



**NHÀ AN TOÀN**  
Leading security solutions

# Hikvision Smart City Solution

First Choice for Security Professionals

## Current issues in city surveillance...



**Frequent incidents of crime**



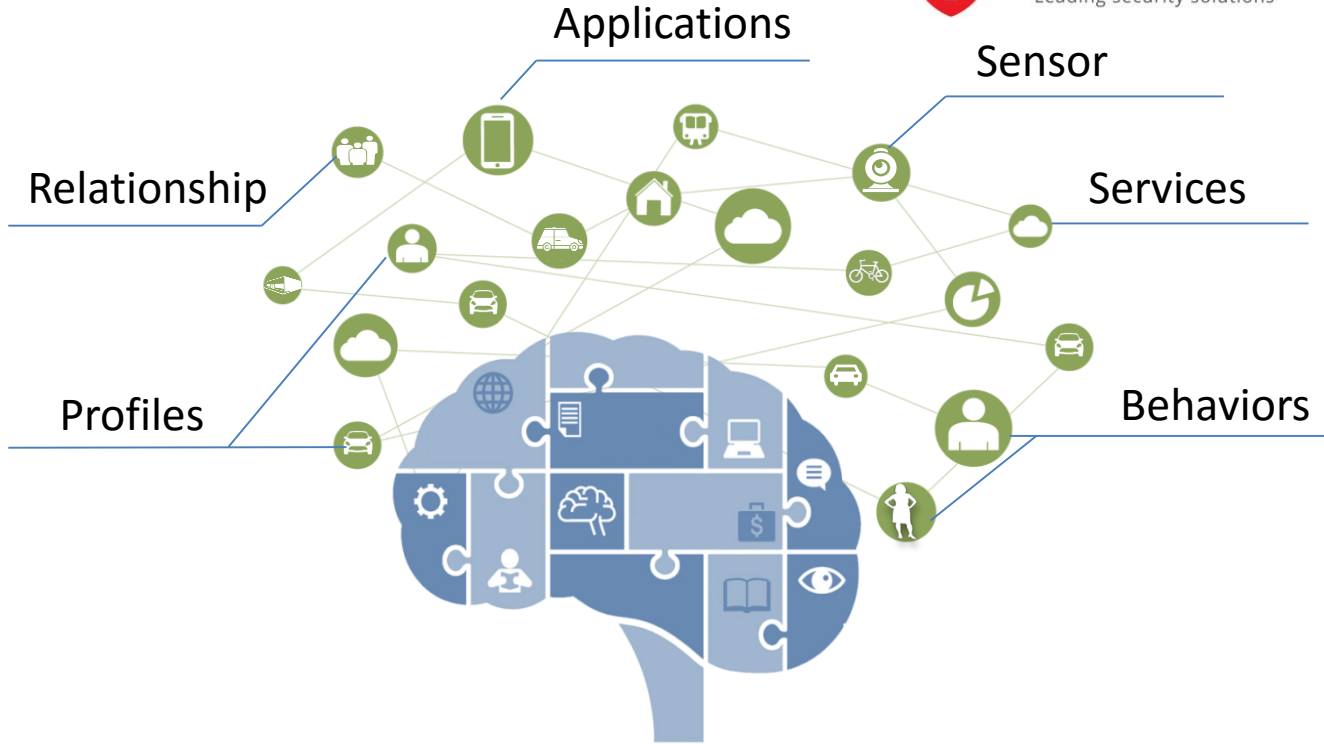
**Lack of timeliness**



**Limited coverage of information**



**High labor intensity**



# Security Data Technology



Applications



Intelligence



Data



Sense



# Sense Layer

Capture the Information by **Sensors**



**Camera**

Video contains most abundant information



**GPS**

Real-time locate the mobile devices



**Access Control**

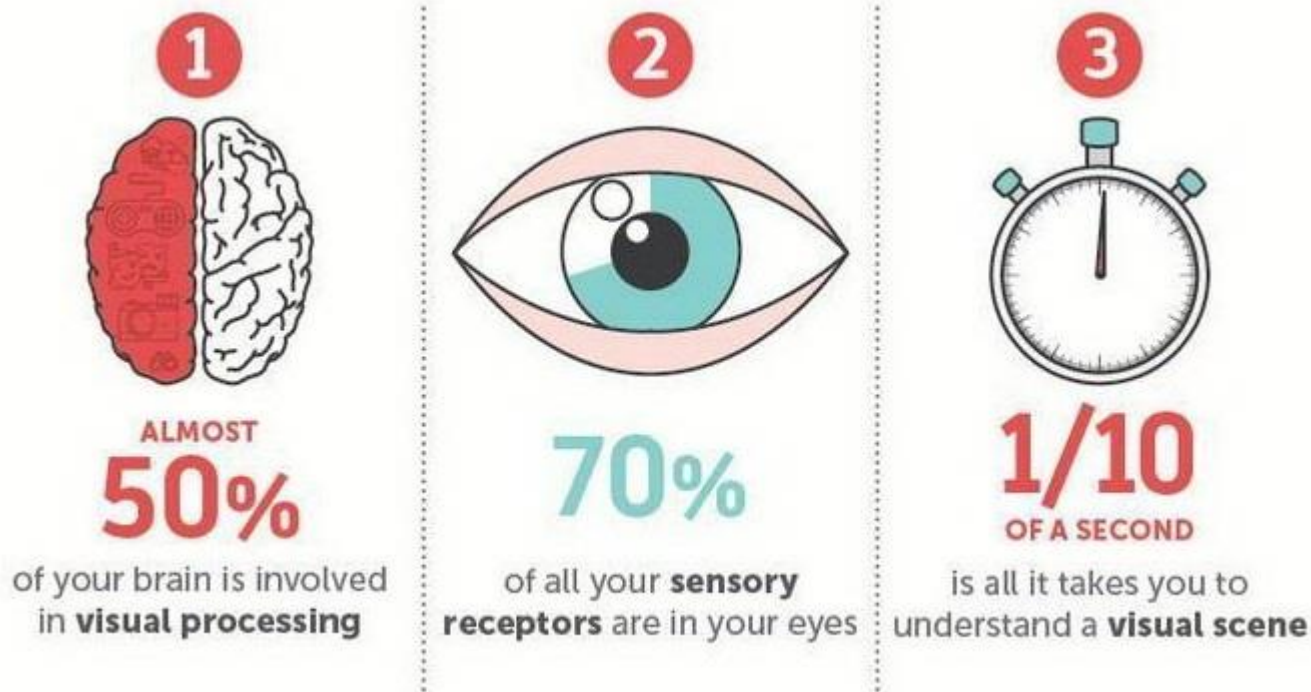
Record the access information



**RFID**

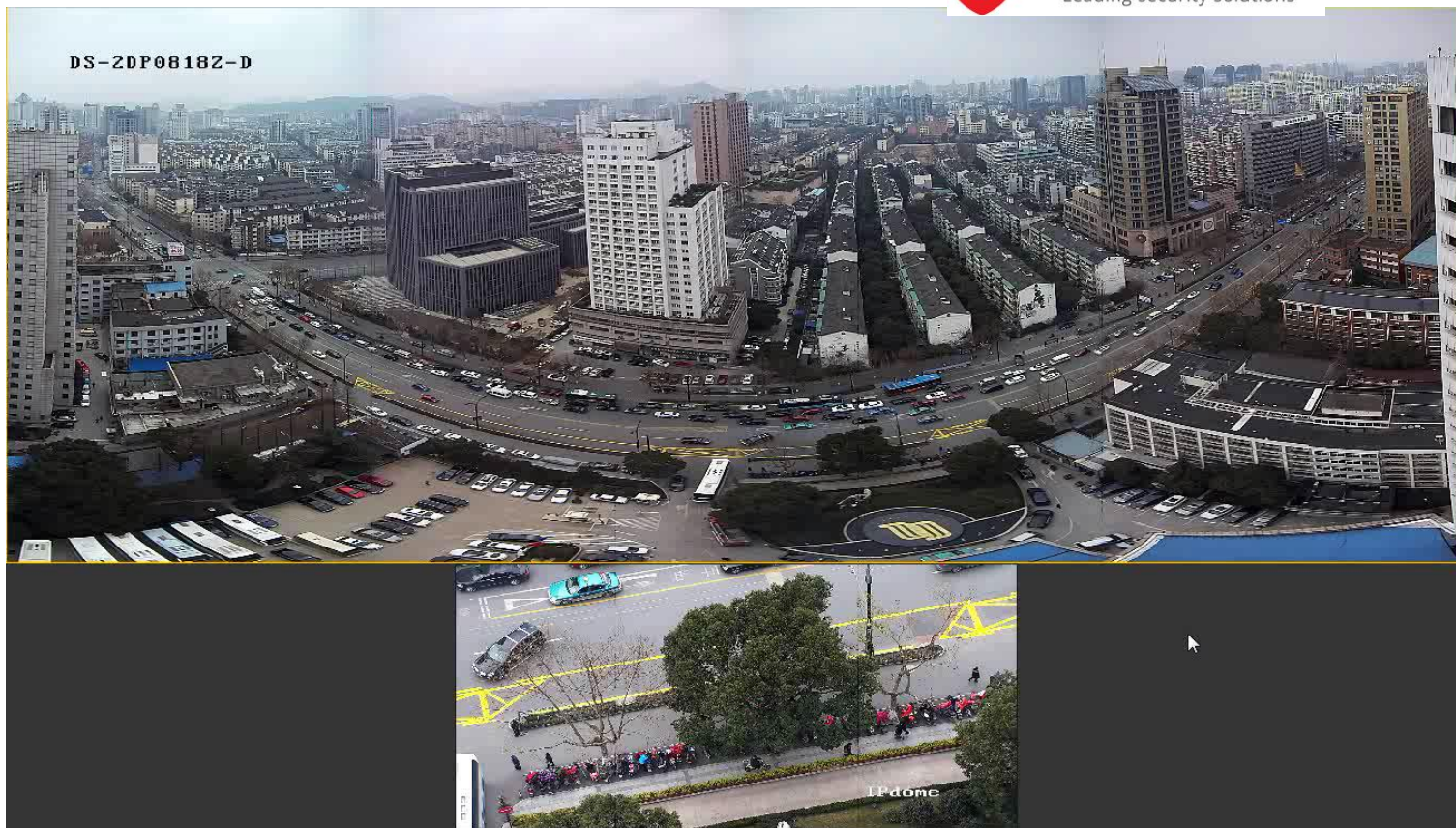
Keep track of goods in logistics system



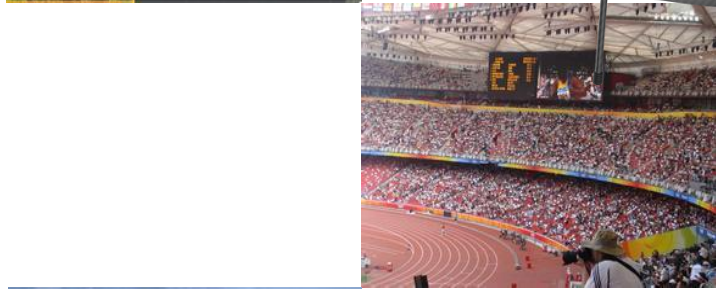


**video is the key component in sense layer**

## Sense- Camera



## Sense- Camera



First Choice for Security Professionals



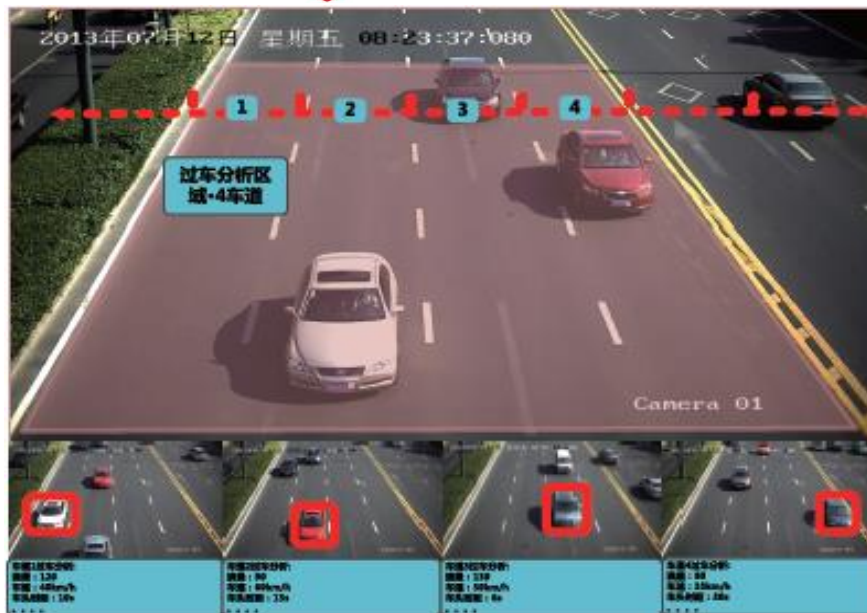
## Sense- Camera



## Intelligent Traffic Camera

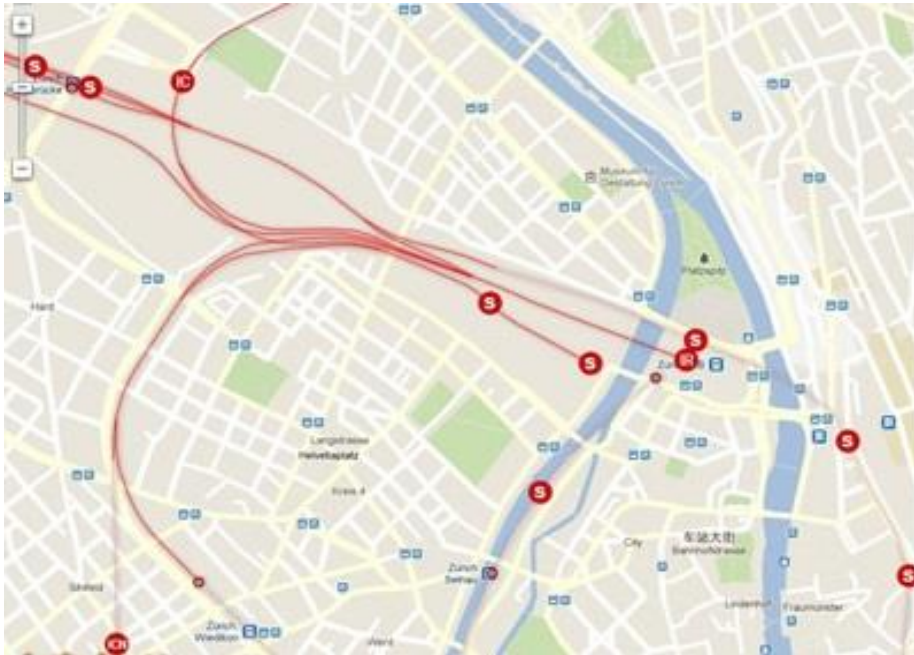


## Vehicle Detector



- License Plate • Vehicle Type • Vehicle Color
- Violation Behaviors • Vehicle Speed
- Traffic Flow • Traffic Density Analysis

## Sense- Mobile Devices with GPS module



**PVR**



**Mobile PTZ**



**Mobile DVR**



## Sense- Access Control

Mifare/EM Card



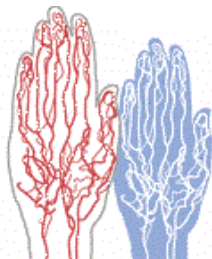
Fingerprint



Face



Iris



Vein



Personnel Information



Name: Jason

Location: Building 2,Demo Room

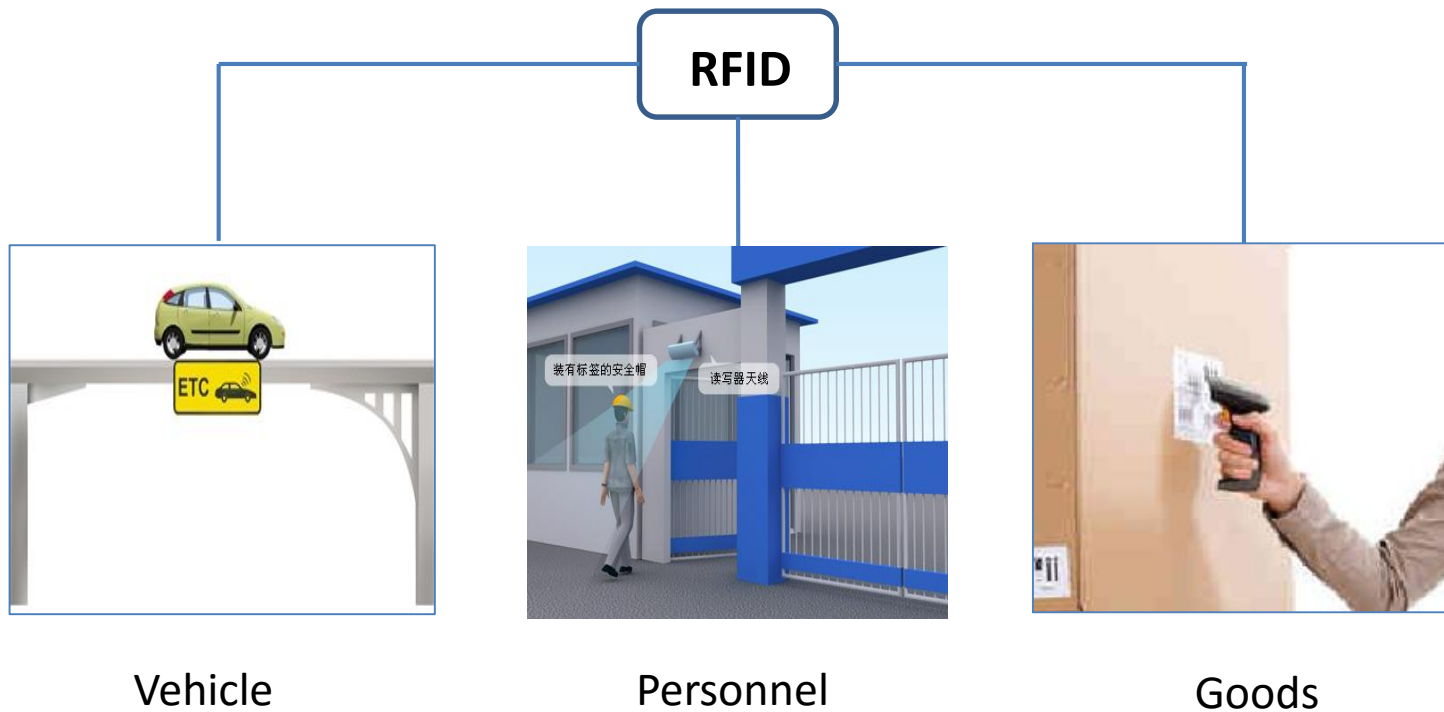
Title: Senior Engineer

Contact No.:6666666

Level: High



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Sense



# Internet of Things

## Connectivity | Interoperability

# Data Layer

Data Processing and Data Storage

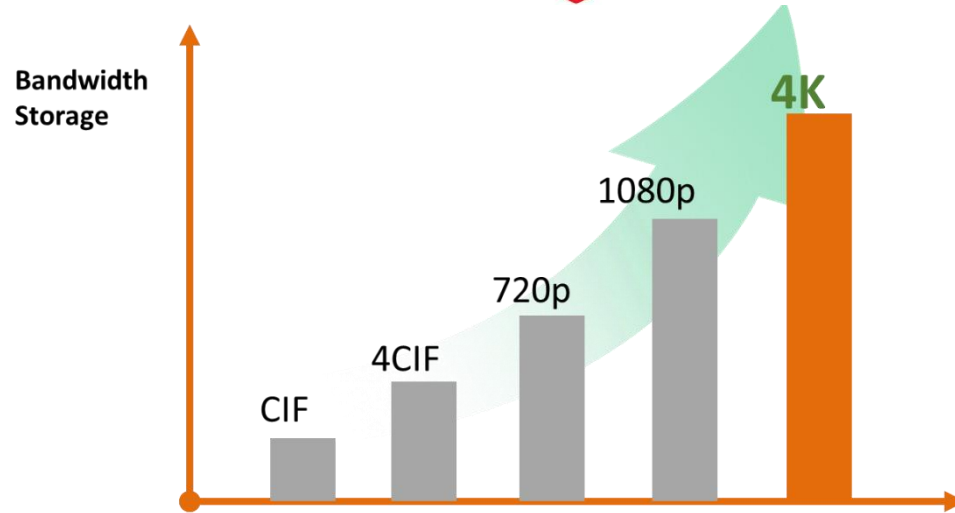
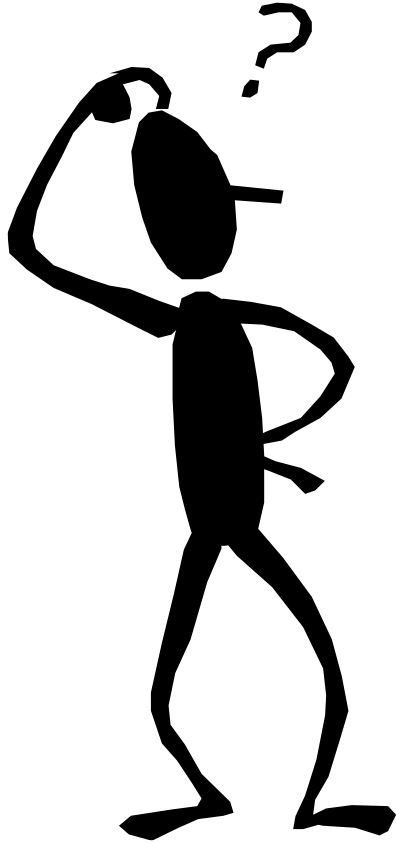


Video Compression



Cloud Storage

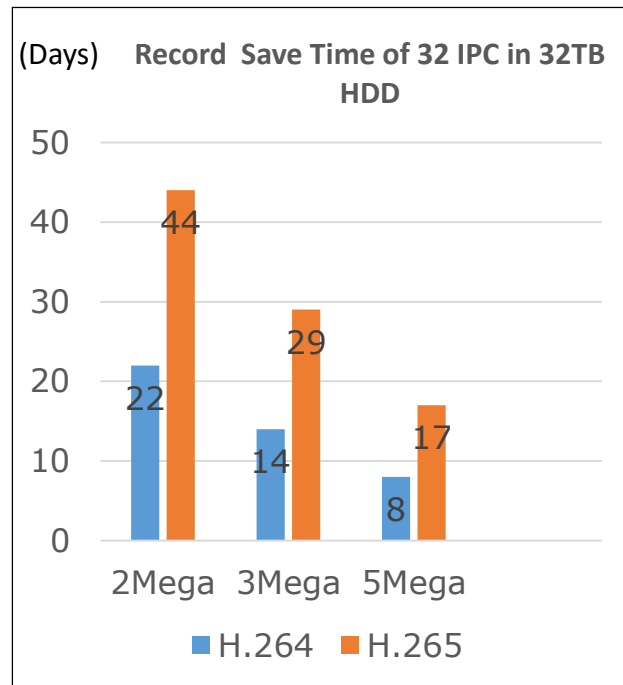
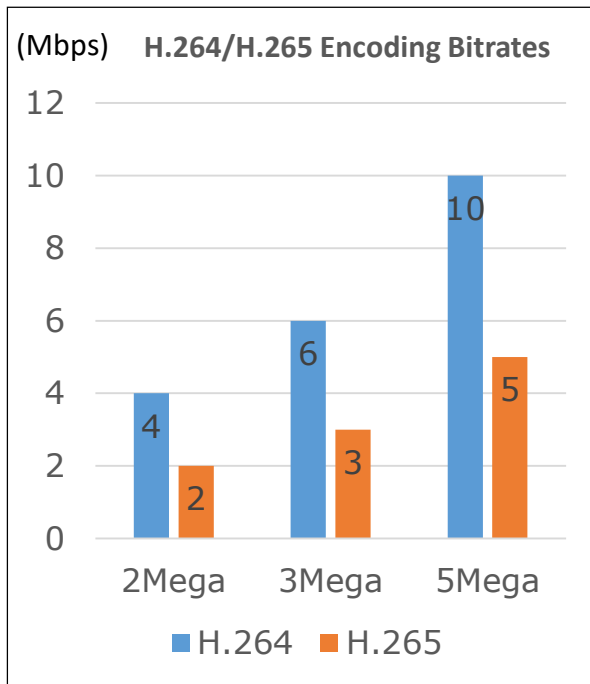
Data



**Ultra HD video is quite enjoyable, but it also brings extra cost on the transmission bandwidth and data storage .**

**How can I make a good balance?**

- H.265 is next generation of video encoding standard, which can double the compression ratio comparing to H.264, at the same level of picture quality.







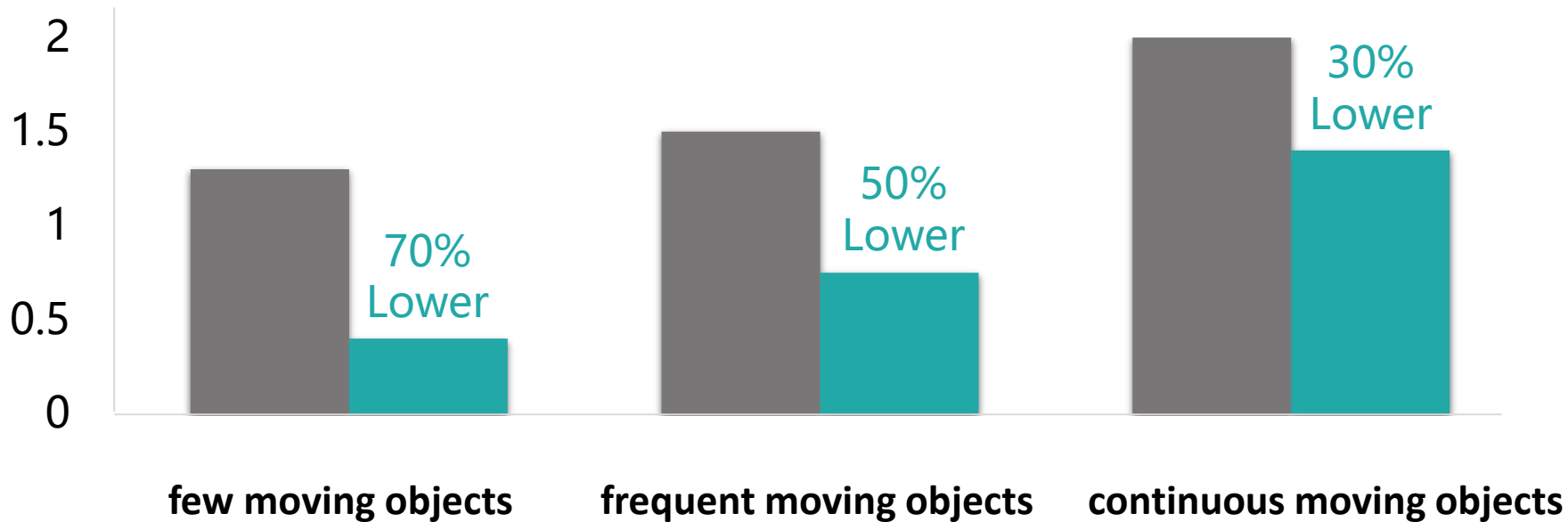
A Hikvision Patent better than H.265

# Smart 265

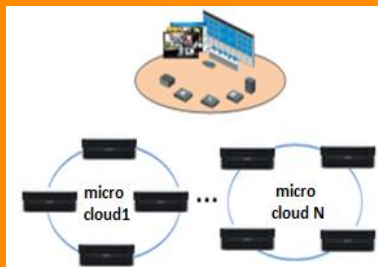


## Bitrate on 1080P Encoding (H.265 VS Smart265)

■ H.265 ■ Smart265

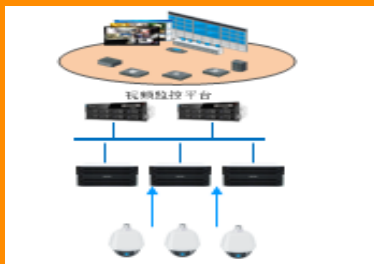


## Micro Cloud



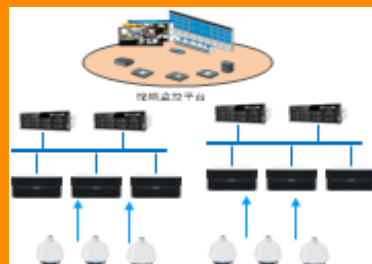
- Small-size project
- Discrete local storage
- CVSN self-management
- No CVMN

## Standard Cloud



- General medium-size cloud storage solution
- Centralized storage
- CVMN+CVSN

## Decentralized Cloud



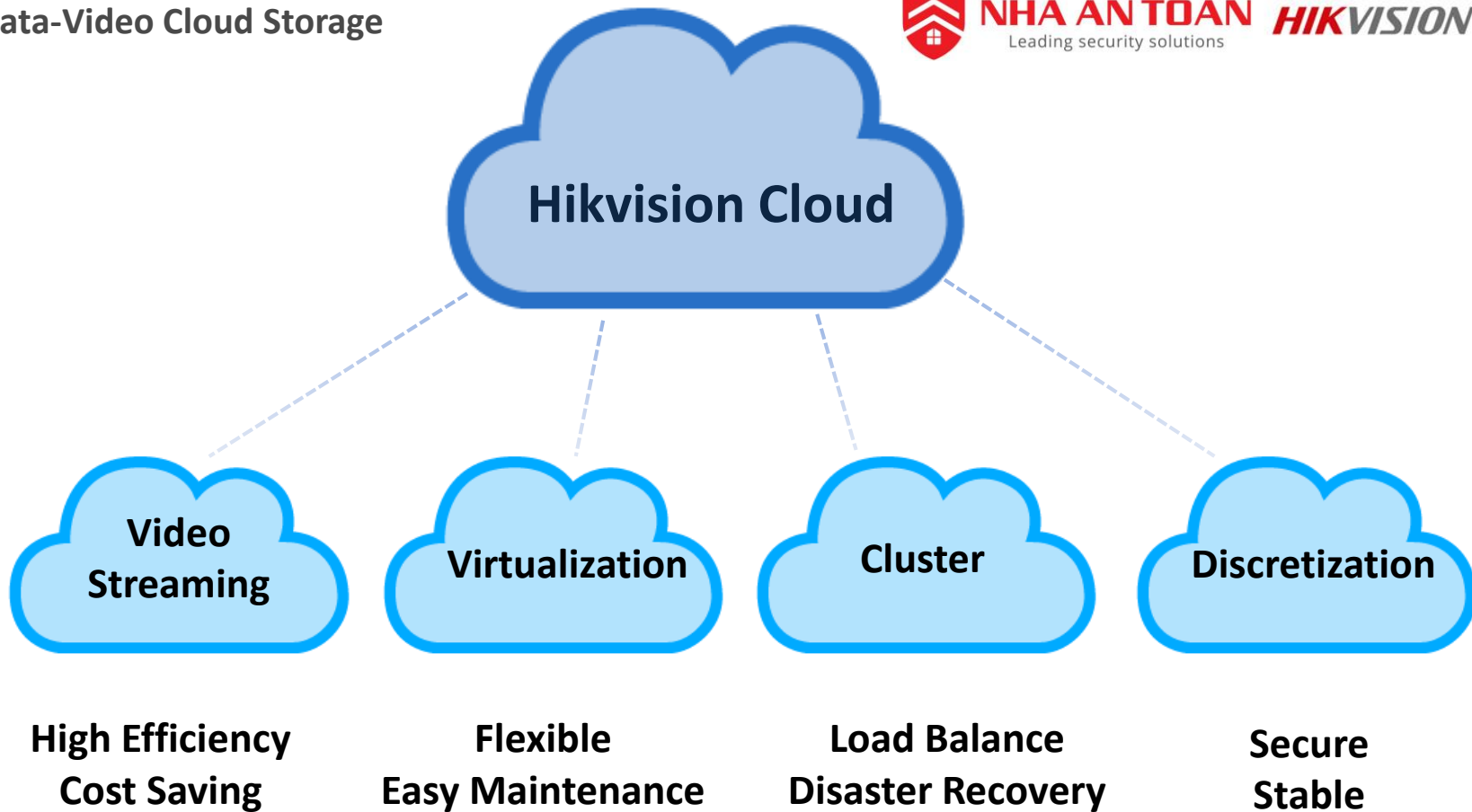
- Discrete server deployment
- Independent storage service
- Cloud self-management

## Intercloud



- Unified management center dispatch resource
- Interaction and backup among clouds

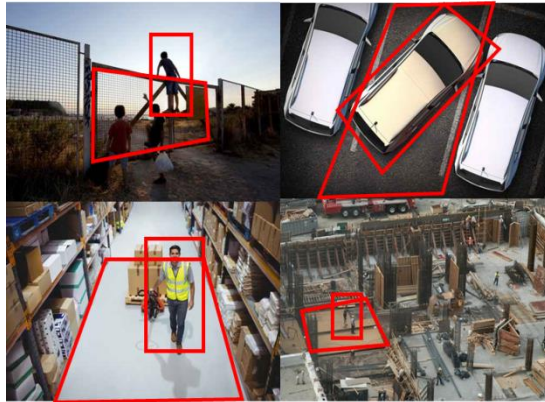
**Hikvision 4 Cloud Storage Solutions**





# Intelligence Layer

Convert Video Data to Structural Data



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# Intelligence-Behavior Analysis

Intrusion Detection



Crossing Detection



Fast Moving



Illegal Parking



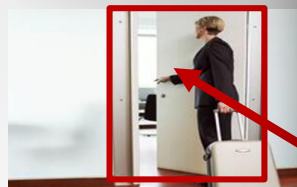
Loitering



People Gathering



Region Entrance



Region Exit



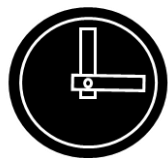
Unattended Object



Object Removal



**Look for key  
information in videos**



**Video : 300,000 GB ,**  
Check one by one



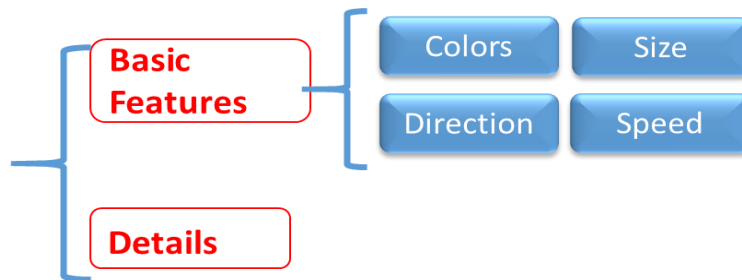
High cost of labor and  
resources

Key information lost



**A true story...**  
**To find the criminal**  
**Policemen spent 2 months to check video**

## Active Target



## Human Characteristics

【Age Group】  
【Gender】  
【Glasses】



## Vehicle Characteristics

【Plate Number】  
【Plate Color】  
【Vehicle Color】  
【Type】  
【Brand】  
【Series】



# Intelligence-Structural Data



# Intelligence-Structural Data



## Object Detection and Orientation Estimation Evaluation

海康威视研究院

Rank	Method	Setting	Code	Moderate	Easy	Environment
1	DJML			83.75 %	74.77 %	GPU @ 1.5 Ghz (Matlab + C/C++)
2	HPS ID 331	88		80.21 %	83.03 %	1 core @ 2.5 Ghz (Matlab + C/C++)
3	3D2P			74.59 %	86.92 %	8 cores @ 3.5 Ghz (Matlab + C/C++)
4	SubCat	code		74.42 %	83.41 %	6 cores @ 3.5 Ghz (Matlab + C/C++)
5	SS			73.06 %	83.87 %	4 cores @ 2.5 Ghz (Matlab + C/C++)

Anonymous submission

## Hikvision Ranges No.1 in World KITTI and MOT Challenge!



# Multiple Object Tracking Benchmark

## 2D MOT 2015 Results

Click on a measure to sort the table accordingly. See below for a more detailed description.

Tracker	Avg Rank	↑ MOTA	MOTP	FAF	MT	ML	FP	FN	ID Sw	Frag	Hr	Detector	
UKDA_TCNN	10.4	49.3	49.1	74.5	1.0	20.0%	26.4%	6,959	24,592	563	1.155	1.2	Private
1.0													
TSMC_CDE	8.6	49.1	49.0	74.3	0.9	30.4%	26.4%	6,954	24,585	577	1.034	0.5	Private
2													
DTA	17.9	48.8	48.7	72.7	1.0	30.4%	23.4%	5,535	23,073	1,087	1.412	1.2	Public
3													
TYBO	9.9	44.0	43.9	73.9	1.1	19.4%	25.7%	6,149	27,049	598	1.223	1.0	1,186.6
4													
PHD_PP	18.0	42.9	42.9	72.3	1.0	18.0%	23.4%	9,430	24,810	808	1.327	1.0	Private
5													
ANM	7.9	36.4	36.4	75.0	0.8	11.9%	45.2%	4,566	33,990	498	1.111	0.5	Private
6													
NOPT	11.8	33.7	33.7	71.9	1.3	12.0%	44.0%	7,762	32,547	442	1.211	1.5	Public
7													
KORT	10.4	30.4	30.4	72.1	1.3	11.2%	30.9%	7,339	30,015	1,001	1.101	1.0	Private

UKDA T\_CNN and TSMC\_CDE are the top two trackers in the benchmark.

DTA is the only public tracker in the top 10.

TYBO is the only tracker with a high number of false alarms (Frag).

PHD\_PP is the only tracker with a high number of false positives (FP).

ANM is the only tracker with a high number of false negatives (FN).

NOPT is the only tracker with a high number of false detections (ML).

KORT is the only tracker with a high number of false tracks (MT).

First Choice for Security Professionals







Video→Structural Data→Machine Analysis

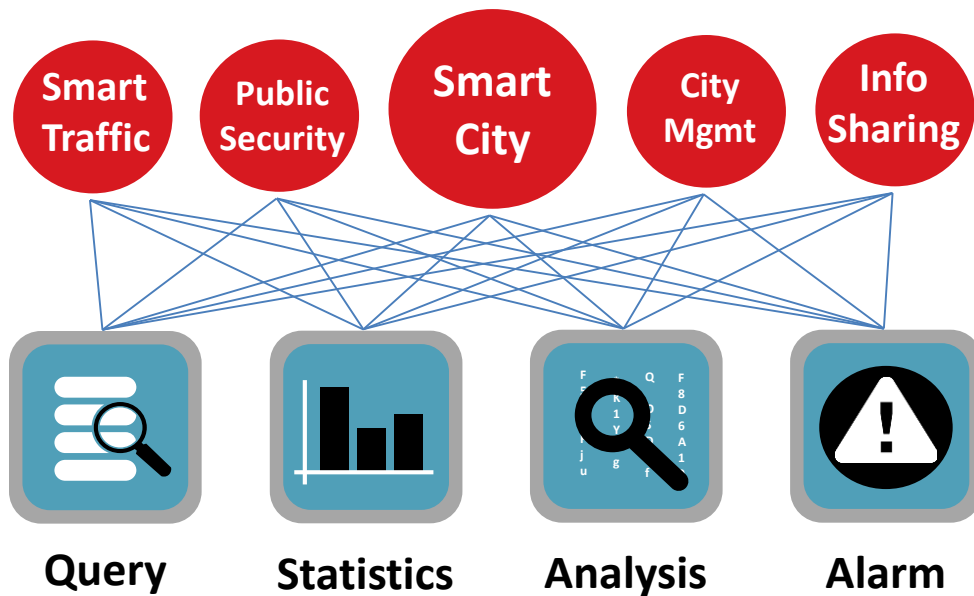


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**HIKVISION**

# Application Layer

Variable Services Provided by Hikvision SDT





**Face Capture**



**Black List**



**Face Comparison**

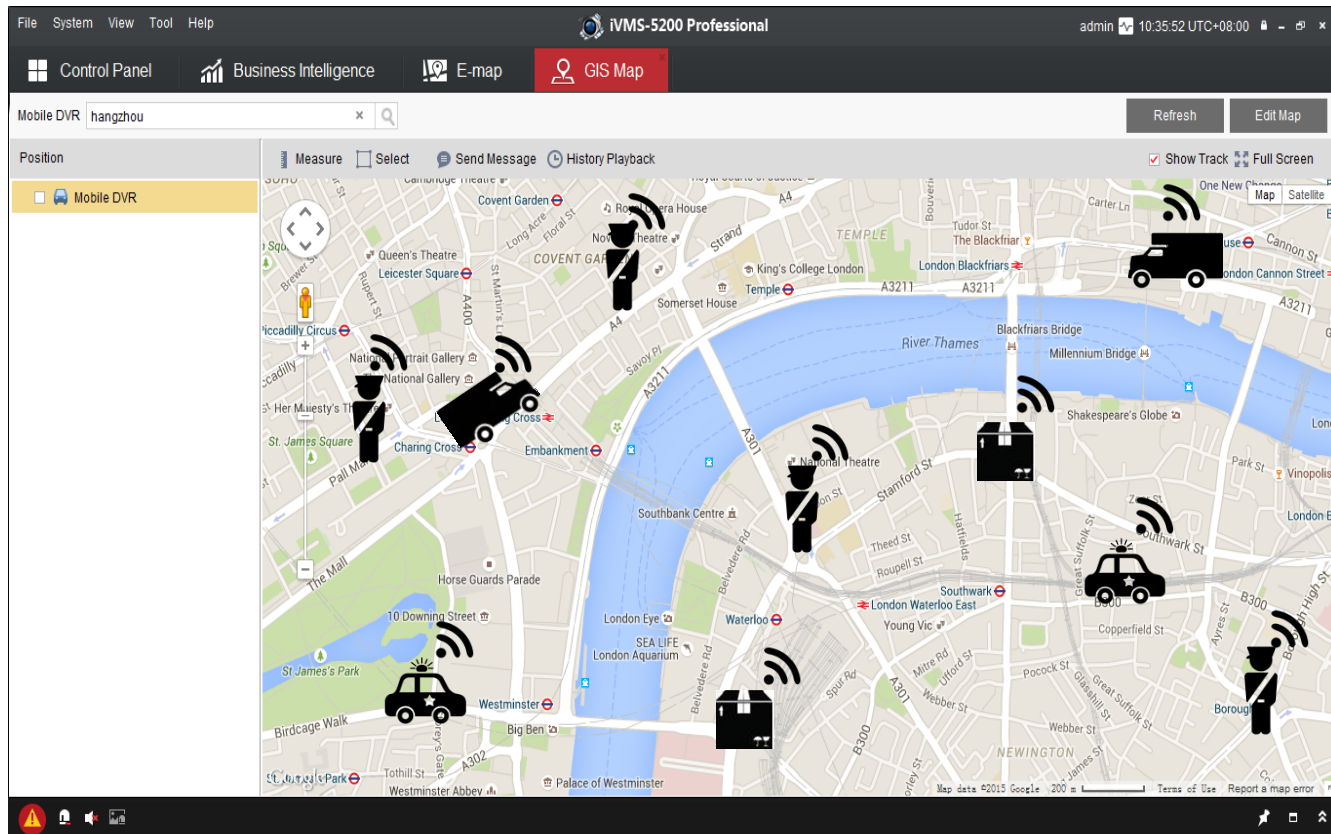


**3/5/2016  
15:36  
Station A  
Zone B**

## Application-Personnel Track



# Application-GIS Map Real-time Monitoring





## Application-Traffic Violation Detection



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# Application-Traffic Flow Estimate

## Short-Term Flow



## Mid-Term Flow



## Long-Term Flow



## Application-Traffic Guidance

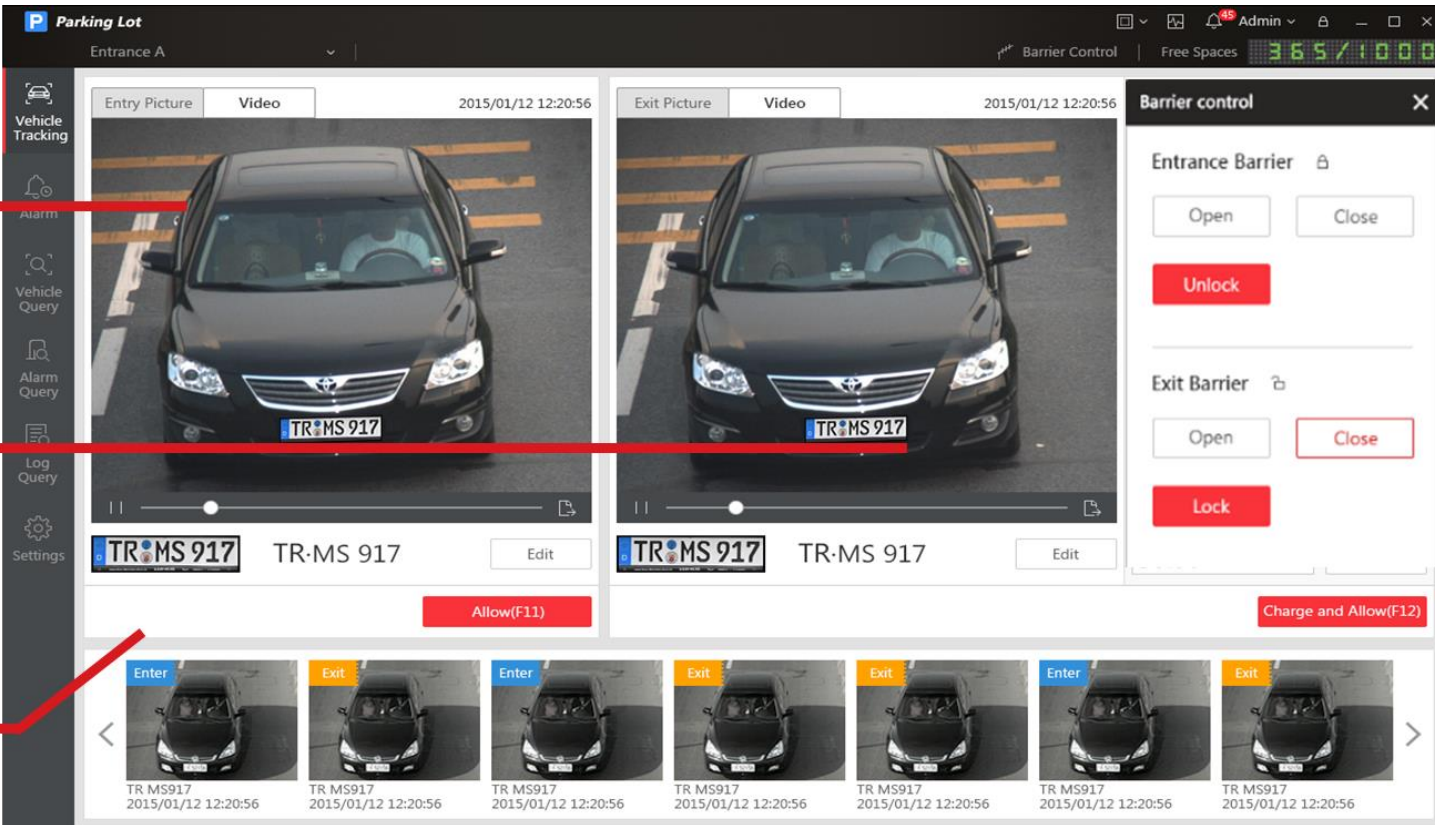


# Application-Vehicle Control

**Entry Picture**

**Exit Picture**

**License Plate**



The screenshot displays the HIKVISION Vehicle Control software interface. The top bar shows 'Parking Lot' and 'Entrance A'. The main area is divided into two video feeds: 'Entry Picture' and 'Exit Picture', both showing a black Toyota car with license plate 'TR-MS 917'. Below the videos are controls for 'Barrier control' (Entrance Barrier: Open, Close, Unlock; Exit Barrier: Open, Close, Lock) and a 'Log Query' section showing a timeline of entry and exit events. Red arrows point from the text labels to the corresponding elements in the interface.

## Application-Passenger Info Database



时间	事件类型	出入口名称	卡号	持卡人姓名	部门
2014-05-14 10:30:19	离开区域	出口	3444704002	么么么么么	默认部门
2014-05-14 10:34:00	进入区域 (仅分童)	测试出入口	3444704002	么么么么么	默认部门
2014-05-14 10:34:00	进入区域	测试出入口	0121307710	李智强	默认部门
2014-05-14 10:34:07	离开区域 (仅分童)	出口	0121307710	李智强	默认部门
2014-05-14 10:34:07	离开区域 (仅分童)	出口	0121307710	李智强	默认部门
2014-05-14 10:34:07	非法卡外出	出口	00001		
2014-05-14 10:34:07	离开区域	出口	0121307710	李智强	默认部门
2014-05-14 10:30:38	进入区域	测试出入口	3444704002	么么么么么	默认部门
2014-05-14 10:30:13	进入区域	测试出入口	0121307710	李智强	默认部门

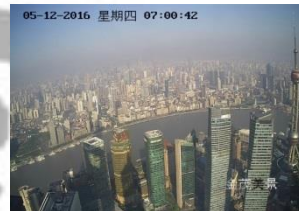
## Access Information

## Face Capture





## Application-City Info Sharing



**Ezviz video square**



First Choice for Security Professionals

Simpler Safer Smarter

Thanks

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