

Kapsch TrafficCom

# ***Urban Traffic and Mobility Management***

Working towards reduced congestion and  
improved road user experiences

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# Introduction

## Urban Traffic and Mobility Management

With over 60 years of collaboration with cities globally, Kapsch TrafficCom has been dedicated to enhancing the quality of life for local citizens. As a leading player in the field, we've successfully implemented traffic management and monitoring solutions in over 200 cities worldwide, including prominent locations such as Madrid, Buenos Aires, and Dallas, using our real-time and traffic management solutions. Leveraging our extensive experience, Kapsch TrafficCom serves as a pivotal partner with expertise across the entire mobility management spectrum.

This includes designing, deploying, and maintaining various traffic management systems for cities or highway networks, access controls, congestion charging, and seamless integration with public transport management systems. By providing a single point of contact, we ensure the efficient and comprehensive fulfillment of all mobility management requirements.

Our capabilities are rooted in unique IT skills and profound experience in the traffic domain, incorporating V2X connected vehicle technologies developed by Kapsch TrafficCom. Taking a progressive approach, we offer industry-leading Artificial Intelligence (AI) and analytics capabilities, enabling us to transform data from diverse sources into real-time traffic management insights and decisions. Additionally, our clients benefit from essential consultancy services to evaluate their current mobility management strategy and capabilities. Bridging the gap between technology tools, features, and project targets, we integrate multiple data sets, support specific applications, and collaborate with public transport and private vehicle data.

This consultancy is integral for the success of your Intelligent Traffic Systems (ITS) initiatives, ensuring efficient and sustainable configurations of your systems. Kapsch TrafficCom stands as a reliable partner committed to optimizing urban traffic and mobility management.



*Kapsch accumulates expertise and capability across the full Mobility Management spectrum.*

# Background

## Challenging Mobility Management scenario

### Legacy Mobility Management

Historically, city authorities and mobility agencies have grappled with multiple systems and manual processes to regulate traffic flows. The challenge lies in the difficulty of scaling operations and responding promptly to evolving traffic and environmental conditions. Operational divisions further hinder effective data sharing and incident responses.

Stand-alone systems, managing traffic lights, road signs, access controls, congestion charging, and video and sensor systems, contribute to the inability to gain an accurate, real-time view of road traffic.



### Disconnected Traffic Monitoring

Cities and mobility agencies often lack the technological tools to predict traffic peaks and respond to incidents promptly. Legacy technologies primarily focus on keeping traffic signals operational, lacking adaptability as traffic conditions change and congestion increases. Even existing real-time traffic monitoring systems are often disjointed, preventing automated responses in subsystems responsible for controlling traffic flow, including traffic-light signaling systems.

Meeting new mobility needs and addressing urban complexity requires systems that utilize data from various sources to understand and predict traffic flow. Automation is crucial for real-time or rapid responses to changing traffic conditions and incidents.

# Challenges

A call to improve Urban Mobility

## Reduce Congestion and Pollution

Traffic congestion has become a significant obstacle to urban infrastructure performance globally. Population growth, ongoing urban expansion, and limited arterial capacity have escalated congestion, leading to increased vehicle emissions and compromised air quality. The challenge is to equip cities with new mobility management tools that directly impact citizens' quality of life.

## Systems Interoperability

Cities operate various legacy mobility control systems independently, obstructing information exchange and joint responses to events or incidents. This limitation complicates global and centralized management for Mobility Managers. Kapsch TrafficCom aims to address these challenges by providing umbrella management systems that coordinate existing systems with innovative solutions like connected vehicle technologies, enabling integrated and coordinated management.

## Maximizing Information Value

Mobility management systems generate vast amounts of underutilized information. Our challenge is to provide innovative data management tools for Mobility Managers to transform data from different systems into actionable information, supporting decision-making and planning processes.

## Proactive Management

Moving from reactive to proactive management is a goal for Mobility Management Agencies. Our objective is to empower operators to anticipate incidents and deploy early traffic management plans, minimizing the impact on city mobility.

## Empowering Mobility Users

At Kapsch TrafficCom, we believe that well-informed users make intelligent decisions, improving their trips and city mobility. The challenge is to provide users with transit information to facilitate smart mobility decisions.



*"This situation bring us with the challenge of providing cities with new mobility management tools to address the congestion problems which have a direct impact on citizens life quality."*

*Vicente Castano, Traffic Product Manager  
Kapsch TrafficCom*



# Solutions

Revolutionary Technology for present and future Mobility challenges

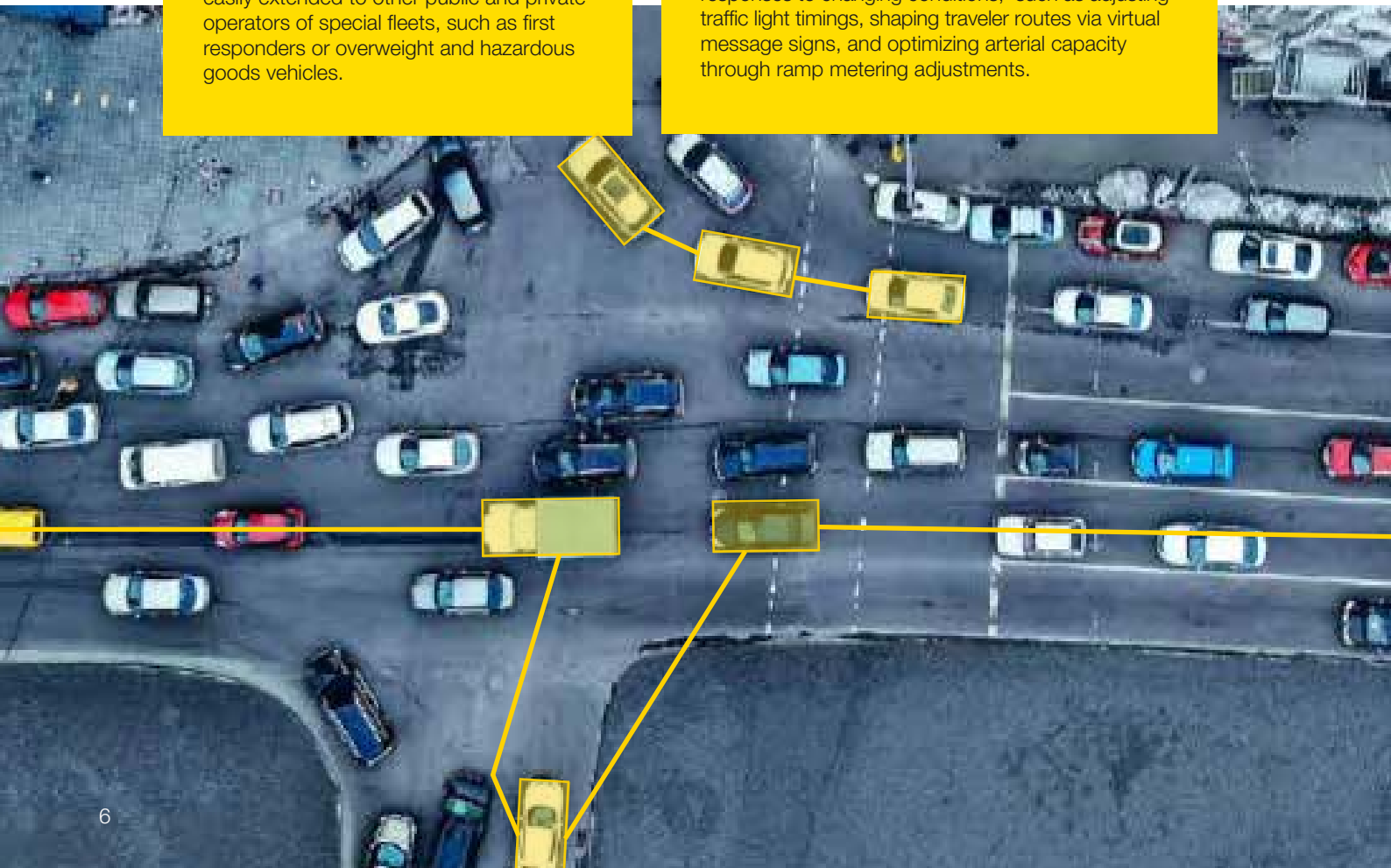
Kapsch TrafficCom Urban Traffic and Mobility Management (UTMM) solution is a high-performance software suite with extensive global implementation experience, ensuring the safe, efficient, and sustainable management of road networks and transportation infrastructures. Accumulating 30 years of development and continuous improvement, our Urban Traffic and Mobility Management platform has proven performance and reliability and stands out for its adaptability and scalability, making it suitable for a wide range of installations. Urban Traffic and Mobility Management solutions (UTMM) help cities address existing mobility challenges. Functional modules within traffic management centers, including map-based (GIS) interfaces, alarms, device status centralization, advanced event management, manual and automated response plans, profile-based access control, agency/geographical area management, reporting tools, and more, contribute to comprehensive traffic management.

## Frameworks for In ter-Agency and Cross-Transport Mode Collaboration

Kapsch TrafficCom Urban Traffic and Mobility Management solutions facilitate seamless collaboration between cities, public transport authorities, and private industry to tackle traffic challenges. For instance, response plans are executed across multiple road operators responsible for different sections of the road network. Collaborative traffic management extends to public transport providers, including bus operators, sharing vehicle positions with city authorities to prioritize public transport vehicles at traffic lights. This solution is easily extended to other public and private operators of special fleets, such as first responders or overweight and hazardous goods vehicles.

## 'Umbrella' Systems Integrating Traffic Management Systems and Data

The Urban Traffic and Mobility Management solution establishes consolidates data from various traffic management systems (traffic lights, signage, congestion charging, access control). This data, combined with rich information from vehicles, mobile phones, and navigation systems, forms a comprehensive, real-time view of traffic conditions. By leveraging powerful Artificial Intelligence facilitates better-informed decision-making. Real-time traffic data integrates with automated decisioning tools, enabling coordinated responses to changing conditions, such as adjusting traffic light timings, shaping traveler routes via virtual message signs, and optimizing arterial capacity through ramp metering adjustments.



### **Predictive and Proactive Traffic Management**

Integrated mobility management employs advanced algorithms and models to analyze data from vehicles and sensors, video footage, mobile devices, social networks, and more. This enables cities and public transport authorities to predict and efficiently manage traffic. Predictive Analytics and artificial intelligence empower authorities to proactively handle traffic by implementing routing strategies, suggesting alternative transport options through user-facing stops, and taking various measures. This feature is particularly valuable when predictive models anticipate upcoming deviations from normal traffic conditions. Implementing controls during such instances becomes crucial to alleviate congestion and ensure optimal experiences for road users. Leveraging this predictive capability enables preemptive measures to prevent the occurrence of traffic congestion.

### **Integrating Vehicles into Traffic Management Solutions**

Kapsch TrafficCom integrates vehicles into its traffic management solutions, utilizing onboard systems to generate data that enhances the mobility ecosystem's efficiency. This vehicle data powers innovative navigation applications, optimizing traffic routes and ensuring compliance with traffic authorities' standards. Additionally, combining vehicle data with Artificial Intelligence and machine learning supports smartphone and in-vehicle apps. These apps provide drivers with real-time information about upcoming traffic lights—whether they are red, amber, or green—increasing safety. The apps can also recommend optimal driving speeds, proven to significantly improve traffic flow, reduce fuel consumption (by up to 15%), and enhance air quality.

### **Adaptive Traffic Light and Signal Optimization**

Kapsch TrafficCom utilizes route and traffic data from umbrella systems to optimize traffic flow through busy junctions via automated signaling systems. Years of experience in real-life traffic projects highlight the efficiency that Adaptive Signal systems bring to the mobility environment. A crucial element in this scenario is traffic demand data, enabling authorities to continually optimize traffic light timings and achieve up to a 30% reduction in congestion. For optimal results, integrating the adaptive traffic signaling layer into every Urban Traffic and Mobility Management (UTMM) installation is imperative.





## **Benefits**

*By integrating data from multiple traffic control systems and agencies and employing real-time and predictive analysis through artificial intelligence, the Urban Traffic and Mobility Management solution offers unique advantages for cities, mobility agencies, and citizens.*

### **Unleashing the power by smart Data Management**

#### **Proactive Traffic Management for Reduced Congestion**

Urban Traffic and Mobility Management (UTMM) solutions enable real-time detection and response to variable traffic conditions. This translates into the capability to adjust traffic light timings, signage, and disseminate recommendations, policies, and rule settings to maintain smooth traffic flow. Predictive analytics and decisioning capabilities facilitate congestion prediction and the automatic implementation of control measures.

#### **Integration with Third-Party Congestion and Incident-Response Solutions**

Urban solutions seamlessly integrate with various third-party solutions to enhance congestion management, aiming to expedite responses to incidents on the road network. A notable example is smart navigation, which ensures coordinated routes among navigation providers, preventing all vehicles from using the same path and maintaining traffic flow on the network.

#### **Environmental Outcomes and Air Quality**

Kapsch TrafficCom Mobility Management solutions seamlessly integrate field data and models into the traffic management strategy. For instance, the solution can predict changes in air quality over the next 30 minutes in a rolling basis. This allows for the adjustment of traffic signaling, dynamic road signage, and even access controls or congestion charging linked to Urban traffic and mobility management to safeguard air quality. Moreover, citizens can stay informed about implemented traffic controls, empowering them to plan alternative routes or travel options before embarking on their journey or even during their ongoing trip.

#### **Improved Public Transport Operations and Better Mobility Services for Citizens**

Integrated Multi-modal Traffic and Mobility Management solutions provide public transport operators with the tools to optimize operational efficiency and service performance. This enables anticipation of high-demand periods, maintenance of optimal traffic signal priority, and the provision of additional or larger buses to specific stops as needed to meet heightened demand.



# Example

## Shifting from reactive to proactive-collaborative Traffic Management

### **Buenos Aires, Argentina**

The City of Buenos Aires awarded Kapsch TrafficCom with the contract for delivering and maintaining the Integrated Mobility Management System (SGIM Sistema de Gestión Integral de la Movilidad), an umbrella system that efficiently integrates existing technologies and manages data from multiple sources to generate and disseminate high-quality information. Buenos Aires, renowned for its award-winning Sustainable Mobility Plan, prioritizes initiatives like new BRTs, subway network expansion, increased bike lanes, and significant infrastructure investments. This commitment has equipped authorities with situational awareness capabilities, providing a foundation to shape the future of mobility for the city.

#### **Project goals**

- Global supervision of city mobility: modernize new integrated control center
- Integrated operation of ITS Systems, including traffic control (old CCAs)
- Coordination between different stakeholders
- Events and incidents management
- Multi-modal information data hub
- Centralized information (data hub): disseminate and publish

#### **Key aspects of the solution:**

- SGIM umbrella software deployment, capable of seamlessly interfacing and integrating with existing systems
- Unified platform for UTC management
- SGIM-UTC communication protocol developed
- Integration of different sources of information
- Manual and automatic control of UTCs
- Public mobility information website



## **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). In its 2022/23 financial year, about 4,000 employees generated revenues of EUR 553 million.

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