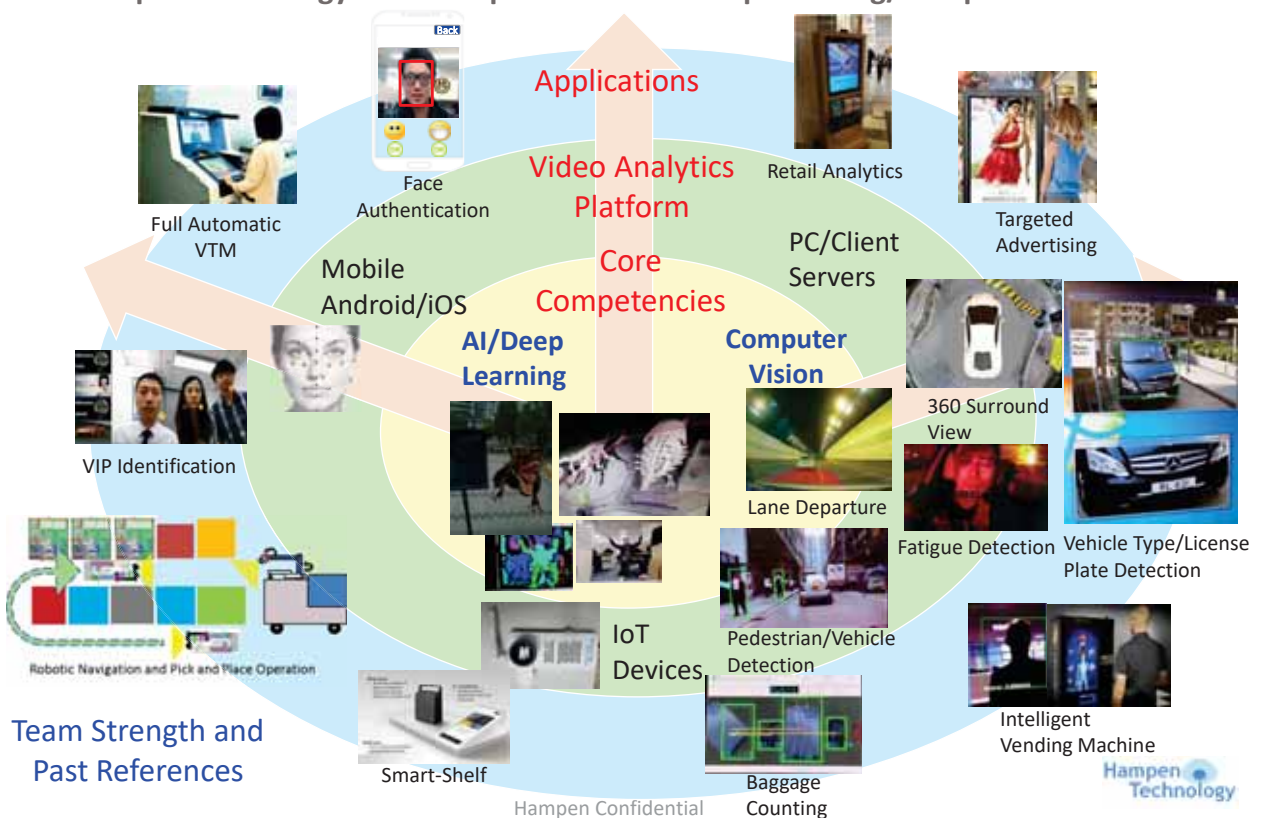


# Hampen Technology

## Biometrics Technologies and Applications

## Hampen Core Competencies

### Hampen Technology Core Competencies – AI Deep Learning/Computer Vision



# Hampen Smart City Focus

## Hampen Technology's AI Enabling SmartCity Applications



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Flagship products based on AI/Deep-learning core technologies

<b>FACE AUTHENTICATION SYSTEM (FAS)</b>  Deep learning facial authentication	<b>CUSTOMER ANALYSIS SYSTEM (CAS)</b>  Demographic and sentiment analysis	<b>PEOPLE COUNTING SYSTEM (PCS)</b>  People traffic and flow direction analysis
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### Market Segments:

1. Building Management (Access control, security, Smart building, energy saving)
2. School/Elderly Home (Student/Staff attendance, Stranger detection, Anti-Wandering, )
3. Smart Retail (mall and shop level analytics: People Traffic/Demographics, VIP recognition, sentiment)
4. Smart Kiosks, Unmanned stores (VIP, repeat customers, heatmap)

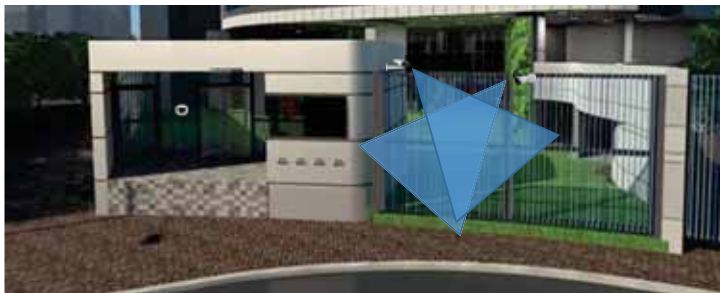
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# Building Management/School/Elderly Home Security Needs

## Security Needs

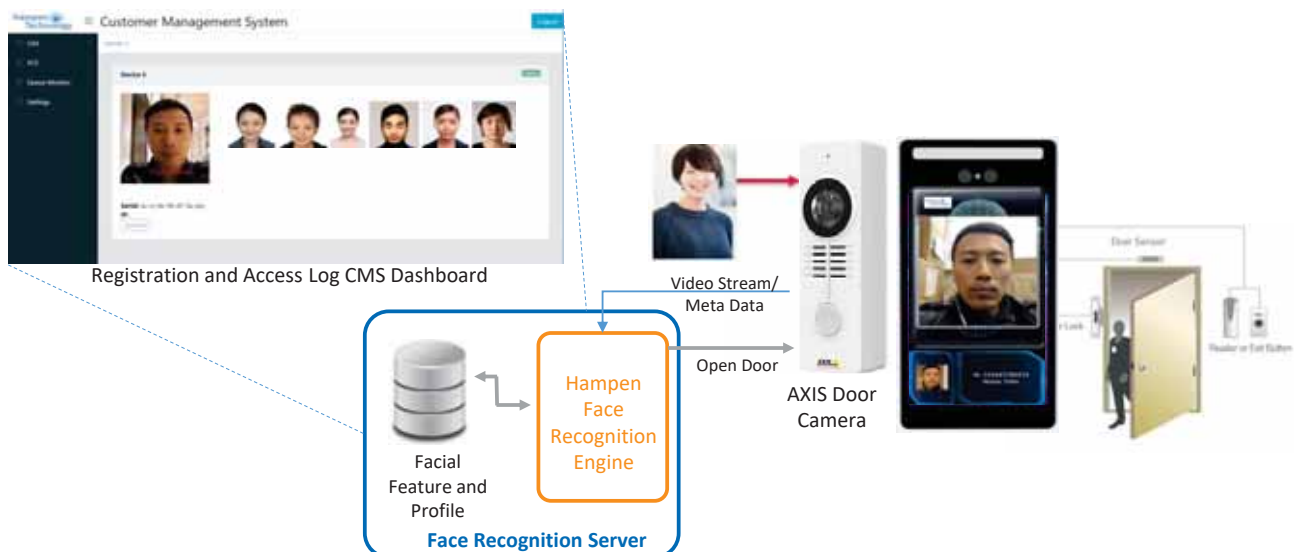
1. Face Recognition Door Access
  - Allow card-less hand-free entry into premises
  - Prevent unauthorized access through stolen access card
2. Detect Blacklisters/Strangers
  - Avoid strangers getting into restricted area
3. Staff Attendance
  - Record staff attendance through FR to avoid cheating



## Security Solution 1: Face Authentication System (FAS)

### Face Recognition Door Access System

- School, Office or housing complex door access system
- Can add VIP notification/blacklist



### Value Proposition:

1. Ease of entry
2. Prevent authorized access through stolen access card

# Security Solution 1 : Face Authentication System (FAS)

## Attendance Log and Reporting/Door Access Device

- Take staff attendance with mobile device or door panel type device
- Transfer attendance log system via API calls
- FAS System does links with HR system through Staff ID (no picture saved)
- Query by profile, full log dumping or export excel CSV file for attendance checking



Total number of people in class: 21  
 Number of people present: 13  
 Number of people absent: 8



Mobile Device or Door Panel Device

Date	Earliest Detected Time	Device Name	Name
25/02/2019	12:17:09	tbg-camera	David
25/02/2019	14:19:28	tbg-camera	Gary
25/02/2019	14:27:04	tbg-camera	Zoe
25/02/2019	11:24:09	tbg-camera	Alan
25/02/2019	11:52:34	tbg-camera	Sharon
25/02/2019	12:02:06	tbg-camera	Daniel
25/02/2019	11:39:55	tbg-camera	Arthur
25/02/2019	11:48:02	tbg-camera	Andy
25/02/2019	14:18:43	tbg-camera	Greg
25/02/2019	13:50:42	tbg-camera	Olivia
25/02/2019	13:45:03	tbg-camera	Yanny
25/02/2019	12:31:22	tbg-camera	Chris
25/02/2019	11:48:18	tbg-camera	Tony

Absentee List  
 Terence  
 Rick  
 Norman  
 Frank  
 Tommy  
 Larry  
 Test 1  
 Test 2

### Value Proposition:

1. Prevent cheating
2. Ease of entry (forgot to bring access card)
3. Automate attendance taking

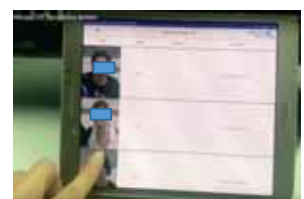
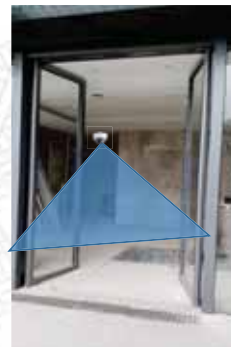
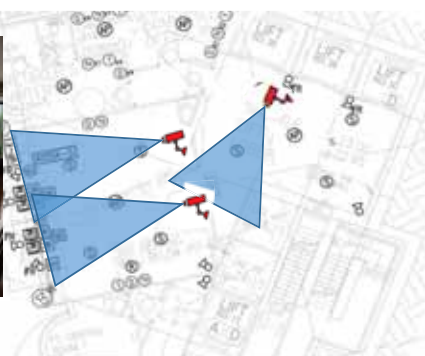
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# Security Solution 1: Face Authentication System (FAS)

## Strangers Detection

- Detect tailgating strangers after access control gate
- Enhances Schools/Office/Residential Complexes security



Stranger Alerts sent to mobile device

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## Retail Industry – Challenges

### On-line Stores vs Off-line Stores (Battle of Customer Data Collection)



VS



#### Online Stores

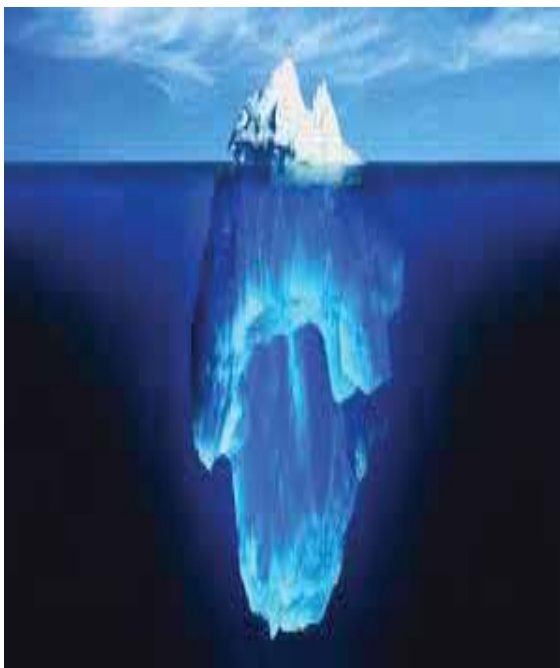
- Know Customer Preference via Sales
- Tracks Customer Browsing History/Preferences/Shopping Habit
- Provide Recommendations
- Data Driven Strategy

#### Offline Brick and Mortar Stores

- Want to take Online strategy to Offline
- Rely mainly on POS sales data
- Lack data/insights for analysis and action (data not shown via POS)

## Retail Industry – Challenges

### Lack the Proper Tools To Extract Off-Line Data



#### Retail Data Currently Collected

- Point-of-Sale POS Data
- Rough people count by traditional counters

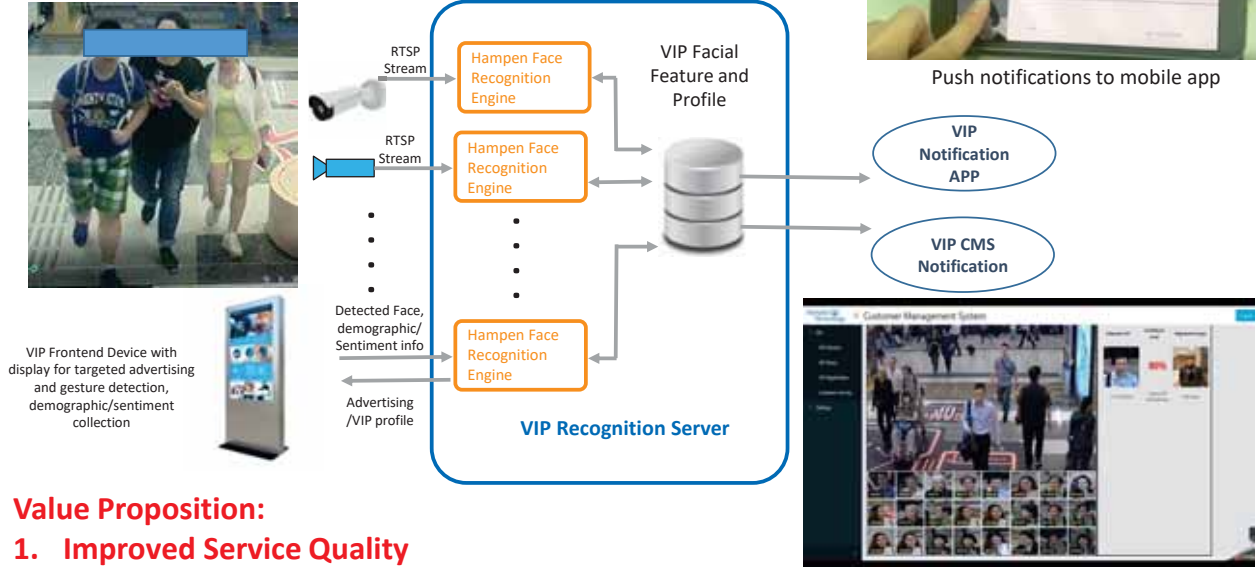
#### Offline Data Wanted but Not Collected

1. Customer Demographics/Sentiment
2. Customer dwell time/location per production section
3. Individual Customer Journey through the store and Preferences
4. Customer Traffic Flow Patterns throughout the day
5. VIP/Members Browsing history

# Retail Solution 1: Face Authentication System (FAS)

## VIP Recognition/Customer Journey

1. VIP Recognition and provide tailor-made service
2. Track customers path at shop or mall level to determine preferences, provide recommendations



### Value Proposition:

1. Improved Service Quality
2. Collect customer preferences

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# Retail Solution 1: Face Authentication System (FAS)

## Intelligent People Count -- Demographic/Sentiment Analyzer

- Collect Customer Demographic/Sentiment, dwell time
- Provide unique people count (can exclude staff)
- Can drive digital display for targeted advertising



Customer Sentiment



Targeted Advertising Digital Signage



Queue & Demographic Analysis



New Product Reception

### Value Proposition:

1. Collect customer demographics, targeted sales/advertising
2. Analyze Customer traffic pattern for staff/inventory allocation
3. Measure event effectiveness

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# Retail Solution 1: Face Authentication System (FAS)

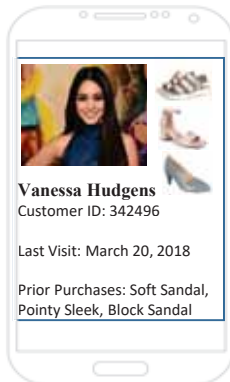
## VIP Recommendations via POS



VIP Captured at store front camera



VIP continues to browse around in the store



VIP Profile displayed on staff's mobile device



Staff approaches VIP with recommendations based on VIP preference



**Faster Conversion!  
Happy Customer!**

### Value Proposition:

1. Provide recommendations, discount, targeted sales

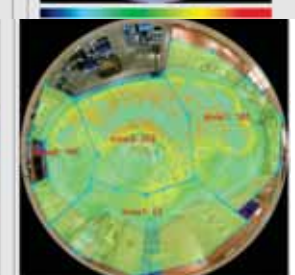
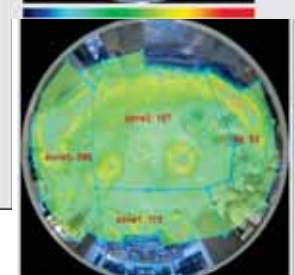
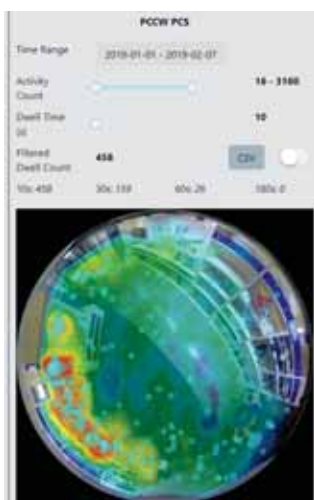
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# Retail Solution 2: People Traffic Flow Analysis (PCS)

## Heatmap/Dwell time Analyzer

- Provide customer traffic flow heatmap, flow direction, per product section dwell count
- Report the number of people stopped at each product zone



### Value Proposition:

1. Customer preferences, conversion rate analysis
2. Customer traffic pattern for staff/inventory allocation, store layout optimization
3. Measure event effectiveness

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# Retail Solution 3: People Counting

## Queue/Crowd Monitor

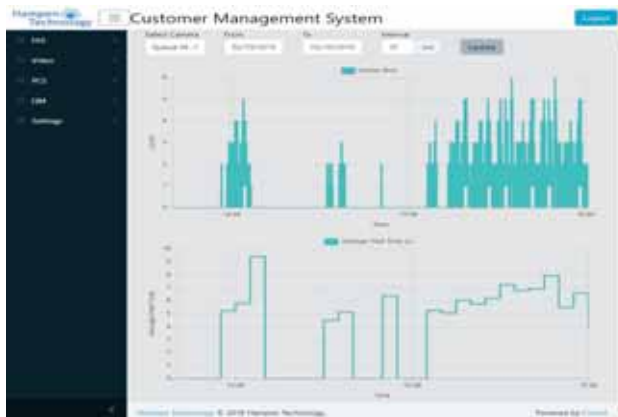
- Queue or crowd counting for low-ceiling locations where traditional people counters will fail
- Report average queue time and queue size
- Alert staffs when queue or crowd size becomes too large
- User configurable queuing zone



Queue-Monitor



Serial: Queue-Monitor



### Value Proposition:

1. Improved customer service quality
2. Customer traffic pattern for staff/inventory allocation

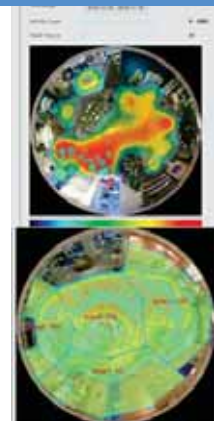
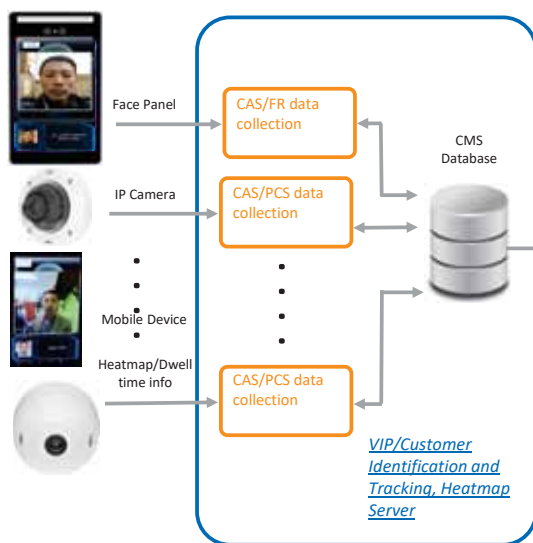
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# Integrated CMS Dashboard for all products

## CMS Platform

- Provide FAS, CAS and PCS data on All-in-One unified dashboard GUI




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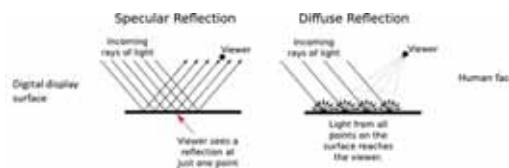




## Liveliness Detection/Anti-Spoofing Mitigation

- Prevent 3D face mask spoofing by performing color diversity test
- Also detects pictures, LCD spoofing inputs through color diversity and digital display test

<b>Spoofing Techniques</b>	 3D Face Mask Spoofing	Static Picture Spoofing	LCD/Monitor Spoofing
<b>HOW TO ADDRESS</b>	Color diversity test	Printed materials detection	LCD Detection (scan line, specular reflection, color diversity test)



### Anti-Spoofing US Patent Granted:

Face Recognition Method and System for Personal Identification and Authentication. U.S. Patent No. 10,061,996

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# PCCW/HKT Strategic Partnership: 5G Festival



# Axis/AliCloud Strategic Partnership

Demos set up at HK, Taiwan, Shanghai, Korea, Japan Axis AEC showrooms (run on AliCloud)

**AXIS Korea P1367**  
Serial: AxisP1367  
IP:   
[Live View](#)

**AXIS TW**  
Serial: ac-cc-be-6d-01-5d  
IP:     
[History](#) [Route Map Setup](#)

**Axis Japan**  
Serial: ac-cc-be-89-7f-1c

**Axis Shanghai**  
Serial: Axis Shanghai  
IP:   
[Live View](#)

**AXIS Shanghai**  
Serial: ac-cc-be-9d-00-81  
IP:     
[History](#) [Route Map Setup](#)

**Alibaba Cloud**  
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## Seeking Partnerships

# Thank You



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