Smart Banking Solutions

The Future of Retail Banking

UK & IRELAND

CONTENTS

INDUSTRY TRENDS

DIGITAL BANKING DRIVES BRANCH UPGRADES

Traditional Banking Faces Challenges

More Than Just Security

Traditional Branches Need Upgrading

Smart Banking Trends

- Intelligent early warning capability
- Process control is improved
- Convergence between security and management information

- Reduced demand for counter staff
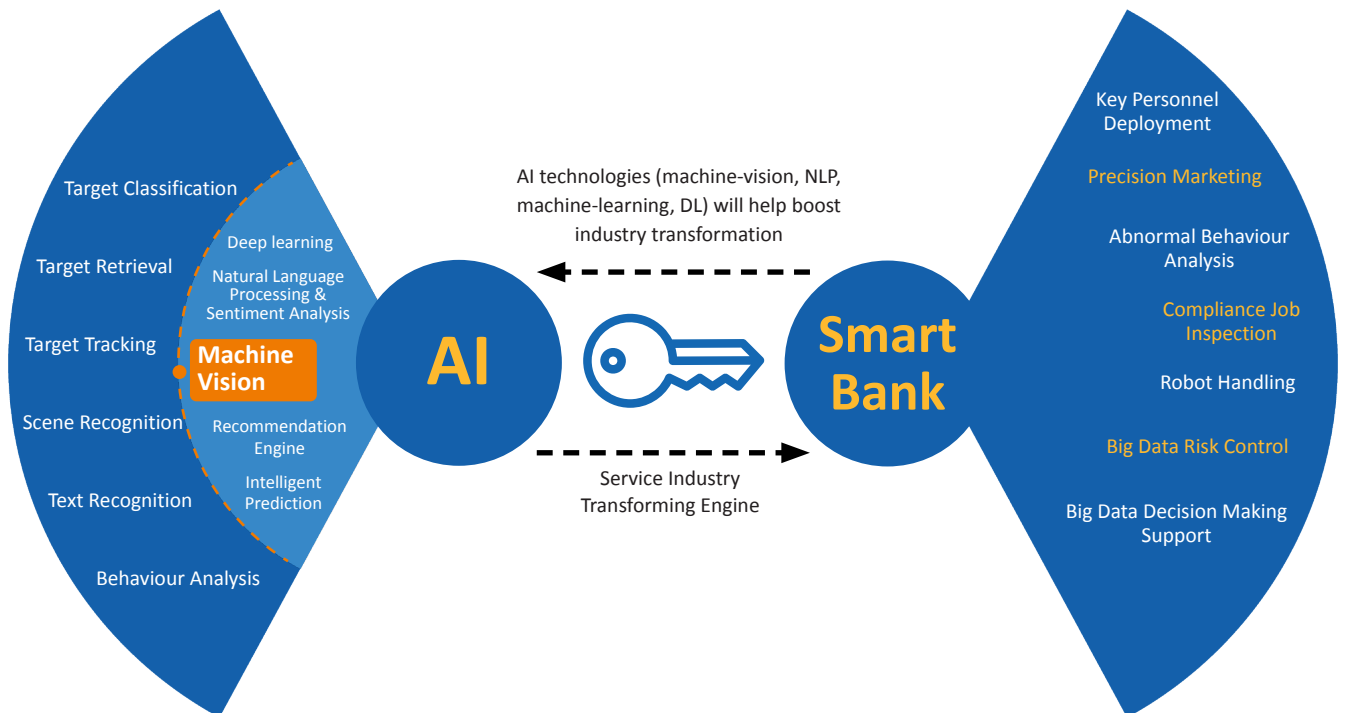- Traditional branches become expensive to maintain

- Acceleration of 'intelligent branches'
- Growth of unmanned banks
- Move towards service marketing

Risks To Banks

Risk Management Enhancement

Marketing Costs Rise

Smart Banking Transformation

- Absence of appropriate technology can lead to non-compliance
- Increasing threat of high technology crimes and fraud
- Lack of audit trail leads to disputes

- Internal compliance operation management enhanced
- Improved credit risk and anti-fraud management

- Offline marketing costs are high
- Customer experience can be poor
- Hard to add value to customers

- Use artificial intelligence, big data, etc. to achieve customer profiles and precision marketing services
- Management and operations optimised

AI POWERS SMART BANKS

Target Classification

Target Retrieval

Target Tracking

Scene Recognition

Text Recognition

Behaviour Analysis

Deep learning

Natural Language Processing & Sentiment Analysis

Machine Vision

Recommendation Engine

Intelligent Prediction

AI

AI technologies (machine-vision, NLP, machine-learning, DL) will help boost industry transformation

Service Industry Transforming Engine

Smart Bank

Key Personnel Deployment

Precision Marketing

Abnormal Behaviour Analysis

Compliance Job Inspection

Robot Handling

Big Data Risk Control

Big Data Decision Making Support

BUSINESS TRANSFORMATION AND INTEGRATION OF TECHNICAL CAPABILITIES

Safer and More Efficient Banking Security System	Precise Early Warning and Incident Prevention	Smart and Convenient Banking Services

AI ▶ **Big Data** ▶ **Biometrics** ▶ **IoT** ▶ **5G**

Advanced Technology Research

- Chip development technology
- Intelligent analysis technology
- Artificial intelligence technology
- Cloud storage and big data analytics

Complete Access Plan

- Business subsystem equipment
- Large networked integration platform
- Each subsystem is linked with video
- Third-party integration

Customised Hardware and Software Capabilities

- Hardware and software customisation
- Service team customisation
- Tailored solution

Optimised Ecosystem

- Open API interface
- Open AI capabilities
- Diversified partners

Multi-dimensional Control	Fully Digital	Intelligent Experience	Open and Transparent	Efficient and Convenient	Outstanding Service

SMART BRANCH

TYPICAL SCENARIO

Enhanced Security ▶▶ **Smart Application** ▶▶ **Unified Management**

Branch Outlets

Entrance, Lobby, Cashier, Office Area, VIP Room, IT Room, Document Storage Room, Cash Transfer Vehicle

ATM

Cash Replenishment Room, ATM Operations Area, Entrance

Central Monitoring Station

Operations Desk, Large Screen Display, Meeting Rooms, Command Center, Entrance, Data Center

Personnel
• Face
• Body
• Attributes
• Behaviour

Vehicle
• Number Plate
• Vehicle Location
• Parking Management
• Abnormal Vehicle

Devices
• Security Equipment
• Fire Equipment
• Valuable Assets
• Access Control Equipment

Early Warning
• Fire
• Intrusion
• Offline Devices
• Environmental Parameters

SMART BANK – SOLUTION OVERVIEW

ATM

Covert Camera

Behaviour Analysis
Camera

WizMind NVR

Security Centre

Biometric Access
Control

HD Video
Compression Server

Entrance

People Counting
Camera

Face Detection
Camera

Outdoors

180° Panoramic
Camera

ANPR Camera Kit

Counter

HD Dome Camera

Dual Lens Face
Detection Camera

Lobby

Fisheye Camera

Smart Digital Signage

SMART BRANCH – OVERVIEW

Business Scenario

Branch Exterior

Branch Interior

Sensor   Gate Access   Intelligent Analysis   Fisheye

People Counting   Face Capture Camera   Behaviour Camera   Panoramic Camera

Comprehensive data awareness and collection to ensure normal business operations

Feature Extraction

| Person Type | Physical Characteristics | Customer Movement | People Counting | Surroundings |

Solution Display
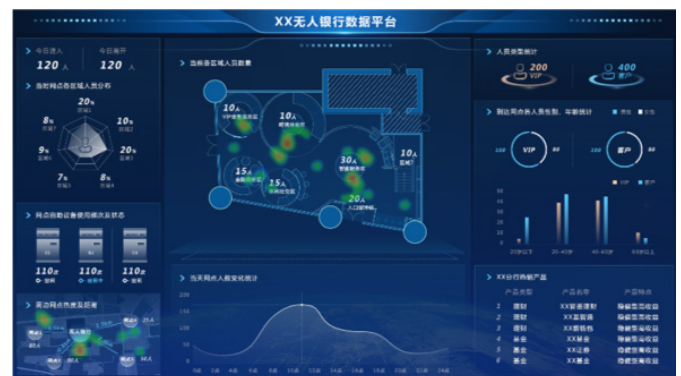
Solution Values

Security Business Display
- Meets various security policy requirements
- Meets the security management needs and ensures the safety of branch outlets
- Provides intelligent management of the entire system

Banking Business Display
- Utilise technology to improve banking experience
- Fulfil the needs of business digitalisation, and assists data driven decision-making
- Maximises the value of the business

BRANCH ENTRANCE – EXTERNAL SURVEILLANCE

Panoramic HD Surveillance

180° Panoramic View

- External Environmental
- Global + details
- Full control

HD Entrance Monitoring

- Meets industry standards
- Face detection in front of branches

- 20m face + number plate recognition
- 50m physical appearance + vehicle model registration
- Using back-end device enables facial recognition

ACCESS CONTROL APPLICATION

Solution Value: Facial recognition access, non-contact, anti-counterfeiting, safe, convenient and efficient.

Face Entry and Access Control Authorisation

Convenient Entry & Exit

Strict Access Control Higher Security
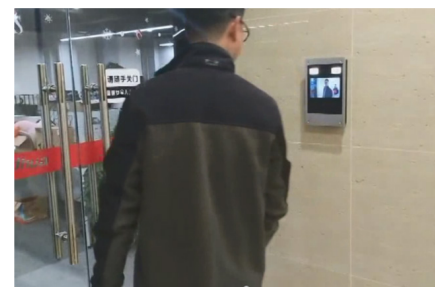
✔ Illegal Entry Early Warning

✔ Live Detection
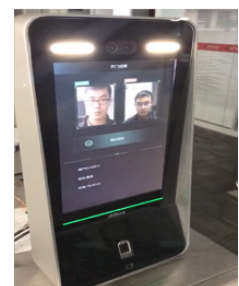
BRANCH VISITOR COUNT, QUEUE MANAGEMENT & HEAT MAP

Dual Lens People Counting Camera

Branch Entry/Exit Visitor Statistics
Provides customer flow data for branch offices in real-time.

Intelligent Fisheye Camera

Provides basis for data driven decision making on branch layout design and business operation optimisation.

Regional Heat Map Analysis

Statistics on the number of people in each area

VIP CUSTOMER RECOGNITION — A NEW MODEL IN BRANCH MARKETING

Customer face detection in branch

Automatically compare faces with VIP client list

System-level integration of VIP customer information

Manager takes the initiative to greet the customer

Real-time notifications of VIP customers

- Intelligent analysis to identify key customers and sends customer related information to the manager
- Improves banks ability to efficiently serve customers and user experience

CASH COUNTER & NON-CASH HANDLING COUNTERS

Non-Cash Product Counter:
- Customer may misunderstand information shared regarding bank products like securities, mutual funds, retirement policies, loans etc.
- Records the whole business process communication between cashier and customer, to avoid any disputes.

Cash Handling Counter:
- High volumes of financial transactions each day may cause frequent customer misunderstandings or disputes.
- Records the whole business process for both cashier and customer, effectively avoiding any disputes.

NEW PRECISION MARKETING MODEL USING SMART DIGITAL SIGNAGE

Solves two major disadvantages of offline advertising:

1. Waste of resourses
2. Traditional advertising media are not visually attractive.

Gender, age, asset amount, recent purchase of financial product records, financial product purchase preferences, whether to use online banking payment
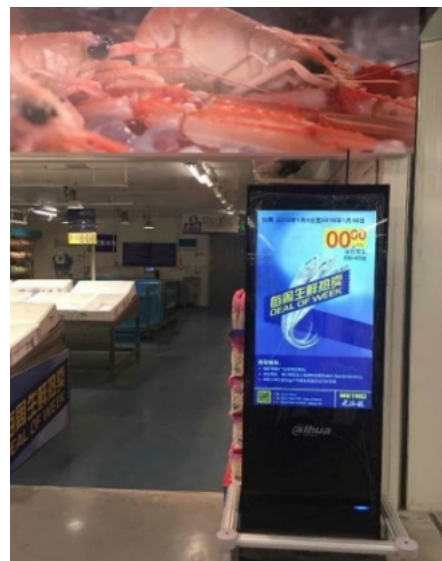
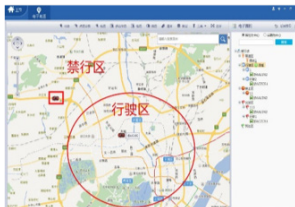One Person One File

Companion Analysis

First Time Visitor

User Tracking

Customer Big Data Analysis Centre

INTELLIGENT ONLINE VEHICLE MANAGEMENT

Vehicle Alarm Management

Vehicle location, speeding, vehicle off-line, full hard disk alarm, etc

Remote Fuel Cut

In the event of emergency, the fuel will be cut off remotely and the vehicle will stop.

Abnormal Driver Behaviour Analysis

Mobile phone use alarm, smoking alarm, driver fatigue warning, driver distraction alarm, driver face recognition.

Advanced Driver-assistance Systems
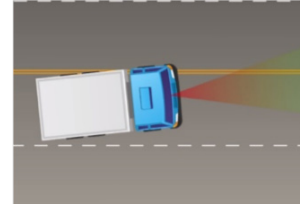
• Lane departure alert
• Distance detection warning
• Forward collision warning

Mobile Branch

Mobile ATMs

Cash-in-Transit Van

Monitoring Platform

Intelligent MNVR

Internal Camera

Vehicle Two-way Intercom

DSM Camera

ADAS Camera

External Camera

INTELLIGENT ONLINE VEHICLE MANAGEMENT

Command Center

Decoding Server

Client   Keyboard   Monitoring Screen

LAN

DSS Management
Platform

Centralised Storage

Mobile Device

L A N

AI, IT, Mailbox &
Other Systems

Emergency
Command

LAN

Base Station   3G/4G   Satellite

GPS

**On-Board Vehicle
System**

Intelligent
MNVR

Two-Way
Intercom   Display   External
Camera   Internal
Camera   Emergency
Button   Vehicle
Status   DSM
Camera   ADAS
Camera   Alarm
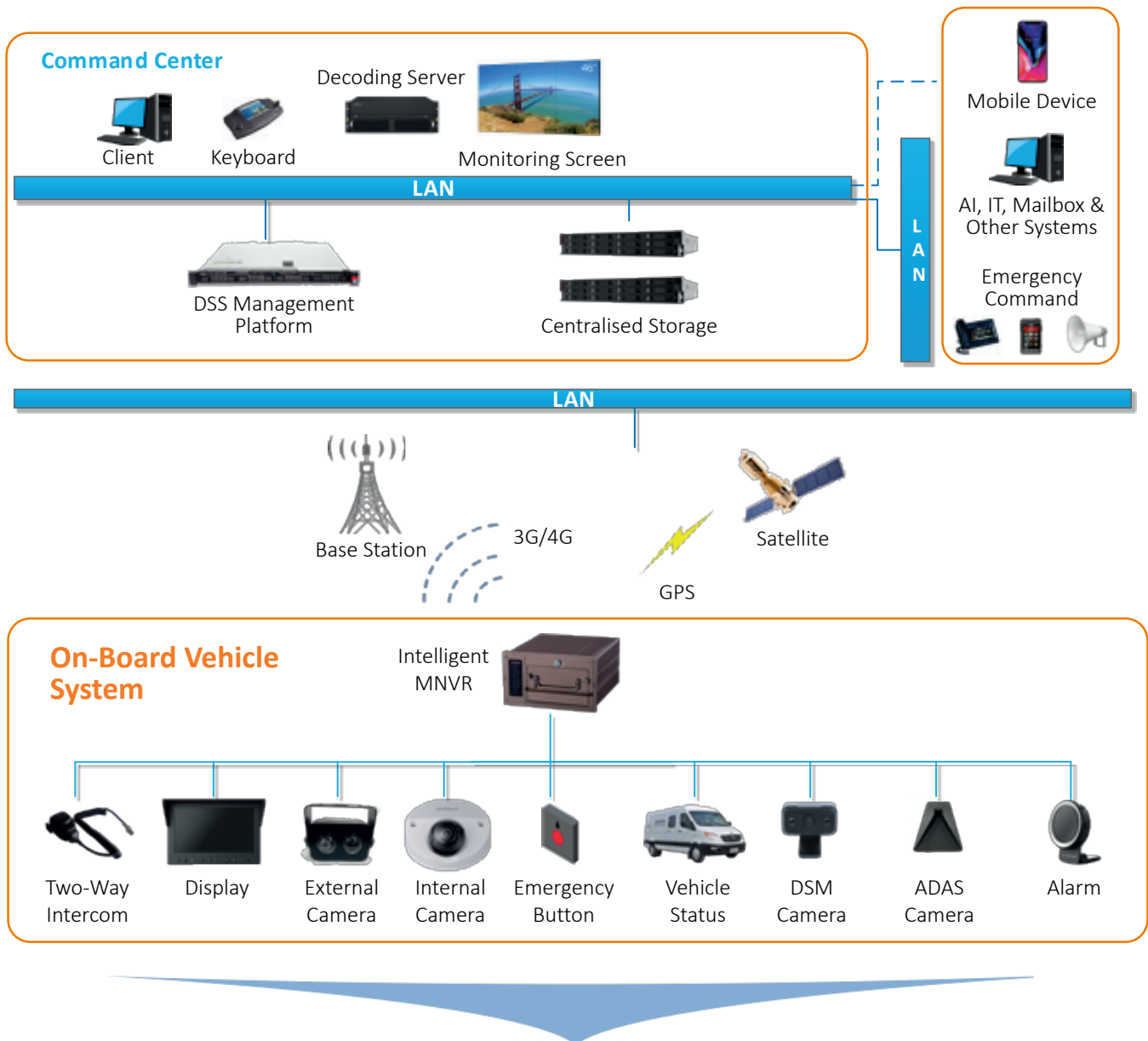
Management Center

- Real-time vehicle positioning
- Audio and video monitoring
- Scheduling management
- Alarm management and emergency disposal
- Escort staff management
- Vehicle management
- Operation and maintenance statistics

Vehicle System

- Real-time vehicle positioning
- Full HD video surveillance
- Vehicle intercom
- Vehicle defect warning
- Emergency button
- Driver behaviour analysis
- Advanced driver assistance system

SMART ATM & SELF-SERVICE BANK

ENHANCING ATM SURVEILLANCE WITH AI

24/7 Service

High Guarding Costs

High Incident Area

Pain Points

Manual Viewing Screen
• Easy to neglect due to workload
• Prompt discovery rate of an incident less than **20%**

Traditional intelligent analysis + manual screen viewing
• Enables partial scene intelligent detection
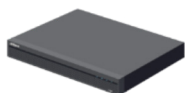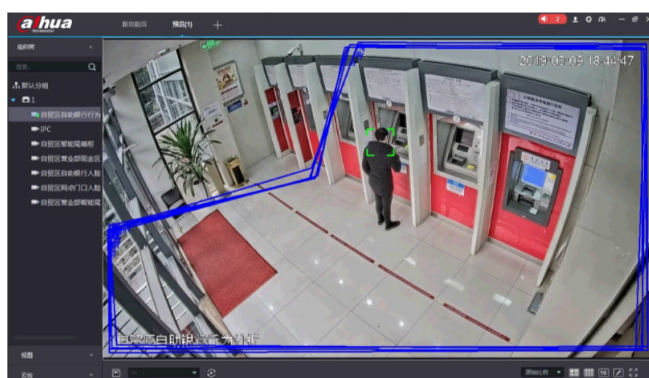• High environmental requirements, **80%** false alarms

Intelligent Analysis Equipment

ATM Pinhole Device

Behaviour Analysis

Intelligent Analysis Box

• Abandoned Object Detection
• Abnormal Face Detection
• Abnormally Close
• Abnormal Number of People
• Loitering
• Violent Action Detection

Integrated System Response
• Remote warning acts as a deterent

• Emergency incidents are reported to the police

999

Practical Effects of Intelligence

Decrease in false positives
70% ⬇

Increase in prompt discovery rate
80% ⬆

ABNORMAL BEHAVIOUR ANALYSIS IN BRANCH

Number of People

Vandalism
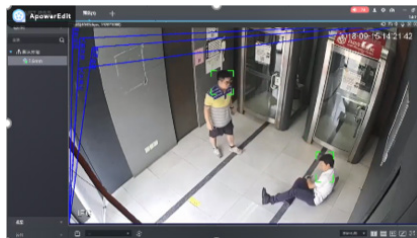
Fall Detection

Abnormal Loitering

Violence

Abnormal Distance

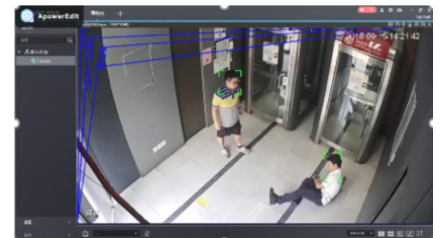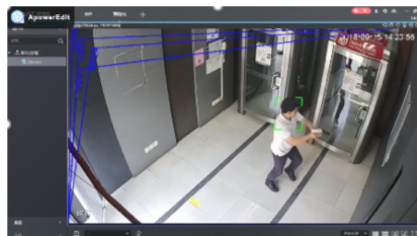**Fall Detection**

Number of People
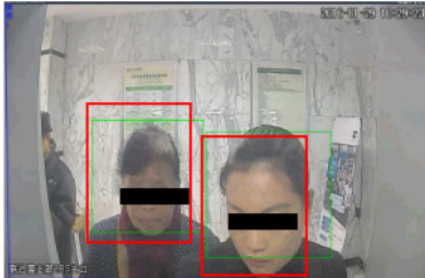

Vandalism

Violence

Detection and early warning of any abnormal behaviour in branch triggers an early warning alarm, which is sent to the headquarters platform in real-time and emergency services are called.
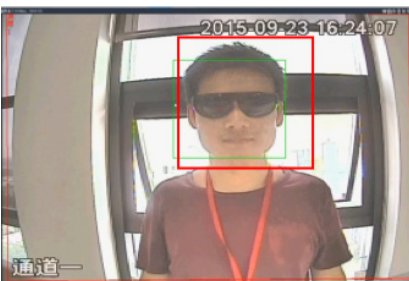
ENHANCED ATM SURVEILLANCE USING AI

Multiple Faces
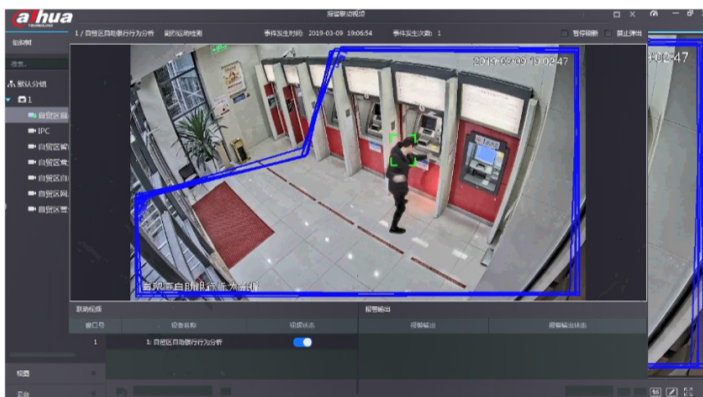
Dummy Keyboards

Stickers & Adverts

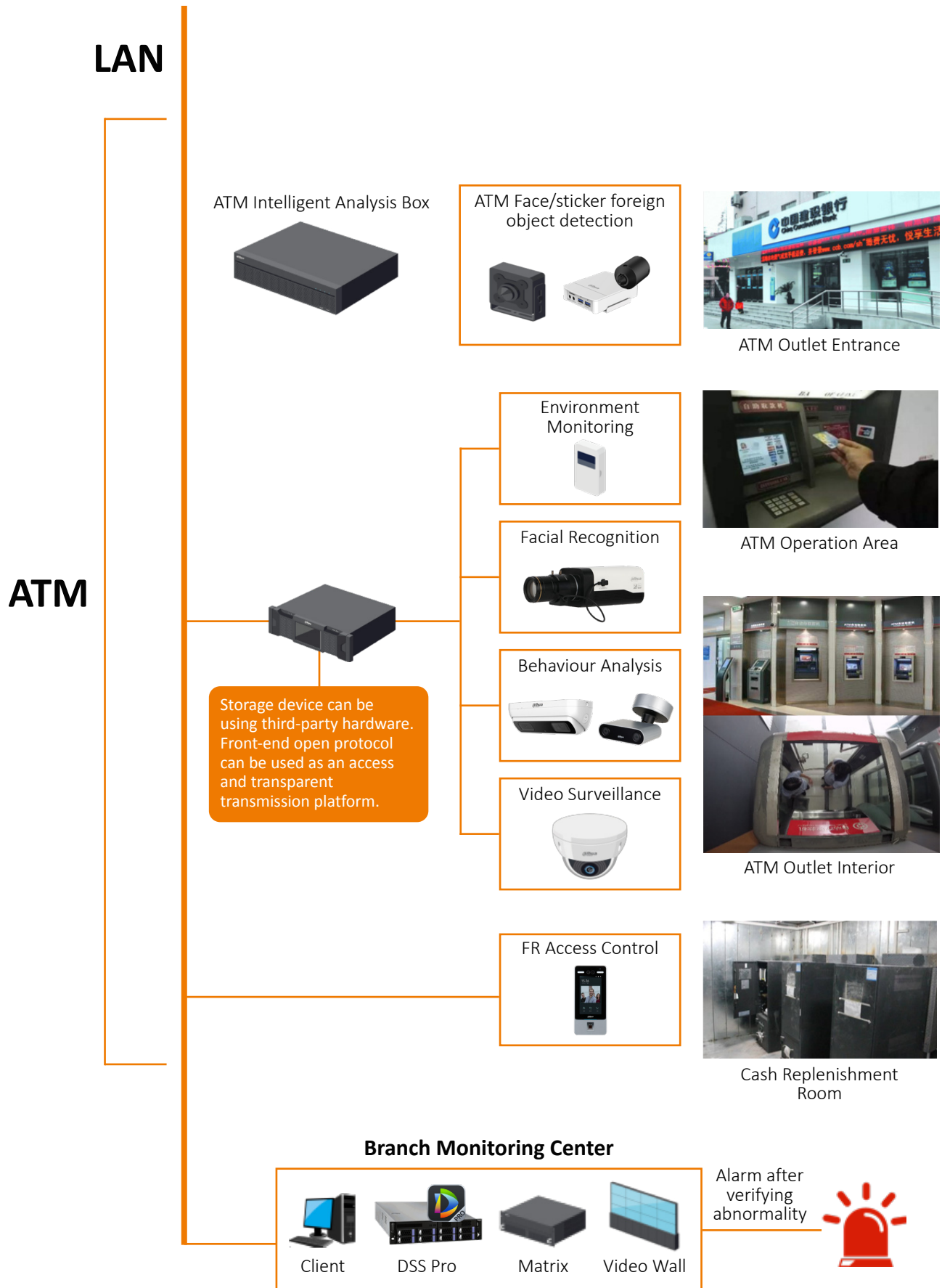**Abnormal Faces**

Phone Call

Frequent Visitors

Features:
- Face Detection: abnormal faces, neighboring faces, phone calls
- Panel Detection: sticker detection, fake keyboard, dummy card reader
- ATM Premises: Loitering, falls, fights, vandalism, excessive number of people, hovering, etc.
- Cash Replenishment room: Facial Recognition
- Authorisation, compliance operation, temperature detection, flooding, etc.

ENHANCED ATM SURVEILLANCE USING AI

LAN

ATM

ATM Intelligent Analysis Box

ATM Face/sticker foreign object detection

ATM Outlet Entrance

Environment Monitoring

ATM Operation Area

Facial Recognition

Behaviour Analysis

Storage device can be using third-party hardware. Front-end open protocol can be used as an access and transparent transmission platform.

Video Surveillance

ATM Outlet Interior

FR Access Control

Cash Replenishment Room

Branch Monitoring Center

Alarm after verifying abnormality

Client   DSS Pro   Matrix   Video Wall
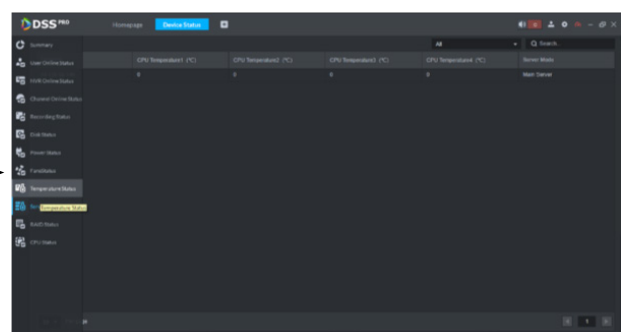
CENTRAL MONITORING STATION

SYSTEM HEALTH MONITORING

Step 1: Comprehensive System Status Inspection
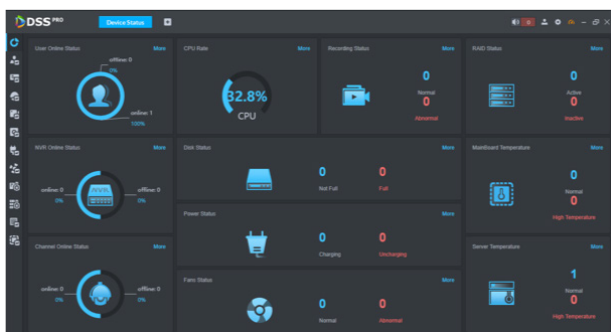
- Monitor the entire system and device status in the dashboard.
- Prompt notifications of any abnormalities in the system.

Step 2: Detailed Fault Inspection & Device Status Check

- Detailed list of all the abnormal events and device operation status in the system.
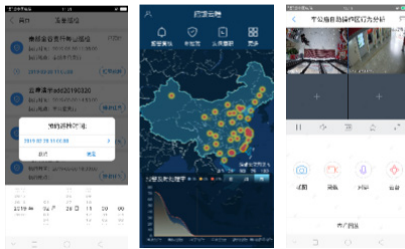
Step 3: Problem Solving & Maintenance

- Event handling, solving system abnormalities.
- Periodical maintenance, ensuring minimal downtime

SMART NETWORKED SURVEILLANCE, IoT CONVERGENCE, EFFICIENT MONITORING

Branch/ATM Application	Branch/ATM Monitoring Centre	Head Office Security Data Management Centre

Security Management, Process Control

Extremely Efficient and Streamlined Monitoring

Understanding All the Information, Complete Control

Provides complete product, process optimisation and service upgrade support for business units

- Security Performance
- Equipment Inspection
- Equipment Repair
- Alarm Review
- Preview Playback
- Emergency Command
- VIP Customer Facial Recognition
- Cash-in-Transit Process Operation

Provides convenient and efficient operation tools for security operators

- Quick Search
- Alarm Processing
- Certificate Verification
- Video Concentration AI Search
- Personnel Supervision
- Abnormal Event
- Escort Supervision
- Pan-structured Video Call

Provides managers with decision analysis, data auditing, supervision and inspection tools

- Data Analysis
- Data Operation
- Task Release
- Security Assessment
- Situation Warning
- Emergency Command
- Pan-structured Video Call
- Group Policy Video Call

NETWORK TOPOLOGY

Central Monitoring Station

DSS Pro
Main

DSS Pro
HotStandby

EVS

Client

NKB

TV Wall

Matrix

Control Room

Aggregation
Switch

Branch Business Outlets

WizMind NVR

Sensitive Area

Access Control

WizMind
Camera

Lobby

360° Fisheye

Digital Signage

Counter

HD Camera

Dual Lens FD
Camera

Entrance

People
Counting

Face
Recognition

ATM Area

WizMind NVR

Pinhole Camera

Behaviour
Analysis Camera

Outdoor

180° Panoramic
Camera

WizMind
Camera

SMART COMPRESSION TECHNOLOGY

SMART HD VIDEO COMPRESSION

Access to HD Images not Easy

Poor Image Quality, Less Detail

Bandwidth Upgrade, Higher Cost

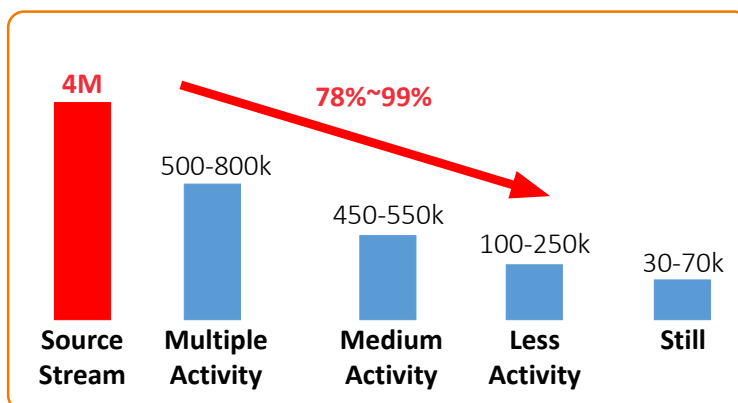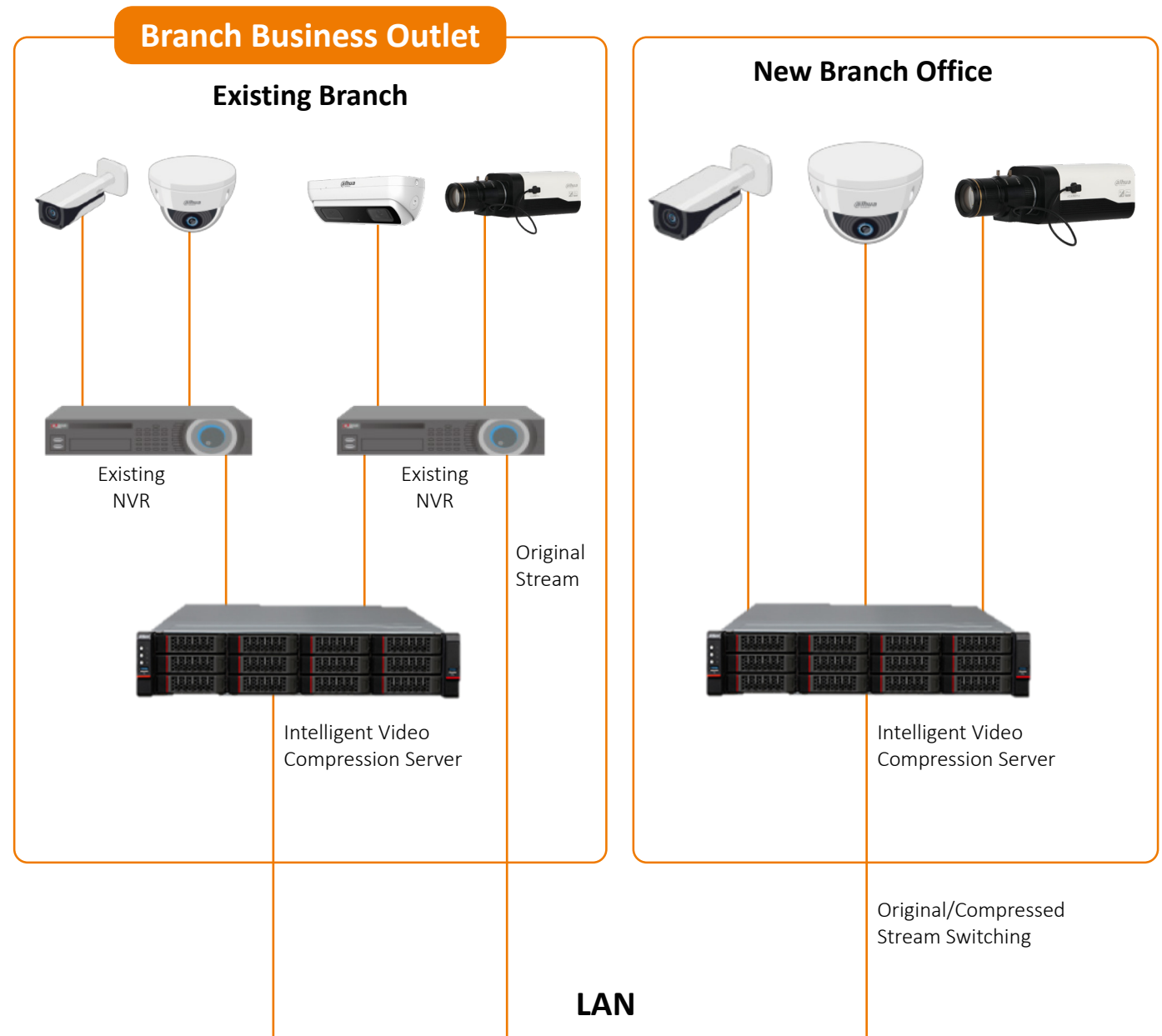|	
Bandwidth Upgrade: **2M**	**10M**
Single Branch x Monthly	400 Branches x 5 Years
Cost Increase **£400**	**Cost Increase** **£9 Million**

HD Video Compression Server

- Preview Compression
- Playback Compression
- Third-party Access

4M

78%~99%

500-800k

450-550k

100-250k

30-70k

| Source Stream | Multiple Activity | Medium Activity | Less Activity | Still |

Branch Business Outlet

Existing Branch

New Branch Office

Existing
NVR

Existing
NVR

Original
Stream

Intelligent Video
Compression Server

Intelligent Video
Compression Server

Original/Compressed
Stream Switching

LAN

- Supports new branch construction and existing branch renovations
- Open and compatible, supports analogue, H.264, H.265 format video compression, compatible with other mainstream manufacturers

PREVIEW COMPRESSED DISPLAY (HD DYNAMIC, STATIC)
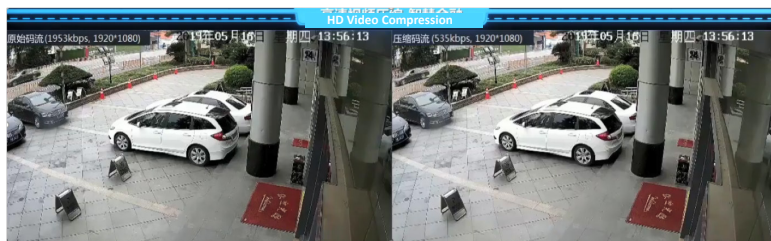
HD dynamic scene preview compression

- Main stream: About 2Mbps
- Compressed code stream: within 600kbps
- Subjective image quality is the same
- Real-time consistency of main stream and compressed stream

HD static scene preview compression

- Main stream: About 4Mbps
- Compressed code stream: within 300kbps
- Subjective image quality is the same
- Real-time consistency of main stream and compressed stream

INTRODUCTION TO DAHUA'S COMPRESSION TECHNOLOGY

A set of intelligent coding solutions independently developed on the basis of existing video coding standards (H264, H265), using a combination of basic algorithms, traditional intelligent algorithms and AI algorithm, ensures the video quality, effectively improving the video coding efficiency.

F area = Van   B Area = other scene
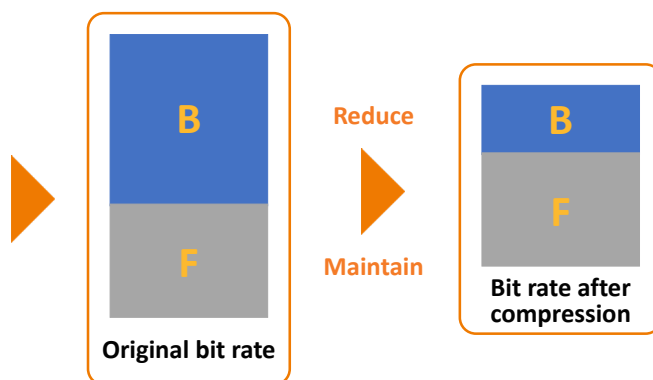
In a low bit rate scheme, artificial intelligence algorithms work similarly to traditional intelligent algorithms, the difference is that the computational accuracy of AI algorithms is higher, and **has the ability to distinguish the specific targets of the scene.**

KEY PRODUCTS

DSS PRO
Comprehensive and Expandable Dahua VMS

• Easy Expansion
• High Reliability
• High Compatibility

IPC-HFW8241X-3D
Dual-Lens Stereo Vision AI Network Camera

• Two 1/2.8" 2Megapixel progressive sca STARVIS™ CMOS
• H.265 & H.264 triple-stream encoding
• Max. IR LEDs Length 40m
• IP67, PoE
• Stereo Analysis: Support fall detection, loitering detection, people approaching, people no. error detection, violence detection

IPC-HUM8231-E2/L1
Covert Pinhole Network Camera-Lens & Main Box Unit

• 25/30fps@1080P(1920×1080)
• Day/Night (Electronic), WDR, 3DNR, AWB, AGC, BLC
• Smart detection
• Day/Night (Electronic), WDR
• 8-meter cable
• Supports IP67

IPC-EBW81242P
12MP Panoramic Network IR Fisheye Camera

• 12MP, 1/1.7"CMOS image sensor
• People counting in multiple areas, queue management in multiple areas, heat map (number of people/time), and track map
• IP67, IK10 protection

IPC-PFW83242-A180

WizMind Multi-Sensor Panoramic Bullet Network Camera

- 4 × 8MP, 1/1.8" CMOS image sensor, low illuminance, HD
- Built-in IR LED, max. IR distance: 30 m
- ROI, SMART H.264+/H.265+,
- Intelligent detection: Intrusion, tripwire
- Intelligent functions: Crowd distribution map, Vehicle situation

IVSS7008-2I

Intelligent HD Video Compression Server

- Industry embedded micro-controller
- Max 400Mbps incoming bandwidth
- Supports RAID 0/1/5/6/10
- HD Video Compression supports analogue, H.264, H.265 format video compression

IPC-HF7442F-FR

WizMind Network Camera

- 4MP, 1/1.8" CMOS image sensor, low illuminance, HD
- Max outputs 4MP (2688×1520) @50 fps/60 fps
- H.264 & H.265 coding, high compression ration
- ROI, SVC, SMART H.264+/H.265+, flexible coding
- With deep learning algorithm, it supports people counting, face recognition, perimeter protection etc.

DH-IPMECS-2201C serials

Access ANPR Camera

- Embraces deep learning algorithm for accurate recognition of vehicles
- Built-in LED illuminator for simplified installation
- Motorised vari-focal lens, easy for installation and commissioning

IPC-HDW8341XP-3D-S2

WizMind Dual-Lens People Counting Camera

- 3MP, 1/2.8" CMOS image sensor, low illuminance, HD
- Outputs max. 3MP (2048 × 1536) @30 fps
- ROI, SMART H.264+/H.265+, flexible coding
- People counting: Queue management, people counting in regions, entry/exit number counting, with daily/monthly/yearly reports available

ASI7214Y-V3

Face Recognition Access Controller

- Support face unlock, fingerprint unlock, IC card unlock, and password unlock; unlock by period; supports living detection
- Face verification accuracy>99.5%; face comparison speed 0.35s per person; low false recognition rate
- Supports profile recognition
- Holds 50,000 users, 50,000 faces, 10,000 fingerprints, 50,000 cards, 50,000 passwords, and 50 administrators

NVR5832/5864-I

WizMind Network Video Recorder

- 32/64 channel IP video access
- Smart H.265+/H.265/Smart H.264+/H.264/MJPEG
- Up to 16 channel perimeter protection
- Up to 4 channel video stream face recognition
- Up to 24 face pictures/sec processing
- Up to 20 face databases with 100,000 face images in total

DHI-LDV49-SAI200

49'' Floor Standing Digital Signage

- Built-in face recognition camera
- Advertisement according to facial feature information.
- Supports picture, audio, video, PDF, IPC stream, time, weather, etc.
- Dahua platform provides unified remote management for syste, integrators and media operators

SMART BANK CASE STUDIES

BANK OF CHINA SMART NETWORKED BANKING SOLUTION

Project Overview

- In 2014, Dahua won the bid for the Bank of China Security Management Platform Networking Project. It lasted for three years from requirement POC, software development and production implementation.

- The project was launched with 37 national first level branches and 343 monitoring centres. A nationwide network security management system was built with more than 700,000 video channels, 250,000 alarms and 30,000 intercoms.

BANK IN KUWAIT

Project Overview

The bank is one of the largest financial institution in Kuwait with dominance in the commercial banking market and 75+ branches and 300+ ATM service points.

• Dahua provided a customised bank solution as per the bank's requirement, the solution included more than 3,000 HD network cameras, and 200+ sets of NVRs for the Bank's HQ, branch offices and ATM sites.

• For centralised management of the entire surveillance system, the solution included DSS Platform software at the Bank's HQ.

BANK OF INDIA

Project Overview

The bank has 870 branches, 4 service branches and 20 regional offices in 27 states and 3 union territories. It has 1,307 ATM sites and 88 receivers/cash deposit machines across India.

• Dahua provided a full set of intelligent video surveillance systems for 80 branches and 500 ATM sites in India, upgrading the system from analogue to an HD IP solution.

• The system includes HD IP cameras, NVRs, XVRs, DSS7016 platform, enabling unified management from the control centre.

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Linkedin
Dahua UK & Ireland

facebook
Dahua UK & Ireland

You Tube
Dahua UK & Ireland

Dahua UK & Ireland

NOTES

Driving Innovation to an AIoT Future

* AIoT is the convergence of Artificial Intelligence (AI) and the Internet of Things (IoT) where connected devices meet human interface. This is enabling unlimited possibilities through the integration of connected devices and security solutions.

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