PTOLEMUS Consulting Group

Understanding the EETS provisioning market

PTOLEMUS report compiled for the Ministerie van Infrastructuur en Waterstaat

October 2018

RWS wish to understand more about the role of EETS providers and EETS service provision

Ministerie van Infrastructuur en Waterstaat

- You asked PTOLEMUS to focus on **2 core questions:**
  - Understanding the market for the provision of EETS and related services to fleets of trucks >3.5 tonnes
  - Understand the extent to which the Netherlands could rely on EETS providers in the place of an NSP for its planned HGV toll
- We have framed the work into **5 key areas, covering the following:**
  1. A detailed look at the role of a National Service Provider (NSP), including examples across multiple live tolling domains
  2. A detailed look at the role of EETS providers, including use of data, typical contractural conditions with fleets and distribution of on board equipment
  3. An examination of ETC value chains across 8 tolling domains with significant HGV derived revenues
  4. An examination of the EETS provider business model, including typical revenue streams and commercial objectives
  5. PTOLEMUS' view on the evolution of the EETS market
- The results/**content from these 5 key areas have fed into a set of conclusions and recommendations addressing the 2 core questions**

Rights and disclaimer

- This report and other PTOLEMUS deliverables are the result of work conducted between August - October 2018
- This report and all PTOLEMUS deliverables are entirely confidential and remain PTOLEMUS' intellectual property
- PTOLEMUS grants to the Ministerie van Infrastructuur en Waterstaat a licence to use its deliverables within the limits of the mutually signed agreement
- Under the guidelines agreed by both parties, **this report did not include a through market consultation**, nor has it been reviewed by any third party
- As a full market consultation was not requested, **PTOLEMUS has not had the opportunity to discuss all of the relevant issues directly with each of the EETS providers**
- The content in this report is the result of in-depth market research and an analysis of information available to PTOLEMUS based on its experience and accumulated intellectual capital
- **The views and opinions expressed in this report are solely those of PTOLEMUS** and do not represent the views of the EETS providers or any other toll service provider
- PTOLEMUS has exercised its independent professional skill and judgment in the performance of this assignment with due care and diligence and believes it has delivered the full and complete benefit of its experience and expertise

This report consists of 6 distinct sections

1	The role of a National Service Provider (NSP)
2	The role of the EETS provider
3	HGV tolling value chains across Europe
4	The EETS provider business model
5	The evolution of the EETS provision market
6	PTOLEMUS' recommendations

Understanding the EETS provisioning market

1 The role of a National Service Provider (NSP)

2 The role of the EETS provider

3 HGV tolling value chains across Europe

4 The EETS provider business model

5 The evolution of the EETS provision market

6 PTOLEMUS' recommendations

PTOLEMUS

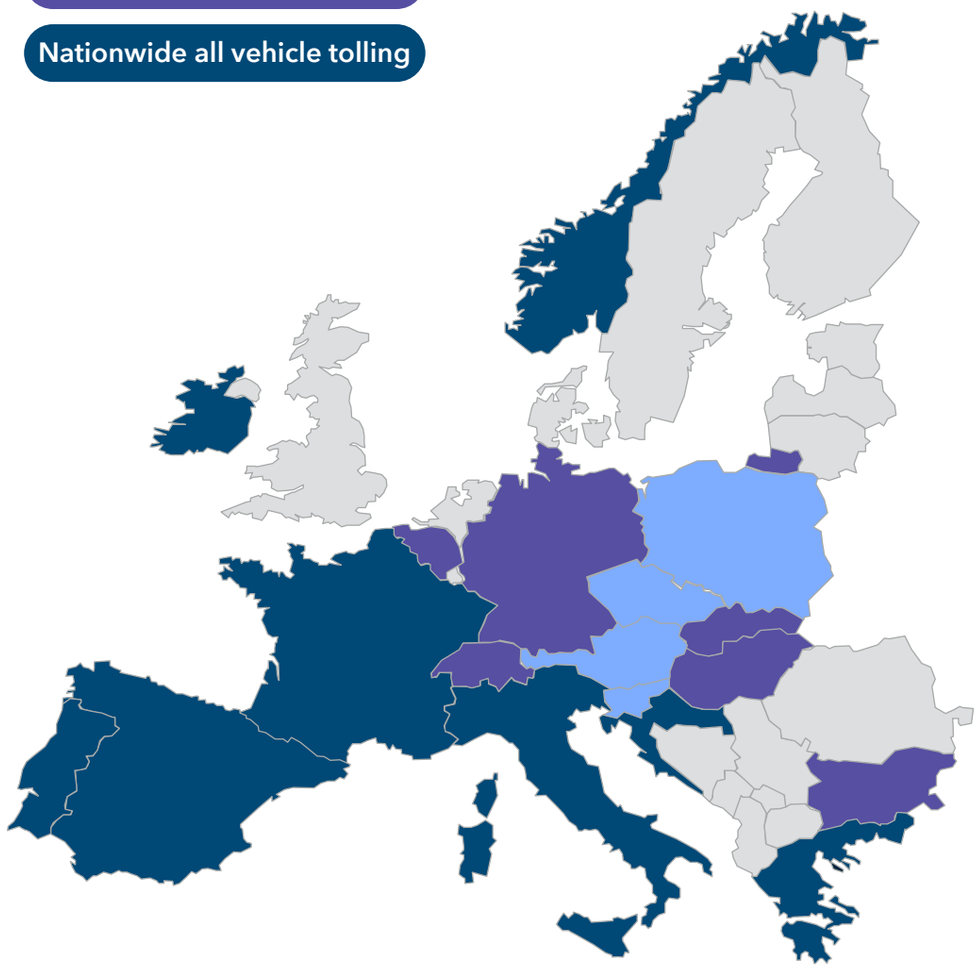
There are 10* dedicated truck tolling schemes in Europe, many with an independent National Service Provider (NSP) issuing a unique OBU

EU Member States with a NSP for HGV tolling

Dedicated HGV toll - DSRC

Dedicated HGV toll - GNSS

Nationwide all vehicle tolling

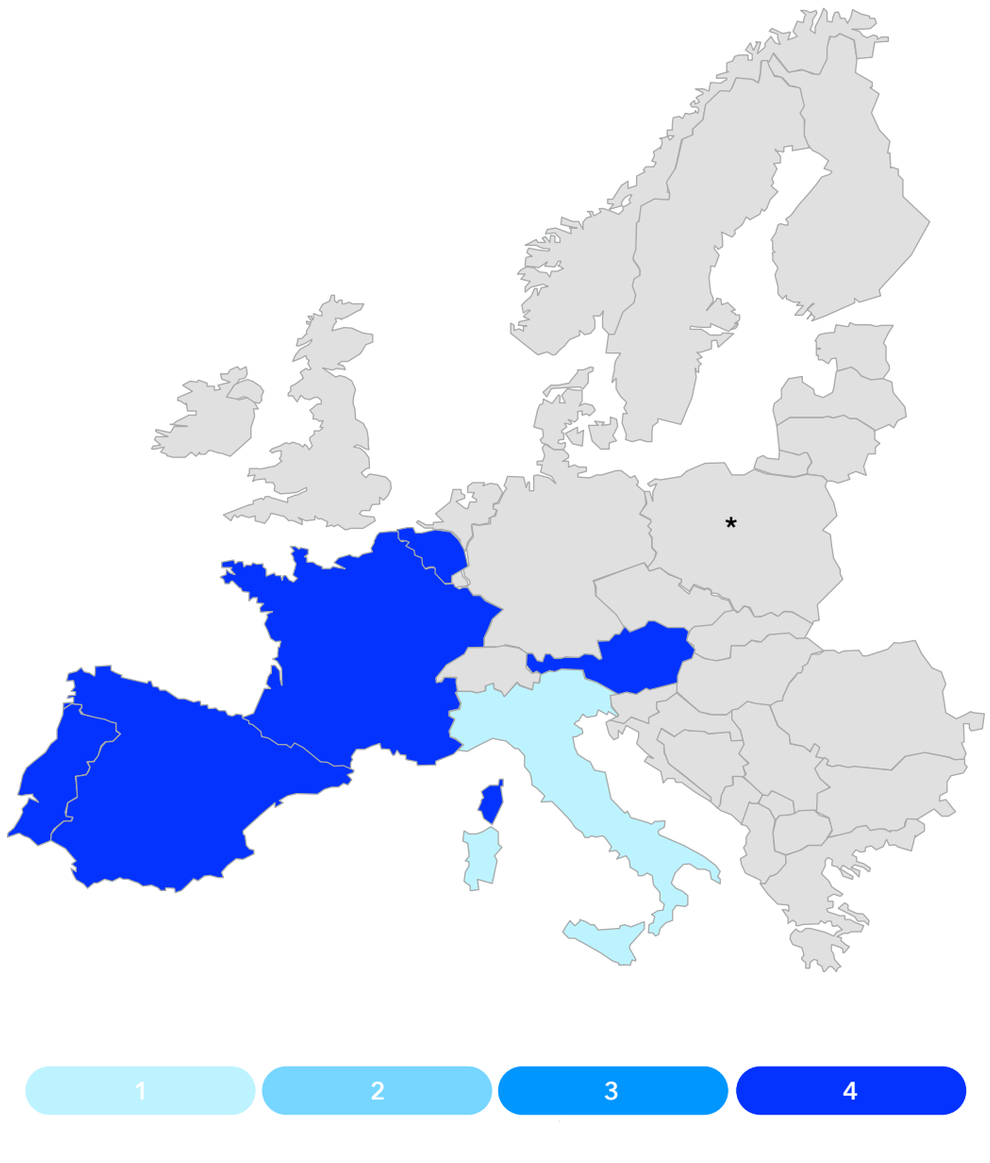


Country	Scheme	NSP	OBU	Technology	Device supplier	Network size (km, mid 2018)
	GO Direkt	GO Direkt		DSRC	kapsch	2,223
	Viapass	Satellic		GNSS	Continental	6,800
	Launch 2019	None	TBC	GNSS	Open market for OBUs	Expected 16,000
	MYTO CZ	MYTO CZ kapsch		DSRC	kapsch	1,468
	MAUT	TOLL COLLECT service on the road		GNSS	BOSCH Continental GRUNDIG	52,276
	HU-GO	None	Open market for OBUs	GNSS	Open market for OBUs	6,750
	viaTOLL	viaTOLL kapsch		DSRC	kapsch	3,660
	myto	SKYTOLL		GNSS	SIEMENS Continental	17,762
	DarsGo	DarsGo Q FREE		DSRC	Q FREE	618
	Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra	Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra		GNSS	Continental	19,833

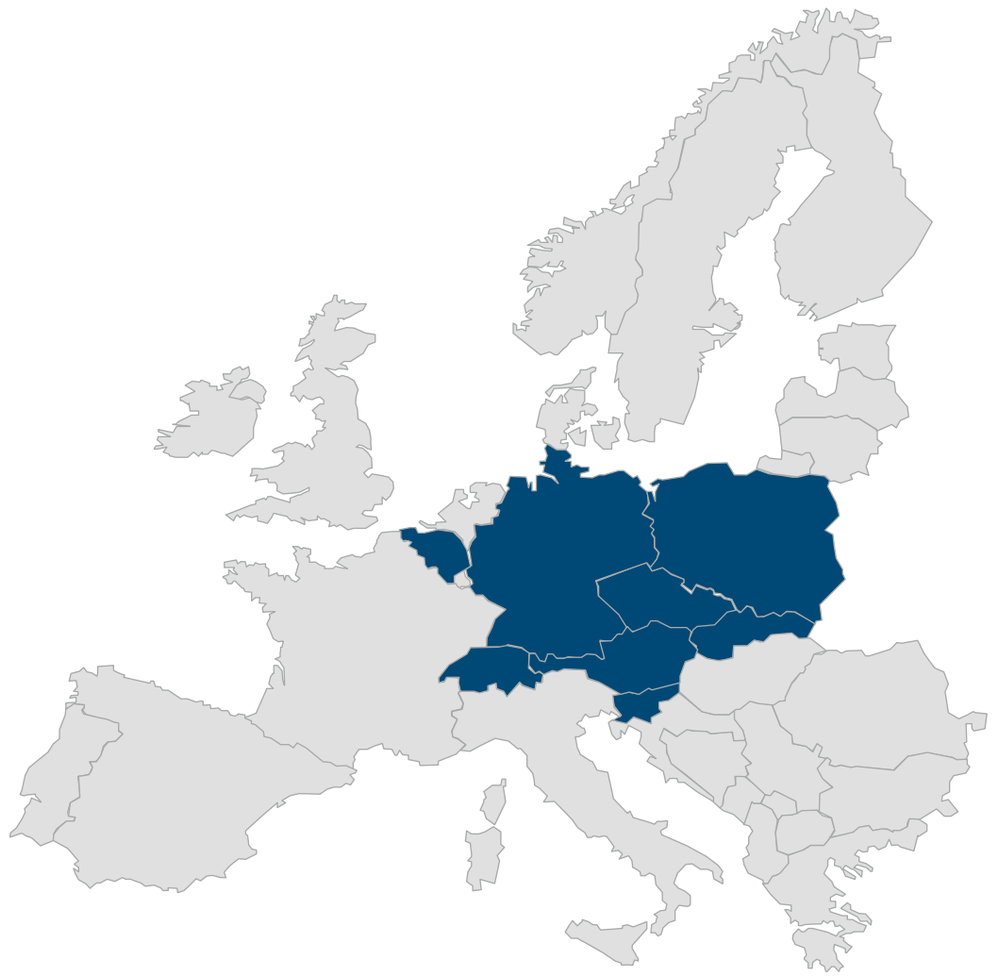
Source: PTOLEMUS *Bulgaria will launch its GNSS-based truck toll in 2019 - **Until November 2018

As of September 2018, only 6 European tolling domains welcome devices and payments from EETS providers

Number of providers offering EETS services, September 2018



HGV-only tolling domains with NSPs



Source: PTOLEMUS *EETS coverage for the ViaTOLL scheme only

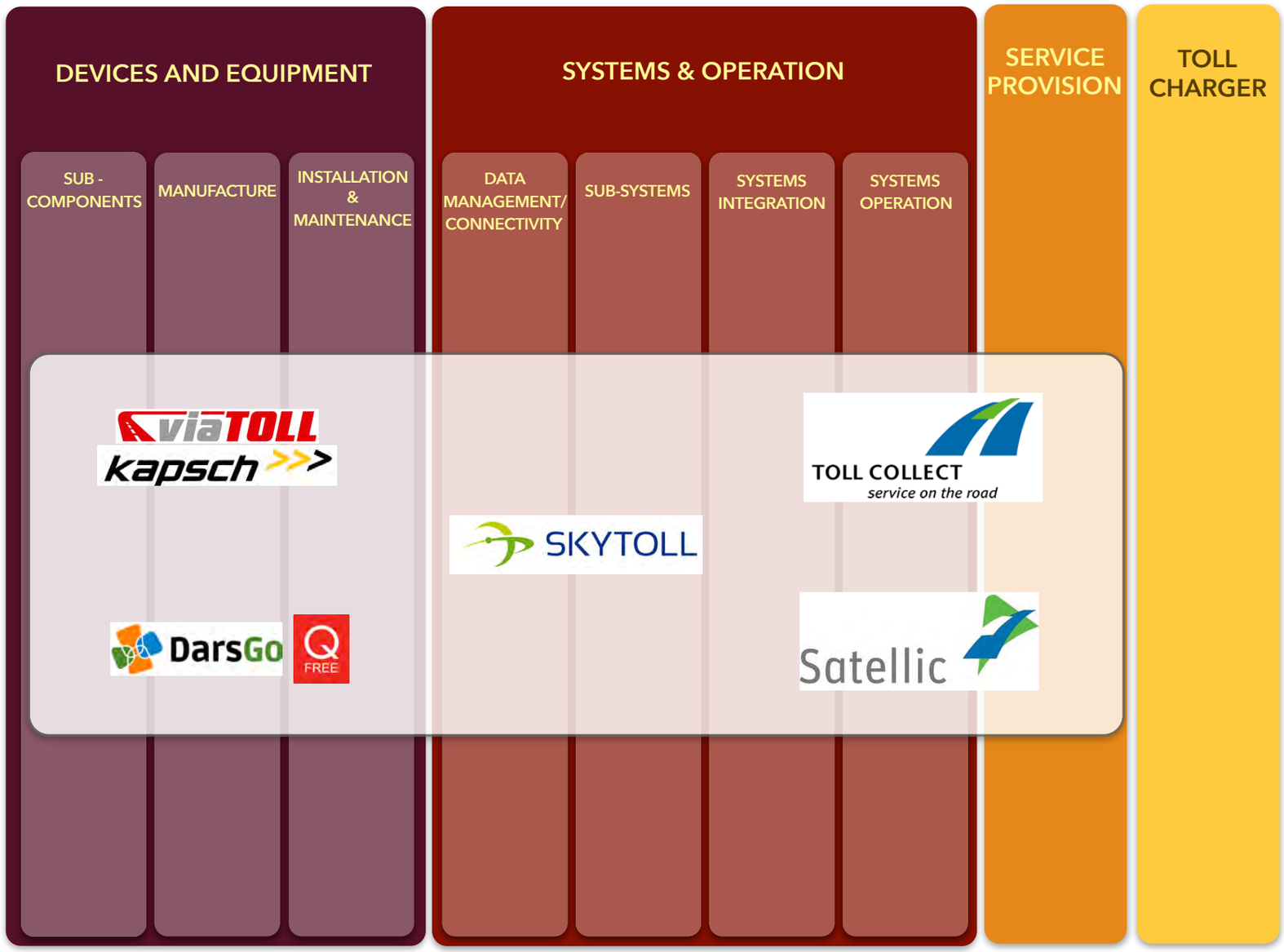
NSPs act as the sole provider of OBUs across many of Europe's largest dedicated truck tolls

- A National Service Provider (NSP), is an independent operator **delivering a full suite of tolling services** directly to the toll charger
- Examples of well know NSPs across Europe include:
  - **Toll Collect** for Germany's LKW MAUT
  - **Satellic** for Belgium's Viapass
  - **SkyToll** for Slovakia's eMYTO
- NSPs typically **operate under guaranteed long-term contracts of generally 10-15 years**
- In countries such as Slovenia, the Czech Republic and Poland, private companies Q-Free and Kapsch, respectively, fulfil the role of an NSP under the brand of the toll, rather than a specific NSP brand, such as Satellic or Toll Collect
  - In these cases, the private companies have the same long-term contracts
- **NSPs are obliged to sign contracts with all interested users**
- NSPs **enable drivers and fleets to pay the toll without additional service fees**, which can sometimes be levied by EETS or third party providers
- NSPs such as Satellic and Toll Collect **offer a range of payment options**, including pre- and post-pay and cash at dedicated terminals
- For users wishing to install an OBU, t**he NSP is responsible for collecting the company and vehicle registration information - no information concerning the driver is requested or required**
- The cost of an NSP service can be less than an interoperable EETS service, particularly for smaller fleets and/or those driving fewer cross-border kilometres due to the lack of an additional service fee, which is levied by most EETS providers *(we shall explore the EETS provider business model in greater detail in Section III)*
- As they are providing a national service, **the NSP business model does not rely on service fees from fleets or, to the same degree, on commissions from tolls** collected
- An NSP can thus be more accommodating to fleets unable to access adequate credit facilities or those wishing to pay in cash

Source: PTOLEMUS

By working in partnership with device manufacturers, when necessary, NSPs cover the entire ETC value chain

The Electronic Toll Collection (ETC) value chain



- NSPs are typically responsible for the design, construction, finance, maintenance and operation of the nationwide toll
- This includes distribution and logistics operations for the required on-board-unit (OBU)
  - To date, **Belgium's Satellic has delivered more than 740,000 OBUs** via 120 service points
  - Germany's **Toll Collect has enabled the professional installation of over 1 million OBUs**
  - Providers Kapsch and Q-Free are also responsible for manufacturing the OBUs for the HGV schemes in Slovenia, Poland and the Czech Republic, respectively

**We shall explore the specific ETC value chains for Austria, Belgium, France, Germany, Italy, Poland, Portugal and Spain in Section 3*

Source: PTOLEMUS

As well as delivering the required systems and structures, NSPs are accountable and able to manage a series of risks

- Large scale public procurement projects always carry a degree of risk - nationwide ETC schemes are no exception
- NSPs represent a single point of contact for the toll charger and a clear line of responsibility in an otherwise **complex value chain consisting of multiple partners with overlapping competencies**
    - For example, an NSP assumes responsibility for managing device supply, which might otherwise remain the responsibility of the toll charger in the absence of an NSP
- In addition to managing the set-up of the project, NSPs have proven to be reliable custodians, delivering high levels of toll capture and system performance
- As has been proven in Germany, **NSPs can be directly held to account** for issues such as:
    - Timeline for delivery of a new tolling system
    - Performance of the IT systems
    - Performance of the OBUs and enforcement technology
- **Moreover, unlike EETS providers, NSPs do not target specific customers; their service is available to all fleets without discrimination**

Source: PTOLEMUS

Image source: Satellic

Specific risks managed by an NSP range from OBU distribution to service delivery for local fleets and rare users

- We have identified several **key risks** which can be either directly managed or mitigated by the NSP, including:
  1. Insufficient **availability of OBUs, particularly at launch**
  2. Lack of **physical distribution points** from which to circulate and return EETS units quickly and on time **without complete reliance on the postal/courier network**
  3. Lack of direct **control over devices**
  4. Lack of **affordable options** (i.e. options excluding additional OBU rental fees and service charges) for smaller and local fleets
  5. Inability to **pay for unplanned or one-time journeys**
  6. Lack of **prepaid or cash based services**
  7. A **guarantee of coverage for all fleets**, including those with poor credit
  8. Lack of **long-term certainty** over service provision from EETS providers

OBUs distributed by NSPs are procured specifically to suit the technological design and requirements of a single toll domain

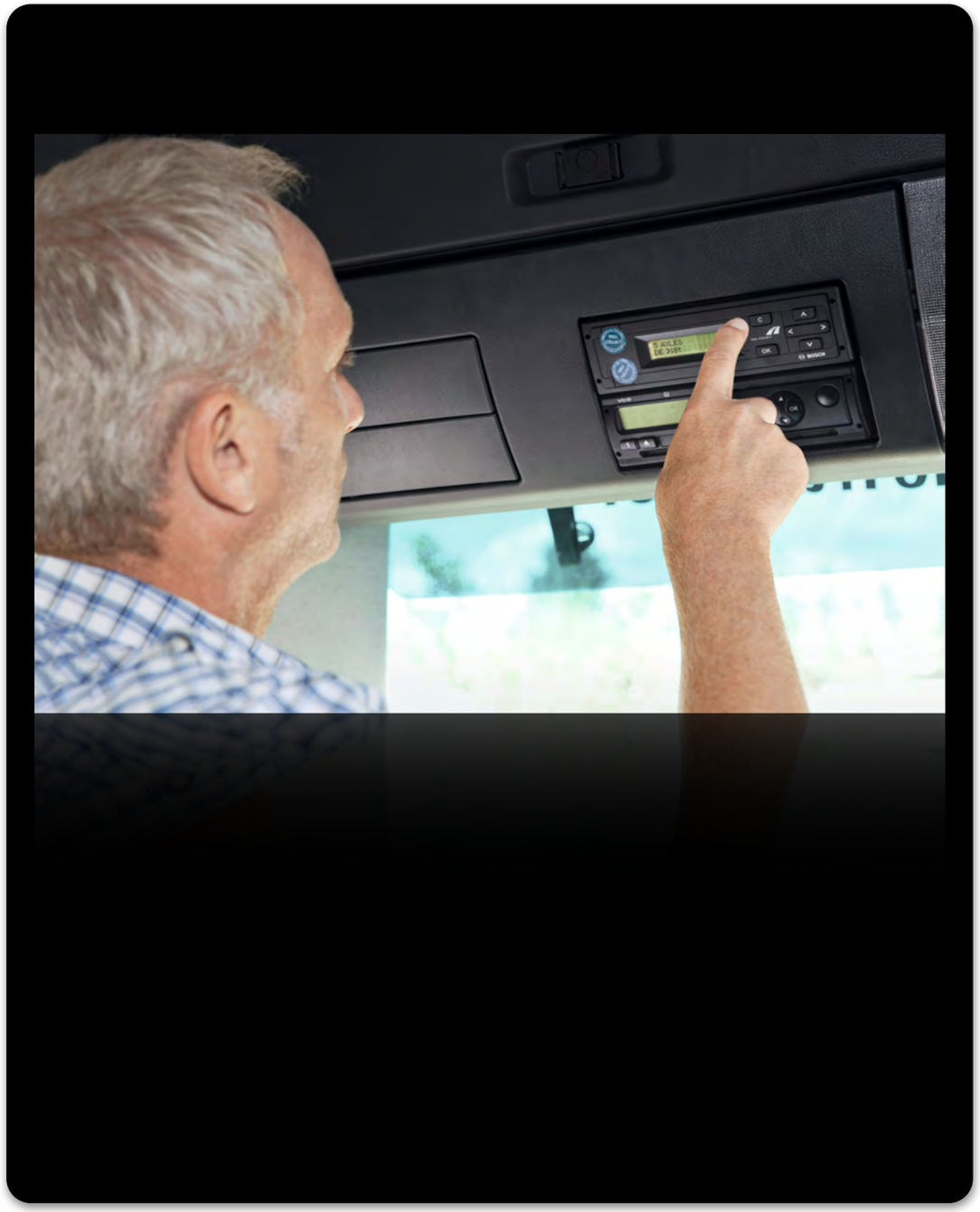
- Device suitability testing and certification can be a lengthy and costly process
- Under an NSP model, this only has to be conducted once, with one device and one provider
- **Devices distributed by an NSP are specifically designed to meet the requirements of a single tolling domain**
- This is of particular relevance for GNSS schemes, which can encounter complexities and/or requirements such as:
  - 'Canyoning' in urban areas, which may necessitate the use of multiple positioning networks (i.e. GPS, Galileo, Glonass etc.)
  - Lack of GSM network coverage in rural/remote areas, resulting in a need for enhanced device data storage
  - Storing road network/mapping data
  - Preferential transfer of tolling data ahead of VAS related data
- As we shall explore in Section 4, the provision of VAS is core to the viability of the EETS business model, but this of course creates additional demand for data transfer from the device
- Nonetheless, both **France and Hungary have successfully outsourced the supply of HGV OBUs to a range of private operators:**
  - In the case of France, only the 4 registered EETS providers - Axxès, Eurotoll, Total and Telepass - are delivering OBU-based toll payments for HGVs*
  - In Hungary, 23 individual operators, known as Toll Declaration Operators (TDOs) are licensed to sell OBUs, each must be audited on a regular basis

Source: PTOLEMUS *As of September 2018

Image source: Various (see appendix)

An NSP directly manages device failure or non-capture on behalf of the toll charger, ensuring high levels of receipts and reducing risk

- Due to their unique position and direct control over the deployed technology, NSPs are well positioned to mitigate the risk of device failure
- In the case of GNSS-based systems, many NSPs argue that direct control over the OBU can ensure greater reliability and accuracy of service:
  - Belgium's Satellic, for example, boasts a GPS precision rate of 99.7% with its dedicated OBU
- Indeed, a lack of **direct control over the device has long been used as a charge against the use of smartphones and other non-tolling specific technologies** to collect road charges
- A criticism often levied against Hungary's open device model, Hu-Go, is the lack of control over the charging device and the requirement to audit (non-EETS) third party providers on a regular basis
  - Hungary's toll declaration operators (TDOs), must guarantee service levels of at least 99%, which contrasts with the **99.9% levels cited by Germany's Toll Collect**
  - If we consider a national HGV tolling system generating €650 million in annual receipts, a loss of 0.9% would result in €5.85 million fewer tolls collected per annum
- Nonetheless, while direct comparisons between NSP device and EETS device capture rates are hard to make, **we see no reason why an EETS device could not deliver the same quality and the same rate of capture as an NSP device**
  - In support of this statement, it is important to note that the **manufacturers of NSP and EETS devices are often the same**
  - For example, Siemens and Kapsch each manufacture devices for several NSPs in addition to the majority of EETS providers



Source: PTOLEMUS

Image source: Toll Collect

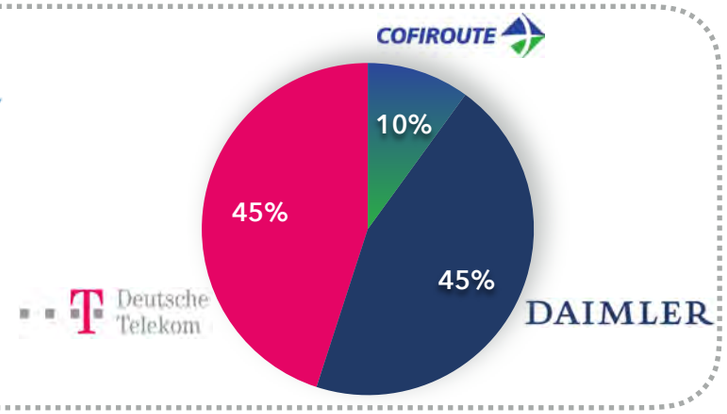
Prior to nationalisation on 1st September 2018, Toll Collect was arguably the most influential NSP in Europe

Germany

- **Population**: 80.7 million
- **Total road network:** c. 644,000 km
- **Total toll road network:** 55,252 km (September 2018)
- **Current tolling scheme:** GNSS tolling for HGVs >7.5t
- **Number of OBUs issued:** 1,081 million (end 2017)
- **Number of active EETS providers:** 0 (September 2018)

Tolled network

TOLL COLLECT
service on the road



Analysis

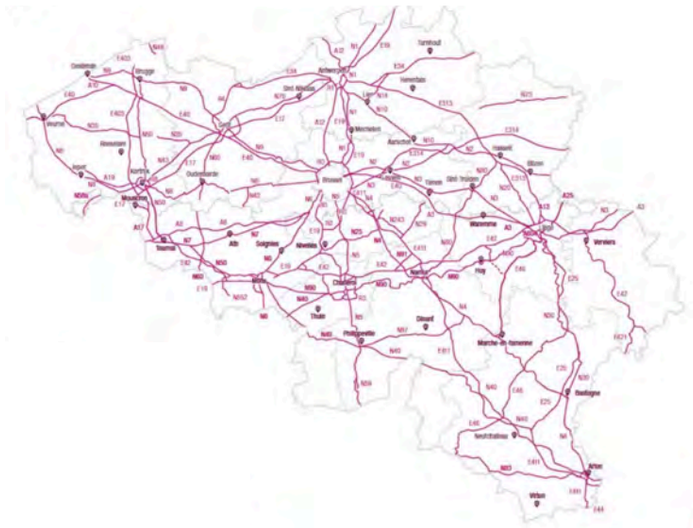
- Toll Collect remains the sole provider of OBUs in Germany
- Prior to nationalisation in September 2018, Toll Collect was owned by a consortium consisting of Deutsche Telekom (T-Systems), Cofiroute and Daimler
- The **OBU is available free of charge, but remains the property of Toll Collect** - fleets are however liable for the following costs:
  - Installation of the OBU (typically between €100 - €150)
  - Deinstallation of the OBU if the vehicle is decommissioned or sold and the business relationship with Toll Collect is terminated
  - Unlike other NSP devices, **the Toll Collect OBU cannot be self-installed**
- In addition to electronic payments via the OBU, **manual card and cash payments can be made at roughly 800 separate locations and fixed terminals** across Germany
- Following its €3.2 billion settlement with the German government in May 2018, **Toll Collect represents a clear example of how an NSP can be held to account for failures or delays** in scheme delivery

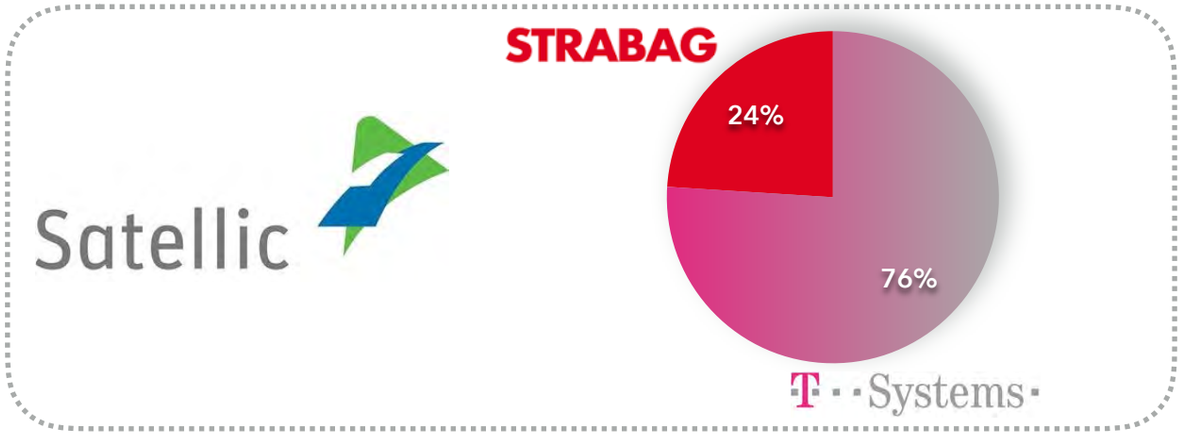
Belgium's Satellic, was designed in the same mould as Toll Collect

Belgium

- **Population**: 11.3 million
- **Total road network:** c.154,000 km
- **Total toll road network:** 6,800 km (September 2018)
- **Current tolling scheme:** GNSS tolling for HGVs >3.5t
- **Number of OBUs issued:** 770,000 (end 2017)
- **Number of active EETS providers:** 4 (September 2018)

Tolled network



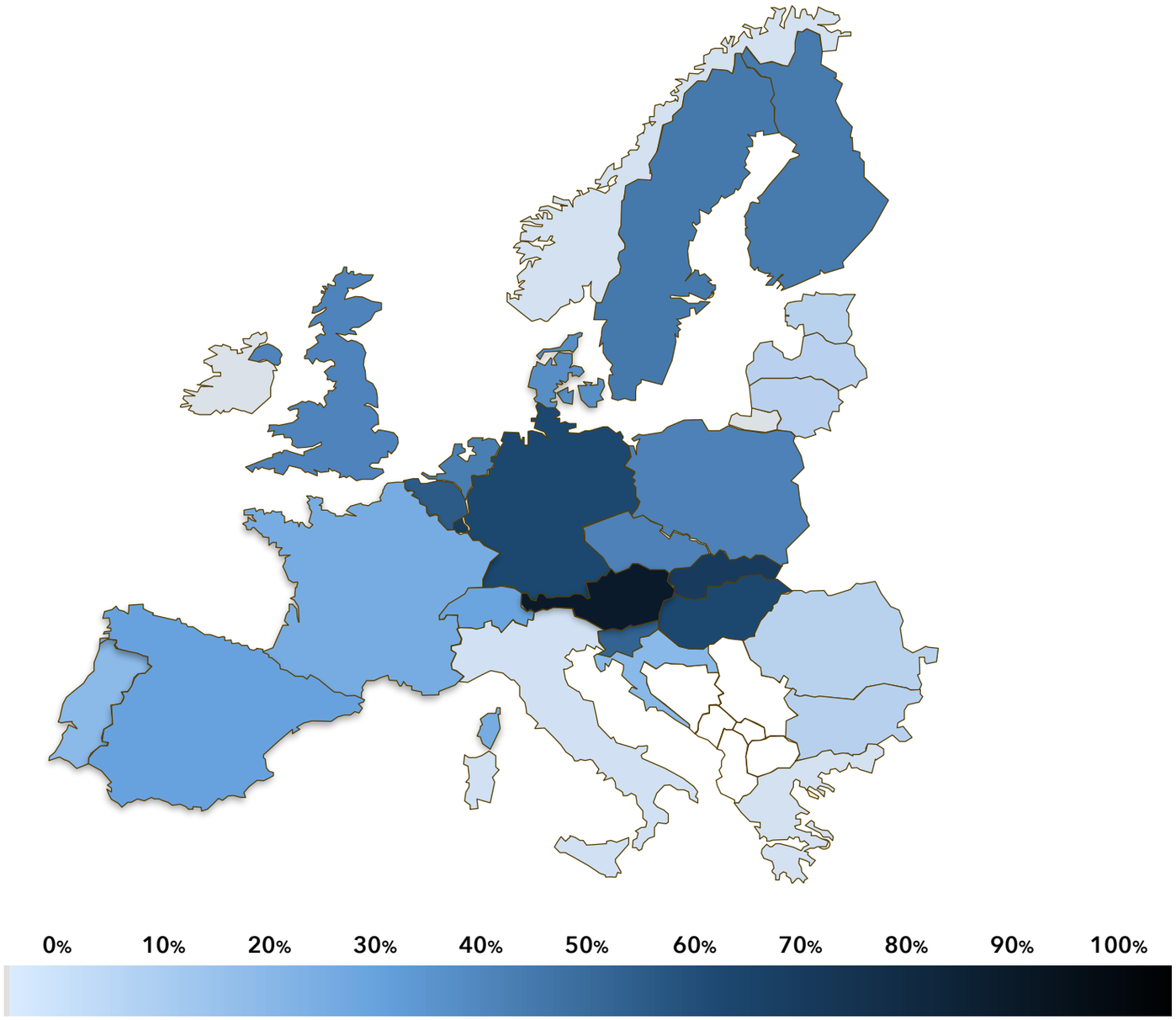


Analysis

- In July 2014, Satellic was appointed by the three Belgian regions to design, build, finance, operate and maintain the GNSS toll for HGVs above 3.5t
- Unlike other national providers such as Q-Free and Kapsch, Satellic does not manufacture its own OBUs directly, instead working with Continental to design and build the device, as is the case with Toll Collect
- A **refundable deposit of €135 is attached to each OBU**, even those used for single, pre-paid trips
- Similarly to most EETS devices, **Satellic's GNSS OBU can be self-installed** and requires only a power source from the vehicle
- Satellic offers HGV drivers in Belgium the **choice of pre- and post-payment with no additional service fee or cost**
- **Cash is accepted at more than 120 fixed terminals as part of a pre-payment only**

Many countries across Europe receive a significant proportion of foreign registered traffic…

Per cent of foreign traffic across various European countries

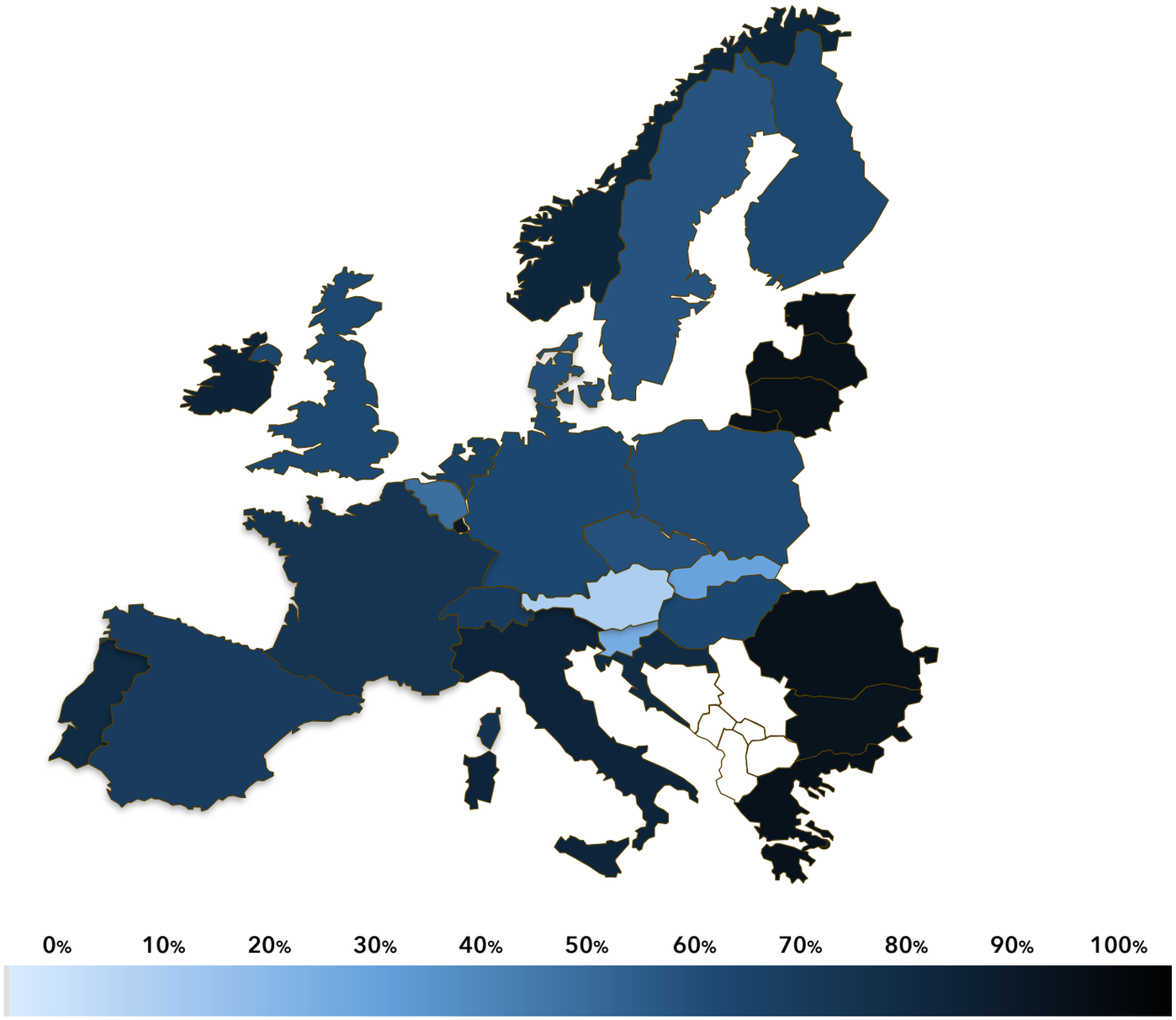


- According to our analysis, only Austria, Belgium, Germany, Slovakia and Slovenia see 50% or more foreign HGV traffic
- It is no coincidence that each of these countries have a dedicated NSP in place with a unique OBU
  - For countries welcoming a large proportion of foreign traffic, **certainty and efficiency of collection** remains a primary concern
  - It has hitherto been argued by NSPs that retaining direct control over the design and distribution of the OBU is a more effective way to deliver the highest degree of certainty over collection, although we see no reason why EETS OBUs could not deliver the same degree of service as those from an NSP
  - In most cases, **NSPs manage multiple physical toll registration and device distribution/collection points**, accepting cash payments from one-time users from foreign users
  - Many of these points are located at the roadside of common entry/exit points

Source: PTOLEMUS

…Yet domestic vehicles still represent the largest share of HGV traffic in all but a handful of European countries

Per cent of domestic traffic across various European countries



- As the nationally designated provider of tolling services, NSPs are arguably better positioned to deliver payment services to fleets travelling only within their own domestic tolling domain as these fleets have **far less need for an interoperable solution**
- This is **particularly the case for small to medium enterprises and occasional users**, as there are far fewer requirements for a service contracts or credit checks
- Almost all **NSPs provide for cash payments as well as prepaid devices**, which do not necessitate an ongoing contract between the service provider and the fleet
- Typically, there is **far less demand for additional VAS from small fleets**, who are also more likely to choose cash and/or manual payments

(We shall explore and identify typical VAS offered by EETS providers in Section 4)

Source: PTOLEMUS

OBU deposits are widely collected, but are refundable and make little contribution towards the NSP business model

Comparison of deposits collected by HGV-specific tolling schemes

Country	Scheme	OBU	Technology	Deposit	Amount	Refundable
	GO Direkt		DSRC	No - One time fee is applied*	€5	No
	Viapass		GNSS	Yes	€135	Yes
	Launch 2019	TBC	GNSS	TBC	TBC	TBC
	MYTO CZ		DSRC	Yes	CZK1550 (approx.€60)	Yes
	MAUT		GNSS	No	-	-
	HU-GO	Open market for OBUs	GNSS	Depends on provider	Depends on provider	Depends on provider
	viaTOLL	 **	DSRC	Yes	PLN120 (approx.€28)	Yes
	myto		GNSS	Yes	€50	Yes
	DarsGo		DSRC	No - One time fee is applied	€10	No
	Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra		GNSS	Yes - for foreign vehicles only	CHF1000 (approx.€900)	Yes

- Where applied, deposits range in value from €30 to €130, depending on the toll domain
- **Deposits are generally collected in order to offset the cost** of lost, damaged, misused or non-returned units, **not as a revenue generator**
- Exchange of a mechanically faulty OBU typically does not require a new deposit, nor will the original deposit be affected
- Among the dedicated HGV tolls, Austria and Slovenia are alone in levying non-refundable fees for either the collection or 'customisation' of an OBU
- Irrespective of any deposit or one-off payment, in almost all cases, **the OBU remains the property of the NSP and not the user/fleet**
- **Deposits are generally refunded in the same manner in which they were paid i.e. cash, fuel/credit card etc.**
- While the amount collected per device does vary, a **failure to refund deposits to the user does not represent a financial gain** for the toll charger or the NSP as the amount typically reflects the cost of a replacement

Source: PTOLEMUS *Acquisition of the Austrian Go-Box requires a €5 'customisation fee'

In addition to covering the cost of lost or damaged OBUs, deposits act as a powerful incentive to ensure return of the unit

Failure to re-use OBUs can result in additional costs for the toll charger and/or the NSP

- As most dedicated HGV tolls operate free-flow tolling infrastructure, **the use of an OBU is often mandatory**, even for infrequent or one-time users:
  - Use of OBUs is mandatory in countries such as Belgium, Slovenia, Czech Republic and Poland
  - Germany, Hungary and Switzerland provide for manual payments via payment terminals or entry/exit booths, removing the need for an OBU for single use trips

NSPs that collect a deposit for each device have a high circulation of OBUs, which can be continuously re-distributed

Without a refundable deposit, there is no clear incentive for one-time or infrequent users to return the OBU

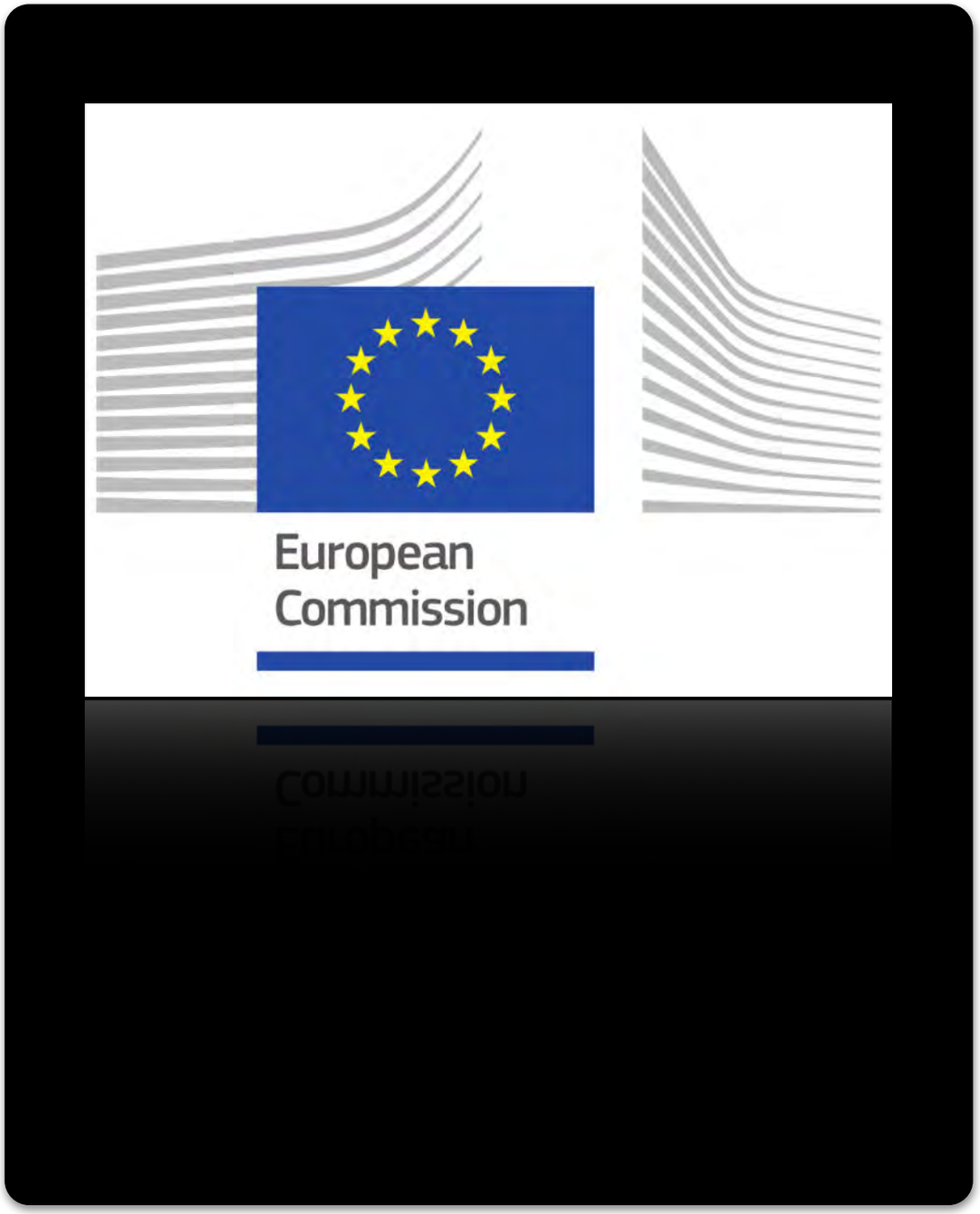
- Evidence from individual schemes demonstrates that **the rate of OBU return is directly linked to the size of deposit**:
  - Belgium's Viapass, which collects a refundable deposit of €135 per device, sends out approximately 5,000 and receives back approximately 3,000 OBUs per week
  - Slovenia's DarsGo, which does not collect a refundable deposit, has distributed over 190,000 OBUs since the April 2018 launch; fewer than 5% have been returned
  - Foreign drivers requesting an OBU for Switzerlands' HVF must pay a (refundable) deposit of CHF1000 (roughly €900) - only 0.25% are not returned
- The **inability to re-circulate lightly used OBUs will necessitate a constant purchase of new OBUs**:
  - Unlimited supply of OBUs is not always part of the agreement between toll chargers and NSPs

Source: PTOLEMUS

Image source: Various (see appendix)

The Commission remains neutral towards the use of NSPs

- The 2004 EETS Directive and subsequent Decisions and revisions do not preclude, nor do they necessitate the existence of an NSP
- As stated in the Decision 2009/750/EC, and re-affirmed in the 2018 revised approach, "**Toll chargers may keep or set up their specific national or local services**… **EETS is a complimentary service to the national or local electronic toll services** of the Member States for the payment of toll"
- It is mandatory however, for all toll chargers across the EU Member States - and therefore any relevant NSPs - to provide access to EETS providers on a non-discriminatory basis, thus **introducing competition to that would otherwise remain a monopoly** of service provision to fleets
- In addition, the revised 2018 Proposal paper makes clear that toll chargers must provide access to EETS providers on a non-discriminatory basis, regardless of the existence of an NSP
  - Furthermore, all **OBU rebates and/or discounts on toll rates resulting from the use of an OBU should be offered to EETS providers on the same basis as an NSP**

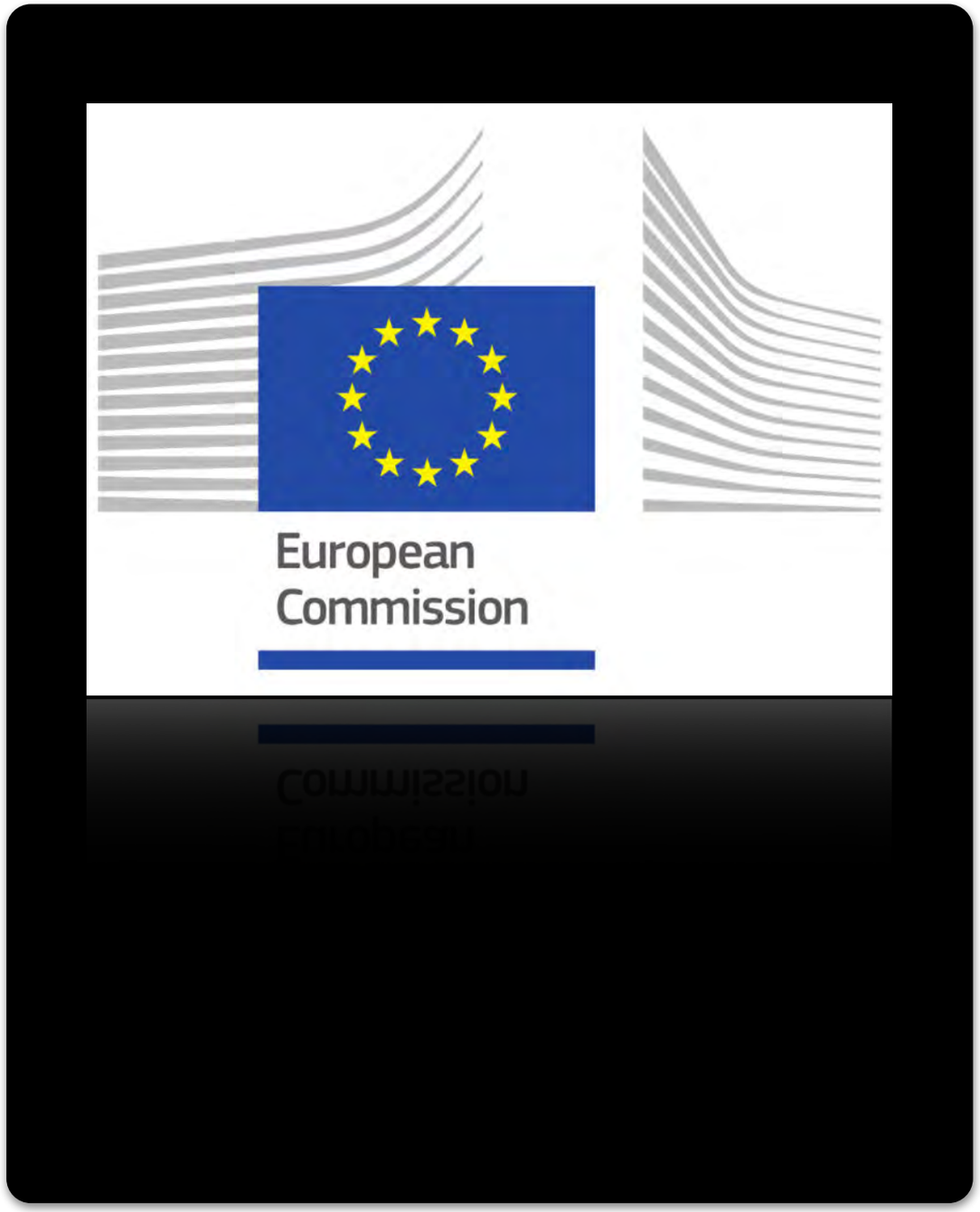


Source: European Commission

Image source: European Commission

EETS providers are not necessarily entitled to the same rate of remuneration as an NSP

- According to the latest EC Proposal, toll chargers should take the necessary measures to ensure that the methodology for calculating remuneration of EETS providers follows the same structure as the comparable remuneration for NSPs
- Nonetheless, **the precise rate of remuneration provided to NSPs and EETS providers can differ** if justified by either:
    1. The cost of specific requirements and obligations fulfilled by the NSP and not by an EETS provider
    2. The need to deduct fixed charges from EETS provider remuneration based on costs associated with EETS accreditation and the operation and maintenance of an EETS-compliant system
- Furthermore, **the revised 2018 Proposal paper solidifies a number of specific rights applicable to an NSP,** notably, the right to a guaranteed long term contract separate from those offered to other service providers



Source: European Commission

Image source: European Commission

Understanding the EETS provisioning market

1 The role of a National Service Provider (NSP)

2 The role of the EETS provider

3 HGV tolling value chains across Europe

4 The EETS provider business model

5 The evolution of the EETS provision market

6 PTOLEMUS' recommendations

PTOLEMUS

The European Electronic Toll Service (EETS) Directive has sought to usher in a single market for all European tolls

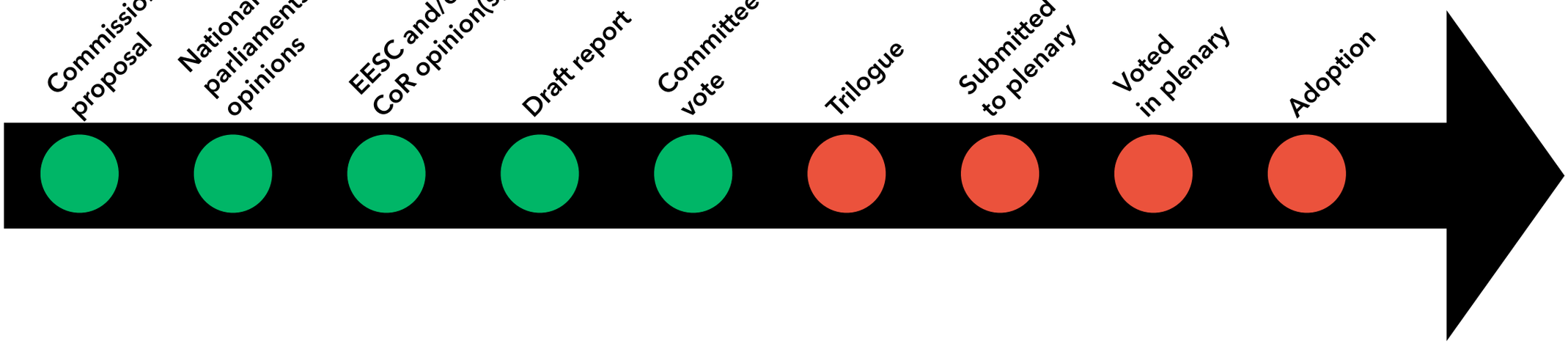
- First issued in 2004, the EETS Directive was designed to bring parity and **create a level playing field for HGV tolling payments** across Europe
- **One contract, one device** was and remains the mantra of EETS
- However, the demand for total European coverage raised **questions concerning the business case** among many potential providers
- Following 10 years of quagmire, a relaxation of the Commission's desire for pan-European coverage (encouraged by the REETS project) through a single provider has led service providers to begin investing in EETS platforms, with varying levels of coverage
- Despite its difficult birth, **EETS is a key consideration among toll chargers and operators when launching new systems** and reassessing existing ones
- Almost all large European tolling markets are now either open or have plans to open to EETS devices
- **Having an EETS-compatible device and enabling EETS services has become a market demand-driven necessity for any new toll service provider entering the market**

Source: European Commission

Image source: European Commission

Since its publication, there have been multiple updates and revisions to the 2004 Directive

Proposed timeline for the latest revision of the EETS Directive, as of September 2018



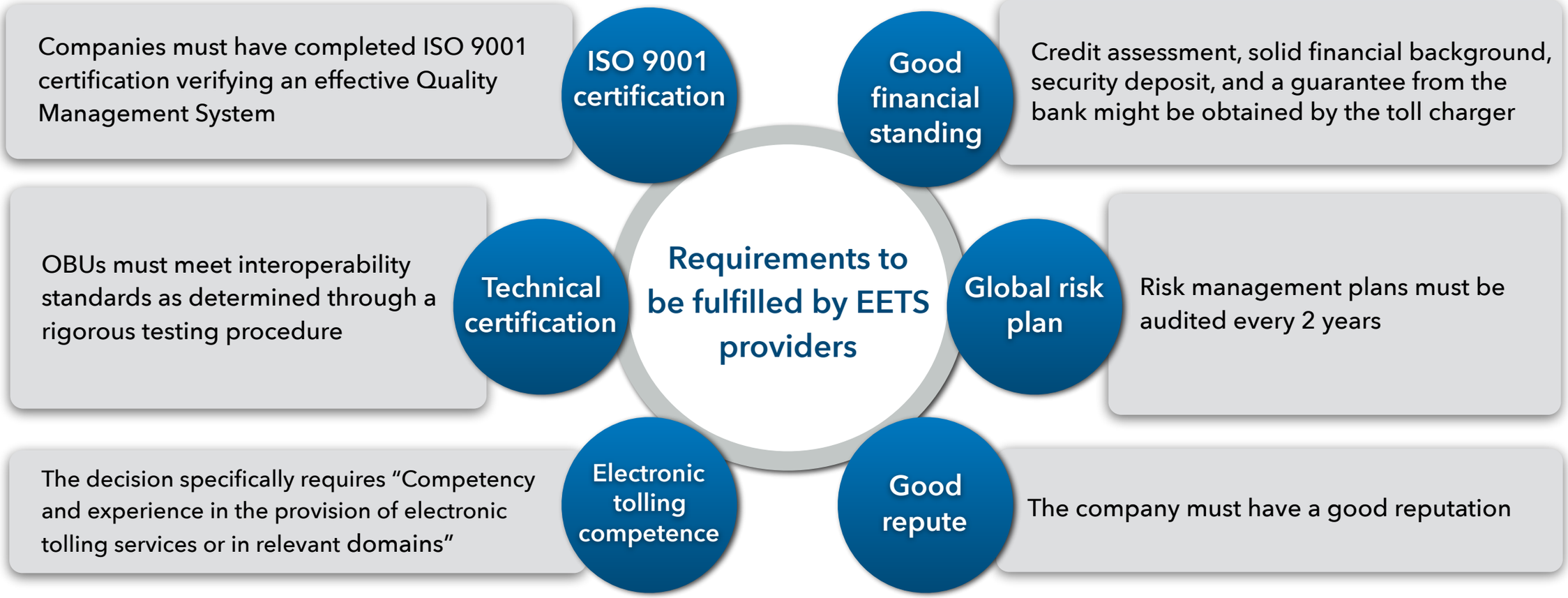
- In **2009, a supplementary Decision was published** further defining the EETS service and the technical aspects of the relationships between Member States, toll chargers, EETS providers (EETS providers), and EETS users or customers
- In 2013, it was recognised by the European Parliament that existing moves to achieve full interoperability between all Member States had been a failure
- Almost 10 years later, an amended general approach has been proposed, further **regulating the functional parameters, rights, obligations, and relationships of each of the stakeholders**
- In June 2018, both Parliament and Commission agreed upon their position concerning the new approach, herein referred to as 2018 Proposal, which includes substantive moves towards solving the issue of cross-border enforcement through a new legal framework for vehicle registration data exchange
- Nonetheless, **disagreements between Member States remain, particularly concerning issues such as the remuneration of EETS providers,** which is still a highly contentious issue in Europe's largest national HGV tolling domain, Germany
- Additionally, the 2018 Proposal indicates that **the Commission will further define the obligations of all parties within 6 months of the entry into force of the proposal**

Source: PTOLEMUS

Image source: European Commission

The Directive outlines several requirements for a company to become an EETS provider

EETS providers' obligations to the toll charger, and requirements for registration, represent **costly barriers to entry** for many potential providers. Originally, the Decision required that once registered, EETS providers must conclude contracts covering all EETS domains in at least 4 Member States within 36 months.



Source: PTOLEMUS

There are currently 9 registered EETS providers, although only 8 have an active service proposition across various Member States

Geographic coverage of the 8 active EETS providers (as of October 2018)

	Axxès	TOLL 4 EUROPE	eurOTOLL	TELEPASS
HQ	France	Germany	France	Italy
Date of EETS registration	December 2015	February 2017	June 2016	March 2016
EETS device coverage	*	Service due to launch in late 2018		**

	TOTAL	EUROWAG	BRO BIZZ	TOLLTICKETS
HQ	France	Czech Republic	Denmark	Germany
Date of EETS registration	February 2016	March 2017	September 2016	February 2018
EETS device coverage		Service due to launch in late 2018/early 2019	Coverage via DSRC device only	*

- **AGES is also a registered provider in Germany, but seems to have abandoned all EETS-related activities**
- Currently, four companies are active in France, Belgium, Spain, and Portugal
- The Italian market is largely controlled by Telepass, and utilises DSRC UNIFO UNI 10607, an alternate DSRC protocol, making it **more complicated for other providers to access the network**
- **All EETS providers are negotiating with Germany** to offer access to the LKW MAUT network
  - **All aim to begin delivering German toll payments in late 2018 /early 2019**, although it remains to be seen whether this will be achieved
- Unlike other providers, **tolltickets does not sell its EETS service directly to fleets**, opting instead to act as a white label provider, predominantly for fuel card issuers
- It is unknown whether BroBizz has plans to launch a fully interoperable EETS ready device, including GNSS functionality

Source: PTOLEMUS - Note: *Full coverage for Austria is expected to begin in 2018 **Coverage in Poland only includes the A4 highway and is not compatible with the national ViaTOLL network

Where active, all EETS providers are required to provide a payment guarantee to the toll charger

- An EETS provider is a private business that acts as the **intermediary between toll chargers and their customers, namely HGV fleets**
- EETS providers must meet strict obligations for registration and certification, the main obligation of which is the **development of an interoperable on-board unit (OBU)**
- The OBU must meet the technical specifications outlined in the Directive, and further defined in the 2018 Proposal including the ability to **operate across Member States** using one or more of
  - Satellite positioning,
  - Mobile communications
  - 5.8 GHz microwave technology
- The 2004/52/EC Directive stipulated that, "**a single contract** between between the clients and the operators offering the service" is required to allow seamless access to the whole network
- EETS providers also relieve the toll charger from the burden of **managing customer service** and **technical issues related to hardware and software development, and maintenance**
- In order to deliver tolling services and as owners of the customer relationship, **EETS providers must provide a payment guarantee to the toll charger**

Source: PTOLEMUS

Risk of non-payment is the primary reason why EETS providers may refuse service to potential customers

EETS providers refuse customers to protect themselves again risk

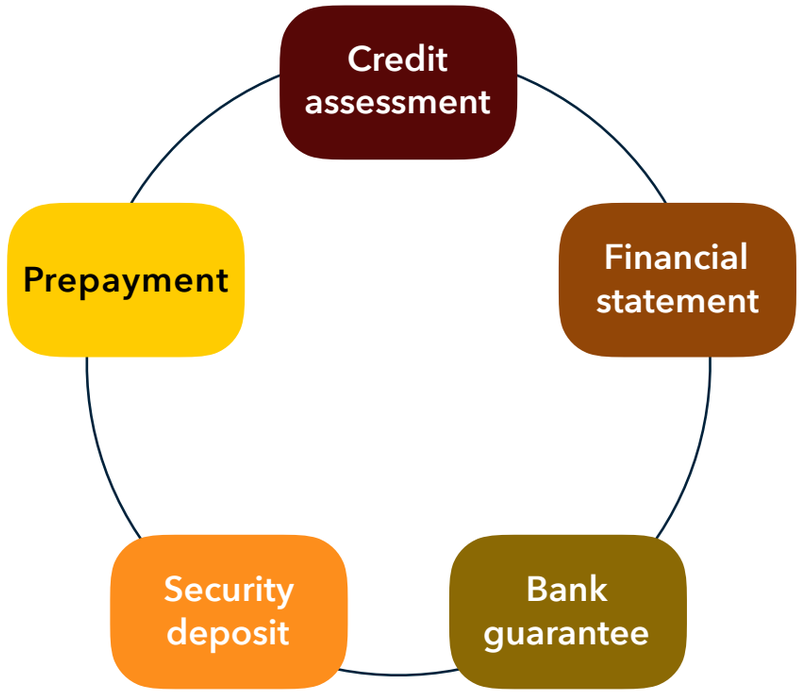
- Under the EETS business model, **EETS providers are liable to the toll charger** for the tolls accumulated by their customers and must pay all tolls due by their clients
- Unlike NSPs, which are obliged to work with all parties, EETS providers **have the right to decline customers** that are unable to provide sufficient proof of means for toll payment
- Furthermore, as private businesses (and like NSPs), EETS providers have obligations to their shareholders and the need to make a **return on investment**
- **EETS providers are operating in a highly competitive market** and are largely dependent on small margins, meaning there is little room for higher risk clients or customer relationships
  - Currently, 5 providers are already active in France, Belgium, Spain and Portugal, with more due to launch services in late 2018 / early 2019
  - **All EETS providers will compete in the largest markets with the highest levels of foreign registered traffic**, leaving little room for differentiation in terms of service coverage
- Revenues are earned through service fees from customers for toll payment and value-added services, as well as through commissions from the tolling domain
- Margins are thin as
  - Most EETS providers offer the same or similar value added services and
  - Where applicable, discounted toll rates for using an OBU (such as those offered in France or Italy) must be offered on a uniform basis to all EETS providers, making it hard for any one provider to gain competitive advantage through lower tolls
- Guaranteeing that customers are financially secure and able to cover the estimated toll usage **protects the EETS providers against total liability** in the case of noncompliance

Source: PTOLEMUS

To ensure that customers' tolls will be paid, EETS providers set the same standards that toll chargers place on them

Providers use 5 main tools to guarantee that the toll charge will not go unpaid

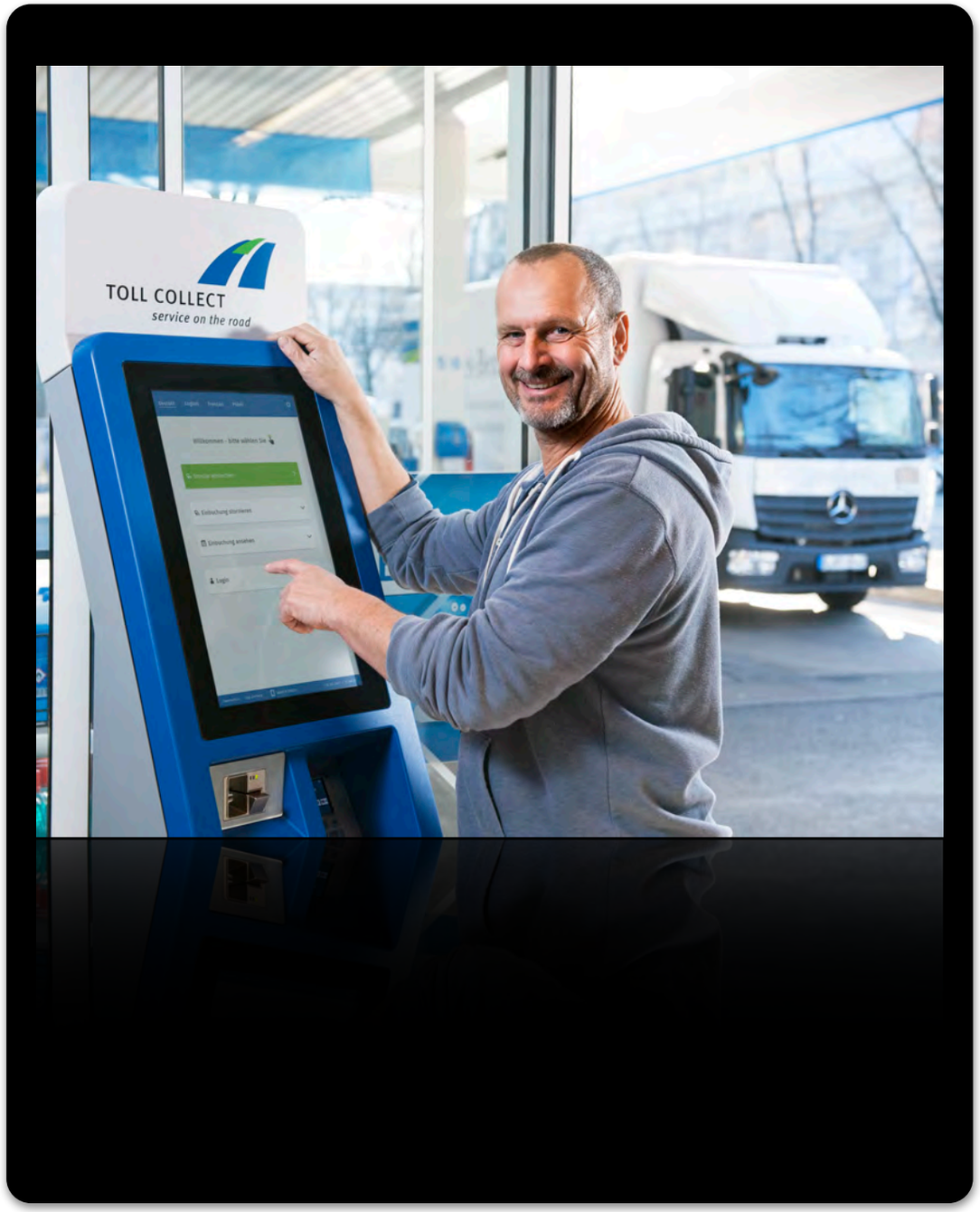
- To offset the financial burden required to meet registration requirements, **EETS providers apply the same strict standards to potential customers, hedging their risk and recouping investment in certification**
- For example, Austria requires credit insurance for each EETS provider - if unable to secure it, the EP must provide another source of financial security, as noted:
  - *"The amount of the financial security is to be set by the Toll Charger on the basis of the **total toll transactions paid by the EETS provider in the preceding year.** If the EP is a new company where previously no business relation in the scope of EETS existed, the amount is to be set on the basis of the **expected average monthly total number of toll transactions that the EETS provider would pay on the basis of the average toll per contract estimated** in its business plan"*
- To ensure the EETS providers' ability to meet these demands, they may **require extensive information on the financial solvency** of potential customers. For example, BroBizz's terms and conditions specifically state that
  - *"Prior to entering an Agreement for payment by invoice, BroBizz A/S may carry out a credit assessment on the customer. BroBizz A/S may also, from time to time, seek information on the customer's financial situation. BroBizz A/S **reserves the right to demand collateral from the customer when entering the agreement and thereafter**"*
- Not all financial tools are used every time by every company and EETS providers typically utilise various tools depending on the situation, for example, a company with outstanding credit and a bank guarantee, may not need to prepay or submit a security deposit
- On average, security deposits amount to between 1 - 3 times the estimated monthly usage of each OBU, **reflecting the percentage of the amount of the financial security burden** that EETS providers face during registration



Source: PTOLEMUS

EETS providers will refuse credit to fleets with bad debt or lack of credit history, which does not represent a refusal of service

- By providing a payment guarantee to the toll charger and enabling post-payment (generally once an assessment of typical usage has been made), **EETS providers are effectively delivering a credit service to fleets**
- In order to control the risk associated with issuing credit facilities, **EETS providers conduct credit checks on all customers and will refuse post-pay services for a number of reasons** including if:
  - The fleet is known to be bankrupt or insolvent
  - A previous agreement with the fleet has resulted in non-payment
  - The fleet is known to have made fraudulent claims
  - The fleet is known to have had agreements terminated with other service providers
  - The fleet is adjudged to have insufficient capital to pay the estimated tolls
- However, **in cases where fleets are refused credit/post-payment facilities, some EETS providers** (such as Axxès and Eurowag) **have prepayment options in place**, similar to those offered by NSPs such as Satellic
  - Under the prepaid model, fleets will still have access to an OBU, upon payment of a refundable deposit
  - Prepayment models require fleets to ensure that there is available credit in their EETS account at all times, otherwise service will be withdrawn



Source: PTOLEMUS

Image source: Toll Collect

Once accepted, customers can order OBUs within a customer portal or from an agent

- Unlike NSPs, EETS providers typically do not have fixed payment terminals or service points within the country of service
- OBUs are **designed to be self-installed** and are distributed primarily through the postal/courier network
- In most cases, they attach to the HGV's windscreen and are powered through the vehicles CLA power source
- EETS providers do not often request deposits for OBUs, but require bank guarantees, security deposits, or prepayments for the estimated usage
    - Unlike some NSPs, EETS providers do not cater specifically for single use OBUs, which can be immediately collected via a vending machine or fixed location
    - Financial guarantees usually equal **1 month of estimated consumption,** though in some cases, it is as high as 3
    - This, combined with the service contract, reduces the risk of OBU non-return
- A company may request multiple OBUs but will need to also provide a **security deposit** for the estimated consumption of each one
- Similarly to NSPs, **the OBU remains the property of the EETS provider** at all times
- EETS providers offer **complimentary replacements for OBUs that are malfunctioning**, as long as the malfunction is not deemed to be the fault of the customer
    - Eurotoll will, for example, replace the OBU if malfunctioning. However, Eurotoll's terms state that if an OBU is reported to be in a poor state of operation but is actually operational, a processing fee will be applied

Source: PTOLEMUS

Image source: Various (see appendix)

EETS providers are required to collect several data sets to deliver the required tolling services

- **Identification and contract data:** data including name, address, email, phone number
- **Connection and location data:** data including IP address, connection logs, geolocation
- **Transaction data:** details of the toll transaction such as vehicle class information and toll context data
- **Commercial data:** data collected to assist in customer service, provide subscribed services, manage the customer relationship, determine satisfaction and for statistical analysis
- **Invoicing data:** data collected for payment means and history, transaction data, and invoices
- **Behaviour data:** data on subscribed or contemplated services, and behaviour on web sites and tools (viewed pages, connection time, number of views)
- **Traffic data:** data on road usage and congestion

Source: PTOLEMUS

Collected data is used in multiple ways to deliver upon the requirements to both users and toll chargers

How is the data used?

- Collecting, collating and understanding toll data is fundamental to levying the correct fee and ensuring all parties are correctly charged and remunerated
- As such, the collected data sets are utilised in various ways:
  - **Identification and contract data** is used for the fulfilment of the contract
  - **Transaction data & vehicle information data** are used to determine the vehicle weight class and the amount of toll owed and **invoicing data** is used to collect that amount
  - In addition, vehicle specific data is used by the toll charger to verify the correct EURO exhaust emission class has been applied
  - **Random samples from this data are used to determine an error ratio for the EURO emission classes**
  - **Connection and location data,** along with contract data, is
    - Compiled into white and black lists that enable toll chargers to identify non-functioning OBUs and enforce alternative means of payment from users
    - Used for **traffic measurement and analysis** and statistical analysis
  - **Commercial data** is required for the management of the customer relationship and the provision or supply of ordered or subscribed services and analysis of the success of those services
  - **Behaviour data** is used to better understand customer segments and user needs and experience
  - **Traffic data** is used for the purpose of designing policy and non-commercial uses

Source: PTOLEMUS

Black list and white list data is compiled and provided to toll chargers for enforcement of non-compliant customers

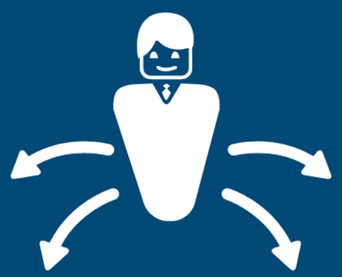
How is the data used?

- **Black list data** is OBU related data compiled to provide the toll charger with a list of current customers with invalidated and malfunctioning OBUs
  - Article 4a.7 of the 2018 Proposal allows Members States access through this data by stating: "Member States shall take the necessary measures to ensure that EETS providers who provide the EETS on their territory **keep lists of invalidated OBE related to their EETS contracts** with the EETS users"

- **White list data** is contractual and vehicle identification data compiled to:
  - invoice EETS providers for users for the toll charges of **OBUs that appear on the black list**
  - identify users that do not have a contract with an EETS solution and **enforce toll payment using alternative solutions**
  - conduct sample checks of **EURO emission classes**

- This is justified in Article 4a.12 of the 2018 Proposal which makes it clear that the Toll Charger is able to obtain data relating to the **vehicle involved in a suspected failure to pay a road fee** and to the owner or holder of that vehicle who is a client of this EETS provider

Toll domain statements included clauses requiring that EETS providers share specific types of data



Who are the recipients?

- **The toll charger is the primary recipient of data**
- All **domain statements require that company identification and contract data, transaction data, and connection and location data be shared** for the development of white and black lists
- In addition, the 2018 Proposal makes it clear that toll chargers may access the data required relating to the owners or holders of these vehicles **to comply with its obligations towards tax authorities**
  - Furthermore, **the Proposal includes provisions to further facilitate the cross-border exchange of data concerning any failure to pay road tolls/ fees** - the proposed procedure will adapt elements of Directive 2015/413, which facilitates cross-border change of information relating to road safety traffic offences
- The toll charger also has access to **traffic data** for the purposes of understanding and modifying traffic management
- **Service providers and commercial partners** who assist in the implementation of the scheme and the management of the contract
- **Parent companies** potentially share data across the wider business

Source: PTOLEMUS

The EETS Directive and subsequent Proposal paper make clear that personal data is collected and required for processing

Data processing regulation is governed by the GDPR* and national laws

- The protection of personal data held or generated by any EETS provider is enshrined within item (17) of the 2004/52/EC Directive and item (4) of 2009/750/EC
- The Directive covers the exchange of data between all parties involved in the provision of EETS services, namely:
  - Member states
  - Toll chargers
  - EETS/service providers
  - Road users
- Within the Directive, it is understood that "**the introduction of electronic toll systems will entail the processing of personal data**"
- Nonetheless, it is made clear that "the right to protection of personal data is explicitly **recognised by Article 8 of the Charter of Fundamental Rights of the European Union"**
- Furthermore, EETS providers must ensure the processing of personal data necessary for the operation of an EETS service in accordance with Directives 95/46/EC and 2002/58/EC - the former has now been superseded by 2016/679 (GDPR)
- These laws were further defined by the 2018 Proposal which states that the provisions of Regulation (EU) 2016/679 and the national laws, regulations or administrative provisions transposing Directives 2002/58/EC and (EU) 2016/680 shall apply to personal data processed under this Directive

Source: PTOLEMUS - Note: * General Data Protection Regulation

Currently, no EETS provider sells customer data to any third parties, nor have they expressed any plans to*

Subsidiaries may still share data with parent companies, though not to external third parties

There is **no indication that EETS providers sell data to any third parties**…

For example, the t**olltickets privacy policy** states: "Your data is never transmitted to third parties for reasons other than the following.

We only transmit your data to third parties if:

- You have granted your express consent for us to do so (under Art. 6 para. 1 clause 1 lit. a GDPR)
- This is necessary to carry out a contractual relationship with you (Art. 6 para. 1 lit. b GDPR)
- We have a legal obligation to transmit such data (Art. 6 para. 1 lit. c GDPR)
- Transmission is necessary to assert, exercise, or defend against legal claims, and there is no reason to assume that you would have an outweighing protected interest in not transmitting your data (Art. 6 para. 1 clause 1 lit. f GDPR).

In such cases, however, the scope of data transmitted is restricted only to the necessary minimum.

Our Data Protection Provisions conform to applicable data privacy laws, and data is only processed in the Federal Republic of Germany / European Union.

Data is not transmitted to third party countries, nor do we intend to do so."

…however, it might **be shared with parent companies or subsidiaries**

The **DKV web site** states:

"As DKV is co-owner of the data as a result of its participation in the Toll4Europe joint-venture, we will have instant insight in our purchases and track & trace records as soon as all countries have been integrated in the on-board unit."

Source: PTOLEMUS - Note: * Based on information available to PTOLEMUS

While complete anonymity is largely impossible, drivers are able to remain anonymous, provided they are not also the vehicle owner

- The revised EETS Proposal outlines the requirement of EETS providers to provide toll chargers with the **identification data needed to calculate and apply the toll, and certify the calculation** of the toll
- As mentioned in the white list within Section I, contract data is also required to **aid in enforcement of non-payment**
- Furthermore, EETS providers currently **require invoicing for payment, making anonymous payments impossible**
- EETS providers offer OBUs to customers without deposit, but with the stipulation that the **customer account will be charged** if not returned, or if returned damaged
- The **enforcement of the clauses within the EETS provider / customer contract** could not be possible whilst retaining total anonymity
- However, the data collected is that of the contract holder, and the OBU is registered to a specific vehicle, so **the driver may remain anonymous, provided they are not also the vehicle owner**

Understanding the EETS provisioning market

1 The role of a National Service Provider (NSP)

2 The role of the EETS provider

3 **HGV tolling value chains across Europe**

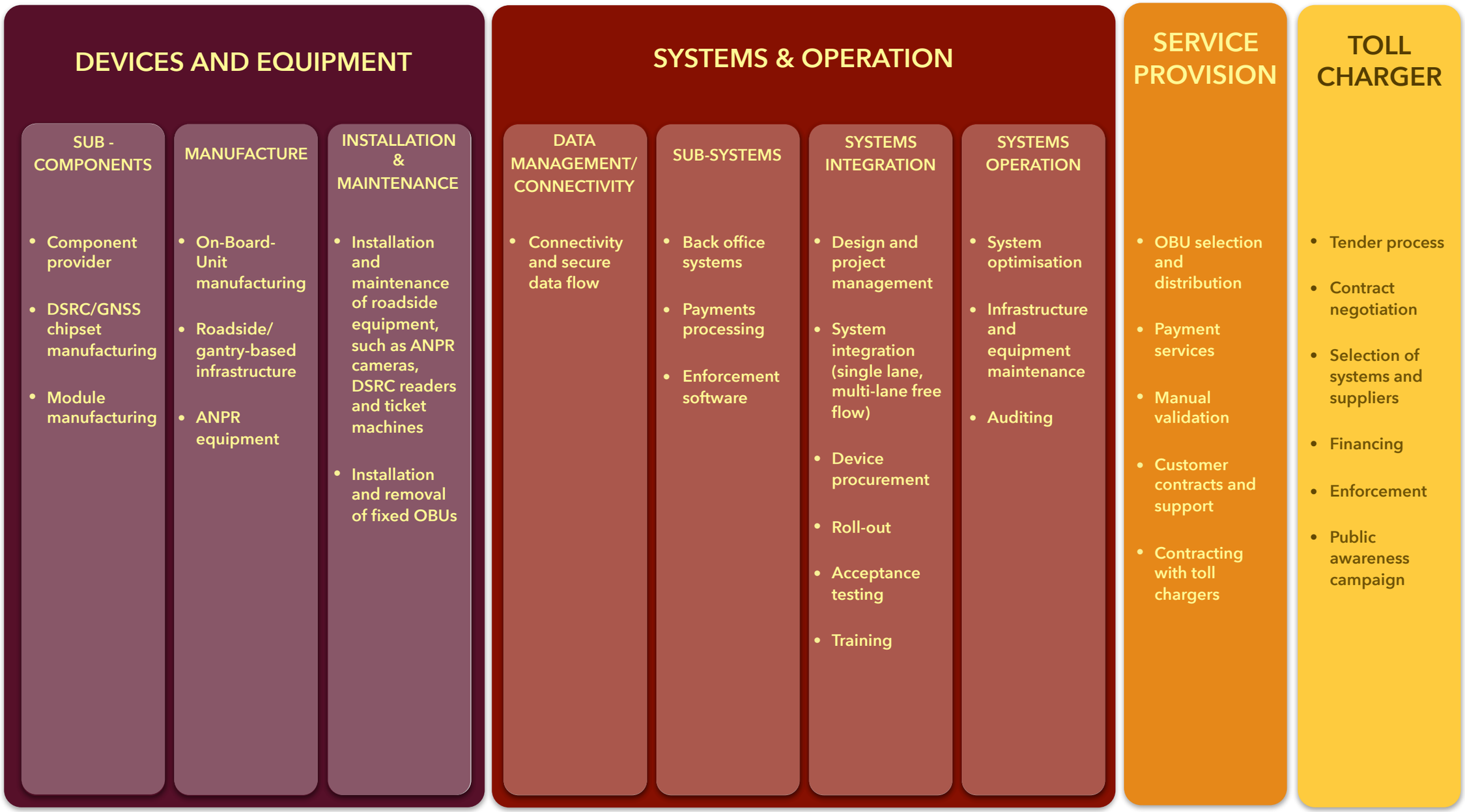
4 The EETS provider business model

5 The evolution of the EETS provision market

6 PTOLEMUS' recommendations

PTOLEMUS

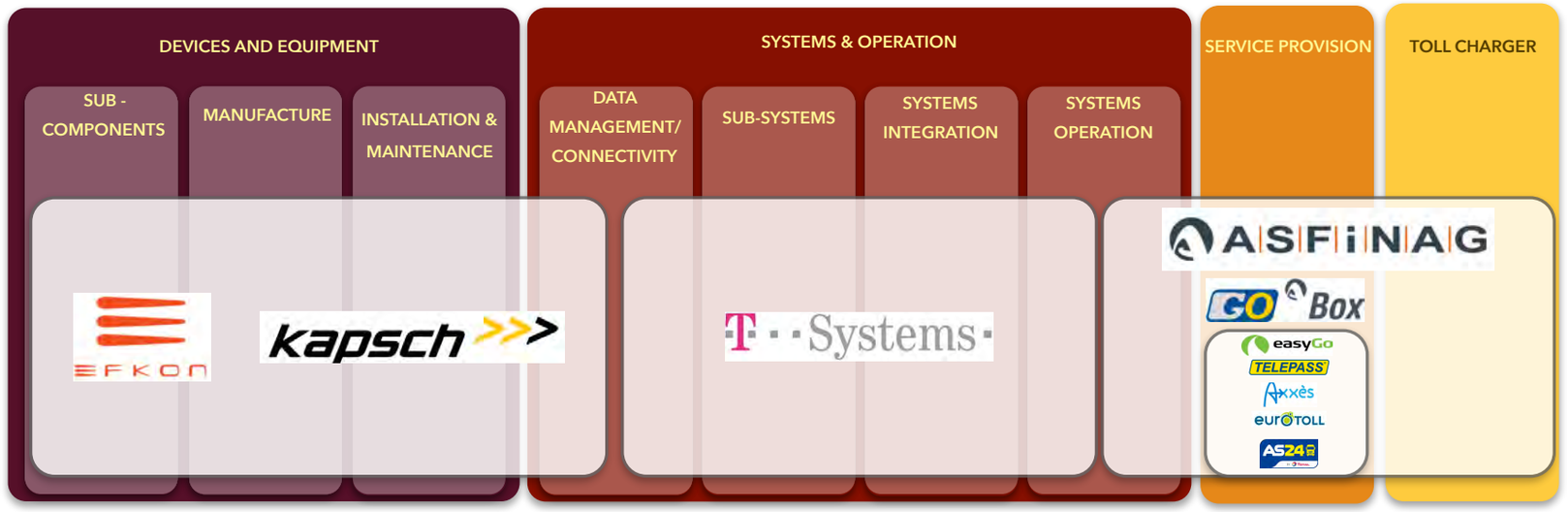
The growing sophistication of the ETC market in Europe has led to a more complex and nuanced value chain



Source: PTOLEMUS

Austria has recently upgraded its national HGV toll by working with Kapsch and T-Systems

- **Launch date**: 1 January 2004
- **Network size (end 2017):** 2,223km
- **Weight class:** HGVs >3.5t
- **Toll charger:** ASFINAG
- **Number of subscribers (end 2017):** 980,000



Value chain structure

- Under the authority of state owned road operator ASFINAG, and delivered by T-Systems, **Austria has upgraded its DSRC-based HGV toll to a new central IT system, which is fully EETS compliant**
- While T-Systems has control over tolling transactions and data processing, Kapsch retains control over construction of the tolling infrastructure, equipment and certain technical operations
- Austrian supplier EFKON has also been awarded previous contracts for device supply
- **Established EETS providers only began to enter the market in 2018**, although there is longstanding interoperability with some Scandinavian domains through the EasyGo network and interoperability with Germany's LKW MAUT through the Toll2Go scheme

Active EETS providers*

TELEPASS
Axxès
eurOTOLL
AS24

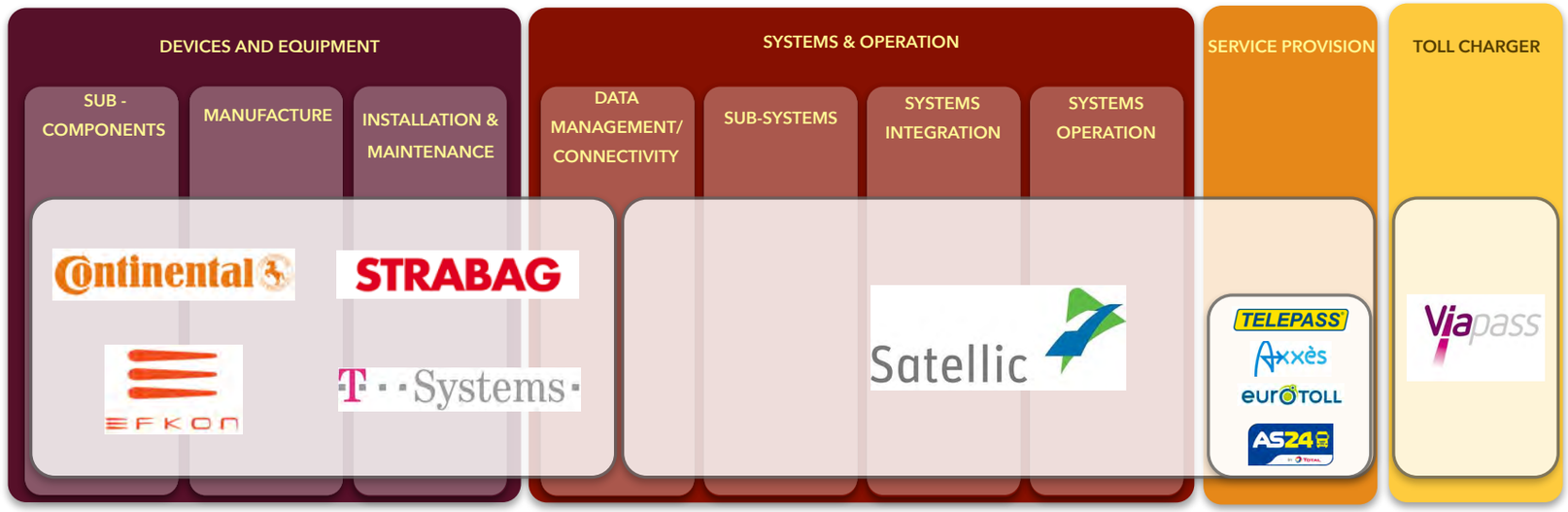
easyGo **
TOLL2GO

Source: PTOLEMUS Note: * As of August 2018 ** EasyGo and Toll2Go are not registered EETS providers

Belgium is one of the most contested market for EETS providers

Viapass

- **Launch date**: April 2016
- **Network size (end 2017):** Approx. 6.700km
- **Weight class:** HGVs >3.5t
- **Toll charger:** Belgian regions of Wallonia, Flanders and Brussels Region - under the responsibility of Viapass
- **Number of subscribers (end 2017):** 770.000



Value chain structure

Active EETS providers*

- With high levels of transit traffic and relatively favourable conditions for EETS providers, **Belgium will remain one of the most contested EETS domains in Europe**
- In addition to the 3 French providers, Axxès, Eurotoll and Total/AS24, Italy's Telepass also offer EETS services
- **Eurowag and Toll4Europe are also nearing the end of the testing phase** and will soon begin offering EETS services

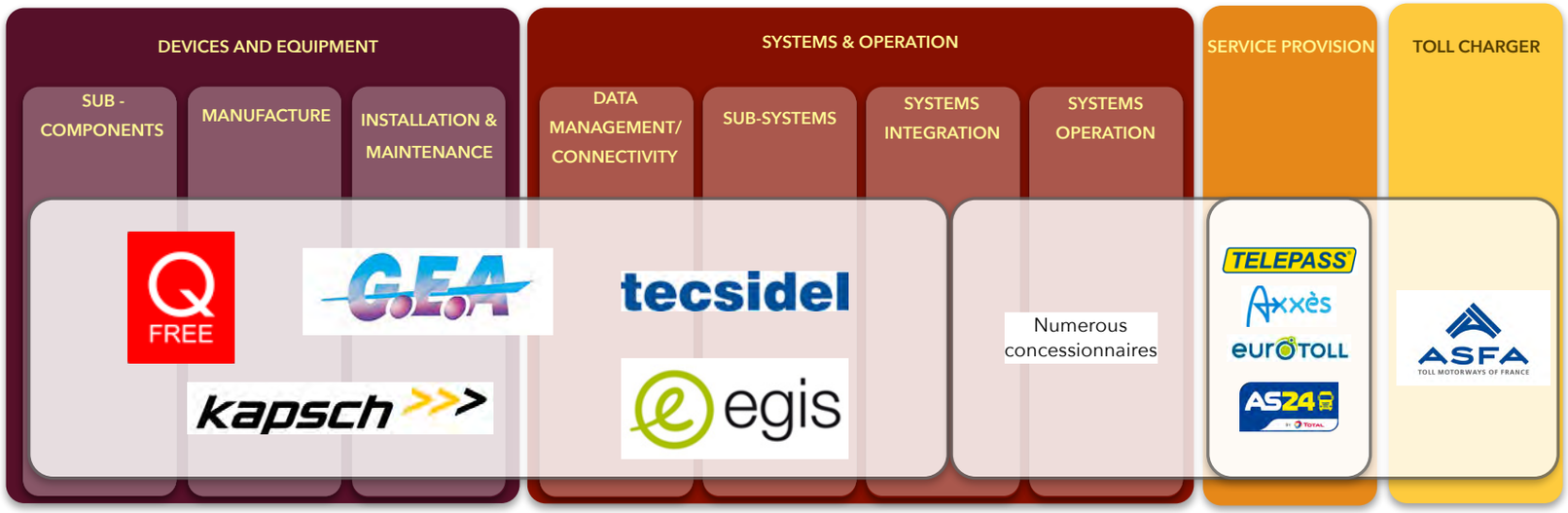
TELEPASS
Axxès
eurOTOLL
AS24

Source: PTOLEMUS Note: * As of August 2018

Electronic payments for HGVs are only possible in France via one of the registered EETS providers

ASFA
TOLL MOTORWAYS OF FRANCE

- **Launch date**: Various
- **Network size (end 2017):** 9,158 km
- **Weight class:** All vehicles
- **Toll charger:** Numerous concessions under the membership of ASFA (Association of French motorway companies)
- **Number of subscribers (end 2017):** 8.41 million



Value chain structure

- France has a typical value chain structure for a concession-based domain, with numerous different operators, systems integrators and device providers
- The provision of ETC services is split across 2 brands; tis-pl (>3.5t) and Liber-t (<3.5t)

Active EETS providers*

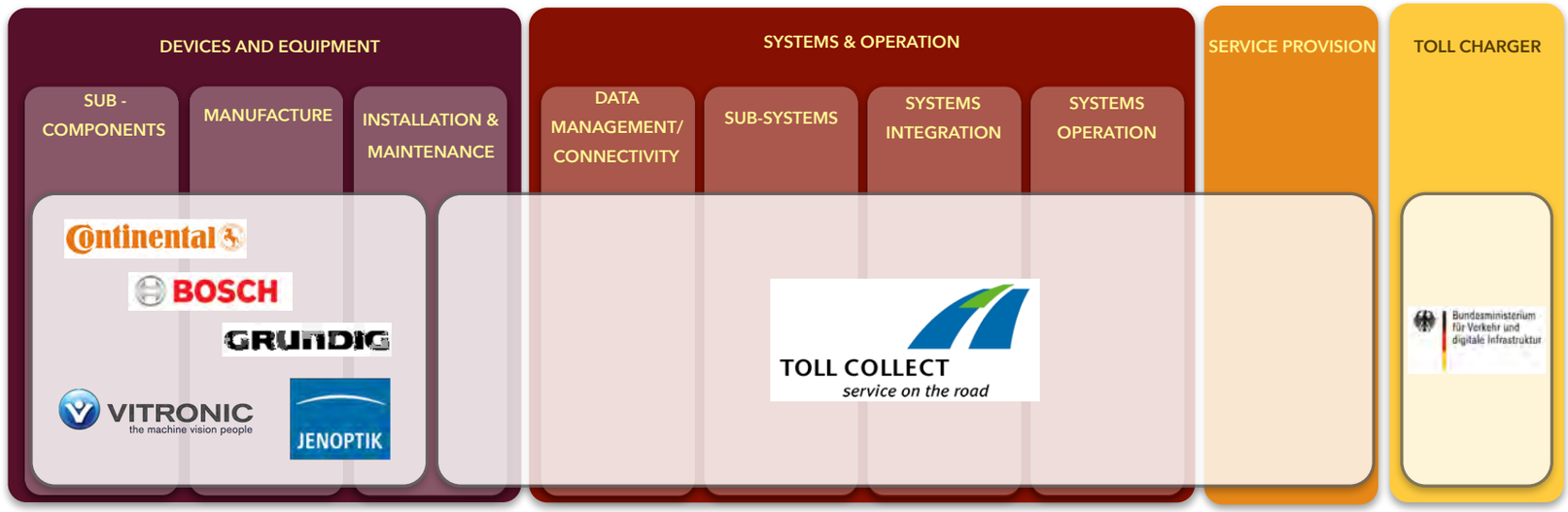
- For the former, while cash and manual card payments remain an option, **payment via a device has been outsourced entirely to 4 registered EETS providers**; Axxès, Eurotoll, Total/AS24 and Telepass

TELEPASS
Axxès
eurOTOLL
AS24 BY TOTAL

Source: PTOLEMUS Note: * As of August 2018

Germany's truck toll represents the biggest prize for EETS providers in Europe, but questions remain over remuneration rates

- **Launch date**: 1st January 2005
- **Network size (end 2017):** 15,252 (2017), 55,252 (2018)
- **Weight class:** HGVs >7.5t
- **Toll charger:** Federal Ministry of Transport and Digital Infrastructure
- **Number of subscribers (end 2017):** 1.081 million



Value chain structure

- Toll Collect was nationalised on 1st September 2018 - while multiple consortia remain in the bidding process, **it remains unclear whether operation of the toll will in fact return to private hands**
- **Germany is currently in negotiations with various EETS providers, although there has not yet been an agreement on the level of EETS provider remuneration**

Active EETS providers*

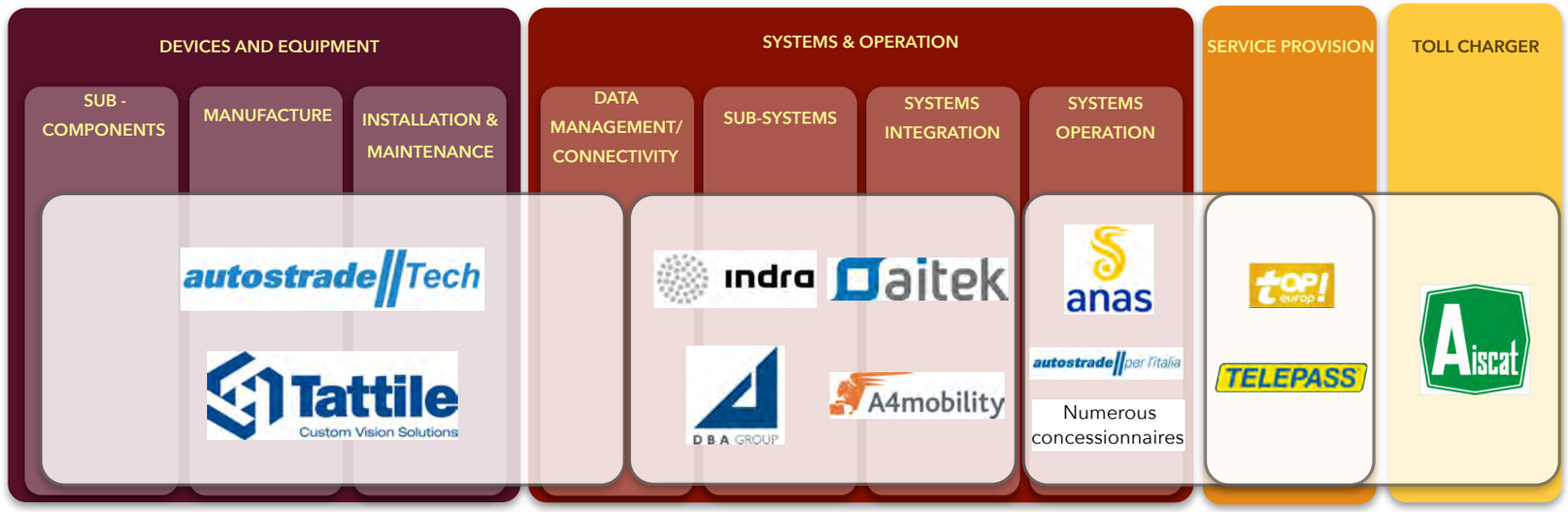
None at this time

Toll Collect remains the only ETC service provider

Source: PTOLEMUS Note: * As of August 2018

Telepass currently has a dominant position as the sole provider of ETC devices and services in Italy, but this will change

- **Launch date**: Various
- **Network size (end 2017):** 6,003km
- **Weight class:** All vehicles
- **Toll charger:** Numerous concessions under the umbrella of Aiscat (Associazione Italiana Società Concessionarie Autostrade e Trafori)
- **Number of subscribers (end 2017):** 9.6 million



Value chain structure

Active EETS providers*

- Italy has as typical value chain structure for a concession-based domain, with numerous different operators, systems integrators and fixed equipment providers
- On-board units are mostly supplied by Autostrade Tech
- EETS and other non-Telepass-based service providers and devices are **expected to enter the market from 2019 onwards for HGVs**
- French concessionnaire APRR's consumer service Top Europ, recently began offering ETC payments for passenger cars

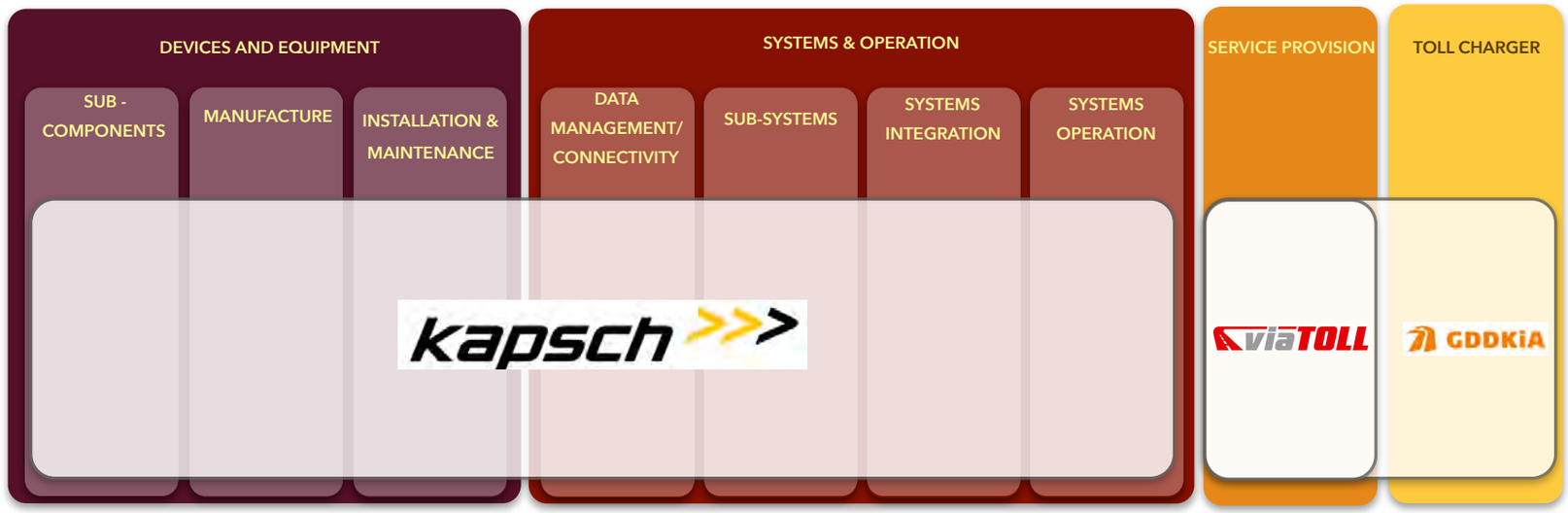
TELEPASS

Source: PTOLEMUS Note: * As of August 2018

Poland has decided to nationalise its nationwide HGV charge, ViaTOLL, from November 2018 onwards

viaTOLL

- **Launch date**: July 2011
- **Network size (end 2017):** 3,600km
- **Weight class:** HGVs >3.5t
- **Toll charger:** General Directorate for National Roads and Motorways
- **Number of subscribers (end 2017):** 1.1 million



Value chain structure

- **Poland has committed to the complete nationalisation of viaTOLL**, beginning in late 2018 when Kapsch's existing operational contract expires
- After this point, it is expected that EETS providers will begin entering service across the expanding viaTOLL network

Active EETS providers*

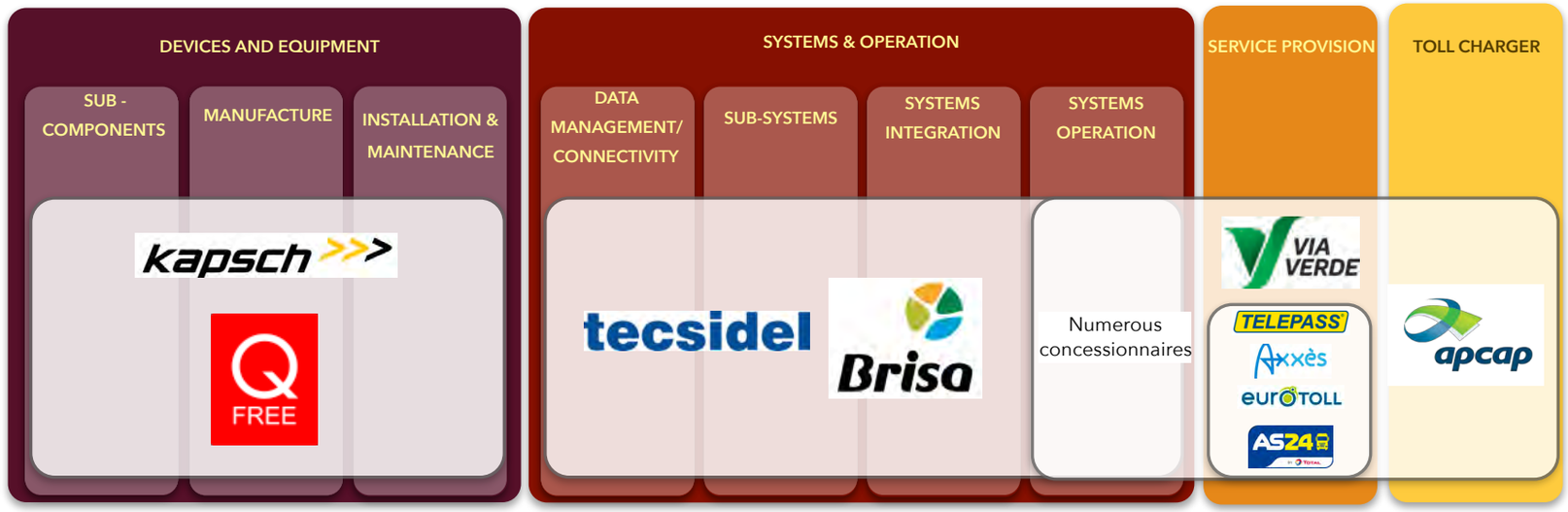
None at this time

viaTOLL remains the only ETC service provider**

Source: PTOLEMUS Note: * As of September 2018 ** ViaTOLL does not include individual concessions, some of which do have interoperability agreements with EETS providers

Portugal's free flow network has been very welcoming towards EETS providers

- **Launch date**: Various
- **Network size (end 2017):** 2,512km
- **Weight class:** All vehicles
- **Toll charger:** Numerous concessions under the membership of Apcap (Association of Portuguese Concessionaires of Motorways and Toll Bridges)
- **Number of subscribers (end 2017):** 3.67 million



Value chain structure

- Portugal has a typical value chain structure for a concession-based domain, with numerous different operators, systems integrators and device providers
- The **national service provider is Via Verde**, a subsidiary of the main concessionaire, Brisa
- Due in part to well-developed interoperability agreements with Spain, **Portugal is also one of the most mature EETS domains**

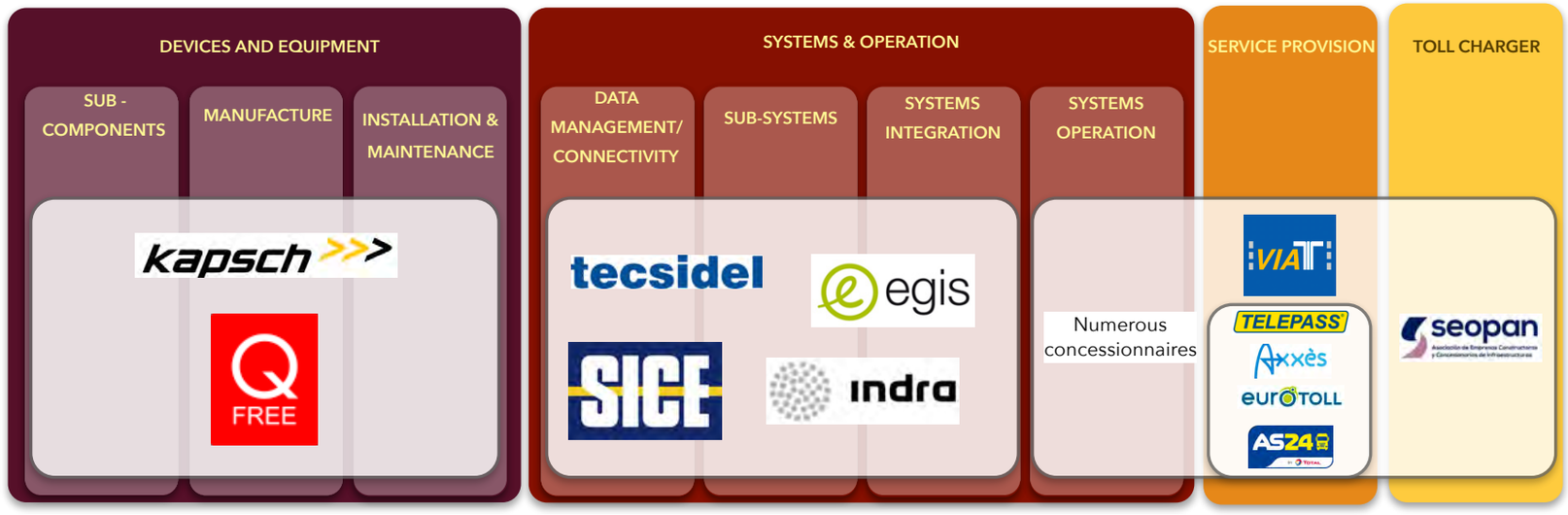
Active EETS providers*

TELEPASS
Axxès
eurOTOLL
AS24

Source: PTOLEMUS Note: * As of August 2018

Spain represents one of the more mature domains for EETS providers in Europe

- **Launch date**: Various
- **Network size (end 2017):** 3,404 km
- **Weight class:** All vehicles
- **Toll charger:** Numerous concessions under the membership of Seopan (Association of Construction Companies and Concessionaires of infrastructures)
- **Number of subscribers (end 2017):** 4.69 million



Value chain structure

- Spain has a typical value chain structure for a concession-based domain, with numerous different operators, systems integrators and device providers
- It **remains one of the most mature EETS domains**, with a similar acceptance network to France and Austria
- Via-T is the nationwide scheme, enabling interoperable payments across all concessions

Active EETS providers*

TELEPASS
Axxès
eurOTOLL
AS24

Source: PTOLEMUS Note: * As of August 2018

Understanding the EETS provisioning market

1 The role of a National Service Provider (NSP)

2 The role of the EETS provider

3 HGV tolling value chains across Europe

4 **The EETS provider business model**

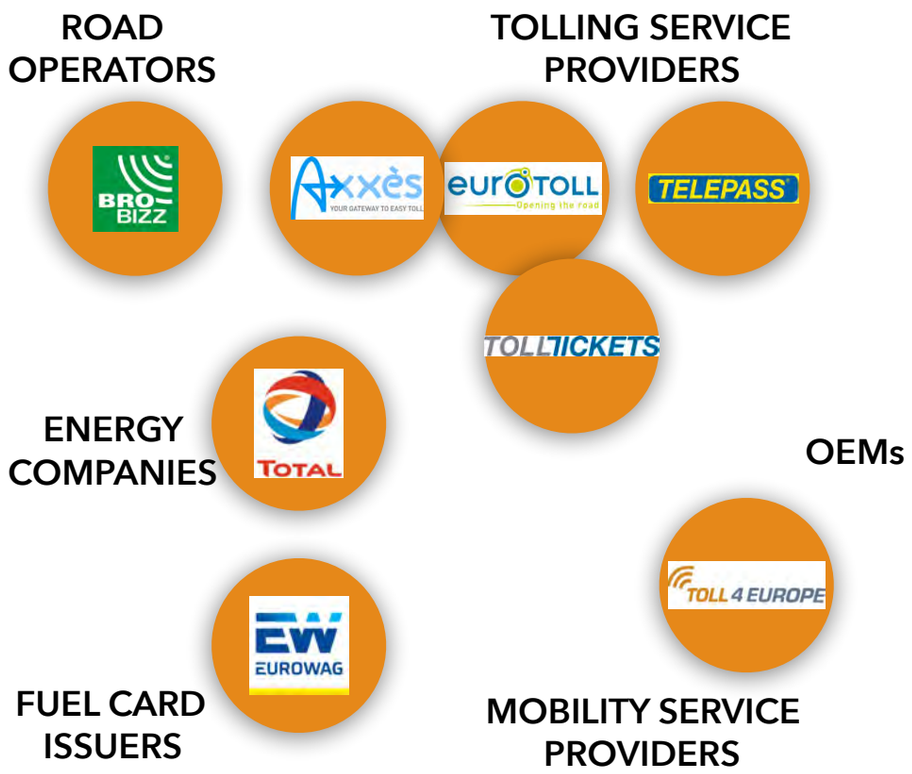
5 The evolution of the EETS provision market

6 PTOLEMUS' recommendations

EETS providers fulfil different strategic objectives depending on their parent companies

- **The strategic direction of parent companies can have an influence on the business model and priorities of the EETS provider**
  - Many FCIs active in the HGV market, for example, view EETS both as a fundamental addition to the fuel payment service and a market/fleet driven demand, indeed **UTA generated more than 40% of its 2017 revenue through value added services such as tolls**
  - However, because tolling is, in many ways, a value added service for FCIs, the need to develop their own device and platform is less acute as they do not realise the same benefits from the technical competency as road operators or toll service providers
  - Toll service providers such as BroBizz, Telepass, Eurotoll and Axxès deliver technical experience and capabilities via their EETS service, which brings value to their road operator parent companies (Sund & Baelt, Atlantia, Abertis and Vinci respectively)
  - As the subsidiary of a distinctly regional road operator, the interoperable service provided by BroBizz enables the parent company to maintain its position as a leading service provider across all domains within its home region
- Thus, within the current EETS providers, we see **4 variances in the development of the business models**
  - 5 of the EETS providers (BroBizz, Eurotoll, Telepass, tolltickets, and Axxès) are dedicated **tolling service providers, albeit with road operator parent companies**
  - Oil and gas company Total's EETS solution, *PASSango*, is sold predominantly through and to existing customers of AS24, a subsidiary specialising in fuel distribution and transport services for HGVs
  - Eurowag is positioned as a provider of mobility services to fleets and its EETS solution is a **natural extension of its existing portfolio**, which includes fuel payment, tolling, fleet telematics and tax recovery
  - Toll4Europe is a **joint venture** between Daimler, T-Systems, DKV and Shell and allows each company to fulfil a different strategic objective; DKV and Shell as fuel card companies, Daimler as an OEM (see Section V for more details) and T-Systems as a tolling software and systems integrator

EETS providers come from multiple different groups



Source: PTOLEMUS

The EETS provider business model relies upon partnerships with several key players

Key partners

- Resellers
  - Fuel card distributors
  - Telematics service providers
  - OEMs
  - Etc.
- Toll chargers
- Device manufacturers

Key activities

- Contract and customer relationship management
- Tolling data collection for the purposes of payment and enforcement
- Value-added services

Key resources

- Existing user base
- Technical competencies
- Certified and accredited

Value proposition

- Offer users ability to:
  - Manage all toll payments with one contract
  - Gain discounts on tolls
  - Use fleet management and geolocation tools
- Provide toll chargers with:
  - Guaranteed toll payments
  - Reduced customer service burden
  - Data required for enforcement and traffic management

Customer relationships

- Regular interactions with customer fleets
- Regular interaction with toll chargers
- Occasional intermediary between fleets and toll chargers

Channels

- Direct sales to fleets in B2B model
- Indirect white label model
- Partnerships with resellers

Customer segments

- Customer fleets
  - Established fleets with good credit for the credit based options
  - New or bad credit fleets for the prepayment model
- Fleet service providers for re-selling white labeled devices

Cost structure

- Product development
- Certification and accreditation
- Back end technology
- Tangible asset inventory (OBU)
- Marketing to attract new users
- Management required to negotiate and lobby with member states for commission rates and access

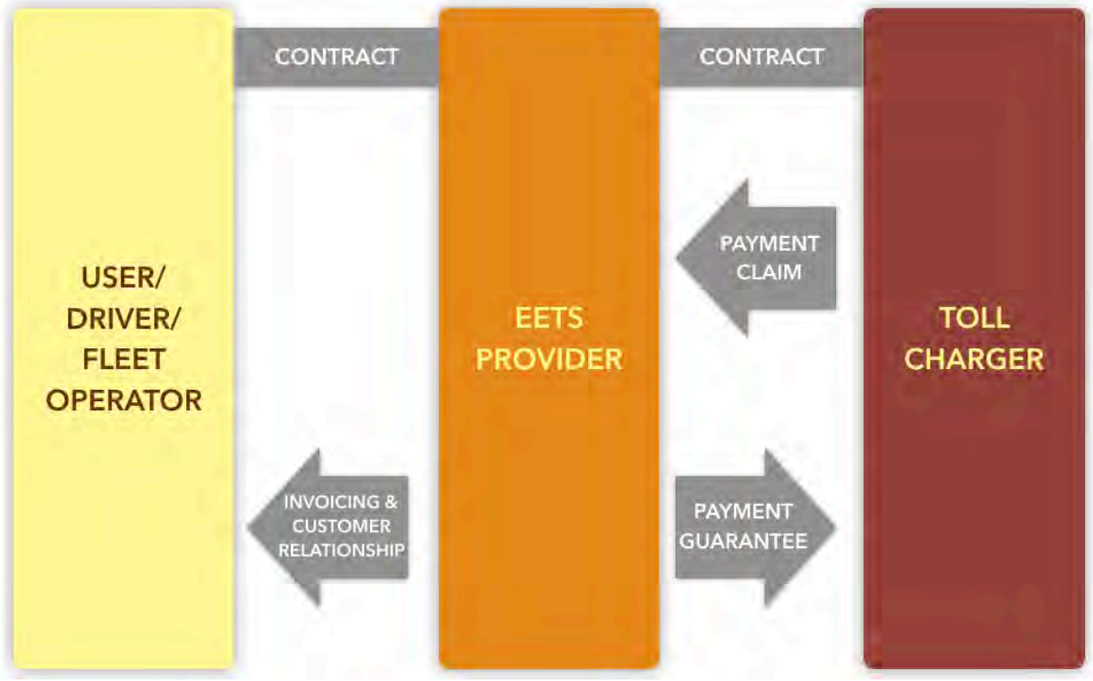
Revenue streams

- Direct fleet-based fees
  - Toll service fees
  - OBU rental fees
  - Value-added services
- Toll charger commission / remuneration
- White label sales
- Sales through resellers

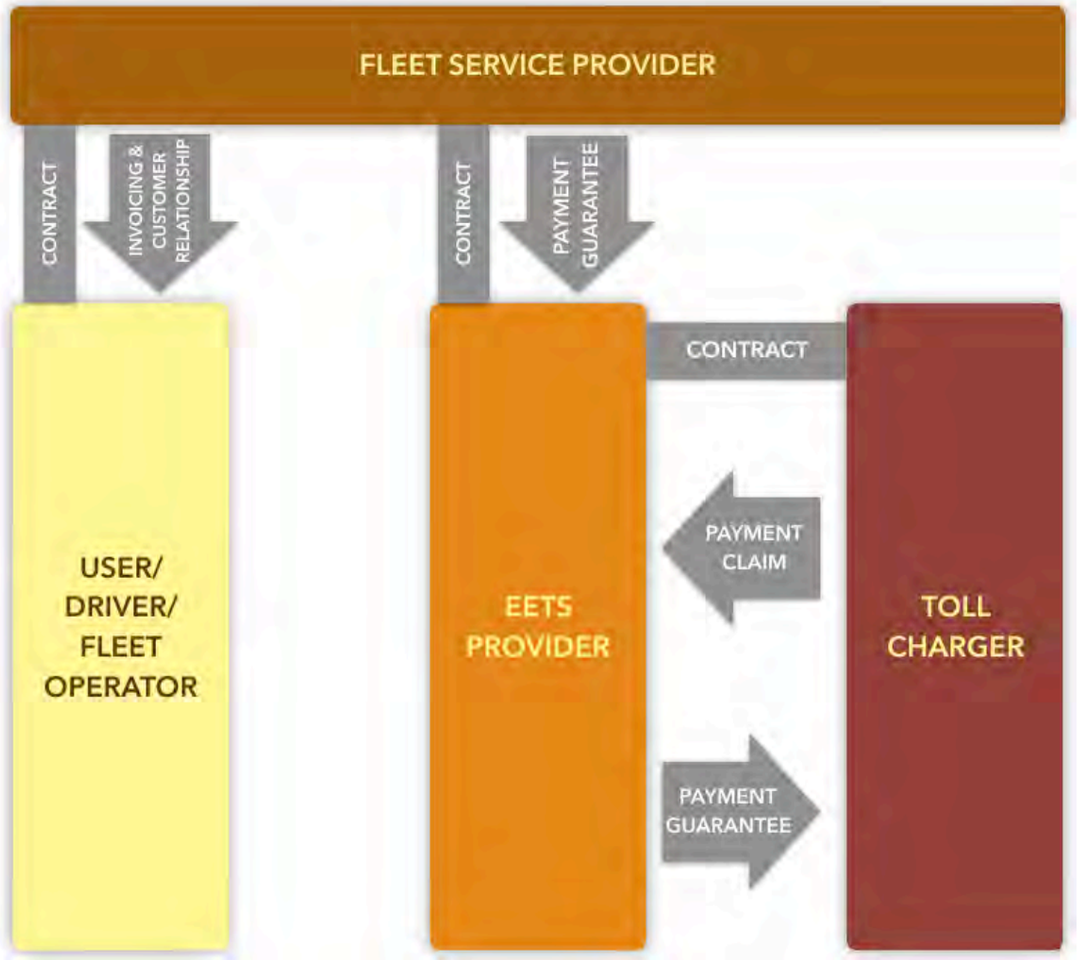
Source: PTOLEMUS

Providing a white labelled device to fleet service providers, in addition to direct sales, represents an alternative route to market

Direct business model



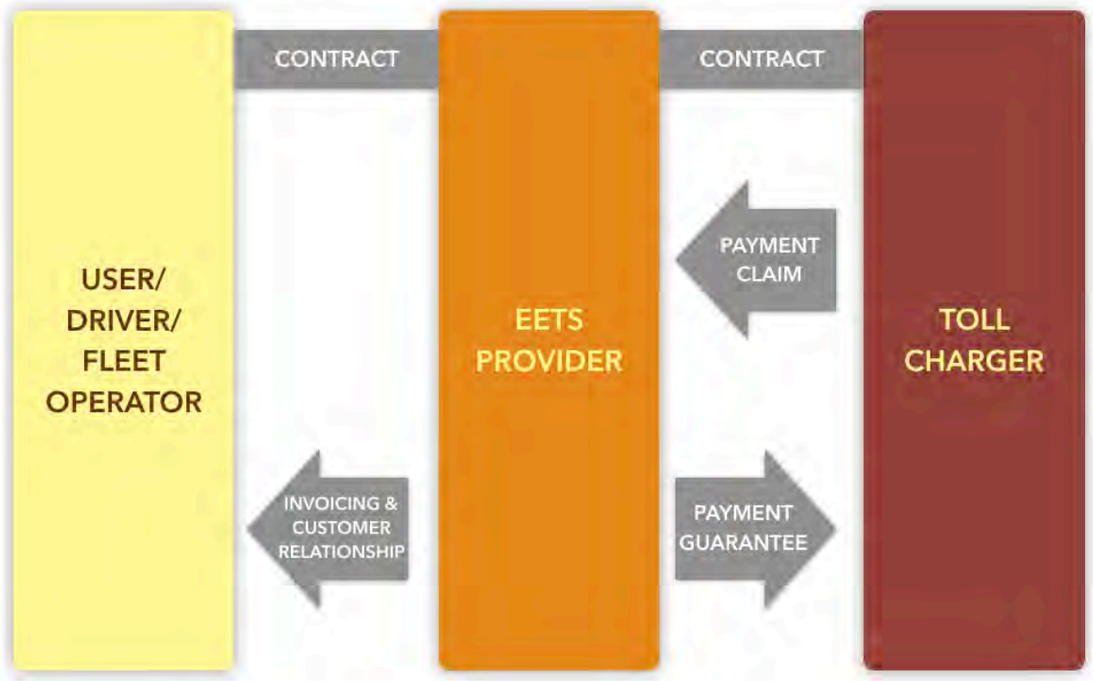
White label business model



Source: PTOLEMUS

The direct business model allows EETS providers to retain complete ownership of the customer relationship

Direct business model

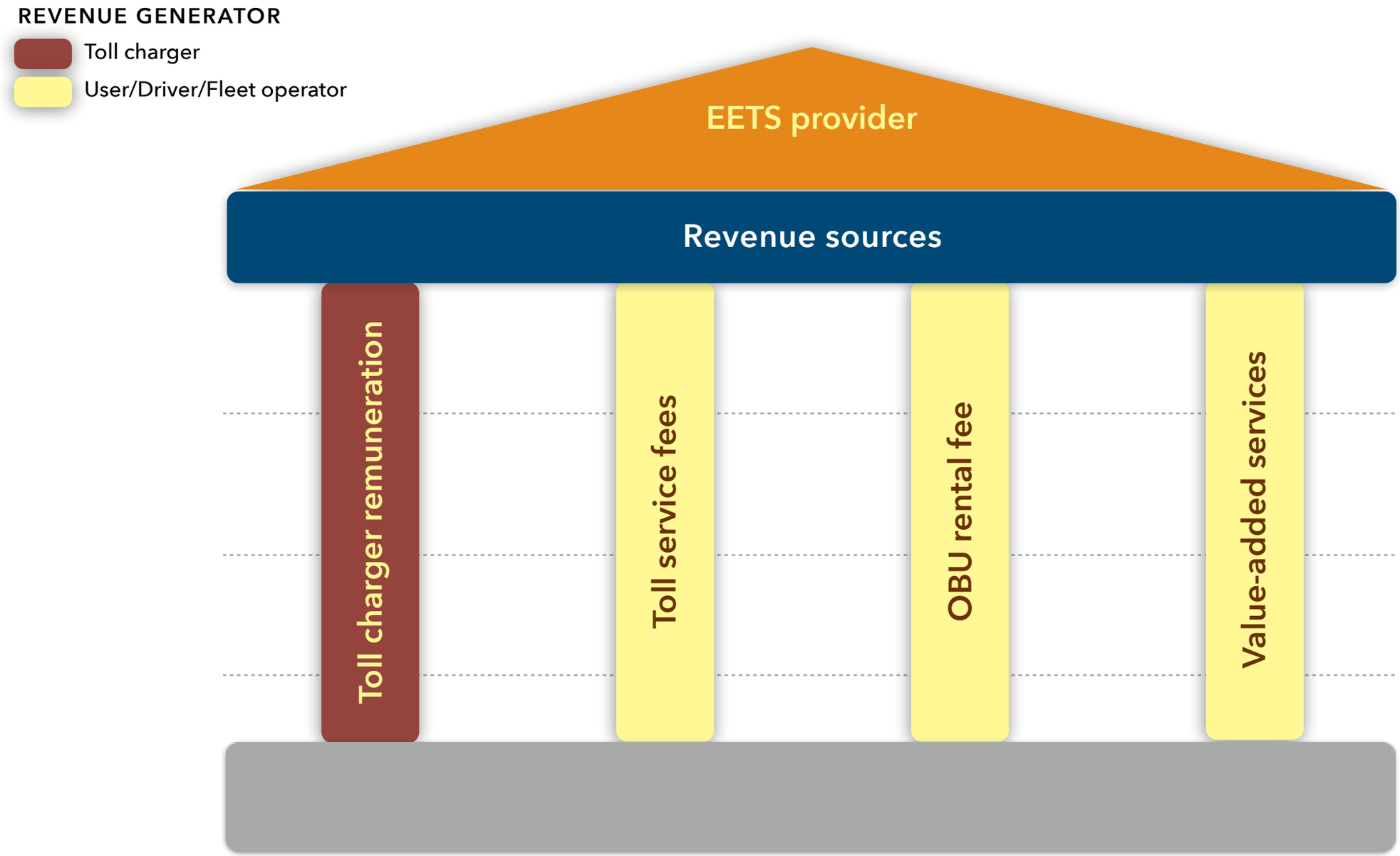


- Under the direct model, **the EETS provider has a contract with the fleet/user** and collects tolls on behalf of the toll charger
- Under the contractural terms, **the EETS provider must provide a payment guarantee to the toll charger**
- As a consequence, **the EETS provider is liable for the toll payment to the toll charger, not the user**, and thus assumes a significant level of financial risk
- While there are clear contractural terms covering remuneration and payment guarantees between the toll charger and the EETS provider, **the EETS provider does not guarantee continuity of service** under the current model
    - While we think it highly unlikely to happen (unless in the case of an acquisition/merger with another EETS provider), an EETS provider could therefore withdraw service without need to consult the toll charger beforehand
- Under the direct model, the EETS provider is effectively replacing the NSP by delivering toll collection services on behalf of the toll charger
- Furthermore, by providing a guarantee of payment, the toll charger is effectively able to outsource the risk of non-payment to a third party

Source: PTOLEMUS

In the direct model, revenue streams are derived from the toll charger and the customer fleets

EETS providers have 4 essential revenue sources



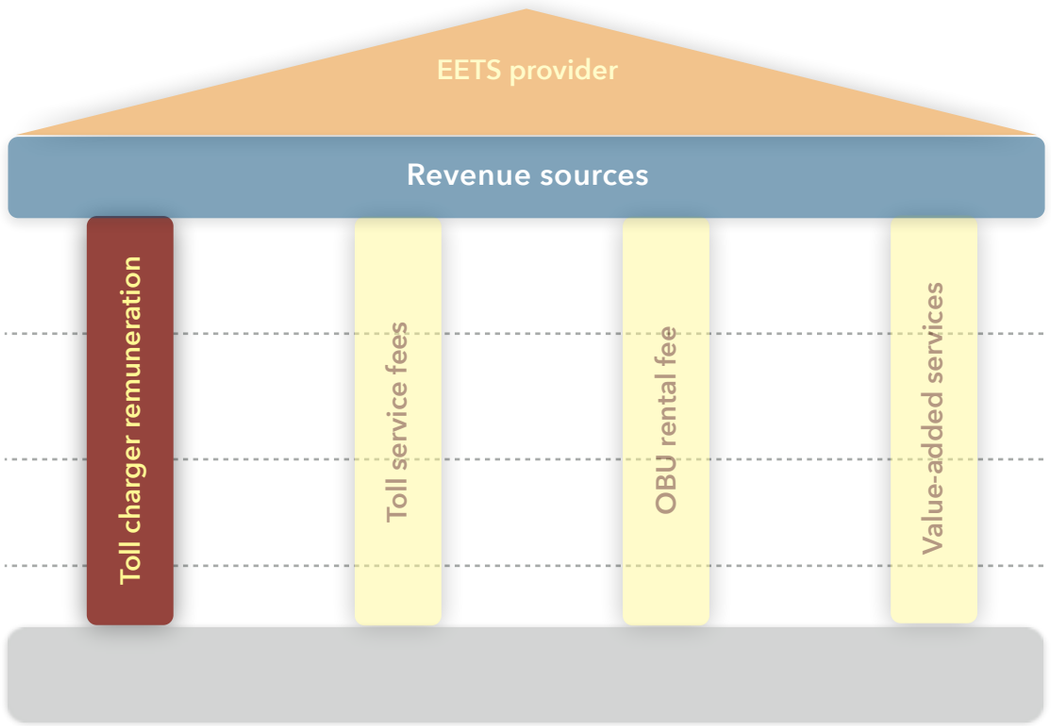
Source: PTOLEMUS

Remuneration from toll chargers is not transparent and varies by toll domain

EETS providers have 4 essential revenue sources

REVENUE GENERATOR

- Toll charger
- User/Driver/Fleet operator



- The Directive clearly states that EETS providers **must receive remuneration from the toll charger** for the toll collection and management of customer relationships
- However, the **exact amount of the remuneration is not transparent** in the Member States' domain statements
- In general, domain statements that address commission rates or payment affirm that the amount of the remuneration is stated in the EETS contract
- Only a few member states, such as Hungary, explicitly disclose the commission percentage for EETS providers (1%)
- Variances in commission rates differ by state based **on technology in use** (GNSS networks are often more costly) and **whether or not an NSP is also present which affects the EETS providers' level of service**
- **Domain level of risk** attached to the payment **also effects the toll charger-EETS provider relationship and remuneration model**
  - **Some tolling domains are higher risk and less attractive than others**
  - **Switzerland, for example,** holds an estimated toll amount against a fuel or payment device upon entrance and then charges the actual amount upon exit, increasing the burden on the toll payment (or, in the future, EETS) provider
  - Tolling domains with high risk try to increase their attractiveness by offering a **higher percentage commission**
  - For example, Switzerland requires estimated toll amounts to be held upon entrance into the country and then charges the actual amount, releasing the hold, upon exit
  - This increases the risk for the EETS provider as they must provide credit for the toll during the duration of the time that the OBU is travelling through Switzerland
  - To address this, the country is likely to offer a higher rate of remuneration
- As mentioned in Section 1, **the 2018 Proposal declares that the methodology for obtaining the remuneration value be transparent and published as part of the commercial conditions in the Member States' domain statements**

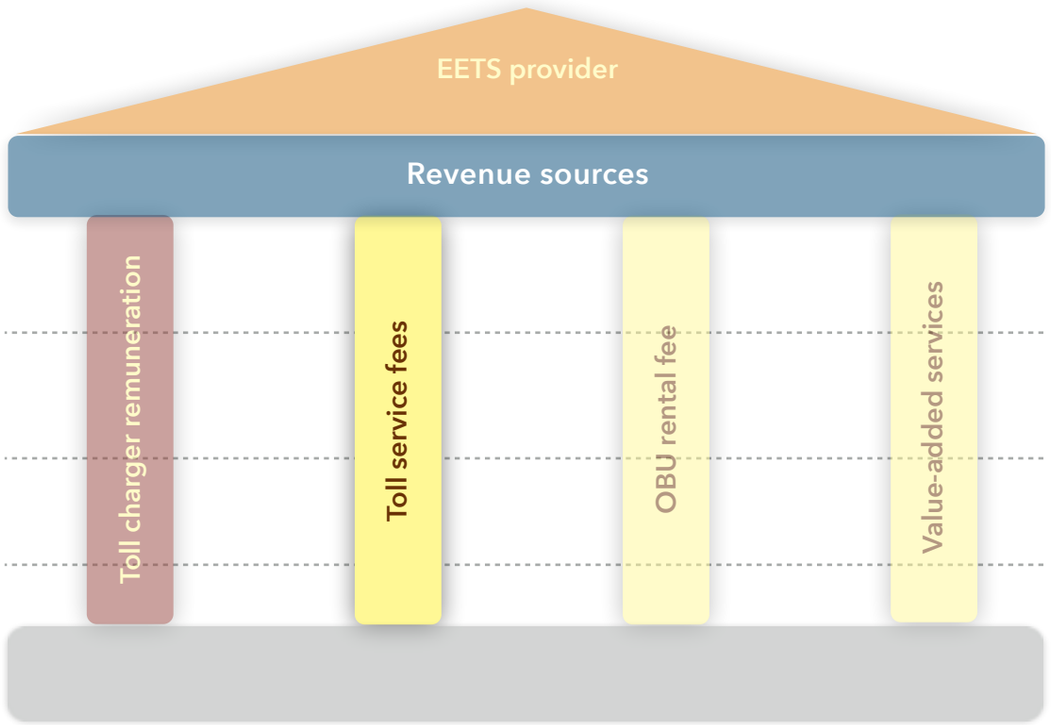
Source: PTOLEMUS

Toll service fees constitute the largest share of customer-derived revenue

EETS providers have 4 essential revenue sources

REVENUE GENERATOR

- Toll charger
- User/Driver/Fleet operator



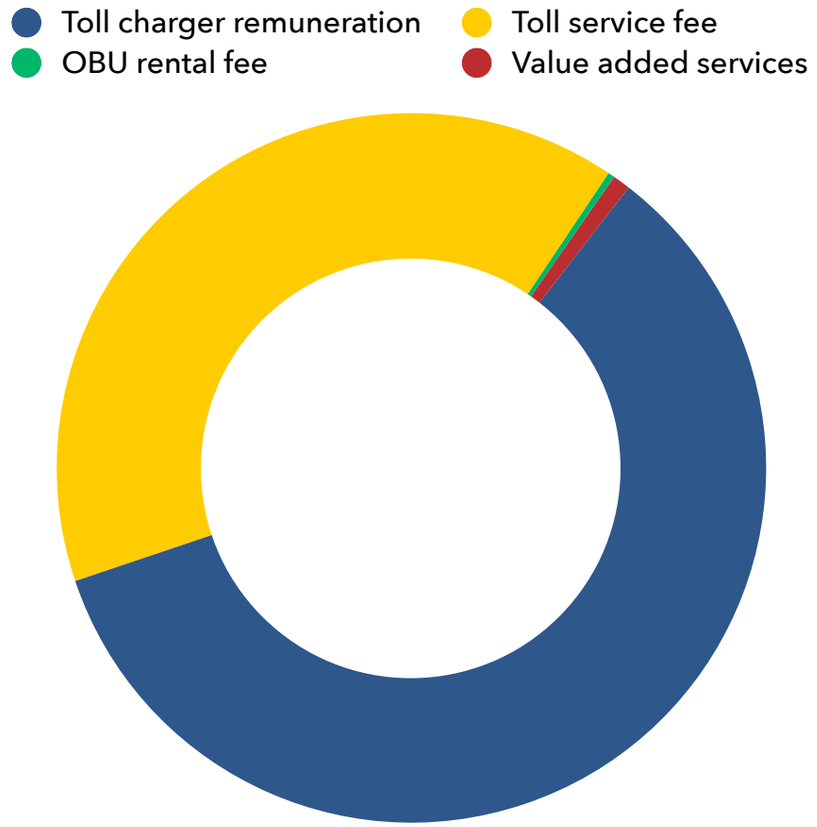
- Toll service fees charged to customer fleets is a primary source of revenue for the EETS provider
- Per Commission Decision (2009/750/EC), EETS provider contracts must **specify the difference between the service fee and the cost of the toll** along with "the time at which and the location where the tolls were incurred and the user-relevant composition of specific tolls"
- **Toll service fees are negotiated as part of the customer contract**
  - Fees cover the management of the contract
  - Fees also cover charges related to the EETS providers requirement to provide credit to the customer for the toll payment for the time period from the toll charge, to the settlement of the related customer invoice
- Invoicing from EETS providers varies:
  - Some EETS providers debit account directly after one week
  - Others invoice up to a month later
- Service fees are negotiable for all EETS providers and the specific rate charged will depend on the specific customer
  - **Currently, we see only a very small number of cases where an EETS provider will offer 0% service fees**
  - **Where these are offered, the remuneration from the toll charger is typically at the high end**
  - **Nonetheless, we do see the market moving in the direction of lower service fees as competition in each domain becomes more intense**
- Monthly reconciliation as opposed to a prepayment or daily reconciliation can increase the cost to the EETS provider for providing credit to the customer for the toll payment during that time

Source: PTOLEMUS

Toll charger rebates and fleet service fees make up the largest proportion of revenues

Estimated breakdown of monthly revenue per vehicle for an EETS provider (October 2018)

- **Toll transaction fees represent a much larger share** of the EETS provider revenue stream than ancillary fees
- This chart represents the estimated breakdown of fees to the fleet and toll charger for the EETS provider
  - The data assumes an average of 1.5% remuneration rate from the toll charger based on a PTOLEMUS average of toll charger commission rates
  - It also assumes a 1% service fee charged to the fleet for the processing of the toll charge
  - As mentioned in the previous slide, prices service fees are not made available and we do expect to see a squeeze on service fees as the market becomes more competitive
  - According to our hypothesis, the estimated service fees equal €390 per month, compared to almost €600 in toll charger remuneration
  - The cost of value-added services are based on an estimation of an additional €8 per month for a bundled geolocation and fleet management dashboard solution
  - Finally, OBU rental fees are nominal and typically range between €1 - €5 per month based on price lists published by EETS providers and their resellers - for the purpose of this exercise we have assumed a rental fee of €3 per month
- The **remuneration from the toll charger is therefore crucial** to the viability of the business model given the already tight margins
- Member States that are able to provide a **guaranteed remuneration rate add security to the model** increasing the EETS providers' ability to provide long-term and continuous service
- EETS providers have the opportunity to **enhance value-added service packages to create a more secure model** that relies less on the toll-related fees, however, similarly to the service fees, we expect to see downward pressure on VAS rates due to increased competition
- Deposits are not considered in this model as they do not deliver revenue and are liabilities owed back to the customer fleets



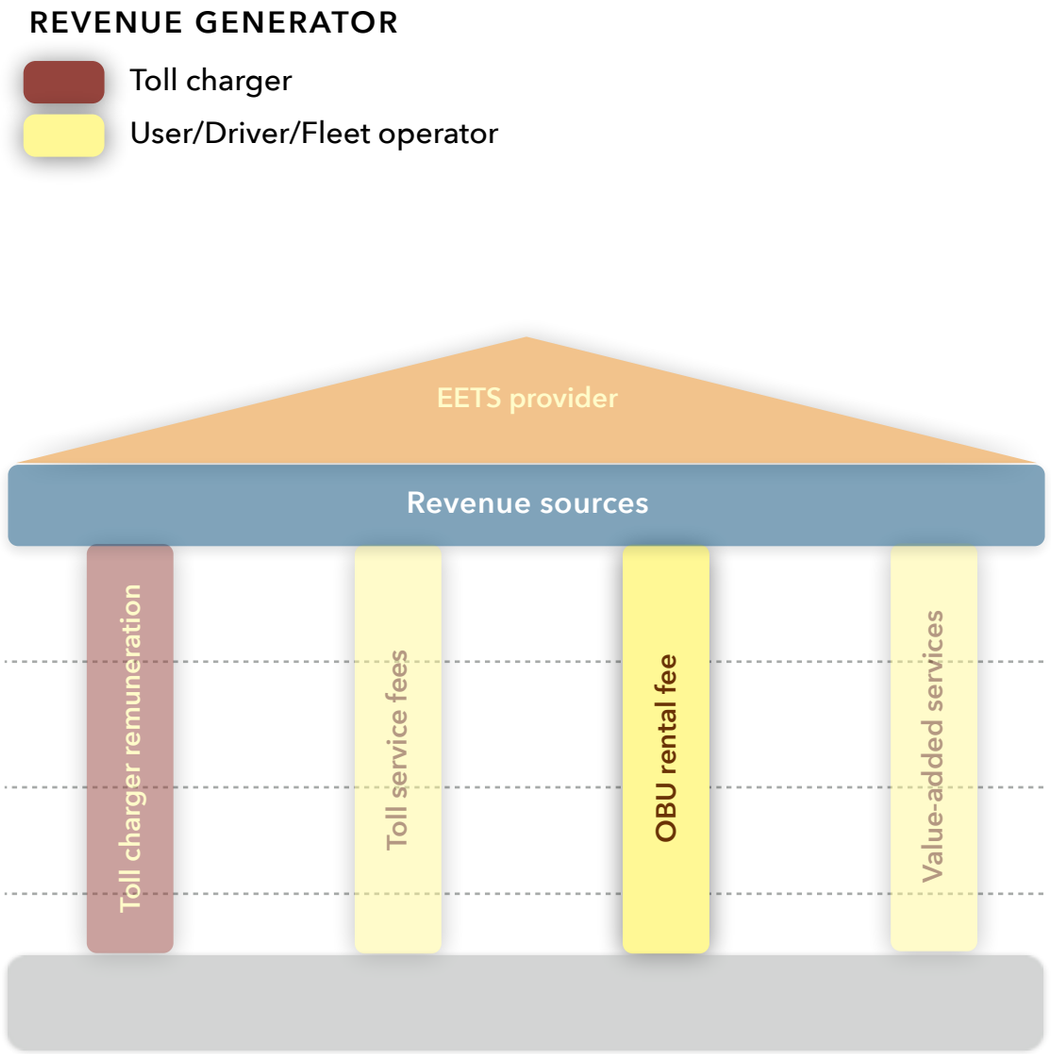
Hypotheses

1 month's estimated revenue split for an EETS provider
Based on 40 tonne EURO 6 truck
Average toll rate of €0.13 per km
3,000km driven on tolled roads for the month

Source: PTOLEMUS

Some EETS providers charge small rental fees for the OBUs

EETS providers have 4 essential revenue sources

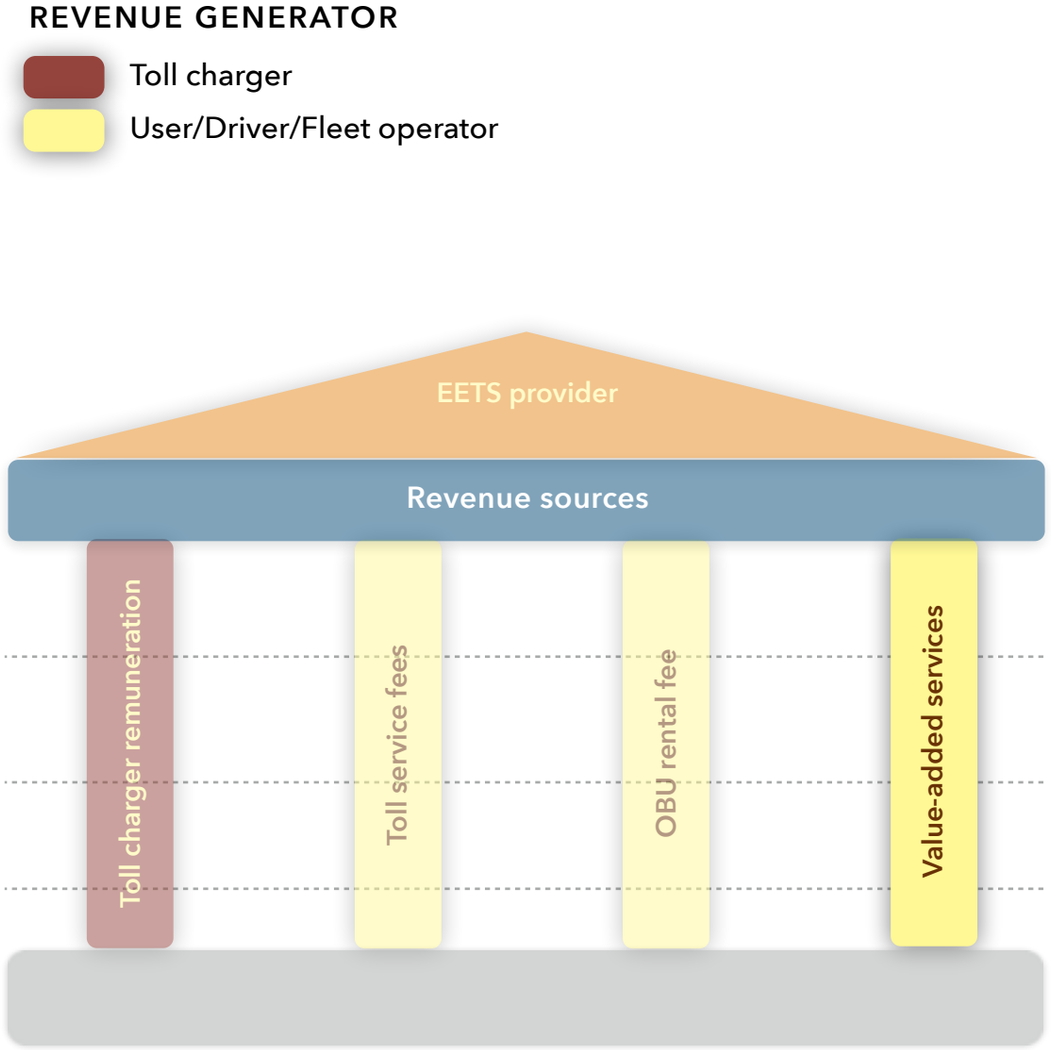


- Certain EETS providers **charge a nominal monthly rental fee to customer fleets**
  - This can range between €1 - €5 per device per month, but is not always fixed
  - Like all fleet derived revenues, OBU rental fees are often negotiable
- Though small, rental fees provide for an additional **safety net to hedge against risk associated with variable revenue from toll transactions**
- Several EETS providers still resell tolling solutions for domains in which they do not yet have access and charge fees for those devices
- We estimate these fees to be small, but the **fees are potentially negotiable** based on the size of the fleet and customer relationship

Source: PTOLEMUS

Value-added services streamline the customer experience and help EETS providers differentiate from competitors

EETS providers have 4 essential revenue sources

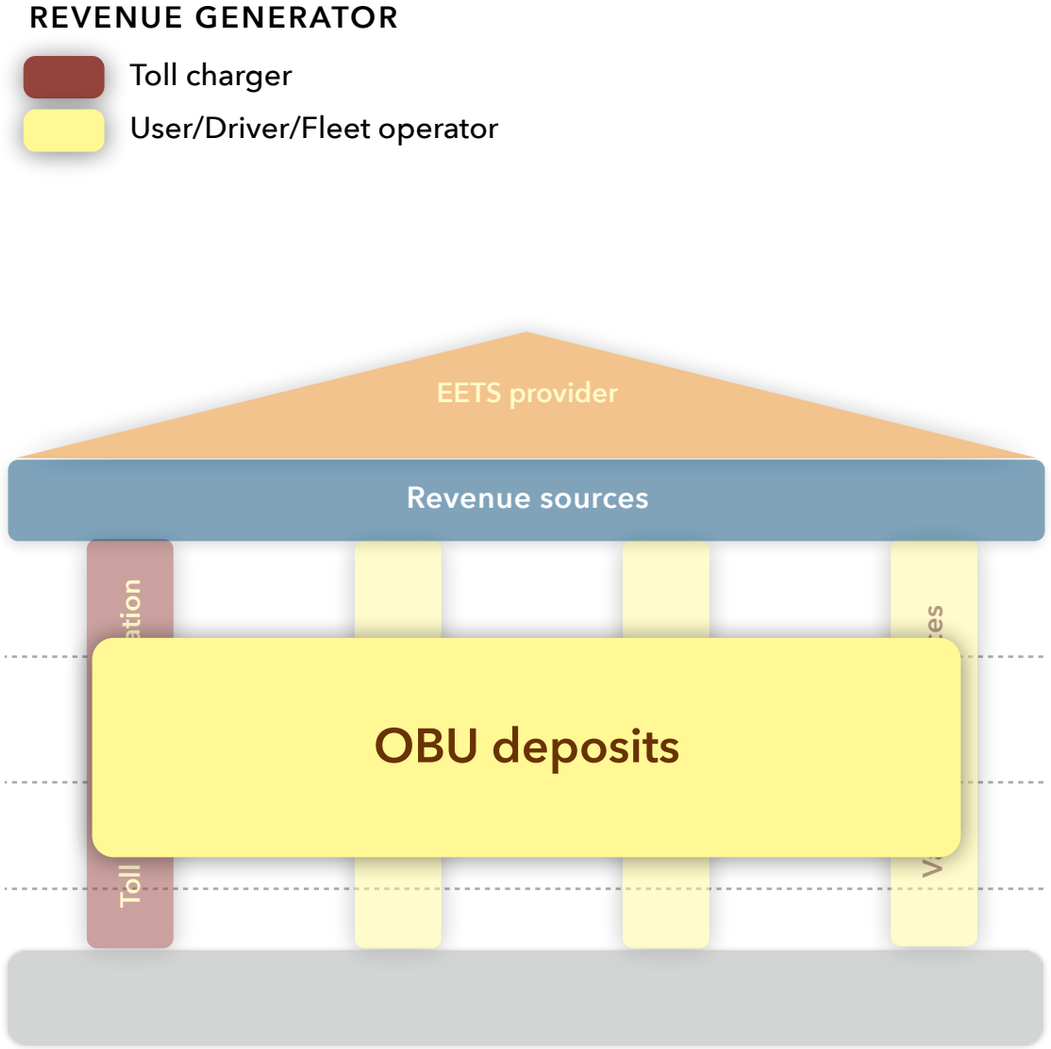


- Delivering value-added services (VAS) in addition to toll payments has been part of EETS DNA since the very beginning and is ensured by item (12) within the 2004/52/EC Directive
- The same item also enables the fitting of **additional 'appropriate' equipment** to deliver these services
- As mentioned, revenue from VAS provides security to the business model
- As competition increases, specifically in domains such as France, Belgium, Spain and Portugal, VAS **enable companies to differentiate from competitors**, as well as NSPs when they exist
- As OBU technology develops HGV-related services integrated into one device, EETS providers will enjoy increased opportunities to diversify their VAS and value propositions
- **VAS are separated into 3 main categories**
  - Additional **payments** such as parking, ferries and bridges
  - **Customer relationship** services including customer dashboards and specialised reporting which streamline the customer experience, although these can often be bundled for free
  - **Location-based services** such as geolocation, eco-tracking (which includes monitoring of CO_2 levels and environmental impact), and anti-theft services among others
- This will be further addressed in Section 5 as we explore the future of the EETS market

Source: PTOLEMUS

Deposits guarantee the providers ability to maintain inventory and meet customer demand for OBUs

OBU deposits represent a financial guarantee, rather than a revenue source



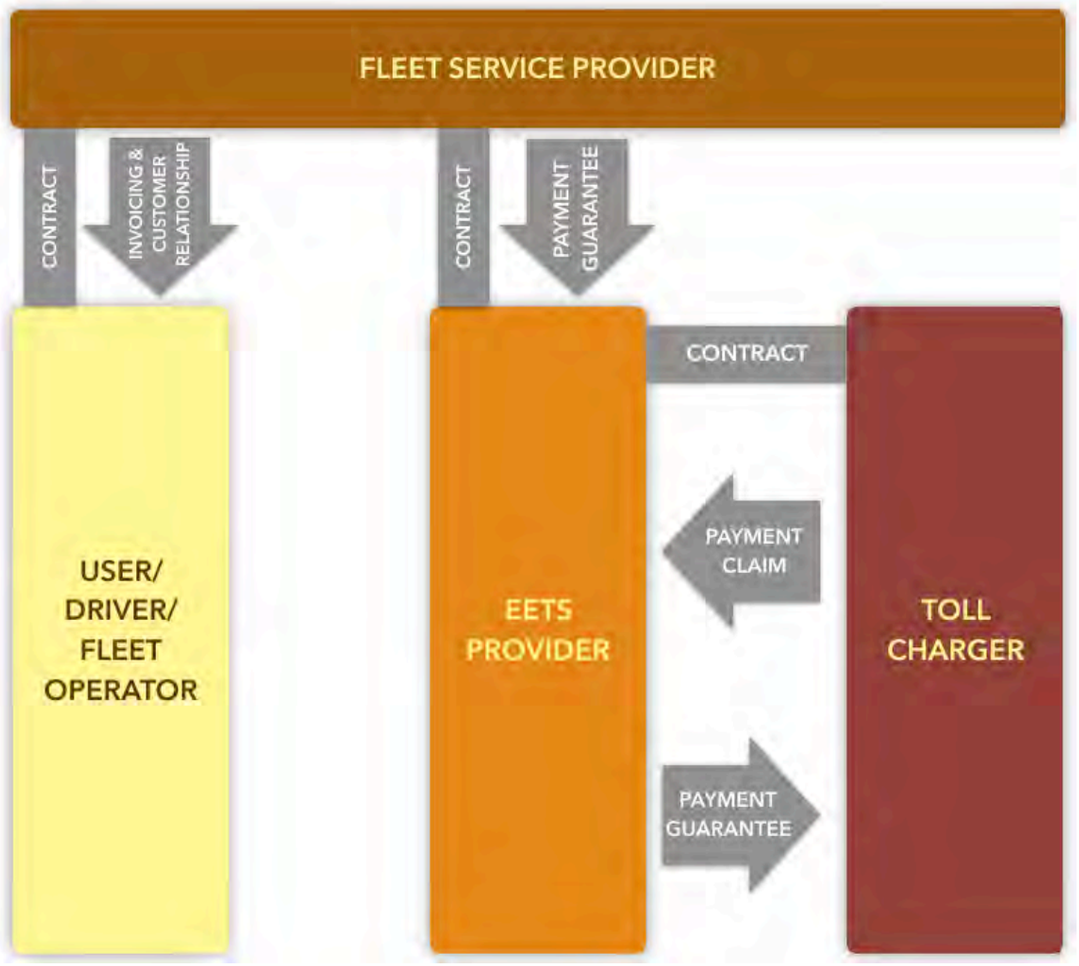
- OBU deposits, in a similar fashion to estimated toll deposits and prepayments, are **not part of revenue model but support the continued operations of the business by ensuring steady inventory of OBUs**
- Deposits are generally in line with those levied by NSPs (see Section I) and represent the cost of replacing the device in the case of damage or non-return
- The amount of the deposit varies both by provider, and by customer
  - Larger fleets with **good credit** and solid financial solvency **may not necessarily be charged a deposit**
  - Alternatively, customers who are refused credit and must use the **prepayment model** for toll charges might be required to submit a deposit **equal to the entire replacement cost** of the OBU
- EETS providers that do not charge deposits include contractual clauses stipulating that a fee for the total cost of the OBU will be **invoiced should it not be returned, or be returned damaged at the fault of the customer**

Source: PTOLEMUS

Under a white label model, EETS providers lose direct contact with the customer, but can potentially extend their reach

- Under the white label or platform model, **EETS providers have no direct contract with the user/fleet**, instead providing white-labelled services to a fleet service provider i.e. fuel card issuer, telematics service provider, OEM etc.
- Under this model, the **EETS provider must still guarantee toll payment to the toll charger, but receive their own payment guarantee from the fleet service provider**, effectively hedging the financial risk
- In the current market, many EETS providers have a smaller commercial footprint and fewer direct customer relationships than many of the larger fuel card issuers or telematics service providers,
  - Thus, by partnering with other fleet service providers, EETS providers are potentially able to expand the use of their device and/or platform and enter new markets more quickly
- **White labelling, rather than selling direct, does of course result in lower revenues for the EETS provider**
- **However, a number of costs are also either decreased or shared**, including:
  - Device management and distribution
  - Market entry and product marketing
  - Customer account management
  - Risk assessment and financial risk management
  - Investment in service development

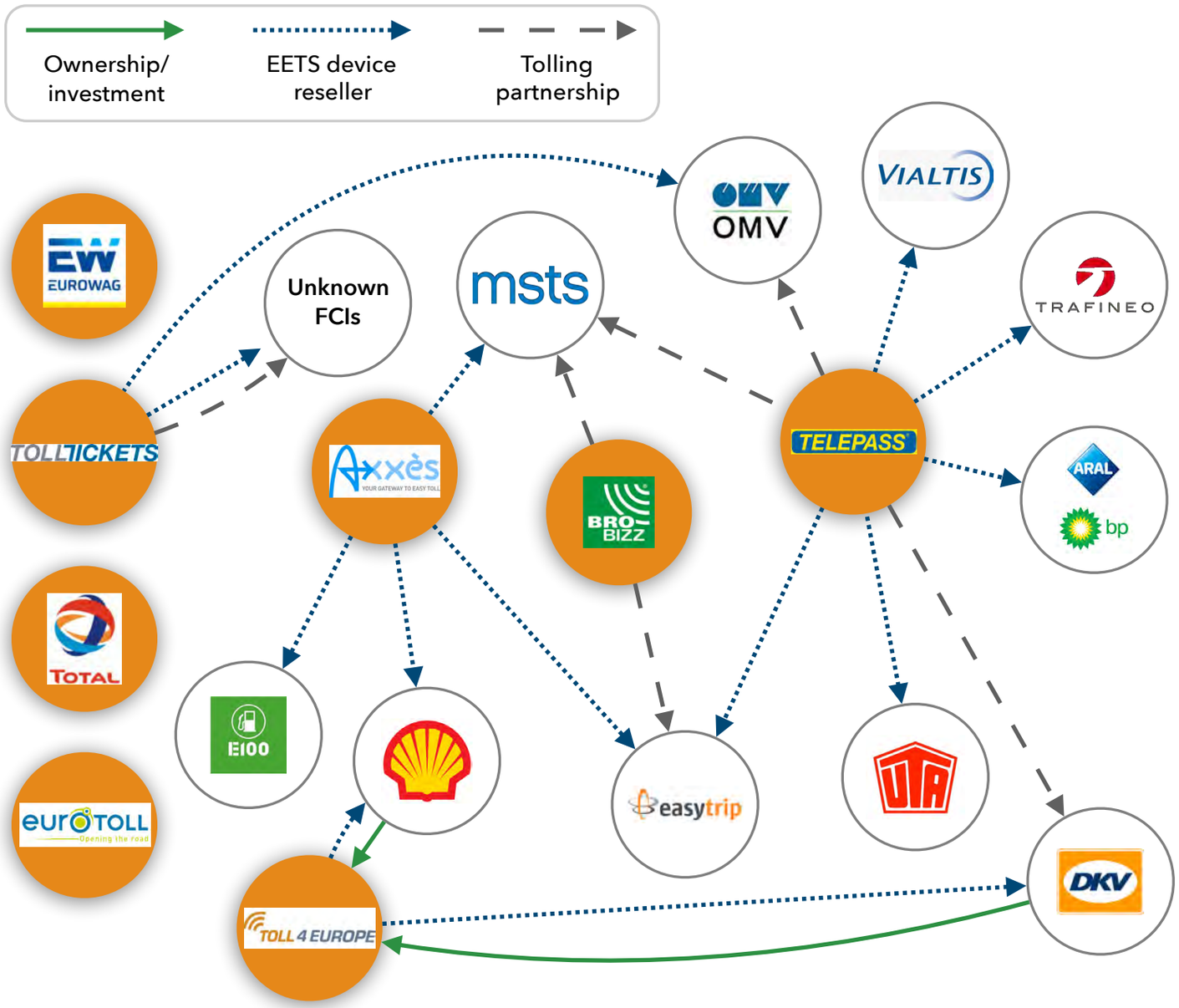
White label business model



Source: PTOLEMUS

EETS providers who are also fuel card issuers are far less likely to white label and re-sell their EETS solutions

Selection of partnerships between EETS providers and large fleet service providers



- As early entrants into the EETS market, **Axxès and Telepass have developed a significant number of relationships with leading fuel card and fleet service providers**
  - Both companies are predominantly toll service providers and therefore do not compete directly with fuel card issuers
  - This advantage enables the two companies to command a larger share of the EETS supplier market
- Powerful players such as **DKV and W.A.G Payment Services (Eurowag) have demonstrated their commitment to the EETS market** by developing their own solutions
- Tolltickets does not disclose its EETS partnerships, but is thought to supply a number of fuel card issuers
- While competitive concerns hitherto precluded EETS re-sale agreements between fuel card issuers, **the entry of new players such as telematics service providers and OEMs will add further demand for white labelled EETS solutions** (we shall explore this issue further in Section 5)

Source: PTOLEMUS

As competition increases with the entry of new resellers service fees will come under pressure

- As mentioned, each of the **fleet-related fees are negotiated** with individual customer fleets and dependent on a number of factors
  - In some cases, larger fleets with strong balance sheets may be able to negotiate lower service and rental fees, or even a complete removal in tolling domains where remuneration rates from the toll charger are higher
- The OBU deposit is not part of the EETS provider revenue stream and is not applied in all cases, but can offset the financial risk of non-return or damage to units when applied
- **The market will become more competitive as more providers enter the space**
  - Although 8 EETS providers are registered (excluding AGES), only 5 can actively provide services (as of September 2018)
  - Toll4Europe and Eurowag should be operational in late 2018 or early 2019, while BroBizz does not yet have a GNSS capable OBU and cannot cover all toll domains
  - **Eventually, all EETS providers are expected to re-sell/white label their platform** as is already the case with Axxès, tolltickets, Telepass and (soon) Toll4Europe
- **Remuneration from the toll charger is thus crucial to the current business model**
  - Service fees also represent a significant proportion of total revenues, although we expect these to decrease as competition becomes more intense
- Certain member states have attempted to implement 0% EETS remuneration, which would place additional stress on the EETS provider business model and increase the requirement to sell additional VAS as part of the EETS service package
  - However, due to the clear guidelines covering remuneration within the 2018 EC Position on EETS, coupled with their fundamental importance to the EETS business model, we do not foresee a market which will accept 0% commission from any toll charger

Source: PTOLEMUS

Image source: Welcomia/Freepik

Understanding the EETS provisioning market

1 The role of a National Service Provider (NSP)

2 The role of the EETS provider

3 HGV tolling value chains across Europe

4 The EETS provider business model

5 The evolution of the EETS provision market

6 PTOLEMUS' recommendations

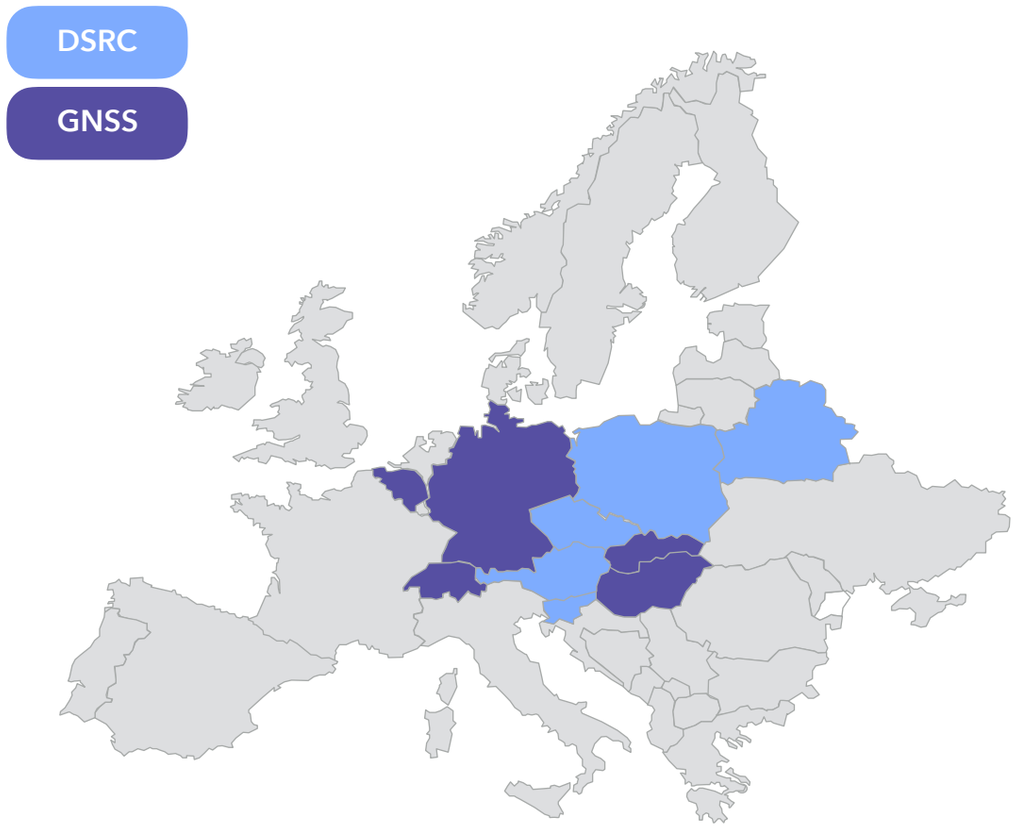
Understanding the EETS provisioning market

5.1 How the EETS market continues to evolve

5.2 External influences and potential disruptors

By 2025 there could be 10 new dedicated ETC schemes for HGVs across Europe

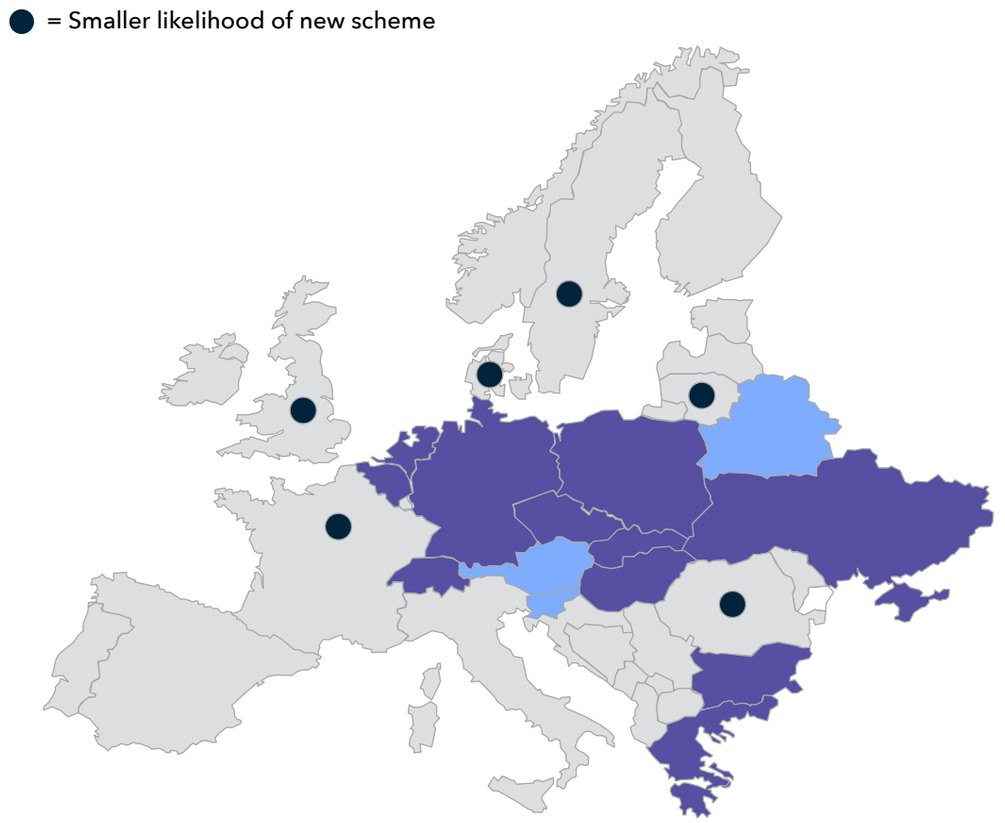
Dedicated HGV ETC schemes in 2018*



- Excluding all vehicle tolling and HGV specific vignettes (including the Eurovignette), there were 10 dedicated HGV tolls across the continent of Europe

  **Russia also has a dedicated HGV toll in place for HGVs, but this is highly unlikely to accept third party or EETS devices*

Potential dedicated HGV ETC schemes in 2025*

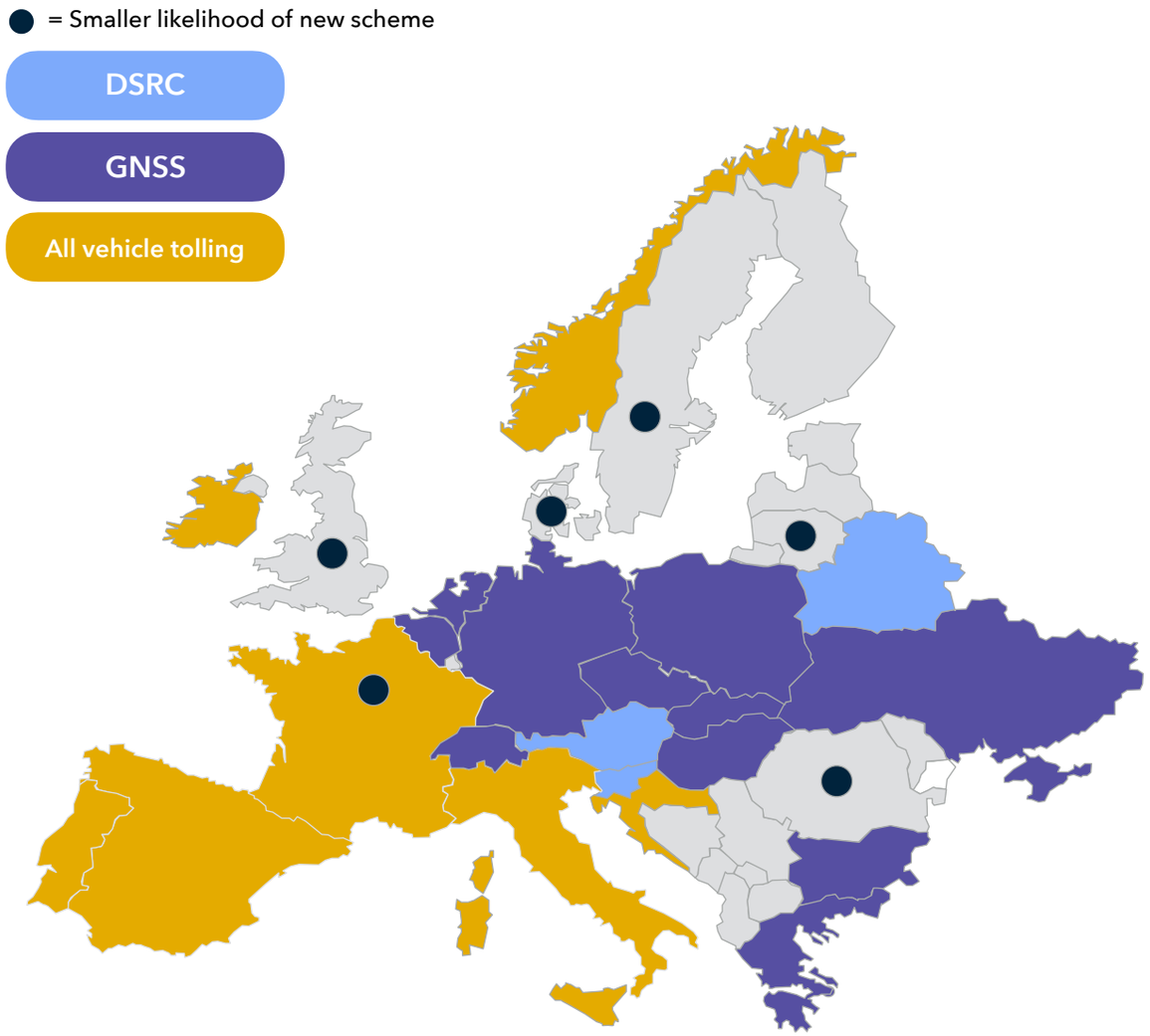


- We expect a significant increase in new activity from within EU Member States and indeed more broadly over the coming years
- Aside from the certainty of a new scheme in Bulgaria, both Greece and Ukraine have made firm steps towards new HGV specific tolling projects
- Furthermore, we see some likelihood of new HGV tolls in each of the current Eurovignette countries, in addition to Romania, Lithuania and potentially even France and the UK

Source: PTOLEMUS *Excluding vignettes (incl. Eurovignette)

Existing all vehicle tolling networks will also continue to grow, which will increase demand for interoperable/EETS services

Potential dedicated HGV ETC schemes and significant, nationwide all vehicle tolling networks in 2025*



- With the exception of Spain, which may begin closing tolled road concessions, almost all European countries have committed to tolling as an infrastructure funding mechanism
- By 2025, there will be very few countries across continental Europe which do not feature some form of either dedicated HGV or all vehicle tolling
- In parallel to the launch of new schemes, we expect to see the continued extension of tolled networks:
  - In July 2018, Germany extended the LKW MAUT network by approximately 40,000km to cover all federal roads
  - Poland's ViaTOLL network is expected to grow from 3,600km in early 2018 to approximately 6,000km by 2024
  - The Czech Republic's MytoCZ network is expected to grow by around 65% by 2021/22
- In addition to new projects and larger toll road networks, free flow technology is expected to replace manual and AET booths across all vehicle tolling domains such as Spain and France
- The expansion of tolling across all of continental Europe could result in the emergence of new EETS providers with a strong, regional presence from which to grow
  - This is already the case with providers such as Eurowag, which has a very different geographical focus and customer base compared to Axxès or Total, for example

Source: PTOLEMUS *Excluding vignettes (incl. Eurovignette)

Europe is in the middle of a pronounced shift towards free flow and open road tolling for both major and minor projects

Countries with FFT or ORT in 2005*

Estimate of countries with FFT or ORT in 2025*

- Free Flow Tolling (FFT) and Open Road Tolling (ORT) refer to toll check points that do not require the driver to either stop or slow down
- In 2005, **FFT and ORT was mostly limited to the HGV tolling schemes in Austria, Germany and Switzerland**
- Additional FFT infrastructure was also in place across concessions in Portugal and Norway - this has since been expanded and now constitutes part of the Via Verde and AutoPass networks, respectively

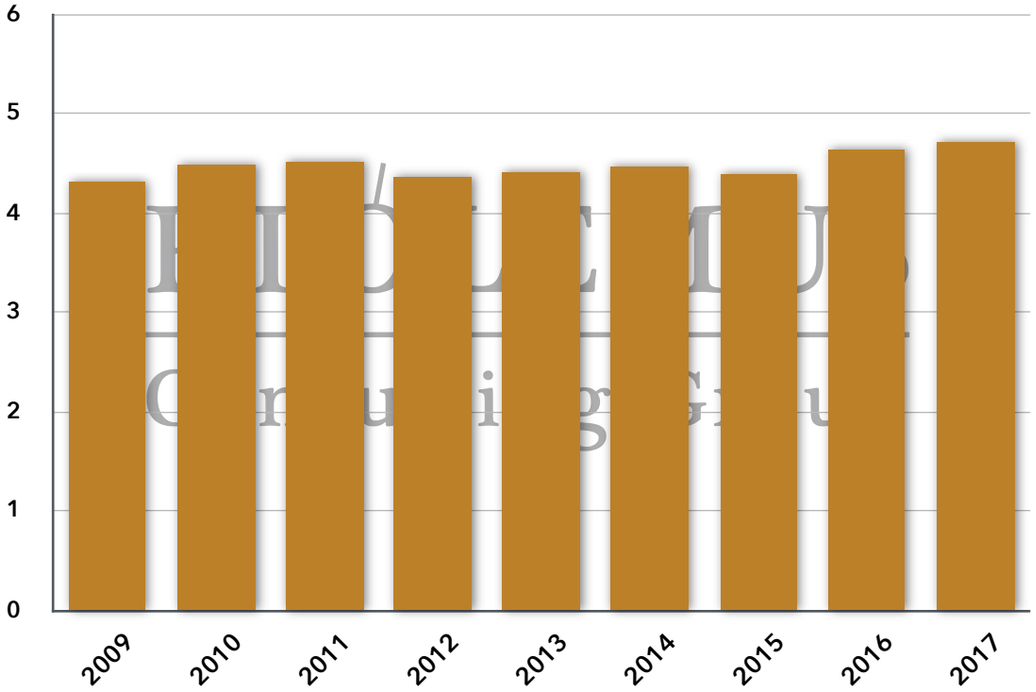
- **By 2025, we expect to see some form of FFT or ORT in almost all countries with road tolling infrastructure**
- All vehicle tolling domains such as France, Spain and Italy are already in the process of replacing manual payment booths - even the UK has some minor FFT lanes installed on the Humber Bridge
- **We estimate that Slovenia's new HGV toll, DarsGo, will be the last DSRC only toll to launch in Europe**, meaning ORT will proliferate over the coming years

Source: PTOLEMUS *Excluding vignettes (incl. Eurovignette)

The opening of Germany's LKW MAUT to third party devices is uniquely important for the long-term viability of EETS

- Since the lunch on 1 January 2005, the German LKW MAUT has collected per km fees for heavy trucks based on GNSS tracking
- Over the last decade, the LKW MAUT has generated substantial revenues at a remarkably consistent rate despite various macro economic challenges across the Eurozone
- **In 2017, the charge generated €4.7 billion in total revenues** - with the 2018 network expansion expected to generate an additional €2 billion per annum - this alone could represent a significant amount of potential commission for EETS providers
- Despite a flourishing EETS market, devices remain restricted to the Toll Collect authorised unit, which is manufactured by three main suppliers: Bosch, Continental and Grundig
  - **Germany remains resistant to allowing an open device market,** primarily due to the lack of an agreement concerning remuneration to EETS providers
  - It is still anticipated, but by no means guaranteed, that an agreement will be reached to allow EETS devices to operate across the LKW MAUT from either late 2018 or early 2019 onwards
  - It also remains the case that many EETS providers already have mature marketing campaigns promising device coverage in Germany

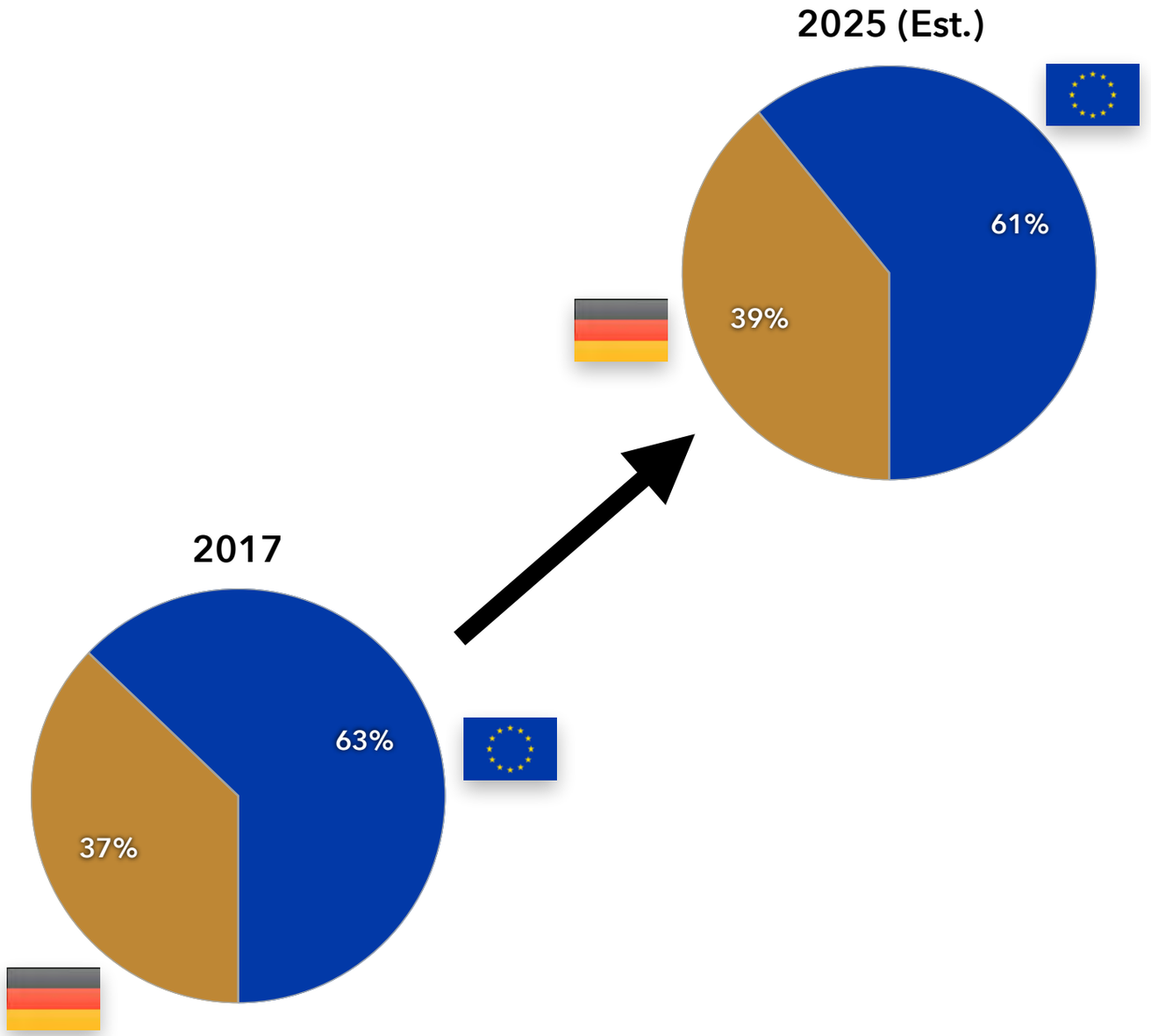
LKW MAUT total revenue (€billon)



Source: PTOLEMUS

Germany is and will remain responsible for the largest single share of HGV ETC revenues* within the EU…

German share of total HGV ETC revenues across the EU in 2017 and 2025 (forecast)

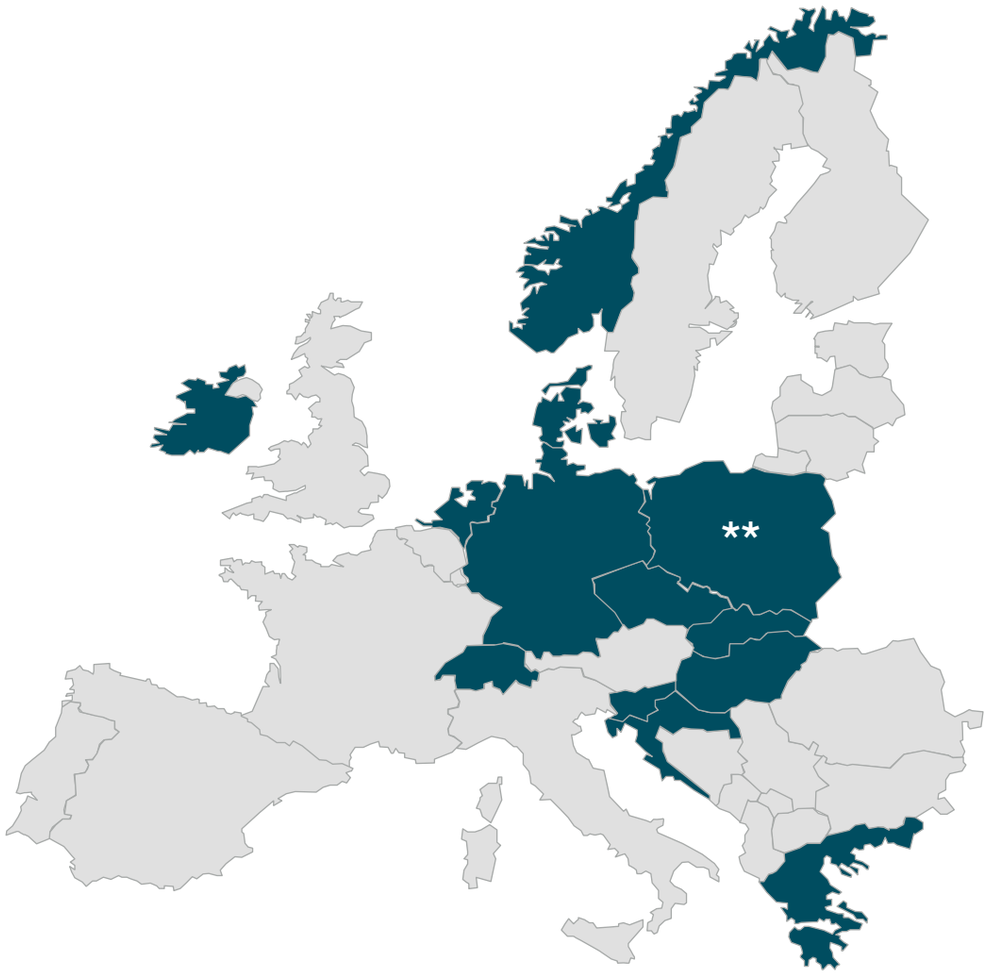


- At the end of 2017, Germany's LKW MAUT accounted for approximately **37% of all electronically collected HGV tolls** across EU Member States
  - This will rise to 39% by 2025
- While there will be new schemes and growth in other Member States over the coming years, the July 2018 network expansion and expected lowering of the weight class to 3.5t will retain Germany's position as the largest HGV tolling domain in the EU
  - Already the world's largest in terms of revenues, the 2018 expansion means that Germany has now surpassed Russia to also become the largest HGV tolling scheme by network size
- The lack of EETS acceptance in Germany and the absence of the LKW MAUT from both today's and tomorrow's market represents a significant challenge to the viability of EETS as a sustainable commercial enterprise
- The barriers to acceptance primarily concern the lack of an agreement on EETS provider remuneration
  - Indeed many EETS providers have already begun the device testing and certification process
  - Equally, marketing campaigns and websites for multiple EETS providers already promise coverage in Germany

Source: PTOLEMUS *Excluding all vignettes (incl. Eurovignette)

…Yet, even without Germany, we expect the demand for EETS services to continue to grow

Countries with significant HGV tolls* still without available EETS coverage (September 2018)



- As of September 2018, the future rate of EETS provider remuneration in Germany remains highly uncertain
  - In spite of this, most existing EETS providers are progressing with device certification and testing
  - We expect to see an agreement on EETS provider remuneration sometime in late 2018 or early 2019
- Outside the German market, **the acceptance of EETS devices will continue to grow**, particularly across Eastern Europe
  - EETS providers have not yet entered Hungary's open device market
  - New GNSS tolling domains in Bulgaria and, potentially, Poland will soon enable EETS acceptance
  - High transit countries Slovakia, Slovenia and the Czech Republic are already on the radar of the EETS providers such as Eurowag and Toll4Europe
  - Italy's DRSC domain will soon open to EETS devices
- **Competition to become the first accepted EETS device in each new country** will further drive the market

Source: PTOLEMUS *Excluding vignettes (incl. Eurovignette) **ViaTOLL

Numerous schemes across Europe are already moving towards either greater or complete reliance on EETS providers

- Bulgaria's public tender and subsequent contract included no provision for the supply of OBUs
  - Thus, **BGToll will be wholly reliant on EETS and third party devices** once it has launched in August 2019
  - As of October 2018, there is no NSP in place
- **France outsourced supply of OBUs to the EETS market** long ago
  - While France also has the option of manual payments at its tolling booths, HGVs wishing to pay via OBU in France can now only choose between EETS providers
  - This will become more relevant as France begins removing booths in favour of free flow tolling, which is expected to happen from the early 2020s onwards
- Even those with NSPs in place are seeing a far greater number of transactions from EETS providers
  - Despite having its own NSP (Satellic) **Belgium is rapidly moving towards a 50/50 split in terms of tolls collected from the NSP and EETS devices**

Source: PTOLEMUS

The acquisition of Abertis by Atlantia is likely to result in the first of several consolidations in the EETS market

- There are **numerous barriers in place which will continue to discourage new providers** from entering the EETS market
  - **Costs** involved in device certification and testing, back office development and service maintenance are high
  - **Technical competency** at both the front and back office cannot be delivered without prior experience in the tolling market
  - With 8 (excluding AGES) registered companies, **competition** is already strong
  - Each of the 8 active providers are both serious players in their own right, but many also have the **backing of much larger, well funded companies**, for whom tolling represents, and will remain, a highly important strategic service
- Italy's Atlantia, in partnership with Spain's ACS have committed to the joint purchase of Abertis, the parent company of EETS provider Eurotoll
  - While not 100% finalised, there are few remaining barriers to the acquisition and no reason to expect it will not be completed
  - While it has been made clear Abertis will not be broken up, it is our view that Eurotoll will merge with Telepass at some stage
  - Eurotoll has both fewer OBUs in circulation and fewer active EETS domains than Telepass
  - Furthermore, **Telepass has developed a market leading position as a white label EETS provider** for large fuel card issuers and fleet service providers, which Eurotoll has not
- Over the long term, we anticipate that the number of EETS providers (excluding resellers/re-sale partners) will stabilise at between 4 - 6
  - The planned merger of Atlantia (owner of Telepass) and Abertis (owner of Eurotoll), for example, will likely remove one of these players from the market
  - The costs of device certification and registration and distribution etc. in a growing number of toll domains could also force smaller players out of the direct market and into a reseller position
- There are few incentives in place for potential new providers such as vehicle manufacturers or fleet telematics suppliers to develop their own EETS platform when mature white label models exist
  - We expect all serious EETS providers to have a white label model option in place within the next 12 - 24 months
  - Failure to provide this option will result in a provider falling behind the competition

Understanding the EETS provisioning market

5.1 How the EETS market continues to evolve

5.2 External influences and potential disruptors

The tolling device of the future could take many forms and be issued by many different players

Typical devices found in a modern HGV capable of delivering or integrating a tolling service

Line-fitted

Black box

Smart Digital Tachograph

OEM system

eCall device

Event data recorder

Aftermarket

Tolling/ETC OBU

Smart Digital Tachograph

Smartphone

OBD dongle

Dash cam

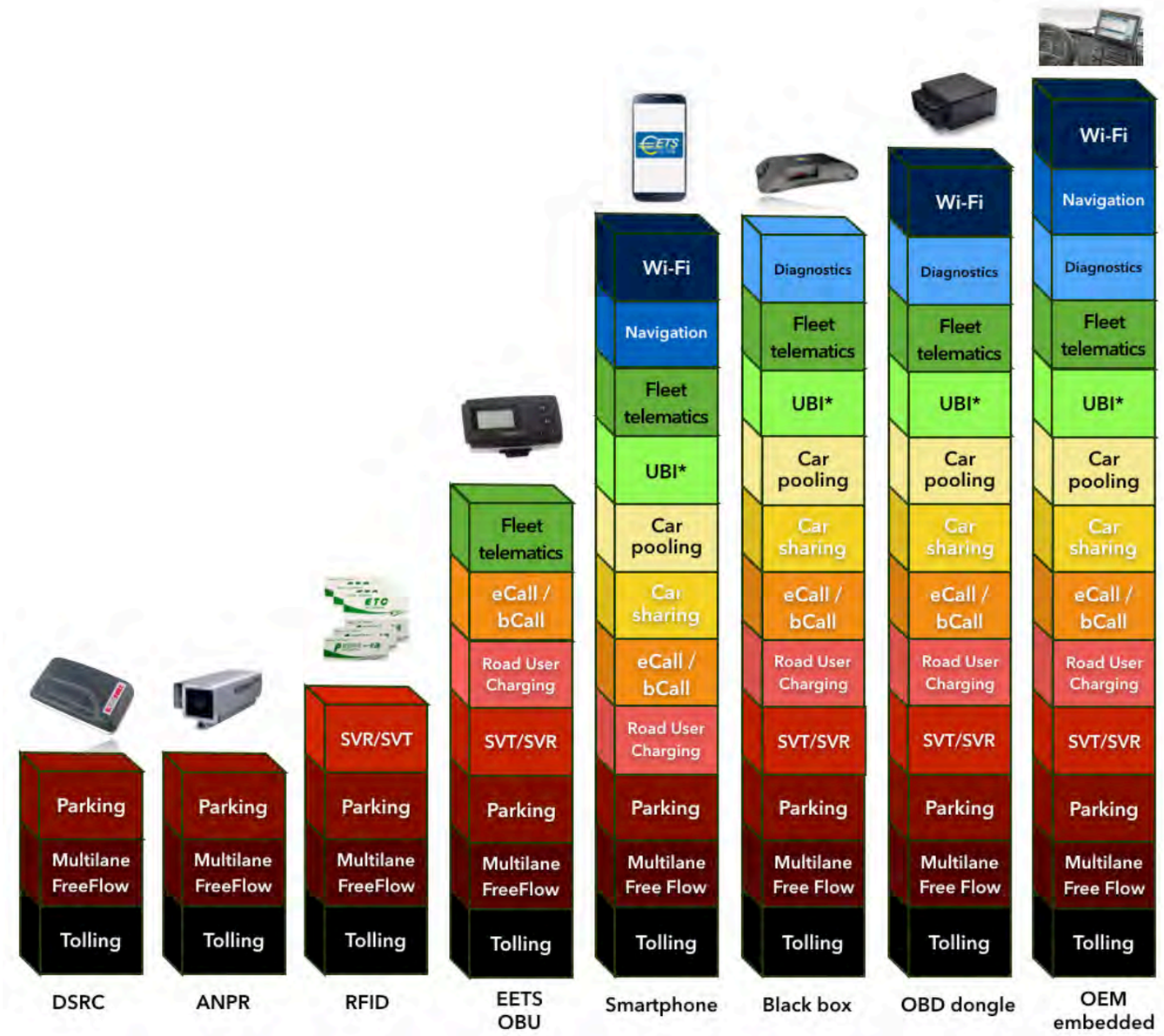
Telematics box

- Whether aftermarket or line-fit, **there are a growing number of devices which can either replicate or assimilate the tolling functionality**, both in terms of DSRC and, perhaps even more so, GNSS
- Fleet telematics, in particular, continues to grow at a rapid pace in all countries across Europe - these are already being certified as tolling devices across a growing number of domains
- **Movements are already taking place to integrate interoperable EETS technology within a line fit OEM platform**
  - This is particularly the case with Toll4Europe, which is partially owned by Daimler and known to be developing an in-vehicle EETS solution
  - This will almost certainly be hosted on the OEM's existing telematics platform, FleetBoard
- The new Smart Digital Tachograph has an additional DSRC device for enforcement, which, technically, could also be used for tolling in domains such as France, Italy, Spain, Portugal, Norway etc.
- Dash cams, eCall devices, OBD dongles and (potentially) event data recorders are all GNSS connected devices
- Most importantly, smartphones are already being utilised to deliver fleet telematics services and common fleet payments such as fuel; **we expect to see continued development in the use of smartphones as a tool payment device in the future**

Source: PTOLEMUS

The tolling function could easily be absorbed by other service providers utilising different technologies

Service comparison between major connected vehicle technologies



- Compared with other connected vehicle devices, **tolling units, be they DSRC or GNSS based, are comparatively less adaptable and less able to deliver services outside of tolling**
- While DSRC devices in particular, have been adapted to enable payment services outside of tolling, such as parking, fuel and restaurant drive-thru, they remain a predominantly single use device
- Due to the inclusion of GNSS technology alongside DSRC, EETS devices are significantly more able to deliver additional/value-added services in the HGV domain
  - Vehicle geolocation - a form of fleet telematics - is already widely offered by most EETS providers
  - This however, brings EETS providers into direct competition with dedicated telematics service providers, all of whom are able to equip the vehicle with an arguably, more adaptable and technologically able device, such as a black box or OBD dongle
- GNSS enabled OEM telematics platforms, such as Daimler's FleetBoard or Scania's OnBoard, are increasingly line fit as standard and even provided with no subscription cost
  - As OEMs representing all vehicle marques begin to re-align themselves as service providers, we expect to see more and more integrate tolling as a service capabilities

Source: PTOLEMUS *UBI = Usage based insurance

While far from widespread, the use of fleet telematics and third party GNSS devices for HGV tolling is already rising

Hungary already has over 20 different devices in use across its toll network

- Hungary created a model for fleet telematics based tolling with the launch of Hu-Go in July 2013
  - Hu-Go allows for the certification and use of any GNSS enabled device to collect tolls
  - To date, **more than 20 different devices are certified to collect tolls across the Hu-go network**
- Since then, Bulgaria has announced plans for an almost identical scheme, based on an open device market, which is set to launch on 16th August 2019
  - As of September 2018, **Bulgaria has no plans in place to offer a dedicated OBU and will rely entirely on the market to deliver tolling devices**
- Working in tandem with the World Bank, Ukraine has repeatedly vowed to introduce nationwide tolling for HGVs and appears to favour a similar procurement and technology model to Bulgaria
- While there appear to be no concrete plans in place, discussions have already take place in Sweden concerning a potential national HGV toll and - despite no firm decisions - Hungary's open device model was openly discussed an a potential option
- The Czech Republic is currently replacing its existing DSRC system with GNSS based technology - it is not yet known whether an open device model could form part of this new programme

Source: PTOLEMUS

Image source: Hu-Go

The potential to capture toll related spend has already encouraged numerous players to enter the tolling services market

Seven groups are now positioned as toll service providers

EETS provider

EETS reseller

- **Road operators have long provided payment solutions for drivers** across their own networks, which have evolved into more sophisticated mobility payment applications including a variety of value-added services
  - Most countries in Europe now have an interoperable nationwide solution for toll payment, often controlled by the dominant road operator(s), as is the case in France, Italy, Spain, Portugal and Greece
- Tolling has become an established service offered by fuel card issuers and energy companies, which have combined toll payments with their existing card based solutions (see next slide)
- Tolling service providers, such as MSTS and Easytrip have emerged over the last 5 years as powerful players in the European market offering a growing variety of value-added features alongside their well developed tolling portfolio
- **Fleet telematics providers have entered the toll domain more recently** with the creation of open device models seen in Hungary and Bulgaria
  - These providers are able to utilise the vehicle location data generated by telematics black boxes to enable toll declarations and transmit kilometres driven over a specific network

Source: PTOLEMUS

Toll payment services are already mature and well-integrated services for small and large fuel card issuers alike

Major FCIs offering toll payment services to HGVs

- Either as resellers or providers of their own on-board devices, **fuel card issuers (FCIs) have demonstrated a strong commitment towards the delivery of toll payment services**
  - Toll payments are increasingly bundled with additional transaction based services such as tax/VAT recovery
  - For many FCIs - particularly those focussing on the HGV segment - tolling now represents the most significant source of revenue after fuel; EETS is also a more profitable enterprise as re-sellers do not shoulder the same kinds of development costs
- FCIs such as DKV, Eurowag and Total have been at the forefront of the development of cross-border tolling and EETS services
  - Those that have not invested in their own EETS capabilities either have or are in the process of partnering with an established white label supplier such as Axxès or Telepass
- FCIs are now among the most important players in the European tolling and EETS market for several reasons:
  - **FCIs represent the largest suppliers of transaction and credit based services to fleets**, particularly within the HGV segment; even the largest telematics suppliers in Europe only have a fraction of the product footprint enjoyed by larger fuel card providers
  - As well as providing transaction and credit facilities, many manage large service station network, providing them with an on the ground presence across many countries
  - Through their banking licences, many **FCIs are able to process credit applications much faster than tolling companies** without a banking licence
  - FCIs already have established sales networks across the continent - this is not the case for most non-FCI EETS providers
  - Often subsidiaries of large energy companies, many FCIs have access to financial resources not available to EETS providers
  - It is arguably far easier to sell additional toll payment services to a fleet which already has a fuel card with the same provider

Source: PTOLEMUS

The EETS market is approaching a paradox

- There are already high barriers to entry in the form of domain certification costs, testing requirements and market experience
- As the EETS market becomes more competitive, scale and market share will be a key driver of profitability and continued ability to invest in new domains and services
- Unless EETS providers have strong re-sale partnerships in place with large players across a range of verticals, they will not survive
  - The EETS Directive forbids any preferential discounts from toll chargers, so providers will not gain a competitive edge in this area
  - Any competition on price will thus put pressure on service and rental fees
  - Standalone toll service providers without access to the financial resources of some larger fleet service providers will struggle to compete in this market
- Ultimately, we believe **the growth of white labelled EETS platforms will have the paradoxical effect of both growing the market for EETS services, yet shrinking the market for EETS providers**
- Nonetheless, toll payment services will remain a vital strategic service for many of the players currently involved in EETS

Winning in the EETS market will depend on partnerships and the quality of value-added services offered

- No single EETS or third party provider is in a position to dominate the market
- Thus, the battle will not be won by the provider with the most extensive device range
  - Coverage will be a factor…
  - …But, value-added services will be essential in order to differentiate from the competition
  - This will be harder to achieve for some EETS providers as many share the same OBUs and technology platforms
  - Currently, there are **only 4 different OBUs used by the 8 active EETS providers**
  - The integration with other service providers e.g. fuel card issuers, fleet telematics suppliers and OEMs will become a must
- Despite some likely consolidation over the next 2 - 3 years, **competition will remain fierce**
  - Although we expect some consolidation to happen, it will remain limited in the short term as new tolling domains continue to open
  - Nonetheless, the planned merger of Atlantia (owner of Telepass) and Abertis (owner of Eurotoll), for example, will likely remove one of these players from the market
  - AGES, the very first registered EETS provider, has already seemingly withdrawn from EETS activity
- Winning the battle for EETS market share will depend on the ability to deliver **a fully open EETS platform** to a range of non-ETC partners
  - Solutions must be able to appeal to mixed fleets and cannot be OEM-specific
  - **Data sharing** between services will also become vitally important as fleets become accustomed to single source dashboards
  - Currently, EETS providers lack data integration capabilities for non-tolling related data compared to other players within the ecosystem such as FCIs and telematics service providers

Ultimately, EETS providers will either have to integrate or be integrated themselves as platforms come to dominate

- Across all verticals, **the integration of services by single providers into single devices and bundled packages to the fleet is growing at a fast pace**
- As the EETS market grows and becomes more commercially attractive to larger service providers, the necessity for standalone EETS providers to deliver value-added services in addition to tolling payments will also grow
- The GNSS functionality of EETS devices can enable the delivery of additional telematics services, however these are currently only competitive with dedicated fleet telematics service providers on price
    - In terms of service sophistication, EETS providers are far behind due to the inability to access vehicle data such as engine diagnostics and fuel tank levels
    - This will make it much harder for EETS providers to compete in a future marketplace dominated by players offering fully integrated services which rely on access to vehicle data
- In our view, it is more likely that EETS providers will become the integrated party, rather than the opposite
    - As described in the previous slide, fuel card issuers are already mature players in the tolling space
    - As more and more tolling domains transition to GNSS technology and open device markets, **the attraction for fleet telematics suppliers will become greater**, indeed both Eurowag and Telepass have already invested in this market
    - **Vehicle manufacturers have also already shown interest in integrating EETS technology**; as a main shareholder of Toll4Europe, Daimler is perhaps the most prominent example of this trend
- A future market whereby EETS becomes an integrated service does not necessarily represent a threat to the market, rather it will encourage EETS providers to seek partnerships, rather than go it alone and increase the availability and, potentially, affordability of EETS
    - Either way, EETS will remain a vital strategic service for all players involved, including fleets

Understanding the EETS provisioning market

1 The role of a National Service Provider (NSP)

2 The role of the EETS provider

3 HGV tolling value chains across Europe

4 The EETS provider business model

5 The evolution of the EETS provision market

6 **PTOLEMUS' recommendations**

PTOLEMUS

Under the right conditions, we strongly believe that EETS providers would be willing to offer a long-term service guarantee…

- While we are anticipating consolidation in the market, most active **providers have demonstrated a clear commitment to EETS** and are certain to continue delivering services for the foreseeable future
  - Fulfilling the requirements of device/platform registration and testing in a new tolling domain arguably represents a significant commitment in itself
  - If conditions concerning remuneration remain agreeable, we do not anticipate EETS provider withdrawals from a tolling domain once the device has been certified and services are live
  - More likely to change is the owner of the customer relationship and the OBU/technology through which the EETS service is delivered
  - As described in Section 5, we expect the customer relationship ownership to shift away from the EETS provider to the reseller, which could be a fuel card issuer, a telematics provider or an OEM embedded platform, for example
  - Similarly to the EETS providers, **toll payment services represent a core strategic business** line for many resellers, who are equally committed to EETS
- Nonetheless, a toll charger can help to guarantee continuity of service and an open, competitive market by fixing **conditions concerning remuneration at a rate acceptable to both parties** (EETS provider and toll charger) and ensuring a uniform remuneration for all EETS providers
  - We believe that Belgium's Viapass can serve as a useful template in this respect as remuneration is uniform for all EETS providers with rates that do not discriminate against smaller providers

…Although, without adequate remuneration from toll chargers, the EETS business model could become unsustainable

- According to our estimates, **remuneration from toll chargers represents the single most important revenue stream for EETS providers**
  - In our hypothetical calculation (see Section 4), **remuneration from the toll charger constituted 60% of the EETS providers' revenue per truck**
- While the number of EETS providers is unlikely to grow (consolidation is more likely), competition will increase as existing providers extend their device acceptance to new countries and more resellers enter the market
  - **Players who are currently positioned as regional providers will continue to expand their service coverage** into new countries
  - The growth of resellers from other fleet service verticals will also increase competition even though they may be re-selling the same EETS device
  - Re-sale partnerships could also erode the strength of regional EETS providers, such as BroBizz, by bringing new players into local markets
- As competition among EETS providers and resellers grows, **service fees to fleets could be either reduced or removed entirely**, placing even greater financial importance on toll charger remuneration
  - Other **sources of revenue such as OBU rental fees and VAS fees could also be squeezed** in future
  - Numerous large fuel card issuers and fleet service providers are already re-selling the same EETS device (BP/Aral, Vialtis, Trafineo and UTA, for example, both re-sell a white labelled Telepass OBU), but continue to compete in the same markets for many of the same customers
  - Thus, toll charger remuneration represents the only revenue stream that cannot be reduced by the service provider to create a competitive advantage and cannot be negotiated down by fleets, particularly larger, international fleets with greater bargaining power
- As explored in Section 5, the entry of new service providers into the market will also have the reverse affect of increasing competition to deliver VAS and thus putting pressure on additional services offered directly by EETS providers such as vehicle geolocation, parking services and fleet management etc.
  - Average revenues per vehicle for geolocation services in particular are already facing pressure due to new and emerging providers

As private companies, EETS providers will not guarantee service to 100% of applicable fleets

- Although covered by EC legislation, **EETS is a business and not a public service**
- Unlike NSPs, **EETS providers are under no obligation to service 100% of the market**
  - Those without prepayment options in place will refuse coverage to financially risky fleets
  - We estimate that fewer than half of the existing EETS providers currently offer a prepaid option
  - **We expect the number offering prepaid solutions to increase**, although not all will choose to offer prepay
- Also unlike NSPs, EETS providers do not yet have systems in place to cater for users preferring not to have an OBU, nor do they have fixed distribution points/locations through which to make OBUs immediately available
- The vast majority of **EETS providers currently rely on the postal/courier network to supply and distribute OBUs**, which precludes immediate collection and payments
  - Account set-up can also take time, depending on the method of credit checking used by the EETS provider
  - Nonetheless, **we expect the means of OBU distribution to change** over the coming years potentially including fixed supply and return points located at fuel stations and truck stops, which will make supply and return of units easier and quicker

Small and domestic fleets and occasional users may require incentives to adopt OBUs

- Small fleets, in particular, may require cost incentives such as the removal of rental fees and smaller deposits to justify the installation of an OBU on a permanent basis
  - Existing EETS services include OBU rental and service fees, which could be prohibitive to certain fleets
  - Smaller fleets and occasional users are also less likely to be attracted by value added services as the ROI is less obvious and the costs proportionately higher
- Even with such incentives in place, **EETS providers will not serve 100% of fleets with their existing service proposition**
  - EETS providers have no financial incentive, nor are they mandated to provide services to all fleets
  - The Ministry could encourage all active EETS providers to offer a prepay option through the introduction of higher rates of remuneration
  - The Ministry should work with EETS providers to ensure that any prepaid option comes with minimal or no additional financial or administrative costs, which could include a **preferential rate of remuneration for prepaid kilometres**

Within the right timeline and under the right conditions, we believe EETS providers can fully service the OBU market

- The Ministry should **begin the device certification and testing process at least 12 - 18 months before the scheme is launched** in order to ensure EETS devices are ready to ship in advance and use from day one
  - The Ministry should be ready to share expected usage data and demand projections with EETS providers to ensure adequate numbers of OBUs are available at launch
- **Rates of remuneration should be agreed between both groups** (toll charger and EETS providers) and fixed, also in advance
  - In our view, we do not believe a competitive EETS market can be sustained without adequate remuneration from the toll charger
- The Ministry should ensure the device certification process is as fast, flexible and straightforward as possible in order to allow new providers and innovative new OBUs to enter the market quickly, should they wish to do so
- The Ministry should promote the option of prepaid OBUs (offered by several EETS providers) prominently in its pre-launch outreach and marketing campaign to encourage use
  - It is our view that the **increased availability of prepaid EETS devices** will ensure that fleets without a sufficient credit rating will be able to access on-board equipment
- The Ministry could incentivise and encourage a removal of service and rental fees through an appropriately structured remuneration regime

Under the right conditions, EETS providers could potentially replace the need for an NSP almost entirely

- Under existing models, a small NSP is still utilised to ensure service coverage for certain fleets and occasional users
  - Where OBUs are not mandatory, this includes the provision for manual payments, typically made via a fixed payment or route ticketing terminal, as is the case in Hungary, Germany and (soon) Bulgaria,
  - In cases where OBUs are mandatory, the NSP manages physical distribution points, including prepaid units without service fees
- Nonetheless, we believe that a more flexible and innovative remuneration structure could incentivise EETS providers to develop inclusive pricing models more suited to small fleets and occasional users, thus largely removing the need for an NSP
  - The Ministry should begin **cooperating with EETS providers at an early stage in the process** in order to promote the availability of prepaid accounts
  - The toll charger could incentivise EETS providers to offer prepaid units through the application of **preferential rates of remuneration for either prepaid kilometres or shorter trips**
- Greater competition and the growing maturity of the EETS market will gradually reduce service and rental fees, particularly for kilometres travelled within domains offering a favourable remuneration structure
  - The toll charger can again accelerate this trend by **providing long-term certainty over remuneration**
- The Ministry could share data concerning projected OBU demand with EETS providers - particularly those most likely to control a larger share of the market - to ensure sufficient OBUs are available at launch
- We believe that **certainty and financial guarantees concerning remuneration will result in greater guarantees of service to all fleets from EETS providers**, thereby reducing or even removing entirely the need for an NSP

PTOLEMUS Consulting Group

Appendix

PTOLEMUS intellectual property

Glossary of terms

AET	Automatic Electronic Tolling	**ROI**	Return on Investment
CLA	Cigarette Lighter Adaptor	**SME**	Small to Medium Enterprise
DSRC	Dedicated Short Range Communications	**SVR**	Stolen Vehicle Recovery
EETS	European Electronic Toll Service	**SVT**	Stolen Vehicle Tracking
ETC	Electronic Toll Collection	**TDO**	Toll Declaration Operator
FFT	Free Flow Tolling	**TSP**	Toll Service Provider (Audited third party toll service providers in Hungary)
GNSS	Global Navigation Satellite System	**UBI**	Usage Based Insurance
LKW MAUT	Truck Toll (Germany)	**VAS**	Value Added Services
NSP	National Service Provider		
OBU	On-Board Unit		
OEM	Original Equipment Manufacturer		
ORT	Open Road Tolling		

Image sources

Page number	Source
10	Satellic
11	Asierromero/Freepik
12	Asfinag, Kapsch, Myto, DarsGo, Satellic, Toll Collect
13	Toll Collect
19	Asfinag, Kapsch, Myto, DarsGo, Satellic, Toll Collect
23	European Commission
24	European Commission
30	Toll Collect
31	Axxes, Toll4Europe, Eurotoll, Telepass, Eurowag, Kapsch, Total/AS24
38	Toll Collect
63	Welcomia/Freepik
77	Hu-Go

PTOLEMUS Consulting Group

Strategies for Mobile Companies

Brussels - Boston - Chicago - Düsseldorf
London - Milan - New York
Moscow - Paris - Toronto

contact@ptolemus.com
www.ptolemus.com
@PTOLEMUS

Frederic Bruneteau
Managing Director
fbruneteau@ptolemus.com

Justin Hamilton
Consultant
jhamilton@ptolemus.com