

## VisioWay<sup>®</sup> OpenCounter

"All in one" video based traffic data collection system. **VisioWay<sup>®</sup> OpenCounter** is made up of a zoom camera as well as a compact and potent embedded system that processes the image in real time. The equipment can be used for lots of traffic management applications.

### Image processing technology

OpenCounter allows areas to be configured over the field of view. Areas function as video detectors as vehicles pass over them. These video detectors can be of the following types:

- **Vehicle Presence Detectors:** These are activated while a vehicle is stopped in the area or circulating over it. These detectors provide data on the number of vehicles and the time they occupy the area.
- **Tracking Detectors:** These detectors discriminate between directions of circulation and can be used to detect traffic violations (illegal turns and drivers circulating in the wrong direction).
- **Traffic Jam Detectors:** These detectors are activated when vehicles are stopped in an area, occupying a configurable percentage of the area.



### Multiuse

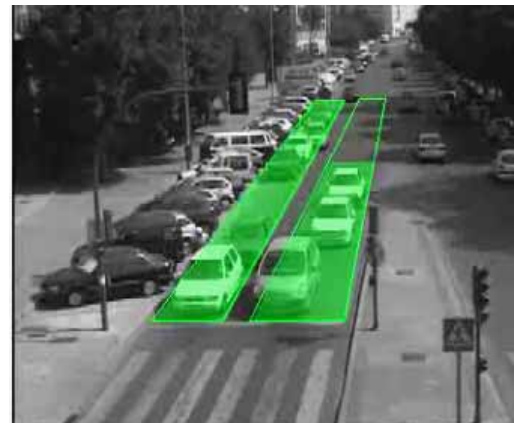
Each vehicle presence detector can be associated with a digital output that can be directly connected to other equipment such as a traffic light controller, these connections are similar those found in detectors of different technologies (infrareds, inductive loops, laser ...)

Traffic jam detectors or traffic violations can also generate outputs when a situation for which each detector is programmed is produced. These outputs can act over other external devices or be communicated to a traffic light controller in order to modify its performance.

The equipment uses its non-volatile memory (Secure Digital Card) to store information concerning each area over a configurable period of time. These registers can be accessed by a control center or by a laptop computer (OpenCounter has an Ethernet connection).



*Vehicle Presence Detector*



*Traffic Jam Detectors*

## Commitment to Open Systems

The system contains an embedded LINUX in addition to what has been installed:

- A html/php server: This allows the equipment to be configured from a laptop computer or from a control center, using only a web browser (Firefox, Internet Explorer,...).
- A video server: This transmits MPEG4 digital streaming video taken in real time, in a way that it can be visualized using a viewer such as Mplayer or similar.
- FTP Client: This allows the server to automatically upgrade new versions by a control center or by a laptop computer (OpenCounter has an Ethernet connection).

### The Heart of the System: EPI-ARM Board

#### HW

- iMX21 Microprocessor based on an ARM-926E core.
- RTC with double feed.
- Internal temperature sensor.
- Connectivity: Ethernet, USB-OTG, two asynchronous series ports.
- Secure Digital Memory Card.
- Video input port with pre-processor.
- Internal Encoder / Decoder MPEG4 and H.263.
- General purpose input and output lines.

#### SW

- LINUX Distribution with Board Support Package specific for the board.
- HTML / PHP (Apache 2.2.4) Server.
- FTP Client for file sharing and automatic new-version upgrades.
- Video encoder in MPEG4 Elementary Video format, 25 fps, QCIF.
- SSH Server with remote access.



EPI-ARM Board



Configuration usina Explorer



Assistance from the office to the

... More advantages

Graphic imaging of the area over which vehicles are circulating is a weak point for many computer vision systems. In the case of OpenCounter, innovative systems, which are in the process of being patented, have been designed and have produced notably superior results than those of conventional systems.

Another example of its innovation is the treatment of shadows and lighting changes (auto iris, clouds, vehicles' headlights casting light over the road during nighttime conditions, etc.) In order to reduce these effects the latest technologies have been used to locate borders and edges.

A simulation program has been developed that allows workers to analyze from the office the occurrences that are being produced over the field of view at the actual installation (occultation, maximum distances, etc.), beginning with the conditions placed on the equipment (height, angle, focal, etc). This allows workers to localize, over the area, the equipment's optimal position.

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