

# VI DIMENSIONS

## Smart AI Video Analytics for Retail

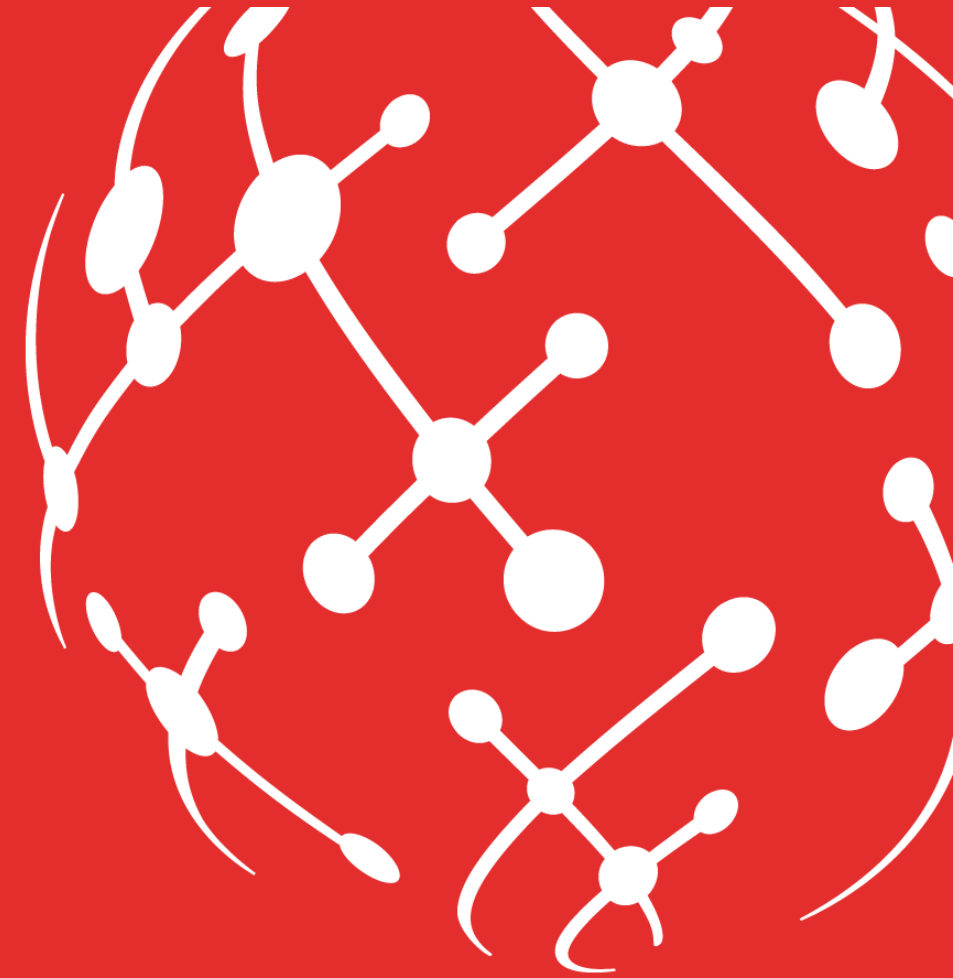
In partnership with



Supported By



Date: 4th December 2019, Wednesday

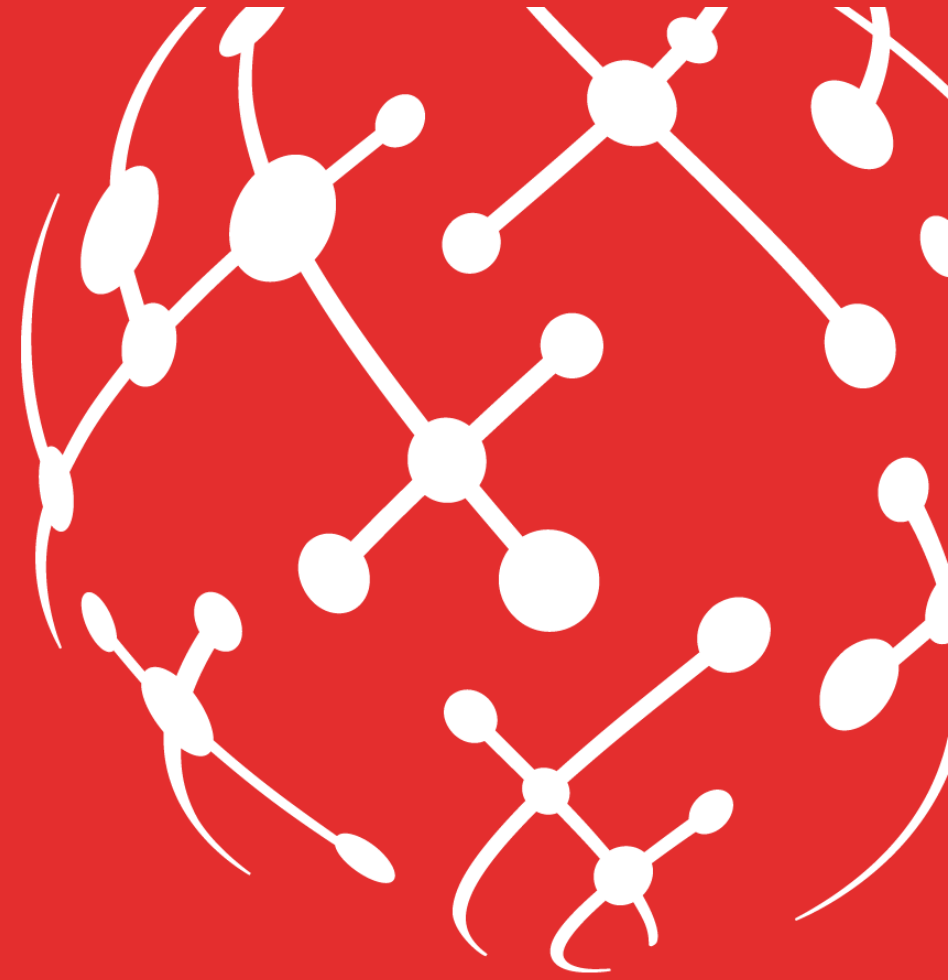


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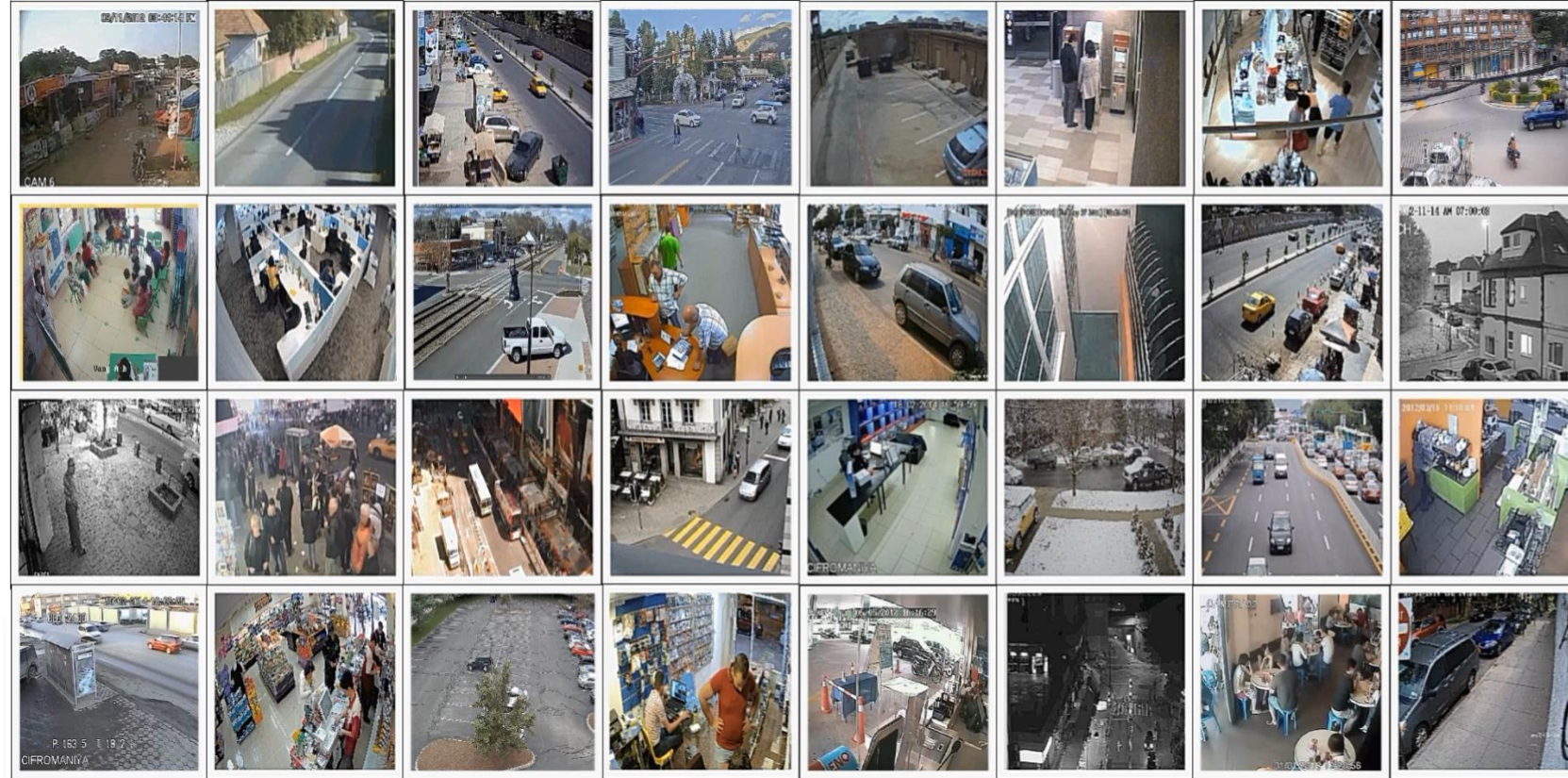


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# Security Operational Challenges faced by Clients Today



# The reality today? Can the operator watches all cameras....



“...(even) a person who is dedicated and well-intentioned, will not support an effective security system. After only **20 minutes** of watching and evaluating monitor screens, the attention of most individuals has degenerated to well below acceptable levels. Monitoring video screens is both boring and mesmerizing.”





# The need for digital transformation...



Reactive & Forensics




Proactive “Tap on the Shoulder”  
– Real Time Situational Awareness

It's about “surfacing the unknown” which can be the greatest security threat..



## How can AI Smart VA helps? Consider the below...



5/29/2010 11:22:16 AM

Camera outside a retail mall overlooking a carpark

Abnormality Level

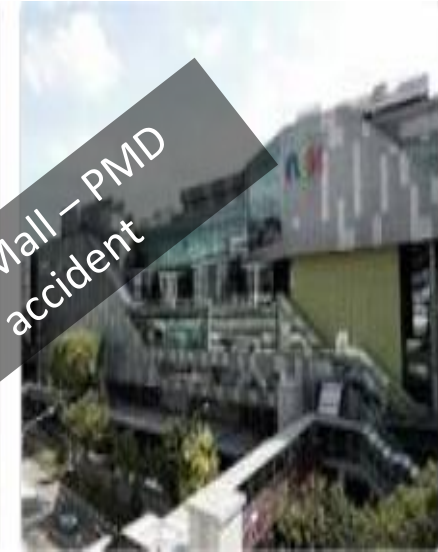
- Will the operator be able to spot this event from all the live surveillance cameras?
- What kind of Video Analytics can be applied to auto-monitor a scene like this?
- Can rules be specified to detect these one-off abnormal situation (unknown)?
- Today it may be happening here, another day a different incidents may happen in another space within similar field of view...
- How about a solution which is fully automated to detect whenever abnormal situation occurs?
- If cameras are smart enough are we able to do away with guard patrol (or reduced it)?
- Let's explore other examples as we go along the retail use cases... what are the operational challenges faced?

Time





# Operational Challenges in Retail – Safety & Security







# Real world examples: Safety





## Real world examples: Security



Police looking into alleged fight outside nightclub at Parklane Shopping Mall



Trails of blood were seen on the floor outside the nightclub at Parklane Shopping Mall. PHOTO: STOMP

PUBLISHED MAY 31, 2017 8:42 PM SGT



**Fight & Aggression**

Black Friday Special  
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while stock last. Grab yours now.



## Headlines:

- **Fights, disturbances shut down malls across U.S.**
- **Secret Harbour shopping centre brawl**
- **Fight Causes Panic at Culver City Shopping Mall**
- **6 detained, 2 arrested for disorderly conduct following fight at Mayfair Mall Saturday night**
- **2 men arrested after brawl at Liang Court shopping centre**
- **Outrageous altercation was filmed on 10th July in Woodbridge Center shopping mall**



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# The Pilot Project – How it evolved!





## Launch of Security Industrial Transformation Map – Feb 2018



Vi Dimensions @ The Launch of Security ITM's visited by Mrs Josephine Teo, Second Minister of Home Affairs

### Guest of Honour

Mrs Josephine Teo, Minister for Manpower, Second Minister for Home Affairs

### Strategy 1: Technology & Innovation

*“For example, CCTVs can replace routine, labour-intensive patrolling. Video analytics alert security officers monitoring CCTV feeds to anomalies, like intrusions and loitering. This technology is already available. For large-scale premises, **advanced analytics that use machine learning can already be deployed to help detect abnormal activities.** Why do we want this? This enables fewer officers to oversee a larger, and even more complex set-up. Instead of continuous patrolling from one end of the building to another end, and not always being able to cover all the nooks and crannies, this technology can help them to focus on making judgements and responding to incidents instead. In other words, apply their mind, make judgments, instead of incurring all that time just to check things out”*

*Mrs Josephine Teo*

Government Initiatives to Transform the Security Industry in Singapore!!!



## The announcement of the CFIS awarded for Security Sector @ Safety and Security Asia 2018



The guest of honor officiating the ceremony is ***Second Minister of Home Affairs Mrs Josephine Teo***



A walk through by Mrs Josephine Teo on Vi Dimensions exhibit and on the pilot along with representatives from CapitaLand, SII, IMDA and MHA.

## Vi Dimensions in partnership with CapitaLand and NEX



### Innovative Solutions for Security Sector 2018

Grant awarded to pilot ARVAS in 7 Retail Malls  
(6 by CapitaLand and NEX)



#### **Straits Times PUBLISHED**

**OCT 4, 2018, 5:00 AM SGT**

"In a move to spur technology providers to develop new solutions in partnership with the security sector, the Infocomm Media Development Authority has set aside \$2.5 million for four pilot projects, which start this month.

One links shopping mall security cameras to a smart artificial intelligence system that automatically flags unusual events such as fires and aggressive behaviour.

It is being tested at six CapitaLand malls and Nex shopping centre in a tie-up between tech start-up Vi Dimensions, CapitaLand Retail Management and Nex operator Gold Ridge. "There are over 100 cameras in a mall, but typically, only six to seven security guards on each shift," said Mr Raymond Looi, chief executive of Vi Dimensions.

"They either monitor the security cameras for incidents, or patrol the mall. The idea is to offload them from menial tasks."

He hopes the system can at least halve the number of security staff needed at malls so they can be redeployed to other tasks and be alerted when there are unusual events."

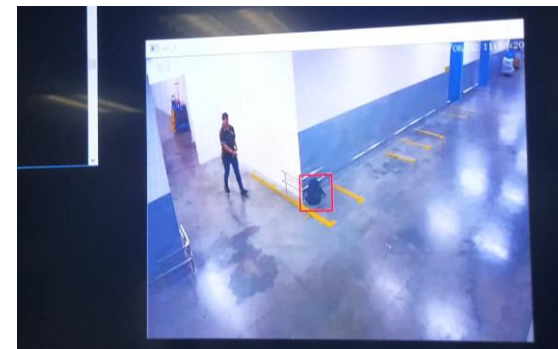


Milestone 1 successfully completed.... 2 more to go!



**Fire Detected!!!  
(70%)**

**Fight / Aggression  
Detected!!!  
(80%)**



**Object Left Behind!!!  
(80%)**

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# The results for the 1<sup>st</sup> Milestone







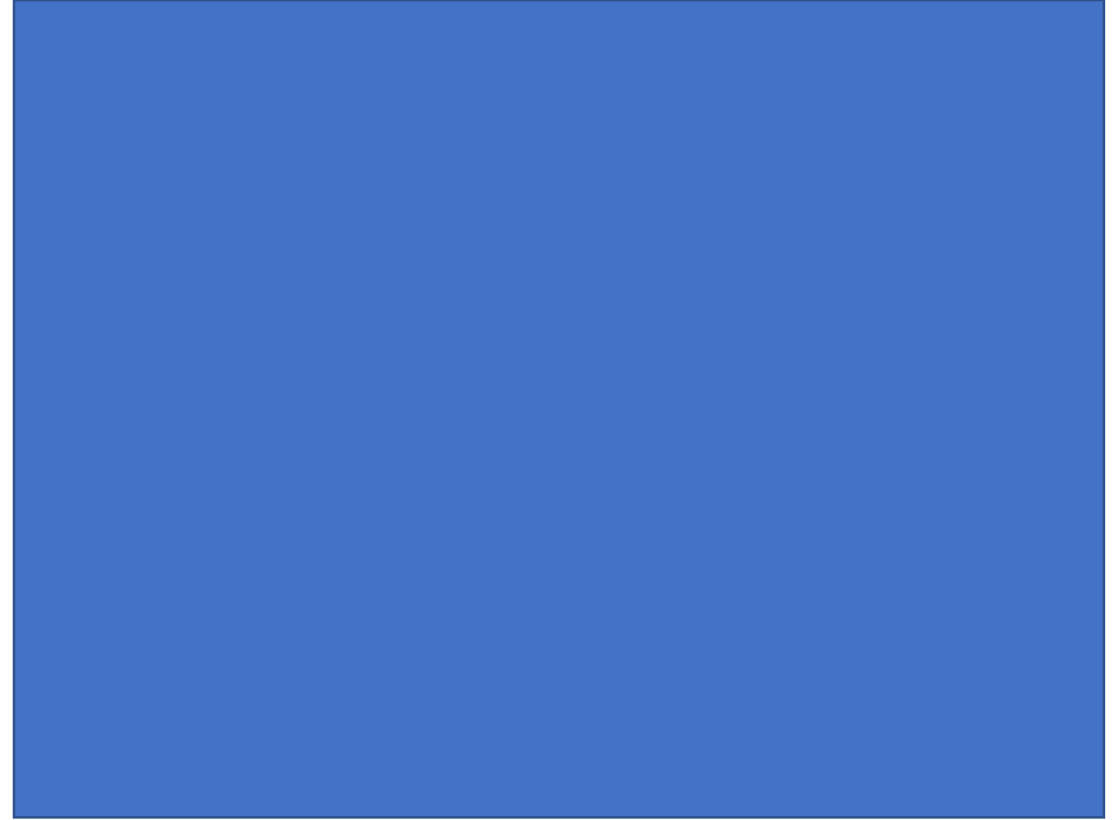
## Detection of Fight and Aggression (Target: 80%)



87.5%



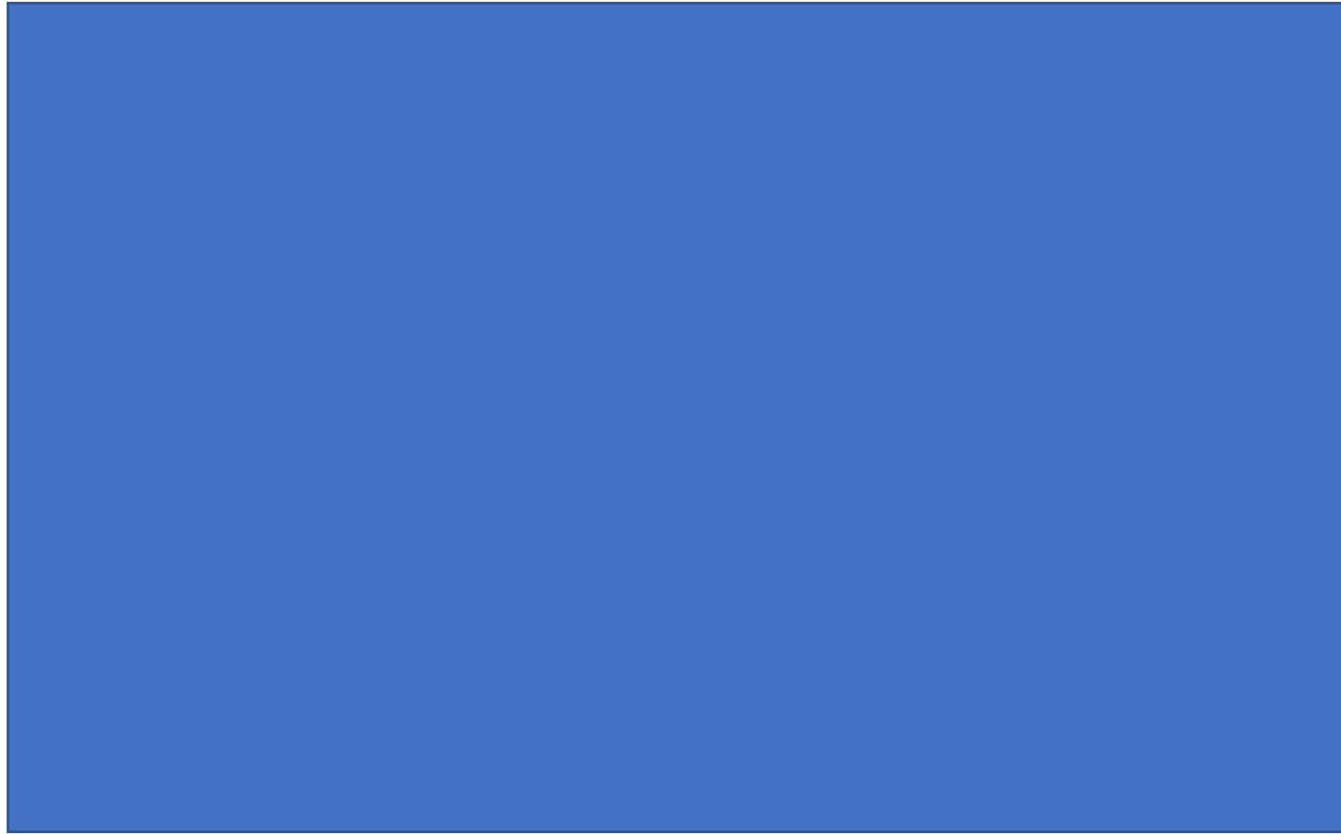
## Object Left Behind (Target 80%)



84.2%



## Detection of Fire (Target 70%)



83.3%



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Result & Beyond...



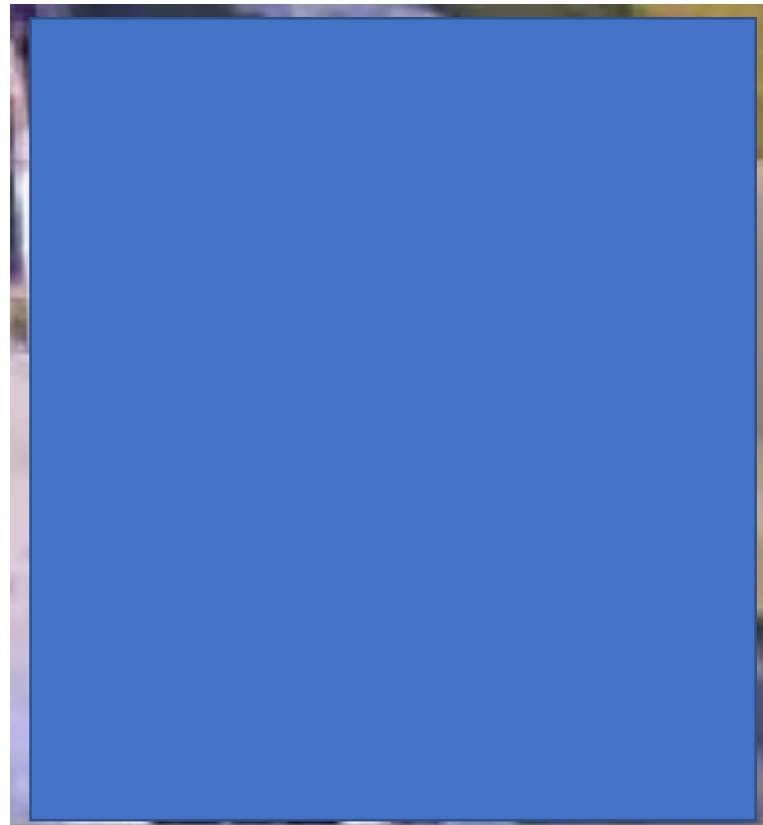


# Useful Anomalous Events

These were some of the events...



**Girl being carried away**  
What if the guy carrying her has bad intention?



**Trip & Fall @ Staircase**  
What if she hit her head and no one is there?



**Girls collapsed**



## Useful Anomalous Events

These were some of the events...



**PMD on footpath**  
Potential Hazard to Shoppers



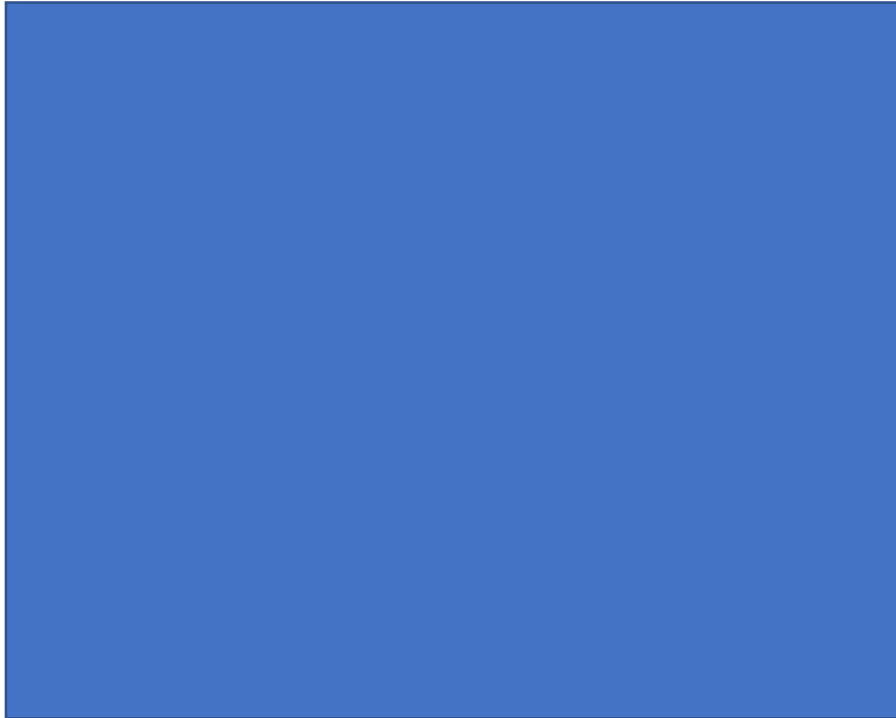
**Anti-direction on escalator**  
Safety issues





## Useful Anomalous Events

These were some of the events...



**Trip on trolley and fall - after midnight**

What if he hit on his head and no one was there?



**Contractor accessing the site at late hours**

Does it match with the maintenance schedule?

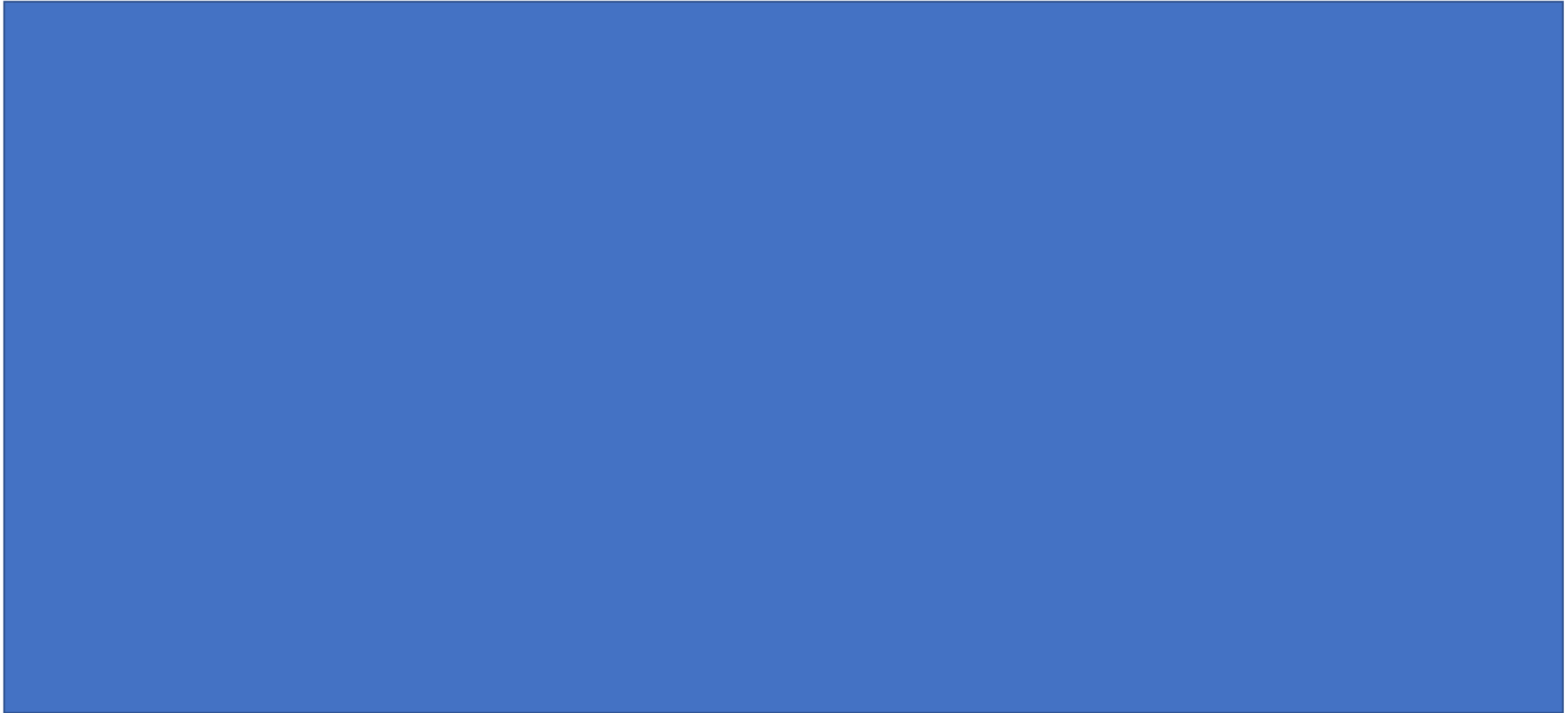
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# Beyond the Pilot....





## Retail Mall outside Singapore – Safety on Escalator





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Beyond retail ....





## Highlights across multiple sites



## ARVAS Wins Merlion Gold Award – Surveillance Category

### **Merlion Awards** Safety & Security Asia

**11th Merlion Awards 2018** serve to honour outstanding concepts, new designs and products in the field of security. Underlining the importance of innovation, the Awards give well-deserving companies the accolades of excellence and pride of place to showcase their exemplary solutions and products at the annual Safety & Security Asia exhibition organised by Conference & Exhibition Management Services Pte Ltd (CEMS).

The Awards are divided into four categories: **Surveillance, Access Control, Alarm Systems and Mobility Technology**. Judged by a distinguished panel comprising of industry experts from academia and independent bodies, the Awards are recognition of the highest standards of product innovation excellence in the ASEAN region and beyond.



Straits Times 3 Oct 2018

Only 1 of 2 companies awarded Gold for Surveillance Category in 2018.





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