Panasonic Security Solution for Railway Industry

May 23rd, 2018

Panasonic BUSINESS
Connected solutions Company
Security Systems Business Division
Today’s Agenda

◆ Security Business Division Introduction
◆ Case Study
◆ Customer Challenges and Solutions
◆ Panasonic Core Technologies
Connected Solutions Company was set up to provide IoT Solutions.
History: 60 Years Experience in Security Solutions

1957: Tube Camera
1990: Digital
2000: Integrated Software
2010-2018: Intelligent Network Camera, VMS, Police Vehicle System

Vertical System
Road Monitoring

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Case Study - Projects

SNCF (France)

NY Train (US)

DENVER RTD (US)

Land Transport Authority (Singapore)
What are the customer challenges?

Clear evidence for Passenger trouble and Train accidents

Monitoring in harsh environments

Black list matching

In Train

Station

Railway
Panasonic’s Solutions

On board Surveillance Camera

In Train

- **Issue**
  Decrease-blind spots and capturing clear image for evidence

- **Solution**
  - Provide outstanding image quality
  - High efficient and low cost solution

- **Benefit**
  Reduce the camera HDx4 -> Ultra 360x1
  Reduce storage cost more than 70%

Facial Recognition Solutions

Station

- **Issue**
  Early detection and prevention of incidents, the efficiency of a particular work after the incident

- **Solution**
  Black List Real-time matching

- **Benefit**
  Reduce loss, labor and operation costs: $120K/year
  * In case of installation at 3 area

Outdoor Application

Railway

- **Issue**
  Durability required to handle various environments

- **Solution**
  - Tough Body under severe environment wind load durability (Max:60m/sec)
  - Hybrid Image stabilization (EIS & PTIS)
  - Anti-salt air corrosion protection

- **Benefit**
  Reduce the installation cost: -$1,300/Cam
  Reduce salt resistant coating: -$2,600/Cam

Object detection

Level crossing

- **Issue**
  To detect cars, bicycles and pedestrians

- **Solution**
  - Stereo image sensor for Intruder detection.

- **Benefit**
  Improve the accuracy of detection even rainy or cloudy day.
  Support to detect small object, even Kids, bicycles and motorcycles in addition cars.

Facial Recognition Solutions

Black list/Real time face matching

Panasonic's Solutions
High picture quality & Color reproduction
By tracking someone’s upper body, various types of drunken status can be classified.
## Deep Learning Technology based Face Recognition

<table>
<thead>
<tr>
<th>Difficult situation</th>
<th>Detection Case 1</th>
<th>Detection Case 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Registered face</td>
<td>Detected Face</td>
</tr>
<tr>
<td><strong>1</strong> Face angle</td>
<td><img src="image1" alt="Registered Face" /></td>
<td><img src="image2" alt="Detected Face" /></td>
</tr>
<tr>
<td><strong>2</strong> Small Face</td>
<td><img src="image5" alt="Registered Face" /></td>
<td><img src="image6" alt="Detected Face" /></td>
</tr>
<tr>
<td><strong>3</strong> Sunglasses</td>
<td><img src="image9" alt="Registered Face" /></td>
<td><img src="image10" alt="Detected Face" /></td>
</tr>
</tbody>
</table>
Other Core Technologies
Onboard Monitoring

Other Brands

Need 6 cameras

79m² Monitoring Area

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Need 3 Cameras

254m² Wider Viewing

Aspheric Lens Technology
Other Brands

In-house developed Aspherical Lens & Video Data Deforming Technology

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Image Enhancement

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Other Brands

can get **Information**

Can **NOT** get **Information**
Unique Hybrid Image Stabilization Technology

Other Brands
Can NOT get Information

Panasonic
Can get Information
Clear Sight Coating

Other Brands

No Coating

Clear-Sight Coating

Can NOT get Information

Can get Information

Reduce Maintenance/Cleaning Cost can be reduced too
Extreme Reliability

Active Dehumidification

Other Brands
Desiccant only

Panasonic
Active Dehumidification

6 months later

Condensation

Can NOT get Information

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Can get Information
Case Study
(Detailed Information)
Drivers need to check if there is anyone stuck between the doors before closing.

Drivers can remotely monitor the situation at each door.

Quick identification of situation ➔ Quick TAT to normal operation
Case Study - NY Train (USA)

Record video for evidence of the crime

Train: 1,000 cars (11,000 Cameras)
Case Study - Land Transport Authority (Singapore)

Centralized incident monitoring at command center

Automatic upload of recording data at each platform.

Reduce manpower to retrieve data manually ➔ save operating cost