Bring AI Closer to You

NVR5000-I AI Network Video Recorder

What Can NVR5000-I Do?

Perimeter Protection

ANPR

People Counting

Heat map

POS

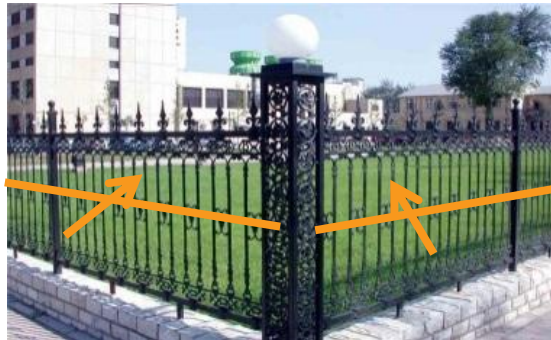Metadata

Face Recognition

Dahua

Perimeter Protection

What is Perimeter Protection?

Perimeter protection system refers to the fortifications built to either keep intruders out or to keep captives contained within the area the boundary surrounds.

Monitoring Area

Plant perimeter, fence...

Limited Access Area

No parking area, military base

Danger Area

Construction site, river bank

Customer Requirements of Perimeter Protection

End user

➡️ Reliably and accurately alarm when intrusion

➡️ Quickly response & early warming

➡️ Low maintenance cost

➡️ Tracking & Accurate positioning

SI/Installer

➡️ Easy installation & adjustment
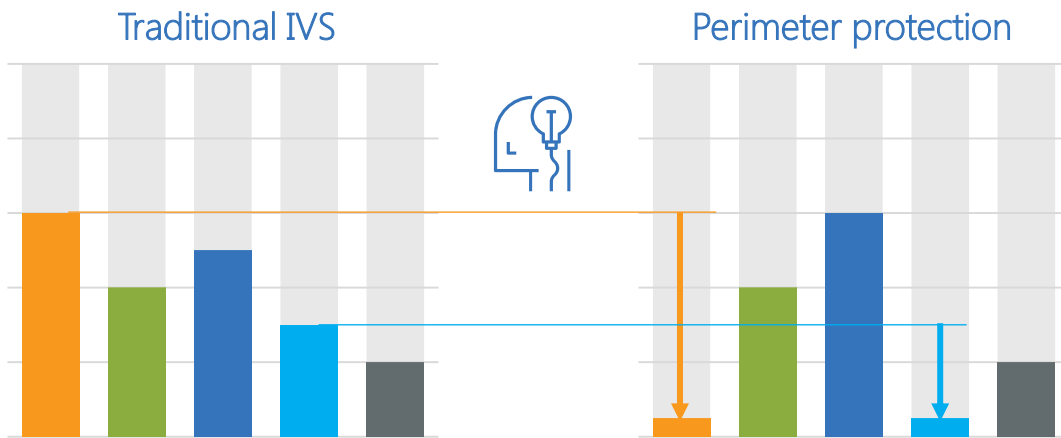
➡️ High stability/performance

➡️ High cost performance

False Positives Rate

False Negatives Rate

AI creates value for Perimeter Protection

Traditional IVS — Upgrade → AI

Traditional IVS

Perimeter protection

Advantages

Lower False Alarm Rate

Lower False Negatives Rate

Customized Classification

AI Search

- False alarm, False Negatives
- Installation complexity
- Application cost
- Influenced by environment
- Maintenance Cost

Lower False Alarm Rate

Accuracy

Traditional IVS   Perimeter protection
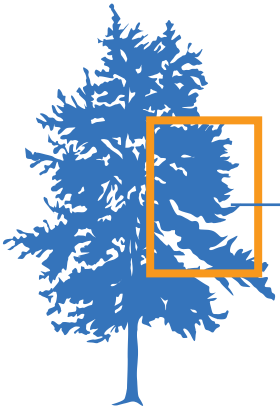
Bright light

Traditional IVS   Perimeter protection

Tree movement
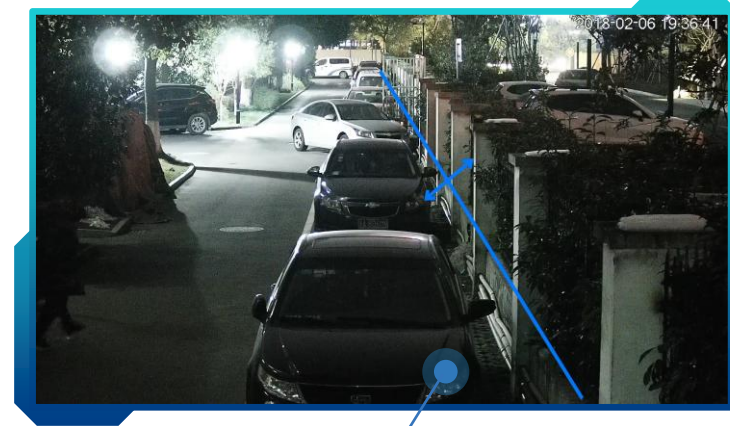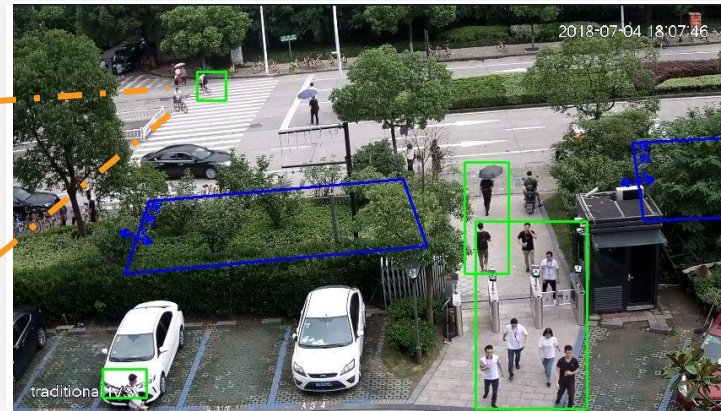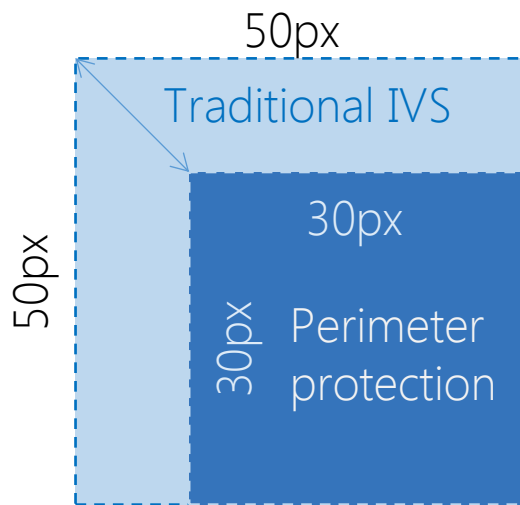
Traditional IVS   Perimeter protection

Animals

Lower False Negatives Rate

64% lower Pixel Count Requirement

Requires 64% less pixels in order to detect and trigger intrusion alarms compared to traditional IVS solutions without compromising its accuracy or error rate, allowing each perimeter protection camera to cover larger areas from further away.

Traditional IVS

- Missed alarms
- Groups of people are regarded as 1 trigger
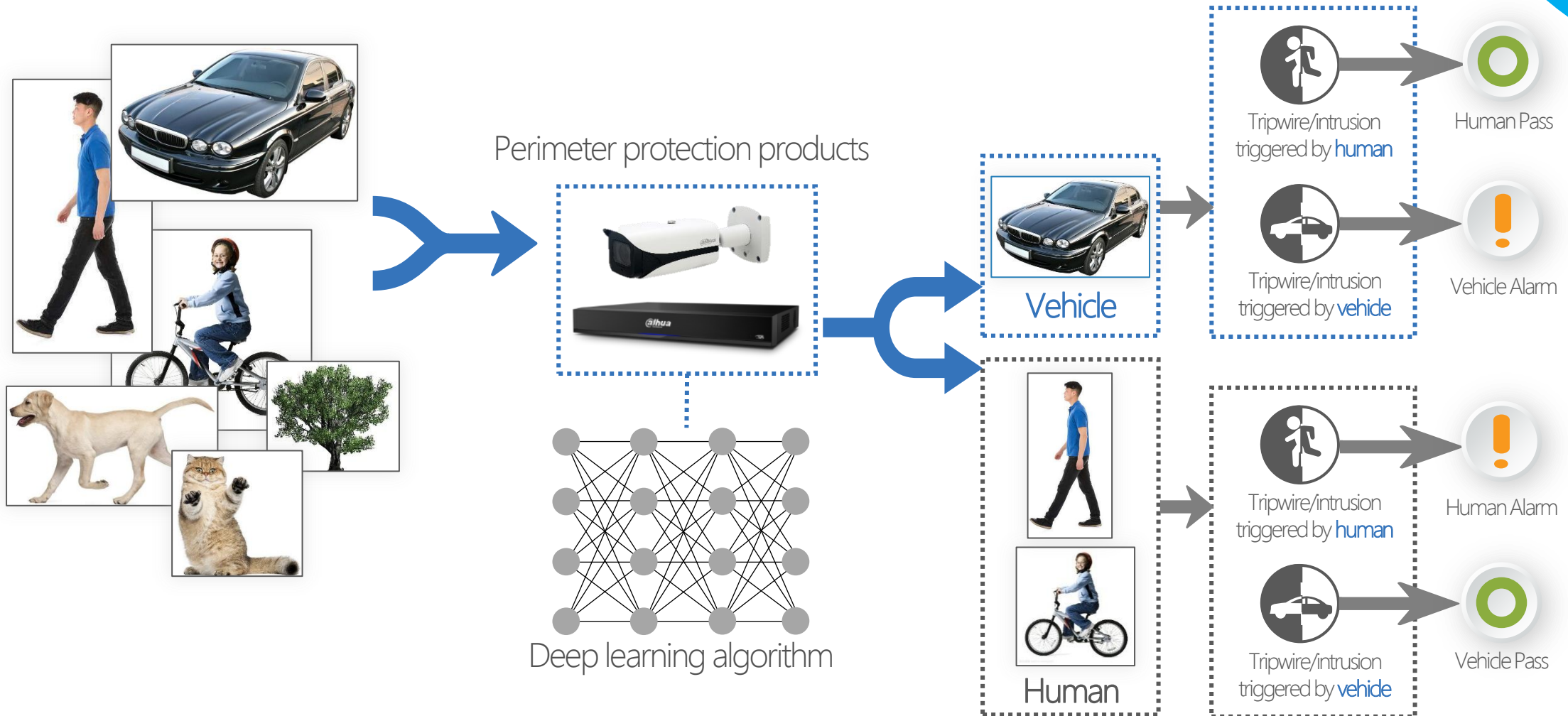- Distant objects are not tracked
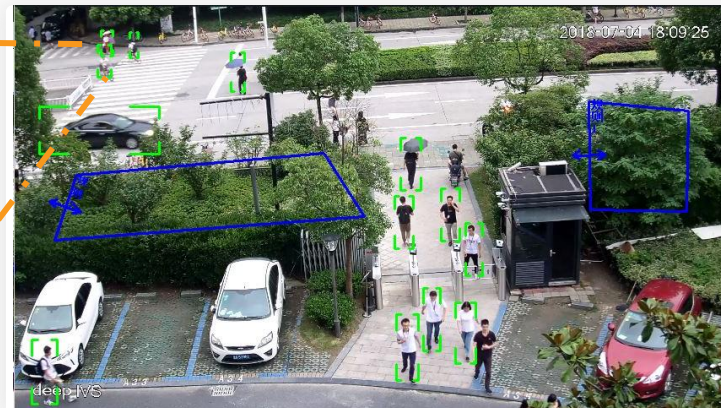
Perimeter protection

- All humans & moving cars detected
- Each person is counted and tracked individually
- Distant objects can be detected

Custom Perimeters based on Object Type

Classification

Perimeter protection products

Deep learning algorithm

Vehicle

Human

Tripwire/intrusion triggered by human

Tripwire/intrusion triggered by vehicle

Human Pass

Vehicle Alarm

Tripwire/intrusion triggered by human

Tripwire/intrusion triggered by vehicle

Human Alarm

Vehicle Pass

Custom Perimeters based on Object Type

Classification

Demo

Perimeter protection
NVR

Human intrusion: triggered only by human

Vehicle intrusion: triggered only by vehicle

Search the video footages by Object Type

SMART SEARCH

IVS
FACE DETECTI...
FACE RECOGN...
VEHICLE DETE...
HUMAN BODY ...
NON-MOTOR V...

Channel   D2
Start Time   2018 - 09 - 26   00 : 00 : 00
End Time   2018 - 09 - 26   23 : 59 : 59
Event Type   Tripwire
☑ Alarm Object
☑ Person ☐ Vehicle ☐ Non-Motor

Smart Search   Cancel

AI Search

Configuration

Human   Vehicle

Triggered by Human

Tripwire Person D2 2018-09-26 17:23:12

17:23:12   17:23:20   17:23:39

17:23:44   17:24:29   17:24:44

Triggered by Vehicle

Tripwire Vehicle D2 2018-09-26 17:23:38
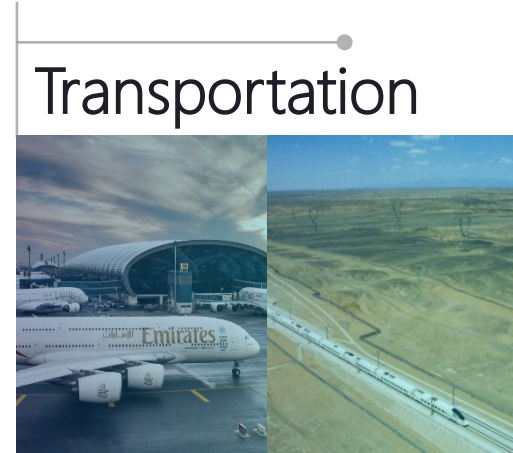
17:23:38   17:23:38   17:25:06

17:25:12   17:25:18   17:25:47

Where to use?

All kinds of industries and scenarios that require high alarm accuracy.

Energy

Oil, Gas, Power plants

Transportation

Airport, Railway, Port

Finance

Bank, Treasury

Commercial

Company, Community, Warehouse

Education

School, Museum

Judiciary

Prison, Court

National security

Border

Personal User
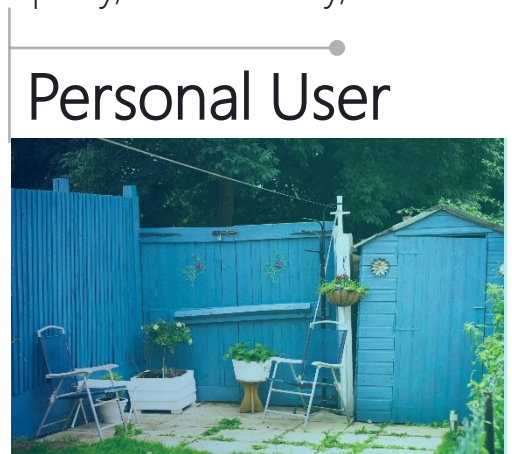
House, Villa

Face Recognition

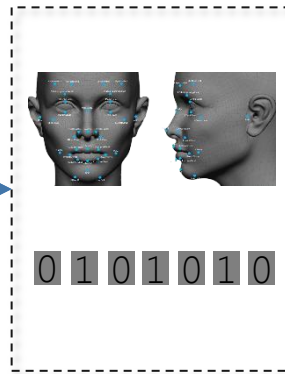# What is Face Recognition?

Face Detection by camera
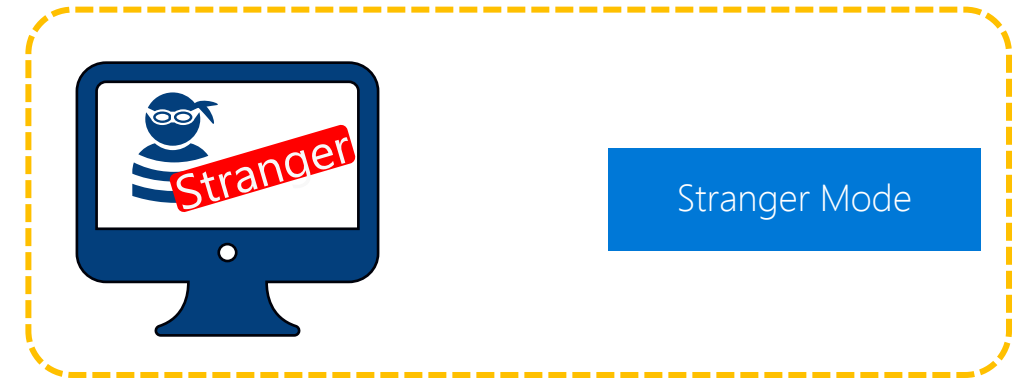
Modeling

Face Recognition

Real-time Recognition

Metadata Search
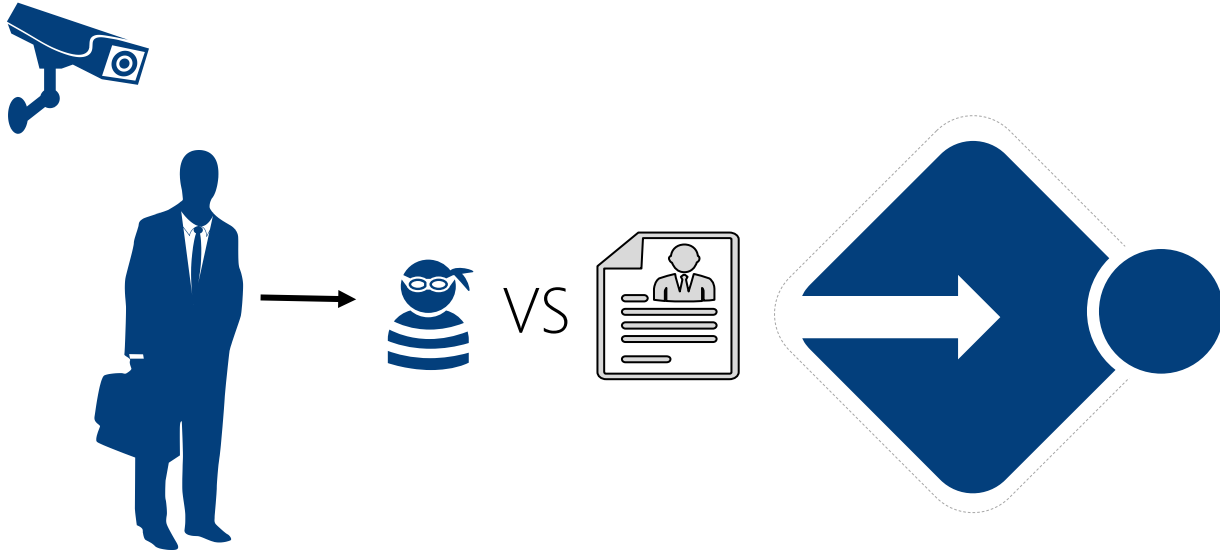
Image Search

Face Detection by Recorder

0 1 0 1 0 1 0

Similarity 95%

Real-time Recognition

Common Mode

Similarity : 90%

Stranger

Stranger Mode
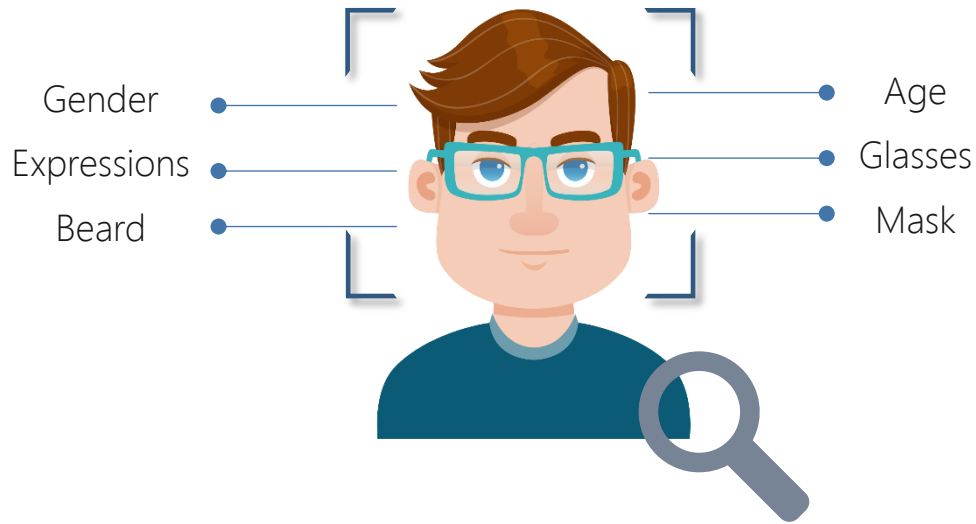
Real-time Recognition

- Preview and verification of personals in real-time
- Active comparison with database, setting alarm trigger
- Supports up to 24 pic/s face recognition and 20 databases with up to 100,000 face images,.

Metadata Search

Gender · · · Age

Expressions · · · Glasses

Beard · · · Mask

- Enhancing searching accuracy and efficiency
- Finding target persons quickly with facial metadata, including age, gender, glasses, mask, beard and expression
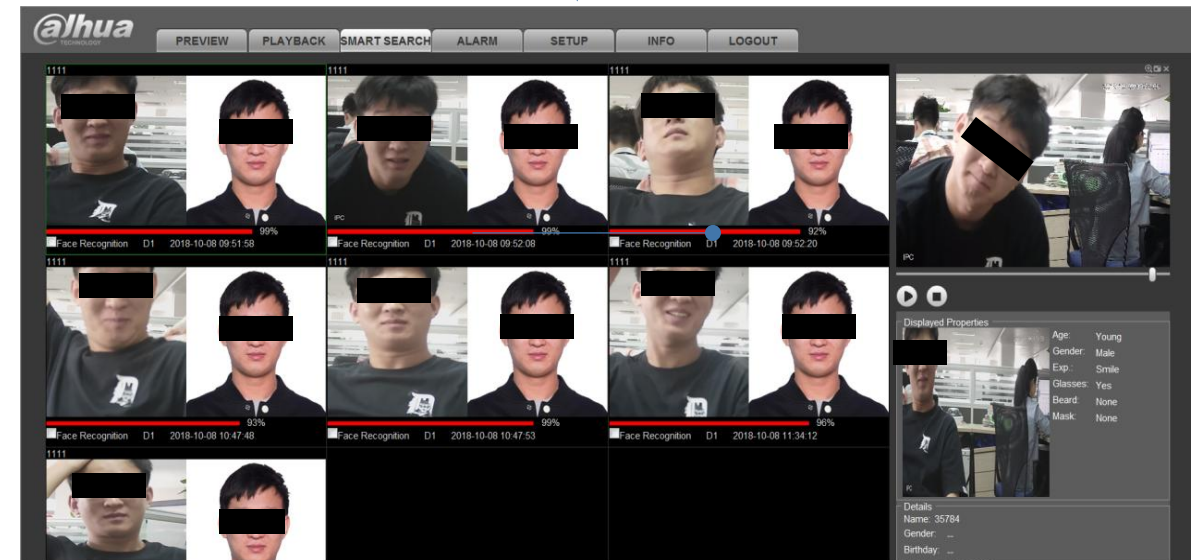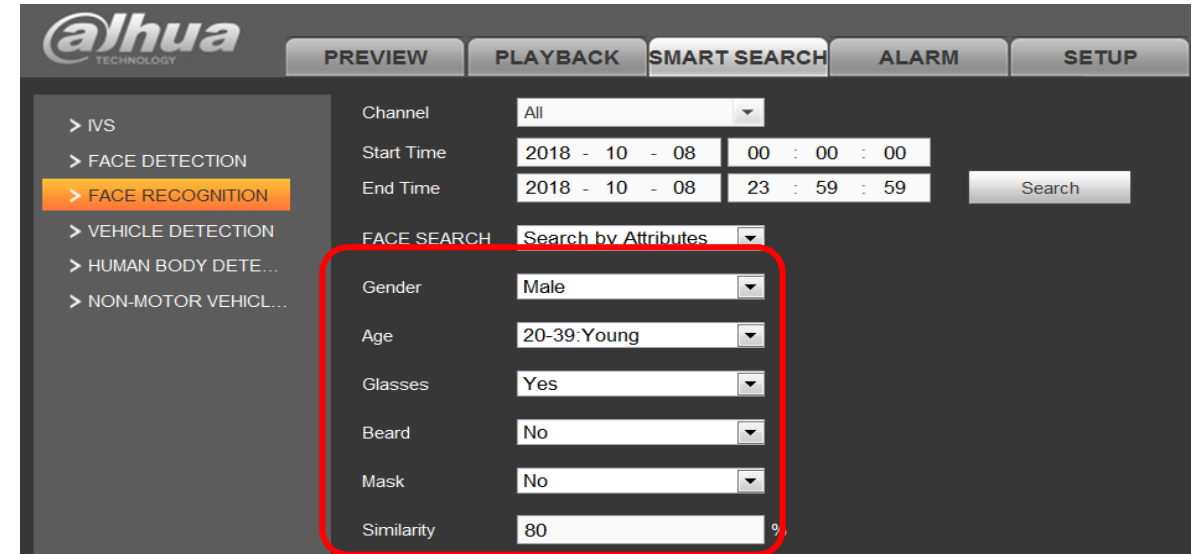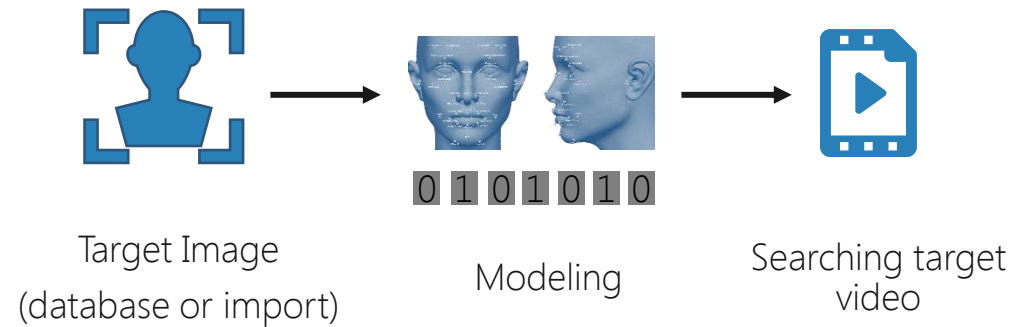- AI searching video or pics from all channels within 7days videos

Image search

Search by face image function enable operators to quickly and easily search through multi channels and 7days duration, efficiently find out when and where a person of interest appeared.

Target Image
(database or import)

Modeling

Searching target video

- High searching accuracy for target persons, even for persons not yet included in the database by uploading face images.

- Up to 8 target face images search at same time.

- Support similarity threshold set for each target face image.

Where to use?

- Business Parks, Schools and other entrances and exits, attendance by Face Detection

- Main entrances and exits of Urban and Towns +Irregular Security Monitoring Point, Escaped Prisoner Identification

- Prison Entrance, Registration and Identification of Visitors

- Entrance of Supermarket/Shopping Mall, Petty Thief Recognition

- Football Field Entrance, Hooligan Recognition

- Key Areas of Banks, Non-Staff forbidden

Metadata

Why need Metadata?

Big data era, Big challenges to security industry. How to manage the data, get useful information and seek interested information from the storage data is very important.

Less space

Metadata is "data about data". It will get useful and efficient data from massive data. In other word, even if you do not record all the time, but you will not lose any important events and alerts.

Higher efficiency

It may take a trained officer or analyst using traditional methods to 1.5-2 hours to review just an hour of raw video footage. Metadata let searching more efficiency.

Better Compatibility

Video data can be easily understand by computer. Metadata makes data be useful to other platforms and business application
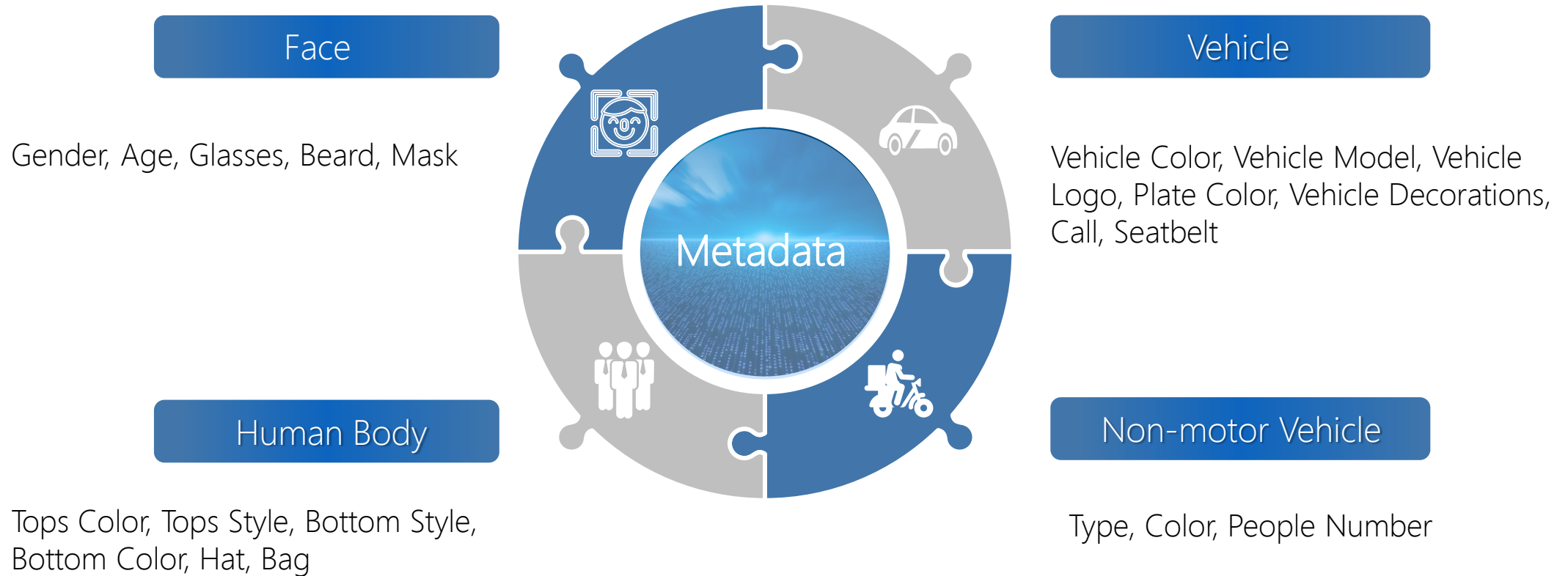
Real-time alerts

According to the metadata, real-time monitoring when events occurs More reliable danger prevention.

What Metadata we have?

Face

Gender, Age, Glasses, Beard, Mask

Human Body

Tops Color, Tops Style, Bottom Style, Bottom Color, Hat, Bag

Metadata

Vehicle

Vehicle Color, Vehicle Model, Vehicle Logo, Plate Color, Vehicle Decorations, Call, Seatbelt

Non-motor Vehicle

Type, Color, People Number

Metadata of Face, Vehicle, Human body, Non-motor vehicle makes it much easier for users to locate the interested objects.

Metadata Search

Configuration

Setting AI by storage or device
Setting channel, metadata events

AI search

Setting channel, time, metadata

Backup

Export metadata table
Backup pictures and videos

What else?

ANPR by ITC

POS

People Counting
by camera

Heat map
by Camera

ePoE

EoC

ANPR by ITC

- ■ Recording

    Get vehicle plate pictures and stream from ANPR camera, storage snapshots and video.

- ■ B/W List
    Add White/Black vehicle plate numbers
    Supports ANPR list import/export

- ■ Smart Play

    Search video and images by date/time/license plate

ITC

**Plate No
MFS 4738**
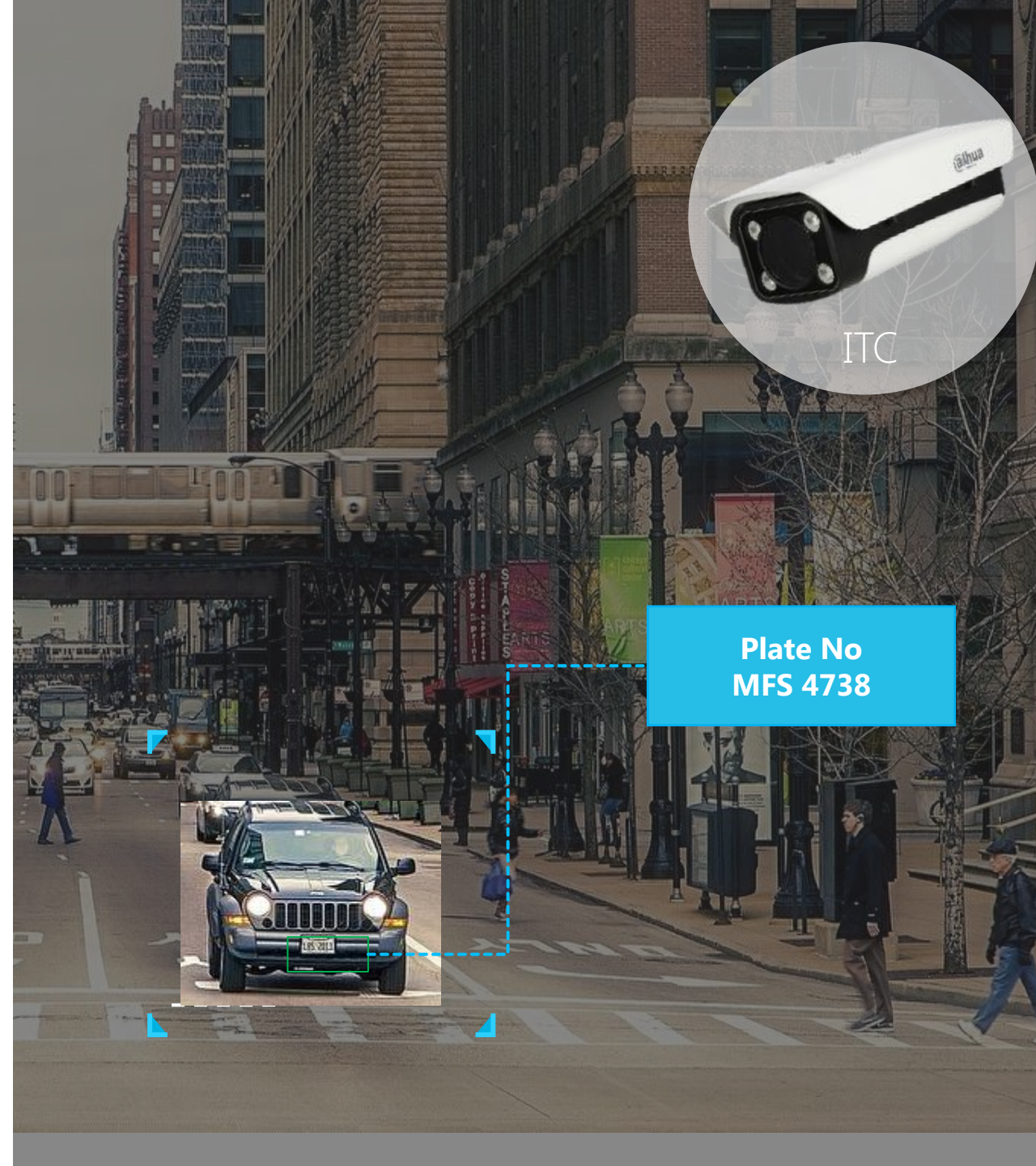
POS

NVR5000-I integrates the POS (Point of Sale) function. Video and corresponding POS information can be shown simultaneously in both preview and playback modes.

People Counting by Camera

Reliable and efficient people counting

People counting cameras are typically placed above the area where you want to count the people that enter and leave. Embedded with powerful algorithm, it will provide high accurate and reliable data. Authorized users can preview the video anytime and export the data from NVR sites. It can be widely used in retail, airport, hotel where need to focus on the footfall.

Report

Export Daily/weekly/monthly report from NVR sites, offering a easy way to analyze foot traffic.
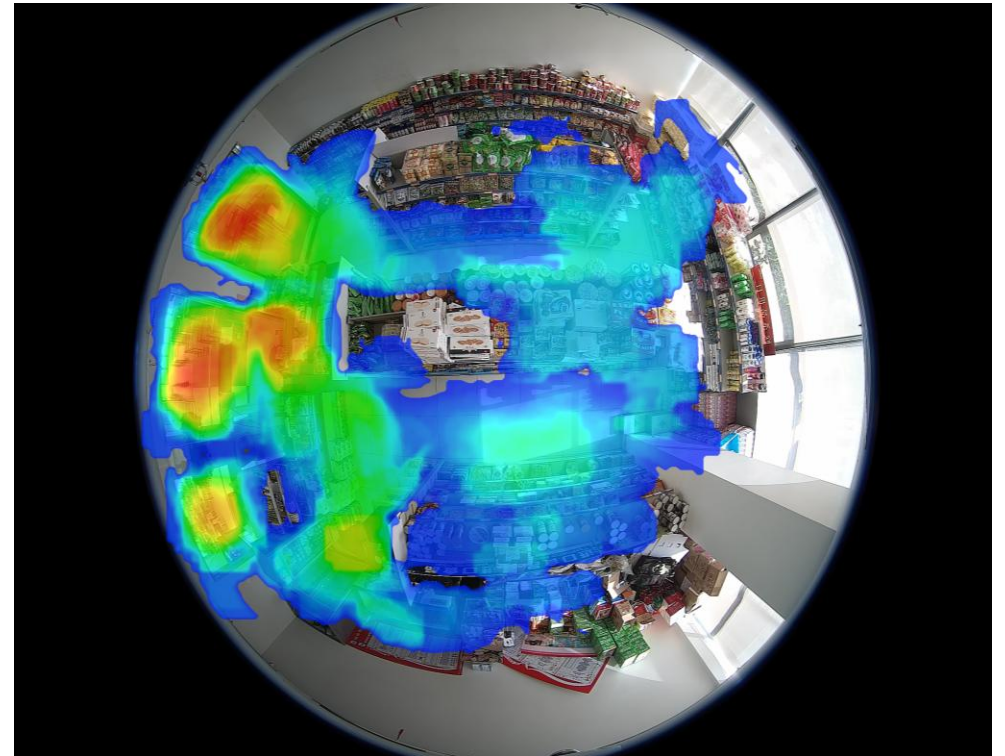
Preview

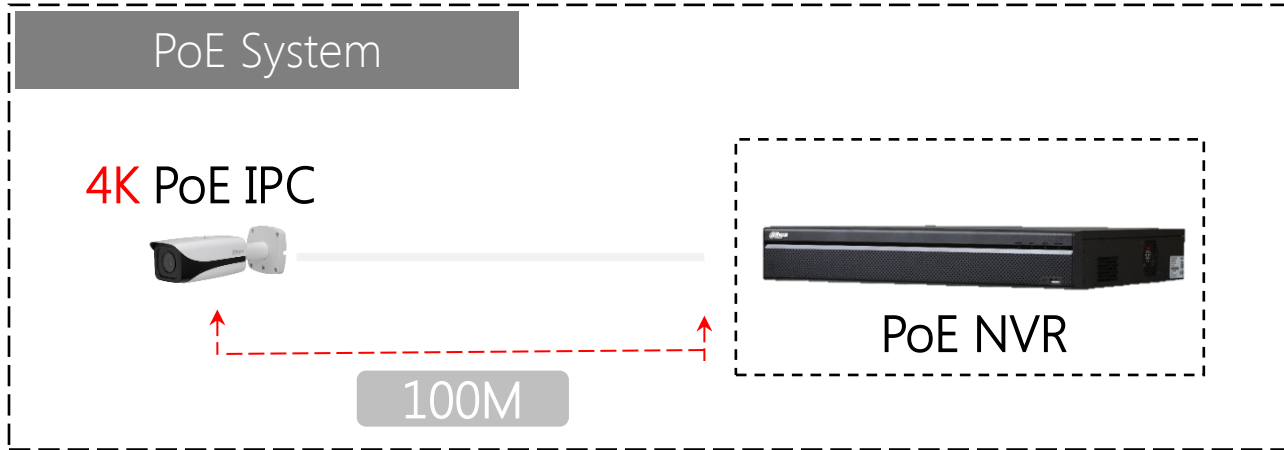Capture and real-time monitor when previewing on NVR sites.
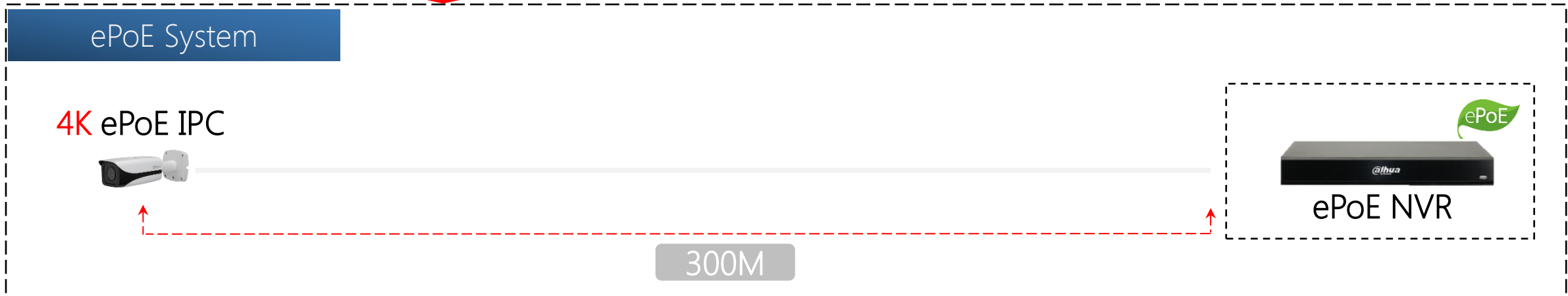
Heat Map by Camera

Heat map function can be applied to business intelligence and bring extra values to customers. The heat map function based on a moving object in time of space movement for analysis, find the most active area and output the report, which is to provide valuable data support for commercial applications.

ePoE

PoE System

4K PoE IPC

<— 100M —>

PoE NVR

Upgrade

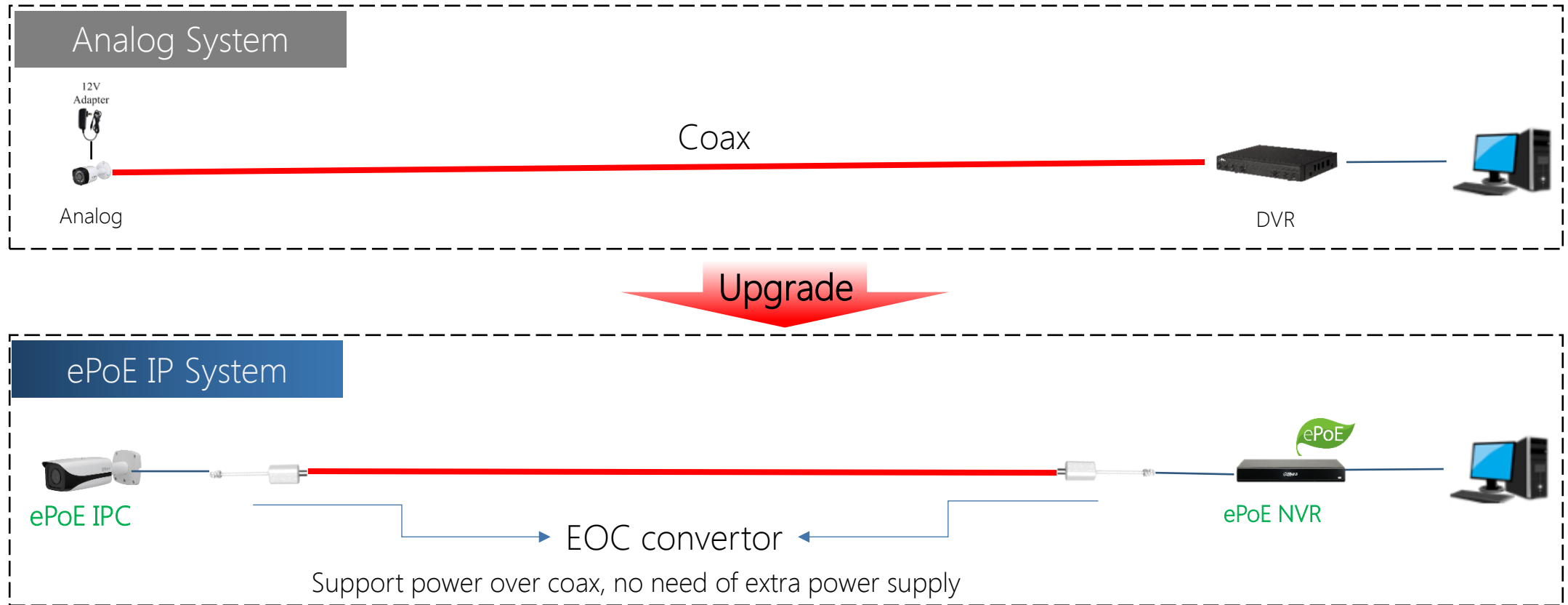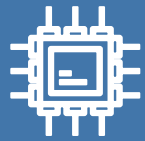## ePoE System

4K ePoE IPC

<— 300M —>

ePoE

ePoE NVR

➢ Compared with PoE system, ePoE system can support **4K** video transmission up to **300**m

➢ ONE cable is enough, no extra devices needed

Notes:
Above contents are laboratory test data.

EoC

-- Stop hesitating to upgrade from analog to IP system

Performance

Performance

Model	NVR5216-8P-I	NVR5216-16P-I	NVR5432-16P-I	NVR5832/64-I
Face Recognition	Up to 24 face pictures /sec processing (4 channel video or 16 Picture stream)			
Database	20 libraries, 100,000 face images in total			
Perimeter Protection	16 channel, 10 IVS rules for each channel			
Metadata	Max 4 channels			
ANPR	Max 4 channels, one image per 5 seconds(by ITC camera)			
POS	Max 8 channels POS terminator input			
ePoE&EoC	1-8 PoE ports support ePoE & EoC(For PoE moles) 800m@10Mbps/300m@100Mbps			

S&W Analysis of HIK's NVR

Performance of Perimeter Protection

16 channels

Local Smart
Resources

8 channels

Local Smart
Resources

Dahua NVR5000-I

HIK iDS-7700NXI-I4/8S(4S)
HIK iDS-7600NXI-I2/4S

Dahua

Competitors

S&W Analysis of HIK's NVR

Category	Item	Dahua NVR5000-I	HIK iDS76/7700NXI-I2(4)/4S(8S)
Capacity	IP camera input	8/16/32/64CH	8/16/32CH
	Decoding Format	H.265+/H.264+/H.265/H.264	H.265+/H.264+/H.265/H.264
	Incoming/Outgoing Bandwidth	320/320Mbps	256/200Mbps
	Recording Resolution	16MP	12MP
	Decoding capacity	Max 16ch@1080P	12ch@1080P
	Storage Capacity	2/4/8*10TB	2/4*8TB
Interface	Display	2HDMI/1VGA(For 4/8HDD)	2HDMI/1VGA/1CVBS
	Audio I/O	1/1	1/1
	Alarm I/O	16/6(For 4/8HDD)	16/4
	PoE Port	16 PoE(For -16P)	16 PoE
	ePoE&EoC	1-8 PoE ports(For PoE models)	N/A
Smart Function	Perimeter Protection	Max 16 channels	8 channels
	Face Recognition	4 channels video stream or 16 channel pictures stream	N/A
	Metadata	Max 4 channels	N/A

Enabling a safer society and smarter living

-- Dahua Technology

A world-leading video-centric smart IoT solution & service provider