Tracker UK | Telematics service provider |
| Socar | B2C car sharing | Tech Mahindra | Telematics service provider |
| Sodexo | Independent fuel card service provider | Technoton | Fuel level sensing system provider |
| Spedion | Smartphone-centric TSP | Telefonica M2M | Telematics service provider |
| Spireon | Telematics technology provider | Telenav | Fleet service provider |
| Split-it | B2C car pooling | Telepass (Autostrade) | Toll service provider |
| Sprint | Telematics service provider | Teletrac | Telematics service provider |

| | | | |
|---|---|---|---|
| Telia Sonera | B2C dongle solutions provider | Trackstar | SVT/SVR telematics service provider |
| Telic | Telematics technology provider | Traffilog | Telematics service provider |
| Telit | Component & device supplier | Trafineo | Toll service provider |
| Telogis | Telematics service provider | Trak Global | Telematics service provider |
| Teltonika | Telematics technology provider | Trakm8 | Telematics technology provider |
| Teradata | Analytics & data provider | Tramigo | Telematics technology provider |
| Texa | Device manufacturer | Transcore | RUC component & device supplier |
| Texas Instruments | Automotive supplier | Transpoco | Fleet TSP integrating fuel cards |
| Thales | RUC systems integrator | Transurban | Toll agency / toll charger |
| The AA | Automobile club | TranzLease | Leasing company |
| The Floow | Analytics & data provider | Traqueur | SVT/SVR telematics service provider |
| Thrifty | Car rental | Travel Supermarket | Car rental agent |
| Times Car Plus | B2C car sharing | Trees for cars | P2P car pooling |
| Toll Collect | Toll agency / toll charger | Trimble | Telematics service provider |
| TomTom | Location-based content & services | TripAdvisor | Location-based content & services |
| ToMyCar | Car sharing technology provider | Tripda | P2P car pooling |
| Total | Oil company | TRL | Analytics & data provider |
| Touring Club (Switzerland) | Automobile club | Trondheim Bilkollektiv | B2C car pooling |
| Touring Club Belgium | Automobile club | TRW | eCall key system components |
| Toyota | OEM | Turo | P2P car sharing |
| Tp-Link | Mobile hotspot supplier | Turpak | RFID gas station system provider |
| Tracker | Telematics service provider | Ubercommute | B2C car pooling |

| | | | |
|---|---|---|---|
| Uberpool | B2C car pooling | Viasat | Telematics service provider |
| UBI Finance | Leasing company | Vinci | Toll agency / toll charger |
| Uhaul | Car rental | Vinli | B2C service provider |
| UK Fuel | Independent fuel card service provider | VISA | General payment card company |
| Unicredit leasing | Leasing company | Visteon | eCall embedded OBU / TCU provider |
| Unilife | Telematics service provider | Vitronic | RUC component & device supplier |
| UnionPay | General payment card company | Vodafone Automotive (Cobra) | Telematics service provider |
| UnipolSai | Insurance company | Volkswagen | OEM |
| Uniqa | Insurance company | Volvo | OEM |
| Urgent.ly (US) | Independent RSA player | Voxx Electronics | B2C dongle solutions provider |
| US Bank (Voyager) | Independent fuel card service provider | VRent (VW) | B2C car sharing |
| UTA | Independent fuel card service provider | Vulog | Car sharing technology provider |
| Valeo (Peiker) | eCall embedded OBU / TCU provider | Wayzup | B2C car pooling |
| Vayamos Juntos | P2P car pooling | Waze | P2P car pooling |
| Vehcon | Mobile-centric TSP | WebEye | Telematics service provider |
| Vendeka | RUC component & device supplier | WebTech Wireless | Telematics service provider |
| Verband Öffentlicher Versicherer | Insurance company | Wejo | Smartphone-centric TSP |
| Verisk Analytics | Analytics & data provider | WEMA | Fuel level sensing system provider |
| Verizon | Telematics solutions provider | Western India Automobile Association | White label RSA service provider |
| Via | B2C car pooling | WEX | Independent fuel card service provider |
| Vialtis | Toll service provider | White Clark Group | Leasing company |

| | | | |
|---|---|---|---|
| Willis Towers Watson | Analytics & data provider | YourDrive | P2P car sharing |
| Wireless Logic | Car sharing technology provider | Zatix | Telematics service provider |
| WirelessCar | Automotive supplier | Zemtu | Car sharing technology provider |
| World Fuel | Independent fuel card service provider | Zenrin | Navigable maps |
| Wunelli (LexisNexis) | Telematics service provider | Zhejiang Expressway | Toll agency / toll charger |
| Xee (Eliocity) | B2C dongle solutions provider | Zify | P2P car pooling |
| Xerox | RUC systems integrator | Zimride | P2P car pooling |
| Xirgo Technologies | Telematics technology provider | Zipcar | B2C car sharing |
| XRS Corporation | Telematics service provider | Zonar Systems | Telematics service provider |
| Yandex | Navigation software | Zoomcar | B2C car sharing |
| Yelp | Location-based content & services | ZTE | Mobile hotspot supplier |
| YF International | Navigation devices | Zubie | B2C dongle solutions provider |

# I. WHAT IS MOBILITY?

Its definition is changing rapidly. From the ability to transport people and goods in urban and interurban environments, the concept of mobility has grown to include a large variety of services, and revenues, within multimodal transportation.

Mobility encompasses a number of concepts, including sustainability and accessibility as the result of the optimal management of individuals, assets and companies transportation needs. It encourages coordination and resource sharing among various shareholders and brings together a panel of activities and options in order to facilitate an individual requirement.

In this forecast, we have investigated the markets for **14 different mobility services**. We have chosen them because they have characteristics in common:

- They are **focused around the car** (for commercial or private use),
- They are **improved by connectivity and data analytics**,
- They are **growing and evolving** rapidly,
- They involve the activities of **multiple stakeholder categories**, which increasingly overlap between different services.

We have structured the services as follows:

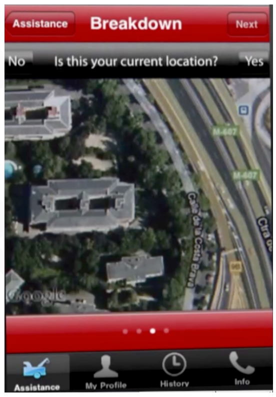
| Services around convenience | | Services around safety & security | |
|---|---|---|---|
| | Car sharing | | Stolen vehicle tracking & recovery |
| | Car pooling | | Emergency assistance (eCall) |
| | Car rental | | Usage-Based Insurance (UBI) |
| | Connected navigation | **Functions linked to cost management & finance** | |
| | In-vehicle Wi-Fi hotspot | | Car leasing |
| **Services around the vehicle maintenance** | | | Road User Charging (RUC) |
| | Remote diagnostics | | Fuel card services |
| | Connected breakdown assistance (bCall) | | Fleet Management Services (FMS) |

# 1. The benefits of connectivity for mobility services

We will describe the architecture of the connected services in Section III but to give a brief example, we shall examine roadside assistance (RSA).

Without telematics, RSA relies on the customer calling the assistance company, describing where the car is and what the problem looks like. As with eCall and e112, locating the endangered driver quickly and precisely is often a difficult and time-consuming task.

Using telematics, the assister is now able to receive **automatic geolocation and breakdown diagnostics**, which accelerates the process. Mapfre Assistance's *MAiassist* app, pictured, requests the customer to confirm his position to avoid any error.




*Mapfre's* MAiassist *app*

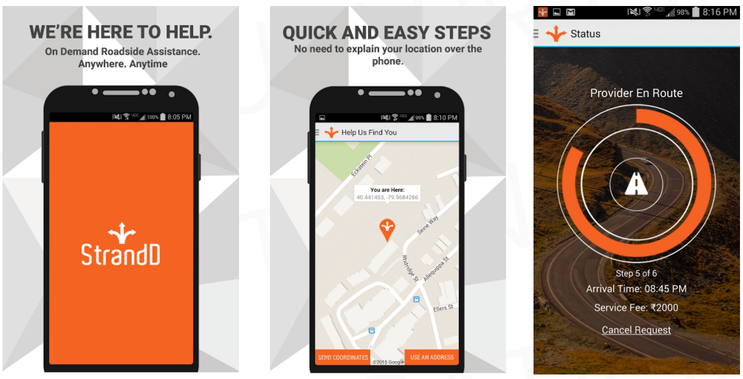
He / she can check for eligibility of service before the car starts. He / she is also immediately able to dispatch the nearest vehicle as well as to channel the repair to its own network of garages. By receiving accurate diagnostics data directly from the vehicle, many common faults can also be repaired at the roadside, without need for further recovery.

Tomorrow, the integration between the RSA provider and the manufacturer will be such that it will be able to receive information about the fault as the same time as the alert and even be in a position to **predict faults ahead of time** using vehicle data to build **prognostics and preemptive alerts**.

For the driver, the benefits are clear: **faster intervention, more reliable repair and better service** all around with more effective communication. This of course results in better customer retention for the Mobility Services Provider (MSP). Post-recovery data analysis will also enable assistance operators to improve their services in future.

In addition to reducing costs and improving the user experience, **connectivity can facilitate market entry at a much faster rate**.

India's on-demand RSA provider **StrandD** is a typical example.




*In less than a year, StrandD has become available in over 4,800 locations across India*

Launched in mid-2015, the smartphone app extracts location data from the user's device and matches it with local assistance providers, as well as delivering real-time information from telematics devices in the assistance vehicles.

Despite being on the market for less than a year, **the platform already covers twice as many locations as India's largest existing, subscription-based RSA provider** and boasts a much faster growing user base!

The costs associated with car transportation are centred on the driver, the car and the connectivity. While car purchasing costs still represent a key part of consumers' and fleets' budget, and vehicle-centric innovation will continue, it appears that **connectivity is in fact behind every single evolutionary step on the service side**.

**Connectivity is the tail wagging the dog**.

It has become a lot more than a nice feature to have: for many of these services, for example fleet management, it is now central to the existence of these services. For others, it is the critical difference that has made the service successful. **Connectivity has created success for new service providers almost overnight**, it has also caused headaches for others. Today, industries such as taxi transportation, insurance, assistance, car rental or road user charging are all wagged by the tail! In the case of navigation, smartphone connectivity has resulted in a complete overhaul of the industry and unseated once dominant players such as TomTom and Garmin.

## 2. Scope of our mobility services forecasts

This report specifically analyses each of the 14 connected car services or sectors in terms of volumes and revenues for connected services sold to the private individual or the company car fleet.

The report also evaluates the total addressable market for each solution, accounting for non-connected as well as connected vehicles.

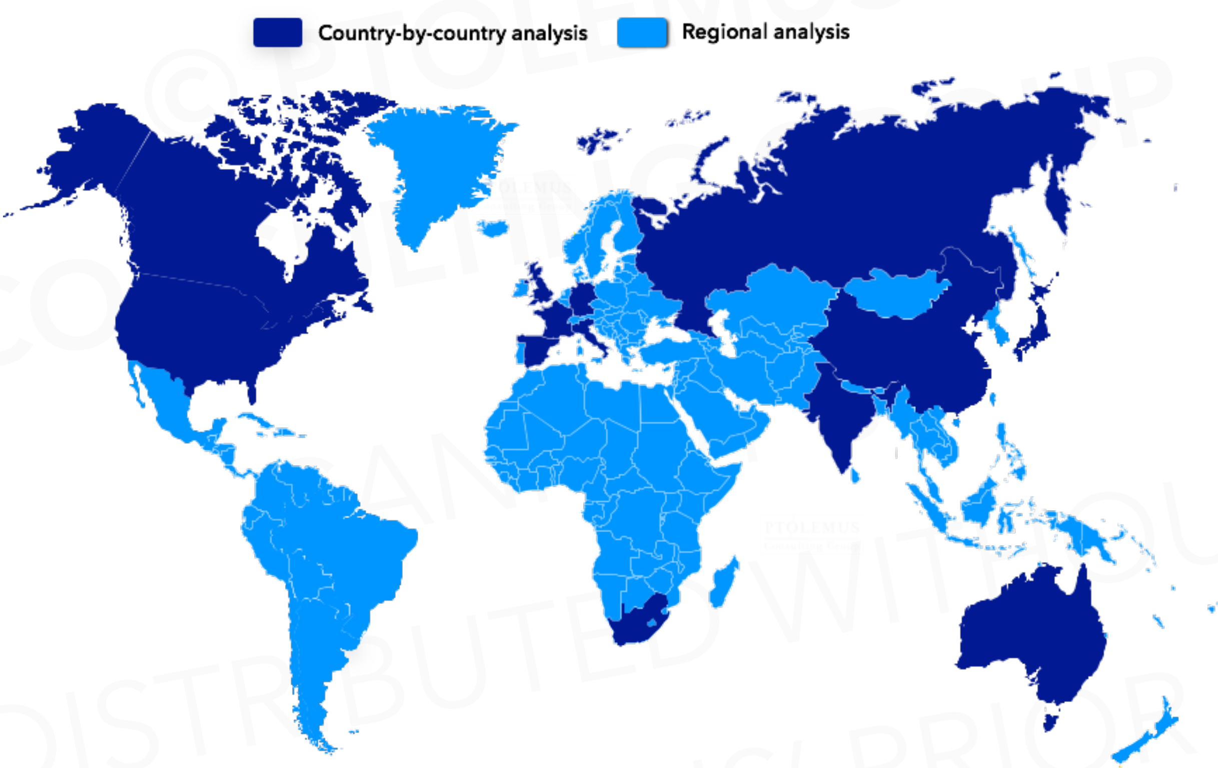
In order to deliver meaningful forecasts, we began by calculating the size of the total mobility services markets and then estimated the penetration of connected services.

For each of the 14 services we examined the value proposition and typical devices involved.

We then assessed the distribution channels and common value chain(s). Lastly, we analysed the environment of each sector and built our own growth forecasts based on competition, technology, demand and regulatory trends.

**Our bottom-up market forecast is global and country-by-country analyses are available for the following 18 markets.**

**PTOLEMUS connected mobility services bottom-up market forecast**




Source: PTOLEMUS Consulting Group

The market forecast outputs and charts are available as an Excel spreadsheet. They have been built using **a bottom-up approach in each region with a detailed calculation in 18 countries** and quantify today's and tomorrow's activities for the 14 mobility services.

The outputs include **2015-2020 volume and revenue forecasts** for both:

- The **Mobility Services Providers (MSPs)** - who offer services to end-customers - such as
    - Insurance companies in the UBI domain (Allianz, Liberty Mutual, etc.),
    - Toll chargers / agencies (Autostrade, Toll-Collect, etc.),

  - Car manufacturers and aftermarket providers of Wi-Fi hotspots (Ford, Toyota, Verizon, etc.).
- Their **Connected Solutions Providers (CSPs),** who provide MSPs with the solution, such as
  - Embedded navigation suppliers in the connected navigation market (HERE, TomTom, etc.)
  - Fuel card processing specialists such as Edenred or WEX,
  - Suppliers of Wi-Fi hotspot systems (Novatel, Samsung, etc.).

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© PTOLEMUS
Rue Cervantes 15
1190 Brussels - Belgium
contact@ptolemus.com

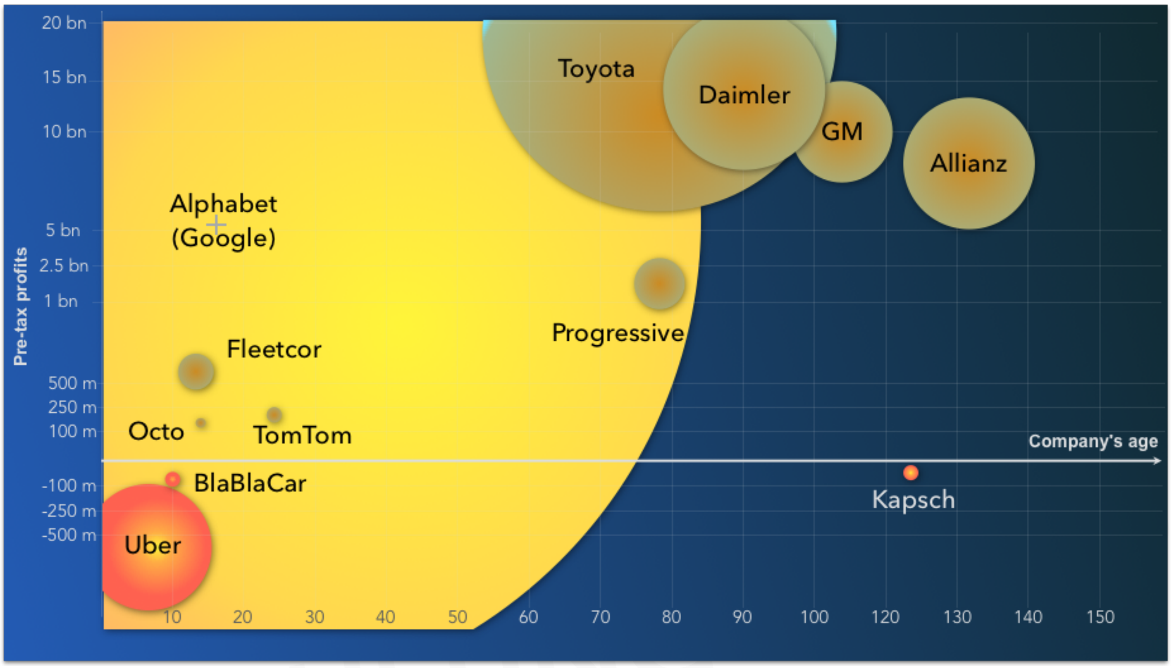
# SEIZE THE OPPORTUNITY, OR SOMEONE ELSE WILL

Throughout its 108-year history, **General Motors** (GM) has faced numerous changes and disruptions to its business model - not least facing bankruptcy in 2009. In 2015, the company posted healthy pre-tax earnings of $10.8 billion, up from $6.5 billion in 2014. Today, along with a number of other OEMs, GM is at the forefront of change in the personal mobility space and in OnStar, it arguably has the most advanced embedded telematics platform of any vehicle manufacturer.

Leveraging its base of 7 million subscribers, GM has forged partnerships with other service providers to deliver UBI, car sharing, Wi-Fi connectivity, eCall, bCall, SVT/SVR and remote diagnostics directly to its customers. GM now has a **market capitalisation of $48 billion.**

Taxi hailing app **Uber** was created in 2009 and officially launched in San Francisco in 2011, having received roughly $1.5 million in initial investment. At its last round of funding in late 2015, Uber was available in over 400 cities across the globe and **valued at $62 billion.** The start-up has achieved this despite never having generated a profit and accumulating debts of $1.6 billion. Uber already has exclusive agreements in place with **FleetCor, ExxonMobil, TomTom, Google, Apple and Tesla**.

**Beware the rise of the unicorns!**




Note: The size of each bubble corresponds to the company's market capitalisation
Source: PTOLEMUS (Some pre-tax profits and market capitalisations are PTOLEMUS' own estimates)

In our view, this chart summarises perfectly why it is important for mobility companies to embrace the opportunities and confront the challenges posed by connectivity. Financial markets have no respect for heritage and in almost no time, a start up with the right idea can disrupt an industry which has otherwise stood for a hundred years.

## FULL FORECAST CONTENT

The Connected Mobility Global Forecast 226-page report includes:

An analysis of the Total Addressable Market (TAM) volume and revenue for each service, provided from the perspective of the service provider to the end user, defined as the Mobility Service Provider (MSP) and its supplier, the Connectivity Service Provider (CSP).

A comparative examination of each market assessing:

- Business models, value chains and key players
- Regulatory and competitive environment
- Connectivity penetration by region
- Key volume and revenue drivers
- Current and future market trends

- Global forecast to 2020 of the volumes and revenues per region

The Forecast also comprises the underlying 2015-2020 outputs of 14 bottom-up forecasts across 18 geographical markets. For each service, the 4,800 line workbook includes:

- The total addressable market in volume and value seen from the MSP and CSP perspective
- The total underlying volumes and revenues by country
- The volume and revenue forecasts for the MSP and the CSP
- The split between OEM and aftermarket volumes and revenues

**To access the full study, visit [www.ptolemus.com/mobility](http://www.ptolemus.com/mobility)**
**or contact [thomas@ptolemus.com](mailto:thomas@ptolemus.com)**