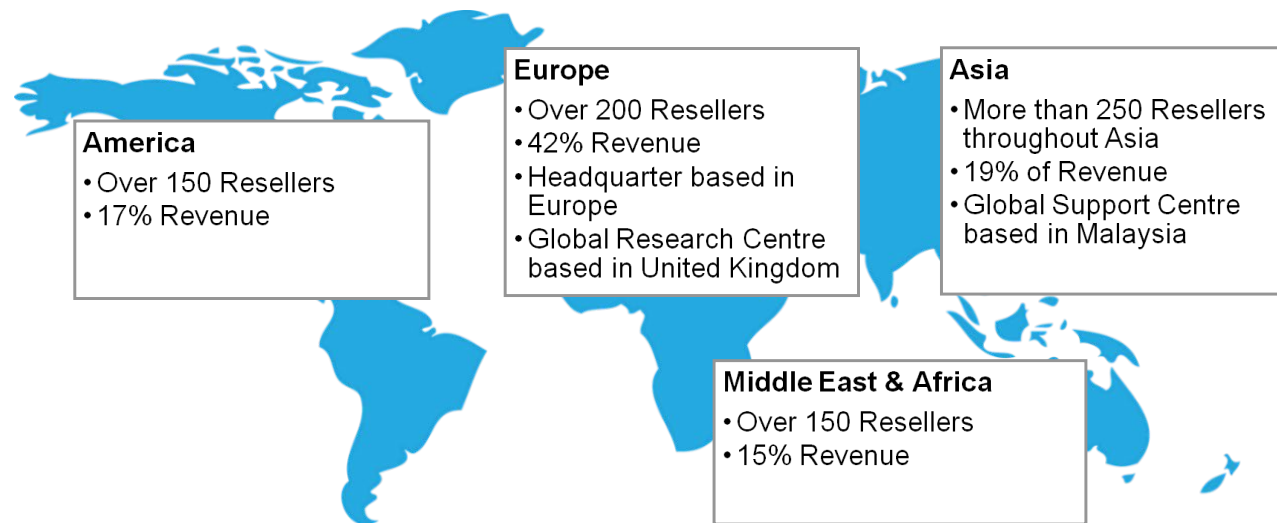# People Counting System for Libraries

Visibility on Patron's Traffic Flow

About FootfallCam™

Global Leader in People Counting System

FootfallCam is the global leader in people counting solutions. 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

- FootfallCam is continuously reinvesting more than 24% revenue into research and development
- **In-house R&D team** dedicated to the development of both hardware and software of FootfallCam
- 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.
- Prior to the Covid-19 scenario, our research team predicted the demand for this solution ahead live occupancy we activated our R&D team to develop our Live Occupancy Control System

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Topics of This Webinar:

- Potential Market for Libraries
- Overview of Smart Library System
- Key Feature #1 Visitor Count
- Key Feature #2 Children Counting
- Key Feature #3 Live Occupancy Monitoring System
- Key Feature #4 Area Utilisation
- Key Feature #5 Cross-Site Visit Tracking
- Key Feature #6 Marketing Effectiveness
- Key Feature #7 Staff Exclusion Tag
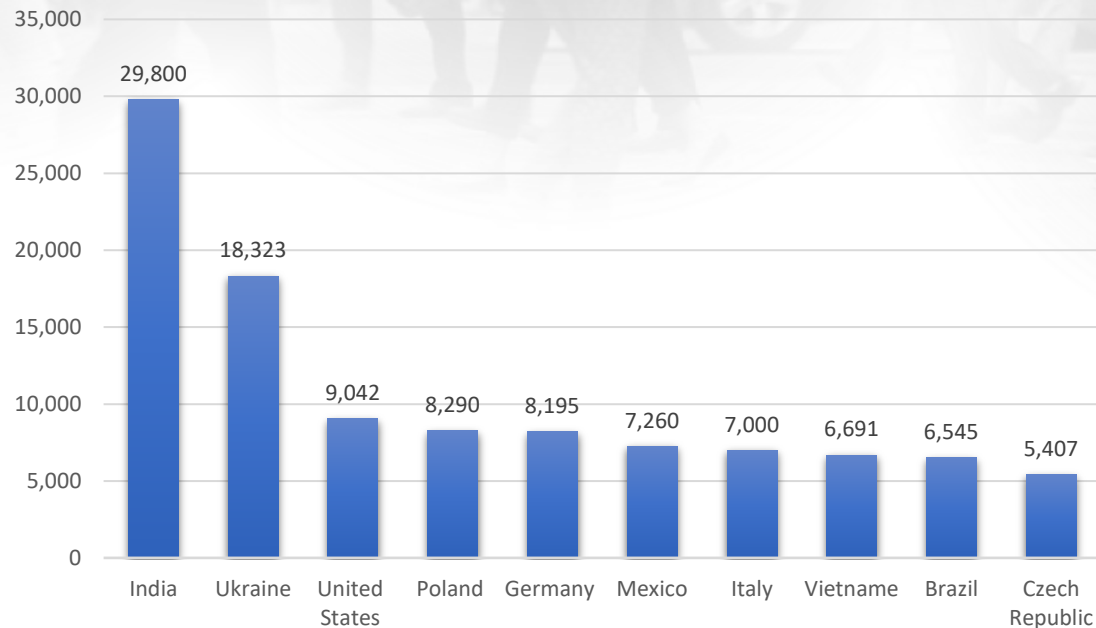- Case Studies

About the Speaker

DR. MELISSA KAO *BSc (Hons), PhD*

Director of International Sales, FootfallCam UK Limited.

Connect on Linkedin

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Potential Market for Libraries

Public Libraries Around the World

Country	Libraries
India	29,800
Ukraine	18,323
United States	9,042
Poland	8,290
Germany	8,195
Mexico	7,260
Italy	7,000
Vietnam	6,691
Brazil	6,545
Czech Republic	5,407

Big market with strong urgency to transform

- Up until year 2019, there are around **406,560** of public libraries worldwide.
- With the introduction of eBooks and eReaders, public libraries are diversifying to offer more community services than just books borrowing.
- Local councils would need to know the usage of their facilities and services so they can continue to provide funding to the relevant sites.
- This creates **a growing need** for the implementation of people counters in public libraries.
  (Source: https://cclibrarians.org/outlook/december-2018/modern-traffic-counting-libraries)

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Overview of Smart Library System

"We need to have an accurate method of tracking our visitors across all the different resources we provide. We want to be able to gauge the usage of each facility and allocate our funding accordingly."

Paul Smith, Head of Acquisitions – Chandler Library
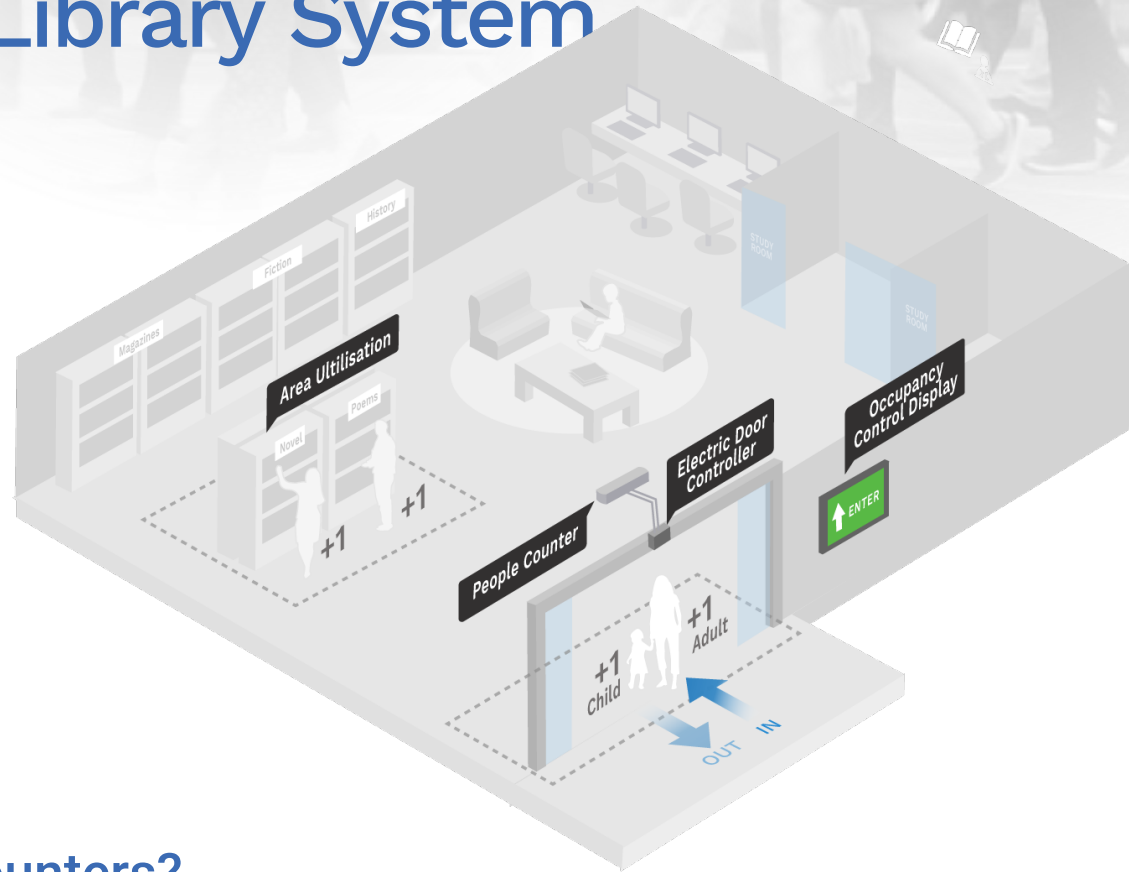

Why do Libraries need People Counters?

- Libraries do not generate much revenue - rely on **government funding** for additional resources.

- They are faced with the challenge that they are unable to justify the necessity of the usage of their resources by the community to the government.

- They have no method of determining the number of visitors that visit their library and are **unable to quantify the usage** of their facilities.

- This creates the need for people counters as data provided by FootfallCam is able to quantify the usage of facilities and the necessity of resources to the community.

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Requirements for Libraries

Here are some of the major issues faced by libraries:

1. *"How often are our resources being used?"*

2. *"What is our most used and least used facility?"*

3. *"How can we make cases to administration for resources?"*

4. *"How can I automatically control the number of patrons to comply with social distancing guideline?"*

#1 Visitor Count
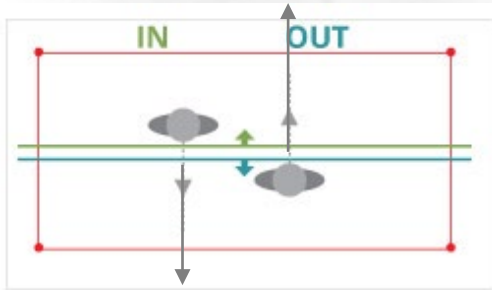
Bi-directional count
3D Count: **1 in 1 out**
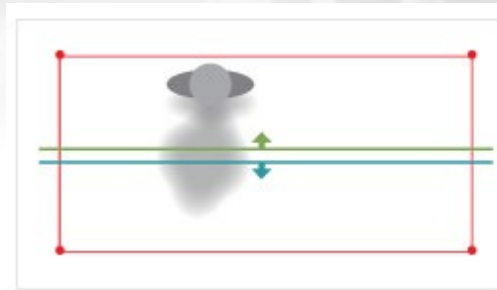
Strong shadow
3D Count: **0**

High Accuracy with 3D Stereoscopic Vision

- Using 3D stereoscopic video technology, the number of patron traffic data can collected at an accuracy of >95%.
- Libraries will be able to Identify the hourly trend and weekly trend for the number of patrons
- Visitor numbers provides **hard evidence for funding justification**
- View Visitor Count Report here.

Efficient Staffing Allocation

- **Reduce cost** through optimum staff scheduling and resources management
- Management can arrange the time for maintenance works to be carried out following non-peak seasons
- View Staff Planning Report here.

Watch how it works: https://youtu.be/wJkLeY2-TUI

X FootfallCam™

#2 Children Counting
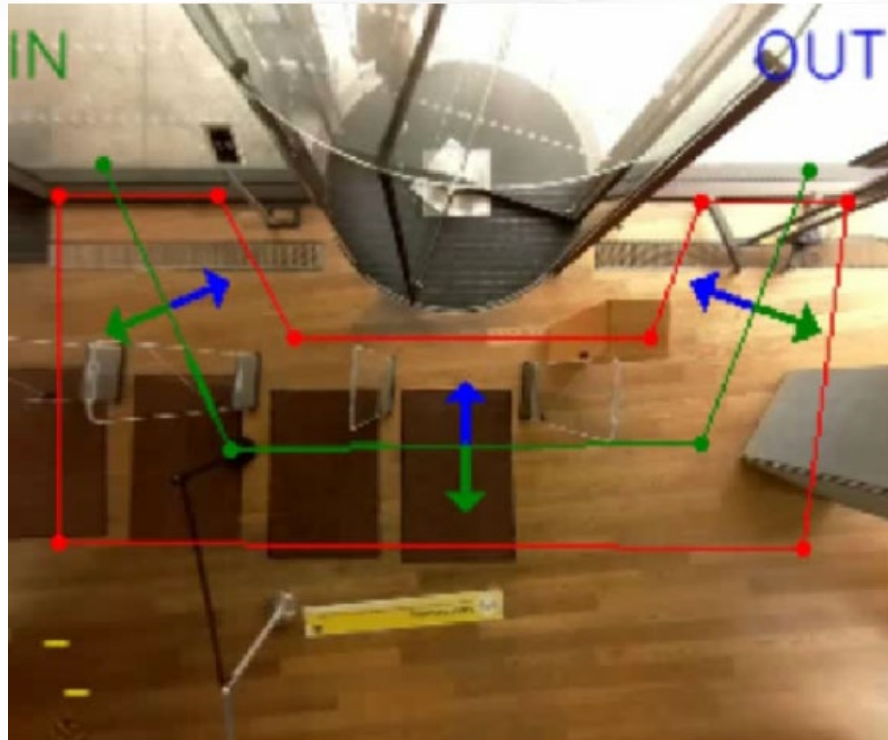
Uncompromised Data Accuracy with Children Counting

- FootfallCam can accurately detect the height of visitors and will be able to filter out non-animate objects such as trolleys and baby carts.

- However, the human height ratio can be manually configured to **include counting of children**, a feature that not commonly provided to retailers' due to the lack of purchasing power from children.

- FootfallCam Verification Specialist found the perfect balance and was able to maintain the accuracy around 90% - a solution that was capable of counting children and adults alike.

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#2 Children Counting

LIBRARY A - FOOTFALL ANALYTIC REPORT
Report Period: 01/01/2020 - 31/01/2020

Total Visitor
9645
▲ 8.0%

Avg. Visit Duration
1h30m
▲ 8.0%
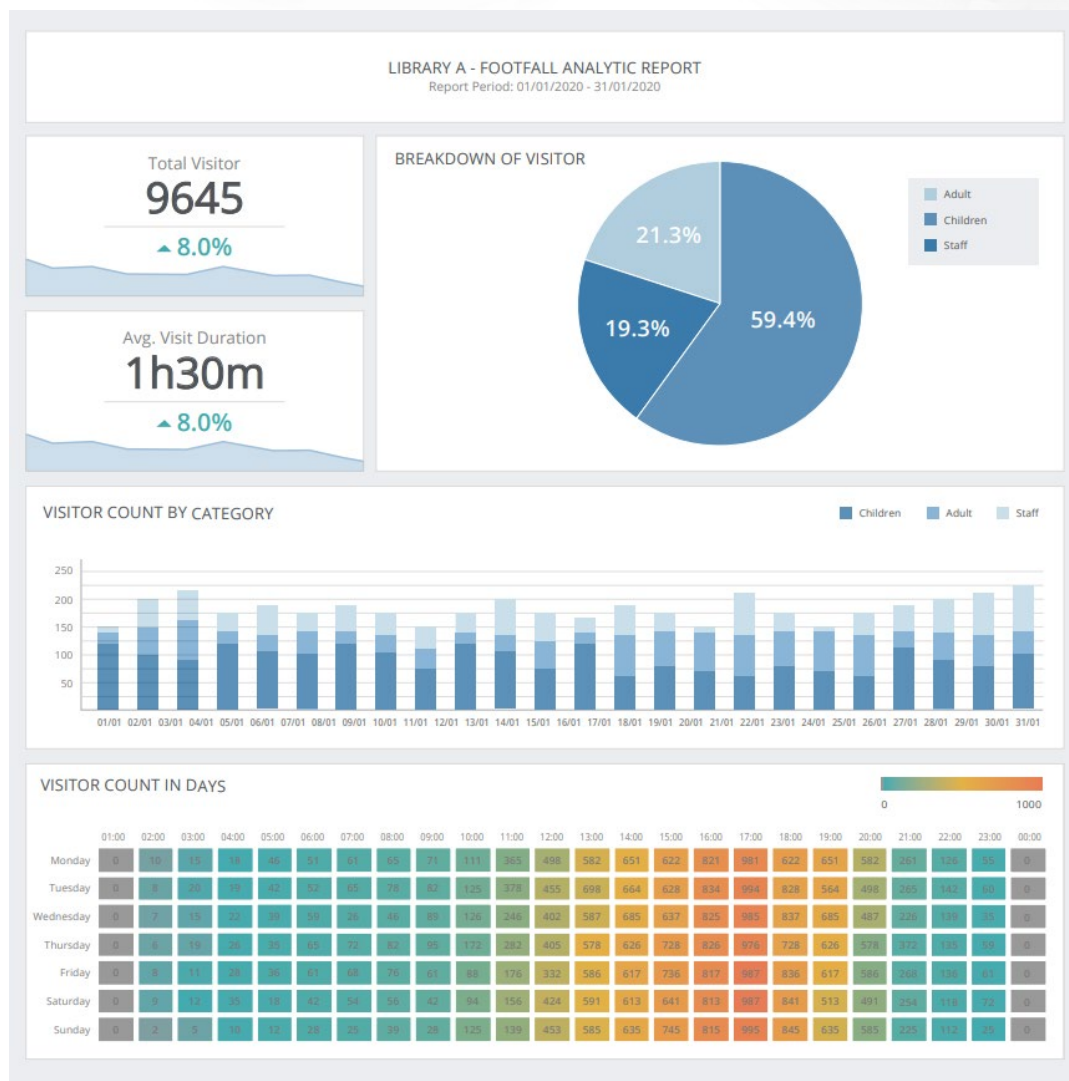
View Sample Report here.

Overview of the Patron's Demographic Information

- Counting of children is crucial for public facilities

- Clear insight into the **demographic information of the patrons**
  - How many proportion of the patrons are children?

- Automated reports give the valid data and overview of their facility (e.g. visitor movement and peak time).

- Replenish resources based on major patron's interest: bringing In reading materials that are catered to the younger age group

- Funding for implementation can be justified and maximized by provision.

- Allocate funding for **proper staffing and security** to make sure the facility is safe for all areas, (e.g. for the library archive collection).

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#3 Live Occupancy Monitoring System
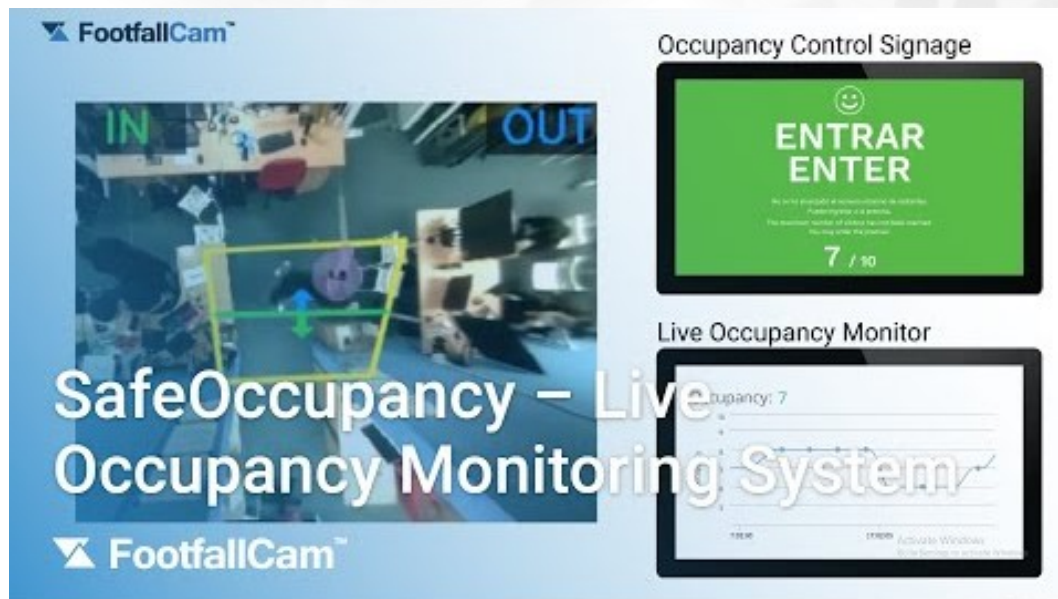
Watch how it works: https://youtu.be/QYEa_EjPjP8

View report here.

Help Public Facilities to Comply with Social Distancing

- Governments have imposed a social distancing regulation to contain the spread of the coronavirus.
  - Businesses need to find ways to **limit the number of people** in the premises after resuming operations

- Many resort to assigning security guards to control the customer traffic at their entrances
  - **Manual counting** – costly, inaccurate and provide no evidence for compliance

- FootfallCam Live Monitoring System helps to limit the maximum number of people within the confined premises

- This can be integrated with electric doors via GPIO to automatically close the door when occupancy limit is breached.

- **Find out more by watching our COVID-19 live occupancy solution webinar here: https://youtu.be/0gydBh7V7XM**

#4 Area Utilisation

FLOOR 1 - floor plan showing South Wing-LV1, Cafe, EventHallA, EventHallB, Fast Food

Most Crowded Area (Number of Visitors)
- EventHallA
- EventHallB
- FastFood
- Cafe
- SouthWing-LV1

Most Quiet Area (Number of Visitors)
- MusicRoom
- Gadget
- HomeLiving
- MRTEnt1
- KidsEnter.
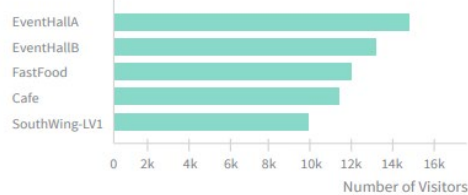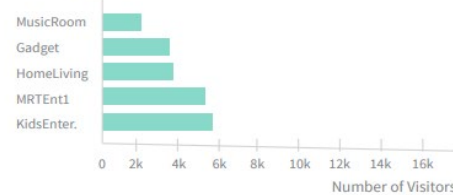
HOURLY TREND - AREA PROFILING

Legend: EventHallA, EventHallB, FastFood, Cafe, SouthWing-LV1
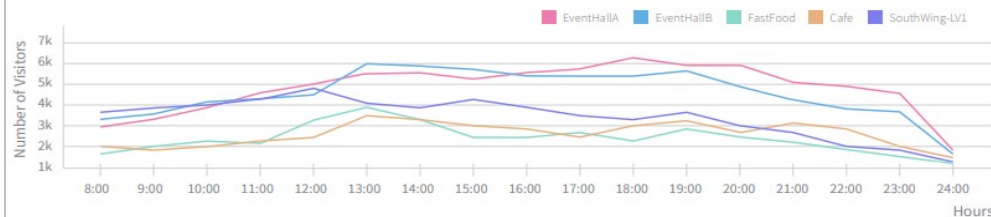
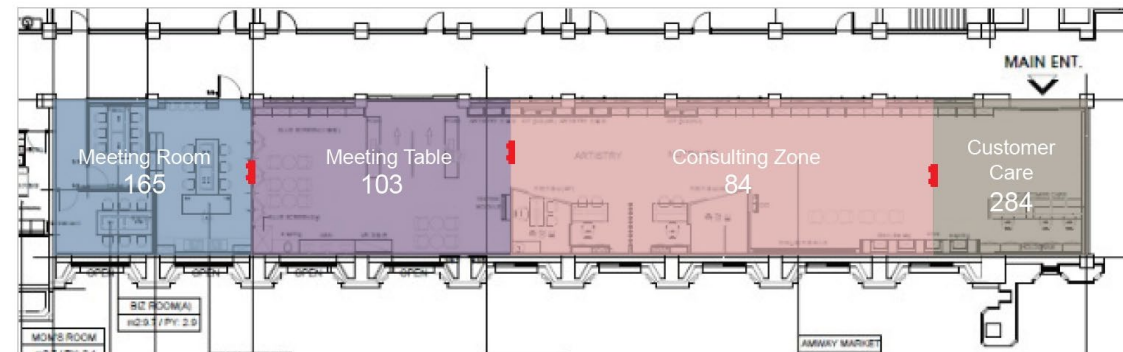| Area	Ranking	Today	Yesterday	Changes (%)	Last Week Same Day	Changes (%)
EventHallB	2	32536	29858	▲ 26.78	34001	▼ 14.65
SouthWing-LV1	5	28468	26591	▲ 18.77	27615	▲ 8.53
EventHallA	1	41512	39116	▲ 23.96	42234	▼ 7.22
KidzEntertainment	7	20100	18667	▲ 14.33	18457	▲ 16.43
MRTEnt1	8	12457	12997	▼ 5.40	10772	▲ 16.85
LuxuryFashion	6	26745	27052	▼ 3.07	25569	▲ 11.76
FastFood	3	31524	30576	▲ 9.48	33628	▼ 21.04
Cafe	4	29685	27411	▲ 22.74	28974	▲ 7.11
Cinema	9	11624	9644	▲ 19.80	8475	▲ 31.49

View Sample Report here.
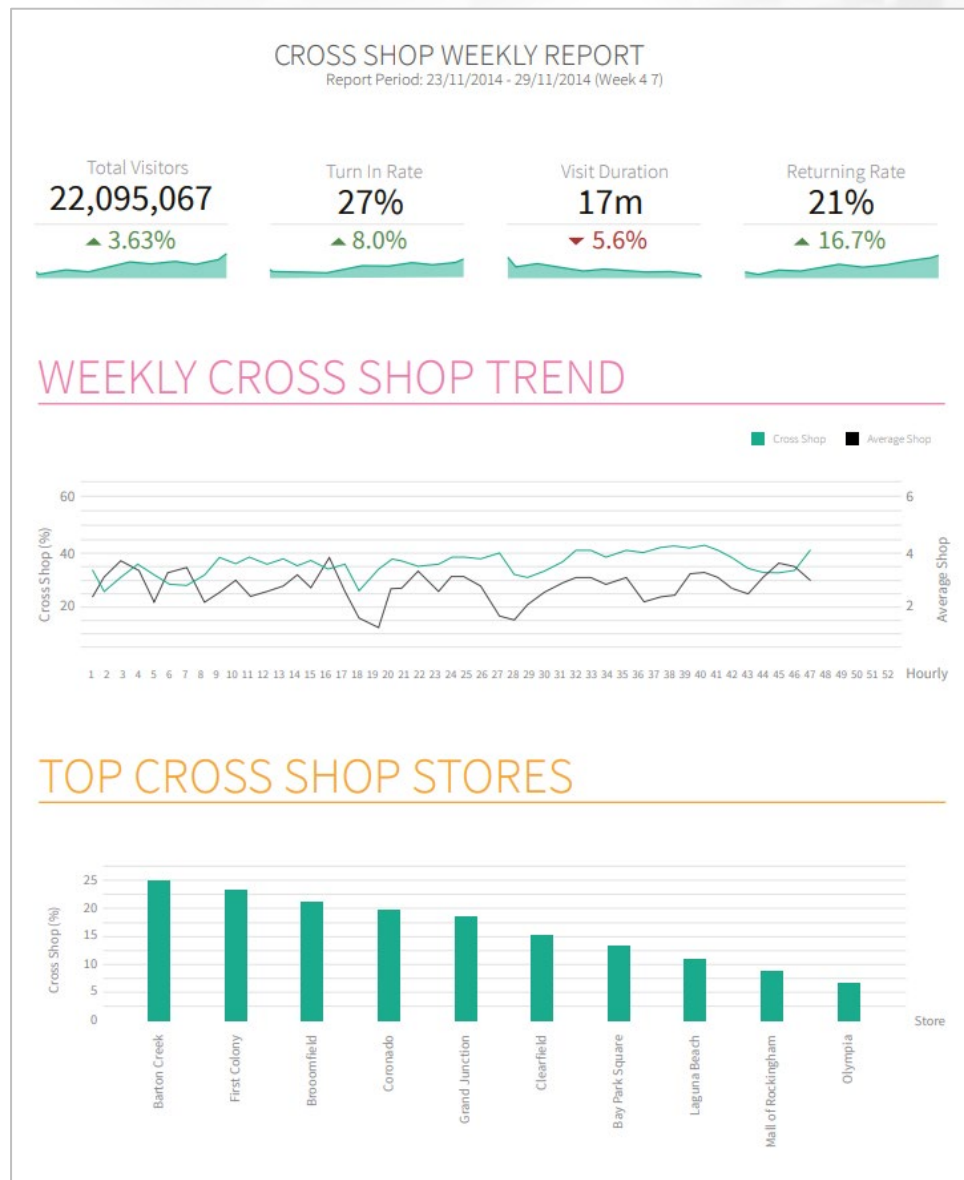
Identify popular zones in the library

- Get **instant comparison** for each zone.
- Analyze patron's behavior in different zone to gain more insight
- Understand which facilities are most or least frequently used such as the quiet area and conference room
- Know the best areas to place the invested resources at to make it accessible to patrons

Optimize funding allocations

- Make informed decisions using sound evidence when allocating the funds
- Determine which facility is most used by visitors and allocate their limited funding accordingly
- *i.e.,* Focusing the funding for maintenance for popular sections of the library, instead of least used areas
- **Justify the usage** of resources by the public community when applying funds

Floor plan: Meeting Room 165, Meeting Table 103, Consulting Zone 84, Customer Care 284, MAIN ENT.

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#5 Cross-Site Visit Tracking

View Sample Report here.

Keep track of patron's loyalty

- Many have library branches that are located in different areas.
- Track returning patron's visit to different sites and generate cross-site visit tracking report.
- The loyalty and engagement of the patrons can be tracked between the sites of the same library.

Understand returning visitor's behaviour

- Analyse **what's working across multiple sites** that is attracting visitors to return
  - Identify which areas needs improvement or refurbishment.

#6 Marketing Effectiveness

View Sample Report here.

Evaluate effectiveness of all your Events

- Libraries organise many events to attract new visitors and retain existing patrons
- Book club meetings, new book launches, writing workshops, language classes, *etc.*
- Compare the footfall data before and after an event was held
- Measure effectiveness of special events and occasions
- **Quantify and compare results** of different types of events

Identify the ROI for each Campaign based on allocated budget

- Analyse the budget and the impact on the growth of footfall for each campaign
- Use concrete data to **justify the impact of the campaign investment**
- Select the best campaign to serve your library demographics
- Determine the least effective campaign on the overall trend
- Use resources wisely by allocating more budget to the most-achieving events
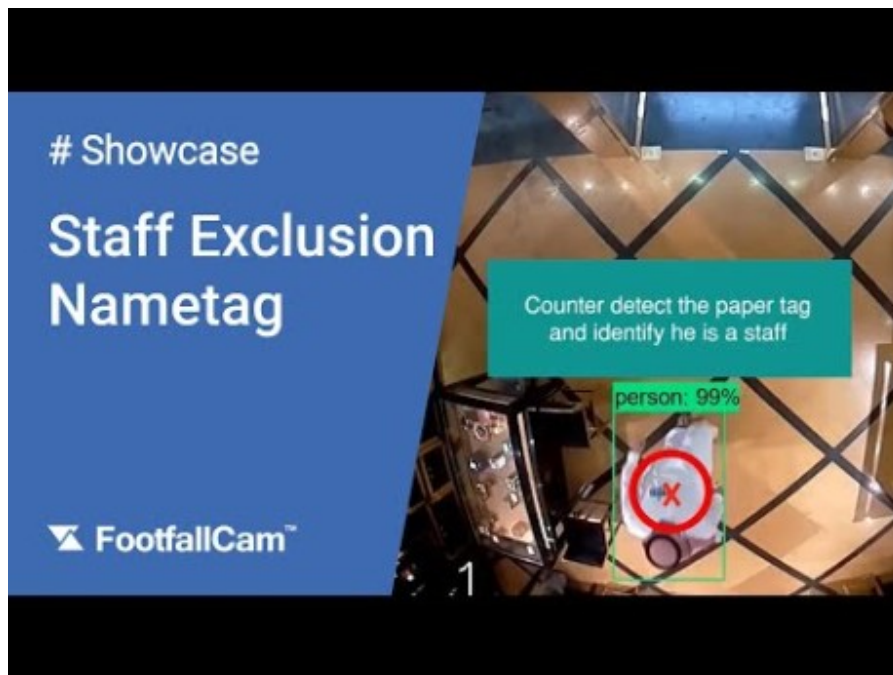
#7 Excluding Staffs from Counting
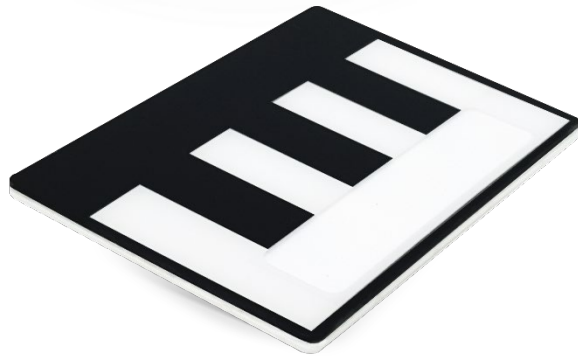
Ensure that no staffs are included in the counting

- **Present patron traffic data with confidence** when requesting for government funding
  - Ensuring that visitor traffic does not include staff, trolleys or hovering passers-by.

- With the latest AI recognition built-in, staffs can be easily excluded from counting just by clipping the Staff Exclusion Tag on the shirt

- Staff is identified by the stripe patterns on the tag and excluded from counting automatically

- No more special lanyards or expensive staff tags needed.
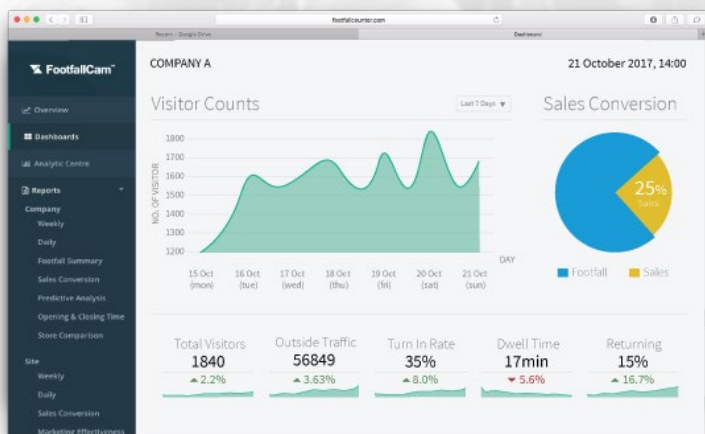 - No infrared or any emission involved, and no battery required.

Watch how it works: https://youtu.be/7dqUT89BvNs

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Enterprise Class Software

FootfallCam Analytic Manager V8™

Functions:

- Staff alert if capacity limit is breached
- Centralized Management Analytics Software
- API Available for Data Integration
- Pre-defined Report Set
- Health Check Report
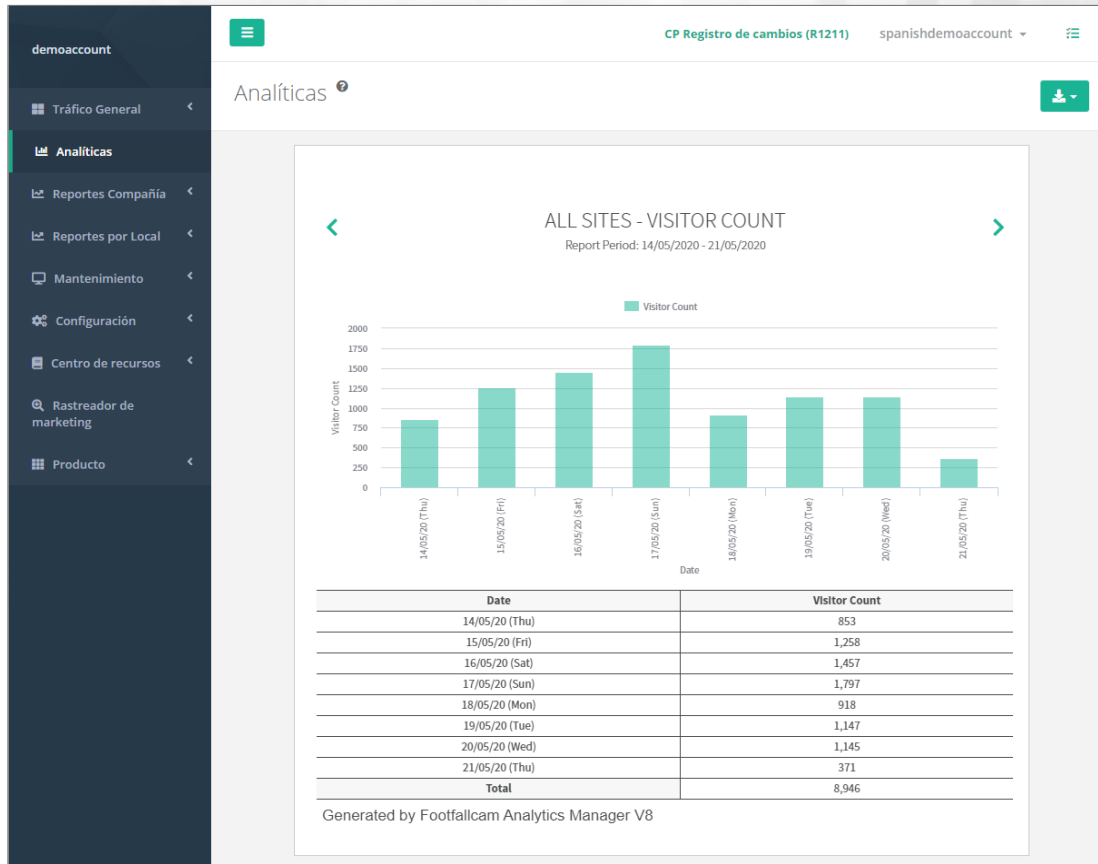- User Account Management
- Automated Email Scheduler

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

#1: 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

#2: Video Proof

SAMPLE MALL ACCURACY CERTIFICATE

Counter Name : Counter 1

Branch : Branch 1

Verified Date : 21/08/2018

Verified by : sengsiong

	In	Out
Manual Observation	119 (in)	138 (out)
System Count	116 (in)	135 (out)
Different	3	3
Accuracy	97.48 %	97.83 %

Summary

Following the concern from the sample mall regarding the accuracy of the footfall counter, we have performed a verification study. The system has achieve an overall accuracy of 97.48% with a sample size of 119 persons coming in; accuracy of 97.83% with a sample size of 138 persons going out. Therefore, we are happy to assure that the count figures are accurate.

Video Logs

Date & Time : 20.08.2018
17:00:00 - 17:30:00

Manual Observation : 45 (in) : 50 (out)

System Count : 45 (in) : 50 (out)

Different : 0 : 0

Date & Time : 20.08.2018
18:00:00 - 18:30:00

Manual Observation : 41 (in) : 47 (out)

System Count : 40 (in) : 46 (out)

Different : 1 : 1

Ensure 95% and above data accuracy

- After installation, FootfallCam's in-house verification specialist will remotely access the counter to perform accuracy audit

- They will schedule video recordings to collect a sample size of 20 and above

- After that, they will configure the counter to ensure that it is able to detect the visitors in the video recording

- Once it is completed, the team will generate an Accuracy Certificate which will showcase the counter accuracy and summarize their finding

(Verification report: Sample 1 & Sample 2)

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#3: 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.

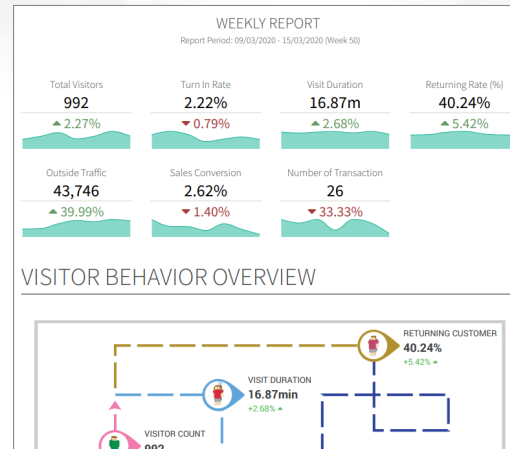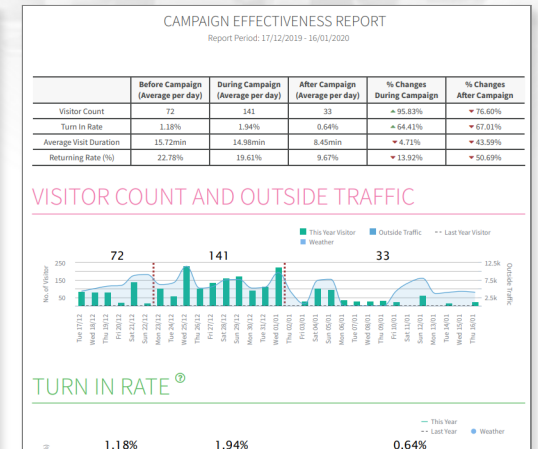- FootfallCam is **exempt from GDPR**. More information can be found here.

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Reporting Suite
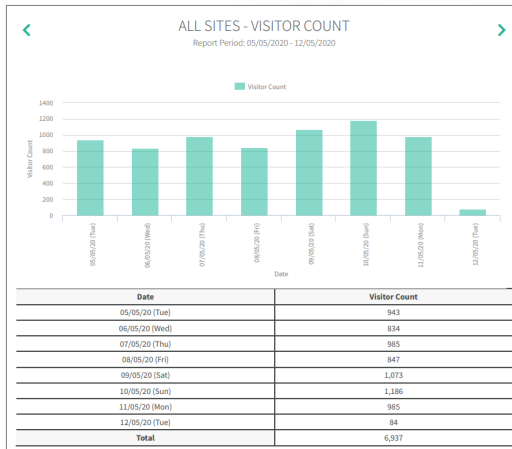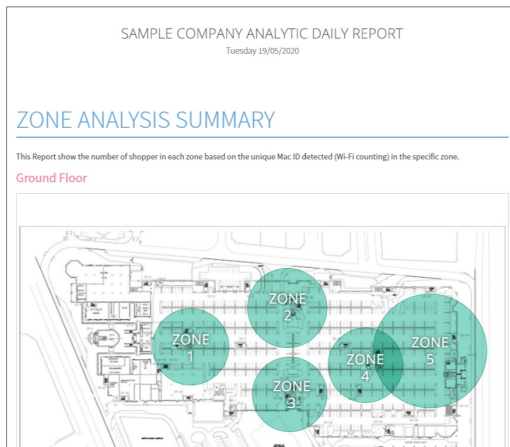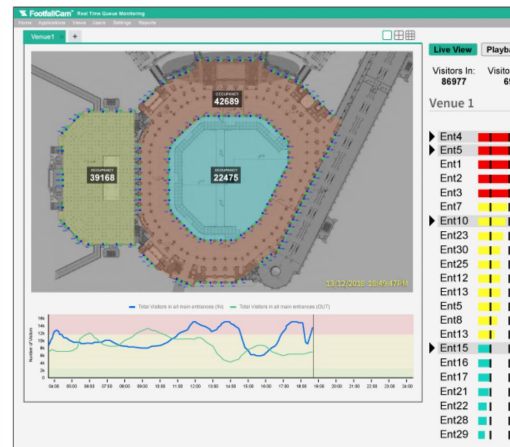

Analytics Center
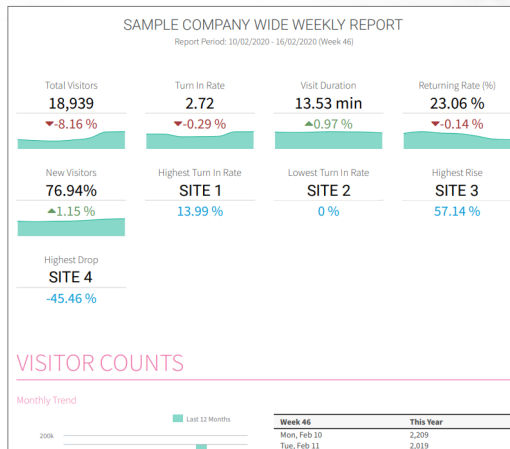
Company Weekly Report

Site Weekly Report

Marketing Effectiveness
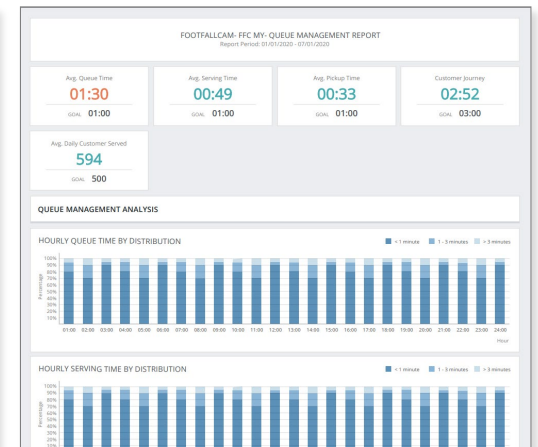
Live Occupancy

Zone Analytics

Mecca Occupancy

Queue Counting

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Case Studies

#1: Libraries in University of Oxford
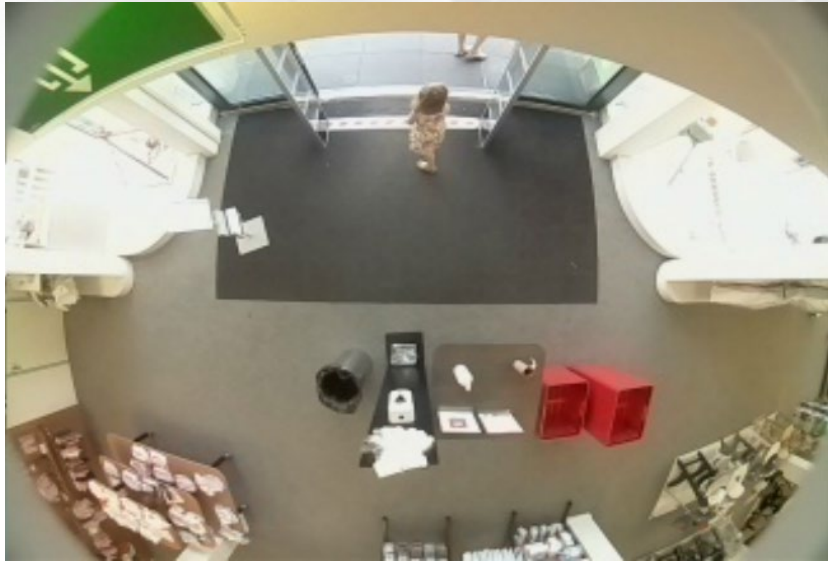
Oldest university in the English-speaking world.

Requirements:

- Large venue, high traffic

- Need to give peace of mind to students

- Limited staffs, automation required

FootfallCam Solutions:

- Highly accurate, real-time centralized data, adjustable occupancy limit

- Automated display of occupancy limit

- Automated audio alert of occupancy threshold

People Counter

Please do not enter

Audio Alerts

Occupancy Control Display

▼ FootfallCam™
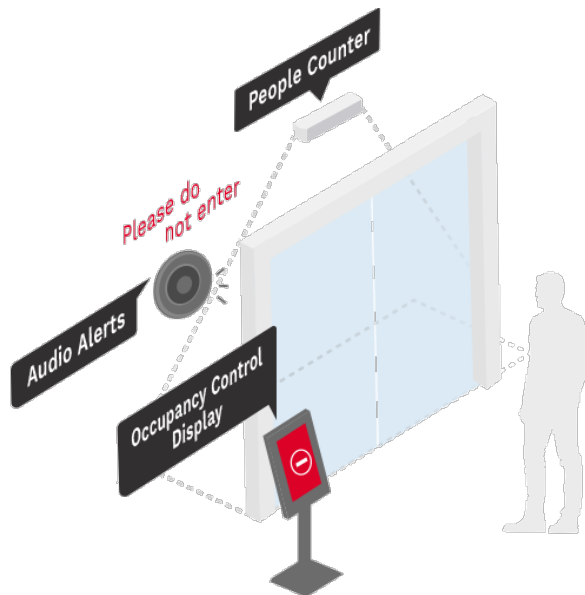
#2: Chandler Public Library

Local library in Chandler Downtown, United States.

- Chandler Library wanted to providing valuable resources and **requesting government funding for the latest technologies** to attract members of the community

- Faced difficulty as they had no method of determining the number of visitors that visit their library

- With the help of FootfallCam, they were able to make cases to administration:

  - **Traffic data:** Request for additional staff members by proving that more labour is required using traffic data

  - **Facility usage:** Show that patrons have been using the in-house digital resources and request additional technology

  - **Resource planning:** Place the invested resources at the most frequently visited areas

More information can be found here.

#3: Otis Library
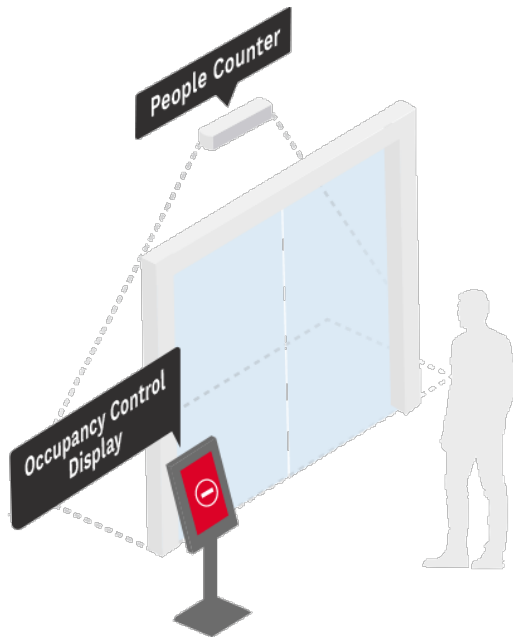

Local library in Connecticut, United States.

Requirements:

- Small venue, limited occupancy

- Need to give peace of mind to visitors

- Limited staffs, automation required

FootfallCam Solutions:

- Highly accurate, real-time data, adjustable occupancy limit

- Automated display of occupancy limit

- Automated staff alert

- Live Occupancy Tracker widget

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#4: Haringey Libraries

Local library in London, United Kingdom.

- 8 libraries of Haringey Libraries were undergoing refurbishment – calls for the need of people counting system.

- Among other competitors, FootfallCam was selected with the **awarded marks of 100** (full marks) on product pricing and quality.

- To ease the application process for funds and additional resources (eBooks: computers, iPads), they needed solid data on:

  - **Traffic flow** (how many people are coming in)
  - **Facility utilisation** (lounge, quiet areas, study rooms)
  - **Cross-site tracking** (track the engagement levels of patrons)

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Other Library Case Studies

Installed locations:

- Calcasieu Parish Public Library (United States)
- Plainview-Old Bethpage Public Library (United States)
- Leicester Library (United States)
- Raheny Library (Ireland)
- Dundrum Library (Ireland)
- Dun Laoghaire Rathdown Library (Ireland)
- East Achterhoek library (Netherlands)
- Utrecht Library (Netherlands)
- Gooi en Meer Library (Netherlands)

People Counter

People Counter

FootfallCam™

Key Selling Points when Approaching Libraries

Designed specifically for Libraries at a competitive price

1. Technology "lagger" – *libraries use technology only when they have to.*

2. Seeking for off-the-shelf, ready-to-use solution – *something widely used and tested in all other industries.*

3. Industry specific solution – *focusing on how they will use it.*

4. Competitively priced – *libraries provide community based services, not profit making.*

Q&A Session

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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