



Intelligent Transportation Systems (ITS),

Traffic Management

&

Telematics

Overview

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Intelligent Transportation Systems, Traffic Management & Telematics

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Introduction

Wireless Environments PVT LTD is a special purpose vehicle founded in June 2014 with the intention of improving Intelligent Transportation Systems (ITS), Traffic management and Telematics; and is backed by the extensive knowledge and expertise of our South African partner EFKON South Africa (Pty) Ltd. Through this partnership we aim to strategise synergistic channels and provide our clients the ultimate in ITS solutions

It is Wireless Environments objective to flood Zimbabwe's transport arena with **cutting-edge Intelligent Transportation Systems, Traffic management and Telematics**. Our products are efficient, reliable and future-oriented, and provide useful solutions for people on the move.

This is also in line with **ZimAsset** as well as other factors such as infrastructure development, employment creation, and at the same time assisting in the betterment of our road, traffic safety, just to mention a few.

Wireless Environments, with the expertise of our South African partner is able to act at any point and level of an Intelligent Transport Systems project development program upon request from a client as;

- (I) Engineer, Consultant
- (ii) Manager, Advisor or Coordinator
- (iii) Designer, Supervisor
- (iv) System Intergrator; and/or
- (v) Supplier, Contractor, Developer

1) Toll Collection

a) Plaza

With our extensive knowledge in toll collection we offer customized solutions according to customer's demand. Deploying a full spectrum of components i.e. automatic vehicle classification, over height vehicle detection and speed enforcement allows for various violation and fraud management.

Apart from the core business processes to collect toll with conventional payment methods (such as cash in different currencies, credit cards, fleet cards, debit cards or Electronic Toll Collection, etc.), our Plaza offering provides a solution that supports Plaza operators daily with many related business processes. These not only include cash management, cash-up function, shift management and reporting, but also live monitoring of lanes and extensive auditing functions.

b) Free-flow/Urban Tolls/Open Road Tolling

"Free-flow" is a method of collecting tolling in dedicated lane or via an overhead gantry, where the Road User does not have to stop to pay toll. In most cases, vehicles slow down slightly until a transaction is registered by means of the on-board units - but traffic delays and vehicle stoppages have been totally mitigated via the free-flow method.

Express lanes enable Road Users with on board units to drive through a plaza without stopping - a convenient way of tolling.

A complete free-flow system allows for Electronic Toll Collection (ETC) where moving traffic can be tolled. Bundled solutions allows for a full system to be deployed or integration into existing systems.

c) Satellite - Virtual Tolling

This system deploys a virtual toll system utilising the GNSS global navigation satellite system eliminating the need for road side equipment. Fare collection can be calculated according to a combination of vehicle type, road section and "time of day" and allow for fare management on either the on-board unit or the operation centre

2) Toll Operations and Services

a) Turnkey

We offer extensive range of solutions in the toll industry. The services we offer create a flawless implementation of any size project from the design phase through to training and turnkey execution.

b) Operations

Operational services do not only pertain to new projects but also to taking over the responsibility of existing plazas on request. We also offer staffing and full training solutions.

c) Maintenance and Support

Wireless Environments not only assists in system provision and integration, but also offers a full portfolio regarding maintenance and support according to our clients' needs. Services cover the full spectrum from third level support to technical operations and services

3) In-Vehicle Products

a) On-board Units

These are specialised units using acceptable media i.e. infrared and microwave 5.8GHz, in different variants and product lines. On-board units (OBU) are used as mechanism for collecting toll in a moving vehicle as part of the process of Electronic Toll Collection. The OBU forms a link between the vehicle and the sensors in the lane to register when the vehicle has passed through. A successful transaction will result in the Road User's account being automatically debited for the toll.

b) Modular Components

A variety of components can be integrated to the unit creating increased functionality, for example, vehicle tracking and fleet management.

c) Intergration Services

A full range of integration services offers customers the ability to provide customer owned units for use in the system leaving value add with the client.

4) Enforcement

a) Stationery

This offering is particularly well adapted for multi-lane free-flow environments providing information to ETC and ITS systems. Enforcement pertaining to sectional speed control as well as weigh-in-motion enforcement is also available as stand-alone or integrated solutions.

b) Portable

Portable systems provide the full modular spectrum of a stationary enforcement system in an easy-to-setup compact unit. Despite its portability, it offers full functionality and unrestricted performance. Due to its modular and flexible architecture, it can be easily adapted to individual applications and working environments - from GNSS and Dedicated Short Range Communication, over licence plates to toll stickers and High Occupancy Vehicles (HOV).

c) Mobile

With Mobile Enforcement, we can take advantage of the "surprise effect," since checks can be performed at any place and at any time. A mobile enforcement system is able to "float" with the traffic, check vehicles for toll charge payment and immediately separate violators from freely flowing traffic. It works together perfectly with an stationary or portable enforcement solution.

***Enforcement product solutions include:**

- Section speed control
- Red light offences
- Vehicle detection
- Vehicle classification
- Photographic evidence
- Communication with on-board equipment
- Data processing
- License plate recognition with country identification (ANPR)
- Recognition of hazardous good markings
- Badge recognition
- Vehicle occupant recognition
- Consolidation of all information in one consistent data file (Matching)
- Automatic violation assessment based on all processed information

Some of the other possible applications that can be implemented are:

- Enforcement for all tolling systems
- Enforcement of access limitations e.g. protected areas
- Front end system for video tolling
- Front end system for intersection monitoring and car searches
- Front end system Journey Time Management Systems and Section Control Monitoring
- Front end system for traffic direction systems (traffic data collection)
- Surveillance of HOV (High Occupancy Vehicles) lanes

5)ITS and Urban Traffic Management

a)ITS Solutions

Services include but are not limited to, electronic tolling, dynamic traffic management, real-time information and other driver-assistance systems such as warning systems.

b)Urban Traffic Management

EFKON offers Automatic Fare Collection and information systems for public transportation systems, to name but a few.

c)Traffic Surveillance

Based on several years of experience in processing legal evidence in traffic violations, EFKON has built a powerful line of products, which is highly flexible for most complex violation scenarios. Vehicle tracking system provides automatic searches for wanted vehicles based on automatic licence plate recognition, which means no human interaction is required.

d)Route Services

e)Traffic Management Centre - Including Back Office System for processing and traffic management and control

f)Carbon Control Enforcement

6)Highway Traffic Monitoring

The main purpose of highway traffic monitoring is the management of information provided by an array of systems allowing for the deployment of decision triage and constant traffic assessment.

Highway Traffic Management System involves the following main processes:

- >**An inflow of information** (e.g. traffic hold-up, accidents etc.) regarding the road status to the road management (operations) company.
- >**Subsequent decision making** (e.g. to send a patrol vehicle to regulate traffic, send an ambulance to the accident site etc.) by the road management (operations) company on the above information. These decisions are normally guided by their standard procedures and policies.
- >**Information** (e.g. Automatic Traffic Counting and Classification System, Weather Monitoring System)

7) Highway Traffic Management Solutions (HTMS) include:

Variable Message Signs - is used to communicate important advisory messages to road users for e.g. weather information, road maintenance, etc ...

Video Incident Detection System - uses image processing techniques on CCTV camera images of the highway or road traffic to automatically detect abnormal behavior. Generate incidents, and "trigger" them on the HTMS system.

Weather Monitoring System - furnishes values of weather parameters to the Traffic Manager console

Speed Enforcement Systems - promotes road safety by monitoring and controlling violations for speeding and reverse driving, section and momentary speeding details on the expressway.

Automatic Traffic Control and Classification System

CCTV (Closed-Circuit Television) Monitoring System - transfers live video images of the highway or road to the Control Centre and provides information for traffic management.

Communication Systems

Analytical Services with Traffic Monitoring

Emergency Call Box System - for Road-Users to report accidents

Mobile Radio Communication - provides communication for mobile surveillance

Command and Control Centre - the heart of the services.

Communication Backbone - to bring in information from the HTMS field equipment at various locations all along the road to the control room and vice-versa.

Fleet Management

We offer an integrated vehicle movement monitoring solution for fuelling, passenger safety/convenience and on-road payment automations.

Wireless Environments total suite of products and services covers the following tailor-made solutions:

1. Toll Systems Software Development
2. Toll Equipment Design and Installation Services
3. Toll Banking and Clearing Services
4. Electronic Toll Collection (ETC)
5. Highway Traffic Management Systems (HTMS)
6. Data Communication Networks
7. Toll Operations and Maintenance
8. Toll System Support
9. Intelligent Transportation Systems (ITS)
10. Operations and Maintenance Strategy; and
11. Weigh-in-motion with static and high speed measuring systems.
12. Automated Fare Collection

We rely on state-of-the-art products, which are subject to continuous further development. We support our partners continuously and focus on long-term and sustainable partnerships. Numerous reference projects worldwide confirm the quality of EFKON's tailor-made customer solutions.

As a market leader in its field, EFKON and its Partners is committed and have the drive to provide the most innovative solutions in Intelligent Transportation Systems and tolling solutions. It is our objective to lead the market in road tolling, multi-application transportation payment solutions, traffic telematics and vehicle communication solutions throughout the world. Our products are efficient, reliable and future-oriented, and provide useful solutions for people on the move