

VISION OUTSIDE THE BOX



www.lectorvision.com

LECTOR VISION

Lector Vision develops integral solutions of artificial vision, both software and hardware, applied to vehicle control. We are experts in Automatic License Plate Reading, Optical Character Recognition (OCR), High Performance Video Analytics and Specific Electronics for image capture.

We have more than 20 years' experience in the development of neural networks, specific algorithms in "Deep Learning" techniques and in the design of electronics and optoelectronics for ITS applications.

- We develop our own OCR Engine
- We design our own hardware solutions
- We manufacture with total Lector Vision quality

LECTOR ENGINE

Our OCR engine, 100% developed by Lector Vision, is designed to ease its integration into complex ITS projects, security, access control, logistics or parking management.

- Fully adaptable to all countries
- Developed with artificial vision algorithms, neural networks of our own design and Deep Learning techniques
- Recognize all types of license plates, regardless of background color or characters, whether reflective or not and the number of lines they contain
- Compatible with most cameras on the market
- Adaptable to different HW platforms
- Compatible with multiple programming languages
- Available for Linux, Windows and Android Operating Systems



PARKING

ACCESS EYE

"All in One" automatic number plate recognition system for car park access. It integrates into a single device the camera, the illumination, the processor, the power supply and the communications via Ethernet in addition to the Lector Engine Software. Is designed to be integrated with the other elements of the park, it has a small footprint and it is made of stainless steel to ensure robustness and tightness.

ACCESS EYE CUBE

"All in One" automatic number plate recognition system for car park access. Includes lifetime license of the Plate Recognition Lector Engine[®]. Installation on wall, pole, floor or ceiling.

PARKING WEB TERMINAL

Management application to control public car park access in which also exist a management system through tickets. It is based on web technology; this means that it is accessed through a Web browser by any device (PC desktop, laptop, tablet ...).

ACCESS WEB TERMINAL

Application for vehicle access control to restricted facilities. It is based on web technology; this means that it is accessed through a Web browser from any device with a Web browser (PC desktop, laptop, tablet ...).

MOBILITY

ON BOARD SYSTEM

High-performance mobile Automatic License Plate Recognition system for vehicle detection on public roads. Specially designed for police use and control of regulated parking areas. It allows real-time license plate readings fully controllable from a rugged tablet PC.











Our evolved Traffic Eye[®] solution, characterized by its high performance enhancements. It incorporates integrated analysis and allows the possibility of directly integrating external sensors such as Doppler or additional lighting, among others. It is an intelligent traffic sensor that integrates, in a single unit, a high-resolution dual-sensor CMOS camera with a dedicated Hardware platform for Artificial Intelligence.

TRAFFIC EYE RED LIGHT

Based on artificial vision, helps to avoid vehicle's Red Light Crossing by automatically detecting vehicles which do not stop at them. It is an automatic system integrated into a single



device which include two cameras (B/W and color), CPU, and infrared illumination.

TRAFFIC GUARD

Is a non-intrusive traffic data software based on Artificial Vision. It allows vehicles counting and classification, speed control and generating alerts among other functionalities.

TRAFFIC MANAGER

Powerful tool designed to monitor changes in traffic flows and provide valuable information in real time. It offers an easily-interpreted overall view that enables potential incidents to be anticipated. It has advanced "Deep Learning" and "Big Data" tools that enable predictive models that cover the current needs of the infrastructure managers of Smart Cities.

TRAFFIC GLASSES

A device state-of-the-art with the latest cutting edge technology, that allows for a technological leap of efficiency in the

control of vehicles on public roads.



Automatic License Plate Reading Software for Smartphone, ready to be integrated into regulated parking control and security solutions.



ALBANIA GERMANY ANDORRA ALGERIA ARGENTINA SAUDI ARABIA AUSTRALIA AUSTRIA BOSNIA - HERZEGOVINA BURKINA FASO CHILE COLOMBIA CROATIA CURAÇAO EAU ECUADOR EGYPT SLOVAKIA SLOVENIA SPAIN ESTONIA FRANCE HONDURAS IRELAND ISRAEL ITALY JAMAICA KAZAKHSTAN KUWAIT KENYA LEBANON MALAYSIA MEXICO MOZAMBIQUE NORWAY NEW ZEALAND PERU POLAND PORTUGAL ROMANIA CZECH REPUBLIC RUSSIA SWEDEN SWITZERLAND TUNISIA TURKEY UKRAINE UΚ URUGUAY USA

INTERNATIONAL PRESENCE



SMART SENSOR TRAFFIC EYE

TRAFFIC EYE SmartSensor[®] our evolved Traffic Eye[®] solution, characterized by its high performance enhancements. It incorporates integrated analysis and allows the possibility of directly integrating external sensors such as Doppler or additional lighting, among others. It is an intelligent traffic sensor that integrates, in a single unit, a high-resolution dual-sensor CMOS camera with a dedicated Hardware platform for Artificial Intelligence.





Algorithms based on Artificial Intelligence and "Deep Learning" make a difference with what currently exists, incorporating technologies such as CNN or "capsule networks". This enables multiple dedicated algorithms for ITS and Machine Vision analytics to be faster, more robust and with exceptional performance. In addition, it allows to add external sensors, such as doppler antennas, to collect additional complete information or external illuminators to have a high-quality image in the most complex scenarios. Other functionalities such as 4K Streaming video, PoE power, connectivity options and different sensor resolutions make SmartSensor the perfect solution.

	B&W SENSOR	00	
Resolution	1. 1456x1088		
	2. 2560 x 1936		
Lens	5-50 mm. Motorized		
	COLOR SENSOR		OTHER CHARACTERISTICS
Resolution	1.1456x1088	Operating System	BSP Linux
	2. 2560 x 1936	OCR	Lector Engine Free Flow
	Available CMOS color 3840x2160	Analytics	"Deep Learning"
Lens	12-50 mm. Motorized	Communications	GigEthernet 10/100/1000
	LIGHTING	Connectivity	4G/Wifi/GPS
Lighting	IR pulsed. 940 nm. Adjustable	Protocols	SNMP, TCP/IP, SFTP, ONVIF, RTSP
	Optional flash	Video format	H264/H265/MJPEG
	PROCESSOR	Certificates	CE, RCM mark.
CPU	QuadCore ARM Cortex A53	Case	235x285x130 mm / 5Kg / IP67
GPIO	3 additional inputs / 2 outputs	Power supply	PoE 802.3bt

TRAFFIC CUBE CITY[®] is an "All in One" automatic number plate recognition system. Designed for traffic flows management in motorways, freeways, roads, urban environments... Installation on wall, pole, floor or ceiling.



BEST RESULTS

Up to two sensors with OCR Lector Engine[®], one in color and the other in black and white increasing performance rate.



OFFLINE

In case of lack of connection, the camera stores results avoiding the loss of information.



Opera

ALL PARAMETERS CAN BE MODIFY REMOTELY

Save time and money on startups and preventive maintenance.

SIMPLE INSTALLATION AND LOW CONSUMPTION

Access Eye CUBE^{\oplus} is a PoE device with a consumption of less than 15W. In addition, due to its compact design, installation time is minimal.

W&B SENSOR

Туре	CMOS Global shutter
Resolution	1456x1088
Optical	5.5-50mm motorized
	COLOR SENSOR
Туре	CMOS Global shutter
Resolution	1456x1088
Optical	5.5-50mm motorized
	LIGHTING
Туре	Infrared LED Array. 940nm
Control	Pulsed and synchronized
	PROCESSOR
CPU	Intel [®] Atom™
	OTHER CHARACTERISTICS
rating System	Windows
OCR	Lector Engine [®] Free Flow
mmunication	GigEthernet 10/100/1000
Certificates	CE, RoHS
Case	170x155x170 mm / 2,8 kg
mp. funcional	-20°C to 55°C
Power supply	12 VDC. 25w





TRAFFIC =Y=

TRAFFIC EYE[®] is an "All in One" automatic number plate recognition system. Designed for traffic flows management in motorways, freeways, roads, urban environments or, overall, any type of roads which requires reliable and robust equipment.

It allows to obtain traveling times, origin-destination patterns or access control to restricted areas.



It integrates into a single device the camera, the illumination IR, 4 cores processor, the power supply, the communications and all the software needed. The format "All in One" reduces excessive wiring and independent processing units, and it allows a quick and easy installation.



It doesn't require operators or supervisors, it operates automatically. The system can be configured in several locations simultaneously. All the information generated can be also distributed to multiple instances and users.

	LECTOR VISIO
	W&B SENSOR
Туре	CMOS Global shutter
Resolution	1936x1216
	COLOR SENSOR
Туре	CMOS Global shutter
Resolution	1936 x1216
	LIGHTING
Lighting Type	Infrared LED Array. 940 nm
Lighting Control	Pulsed and synchronized
	Integrated power stage
Range	Up to 35m
	PROCESSOR
CPU	Intel Quad-Core
RAM	8GB
Hard Disc	SSD extended temperature range
	OTHER CHARACTERISTICS
Operating System	Windows
OCR	Lector Engine Free Flow
Communication	GigEthernet 10/100/1000
Case	260x365x110 mm / 6Kg / IP68
Temp. funcional	-40°C to 60°C
Power supply	12 VDC/PoE+

TRAFFIC EYE® / RED LIGHT, based on artificial vision, helps to avoid vehicle's Red Light Crossing by automatically detecting vehicles which do not stop at them. It is an automatic system integrated into a single device which include two cameras (B/W and color), CPU, and infrared illumination.



Traffic Eye for Red Light Enforcement doesn't require the installation of electromagnetic loops or other road equipment as it is based on image analysis. A signal from the Traffic Light Controller is used to get the state of the Traffic Light in all environmental conditions. For each vehicle which doesn't respect the Red Light, a data package is generated which includes several high resolution color images, before and after crossing the stop line as well as the License Plate, date, location, etc.

	W&B SENSOR	
Туре	CMOS Global shutter	
Resolution	1936x1216	
	COLOR SENSOR	
Туре	CMOS Global shutter	
Resolution	2046x2046	
Optical	IR corrected	
	LIGHTING	
Lighting Type	Infrared LED Array. 940 nm	
Lighting Control	Pulsed and synchronized	
	Integrated power stage	
Range	Up to 35m	
	PROCESSOR	
CPU	Intel Quad-Core	
RAM	8GB	
Hard Disc	SSD extended temperature range	
	OTHER CHARACTERISTICS	
perating System	Windows	
OCR	Lector Engine Free Flow	
Communication	GigEthernet 10/100/1000	
Case	260x365x110 mm / 6Kg / IP68	
Temp. funcional	-40°C to 60°C	
Power supply	12 VDC/PoE+	
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TRAFFIC MANAGER

Traffic Manager is a powerful tool designed to monitor changes in traffic flows and provide valuable information in real time. Traffic Manager offers an easily-interpreted overall view that enables potential incidents to be anticipated. Traffic Manager stores all the information collected by field devices for subsequent analysis and the automatic generation of traffic statistics. It has advanced "Deep Learning" and "Big Data" tools that enable predictive models that cover the current needs of the infrastructure managers of Smart Cities.



Today, the high volume of vehicle traffic makes the monitoring of the devices involved in traffic management increasingly necessary. Traffic Manager integrates a management tool for traffic control and data collection devices to optimize their performance, detecting and correcting anomalies in their operation.



Traffic Manager allows the user to monitoring the operation of connected devices, set up alarms and programme automatic actions with different control routines. It provides information on the current traffic situation in real time and allowing preventative actions to be carried out if necessary. This allows to speed-up the response from the control centre in any situation.



It can be integrated with devices developed by Lector Vision such as: Traffic Eye® ITS | Traffic Eye® Red Light Traffic Eye® Speed Control | Traffic Guard® Changeable message boards | Data collection stations CCTV for traffic supervision | ...

OTHER CHARACTERISTICS

- Communication with the different systems that make up the network
- Control equipment performance (alarms and states)
- Traffic data collection (numbers, type, speed ...)
- Route schedules
- Speed control by sections
- Red Light santion control
- Interactive Data Modification
- Historical data
- Statistics Samples
- Sensor statistics
- Road occupation statistics
- Graphic representation by visual interface
- ..

TRAFFIC GUARD

Is a non-intrusive traffic data software based on Artificial Vision. It allows vehicles counting and classification, speed control and generating alerts among other functionalities.



It is an innovative system that offers a change in the way roads are controlled, based on computer vision algorithms developed in-house. It has been financed by the Centre for Technological and Industrial Development (CDTI), the Ministry of Economy and Competitiveness, and co-financed by the European Regional Development Fund (ERDF).



The system can cover up to 3 traffic lanes and delivers the following information:

Vehicles Counting | Vehicles Classification | Speed Control Queue Detection | Restricted Areas | Hard Shoulders Prohibited Turns | Objects on the highway | ...







INVASIVE



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SIMPLE INSTALATION

IP67 RESISTANT

I. T.

OTRAS CARACTERÍSTICAS

RELIABILITY

- Multifunción configurable por zonas de control.
- Monitoreo individual de cada vehículo.
- Historial de imágenes de cada vehículo.
- Aporta más información que los clásicos sistemas en lazo.
- Se adapta automáticamente a las condiciones ambientales externas.
- ..

ACCESS EYE



BEST RESULTS

Up to two sensors with OCR Lector $\mathsf{Engine}^{\circledast},$ one in color and the other in black and white increasing performance rate.

OFFLINE

In case of lack of connection, the camera stores results avoiding the loss of information.



ALL PARAMETERS CAN BE MODIFY REMOTELY

Save time and money on startups and preventive maintenance.

SIMPLE INSTALLATION AND LOW CONSUMPTION

Access Eye CUBE^{\oplus} is a PoE device with a consumption of less than 15W. In addition, due to its compact design, installation time is minimal.

ACCESS EYE® is an "All in One" automatic number plate recognition system for car park access. It integrates into a single device the camera, the illumination, the processor, the power supply and the communications via Ethernet in addition to the Lector Engine Software. Is designed to be integrated with the other elements of the park, it has a small footprint and it is made of stainless steel to ensure robustness and tightness. Includes lifetime license of the Plate Recognition Lector Engine®. Installation on wall, pole, floor or ceiling.

	W&B SENSOR
Туре	CMOS Global shutter
Resolution	1456x1088
Optical	5.5-50mm motorized
	COLOR SENSOR
Туре	CMOS Global shutter
Resolution	1456x1088
Optical	5.5-50mm motorized
	LIGHTING
Туре	Infrared LED Array. 940nm
Control	Pulsed and synchronized
	PROCESSOR
CPU	Embedded ARM processor
GPIO	3 additional input and 2 output
	OTHER CHARACTERISTICS
Operating System	Linux
OCR	Lector Engine [®] Free Flow
Communication	GigEthernet 10/100/1000
Certificates	CE, RoHS
Case	205x260x630 mm / 6 Kg
Temp. funcional	-20°C to 55°C
Power supply	12 VDC / PoE 802.3af / 15w





ACCESS EYE CUBE

W&B SENSOR

Operating System Linux Certificates CE, RoHS Temp. funcional -20°C to 55°C

Type CMOS Global shutter Resolution 1456x1088 Optical 5.5-50mm motorized COLOR SENSOR Type CMOS Global shutter Resolution 1456x1088 Optical 5.5-50mm motorized LIGHTING Type Infrared LED Array. 940nm Control Pulsed and synchronized PROCESSOR CPU Embedded ARM processor GPIO 3 additional input and 2 output **OTHER CHARACTERISTICS OCR** Lector Engine[®] Free Flow Communication GigEthernet 10/100/1000 Case 170x155x170 mm / 2,8 kg Power supply 12 VDC / PoE 802.3af / 15w

PRK

PARKING WEB TERMINAL

Aplicación de Control de Accesos al parking público con sistema de gestión de tickets.

is a management application to control public car park access in which also exist a management system through tickets. It is based on web technology; this means that it is accessed through a Web browser by any device (PC desktop, laptop, tablet ...)



NO ADITIONAL SOFTWARE, it does not require the installation of any additional software on the machine that will be used as a terminal.

MULTITERMINAL, it allows access from different devices simultaneously (the system includes user management and access is password protected).



DISTRIBUTED, it may be accessed through the network as long as the server is accessible to the car park management terminal. It allows remote and centralized management of the infrastructures.



MULTIPLATFORM, although EdgeLprServer Server runs under Windows, the web terminal only requires a web browser (Android tablets and tablets with IOS SO are also an option).

PORTABLE, the combination of several of the above elements allows a guard to make the rounds of the infrastructure and continue managing the license plate reading

system, including online troubleshooting.

MANAGEMENT The Management software allows the monitoring of transits individually and/ **SOFTWARE** or sequentially. It is possible to monitor all transits or just the last transit with detailed information.

HISTORICAL The system generates and stores a record for each vehicle transit with all its DATA associated data: plate read, date and time, lane, associated images and videos (tuition, vehicle profiles and facial driver), etc.

INCIDENT It allows control of incidents on line when working in attended mode.

- MANAGEMENT Mismatched ticket at the exit.
 - Unread plates.

In the image resolution of the incident we can see how it shows the input and output information.

OCCUPATION It shows information only of the vehicles that are in the car park.

- **INQUIRY** Ticket loss (Vehicle location)
 - State of vehicle at the entrance.

OTHER CHARACTERISTICS

Prints the plate in the ticket.

Detection of ticket exchange for preventing fraud.

In case of the ticket lost, it allows to deliver an equal ticket.

Print custom reports and export of historical information.

Space and incidents management associated to user profiles.

Centralization of several remote car park on virtual servers.

Management white and black lists.

ACCESS WEB

Access Web Terminal is an application for vehicle access control to restricted facilities. It is based on web technology; this means that it is accessed through a Web browser from any device with a Web browser (PC desktop, laptop, tablet ...)



REAL-TIME

Real-time comparison of each license plate read with DB to allow or deny vehicle access.

AUTHORIZATION

Handles vehicle and people access authorization allocation (by days, hours, slots, etc.).



ANALYTICS

Colour Background camera integration to monitor vehicle status at entry or exit (video and/or still images). White and black lists management, allowing automatic access to authorized vehicles and preventing the unwanted ones.



REPORT

Printing of custom reports and exportation of historical information in multiple formats (plain text, pdf, doc, xls, etc.).



PROFILES

Car park places and incidents management associated to user profiles.

IDENTIFICATION At the time of access or exit to car park, the system displays the following data of Car and Driver:

- Full name of the driver Picture of the driver
- Company and department of the driver
- Manufacturer, model and colour of vehicle
- Permissions assigned to the driver. There are 4 criteria: Date range, Weekdays, SectionS Time
- HISTORICAL The system generates and stores a record for each vehicle transit with all its DATA associated data: plate read, date and time, lane, associated images and videos (tuition, vehicle profiles and facial driver), etc.
- OCCUPATION It shows the information of the vehicles which are in the car park and providing CONSULT the possibility of checking the vehicle state at the entry (to avoid unjustified vehicle claims).

OTHER CHARACTERISTICS

No additional software Multiterminal (user management and access is password protected) DISTRIBUTED (remote and centralized management) Multiplatform (Android + IOS)



High-performance mobile Automatic License Plate Recognition system for vehicle detection on public roads. Specially designed for police use and control of regulated parking areas. It allows real-time license plate readings on both sides of the vehicle on which it is installed, capturing and sending videos while driving. Fully controllable from a rugged tablet PC.



It allows to collect road occupancy data, occupation of surface parking spaces, parking times and perform rotation studies. It classifies vehicles by age and type of environmental badge and facilitates control in situations of restriction of both vehicles in circulation and parked vehicles.



It has up to 8 dual sensor OCR Lector Engine[®] capture units for capturing black / white and color images simultaneously. Allows integration with databases and external platforms. Customizable and configurable according to customer requirements.

DISPLAY

Device	Rugged Tablet PC	
Processor	Intel® Core™ i7	
Screen	11.6" Multi-Touch capacitive	
Battery	Interchangeable	
Certificates	MIL-STD-810G / MIL-STD-461Gvi / IP65	
Control	Touch and voice commands	
	Real time video	
	B&W + COLOR SENSOR	
Capture	Double CMOS sensor (B/N and color)	
Resolution	1,4 Mpx, 20 fps each sensor	
Lighting	IR Pulsed and synchronized	
Lens	Motorized. Remote control	
Channels	3 per CMOS sensor	
Processor	ARM integrated	
Power supply	12 VCD	
Extra	Panoramic IP camera (optional) 4K	
Dimensions	185x190x110 mm / 3,5 Kg	
	OTHER CHARACTERISTICS	
Navigation	Global Satellite Navigation System (GNSS)	
GPS	Submetric precision	
Conections	Dual antenna and multiple frequency input	
mmunications	TCP/IP, Wi-Fi, 3G/4G & Bluetooth	
Sending data	FTP, emails, VPN	
management	Local and USB download	



is a specific software module for image processing, motion detection and plate recognition. The software uses artificial vision algorithms based on our neural networks. The technology developed by

Lector Vision ensures high-speed image processing, high accuracy in detecting plates of vehicles, maximum reliability in the automatic reading of license plates and excellent adaptability to different environments and plate states.



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It has been specially designed and developed for easy integration in complex ITS applications as: traffic management and control, tolling automation, car park access control, security, embedded systems and many other projects where a fast and reliable License Plate Recognition software is essential.

Our software recognizes license plates from different countries simultaneously, recognizing the country automatically. The software allows to select optimized settings per country, recognizes rectangular and square license plates, with one or more lines of characters.





The Traffic Glasses is a device state-of –the-art with the latest cutting edge technology, that allows for a technological leap of efficiency in the control of vehicles on public roads.



The first smart glasses that incorporate license plate recognition technology, which informs visually and audibly of the reading data.



They incorporate a high contrast screen that is equivalent to a 30 "screen seen at 2m distance, with patented technology that turns on when we look close and turns off when we look again at a distance. With its integrated camera you can take photos and videos with a simple gesture.



Our ANPR Software integrated in the glasses, the Lector Engine using Artificial Vision algorithms, based on Neural Networks of our own development, together with technology developed by Lector Vision guarantees high speed of image processing, great precision in detecting license plates, maximum reliability in automatic license plate reading and excellent adaptability.

Widescreen 16:9 WQVGA Screen Image Virtual 30" screen HD (2 m) Resolution High contrast and brightness display Processor 1 GHz dual-core ARM Cortex-A9Lector RAM 1GB Hard Disc 8 GB Flash Up to 4h Batterv Structure Easy to replace







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EUROPEAN REGIONAL DEVELOPMENT FUND

A WAY TO MAKE EUROPE