



ANALYTICS FOR A SAFER WORLD

VAIDIO AI VISION PLATFORM

1. Ironyun and Aicuda Technology have a Global presence and have vast experience in building up the business in both US and Europe.
2. Ironyun and Aicuda Technology R&D department includes both a software development team and a hardware development team to facilitate integration between software and hardware in projects.
3. Ironyun and Aicuda Technology have a flexible price structure. As soon as pricing is becoming the bottleneck it makes sense to talk with us.
4. The VAIDIO AI Vision Platform goes beyond opportunities in Surveillance as “AI Vision” is already indicating.
5. Ironyun and Aicuda Technology are flexible in projects. If the commitment is there we are able to develop AI models on the run based on customer requirements.

VAIDIO AI ENGINE





CONVERGED ANALYTICS

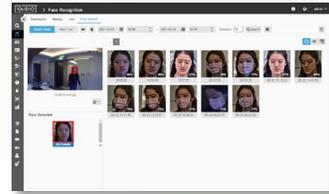
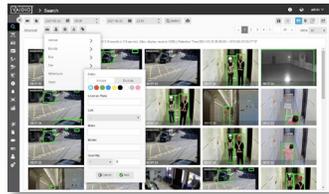
The Aicuda Converged Analytics Platform (CAP) provides a common AI core, multi-object search, and the industry's broadest array of analytics functions.



AI-BASED ANALYTICS

REAL-TIME

FORENSICS



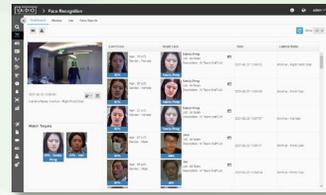
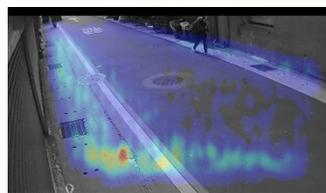
Face Search



People Counting



Vehicle Counting



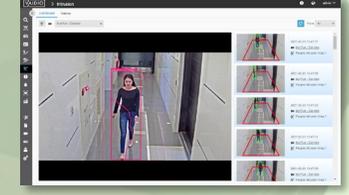
Face Recognition



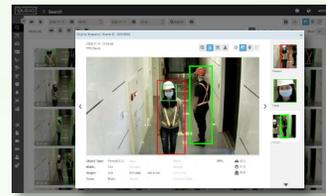
ID Verification



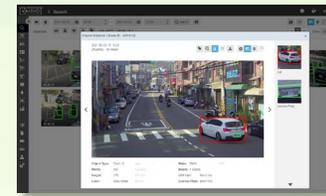
License Plate Recognition



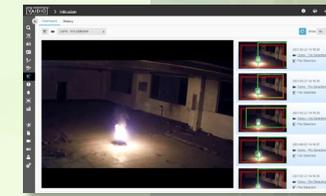
Intrusion Detection



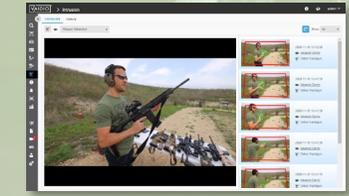
PPE Detection



Make & Model



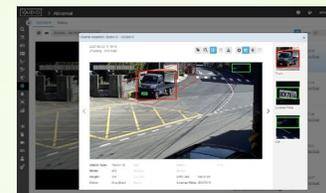
Fire Detection



Weapon Detection



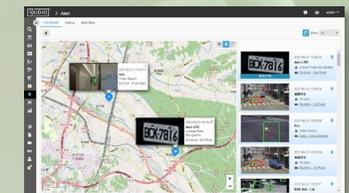
Person Fall



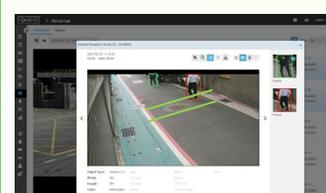
Illegal Parking



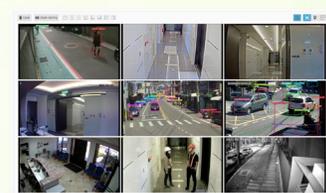
Object Left Behind



Real-time Alert



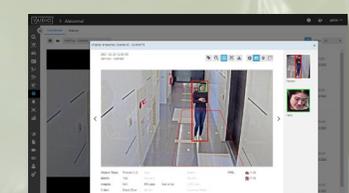
Walking Direction



Liveview



Social Health



Loitering

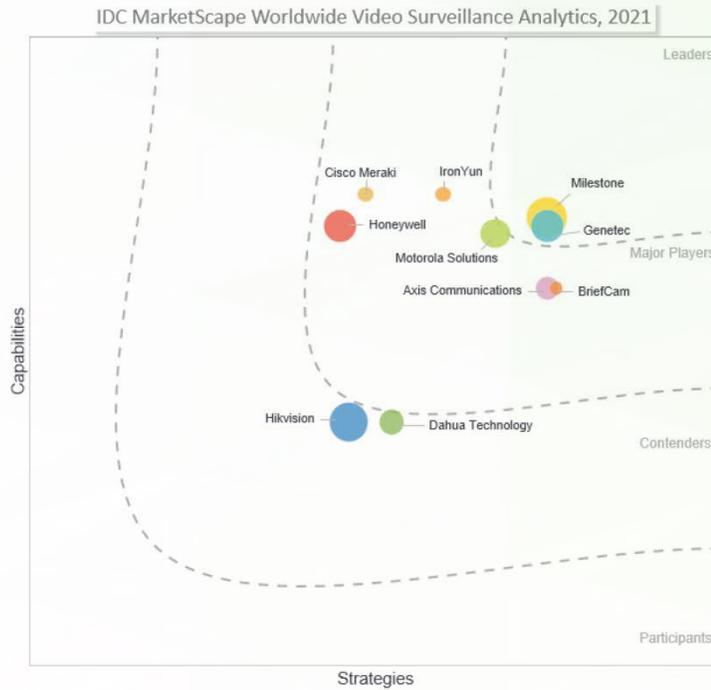
IDC MarketScape: Worldwide Video Surveillance Analytics 2021 Vendor Assessment

Mike Jude

IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape Worldwide Video Surveillance Analytics Vendor Assessment



Source: IDC, 2021

TABLE 1

Key Strategy Measures for Success: Worldwide Video Surveillance Analytics, 2021

Strategies Criteria	Definition	Weight (%)
Functionality or offering strategy	Excellence is demonstrated by the degree to which the vendor uses open source applications.	35.0
	Excellence is demonstrated by the extent to which cloud-based approaches are facilitated.	
Financial/funding	Excellence is marked by consistent growth or increase in market share.	20.0
	Plans to modify geographic distribution are in place.	
Delivery	Excellence is marked by the use of flexible licensing options.	10.0
Innovation	Excellence is marked by a consistent release of new capabilities or products.	25.0
Implementation	Implementation is the time to deploy analytics application.	5.0
Market reach	Global reach is measured by the percentage of sales inside the U.S. market.	5.0
Total		100.0

Source: IDC, 2021

TABLE 2

Key Capability Measures for Success: Worldwide Video Surveillance Analytics, 2021

Capabilities Criteria	Definition	Weight (%)
Functionality or offering capabilities	Excellence is demonstrated by the ability to support the specific capabilities listed.	40.0
	Patch management options are included.	
Customer service delivery	Excellence is demonstrated by the degree to which vendor provides direct customer support.	15.0
	Excellence is demonstrated by the time it takes to upgrade analytics capabilities on release of new OS version.	
Portfolio benefits	Excellence is demonstrated by integrating with a wide variety of third-party applications as listed.	10.0
Customer satisfaction	Excellence is demonstrated by the customer references and online commentary.	10.0
Architecture	Excellence is demonstrated by the range of customer service offerings as noted.	20.0
Standards	The vendor conforms to standards, including the U.S. National Defense Authorization Act.	5.0
Total		100.0

Source: IDC, 2021

IDC MarketScape: Worldwide Video Surveillance as a Service
2022 Vendor Assessment

Mike Jude

IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape Worldwide Video Surveillance as a Service Vendor Assessment

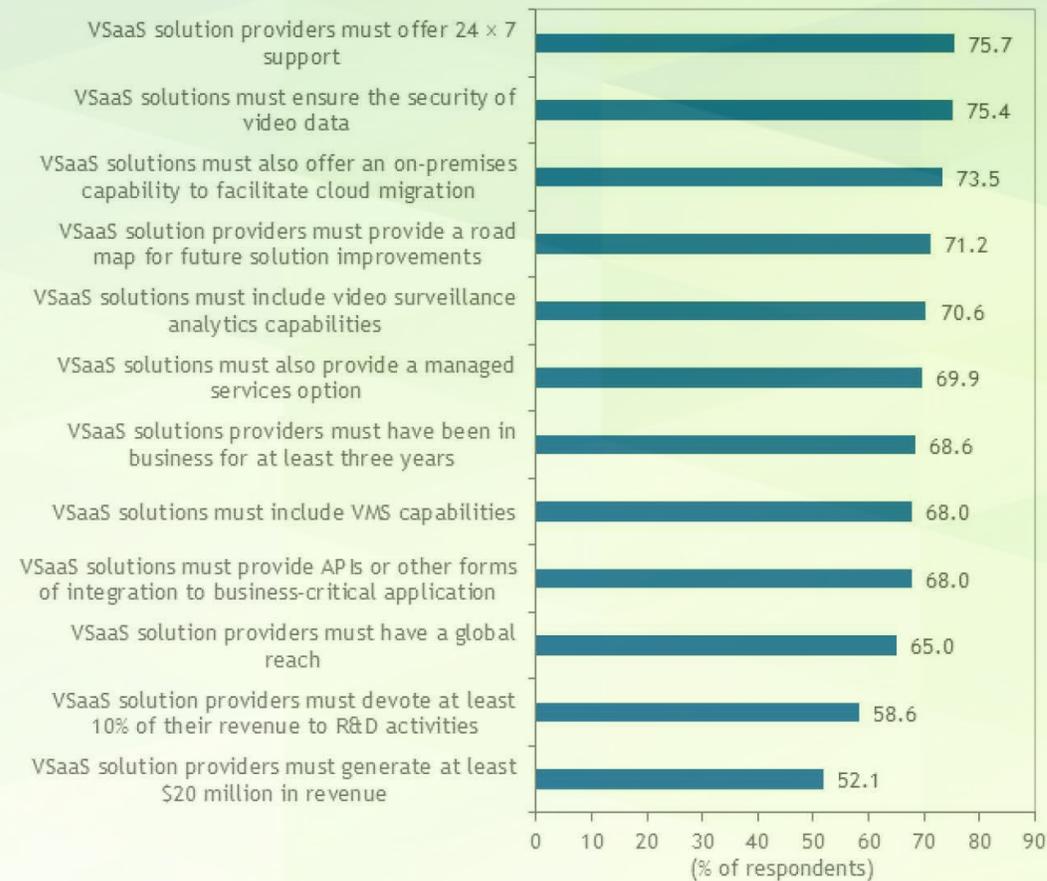
IDC MarketScape Worldwide Video Surveillance as a Service, 2022



Source: IDC, 2022

FIGURE 2

VSaaS Selection Criteria



n = 309

Source: IDC's Video Surveillance Survey, March 2022

SMART CITIES



VIDEO SEARCH

- LAW ENFORCEMENT**
- Identify persons & vehicles
 - Multiple camera search
 - Color search
 - Quantity search



FACE RECOGNITION

- ACCESS CONTROL**
- Face search
 - Blacklists / whitelists
 - Detect multiple persons
 - Detect face similarities



INTRUSION DETECTION

- LAW ENFORCEMENT**
- No false alarms
 - Multiple ROI's
 - Perimeter detection
 - Restricted area protection



LICENSE PLATE RECOGNITION

- ACCESS CONTROL**
- Read license plates
 - Track stolen vehicles
 - Detect permit holders
 - Improve site security



ILLEGAL PARKING

- LAW ENFORCEMENT**
- Parking access availability
 - Find vacant parking spots
 - Park in restricted zones
 - Manage incidents

AICUDA SMART CITY ANALYTICS



SUPERVISION CENTRE



INTERVENTION FORCE

SAFE & SMART CITY



VEHICLE COUNTING

- INFRASTRUCTURE**
- Optimize traffic flows
 - Statistical traffic reporting
 - Reduce pollution
 - Urban planning



PEOPLE COUNTING

- INFRASTRUCTURE**
- Control visitor flows
 - Occupancy rate
 - Queue detection
 - Detection of peak hours



LOITERING DETECTION

- LAW ENFORCEMENT**
- Detects suspicious behavior
 - Unauthorized presence
 - Analyze movements
 - Prevents vandalism & crime



WEAPON DETECTION

- PUBLIC SAFETY**
- Detect guns, rifles & knives
 - Fast response to danger
 - Active shooter detection
 - Prevent violent crime



FIRE DETECTION

- PUBLIC SAFETY**
- Fast smoke & fire detection
 - Prevent property damage
 - Guaranteed fire safety
 - Quick response save lives

SOCIAL HEALTH ANALYTICS

- Contact Tracing Detection
- Distancing Detection
- Facemask Detection
- Occupancy Detection
- High Body Temperature Detection



Social Screening & Health Analytics

GANZ
Security Solutions
by *000*

Next generation temperature screening system

With the current ongoing Coronavirus pandemic, thermal screening and social health analytics play a critical role in protecting the public and limiting the spread of the Coronavirus. Today, GANZ thermal cameras and VAIDIO social health analytics are helping companies all over the world to move to a new normal and safely re-open their businesses. GANZ and VAIDIO social screening and health analytics include contact tracing detection, distancing detection, facemask detection, occupancy detection and high body temperature detection.

Strategic alliance partners

CBC America, a leading manufacturer of intelligent security systems and the GANZ brand's parent company, has entered into a strategic alliance with IronYun and its subsidiary Aicuda Technology. The partners are introducing a temperature screening system for businesses re-opening during the current COVID-19 pandemic. CBC customizes the GANZ thermal camera and pairs it with the VAIDIO Video Intelligence Platform for social health screening. The enterprise solution will provide rapid temperature screening and advanced social health analytics.

📍 Ideal for

- Airports
- Concert halls
- Elderly homes
- Entertainment parks
- Factories
- Government institutes
- Hospitals
- Hotels
- Mosques
- Railway stations
- Schools
- Sport stadiums
- Supermarkets
- Theatres



SOCIAL HEALTH ANALYTICS



VAIDIO Crowd Occupancy Alert system allows operators to set occupancy limits and is able to monitor an unlimited amount of entrances. It automatically sums up the combined IN and OUT people traffic from all entrances and calculate the occupancy number in real-time



Body temperature screening to identify persons with a high temperature quickly and isolate them for testing and further observation.

Enforce persons to wear personal protective equipment to limit the spread of viral diseases and send out alerts to warn.

Count and track the number of people in each location and send out an alert if the maximum capacity has been reached.

Enforce social distancing by measuring the distance of people from each other and send out alerts to ensure public safety.

Viral diseases management using face recognition technology to enable intelligent tracing of infected persons and their contacts.

OBJECT TYPES SEARCH

General Model

Models



Object types

35 object types
Face (+age +gender, no color), person, bicycle, bus, car, motorcycle, truck, license plate (no color), bear, cat, cow, dog, horse, airplane, backpack, ball, baseball_bat, boat, cell_phone, chair, gloves, handbag, kite, knife, laptop, plant, racket, skateboard, skis, snowboard, suitcase, surfboard, tie, train, umbrella.

Applicable Functions

7 applicable functions
Video Search, Alert, Face Recognition, License Plate Recognition, Intrusion Detection People Counting (Incl: Reverse Movement, Person Falling, Person Crouching, Loitering), Vehicle Counting (Incl. Reverse Movement, Illegal Parking).

Color search for object types

- Black, blue, grey, green, pink, red, white, yellow.
- Search for multiple colors per object type. For example: "car(red, white)"
- Search for objects that are not a certain color. For example: "car(!red)" for a car that is not red.



4 object types
Face (+age +gender, no color), person handgun, rifle.

5 applicable functions
Video Search, Alert, Face Recognition, Intrusion Detection People Counting (Incl: Reverse Movement, Person Falling, Person Crouching, Loitering).

Weapon Model

Fire Model



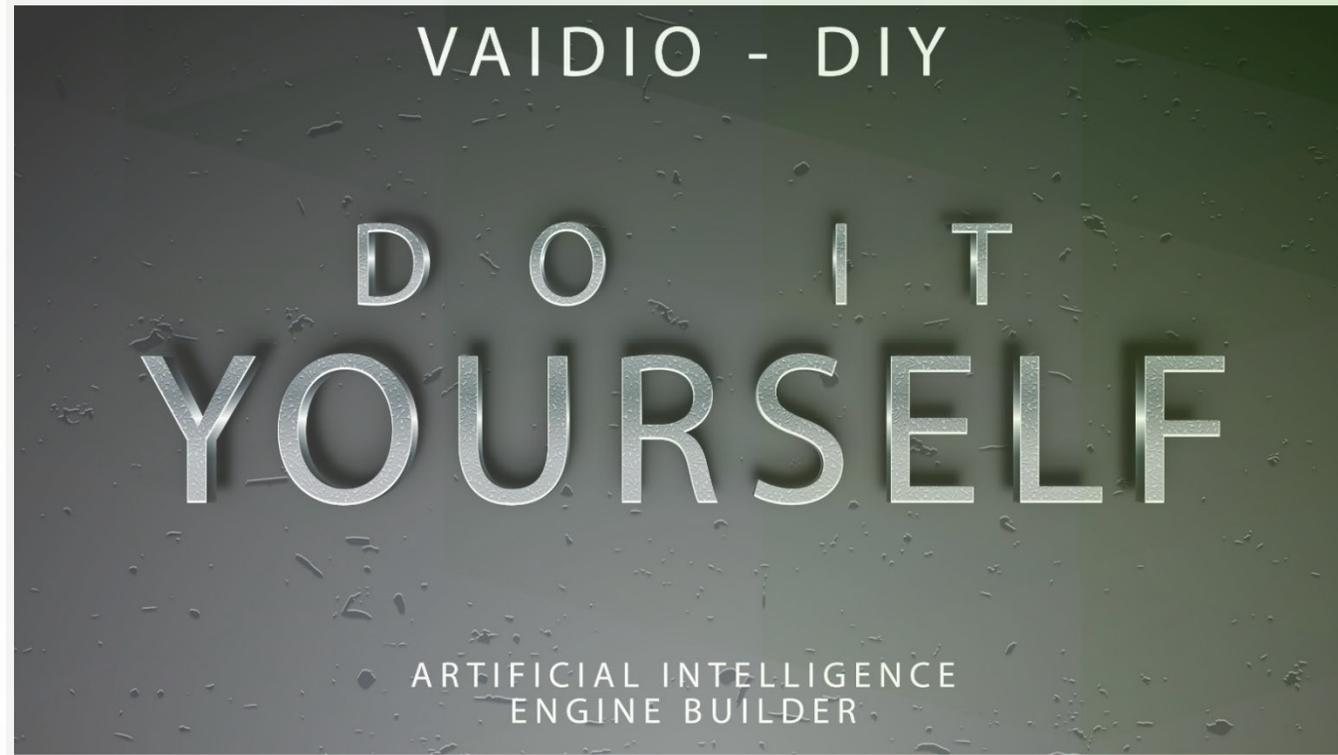
6 object types
Face (+age +gender, no color), person, car, license plate (no color), smoke, fire.

7 applicable functions
Video Search, Alert, Face Recognition, License Plate Recognition, Intrusion Detection People Counting (Incl: Reverse Movement, Person Falling, Person Crouching, Loitering), Vehicle Counting (Incl. Reverse Movement, Illegal Parking).

Quantity search for object types

- Equal (=), less than (<), greater than (>), less than or equal to (≤), greater than or equal to (≥)

VAIDIO TOOL KIT

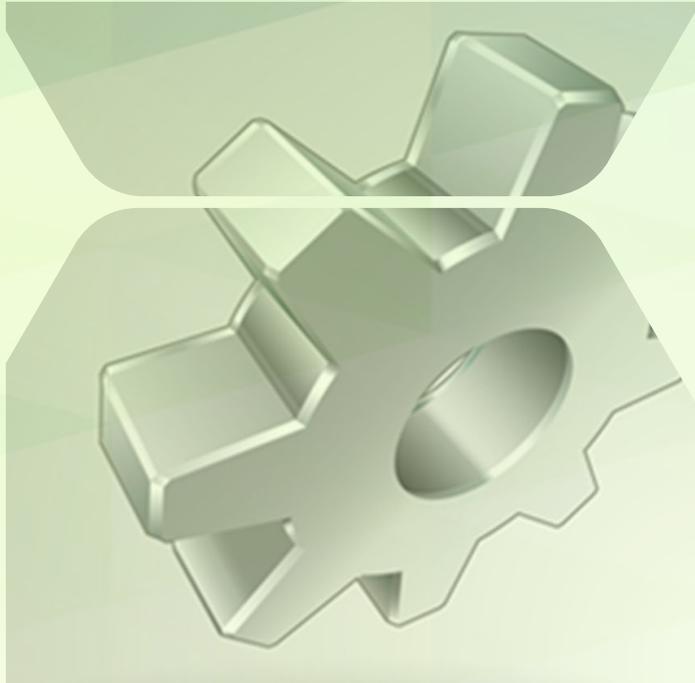


TRAIN YOUR OWN OBJECT
DETECTION MODEL

INPUT: USER SELECTED
FOOTAGE

OUTPUT: READY-TO-USE
AI MODEL

VAIDIO TOOL KIT



ADVANTAGES

EASE-OF-USE

NO KNOWLEDGE REQUIRED AROUND NEURAL NETWORKS, AI LIBRARIES, ALGORITHMS AND DATASETS

VERSATILITY

TRAIN A MODEL FOR ANY OBJECT

INTERFACE

INTUITIVE GRAPHICAL USER INTERFACE

SECURITY

NO DATA SHARING TO 3rd-PARTY LABELLING SERVICES

CUSTOMIZATION

NO CUSTOMIZATION FEE FOR CUSTOMER SPECIFIC REQUESTS

THE CHALLENGE



COSTLY
false alarms



LIMITED
resources



SLOW
forensic search



UNMONITORED
cameras



INADEQUATE
tracking



THE SOLUTION



ACCURATE
ALERTS



MAXIMIZED
EFFICIENCY



FAST
VIDEO SEARCH



AI-ENABLED
ANALYTICS



COMPREHENSIVE
FUNCTIONALITY



FACES

MATCH
RECOGNITION



PEOPLE

BEHAVIOR
INTRUSION
COUNTING
FALLING
DIRECTION



VEHICLES

COUNTING
DIRECTION
LPR
MAKE / MODEL
PARKING



APPLICATIONS

CONSTRUCTION
HOSPITAL
MOBILE / EDGE
RETAIL
SMOKE / FIRE
WEAPON



AI / DB / SEARCH / ALERT / REPORT

CONVERGED ANALYTICS PLATFORM

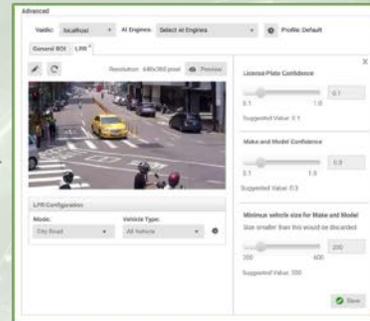
AICUDA  CAP

OPERATING THE SYSTEM

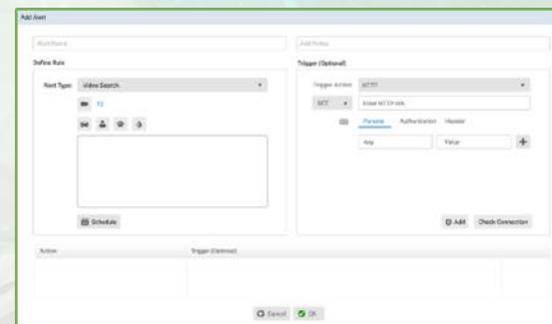
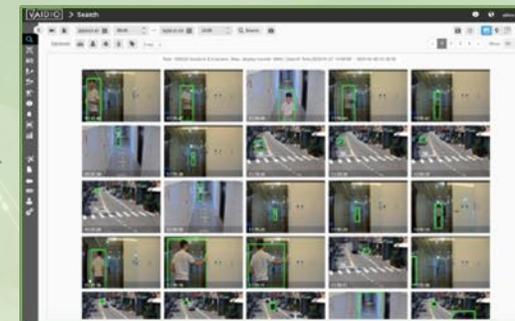
Add Camera



Enable Analytics



Video Search



Define Alert Rules



Realtime Alert

THE TRENDS

- Solutions based on SaaS, PaaS, IoT, Cloud and Artificial Intelligence are going to drive the future growth of Industries.
- Trends in SaaS, PaaS, IoT, Cloud and Artificial Intelligence are stimulating interconnection of products in a solution. Establish strong vendor partnerships is important.
- Simplicity and user friendliness are key in a world where solutions are becoming increasingly sophisticated and technology advanced.
- The Global installed base of IoT devices will increase from 27 billion in 2017 to 73 billion in 2025. Many of this IoT devices will be at the edge. The roll-out of 5G is an important driver for the increase of this edge devices.

CAP IS MORE

- ❑ VERSATILE
- ❑ FAST
- ❑ ACCURATE
- ❑ IMMEDIATE
- ❑ INTELLIGENT
- ❑ OPEN
- ❑ IMPACTFUL

More analytics than any alternative

Search days of video in minutes

Reduce false positives by orders of magnitude

Real-time alerts in 3 seconds or less

Natural language search across multiple objects

Integrate with 97% of ONVIF cameras, NVR's, VMS's

Increase alert readiness, improve productivity



AICUDA CAP APPLIANCE



Vaidio edge devices, Vaidio servers, Cloud instances



Trigger actions

I/O device, email, VMS, ...

Cameras



NVRs

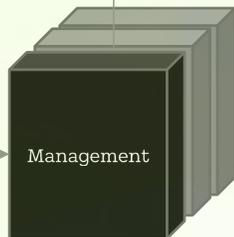
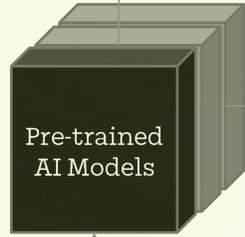
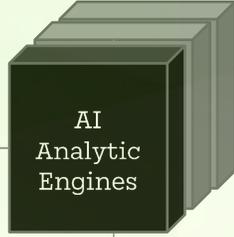
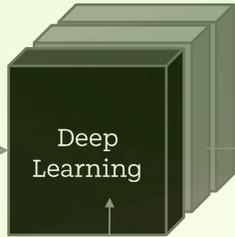


VAIDIO Cam app

VAIDIO DOCKER CONTAINER

Decode, pre-process, track inference, encode, composite

Analyze data



Determine object types

Management

Import target lists



External database



LDAP Server

Import users

VAIDIO Web UI & VAIDIO App



Visualize results
Monitor system
Manager user groups



Real-time Alert
GPS map & Indoor map



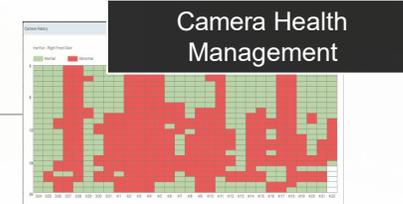
Search



Statistics

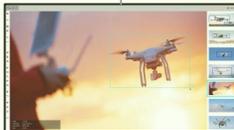


Live View

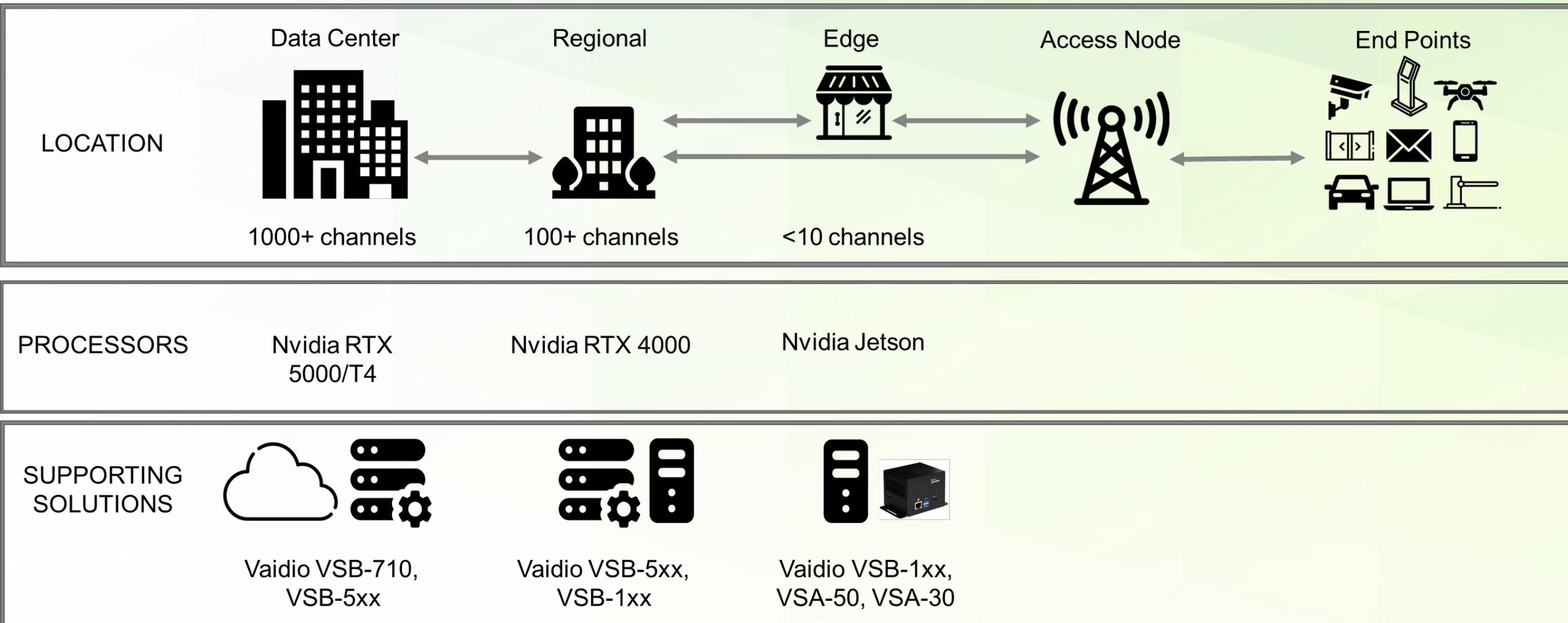


Camera Health
Management

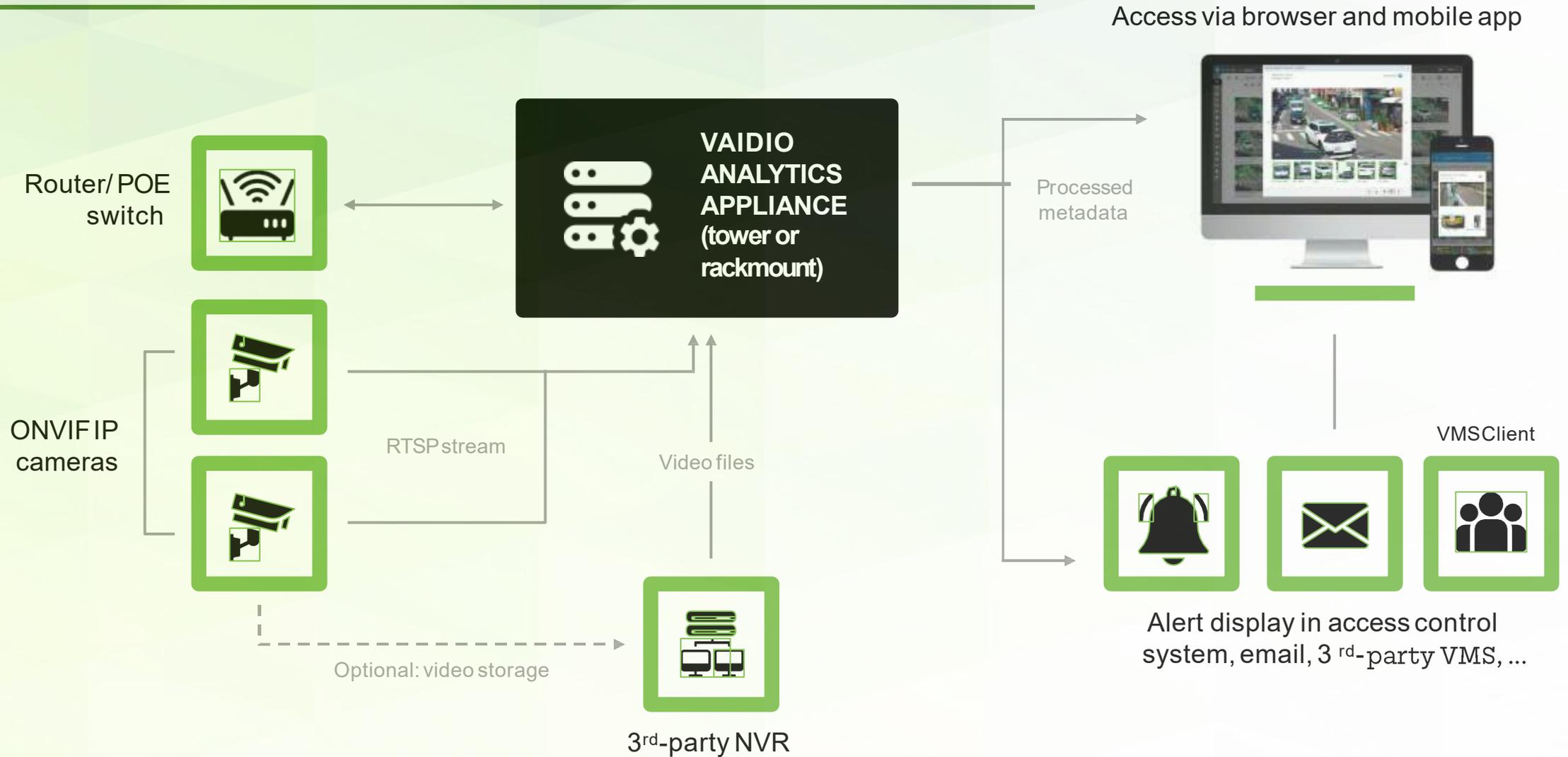
VAIDIO DIY
data labeling &
model training tool



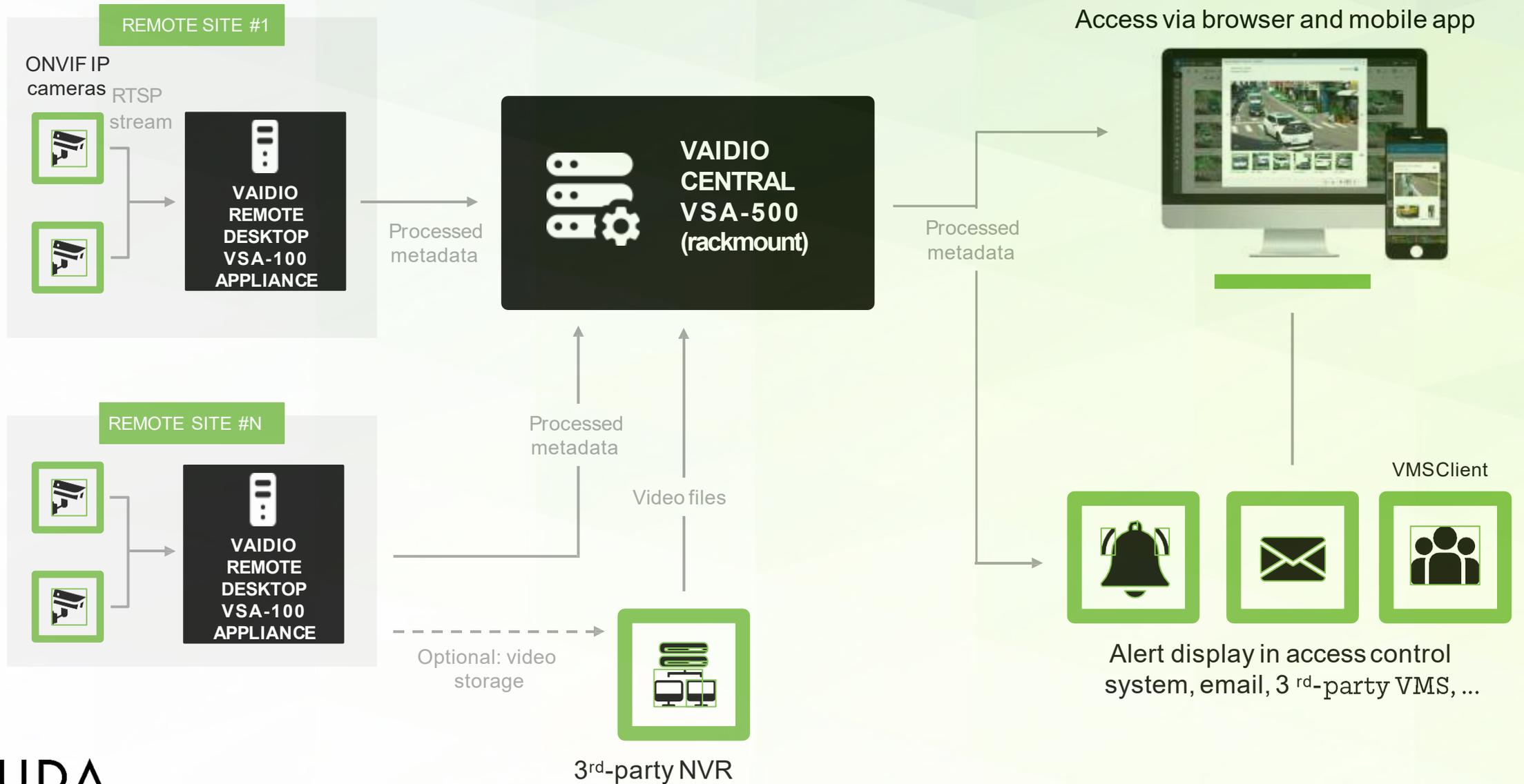
END-TO-END DEPLOYMENT



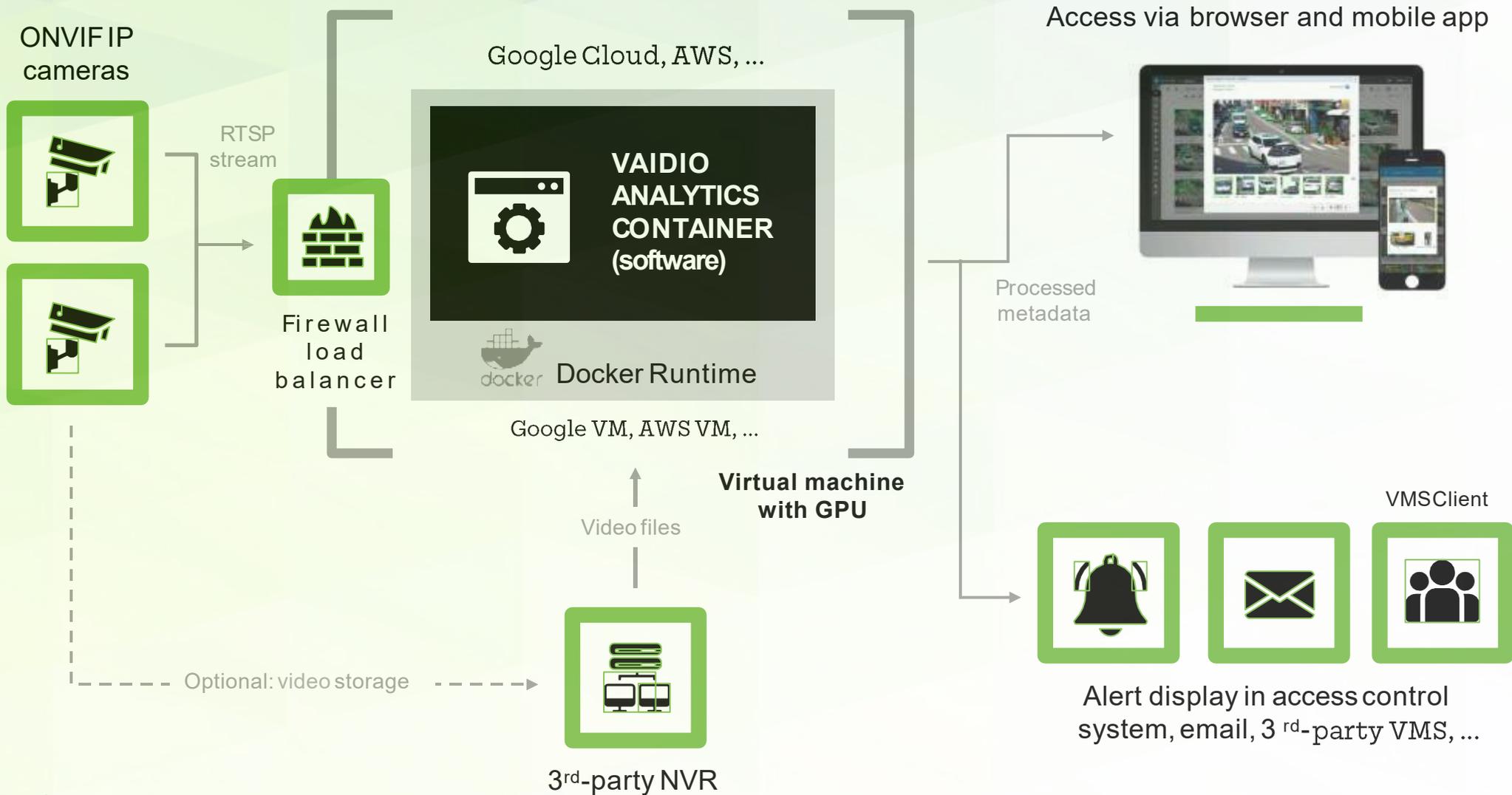
ON-PREMISE ARCHITECTURE



CENTRAL AND REMOTE ARCHITECTURE



PUBLIC CLOUD DEPLOYMENT ARCHITECTURE



ANALYTICS ON DEMAND

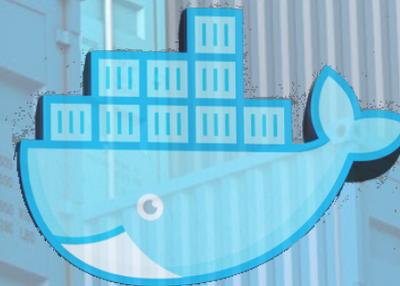
- ❑ **AICUDA Analytics Platform packaged for Docker VSaaS**
- ❑ **20+ AI analytics functions**
- ❑ **Cloud, Hybrid, On-Premises**
- ❑ **Cloud-based virtualization**
- ❑ **Hardware server agnostic**
- ❑ **Flexible payment options**



ANALYTICS ON DEMAND



- **Simple** Docker container technology is light weight
- **Easy** Docker makes applications easily portable
- **Fast** Docker deployment can be done in <5 mins



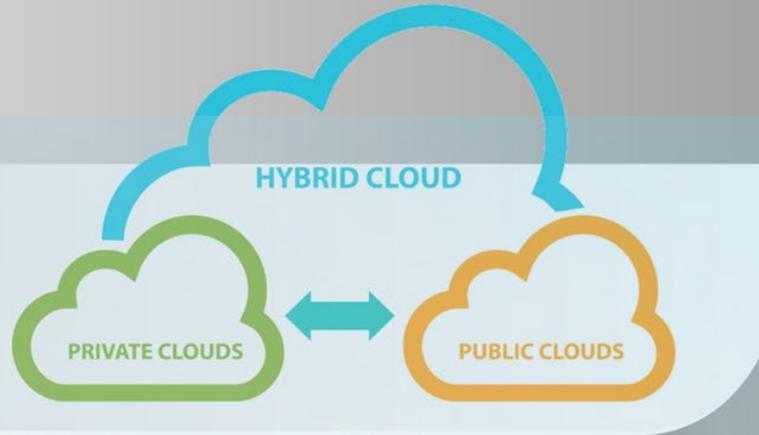
ANALYTICS ON DEMAND

- Internet Service Providers & System Integrators
- Develop your own smart analytics-on-demand VSaaS cloud solution.
- Public, private or hybrid cloud



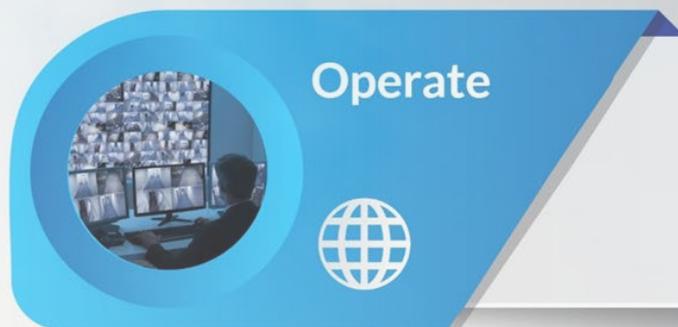
Infrastructure design

The icon features a green arrow pointing right, containing a circular image of a network cable connector and a lightbulb icon.



Build

The icon features a pink arrow pointing right, containing a circular image of a hand typing on a keyboard and a house icon.



Operate

The icon features a blue arrow pointing right, containing a circular image of a person at a computer workstation and a globe icon.

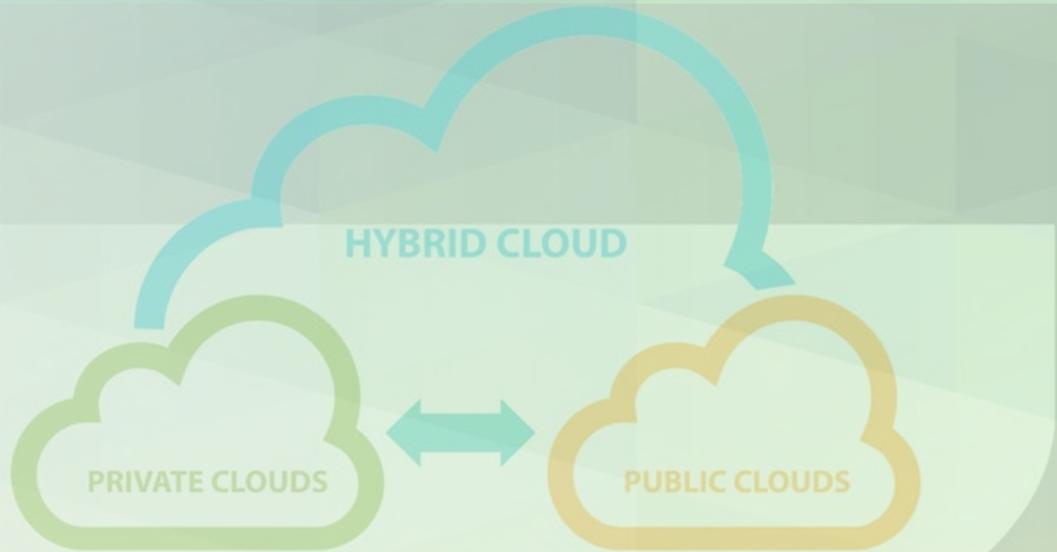




Infrastructure



HYBRID CLOUD



VAIDIO-APP

Login

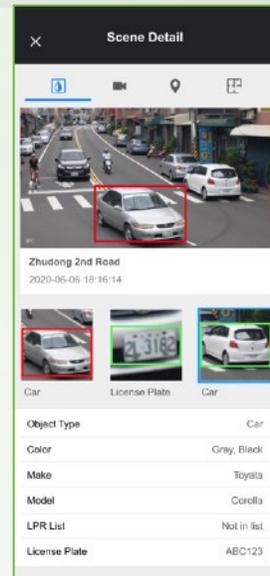
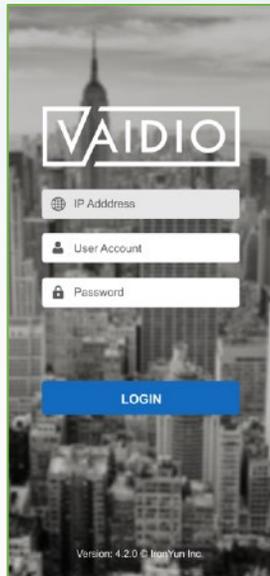
Search

Result

Event Details

Tracking

Realtime Alerts



MOBILE SOLUTIONS



Bodycam as Artificial Intelligence edge device including AI Face Recognition and AI License Plate Recognition



+



Aicuda AIVA Cloud Appliance to store the footage from the bodycams and perform AI Video Search to make the videos searchable



FACE RECOGNITION & LPR ON VAIDIO CAM APP

- Start recording using the VAIDIO CAM APP
- Analyze the recorded video in real-time
- When VAIDIO detects a face or license plate VAIDIO will match the detected face or license plate with the database and show the detail information on VAIDIO CAM APP
- Face Recognition includes the similarity-%, the name and the list name
- License Plate Recognition includes license plate number, list name and vehicle owner



ECO PARTNERS



AICUDA
TECHNOLOGY

Aicuda Technology

Next generation artificial intelligence Video Search

NVIDIA

Next-level acceleration has arrived



Breakthrough Performance

GDPR COMPLIANCE

- Audit logs to follow user access and user activities including timestamp
- Possibility to give access control to separate parts of the software for authorized users only
- Ability to blur persons & faces
- Ability to blur license plates
- Storage retention time for recorded data and metadata



PROJECT INTEGRATION

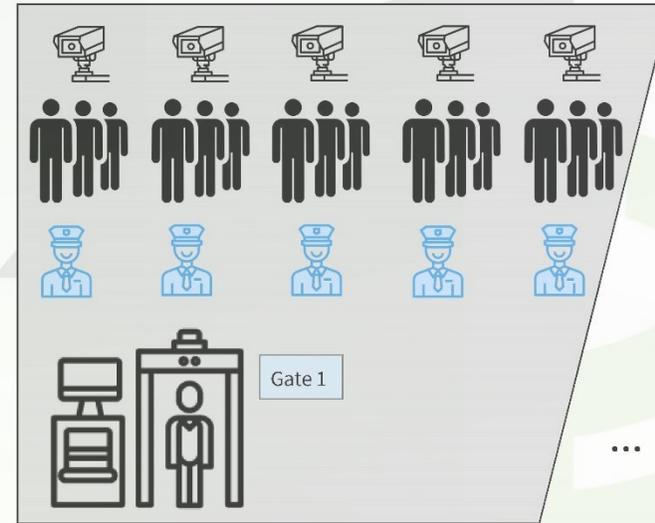


- CAMERA INTEGRATION
- CLOUD PLATFORM INTEGRATION
- ERP INTEGRATION
- IO DEVICE INTEGRATION
- SOFTWARE SERVICES
- VMS INTEGRATION

PROJECT INTEGRATION

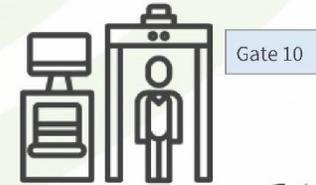
WE START WHERE OTHERS GIVE UP

Aicuda project integration & software services



Scenario Description

We have ten gates and each gate has 5 banners and consequently 5 guard to check the visitors and above each banner we have CCTV camera so we need 50 face recognition camera.

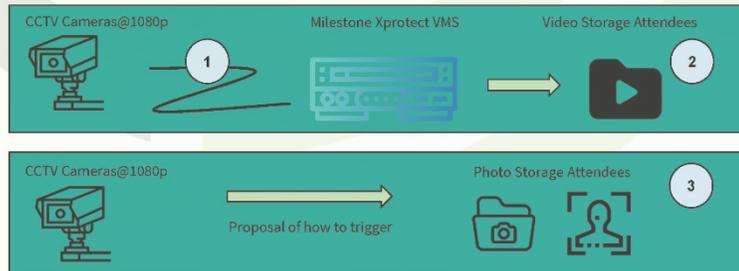


The requirements :

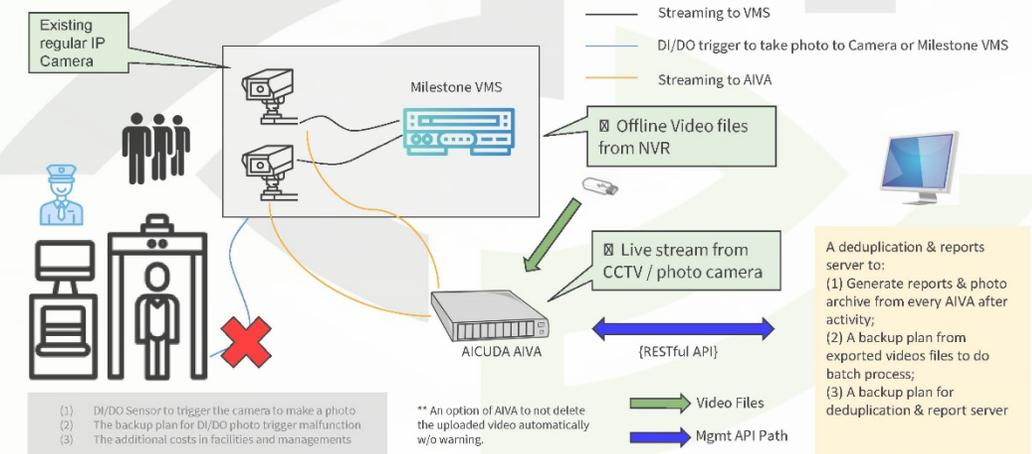
1. To collect **images** and **count the attendees** for a five-days annual activity with existing surveillance and security deployment.
2. Leverage Face Recognition technology to filter out redundant persons of re-entrance and generate the reports.

The video / image sources :

- ☒ Live stream from CCTV / photo camera
- ☒ Offline Video files from NVR
- ☒ Image / photo from CCTV / photo camera



The Tech Proposal - Topology



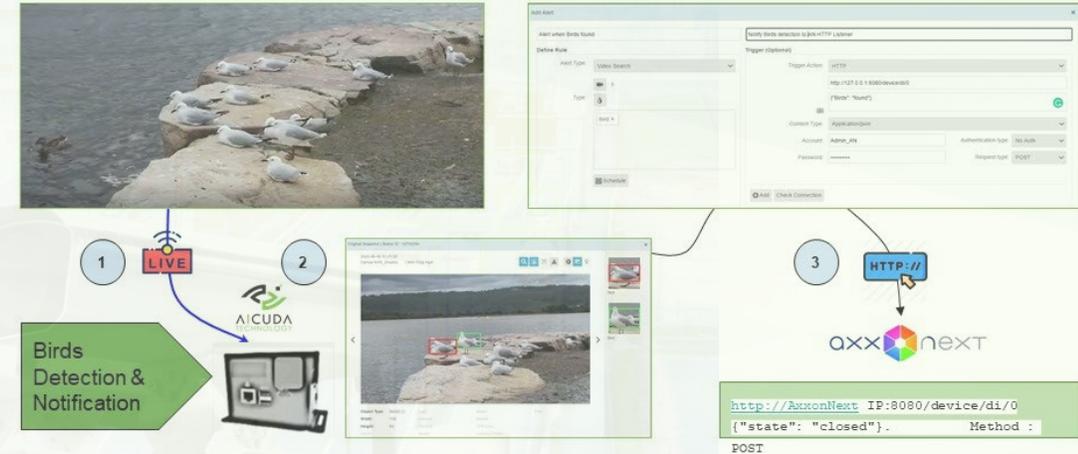
A deduplication & reports server to:

- (1) Generate reports & photo archive from every AIVA after activity;
- (2) A backup plan from exported videos files to do batch process;
- (3) A backup plan for deduplication & report server

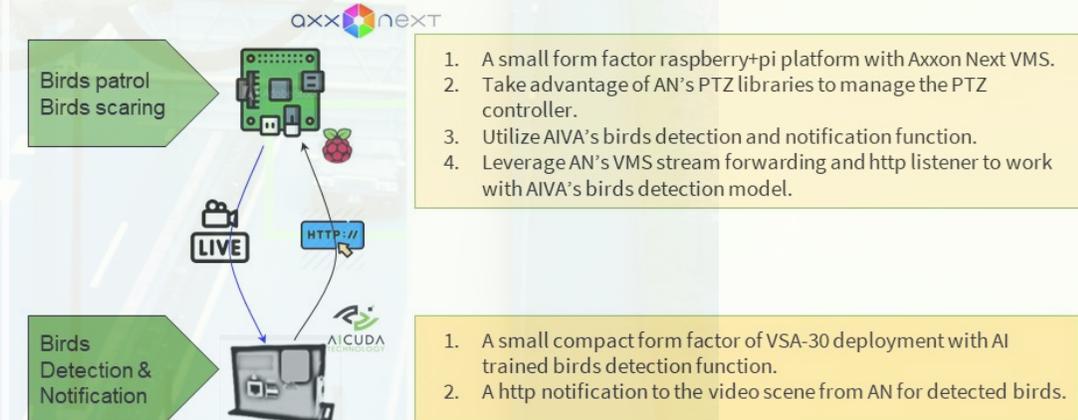
PROJECT INTEGRATION

Aicuda Solution Integration Services

POC - AIVA Preparation before Integration



POC - First integration



PROJECT INTEGRATION

ID 984093591409

ID 546543867893

ID 325465645710

ID 570293477729

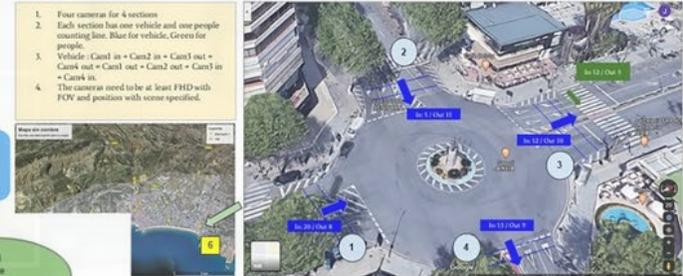
Guard On Duty Management System diagram



FISH FARM BIRD DETECTION



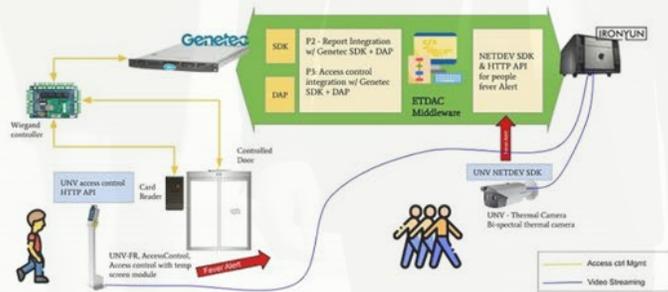
Deployment Design



GOVERNMENT BUILDING

TEMPERATURE SCREENING

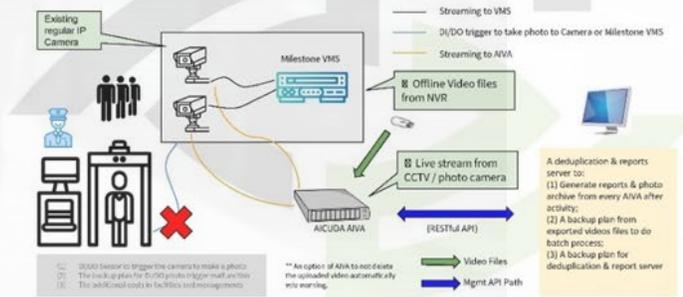
ETDAC - Architecture



TOURIST PLACE COUNTING

PILGRIMAGE DETECT & COUNT

ch Proposal - Topology



DEPLOYMENTS

Deployments across Industries



DEPLOYMENTS

Project name	Country	Vertical	Video Search	Map Tracking	Face Search & Recognition	Intrusion Detection	Heat Map	License Plate Recognition	Weapon Detection	Fire & Smoke Detection	Loitering	Illegal Parking	People Counting	Vehicle Counting	Object Left Behind	Social Health Analytics	Falling / Crouching	Reverse Movement
City of San Francisco	US	Smart City	√	√	√	√		√	√		√	√		√				
City of Philadelphia	US	Smart City	√	√	√	√		√	√	√		√						
City of Phoenix	US	Smart City	√	√	√	√		√	√		√	√		√				
City of Charlotte	US	Smart City	√	√	√	√		√	√	√	√	√						
City of Lancaster	US	Smart City	√	√	√	√		√			√	√		√				
Automobile Manufacturing Plant	US	Manufacturing														√		
School campus, Arizona	US	Schools	√	√	√	√		√	√	√	√							
Casino and Hotel Resort, Connecticut	US	Hotels & Resorts	√	√		√	√	√										
Police department, Illinois	US	Police	√	√				√										
Police department, North Carolina	US	Police	√	√	√	√		√										
Police departments, Connecticut	US	Police	√	√		√		√										
National bank, North Carolina	US	Banks	√	√	√	√	√	√	√	√	√	√	√	√				
Lending marketplace company, North Carolina	US	Corporate Campus	√		√	√												
Broadcast network company, Connecticut	US	Corporate Campus				√												
Fitness center, California	US	Fitness			√													
Fitness center, Tokyo	JP	Fitness			√		√						√					
Bird detection system at factory	JP	Manufacturing				√												
Bank	DR	Banks			√	√	√		√									
Acer's Aspire Resort Park	TW	Hotels & Resorts	√		√	√		√	√		√							
Taoyuan Airport	TW	Airports	√	√	√	√		√	√	√					√			√
High Secured Prison	UK	Prisons	√	√	√	√		√	√	√	√	√	√		√		√	√
Datacenter	LA	Datacenters	√	√	√	√		√	√	√	√	√	√		√		√	
Armed Forces	SE	Military	√					√										
Police department	SP	Police	√		√			√	√		√							
Armed Forces	NO	Military	√	√	√	√		√			√		√					
Bird Detection system fish farm	NO	Farms	√			√												
King Abdullah Financial District safe buildings	SA	Buildings	√		√	√		√		√		√					√	
Guard on Duty project	SA	Government			√													
Pilgrimage	IQ	Government			√								√					
Nuclear Energy Plant	AE	Energy	√	√	√	√			√	√			√		√		√	
Safe City	EG	Smart City	√		√	√					√							

VAIDIO – RETURN ON INVESTMENT

Cost of labor calculation metrics	Company security staff
Daily hours spend on video search per person (Source: IPVM survey)	30 mins -1 hour daily
Average US security staff pay per hour (Source: www.Payscale.com)	\$12 per hour

Functions	Cost of manual video search
Daily hours spend on video search	30 mins to 1 hours daily
Number of security staff members	3
Minimum Monthly labor cost with manual search	$3 \times 0.5 \text{ hr} \times \$12/\text{hr} \times 30 \text{ days/month} = \$540/\text{month}$
Average Monthly labor cost with manual search	$3 \times 1 \text{ hr} \times \$12/\text{hr} \times 30 \text{ days/month} = \$1,080/\text{month}$

VAIDIO AI-based Video Search Return On Investment is 3 - 6 months

Note: This cost saving is calculated in terms of labor only. Other non-tangible benefits are the speed of completion of tasks and customer satisfaction benefits.

BASED ON STUDIES, THE TYPICAL SECURITY STAFF SPENDS 30 – 60 MINUTES DAILY PERFORMING VIDEO SEARCH

ASSUMING:

- ❑ TYPICAL ENTERPRISE CUSTOMER PROFILE – MID-SIZED COMPANY WITH 500 EMPLOYEES AND 3 SECURITY STAFF MEMBERS
- ❑ THE SECURITY STAFF PERFORMS VIDEO SEARCH WHEN AN ALERT IS TRIGGERED
- ❑ ROI CALCULATION IS BASED ON VAIDIO VSB-1110 UNIT (USD 3,000)

VAIDIO – RETURN ON INVESTMENT

Perimeter

False Alerts on 200 Cameras / Month

2,000 → 10

Temperature

Screening bottleneck 1,500 Employees

90 Minutes → 0

LPR

Stolen Vehicles Caught

12 → 1st Month

THE PROMISE

Video Analytics for a Safer World

- ❑ Deliver immediate relief with AI-enabled security analytics
- ❑ Leverage existing cameras
- ❑ Integrate with existing VMS
- ❑ Reduce monitoring overhead
- ❑ Reduce false positives
- ❑ Improve efficiency

AICUDA  CAP



More analytics

Faster alerts

Higher accuracy

Increased efficiency

THE OUTCOME

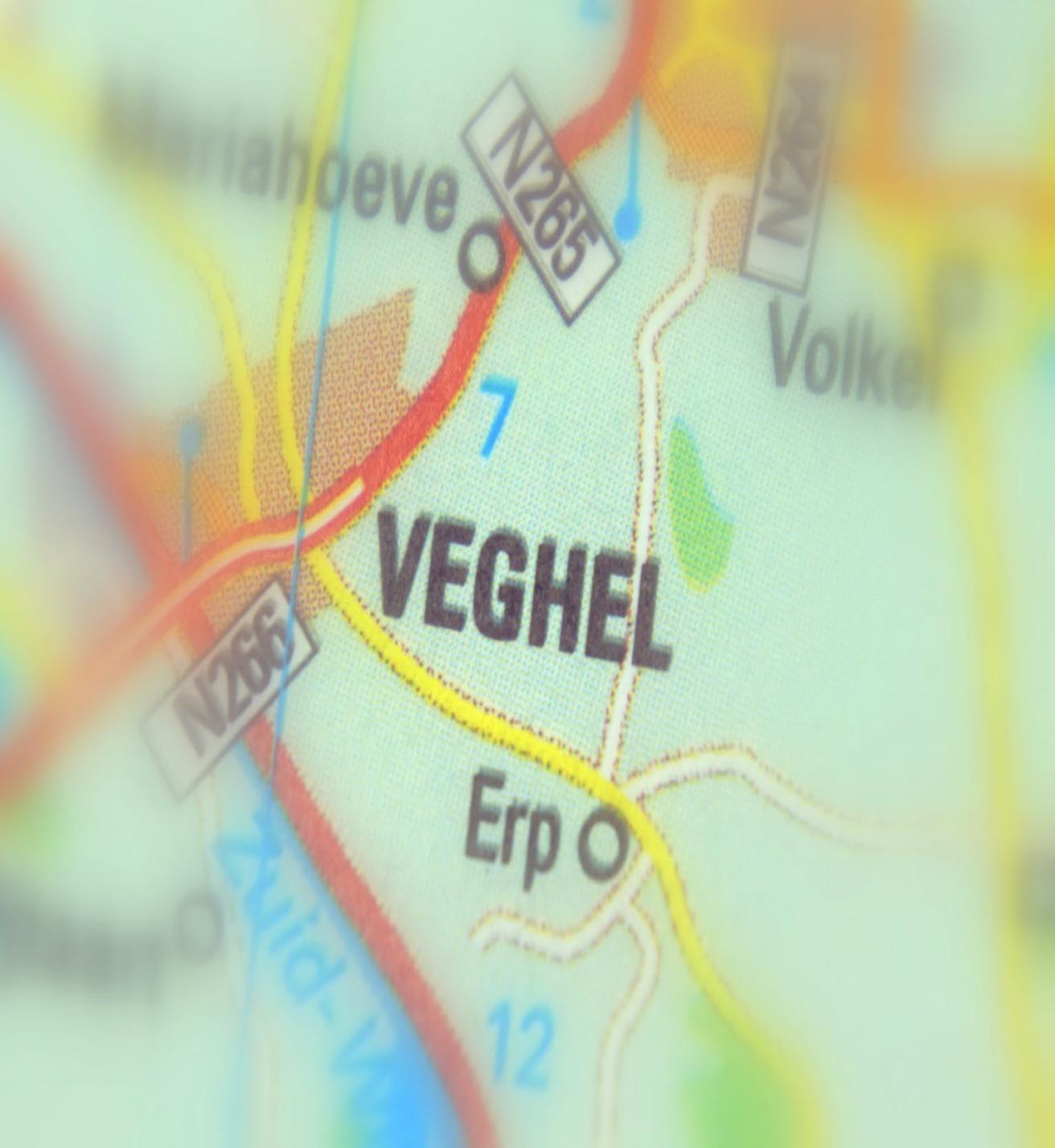
VAIDIO

Turn your existing IP
cameras into smart
AI-powered cameras

AICUDA
TECHNOLOGY







THANK YOU

 HQ Veghel, The Netherlands

 <https://twitter.com/AicudaT>

 <https://www.linkedin.com/company/aicuda-technology>

 <https://aicuda.world>

