



SAFE CITY SOLUTION LITE



CONTENT

01 REQUIREMENT

02 SOLUTION

03 APPLICATION

04 CONCLUSION

DEVELOPMENT STAGES



1. Investigation After Case

In the period when the level of technology is low, the main work of public security is to investigate quickly after case happened.



2. Control During Case

Utilize the intelligent information system to respond promptly when cases and incidents occur, and quickly control the situation on the spot.



3. Prevention Before Case

With intelligent cloud system and efficient police force, intelligence leads the police work, prevention and pre-warning become the focus of work.



HD Product

Achieve a high definition and clear view of objects so as to get enough evidence



Intelligent System

The system will intelligently detect the illegal behavior, when it happens, police can control it quickly.



Smart Policing

Business Linkage, Data Collision, Police Coordination. Stop criminal case before it happens.

TRANSFORMATIONS



Passive

Only when cases happen, can we go the spot to check the videos for the investigation.



Positive

Blind

Cannot figure out if he has criminal record, if it is the vehicle that just escapes in a traffic case.



Accurate

Isolated

Data is not shared, cannot be mined across systems, departments, regions, cities.



Unified

CONTENT



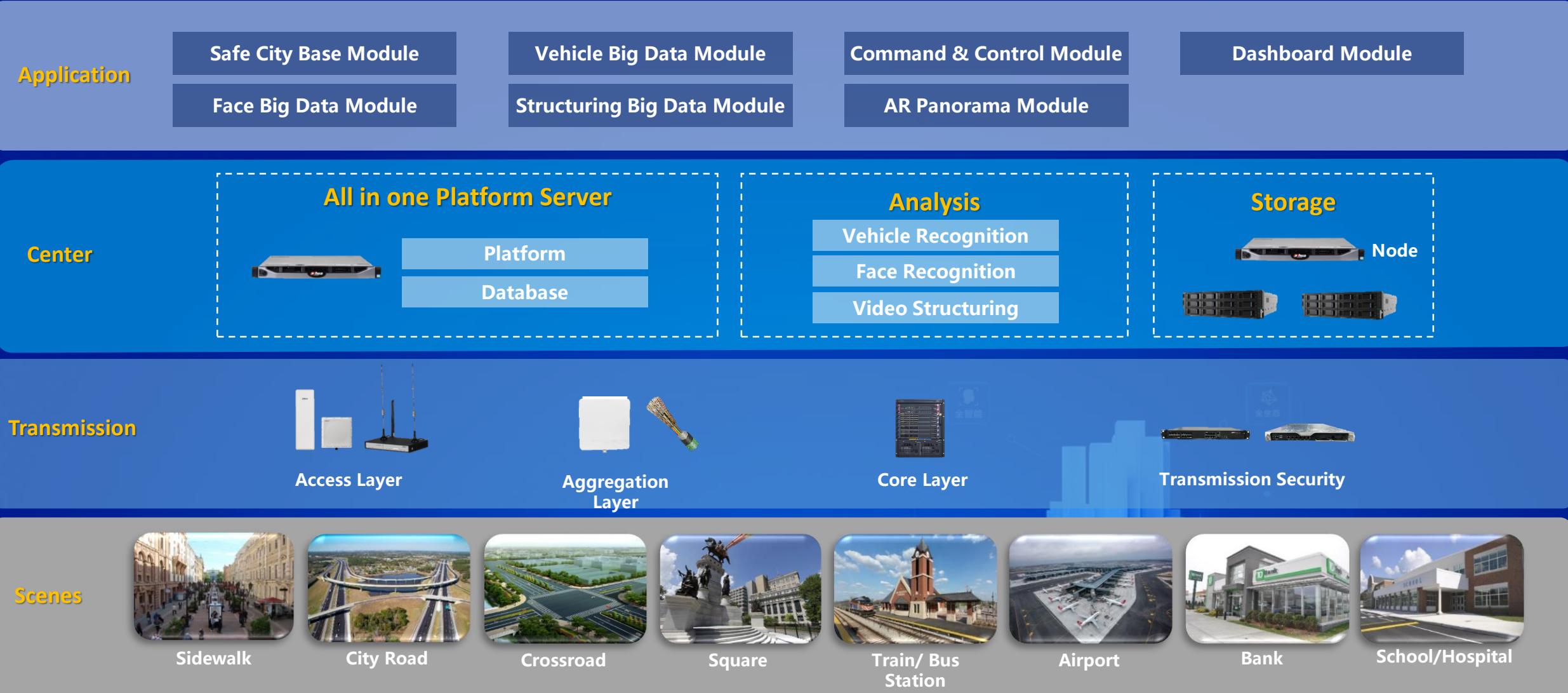
01 REQUIREMENT

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ARCHITECTURE



SCENES | THREE DEFENSIVE LINES



1-Peripheral Control

【Level 1】Peripheral Control

To check the access of vehicles and people



Airport

Train Station

Bus Station

3-Key Area Control

【Level 2】Road Control

To record targets' activities on the road.



Sidewalk

City Road

Crossroad

City Road

【Level 3】Key Area Control

To make sure the safety of key areas.



Square

Hospital

Bank

School

Bank

Hospital

Square

2-Road Control

Sidewalk

Crossroad

Airport

Bus Station

Train Station

PARK

SCENES | TRAIN/BUS STATION



Scene Features



Large population in and out



Complex condition of station square



Criminal cases

Solution

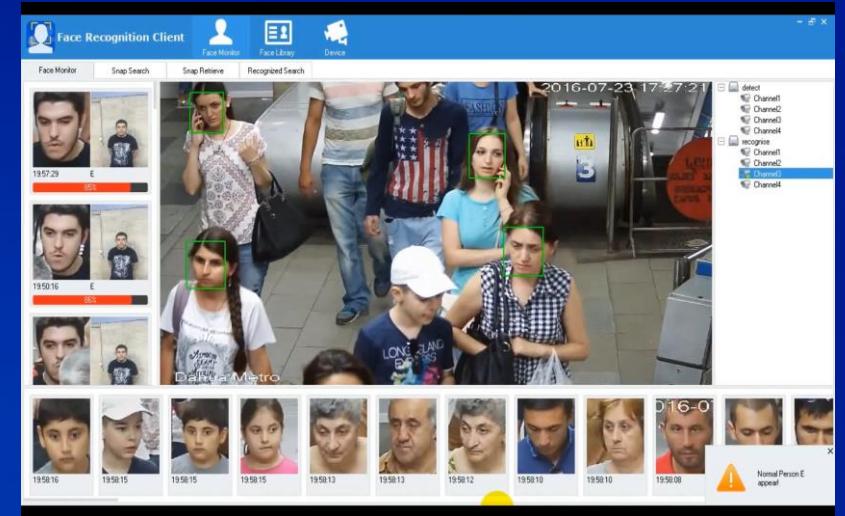


Entrance/Exit face recognition



Station square panoramic monitor

Function



Entrance face recognition.

Station outside panoramic monitoring.

SCENES | AIRPORTS



Scene Features



Large amount of passengers



Large amount of vehicles



Key person monitoring

Solution

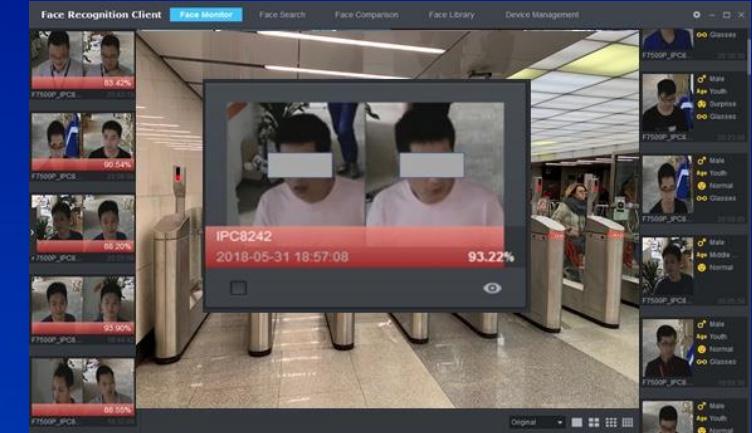


Face recognition at entrance and exit

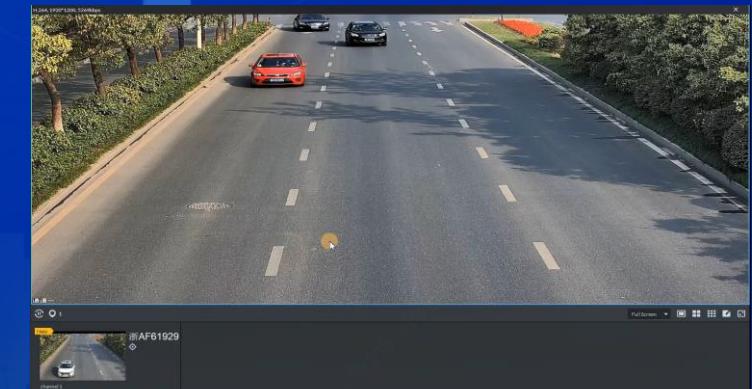


Passenger' s vehicle ANPR

Function



Passenger face recognition



Vehicle ANPR

SCENES | CITY ROAD



Scene Features



Vehicle identification

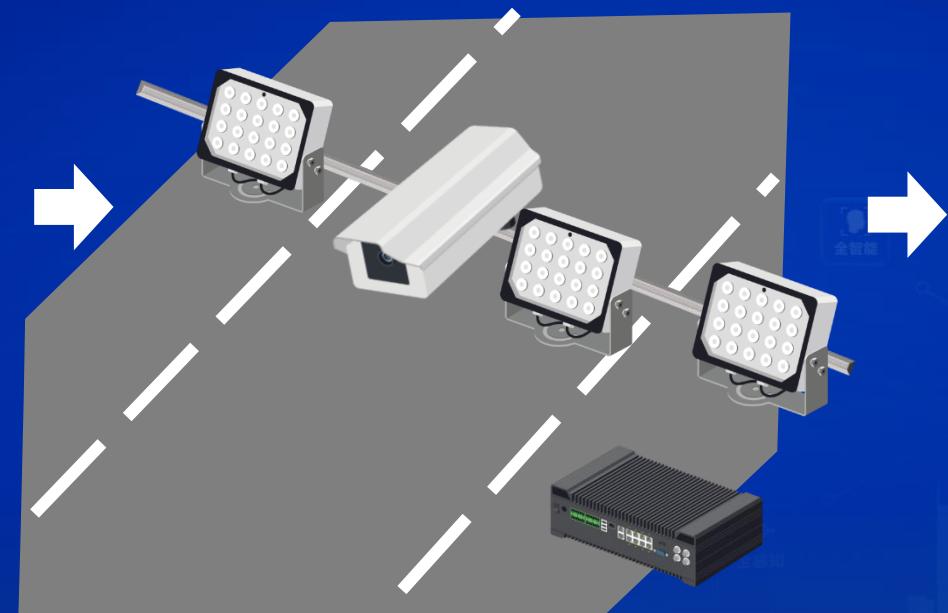


Hard to catch fugitive

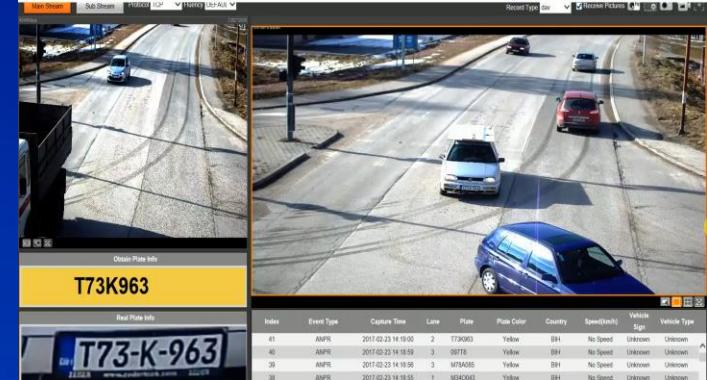


Drivers identification

Solution



Function



Set in **main road**.
Capture **vehicle pictures**.
Recognize **vehicle features**.

SCENES | SIDEWALK



Scene Features



Heavy flow of people

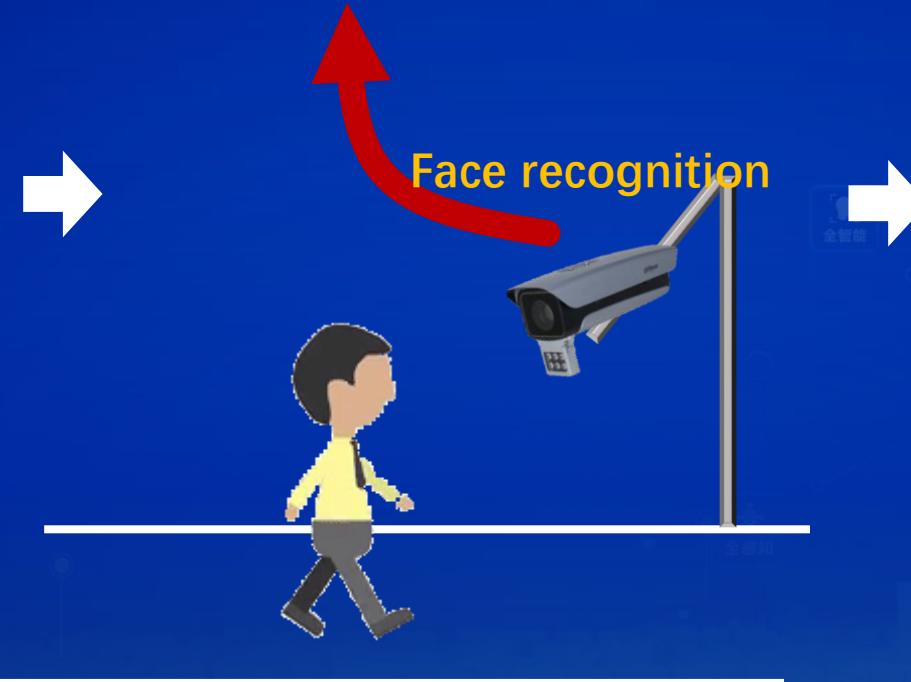


Frequent accidents

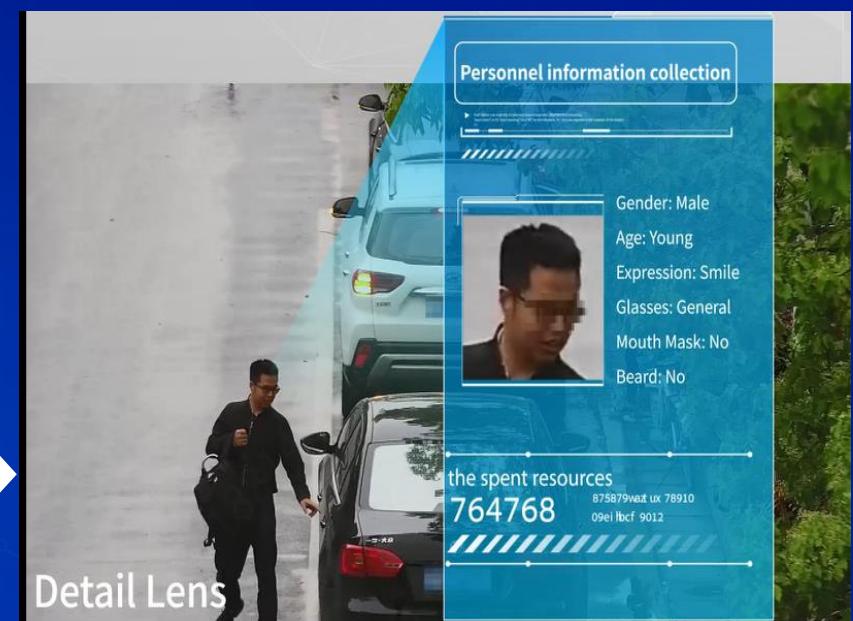


Criminals fleeing

Solution



Function



Pedestrian information record.
Face pictures & structured data.

SCENES | CROSSROAD



Scene Features



Wide range

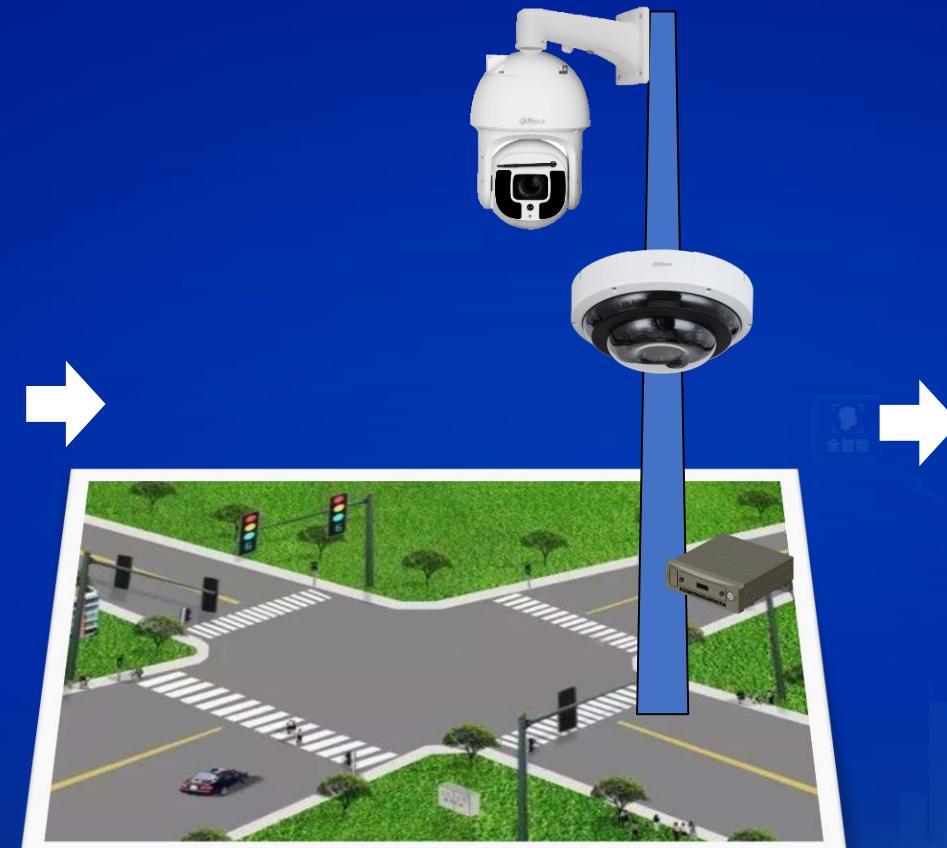


Frequent accidents

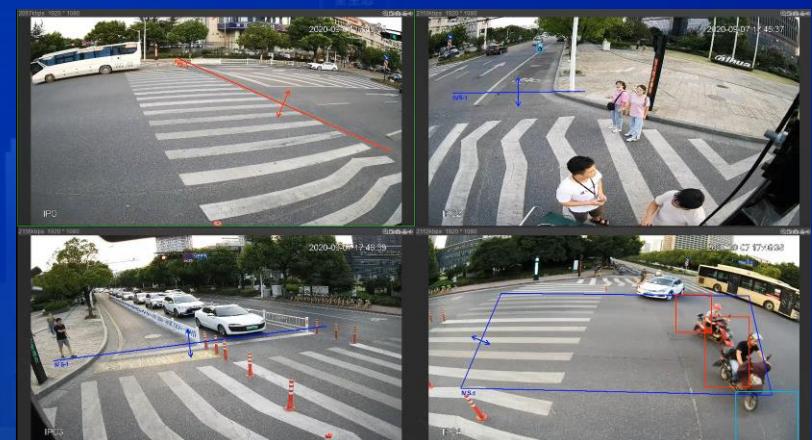


Traffic congestion
resulted from accidents

Solution



Function



SCENES | SQUARE



Scene Features



Wide range monitor



Complex Scene



Need to get details

Solution



Function



Multi-sensor panoramic monitoring



People Density

SCENES | HOSPITAL/SCHOOL



Scene Features



Heavy flow of people



Frequent accidents



Criminals fleeing

Solution



Function



Face capture



Face analysis



Data comparison



Generate alarm

Scene Features



Large customer flow



No blind spot manage



Emergency

Solution



Front door monitoring



Loitering detection

Function



Front door HD monitoring
Face & Vehicle license



Panoramic HD monitoring
Overall & Details

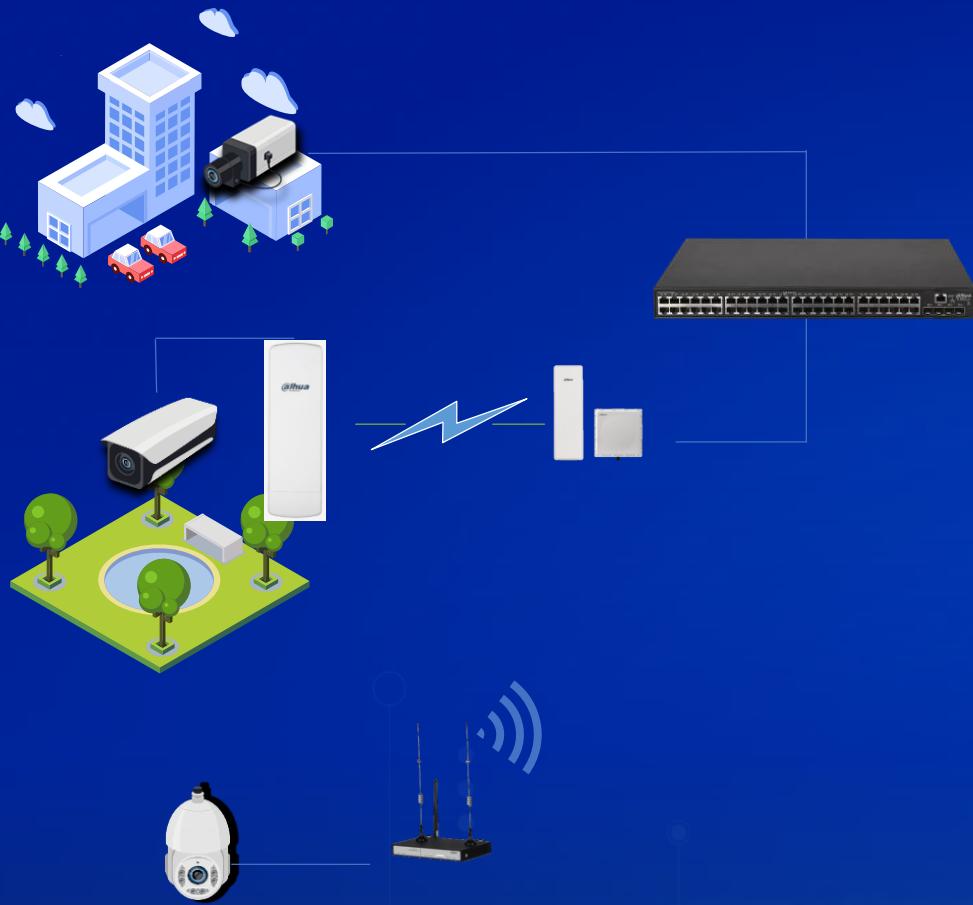


Abnormal behavior warning

TRANSMISSION | ACCESS LAYER



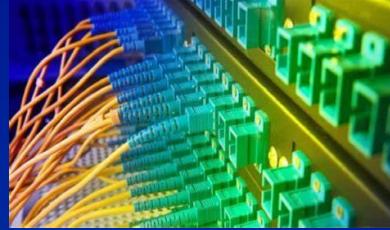
Connect the front-end access point to the overall network structure.



Wired Transmission



Reliable transmission



Large bandwidth



Avoid interference

Wireless Transmission



Limited bandwidth



Empty Site



Difficult in wiring

4G Transmission



TRANSMISSION | AGGREGATION LAYER



Summarize data from the access points.

Upload the video data to the DC.

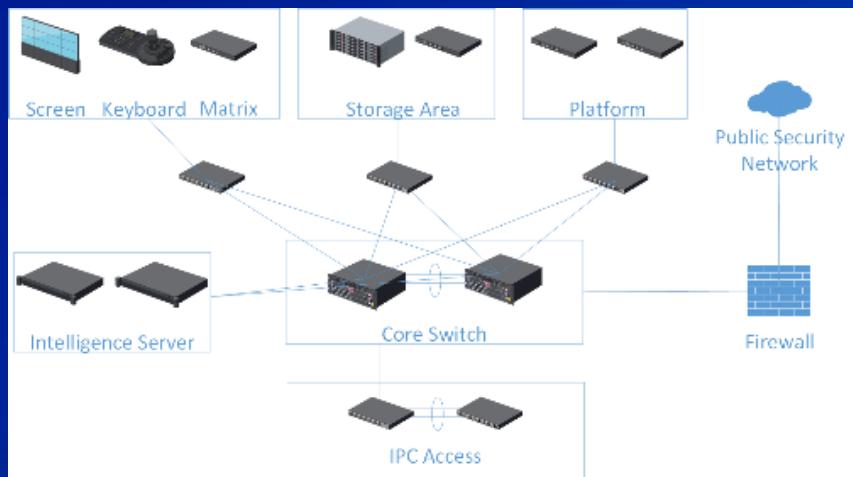


Method	Introduction	Features
Existing Network	Transfer the data according to the existing network from ISP.	1.Far away from the DC. 2.Existing transmission path.
Fiber	Build fiber link from the convergence level to the DC.	1.Reliable transmission. 2.Good fiber deployment environment. 3.Near to the DC.
Microwave	Remote large bandwidth wireless transmission.	1.Far away from the DC. 2.Large bandwidth. 3.Reliable transmission. 4.Transmition between main city and satellite cities.
Wireless	Wireless bridge transmission to the DC.	1.Near to the DC. 2.Limited bandwidth. 3.Adapted to the small town.

TRANSMISSION | CORE LAYER



DC is the convergence point of the entire network,
has high-speed switching performance.
Ensure functional modularity and scalability.



Core switch:



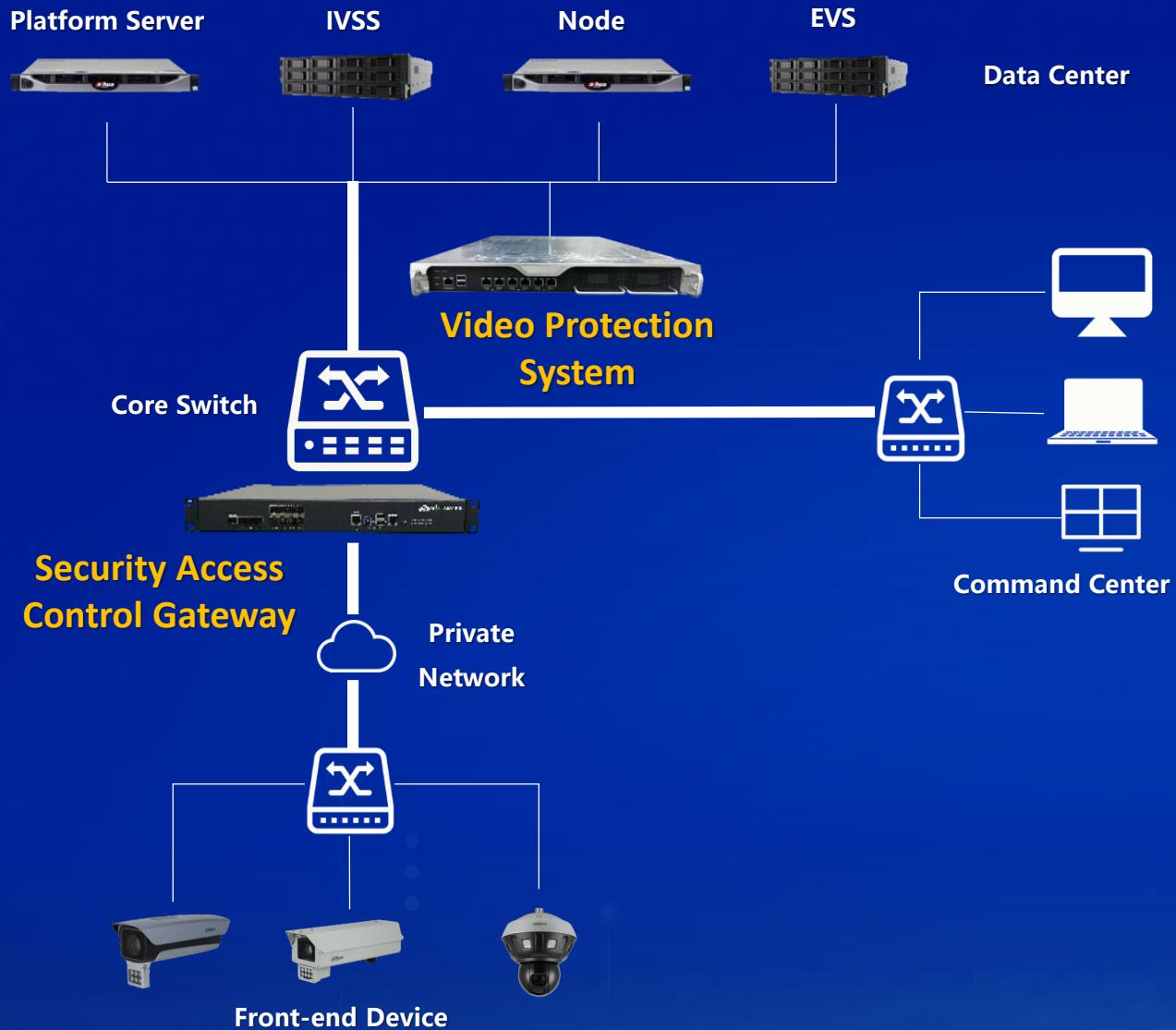
- High speed and uninterrupted switching.
- High availability, flexibility upgrade ability.
- Provide hardware redundancy.
- IRF2.0.

Aggregation switch:



- Distribute the layer 2 VLAN.
- Deploy policy-based connectivity.
- Provide interface and use the old facilities.
- IRF2.0, Link aggregation.

TRANSMISSION | SECURITY



Security Access Control Gateway

Device authentication: SACG can actively scan existing network devices (IPC, PC, NVR, etc.) to build an asset library, preventing illegal private connection .

Protocol filtering: SACG can do protocol-level identification filtering on the transmitted data, and only allow compliant data such as videos and pictures.

Threat blocking: SACG can monitor the access behavior of the device and its transmission data. Once an attack is found, it can block and alert.



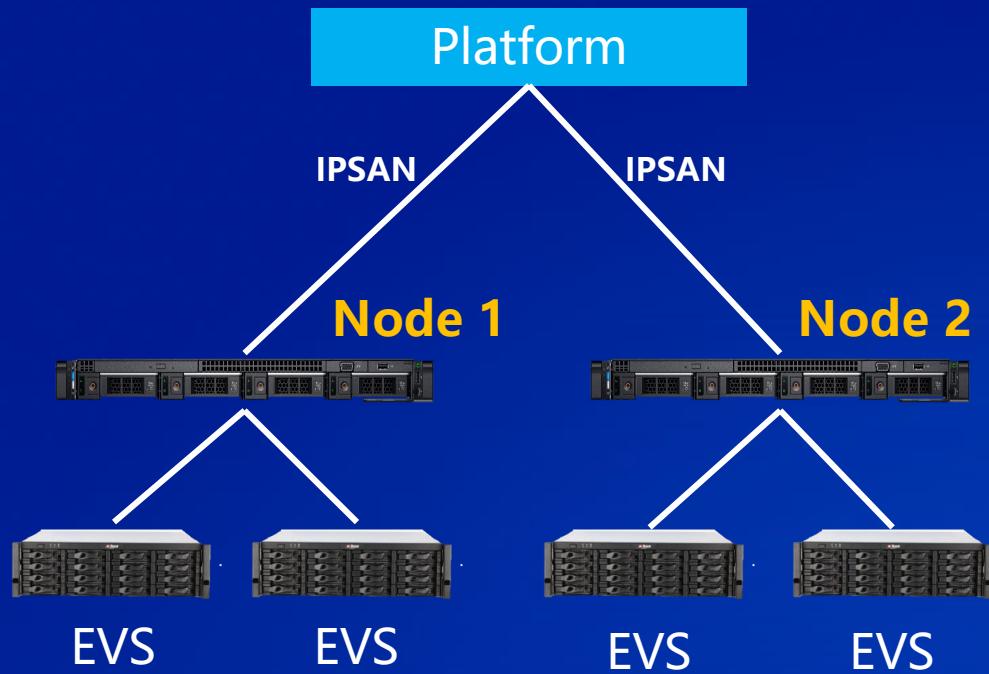
Video Protection System

Users Control: Only legal users can access. Client access uses encrypted transmission.

Watermark Audit: Two watermark modes, visible overlay and invisible overlay, are adopted, and when a leak occurs, the source can be traced based on the watermark information.

Document Control: When the file is saved locally, it will be automatically encrypted, and the exported file cannot be opened directly.

STORAGE | NODE



Each node supports:
2 EVSs
600T storage space
512 channel*2Mbps



EVS5016S-R



EVS5024S-R



EVS5036S-R



EVS5048S-R

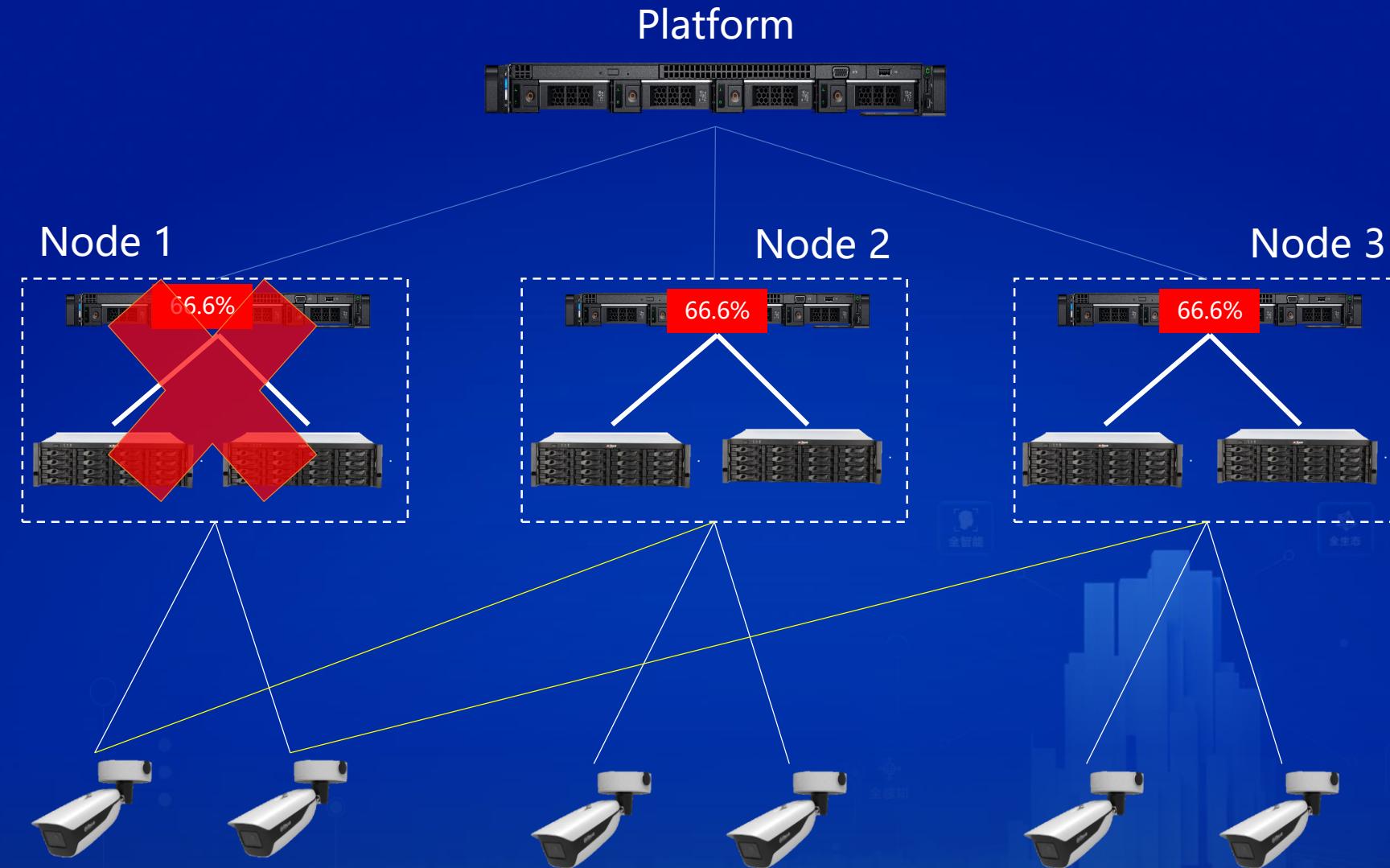
16 SATA HDDs
10TB for Each HDD
RAID 0/1/5/6/10/50/60

24 SATA HDDs
10TB for Each HDD
RAID 0/1/5/6/10/50/60

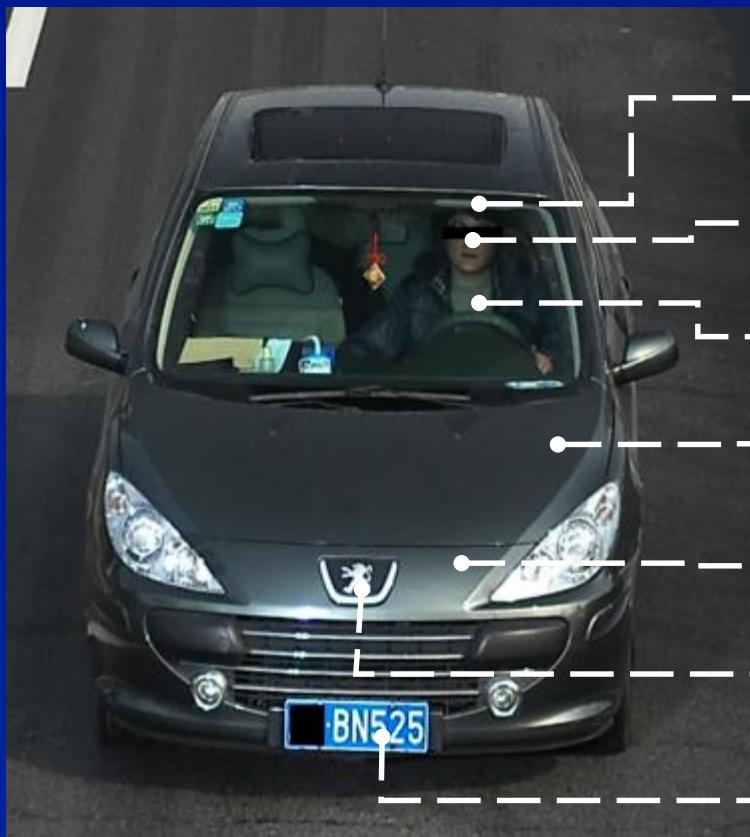
36 SATA HDDs
10TB for Each HDD
RAID 0/1/5/6/10/50/60

48 SATA HDDs
10TB for Each HDD
RAID 0/1/5/6/10/50/60

STORAGE | NODE LOAD BALANCE



ANALYSIS | VEHICLE RECOGNITION



Vehicle Attributes

- No Sunshield >> Sunshield
- Face of Driver >> Face of Driver
- Without Seat Belt >> Seat Belt
- Gray >> Color of Vehicle
- Car >> Vehicle Type
- Peugeot >> Vehicle Brand
- BN525 >> License Number

Application

Vehicle big data applications

Storage & Database

Images is stored in the storage and attributes in database

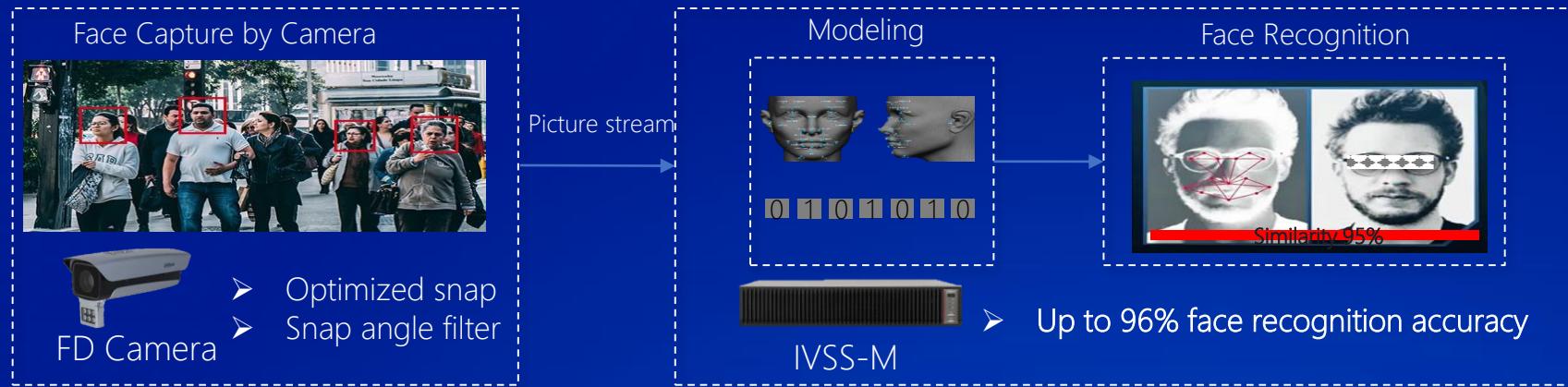


ITCs get the images and attributes

ANALYSIS | FACE RECOGNITION



FD Camera + IVSS-M Face Recognition Process



IVSS7016DR-4M/G	IVSS7024DR-16M/G
128ch FD cameras	400ch FD cameras
32ch normal cameras	128ch normal cameras

Normal Camera + IVSS-M Face Recognition Process



ANALYSIS | VIDEO STRUCTURING



Vehicle

Plate, plate color, vehicle body, vehicle brand, driver calling, seatbelt status, decoration object in the vehicle, and vehicle registration place



Human Body

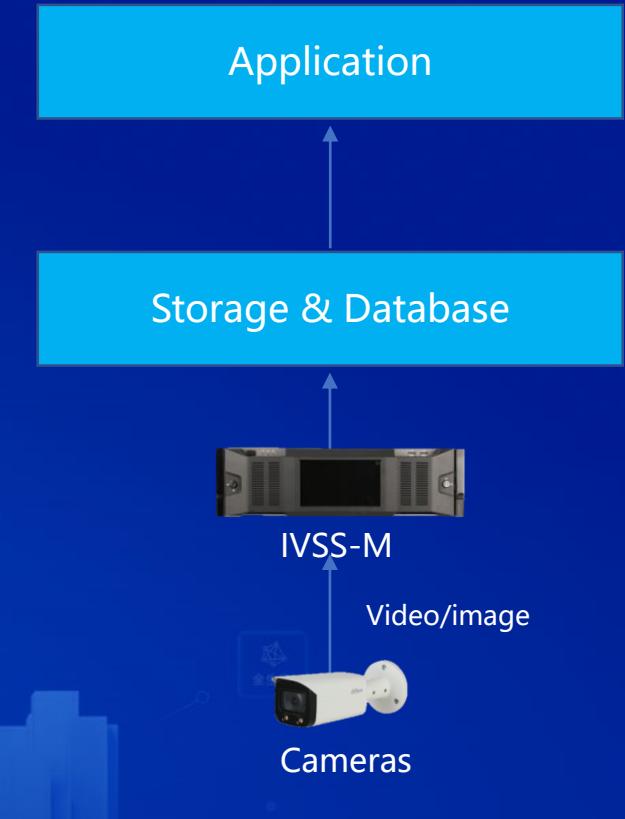
Top color, top type, bottom color, bottom type, cap, bag, age, gender, and umbrella

Non-motor Vehicle

Vehicle type, vehicle color, people number, helmet

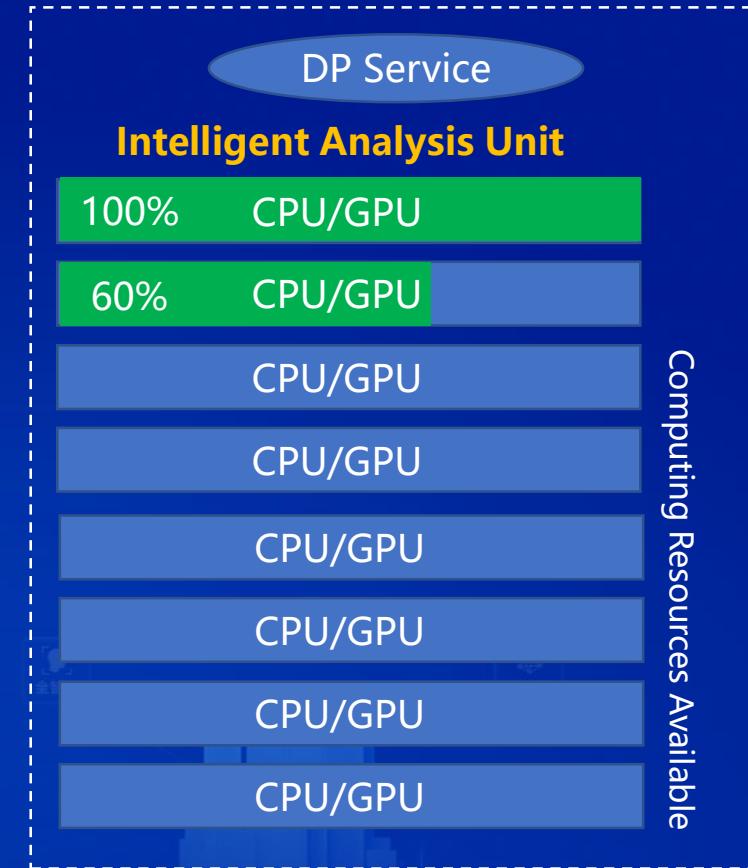
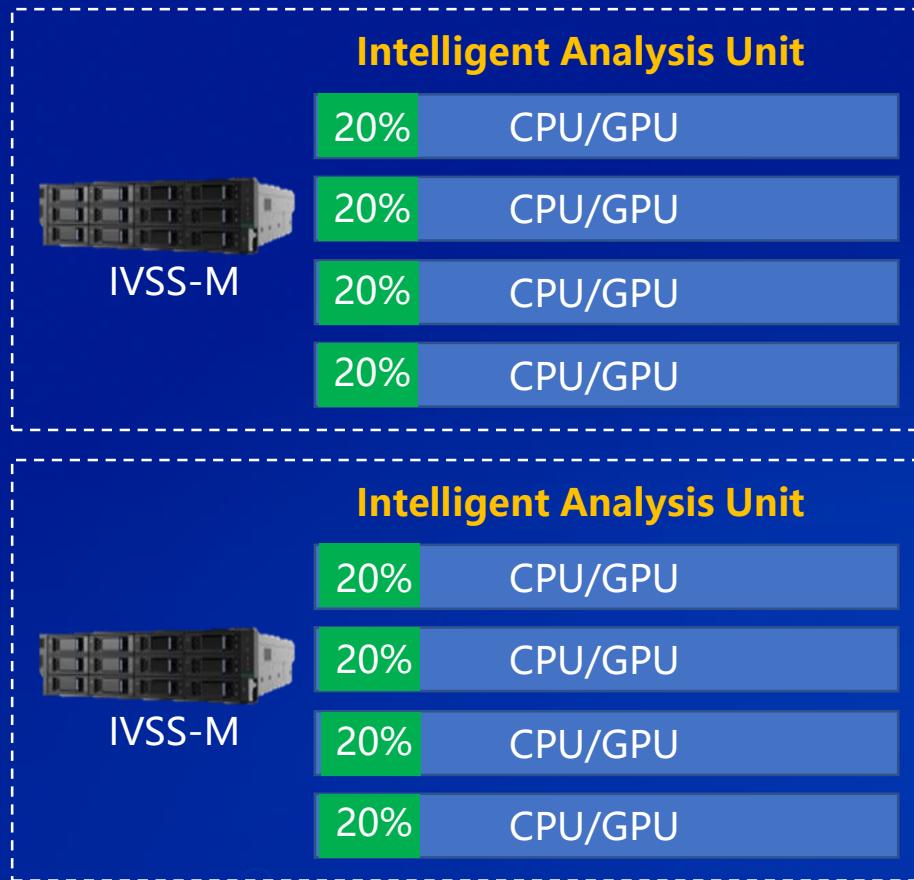


Metadata of Face, Vehicle, Human body, Non-motor vehicle makes it much easier for users to locate the interested objects.



IVSS7016DR-4M/G	IVSS7024DR-16M/G
128ch Structuring cameras	400ch Structuring cameras
32ch normal cameras	128ch normal cameras

ANALYSIS | INTELLIGENCE SCHEDULING



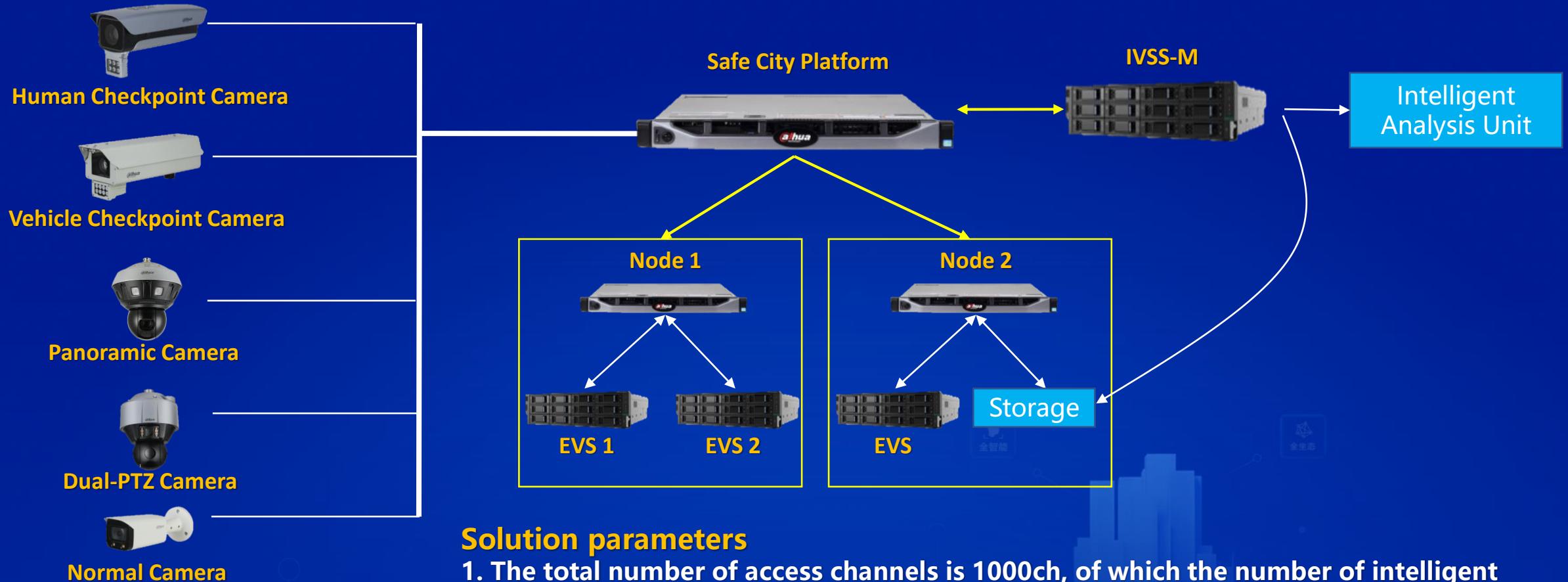
Every time you add a device, you need to configure the channel to a specific server for calculation.

DP service will uniformly manage computing resources.

TOPOLOGY-1



TOPOLOGY-2



Solution parameters

1. The total number of access channels is 1000ch, of which the number of intelligent channels is 200ch;
2. Supports IVSS-M cluster, but the intelligent channels supported by the platform is 200ch;
3. Supports storage multi-node clusters.
4. The built-in PG database supports up to 30 million.

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FACE BIG DATA| FACE SEARCH

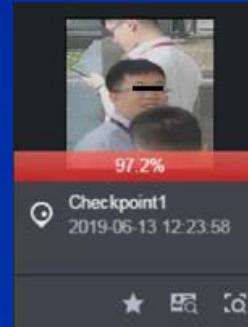
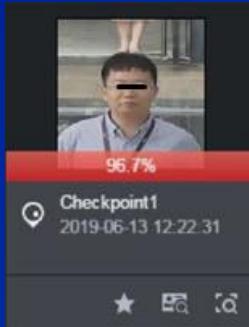
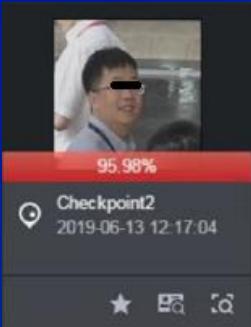


Face Search by Image

Upload a face image



Show all the similar faces



Show the trail



Face Search by Features

Input face features



Gender

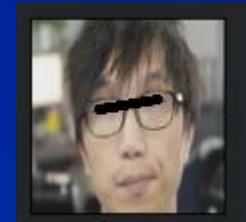


Age Range



Glasses

Show all the faces



Show the trail



FACE BIG DATA|ARMING



Arming



Point Arming

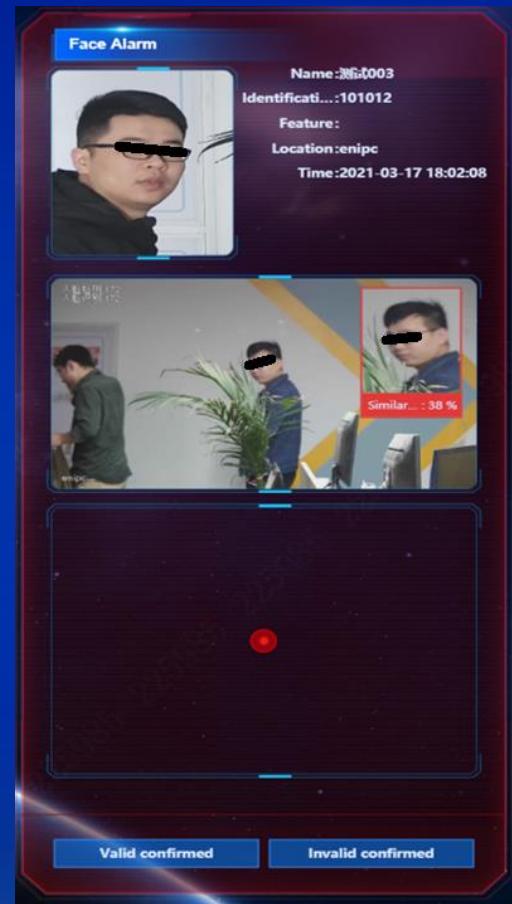


Area Arming



Type Arming

Pre-warning



Arresting



VEHICLE BIG DATA|VEHICLE SEARCH



Vehicle Search



License Plate



Vehicle Type



Brand



Vehicle Color



Sunshield



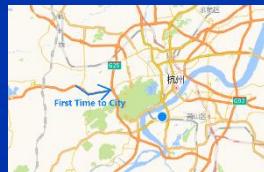
Tactics



Frequent Pass Analysis



Space & Time Analysis



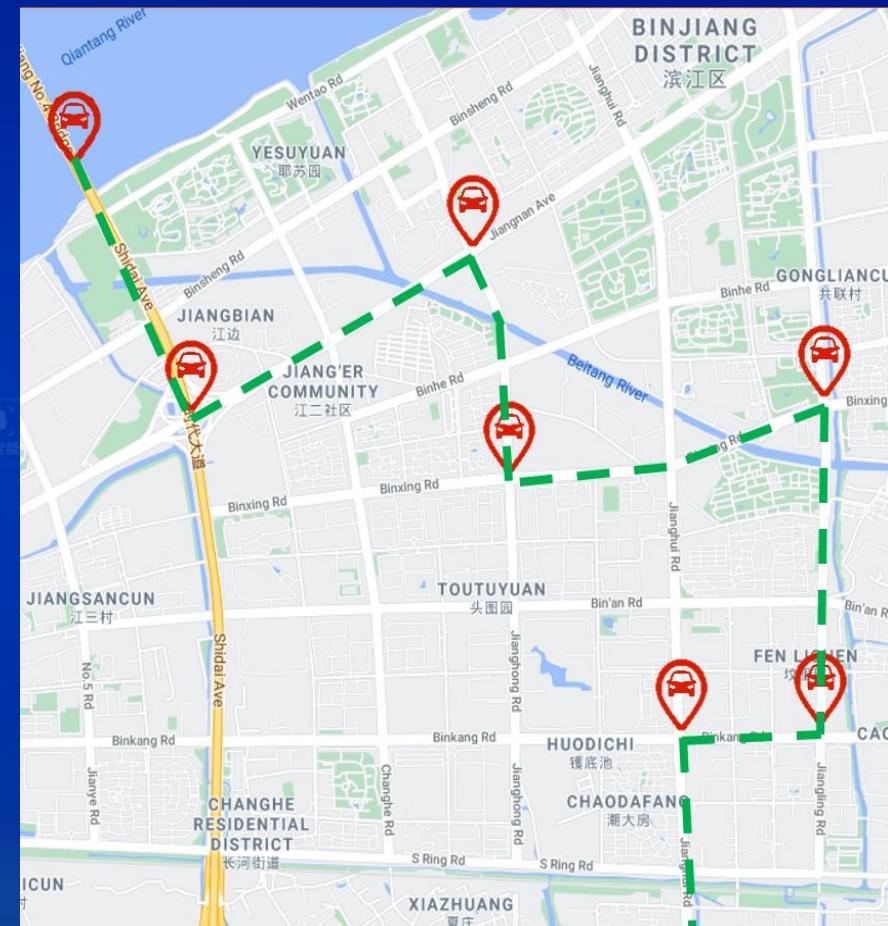
First Appearance Analysis



Nocturnal Activity Analysis



Trajectory



VEHICLE BIG DATA|ARMING



Arming

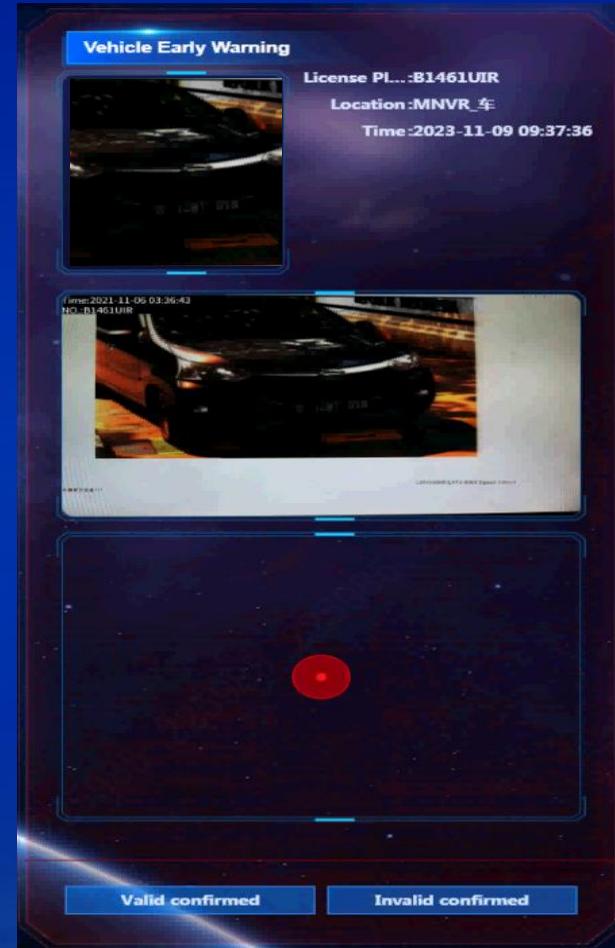
Exact Arming

Input the exact plate number of the vehicle.

Fuzzy Arming

1. "*" represents multiple digits;
2. "?" represents one digit.

Pre-warning



Arresting



STRUCTURING BIG DATA | SEARCH BY FEATURES



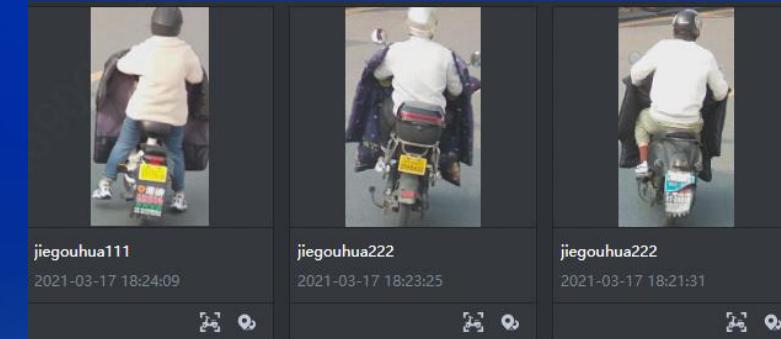
People

	Unlimited	Male	Female
	Unlimited	Yes	No
	Unlimited	Yes	No
	Unlimited	Child	Youth Middle-aged Elder
	Unlimited	Long sleeve	Short sleeve
	Unlimited	Trousers	Shorts Skirt
	Unlimited	Black	White Red Yellow Green
	Unlimited	Black	White Red Yellow Green



Non-motor

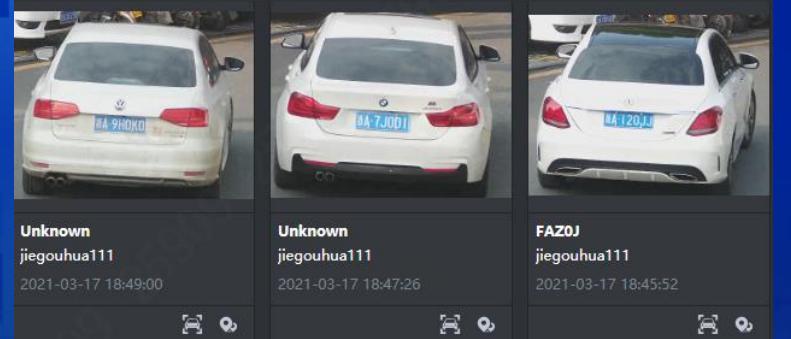
	Unlimited	Bicycle	Motorcycle	Tricycle
	Unlimited	Male	Female	
	Unlimited	Yes	No	
	Unlimited	Long hair	Short hair	
	Unlimited	Child	Youth Middle-aged Elder	
	Unlimited	Yes	No	
	Unlimited	Black	White Red Yellow Green	
	Unlimited	Black	White Red Yellow Green	



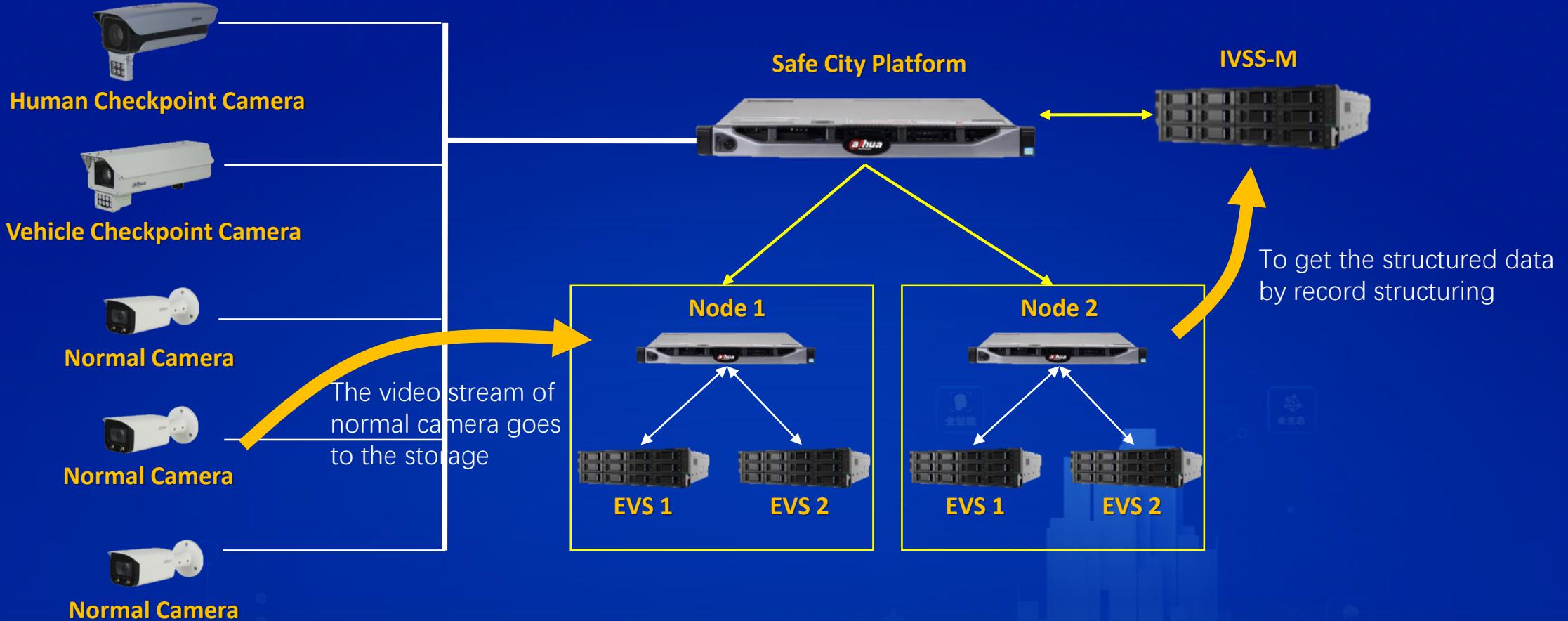
Vehicle

	Unlimited	Bus	Car	Van SUV MPV Bus
	Unlimited	Ornament Pendant Sticker Sunshield		
	Unlimited	Yes	No	

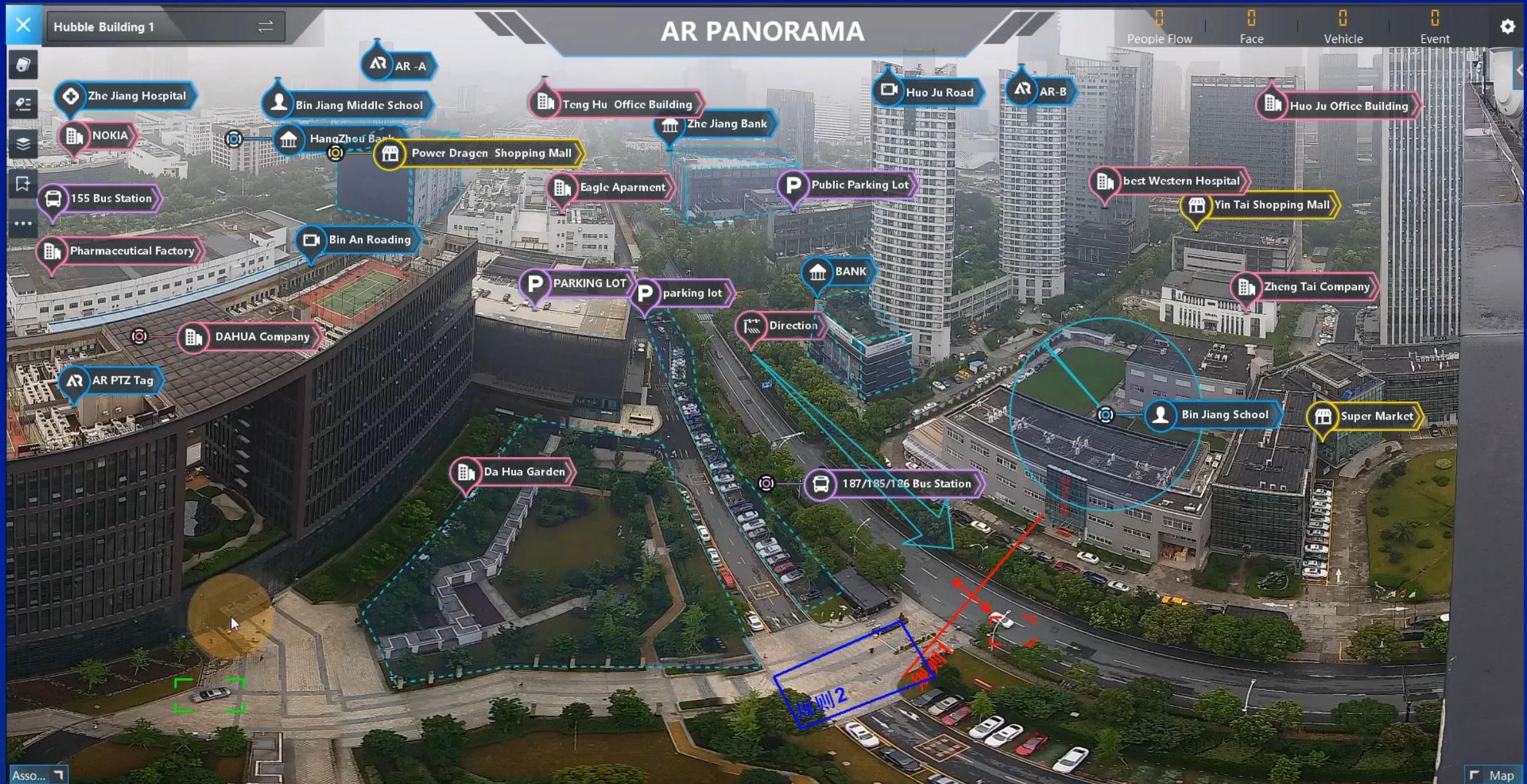
	Unlimited	Audi Honda Buick Volkswagen		
	Unlimited	Black White Red Yellow Green		
	Unlimited	Yes	No	
	Unlimited	Black	White Red Yellow Green	



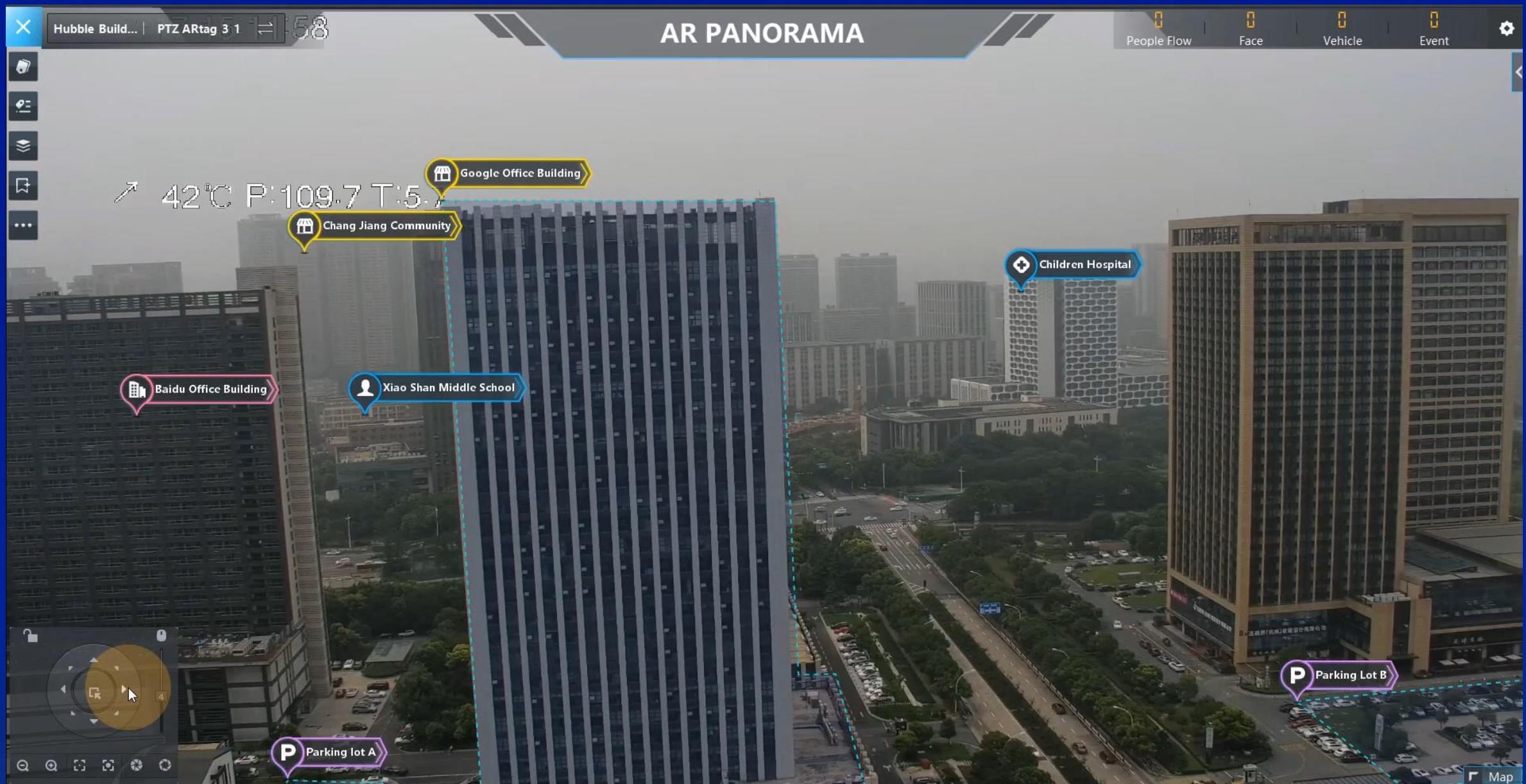
STRUCTURING BIG DATA|RECORD STRUCTURING



AR PANORAMA|BY PANORAMIC CAMERA



AR PANORAMA|BY PTZ CAMERA



DASHBOARD



Face big data

- Total number of people
- Early warning of face conditions
-

Vehicle big data

- Traffic flow statistics
- Model brand data statistics
- Real-time vehicle warning
- Today's key vehicle statistics
- Deployment control data statistics

Pre-warning

- Face deploy control warning
- Vehicle deploy control warning
-

COMMAND & CONTROL



Locating Emergency, information Synchronization

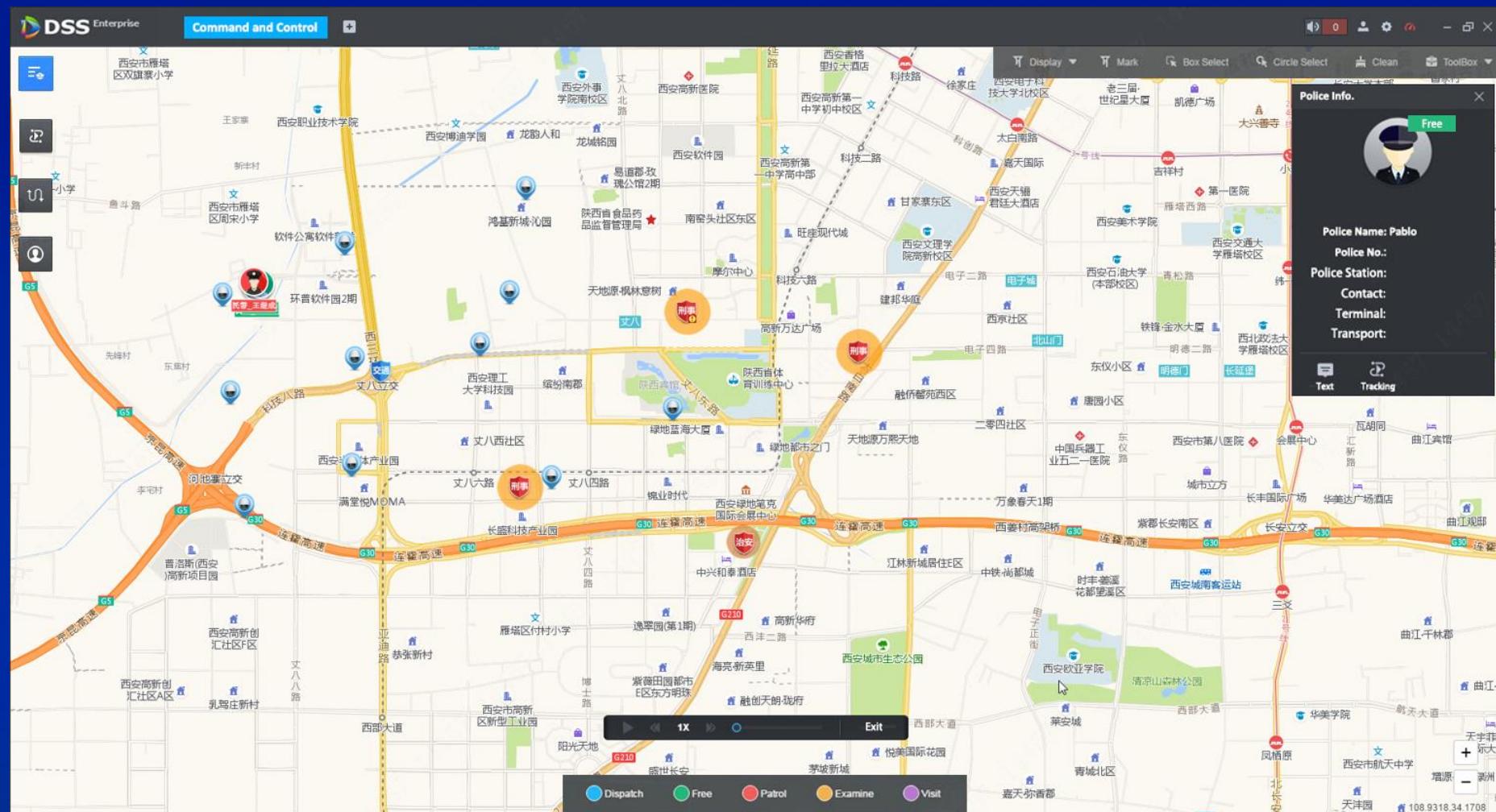
Check Resources Around

Check Video Surveillance

Create Police Force Team

Issue a Task

Accept Task, Deal with It on Site



COMMAND & CONTROL



Locating Emergency, information
Synchronization

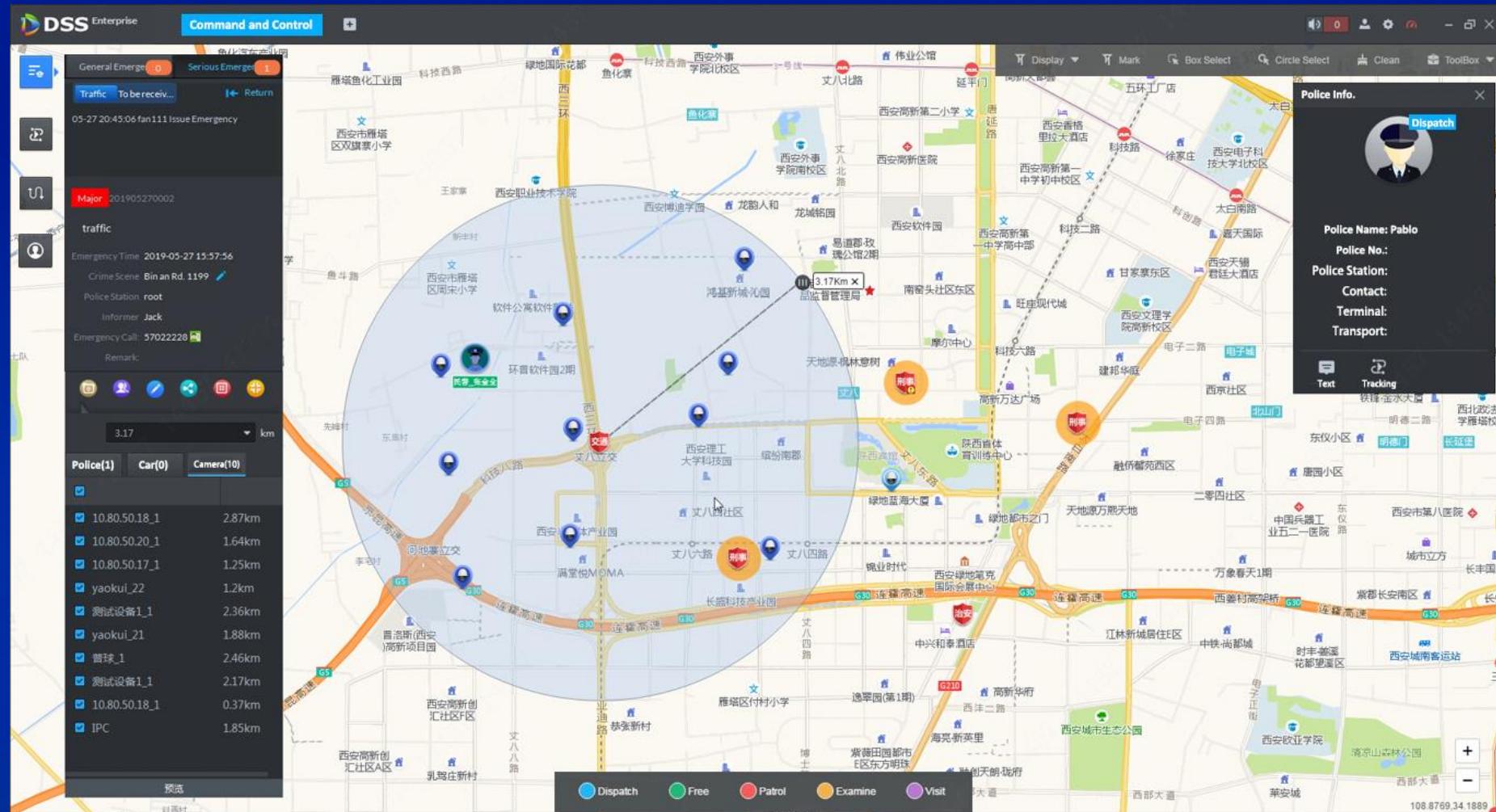
Check Resources Around

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COMMAND & CONTROL



Locating Emergency, information
Synchronization



Check Resources Around



Check Video Surveillance



Create Police Force Team



Issue a Task



Accept Task, Deal with It on Site

The screenshot displays the DSS Enterprise Command and Control software interface. On the left, a sidebar lists resources categorized by type (e.g., 视频 (8/8), 资源 (1/1)) and location (e.g., 西三环与丈八立交路口, 西安高新创汇社区). Below this is a search bar and a navigation menu with options like 视频, 云台, and 全屏. The main area consists of a 3x3 grid of video feeds. The top row shows: two police officers interacting with civilians outdoors, a panoramic view of a modern city skyline under construction, and a line of riot police in full gear standing in formation. The middle row shows: an interior view of a large, modern building lobby, several emergency responders (police and firefighters) gathered around a person on a stretcher, and a large outdoor event with many people and a stadium in the background. The bottom row shows: police officers working at computer monitors in a control room, a street scene where a police officer directs traffic near a car, and a police vehicle driving down a road.

COMMAND & CONTROL



Locating Emergency, information
Synchronization



Check Resources Around



Check Video Surveillance



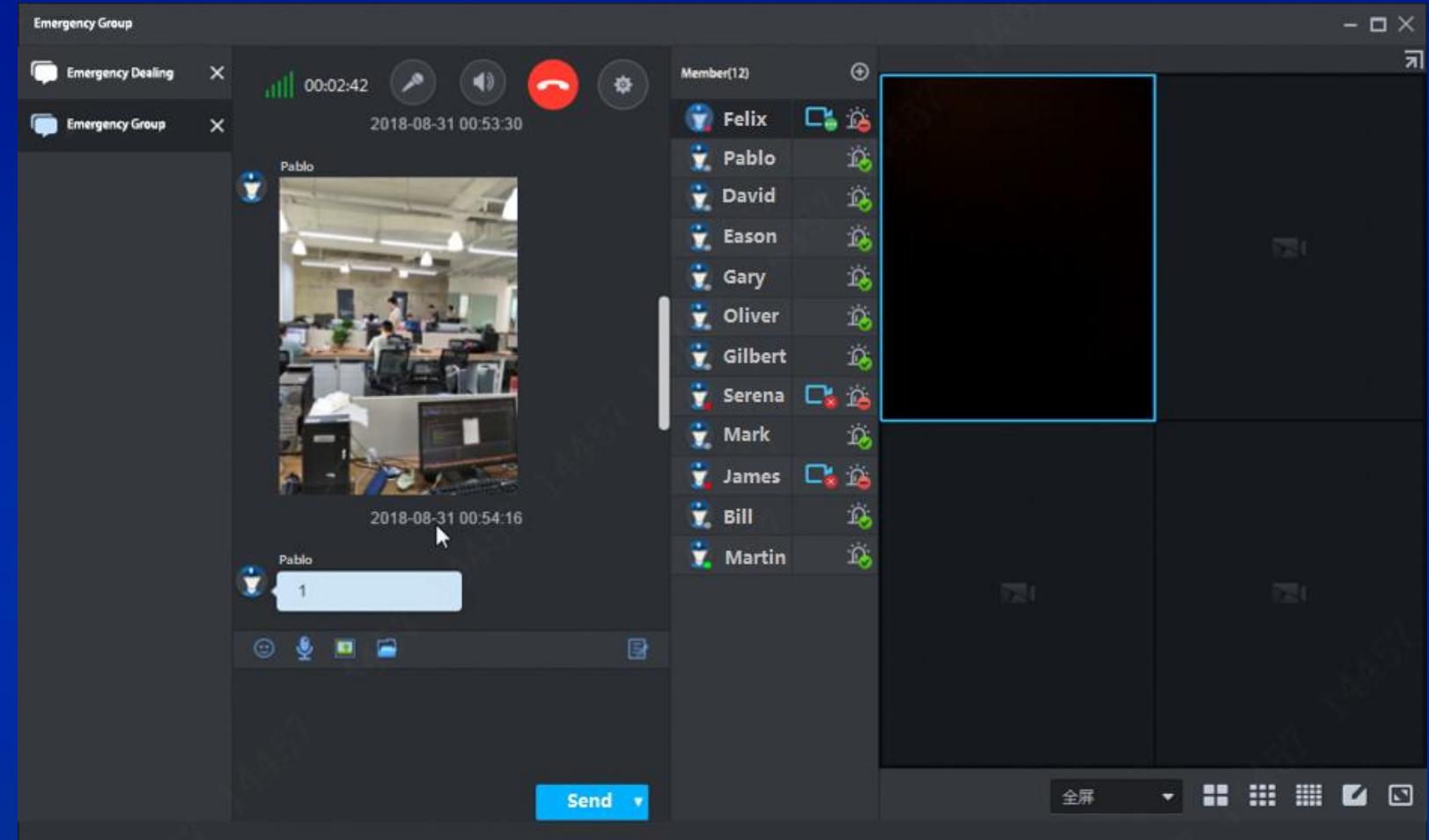
Create Police Force Team



Issue a Task



Accept Task, Deal with It on Site



COMMAND & CONTROL



Locating Emergency, information
Synchronization



Check Resources Around



Check Video Surveillance



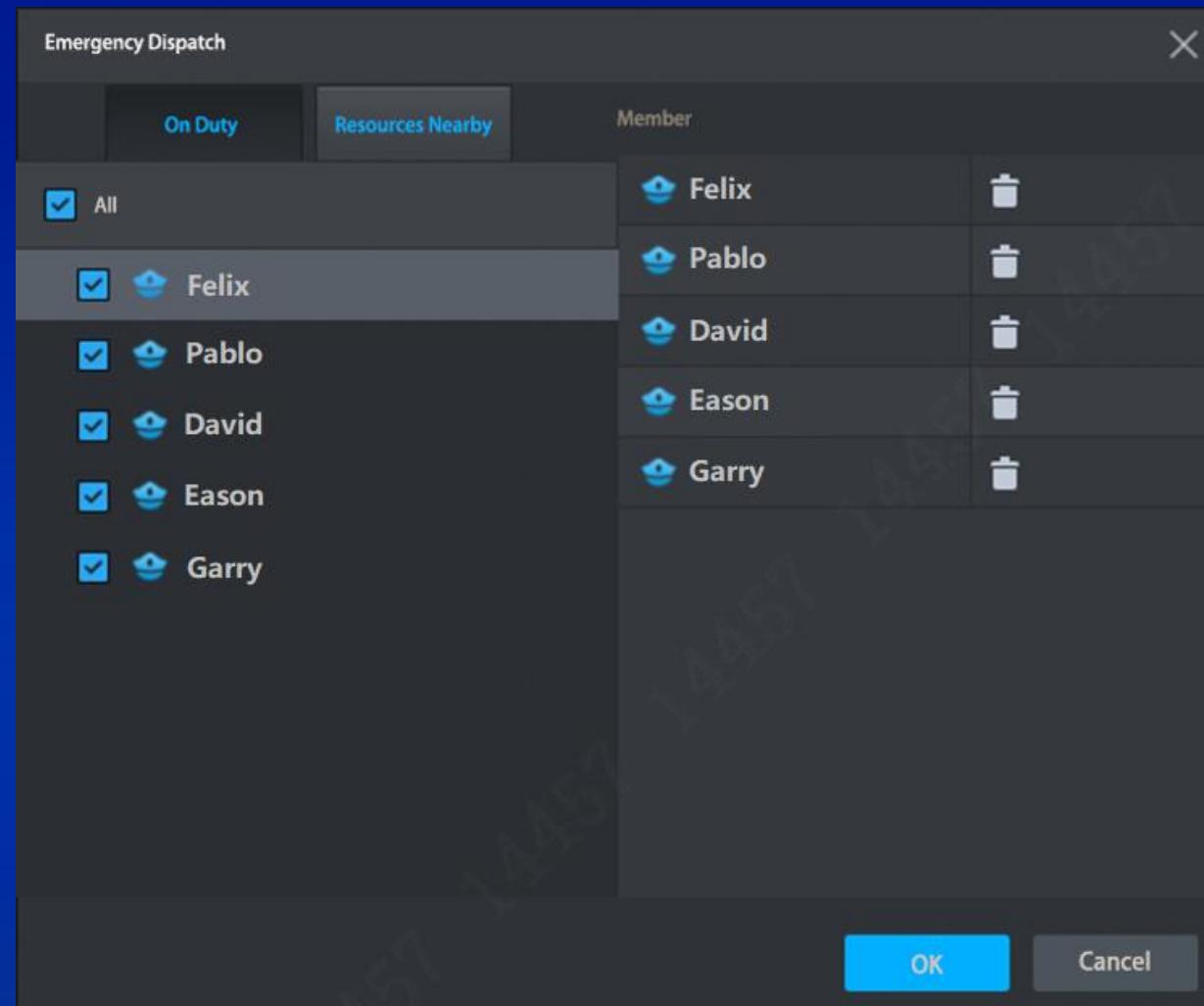
Create Police Force Team



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COMMAND & CONTROL



Locating Emergency, information
Synchronization



Check Resources Around



Check Video Surveillance



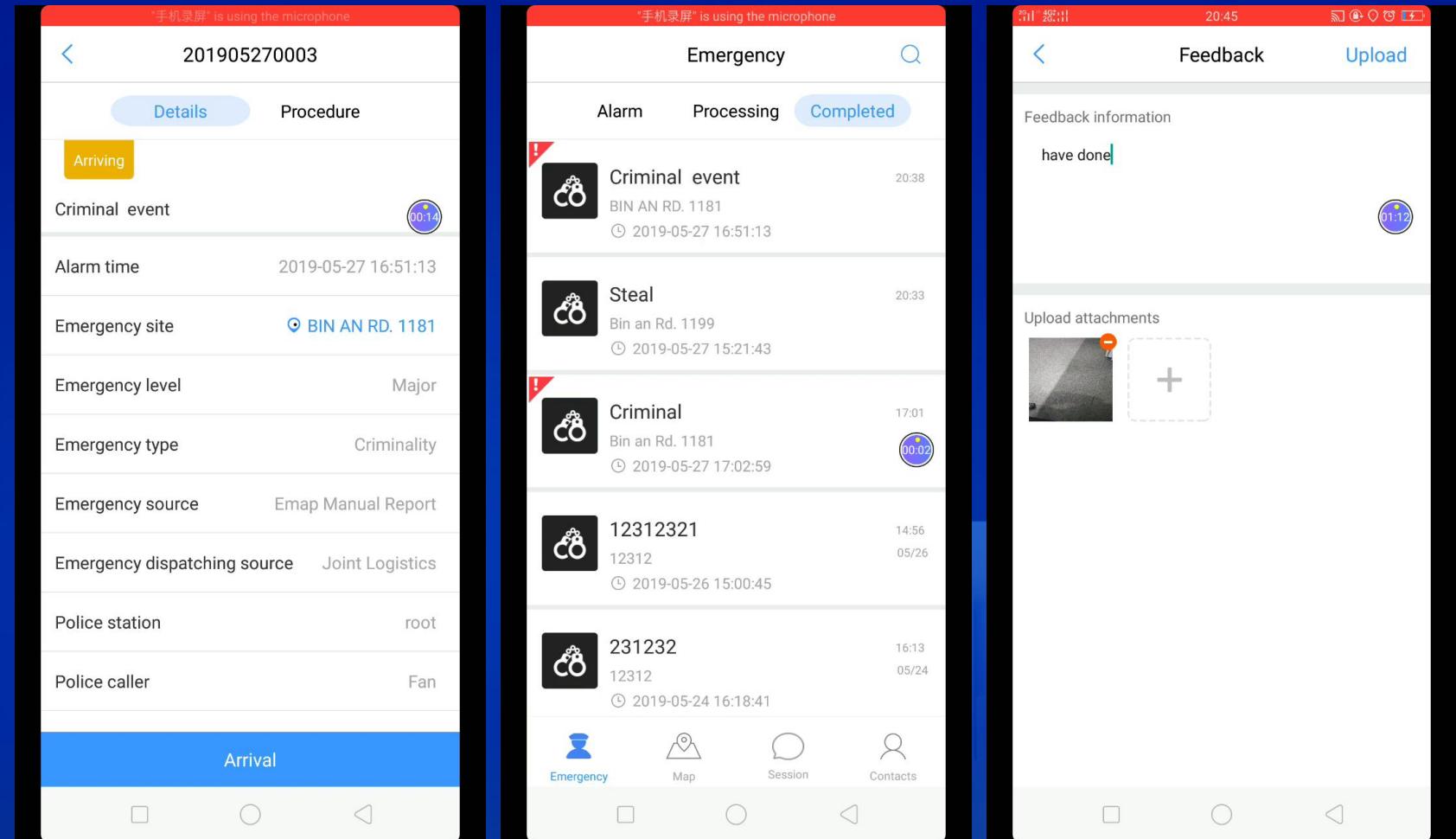
Create Police Force Team



Issue a Task



Accept Task, Deal with It on Site



CONTENT

01 REQUIREMENT

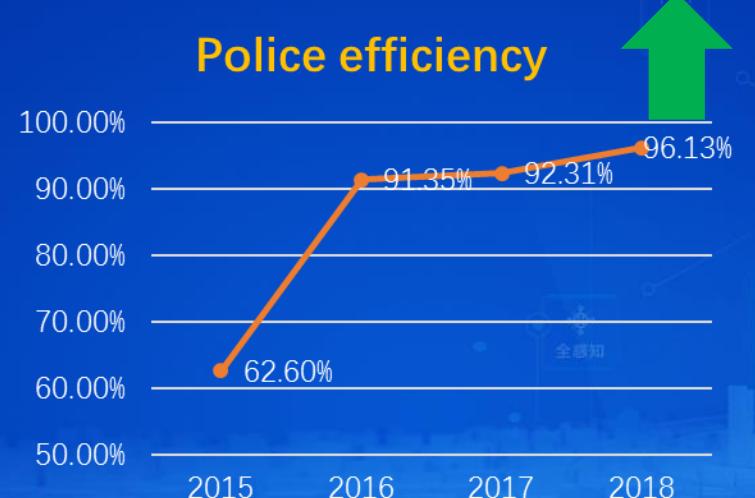
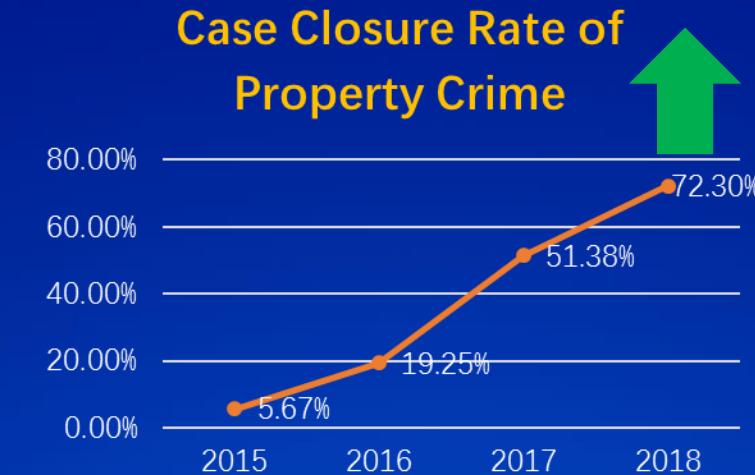
02 SOLUTION

03 APPLICATION

04 CONCLUSION

ACHIEVEMENT & BENEFIT

Since Feb, 2016, Dahua started the safe city project for a city. The overall results are as follows, opening a new chapter in smart policing.



[2018 Achievement]