

Kapsch TrafficCom

***Driving tolling
transformation***
*Region in focus:
Europe, Middle East
and North Africa*

How toll providers can enhance end user experiences and boost efficiency through automation

Traditionally, road tolling has been a simple value exchange between road users and authorities. The user pays to use a certain section of roadway – and the concessionaire or authority takes responsibility for road maintenance and security.

But in recent years, tolling technology has advanced at such a pace that it is transforming the way roads are being used and paid for. Today, the right tolling strategy and technology solutions can help authorities and concessionaires deliver more value for end users than ever before. At the same time, automated tolling technologies are helping to improve operating efficiency in ways that were previously impossible.

The latest generation of tolling technology is enabling the efficiency and experience benefits that concessionaires, authorities, and road users are looking for. In particular, systems that can consume and use alternative data sources such as Connected Vehicle (CV) data and mobile data are supporting entirely infrastructure-less tolling, with consistently excellent experiences for both regular and first-time toll-road users.

What's more, these kinds of systems can support innovative tolling models, such as Road User Charging (RUC), which can apply fairer 'distance-based' charges to vehicles. This not only improves road-user experiences, but can also help authorities to manage the transition to Electric Vehicles (EV), and the slow but inexorable reduction in revenues from fuel taxes.

Kapsch TrafficCom: delivering the future of tolling today

Kapsch TrafficCom leads the tolling industry in terms of technology innovation. This is evidenced by our distance-based and Road User Charging solutions, which use innovative technologies such as the Global Navigation Satellite System (GNSS) and alternative data sources such as Connected Vehicle (CV)

data and mobile data, to make the vision of entirely 'infrastructure-less' tolling a reality.

Our unique vision for the future of tolling has already been achieved with our recent distance-based charging project in Bulgaria, which uses European Electronic Toll Service-compliant tolling for Heavy Good Vehicles (HGV) based on location data from a variety of sources, processed within our advanced Geo Location Platform, to calculate and apply vehicle charges accurately and reliably. This project shows that our technology is ready and able to support RUC and distance-based charging models when the time is right, allowing authorities and concessionaires to maximize tolling revenues as the trend towards EVs continues to accelerate.

Supporting every stage of your tolling transformation

While Kapsch TrafficCom technology already enables infrastructure-less tolling, we also understand that many customers around the world are still migrating from plaza solutions to Multi-Lane Free Flow (MLFF) solutions, powered by onboard units.

For this reason, we offer all of the infrastructure, software, and services you need to take the next step on your own transformation journey, whether you are moving from manual plaza tolling to automated payment lanes, MLFF solutions, or deploying a new, 'greenfield' scheme using a fully gantry-less tolling approach based on GNSS technology.

In this short paper, we provide a brief overview of Kapsch TrafficCom's tolling innovation and end-to-end tolling solutions and capabilities. We also explain how our unique industry knowledge and delivery experience ensure success for our clients, time after time.



GO MAUT 2.0 project, Austria

Reference project

Kapsch TrafficCom was selected to provide a new MLFF solution in Austria. The scope of the project included the design, development and delivery of an end-to-end MLFF architecture, including a fully integrated automatic number plate recognition (ANPR)-based vehicle identification system, which handles tolling enforcement across 2,200 km of Austrian roadways.

The technical solution had to provide an accurate, auditable, enforceable system which is suitable for rapid nationwide implementation, with the scope to handle initial traffic volumes of up to 700,000 commercial vehicles of over 3.5 tons in weight. The most critical requirement was to replace the existing toll system with the MLFF solution, while identifying

enforcement cases for near-zero loss of revenue.

In line with Austria's transport policy and European objectives, interoperability with systems in other EU member states, and non-discrimination of users were both critical requirements.

The result is a stable, reliable, and high-performing system with a very low demand for manual interventions that has significantly reduced operational costs. Through automation, the number of manual validations has been reduced by over 60%.





Why partner with Kapsch TrafficCom for your tolling transformation

Kapsch TrafficCom is delivering the future of tolling today, allowing your organization to automate processes, improve business performance, and provide excellent end user experiences. Our tolling capabilities and services are differentiated by:

1 Our passion for and commitment to R&D

which has enabled us to create the industry's most innovative, end-to-end solutions for fully infrastructure-less tolling based on GNSS technology, including our proprietary Geo Location Platform.

2 A unique and compelling vision and technology roadmap for the future of tolling and mobility

based on seamless integration of our tolling solutions with traffic and demand management solutions, such as real-time incentives to reduce traffic demand at busy times, integration with public transport networks for multi-modal journey planning, and more.

3 Unique operations experience that minimizes project risks

based on 30+ years of industry experience and successful delivery of 6 nationwide tolling schemes around the world (as well as many other local projects) and experience operating schemes from 'the inside'.

4 High performance and reliability Key Performance Indicators for vehicle detection, vehicle classification and charging

allowing your organization to maximize revenues and meet your challenging Service-Level-Agreements (SLAs).

Leading tolling innovation for more than two decades

Kapsch TrafficCom leads the industry in terms of tolling innovation, R&D and tolling product development. This allows tolling providers to reduce their infrastructure footprints and associated costs vs. competing providers, and to adopt tolling technologies and models that meet your specific needs.

Our innovative portfolio can take tolling providers all the way from tolling with OBUs (RFID/DSRC) to AI-powered video for enforcement and – ultimately – to infrastructure-less tolling based on GNSS/mobile data, with highly efficient, AI video for enforcement.

Having deployed a nationwide satellite distance-based tolling solution for HGVs in Bulgaria, and with responsibility for operating other GNSS domains in Belgium and Germany, Kapsch TrafficCom is ideally positioned to create pilots, PoCs and full rollouts for distance-based/road-user charging as required. Our unique capabilities in this area are based on:

- **Our back-office platform, which already supports full-fledged RUC**

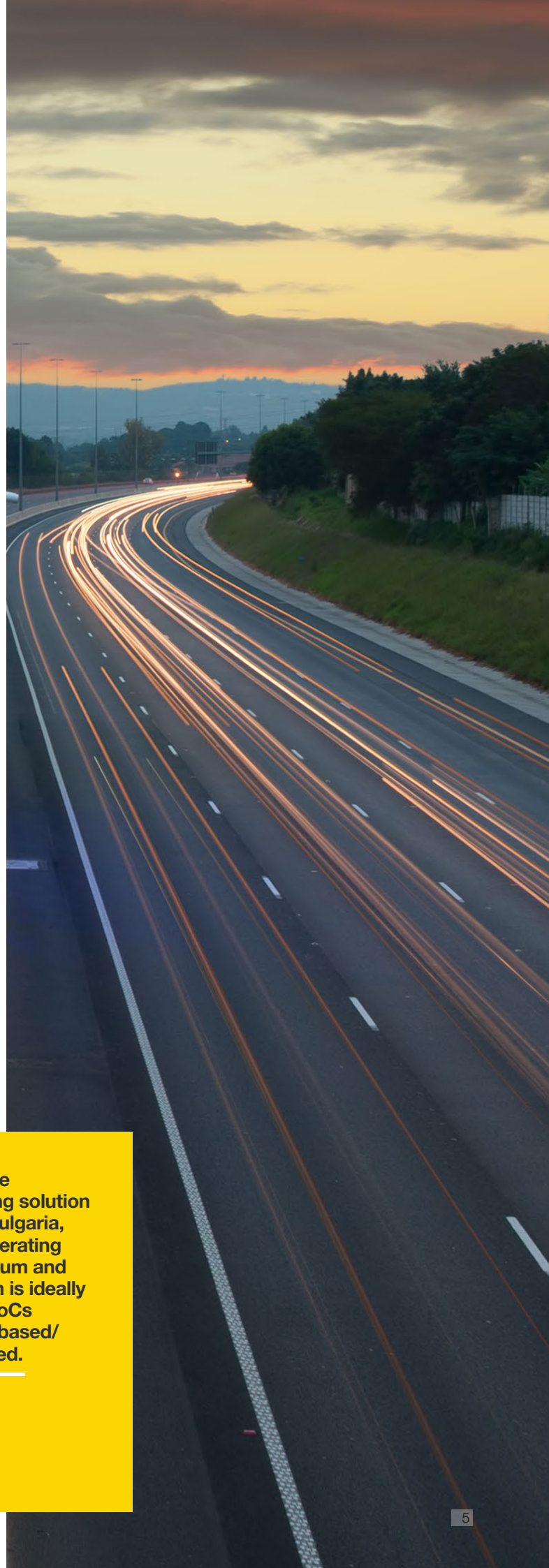
The Kapsch TrafficCom back-office platform (OBO) not only ingests data from dedicated OBUs. We are also integrating Connected Vehicle (CV) data and other data sources into our software to enable true RUC applications.

- **Our advanced GNSS capabilities,** underpinned by our proprietary Geo Location Platform.

- **Our recent and relevant experience** of delivering the nationwide distance-based charging scheme in Bulgaria, which recently became available based on a Software-as-a-Service (SaaS) delivery model for the project GPL. We also have experience in 'toll tickets' operations in Belgium and Germany.

Having deployed a nationwide satellite distance-based tolling solution for Heavy Good Vehicles in Bulgaria, and with responsibility for operating other GNSS domains in Belgium and Germany, Kapsch TrafficCom is ideally positioned to create pilots, PoCs and full rollouts for distance-based/road-user charging as required.

**Bernard Lamy,
Executive Vice President
Tolling Application Centre,
Kapsch TrafficCom**



Kapsch TrafficCom tolling solutions at a glance

Kapsch TrafficCom offers all of the infrastructure, software, and services tolling providers need to deploy plaza tolling solutions (that support a mix of manual, ETC, and mixed payment-method lanes), and Multi-Lane Free Flow tolling solutions. The unique breadth and depth of our industry knowledge, technology portfolio and delivery capabilities mean we are in a unique position in terms of being able to steer tolling providers on their transformation journeys, from manual plaza solutions to automated plaza solutions, and to MLFF solutions that use tags, video, satellite, or a combination of technologies as required for specific use cases.

Kapsch TrafficCom tolling solutions, which are suitable for both highway applications and bridge and tunnel applications, include:

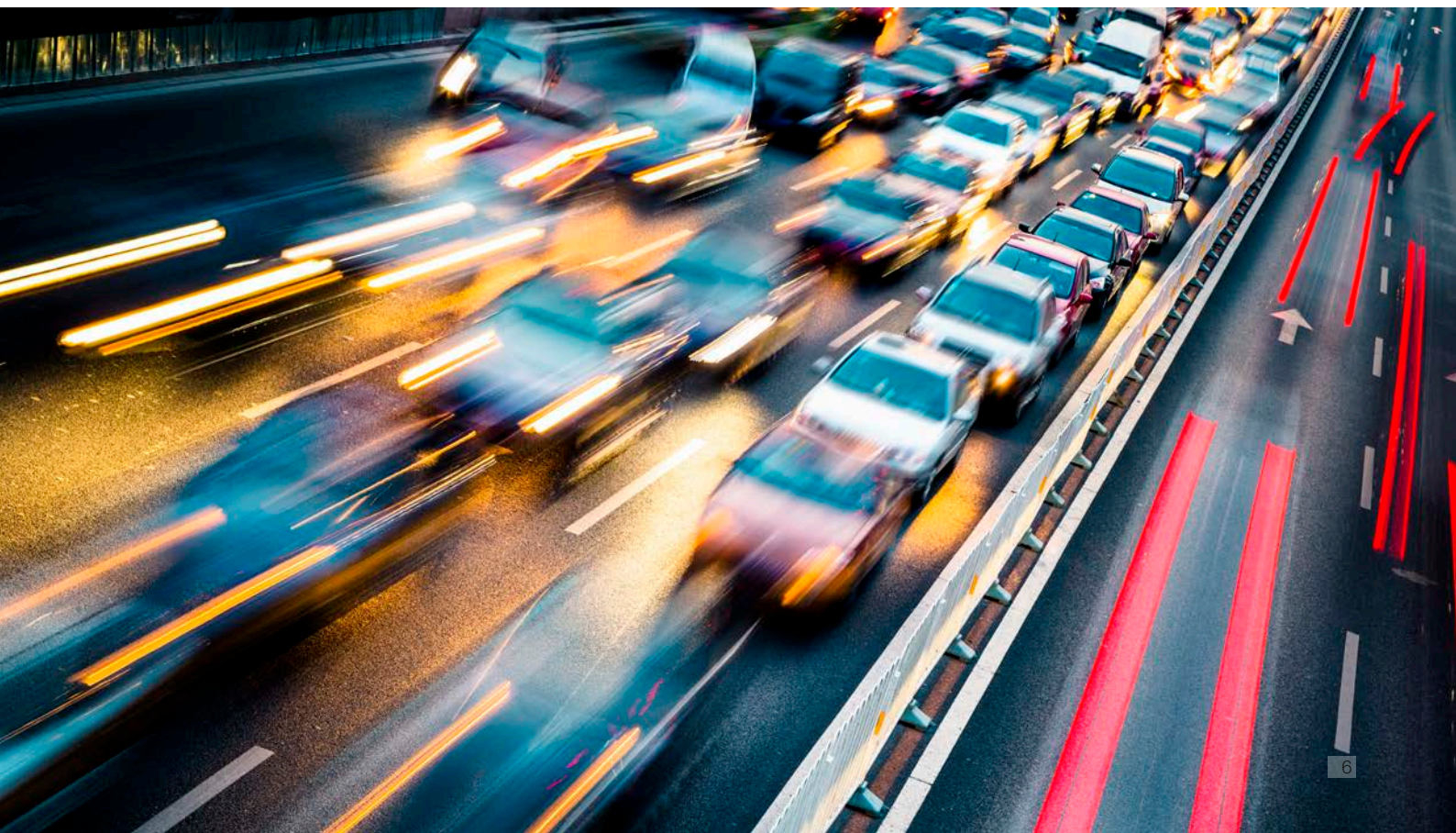
1 Highly innovative, fully infrastructure-less tolling powered by alternative data sources such as Connected Vehicle (CV) data and mobile data, with effective charging enabled by our proprietary Geo Location Platform (which is only one of two such systems that is currently certified to the EETS standard). Our infrastructure-less tolling capabilities are facilitated by on-board equipment that reports the location of the vehicle over a wireless connection to Kapsch TrafficCom's Geo Location Platform. The in-vehicle data source for location-based tolling can be a dedicated GNSS OBU, a fleet tracking device, a smartphone, or – in a future scenario – the vehicle's on-board (OEM) infotainment system.

2 MLFF tolling based on DSRC or RFID which offers near-100% reliability for reading onboard tags in vehicles and applying charges based on the sections of the tolling network travelled. Kapsch TrafficCom is the only provider currently offering double technology (RFID 6 and DSRC 5.8) toll gantries.

3 Managed lanes, a specific application of MLFF, which allows authorities to shape or control traffic to achieve specific objectives, including high occupancy (HOV) lanes, or high occupancy toll (HOT) lanes.

4 Video tolling, which supports vehicle detection, classification and identification through automatic number plate recognition. Importantly, our video solutions support a high degree of tolling enforcement, and therefore operating efficiency, which is critically important in all markets.

5 Traditional plaza solutions, which are optimized for throughput and support new features, including gantry-mounted sensors (rather than tarmac embedded sensors), which are less expensive to maintain.



Nationwide tolling and e-vignette system, Bulgaria

Reference project

In January 2018, Kapsch TrafficCom signed a public procurement contract with the Road Infrastructure Agency (RIA) of Bulgaria for the design, development, and implementation of a nationwide Electronic Toll Collection System (ETCS). As of December 23rd, 2020, for a period of five years, Kapsch TrafficCom Traffic Solutions will manage the technical operation of the passenger vehicle e-vignette system and the electronic truck toll system in Bulgaria.

The technical operation comprises the maintenance of all hardware and software as well as the operation of the data centers.

Kapsch TrafficCom took a collaborative partnership approach during all stages of the project, including project kick-off, requirements analysis, testing, training, and acceptance. The project kick-off took place under

the supervision of the special consulting team, who was an officially appointed partner of the Authority and also led the acceptance tests on behalf of the Authority. With a professional approach, documentation, and workshops with RIA and the consulting team, Kapsch TrafficCom successfully tested and obtained system acceptance.

Working closely with the client across seven key working groups, Kapsch TrafficCom was able to take the e-vignette system into operational service two months ahead of schedule. What's more, Kapsch TrafficCom efficiently steered the transition from time-based to distance-based tolling for vehicles over 3.5 tons. As a result of the solution, the Authority has increased revenues from e-vignettes by 10% and achieved even higher returns from effective enforcement.



Take the next step on your tolling transformation journey

For more information about Kapsch TrafficCom tolling solutions and services, and how they can help your organization to maximize efficiency through automation and deliver more convenient, value-added customer experiences, please [visit the website](#), or [contact us](#) for a meeting today.

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Kapsch TrafficCom

Kapsch TrafficCom is a globally renowned provider of transportation solutions for sustainable mobility with successful projects in more than 50 countries. Innovative solutions in the application fields of tolling, tolling services, traffic management and demand management contribute to a healthy world without congestion.

With one-stop-shop-solutions, the company covers the entire value chain of customers, from components to design and implementation to the operation of systems.

Kapsch TrafficCom, headquartered in Vienna, has subsidiaries and branches in more than 25 countries and is listed in the Prime Market segment of the Vienna Stock Exchange (ticker symbol: KTCG).

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