PTOLEMUS
Consulting Group

2018 EDITION

Free abstract

The reference report for commercial fleet telematics, fuel, toll, diagnostics & insurance services

CONNECTED FLEET SERVICES
Global Study

Big data for big trucks: digitalising transport services

ABOUT PTOLEMUS CONSULTING GROUP

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

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

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

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

PTOLEMUS has performed nearly 100 consulting assignments related to connected and autonomous vehicles.

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

Our consulting services

Strategy definition

Investment assistance

Innovation management

Procurement strategy

Business development

Deployment

Our fields of expertise

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

YOUR PTOLEMUS CONTACTS

BRUSSELS

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

PARIS

Matthieu Noël, Manager
+33 6 13 34 70 56
mnoel@ptolemus.com

LONDON

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

DUSSELDORF

Dr. Arno Wilfert, Associate Partner
+49 151 140 15 795
awilfert@ptolemus.com

MILAN

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

TORONTO

JD Hassan, Associate Partner
+1 416 996 6124
jdhassan@ptolemus.com

MOSCOW

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

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

PTOLEMUS
Consulting Group

THE 6 AUTHORS OF THIS REPORT

Frederic Bruneteau, Managing Director, Brussels
MS, Management, HEC Paris and CEMS Master, University of Cologne

Mr. Bruneteau has accumulated over 20 years of experience including 17 years of experience of the mobility domain and 14 years of strategic and financial advisory for company such as **Arthur D. Little**, **BNP Paribas, SFR Vodafone** and **TomTom.**

He has become **one of the world's foremost experts in the field of telematics**, quoted by publications such as *The Wall Street Journal, The Economist* and *the Financial Times*. He has spoken at more than 50 international conferences on the subject.

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

He has completed 30 projects related to fleet management such as:

*   Helped Investcorp in the **due diligence of Arvento**, the largest fleet TSP in Turkey;
*   **Appraised the EU fleet telematics management market** for a $40 billion hedge fund,
*   **For a large TSP, assessed the Benelux light vehicle fleet telematics market,**
*   Helped a data vehicle provider define its **fleet telematics strategy, business plan and device sourcing**,
*   Designed the **pan-European pricing strategy of a provider of services to fleets** including telematics management, fuel card services and electronic tolling,
*   Assisted Disruptive Capital Finance in its acquisition of **Tracker UK**, a supplier of stolen vehicle recovery and fleet management services and its merger with **Lysanda**, a fleet telematics provider.

Frederic performed a complete review of this report.

Thomas Hallauer, Research Director, London
BA, International Business, South Bank University, London

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

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

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

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

Thomas also **reviewed and published the Connected Insurance Analytics Report and the UBI Global Study 2013 and 2016,** interviewing dozens of insurance companies.

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

Justin Hamilton, Consultant, London

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

Justin has more than 5 years of experience within the transportation, mobility and road user charging market. He conducts quantitative and qualitative analysis of global trends and developments in mobility, electronic road pricing and intelligent transport solutions.

Before joining PTOLEMUS, Justin launched Road User Charging Magazine and is frequently published in journals such as *Thinking Highways*, *Tolling Review* and *Tolltrans*. He regularly speaks at events such as the *ITS World Congress* and *Connected Fleets USA*.

His recent projects include:

- For a major provider of intelligent transports systems, contributed to the definition of its **European fleet services strategy and go-to-market plan**,
- An **in-depth review of the US fleet services market** and key trends impacting it for a fuel card provider,
- For one of the world's largest roadside assistance companies, investigated **new digital assistance models** and analysed their breakthrough impact on the value chain,
- The writing of our UBI Global Study 2016, the reference research on the connected insurance market, quoted by *Fortune*, the *Financial Times*, *Corriere della Serra*, etc.
- A **global analysis of the car sharing, car pooling, car leasing and car rental markets** for our recently published Connected Mobility Forecast 2016.

Justin is the main author of this report.

As such he investigated the Total Cost of Ownership (TCO) and the use of fleet services globally. He interviewed a very large number of fleet operators (Albert Schuck, Betz International, Kühne & Nagel, SIG Distribution, Travis Perkins and Whitbread) and suppliers such as ABAX, Masternaut, MIX Telematics, Navistar, Telogis, TomTom, Scania, Stoneridge, etc.

Matthieu Noël, Manager, Paris

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

Matthieu Noël has gained **7 years of consulting experience in the mobility domain** advising numerous clients such as **Admiral, Airbiquity, Allianz, BMW, Egis, Faurecia, HERE, Macif, Matmut, Michelin, Mondial Assistance, Octo Telematics, PSA Peugeot-Citroën, Renault-Nissan** and **Vodafone Automotive.**

He holds expert knowledge of domains such as remote diagnostics, PAYD/PHYD, connected vehicle data & analytics, OBD dongles, vehicle repair and maintenance, fleet telematics, fuel card services, ETC, autonomous vehicles, etc.

He led or participated in **more than 20 consulting assignments**, **including many in the fleet management domain such as:**

- For **Euromaster**, evaluated the interest of telematics & scheduling solutions for its fleet of repair trucks,

- For a **major road operator**, built its marketing & pricing strategy to launch a wide range of fleet services across Europe including fleet telematics, ETC and tax refund,

- For an **automotive data aggregator**, defined its future connected vehicle data strategy and 5-year business plan to enter the fleet telematics market,

- For **BMW**, built a new marketing strategy to improve the fleet sales performance in France,

- **For a leading automotive OEM, defined a new business model of its electric vehicles offer in Europe.**

Matthieu regularly speaks and moderates panels on automotive, mobility and telematics services at conferences.

For this report, Matthieu contributed to the building of our fleet telematics and fuel cards market forecasts globally.

Philippe Brousse, Consultant, Brussels

MSc Eng., ENSIMAG & MS Strategy ESSEC, Paris

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

He has performed multiple assignments in connected fleet services such as:

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

- The building of the US fleet services strategy & business plan for a major player,

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

- The evaluation of the EU fleet telematics management market for a hedge fund,

As part of our Connected Mobility Forecast, he conducted the analysis and 5-year forecasts of the markets for fleet management worldwide.

For this report, Philippe contributed to the building of our bottom-up market forecasts of the Fleet Telematics markets globally.

Tong Wang, Business Analyst, Paris

Master in International Business, Grenoble School of Management; BA in International Business, University of Nottingham Ningbo China (Zhejiang, China)

Tong Wang has experience in strategy and management consulting in China. She notably assisted a French IT company that provides **IoT solutions to enter the Chinese market** and contributed to redefining the **business strategy of a listed Chinese retail group.**

She holds experience in **market research and data analysis.** Tong conducted a survey, collected and analysed data about the retail industry in China to design a business model.

She is fluent in English and Chinese and also has proficiency in French. With an international business education background and overseas experiences, she is good at collaborating with teams with international profiles to deliver global market insights.

For this report, Tong led the telematics market and fleet cost analysis of the Chinese market. She also interviewed a number of actors in fleet management in and outside China in order to build their company profiles.

FOREWORD

As we had already predicted several years ago, the combined positioning and connectivity of vehicles to the Internet would not let the industries that supply them and the related services untouched.

Commercial vehicle OEMs, oil majors, tyre suppliers, telematics providers, toll operators… All of them are facing the need to reinvent the way they provide services to fleets by leveraging data, integrating with partners and breaking the silos they were operating in. Over the last 18 months, we have seen an acceleration in the number and the scale of partnerships, mergers, investments and acquisitions aimed at bringing previously disparate fleet management services together.

The prize to be had by making the right move? **Complete control of the total cost of fleet operation (TCO). Beyond this, the complete reengineering of the supply value chain and the fleets' operational models.**

The level of activity in the fleet market in the last 18 months is impressive:

- **DKV, T-Systems and Daimler's** joint launch of Toll4Europe, a pan-European tolling payments provider,

- Navistar's launch of its own telematics platform, *OnCommand Connection*,

- TomTom Telematics' **data sharing partnership** with BP,

- US fuel card giant **Fleetcor**'s acquisition of Brazilian tolling payment provider Sem Parar and European TSP Masternaut,

- Michelin's acquisition of **NexTraq**, the US Telematics Service Provider,

- WEX' acquisition of **EFS**, the fuel card provider to over-the-road (OTR) truck fleets,

- Fuel card giants UTA and Total's **own brand entry into the EU electronic tolling market**,

- Fuel card issuer **Eurowag's acquisition of Czech telematics service provider Princip**,

- Tier-1 supplier and diagnostics provider **WABCO's acquisition of TSPs** Transics (Europe) and AssetTrackr (India) and partnership with G7 (China),

- Chinese TSP **Sinoiov**'s partnership with fuel card issuer Sinopec,

- **Joint partnership between BMW, DriveNow and Total** on vehicle based fuel payments,

- **Partnership between Shell, Jaguar, PayPal and Apple** *Pay* on vehicle-based fuel payments,

- Allstar and Masternaut's **launch of a co-branded fuel card and telematics** package,

- EU fuel card issuer LogPay's joint venture with **Volkswagen** on toll and fuel payments,

- **PSA Groupe**'s collaboration with TomTom Telematics and Masternaut,

- **Daimler Fleetboard**'s partnership with UTA,

- General Motor's **OnStar data sharing** partnership with TSP **Spireon**,

- Japan's electronic tolling 2.0 additional services and data analytics launch.

Yet it has not been plain sailing for all. Fleetcor's divestment of NexTraq has demonstrated that **acquiring competencies across different fleet management silos is not enough on its own to ensure commercial success.**

As we explore throughout this report, the value of the data being generated by each service must be fully understood and organised. Simply layering complimentary data sets or **delivering raw data to fleets is no longer enough** to generate value, let alone additional revenues.

Until recently, OEMs have played a very small role in the delivery of fleet services beyond the sale, financing and maintenance of the vehicle. As of today, **OEMs across all regions are positioning themselves as holistic providers of fleet, driver and expense management services**. Some have chosen to partner with best-in-class aftermarket suppliers. Others are choosing to do it alone.

This report is the first the provide a strategic, global, cross-industry analysis of the new challenges faced by commercial vehicle fleets and their suppliers.

In more than 650 pages, it responds to a number of key questions:

- **How will the cost optimisation, mobility and management needs of fleets evolve** in the next 5-10 years?

- Will **fleet operators** actually look for a single provider of service to reduce their TCO?

- What will be the **role of van and truck manufacturers** in the provision of fleet services?

- How will **fuel card issuers**, leverage their newly gained access to fuel, fleet & toll data?

- How will the ETC (Electronic Toll Collection) market evolve and where will the **next truck toll schemes emerge**?

- What will it take for **connected fleet insurance to become a popular** service?

- Will these initial **cross-silos partnerships provide tomorrow's template** for fleet management business development?

- **How big are the opportunities** in the fleet telematics, fuel card, tolling and connected insurance market - in volume and revenue?

Our ultimate objectives: help fleet suppliers reinvent the way they provide services and guide all fleet owners into this changing landscape.

To answer these questions, and many more, we have researched and forecast 5 vertical markets that are critical to fleet needs: fuel card services, electronic toll collection, fleet telematics, remote diagnostics and insurance.

We explain in the next chart the methodology and key outputs of this report.

Structure of the Connected Fleet Services Global Study 2018
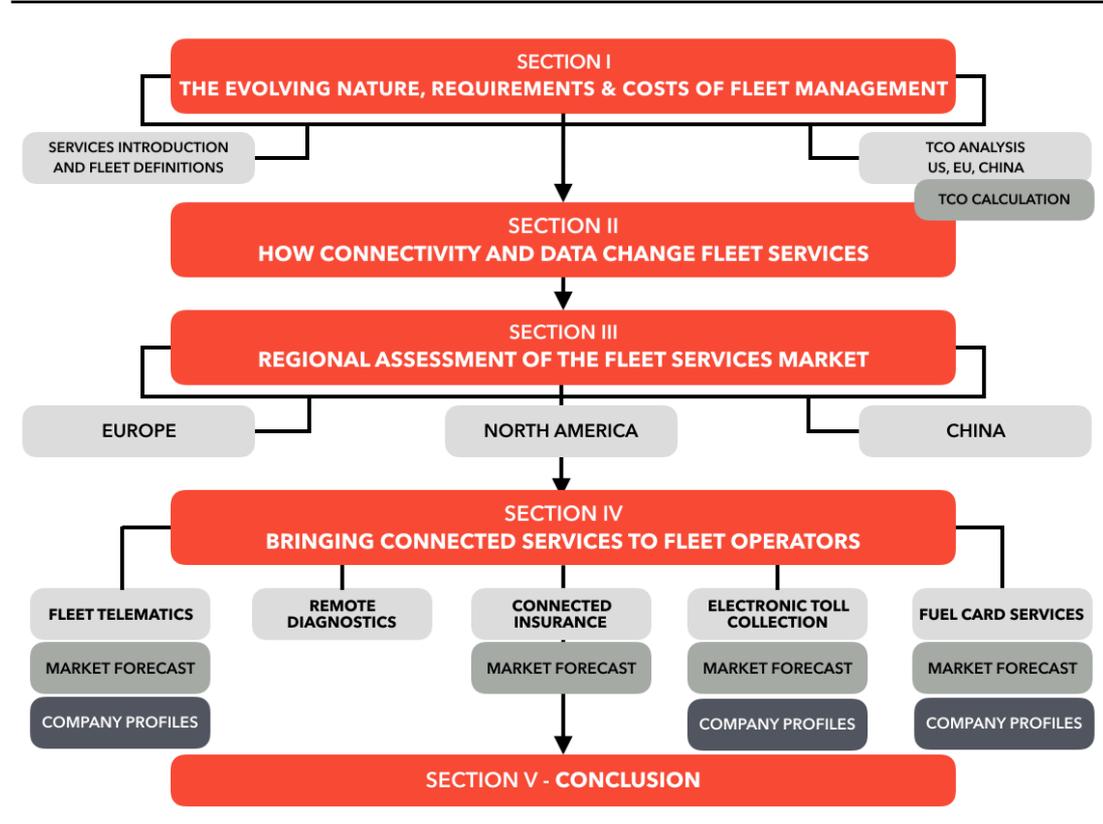
Source: PTOLEMUS

Our methodology has included:

• **Interviewing** a very large number of **fleets** in different industries,

• **Interviewing** all leading **suppliers** as well as disruptive **start-ups** throughout the fleet market place,

• **Recording all the offers** available in each market and building 4 bottom-up forecasts,

• Exploring the pros and cons of each approach with **multiple supporting case studies** and results from our extensive primary research,

• **Leveraging our skills in forecasting and analysis** to construct the most comprehensive and insightful report on connected fleet services available today.

This report leverages:

- **18 months of dedicated desk research of the fleet market on a global basis,**

- **Analysis and peer review** by a team of experts,

- **The insights from over 100 consulting assignments** on fleet telematics, fuel card services, roadside assistance, electronic tolling, data analytics and connected insurance,

- **Interviews with over 70 executives** from across the fleet landscape including fleet operators and fleet owners,

- **A review of mergers, acquisitions** and strategic undertakings by relevant companies,

- **Rankings of suppliers in 3 domains**: fuel card, telematics and toll services.

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

Sincerely,

Frederic Bruneteau
Managing Director

This report bridges the gaps and examines the links between connected fleet services

EXECUTIVE SUMMARY

This year **Amazon's market capitalisation overtook $500 billion**, proving how integrated logistics combined with a smooth web experience were key to meeting customer needs. Amazing if you think that **this giant does not even operate its own fleet of vehicles!**

Maybe there is a reason for that. While **commercial transport** is a critical component of our globalised economy, **it is lagging behind in the race towards digitalisation and Big Data**.

Most containers are still not tracked. Most databases are not connected to each other. **And all commercial fleet managers are still inundated with paperwork!** Every day, to streamline their operations and costs, they attempt to best leverage their drivers and optimise their moving assets and 4 critical costs: maintenance, fuel, insurance and road tolls.

The suppliers offering these still typically provide their solutions in individual silos. Each of them offers a fleet dashboard, resulting in the operator looking at multiple screens and databases to understand the state of its vehicles.

This is changing fast, as we will describe in this report. In our view, **fleet managers will increasingly move towards a unified sourcing of fleet services**. With one objective: operate their fleets in a smooth and unified manner, a bit more like Amazon.

Fuel card services

- Fuel cards represent the largest of the 5 sectors assessed in this report with supplier **revenues in Europe and North America estimated to grow to $22 billion by 2025**

- With **66 million fuel cards across Europe and North America in 2017**, fuel card issuers offer wide payment network footprints and have often become the **most important fleet relationship**

- However, it is also the market with the **slowest predicted growth, at 2% CAGR,** due to fierce competition, disruptive new entrants and the effects of fleet efficiency initiatives such as platooning, freight sharing and electrification

- Fuel card issuers will be forced to either steal market share from competitors or **branch out into neighbouring fleet services** in order to deliver growth

- **Fleetcor's** divestment of **NexTraq** has forced other fuel card issuers to re-assess their strategic approach towards telematics, but does not mean there are not clear benefits of combining the two services

- The growing intensity of the competition in the fleet market will force fuel card issuers to develop **payment services that match those on offer to consumers**

- New payment devices such as smartphones and driver-specific reward schemes could represent the key to **unlocking the small fleet market**

Fleet telematics services

- By 2025, the commercial fleet telematics market will approach **100 million units installed globally**

- Fleet telematics **ARPUs and service models will be challenged** by the entry of OEMs and suppliers from neighbouring markets such as fuel card issuers and ETC providers

- High levels of organic growth has created **telematics giants**, from Arvento to Verizon, who will increasingly compete in a single global market

- Increasingly TSPs will move to become **integrated suppliers** combining multiple fleet services. This is already started by companies such as Geotab and TomTom.

- The **explosive growth of fleet management software dashboards and data aggregators** such as Fleetio, Chevin and GAC Technology has made clear that fleets are looking for actionable insights, rather than just data reporting

- Without delivering clear analysis and data-driven insights, telematics service providers are under threat of becoming **commoditised data generators**

- **OEMs will continue to rapidly expand their in-house telematics platforms** and are beginning to appeal to mixed fleets

- **In our view, the fleet telematics market faces the highest threat of disruption** due to new market entrants and rapidly evolving business models

Electronic toll collection (ETC)

- In 2025, **120 million commercial vehicles will be equipped with ETC**, representing a **10% annual growth rate**

- The total length of **tolled roads applicable to HGV in Europe could rise by almost 50% by 2025** due to an expansion of existing schemes and the introduction of new national programmes

- As a result, **Heavy Goods Vehicles** (trucks over 3.5 tons) **will account for 71% of the global commercial vehicle ETC revenue**

- The technology is changing. **We expect that all new electronic tolling systems for trucks in Europe will be satellite-based**, facilitating their integration with other services.

- In the US, **integration between the $6.3 billion electronic tolling market** and other fleet services is largely non-existent despite significant opportunities

- Full integration between ETC payments and other fleet services such as fuel cards and HoS (Hours of Service) reporting has already propelled **China above the US as the single largest market for commercial vehicle ETC in the world** - by 2025 revenues will almost match those of all European schemes combined

- Revenues in emerging markets such as **Indonesia, Philippines and South Korea** will rise significantly as governments increasingly rely on ETC to support new road building programmes

Connected fleet insurance

- **For the last 5 years, commercial motor insurance worldwide has been losing money** with a combined ratio between 108 and 110!

- Yet, **risk management programmes are still at the R&D stage** in the commercial line

- Regulations in Europe and the US give no choice; **fleet operators are responsible for their driver's behaviour**, whether they know about it or not!

- Many partnerships between TSPs, leasers, brokers and fuel card providers already exist but the **opportunity to monetise the relationship is generally unexploited**

- The value of telematics data to the risk sector will come from **changing driver behaviour, not just reporting it** - without driver training, TSPs cannot change the risk profile of their fleet customers

One thing brings them together: data

- **OEM-developed fleet services remain in their infancy** compared to the aftermarket

- At the same time, the vast majority of fleet service providers are **failing to fully utilise the data available to them**

- Sharing/combining data between OEMs and aftermarket providers can **enhance the product offering of *all* service providers**

- 2 clear models - **open loop and closed loop** - have emerged with regard to OEMs' use and application of fleet data

- The OEM data clouds will need to be connected to competing, sector-focused "neutral" servers, to ensure **many-to-many service provision**

- It's not (only) about accessing Big Data! Simply **combining data is not enough** to deliver increased revenues in today's market

- Data analytics capabilities and the **delivery of actionable insights** to the fleet will determine the winners and losers in the future fleet services ecosystem

- **Remote vehicle diagnostics will be the next battlefront** as OEMs take more control of the data distribution

- Other key data sets will become valuable commodities, including **crash data, driver behaviour data and fuel transaction data**

- **Driving behaviour data represents the single most valuable dataset** across each of the 5 connected service providers we have assessed, yet it is not being utilised to its full potential

The Connected Fleet Services Global Study in numbers

- 650 pages

- 300 graphs

- 50+ case studies

- 45 company profiles

- 4 market forecasts (fleet telematics, fuel cards, electronic tolling and connected fleet insurance)

- 150 TSPs ranked by volume worldwide

PTOLEMUS
Consulting Group

FOOD FOR THOUGHT

"We will still focus on eCall and bCall, but expanding our offering means we can deliver a complementary group of services for manufacturers and their customers. By using a rich variety of information we have the opportunity to ultimately offer predictive maintenance."

Lee Taylor, chief sales officer for Allianz Worldwide Partners

"The application of telematics for commercial vehicles, to improve segmentation and effectively underwrite and price small fleets, is a space where we are enthusiastic about playing in the future."

Glenn Renwick, CEO, Progressive

"Daimler is today facing an exceptional challenge: we are more successful than ever before but our business is changing like never before"

Dr Dieter Zetsche, Chairman, Daimler AG

"We know the future is embedded,"

Andrés Irlando, CEO, Verizon Telematics

"The DKV BOX EUROPE even has everything required to cope with future tasks, such as providing further value-added services, including comprehensive vehicle data analyses"

Gertjan Breij, MD, DKV

"I believe the auto industry will change more in the next five to 10 years than it has in the last 50."

Mary Barra, CEO, General Motors

DTNA is currently evaluating machine learning systems such as IBM's Watson to apply artificial intelligence tools to the number crunching

Jason Krajewski, manager, Daimler Trucks North America

The combined data and analytics that customers will be able to benefit from [our partnership with Masternaut] will provide a 360 degree view of fuel spending and usage

Tony Murtagh, Fuel Card and Corporate Payments, FLEETCOR

"Telematics and fleet management services are a rapidly growing category worldwide and an important area of Michelin Group's overall business plans"

"For goods transportation, which could travel primarily on highways, there's a good and compelling use case there, too. Either of those two might be the first ones you see."

John Krafcik, CEO, Waymo

Ralph Dimenna, COO, Michelin Americas Truck Tires

Renault is able to deliver more vehicle data to insurers than any aftermarket players.

Pascal Le Merle, Renault

TABLE OF CONTENTS

6. The role of the OEMs in building fleet services

B. NORTH AMERICA

1. Examination of current market conditions
2. Key market drivers and regulatory issues
3. Key stakeholders and landscape evolution
4. The role of OEMs in developing fleet services

C. CHINA

1. Examination of key market drivers
2. Offering, Stakeholders & landscape evolution
3. Role of OEMs in building fleet services

IV. BRINGING NEW SERVICES TO FLEET OPERATORS

A. The golden era of fleet telematics

1. Background and recent market developments
2. Service integration and new players entering the market
3. Value chain
4. Systems architecture and data requirements
5. Typical devices in use
6. Delivery recommendations
7. Template graph from Fuel card slides - led by TCO split per region
8. Fleet telematics global forecast

B. Using vehicle data to reduce spend on maintenance and breakdowns

1. The benefits and opportunities of remote diagnostics service
2. Remote diagnostics solutions for light commercial vehicles
3. Remote diagnostics solutions for heavy commercial vehicles
4. The impacts of OBD dongles on vehicle safety
5. The value chain of remote diagnostics
6. Systems architecture & data requirements

C. The struggling growth of connected fleet insurance

1. Background & recent market developments
2. Technology trends and devices used in the truck sector impacting safety
3. The connected insurance value chain
4. Systems architecture & data requirements
5. Integration with other services

6. Forecasting the Connected Insurance market in LCVs and HGVs
7. Delivery recommendations

D. Electronic toll collection moves out of the shadows

1. Background & recent market developments including key geographic markets
2. Value chain
3. Systems architecture & data requirements (including certification requirements for new drivers, etc.)
4. Typical devices in use including data generated/functionalities, unit costs, etc.

5. Level of existing integration with other fleet services
6. Recommendations on how to deliver service i.e. is this a host service or an API?
7. TAM, ARPU, costs and growth forecasts

E. Fuel cards: the sleeping giants of fleet services

1. Background and recent market developments
2. The fuel card value chain
3. Systems architecture, data requirements and typical devices in use
4. Integration with other services
5. Level of existing integration with other fleet services
6. Growth forecast for fuel card services

V. CONCLUSIONS

VI. COMPANY PROFILES

LIST OF FIGURES

LIST OF PROFILED COMPANIES

As an appendix to this report, we have assessed a total of 44 companies, consisting of:

- **15 fuel card issuers** (FCIs) across Europe and North America,

- **22 telematics service providers (TSPs)** operating across Europe, North America, South Africa, Latin America and China,

- **8 electronic toll collection (ETC) service providers** delivering cross-border services across the world's largest single market; Europe.

For each of the suppliers listed in the table below, we have examined their core strategies and market activities with regards to the delivery of fleet management services and their partnerships with other fleet service providers.

Fuel card issuers	Telematics service providers (TSPs)	Electronic toll collection service providers

LIST OF COMPANIES MENTIONED IN THE STUDY

During the last 18 months, PTOLEMUS research team has conducted **phone or face-to-face interviews with over 70 companies** including Betz International, BP, Cartrack, CSI Mexico, DKV, Kapsch, Kuehne + Nagel, Fleetcor, Fleetio, Gurtam, Masternaut, Microlise, Mix Telematics, Navistar International, Ocean, Omnitracs, Orix, Scania, SIG Distribution, Sygic, Telepass, Telogis, TomTom, Total, WEX, Whitbread and many more.

We listed below **some of the 360 organisations we mentioned in the Connected Fleet Services Global Study.**

In this list we have used the abbreviations below:

NGO Non-Governmental Organisations
OEM Vehicle manufacturers
RSA Road Side Assistance
TSP Telematics Service Provider
TTP Telematics Technology Provider

Company	Type	Company	Type
AJG	Broker	Masternaut	TSP
AA	RSA	Meridian Global Services	Tax refund/recovery
ABAX	TSP	Michelin	TTP/TSP
Abertis	Road operator	Microlise	TSP
Abertis/Emovis	Toll operator	Microlise	TSP/TSP
Agip	Oil company	Midas	Repair & Maintenance
Aioi Nissay Dowa Insurer	Insurer	MilesSmith	Broker
Airmax	TSP	MIND Mobility	Leasing/mobility
AIS	TSP	Mix Telematics	TSP
Albert Schuck Transport und Logistik	Fleet	Mobivia Group	Mobility
ALD Automotive	Leasing/mobility	Mojio	TTP/TSP
Allianz	Insurer	Mouchel	Platooning
AllStar	Fuel card issuer	MyLumper	Payments
Allstate	TSP	National General Insurer (GMAC)	Insurer
Alphabet (BMW)	Leasing/mobility	National Safety Council	NGO
Altech Netstar	TSP	Nationwide	Insurer
American Transport Research Institute	NGO	Navistar	OEM
Aral	Fuel card issuer	Neste	Fuel card issuer
Arco	Oil company	Nevada DMV	Government agency
Arriva	Fleet - Public sector	NewMotion	EV charging
Arval	Leasing/mobility	NexTraq	TSP
Arvento	TSP	Nikosax	Tax refund/recovery
AS24	Fuel card issuer	Nissan	OEM

Company	Type	Company	Type
AssetTrackr	TSP	Norauto	Repair & Maintenance
Astrata	TSP	NordTrans Services	Tax refund/recovery
AT&T	Telemcom service provider	NordTrans Services	Tax refund/recovery
ATG Risk Solutions	Data hub	Noregon	IoT and analytics companies
Atlantia	Road operator	Nvacom	TSP
Automatic	TTP/ TSP	Octo	TSP
Avis	Rental	Omnitracs	TSP
AVIVA	Insurer	OMV	Fuel card issuer
Aviva	Insurer	Openbay	Repair & Maintenance
Axxes	EETS provider	Orange International M2M Center	TSP
Azuga	TSP	Orange/Ocean	TSP
Azuga (Danlaw)	TSP	ORBCOMM	TSP
Beiben Truck	OEM	Orix	Leasing/mobility
Berlio	Fuel card issuer	Orix Auto Corporation	Leasing/mobility
Betz International	Fleet	Orlen	Fuel card issuer
BigRoad	TSP	Otto	Software
BlaBlaCar	Ride sharing	Overhaul	Tech provider
BMW	OEM	PayPal	Payment proider
Bosch	TSP	Peloton	Automation platform
Bosch China	OEM	Penske Truck Leasing	Leasing/mobility
Box Telematics	TSP	Penske Truck Leasing	Leasing/mobility
Box Telematics	TSP	PeopleNet	TSP
BP	Fuel Card/Oil company	PepsiCo	Fleet
BroBizz	Toll service provider	Petro China	Oil company/Fuel card issuer
BSquare	IoT and analytics companies	PHH Corporation	TSP
BT Fleet	Fleet	PICC	Insurer
Budget	Rental	PingAn	Insurer
C&C Truck	OEM	Plaza Insurer Company	Insurer
Camatics	Insurer	Pointer/ Cellocator	TSP
CAMC	OEM	Pon Automotive	Leasing/mobility
Car2Go Europe	Mobility	Position Logic	Software
Carrot	TSP	Preteckt	IoT and analytics companies
Cartrack	TSP	Princip	TSP
Ccompass	TSP	Progressive	Insurer
CEABS	TSP	PSA	OEM
Chainway ITS	TSP/TSP	PTV Group	Data aggregator/ Analytics
ChargePoint	EV charging	Q1 Energy AG	Energy company
Chevin Fleet Solutions	FMS platform	Q8	Fuel card issuer
Chevron	Oil company	Quartix	Fleet
China Mobile	Telemcom service provider	RAC	TSP
Circle K	Fuel card issuer	Redtail Telematics	TTP
Circle K	Fuel card issuer	Remobis Refund Service	Tax refund/recovery
CITGO	Oil company	Repsol	Fuel card issuer

Company	Type	Company	Type
Comdata	Fuel card issuer	Rio	Software provider
Continental	TTP	RoadTrack	TSP
CPIC	Insurer	Routex	Fuel card issuer
Crashboxx	TTP/TSP	Royal MAil	Fleet
Crown Commercial Service	Fleet	RS installation	Installer
CSI	TSP	RSA	Insurer
DAF	OEM	Ruptela	TTP
DAIMLER	OEM	Ryder	Rental
Daimler Insurance Services	TSP	SafeFleet	TSP
Danlaw	TTP	Safetrack	TSP
Dash	TSP	SAIC-IVECO Hongyan	OEM
DB Schenker	Shipper	Sascar	TSP
DCL	Insurer	Scania	OEM
Dekra	Fleet	Schmitz Cargobull	TSP
Delphi	OEM	Scout	TSP
Desjardins	TSP	Sem Parar	ETC Payments Provider
Detector	TSP	Shanxi Automobile	OEM
DHL	Fleet	Shell	Fuel card issuer/Oil company
Didi Chuxing	Ride hailing	Siemens	TTP
DigiCore / Ctrack	TSP	SIG Distribution	Fleet - construction
Digicore/C-Track	TSP	Sinoiov	TSP
DKV	Fuel card issuer	Sinopec	Fuel card issuer/Oil company
Dongfeng Motor	OEM	Sinotruck	OEM
Donlen	Leasing/mobility	Sixt	Rental
Drivy	Mobility	SMartDriverClub	TSP/TSP
Drust	TTP	SmartWitness	TTP
DRVR	TSP/TSP	Smoove	Mobility
E100	Fuel card issuer	SPEDION	TSP
E6GPS	TSP	Speedway	Oil company
Easytrip	Tax refund/recovery	Spie	fleet
Ebeling Spedition	Fleet - Tax	Spireon	TSP
Eddie Stobart	Fleet	Sprint	Telecom service provider
Edenred	TSP	Squarell	TTP/ TSP
Eerie	Insurer	State Auto Insurer	Insurer
Egis Easytrip Services	TSP	State Farm	Insurer
Emixis	TSP	Statoil	Fuel card issuer/Oil company
Emovis	Road operator	Stoneridge Electronics	Tachograph
ENI	Oil company	Sygic	TSP
Enterprise Truck Rental	Rental	T-Mobile	Telemcom service provider
Equity Red Star	Insurer	T-systems	Mobile network operator
Erie Insurer Company	Insurer	TankTaler	TSP
EROAD	TSP/TSP	Tata Motors	OEM
Esso	Oil company	Telefleet	Insurer

Company	Type	Company	Type
ETRANS	TSP	Telenav	Navigation
Europcar	Rental	Telepass	Toll operator
Eurotoll	Toll service provider	Teletrac/Navman Wireless	TSP/TSP
Eurowag	Fuel card issuer	Telogis	TSP
ExxonMobil	Oil company	Tesla	OEM
FAW	OEM	The Floow	TSP
FDE	Tax refund/recovery	The Hartford	Insurer
Finch	Broker	TIP Europe	Fleet
Finder SA	TSP	TIZA	TSP
Fleet complete	TSP	TNT	Fleet
Fleet Minder	TSP	Tollsmart	Tolling
Fleetboard	TSP	TomTom	TSP
Fleetcomplete	TSP	Total	Fuel card issuer/Oil company
Fleetcor	TSP/FCI	Towergate	Insurer
Fleetio	FMS platform	Toyota	OEM
Fleetmatics	TSP	Tracker	TSP
Ford	OEM	Trafficmaster / Eurowatch	TSP
Fortum	EV charging	Trak Global	TSP/TTP
Foton Daimler	OEM	Trakm8	TSP/TTP
Frotcom	TSP	Transics	TSP
Fuel Genie	TSP	Traqueur	TTP/ TSP
fuelGenie	Fuel card issuer	Travelcard	Fuel card issuer
Fuelman	Fuel card issuer	Travelers	Insurer
G7	TSP	Travis Perkins	Fleet - T&L
GAC Technology	FMS platform	Trimble	TSP
Galp	Fuel card issuer	Truck Alliance	Freight-cargo matching platfrom
Gaz distribution France	fleet	Truckcom	TSP
Gemalto	SIM	Trucks & Trailers Ltd	OEM/Dealer
General Motors	OEM	TSPS	Smart Parking
Geoconcept	TSP	U-Haul	Rental
Georgia Dept. of Economic Development	Government agency	Ubeeqo	Mobility operator
Geotab	TSP	Uber	Ride hailing
Geotab	TSP	Unipart Logistics	Fleet
Godfrey-Morrow	Insurer	UnipoSai	Insurer
Google	IT service provider	Urgent.ly	RSA
GPS Insight	TSP	US Bank	Fuel card issuer
Gurtam	TSP/Integrator	UTA	Fuel card issuer
HDI Gerling	Insurer	Vehcon	TSP
Heetch	Mobility	Veolia	Fleet
Hertz on Demand	Rental	Verisk	TSP
Hino Trucks	OEM	Verizon	TSP/ TTP
HONK	RSA	Vialtis	Fuel card provider/Tax refund/recovery
Idem Telematics	TSP	Viasat Telematics Ltd.	TSP

Company	Type	Company	Type
IMS	TSP	Vinci Group	Road operator
Innovative Software Engineering (ISE)	TSP	Visiontrack	TTP/ TSP
Intact Insurer	Insurer	Volkwagen Truck & Bus	OEM
Intelematics Europe	TSP	Volvo	OEM
Inthinc	TSP	Volvo Construction Equipment	OEM
Invers	TTP	Voyager	Fuel card issuer
Iron Mountain	Fleet	VUM	Insurer
IVECO	OEM	WABCO	TSP
JAC	OEM	Wawa	Oil company
Jaguar Land Rover	OEM	WayzUp	Mobility
JCB	OEM	Wejo	TSP
Katsana	TSP/TSP	WEX	Fuel card issuer
Kore	IoT and analytics companies	Whitbread	Fleet - T&L
Kuehne + Nagel	Fleet - T&L	Willi Betz	Fleet - T&L
Lease Plan	TSP	XEE	TTP/ TSP
Leaseplan	Leasing/mobility	Xerox	Fleet
Lex Autolease	Leasing/mobility	XPO	Fleet
Liberty Mutual	Insurer	Xximo	Fuel card issuer
Locster	TTP	Yunmanman	Freight-cargo matching platfrom
Lotos	Oil company	Zahlz	Payment proider
Lytx	TSP	Zendrive	TSP
m2m Telefonica	Mobile network operator	Zipcar	Rental
Magneti Marelli	TTP	Zonar	TSP
MAN	OEM	Zubie	TTP/ TSP
Marsh	Broker	Zurich	Insurer

Published in November 2017

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

Disclosure

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

PTOLEMUS
Consulting Group

INTERVIEWS

Andrew Dondlinger

NAVISTAR®

Vice President & General Manager, Connected Services

Navistar Inc.

Q. Like many truck vendors, Navistar are facing a growing challenge around product commoditisation, how do you plan to address this and differentiate your brand in the future?

From our perspective, vehicle commoditisation foreshadows the future of trucking, which is really moving towards autonomy for many applications.

When you think about autonomous vehicles in that context, you no longer have to worry about all of the driver-related concerns that you have today, such as drivability and ergonomics. The vehicle becomes a commodity to move product from point A to point B. While we continue to make sure we have the best product in the market place for a driver, and the best total cost of ownership for the customer, **as trucks move closer towards autonomy, they become commoditised.**

Customers are going to be making decisions on total cost of ownership rather than worrying about how the driver likes the vehicle they are spending all of their time in.

So, we are looking at how we create products and services that **help become the digital backbone of the industry** as vehicles become commoditised. Frankly, the question is, who will be making the vehicles in the future? That could be 10, 20 or 30 years away, but the system we are building is one that is open, so that no matter who is building the vehicles in the future, our system will be the backbone for that.

Q. How would you characterise your 'system' approach?

I would frame it as what we have done with *OnCommand Connection* (OCC) today, which is an open, all makes, advanced remote diagnostics system. The reason we say "open" is that we have invited everyone to come. **We've got 25-plus integrated telematics service provider (TSP) partners who have joined on behalf of their customers.** Additionally, we have our own telematics offering, which we have just launched: *OnCommand Connection Telematics*. These all feed data into OCC, which is the backbone.

The backbone is a diagnostics hub for our customers. Since OCC is all

makes, it doesn't matter which OEM's vehicles are reporting in; it is reporting in on behalf of that customer through their telematics provider of choice.

The reason we see OCC as the service of the future is that as customers move towards vehicles that will likely be autonomous in the future, they won't have to make a choice around which platform they are going to use. They should be able to purchase from any vehicle without the question of whether that vehicle will connect with a platform. That leaves the choice in the customer's hands.

Q: Can you tell us more about *OnCommand Connection Telematics*?

We launched our own telematics solution in July. It has a classical telematics device, which connects to the diagnostic port and feeds data back to the *OnCommand Connection* platform, just like any TSP's system does today. We do, however, send a **higher frequency of data with more data points** than any other TSP does today. As we conducted interviews with our customers, one of the challenges we found was that, depending on the TSP, they would get varying amounts of data, but often

not as much as they were looking for, and often it lacked consistency.

We decided we had to launch a platform that had the highest resolution and frequency of data so that users could run appropriate analytics without large gaps or holes in their data sets.

When we first launched *OnCommand Connection*, **our biggest challenge was getting customers to bring their VINs** (Vehicle Identification Numbers) **into the platform**. So we sat down with them, and what we learned was that they didn't like the concept of a telematics solution that was proprietary. They had put significant dollars into the hardware, and every time they came up for renewal, they were faced with either a small price increase, or they could choose to move to another TSP. The problem is that whether or not they had a remaining book value in the hardware, they still had the cost of acquiring new hardware as the biggest barrier to entry. We

have launched our telematics solution as a universal device, and because it is universal, it allows the customer to move out of their current hardware into our universal hardware without having to do the all-or-nothing approach. Because we have integrations with the TSPs, the customer is able to see their diagnostics data and their telematics data within *OnCommand Connection*, but they can also see their telematics data within their telematics provider portal, because it is being fed by their proprietary hardware.

If the TSP integrates with our open platform, what we call reversing the flow, then they can also ingest the customer's data from our universal platform. So, **the customer can see all of their telematics data within that TSP's platform or portal, even though the data is coming from two different sources.**

⊘OnCommand®
Connection

Eventually we expect customers to move over completely to our universal device and then have their choice of TSP.

TSPs are becoming Software as a Service (SaaS) providers and eliminating

their dependency on proprietary hardware. That is where we have found our best opportunities with TSPs. Most TSPs who are interested or have already joined our marketplace have stated that they don't want to be in the business of designing, developing, procuring, selling and supporting hardware. We do that now, and as an OEM we are ideally resourced for that.

Q: Can you provide some more detail on how the universal device is able to communicate with multiple TSPs despite potentially proprietary communication protocols?

We think of our hardware like an iPhone or an Android phone. It is still a proprietary piece of hardware, but it is open to anybody who wants to connect apps to it. Our hardware sends the customer's data back to our cloud, and then we have APIs available to those TSPs

who then ingest the customer's data into their system. Our first integration is with a company called **EDULOG in the school bus space**. They were the first company to join our market place and eliminate the need for third-party hardware. They have moved to using our device and our *OnCommand Connection* system, whereby their software gets data from our cloud. The data flow is from our telematics device in the customer's vehicle to our OCC cloud. The customer can purchase applications in the marketplace if they want to, but also TSPs can use the APIs we have published to access the customer's data.

The customer can see their data in our *OnCommand* portal, as well as see it in the EDULOG portal.

The benefit is that they are able to use all of the software applications that EDULOG provides.

It is what we call **reversing the flow**. Instead of having the data go to the TSP and then into the *OnCommand Connection* cloud, it now goes to the OnCommand Connection cloud and then to the TSP of their choice.

Q: How do you think the Navistar OnCommand Connection Telematics product compares to established aftermarket players?

I would stratify TSPs into 3 categories: geolocation or geo-tracking, boutique or specialised solutions, and full-service offerings across hardware and software.

As of right now, the first category is going away and being converted into full-service solutions. Looking at the full-service solutions, we are very comparably equipped from a software / service perspective and at a higher value and lower cost than most of them.

Q: Can you give us some examples of the data sets and frequency that will make the difference between a TSP or another OEM and what you are providing?

First of all, our standard device reports back every 30 seconds with a full health report, including geolocation, etc. Most TSPs report between 2 to
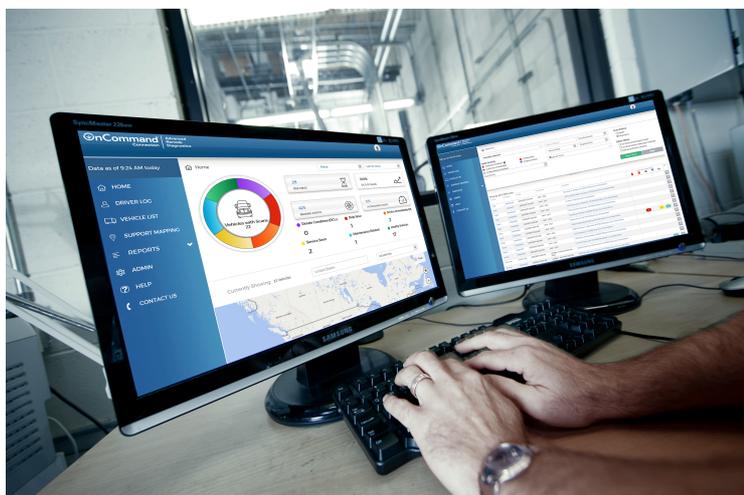
5 minute intervals. So, from a **frequency** perspective, **we know that 30 seconds is best in class in the industry.** We have the capability of dialing that down to every 15 seconds, or if we want to go with an even higher frequency, we can eliminate some of the data we are sending with every ping to give high-resolution tracking. If you need to see where that vehicle is now, not where it was 5 minutes ago, we can dial that resolution up to reporting as often as every 7 seconds. This gives you **virtually real-time data.**

On the **resolution** side, the challenge with the TSPs is not their ability to collect the data set, but it comes in their willingness to send the data set. Historically, cellular data was very expensive, and when you look at M2M data costs, they are ridiculously expensive.

We went to two of the major carriers and negotiated exclusive rates with them. That has enabled us to bring the price down while sending more data. Most TSPs will eliminate, filter and just not send a certain amount of data.

We collect approximately 180 parameters from the engine and CAN-bus and send that every 30 seconds. Most TSPs will send between 10 and 20 parameters at their current frequency, which we know is longer than every 30 seconds.

We have plans to take even more data and pull that across the CAN bus. This will enable the customer to see more parameters than they are seeing today. It's not that other TSPs couldn't collect and send more data, but we also have the diagnostics solution that helps the customer leverage the data.

Q: Over the last few years we have seen the emergence of fleet data integrators such as Chevin and Fleetio offering a single dashboard view of all fleet management related data. Does Navistar have plans to develop a single dashboard solution?

Over time our goal is to integrate partners in the fleet maintenance and management space so that our customers would have access to their data in whichever dashboard they choose. We haven't committed to have a single dashboard portal to provide that information, but certainly we would like to be able to do that sometime in the future.

Right now, our focus is on making our telematics and associated applications the best we can, and providing a marketplace where our customers can acquire the
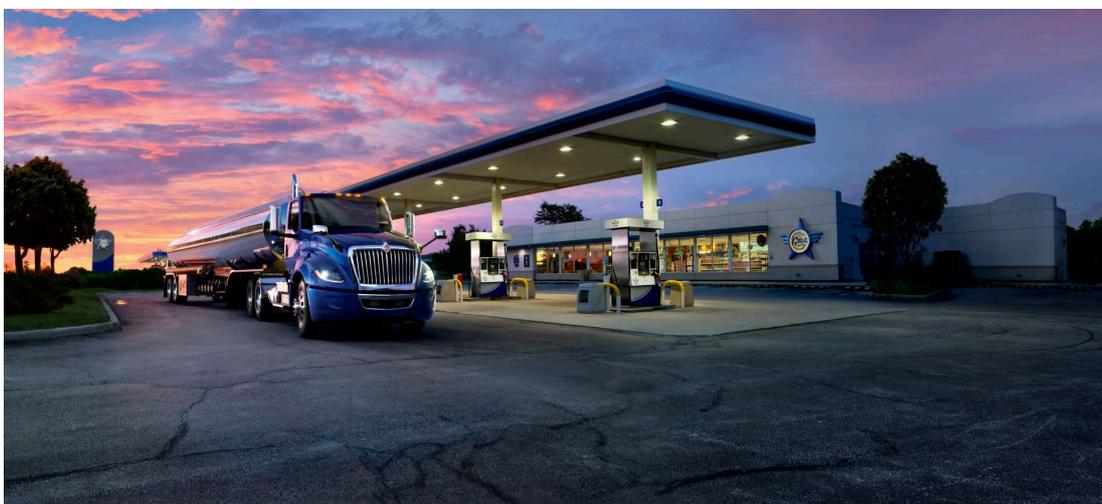
other products and services that they need to round out their solution.

Q: We have seen car OEMs such as GM, Jaguar and BMW begin to launch embedded payment functions for vehicle related purchases such as fuel. Does Navistar have any plans to develop something similar?

We have certainly looked at that internally, but I would say that **the smartphone is more the universal solution that people are looking for**. When you think about somebody that is on the road, that individual is the one that is consuming. We see the driver as an employee and the driver as a consumer. When you think about the driver as an employee, they already have systems that are required for them to get paid or to process paperwork.

As a consumer, the driver consumes wherever they happen to be, and generally that consumption will be paid for out of private dollars. So, I see the trends being set by the smartphone providers like Apple Pay, Google Wallet and Samsung Pay as the ones that are going to lead the market, as opposed to the vehicle.

I think that the opportunities are limited, because the vehicle does not go everywhere the person goes. I think phone-based payments will dominate this space because smartphone security measures are getting better and becoming easier to use.

Q: Do you have plans to offer a Navistar branded fuel payment solution?

We are **in discussions with several suppliers of fuel cards at the moment.** We are also talking to insurance companies, tire manufacturers and finding ways to offer the kinds of benefits to smaller fleets that currently only larger fleets benefit from.

We want to give owner operators and small fleets the benefits of aggregated spend. Owner operators and small fleets are at a disadvantage compared to large fleets in terms of fuel spend. So the marketplace is going to offer aggregated spend instruments like fuel cards and insurance solutions, so small fleets can operate at less of a disadvantage.

Interview conducted by Justin Hamilton in October 2017

PTOLEMUS
Consulting Group

Thomas Schmidt
Managing Director
TomTom Telematics

TOMTOM
T E L E M A T I C S

Q. Do you see a shift in the way telematics is used and sold today between an emphasis on the vehicles and goods to an emphasis on the drivers?

Since the beginning in 2005, driver services have been our core strategy. Back then the industry was focused on track and trace something now very much commoditised. What has changed is the range of devices used such as driver terminals, secondary screens, smartphones and tablets. This has brought a wide range of new services.

So rather than talk about a shift, it is more an extension of the driver-related functions and services, as well as an extension in the amount of granularity in the data we collect from the vehicle. Things we could not imagine 10 years ago:

engine management, fuel consumption, deep vehicle analytics, etc.

A good example of the hybrid between driver- and vehicle-related services is advanced driving behaviour. Many TSPs may think an accelerometer is enough to do **driver management**, but much more is possible with **enriched data** such as engine data, RPM, fuel consumption, aggressive driving metrics. These cannot be all taken from a simple acceleration sensor. Enriched data gives a much more holistic view of how the driver operates the vehicle and through that you can really understand how to improve cost management such as fuel efficiency.

Another example is to **combine engine data with map data** to generate better engine and power management, which in turn generates more energy-optimised routing in addition to on-board coaching of the driver. So in these areas, telematics has played a key role.

While OEMs partially implement these techniques, they only focus on the vehicle and cannot integrate the high-level information such as load, route or arrival time. **The aftermarket is where all the different sets of data are combined and harmonised for the benefit of operators.** That includes vehicle data, back-end office based data, navigation and map data, all integrated on a driver display where you can actively influence the driver.

Q. When you look at the cost of operating a fleet, the cost of a vehicle being off road is huge. Why don't players make crash detection a default service?

To detect a crash, you need non-discriminatory access to native vehicle data and agreed upon standards.

Acceleration and GPS data gives you an event that could be a crash but is not fully validated as such. It is dangerous to detect a false positive and even worse to miss a real crash. The question is who takes responsibility over the detection of the crash?

TSPs do not have access to the necessary vehicle data. For example there is no standard interface where a third party could collect airbag deployment. So currently data goes to the operator who then needs to verify with the driver or in some cases the insurer if there was indeed a crash. But if we consider all of the sensors that a car has today, the vehicle can detect even a small crash very clearly. This cannot necessarily be done by an aftermarket black box.

The definition of a crash is also not shared between third parties, there are no standards to define what a crash is and how severe it was, for example, to inform emergency services. So there is a clear need for standards, and these standards also need to be

cross-border. It is the same with eCall. There is no standard interface where a third party can access the trigger data in a non-discriminatory way.

That is why today information about a potential crash is often sent to an insurer or broker, but it is very much up to them to verify it by contacting the driver or the fleet operator. Here the definition of the crash is based on the partnership with the specific company and differs between cases.

The liability linked to send or not send an ambulance can only be cleared by standardised definition of what a crash is. Until then we cannot widen the scope of crash detection beyond single proprietary solution between two partners.

Q. Have you seen this market being disrupted?

I have not seen any major disruption. Rather the technology has gradually improved over time. **Service functions and quality levels are improving, but it is more an evolution than a revolution.**

You do see new players trying to enter the fleet telematics market, but with only limited success. They have tried to experiment with some services but are

only providing basic data such as location, which is already very much commoditised. They are not providing an advanced solution that offers planning, insights and interaction with driver.

While many service providers try to sell fleet telematics systems as a service attached to the vehicle, **we see it more like an ERP software attached to the back office of customers**. This is a radically different approach because **the deep benefits of connected fleet services comes from the overall IT system integrating together.**

Q. Do you see an opportunity to become a payment platform as well?

Wireless operators came to us 10 years ago suggesting that since they had the customer relationships they could combine all the services and provide a single invoice.

It did not work. I don't think a payment provider necessarily needs to provide all services. I believe in collaboration, in

data sharing between systems that are connected with each other via APIs, where customers have the choice of services and providers.

Rather than one provider trying to cover all services each provider should focus on what they are good at. History is littered with companies that have tried to deliver the whole stack.

Q. Do you expect that at some stage, fleet management will be enriched by the data that is generated by the vehicle ADAS systems, such as cameras and radar?

I have big hope that it could, but it's a question of timing. Likely this will not happen soon. OEMs have a growing dataset that they believe is their data, for their own consumption and analytics, and that they can use and monetize. I disagree.

This data belongs to the driver and the customer True disruption will come if they open the interfaces and provide rich, discrimination-free data. Then we will see services appear that we can't even think of today.

who owns the asset and generates that data. In my view, this is the right of the customer and it should be protected by laws that are still being created.

Q. Do you see a competition coming from the IoT service providers, companies that are more data-centric and could compete with the analytics part of your offering?

If the OEMs shared their data in a non-discriminatory way through a rich API interface thus making available vehicle data in addition to map and location data on a pure software base, that would open fleet management related services to all kinds of developers.

At the moment the software industry is capable to

interact with drivers, but if car data was open, it would also open up possibilities to interact directly with vehicles. OEMs are only defining what they can share based on the defined minimum needs and are prioritising the protection of their data. We also need all the OEMs to work on this, not just a few.

Disruption is when we separate the basic infrastructure from the service supply and give true open-minded access to the service providers. Controlling the platform means limiting the access to some datasets, controlling who has access to it and restricting above-FMS datasets to their own services. **We also need one or two standards for the applications to be written, not one per manufacturer**.

Interview conducted by Thomas Hallauer in September 2017

Bernie Kavanagh

Senior Vice President & General Manager, Large Fleet
WEX Inc.

Q. Could you please present WEX's position in the fleet market and tell us what is unique about its service proposition to fleets?

We are an industry leader known for pioneering the closed-loop proprietary fuel card network. That in itself differentiates us.

Many of our competitors offer open-loop products, such as a traditional purchasing card -- like a MasterCard, a VISA -- where the bank may not own the entire chain. So you might have an issuing bank, where someone else is doing the processing for you, while another institution is handling the acquiring side. In the WEX world, on the fuel card side, it's a closed-loop network, which means

it's a proprietary network. We release specifications to the merchants that accept our card. That means we control the data. We are the issuer, the processor/network, t, we issue the credit, etc. We own the entire chain.

What that allows us to do is to control what data we capture, and what to do with it. It allows us to have a more secure network, because we're not passing data to anybody else waiting for it to come back.

That's what fleets really have come to appreciate over the years.

One of our other lines of business is our Virtual business. We started that back in 2000. Very different from our competitors -- who are owned by a bank, or who use a bank -- we own a bank. So we issue, through our bank, a MasterCard. Most of the issuance is done by our Virtual business. Having the ability to offer both open and closed loop solutions gives us the

flexibility to meet the market need, and Our customers and partners, still to this day, will tell us that the value in that closed-loop network is worth keeping.

Q. Is the value in the control and the security that you provide? Is security a big issue in the fuel business?

Absolutely, security is a very big issue. And to your point, this is the control piece of that. Most of what open loops do is controlled by the MCC (Merchant Category Code) level. For example, if I am a retail operation and sell fuel, the MCC code is going to be "convenience / chain." So I have to say: I want to allow that. Well, when you've opened that up, could you purchase products inside vs at the station? There are ways that they've found to control that, but it's not as

clean cut as what we do on our closed loop, which is product type controls. We restrict everything by the product that's bought.

We allow fuel as a product. So even though service locations and fuelling stations will have a convenience store attached to them, if a fleet says: "I only want driver to buy fuel," the drivers are only going to get fuel.

Q. How large are you in the fleet business today?

We have 10.5 million WEX fuel cards in circulation worldwide. We've got a fleet application in North America. We have a fleet business in Brazil, Australia and in Europe. We process roughly **32 million** transactions a month. Data is another valuable point. People want to do more and more things with data and we've got a lot of data.

Q. Last year, WEX acquired EFS for $1.5 billion. How does that position you in the North American Over-The-Road (OTR) / haulage market?

Several years back, we saw an opportunity to better serve not only the heavy truck market but mixed fleets as well.

We had a lot of light vehicles and sedans but we didn't have a lot of Class 7 and 8s. Those vehicles have very unique needs which require specific products. This segment drives a lot of volume because fuel consumption is five to six times more than a light vehicle.

So we started to develop a product to fit that market. The first acquisition that came about was Fleet One. We acquired them, which allowed us to enter the OTR space. And one year and a half ago, when EFS became available, acquiring them really put us firmly in that OTR space. What that allowed us to do is to offer a true OTR solution.

So now we can serve those companies that are just operating larger vehicles and need advanced functionalities such as cash advance, different pricing schemes (cost plus, retail minus, etc.) but on a very

limited network (7,000 Tier 1 truck stops), which is all they need because they travel long distance between cities.

The integration of EFS allows us to serve all levels of vehicle We now will launch a product that truly serves the mixed fleet market, still have our proprietary fuel card for the lights and sedans and have a solution for the Class 7's and 8's. The mixed fleet solution will be the first with a closed loop-closed loop solution, aggregating two proprietary systems.

Another benefit of the EFS acquisition is their integrated payables division, which does a lot of business in the fleet space.

Q. How do you see the market for fuel card services evolving over the coming years? Will the oil companies fully turn to outsourcing to specialist companies such as WEX and FleetCor?

I think you see most oil companies focus on what they are good at, what are their specialties. I don't think that card programmes necessarily need to be their speciality.

To succeed, you need to have the systems in place; you need to build scale.

When you've got a partner like WEX who already has the scale and can immediately bring that and drive the operations and the sales, handle the billing and other things, it makes just more sense to partner with somebody.

And oil companies are now focusing back on their core business. I think you're seeing them even going further that way. The oil companies are getting out of owning the stations. Several major oil companies have recently made the decision to leave the gas station business. I think companies as a whole are specialising in their core business and partnering with those that do the pieces of their business that's core to them. So it creates opportunities for WEX and others to do the processing and run the card programs for most of the major oil companies.

We have 40 partners. Most of the oil companies are with WEX today. There's just a small handful that are not.
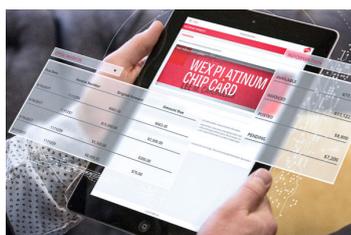
Q. Is WEX ready to handle the growing influx of fleet

and connected vehicle data?

I think we always want to collect more data. Our partners and customers expect that from us. We've got a very robust data set on fuelling and fuelling transactions. We partner with lots of outside agencies to obtain more fuelling data. We're the system of record when it comes to fuelling transactions.

But now, people are seeing the need for other pieces of data to tie into that. The fuelling data is, for the most part, an asset-based piece of data.

You're tracking a vehicle, you're tracking a tool. But now people also want to track the driver and monitor driver safety, the behaviours of the drivers, etc… And those two pieces, independent of each other, are very valuable. When you're putting them together, you're starting to get a better picture of what happens in the day of the life.

I have an employee and a company-owned asset working on my behalf. I want to know everything about what's happening so I can keep them safe, be more efficient, be able to drive more revenues, whatever that role might be.

Those data sets lend itself to tools that help you manage your fleet better.

Q. What is the share of the fleets that are really tracking their fuel consumption today?

Naturally, by having a universally accepted card, you're going to reduce fuel usage because drivers are not going to have to drive around to find a specific site. That's an immediate benefit.

Created by Freepik

Then through the tools that we make available to the fleet managers and regional employees who may have access to them, a fleet can start to drill down to the next layer: am I buying unauthorised levels of fuel? Premium vs regular? Am I buying high-price fuel vs. low-price fuel, etc.? Those are the datasets that you can start to use with our analytics tools to drive to lower cost fuelling locations and make better purchasing decisions.

Q. Are fleets really doing that?

Most of our fleets will be able to tell you they've realised savings over time using the tools we make available to them. It varies

based on geography. It varies based on industry. Some vehicles have to go where they have to go. We've got fleets that will allow their driver to drive a half mile out of their way to save 3 cents. We have some fleets that say: It's more important for you to be on the road and make the delivery. We give them the tools to do both.

So we work with the fleets and with the partners to optimise the fuelling experience.

Q. Concretely, as a fleet manager, what kind of tools do you give me to optimise my fuel consumption?

We start off with basic levels of consumption: usage, trends, when they're buying, where they're buying. Then we'll drill down a bit deeper to say: within a given geography, how did you buy against that area? Within a 3 mile radius where you were buying, did you buy at below average or above average prices? And we give them a scorecard based on that.

Then we give them tools to say: instead of going to this location, you could go to

that station over here and save 6 cents a gallon. Here's the potential saving you could make. And then we benchmark that and track it each month. And we show them how they're doing against their projected savings.

Q. How can WEX future proof itself against the growing threat of service integration by fleet Telematics Service Providers? In your view, does the rapid growth of fleet telematics providers such as Verizon, Geotab, and TomTom represent a threat or an opportunity to WEX?

I think a lot of it is driven by customer needs and what relationships they have. We're doing a lot of integration with some of these partners today. In some cases, we will send them data and they can become the system of record for certain reports that the customer might want to see. In other cases, we will take their data in and integrate it with other pieces of data that we have access to. It really comes down to the customer need: what is it that they want to see and who can deliver that?

If everything is being driven by your fuel usage and the telematics information is an added benefit to that, then we'll control that data. If

they're driving all their decisions based on the location information, then the fuel feeds into that. The important thing is to have that 2-way conversation going through the data exchange.

Q. Is there a big appetite for the combination of fuel and telematics data today?

Absolutely. That's becoming a huge need in the marketplace. We started a couple of years ago with just a very simple report that we called the Fuel Guard report. It basically said: Here's a fuelling transaction that occurred at that location. At the exact same time, this was the vehicle's location. If the two of them don't match, you might want to look into it.

This seems like a very basic report. But now we're starting to see that that information is used in many other different ways. They're starting to look at fuel consumption for those who are harsh braking. At locations: why have you

gone off your route? You should have bought your fuel here and staid on your route. There are lots of ways to integrate that data.

And they're just two pieces of it. There is a lot of data that customers are asking for and at some point in time, somebody is going to need to be that repository of much more data than just fuel and telematics.

Q. You're specifically in charge of large fleets for WEX. Do you see fleet managers really doing that or are they still struggling?

A little of both. Some have the time and are utilising it. But what's happening now is, it used to be: "I want all the data. Then just tell me what were the exceptions within the data." Now it's being driven toward being more predictive and more prescriptive. Now they want me to tell them what they don't know. "You have my data, you see these behaviours and what the trends are. Tell me what I should do and what I shouldn't do. And tell me how I'm doing against that."

Q. We have already seen new players such as Apple Pay and PayPal move into consumer fuel payments – could these players

represent a threat to WEX in the future?

No, not necessarily. It may be more of a partnership opportunity as they start to get more involved in other aspects of the business.

Created by Vectorpocket - Freepik.com

For example, we've been able to use a device like the one designed by Square to help out some emergency fuelling partners. You can imagine the scene: There is a hurricane coming in and you've got a number of mobile fuelling trucks set up on the side of a parking lot and they want to make sure they know who's getting fuel at that location. They're going to need a way to capture that information. So now, with an iPad and a Square device, we've programmed it so that they can accept a WEX card. They're going to swipe that WEX card in the vehicle and capture all that data.

So it's not necessarily a threat as much as an opportunity for us to integrate with them and potentially share customers.

I think that they've got the awareness of the market. A lot of what happens in the commercial space is being driven by consumer experience. So people want to have that same customer experience. In some ways, it pushes us to develop different applications that are more consumer-like: mobile apps and ways to pay with a mobile device, etc.

Q. In the long run, will we see smartphone payments become a viable long-term alternative or addition to existing fuel cards?

I think that down the road everybody probably assumes that we end up in a card-less society. You will

have some sort of a device that will host all of this information. However between here and there, the road can be quite long and winding. You need to have other players involved to make that happen. I need to have a Point of Sale device that is activated by that mobile device and can transmit that data to me. So there's a lot of work that needs to be done, even if you just think of the fuelling locations. There are 160,000 locations across the country that need to have some sort of upgrades to their current POS devices to allow these transactions to occur.

And we'll get there. You need to have all pieces coming to play. It is like the EMV, the standard for chip-enabled cards. We've all been to these retail locations with the sign up that says: "Swipe your card" because they don't have a chip reader yet.

Q. Does WEX have to move beyond payments in order to secure its position in the future connected car landscape?

Vehicles will always need to be fuelled. That may be through traditional gas and diesel, alternative fuels, electricity. We will need some mechanisms to activate, capture, bill and report those transactions.

If you think about the connected car world, there are probably a lot of integration points we explore today to see how the payment mechanism is tied to the vehicle. The OTR market is somewhat advanced. They have some of the Tier 1 truck shops that, as you drive through the lane, use RFID to import information from your vehicle and activate the pump for you. It knows the controls you're allowed. You just walk up, fuel the vehicle and you're done. So it has got all the information.

But this is a very isolated example. It is very different to pull up to a fuelling location that has 12 pumps all within 20 feet of you. Which pump are you going to turn on? What data are you going to capture?

But we know that things will change with technology, and we will figure out a way to do that. At some point, it may just be right in the

vehicle. And there's also the opportunity to tie the vehicle to a mobile device.

What I want as an employee and a fleet manager is for that to be integrated together.

Q. Do you expect the future of fuel cards to be in mobile payment or in embedded vehicle payment?

I think you will get both. It's going to take a lot of time to change to just one solution.

Think about the day when you used to go through a toll booth and you handed somebody money. Then we moved to the basket where you threw the cash in. And we moved to E-ZPass.But there are still toll booths that have all three of them!

If you think about that, if you think about the replacement cycle of vehicles, if you think about the replacement cycle of POS devices, you're 10-15 years out before we'll

be at the point there's a critical mass to move to just one solution.

In that interim period, you might have some vehicles that may issue payments, some mobile devices that issue payments and you may still have a card as a backup, because the device may not be able to register, you may not have cell coverage. I think there will be a slow migration.

In the end, there will still be a need to track the asset. So, there's still a benefit to connect to the vehicle. Same for diagnostics. So, it might go the other way, where all my relevant information is in my dash, so why wouldn't my payments be there as well? So, the car could have access to the phone's payment solution. The car becomes the gateway.

Q. What is WEX's fleet strategy in Europe and in Asia? Do you actually have a fleet strategy there?

In these regions, a lot of what we do is following our customers. We are fortunate enough to have a database of more than 300,000 customers. A lot of them have presence in other countries.

Our presence there has been largely opportunistic.

An opportunity presents itself and we acquire a fuel card company. A lot of that has been through partnerships.

In Australia, we bought a fuel card company that was very similar to ours. It's a closed loop, proprietary card accepted network. In Europe it was through a partnership. **We acquired the Esso portfolio** and we built it out that way.

What we are seeing now is that a lot of our customers, which are multinationals, are saying: "Ideally, I'd like one solution." However, they realise there won't just be one solution around the world, just because of different regulatory issues, different pricing schemes, different accepting locations, but if I can deal with one organisation that would be very beneficial

Q. Does this demand come from oil companies or from fleets?

We're getting it more from the customers. If I manage a fleet and I have a presence in 15 different countries, I have a global fleet manager that oversees it all. It would be nice if they had one resource. So, the question becomes: What does that resource look like? One platform where all that information resides. You

have in-country solutions that meet the needs in that individual region. Is it one universally accepted card that knows currency conversions and interchanges?

At the end of the day, people would like to deal with one partner: one point of contact, one company they deal with and that handles all their global needs.

Q. Who would be the leader in the relationship with the fleet, you or the fleet management company?

Obviously, a partner will have more presence than an individual customer. A fleet is just one entity, whereas a fleet management partner might have 20 or 30 accounts in a given region. Most of the FMCs are globalising. They're all faced with the same requests that we have. "I'd like to have somebody to handle all my vehicle needs." But a tire here may not be the same as a tire in Australia or in Singapore. But I want to have a company that I can call and say: "Just help me with this."

So, when they look to globalise, they look to their partnerships, and most of them use us for fuel. And they say: "What is your

presence and what can you do to help us in our partnership?" There have been opportunities where we partner in other countries with our existing US partners. There have been opportunities where they say: "This is where we're going. Here's our roadmap over the next three years. Tell me where you can match up with us."

So, the ownership question really comes down to the individual customer. If they want to deal direct with us, we can handle that. If they have integrated needs that are better suited to a Fleet Management Company we partner with them as well.

Q. Shell just acquired NewMotion, a network of 30,000 EV charging points in Europe. This comes after the partnership between US Bank/Voyager with ChargePoint to make its fuel card compatible with its 42,000 charging spots in North America. Is the future electric for WEX too?

We are in the electric space today. We've got acceptance at a number of charging stations including ChargePoint. We continue to build out that network.

We've got customers and partners who have electric vehicles and need to have charging facilities. We do business with the Federal Government and the Department of Energy is a customer of ours and we've got a huge push. The GSA (General Services Administration) also has got a huge push for EVs. A lot of the needs are related to the infrastructure: Where can you find these charging locations? What's the charge time? What's the battery life? I think our role is to allow people to get the charge reported back and settled. And we help companies establish where they should put charging stations, based on where we know our customers have EVs.

We've had conversations with these stakeholders, the same way we have had these with alternative fuels such as CNG (Compressed Natural Gas). The charging stations represent an interesting dilemma in that it's probably not going to be your traditional gas station that will put a charging station and have vehicles there 30 minutes or an hour. It's going to be somewhere else.

But, again, it's important that the cards are accepted there. We're doing a lot of work with the charging stations on mobile and RFID technologies because a lot of the home charging points don't have card readers on them. So you want to capture that information using your mobile device.

There are only around 2 million vehicles worldwide now but 2016 had the highest number of new sold EVs: 600,000 or 700,000. It's really starting to peak up. But 2 million represents a very small percentage of the entire vehicle population.

Interview conducted by Frederic Bruneteau in October 2017

REPORT SAMPLE - SECTION EXCERPTS

Please note that several figures have been replaced with XXX. They are available in the Full Study.

A. Introduction and definitions

1. The 5 core connected fleet management services

The purpose of this study is to provide a thorough overview of the changes which are taking place it the way connected fleet services are being delivered across five key segments:

| FLEET TELEMATICS | REMOTE/ VEHICLE DIAGNOSTICS | CONNECTED INSURANCE | ELECTRONIC TOLL COLLECTION (ETC) | FUEL CARDS |

SAMPLE FROM SECTION 1

As well as analysing ~~and market movements effecting each individual market in de~~amine how these services are becoming increasingly intertwi~~connected.~~

~~se 5 services - fleet telematics, connected insurance, ETC and fuel cards - we built a bottom-up, **10-year global market forecast** with clear outputs providing:

- **Subscriber volumes by country, region and vehicle segment,**
- **A breakdown between technologies used** (where applicable),
- A breakdown between **aftermarket and OEM volumes** (where applicable).
- **Revenues by country, region and vehicle segment** (light commercial vehicles, heavy goods vehicles),

Furthermore, **we have calculated the TCO (total cost of operations for light and heavy commercial vehicles across Europe, China and the United States**. An example for China is presented below:

INTRODUCTION

Connected Fleet Services Global Study 2018
Free Abstract

Annual TCO calculation for HGV >14t in China

SAMPLE FROM SECTION 1

- Fuel
- Depreciation
- Maintenance
- Tolling
- ...
- ...rance
- Taxes
- Driver
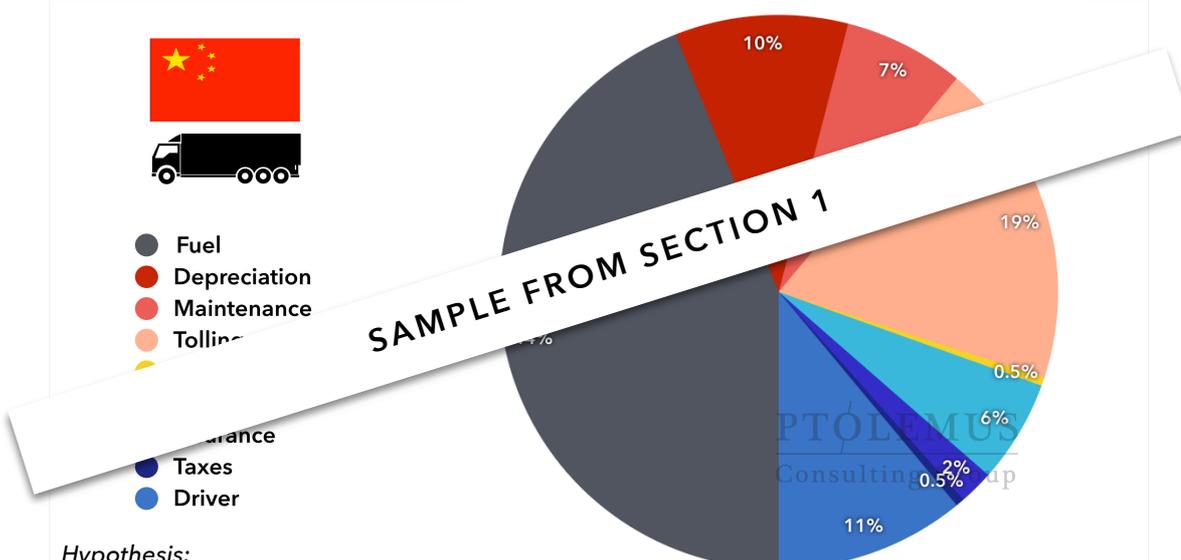
Hypothesis:

- *HGV truck >14 tonnes driven for 150,000 km per year*
- *Straight line depreciation over 6 years*
- *Financing based on 3-year loans with monthly payments covering 70% of vehicle cost at annual rate of 4.5%*
- *Diesel price $0.96 per litre*

Analysis

- **Road tolling represents a very significant cost in China due to the extent of the network, which runs to over 160,000km** - the country has invested significant sums recently in ETC
- Low driver costs than other regions such as Europe and North America reflect the country's overall low labor cost, although wage inflation is increasing
- Fuel costs are high in proportion to the total cost due to heavy usage of the vehicles, the fuel consumption per 100 km in China is however comparable to the rest of the world
- Annual mileage ranges from 100,000 to over 200,000 km and daily driving hours can easily exceed 10 hours
- Although not included in this calculation, highway fines are very common in China - **we estimate that an average HGV will be required to pay around 30,000 CNY (€3,800) in fines per year**

Annual costs (€)

© PTOLEMUS - www.ptolemus.com - Connected Fleet Services Global Study 2018 - All rights reserved
Strictly reserved for the internal use of the reader - Distribution to third parties is prohibited   53
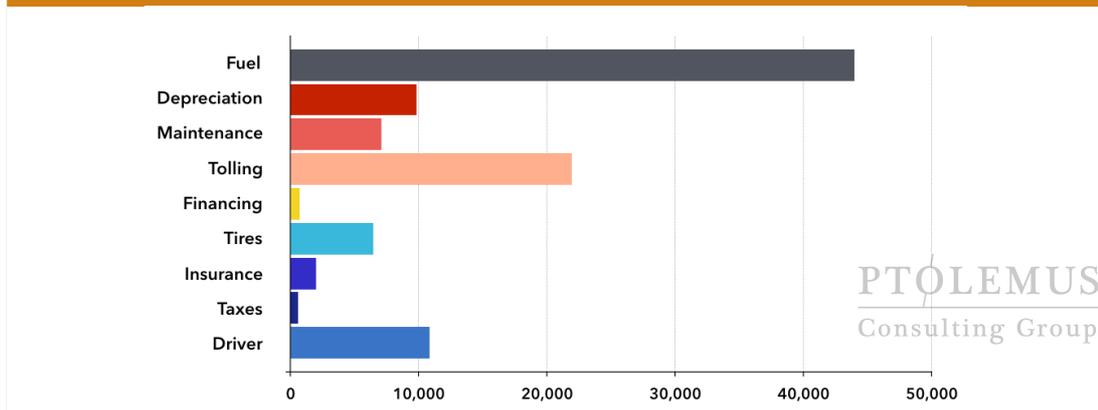
Supporting each forecast is a foundation of the number of commercial vehicles in use today and through to 2025.

In 2016, HGVs and **LCVs accounted for xxx% of all commercial vehicles** in Europe; approximately xxx million vehicles. Truck sales in Europe, at around xxxx million per year, are expected to remain at this level over the coming years.

We anticipate that this market share will decrease due, in part ~~ leased and company cars. This rise can be explained in ~~ attractive, complete mobility solutions on the market from ~~ such as Alphabet and LeasePlan. Equally, the steep rise in ~~ mobility solutions such as car sharing and ride hailing will ~~ commercial owned passenger cars in use across all Europe~~ **by 2020, we estimate that almost xxx cars will be** ~~ will continue to rise.

~~ber of HGVs will remain broadly steady, with a slight decline in the longer ~~, while the number of LCVs will increase due to macro trends effecting goods distribution and the **explosive growth in home and urban deliveries coming from online retailers such as Amazon and Rakuten**.

The evolution of commercial vehicles in use in Europe (million)
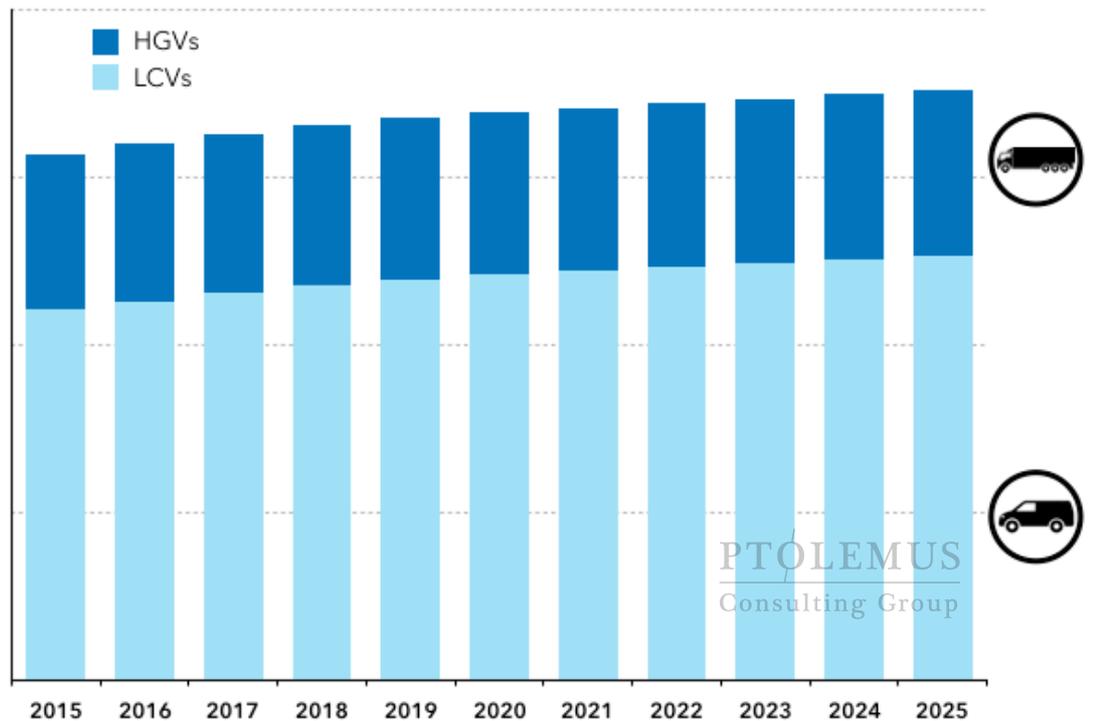
Source: PTOLEMUS

2. Key trends and market developments

a. Fuel card issuers

Fuel cards represent one of the most well-established and mature fleet services in the developed markets of Europe and North America. Across both of these markets, oil companies still dominate the fuel card landscape due to their extensive own-brand and partner networks. Nonetheless, **the rapid growth of new, non-oil, players such as WEX, Fleetcor, UTA and DKV has signalled a retreat by some oil companies**, which have chosen to partner and white label their fuel card services, rather than continue to supply th directly.

While the number of fuel cards in circulation across each vehi broadly similar (see Fig 4e.3), this reflects a **disproportionately hi ng HGVs** and a much lower penetration among LCVs and pas d, the proportion of HGV fleets utilising fuel cards is far higher eet service we assess in this study. The number of individual c g in this space across all markets is also far fewer than either tele nostics or insurance - meaning that fuel card issuers (FCIs), on av larger footprint than even the largest telematics service provi rs in the fleet market.

any FCIs in the value chain as both oil producers, retailers and fuel card as resulted in a complex work of sales, billing and acceptance agreements, whereby many direct competitors accept each other's fuel cards at their own point of sale. In Europe, for example, oil giants **Shell**, **Total** and **Esso (ExxonMobil)** each accept one another's branded fuel cards across their entire retail network. FCIs in all markets have continued to press ahead with acceptance network expansion.

In Europe, the euroShell card boasts one of the largest acceptance networks, although this pales in comparison to WEX's network of 160,000 accepting locations across the US.

The euroShell card is accepted at more than 27,000 sites across 30 European countries

3. How data is driving the evolution of fleet services

Each of the 5 services we have chosen to examine in-depth throughout this study relies on a range of complimentary data sets, which can be packaged into the 8 categories we outlined above. Each of these 8 categories contains a selection of individual data sets which are combined to power each connected service.

Below, we have identified the individual data categories which are required to deliver a basic version of each service.

Data sets used to power basic fleet services
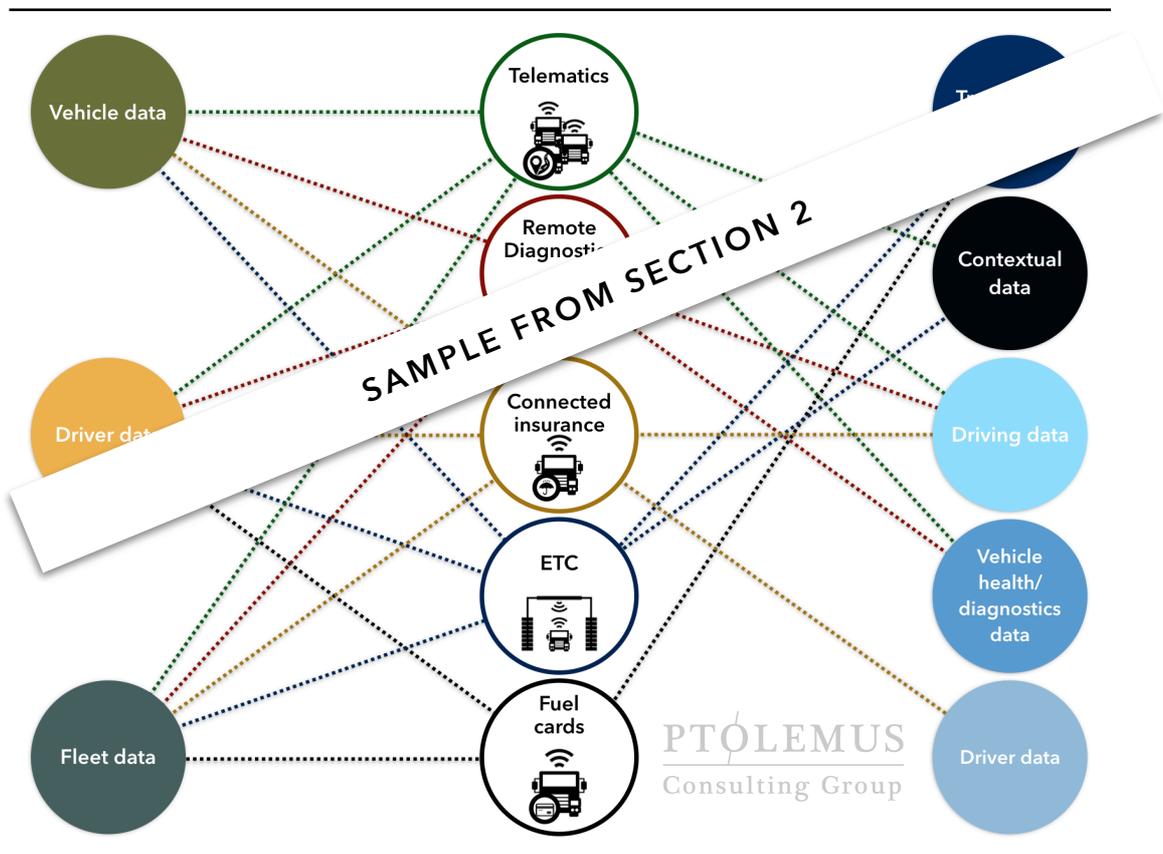
Source: PTOLEMUS

In Section II, we have completed a thorough analysis of **how these existing data sets generated in isolation by each service can be further enriched** by partnering with other service providers. Through **sharing of complimentary data set**s we clearly demonstrate how, by forming strong partnerships, previously disparate service providers can **increase both their ARPU and the stickiness (retention) of their brand**.

4. Market forecasts

Fleet telematics

The global fleet telematics market will grow from US$xxx billion to US$xxx billion in the next five years. Worldwide, the largest market for fleet telematics is **North America, which is estimated at US$xxx billion and is expected to reach US$xxx billion by 2025**.

The growth in revenues available to TSPs is primarily due to the **greater penetration among HGVs**, which typically pay a **higher subscription** fee than LCVs and com   cars.

In Europe, the Northern, Central and Eastern countries generate   as the five Western European countries. France, Germany, Italy   K together will extend their lead after 2021.

TSP revenues on all fleet telematics (U
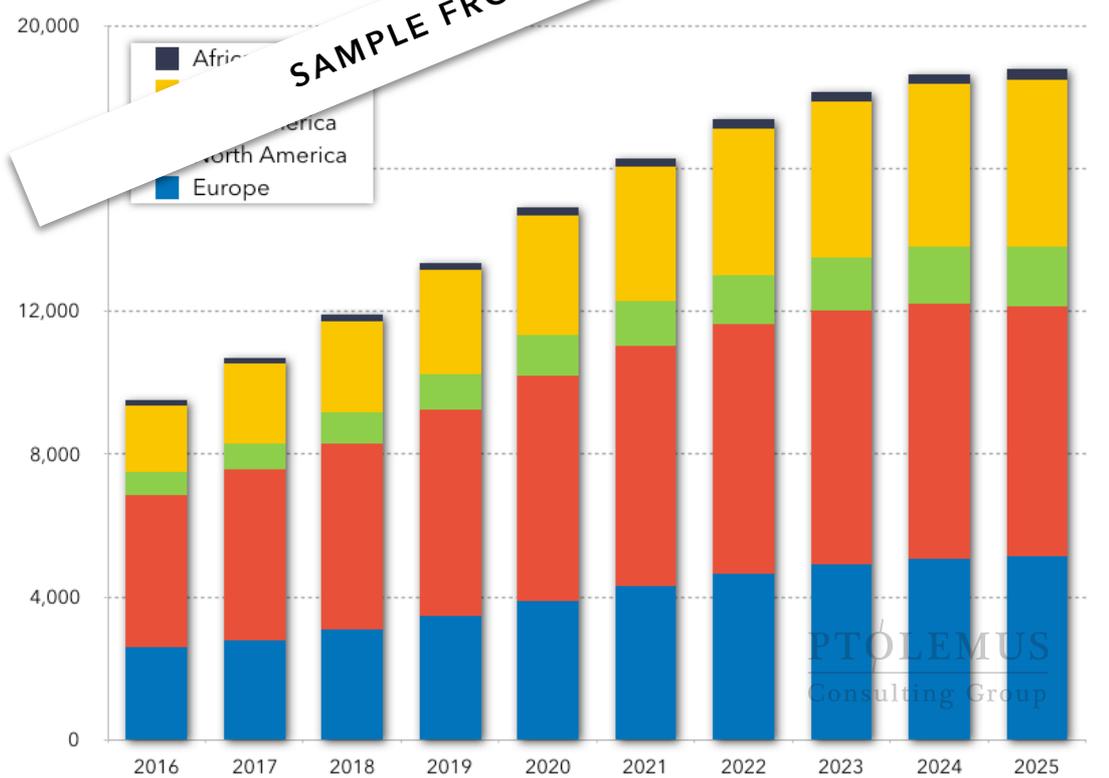
Source: PTOLEMUS

The shape of the overall revenue forecast is linked to the following trends:

- **Lower hardware costs,** driven by regulatory mandates and increased volumes and by OEMs active promotion of their connected services packages with competitive prices, such as Navistar's $25/month offer.

- Fleet telematics **will not switch to smartphone data collection** like many other connected vehicle services, due to the need to connect to the CAN-bus and because operators use mixed fleets.

- **Reducing data costs**, due to the higher capacity and improved spectrum efficiency of new 4G and 5G cellular networks.

- **Lower growth in the volumes of vehicles on the road** after 2020, linked to efficiency gains, platooning, freight sharing and competition from other transport modes.

- **Resilient ARPU -** Despite lower costs, the extension of features and quality improvements will slow its natural decrease.

Comparison of volumes and revenues by vehicle segment

In terms of segmentation, the revenues are relatively parallel to the volume of vehicles in each category. HGVs and LCVs together represent xxx% of the market revenues, but this is changing. Specifically, the role of commercial cars in Europe is growing rapidly - both in volumes and revenues.

**TSP revenues and volumes of vehicles using telematics in the US and Europe (US$ million)**

Source: PTOLEMUS

Premiums generated by connected insurance

While the benefits of using telematics extend beyond the insurance cover, the impact telematics can have on the premium depends on a series of factors. Most importantly, it can be nil if the fleet data proves that it is a relatively higher risk than the average.

Connected insurance written premiums (million)

Connected insurance premiums generated - LCV   Connected insurance premiums generated - HGV

Available in the
Full Study

2015 2017 2019 2021 2023 2025   2015 2017 2019 2021 2023 2025
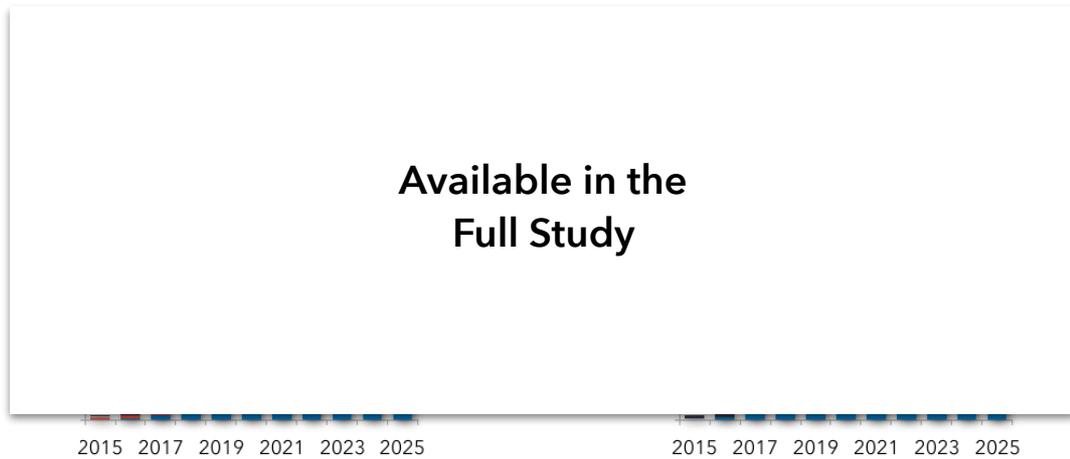
Source: PTOLEMUS

Today the share of insurance carriers offering risk management programs that have a direct impact on premiums is very low. We counted less than xxx providers worldwide, and **only xxx% of these used the data gathered to affect premiums**.

On average, the fleets using risk management programs **start with higher than average premiums** and work towards reaching the industry's local average. It also means that the average premiums of the fleets using connected insurance could be higher.

The trend for premiums to fall will continue as the economies in Europe and the US continue to grow, new taxes are added to the premiums and - most importantly - **risks start changing for the better in the near term**. In fact, premiums are still predicted to fall until 2025, when the penetration of ADAS and (to a lesser extent) connected insurance start making a difference to safety.

In China, premiums have been falling while the number of insureds has been growing steadily. With the reform, more people will be insured with more than the minimum MTPL coverage, boosting the overall premiums generated.

Fig 4c.46: Connected insurance written premiums, all vehicles combined in Europe (million)

a. New partners and new services in tolling

For many years, there has been a clear strategy among oil companies and fuel card specialists to re-sell additional services and take transaction commissions. In Europe, companies such as **Shell**, **UTA** and **DKV** have been reselling devices and services from specialists such as **Telepass** and **Axxès** with the common aim of ensuring that their customers are able to access relevant services through them. Whether the service is ultimately delivered by the fuel card company or not is irrelevant.

In the US, WEX has followed the same approach with regards to telematics by partnering with market leaders such as **Verizon**, **GPS Insight** and **Geotab** to re-sell their telematics solutions.

Examples of partnerships and acquisitions involving fuel card issuers

Source: PTOLEMUS

More recently, FCIs have extended this approach to enable them to bring new features to the market faster and more successfully. Equally, **the emphasis has shifted from partnering to direct investments and acquisitions**, led by M&A hungry providers such as Fleetcor,

who have acquired companies specialising in ETC, telematics, digital security and commercial payments over the past 3 years alone.

Across all markets, there has been a strong focus among fuel card issuers to enhance security and improve the payments features of the core product in tandem with increasing the breadth of other services offered. In order to achieve this, oil companies and specialist FCIs have engaged with a range of specific technology providers and digital experts in order to deliver a more robust payment service.

The move towards integration of chip and pin within fuel cards has come, for many, as a result of partnering with companies such as **Gemalto**, who are able to bring highly secure chip & pin and contactless cards to the market for **Total/AS24** in a much faster time than if they have opted to develop the capability alone.

To enhance its account payable (AP) capabilities, Fleetcor finalised the acquisition of international AP payments supplier **Cambridge** in August 2017 for an undisclosed sum. This came in the wake of prior movements into the Brazilian ETC and European telematics markets through the acquisition of **Sem Parar** and a minority investment in **Masternaut** respectively.

The ubiquity of smartphones, not only as a personal communication device, but as a tool for fleets, is already changing the way fleet service providers deliver their products and solutions. For fuel card issuers, this has meant engaging or indeed acquiring specialists such as **Telenav**, which was purchased by Fleetcor in 2013.

The **DKV**, **Daimler** and **T-systems** alliance has enabled them to leapfrog many competitors it the European ETC market, including specialist/pure play providers. As we shall explore later in this section, the combination of all 3 companies adds strength to each, as well as much increased bargaining power with toll operators who typically act as the gatekeepers for tolling services.

As we explore in detail in Section xxx (China), the link between fuel card companies and telematics providers has not followed the same path as in Europe and in North America. In this case, while there are noticeable partnerships, such as between **Sinopec** and **Sinoiov**, the emphasis has been placed on delivering access for fuel card customers to popular freight matching platforms, rather than creating a direct link between transaction and vehicle location data. **In the case of Sinopec and Sinoiov, the desire is to bring new services to their customers, rather than enhancing their own.**

Finally, Eastern European FCI **Eurowag** acquired Czech TSP **Princip** in early 2017 as a means to enter the telematics market directly as well as potentially bringing expertise in telematics devices which could be applied to ETC at a later date.

2. Examination of current market conditions in ETC

Road tolling exists in one form or another in almost every si~~~~~~~~~ the world. According to our estimates, **in 2016, approximate~~~~~~~~~~~~ were collected worldwide by road tolling operators** with an ~~~~~~~~~~~~~~ electronically and/or with an electronic device.

In **Europe**, Austria, Belgium~~~~~~~~~ Germany, Czech Republic, Slovakia, Bulgaria, Slovenia, Hungary, P~~~~~~~~~ Poland and Belarus all have a dedicated scheme in place (or in d~~~~~~~~~ the case of Slovenia and Bulgaria) to charge trucks to drive acros~~~~~~~~~ the primary road network. With the exceptions of Germany and ~~~~~~~~~ese countries currently levy the charge on all vehicles over 3.5 tonnes. At th~~~~~~~~ of 2016, **these schemes collected almost €xxx billion in revenues**.

SAMPLE FROM SECTION 4D

In addition, France, Spain, Portugal, Italy, Ireland, Croatia, Greece, Serbia, Denmark and Turkey have extensive tolled networks with specific fees levied for heavier vehicles.

In **North America**, despite, proportionally, having far fewer tolled roads than most European countries and no dedicated scheme for HGVs, more than $xxx billion is generated annually. Over **$xxx billion is collected each year in the US alone - over xxx% of which is paid via an RFID** (Radio Frequency Identification) **device** subscription.

The Golden Gate Bridge toll can now only be paid electronically - A single journey by a truck with 7 axels or more can cost above $50!

Due to a pre-existing vast network of cash payment toll roads, **China** has rapidly become **the largest single market in the world for electronic toll collection.** Total tolling payments stand **above €xxx billion per year;** more and more of which are being settled via a DSRC (Dedicated Short Range Communication) device.

In May 2017, it was announced that **India** would become the first country in the world to **require the sale of ETC devices** (in this case an RFID tag) **with every new vehicle**.

In October 2017, BMW Japan became the first OEM in the country to pre-install (DSRC) ETC devices in all new vehicles sold. **Japan now has almost xxx million ETC units in circulation.**

At the end if 2017, Indonesia, Malaysia, Cambodia, Sri Lanka, the Philippines and Thailand all have significant plans in place to expand either existing electronic tolling road networks

China is moving fast to replace manual toll booths to reduce chronic traffic jams around tolling stations

or contact new ones. In 2020, Singapore will become the first country in the world to use GNSS/GPS positioning to levy tolling charges on all vehicles.

Across **Latin America**, Mexico, Brazil, Chile all have extensive ETC networks and **joint revenues approaching €xxx billion**. Countries such as Argentina, Uruguay and Colombia also have tolled roads in operation.

In **Africa**, the continent's biggest economy, South Africa, has a modest network of ETC-only road tolls, alongside Morocco, which also has an ETC network in place. Countries ranging from Kenya to Ghana are also in the process of introducing tolling as a means to finance current and future road building programmes.

Yet, despite a booming global market and revenues which dwarf many other vehicle, let alone commercial vehicle, services, **electronic tolling is often a forgotten or even entirely absent aspect of fleet management**. This is particularly the case across North America and countries such as the UK, Australia, Turkey and India, where road tolls are (currently) relatively sparse and all too easily viewed as a troublesome, occasional expense.

Indeed, in almost all regions of the world, despite representing a daily experience for many fleet operators and commercial vehicle drivers, **toll payments have not yet become a fully integrated fleet management solution in the same way as fuel.** Europe and China are perhaps notable exceptions, as we shall now explore further.

ETC in Europe

In keeping with the theme of this report, we have chosen to focus disproportionately on the HGV (>3.5 tonnes) specific tolling schemes in Europe such as Germany's LKW Maut, Belgium's Viapass, Poland's ViaTOLL and Austria's GO MAUT. This is primarily because these are targeted specifically at commercial vehicles and are far more likely to be based on GNSS technology, rather that the DSRC variant which is applied to all vehicles in ….

This is the end of the Connected Fleet Services Global Study free abstract.

To enquire about the Full Study, simply email thomas@ptolemus.com

The full 650-page report includes the following sections.

B. NORTH AMERICA

1. Examination of current market conditions
2. Key market drivers and regulatory issues
3. Key stakeholders and landscape evolution
4. The role of OEMs in developing fleet services

C. CHINA

1. Examination of key market drivers
2. Offering, Stakeholders & landscape evolution
3. Role of OEMs in building fleet services

IV. BRINGING NEW SERVICES TO FLEET OPERATORS

A. The golden era of fleet telematics

4. Background and recent market developments
5. Service integration and new players entering the market
6. Value chain
7. Systems architecture and data requirements
8. Typical devices in use
9. Delivery recommendations
10. Template graph from Fuel card slides - led by TCO split per region
11. Fleet telematics global forecast

B. Using vehicle data to reduce spend on maintenance and breakdowns

1. The benefits and opportunities of remote diagnostics service
2. Remote diagnostics solutions for light commercial vehicles
3. Remote diagnostics solutions for heavy commercial vehicles
4. The impacts of OBD dongles on vehicle safety
5. The value chain of remote diagnostics
6. Systems architecture & data requirements

C. The struggling growth of connected fleet insurance

1. Background & recent market developments
2. Technology trends and devices used in the truck sector impacting safety
3. The connected insurance value chain
4. Systems architecture & data requirements
5. Integration with other services
6. Forecasting the Connected Insurance market in LCVs and HGVs
7. Delivery recommendations

D. Electronic toll collection moves out of the shadows

1. Background & recent market developments including key geographic markets
2. Value chain
3. Systems architecture & data requirements (including certification requirements for new drivers, etc.)
4. Typical devices in use including data generated/functionalities, unit costs, etc.

5. Level of existing integration with other fleet services
6. Recommendations on how to deliver service i.e. is this a host service or an API?
7. TAM, ARPU, costs and growth forecasts

E. Fuel cards: the sleeping giants of fleet services

1. Background and recent market developments
2. The fuel card value chain
3. Systems architecture, data requirements and typical devices in use
4. Integration with other services
5. Level of existing integration with other fleet services
6. Growth forecast for fuel card services

V. CONCLUSIONS

VI. COMPANY PROFILES

To read the full study, please visit www.ptolemus.com

or contact thomas@PTOLEMUS.com