FootfallCam Smart Office Solution
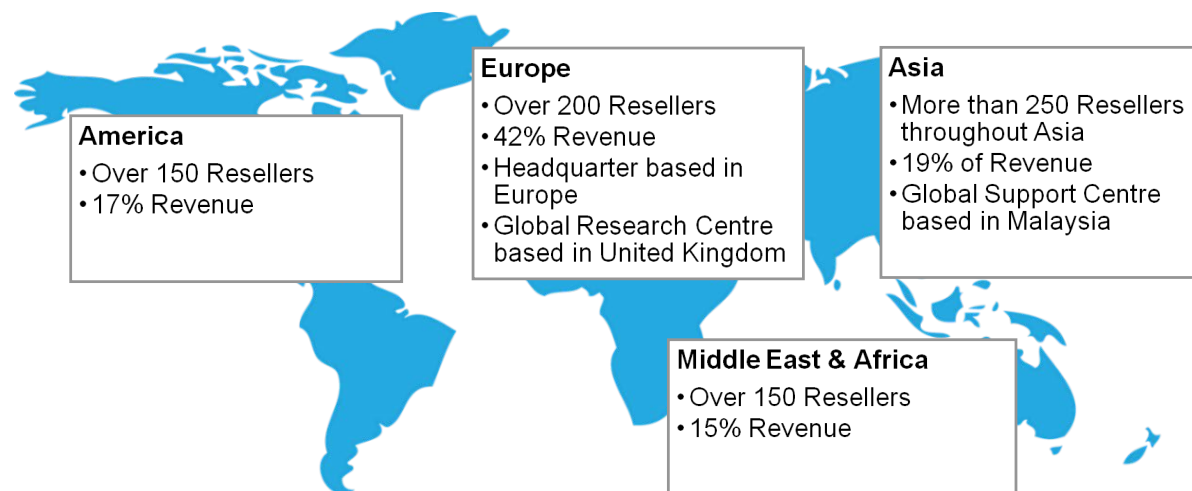
FootfallCam™

About FootfallCam™ 🇬🇧

Global Leader in People Counting System

Headquartered in the **United Kingdom**, FootfallCam started with a team of experienced engineers with the vision of creating the most advanced people counting system in the market. We are the **manufacturer** of both hardware and software; all the design and development are 100% in-house made.

America
- Over 150 Resellers
- 17% Revenue

Europe
- Over 200 Resellers
- 42% Revenue
- Headquarter based in Europe
- Global Research Centre based in United Kingdom

Asia
- More than 250 Resellers throughout Asia
- 19% of Revenue
- Global Support Centre based in Malaysia

Middle East & Africa
- Over 150 Resellers
- 15% Revenue

- Continuously reinvesting more than 24% revenue into research and development
- **In-house R&D team** dedicated to the development of both hardware and software platform
- Combined **over 100 years industry experiences** in developing people counting solution
- **Serving multiple sectors** varying from retail, fast food, restaurants, museums to smart buildings and airports.
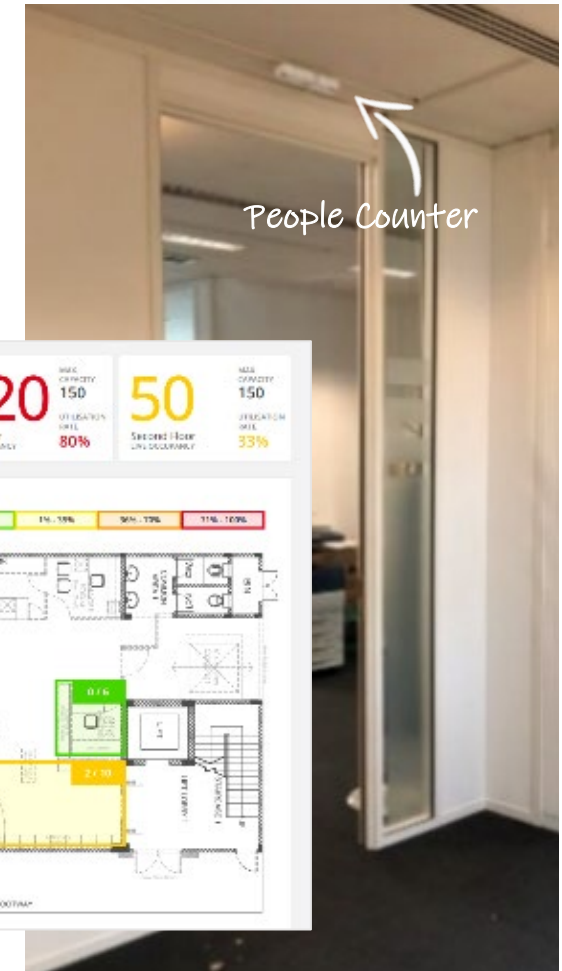
Case Studies

Case Study #1: Regus (IWG plc)

Regus (IWG plc) is a multinational corporation that provides serviced offices, virtual offices, meeting rooms, and video conferencing to clients on a contract basis, with 3,300 locations around 110+ countries

Workspace Utilisation and Amenities Feedback

- Deploy smart building strategy for
  - Member vs non-member footfall ratio
  - Traffic flow & pattern (where do people go)
  - Facility utilisation (café, toilet, meeting rooms)
  - Energy optimisation (matching floor utilisation with energy consumption)
- FootfallCam in collaboration with Cognizant to integrate the above metrics into IWG platform

People Counter

Case Study #2: Amway

Amway

Amway is an American multi-level marketing company in more than 100 countries and territories.

Facility Utilisation and Customer Experience

- Social-distancing compliance and occupancy restriction to protect their Amway Business Owner (ABO).

- Efficient facility management for their experience center such as market retail, meeting room, cafeteria & etc. using footfall data

- Integrate people counting data with Magic Mirror display for real-time occupancy at entrance to control incoming traffic.

- Space planning by identifying the facility usage with high flow intensity, low flow intensity, and that are most used, and least

People Counter

People Counter

Amway Grand Opening: https://youtu.be/Bjm8Y5jRiNs
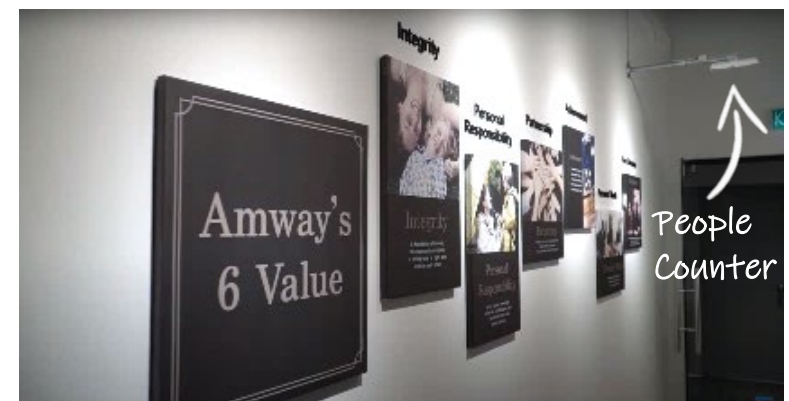
Case Study #3: WeWork

wework

WeWork is an American commercial real estate company that provides shared workspaces for technology start-ups and services for other enterprises.

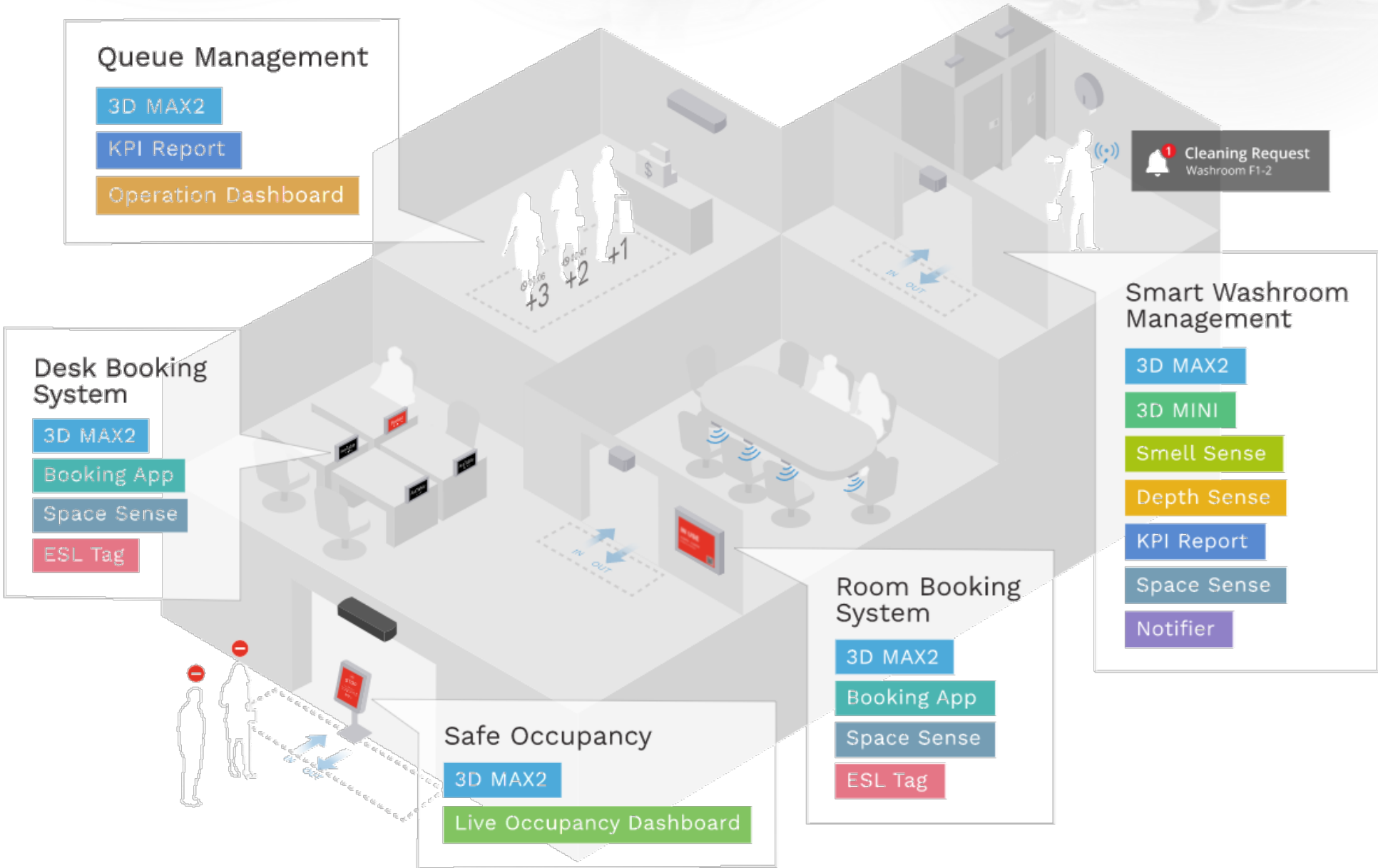## Anonymous ToF Counting and Workspace Desk Booking

- WeWork Japan approached FootfallCam to find a solution for Occupancy Counting.

- Measuring the occupancy of the meeting rooms using anonymous Time-of-Flight (ToF) technology for total privacy.

- Deployed over 3,000 sensors in their existing buildings around Tokyo, Japan.

- Desk booking app - Pre-book the available desks/rooms for better workspace planning

People Counter
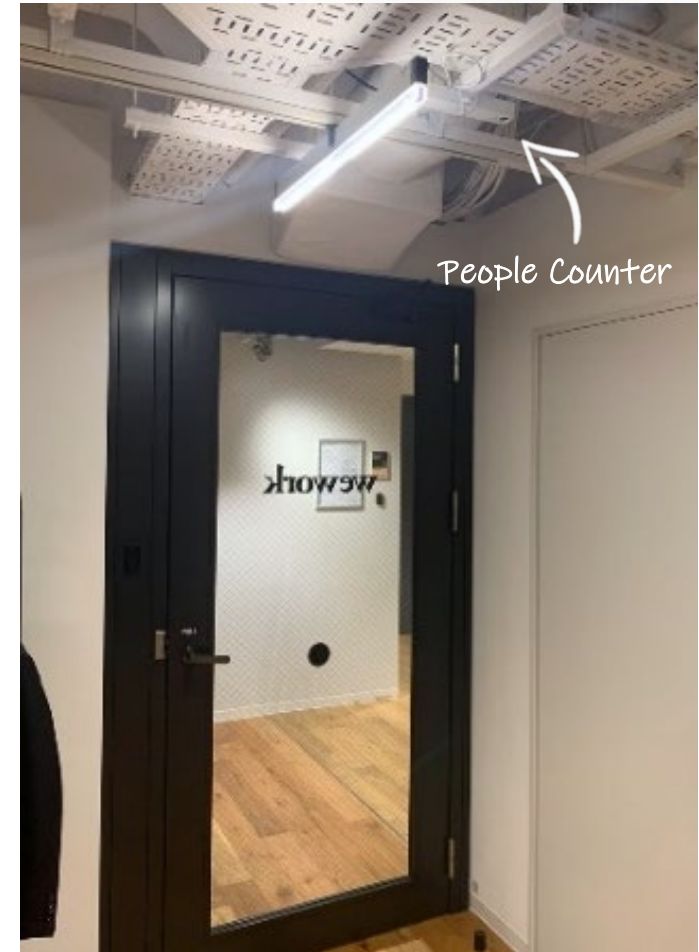
FootfallCam Solutions

Smart Office Solution

Queue Management
- 3D MAX2
- KPI Report
- Operation Dashboard

Desk Booking System
- 3D MAX2
- Booking App
- Space Sense
- ESL Tag

Safe Occupancy
- 3D MAX2
- Live Occupancy Dashboard

Room Booking System
- 3D MAX2
- Booking App
- Space Sense
- ESL Tag

Smart Washroom Management
- 3D MAX2
- 3D MINI
- Smell Sense
- Depth Sense
- KPI Report
- Space Sense
- Notifier

1 Cleaning Request
Washroom F1-2

FootfallCam™

FootfallCam Products

FootfallCam offers 6 different devices that uses 6 different technologies that can be suited to all environments and scenarios.

FootfallCam 3D Pro2™
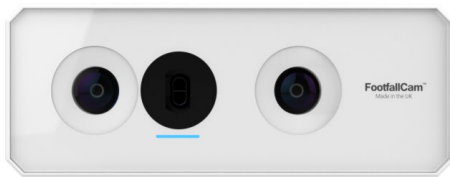
Infrared counting + Wi-Fi Counting
Datasheet

FootfallCam 3D Mini™
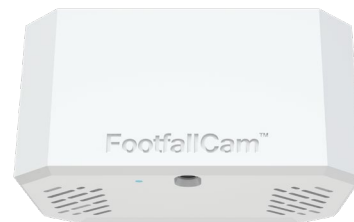
Time-of-Flight (ToF) Technology
Datasheet

FootfallCam Centroid™

2D Video Analytics
Datasheet

FootfallCam DeskTag™

Chris Eavis
Booked: 9:00AM – 11:00AM
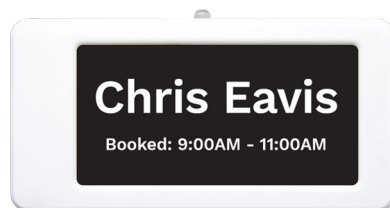
Electronic Display Device
Datasheet

FootfallCam RoomTag™

IN MEETING

Electronic Display Device
Datasheet

FootfallCam Space Sense™
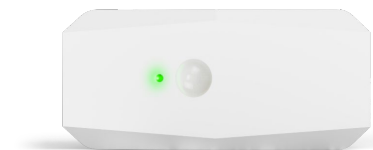
Passive Infra-red (PiR) + Time-of-Flight (ToF)
Datasheet

FootfallCam™

Space Monitoring for Offices

Showcase

Meeting Room Utilisation

FootfallCam™

YouTube Link: https://www.youtube.com/watch?v=REfE_0-4aAA

FootfallCam™

Area Occupancy Floorplan
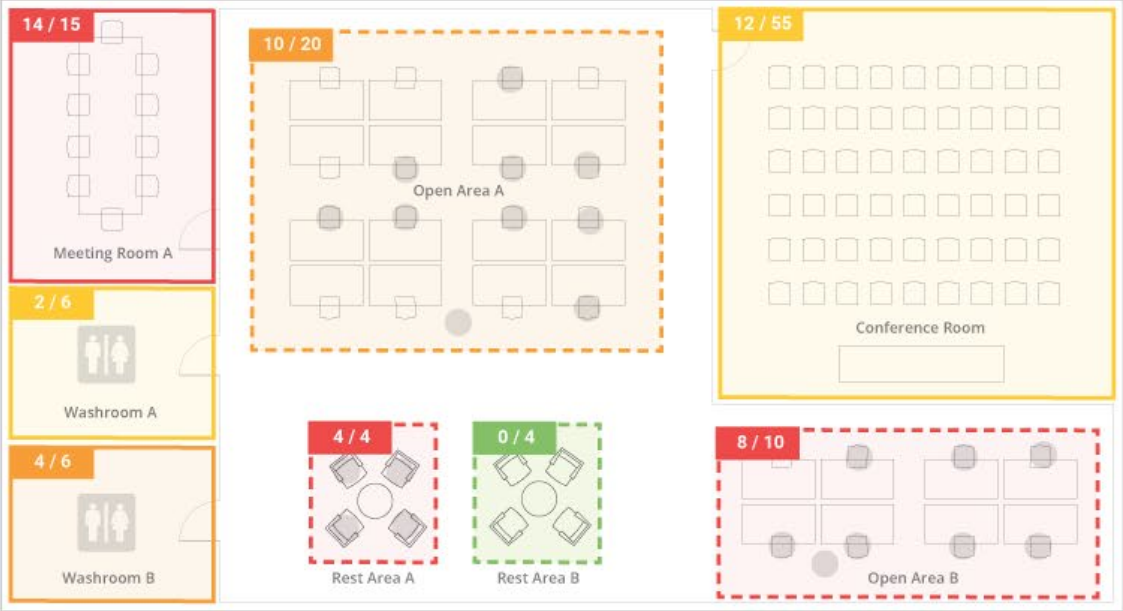
[Sample report](#)

Use Case #1: Meeting Room Occupancy Counting

By installing FootfallCam 3D *Mini*™ at the entrance of each meeting room, the number of people using the meeting room can be counted, thereby generate utilisation rate of the room.

Watch how it works: https://youtu.be/P1BAnWvVusM
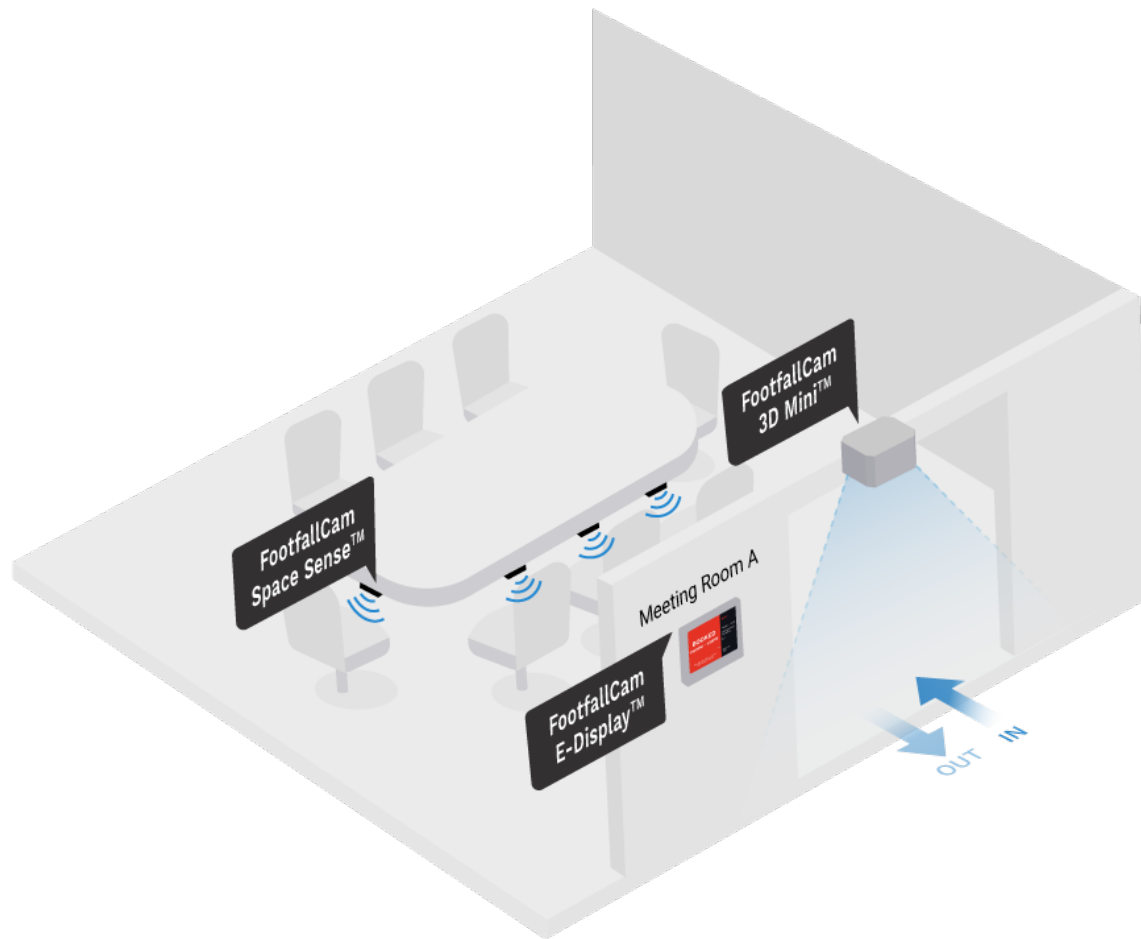
- Cost effective
- **Anonymous** counting, privacy protected
- Using **ToF 16x16 Sensor**
- Suitable for **single door** and **washroom entrance**
- Field of view (FOV): **57°**
- Proven deployment in WeWork, Regus, Rentokil & etc.

FootfallCam 3D *Mini*™

FootfallCam™

Use Case #2: Collaboration Area Occupancy Counting

The number of people sitting in the area can be detected by installing a Space Sense™ under each desk.
Alternatively, the FootfallCam Centroid™ can also integrate with existing CCTV system to detect the occupancy of the area.

Watch how it works: https://youtu.be/JweKfEaXjL0
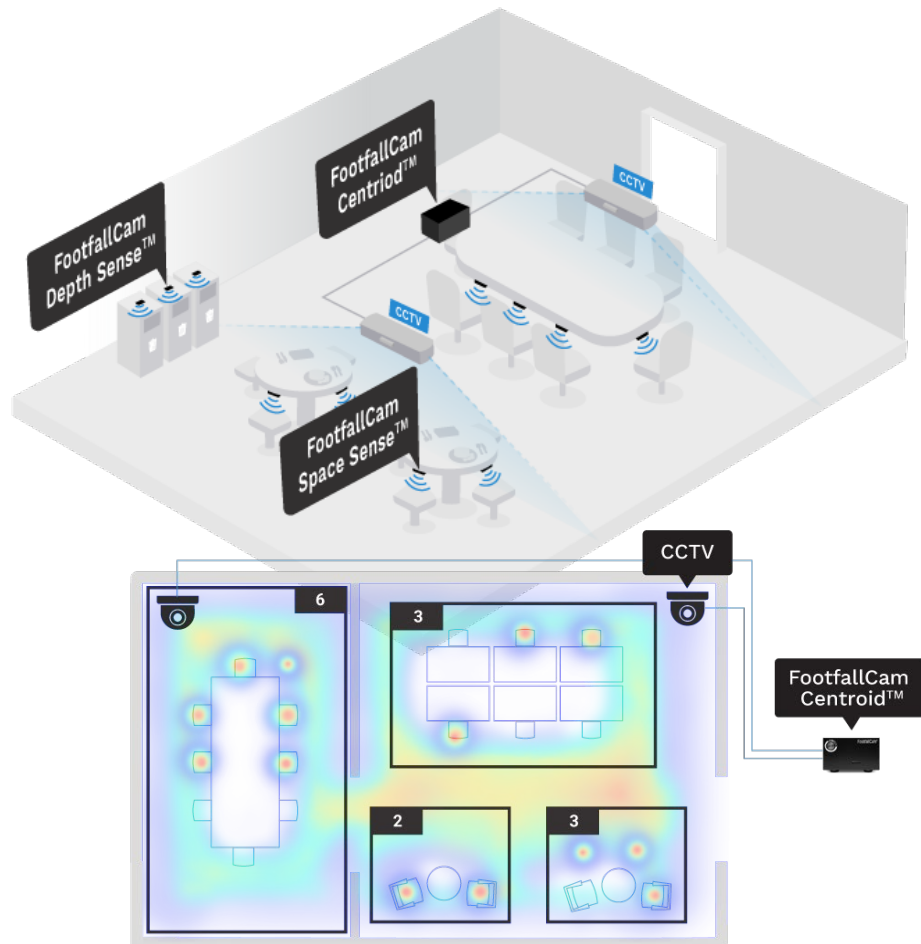
- Space Sense for **desks usage**

- Using Passive Infra-Red (**PiR**) or 2D Video Analytics

- Suitable for **open space** or **large area,** e.g.: collaboration areas, co-working space

- Ease and scalability of its deployment

OR

FootfallCam Space Sense™   **FootfallCam Centroid™**

FootfallCam™

Use Case #3: Common Areas Occupancy Counting

Suitable for tracking people standing up and gathering around an open area, such as stand-up discussion area and break areas. The FootfallCam Centroid™ can integrate with existing CCTV system to measure activity in an area.
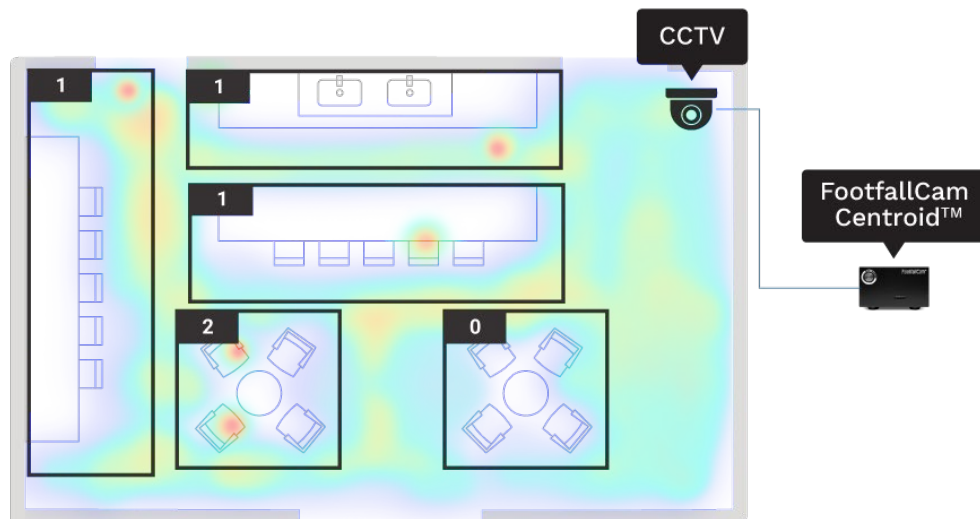
- Analyse video footage from CCTV cameras
- Track people's **skeletal movement** with artificial intelligence
- Suitable for **cafeteria**, **stand-up discussion area** and etc.
- Multiple cameras can be used for large area tracking

Watch how it works: https://www.youtube.com/watch?v=pfpuIj4W-1Q

FootfallCam Centroid™

FootfallCam™

Use Case #4: Conference Hall Occupancy Counting

Suitable for tracking people in a high density and large area, such as lobbies, conference halls, seminar rooms. The FootfallCam Centroid™ can integrate with existing CCTV system to measure crowd level.

Watch how it works: https://youtu.be/gvSKe9xGO6M
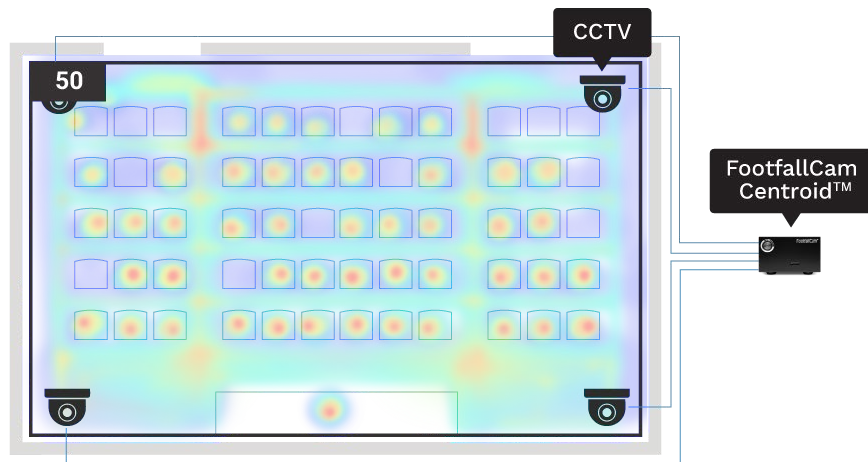
- Analyse video footage from **CCTV cameras**

- Suitable for **open space** or **large area,** e.g.: lobbies, conference halls, seminar rooms

- Multiple cameras can be combined to reach wide range of coverage

FootfallCam Centroid™

FootfallCam™

Use Case #5: Occupancy Counting in Confined Areas

FootfallCam 3D Pro2™ can also be used to section off a large office floor into multiple zones. The occupancy in each zone can be counted with a FootfallCam 3D Pro2™ installed in the doorway in between different zones.

ENTRANCE A

ENTRANCE B

FootfallCam 3D Pro2™

Watch how it works: https://youtu.be/3ERxdewNWd8
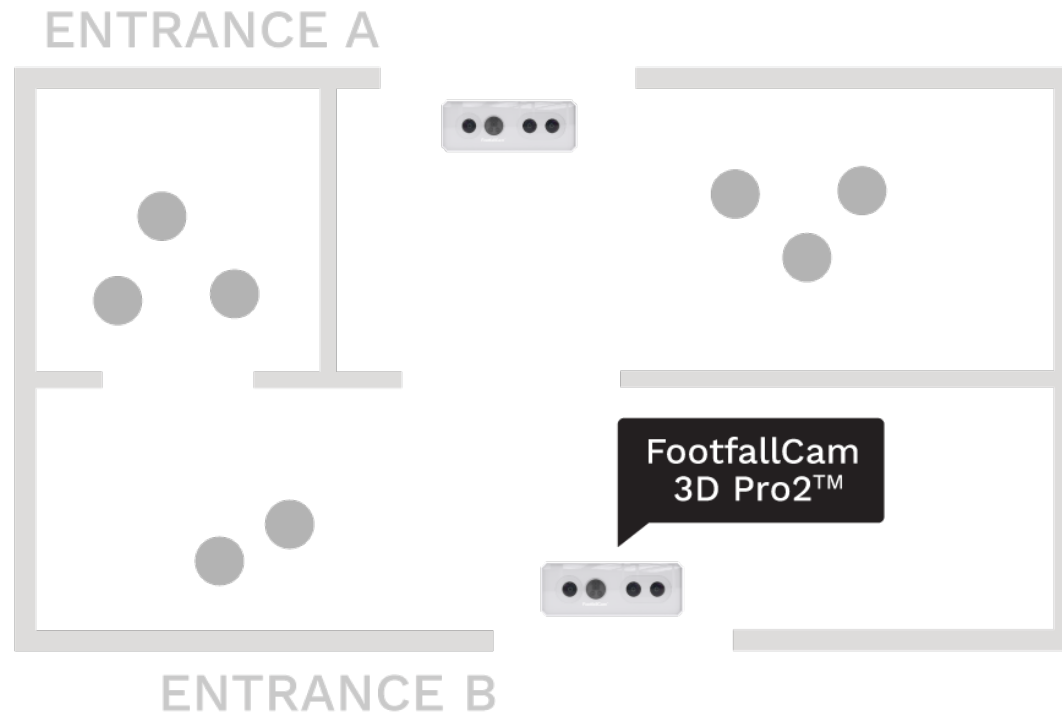
- Count the number of people in a **specific zones**

- **Occupancy** = (IN from both entrances) − (OUT from both entrances)

- Highly accurate with video proof

- Provides visibility on the occupancy in each zone
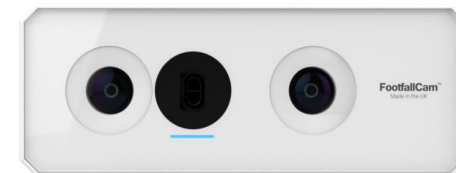
FootfallCam 3D Pro2™

FootfallCam™

Use Case #6: Queue Counting in Cafeteria

With queue counting detection and blob tracking technology, the FootfallCam 3D MAX™ will automatically detect any form of movement and register the queuing patterns
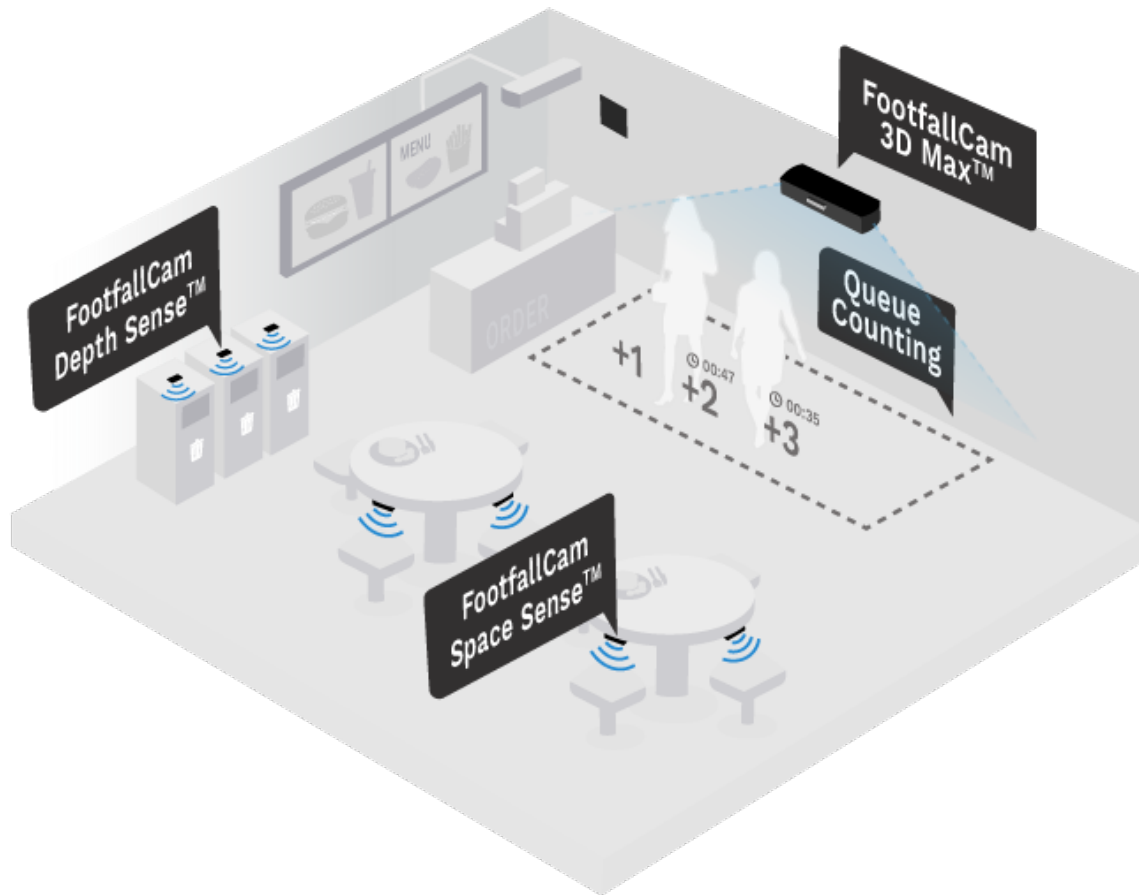
- Using **3D Stereo Vision** technology and 2D video analytics
- Highly accurate with video proof
- Suitable for **wide corridors**, **walkway** or **high traffic areas**
- Supports up to 25m ceiling height
- Field of view (FOV): **120°**
- Proven deployment in Kentucky Fried Chicken
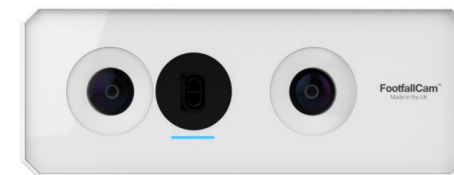
FootfallCam 3D Pro2™

Watch how Queue Counting works: https://youtu.be/5iPEHKD-zQc

Use Case #7: Electricity Usage Sensor

FootfallCam has an Open Architecture that allows the integration with other smart energy meters through Zigbee and LoRa protocol. The smart energy meters will be deployed in IT connectivity rooms such as open-space areas and office floors.
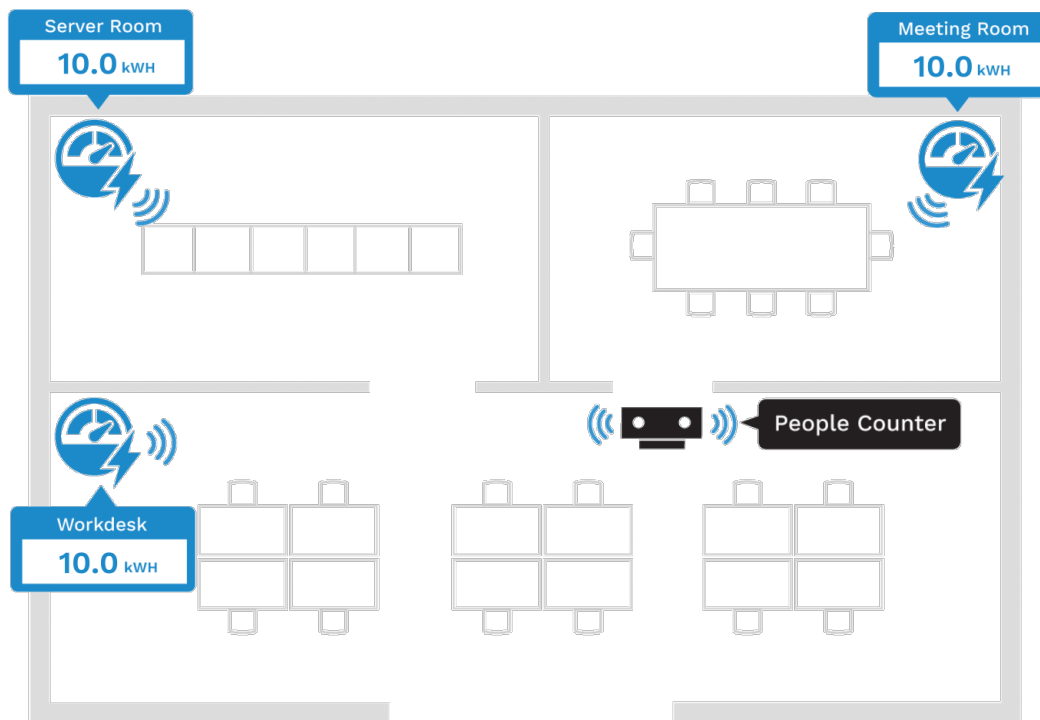
- Connect wirelessly to FootfallCam counters via **Zigbee** or **LoRa**

- Hardware options:
  i. FootfallCam Authorised Sensors, or
  ii. Any outsource smart meters

- Track **energy usage** for each area

EKM Universal Smart Meter   Accuenergy Power Meter

Use Case #8: Water Usage Sensor

FootfallCam has an Open Architecture that allows the integration with other smart water meters through Zigbee and LoRa protocol. The smart energy meters will be deployed in washrooms and pantry areas.
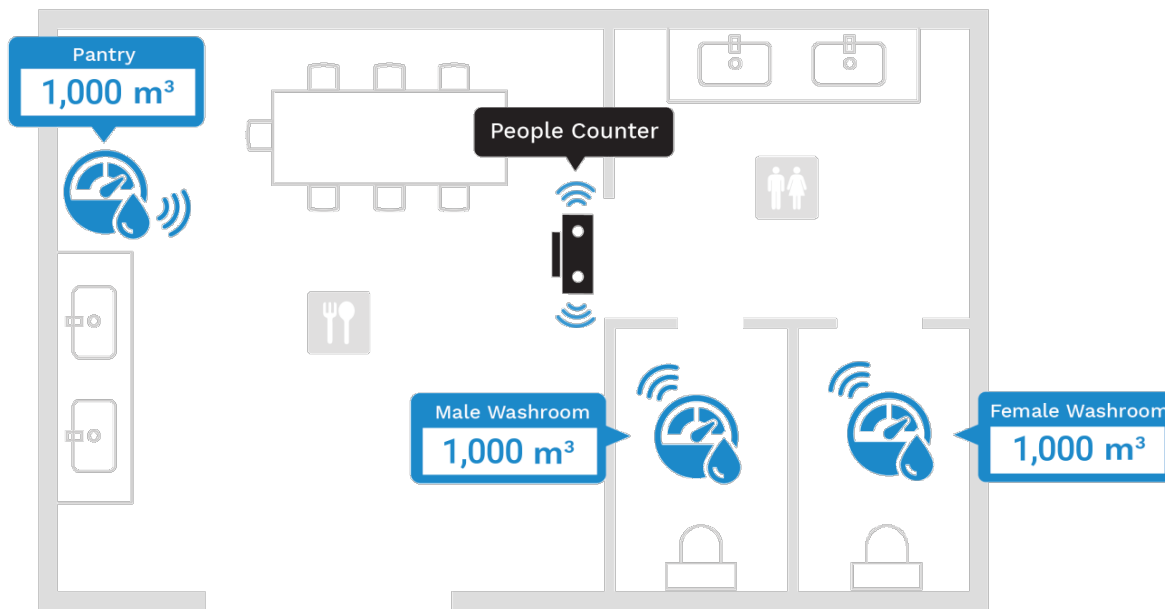
- Connect wirelessly to FootfallCam counters via **Zigbee** or **LoRa**
- Hardware options:
    i.   FootfallCam Authorised Sensors, or
    ii. Any outsource smart meters
- Track **water usage** for each area
- Detect water **leakage**

Smart Water Meter Sensor

FootfallCam™

Use Case #9: Smart Washroom Management

Demand-based Cleaning Schedules - FootfallCam 3D *Mini*™ sensors can detect the number of people entering and exiting the washroom, send cleaning requests wirelessly to cleaners via Washroom Management App.
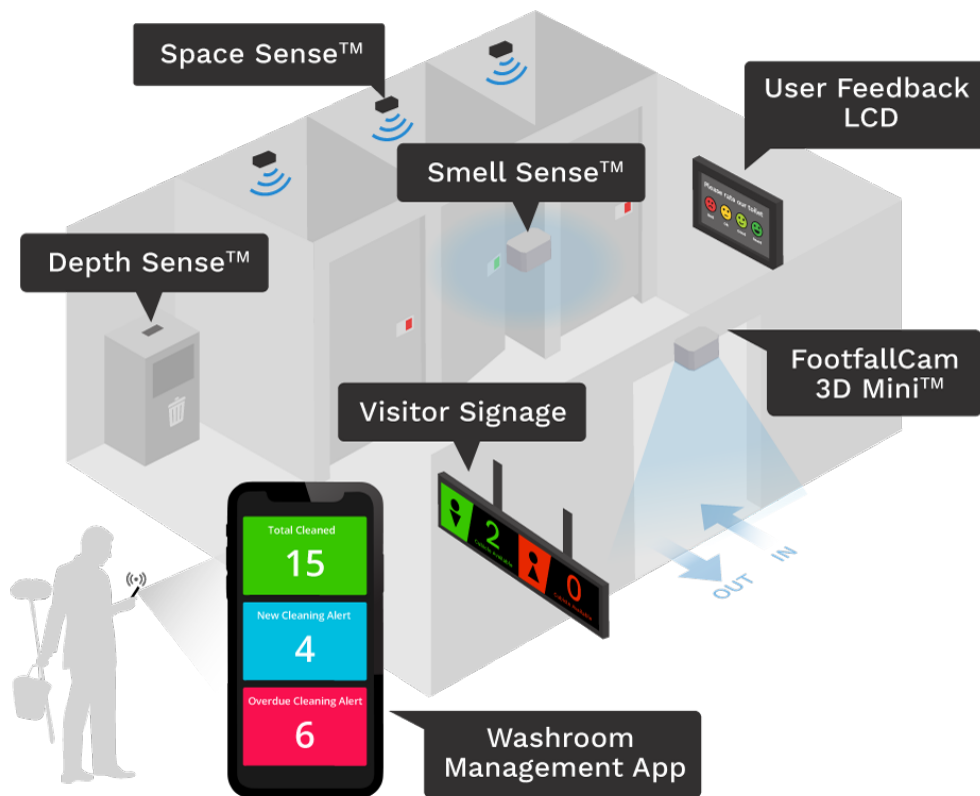
Demand-based Cleaning

Crews get accurate information about cleaning needs via wireless cleaning notification alert which can lead to improve the efficiency for janitorial services.

Measure SLA and Auditable Cleaning Fee

Identify the cleaning service KPI with over-cleaned or under-cleaned which able to optimize the cost of maintenance.

Improve User Experience

A reliably serviced building is a far more welcoming place for its occupants.

Watch how it works: https://youtu.be/iE4f15g5-TE

FootfallCam™

Use Case #10: Meeting Room Booking

Employees can book a meeting room ahead of time for group discussion via their mobile app. FootfallCam RoomTag™ will be placed outside the meeting room to indicate the availability of a room.
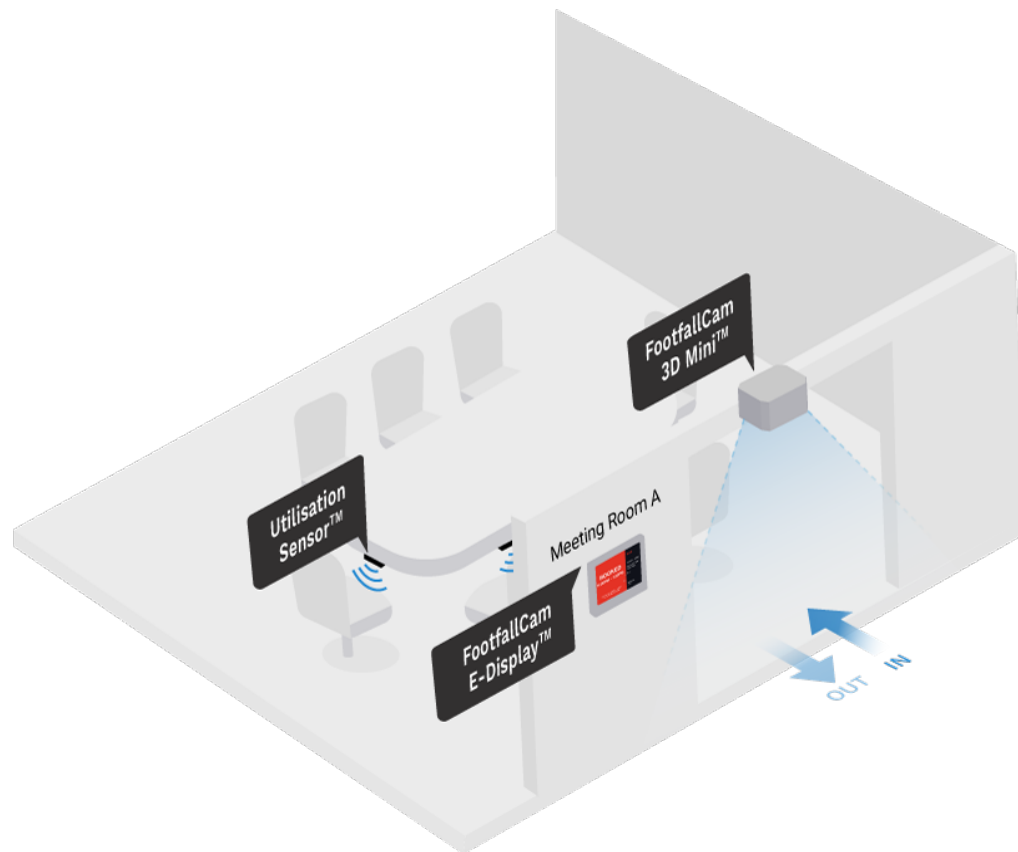
- **E-paper** Display, cost effective
- Wirelessly connect to FootfallCam counters via **Radio Frequency** (RF)
- **Minimize time spent** searching for an available workspace
- **On-the-spot room booking** via QR code
- Display the availability of meeting rooms in **real-time**
- Analyze the low and high usage period based on the historical trend

Watch how it works: https://youtu.be/fztYYyTV2TA

FootfallCam E-Display™

Utilisation Sensor™

FootfallCam 3D Mini™

Meeting Room A

OUT   IN

AVAILABLE
UNTIL 2:00PM

NEXT
2:00PM - 3:30PM
Public Relations Meeting
👤 8

Booked by
Chris Eavis
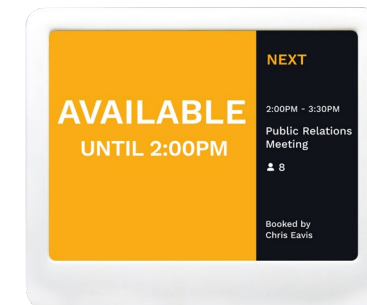
FootfallCam RoomTag™

FootfallCam™

Use Case #10: Desk Booking

Employees may also book a desk for group discussion or hot-desking via their mobile app. FootfallCam DeskTag™ will be placed on the tabletop to indicate the availability of a desk.

- **E-paper** Display, cost effective
- Wirelessly connect to FootfallCam counters via **Radio Frequency** (RF)
- **Minimize time spent** searching for an available workspace
- Display the availability of vacant desks in **real-time**
- Allocate employees to commonly used facilities and eliminate unused areas to **save operating costs**
- **Group booking in advance** for collaborative work

Chris Eavis
Booked: 9:00AM - 11:00AM
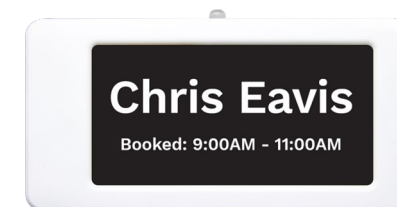
FootfallCam DeskTag™

Watch how it works: https://youtu.be/ww-Jsgv2p-l

FootfallCam™

Use Case #11: Smart Carpark Management

Launching FootfallCam Car Detector in Q1 2022, it helps to detect the usage of carpark, display the availability of vacant carpark in real-time, and enable active parking management such as searching and reservation.

Available Carpark
4

People Counter

Carpark Sensor
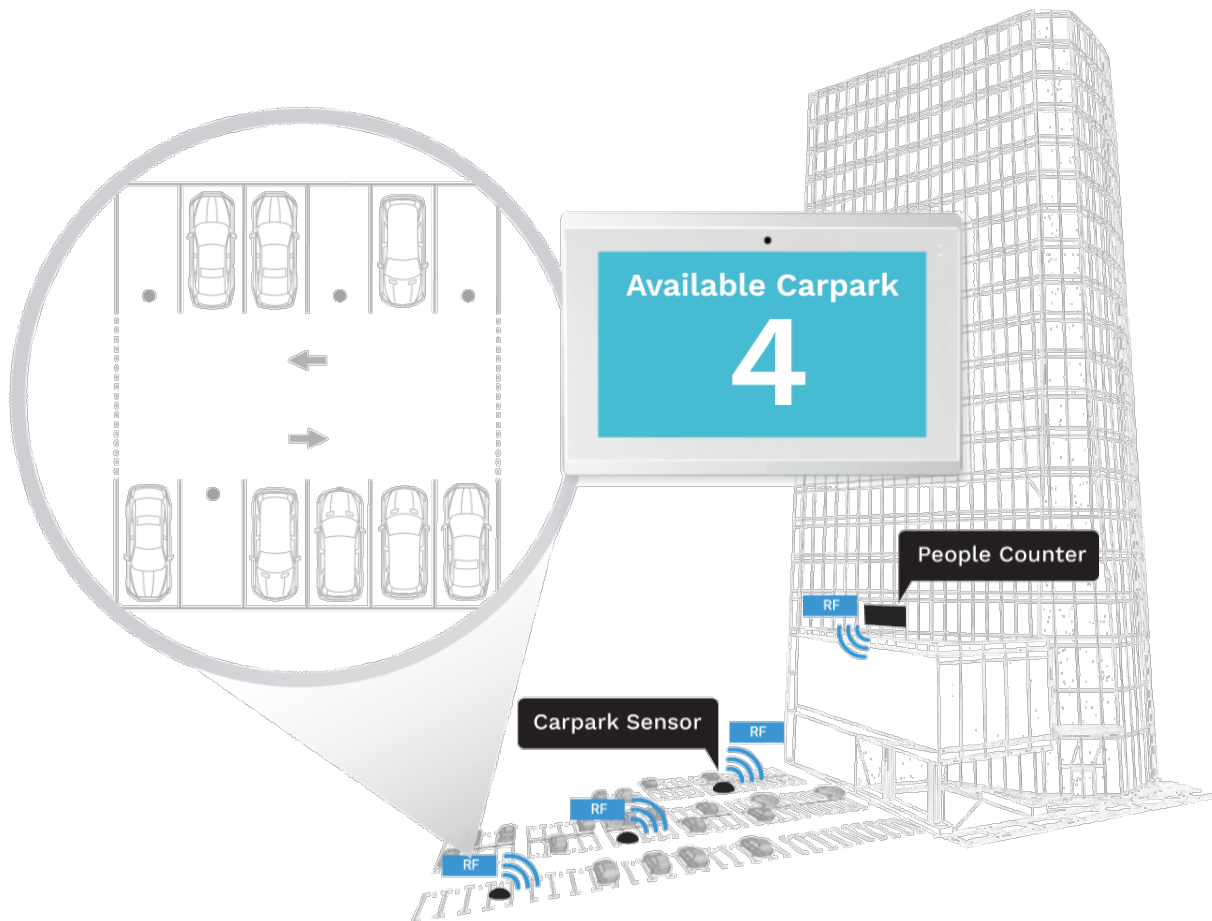
- Using **Magnetometer** and **Radar** for vehicle detection
- Up to 98% accuracy
- Wirelessly connect to FootfallCam counters via **Radio Frequency** (RF)
- Battery operated
- **IP67** - Sturdy and waterproof casing

FootfallCam Car Detector

FootfallCam™

Analytic Reports for Targeted Functions
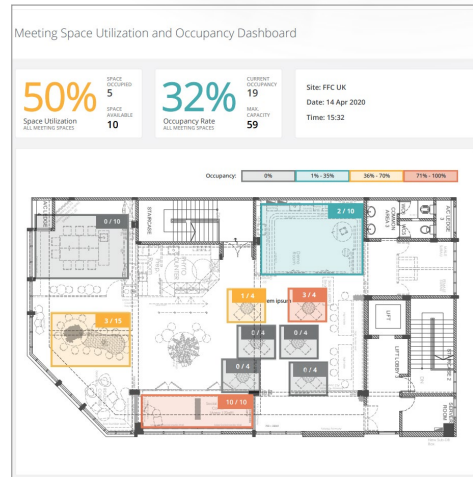
#1 Meeting Space Utilization and Occupancy Dashboard

Track the utilization rate and occupancy in different facilities

Key Questions:

- Which facility is nearly fully occupied (71-100%)? Which facility is having low utilisation rate (1-35%)?
- Should facility manager enable access to more meeting spaces to avoid overcrowding?
- What is the occupancy rate of each floor in the building? Should the employees consider using other floors for better social distancing compliance?

View report here.
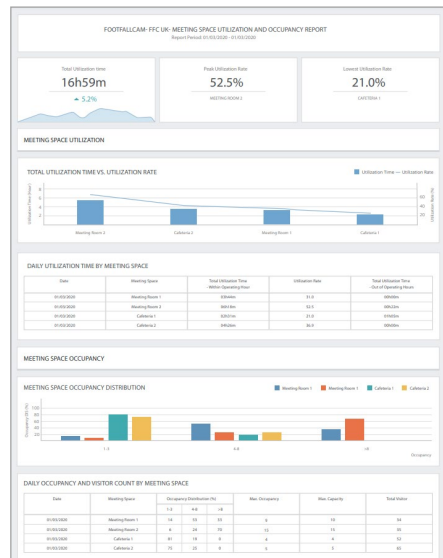
#2 Meeting Space Utilization and Occupancy Report

Overview of the utilization rate and occupancy in the entire facility

Key Questions:

- Which facilities are having the highest/lowest utilization rate?
- Is there any facilities being under-utilized/over-utilized?
- Are the facilities being used during out-of-hour periods? Should the management look into extending the operating hours?

View report here.

FootfallCam™

Analytic Reports for Targeted Functions
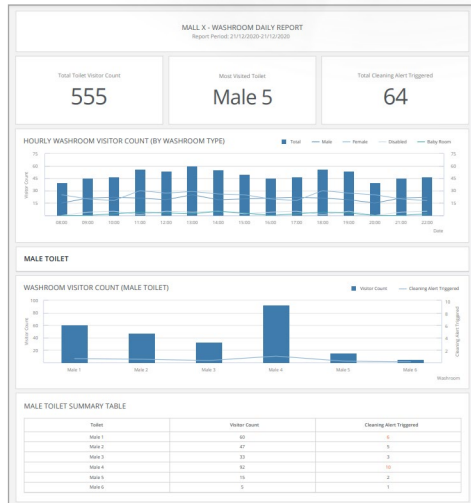
View report [here](#).

#3 Washroom Daily Report

Measure washroom usage for demand-based cleaning

Key Questions:

- Which hour of the day has the highest hourly washroom usage? Do I have enough cleaners on standby during that period?
- How many times was the cleaning alert triggered in a particular time range?
- Which washroom has the highest usage? Should I allocate more cleaners to be on standby for that washroom?
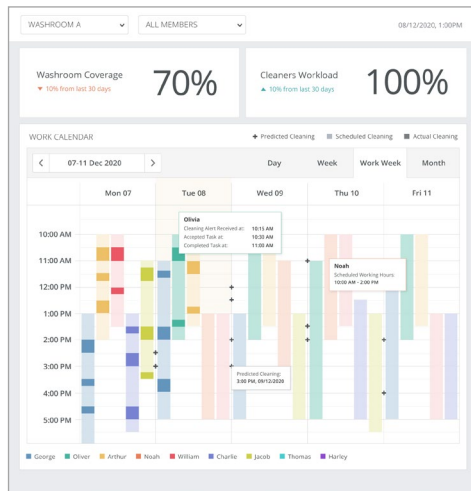
View report [here](#).

#4 Washroom Management Dashboard

Plan your cleaners' schedule effectively using predictive analysis

Key Questions:

- When did the cleaners washed the toilet during their shift?
- Based on the previous cleaning hours, when should the cleaners be on standby in the future?
- Was the cleaning schedule enough to cover all washrooms? Should there be any changes in the schedule to improve washroom coverage?
- Were the cleaners' workload fully utilized? Should there be any changes in the schedule to increase/reduce their workload?

Reporting Suite
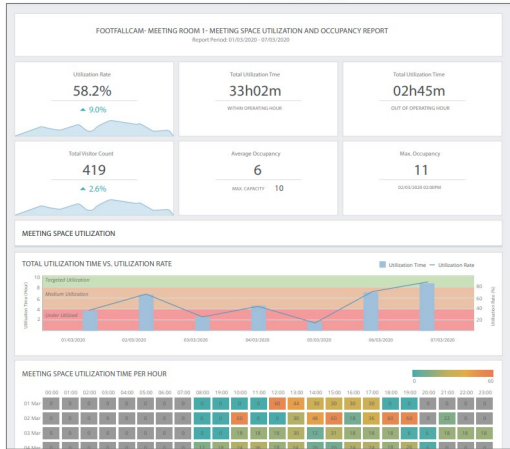
Meeting Space Utilization Report
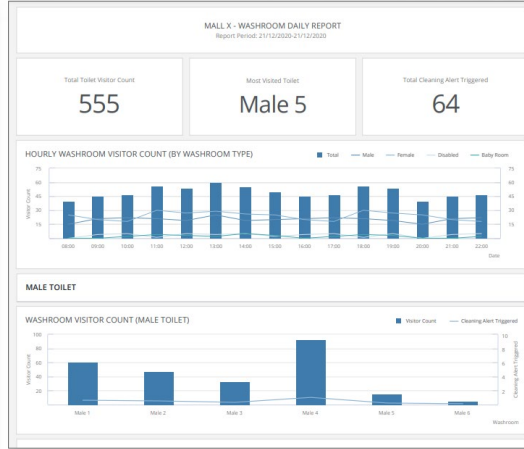
Washroom Daily Report
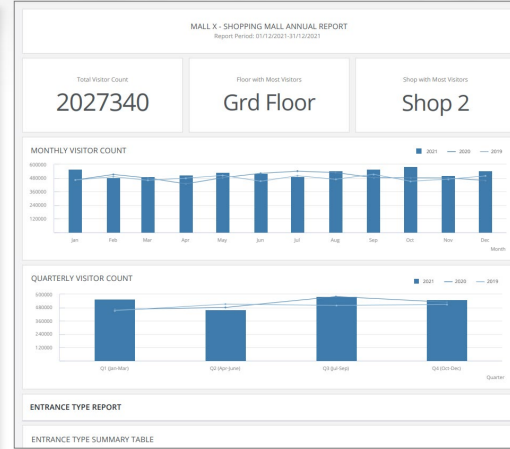
Shopping Mall Annual Report
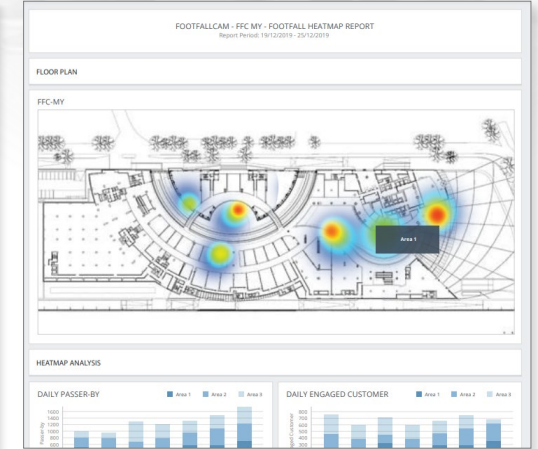
Heatmap Report
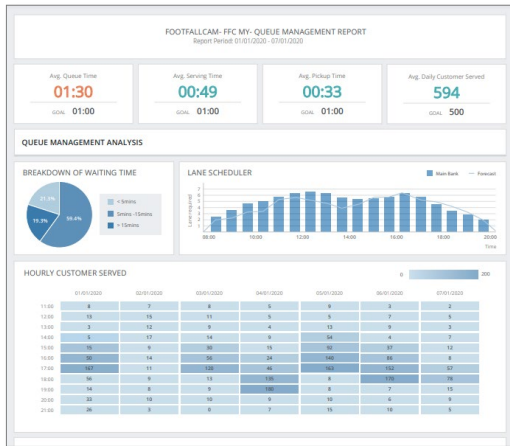
Queue Management Report
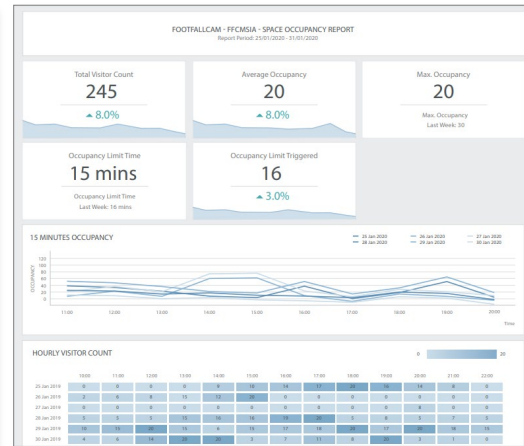
Space Occupancy Report

Open Space Occupancy
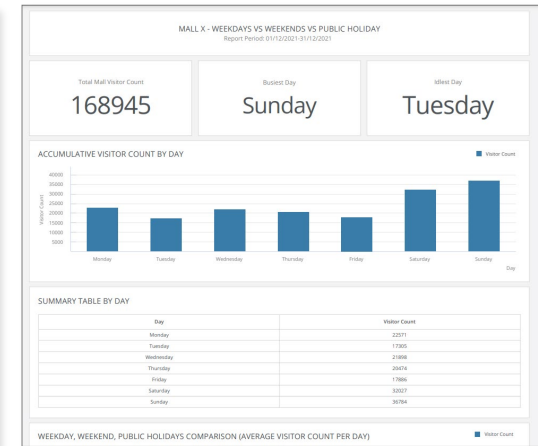
Weekday vs. Weekend

FootfallCam™

FootfallCam Network Connectivity

FootfallCam's Dedicated Network
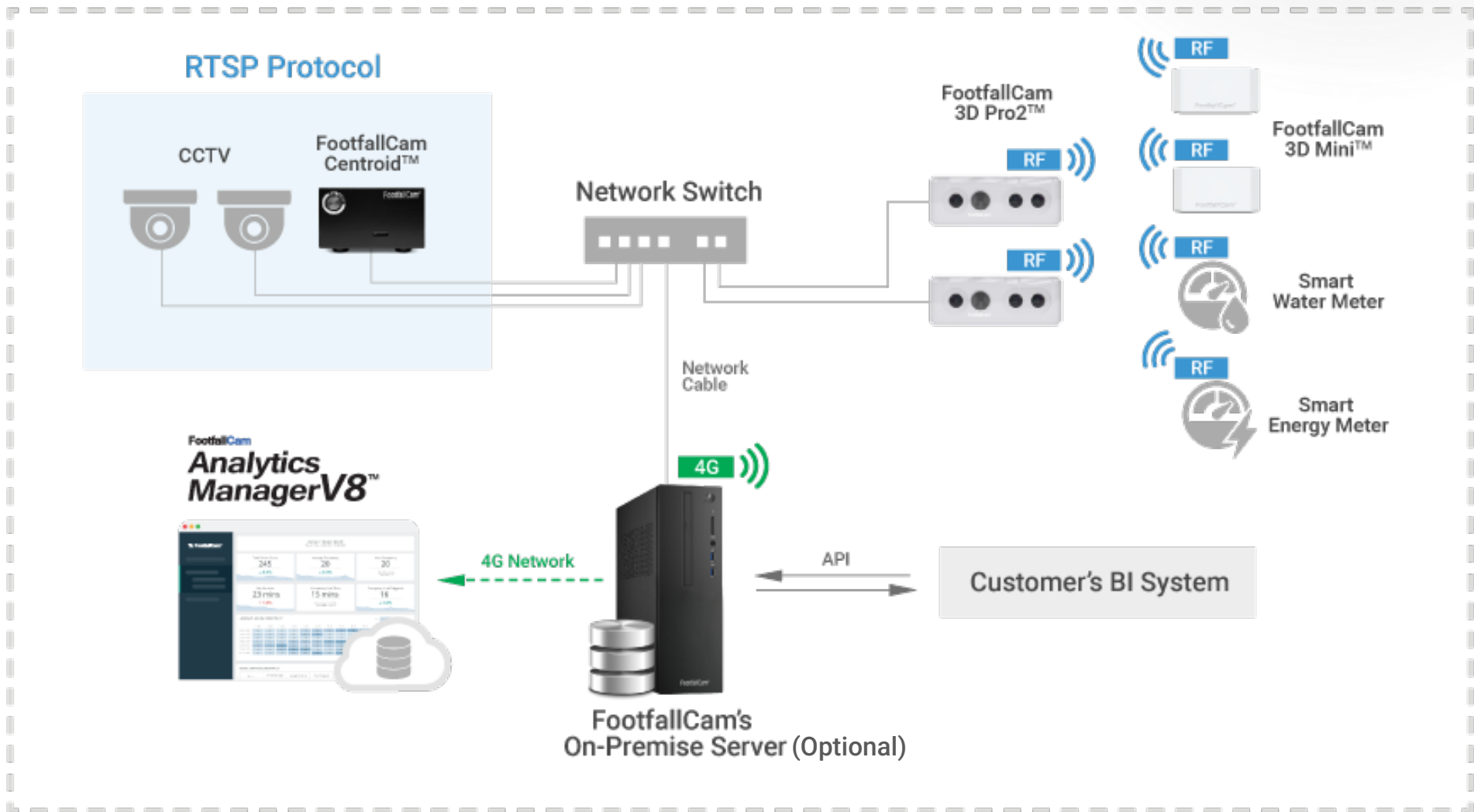
FootfallCam System Design – Sample Floorplan
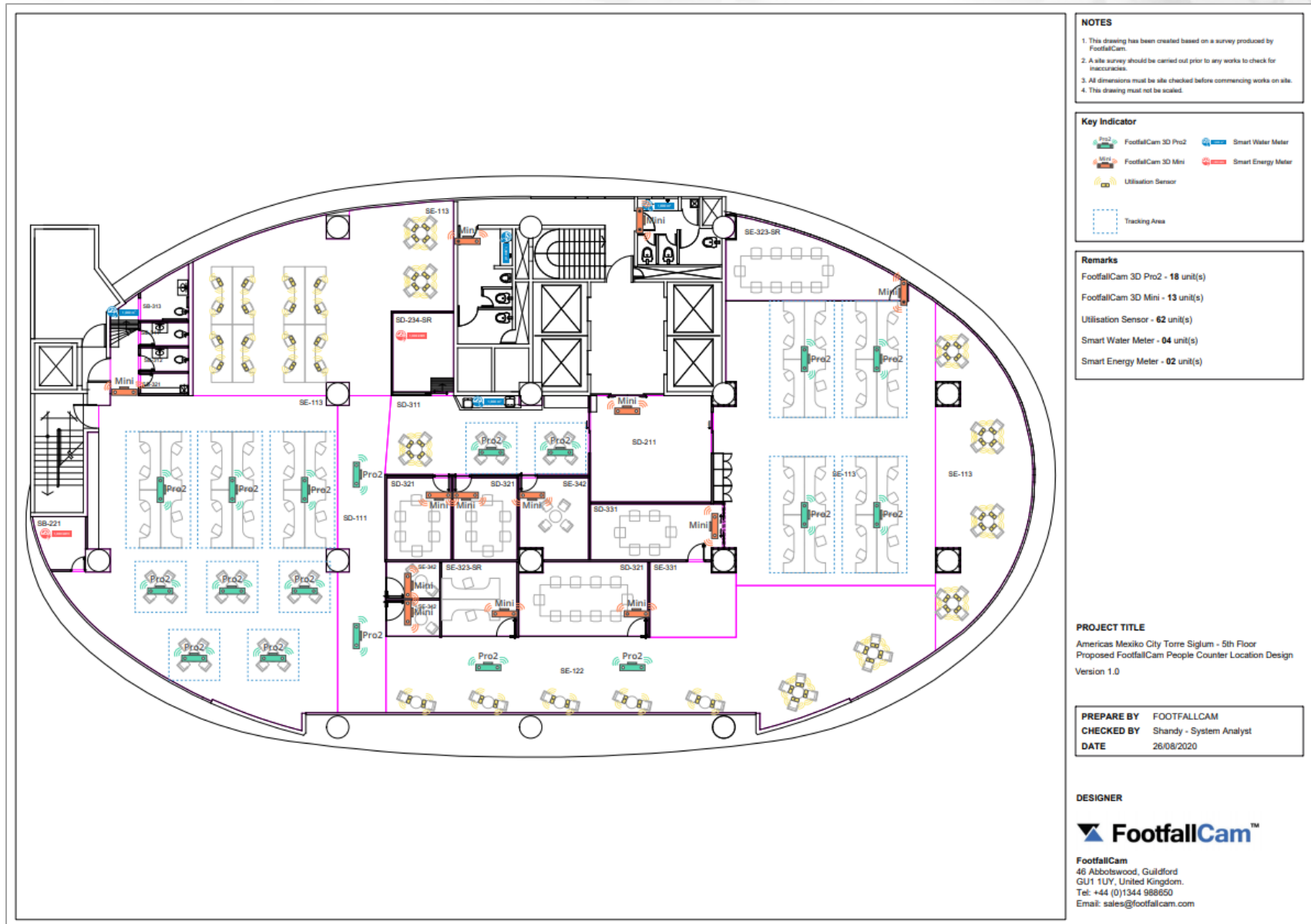
FootfallCam Sample Floorplan Design here
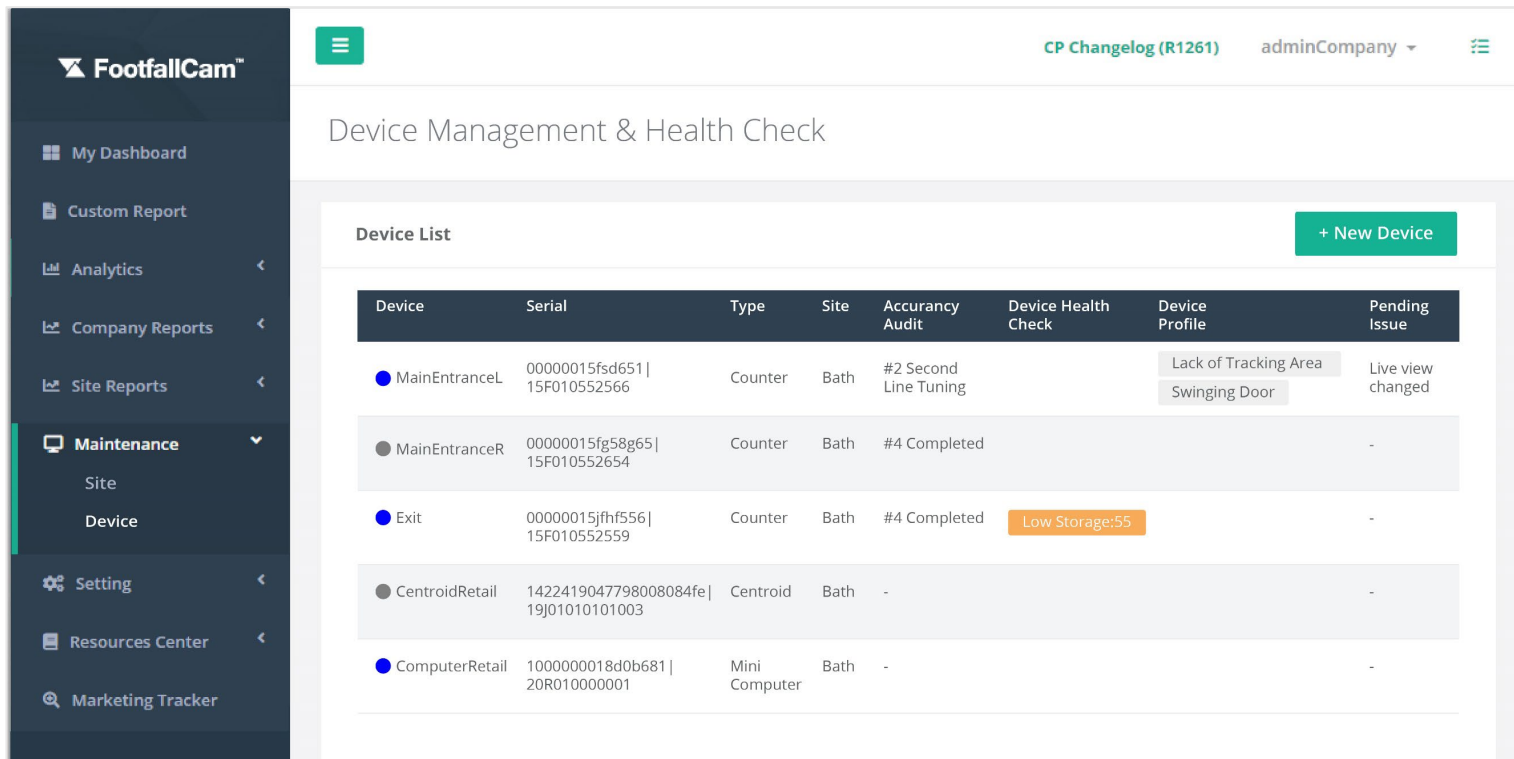
FootfallCam Device Management

- Designed to manage large number of counters

- Collects data from all counters and centralizes them in a single place

- Fully manage FootfallCam sensors

- Easily **add and remove** counters from your account

- Edit configurations remotely without going on-site
  - Branch ID
  - Counter ID
  - Number of sensors per branch,
  - Operating hours
  - Etc.

More details can be found here

FootfallCam Health Check

- **Monitor** if all sensors are connected and counting.
- **Scheduled daily checks** at a pre-defined time
- Display counters that are offline for more than 30 mins
- Send **automated email alert** to person-in-charge detailing any faults found
- Proactive yet manageable approach
- Detects issues such as:
    - Network issue or failures
    - Abnormal data alert
    - Counting data and Wi-Fi data upload checking

FootfallCam Rule Engine

FootfallCam Rule Engine - List View

FootfallCam Rule Engine - Settings

- 500+ different **rule templates**
- Customised rules using Python, interface with:
  - FootfallCam raw data, or
  - Aggregated metrics
- **Automatic notification** via SMS, Emails, FootfallCam Watch, Android and iOS Apps

Account Management

Individual user accounts can be setup for team members and assign access rights accordingly.

Account Type	Description	Example
Admin	Can create more accounts and remove unwanted accounts.	CEOs are able to restrict the store managers' access to certain data metrics.
User	Limited access in account creation and removal.	Store managers are only allowed access to their own store's data.

Maintaining Data Integrity

The Data Integrity Report allows users to monitor data discrepancies and site changes. For example:

1 Site Summary for the last 14 days

No. of Visitor (IN)	No. of Visitor (OUT)	Discrepancy (%)
8,888	8,888	0.00

Discrepancy (%)

0.00

0% in Discrepancy would mean that the counters are functioning ideally with high accuracy.

2 Site Detail for the last 14 days

| Date	No. of Visitor (IN)	No. of Visitor (OUT)	Discrepancy (%)
SUN 01/12	8,888	8,888	0.39
MON 02/12	8,888	8,888	2.32
TUE 03/12	8,888	8,888	0.00
WED 04/12	8,888	8,888	32.26
THU 05/12	8,888	8,888	4.92
FRI 06/12	8,888	8,888	1.66
SAT 07/12	8,888	8,888	3.45
SUN 08/12	8,888	8,888	0.00
MON 09/12	8,888	8,888	1.44
TUE 10/12	8,888	8,888	16.67
WED 11/12	8,888	8,888	0.00
THU 12/12	8,888	8,888	2.56
FRI 13/12	8,888	8,888	1.51
SAT 14/12	8,888	8,888	21.88

16.67

16.67% in Discrepancy would require sourcing out the root cause of this occurrence.

To recover the missing data, FootfallCam server will re-aggregate the raw data stored in counter level and store the re-aggregated data in the server. Hence, users can retrieve back the missing daily or hourly data so that macro trends will not be affected.
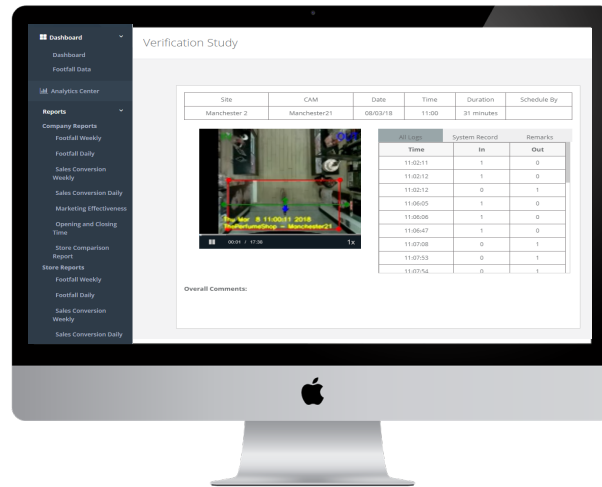
More information can be found here.

Accuracy Audit

How do we audit accuracy to ensure 95% and above counting accuracy?
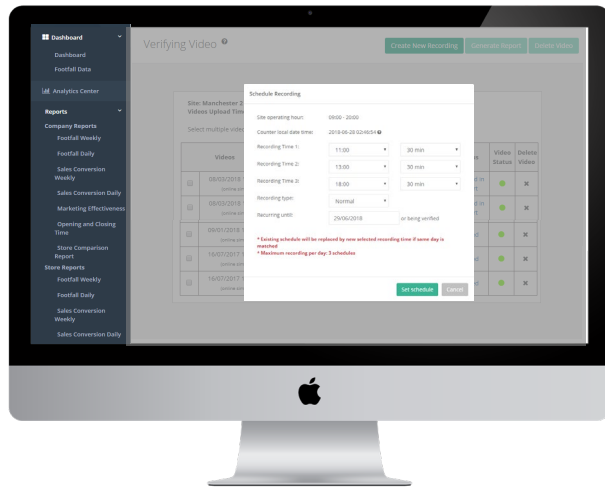
1 Schedule video recordings

Schedule video recordings of peak hours to ensure there is sufficient sample size (20 and above) for to audit the accuracy of the counter.

2 Compare system count and manual count

Compare the system count generated by the FootfallCam device against manual observations to determine the accuracy of the FootfallCam.
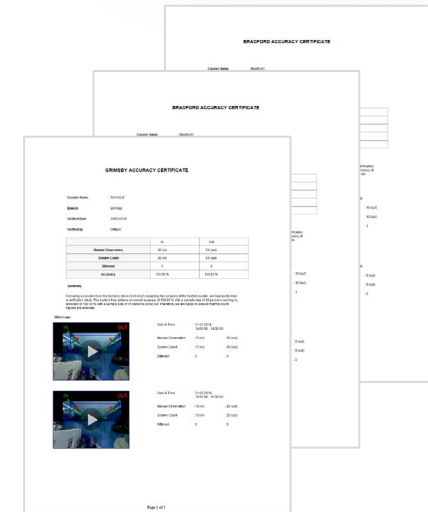
3 Generate verification report

Once there is sufficient sample size and the accuracy is satisfactory, a verification report with the video proof used in manual observation will be generated.

(Verification report: Sample 1)

FootfallCam™

Built-in maintenance support portal

The one-stop support center for all FootfallCam Analytics Software users.

Any technical issues can be raised via the Support Portal and this will be assigned to a technical personnel accordingly.

More information can be found here.

Data Privacy and GDPR Exemption

Low-Resolution Video Image (320 x 240)

3D Depth Map

- Counters installed downwards facing the ground – does not capture the entirety of the customer & unable to pick up facial features.

- Videos are recorded only **for verification purposes** and **taken in low resolution**. The videos will be deleted once verification is completed.

- FootfallCam uses 3D depth map instead of video images for counting purposes – data collected are non-visual and are will not be able to be identify with any individuals.

- FootfallCam is **exempt from GDPR**. More information can be found here.

Management Control

User Control

Branch Control

Email Scheduler

Import/Export

Health Check and Maintenance Tools

Data Integrity

Company Data Integrity

Issue Tracker

Support Portal

FootfallCam™

Enterprise Class Software
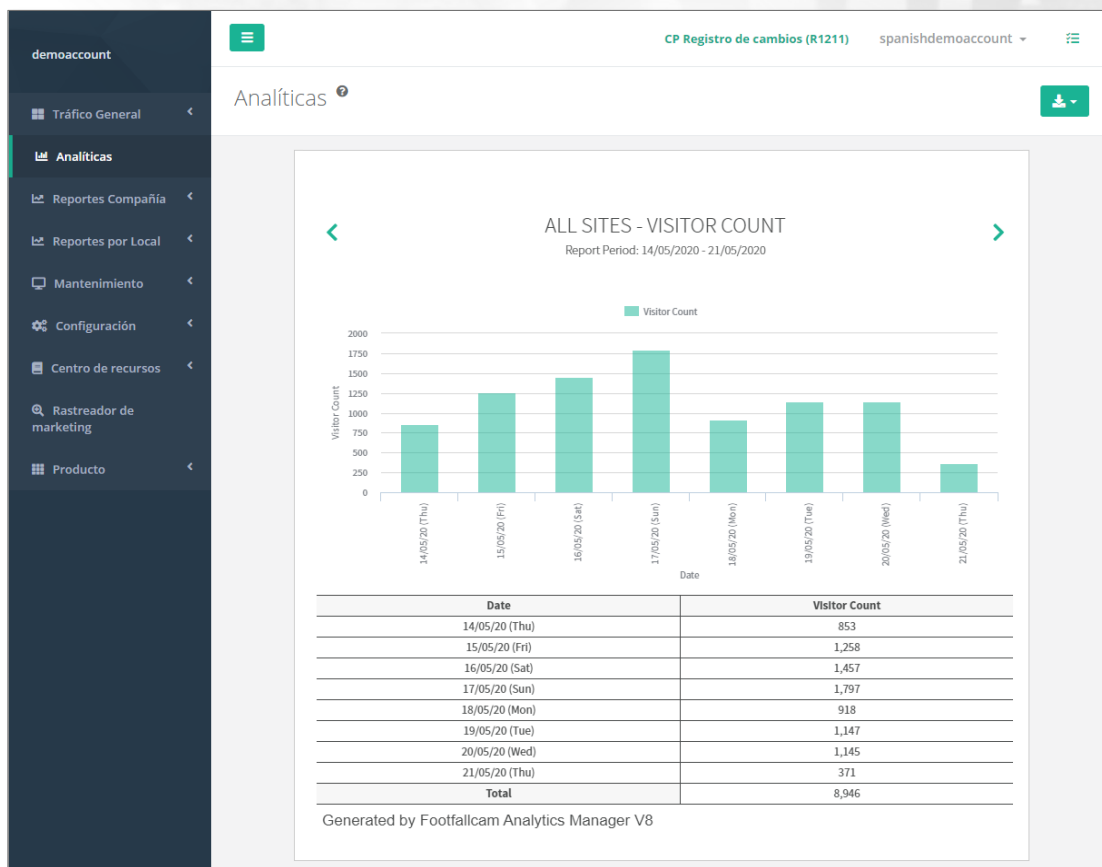
Multi-language Interface

Different languages available such as:

- English
- Dutch
- Spanish
- French
- Italian
- German
- Arabic
- Japanese
- Chinese

Customise dashboard design

- FootfallCam will customize the language and images in the dashboard
- Provide us with the translated text and graphics, then we will help you handle the configuration

FootfallCam™

FootfallCam Analytic Manager V8™

COMPANY A
21 October 2017, 14:00

Functions:

- Staff alert if capacity limit is breached
- Centralized Management Analytics Software
- API Available for Data Integration
- Pre-defined Report Set
- Health Check Report
- User Account Management
- Automated Email Scheduler
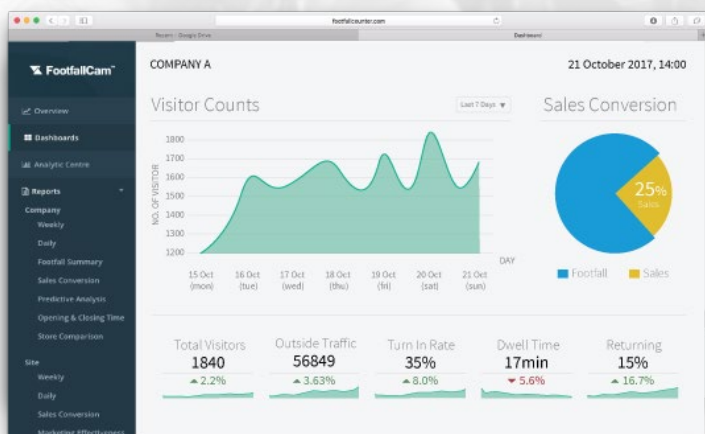
Software Specifications	
Interface	Http; Https
Compatible Browser	IE7 or Later Mozilla Firefox or Later Chrome Version 4.0 or Later Safari
User Levels	2 levels: Administrator, Standard User
Ethernet	10/100 Mb Ethernet
Time	NTP, Adjustable time zone, automatic day light saving adjustments
Data Delivery	TCP/IP
Database Type	SQLite
Report format	csv, .xml, .txt
Data Storage	5 Years storage with auto sync
Data Backup	Yes
Backup Frequency	Daily Full Backup of Data and Configuration Weekly Backup to Sub Server for Contingency Purpose
Software Version Upgrade	Auto Upgrade

Integration

FootfallCam System Open Architecture
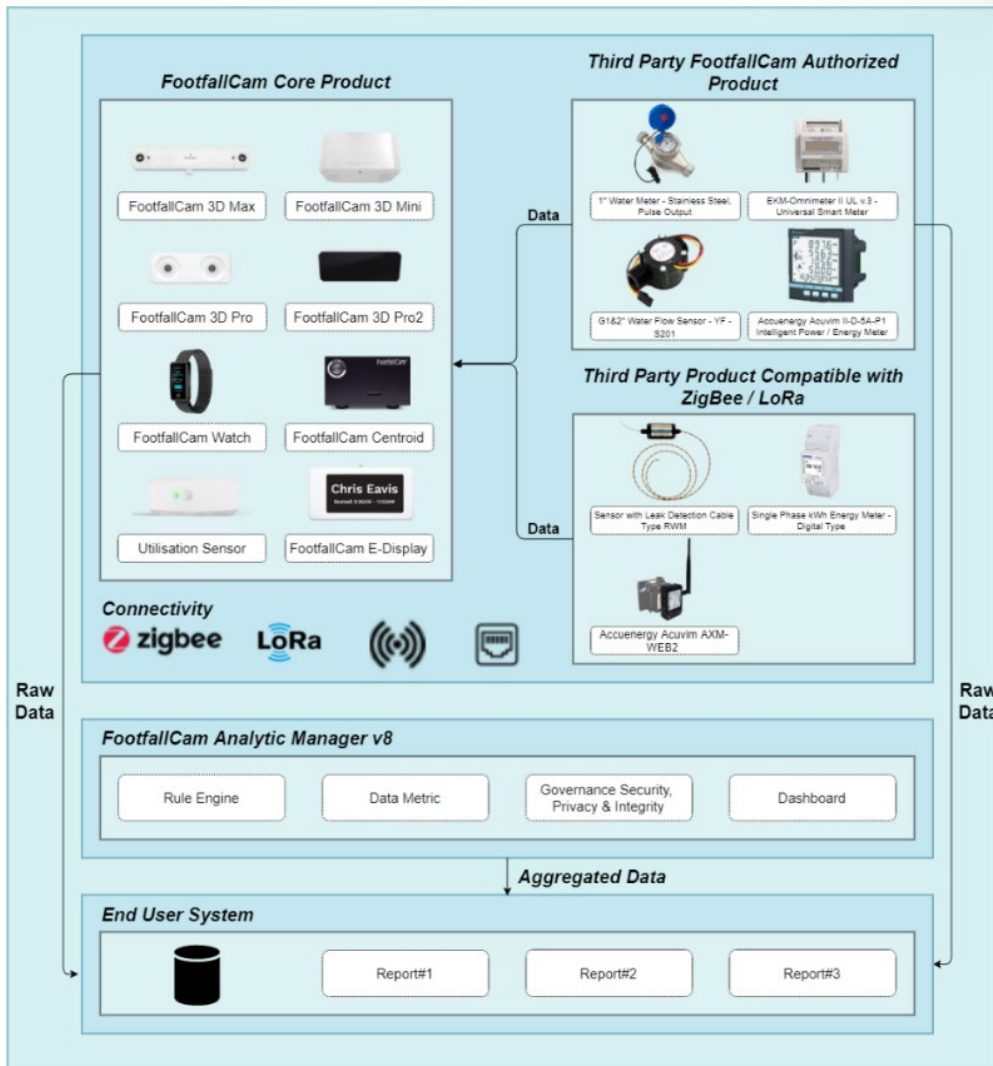
System Architecture

- FootfallCam supports:
  - Certified third-party smart sensors
  - **Zigbee** and **LoRa** compatible third-party smart sensors
- Can be hosted on FootfallCam Servers or hosted on clients' servers, as long as it is a FootfallCam Sensor with IoT gateway.
- Offers flexibility to work with a variety of smart sensors
- Dedicated FootfallCam specialist who will be responsible for integration

API: Integrate with your Applications
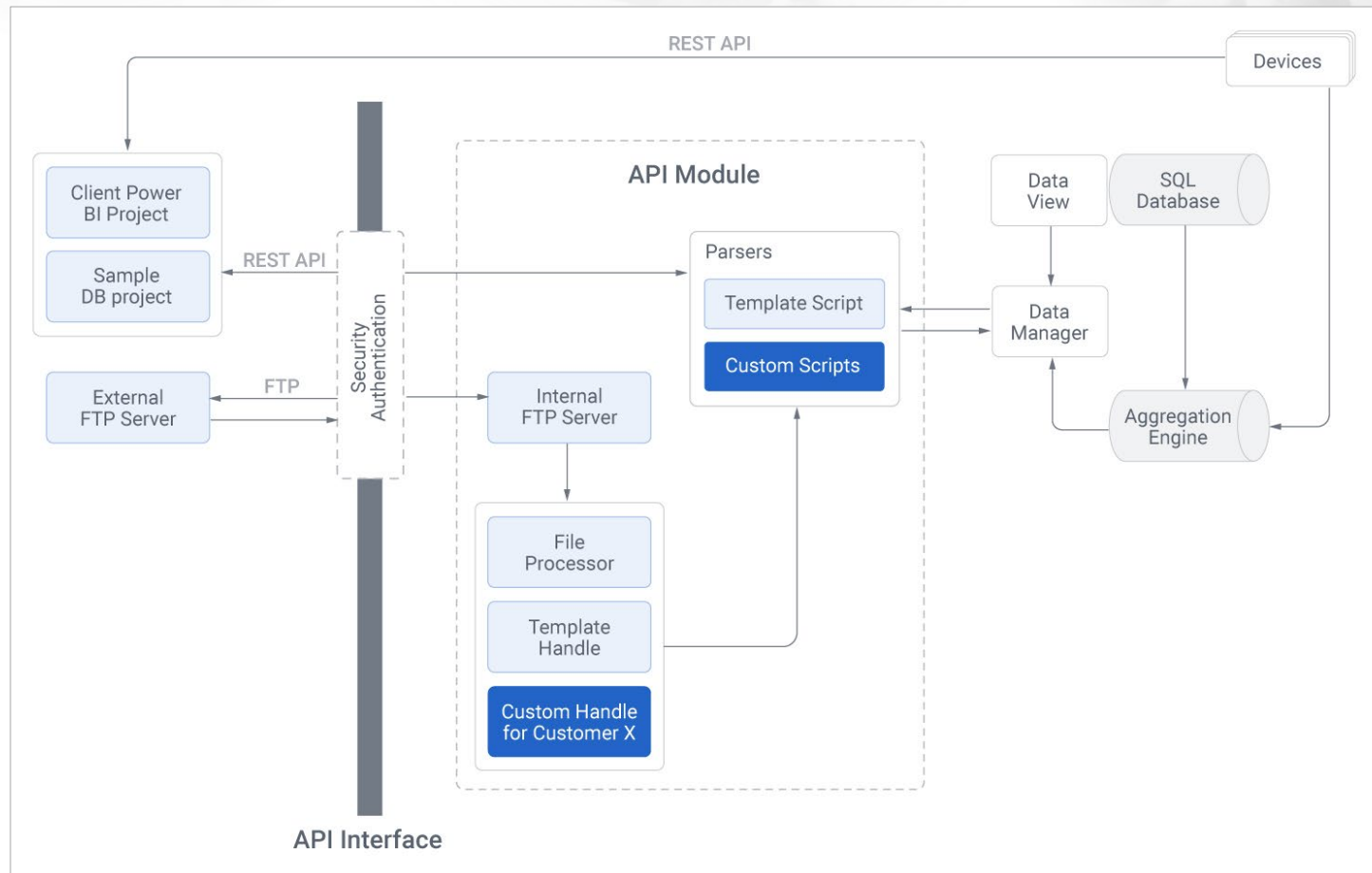
[FootfallCam API document](#)

- **Integrate** people counting data into third-party software platform or sample projects via API or FTP
- **Real-time** data retrieval
- Data in **aggregated** or **raw** format
- Allow **customised** scripts and handling for specific customer's project

System Security: IEEE 802.1x Certificate
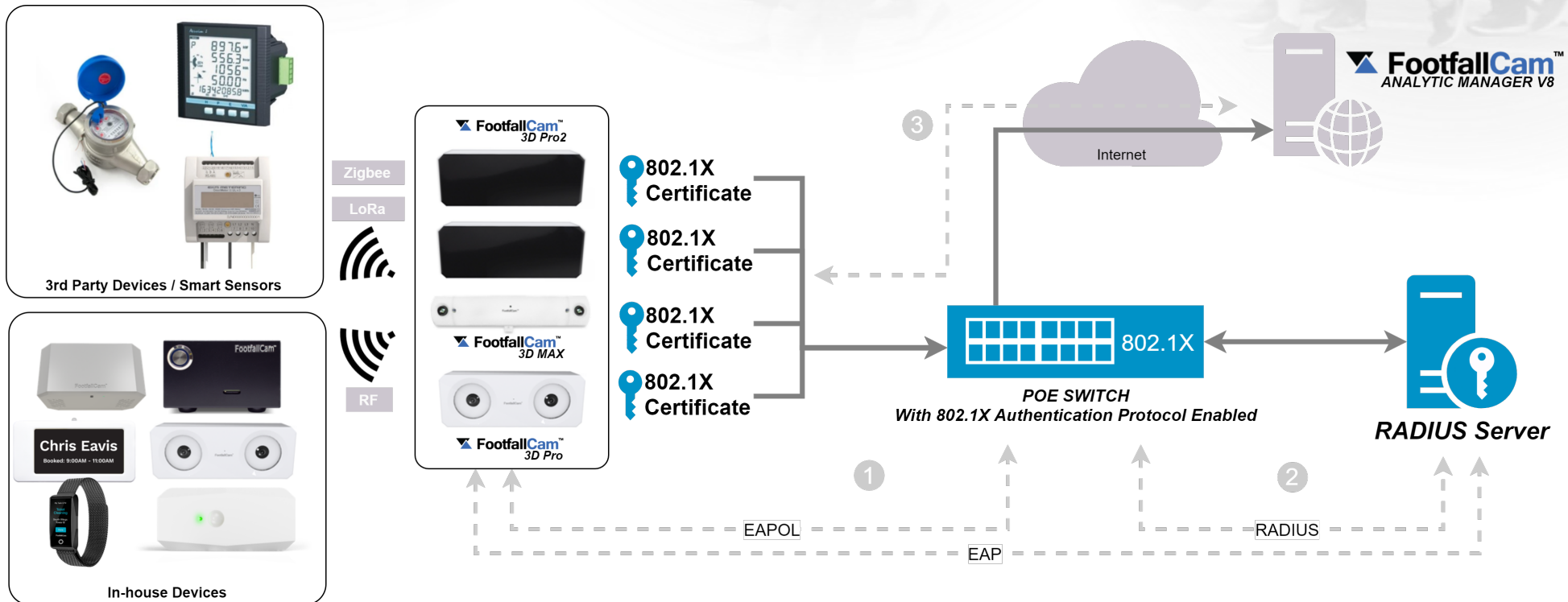
- FootfallCam™ Counters **supports IEEE 802.1x network authentication protocol**, allowing greater security for your own network environment while using our counters.

- **RADIUS Server (Authentication Server)** must be readily deployed, and a **PoE Switch with 802.1x enabled ports (Authenticator)** is required to interconnect and authenticate between our counters and the RADIUS Server.

- FootfallCam™ Counters **(Supplicants)**, required to install **802.1x certificate**, generated by the RADIUS Server, to enable this security feature.

Deployment of the Solution

Wiring Diagram for FootfallCam 3D *Mini*™

Up to 10 devices, Up to 100m

PSU

24 AWG Wire or thicker

Power Consumption (per 3D Mini)
7-12V, 40mA

FootfallCam 3D Mini™
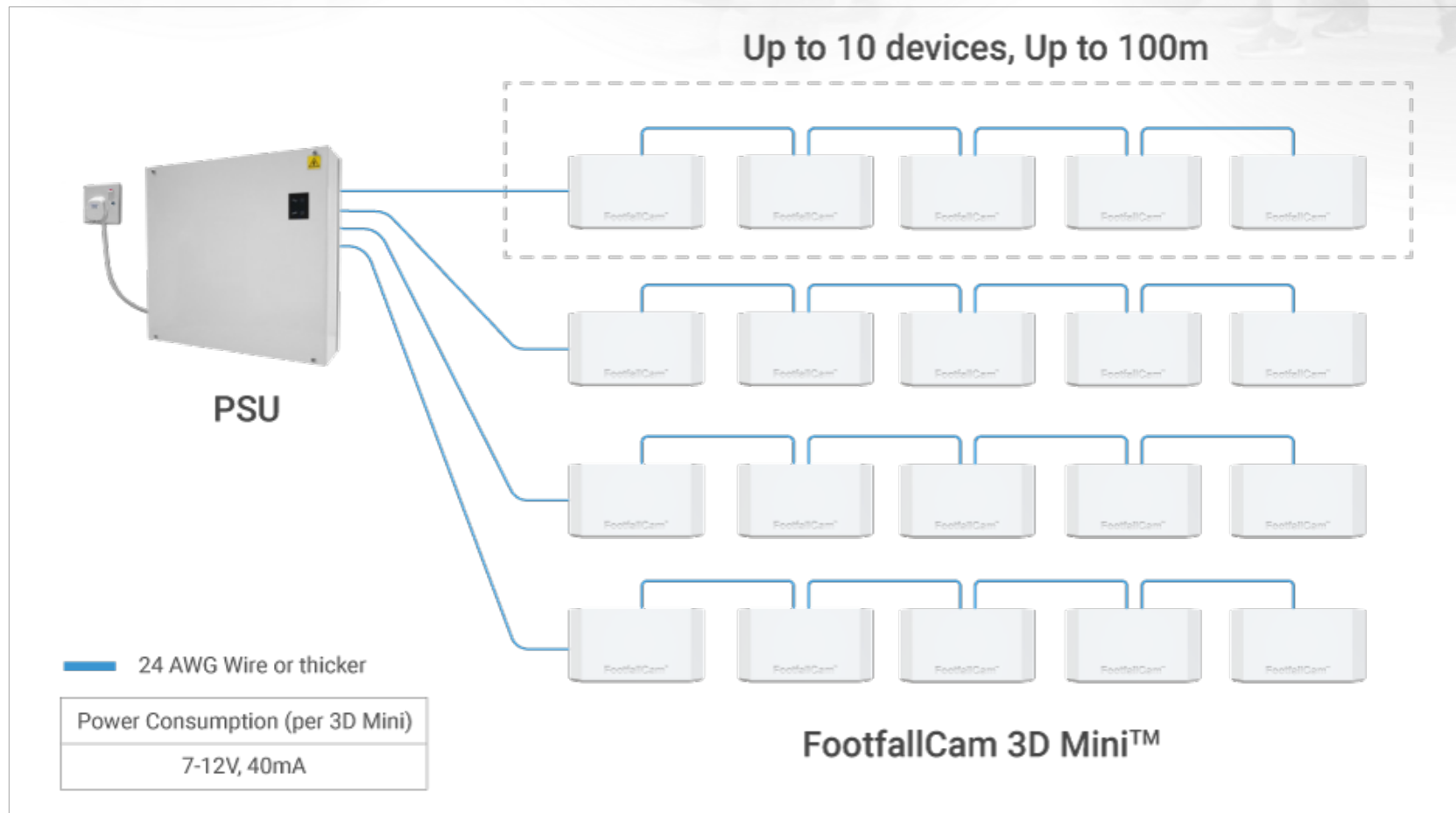
- Support up to **10x daisy-chained** devices, up to **100m** for each channel of Power Supply Unit (PSU)
- **Cost effective**, reduce infrastructure cost
- **Low power consumption**, environmental-friendly

Deployment Process

Installation Progress

Swiss Re Project Implementation Gantt Chart
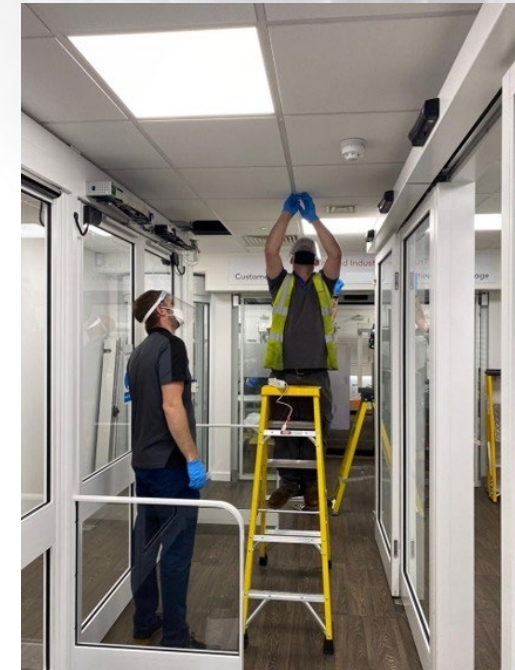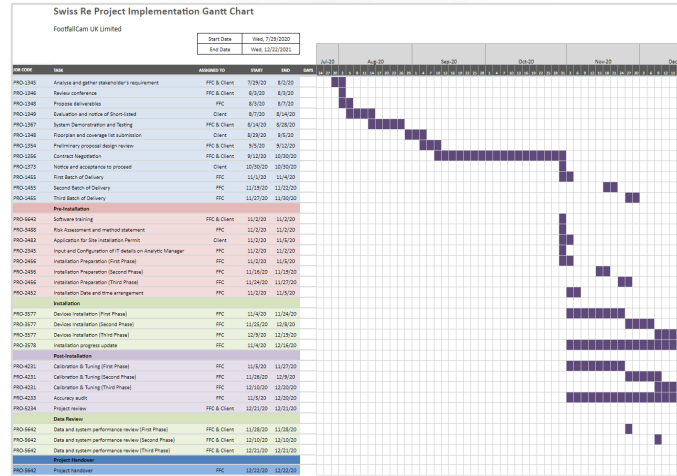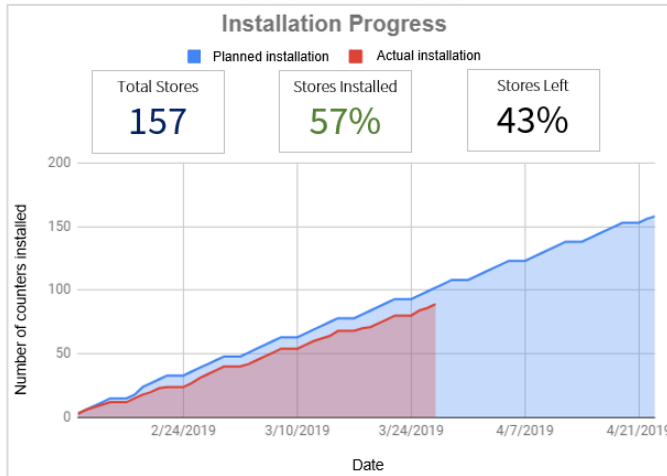
- Manage installation progress using [Installation Tracker](#) with bi-weekly update

- Scope of work and timeframe included in [Gantt Chart](#)

- Estimated timeframe: 6 weeks

- 120 devices installed in 1 site

- Data validation to be done within 3 days after each installation

- Deployment executed concurrently in different countries

FootfallCam™

Reactive & Proactive Support Workflow

This section outlines the parameters of all supporting services by FootfallCam.
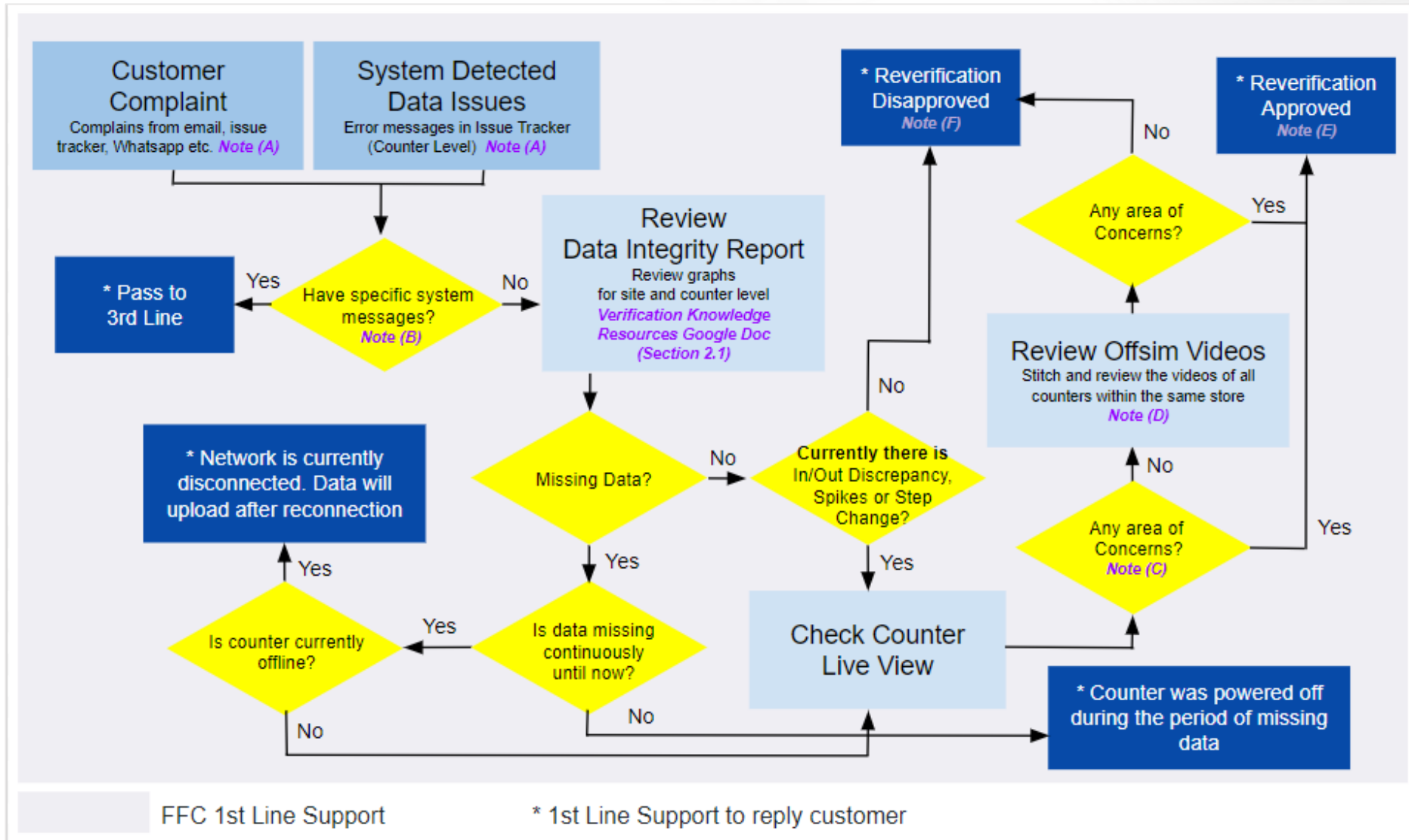
Flow chart of the support flow and diagnostics when issues are raised to FootfallCam.

Return Merchandise Authorisation (RMA) Process

Upon diagnosis by FootfallCam that a device is suspected faulty, the device will be sent back to FootfallCam to undergo further inspections through the Return Merchandise Authorization (RMA) Process.

1A Pending RMA Request
To find out the RMA reason (from customer or internal)

RMA is requested? — No / Yes

1B Pending RMA Request Approval
To review the RMA reason and approve / disapprove RMA request

RMA Request is approved? — No / Yes

2 Pending Remote RMA Inspection
To inspect the RMA counter from the software side and see if there is any faulty or defect

Closed

RMA Case is Reviewed? — No / Yes

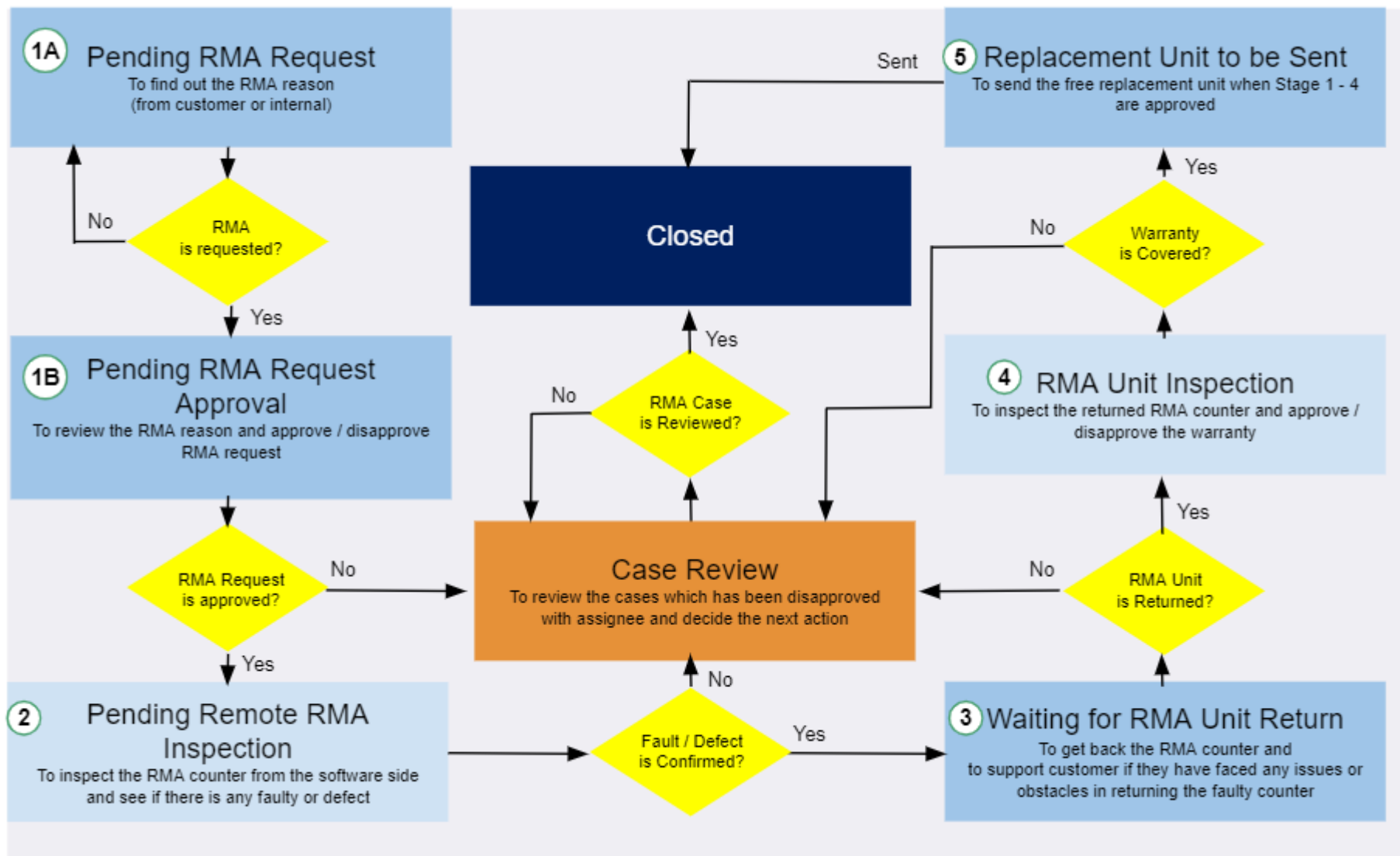**Case Review**
To review the cases which has been disapproved with assignee and decide the next action

Fault / Defect is Confirmed? — No / Yes

Sent

5 Replacement Unit to be Sent
To send the free replacement unit when Stage 1 - 4 are approved

Warranty is Covered? — No / Yes

4 RMA Unit Inspection
To inspect the returned RMA counter and approve / disapprove the warranty

RMA Unit is Returned? — No / Yes

3 Waiting for RMA Unit Return
To get back the RMA counter and to support customer if they have faced any issues or obstacles in returning the faulty counter

FootfallCam™

Contact Us

You need further information or have a question?
Please visit:

www.footfallcam.com

Subscribe to FootfallCam YouTube channel for more marketing and training videos:

 YouTube

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