GEOTECHMIN
ГЕОТЕХМИН

vizor LABS

COMPUTER VISION

For work safety
and Industrial processes control

Management presentation

CONTENTS

ABOUT COMPUTER VISION

Work safety issue

Solution

Possible applications

PROBLEM & OPPORTUNITY

PROBLEM:

- Non-compliance with production regulations
- Disregard for safety
- Concealment of incidents and Incidents

Penalty charges

Stoppage of production

Incidents

Defective production

Losses

OPPORTUNITY:

Early stage intelligent detecting and prediction of process abnormality and safety violation **saves lives** and **saves money for employers**

SOLUTION

To watch and to see is not the same thing

FROM CONVENTIONAL MONITORING

TO INTELLIGENT VIDEO SURVEILLANCE

Human eye conventional monitoring

- Depends much on the human factor
- Post-factum detection – problem has already happened
- Labour intense – surveillance operators

Capable to:

- Detect abnormalities in processes and violation of safety rules
- Predict dangerous scenarios
- Analyze cause-effect link

Allows:

- Reinforcement of Safety rules
- Motivation to follow safety rules
- Ongoing safety policies improvement

POSSIBLE APPLICATIONS

Wide range of possible scenarios

IDENTIFICATION	THE CONTROL	AUTOMATION
People / Transport / Freight	PPE / Safety / Quality	Equipment / Processes / Analytics

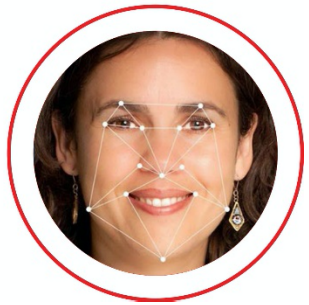
Computer eye recognizes better than human eye and without human errors

Personal protection equipment

Vehicle types and plates

Equipment and processes monitoring

Construction



People identification against available databases (employees, subcontractors, tenants etc.)

GEOTECHMIN IMPLEMENTATION OF COMPUTER VISION SYSTEM

Scope of the project

Implementation

Results

Real time demonstration

SCOPE OF THE PILOT

Control of usage of Personal Protection Equipment

Project scope:

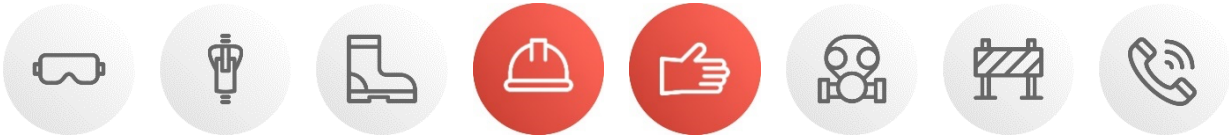
- Identify persistent breaches of safety rules
- Increase awareness and safety habits of personal
- Reduce possibility for incidents
- Test useful application, feasibility and functionality of the system for further extension

We monitor 2 important operational spaces:

Machinary hall «Мелнично»

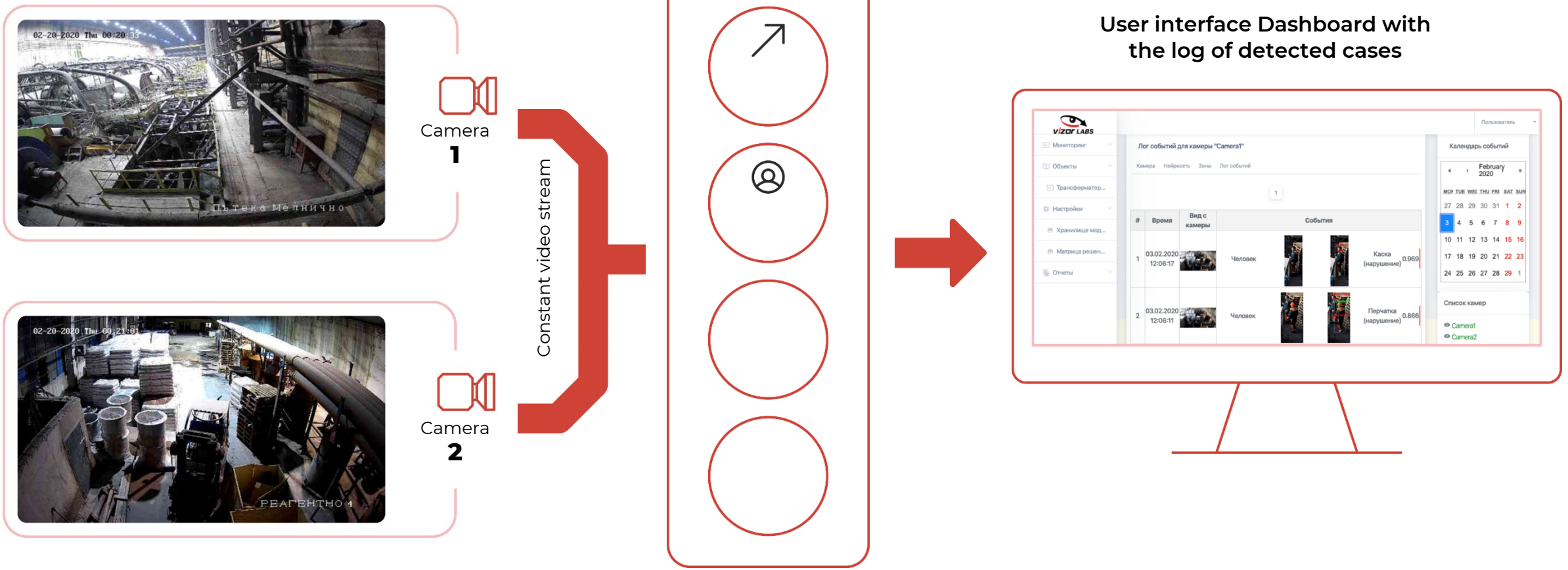
Реагентно

We detect 2 most critical PPE in the context of ГЕОТЕХМИН plant:
Helmets + gloves



IMPLEMENTATION

Control of usage of Personal Protection Equipment



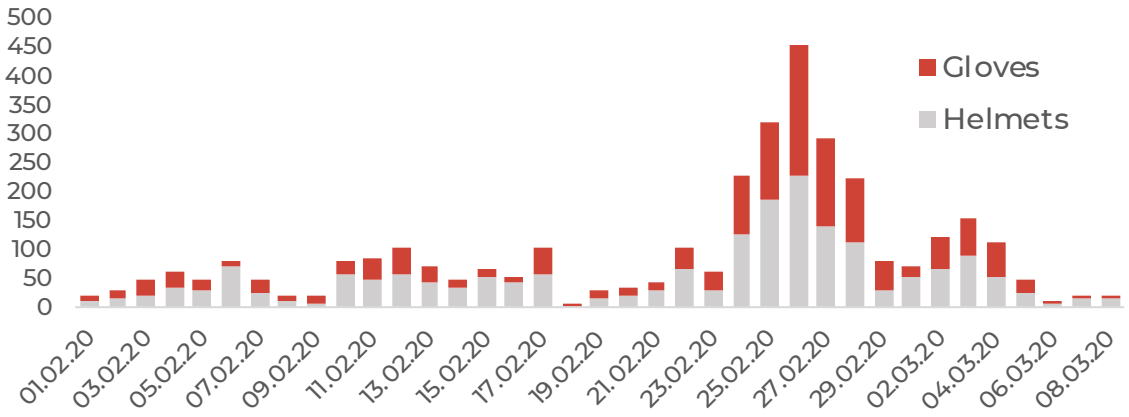
RESULTS

Detection accuracy and basic statistics

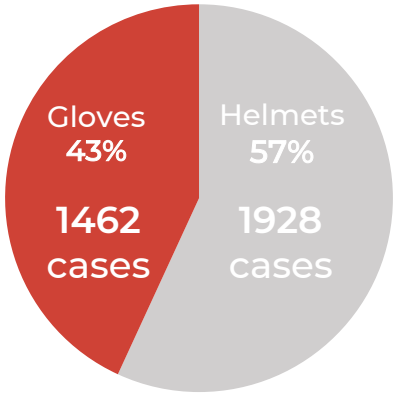
Key results and and conclusions:

- The system works effectively and stably
- Evident existence of disregard of safety rules
- Persistent statistics of 92 breaches a day on average with total of 3 390 cases over 37 days of observation
- The disregards of helmets and gloves is almost equal
- Can be extended to other working areas and applications

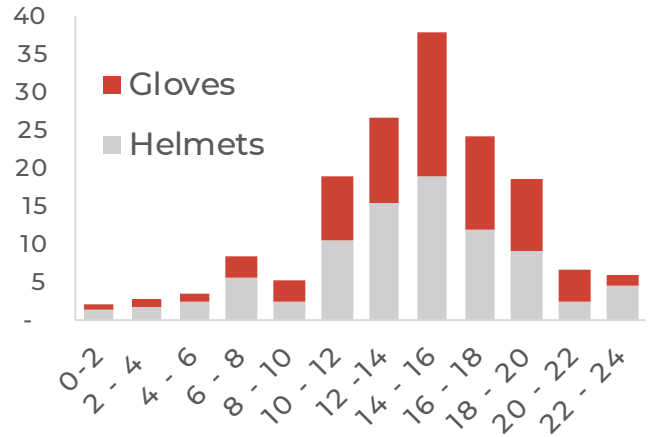
Daily statistics of PPE disregards (breaches / day / camera 1)



Type of PPE breakdown on



Part of the day breakdown



This is only several examples of wide range of statistics and breakdown available for extraction according to the management needs

OVERVIEW OF VIZORLABS SOLUTIONS

VizorLabs system modules

Main video analysis algorithms

Integration

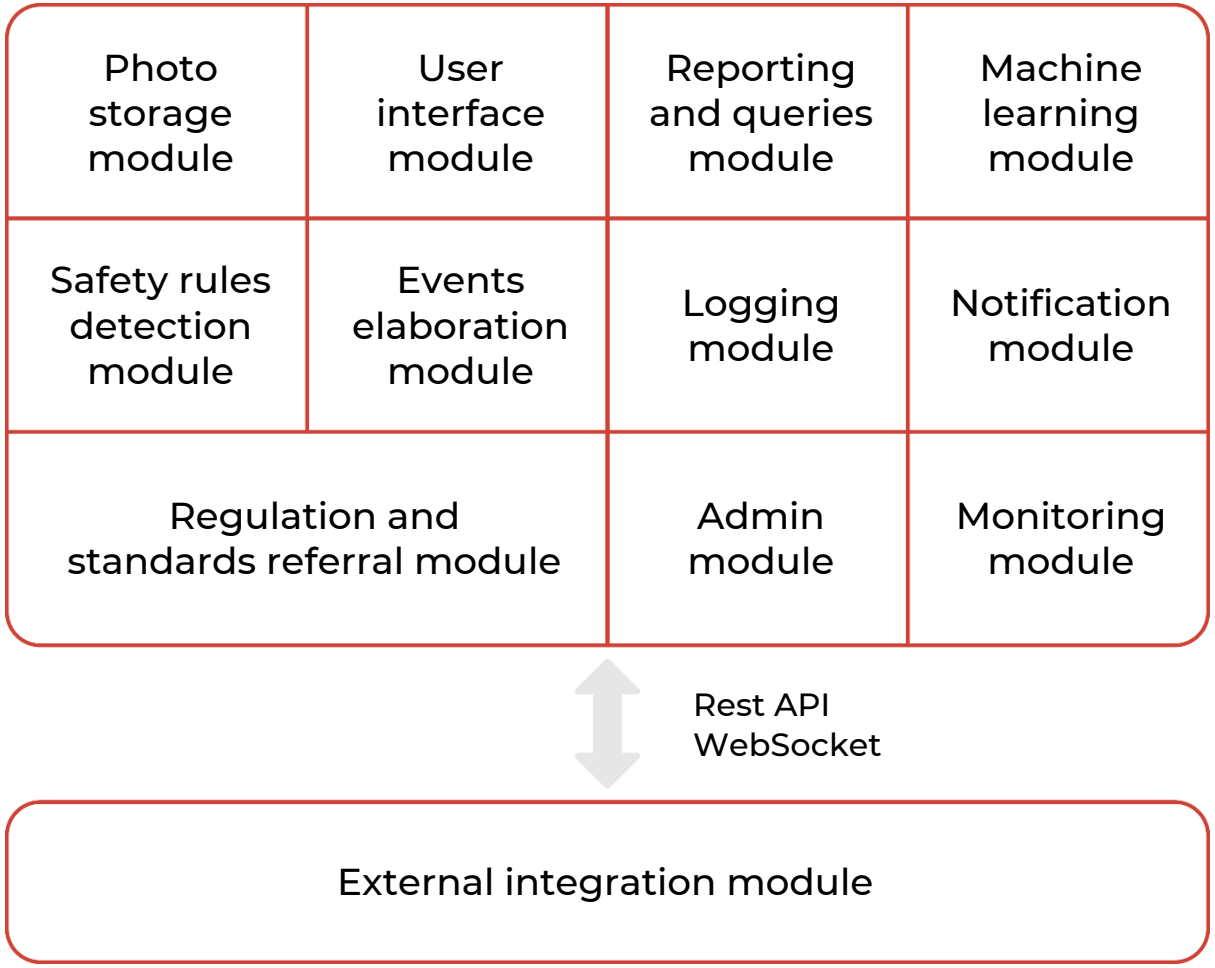
Component of server-based architecture

VIZORLABS SYSTEM

Functional Modules of the system

Intelligent Video Surveillance operating system

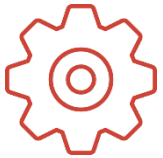
- Automated detection and registration
- Integration with Security Operation Center
- Expanded picture of detected scene for Operator
- Multi channel alerts (SMS, e-mail, telegram etc)
- Great out-of-the-box reports
- Meaningful tagged archive

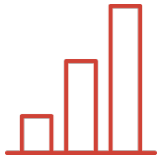


VIZORLABS SYSTEM

Most requested algorithms for industries

The great variety of over 75 patented algorithms* allow our systems to go from the simple video surveillance to the most advanced video elaboration and data analysis.





SECURITY	PROCESSES AND AUTOMATION	STATS AND ANALYTICS
People, objects and vehicles recognition	Machineries malfunction detection	Counting of units produced
Personal protection equipment recognition	Preventing accesses to dangerous areas or equipment	Analysis of efficiency, occupation or workers involvement rates
Access control	Quality control and assurance	Input/output measurements
Intrusion and other zone detection	Alert messages	Time schedules enforcements
Face recognition	Automated production processes	Risk/danger assessment
People concentrations, traffic counting	Gates and other infrastructure automation	Heat maps
Worker's conduct monitoring	Freight loading and movement monitoring	
Safety protocol compliance		

* Algorithms listed above are only selected examples of wider range of computer vision detectors.

VIZORLABS SYSTEM

Integration with external system

ERP

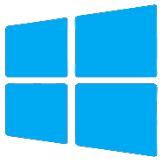
- Microsoft Dynamics NAV
- Microsoft Dynamics 365 Business Central
- 1C

Business Analytics and Reporting

- Microsoft Power BI
- Tableau
- SAP Crystal Reports
- IBM Business Analytics

Control Centers

- IBM Intelligent Operation Center
- Avigilon Control Center
- Bosch Building Integration System



Microsoft Active Directory

Notifications

- E-mail
- SMS
- Telegram
- Portable gadgets
- Voice alarm
- Workflow systems

Video Management System

- Bosch Video Management System
- Trassir
- ITV
- Milestone XProtect

Video Cameras

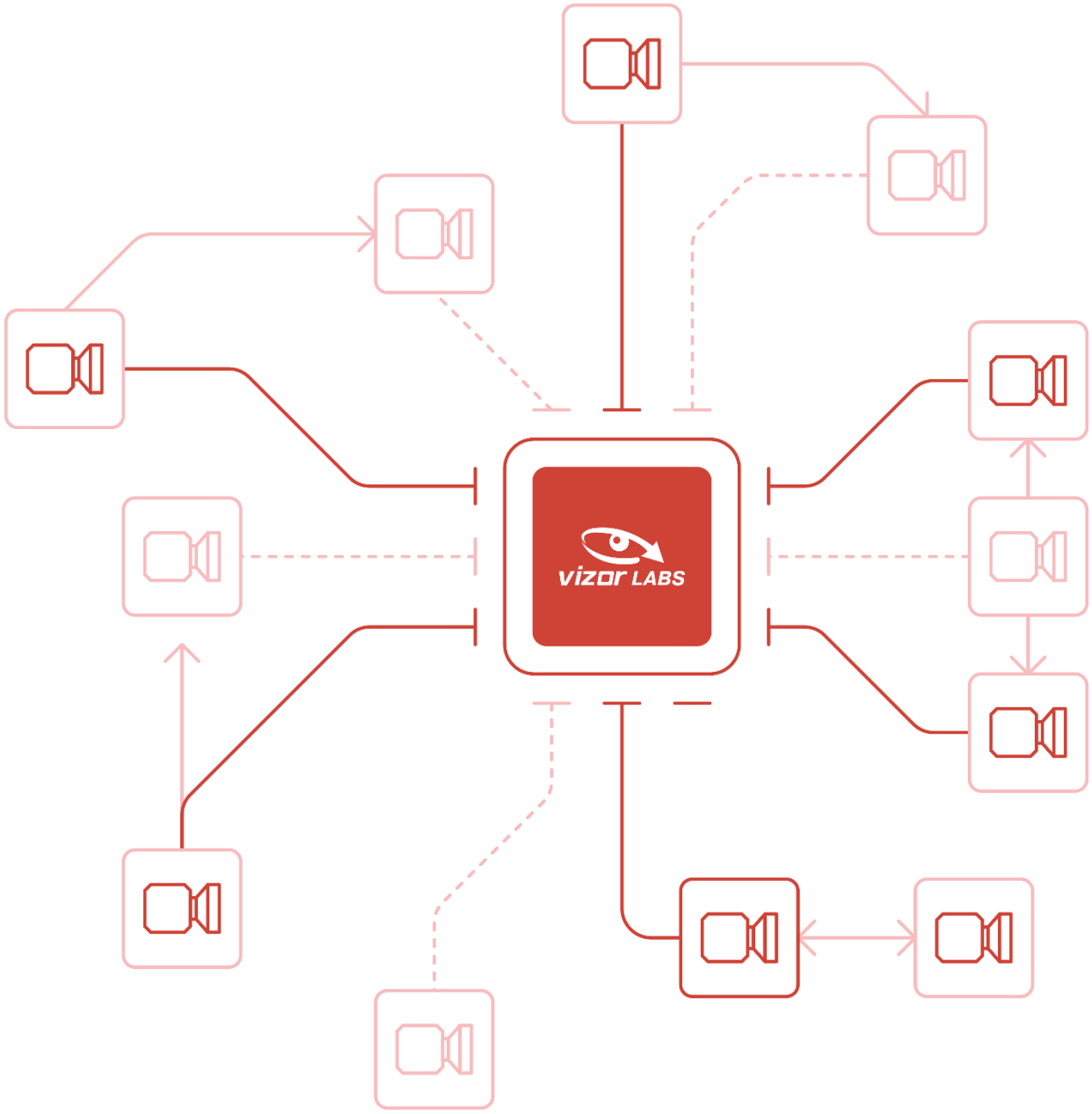
- HikVision
- Aviglion
- Konica Minolta
- Axis
- Dahua
- Panasonic

VIZORLABS SYSTEM

Universal and scalable

UNIVERSAL MONITORING

- Unlimited number of cameras, sensors and servers on the network
- Implementation of geographically distributed solutions
- Support for analog and IP cameras
- Virtualization, network storage, global administration
- Ability to tune, combine and cascade detectors
- Panning of cameras in case of alarm
- Support for interactive 2D, 3D plans of the object, integration with GIS



VIZORLABS SYSTEM

Server based architecture

cameras

CCTV and communications

Video analytics Online

Video archive

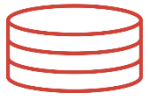
Meta data

Video samples

Stop frame

data processing centre

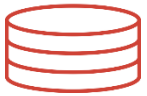
Eadditional elaboration of video and frames



Event Database

Storage and search on meta data

Preparation of statistics and reporting



Reporting Cube

Data elaboration

Reports in personal web panel

Export of data to client's ERP system

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vizor LABS

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