

## Helping Retailers fight fraud from theft & unscanned items

### -TCS Solution on Self Check Out Loss Prevention

**Self-Checkout machines are now a common sight at every retail store.** Self-checkout machines are employed by retailers to enhance the store operations by eliminating the manned checkout process. These SCO machines help consumers to purchase the merchandise and checkout by themselves and avoid standing in queue.

**Market problems:** Since these machines are not manned, there is a tendency to commit fraud intentionally or un-intentionally by consumers who are using these machines. As per the retail industry for every product loss, by these frauds, stores have to sell 100 times the same product to recover the loss. In addition, these losses run into millions as the product are more expensive or in luxury product category. Hence, it is important to have AI in place to detect different kinds of possible thefts in SCO so that the same events can alert the store manager, HALT the transaction and prevent such suspicious activities. This would address the retail shrinkage largely.

### TCS Solution

**TCS SCO Loss Solution was created to solve the SCO Theft problem of retailers. This fraud detection technique will arm every retailer to prevent thefts and help reduce the losses.**

**Data Collection:** This solution addresses this loss or fraud prevention by tapping into the video feed of the existing infrastructure. Majority of the stores are having surveillance camera and using the same camera feed, we analyze the actions performed by the consumers using these SCO machines to flag alerts. Based on the alerts, the store manager can intervene and help in stopping the fraud being committed. No additional camera procurement and commissioning investments are required to deploy the solution.


- **Where is the data analyzed:** The data collected from the camera is analyzed in the local edge gateway. The Video feed is streamed to an Intel architecture based hardware in which the TCS Image & Video Analytics algorithms are used to derive the results and interfaced to the end user.
- **Utilizing existing CCTV infrastructure:** The solution prefers to utilize existing CCTV infrastructure if possible. The requirement of assuring overhead narrow FoV is to be ensured. Next, a simple manual configuration would be able to handle the same.
- **TCS Image & Video Analytics Tool Kit:** The TCS IP in image & video analytics, named as TCS IVTK (Image and video analytics toolkit) has been leveraged to develop this solution which has 47 patent applications and 20 publications to its credit.



# TCS Self Check Out Loss Prevention Solution


**Business value Delivered:** The alerts generated in the Intel hardware is interfaced to the store application. Store manager can take necessary action based on the alerts and prevent the fraud. This helps in loss prevention, which is a direct proportional to the financial benefits.

The TCS AlgoRetail powered by TCS IVTK addresses the below mentioned scenarios and triggers real-time alerts to the store manager. The potential scenarios are as follows:




**Free walkaway**

Customer might just keep the basket on the cart zone and after few moments just leaves the store without scanning or weighing or making payment.



**Non-payment walkaway**

Customer may follow the rules of scanning each of the items, weighing the same, bagging, following the loop for each of the items; but skip payment before leaving the store.



**Partial scan or miss-scan**

Customer may scan items, weigh, and make payment but skip to scan one or few items in between.

Through the live deployment to 4 identified SCO stations in Manchester, United Kingdom, it has been shown that around 8.85% of the SCO transactions are anomalous which is a significant pound value shrinkage for the retail store. TCS solution has been successful in detecting and hence preventing the thefts in collaboration with Intel.

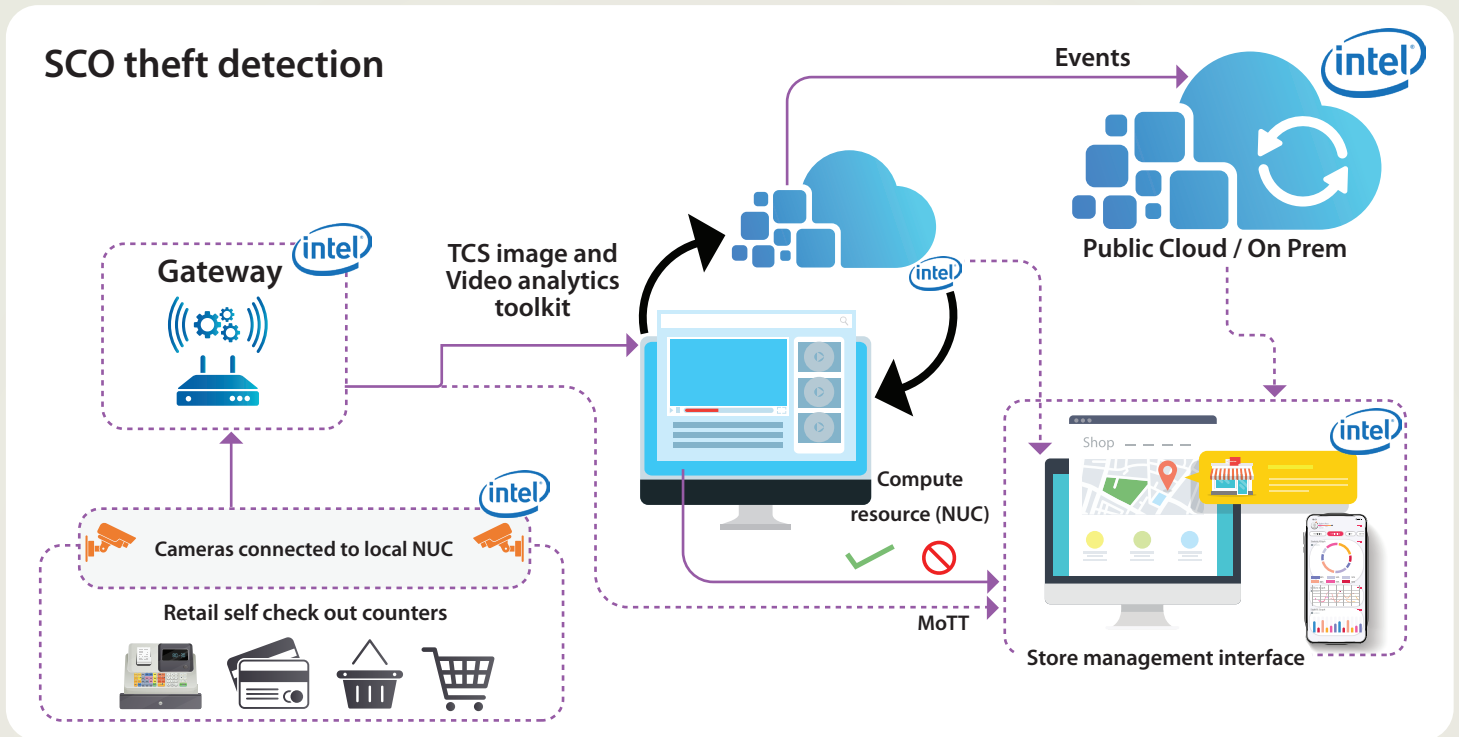
## Technical Flow

The solution captures live video from IP cameras and sends the data packets through Ethernet to Intel NUC based vision processor. The TCS algorithm is optimized through OpenVino 2020 to run in Intel platform which makes the affordability ensured. Most of the video analytics solutions on the contrary require either higher end GPU based server or Cloud infrastructure for vision processing.

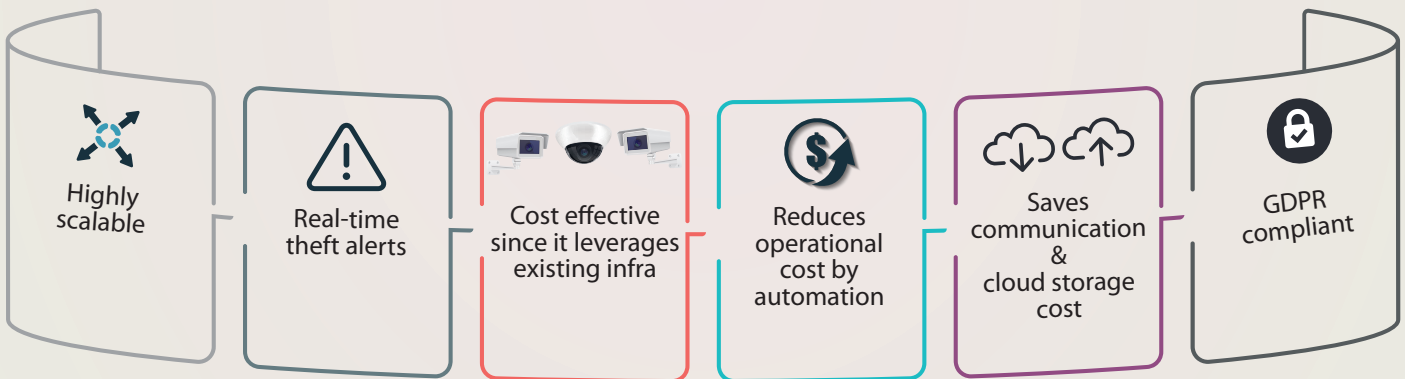
The said AlgoRetail solution gets triggered automatically as soon as potential persons are detected in the pre-configured zone near SCO station. It can automatically understand the start of a transaction from the very 1st scan of an item and keeps a digital eye on each of the items getting scanned, weighed, bagged and finally paid. The complete cycle is programmed and learned as sequence of potential actions. Any anomaly or exception triggers alert to the store manager's device application.

# TCS Self Check Out Loss Prevention Solution

## Solution Architecture:



## Benefits



## TCS Advantage:

This is an end-to-end TCS solution that caters to SCO loss in the retail stores. Majority of the retailers would like the solution provider to generate the alerts and interface to their store application leveraging existing camera infrastructure. This solution involves camera, intel gateway & store application.

TCS provides this complete the integration with the existing systems at the retailer, the acceptance testing for the solution, warranty, support and ongoing systems integration as the usage evolves.

Contact : [tcs.iot@tcs.com](mailto:tcs.iot@tcs.com)

For queries and feedback , write a mail to : [tcs.iot@tcs.com](mailto:tcs.iot@tcs.com)