

MOBILITY PLATFORM SUPPLIERS Handbook

FREE
ABSTRACT

The first global
buyers' guide to
17 mobtech
suppliers



*Building multimodal transportation,
from shared mobility to MaaS*

Foreword - The genesis of mobtech

Dear reader,

Modern cities face considerable challenges, from growing population, social imbalances and traffic congestion to air pollution. All of which are related to mobility.

But the challenges extends beyond city governments and involve both public transport operators and private stakeholders.

With Uber's success, everything has changed. **Smartphones make mobility a touch away**, and all players have reacted. BMW and Daimler just announced the merger of their mobility operations. Citymapper just announced *Pass*, an embryo MaaS service in London (pictured). Uber itself started integrating with public transport and operating bike-sharing services. And 2 days ago, Narendra Modi, Indian's Prime Minister launched the **National Common Mobility Card** to enable people to pay multiple kinds of transport charges, including metro services and tolls, across the country.

In other words, **the whole industry is rapidly transitioning to Mobility as a Service (MaaS)**, where users are able to access, plan and pay for mobility services through one unique platform.

Today, the market is still very much on the starting line both from a technological and a stakeholder perspective. Standards and business models have yet to be agreed upon

and some public transport operators (PTOs) and cities are wary of private mobility providers. **Most suppliers are still below or at level 3 in our 6-level MaaS integration scale.**

Created 10 years ago around the idea of "connected mobility", PTOLEMUS has been tracking this evolution since then. We have accumulated expertise through our research, 130 consulting assignments, and engaging with all stakeholders from automotive, cities, telecoms, insurance, etc.

We have used this privileged position to structure the MaaS ecosystem, laying out the key stakeholders, trends and technologies. We have also mapped the value chain and identified different building blocks required to build a complete MaaS solution.

Further to this, we have **analysed 17 key providers of mobility platforms, the "mobtech" suppliers**, identified key clients and discussed case studies. Some of them such as Omoove or Vullog focus on a single transport mode. Others such as A-to-Be and Fluidtime prefer to provide a MaaS platform from the start.

Who will win?

It is still unclear. **Behind the apparent harmony, there will be dogfights between those who will eat (integrate) and those who will be eaten (integrated).**

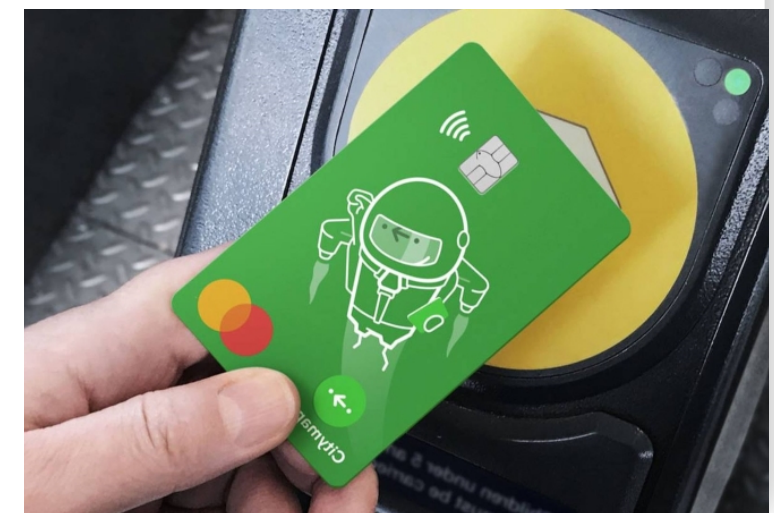
However, to **help mobility operators make their procurement decision**, we have compared them and ranked these suppliers to provide prospective MaaS operators an accurate idea of which supplier best suits their needs.

We hope this report helps **clarify a very complex landscape** and gives a chance to specialist players against integrated tech giants such as Google and Uber.

As consultants, we also look forward to helping you shape and successfully execute your MaaS strategy!

Sincerely,

Frederic Bruneteau
Managing Director



India is moving towards MaaS, relying on government-owned Bharat Electronics technology



"Since systems were made by different players, a card issued in one city did not work in another city. Thus, we asked various ministries, departments and even banks to resolve this issue.

Now, our dream of One Nation One Card has been realised. People can also withdraw money using this Common Mobility Card. This RuPay card can be used for travelling in metros in any part of the country. In simple terms, we have merged the RuPay card with the mobility card"



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

Strategy consulting services



Market research services



Fields of expertise

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

Our clients come from across the mobility ecosystem

Analytics, maps & applications providers



Automotive manufacturers & suppliers



Telematics solution providers



Mobile telecom operators



Fleet & fuel, ITS & regulators



Device & location suppliers



Insurers, aggregators & assistance providers



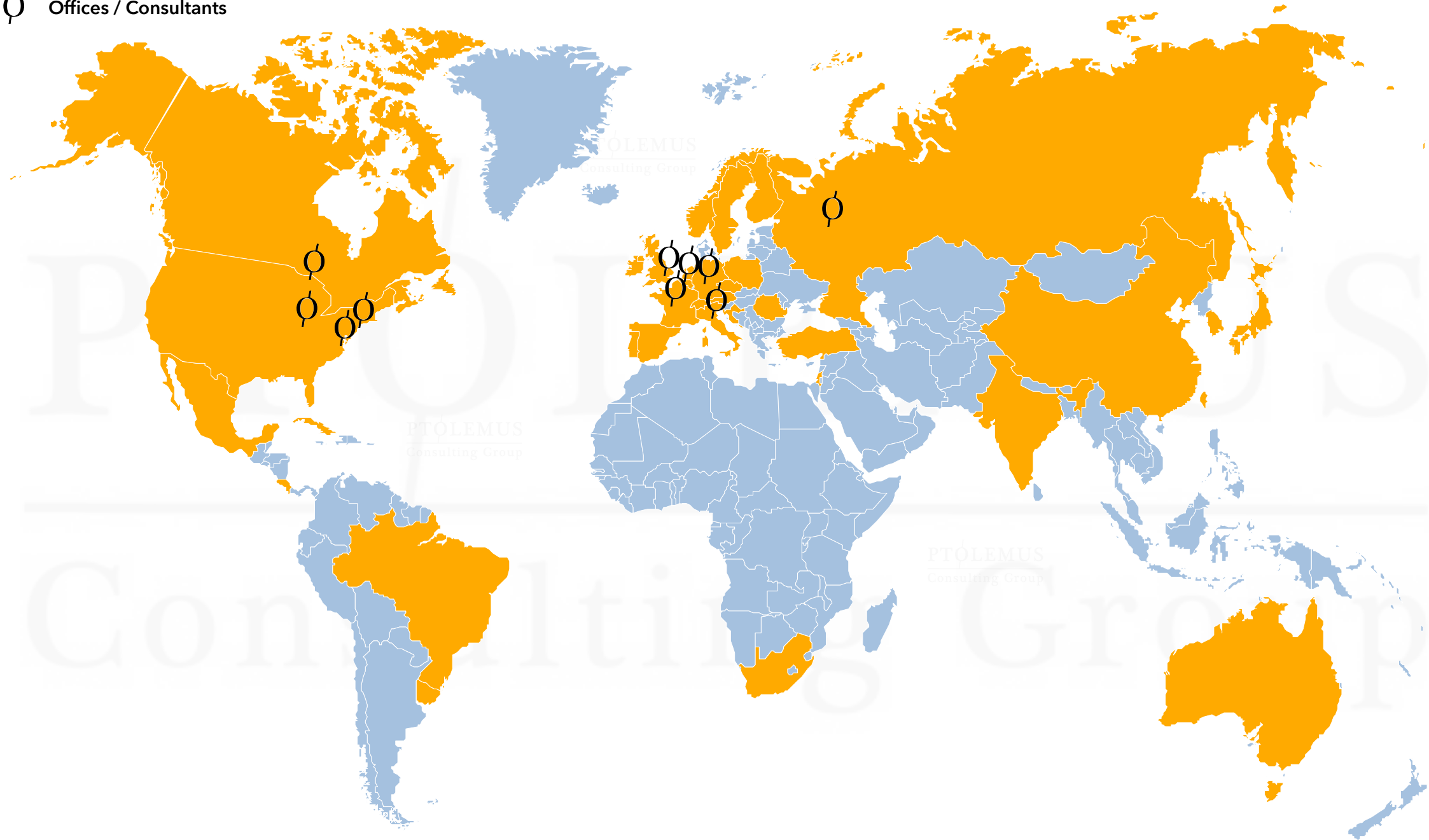
Banks & private equity investors



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

Clients

Offices / Consultants



130 consulting assignments to help our clients define their mobility & digital strategies...



Assessed the global market trends and built forecasts of 14 different connected mobility services by country

Leading Telematics Service Provider



Identified market opportunities & defined strategic plan in connected mobility services

Road & infrastructure operator



Defined its future vehicle connected services global strategy

Global roadside assistance group



Assisted in developing its usage-based charging telematics business



Forecast and analysed the connected mobility market

Global mobility service provider



Conducted the due diligence of VTraffic, a leading traffic information provider

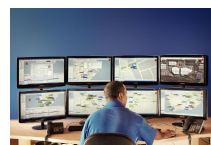


Defined connected vehicle data strategy for innovative telematics services provision and monetisation

Vehicle data aggregator



Led a feasibility study of a telematics-enabled shadow tolling scheme



Built 5-year strategy & go-to-market plan in EU mobility services market

Global electronic tolling supplier



Defined our client's strategic positioning in the field of connected vehicle services



Designed a digital roadside assistant solution using OBD dongles & car data

Global roadside assistance group



Defined its global data & analytics strategy to predict incidents

Major road operator

The report was written by a team of world-class experts...



Frederic Bruneteau

Managing Director, Brussels

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

He has accumulated **23 years of experience of the mobility / transport domains** and 15 years of strategic and financial advisory.

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

Frederic has spoken at more than 50 related conferences worldwide.

He has helped many world leaders define their strategic & innovation plans and implement them including Abertis, AGC Automotive, A-to-Be, BP, Bridgestone, Danlaw, Egis, ENI, ESRI, Europ Assistance, the European Commission, HERE, Kapsch, Michelin, the Netherlands' Ministry of Transport, Octo Telematics, Pioneer, Qualcomm, Scania, Sentiance, Telit, Thales Alenia Space, TomTom, Toyota, Vodafone and WEX.

Frederic directed and fully reviewed the research for this report.



Alberto Lodieu

Manager, Paris

A Mexican citizen, Alberto has **9 years of experience in strategy and operations consulting** in Europe and America.

He has assisted organisations such as Abertis, AGC Automotive, AXA Partners, CNES, the French space agency, CVC Capital Partners, DMP, Europ Assistance, the European Commission, Liberty Mutual, Silver Lake, Société Générale and Telespazio.

He participated in **over 30 projects** around **connected mobility, ADAS & autonomous vehicles, payments, transportation and usage-based insurance**.

Alberto recently led our landmark research Augmented Mobility 2030 Global Study. He also integrated this supplier research in our mobility research.



Florianne de Mahieu

Mobility Project Manager, Brussels

Florianne has more than **8 years of experience in project management** in the automotive, media, property development and retail industries.

She She has managed a large number of projects in the mobility and automotive domain, helping companies such as **AGC Automotive, Alphabet, BMW, Ferrari, Europ Assistance**, and Francorchamps Motors.

She recently drove the successful building and operational launch of an innovative telematics provider.

Florianne has managed this research project. She **interviewed and assessed over 15 mobility platform vendors** and associations. She **structured our analysis of this complex ecosystem**.



Annie Reddaway

Research Analyst, London

Annie Reddaway has **5 years of experience in the connected vehicle industry**, specifically in the areas of connected car, cybersecurity and mobility services.

She has researched and run various events and webinars on these topics. In 2018, she was awarded "Best New Mobility Leader" in the Tech Cars Awards from Auto Connected Car News.

She recently contributed to our latest Electronic Tolling Global Study.

For this report, Annie completed the competitive analysis of the suppliers and reviewed the entire research.

The first competitive analysis of the technology providers enabling multimodal mobility



The first strategic analysis of the mobility platform supply landscape

- Written by a team of expert consultants, this report is the **only complete analysis of the MaaS ecosystem**
 - It clarifies the role of all stakeholders in building future mobility
 - It maps the complete supplier landscape
 - It defines the 6 levels and 18 building blocks of the path to MaaS
 - It provides a detailed value chain for **platform providers** of both
 - ✓ **Single operator solutions** (single mode or multimodal), the Transport Service Providers (TSPs)
 - ✓ **Multiple operator solutions** (multimodal), named Mobility Service Providers (MSPs)
- **For each of the top 17 vendors, the report offers company profiles including:**
 - Key facts and numbers, investors, clients and value proposition
 - Independent analysis of the company's strategy, offering and place in the value chain
 - Their ranking in the MaaS market
- **The report is based on**
 - **10 years of experience in mobility consulting**
 - 20 interviews with the key players in the mobility market
 - Research by a team of 4 consultants and analysts in London, Paris and Brussels
 - Insights from 130 consulting assignments on mobility markets, technology and strategy
- **Over 150 pages, the report structures and clarifies the complex ecosystem powering mobility as a service, including:**
 - A precise competitive analysis of MaaS technology providers
 - The inside workings of the market and the changing role of the players
 - The high level architecture of shared mobility platforms
 - An independent review of the models
- **The first ranking of 17 mobility platform suppliers globally**
 - Those companies that are building the digital solutions for cities, public transport operators and mobility operators
 - An objective comparison and appraisal of both TSPs and MSPs

This report is part of the world's most comprehensive mobility research series

GLOBAL MOBILITY ROADBOOK

Mobility trends



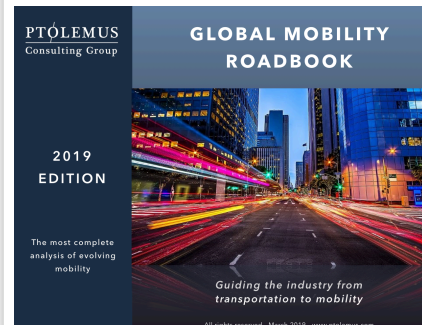
- The combined impact of 12 mega-trends on:
 - 16 stakeholder categories
 - 18 road transport modes, from the private passenger car to the kick-scooter
 - 18 regions

Mobility suppliers



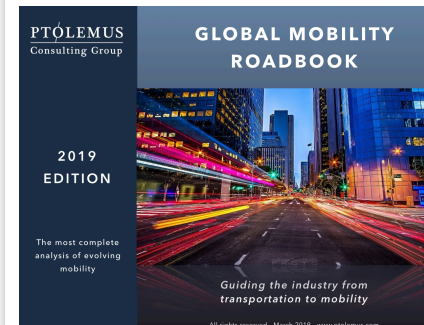
- Detailed analysis of the MaaS ecosystem
- Appraisal of 17 top technology providers to the mobility operators
- Ranking of the top 6 suppliers

Mobility investment



- Analysis of key investments in mobility in 5 categories
- List of 600 start-ups and scale-ups active in the mobility market

Urban mobility



- 8 case studies and best practices for reducing congestion
- City mobility model to predict future demand by transport mode

Mobility market forecasts



- 2018-2030 global mobility demand forecast
- For 11 road transport modes
- Across 18 countries
- AVs and EVs volume projections

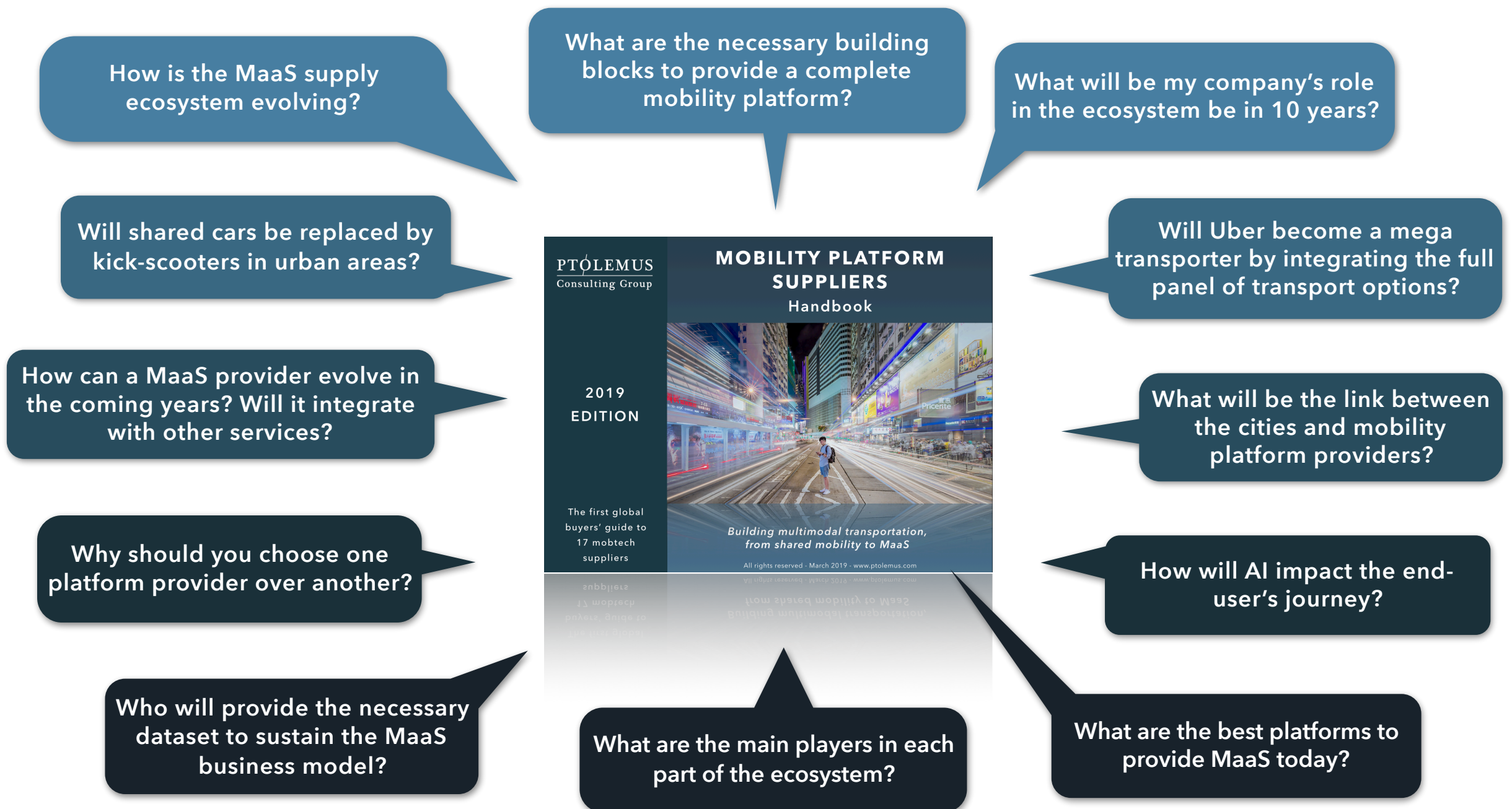
The report covers the activities of nearly 300 organisations

3M	AMAT	Bestmile	Carplug	DATS24	EMT	Gabriëls	Hello Tomorrow
A-to-Be	Amazon	BikeShare	Carris	DB	Enel	Galp Energia	Helsinki Business Hub
A1	Andreessen Horowitz	BIXI	Citibike	De Lijn	Enjoy	Gemini Investors	Hertz
AAA	Animo	BlaBlaCar	Citymapper	Debso	Etf partners	Generali	Hitachi Vantara
Abertis	Apple	BMI i Ventures	CityMobil2	Didi	Europ Assistance	Georgia Tech	Honeywell
Activate Capital	APTA	BMW Group	Citynikes	Divvy	Evo Car Share	Ghent University	HSL
ADAC	Arval	BMW i.	Cloudbike	DKV	Facebook	GIG Car Share	Huawei
Adduma car	AT&T	BNP Paribas	Codes Rousseau	Donkey republic	Farmacia Silveira	GirACI	Hubway
Ademe	Atlantic Ferries	BNV mobility	Communauto	Dot Transfers	Faurecia	Go Urban	iGuido Car Sharing
Admiral	Audi	Bosch	Conduent	Drivenow	Fleet Europe	GoCatch	Indigo
Aeroportos de Portugal	AutismCRC	BP	Contact Light	E-Flux	Fleetcor	Goget	Ingogo
Airbus Ventures	Auto Bleue	BPI France	Continental	Ecomobix	Flexigo	Gomentum Station	Initialized Capital
AISIN	Autostrade	Breeze bike share	Corrente	Egis	FlitWays	GoMore	Instant System
ALD Automotive	AVIS	Brisa	Cowline	EkoRent	Fluidtime	GoNow	Intel Capital
Allitalia	AVV	Cabify	Cox Automotive	Emel	Föli	Google	Inven Capital
Allianz	AXA	Cabsee	CSA	Emobitaly	Ford	GreenMobility	INVERS
Ally Ventures	Baidu	Car & Away	Cubic	Emov	Free2Move	Greenrock Capital Company	ITS
Alto	Berkeley	Car Next Door	Daimler	Empark	Frog Capital	Groupe Renault	Jayride
	Bharat Electronics	CAR2GO	Dashee				

The report covers the activities of nearly 300 organisations

Johnson Controls	MaaS Latam	NMBS	Perron	Road Ventures	Sobi social bicycles	TPF	Via Verde
Kapsch	MaaS Madrid	Octo Telematics	Poppy	Roads & Maritime	Soler i Sauret	TPG	Viavan
Keolis	Mairie de Paris	Olashare	PostBus	SAP	Sonae	Transdev	Vinci
KEOLIS	Mastercard	Omoove	PSA Groupe	SBB CFF FFS	Sony Innovation Fund	TRANSLink	Vintage Investment Partners
Khosla Ventures	Metropolitano de Lisboa	OMV	PTOLEMUS Consulting Group	Sequoia Capital	Sound Ventures	Transport Canberra	Visa
KIA	Mevo	Optimile	PTV Group	Serena	Southern Connector	Transport for London	Vodafone
Konux	Mobility	Optimum	Qando	Setec	SouthWest Transit	Transurban	Vulog
Launch Mobility	Mobility+	OPTUS	Qpark	Shotl	STCP	Tropy	WEX
LeasePlan	Mobit	Orange	RACV	Sicily by Car	STIB	Turnn	Whim
LG Technology Ventures	MOL Limo	Orleans Metropole	Radiuz	Siemens	Stripe	UBER	Wible
Liberty Mutual	Moovel / ReachNow	PACA Investissement	RATP	Silence	Swiftfleet	Ubigo	WienMobilLab
Lime	Moovit	Padam	RatP Dev	Silence Urban Ecomobility	Tencent	UCSF	Y Combinator
LoveSharing	Moventis	Park 'N Fly	RCI Bank & Services	Sixt	Tesla	UnionPay	Yuko
Lyft	MTA	Parkit	ReachNow	SK Telecom	Ticketeer	Urbano	ZF Group
Maas Scotland	Munich RE	Partech	Refeel	Skedgo	TIP (Intermodal port transport)	Vaizra	Zify
Maas Alliance	Nextbike	PayLane	ReFeel Emobility	SL	Toyota	Velhop	Zipcar
Maas Catalonia	NGP Capital	Paypal	Ridecell	Smile	Toyota Financial Services	Verizon	Zity
	Nissan	Penske	RingGo				

This research responds to all key strategic questions



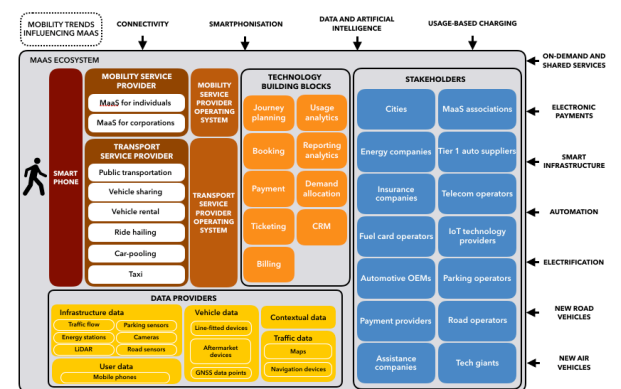
We followed a rigorous method to clarify the MaaS ecosystem

- Today, mobility-as-a-service has an undefined and evolving ecosystem
- We have **identified and mapped the different stakeholders of the ecosystem** thanks to:
 - In-depth research
 - Stakeholder interviews
 - Built-up experience in the mobility sector
- We also established the links and convergences between stakeholders
- We put together the different **integration levels** of MaaS, including the building blocks for each level
- We then designed and explained the **value chain** for companies providing B2B solutions, specifically:
 - **Transport platform providers (TPPs):** Mobility platforms for a **single transport operator (single mode or multimodal)**
 - **Mobility platform providers (MPPs):** Mobility platforms for **multiple transport operators (multimodal)**
- Finally, we **ranked the companies** according to
 - TSPs: Number of rentals and users per month, number of vehicles connected through the platform, number of clients and solution maturity
 - MSPs: Number of clients, number of integrated TSPs, solution maturity, integration and whether a member of a MaaS association

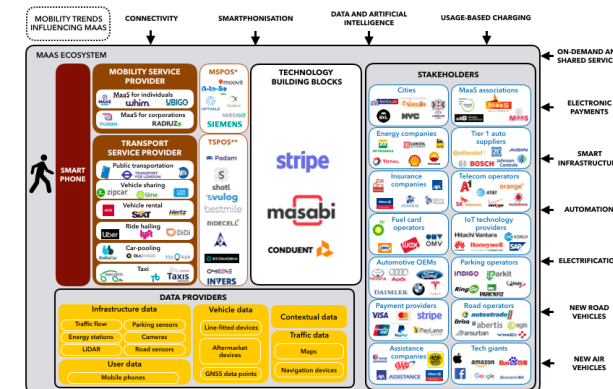


This report offers a comprehensive analysis of MaaS building blocks and B2B service providers

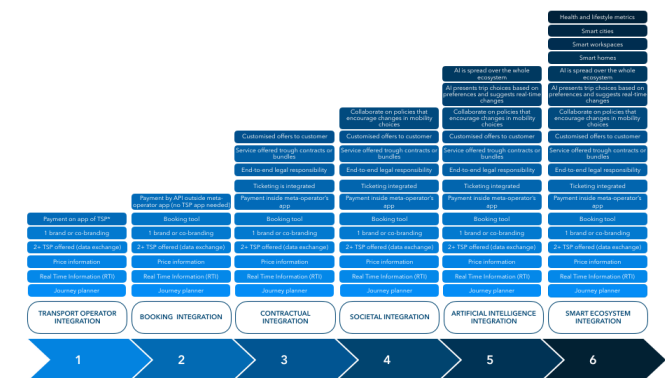
1 MAAS ECOSYSTEM



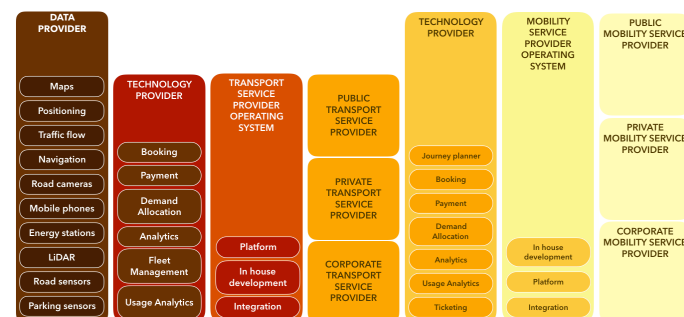
2 LANDSCAPE



3 MAAS INTEGRATION LEVELS



4 MAAS VALUE CHAIN



5 SERVICE PROVIDER ANALYSIS



6 SERVICE PROVIDER RANKING



What is Mobility-as-a-Service (MaaS) exactly?

A service combining transport, information, routing, payment and ticketing services to offer a seamless, unified transportation experience to travellers



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

*Sampo Hietanen
CEO, MAAS
Global*

A complete MaaS solution includes at least 14 elements:

The 14 conditions to achieve full MaaS

1	2+ transportation service providers	Integrates services from multiple operators and providers	8	Integrated ticketing	Ticketing for different modes or stages of a journey is integrated into one ticket
2	Multimodal	Combines multimodal options to complete a journey, including bikes, trains, cars	9	Payment	Payment for the service can be done via the app
3	A smartphone app	An app will be the core user interface	10	Real-time information	Journey information is based on real-time data
4	A journey planner	Enables the user to plan their journey end-to-end	11	Open data exchange	All mobility services openly share their data with the MaaS provider
5	Personalised route options	Will suggest routes according to user preferences	12	End-to-end legal responsibility	The MaaS provider bears responsibility for the entire trip
6	A single brand	The MaaS provider has its own consumer-facing brand	13	Service offered through contract or bundles	End-user pay as they go, but can also contract different bundles of transit options
7	A booking tool	Users are able to book journeys through the app	14	Integrated third party tools	Third party services or tools can be combined into the app

MaaS is taking off, driven by vertically integrated solutions and, increasingly by mobtechs

- Mobility as a Service (MaaS) is the **integration of the mobility ecosystem** to unify the user's experience and promote shared transport modes
- **Cities are pushing for more sustainable transit, less congestion and lower pollution**
 - This is creating favourable conditions for MaaS and emerging mobility technology - or "**mobtech**" - providers
- **Smartphonisation of mobility is the underlying driving force**
 - Mobile phones are the ultimate, universal technology tool that offer a real-time 2-way connection with the transport operator
 - A single MaaS app will be more convenient than multiple apps from different providers: it will be used for trip planning, mode selection & payment
- Multiple stakeholders are now looking to offer MaaS
 - They can be public, e.g. cities or **public transport operators**
- But also many private mobility operators e.g. **mobility pure players, automakers, technology giants**
- MaaS will disrupt the way mobility / transport operators do business and the way we all make our travel choices
- We have identified **6 levels of integration to deliver MaaS**:
 1. **Transport operator integration**
 2. **Booking integration**
 3. **Contractual integration**
 4. **Societal integration**
 5. **Artificial intelligence integration**
 6. **Smart ecosystem integration**
- **MaaS is still in its infancy**:
 - Most MaaS companies today are between levels 1 and 2, due to the existence of data or transaction silos
 - Certain large PTOs and mobility players such as Uber are not playing the interconnection game
 - We do not expect level 6 to be reached before 2030
- **MaaS is taking off due to**
 - The explosive growth of new shared mobility schemes
- The emergence of multimodal planning tools such as Citymapper and Google Maps
- As an alternative to integrated solutions, **mobility technology / mobtech providers are emerging** to cater for MaaS operators
 - Before, PTOs would build their own app or interface, trying to integrate all public transport modes
 - However, with the emergence of new shared mobility services, new players must be integrated
 - There is a **need for an extra layer or platform to integrate different stakeholder offerings into one solution**
- **It remains unclear whether the market will adopt**:
 - **Integrated solutions by tech giants** such as Didi, Google and Uber
 - **A layered approach** where mobility operators rely on a cloud-based software solution offered by mobtech providers
 - **A regulation to force data access and interconnection, which is mandatory** in our view to avoid de facto monopolies

We assessed all key mobility platform suppliers



The handbook brings much-needed clarity over mobility technology supply chain and competition



The competitive analysis of the mobility building blocks suppliers

Mobility Platform Suppliers handbook

Contents

- **150-page analysis** of the complex ecosystem powering mobility as a service.
- **17 MaaS suppliers assessment** including company strategy, market offering and place in the value chain
- **High level architecture** of the shared mobility platforms
- **Independent ranking** of the top technology providers in the MaaS market

Mobility strategy workshop

- The full study presented to your board or strategy team
- Half-day workshop in your offices

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€ 4,300

Approx. \$4,900

€ 2,000

Approx. \$2,300

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A clear and structured supply landscape is required to make MaaS a mass market



"MaaS is the ultimate consequence of smartphones' invasion of mobility"


Frederic Bruneteau

Thank you!

- India's decision to launch a nationwide mobility system is the proof that MaaS has reached its tipping point
- Cities, Public Transport Operators and all other mobility operators have no choice but to go beyond their silo to offer an end-to-end travelling experience to users
- Together with ubiquitous smartphones, mobtech suppliers offer the open environment and toolbox for mobility operators to deliver it
- **The Mobility Platform Suppliers' handbook helps all stakeholders decide the model and the suppliers that will fit their needs, responding to the key questions:**
 - Who does what in MaaS?
 - How will the MaaS ecosystem function?
 - What mobtechs are supplying and what they are good and less good at?
 - Which suppliers come on top?

PTOLEMUS can help your organisation define and achieve its MaaS strategy

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



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PTOLEMUS
Consulting Group

**10 years of experience
in mobility**