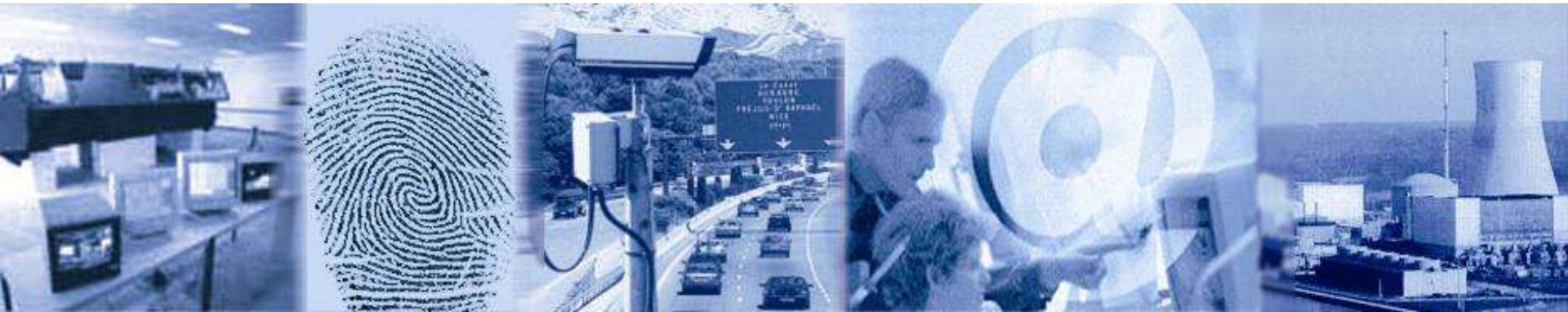


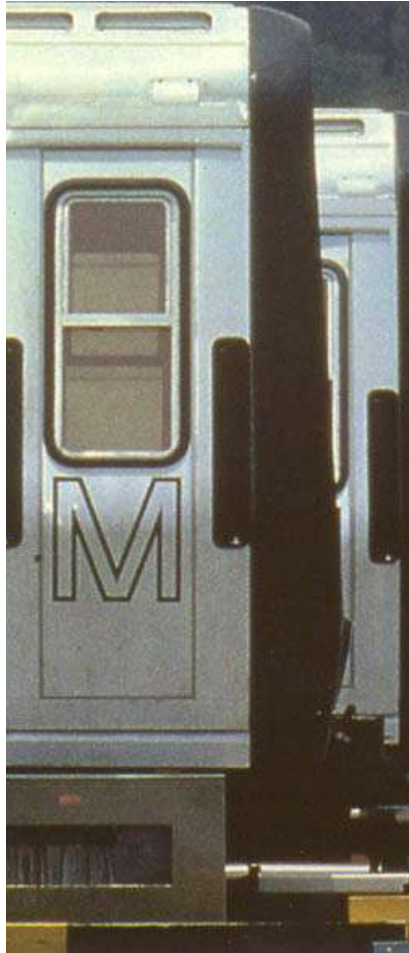
Thales Security Systems



Solutions for Rail Transport Security
Christian FEDORCZAK
Marketing Manager

Video surveillance for security improvement





- System vision
- Solutions for security & safety improvement
- Solutions for in-car entertainment
- New features



- **Deployment of a network based video surveillance system**
- **Deployment of a wide band wireless network enabling new services:**
- **Security & Safety**
 - **Onboard Surveillance and transmission to a ground based Control center**
 - **Platform and track surveillance and transmission to the driver's cab**
- **Entertainment / Commercial**
 - **In the cars multimedia diffusion**

Security of IT systems

PKI
VPN Solutions
Dematerialization
Supervision
Integrity control

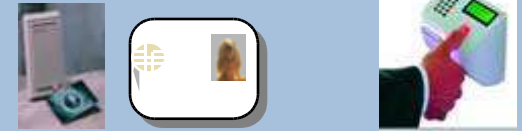


Video surveillance & image analysis Access control cameras



Digital recording, behaviour analysis, identification, object detection, tracking,

Identification & access control Card readers, smart cards, biometrics identification



Building access, logical access, biometrics authentication



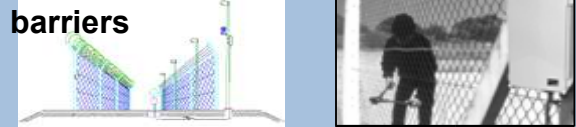
NBC detection systems



Tracking and positioning



Intrusion detection & alarms Mgt Microwave, IR barriers



Movement sensors, optic fiber, volumetric sensors

Videosurveillance integration and management



Browser



Operator workstation



Keyboards



Monitors



API

Video Management

API

API

API

API

Integrated video processes:

- Movement detection
- Automatic Alarm reaction
- Privacy zones

Intelligent image analysis:

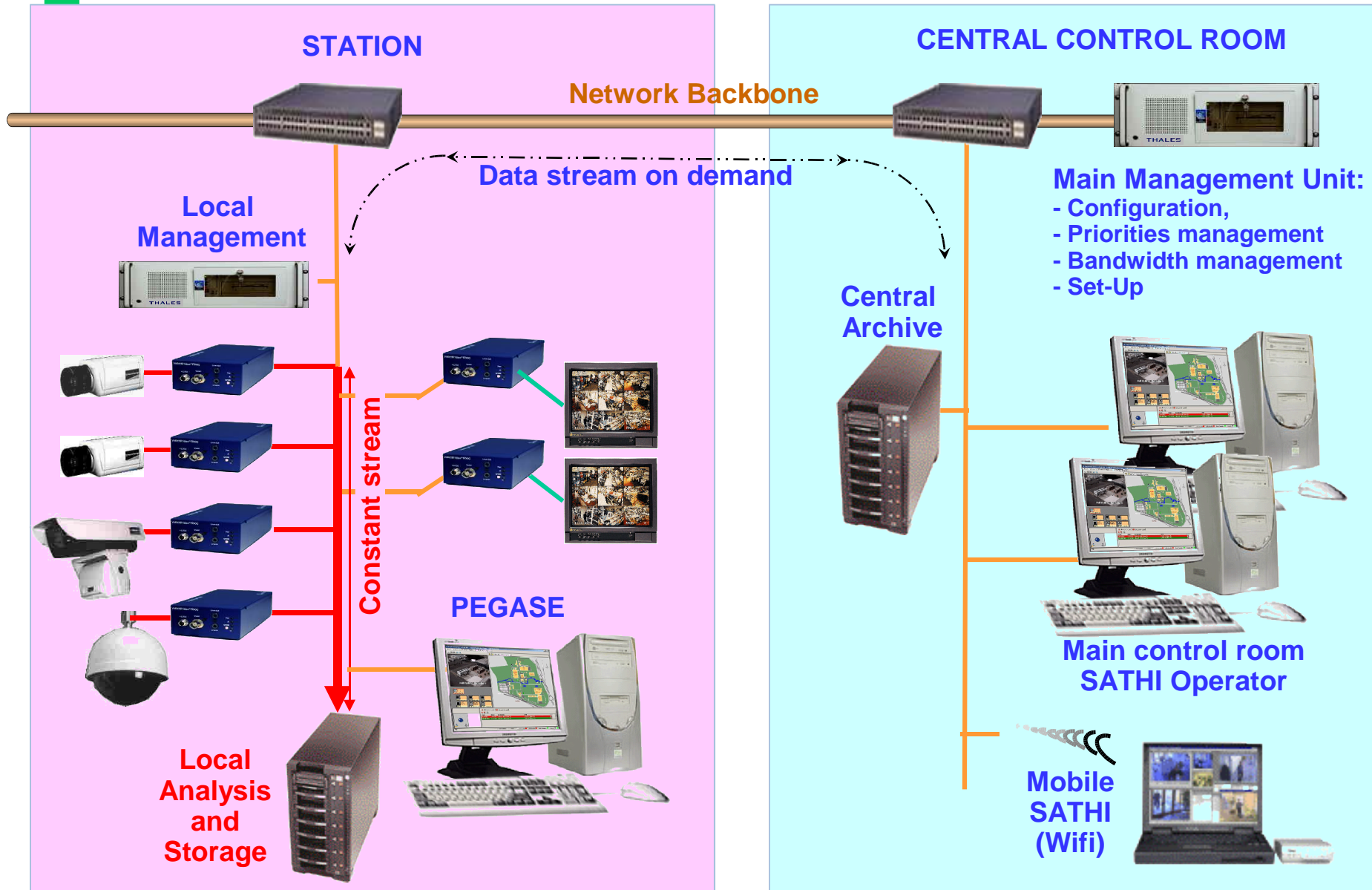
- Licence plate recognition
- Tracking and counting
- Face recognition
- Unattended object detection
- Behaviour recognition

Digital recording & storage

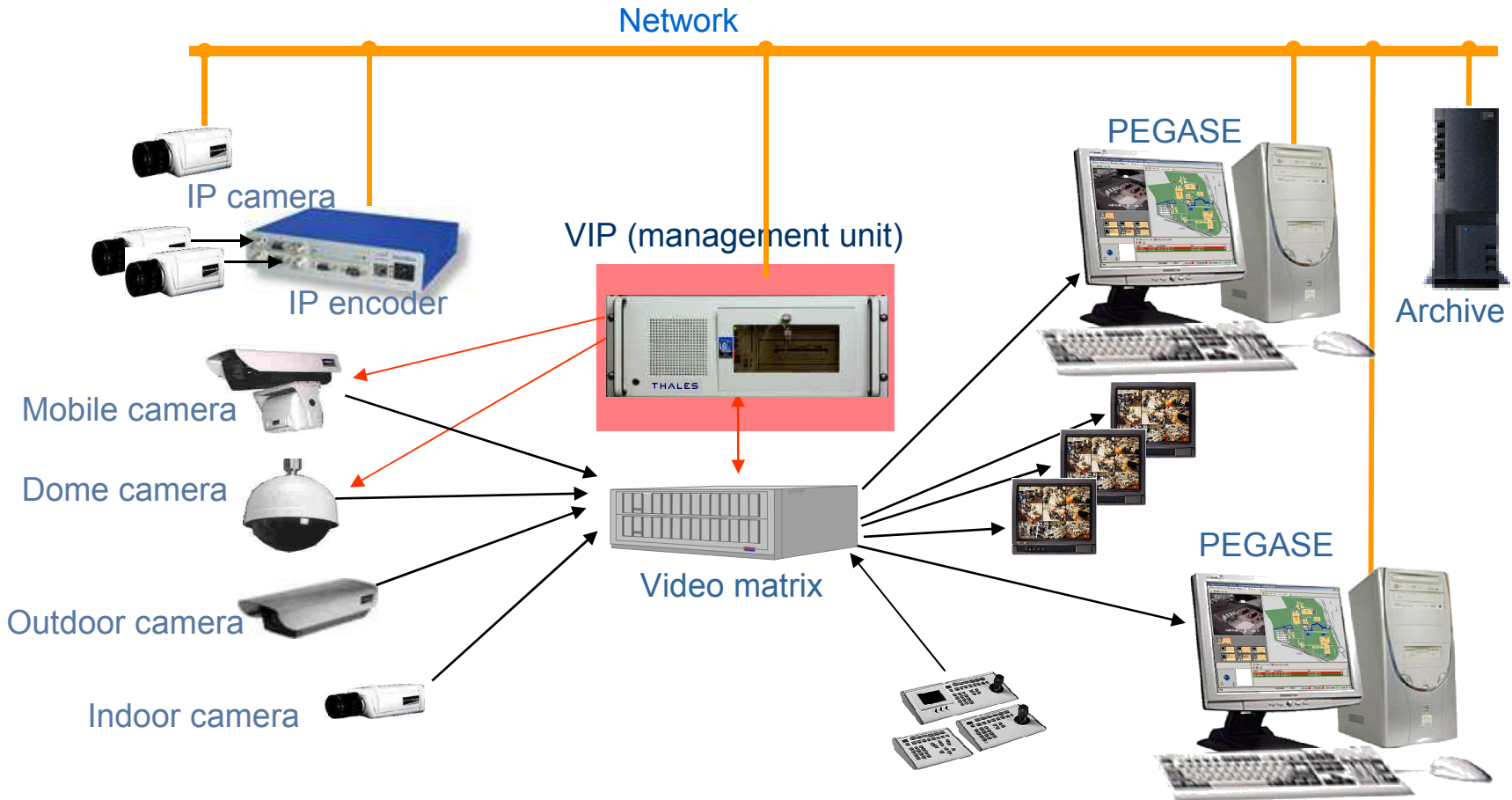
Analog or digital Cameras, IP CODEC

Switching matrixes

Ground video surveillance architecture

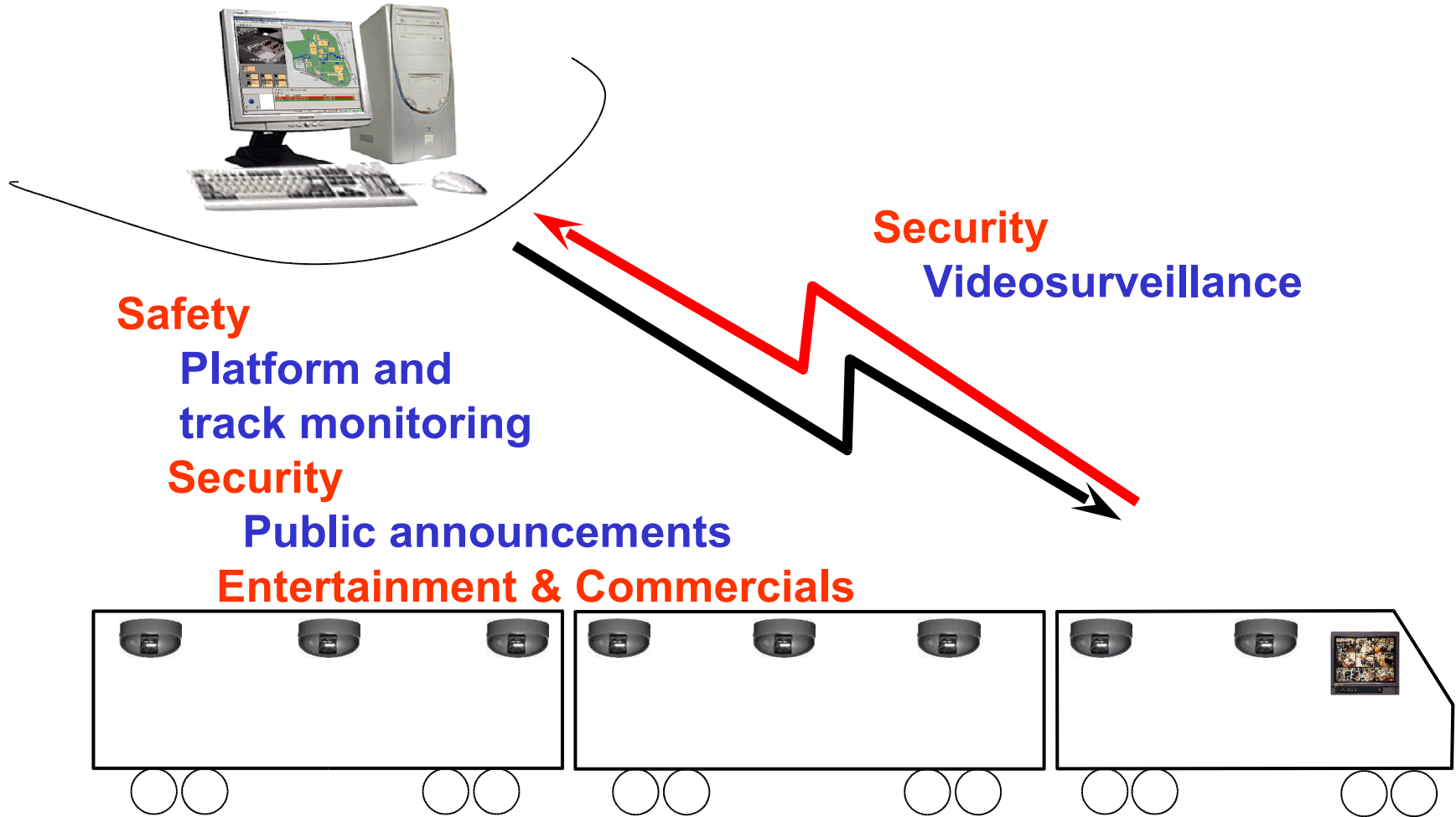


Solution for analogue to digital migration

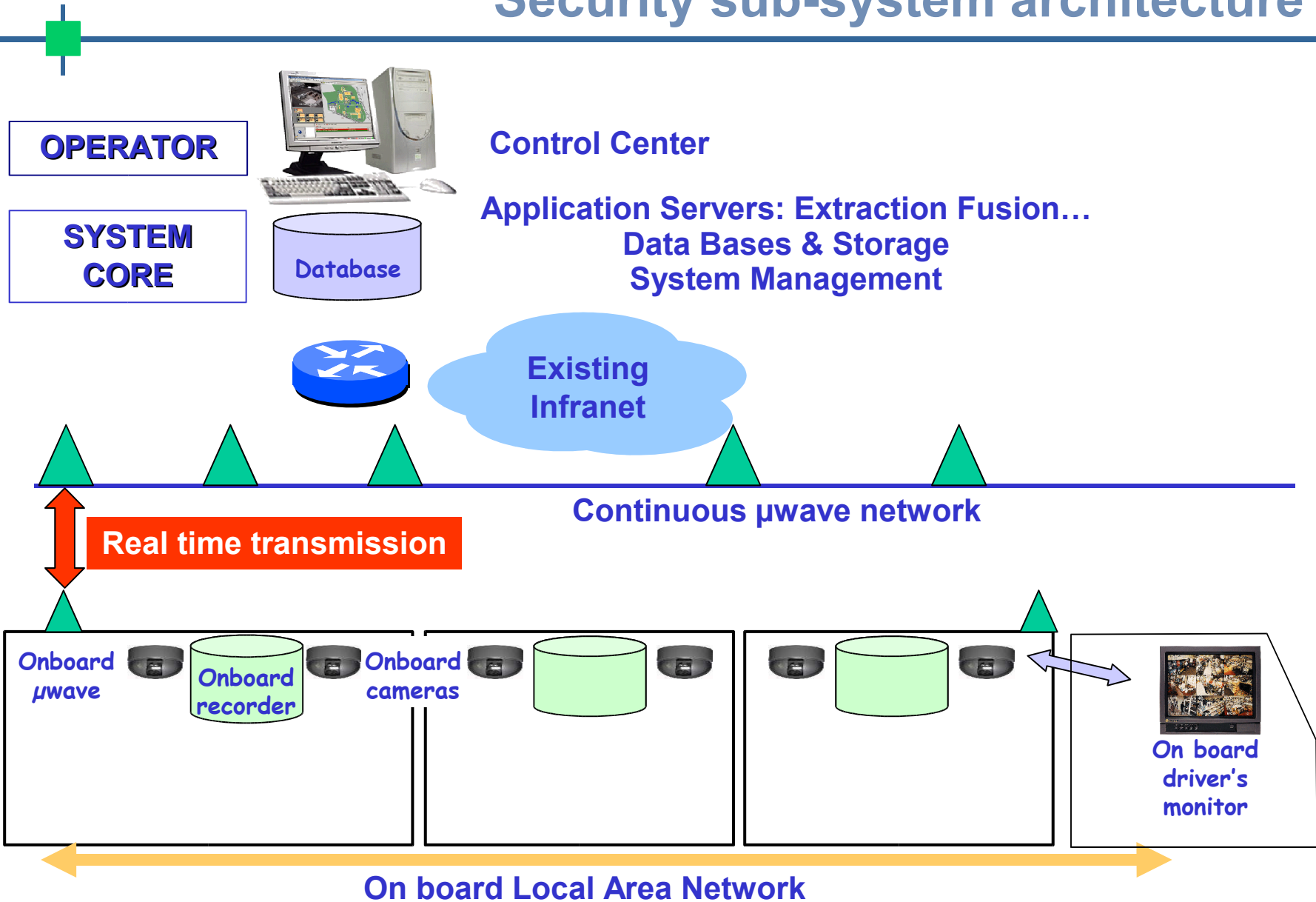




GLOBAL ANALYSIS & SYSTEM TRADE-OFF



Security sub-system architecture



•Video and audio recording in the cars :



➤ Color video cameras installed in the cars

- In the corridors, every 6 m
- Near the doors

➤ Video and audio compression and IP transmission over the onboard LAN

➤ Alarm detection :

- Emergency cord
- Operator (driver, controller)
- Video or audio detection



■ Video and audio recording in the cars:

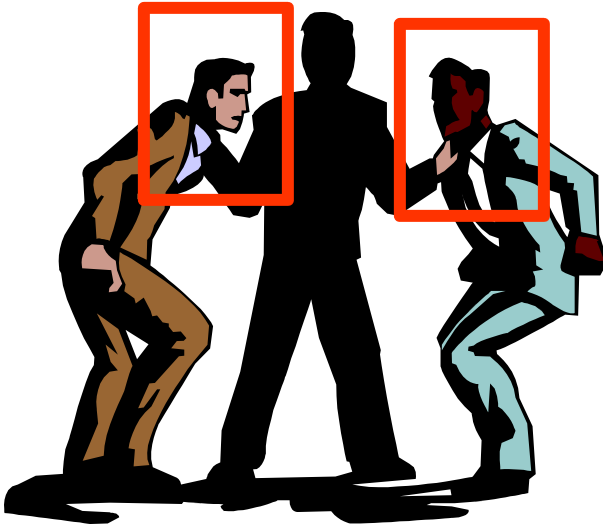


- Video Compression CPU and Hard Disk Recorder fitted in an anti-vibration box
- Management of cameras (resolution, compression rate, detection of masked cameras...)
- Continuous digital recording of last 8 hours
- Protection of alarm sequences
- Transmissions to the ground according to available radio bandwidth
- Easy configuration with a laptop or from a ground workstation
- Removable hot plug hard disk protected against unauthorized extractions
- Same system used for entertainment with additional board



– Alarm transmission and analysis at the Security Control room :

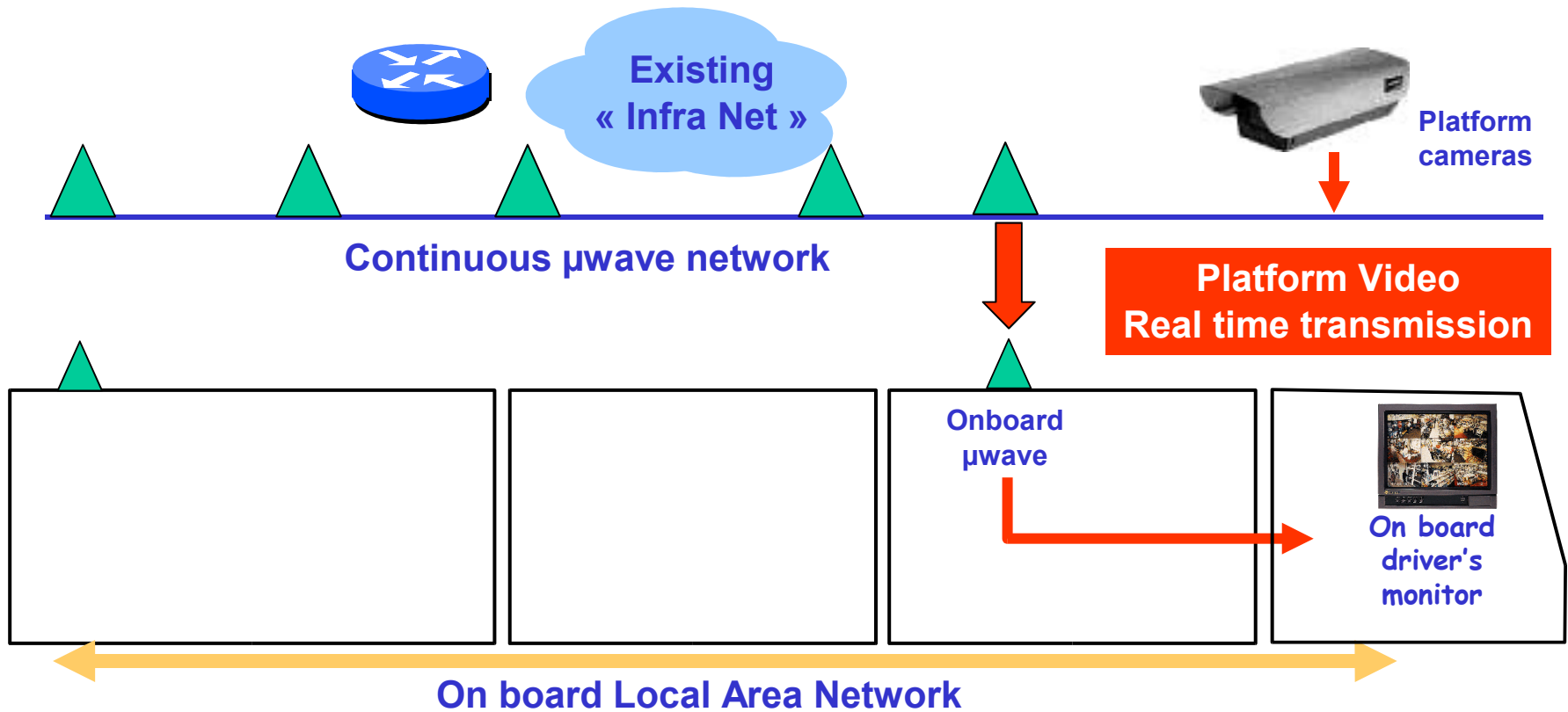
- **Live video or recorded sequence transmission over the Wide Band Network**
- **Image and Audio analysis**
 - Live video and audio for an accurate evaluation of the situation
 - Recorded sequences for confirmation of the alarm
- **Alarm confirmation :**
 - Recognition / identification of the suspect persons
- **Description of the suspect persons**
 - Description
 - Image or sequence selection



■ Alarm sent to the downstream stations :



- **Description of the suspect persons**
 - Picture
 - Video sequence
 - Additional information extracted from the live video
- **Follow-up of the situation from the Security Control Room**
- **Follow-up of the situation by the Police in the downstream stations**
- **Interception of the suspects**





■ Detection of incidents in the stations :

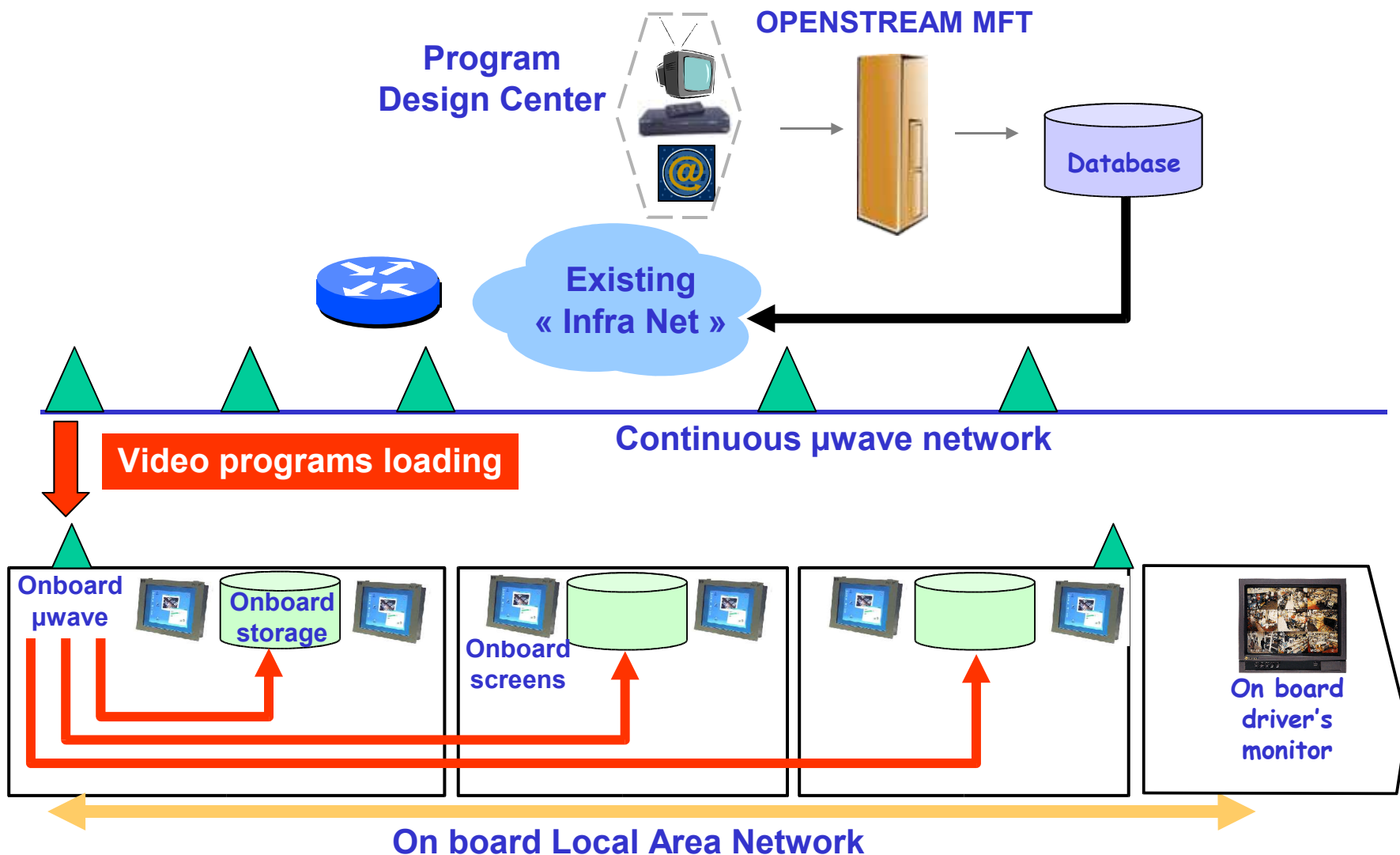


- Cameras on the platform watching:
 - The track and the platform
 - The train doors
- Platform images sent to a video monitor in the driver's compartment
- Detection of objects or people on the track
- Checking the doors before departure

- Monitors in the cars (video and audio) for passengers entertainment
- Travel information:
 - Next station
 - Available services
- Commercials:
 - Related to the next stations
- News, Music...
- Specific information...
- Alarm, emergency instructions...



Entertainment sub-system architecture





•Video and audio recording in the busses :



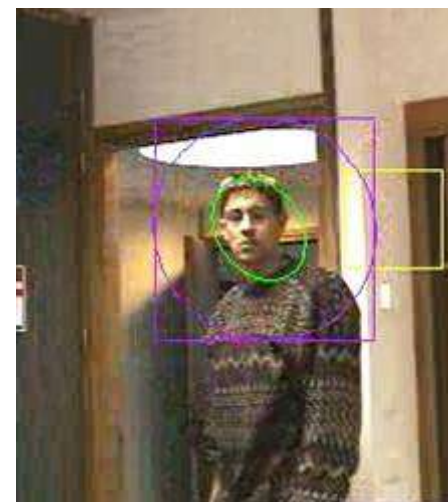
Example: RATP busses

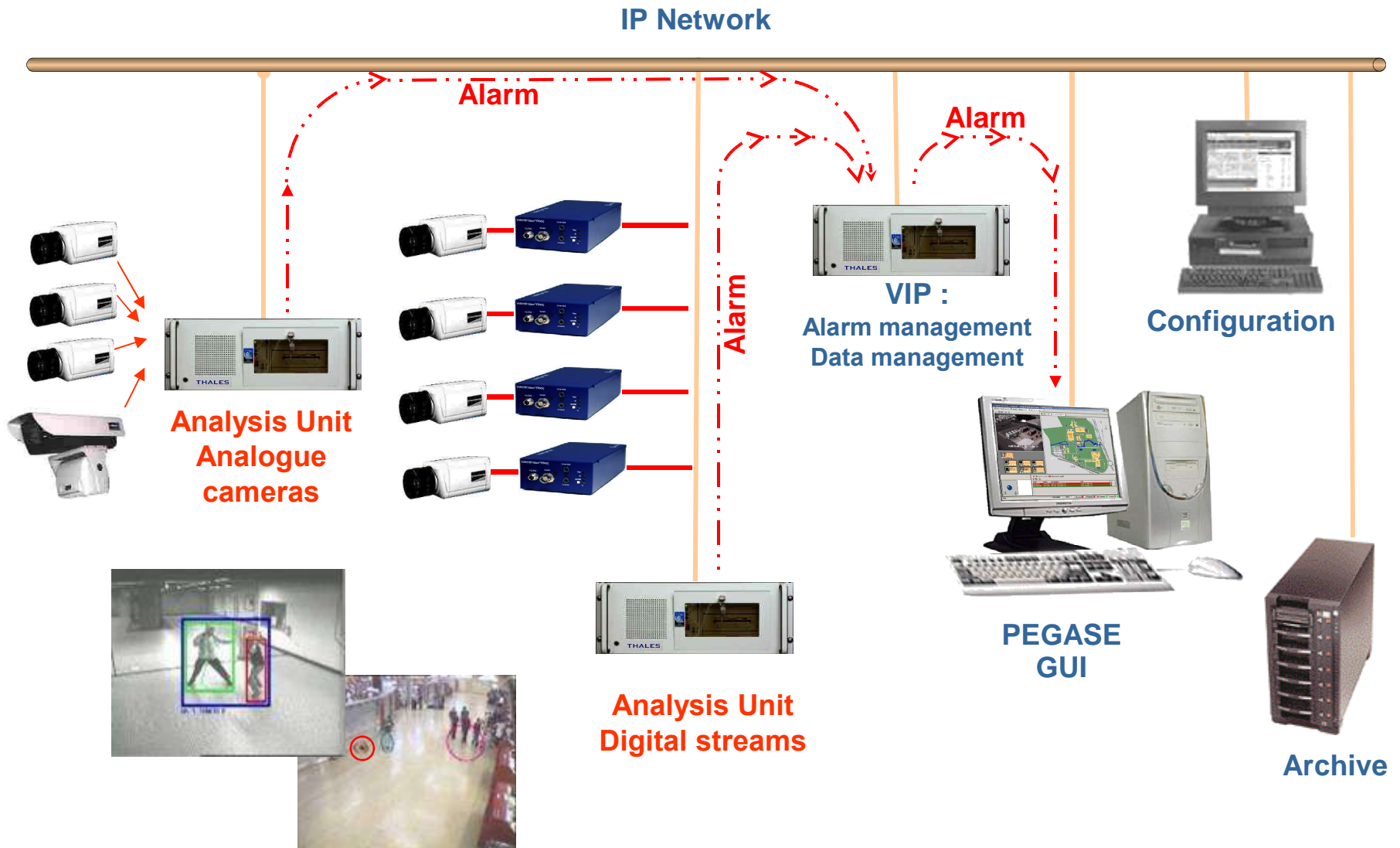
- 2000 busses
- 12000 cameras
- 2000 digital recorders
- 400 LCD monitors

- Color video cameras installed in the cars
 - 4 to 8 cameras per bus
 - Doors entrance surveillance
- Video and audio compression and recording on a removable hard disk
- Alarm detection :
 - Emergency cord
 - Operator (driver, controller)
 - Video or audio detection

Intelligent Digital Video Analysis

- Modular Video Architecture
 - Analysis units linked to VIP or to the supervisor by LAN for alarm transmission and processing or for data transfer (counting)
 - Processing of analogue video cameras directly connected to the analysis units
 - Processing of digital video streams provided by camera encoders
- Upgradeable analysis capability
 - Blue Eye Tracker :
 - Behaviour analysis
 - Tracking
 - Counting
 - Licence plate recognition, Radiator grid recognition
 - Facial recognition...





Automatic people tracking

- Fast detection and designation
- Detection of people entering a restricted area
- Detection of persons walking opposite way
- Detection of violent behaviour, vandalism
- Detection of suspect behaviour in the car parks
- Recording of alarm sequences
- Crowd monitoring
- People tracking



Unattended objects detection

Applications

- Unattended luggage and parcels detection
- Object displacement detection

Characteristics

- Integrated to video surveillance equipment
- Automatic detection
- Pertinent alarm for the security staff (localization)
- Quick owner research



Behaviour detection

Low level analysis

- Individuals detection
- Object tracking
- Group tracking
- Inter object movements



High level analysis

- Suspicious activity
- Agitated
- Alarm for the security staff



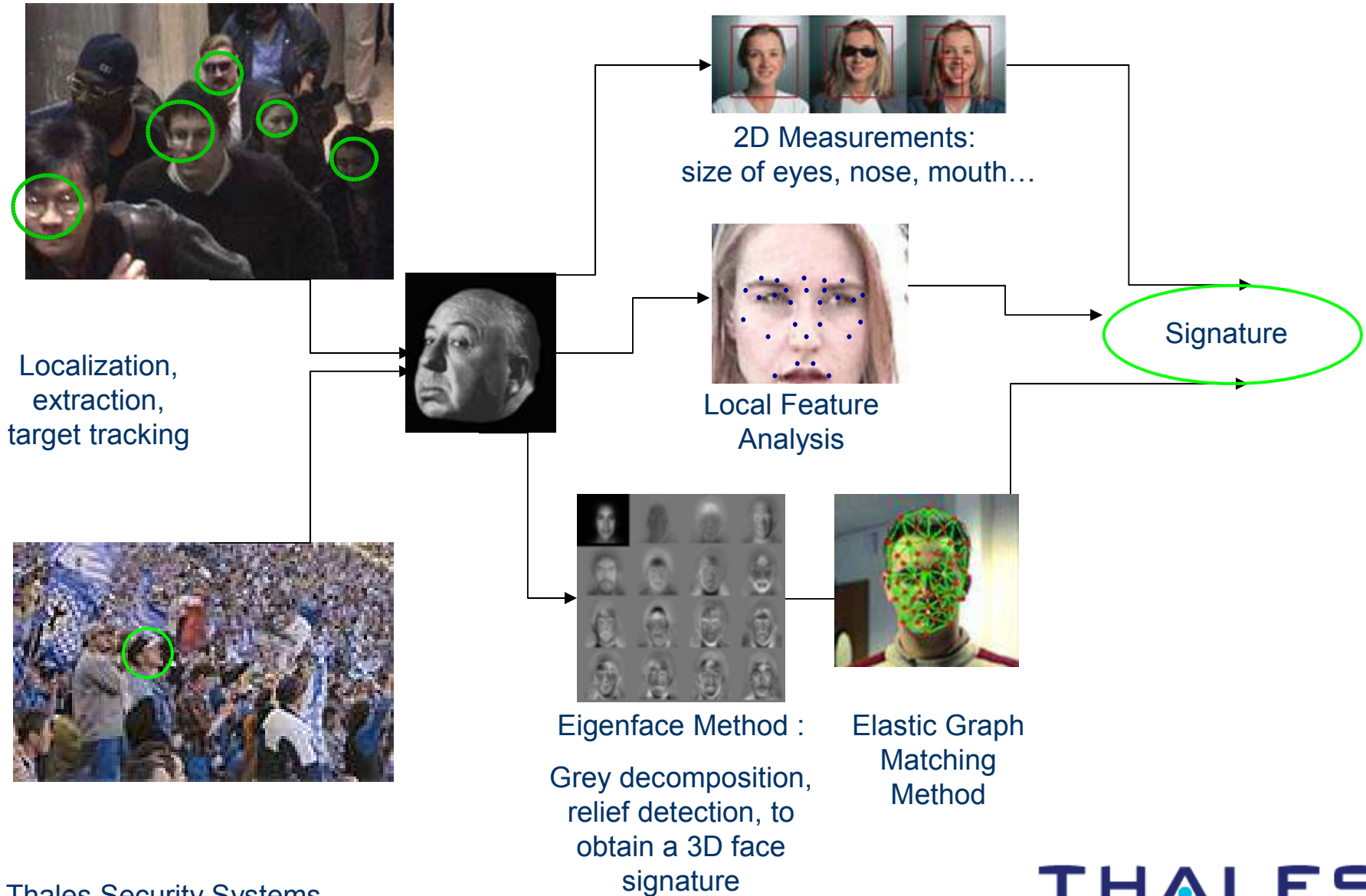


Jumping over gates

Dangerous behaviour



Face recognition





RATP

SNCF

**VAL subways of Lille,
Toulouse, Rennes,
Taipei, Chicago**

Singapore subway

Rio de Janeiro subway

Caracas subway

Eurotunnel...

