

# End-to-End Product & Solution Portfolio.



always one step ahead

# Kapsch TrafficCom: Always one step ahead.

## **Always looking to the future.**

As an international provider of ITS solutions and intelligent traffic management solutions, we maintain a tradition of visionary thinking, responsible leadership and an entrepreneurial spirit since 1892. For an optimized traffic flow, conscientious to the impact on the environment – today and in the future.

## **Always innovative.**

Our goal is to create intelligent products and solutions that support our customers' end-to-end value chain. To this end, we focus on innovative ITS (intelligent transportation systems) that deliver commercial benefits and enduring advantages for our customers.

## **Always striving for excellence.**

Our mission is to help our customers and partners worldwide achieve and sustain a competitive edge. We are committed to create value that generates value.

## **Always aware of our responsibilities.**

We strive to make an important contribution to shaping the future by promoting a mobile, networked and responsible world. We are dedicated to the responsible stewardship of natural resources, and follow an integrated quality management system.

## **Always where you need us.**

Our corporate strategy is based on a synthesis of local customer support, genuine customer-centricity, and a global presence. With an extensive network of subsidiaries and branch offices around the globe, we are always where our customers and partners need us.



## End-to-End Product & Solution Portfolio

Kapsch TrafficCom specializes in products, systems and solutions for the intelligent transportation systems (ITS) market, focused on three key areas: toll collection, urban access management and safety and security applications. Kapsch TrafficCom offers an end-to-end (“e2e”) solutions portfolio across the entire value chain, from single products and services to fully integrated turn-key systems including:

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- system concept and design
- planning and rollout
- development and manufacture of core products
- system integration and implementation
- customer support
- training
- maintenance and service
- technical and commercial operations

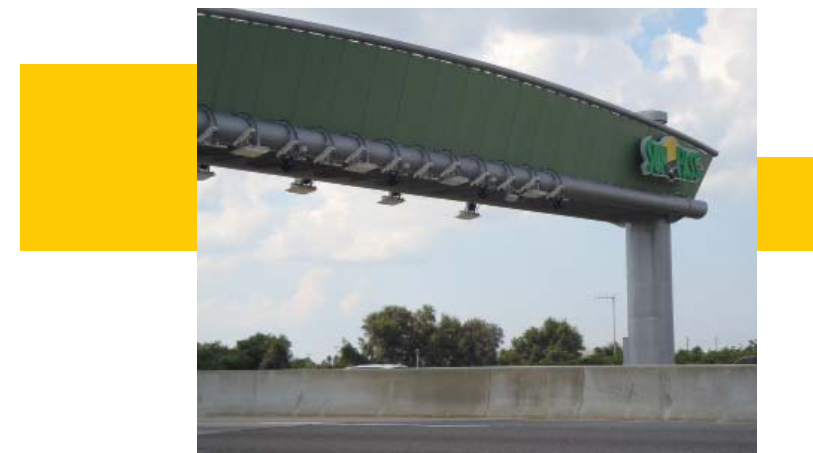
Kapsch TrafficCom North America operations supports sales, customer service, engineering competence and manufacturing for the business entities in Canada, Mexico and U.S.A. North American headquarters are located in Sterling, Virginia.

# To manage traffic with intelligence. Creating added value.

Toll Collection. Kapsch TrafficCom designs, develops, manufactures products, systems and services for electronic toll collection (ETC) systems, for automatic single lane applications as well as for all electronic tolling (AET)/ open road tolling (ORT), and high occupancy tolling (HOT) solutions.

Kapsch TrafficCom specializes in toll collection systems which utilize 915MHz transponders and readers, 802.11 WAVE (5.9 GHz) technology, infrared laser, video and/or automatic license plate recognition (ALPR) technologies. We offer electronic toll collection products including roadside equipment and in-vehicle on-board units compliant with national and international standards, vehicle enforcement systems, vehicle detection and classification systems, vehicle registration, back office systems along with integration services. Kapsch also offers a variety of services to toll collection agencies and the operation of tolling and traffic management systems.

The Kapsch AET/ORT System delivers high performance electronic toll collection without physical barriers and independent of traffic level. The Kapsch system maintains superior accuracy and vehicle-specific lane localization in an open road environment, where vehicles can drive at high speeds and change lanes at every location throughout the system ensuring reliable revenue for road operators. Kapsch AET/ORT systems deliver this revenue-guaranteeing performance while enabling greater traffic throughput and reducing traffic congestion and consequent vehicular emissions than traditional single-lane tolling systems.



Kapsch TrafficCom provides an end-to-end technology solutions for managed lanes and and High Occupancy Tolling (HOT) that incorporate sophisticated toll collection and traffic information systems. These systems can provide dynamically priced tolls leading to a faster commute for travelers, and a reliable system for road operators that helps to reduce congestion and generates an additional source of revenue.



### Vehicle Enforcement Systems (VES).

Toll needs control. Only effective control ensures that all toll revenue is collected and all users are treated fairly. Kapsch TrafficCom offers comprehensive solutions for enforcement based on video and laser scanner technologies.

### Vehicle Detection and Classification.

Kapsch TrafficCom creates sensor systems based on laser scanners for vehicle classification and detection, including as a trigger for ALPR camera images.

### Video Tolling.

Kapsch TrafficCom offers camera systems for multi-lane and single lane environments capable of generating overview images and automatic optical character recognition (OCR/ALPR).

### Back Office Systems.

Kapsch Back Office Systems are designed to be scalable, reliable and robust solutions for toll collection systems handling the following key functions:

- Customer Service Center (CSC)
- Interface to roadside system for communication with tolling points
- Creation and maintenance of lists of authorized or unauthorized users
- Tolling procedures including application of complex toll rate schemes
- Enforcement procedures including validation and provision of incident data
- Customer Relationship Management (CRM) with customer contact point applications and customer web portal
- Billing and Accounting including payment reminder processes
- Reporting and Statistics for operational and financial purpose

### Urban Access Management.

Urban Access Management applications consider a variety of traffic control measures to manage the needs of that specific urban environment and the character of the city. This suite of products, systems and solutions includes urban road user charging solutions, parking and access management, restricted access zones, as well as environmental or low emission zones for urban areas. Enforcement and back office infrastructure may be an integral part of these solutions. The product portfolio includes on-board units, roadside equipment, point-of-sales equipment, as well as video and sensor products for enforcement purposes.



### Safety & Security.

Kapsch TrafficCom offers products, systems and complete turn-key solutions for selected safety & security applications that allow authorities to increase traffic safety and to ensure that road users comply with traffic law. The product suite for safety & security applications includes on board units and roadside equipment as well as smart video and various sensor products.

### Commercial Vehicle Operations.

Kapsch TrafficCom is a supplier of specialized transponders for heavy interstate trucks, used to assist in preclearance at equipped weigh stations, port-of-entry facilities and agricultural interdiction facilities. That means greater efficiency for shippers and improved safety for all highway users. Kapsch TDMA CVO transponders are compatible with all CVISN AVI readers across the US, including all PrePass and Norpass sites. We also provide video based e-screening solutions.

### Incident Detection.

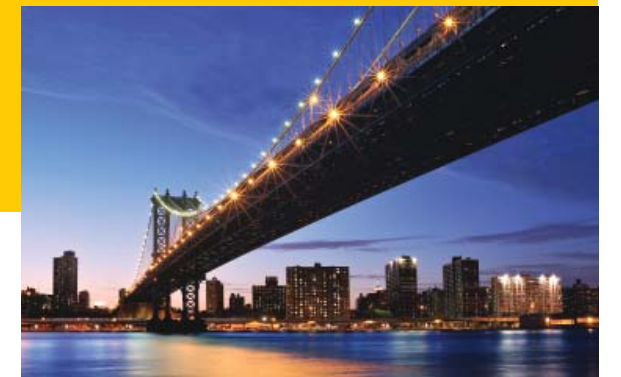
The Kapsch Incident Detection System (IDS) detects roadway events and anomalies within seconds of their occurrence by analyzing images from standard video surveillance cameras. Kapsch IDS systems include video analysis, digital storage, digital image transmission and control systems in one integrated system.

### Vehicle to Infrastructure Safety Applications.

Since its inception, Kapsch TrafficCom has been a partner of the U.S. Department of Transportation's Connected Vehicle Initiative (formerly IntelliDrive™). This initiative supports deployment of an interoperable communications infrastructure for ongoing real-time data communications between vehicles (V2V) and between vehicles and the roadside communications (V2I) infrastructure.

Ultimately such V2V and V2I applications will allow travelers to access real-time local traffic conditions and routing information, receive warnings about imminent roadside hazards, and conduct commercial transactions within their vehicles. In addition, transportation agencies will have access to road condition and traffic situation data, allowing them to better manage traffic operations, support planning, and more efficiently manage maintenance services.

Kapsch TrafficCom is a pioneer in the development of products and applications for such V2I uses based on 5.9 GHz DSRC WAVE.



# Operations.

Kapsch TrafficCom offers technical and commercial operation of electronic toll collection systems. The Kapsch operations portfolio focuses on three core competencies: consulting, implementation and operations, including staffing and training, maintenance and system monitoring.



# Products & Components. 915 MHz Portfolio.

JANUS® Transponders are designed for high performance in both lane-based and open road toll collection environments, enabling agencies to implement the best application to meet its needs today while proving a seamless path for expansion or upgrade as resources permit. The JANUS transponders deliver the same powerful flexibility and functionality as the field-proven Interior FPT (the predecessor with more than 21 million units in service today) in a smaller and more aesthetically pleasing form. The JANUS transponders are available in several forms including the Interior Transferable/Secure/Permanent Mount, Driver and Exterior, designed to accommodate many functional and installation requirements.

V6 TDMA Transponders are designed to help heavy interstate trucks to avoid lengthy stops at weigh stations and ports of entry. The device's onboard lights and tone alert the driver to bypass inspection facilities or pull-in for manual processing. It facilitates verification by enforcement officials with the 15 minute driver feedback signal standard recommended by ITS America. This transponder is also available with a Pre-Trip Inspection capability which enables users to verify the operational status of their transponders with the simple push of a button.

JANUS® Reader was designed to achieve high performance transponder reading in open road toll collection environments.

It supports up to 8 RF channels or 5 ORT channels and takes accurate, reliable identification transponder revenue capture to the next level. It is fully compatible with the IAG protocol and Badger lane controller interfaces while offering additional capabilities and benefits such as Ethernet connectivity to make networking possible, faster transaction processing time to improve toll collection performance further, and Web-based configuration interface to allow for simplified maintenance, diagnostics and administration.

JANUS® Multiprotocol Reader is capable of supporting our industry leading 256-bit Active Time Division Multiplexed (TDM) transponders as well as commonly used protocols including ISO backscatter 10374/ATA/AAR S-918, ISO 18000-6B- and ISO 18000-6C tags.

JANUS® Portable Reader provides the mobility required to read transponders in field settings. It features in automatic RF synchronization capability to ensure there is no interference with existing roadside readers. An optional extended range antenna allows the JANUS Portable Reader to read transponders as far away as 20 feet. The result is an extraordinarily flexible portable reader.

The Kapsch TrafficCom 5.9 GHz DSRC WAVE portfolio.





**Tolling Transceiver 9450 for electronic toll collection based on 5.9 GHz DSRC.** The transceiver is a compact roadside infrastructure device that communicates wirelessly with the on-board equipment in multi-lane and single lane tolling environments. The transceiver is ideally suited for high-speed AET/ORT and implements a high performance lane level localization capability.

**On-board unit (OBU) TS 3304.** The OBU is a light weight and compact transponder suited for road charging systems such as high-speed ORT and high performance high occupancy lane tolling environments.



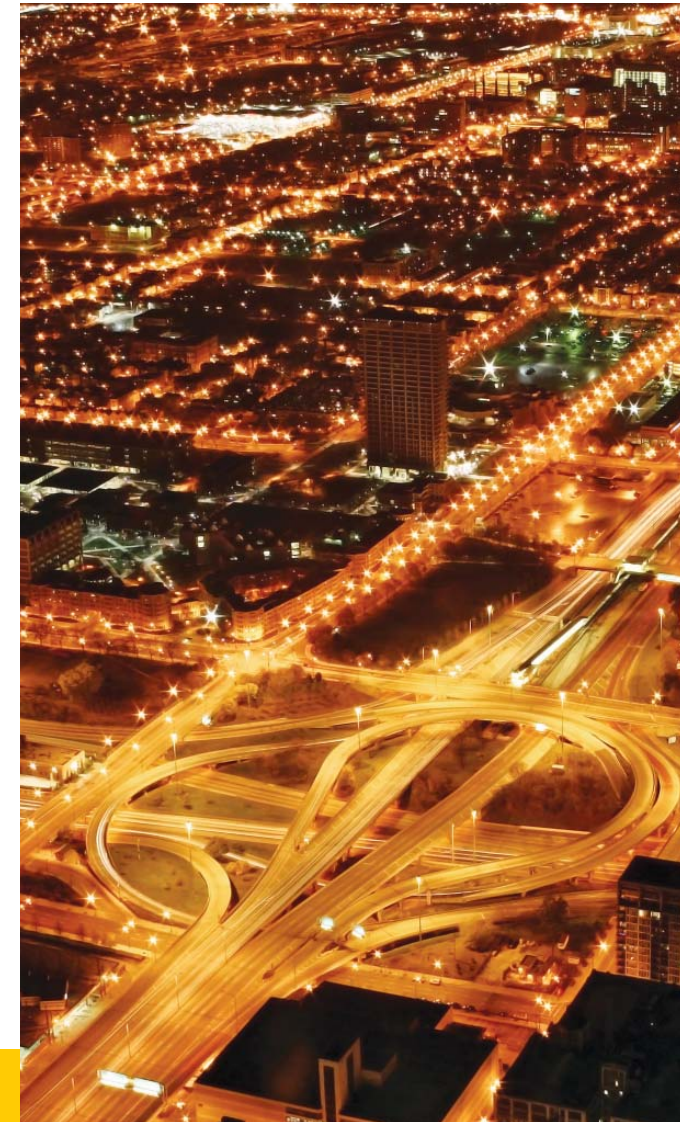
**On-board unit (OBU) TS 3306.** The OBU is a light weight aftermarket device capable of complex applications such as tolling, CVO, V2V and V2I applications. The device provides the ability to sync with Android based platforms for audio and visual human machine interfaces.

**On Board Unit Programming Station (OPS) 9955 for programming tags.** This product allows road operators to store user specific information on transponders in a fast and seamless way.



**Multiband Configurable Networking Unit (MCNU).** The MCNU operates on 5.9 GHz DSRC band. The MCNU is a wireless communication solution which supports vehicle to infrastructure and industry common protocols for vehicle communications. It enables various applications for traffic and safety.

**Embedded WAVE Module "eWAVE".** The eWave is a compact 5.9 GHz DSRC module designed to create portable and integrated on-board vehicle communication systems. Due to its versatility and size, the eWAVE module can be integrated into a communications vehicle and roadside equipment platforms, offering easy configuration with 3rd party applications.



Kapsch 5.9 GHz DSRC products are compliant with the current IEEE 802.11 a/b/g and p, WAVE standards for Dedicated Short Range Communications (DSRC) as well as meet the ISO standards for Toll Collection.

**Kapsch TrafficCom Inc.**

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