

LEAFLET

*The first RUC diagnostics
and simulation tool for road
& transport decision makers*

ROAD USAGE CHARGING

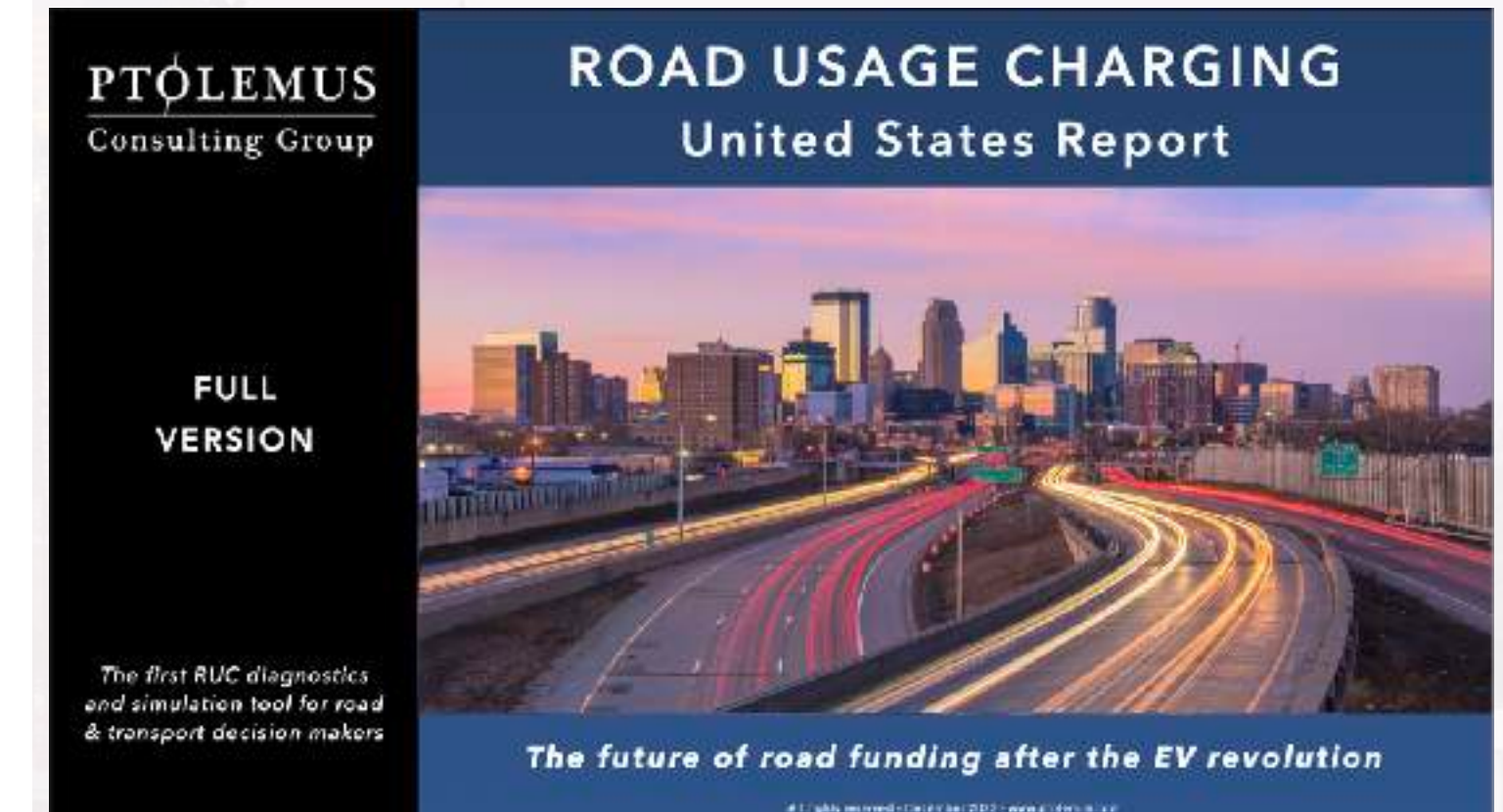
United States Report



The future of road funding after the EV revolution

This in-depth analysis and market forecast is the first decision-making tool for key stakeholders to design a successful RUC strategy

- A **330-page** analysis of the current and future road financing in the US based on:
 - **10** years of constant market surveillance
 - PTOLEMUS tolling and RUC consulting experience with over **40** client assignments
 - **6** months of research and analysis including interviews with key stakeholders
 - More than **200** figures presented in the report
 - More than **90** companies mentioned
- **An examination of the economic, financial, political and technological context behind RUC**
- **A detailed assessment of RUC vs. other major funding solutions across 9 key dimensions**
- **The status of road funding examined in the US including 4 in-depth profiles of US States that are at the forefront of RUC initiatives**
- A comparison of RUC in the US and distance-based charging in Europe that identifies **5** key lessons and insights that the US can take away from the European experience
- **Models for the US and Colorado covering**
 - Motor fuel tax revenues forecast
 - RUC fees & revenues scenario
 - RUC costs scenario
- **The 2022-2040 Excel forecast model has been developed bottom up**
 - With inputs from over **20** reputable sources and PTOLEMUS' own automotive and EV forecasts
 - To easily store and simulate hundreds of unique vehicle, travel, and pricing scenarios as defined by the user
 - Additional forecasts, scenarios, and slides on the other 49 states (+DC) can also be purchased*
- **Quantitative & qualitative analysis on which states would benefit most from a RUC scheme**



More than just market research.

In-depth strategic analysis and a complete tool to help your organization make the right decision to launch a new road funding model

The report will answer the key strategic questions about RUC in the US and help your organization navigate the evolving market

Where is RUC now?

What is Road Usage Charging (RUC) in the US context and how is it different from other road charging schemes?

What are the key factors and trends that are causing states to turn towards RUC?

What type of RUC activities have states performed and which states have been the most active?

What has been the US federal government involvement (i.e., regulatory, financial, etc.)?

Which stakeholders (public and private) have been involved and in what role?

Which technologies have been used in the and how do they compare with each other?

What other funding options exist and what are the key advantages of RUC versus other funding options?

How does RUC compare and rank versus the other funding options with regards to revenue robustness, efficiency, flexibility, equity, etc.?

What can we learn from the European RUC (distance-based charging) experience?



Is RUC the future of road funding for the US, a complementary piece, or a short term fad?

Where is RUC going?

What factors will be the most relevant in determining RUC's success?

Which states will be the most active (leading) and why?

Which stakeholders are more likely to take the lead in the market?

Which technologies are most likely to be deployed in short and longer term?

What are the key factors help lower overall costs and increase the profitability of the program?

What factors should be considered when setting RUC rates and how much revenue can a program generate in the rate setting scenario?

What will be the impact of EVs (and more fuel efficient vehicles overall) on road funding in the next 20 years, assuming the current funding status quo?

The report leverages PTOLEMUS' road charging experience and the expertise of a diverse team of mobility consultants (1/2)



Frederic Bruneteau

Managing Director

Experience

27 years

The founder of PTOLEMUS, Frederic has accumulated 25 years of experience of the mobility and transport domains and 15 years of strategic and financial advisory.

He has become **one of the world's foremost experts of connected mobility** and is interviewed on the subject by publications such as the Financial Times, Forbes, the Wall Street Journal and The Economist. He has also spoken at over 40 conferences on the subject.

He has **led over 180 consulting projects and helped many world leaders define their strategy and implement it.**

Clients he has served include A-to-Be, Abertis, AETIS, AGC Automotive, Allianz, Axxès, AXA, Baloise, BP, Bridgestone, BRP, CNH Industrial, Danlaw, DMP, Egis, the European Commission, Ferrovial, HERE, Hitachi, Kapsch, the Netherlands' Ministry of Transport, Mobile Devices, Neology, Octo Telematics, Michelin, OMV, MPTC, Pioneer, Q-Free, Qualcomm, Scania, Société Générale, Skytoll, ST Engineering, Telepass, Telit, TomTom, Toyota, Transurban, T-Systems, and WEX.

Frederic has led over 30 assignments related to tolling and RUC.

Frederic fully reviewed this report.



Ashton Williams

Manager

15 years

Mr. Williams has accumulated over 15 years of professional experience working for and alongside transportation and mobility companies **specialized in infrastructure operations, highway management, public private partnerships, road charging solutions and services, and mobility payments.** He has also co-founded an EV service start-up company.

Mr. Williams' responsibilities and achievements include:

Led commercial stream and development of commercial structuring for a multi-national infrastructure operator on \$3 billion express lane project in the US.

Served as Global Head of Business Development for both Abertis Mobility Services (AMS) and its toll-based mobility service provider Emovis.

Oversaw implementation of the first non-pilot US RUC project.

Led for the Abertis Group origination, diligence and execution efforts on infrastructure and mobility projects across Asia, Northern Europe, and North America.

Participated in over 40 infrastructure M&A transactions spanning 15 countries at \$78 billion (\$12 billion executed).

Ashton led the research and writing of this report.



Paul Maupin

Marketing Director

15 years

An American citizen, Paul has 15 years of experience in digital marketing in a range of responsibilities such as web site development, copywriting, CRM, analytics, project management, product development, social media management and content strategy.

Paul has worked with a broad range of international clients and brands, large and small, to develop relevant, consistent, and results-oriented digital communication and marketing strategies across channels.

Responsibilities he endorsed over his career include:

Developed, implemented and supervised the global content marketing strategy for Radisson Hotel Group, including data-driven marketing, communication with key internal and external stakeholders;

Managed digital channels, social presence and marketing strategy for the Europe region at UPS, including implementation of paid campaigns alongside ad agencies and content creation for the pan-European central channels.

Paul reviewed the report and leads our marketing of the report.

Biography

The report leverages PTOLEMUS’ road charging experience and the expertise of a diverse team of mobility consultants (2/2)



Filippo Frezet

Senior Business Analyst



Saeeda Malik

Senior Business Analyst



Williams Demanou

Business Analyst



Fatima Essakhi

Business Analyst

Experience

3 years

An ESCP Business School alumnus, Filippo has started developing an expertise in emergency services, in Electronic Toll Collection (ETC) and Road Usage Charging (RUC), in Usage Based Insurance (UBI), in last-mile delivery, in vehicle data hubs and vehicle data monetisation.

In over 3 years at PTOLEMUS, Filippo has contributed as a core team member to 12 consulting assignments and 4 research reports.

Clients he has served include Abertis Mobility Services, Advent International, Bain Capital, European Commission, FairConnect, FSI, Hitachi, Intrado, Palamon Capital, Skytoll, Telepass, wejo, Zego Insurance

Before joining PTOLEMUS, he gained experience in consulting thanks to his internship as Junior Tax Consultant at KPMG Italy.

Filippo participated in the research, writing and review of the report.

5 years

An HEC Paris MBA graduate, Saeeda has over 5 years of experience in strategy formulation, execution, and research.

She has been working on consulting and research assignments mainly in the fields of Electronic Toll Collection (ETC), Road User Charging and Usage-based Insurance.

Clients she has served include a private equity firm, a Toll Service Provider and a major road operator in Asia.

Saeeda led the financial feasibility analysis of Open Road Tolling for several road concessions in the Philippines

Saeeda has also contributed to our ETC and Commercial Fleet Telematics (CFT) reports.

Before PTOLEMUS, she was part of Schneider Electric’s Global Automotive and eMobility team in France. Prior to that, she worked in the financial services industry.

Saeeda participated in the research and writing of the report.

5 years

An HEC Paris MBA graduate, Williams joined PTOLEMUS where he is developing an expertise in RUC, ETC, and UBI.

Since he joined PTOLEMUS, Williams: Took part in vendor and commercial due diligences on the UBI market.

Led a comparison of the New York City and Brussels congestion charging models.

Monitors the operational performance of 70+ telematics auto insurance programs in North America.

Prior to joining PTOLEMUS, Williams worked in Cameroon for 5 years in an engineering consulting firm focused on transport infrastructure.

During his tenure at SOL SOLUTION, he led over 20 assignments for the design of a total of 1,488 km of roads budgeted at 15 to 160 million euros for clients including development finance institutions and Cameroonian ministries.

Williams participated to the research and writing of the report.

4 years

An electronics and telecommunication engineer, she also holds a master degree in Smart Mobility from ENPC, Paris.

Fatima joined PTOLEMUS in 2021 and started to specialize in Electronic Toll Collection (ETC), Road Usage Charging (RUC), Intelligent Transportation Systems (ITS), Autonomous Vehicles (AV), Connected Vehicle Data (CVD).

Within PTOLEMUS, she participated in 4 consulting assignments, 2 research reports.

Clients she has served include private equity firms, Abertis Mobility Services, Neology and ST Engineering.

Before joining PTOLEMUS, Fatima started her career in the automotive industry. She was a software project leader for Renault for 3 years.

Fatima participated to the research and writing of the report.

Biography

The report offers an in-depth analysis of the current state of RUC in the US and its future direction

1 Introduction	<u>1</u>	4 In-depth State Case Studies	<u>146</u>
1. Definitions		1. Hawaii	
2. Context		2. Minnesota	
		3. Oregon	
		4. Utah	
2 Drivers	<u>25</u>	5 Lessons and Insights from Europe	<u>191</u>
1. Financial and Economic		1. Overview of European Road Charging	
2. Mobility		2. Lessons Learned and Key Insights	
3. Infrastructure		2.1. Regional (nationwide) framework	
4. Political and Regulatory		2.2. Location-based charging	
		2.3. Interoperability	
		2.4. Account Managers (EETS Providers)	
		2.5. Public acceptance	
3 Overview of the Current US Market	<u>79</u>	6 Future of Funding and RUC in the US	<u>232</u>
1. Alternative Road Funding Options		1. Road Funding: Fuel Tax Decline (US and Colorado)	
2. Studies, Pilots, and Programs		2. Funding Potential of RUC (US and Colorado)	
3. Stakeholders and Value Chain		3. Cost Analysis of RUC (US and Colorado)	
4. Technologies		4. Evolving Account Manager Role	
5. Benefits and Considerations		5. Leading States	
		6. RUC in the Future: Conclusion	

The report mentions 90+ companies and organizations

Company	Region/ Country	Type	Company	Region/ Country	Type	Company	Region/ Country	Type
Azuga	USA	Account managers	RUC America	USA	Coalitions	Hourcar	USA	Other companies
Emovis	USA		TET Coalition	USA		SFR	Europe	
Eroad	USA		CalTrans	USA	DOTs	SNCF	Europe	
IMS	USA		Hawaii DOT	USA		Steria	Europe	
Verizon Connect	USA		Minnesota DOT	USA		Thales	Europe	
AECOM	USA	Advisors	Oregon DOT	USA		Via	USA	
ARUP	UK		Utah DOT	USA		VSI Labs	USA	
BERK	USA		Virginia DOT	USA		Zipcar	USA	
CDM Smith	USA		Vermont DOT	USA	Energy companies	Msts	Europe	Payment and Credit
EBP	USA		Washington DOT	USA		Abertis	Europe	Road Operators
Jacobs	USA		Aral	Europe		Autostrade per l'Italia	Europe	
WSP	USA		AS24	Europe		Bro Bizz	Europe	
Audi	Europe	Car manufacturers	BP	Europe		Transurban USA	USA	
BMW	Europe		PetroChina	Europe	Fleet Management Service Providers	AWS	USA	Subcontractor/ supplier
Ford	USA		Shell	Europe		Helpware	USA	
GM	USA		Sinopec	Europe	Fuel Card Issuers	Oracle	USA	
Honda	Asia		Total	Europe		Otonomo	Asia	
Hyundai	Asia		Fleetcor	Europe	Governmental institutions	Smartcar	USA	
Kia	Asia		Wex	Europe		Wejo	Europe	Tolling service providers
Lucid Motors	USA		Eurowag	Europe	Industry groups	A-to-Be	Europe	
Mazda	Asia		UTA	Europe		Axxès	Europe	
Mercedes	Europe		Department of Energy	USA		Conduent	USA	
Nissan	Asia		European Comission	Europe	Insurance carriers	DKV	Europe	
Rivian	USA		FHWA	USA		easytrip	Europe	
Stellantis	Europe		IBTTA	USA		eurotoll	Europe	
Subaru	Asia		IRF	USA		Kapch	Europe	
Tesla	USA		MBUFA	USA		Neology	USA	
Toyota	Asia		Fremtind	Europe		Telepass	Europe	
VW	Europe		UnipolSai	Europe		TollTickets	Europe	
						TransCore	USA	

The report comes with a single, worldwide company license



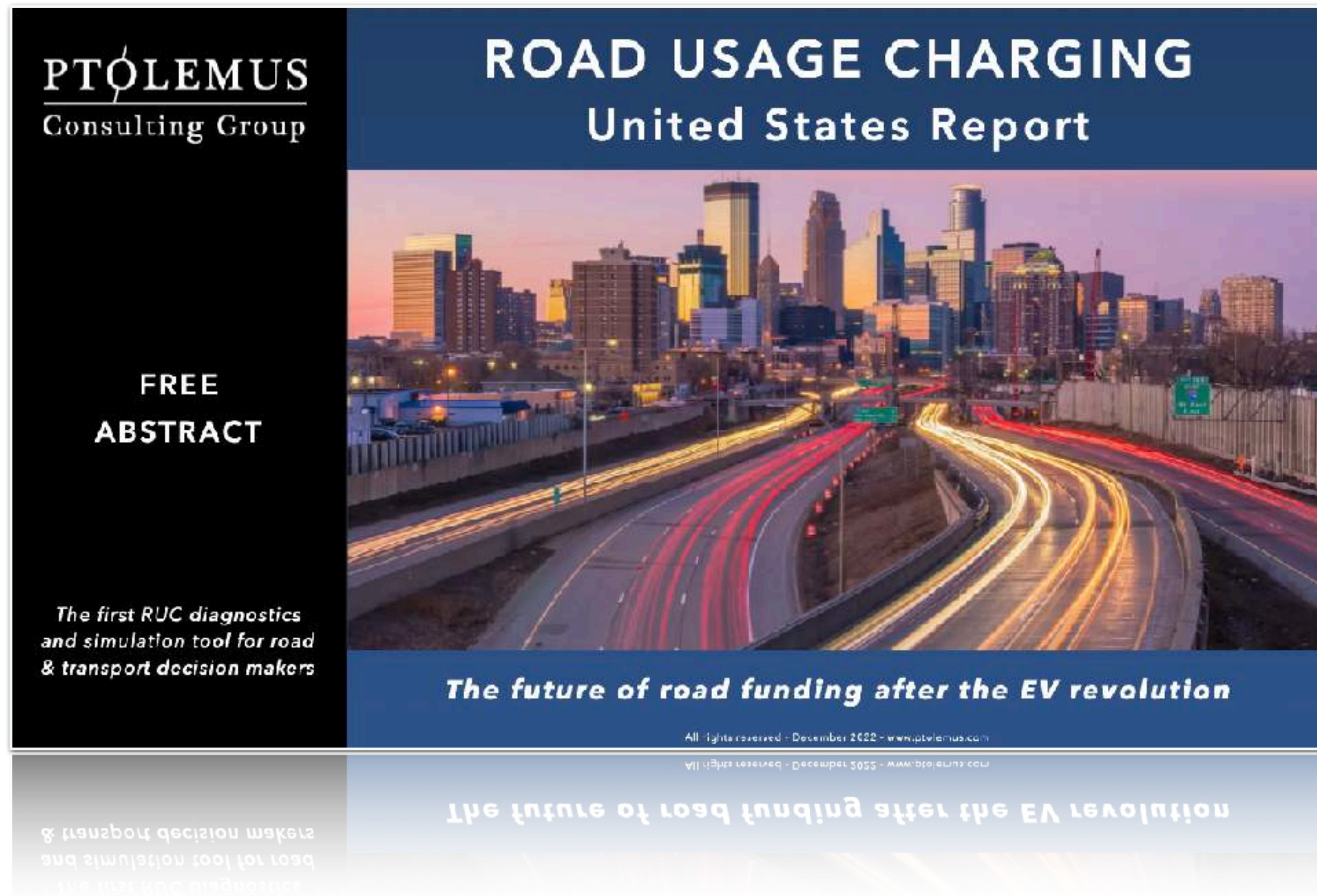
For more information about the report, email contact@ptolemus.com



You can purchase the report by requesting an invoice or buying online** (Visa or MasterCard) on our website

	Report (1)	Forecasts & Scenarios (2)	(1) + (2)	Additional per-state RUC scenario analysis	Additional workshop
Contents	<ul style="list-style-type: none">• 330-page analysis of the current and future road financing in the US• Examination of the economic, financial, political and technological context behind RUC• Detailed assessment of RUC vs. other major funding solutions across 9 key dimensions• 4 in-depth profiles of US States that are at the forefront of RUC initiatives	<ul style="list-style-type: none">• One Excel file with the outputs of:<ol style="list-style-type: none">1. Fuel tax revenues forecast2. RUC fee rates & revenues scenarios3. RUC costs scenarios• 40+ slides summarizing and explaining these scenarios<ul style="list-style-type: none">- Covers the US and the State of Colorado	<ul style="list-style-type: none">• 330-page analysis of the current and future road financing in the US including 40+ slides summarizing and explaining the Excel file scenarios• One Excel file with the 3 outputs<ul style="list-style-type: none">- Covers the US and the State of Colorado	Additional per-state RUC scenario analysis and slides on US states not included in the report can be purchased separately	The full report and a scenario analysis Excel tool demo presented to your board or strategy team Half-day workshop*
Company-wide license	\$2,995	\$1,995	\$3,995	Pricing on request	\$4,995

You can download a free 54-page abstract of the report here:



<https://www.ptolemus.com/research/road-usage-charging-united-states-study/>

To purchase the report, email contact@ptolemus.com

PTOLEMUS is the first strategy consulting and research firm entirely focused on geo-connected mobility and automation



Strategy consulting services

Strategy definition	M&A advisory	Procurement strategy
Partnership strategy	Business development	Market forecasting



Market research services

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



Fields of expertise

RUC and tolling	Motor insurance	Vehicle data and analytics
IoT & connectivity	Emergency services	Vehicle services
Mobility services	Vehicle automation	Electrification

We serve over 350 clients across 6 major mobility verticals

Some of our references

AUTOMOTIVE



















INSURANCE & ASSISTANCE






















ENERGY & FLEET MGMT
















TECHNOLOGY






















FINANCE


















INFRASTRUCTURE







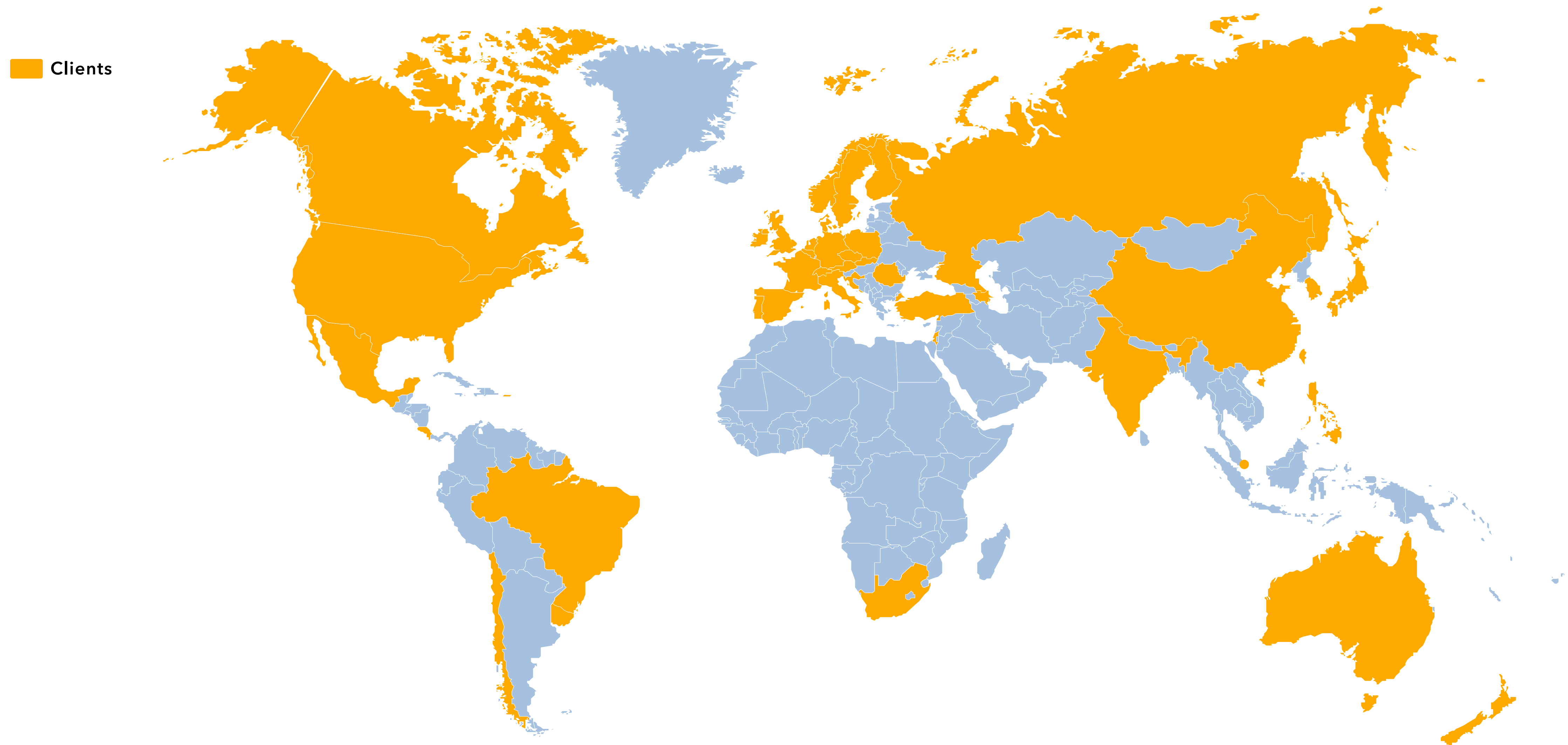









**Our team of consultants, experts and analysts with 13 nationalities,
serve our clients in 40 countries**



A member of the IBTTA and the IRF, PTOLEMUS has performed nearly 200 consulting assignments including 46 in tolling, RUC and ITS



Advised ST Engineering in the commercial due diligence for the acquisition of TransCore, the leading US toll solution provider



Performed the feasibility study of its move to All Electric Tolling (AET) and Open Road Tolling

Asian road concessionaire



Helped a US-based toll solution provider to identify project opportunities and build its sales pipeline in the US and 22 other markets

Major toll solution provider



Helped define its strategy for the future Australian RUC scheme

Road & infrastructure operator



Conducted an in-depth examination of the demand for tolling solutions in North America and helped identifying M&A target and partners

ETC / RUC solution provider



Assisted the board of its technology unit in its strategy definition

Global motorway operator



Defined the value proposition for RUC and selected optimal partners and M&A targets to enter the US market

Global RUC solution provider



Evaluated the technologies & business potential of the EU electronic tolling market

Telit



Evaluate global OEMs' connected vehicle payments strategies and partnership opportunities

Major road operator



Advised on the optimal structuring of the Netherlands' RUC scheme, notably regarding interoperability with other Member States



PTOLEMUS can help your organisation define and achieve its strategy in fast moving times

• Strategy definition

- Road policy strategy assistance
- Market entry assistance
- Data strategy and analysis
- RUC strategy development
- RUC program design & planning
- Connected vehicle strategy
- Strategy orientation workshops

• Innovation strategy

- Vertical market assessments
- Product definition
- Consent management
- Data collection & analytics strategy

• Innovation delivery

- Proof of concept design & launch
- Architecture definition
- Project management

• Investment assistance

- RUC revenue business planning & simulation
- M&A strategy
- Commercial due diligence
- Technology due diligence
- Feasibility studies
- Vehicle data market sizing
- Business case development
- Cost benefit analyses

• Procurement

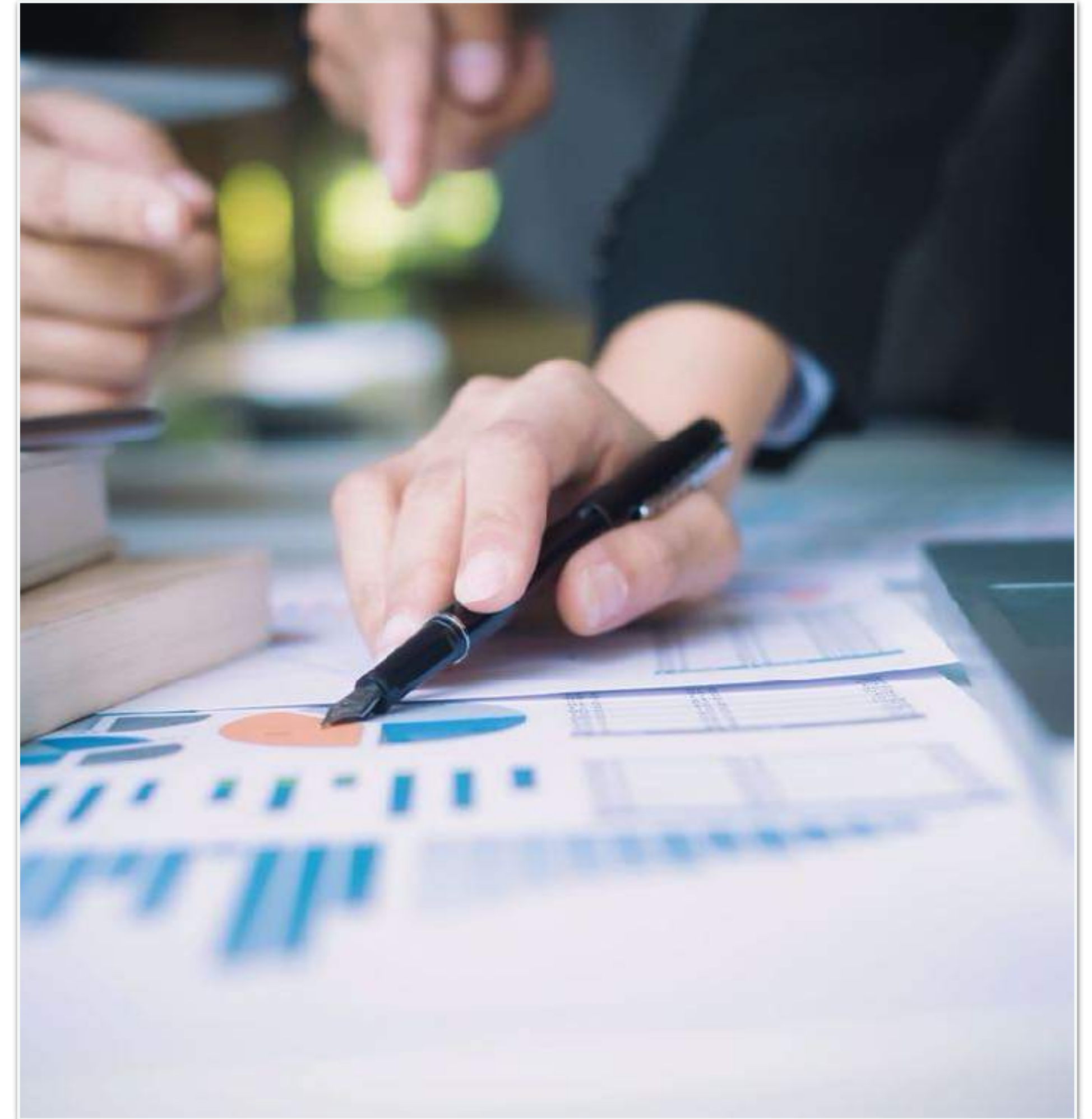
- Definition of road charging schemes
- Assistance to tenders
- Selection and sourcing of RUC technology

• Business development

- Partnership strategy definition
- Assistance to tender response

• Project management

- Assistance in management of road pricing projects
- Congestion charge project management



PTOLEMUS Consulting Group

Strategies for Mobile Companies

For any assistance in your RUC and mobility strategy, please contact:

Frederic Bruneteau

Managing Director

fbruneteau@PTOLEMUS.com

contact@PTOLEMUS.com

www.ptolemus.com

@PTOLEMUS

