Space Utilisation and Occupancy Analytics

REDUCE THE COST OF YOUR BUILDINGS

- Optimise workspace utilisation
- Boost meeting room efficiency
- Improve employee productivity

TrueOccupancy
by irisys

A Fluke Company

Introduction

Buildings are one of the biggest costs for any business, second only to the people that use them. But many businesses don't know how this valuable asset is being utilised or how it is performing.

A True Occupancy solution is the answer

Through the use of occupancy analytics, a True Occupancy solution enables businesses to optimise their buildings and workplaces.

Large financial savings can be made by reducing the amount of real estate required, increasing the utilisation of existing space and consolidating areas that are under-utilised.

Energy savings can be achieved through occupancy based lighting and HVAC control. This also provides a more comfortable working environment for building occupants whose productivity is boosted through workplace optimisations.

- How effectively was this building used this month?
- Do we need all of this space?
- Can we consolidate and save money?
- Are our meeting rooms the right size for our needs?

Insights from a True Occupancy solution enable you to answer questions like this with objective and reliable data, unleashing the potential of your facilities and people.

What are occupancy analytics?

Occupancy analytics refers to the study of data collected by smart devices or other manual applications in order to measure the movement of individuals throughout a building or facility.

"Anyone can make an assumption about how a building is being used, but it's data that gives clarity."

James McHale
Founder and MD, Memoori

The True Occupancy solution

Our occupancy analytics solution empowers property and facility managers with objective data that removes the guesswork from important space planning decisions.

Dashboards enable instant analysis of how buildings, floors, zones and even individual rooms are utilised, allowing usage trends to be identified and performance measured against KPIs.

Building occupants also benefit from a True Occupancy solution as it provides real time space and room availability – reducing wasted time and boosting productivity.

Powering our True Occupancy solution are our highly accurate workplace occupancy sensors which use people counting technology to anonymously detect people as they enter or exit an area.

By only monitoring occupant movement at these key locations, a True Occupancy solution is cost effective, highly scalable and non-intrusive. Occupancy data can be collected at as granular a level as required - from a whole building, to individual floorplates, departments or rooms.

63% Average workspace utilisation

Globally, 37% of workspace is empty and un-utilised every day

Source: JLL Occupancy Benchmarking Guide 2018/19

Applications of True Occupancy data

Office space (eg. hot desking)

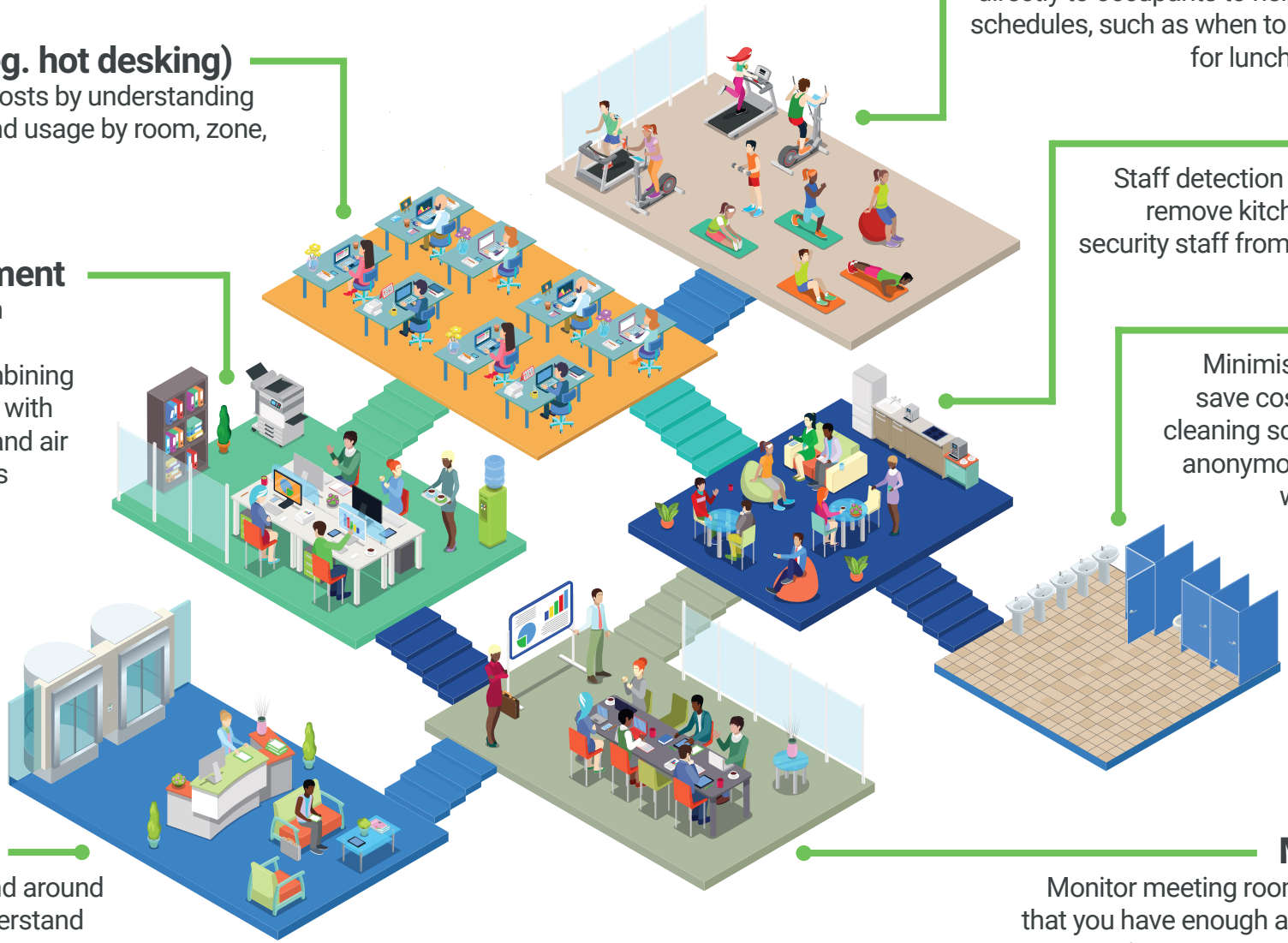
Reduce real estate costs by understanding actual occupancy and usage by room, zone, area or building

Office environment

Manage your carbon footprint and reduce energy costs by combining real-time occupancy with automated heating and air conditioning controls

Main entrance

Measure traffic in and around your facility and understand your total building usage



On site facilities (eg. gym)

Real time occupancy data can be delivered directly to occupants to help them plan their schedules, such as when to go to the gym or for lunch to avoid queues

Restaurant

Staff detection functionality can remove kitchen, cleaning and security staff from occupancy data

Washroom

Minimise disruption and save costs by optimising cleaning schedules through anonymous monitoring of washroom usage

Meeting rooms

Monitor meeting room usage and ensure that you have enough and they are the right size to meet your occupants needs

30% **Average global meeting room utilisation**

And when they are in use, only 40% of available seats are occupied.

Source: CBRE Report

Space planning

Building and facilities managers have previously had limited ability to understand how the workplace is being used – leading to uncomfortable working environments, over crowding and under utilisation.

A True Occupancy solution can provide valuable insights into how buildings and spaces are used. Such insight is essential for optimizing the required space as this objective data can be fed in to Capital Asset Planning Models (CAPM) to improve the ease and accuracy of long term planning.

With increases in flexible and remote working, as well as hot-desking and agile working practices – the need to understand how the workplace is being used is greater than ever. Insights from a True Occupancy system can help you optimise space requirements and the layout and design of work areas based on actual occupant behaviour.

- **Confirm space requirements**
- **Align strategy and design**
- **Reduce costs**

Workplace optimisation

Modern workplaces are becoming increasingly flexible, with occupants able to work from a location of their choosing. By understanding how occupants interact with their workplace, property teams can optimise facilities based on actual usage.

A True Occupancy solution gives property teams this important information and enables them to understand whether they actually need all their space, if employees use the collaboration areas provided and whether they have the right number and size of meeting rooms onsite.

The provision of soft services (cleaning, catering) can be aligned with actual demand rather than relying on schedules, improving responsiveness to real time changes in occupant behaviour.

Employee wellbeing and productivity can also benefit. From real time availability of meeting rooms and other onsite facilities, to the queues in the cafeteria and canteen, a True Occupancy solution helps employees plan and optimise their time.

Reduce operating expenses

Improve occupant satisfaction

Improve workplace experience and employee wellbeing with:

- Real time availability of rooms and facilities
- Dynamic room release and booking
- Optimised environments for productivity

Safety and compliance

A True Occupancy solution can enhance existing safety and security measures. In the event of an emergency, knowing the number and location of people in a building can be critically important.*

Compliance with building regulations, floor loading restrictions, insurance requirements and local government legislation can be monitored in real time with automated alerts triggered when limits are approached or exceeded. This enables property and facility teams to respond immediately and take measures to ensure compliance.

Ensure legal compliance

Enhance safety

24/7 Continuous monitoring

Occupancy monitoring works around the clock, ensuring you are always compliant.

*** Disclaimer:** Whilst every effort is taken to make occupancy data in a True Occupancy solution as accurate as possible, it should not be relied upon in emergency situations. In these situations, data should be used as a guide to enhance existing safety measures.*

30% **Energy wasted**

In commercial buildings

Source: MIT Energy Futures

Energy savings

Energy consumption and usage can be reduced through the use of a True Occupancy system.

Real time occupancy data can be integrated with existing BMS and HVAC systems to enable automatic control of lighting, heating and ventilation that not only reduces energy usage but can also improve occupant comfort.

Further energy savings can be made through smart utilisation of the available workspace. For example, by analysing historical occupancy data to identify quiet days and limiting the available floors/areas on these days.

Reduce energy costs

Improve occupant comfort

Why True Occupancy?

Space planning

Asset utilisation and right sizing. Use high fidelity, objective and accurate data to know how much space you need and the type of space you need when designing or re-purposing your physical spaces.

Occupant wellbeing

Empower employees with access to real time data and historical availability patterns of amenities i.e. canteens and gyms.

Combine with automated environmental controls to optimise occupant comfort.

Reduce costs

Interface with existing HVAC systems and BMS to dynamically respond to real time occupancy, reducing energy consumption.

Cut cleaning and other servicing costs by aligning to usage rather than schedules.

Employee productivity

Enable employees to find available meeting rooms quicker and easier by enabling dynamic room release.

Reduce unproductive time employees spend waiting in queues at the canteen.

Technology comparison

Alternative	Manual Checks	PIR	Beam Break	Cameras & CCTV	Desk & Seat Sensor	WiFi
Reason why alternative is not suitable	Expensive, only a snapshot	Low accuracy, only occupied or un-occupied	Low accuracy, typically only counts in one direction	Invasive, privacy concerns for business and building users	Invasive, not suitable for areas without seats	Privacy concerns, low fidelity data - one person may have more than one device
True Occupancy	**Cost effective, continuous data**	**Highly accurate, captures exact occupancy and utilisation**	**Bi-directional and multi-functional sensors**	**Anonymous, privacy protecting**	**Scalable and suitable for any room, floor or building**	**AI and machine vision ensures only people are counted**

What can be achieved?

National Grid (a FTSE 100 company) rolled out our occupancy monitoring solution as part of their smart workspace initiative.

We worked with National Grid to give them the data they needed to optimise their building use at locations all across the UK.

The project was a huge success, enabling multi-million pound savings and acheiving an **ROI of less than 12months**.

Annual savings
£8million

Energy usage
16% decrease

Asset utilisation
15% increase

Workplace density
27% decrease

Employee productivity
8% increase in performance

Delighted staff
8% increase in satisfaction

Read the full case study:
www.trueoccupancy.com/national-grid

Image credit: National Grid, Wokingham

£8million annual savings

> *"This analysis gave us everything we needed to make proactive changes."*
>
> **Simon Carter**
> Head of Corporate Property (Former), National Grid

Image credit: National Grid, Wokingham

How True Occupancy collects data

At the heart of the True Occupancy solution is our highly accurate workplace occupancy sensor. Discreetly installed on the ceiling, these sensors use people counting technology to anonymously detect people as they enter or exit an area.

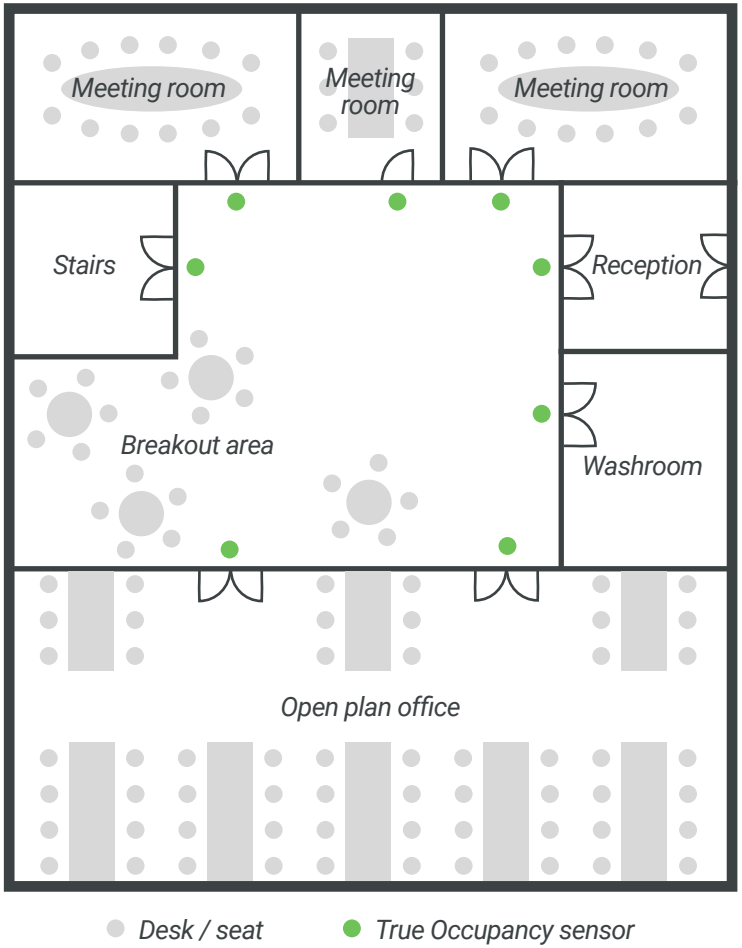
By only monitoring occupant movement at these locations, a True Occupancy solution is cost effective and infinitely scalable. Occupancy data can be collected at as macro or as granular a level as required - from a whole building, to individual floorplates, departments or rooms.

In the example on the right, just **eight sensors** are deployed on the ground floor of this building to measure occupancy and utilisation of:

- Three meeting rooms
- Washroom
- Breakout area
- Open plan office
- Ground floor
- Whole building

Collected data is securely transmitted to the True Occupancy cloud platform where patented AI algorithms calculate real time occupancy levels and space utilisation.

True Occupancy data is accurate and reliable, enabling you to make objective and informed decisions.



How people counting works

- A people counting sensor is discreetly installed overhead, typically at a threshold where a person enters/exits an area, zone or room (i.e. above a door or corridor)
- The sensor counts people entering and leaving
- Count data is sent securely to the True Occupancy cloud platform
- The cloud platform collects and collates data from all sensors installed within the building
- Real time occupancy and space utilisation is calculated and displayed on dashboards

Example meeting room installation

Utilisation of two meeting rooms monitored with only one sensor

The workplace occupancy sensor

irisys Vector 4D

- Time of Flight sensor
- (Optional) low resolution camera for remote setup and support
- LED indicators
- Unobtrusive and low profile design
- Infrared illuminators
- PoE (Power over Ethernet)
- True IoT device, all data processed at the edge

Designed for accuracy, the Irisys Vector 4D was created using our extensive experience of counting people in retail environments.

Unaffected by light levels and able to count large crowds of people, all moving in different directions, the sensor works perfectly in the busiest of locations.

Utilising Time of Flight technology, advanced AI and machine vision, the detection of people is completely anonymous.

Privacy protecting

No personally identifiable information captured

Discreet design

Ceiling mounted for passive detection

What is Time of Flight?

Time of Flight (ToF) people counting uses pulses of invisible infrared light to create a 3D image of all objects (including people) beneath it.

Advanced machine vision algorithms process this 3D image to detect people and exclude other objects.

A target is assigned to each person detected and they are anonymously tracked whilst they remain within the sensors field of view.

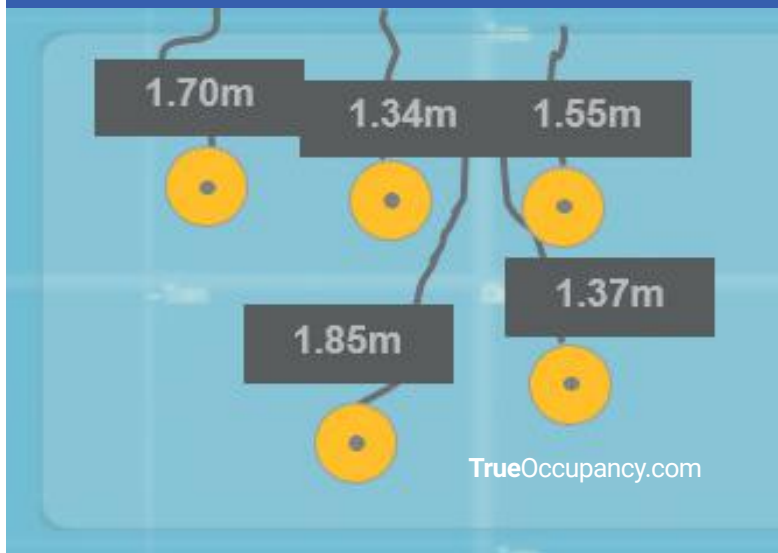
For data security and privacy protection, all data is processed on board the sensor. Only count data is transmitted to the True Occupancy cloud platform.

1. **Real life view**
   5 people (2 adults and 3 children) walk under sensor mounted on ceiling
2. **Time of Flight sensor view**
   Sensor builds 3D image of scene and excludes objects that are not people
3. **Output (machine vision view)**
   Machine vision and AI algorithms process 3D image and anonymously detect people

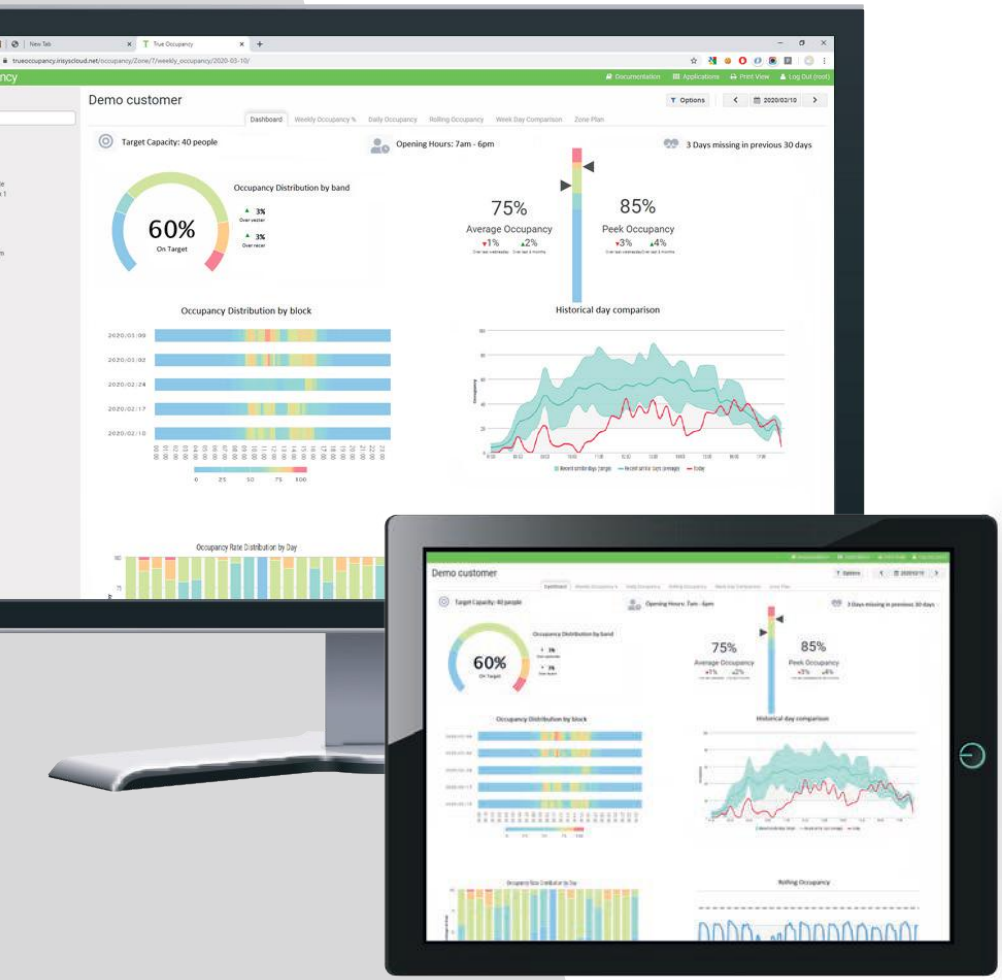
1

2

3



Easy to install, cost effective to scale



Easy to deploy and minimally disruptive, the installation of sensors overhead at key ingress and egress points, keeps costs low whilst still enabling granularity of data.

- Data and power transferred using a single PoE cable
- Easy to retrofit to existing buildings and IT infrastructure
- Can connect to existing internal networks or use an external 3/4G mobile network
- Remote management and support

True Occupancy is a flexible sensing platform capable of monitoring all aspects of occupant movement and behaviour from meeting room occupancy, to washroom utilisation and even the queues in the cafeteria.

One sensor and one platform for all requirements

To provide peace of mind and ensure our sensors are working optimally, we have a full suite of remote management tools. These enable us to remotely monitor, support, configure and audit sensors installed anywhere in the world.

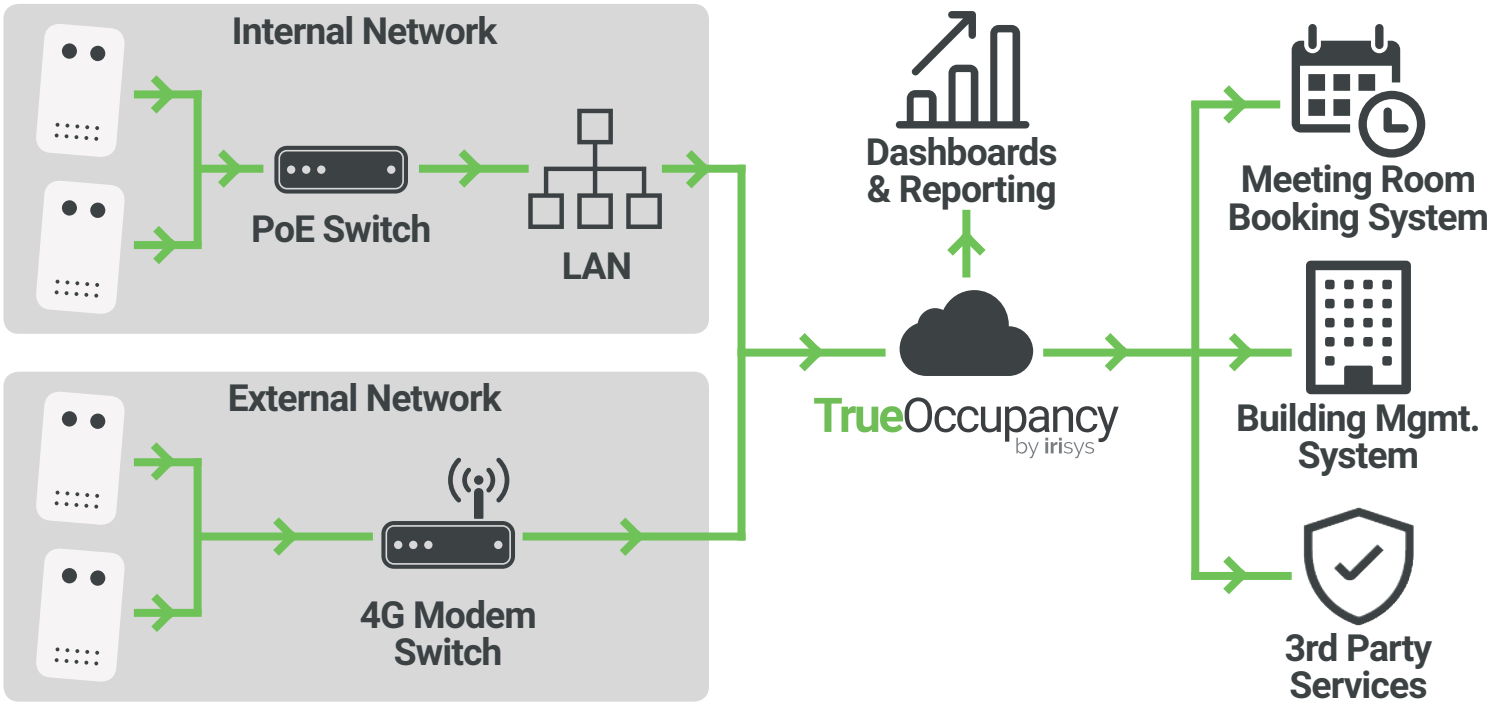
Integration and system architecture

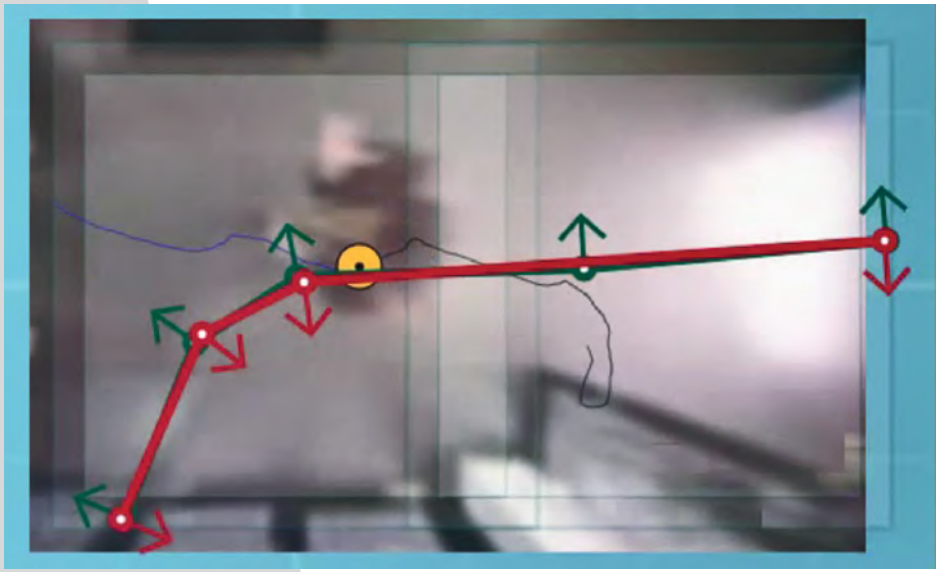
Data from the True Occupancy platform can be seamlessly integrated with 3rd party systems such as:

- Meeting room booking systems
- Building management systems (BMS)
- HVAC systems
- 3rd party data systems (eg. Power BI, Tableau)

What communication protocols are available?

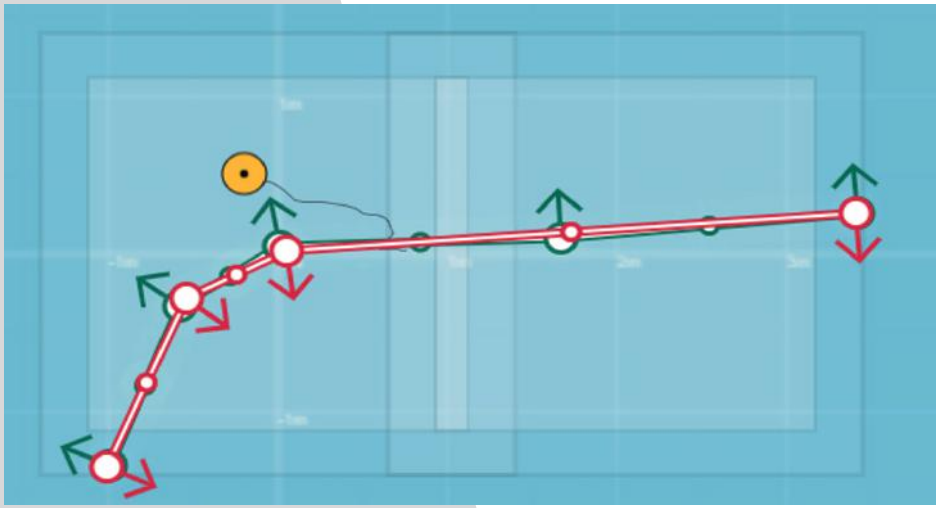
Integration is provided through a Rest API.





Above: *example of low resolution video with overlay of machine vision ToF people counting output*

Below: *machine vision output only*



Privacy

Our workplace occupancy sensors are designed to be unobtrusive in appearance and passive in operation.

Through the use of anonymous sensing technology (Time of Flight) we respect occupant privacy.

No reliance on video.

- Video resolution intentionally limited, no GDPR or European Works Council compliance issues
- Internal camera only required for remote support and setup

Our software eco-system has been designed to make it easy to comply with GDPR and other data privacy guidelines.

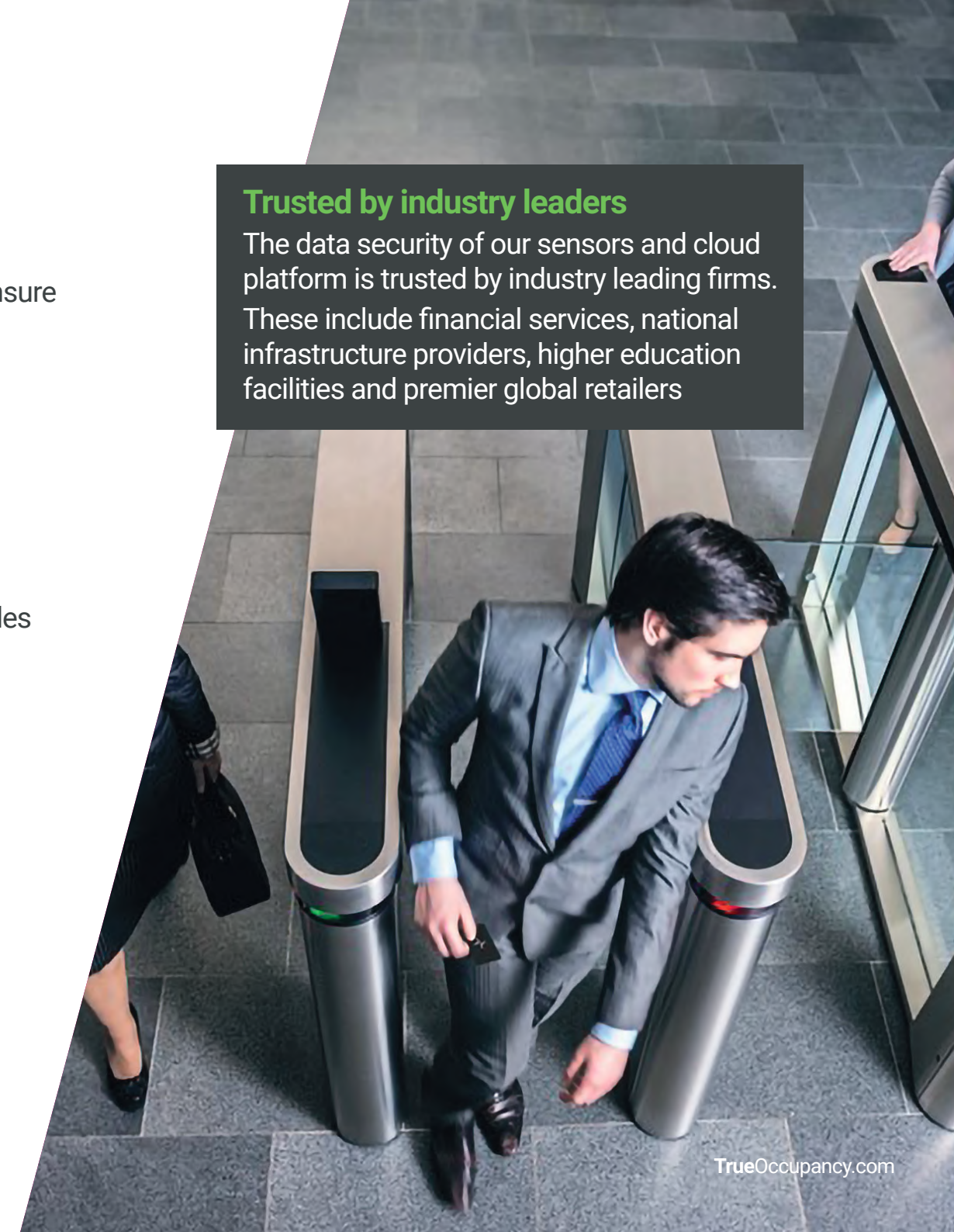
Privacy protecting

No personally identifiable information captured

Security

Using IoT industry best practices, our sensors and True Occupancy solution have been designed end to end, to ensure that all captured data is stored and transmitted securely.

- No personal or sensitive data captured or stored
- Utilises HTTPS / TLS 1.2 encryption for data in transit
- AES 256-bit encryption for data at rest
- User login required for direct device access
- Device and platform APIs require unique keys
- Remote management of firmware and security upgrades



Trusted by industry leaders

The data security of our sensors and cloud platform is trusted by industry leading firms. These include financial services, national infrastructure providers, higher education facilities and premier global retailers

> *"For any business, the competitive advantage comes in its people, so* ***when technology is harnessed, and real estate is purposed to engage and empower employees, everyone wins****"*
>
> **James McHale**
> Founder and MD, Memoori

About True Occupancy

True Occupancy is an occupancy analytics solution created by Irisys. As the world's largest supplier of people counting and real time queue management solutions, the Irisys True Occupancy solution brings that expertise and technology to the world of smart and connected buildings.

Based in Northampton (UK), our team of highly skilled developers and engineers are natural problem solvers and born innovators. Combining advanced technology and AI, our True Occupancy solution equips building and facility managers with the insight required to optimise the workplace, boost employee productivity and reduce costs.

>500,000
sensors installed worldwide

20+
years of experience

>10 billion
people counted annually

Irisys founded in 1996
Acquired by Fluke in 2012
Part of the Fortive Group - $6.2bn (NYSE:FTV)

Trusted by businesses around the world

Ready to find out more?

Get in touch with our friendly team and see how easy it is to get started on your occupancy analytics journey.

www.trueoccupancy.com/get-started

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