



**PRODUCT**

## **AIVU-MOBILE**

**In-vehicle embedded solutions for smart video security and passenger information**

# AIVU-MOBILE

## WHY AIVU-MOBILE?

AiVu Mobile is a high tech solution to ensure the security of buses, taxis, cash-in-transit and security service vehicles, featuring all the functions for remote and real time monitoring (video surveillance, vehicle tracking, alarm management, automatic license plate recognition) and on-board digital communication and WiFi connectivity.

A single in-vehicle device equipped with a digital video-recorder, a router for connections to the network and a GPS receiver, guarantees acquisition, recording and transmission of video streams to the monitoring center.

Besides video, AiVu Mobile can generate manually or automatically alarms like danger or safety threats (such as panic button in the driver's cab or unexpected doors openings), but also malfunctions of the video cameras and recording device, network disconnections or GPS signal lost.

A user friendly web interface allows operators in the monitoring center to display real time images from on board video-cameras, to consult the database of recorded videos, to continuously tracking the position of each vehicle, to display and receive all alarms and to support on board personnel in case of a danger.

Designed to offer the highest performance standards in the most extreme operative conditions, AiVu Mobile is a complete solution which exploits the best available technologies to guarantee utmost reliability.

**Acquisition, storage and real-time streaming of images from CCTV cameras**

**Management of video-streams from ONVIF compliant IP video cameras**

**Remote configuration, control and maintenance**

**Compliant with MPEG-4, H.263, H.264, MJPEG, WebM video codec standards**

**Internal video storage on SSD or automotive grade HD**

**Strong encryption of video streams to ensure security and privacy**

**HTML5 web interface for mobile and workstation**

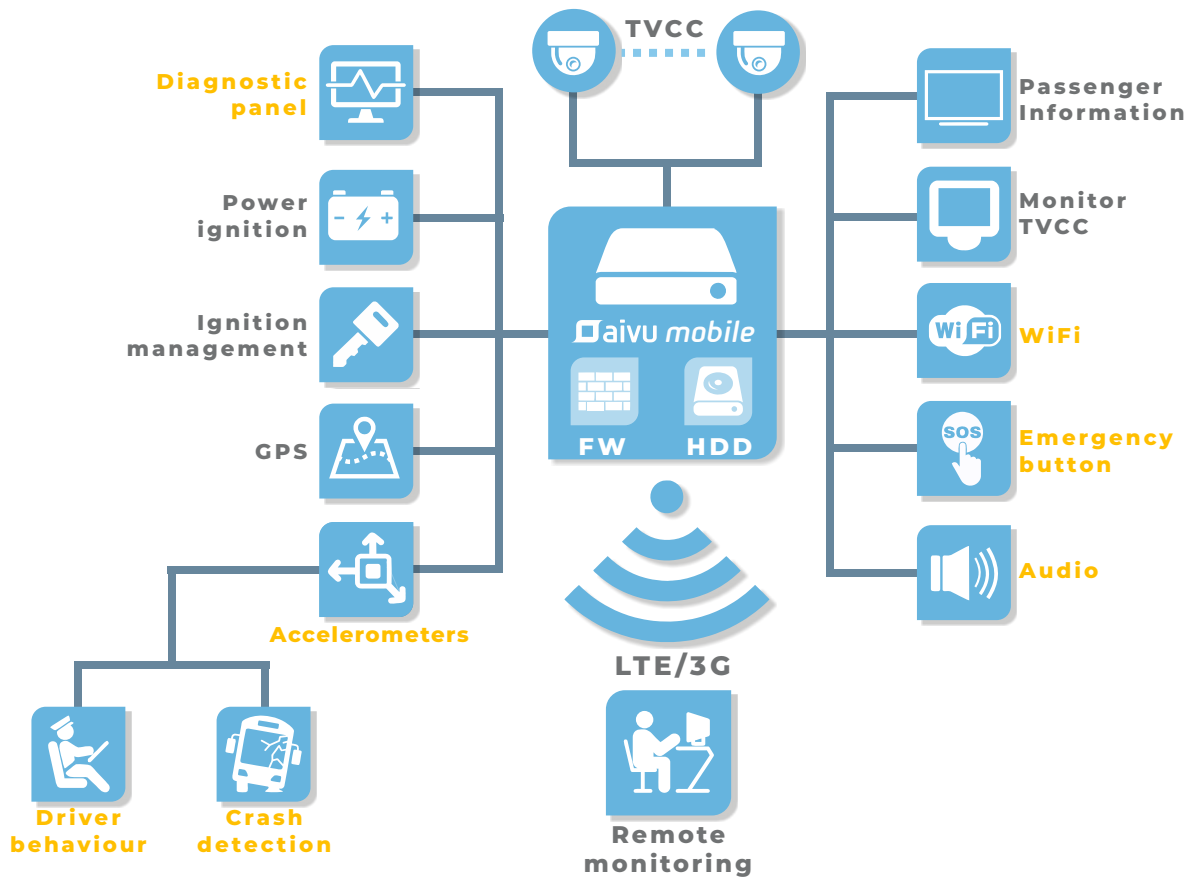
**GPS for tracking and images georeferentiation**

**Accelerometers for crash detection and driving behaviours**

**Integration with third-party supervisory systems**

# AIVU-MOBILE ARCHITECTURE

base version  
optional



## EXAMPLE OF APPLICATION

					
Video surveillance	✓	✓	✓	✓	✓
Passenger Information	✓	✓	✓	✓	✓
Audio	✓	✓	✓	✓	✓
WiFi connectivity	✓	✓	✓	✓	✓
Accelerometers	✓	✓	✓	✓	✓
Emergency button management	✓	✓	✓	✓	✓
Digital I/O management	✓	✓	✓	✓	✓
GPS	✓	✓	✓	✓	✓
Ignition management	✓	✓	✓	✓	✓
On board CCTV monitor	✓	✓	✓	✓	✓
Diagnostic panel	✓	✓	✓	✓	✓
Power ignition	✓	✓	✓	✓	✓
Integration with POS systems	✓	✓	✓	✓	✓
License plate recognition	✓	✓	✓	✓	✓



# AIVU-MOBILE FEATURES

## Easy to use

AiVu Mobile can be quickly set up, as it only requires to connect the device to car power line and a simple configuration. No external device is required for video camera connection, powering (POE) and network access (integrated modem).

The video cameras configuration can be carried out using the device interface, without any further intervention on the cameras.

## Display of images from monitoring center

A web interface makes it possible to manage all fleet vehicles from remote. For each vehicle, the user can review live video streams, send controls to the video-cameras to pan, tilt and zoom. Videos are identified with timestamp, GPS location and sequence identifier.

A custom application with typical play, stop, fast forward and rewind buttons allows the operator to view the recorded videos in a friendly way. The interface allows the user to simultaneously display videos from several cameras organized as videowall, or to display a single video stream in full screen format.



## Display of images on mobile devices

AiVu Mobile can redistribute all live and recorded video streams on board vehicles to mobile devices (tablets, smartphones, etc.) of personnel. Using the latest HTML5 (WebM and HLS streaming) technologies a support to all kind of operating systems is guaranteed.



## Alarm management

All the configured alarms are sent to the control center and available to operators in real time. Alarms are transmitted with the related video sequences linked to the event's timestamp, vehicle ID and geographical localization. The system allows operators to configure user-lists to automatically send e-mail and/or SMS alerts for every occurred event.

## Digital Input/Output

AiVu Mobile supports digital I/O to detect events, such as alarms generated by the "emergency button" in the driver's cab, or following unexpected opening of the doors or if the vehicle is at a standstill. AiVu Mobile automatically responds by acquiring and video-recording the event and enabling the transmission of video streams to the control center.

# AIVU-MOBILE FEATURES

## Georeferentiation of video streams

The on-board GPS system makes it possible to georeferentiate live/recorded images: for each sequence, it displays the timestamp, the vehicle ID and geographical coordinates. The web interface can use online services like GoogleMaps or OpenStreetMap to rapidly localize and track all vehicles on the map.



## On-board monitor

A monitor inside the cab can be available to watch live images and alarms from the vehicle, and also receive video streams coming from the center.



## Image and data protection

Data protection on AiVu Mobile is taken into great account. The system allows operators to define user profiles with varying password to access system functions. Only allowed profiles can access to console and take charge of alarms. All the live and recorded sequences are "encrypted" with unique access keys, allowing only the staff with valid credentials to view them. The use of devices with encrypted software applications and firewall protection ensures complete data protection and incorruptibility.

## Video analytics

The AiVu-Smart Modules suite integrates existing CCTV systems by using Video Content Analysis techniques for real-time detection of a variety of different events focusing on people, vehicles and static objects.

A wide range of embedded image processing algorithms generates alarm notifications in case of events involving the security of the monitored areas (face detection, license plate recognition and more). Virtual sensors are configured onto images through a user-friendly web interface.

## Integration into third-party supervisory systems

Quite often, video surveillance applications are "subsystems" of other, more complex control and security systems. For this reason, AiVu Mobile offers to System Integrators a full set of programming libraries (SDK and API) to access all functions from third parties applications, such as supervisory or management systems..

## Certifications

AiVu Mobile is compliant with EN50155 standard regulating electronic equipment used on rolling stock for railway applications. AiVu Mobile is also designed to meet the requirements of the E-Mark Certification (E13).





# DIGITAL SIGNAGE

## Dynamic and real-time on-board communication

AiVu Mobile can integrate a complete Digital Signage application to provide passenger information, entertainment and advertise. A powerful media player inside the device is fully programmed from a Content Manager application from the control center.

All kind of media and crawling tickers are reproduced on dedicate on-board display and can be scheduled by time or GPS position.

The integration with Digital Signage opens to new business models capable of producing profit from the selling of advertising space.

## The powerful and easy-to-use Content Manager

The management of contents and programming their distribution to the monitors is possible thanks to TVIP-Director, the web application developed by Aitek for the management of Digital Signage networks. TVIP-Director allows system administrators to independently manage the entire network (distributed players and monitors), modify player configurations and add new ones in case of network extensions directly from the center, with no need of on-site interventions.

TVIP-Director is a content manager equipped with all the typical editing and programming tools for a Digital Signage network: from multimedia ingestion (audio / video clips, images, slides, web content, text content, RSS) to the creation of custom layouts, playlists and channels.

A reliable and easy-to-use tool that allows to quickly and securely disseminate updated information in real time and distribute content scheduled according to the place and time of broadcasting.

# AIVU-MOBILE TECHNICAL FEATURES

- ▶ Integrated web interface for remote viewing and management of video cameras and recordings
- ▶ Plug-in free HTML5 interface for remote access from PC clients and mobile devices
- ▶ Real-time cropping of live and recordings
- ▶ Integrated GPS receiver for vehicle and video localization
- ▶ Duration, resolution, frame rate and video codec of recordings can be configured independently for each camera
- ▶ GPS/status/AVM data embedded into video streams
- ▶ Embedded 64 bit Linux Operating System on flash memory support
- ▶ Internal watchdog
- ▶ Diagnostic interface
- ▶ HTTPS protocol connection for secure data access and transfer
- ▶ Encrypted video streams to ensure the video integrity, no risks of unauthorized access
- ▶ Automatic overwriting of recordings
- ▶ Fully compliant with current CCTV regulations on public transport
- ▶ Dedicated network for video cameras, separated by an internal firewall from the external network
- ▶ SW upgrade with packet encryption, allowing simultaneous remote maintenance for the entire vehicle fleet
- ▶ Secondary OS for backup and recovery procedure
- ▶ Java and C/C++ SDK for Linux and Windows Operating Systems for integration in third-party applications

**AiVu-Mobile is conformant  
with ONVIF profiles S**







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