PTOLEMUS Consulting Group

The Connected Insurance Analytics report

Transforming copper into gold

A complement to the UBI Global Study - October 2016 - PTOLEMUS intellectual property

The consulting & research firm for the connected world

Consulting services

- **Strategy definition**
- **Investment assistance**
- **Procurement strategy**
- **Innovation management**
- **Business development**
- **Deployment**

Research services

Fields of expertise

Car infotainment & navigation

Connected services (traffic information, fuel prices, speed cameras, parking, POIs), maps, navigation

Usage-based charging

Connected insurance, driving behaviour monitoring & analytics, road charging / electronic tolling, car leasing & rental, car sharing, car pooling, Car As A Service, etc.

Telematics & Intelligent Transport Systems

ADAS, autonomous vehicle, connected services, crowd-sourcing, fleet management, eCall, bCall, SVR, tracking, vehicle data analytics (OBD / CAN-bus), VRM, V2X, xFCD

Positioning / Location enablement

M2M & connectivity

Helping clients across the mobility ecosystem

Analytics providers

AAA, Cognizant, Google, here, LexisNexis, sas, Towers Watson, Verisk Analytics, RMS, Wunelli

Applications providers

BMJ Group, censio, CCC Information Services Inc., Commedi, Coyote, TomTom, ESRI, MOVELO, tdf, RoadPilot, wejo

Device / location suppliers

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

Automotive manufacturers & suppliers

Agero, Airbiquity, Cox Automotive, Daimler, Danlaw, Delphi, Directed, intel, Ford, Harman, Meta System, Michelin, Qoros, Qualcomm, Sierra Wireless, Telit, Toyota, Toyota Tsusho

Telematics solution providers

Arkan, Digicore, Arvento Mobile Systems, drivefactor, drust, FleetComplete, Eliocity, Fleetmatics, IMS, Lysanda, LoJack, Mobile devices, OCTO, Himex, Orion, Quartix, Queclink, SafeFleet, Scope Technologies, simobil, Sistema, Watchstone

Insurers, aggregators & assistance providers

AAA Insurance, Admiral, Aioi Nissay Dowa Insurance MS&AD Insurance Group, Allianz Global Assistance, Allstate, AXA, Baloise Insurance, carrot, covea, Crédit Agricole Assurances, Desjardins, europ assistance, Generali, The Hartford, Inter Mutuelles Assistance, Ингосстрах Ingosstrakh, Liberty Mutual, MACIF, Matmut, HUK, Menora Mivtachim Insurance Ltd, Mondial Assistance, Munich RE, Promutuel Assurance, Out Surance, RSA, Societe Generale, Sompo Japan, Swiss Re, smile direct, telesure, Tokio Marine, youi, Zurich

Mobile telecom operators

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

ITS operators, regulators & fleets

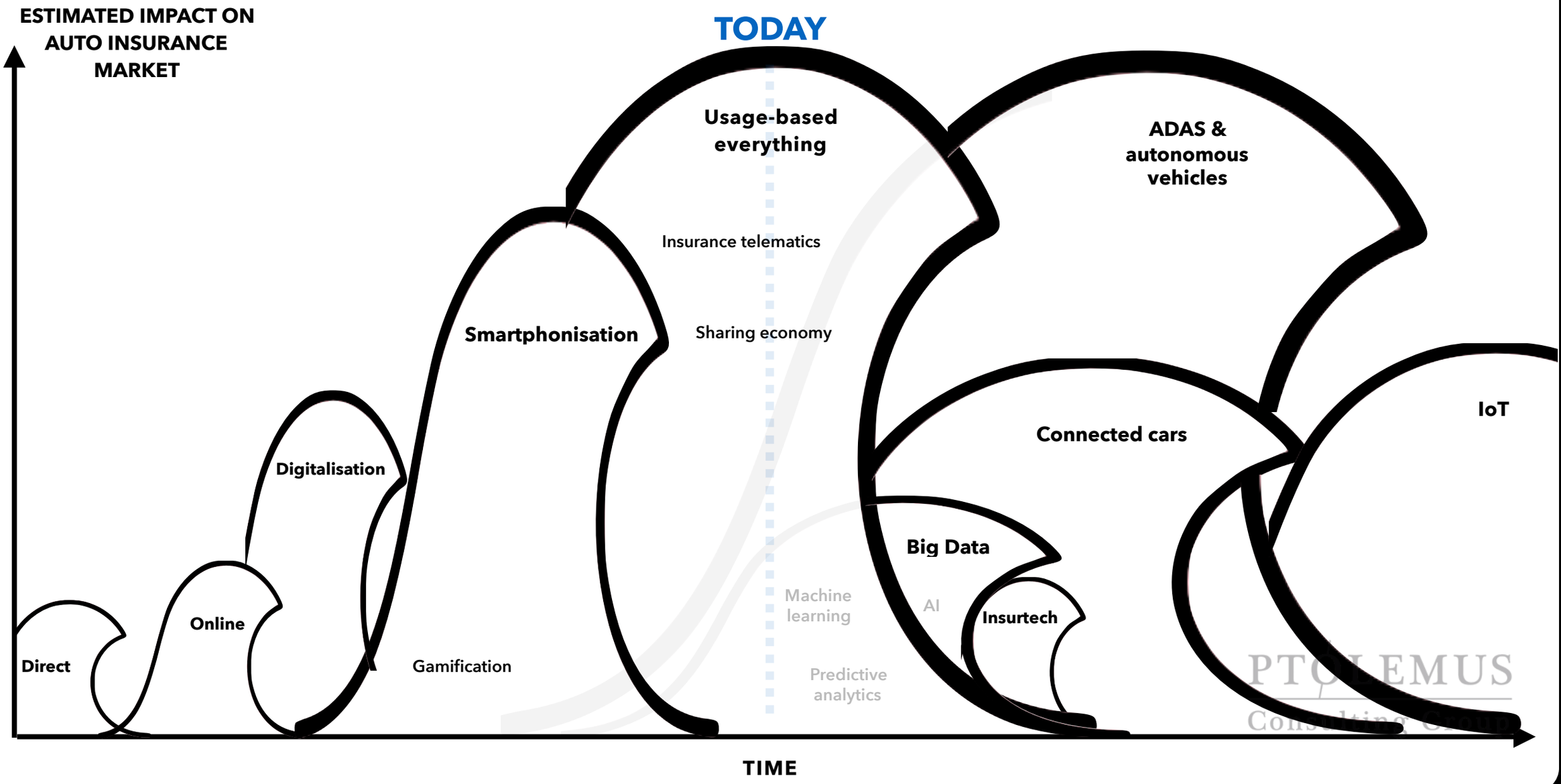
Arval BNP Paribas Group, autostrade per l'italia, Brisa, CGI, DKV, Edenred, EFKON, egis, Euromaster, European Commission, Fleetcor, kapsch, mouchel, Nomad Digital, Norbit, SICK, Sofico, Telepass, T-Systems, Toll Collect, UTA, Vitronic, Thales

Banks & private equity investors

Amadeus Capital, Bain Capital, Bank of America Merrill Lynch, Barclays, The Baupost Group, Cinven, citigroup, Hellman & Friedman, Investcorp, Disruptive Capital Finance, Goldman Sachs, Intek Group, Hutton Collins Partners LLP, J.P.Morgan, Leonardo & Co., Montezemolo & Partners, Nomura, New Amsterdam Growth Capital LLC, Pamplona Capital Management, Renova Group, SilverLake, Thoma Bravo

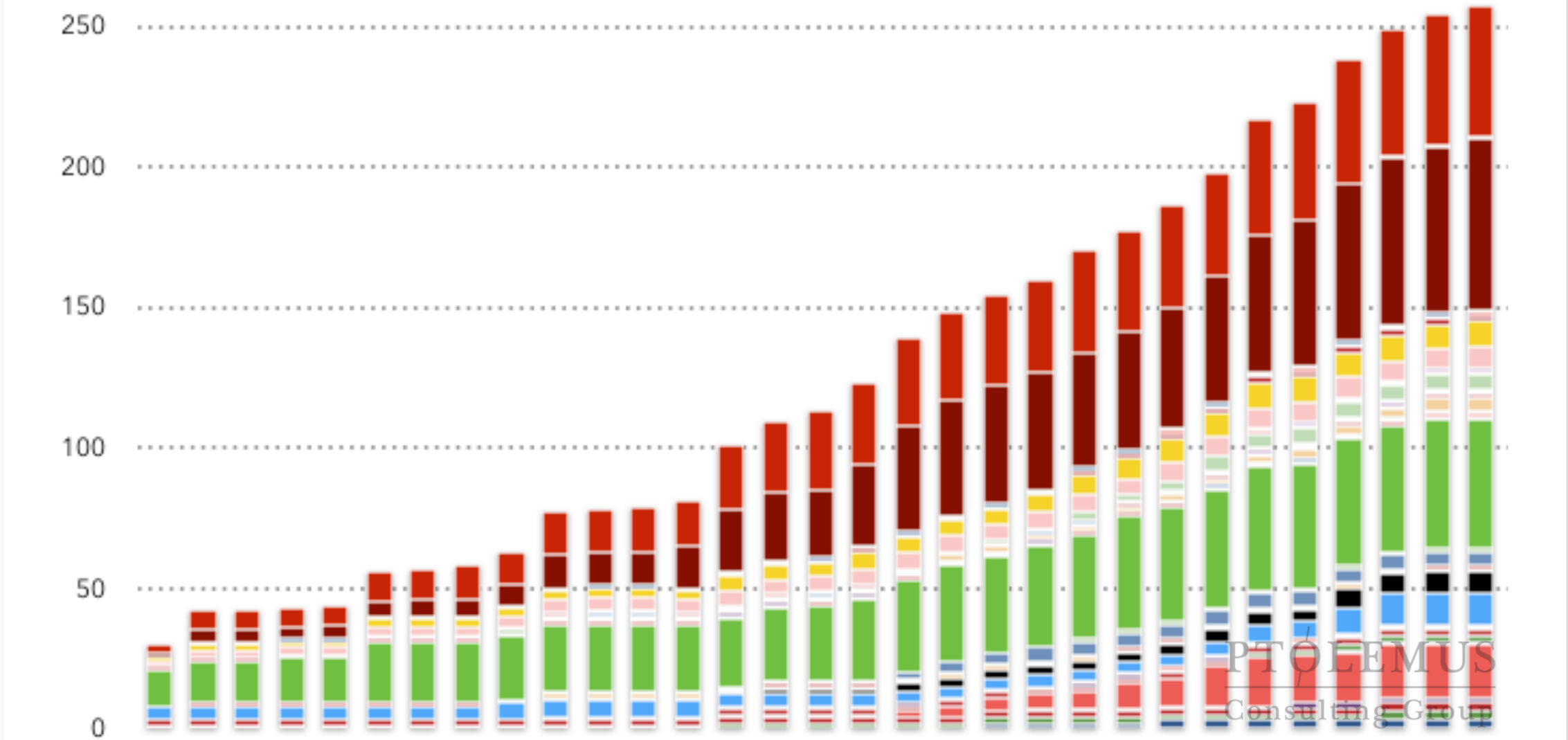
The insurance sector is facing a maelstrom of changes

The waves - Impact of major trends on auto insurance business



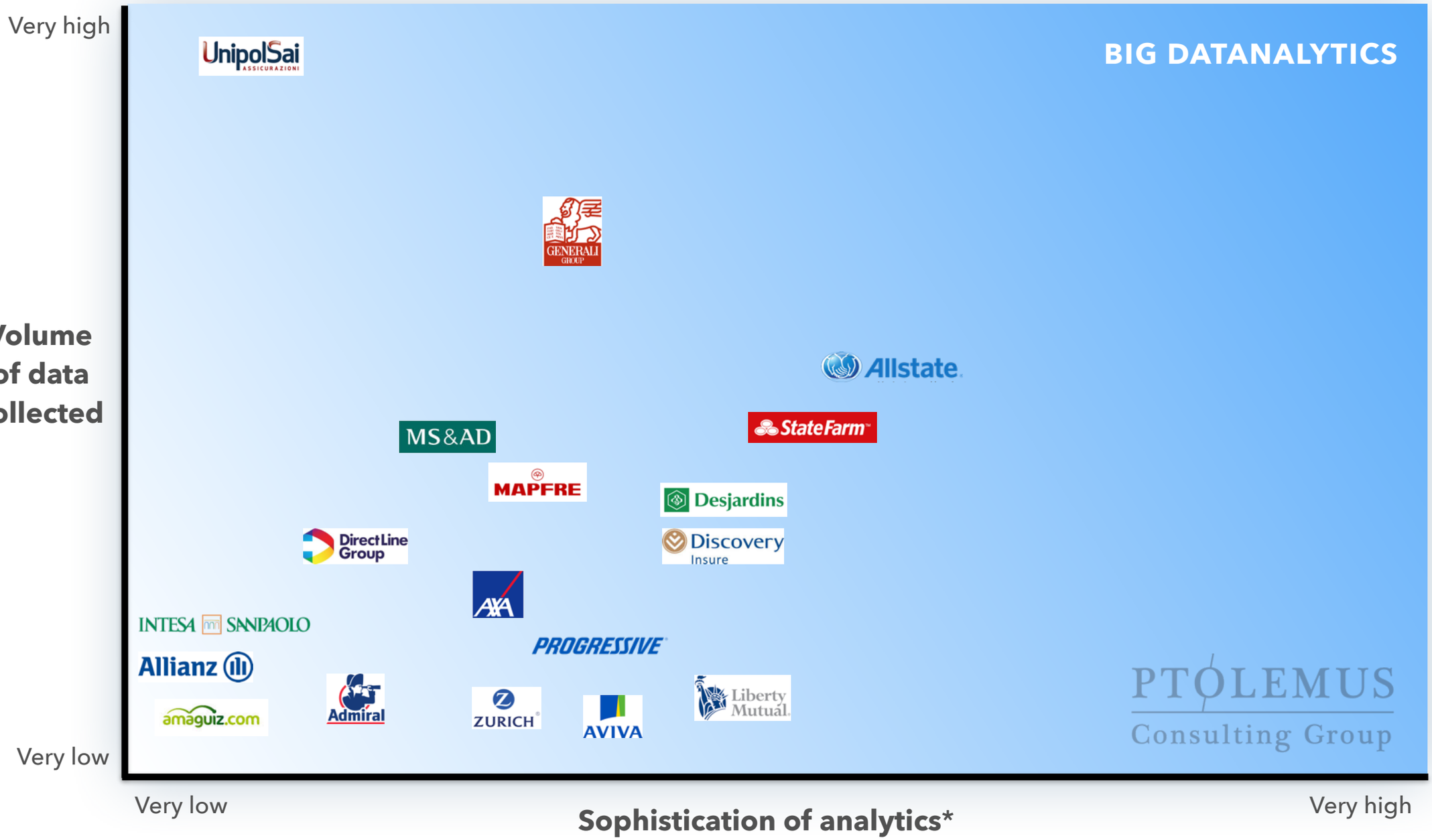
The wave of connected insurance is rolling in globally…

The number of active UBI programmes worldwide is now reaching 250



Source: PTOLEMUS quarterly UBI market dashboard

… but the race towards Big Datanalytics just started!



Source: PTOLEMUS analysis - Note: * Evaluation criteria detailed in the report

The authors of this report combine 40 years of experience in insurance telematics and analytics

Frederic Bruneteau, Managing Director, Brussels

fbruneteau@ptolemus.com

Frederic Bruneteau has accumulated 20 years of experience including 17 years of experience of the mobility domain and 10 years of strategic and financial advisory for companies such as **Arthur D. Little, BNP Paribas, SFR Vodafone** and **TomTom**.

Within PTOLEMUS, he has led **more than 40 assignments related to insurance telematics & analytics** for global leaders such as Admiral, Aioi Nissay Dowa, AXA, Baloise, Danlaw, DriveFactor, Europ Assistance, Generali, LexisNexis, Liberty Mutual, Macif, Matmut, Michelin, Octo Telematics, Qualcomm and Toyota.

He has become **one of the world's foremost experts in Usage-based Insurance (UBI)** and is interviewed on the subject by publications such as the *Financial Times* and *The Economist*. He has spoken at more than 20 related conferences worldwide.

Frederic co-authored this report and the UBI Global Study 2016.

Thomas Hallauer, Research Director, London

thallauer@ptolemus.com

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**.

Thomas is the lead author of the ETC Global Study, he is also the co-author of the UBI Global Study 2016.

Thomas fully reviewed this report.

Sahand Malek, Consultant, Brussels

smalek@ptolemus.com

With a PhD in Mechanical Engineering from the University of Bath, UK, **Sahand Malek has gained almost 5 years of experience in telematics research and development projects on vehicle On-Board Diagnostics (OBD), data management and analytics**, Usage-Based Insurance (UBI) and Advanced Driving Assistance Systems (ADAS).

He notably conducted an extensive academic study on the effect of driving behaviour on fuel consumption and road safety.

Sahand is **the lead author of the Connected Insurance Analytics Report.**

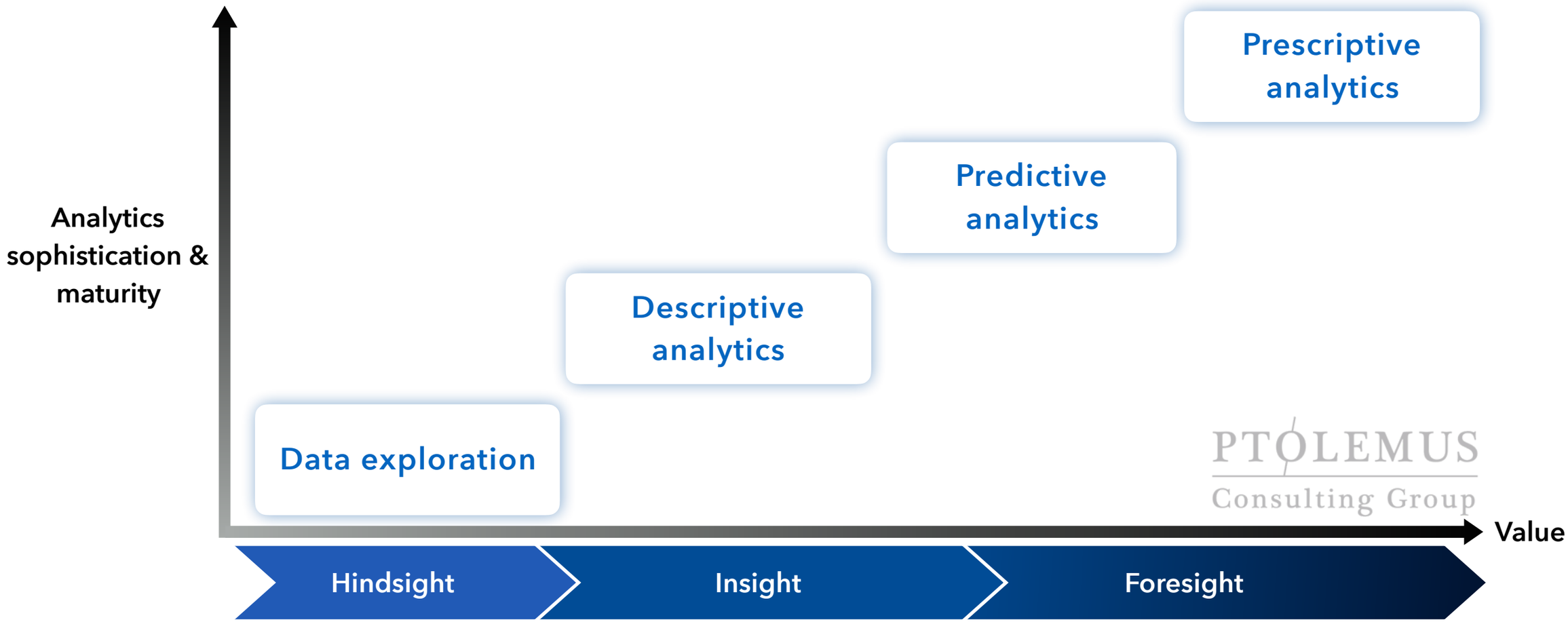
With advanced analytics, insurers will be able to

1. **Accurately evaluate the driver's risk in near-real-time**
2. **Make sense of their customer's behaviour and risk profile along the customer lifecycle**
3. **Generate new contact points with the customer thanks to more driver-specific data at different stages of the contract**
4. **Bring together and link all core activities from marketing to claims management**
5. **Identify new business opportunities by using & looking at data in a new fashion, i.e. create new segment-specific offers**
6. **Reduce risk by making driver feedback a lot more effective on risk management**

But the journey to advanced analytics is long and arduous

Questions the analytics process is answering

1. What has happened?
2. Why did it happen?
3. What could happen?
4. What is the best path?



Drilling into Big Data is done in 6 essential steps

The **essence** of UBI is the driving data.

It comes in a **variety** of format, in real-time or near real-time **speed**, and potentially in very high **volumes.**

1. Data collection

Data staging is the temporary step to handle the data.

Data is stored in a so-called **landing zone** before the **data warehouse** (in-between collected raw data and storing structured data)

2. Data staging

Noisy data (i.e. data including non-predictive parameters) is **difficult to use or even meaningless**.

The filtering stage is where noise is **removed** from reported data and data is **cleaned**.

3. Data filtering & data mining

Layers of context information such as key driving performance indicators, road speed limits, weather and traffic information is added to the raw telematics data.

The **quality** of the conclusion that is made from the analytics, **depends** on how **enriched** the data was in the first place.

4. Data enrichment

The data archiving strategy of the UBI programme addresses **security**, **privacy** and **access management issues**.

5. Data archiving

Advanced analytics methods and various **statistical techniques** are applied to respond to **specific questions**

6. Data exploitation

Source: PTOLEMUS Consulting Group

To find your way, follow our best practices on driver scoring

1

Scoring should be trip-based with adjustments made monthly and quarterly using weighting methods.

2

Put driving behaviour in context by relating it to environmental information.

The set of information layers should at least include: relative speed limit, road type and crash-prone locations.

3

Sub-scores, such as smoothness, mileage, time of day and driving duration should be provided to insurers as standard.

4

Correlate behaviour with past claims records, crashes and actual claims losses to continue improving predictiveness.

5

Driver distraction tracking should be done at a granular level and it is recommended that a smartphone app is used to that effect.

6

Scoring criteria and sub-scores must be clearly expressed and made understandable to drivers.

Criteria the driver cannot influence should be explained separately.

This report has one objective: helping insurers transform Big Data copper into Analytics gold

The most comprehensive research on the UBI analytics market

- **Analysis of the pricing and data management policies of the 27 largest UBI programmes** including :
  - Admiral, Allianz, Allstate, American Family, AXA, Generali, Desjardins, Direct Line Group, State Farm, The Hartford, UnipolSai, Uniqa and Zurich
- **Based on 40 in-depth interviews** with Telematics Service Providers (TSPs), analytics providers and insurers
- **5 interviews transcribed:** Nationwide, Insurethebox, LexisNexis Wunelli, Octo Telematics and The Floow
- Illustrated by case studies from companies using advance analytics such as: Progressive, Generali, Insure the box and many more
- **Profile and review of 10 advanced analytics suppliers** active in UBI
  - Accenture, Cambridge Mobile Telematics, Cognizant, HERE, IBM, IMS, SAS, Verisk Analytics and Willis Towers Watson
- Findings and recommendations **validated by 150 academic papers** and journals
- All that in a **340+ page document with over 150 graphs** and tables
- Resulting in **20 best practices** including recommendations on how to record and process driving data, score drivers and interact with them.

Download the 90-page abstract today at www.ptolemus.com/cia-abstract

Based on interviews of more than 200 new companies in 30 countries including 12 analytics providers

Organisation
AAA Club Partners
Achmea
ADAC
Admiral France - L'C Assurances
Admiral Insuranc
Ageas Continental Ei
Agnik
AIG
Aioi Nissay Dowa Insu
Airmax Group
ALD Automotive
Allianz
Allianz
Allianz
Allianz
Allstate Insuranc
Altima Assuranc
Amadeus Capital Pai
Amaguiz (Groupar
American Famil
AnyDATA Corporat
Aplicom
Arval
Association of Brit Insurers
Atos
ATrack Technolo
Audiovox
Autoline
Autosaint (Fresh! Insu Group)
Aviva (formerly Nor Union)
Axa Assistance
Axa Belgium
Axa Global P&C
Axa Matrix Risk Cons
Axa Re
Axa UK
Baseline telemati
BGL Group Ltd
Bird & Bird
BluO Fund

Organisation
BMW
Bouygues Telecom
Cambridge Mobile Telem Inc.
Carrot Insurance

Company name	Coun
AIG	UK
Aioi Nissay Dowa Insurance	Worldv
Alcatel-Lucent	Franc
ALD Automotive	Franc
Allianz	Euro
Allianz Global Assistance	Euro
Allstate Insurance	USA
Alo@Assurances	Franc
Alpine	Japa
Altea	Italy
Altech Netstar	South A
Altima Assurances	Franc
Amadeus Capital Partners	UK
Amaguiz (Groupama)	Franc
American Family	USA
Amodo	Slove
ANIA	Italy
ANWB	Netherl
AnyDATA Corporation	USA
Aplicom	Finla
Apple	USA
ARM Holdings	UK
Arval	Franc
ASFA	Franc
Assercar	Franc
Assicurazioni Navale	Italy
Association of British Insurers	UK
Assurland.com	Franc
Atmel	USA
Atos	Franc
ATrack Technology	Taiwa
Audatex	USA
Audi	Germa
Audiovox	USA
AutoDirect Insurance	UK
Autoline	UK
Autoliv	Euro
Autosaint (Fresh! Insurance)	UK
Aviva (formerly Norwich Union)	UK

Company name	Country	Sector
Market IP	Belgium	
Marks & Spencer	UK	
Marmalade Group	UK	
Masternaut	Europe	
Matmut Assurances	France	
Mercedes Benz	Germany	
Meta System	Italy	
Michelin	France	
Mitsubishi Electric	Japan	
Mix Telematics	South Africa	
Mobile Devices	France	
Mobileye	Israel	
Modus	USA	
MOJIO	USA	
Money Super Market	UK	
Montezemolo & Partners	Italy	
Moody's	USA	
MORE TH>N	UK	
Motaquote	UK	
Movelo	Sweden	
MyDrive Solutions	UK	
Nationwide Insurance	USA	
Navteq / HERE	France	
navya	France	
ND a Islandi Ehf	Island	
NIS Glonass	Russia	
Nissan Europe	Europ	
Nissan Motor Corporation	USA	
No Nonsense Insurance	N. Ireland	
Nokia	Finland	
Norton Rose	UK	
Novacom Europe	Netherlands	
Novatel Wireless	Worldwide	
NTT DoCoMo	Japan	
NXP	Netherlands	
ÖAMTC	Austria	
OBD Experts	UK	
Octo Telematics	Italy	
OECD	France	
	General insurance	

Company name	Country	Sec
CLAL Insurance	Israel	General ir
Clarion	Japan	
CMA Claims	UK	
CNIL (Commission Nationale de l'Information et des Libertés)	France	
Co-operative Insurance	UK	
Cobra Automotive Tech.	Italy	
Cognizant	USA	
Compagnie Générale d'Automatisme (CGA HBS)	France	
Comparethemarket.com	UK	
Confused.com	UK	
Continental	France	
Corona Direct	Belgiur	
Corporate Vehicle Observatory	France	
Covea Group	France	
Coverbox	UK	
Coverhound	USA	
Coyote	Europe	
Crédit Mutuel Arkea	France	
cTrack (Digicore)	South Af	
Cybit Masternaut	UK	
Daimler Fleetboard	Germar	
Daimler Insurance Services	Germar	
Danlaw	USA	
Data Tec Co Ltd	Japan	
Davis Instruments	USA	
DBV Winterthur	Germar	
Delphi	USA	
Denso	Germar	
Department of Transportation	USA	
Detector	Spain	
Deutsche Telekom	Germar	
Diamonds	UK	
Direct Line Germany	Germar	
Discovery Insure	South Af	
Disruptive Capital Partners	UK	
Diva	UK	
Dixon's	UK	
Drive Power	USA	

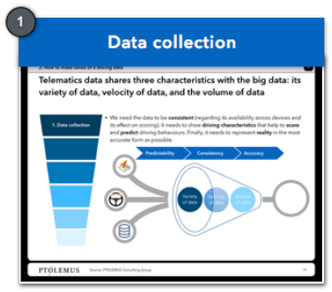
Company name	Country	Sector
Generali France	France	General insurance
Generali Group	Italy	General insurance
Genertel (Generali Group)	Italy	
Geotab	USA	

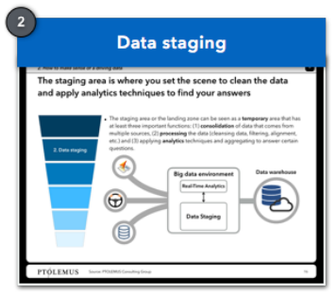
Provider	Footprint	Insurance markets		R	
		B2C	B2B	TSP	S p
Accenture	Worldwide	✔	✔	✔	
Cambridge Mobile Telematics	NATAM / Africa	✔		✔	
HERE	Worldwide	✔	✔		
IMS	Worldwide	✔	✔	✔	
LexisNexis / Wunelli	Worldwide	✔	✔	✔	
Octo Telematics	Worldwide	✔	✔	✔	
SAS	Worldwide	✔	✔		
The Floow	Worldwide	✔	✔	✔	
Verisk Analytics	US & Europe	✔	✔		
Willis Towers Watson	Worldwide	✔	✔	✔	

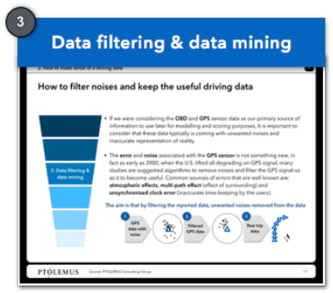
Organisation	Country
Telekom Austria Group	Austria
Telenor Connexion	UK
Telit	Italy
Telogis	USA
Teradata Aster	USA
Texa	Italy
The AA	UK
The Co-operative Insurance	UK
The Floow	UK
The Hartford	USA
TomTom	Netherlands
TomTom Business Solutions	UK
Touring	Belgium
Toyota	Belgium
Toyota Insurance Management	Belgium
Toyota Insurance Management	UK
Trac Global	UK
Tracker	South Africa
Traqueur	France
Trafficmaster	UK
Transics	Belgium
Travelers Insurance	USA
Trimble MRM	USA
TRL	UK
Uniqa	Austria
Uralsib	Russia
US Department of Transport	USA
Vehcon	USA
Verizon Telematics	USA
Viasat	Italy
Vivium (P&V Group)	Belgium
Vodafone	UK
Volvo Cars	Sweden
Wireless Car	Sweden
Wunelli	UK
Xirgo Technologies	USA
Young Marmalade	UK
Zurich	Italy
Zurich	UK
Zurich Financial Services	France

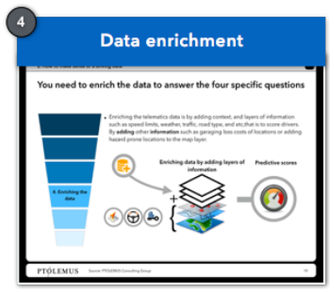
The report offers 340 pages of analysis, examples, case studies, best practices and recommendations

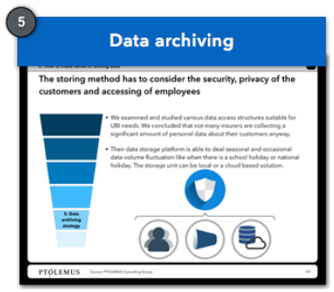
It provides a step-by-step advanced analytics roadmap…

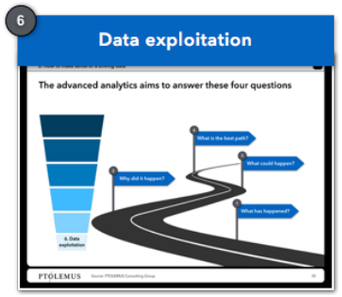


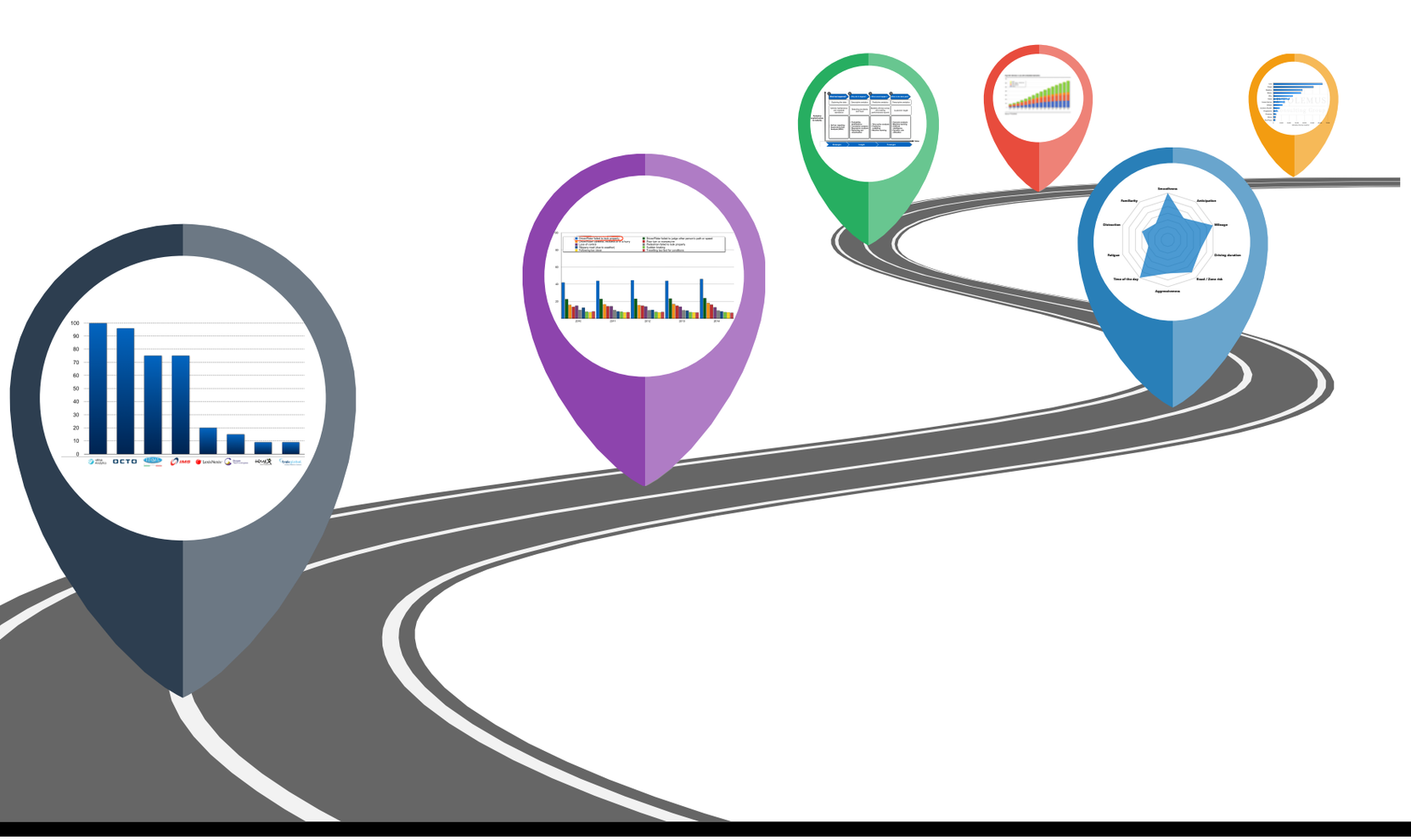








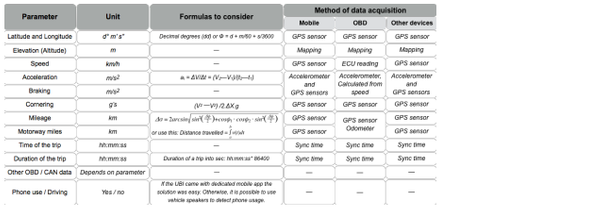


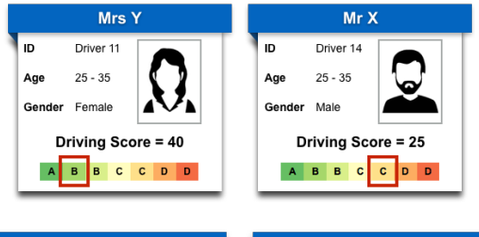


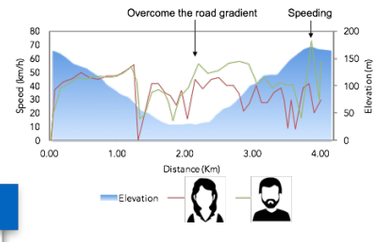
… and uses results of real world driving tests

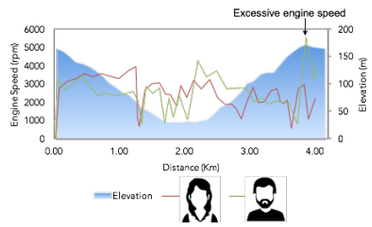
Parameter	Unit	Formulas to consider	Method of data acquisition		
			Mobile	OBD	Other devices
Latitude and Longitude	*d° m' s"*	*Decimal degrees (dd) or Φ = d + m/60 + s/3600*	*GPS sensor*	*GPS sensor*	*GPS sensor*
Elevation (Altitude)	*m*	—	*Mapping*	*Mapping*	*Mapping*
Speed	*km/h*	—	*GPS sensor*	*ECU reading*	*GPS sensor*
Acceleration	m/s^2	$a_i = \Delta V/\Delta t = (V_2 - V_1)/(t_2 - t_1)$	*Accelerometer and GPS sensors*	*Accelerometer, Calculated from speed*	*Accelerometer and GPS sensors*
Braking	m/s^2	—			
Cornering	*g's*	$(V^2 - V^2)/2.\Delta X.g$	*GPS sensor*	*GPS sensor*	*GPS sensor*
Mileage	*km*	$\Delta\sigma = 2arcsin\sqrt{sin^2(\frac{\Delta\varphi}{2}) + cos\varphi_1 \cdot cos\varphi_2 \cdot sin^2(\frac{\Delta\lambda}{2})}$ or use this: Distance travelled $= \int_a^b v(t)dt$	*GPS sensor*	*GPS sensor Odometer*	*GPS sensor*
Motorway miles	*km*		*GPS sensor*		*GPS sensor*
Time of the trip	*hh:mm:ss*	—	*Sync time*	*Sync time*	*Sync time*
Duration of the trip	*hh:mm:ss*	*Duration of a trip into sec: hh:mm:ss* 86400*	*Sync time*	*Sync time*	*Sync time*
Other OBD / CAN data	*Depends on parameter*	—	—	—	—
Phone use / Driving	*Yes / no*	*If the UBI came with dedicated mobile app the solution was easy. Otherwise, it is possible to use vehicle speakers to detect phone usage.*	—	—	—

	Parameter	The evaluation metrics: threshold rules and criteria
1	Speeding	*Between 1.15 to 1.5 times above the speed limit*
2	Harsh acceleration	*Based on g force value, various thresholds, usually it is from 0.4 to 0.6 g*
3	Harsh braking	*Based on g force value, various thresholds, usually it is from 0.2 to 0.4 g*
4	Cornering	*Based on speed and cornering force, value exceeding 0.2 g*
5	Unsafe lane changing	*Based on speed, location and g force, value exceeding 0.2 g*

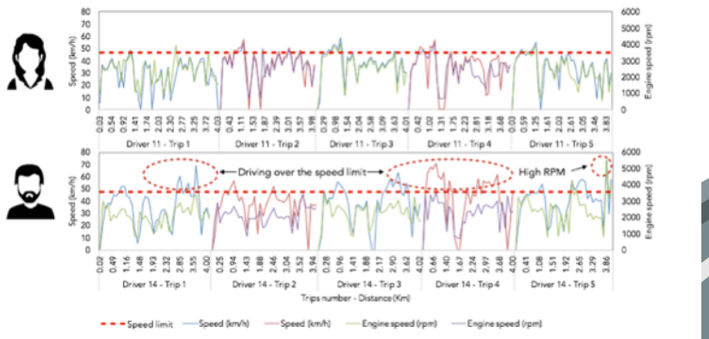


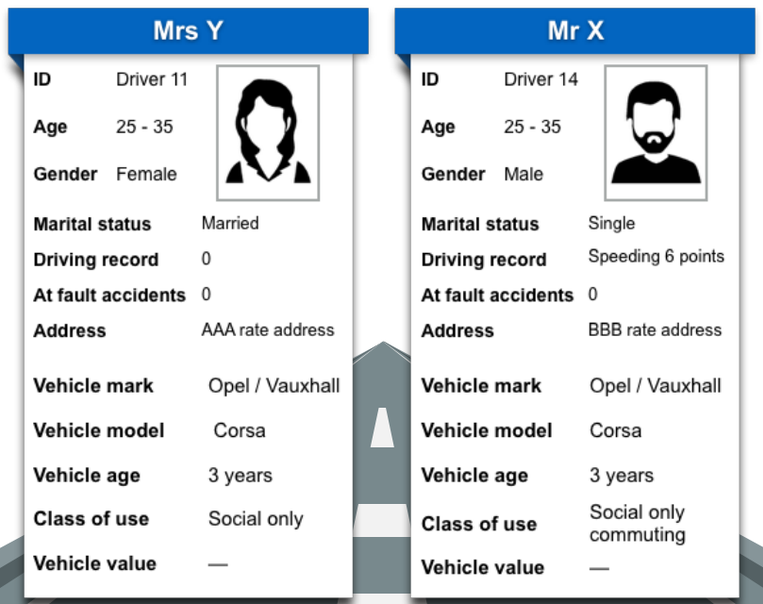


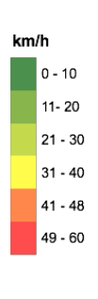


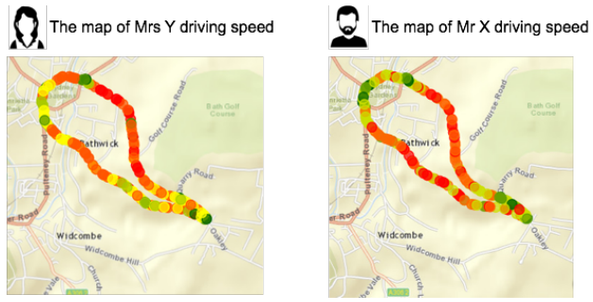


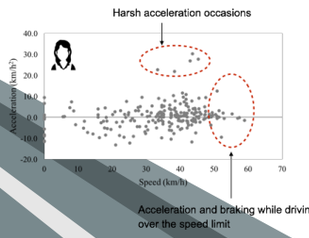
A	45 ≤ driver score ≤ 50	Excellent driver, with safe attitudes towards speeding and braking
B	40 ≤ driver score ≤ 44	Good driver, with occasional harsh acceleration and deceleration
B	35 ≤ driver score ≤ 39	
C	30 ≤ driver score ≤ 34	Dangerous driver, with a habit of harsh acceleration and deceleration, occasional speeding and cornering
C	25 ≤ driver score ≤ 29	
D	20 ≤ driver score ≤ 24	Poor driver, with careless driving attitude and a habit of harsh acceleration and deceleration, occasional speeding and cornering, frequently uses mobile phone while driving
D	0 ≤ driver score ≤ 19	

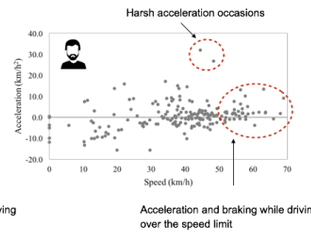












The report is a searchable pdf document that can be used by the whole company, worldwide

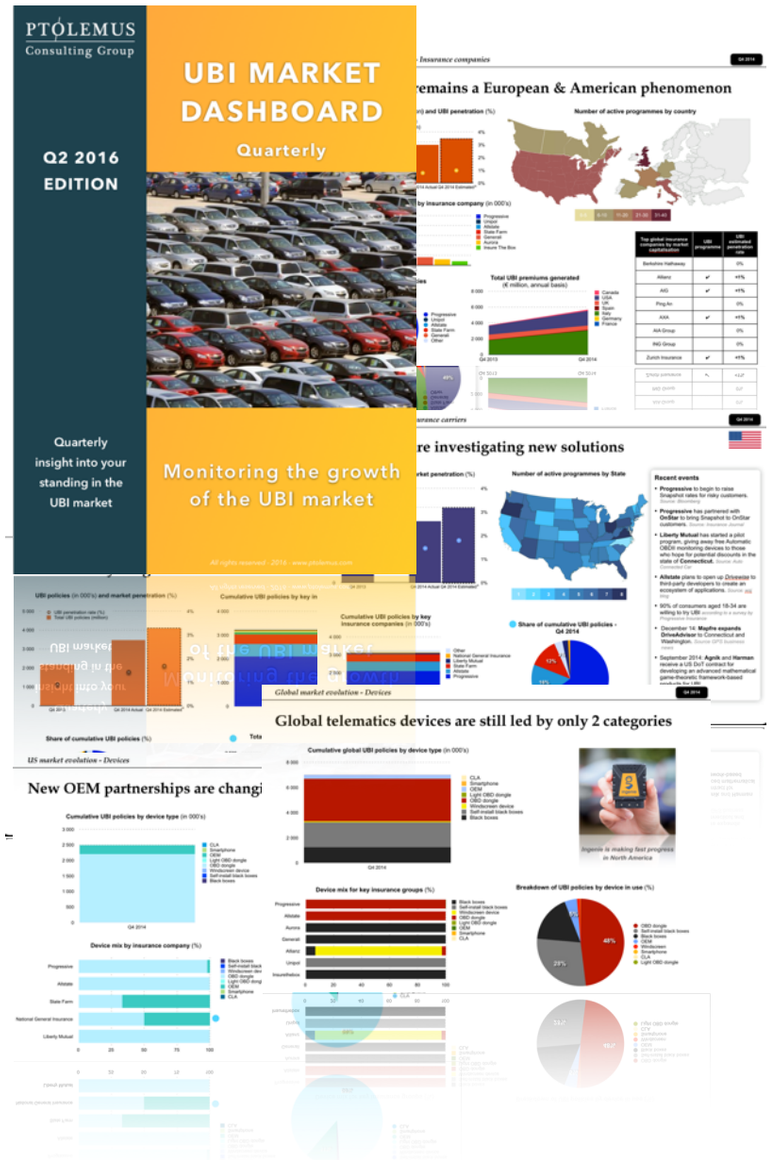
The most comprehensive research on the UBI analytics market

Reports	Connected Insurance Analytics Report Only	UBI Global Study 2016 with market forecasts + Connected Insurance Analytics update
Contents	• **340-page study** (pdf format, password-protected) • 10 company profiles • 20 best practices • Recommendations to insurers and analytics providers	• **1,200-page study** (pdf format, password-protected) • Market forecasts outputs with graphs (Excel format, password-protected) • 60 TSP, TTP & analytics supplier profiles • 30 country profiles
Company-wide licence	**€ 3,995** *Approx. $4,350*	**€ 8,990** *Approx. $9,799*

For more information and to order the update if you already have the UBI Global Study 2016, contact us at thomas@ptolemus.com

Notes: Prices in Euros excluding VAT (VAT applicable to clients located in Belgium)

We also issue a quarterly dashboard of the UBI market



All the hard data you need to define & adjust your strategy

- **60-page barometer of the global UBI industry**
  - Covers 170 companies
  - Covers the US, Canada, France, Germany, Italy, Spain and the UK
  - Issued on a quarterly basis
  - 190 charts, tables & figures
- **Leverages both public information and primary research**
  - A large set of public information collected from conferences, desk research, etc.
  - Supplemented and validated by primary research & data (Interviews, supplier questionnaires, own market forecasts, etc.)
- **Brings you the most important market news**

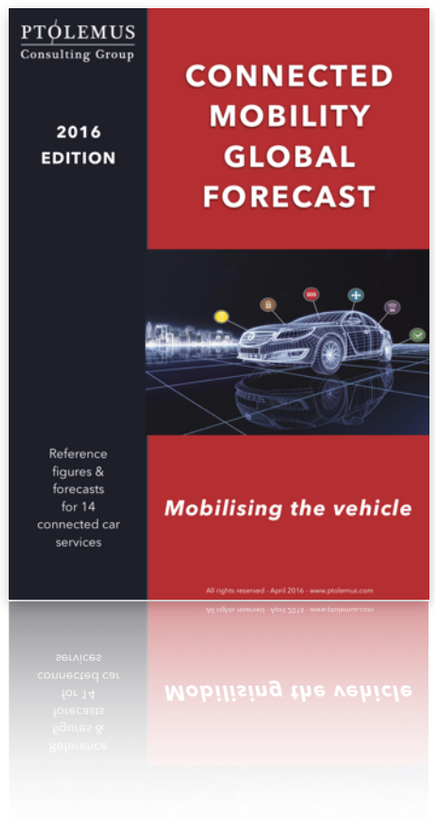
- **Estimates UBI volumes and sales for all main players**
  - Insurance companies
  - TSPs
  - Technology providers
- **Deciphers the key market trends**
  - UBI penetration
  - Number of programmes
  - Mix by business model (PAYD, PHYD, TBYB, etc.)
  - Market share of all main insurers, TSPs and device makers
  - Technology mix (Black boxes, OBD, apps, etc.)
  - Business line mix
  - Segment mix (Young drivers, mature drivers, etc.)
  - Channel mix aftermarket / OEM

PTOLEMUS brings unparalleled depth of knowledge in UBI

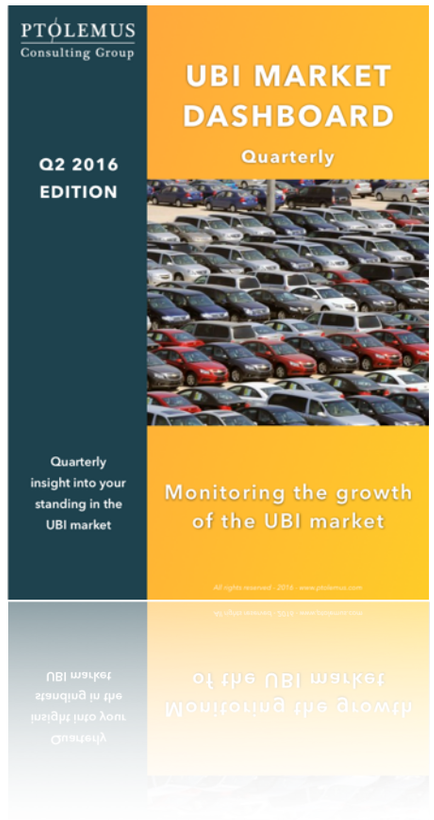
The most comprehensive research on the UBI analytics market

The reference report on the subject, quoted by The Economist, the Financial Times and the Wall Street Journal

30 insurance markets and 60 suppliers analysed



Referenced figures and forecasts for 14 connected car services



Quarterly insight into your standing in the UBI market

PTOLEMUS Consulting Group

Strategies for Mobile Companies

Brussels - Boston - Chicago - Hanover - London
Milan - New York - Moscow - Paris

contact@ptolemus.com

www.ptolemus.com
@PTOLEMUS

For more information, contact Thomas Hallauer at

thomas@ptolemus.com