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# Strategic FM case studies: the value of technology



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## Executive summary

The term 'proptech' describes the new technological trends that are emerging across the property industry – from co-working in the office space sector, to co-living as an alternative to traditional residential real estate, and from crowdfunding new construction and real estate to home swapping for seasonal rentals – utilising new ideas and modern technology to disrupt the whole property sector.

Ranging from big data, to virtual and augmented reality, sensor-led technology and the Internet of Things to smart data capture, this series of case studies looks at how five different proptech companies have utilised technology, building management systems, and the buildings themselves to deliver solutions to clients' needs.

### 1. StepJockey and Comcast NBC Universal

The increasing shift towards a knowledge-based culture, with more workers based in urbanised environments, has led to an increasingly sedentary workforce that rarely has the opportunity to move about during the working day. A trend towards working from home has seen the problem magnify, without even the daily commute getting people up and about. Add to this a cheap and convenient fast-food culture, and healthy habits are increasingly being designed out of the working environment, with the result that workers are exercising less, spending more time in sedentary activities, leading to heart disease, diabetes and poor mental health.



Diabetes affects 382 million people globally and 3.2 million people in the UK. High blood pressure affects more than one in four adults in the UK and sedentary behaviour now kills as many people annually as smoking, costing the NHS around £700 million per year.

In response, organisations are increasingly directing efforts towards keeping their employees healthy, utilising measures to improve both the bottom line and their corporate social responsibilities.

StepJockey is a leading workplace wellness company that transforms corporate wellness through a range of powerful employee wellbeing programmes. As companies face unprecedented levels of employee sedentary behaviour, StepJockey's aim is to "start a revolution in corporate wellness".

Founded in 2013, the technology solution enables building occupants to 'gamify' their use of a building in order to increase their fitness. Seven minutes of stair climbing every day reduces your risk of a heart attack by 50% over ten years, so the seemingly simple idea is to encourage people to use the stairs rather than the lifts in their everyday journeys around their workplace. This case study details the company's four-year relationship with US-based media giant Comcast NBC Universal, and the improvements in fitness that have been witnessed by making a series of simple, yet effective steps.





## 2. Yodiwo, Engie and InterAmerican

The Internet of Things (IoT) is one of the most promising innovations in the real estate space. It is broadly defined as a giant network of connected ‘things’ (that also includes people), incorporating relationships between people–people, people–things, and things–things. Sensors are the glue that keeps these relationships together. According to the World Economic Forum report, Technological Tipping Points, by 2022 there will be over one trillion sensors connected to the internet. As we become more connected, we produce more data, which can then be used for the planning and consumption of urban spaces and real estate.

Commercial and residential buildings are massive contributors to world energy consumption and greenhouse gas emissions. In developed countries, they consume approximately 40% of primary energy.

The efficiency of appliances and equipment used in homes and businesses has increased greatly over the past three decades. However, there is still much that can be done to reduce the amount and slow the growth of energy consumption in residential and commercial buildings. Energy monitoring is the starting point to understand the actual needs of a building. Breaking down total energy consumption in equipment can help to identify cases where negligence or lack of maintenance has led to unreasonably high consumption, so that action can immediately and easily be taken to reduce it.

Yodiwo FM is an IoT-based building management platform that optimises facility management operations and empowers energy efficiency optimisation by utilising real-time and historical data across a wide spectrum of building systems. It unifies diverse siloed systems under a common open and scalable management platform, without creating traditional vendor lock-in effects. A spin-off of former Samsung Nanoradio Design Center, after Samsung acquired the Swedish company Nanoradio in 2012, Yodiwo was initiated in 2015 as a new start-up, keeping the corporate vehicle and core team, with a new name and scope, that of a leading IoT Application Enablement Platform (Yodiwo stands for Your Digital World).

This case study details its partnership with French energy company Engie and one of its clients, INTERAMERICAN, a leading insurance company in Greece. Engaging more than a million individual and corporate customers, the company was highly aware of its carbon footprint and the need to reduce its energy bill. Over a five-year energy savings performance contract, Engie agreed to drive down INTERAMERICAN’s FM and energy costs through further service integration, energy services and workplace optimisation, allowing INTERAMERICAN to achieve its goals for ecological consciousness and environmentally-friendly behaviour.

ENGIE – through the Yodiwo FM platform – was able to consolidate existing legacy systems, commercial off-the-shelf wireless sensors, open communication protocols and third party services. The platform utilises industry-leading algorithms to automatically and continuously assess real-time energy and asset telemetry data flowing from the building and then highlight energy wasting events and tag it with possible causes and additional ‘action’ values.

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### 3. Fabriq

Real estate is complex. It involves many stakeholders, massive portfolios, ongoing transactions and (often) siloed functions and databases. Key building systems are often incompatible with each other and badly configured, with varying operating requirements from different tenants within the same asset. To add to the confusion, user demands are rapidly changing. Evolving tenant demands, increasing cost pressure, and asset yield depression all lead to one big challenge – massive inherent inefficiencies and disconnect between key stakeholders in the real estate value chain. This ultimately leads to inefficient management of building assets with huge wastage of natural resources and costs, and suboptimal value creation for the end-user, the tenant.

It's a huge issue for landlords and building operators, as the market for real estate has changed massively in recent years.

Fabriq was created in late 2011, born from its founder's experience working for Google at a European level. Based in London, Benjamin Kott managed Google's European real estate assets, including offices and data centres, making them environmentally sustainable and more occupier/operator-friendly. The data-driven platform connects all the information from the building assets and the equipment that is in the buildings, as well as the investors, contractors, service providers and, last but not least, the tenants, to bring them together in one platform for two reasons:

1. To streamline building operations and performance benchmarking; and
2. To better understand energy and resource consumption, in order to reduce carbon emissions, save resources and lower costs.



Fabriq's main offering is a fully integrated web-based IoT platform that tracks energy and resource consumption as well as environmental parameters across assets. Fabriq can be accessed from any internet-connected device to manage data sources, identify inefficiencies in building operations and manage savings projects – not just for energy, but also water, waste, air quality, wellbeing, productivity and more.

In 2017, a leading facility management company won a tender contract with a large commercial property development and investment company in the UK. As part of this new engagement, the FM company was on the lookout for a provider of a new platform for managing its largest and most critical FM engagements. It hired an expert consultant to review the offering in the market and run a full-fledged selection process, from which Fabriq emerged as first choice.

This case study details how Fabriq has helped implement a fully integrated data management solution whereby it is possible to identify energy and operational savings opportunities across the commercial property company's portfolio year on year.



## 4. Vantage Space and Cushman & Wakefield

For almost every organisation in an office environment, premises are the second largest cost after personnel. As work becomes more mobile and people spend less time at their workstations, this cost is increasingly wasted. On average, 53% of workstations are under-utilised or temporarily unoccupied. Large corporations in England and Wales are collectively under-using an area of office real estate equivalent to 75 Canary Wharf towers, costing up to £10 billion a year.

In the old days, tracking space utilisation metrics meant tracking how much you spent on space – in terms of cost per square foot. This information is not particularly useful, as the only way it can be improved is by finding cheaper space. Less expensive space isn't always an option, let alone a good one. Tracking space utilisation can be an arduous and unrewarding task; even once you have collected all the necessary data it is not always easy to deduce patterns of behaviour or analyse which spaces are under-performing or being over-used. A technology-led solution is needed.

Vantage Space is a space utilisation app that allows anyone to understand how their workplace is being used and to identify opportunities to save money and improve employee experience. Launched as a proptech start-up from London in 2016, Vantage Space is now used by many of the world's best recognised companies and consultants in over 120 cities around the world.

A recent collaboration with a leading organisation in Singapore led to Cushman & Wakefield carrying out a space occupancy project with Vantage Space. The client needed to consolidate three separate sites into a single central location, which meant that the new workplace had to cater to diverse working styles and different occupancy patterns in a site that presented a uniform workplace identity. To execute that consolidation, Cushman & Wakefield first needed to have an in-depth understanding and visualisation of the client's spatial and cultural workplace needs.

The occupancy / utilisation data from Vantage Space, combined with qualitative inputs from various other workplace strategy streams, helped produce a wealth of data that allowed senior executives from the client organisation to make informed decisions on both short-term and long-term CAPEX and OPEX distribution with regards to their real estate strategy.



## 5. Chubb, Tencent and Beijing Western Academy School

We live in a connected world, and buildings – be they public hospitals and shopping centres, or private businesses and residences – are increasingly utilising technology to master real-time activities, manage building systems, and create better efficiencies. Buildings themselves are static objects, but the activities within them are numerous and ongoing, around the clock. Security is a huge issue for organisations dealing with sensitive material – from healthcare centres to laboratories to schools to factories to data centres; all need their assets protecting, and in a more technologically streamlined way than traditional video recording.

Video analytics analyse live or recorded video streams to detect, classify and track pre-defined objects and behaviour patterns via CCTV video images. This sophisticated technology can also detect advanced events such as objects left or removed, direction of travel and loitering. The system can alert Remote Video Response (RVR) to trigger a response dependent on pre-defined procedures. This area of proptech is fast developing, and being used to safeguard both people and assets.



Chubb Fire & Security is a leading branch-based global provider of end-to-end fire safety, electronic security and monitoring solutions, delivering tailored solutions to meet local, national and global customers' needs. Chubb draws on more than 200 years of experience to provide branch-based, high quality, reliable safety and security solutions from design and installation to monitoring and ongoing maintenance. One of the best-known global safety and security providers, Chubb offers a full range of services, including video surveillance/CCTV, installation, inspection, monitoring and response services, as well as personal emergency response services.

This case study details how Chubb helped two very different entities in China improve their security needs. Tencent Holdings, a Chinese multinational investment holding conglomerate, whose subsidiaries specialise in various internet-related services and products, social media, e-commerce, financial services, entertainment, AI and technology, both in China and globally, needed to improve threat detection and prevention capacity across its urban offices and to protect the large volumes of data and sensitive information it holds.

Founded in 1994, Western Academy of Beijing (WAB) is an international school providing kindergarten, primary school, junior and senior school education to around 1,400 students from 56 countries and regions. As parents increasingly require higher safety standards for their children, WAB in turn was looking for more efficient safety and facility management. The previous CCTV system could no longer accommodate the academy's needs as the school required a video management system integrated with intelligent features to elevate the security of the campus and facility management efficiency – Chubb helped the academy fulfil its needs.

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# StepJockey and Comcast NBC Universal

Utilising IoT property and health technology to promote, track and incentivise incidental activity, transforming workplace wellness in a 'Smart' building

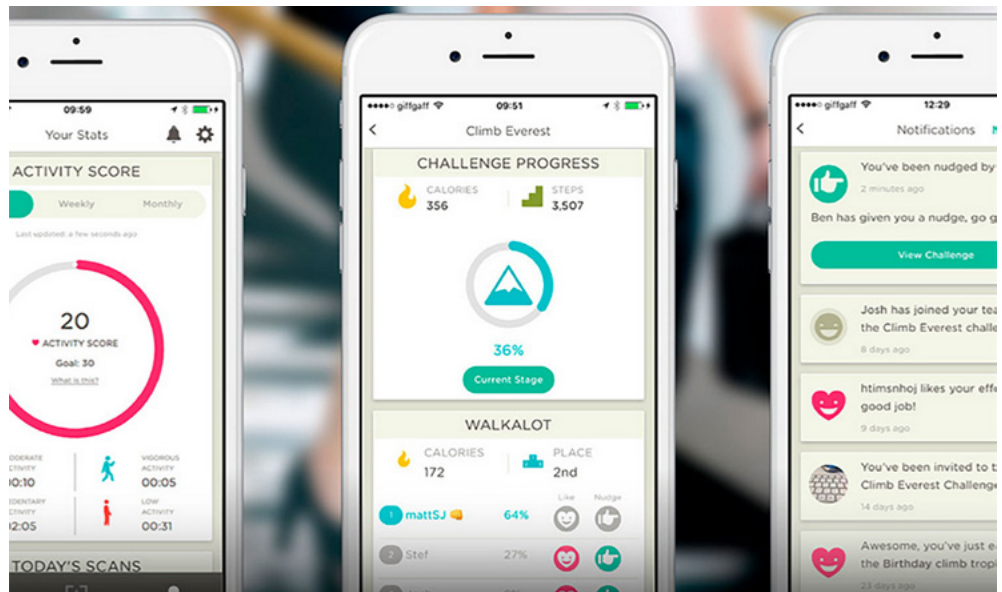
## The issue

The increasing shift towards a knowledge-based culture, with more workers based in urbanised environments, has led to an increasingly sedentary workforce that rarely has the opportunity to move about during the working day. A trend towards working from home has seen the problem magnify, without even the daily commute getting people up and about. Add to this a cheap and convenient fast-food culture, and healthy habits are increasingly being designed out of the working environment, with the result that workers are moving and exercising less, spending more time in sedentary activities, leading to notable increases in heart disease, diabetes and poor mental health.

[Diabetes](#) affects 382 million people globally and 3.2 million people in the UK. High blood pressure affects more than one in four adults in the UK and sedentary behaviour now kills as many people annually as smoking, costing the [NHS](#) around £700 million per year.

In response, organisations are increasingly seeking ways to keep their employees healthy, utilising initiatives to improve and transform workplace health.





Two international health-focused building rating systems – [WELL](#) and [Fitwel](#) – emerged in 2016 to translate peer-reviewed, academic medical research into useful, actionable strategies for designers, contractors, tenants and building managers to use to promote healthy outcomes across the built environment. Both standards are designed to work in tandem with internationally accepted, mainstream sustainability systems, such as LEED and BREEAM, overlapping to simultaneously promote health and sustainability together.

The idea is that the built environment itself can be used to promote healthy habits and activity, encouraging inhabitants to boost their health as part of their working lifestyle.

Technology plays an increasingly important part here. With the Internet of Things (IoT), it is now increasingly simple to scan codes, connect sensors, devices and mobile applications together to monitor incidental activity and utilise and repurpose space to promote wellness and activity – something that UK-based StepJockey has been doing since 2013.



## StepJockey

*“Employees tell us that they want to take better care of themselves, but don’t have time for traditional exercise in gyms and swimming pools. They don’t want to feel silly and want to be empowered to look after themselves at work.”*

**Zarir Vakil, Director, StepJockey**

StepJockey is a leading workplace wellness company that transforms corporate wellness through a range of powerful employee wellbeing programmes. As companies face unprecedented levels of employee sedentary behaviour, StepJockey’s aim is to “start a revolution in corporate wellness”.

Founded in 2013, the technology solution enables landlords, asset managers and employers to ‘gamify’ their occupants’ incidental use of a building in order to improve their health by increasing evidence-based health-giving activity, combining technology and ‘nudge’ theory.

Seven minutes of stairclimbing every day reduces your risk of a heart attack by 50% over ten years,\* so the seemingly simple idea is to encourage people to use the stairs rather than the lifts in their everyday incidental journeys around their workplace.

**Explains Zarir Vakil, director of StepJockey:**

“At the heart of StepJockey’s thinking is the idea that the world’s built environment can be brought alive as such and repurposed. Foods are labelled with calories so we know what we’re consuming. StepJockey is about the other side of the equation; labelling the physical world for easy opportunities to build in physical activity, enabling ‘health giving minutes’.

“So that sparked the idea to create a technology platform and change programme that would label the things that are good for you in the workplace, nudging you to make a change. Starting with the stairs. Stairclimbing is a really easy way of getting incidental activity into your day-to-day routine at work, which is where most people spend the majority of their time during the day and can have a hugely beneficial impact on your health and wellbeing over time without making too much effort. And it’s obviously very accessible. There’s no need to change into lycra, trainers or pay for an expensive gym membership.



“With the help of seed funding by the NHS, and evidence-based solutions that were researched and validated by the University of Teesside, the StepJockey team developed Smart signage stair prompts, which are grounded in behavioural economics or ‘nudge theory’, with an accompanying mobile application available free on iOS and Android, prompting people to make an easy change to their behaviour every day. And from there, we developed our gamification platform, which incentivises stair use and allows people to take part in fun and engaging stairclimbing challenges, creating that incentive for people to adopt a healthy habit day-to-day whilst they’re at work and provide for substantial social, cultural and team building enhancements.”

\* Associations of light, moderate and vigorous intensity physical activity with longevity, Harvard Alumni health study, *American Journal of Epidemiology*, 2000

## How it works

StepJockey surveys its clients' buildings to understand where the hotspots are to disrupt people's typical everyday journeys and nudge them away from the lift lobbies, and into the stairwells.

Once the general flow of foot traffic and building habits are understood, StepJockey designs and installs a tailored network of optimal Smart sign stair prompts to nudge users in the right direction.

The stair-prompts feature evidence-based nudge messaging proven to have maximum impact in influencing people to change their behaviour and do the groundwork to prepare the building for a shift in culture where stairclimbing is the default, and health and wellbeing sits front and centre in people's experience as a building user.

Once the stair prompts are installed they become a critical piece of infrastructure in allowing users access to the wider StepJockey programme. The signs are enabled with smart technology, including QR codes and NFC capability, coded with unique data for each stairwell, allowing users to accurately track their stair activity with StepJockey's mobile app.

### Says Zarir:

"The mobile app is the main way that building users can engage with StepJockey. It allows StepJockey users to track their stair journeys, understand how active they've been with our daily Activity Score and set themselves activity goals to build and improve every day. It is now well understood that a focus on moderate and vigorous levels of activity is needed to see significant health gains. So, StepJockey's Activity Score breaks down your activity into sedentary, light, moderate and vigorous minutes and importantly gives you a score based on the number of 'health-giving' minutes you've tracked to provide users with a better understanding of how much of the activity they are doing is improving their health.

"An easy way to clock 'health-boosting' minutes is to hit the stairs when you have the chance, and that's where our challenges come in. The StepJockey app also allows users to participate in our employer-led stairclimbing challenges, competing in teams across live company-wide leader boards and win impressive trophies – so you can say you've walked up the Eiffel Tower or the Empire State Building just on the local stairs, for example."



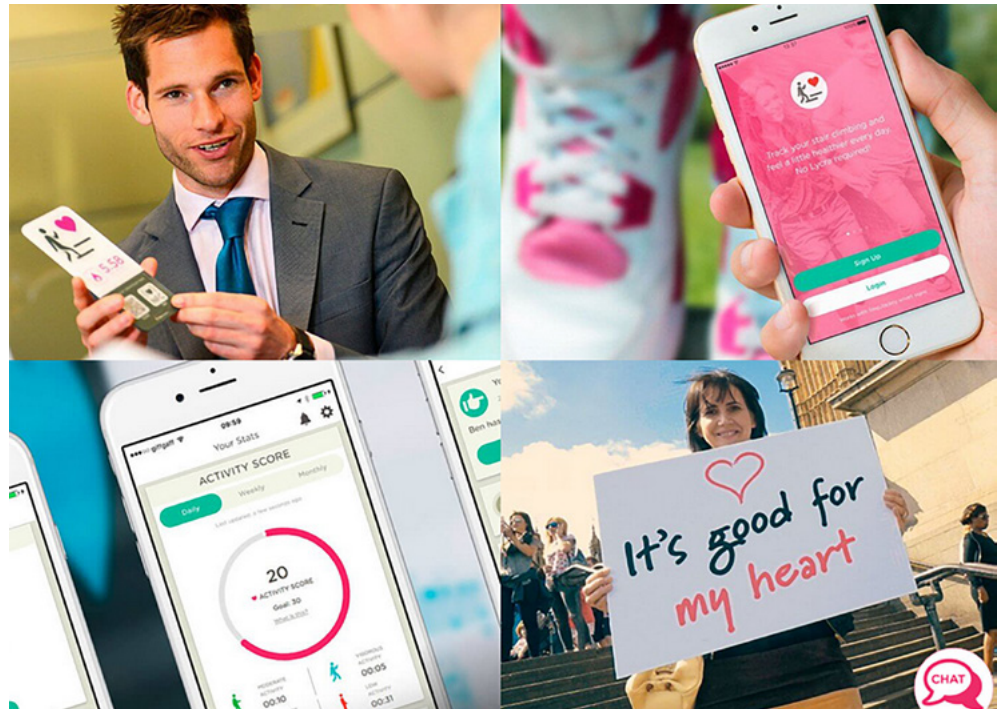
## The technology

Utilising the Smart signs in the building, users can either scan the QR code or tap the NFC code, depending on whether they use an Apple or an Android device, to track their stair journey. For example, as you arrive in the office on the ground floor, you scan the QR code as



you enter the stairwell, go up to your desk on the seventh floor, and scan out. The app then knows exactly how many steps you've taken, based on the data collated as part of the building survey, and feeds this into the live challenge leader board you're competing in, as well as your daily Activity Score.

By using unique building data, StepJockey's stair step tracking technology is much more accurate than most step trackers and wearable technologies, which can have tolerances of up to 15%, and can skip steps quite a lot and be open to cheating!



At the same time, StepJockey wants to use technology to go beyond tracking arbitrary step goals, and focus much more on increasing the types of incidental activity that is proven in science to improve health. Again, 'health-boosting minutes' based on the level of activity.

A lot of different goals are lauded by different health professions (such as the popular 10,000 steps a day recommendation), whereas medical research and evidence is showing that those arbitrary numbers aren't all that helpful and don't necessarily reflect how much you can gain from being active.

StepJockey's Activity Score is designed to capture how much activity a user is doing that is actually improving their health, moving beyond an arbitrary step count and towards how many minutes they have spent engaging in beneficial activity. The NHS recommends 30 minutes of activity every day, and the StepJockey app can determine if users are vigorously active, moderately active or experiencing sedentary behaviour.

The StepJockey app does this by syncing with the user's mobile device (Apple Health or Google Fit), allowing all general movement and activity to feed into their daily Activity Score, in addition to their stair activity. By collating all of this activity data and breaking it down in this way the Activity Score provides a much more inclusive and meaningful way of understanding how truly health-giving a user's activity is.

**Says Zarir:**

“As with any technology, particularly within buildings, it only works if people actually adopt it and change their behaviour. The reason StepJockey has such an impact is because it does change people’s behaviour sustainably, and they form new habits and they do actually get healthier.

“A big part of our programme is grounded in change management principles and behavioural economics. We work in partnership with our clients to understand their people and culture and tailor our programme of anti-sedentary interventions to help employers encourage their people on a change journey. The programme pulls on four key change levers to help people realise why they need to change their behaviour, to create incentives to actively adopt the habit and reward them to make sure it sticks. Forever.

“This means focusing programme activity around leadership, communication, rewards and nudging to get people to adopt the technology so that they can reap the benefits that come from using StepJockey.”



In 2019, StepJockey’s capability was acquired by leading proptech business WRLD.

WRLD provides a spatial foundation for connected technologies so that any data can be unified, visualised, and made immediately actionable in a digital twin. WRLD creates a 3D digital workplace that provides employees with unprecedented access of their work environments on any device and manages quicker insights into building operations.

WRLD has conceived state-of-the-art digital twinning of the exterior and interior of buildings, and with the acquisition of StepJockey intends to add workplace wellness at the heart of its value proposition, by combining StepJockey’s renowned wellness technology solution with its own smart series of applications and use cases.

WRLD provides a technological platform to developers worldwide to provide a digital twin concept for all types of data in the world. This includes leading-edge three-dimensional Smart City, Smart Office, Smart Retail and Smart Campus applications.





## Case study: Comcast NBC Universal

**Comcast NBC Universal is a technology and media company, based in seven countries around the world. As most of its employees are in sedentary roles, the company recognises that setting – and reaching – personal wellbeing goals can seem like a daunting task for employees. Which is why the company engaged with StepJockey.**

**Says Martel Neville, Senior Manager, International Benefits, Comcast NBC Universal:**

“StepJockey is designed to get us all moving more by using the stairs instead of the lifts to boost our workplace health. We know that continued active physical activity amongst adults overall has a positive impact on an individual’s wellbeing and reduces the risk of developing severe health conditions (i.e. chronic illnesses, cholesterol, heart risk, stress, etc.).

“We want our employees and their families to be at their best – physically, emotionally and financially – both at work and in their personal lives. That’s why we provide valuable benefits and resources to help them take small steps to improve their health and wellbeing.”

The company has been working with StepJockey for four years now and has seen extensive return on investment. Its initial goals for StepJockey and other wellness programmes included:

- Demonstrate how select benefits and products can help employees lead healthier and more productive lifestyles;
- Get employees to focus on simple ways to improve their wellbeing;
- Showcase Comcast NBCUniversal’s commitment to fostering a culture that supports and enables employees’ pursuit of wellbeing; and
- Encourage employees to involve their family, friends and co-workers in wellbeing with wellness activities and benefits programmes.



**Continues Martel:**

“We want to create meaningful experiences that will help foster a culture of wellbeing, encouraging employees not only to interact and engage with their benefits, but more importantly, each other. StepJockey is a catalyst for changing behaviour in employee usage of Comcast NBCUniversal’s benefits programmes and helps create a culture of wellness.”

**Collaborating with Step Jockey, Comcast NBC Universal has been able to:**

- boost its workplace health, especially for employees who are typically stationary at their workstations eight hours a day;
- improve individual (physical, mental and emotional) wellbeing – reducing the risk of developing severe health conditions;
- create a more positive employee experience through building camaraderie through the team challenges; and
- promote positive competitiveness, as teams compete against other teams across seven countries.



**Says Martel:**

“We did a survey in 2017, asking people about their perspective on health and wellness, and over 96% of people thought it was really important that we have physical activity in the workplace. In the most recent StepJockey Challenge, 150 climbers collectively took over one million steps in three weeks. Per climber, that’s more than 2,000 steps up and down the office floors per week!

“When surveyed after the latest challenge, 90% of participants felt healthier as a result, and more than half are now using the stairs more than they were before the challenge.

This demonstrates the simple change that employees have taken to lead healthier lifestyles. Over 80% of participants want another challenge to be run, and the competition and camaraderie between different global offices was and continues to be a huge driver and conversation point.

“In the first year we gave out individual prizes where we identified the top walkers throughout the world. Now we do a group prize, so whichever location has had the most activity, we fund their next wellness event. They decide on the event and we provide funding for it.

“In 2020 we’ll be playing a huge role in sponsoring the Olympics so we were thinking about what we could do with StepJockey around an Olympic-themed challenge.”

**Aside from improved health, there are other benefits. According to Martel:**

“In the last two years that we’ve done StepJockey, we have had absolutely no claims whatsoever on our group income protection or any other claims, medical wise, and I believe there’s a correlation between the two.”

**Adds Zarir:**

“Our challenges are a key catalyst for bringing teams together and building a sense of community and achievement as people work towards a collective goal, like climbing Everest. This delivers great benefits in the workplace beyond improvements in individual health, including boosting morale and building social capital by connecting people who wouldn’t otherwise interact in the office.

“By increasing stair use we are also actively driving down lift usage. [Research from IBM has shown](#) that opting for the stairs instead of the lift saves a significant amount of time and contributes to greater levels of productivity amongst employees.”



This swap in habit appeals to employers, facilities managers and landlords alike, who can see that this is an easy way to save energy costs (which can account for up to 8% of a building's overall energy use) and cut their carbon emissions too. At the same time, users want to know that their active habits are having a positive impact beyond their health, so everyone wins.

**Continues Zarir:**

“The other huge driver where we’re seeing the benefit is being able to comply with the new Healthy Building Standards. A lot of our clients, whether they’re a landlord, asset manager, building manager or an employer, are really trying to comply with [Fitwel](#), and part of the scorecard is to have stair prompts, encouraging people to use the stairs. StepJockey is a way of ticking that box, so that’s a huge benefit for a lot of our clients. So people really love the programme and the competition, but also they get to take their journey a little closer to the Fitwell qualification.”

Indeed, StepJockey is a powerful ‘active design’ solution for new and existing buildings. With 75% of stakeholders in the building industry citing occupier wellbeing as a key driver for implementing programmes like StepJockey, sedentary buildings are more than just a health risk. StepJockey leverages active design and IoT technologies to quickly create healthier, more productive buildings that:

- showcase your commitment to occupant health and staff wellbeing;
- work for all, not just the already fit minority;
- comply with the new healthy building standards (WELL, Fitwel, LEED);
- allow you to link networked buildings and build tenant communities;
- cut lift waiting times, creating time and energy savings;
- get detailed ‘people-flow’ data and actionable insights;
- make use of a paid for asset – your stairs; and
- impress your clients with workplace health innovation.

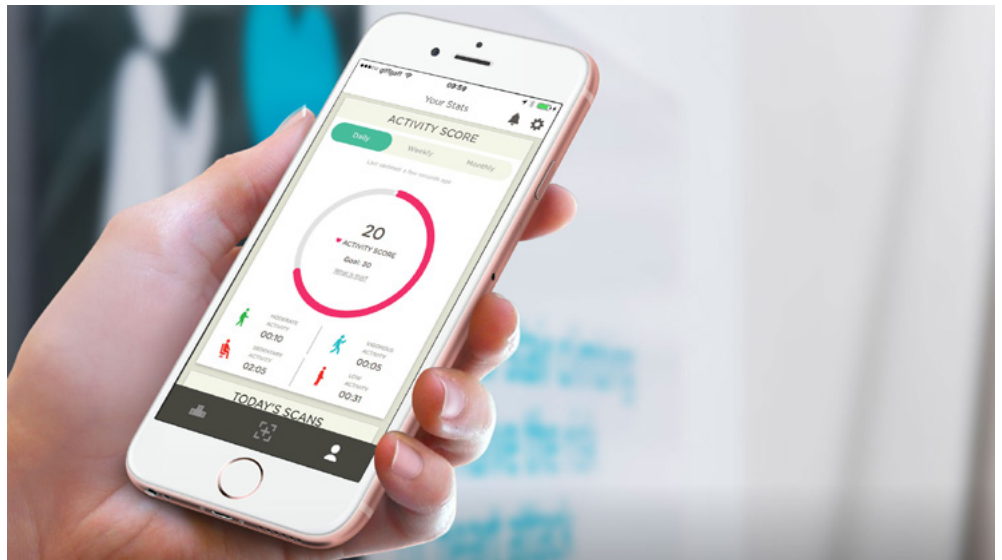
## The future

StepJockey’s technology has allowed nearly 18,000 stairwells to be rated worldwide and counting, in 136 countries, with over 40 blue chip clients worldwide. StepJockey will be well placed to continue its efforts to get otherwise sedentary workers moving.

*“By using StepJockey, we are enhancing our ability to deliver 3D spatial modelling and digital twinning solutions that will enable our corporate clients and partners to achieve their bottom line, and support employee wellbeing in an impactful, measurable way. We expect to build on the technology of StepJockey to advance our offering of holistic services in the proptech arena. At the same time, we hope this will become a real force for good.”*

**Chairman of WRLD3D, Hassan Sadiq**





StepJockey is innovating constantly to keep up with the market and satisfy its client needs and with the acquisition by WRLD sits at the forefront of compelling proptech solutions with real life use cases.

StepJockey has already commenced work on tracking external activity, community-based events, and providing a freemium SaaS model for smaller scale users. By utilising WRLD's knowhow it will also be able to bring dramatic and interesting technology interfaces and multiple use cases for one mobile application to building occupants – a real convergence of solutions for users, including their health.

**Says Zarir:**

“If we want our users to break a habit of a lifetime and adopt a new one, that new one has to be easy. So a big innovation project for us is moving away from scanning with the mobile app to allow users to remotely track their stair activity without having to take their phone out of their pocket. Our technical team are internally testing lots of different technologies in order to do that, including using the magnetometer in your phone, or using Bluetooth beacons in order to remotely track your movement through a stairwell and then through a building. So, the technology is evolving, and we can feel a real need to do that quickly to ultimately enhance our users' experiences and make healthy habits a convenient and easy thing for people to do day-to-day whilst they're at work.”

Whilst this research and development is underway, StepJockey is simultaneously leading on a significant re-write of the StepJockey app to improve its speed, stability and bring it to life with new visuals and data insights.

“Technology is obviously a fundamental piece of what StepJockey is all about,” says Zarir. “The app really is the key interface between StepJockey and our users, as it's convenient, everyone has a phone and it's really accessible, so technology is core to what we do in that sense. But at the same time, behavioural economics and change management are the fundamentals underpinning the StepJockey programme. This is where we can partner with our clients to understand how the values of the programme can integrate with their existing wellbeing ecosystem and be impactful in encouraging and enabling users to engage and feel the benefits of doing so.

“Recognising the tangible health benefits individuals feel using StepJockey is really key to ensure we are achieving our shared objective with clients to create long-term and sustainable behaviour change. That's why we are shifting our focus to understanding the positive health outcomes of our users, starting with introducing in-app, clinically validated health outcome questionnaires. How can we be sure if our users are feeling healthier by being more active unless we ask them they feel?”

Employees need to see and understand the programme, and the company's behavioural research has led them to develop best practice regarding where to position signs, at what height, and at what intervals from the door, the elevators and the stairs.

Their reporting tool gives managers detailed insights into user behaviour.

**Says Zarir:**

“As an individual user, there are leader boards. It's slightly different depending on how the building is set up – it might be that the whole building has a leader board, or if it's a global organisation like Comcast NBC Universal, there will be a global leader board. When you're in a challenge you can see the leader board for teams, purely based on step count at the moment. So that's what you can see as a user.

“As a programme manager, someone like Martel could log onto a client portal and actually get a really significant amount of data on how the stairs are being used. So they can see hotspots in the building, and which stairs are being used more than others. They can break that down to what time those stairs are super-active, they can see when people are signing up to the app, when people are using the app. We can compare different offices to each other and the changes in activity.”

This all helps paint a picture of building usage, potentially leading to energy savings, or even relocations/refits, to ensure the building is being used as efficiently as possible. The app also provides data about employee demographics.

“What's really fascinating is the audience that find our product most appealing. There's a bias towards women, the middle aged, those who are overweight, and the inactive people that are so hard to engage with usually. Because we normalise moderate and vigorous activity, it's not seen as exercise.”

**Martel gives the final word:**

*“At Comcast NBC Universal our hope is that all employees will be healthy, if not healthier, then when they started with the company. We are always looking for opportunities where we can improve the total health and wellbeing of our employees and their families, and we find that connecting with StepJockey has allowed us to offer a unique experience in promoting physical, emotional and mental health. Given the fact that we are a technology company, it is good to have partners, like StepJockey, that align with our digital image.”*





# Yodiwo and Engie

The internet of things and energy efficiency

The Internet of Things (IoT) is one of the most promising innovations in the real estate space. It is broadly [defined](#) as a giant network of connected ‘things’ (that also includes people), incorporating relationships between people–people, people–things, and things–things. Sensors are the glue that keeps these relationships together. According to the World Economic Forum report, [Technological Tipping Points](#), by 2022 there will be over one trillion sensors connected to the internet. As we become more connected, we produce more data, which can then be used for the planning and consumption of urban spaces and real estate.

**There are many positive impacts associated with the IoT, including:**

- increased efficiency in using resources;
- rise in productivity;
- improved quality of life;
- effect on the environment;
- lower cost of delivering services;
- more transparency around the use and state of resources;
- safety (e.g. airplanes, food);
- efficiency (logistics);
- more demand for storage and bandwidth;
- shift in labour markets and skills; and
- creation of new businesses and new business models.

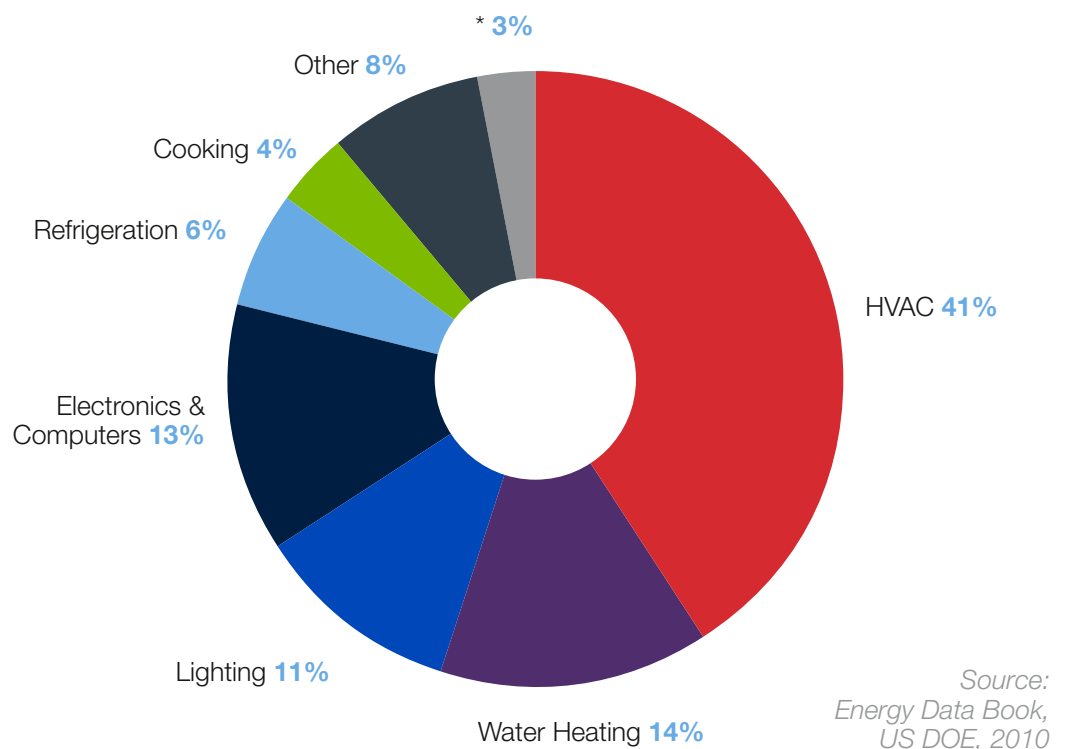


### The role of energy-efficient buildings

Commercial and residential buildings are massive contributors to world energy consumption and greenhouse gas emissions. In developed countries, they [consume approximately 40% of primary energy](#).

The efficiency of appliances and equipment used in homes and businesses has increased greatly over the past three decades. However, there is still much that can be done to reduce the amount and slow the growth of energy consumption in residential and commercial buildings.

**Figure 1: Commercial building energy consumption.**



The outcome from many studies regarding the use of energy in commercial and residential buildings is that more than 55% of total energy is consumed by HVAC and water heating systems. Together with lighting, they are [responsible for almost 70% of energy in buildings](#).

The patterns (or profiles) of energy usage contained within interval energy data are great for discovering where a building is wasting energy. The fine-grained detail of interval data (such as half-hourly data) is key – daily, weekly or monthly data doesn't contain anywhere near as much information about how energy is being used.

## Energy management IT systems

Energy monitoring is the starting point to understand the actual needs of a building. Breaking down total energy consumption in equipment can help to identify cases where negligence or lack of maintenance has led to unreasonably high consumption, so that action can immediately and easily be taken to reduce it.

The evolution of sensor and metering technologies, long-range connectivity protocols and affordable edge and cloud computing devices have allowed IT to deliver efficient monitoring through the integration of heterogeneous systems and the use of programmable rules for alert generation. For instance, during non-working hours, lighting or heating should only be used in certain areas; therefore increased energy consumption or air pollution levels in other spaces could create notifications for where action can be taken.



More complex rules for increasing the efficacy of energy monitoring systems can be established using data from various types of sensors and services. For instance, space occupancy sensors can be used to manage lighting. CO<sub>2</sub> levels can be measured to optimise the operation of ventilation systems.

Modern automated energy management solutions adopting the Internet of Things (IoT) paradigm can be made infinitely smarter with the use of other forms of data. For instance, creating a solution able to receive data from an electronic booking system of meeting rooms and public spaces can optimise the operation of the HVAC equipment that controls the air quality of these spaces. Input from internet weather forecast services could also be considered in order to optimise the heating or cooling process of a building, saving significant amounts of energy.

Finally, an advanced energy management system could also take into account occupants' perception of indoor environment comfort – for instance, data collected by office staff about thermal and visual comfort levels according to their perception could be used along with any other aforementioned information by sophisticated energy management algorithms that control the HVAC systems of office spaces.



## Yodiwo

Yodiwo is a leading solution provider for infrastructure asset life cycle management, based on its fully owned IoT platform. The company was founded in 2015 and has its headquarters in Sweden with design and sales offices in Greece and Cyprus. The main market sectors the company serves are smart cities, space management in retail, industry 4.0, predictive maintenance and facility management. Its patented edge and cloud computing technology is a key element for the diversity and unification of facility management services provided under a single platform, named YODIWO FM.

In the five years of its operation, YODIWO has established an astonishing ecosystem of leading firms, such as Nokia, ENGIE, VolkerWessels and organisations that manage their own property portfolio, which trust YODIWO FM solutions for energy resource optimisation, equipment maintenance, business operation efficiency, indoor and outdoor environmental management, FM resource and supply management. The ecosystem also includes academic organisations with intensive research activities in artificial intelligence and machine learning, which keep YODIWO updated with the latest technology developments.

Having full control over its technology, YODIWO is able to apply a flexible business model that allows its clients to use YODIWO cloud-hosted services or install YODIWO FM at their premises or use their own private cloud to host the YODIWO FM platform.

Today, YODIWO FM already supports energy management with emphasis on the optimisation of HVAC operation, air quality management, asset and people tracking, sound and lighting management, equipment maintenance based on anomalies detection, customisable reporting for auditors, space management and distributed maintenance task management. The company implements a roadmap driven by its customers, its partners and the market trends for modern AIoT Integrated Workplace Management Systems (AIoT – IWMS).

## Yodiwo FM target group

Yodiwo's value proposition addresses mainly organisations with a lot of buildings or other assets to manage whose service provision portfolio include or will include at least two of the following:

- energy monitoring and verification
- wellbeing
- space management
- asset and people tracking
- equipment maintenance
- regular audit reporting

### **Also, these organisations may:**

- use or intend to use a Computer Aided Facility Management (CAFM) tool
- use or intend to use a Computerized Maintenance Management System (CMMS)
- realise the benefits of integrated workplace management systems for all the above services and future ones
- want an IWMS with selective views for administrators, managers, technicians and end-customers
- need systems that collect data from everything in a building, analyse them, present building performance and manage its operation automatically whenever possible
- need such systems to operate partly or totally on-premise
- follow a holistic FM approach where, for instance, the best possible environmental conditions for occupants are ensured in conjunction with energy optimisation and predictive maintenance of equipment
- provide modern building management equipment and want to provide end-to-end building management solutions that incorporate them



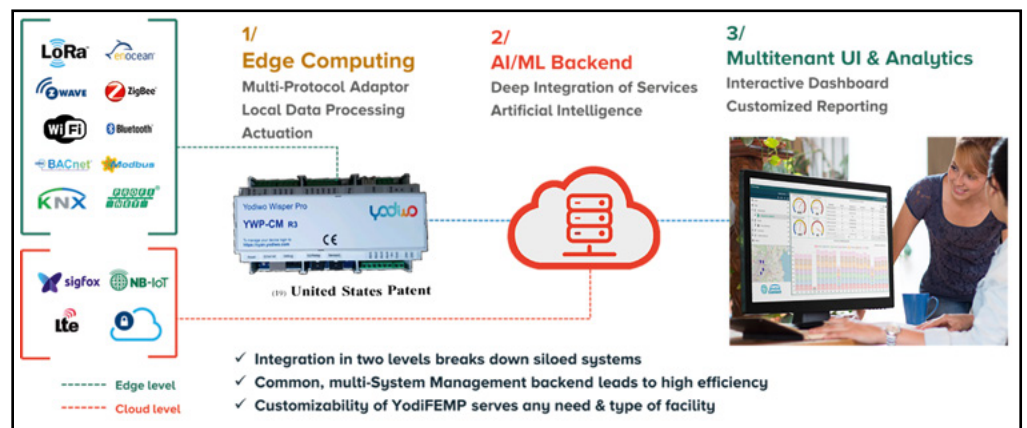
## The Yodiwo FM platform

Yodiwo FM has a multi-role (FMSP admin, FMSP users, end customer etc.) based on an interactive graphical user interface (GUI) environment for the efficient and productive monitoring and management of a building, including complex or even multiple sites.

An indicative high-level solution architecture of the Yodiwo FM platform is shown in Figure 2. The Yodiwo FM platform can connect with building systems and sensors through the Yodiwo Wisper gateway or third party gateways and provides network protocol bridging, edge computing and sensor-system-controller aggregation, thus offering a cost effective and scalable approach. The gateways facilitate a bi-directional and secure interface to accommodate monitoring and control/actuation services.



Figure 2: Yodiwo FM platform.



In most existing installations, expensive controllers for HVAC, water heating, electricity, gas and other systems are used but are not fully leveraged in terms of programmability. Their setting points are configured once by specialists, although the controllers allow dynamic and remote configuration. Furthermore, in existing installations, even if the controllers are remotely managed by their vendors' proprietary software, the lack of a centralised control mechanism discourages FMSPs from using them due to their complexity and the high cost of the process.

The Yodiwo FM platform relies on the extended integration of modern sensor technologies with controllers and PLCs. A modular IoT Gateway provided by Yodiwo can bridge almost any controller and PLC with the cloud over Modbus or BACnet.



The same gateway can collect data from sensors using wireless protocols such as LoRa, ZWave or Bluetooth and wired interfaces such as 1-wire, I2C, RS485, RS232, dry contacts and others. Nowadays, the plethora of commercially available CO<sub>2</sub>, temperature, water leak, door opening and other sensors as well as meters, switches, relays and other equipment based on a wireless or wired connectivity protocol such as those mentioned above, offer unprecedented flexibility, leading to low-cost FM solutions with the use of a modular gateway with an open architecture.

In the current installation of Yodiwo FM, wireless LoRa sensors in open space are able to monitor temperature, humidity, CO<sub>2</sub>, motion detection and light levels. Within the Yodiwo FM platform-based solution there is the ability to set acceptable limits for human comfort (temperature, CO<sub>2</sub>) and the solution will operate the ventilation system and set the central air-handling unit setpoint according to the defined values, sending email notifications in the case of limit violations. The efficiency of its operation increases when the outdoor temperature is also sensed. Using machine learning algorithms, the solution can provide notifications when something looks abnormal or when data from meters and sensors cross pre-programmed thresholds during certain hours.

The table below provides an indicative list of PLC, meters and sensors that have been used and pre-integrated into the platform so far. All of them are bridged with the use of the Wisper IoT gateway or third party data collectors, bridges and networks (e.g. LoRa, NB-IoT, SigFox). The list of connectivity protocols ensures that even more controllers and connected devices can be integrated in the future.

Yodiwo FM can run either on local or cloud servers and can support multiple accounts. Each account can manage many buildings and many owners with full or view-only rights. A user with full rights on a certain account can not only monitor the operation of a building based on the collected data from equipment and sensors but also programme the setting points of controllers or alarm thresholds and the recipients of notifications

Demetris Papailiou is the business development director at Yodiwo. He describes the typical process that a user will undertake to utilise the product:

“Depending on the scope and scale of the project and building size, the set-up will take anything between one and two weeks. For a typical brownfield installation, a retrofitted IoT enabled solution will integrate existing building legacy systems, environmental and weather conditions, and space usage and occupancy into one consolidated solution that will improve operation efficiency such as energy optimisation and maintenance savings, as well as minimise and predict system downtimes and failures, and enhance overall tenant wellbeing through continuous environmental monitoring.

“A typical FMSP will increase their awareness, responsiveness and visibility to any monitored site, as well as offer cost cutting and enhanced services to their customers, driving them towards achieving digital transformation.”





## Case study: Yodiwo, Engie and INTERAMERICAN

**In 2019, Engie, a French multinational electric utility company and facility management service provider (FMSP) operating in the fields of energy transition, electricity generation and distribution, natural gas, nuclear, renewable energy and petroleum, committed to drive down the energy costs of its customers' buildings through energy services and workplace optimisation, by helping them achieve ecological consciousness and environmentally-friendly behaviour.**

**Contracts with its customers relate to:**

- implementing energy-saving projects and continuous provision of new initiatives;
- operation and maintenance of ISO 50001:2018 for energy management system (EnMS) requirements; and
- the PDCA process: Plan, Do, Check, Act.

One of its clients, INTERAMERICAN, a leading insurance company in Greece, operating all insurance business lines and engaging more than a million individual and corporate customers, was highly aware of its carbon footprint and reducing its energy bill. Over a five-year energy savings performance contract, Engie agreed to drive down INTERAMERICAN's FM and energy costs through further service integration, energy services and workplace optimisation, allowing INTERAMERICAN to achieve its goals for ecological consciousness and environmentally-friendly behaviour.

## The problem and the solution

### The main challenges Engie faced included:

- a lack of an updated building management system (BMS);
- insufficient sensing devices to record temperature and the status of systems;
- a lack of tools, sensors and controllers to diagnose problems and failures; and
- a lack of energy metering units.

Yodiwo's experience had shown that smart metering and EnMS are integral to the solution, but users often become overloaded by data and get confused. In addition, metering data needs to be monitored alongside local weather conditions and other inputs to make a clear decision.

The Engie Connect platform is an AI-driven platform that uses historic metering data and sensors to track asset performance, create savings, minimise wasted energy, optimise energy consumption and reduce CO<sub>2</sub> emissions. The platform enables vertical integration, connecting everything from a sensor to a building management system that needs such data or from a specific function of a microcontroller with another computing system over the network.

Engie – through the Yodiwo FM platform – was able to consolidate existing legacy systems, commercial off-the-shelf wireless sensors, open communication protocols and third party services. The platform utilises industry-leading algorithms to automatically and continuously assess real-time energy and asset telemetry data flowing from a building and then highlight energy-wasting events and tag it with possible causes and an additional 'action' value.

The system takes data feeds from any data-producing hardware on site such as energy meters, asset sensors, BMS data etc, or remote data sources – including weather data and even client activity feeds – and integrates and co-analyses the useful information.





## Results

The project achieved savings of 17.52% of total energy consumption, total electricity savings of 14.94%, while fuel savings reached an astonishing 45.89%, within only a few months of operation, achieving higher than expected savings.

The system was implemented and deployed in under four months by utilising pre-existing integrations and design acceleration tools. ROI was accelerated by a combination of low capex investment and high yield results.

### The benefits to clients included:

- indoor air-quality monitoring instant alarming on unhealthy conditions;
- indoor temperature optimisation – leading to a better working environment;
- optimum operation of HVAC systems, meaning reduced maintenance costs (at least 20%);
- unification of BMS systems, resulting in efficient FM administration;
- identification of the control parameters and settings associated with the best stable performance – taking full advantage of expensive installed PLCs for cost efficiency and maximum life cycle;
- predictive maintenance – starting with ‘anomalies detection’ and targeting to full predictive maintenance through energy budget forecasting; and
- dynamic resetting of systems – actuation and resetting of systems based on existing environment and use.



## The future

### Says Engie:

*“ENGIE intends to continue to expand the connection of more assets and the fine tuning of the solution, taking advantage of new features of the Internet of Things, machine learning and new control and interaction tools. Its goal is to continue improving its services, making them more ‘connected’, user-friendly and even simpler for its clients.”*





# Fabriq, in partnership with a leading FM and property management firm

Creating better working environments through integrated systems

## Introduction

Real estate is complex. It involves many stakeholders, massive portfolios, ongoing transactions and (often) siloed functions and databases. In addition, buildings are messy. Key building systems are often incompatible with each other and badly configured, with varying operating requirements from different tenants within the same asset. To add to the confusion, user demands are rapidly changing. Evolving tenant demands, increasing cost pressure, and asset yield depression all lead to one big challenge – massive inherent inefficiencies and disconnect between key stakeholders in the real estate value chain. This ultimately leads to inefficient management of building assets with huge wastage of natural resources and costs, and suboptimal value creation for the end-user, the tenant.

It's a huge issue for landlords and building operators, as the market for real estate has changed massively in recent years.

People will no longer accept working in cluttered shoeboxes with no natural light and a heating system that makes them ill. Productivity is in many cases strongly linked to the working environment, and workers are voting with their feet – choosing to work in spaces that accommodate their needs, that are flexible and conducive to their working practices. Cue WeWork and its stratospheric growth over the past decade. Employers, realising this trend,

are beginning to downsize or upgrade their old-fashioned office environments, in addition to encouraging their workers to utilise spaces that corporates don't need to manage and pay for (i.e. their homes and public spaces) to make the best use of their resources.

Energy efficiency is a huge issue too. Resource optimisation is high on landlords' agendas, saving energy, creating better working environments, and creating efficiencies is key to modern work environments. By now, even people outside of the industry have got the message that buildings are responsible for around 40% of energy consumption globally. So this is a good place to focus on in order to avoid the worst impacts of climate change.

To save energy and improve working spaces, data is needed to highlight exactly what needs to be managed, improved and made more efficient. As a first step in this endeavour, it is useful to have systems in place that can easily import, process and analyse the data generated from buildings.

# Fabriq

## Fabriq

Fabriq was founded in late 2011 (then known as EnergyDeck Ltd) and was born from its founder's experience working for Google at a European level. Based in London, Benjamin Kott managed Google's European real estate assets, including offices and data centres, making them environmentally sustainable and more occupier/operator-friendly. Benjamin saw the need and the opportunity to build a data-driven platform that would connect all the information from the building assets and the equipment that is in the buildings, as well as the investors, contractors, service providers and, last but not least, the tenants, to bring them together in one platform for two reasons:

1. To streamline building operations and performance benchmarking; and
2. To better understand energy and resource consumption, in order to reduce carbon emissions, save resources and lower costs.

Fabriq's main offering is a fully integrated web-based IoT platform that tracks energy and resource consumption as well as environmental parameters across assets. Fabriq can be accessed from any internet-connected device to manage data sources, identify inefficiencies in building operations and manage savings projects – not just for energy, but also water, waste, air quality, wellbeing, productivity and more.





Fabriq is designed to be flexible and to connect to a wide range of building components and data sources, from metering gateways to building management systems and specialist sensors, such as for air quality tracking and occupancy management.

The Fabriq OS platform provides a range of apps that offer advanced functionality for users from landlords to tenants across all aspects of building operations.

In essence, Fabriq OS provides a “single pane of glass” for operational real estate management, including the following functionalities:

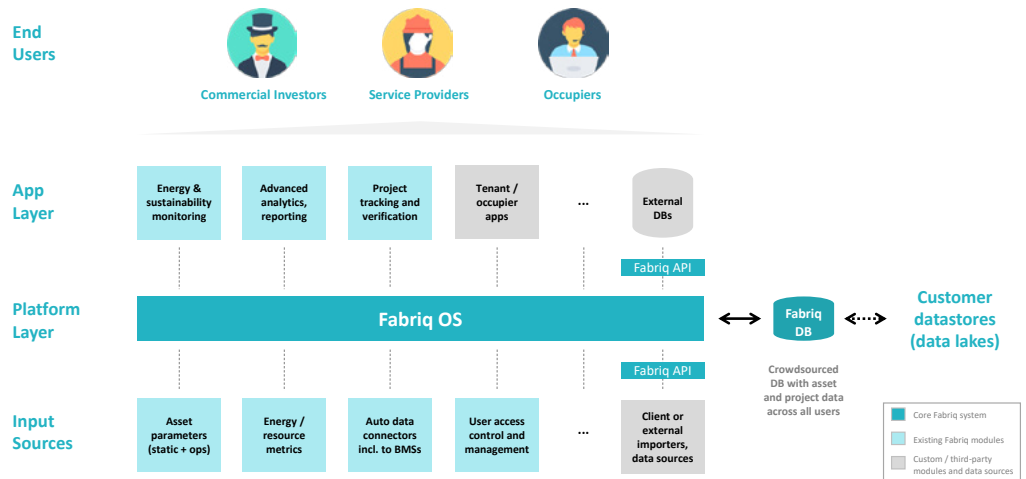
- Imports any operational data type from any source;
- Tracking of energy, carbon, sustainability, air quality, utilisation;
- Suitable for any type of building – from airports to warehouses;
- Accessible by all key stakeholders in real estate;
- Automatic benchmarking and flexible reporting;
- AI-powered analytics for automatic outlier detection;
- User-friendly front-end and intuitive workflows;
- Extensible through custom connectors and visualisations; and
- Providing flexible integration options with client databases and workflows.



## How it works

The Fabriq OS platform connects to a wide variety of data sources at building level (shown in the bottom row of the chart below), from which it automatically imports live information about, for example, energy consumption from building down to room or device level, water and waste data, as well as information about building occupancy and environmental parameters.

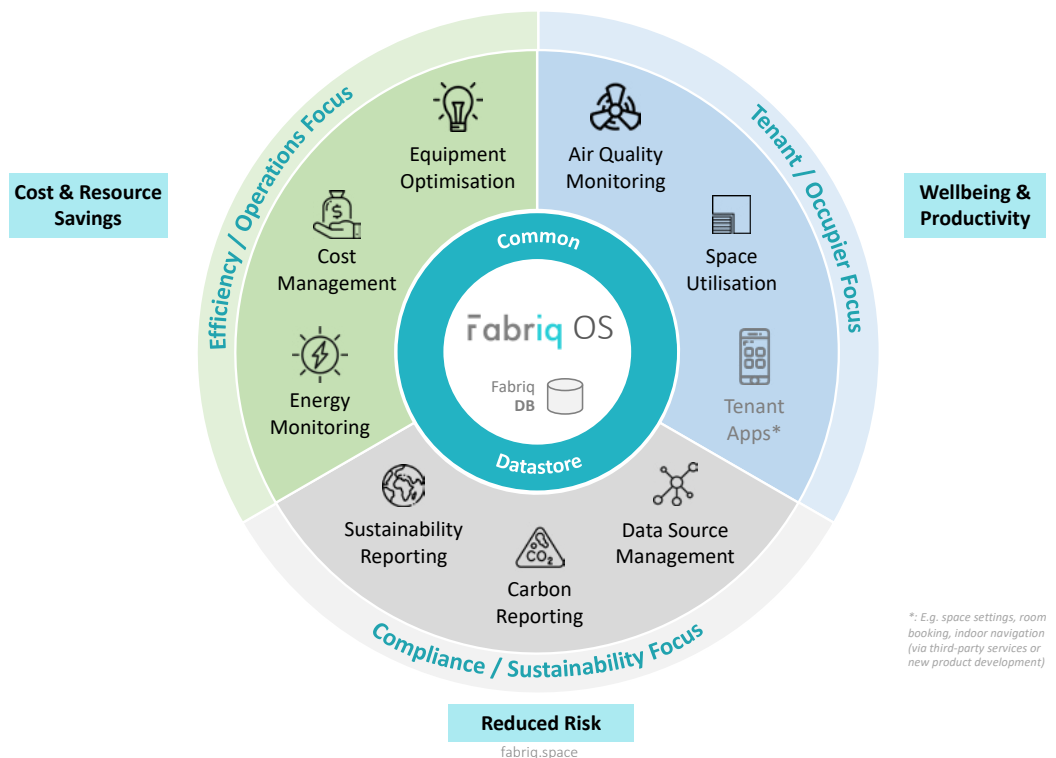




The platform then validates and processes the data acquired for analytics and reporting purposes. In addition, it automatically generates building performance benchmarks across all assets and data feeds collected from all users. These benchmarks are anonymised and aggregated, and made accessible to all users of the platform via the Fabriq database.

On the 'front-end' side, users are able to view and analyse their data in a wide range of scenarios, starting with energy and sustainability monitoring, advanced analytics and project management and tracking (e.g. for savings measures), among others.

Fabriq covers multiple sectors, including energy, the IoT and space management. It combines capabilities from these segments in a single platform, the 'sweet spot' for effective real estate management and to maximise asset yields. The Fabriq platform is accessible to all key stakeholders in the 'building stack' – landlords, service providers and occupiers – whereupon users are provided with a one-stop-shop for managing, analysing and acting on all operational building metrics.



The company is built around crowdsourced data that is made available to all users in an anonymised form – so you don't just see your own data, but benefit from the experiences of others as well.

**Says Benjamin:**

“That is really the premise that we started on. I didn't just want to build another dashboard, another platform. The big premise was around the crowdsourcing aspect of it, so that we would all benefit as an industry. The more sites, assets and building information we had on there, and the more information, the more everyone who uses it would benefit from it. So it's a typical network effect, which obviously works for the business model as well.

“It is an intrinsic part of the platform to have this crowdsourcing aspect, and it applies to both building performance benchmarks (in terms of typical and best in class energy consumption per sqm) and resource efficiency projects that have been implemented in buildings (which are fully anonymised and made accessible to all users via a shared projects database). Even if you only have, say, three buildings for which you are uploading data, as soon as you upload the data for those, you can see how they compare to another hundred or more buildings of a similar type that are on the database. That is still the case today.”



## Proptech

**Says Benjamin:**

“Even five years ago, proptech as a term didn't exist. But it is a hot topic right now; [MIPIM](#), a key real estate exposition in France, for example has a large area dedicated to all things proptech, and so has Expo Real, its German equivalent. Over the past two or three years, proptech has evolved into a mini craze, with many dedicated events, funds and lots of hype. In a lot of cases however, proptech still largely means online marketplaces for asset transaction and tenant-focused apps for room bookings. For us, proptech has always been a much deeper concept, spanning the entire gamut of building operations and driven by high frequency, granular data from the actual buildings. By that I don't just mean the annual energy bill but really the consumption at half-hourly and five-minute level, not just of the building but at the tenant level, the floor level, the consumer level, in addition to lights versus air conditioning versus plugs and so on.

“So we are seeing proptech everywhere, in the sense of things that we access and connect to, and Fabriq is part of that because we provide the database at the back-end for all of this data that other people can benefit from, either directly through the platform by data analytics, or indirectly by building applications on top of that.

“When I started out I needed to do a lot of education of customers, starting with how cloud technologies are safer than on-premise servers, to crowdsourcing of data and how everyone can benefit from it. I didn’t even use the term proptech at the time. It was all about Big Data or IoT (Internet of Things), or simply Building Management Systems, benchmarking and sustainability. Now it is much more around smart buildings, connected workspaces, efficient workspaces, and all that sort of thing we have seen emerge in the last couple of years.”  
The connecting element for all the latest developments is really the human factor, in other words, the building operators and users. More recent service providers – including Fabriq – are fully focused on how to provide the best level of service to these key users.

**Continues Benjamin:**

“We are building this platform to connect and aggregate all this data and then deliver value off the back of it to different types of users. But what we have seen change in the meantime in the last seven years is now we don’t have to explain it so much anymore. We don’t have to install meters or loggers all that often anymore, as more and more buildings are coming equipped with sensors for this data (which of course presents a challenge of its own in terms of integrating with lots of different providers). Now you really need a platform to aggregate all this data in a single tool and get the value of it.

“When we actually install the system and configure it and scale it then it can feel a little scary, as most buildings have not been designed with internet-type connectivity and digital services in mind. Very little ever works out of the box, nothing ever seems to be configured properly from the get-go, and all the various systems you need to come together to deliver full value. We often fill that role of accessing and connecting these systems and extracting all the data we can get from them for the user.”



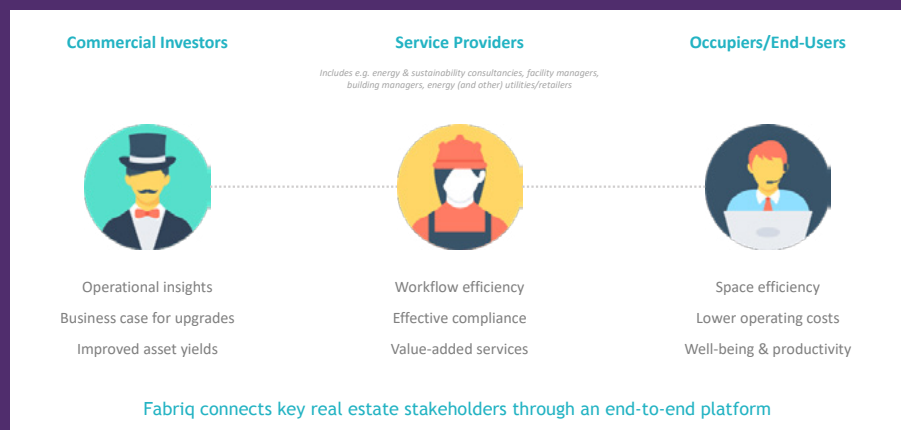
## How is Fabriq part of proptech?

### Says Benjamin:

“It really depends on who I am talking to. If I talk to the energy and sustainability crowd, which is where we started, then I would say we can be the cloud-based energy management system for your portfolio, helping clients save 10, 20 or 30% of energy and resource consumption in the process.

“If I speak to landlords, on the other hand, it is more about how can they benefit from the financial side. So how can they increase asset yield? All other factors being equal (like location, location and location), you can typically achieve higher yields by reducing the service charge and the cost that it takes to run the building, which we can help with and make it more efficient.

“If I talk to the service providers, who sit in the middle, they can use our platform to streamline key workflows from data gathering to reporting and help with the processes as now they don't have to handle hundreds of different spreadsheets and energy bills and other databases, because it is now all in one system. In addition to workflow efficiency and decreasing their risk of exposure to badly managed data, the platform allows them to deliver value-added services to their customers. For instance, instead of spending hours verifying the reliability of a specific dataset that's crucial for reporting, service providers can for instance focus on understanding how different types of equipment influence building performance, and what opportunities there are for saving costs.



“So how do you sum this up? If you know about the web, I describe us as the Google Analytics of buildings. Rather than explaining the technical side, other than the fact we are web-based and data-driven, I tend to talk more about the value that users can get from us.

“Fabriq is not simply a database, it is much more of a data backbone or a data engine of buildings and entire building portfolios, that enables users to extract a wide range of benefits beyond resource efficiency.”



## Case study:

# Partnering with a leading FM and property management firm

In 2017, a leading facility management company won a tender contract with a large commercial property development and investment company in the UK. As part of this new engagement, the FM company was on the lookout for a provider of a new platform for managing its largest and most critical FM engagements. It hired an expert consultant to review the offering in the market and run a full-fledged selection process, from which Fabriq emerged as first choice.

The FM company was aware that doing things the traditional industry way (with mainly spreadsheet-based data collection and analysis) wouldn't be sufficient in order to serve its most demanding clients. In addition, the contractual requirements were such that an advanced data management and analytics platform was needed in order to maintain customer satisfaction.

Only with a fully integrated data management solution would it be possible to identify energy and operational savings opportunities across the property company's portfolio year after year, over several years (large-scale FM contracts typically run for up to five to ten years).

Fabriq is deployed across most of the client's large commercial properties in terms of office buildings and a number of shopping centres; in total about 35 large-scale facilities in the UK.

**Says Benjamin:**

“We have nearly 30 office buildings and upwards of 1,200 meters, or data feeds, into the platform with half-hourly data. These are not just energy main meters but lots of other metrics as well. And now they are looking to bring on additional sites and customers.”

Fabriq connects to the key building systems via a direct data feed from the FM company. This includes, but is not limited to:

- total electricity, gas and water consumption;
- electricity consumption for all key building plant, e.g. chillers, pumps, lighting, elevators etc.;
- information on key building operational parameters such as temperatures;
- information on external temperatures from official weather stations (via a Fabriq built-in library); and
- key asset data such as type, size, location, occupancy and so on.

**The key purposes of the Fabriq platform operation include:**

1. To provide a ‘single pane of glass’ for all operational resource data for the key property company facilities, accessible by all stakeholders;
2. To enable the FM lead to effectively analyse and manage the facilities with a view to reducing energy and resource consumption (as well as emissions) and improve overall operations of the sites; and
3. To automate feedback to key client roles at the property developer via Fabriq’s integrated automated reporting facility, which includes custom charts, tables and widgets.



## Benefits and savings

**Says Benjamin:**

“It is always a bit chicken and egg. Have the changes come about because of the platform, or can they just see the results now that they have the platform? But there are some definite tangible benefits.”

These include:

- Before, the company was managing workflow in Excel, which was very messy and time consuming. Now it has massive streamlining optimisation regarding how it manages all this data;
- Fabriq generates reports for the client, which they get every day or every week, all managed to spec; and
- Increasingly, FM contracts include a performance element – saving perhaps 10%, 5% or 3% year on year over ten years. In the first year it’s easy and then it becomes harder and harder once all the straightforward, low hanging fruit is addressed. In one shopping centre the client identified savings of £40,000 a year.

“We are ticking all the boxes and now they are discussing with the client how they can take this beyond the basic contractual requirements. We can help clients get additional value from their buildings, based on what we have identified via the platform.”



## The process

### Says Benjamin:

“This was probably one of our quickest mobilisations ever – literally three months. Some projects take a year-and-a-half because it is missing the service provider level that can ensure everything is connected up and commissioned properly.

“Sometimes it is easier to get the data from an old building that has been refurbished and someone comes in and walks through and installs a number of data loggers with SIM cards and that’s it. Compare that to new buildings that have been done to a super-high spec, but then you don’t get access to the data because it is all locked down in proprietary systems that don’t talk to each other.

“We consider ourselves very lucky to be able to work with such a partner, as it almost never happens to bring 20 really large buildings online in three months with zero hiccups. It really makes a massive difference.”

## The reasoning

Obviously, a lot of the project drivers are centred around cost – creating efficiencies and maximising the value from their assets. But, says Benjamin, there is a counterpart to this, regarding sustainability, efficiency, and simply being a good landlord.

“Leading landlords like Grosvenor, British Land and Aberdeen, to name but a few, are really starting to take CSR seriously and their CEOs are leading the charge to make a difference in the context of worsening climate change. And real estate is a really big lever in this challenge.

“There is a big step from stating your ambitions at C-level to actually implementing them across all assets and clients. Luckily for us, companies want to innovate and show what is possible in this space. Real estate used to be about ‘location, location, location’, plus a plush fit out with bean bags and coffee machines, and you have got your ten-year lease. But nothing is guaranteed anymore these days.

“The shorter and flexible leases pioneered by the plethora of new workspace providers have had a massive impact on the industry, and with a likely downturn on the horizon, in combination with a potential oversupply, the whole real estate market is facing tremendous pressure to evolve, fast.”

## The future

Regarding education and awareness, people are beginning to understand the concept better, and the importance of adequate measurement. The availability of hardware and data sensors at a low price point has also massively improved in recent years.

What has also emerged is the availability of advanced algorithms available to a broad audience. Google is a driving force in this space with its TensorFlow suite of machine learning libraries in combination with open-source tools such as OpenCV that provide fully trained neural networks for image recognition.

### Says Benjamin:

“Today, you don’t need an army of advanced data scientists to get started with training and optimising neural networks by hand, as was the case only a few years ago. It’s almost plug-and-play now with the vast number of open-source frameworks and fully trained nets out there. At the very least you should be able to build minimum viable products (MVPs) quickly and then iterate to deliver maximum user value.

“In the built environment, getting access to enough high-quality data of sufficient granularity (i.e. at least 30 minute data resolution, ideally much higher) still poses a major challenge. This applies to, for example, data on chillers, boilers, pumps, lighting systems and so on. To properly train a neural network for outlier detection and eventually predictive maintenance, you need data for hundreds if not thousands of similar devices. Most operators in this space simply do not have access to these sorts of datasets. But thanks to IoT and more importantly, customer pull for fully connected and responsive buildings, this is changing fast.”





# Vantage Space and Cushman & Wakefield

Exploiting technology to utilise space

## The issue

For almost every organisation in an office environment, premises are the second largest cost after personnel. As work becomes more mobile and people spend less time at their workstations, this cost is increasingly wasted. According to the global [Optimize Workplace Review](#), on average 53% of workstations are under-utilised or temporarily unoccupied.

To put this into perspective, according to workplace consultancy [Abintra](#), of the 100 million square metres of occupied office real estate in England and Wales, up to a third is under-used, equating to more than 12 square miles. The company's figures show that large corporations in England and Wales are collectively under-using an area of office real estate equivalent to 75 Canary Wharf towers, costing up to £10 billion a year.

In the old days, tracking space utilisation metrics meant tracking how much you spent on space – in terms of cost per square foot. This information is not particularly useful, as the only way it can be improved is by finding cheaper space. Less expensive space isn't always an option, let alone a good one.

Another outdated way of approaching space utilisation metrics is to track density, or square feet per desk. Again, there is a limit to what you can do with this information, namely fitting more into your current space, which not only costs money in terms of retrofitting, but also makes the



work environment less pleasant. Packing people in like sardines, or switching to less desirable workspaces doesn't solve the underlying problem, which is that people are not using those desks all day, every day, anymore.

Modern companies have moved to tracking cost per person as a more useful metric. Measuring the cost of space per person as your key metric provides the necessary data to move from the traditional assigned-seating model to an agile work environment. Transitioning from dedicated workstations for each employee to shared spaces that workers use as needed allows companies to get rid of wasted space and turn the workspace into a much more enjoyable and productive environment for employees.

It's clear that workplaces are changing, with more and more workers choosing, or being asked, to work from alternative locations, most frequently home. Whilst this offers much-needed flexibility for both employers and workers alike, not everyone is up for the change, with many typical office workers reluctant to move away from the traditional nine-to-five office-based working experience. Studies have shown that the most important factor in a successful work environment change process is securing the commitment and involvement of those involved. Communicating with your organisation and making people feel involved is vital when you are asking your organisation to move premises or adapt to a redesigned work environment. The information gained from space utilisation measurements, activity observation and employee surveys can help justify the changes, and promote discussion between management and personnel.

Tracking space utilisation can be an arduous and unrewarding task; even once you have collected all the necessary data it is not always easy to deduce patterns of behaviour or analyse which spaces are under-performing or being over-used. A technology-led solution is needed.

## VANTAGE SPACE

### Vantage Space

[Vantage Space](#) is a space utilisation app, which allows anyone to understand how their workplace is being used and to identify opportunities to save money and improve employee experience. Launched as a proptech start-up from London in 2016, Vantage Space is now used by many of the world's best recognised companies and consultants in over 120 cities around the world.

Designed with the end user in mind, it is a simple to use app that engages the data-inputter, creating real-time statistics at a low cost. Its tagline is, "If you can click buttons and fill in forms you can use Vantage Space".

#### **Says Sarah Taylor, VP of Customer Success:**

"We at Vantage Space saw a need for a shift in how workplace studies are done. In the past, workplace studies would be done with a spreadsheet and people going through rooms, inputting data. It would need a lot of planning, a lot of paperwork and it all needs to go into an Excel sheet and needs to be sent off to a statistician, taking days or even weeks to enter, clean and analyse all that data. With Vantage Space we created a web application that makes all these steps a lot easier."

In the true spirit of a technology start-up, the focus is on the customer.

#### **Says Sarah:**

"Vantage Space can reduce the cost of workspace studies by almost 82%. It varies, depending on the company, but it's a huge improvement. People can sign up for free, test the app and see whether it's for them or not."

*“You don’t need someone to sit down and look through everything that has been tracked, inputting it into an Excel file – that is all done by the app. During the observation you just add the information into the iPad and it’s automatically synchronised with the server for instant analysis. So our customers save a lot of time by having all that automated and available online.”*

Rather than using complicated software, charts and data tables, the aim of the app is to be as straightforward as possible. In addition to the app the client requires floorplans of their offices and buildings – which can be in any format, even hand-drawn – which are then uploaded as an image and digitised by the user, allowing them to pinpoint areas where people work, sit and gather.

The idea then is that ‘tours’ are carried out by observers, at set intervals, to determine how the building occupants are utilising the space. The user highlights what activities are being carried out where, where there is unused space, whether a space is clean and clear, and what technologies are being used, such as landlines or laptops. The more tours that are carried out, the richer the data. Once all the data is input into the system it can be analysed immediately, in raw data form, charts and heat maps.

**Figure 1: Navigate by floorplan.**

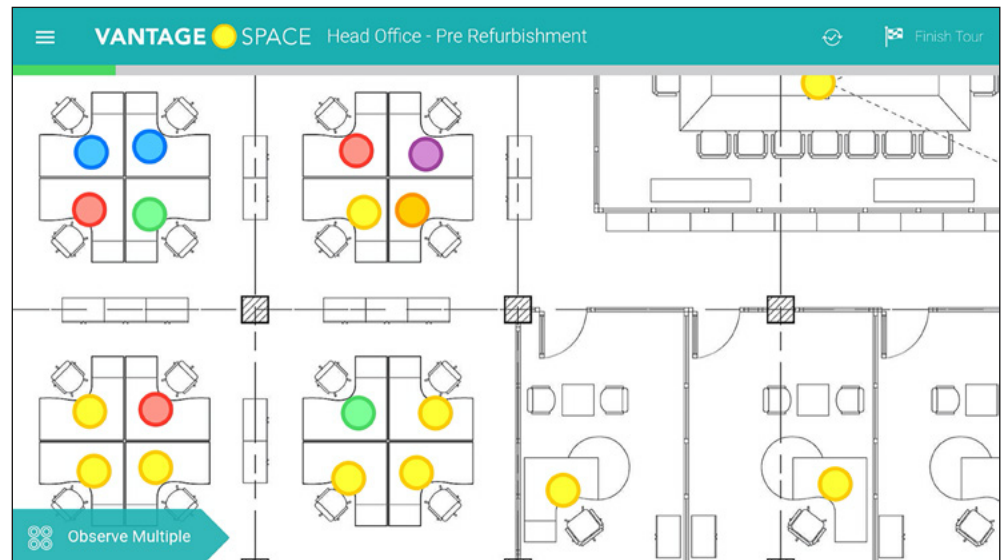


Figure 2: See what people are doing with activities and technologies.

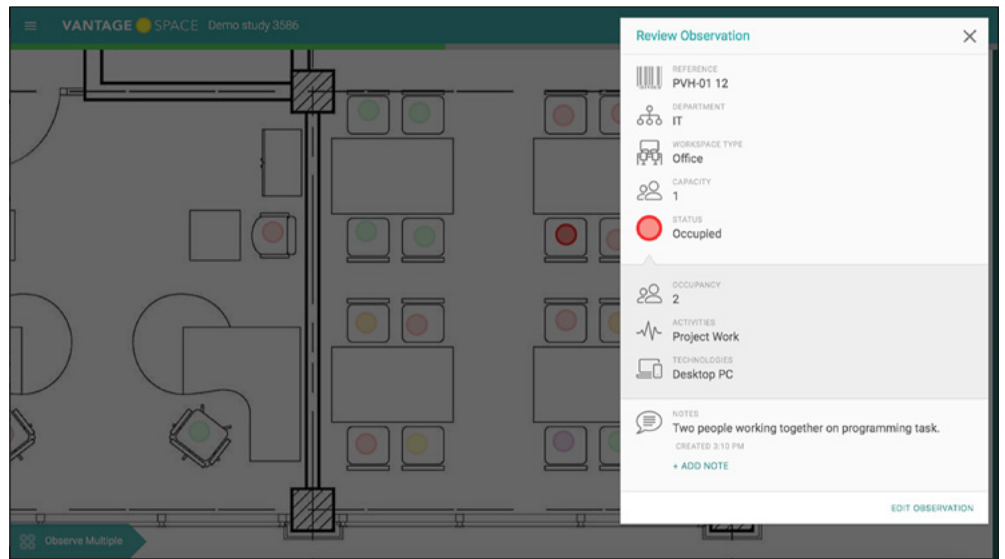
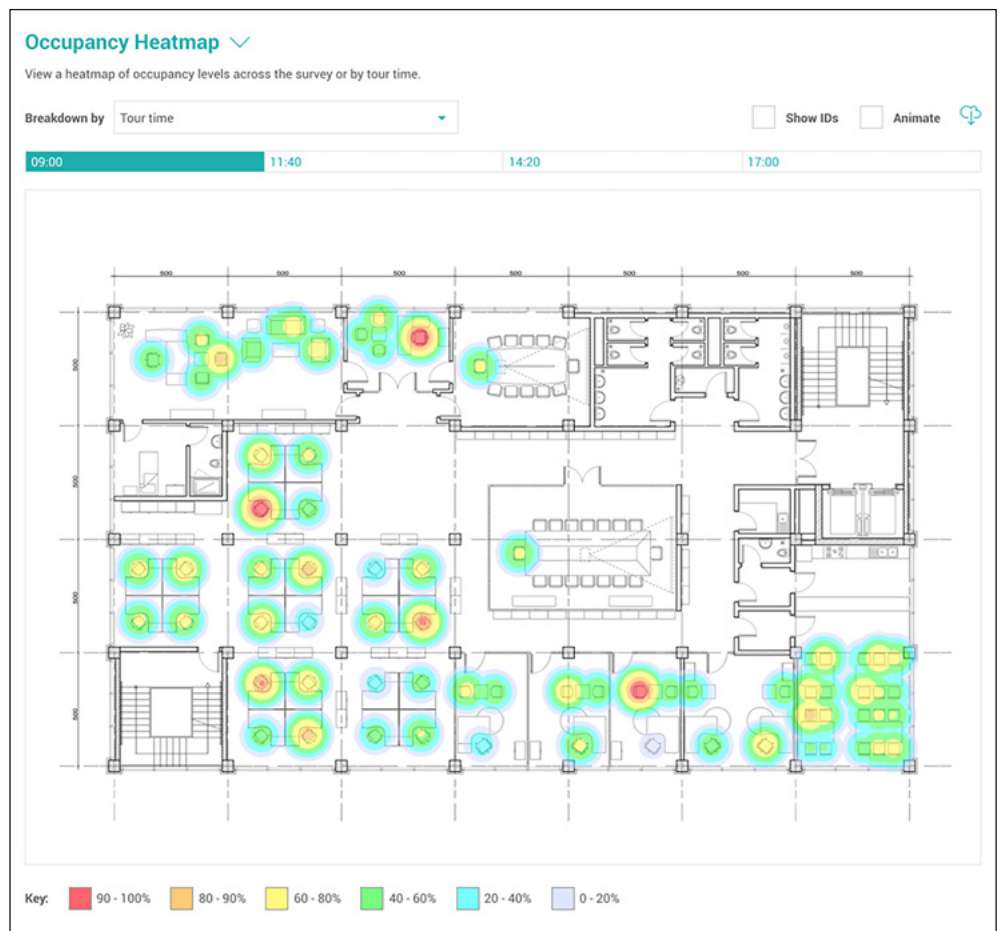


Figure 3: Powerful heatmaps show immediate opportunities.





As soon as the studies are complete, analysis can begin – the user-friendly dashboard allows users to see meaningful data, allowing them to make decisions on the way they use their office space.

**Says Sarah:**

“About 40-60% of office buildings are not used or not used properly. Our platform and our software help companies to determine which part of their building is not used properly so they can improve it. Using all these charts and graphs that we have to visualise the results helps our customers to make informed decisions. And that might be different for each client; some improve employees' happiness, some look at 'How much office space do we need in the next few years?' Some improve the interior design. And so it really depends a lot on the individual client but our data basically is the basis for all of that.”



Space utilisation measurements can also provide information on trends that can save energy. For example, during holidays, less-used areas of a workplace can be shut down, gathering workers together in a smaller space, so not everywhere has to be heated. As remote working becomes increasingly popular, it is common for fewer personnel to be present on Fridays; again, this trend can lead to different areas of the building being utilised at different times. Modern building automation enables lights to be turned off and air conditioning to be turned down in unused spaces, saving energy.

Utilisation rate trends can also help scale services correctly – such as food deliveries, or a more intensive level of cleaning on days when more workers are present – generating savings by reducing food wastage, and increasing comfort levels in the workplace.



## Case study:

# Cushman & Wakefield

**Leading global real estate services firm Cushman & Wakefield understands the importance of delivering meaningful and actionable workplace insights to the many major occupiers it supports in key metros across the world. The Workplace Delivery team, a part of its Global Occupier Services platform, advises clients, who are typically major organisations (either MNCs or large local firms), on crafting a future-proof workplace strategy, helping them identify the right workplace elements for the way they work and enhancing the workplace experience of end-users.**

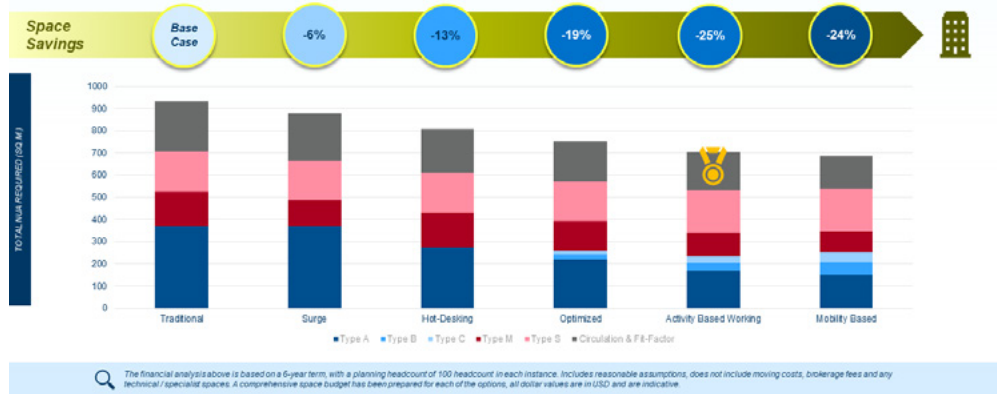
People today can work from anywhere, at any time, so offices now must compete with other workplace options. When workers do go into the office they want a work environment to complement their work-life experience – and a place where they feel valued, connected and supported. Organisations are starting to realise that the workplace experience (a combination of the physical space and the workplace culture) is a critical cornerstone in attracting and retaining top talent.

From floor plans to personalised experiences – it's not just about the space anymore. Organisations need to shift away from the physical environment to company-designed experiences these environments create, improving employee engagement. [A 2018 report by Cushman & Wakefield](#) imagines what the workplace of 2025 will look like, suggesting that “companies need to bring their People (HR), Place (CRE) and Technology (IT) functions along with the business together in a more integrated way... to deliver an optimal experience to [their] employees through upgraded smart workplaces that are enabled by 24/7 virtual technology”.

It is for this reason that it has teamed up with Vantage Space to help its clients understand their buildings and their occupants' needs better.

## GREATER FLEXIBILITY, LESS SPACE REQUIRED!

While not every workplace model is for every organization, there are a number of benefits associated with adopting new ways of working. With a well executed strategy and carefully designed change program, organizations can see an uptick in employee experience and engagement scores, while at the same time saving up to 25% of their footprints. This is directly correlated with both capital and operating costs incurred, which can result in significant short & long-term savings.



**Figure 4: Space required for different workplace models, for a sample size of 100 people. All numbers shown are indicative and subject to certain reasonable assumptions.**

### Says Adithya Prasad, Senior Workplace Consultant, Global Occupier Services, Asia Pacific:

“It’s hard to capture that information and understanding unless we have some hard data about how people are using the workplace. An interior designer might come up with a really good-looking office, but then you realise people gravitate away from some spaces and towards others. So, understanding those trends helps us conceptualise and deliver better workplaces for our clients.”

A recent collaboration with a leading organisation in Singapore led to Cushman & Wakefield carrying out a space occupancy project with Vantage Space. The client needed to consolidate three separate sites into a single central location, which meant that the new workplace had to cater to diverse working styles and different occupancy patterns in a site that presented a uniform workplace identity. To execute that consolidation, Cushman & Wakefield first needed to have an in-depth understanding and visualisation of the client’s spatial and cultural workplace needs.

The occupancy / utilisation data from Vantage Space, combined with qualitative inputs from various other workplace strategy streams, helped produce a wealth of data that allowed senior executives from the client organisation to make informed decisions on both short-term and long-term CAPEX and OPEX distribution with regards to their real estate strategy.

### Says Adithya:

“There were around 1,000 employees in total over three sites. One site had about 500, another around 300, and the third had about 150 staff. They came from three distinct organisations and everybody worked differently – different levels of occupancy, different kinds of workstations, different levels of workplace maturity. Some were a lot better designed, some were pretty basic. They all had to come together to a new city location, so it was like bringing three organisations together; there was also some change management from a role standpoint as well, because people’s roles were changing. They had to adapt to each other, and to the parent company’s job benchmarking in the background.”

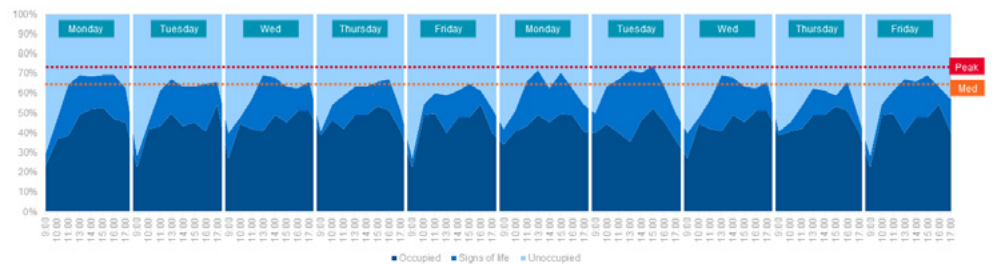


The client had strategic decisions to make, and Cushman & Wakefield needed to provide them with relevant insights based on the collected data. The Workplace Delivery team harnessed the data collected from Vantage Space and conducted its own internal analysis to identify certain patterns and trends, informing subsequent strategic discussions on the level of sharing, collaborative facilities provided etc.

**Figure 5: Sample of the charts produced by analysing data obtained from Vantage Space.**

### ALL BUSINESS UNITS (REGIONAL + LOCAL)

Occupancy across 10 business days, normalized data

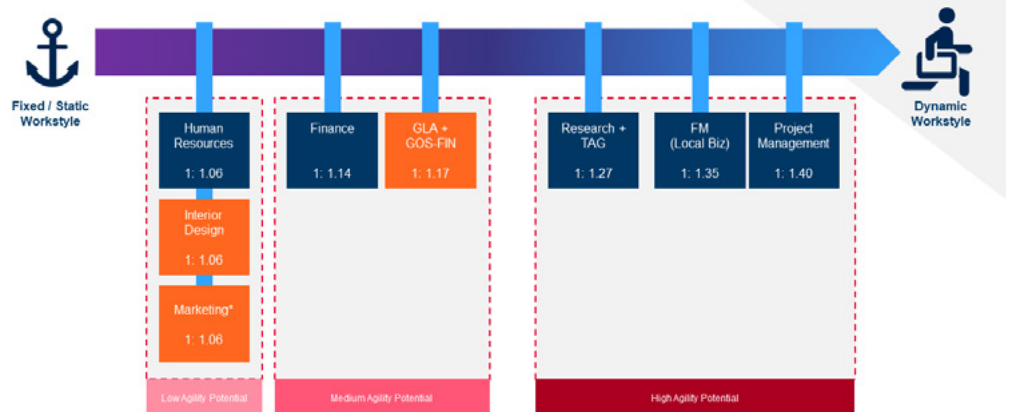


Key Statistics		Notes
Peak	74%	<ul style="list-style-type: none"> <li>When all business units are considered (Regional + Local), a generally static workstyle is observed in the Manila Office.</li> <li>With a median occupancy of 63% and a peak occupancy of 74%, there does exist room for introducing Non-Territorial Working, however a deep-dive into occupancy levels by business unit is required. This is explored in the next few pages of this report.</li> </ul>
Median	63%	

**Figure 6: Sample of the agility potential calculated by team for consideration by the management.**

### AGILITY POTENTIAL BY BUSINESS UNIT

Business units sorted into three tiers based on agility potential



## To go agile or not

### There were several critical 'people' issues to answer, says Adithya:

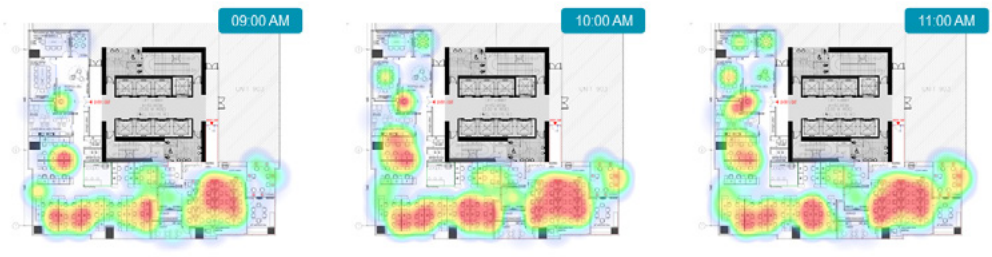
"How did the people feel? Were they ready to give up their dedicated workspace to move to a shared workspace model? Were they ready to move to a workspace that was more 'we space' and less 'me space'? That's fundamentally a 'people' issue. The other side of the story was the occupancy level of the different business units, which was critical in making a decision – giving the CRE the knowledge of how their people work and bringing that conversation to the CEO and board of directors. That provided a lot of insight which helped to shape their decision."

The occupancy / utilisation data provided C&W, and ultimately the client, a perspective on the readiness of the organisation to go agile (which they did, partially), and what space savings could be achieved as a result. In addition, the activities / technology-related workstyles provided valuable information that influenced the design and construction of the new unified site.

**Figure 7: Powerful heatmaps extracted from Vantage Space to understand how spaces are being used.**

### HEATMAPS

Broken down by aggregate readings per observation round



### Meeting room booking system and collaboration spaces

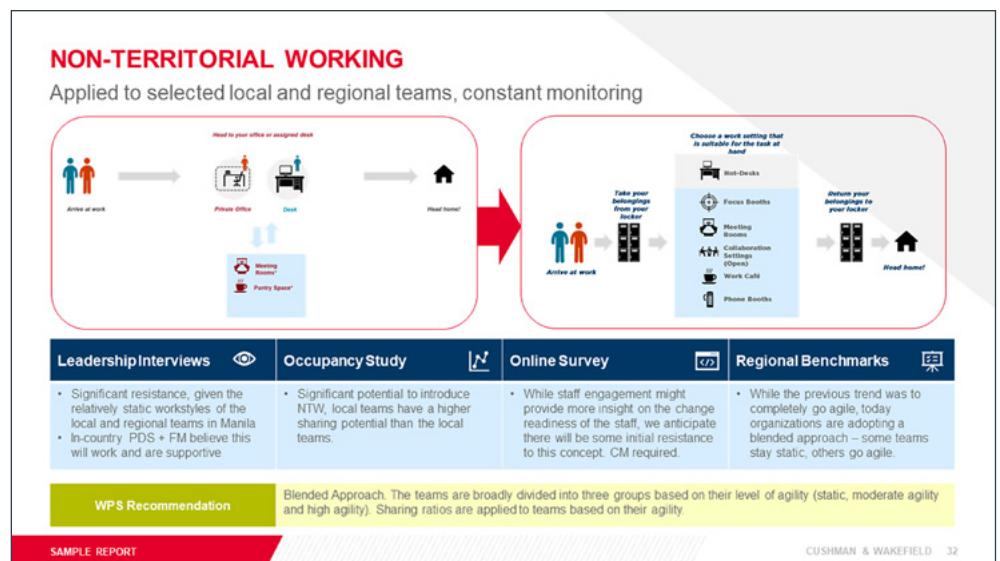
The company had around 40 meeting rooms in total, but the biggest complaint was that nobody could ever find a meeting room that was free – the client meeting room calendar appeared to demonstrate 90% occupancy during working hours, so they felt they needed a lot more enclosed meeting spaces than they currently had.

The study compared data from the meeting room calendar for two weeks and used Vantage Space's app during an in-person observation over the same two-week period. The analysis revealed that there was a delta of about 25% between the booking system and the actual occupancy rate, because people were booking rooms on the system but weren't showing up for the meeting, or booking meeting rooms out for the full day, even if they needed it just for two hours. Such poor workplace etiquette was leading to a waste of space and a waste of a facility, at a huge cost.

This 25% was considered a lost opportunity, and presented a solid business case to invest in an intelligent, technologically enabled meeting room booking system for the organisation. This was successfully budgeted and implemented in the final phase of the project. Additionally, with the Vantage Space data, the team was able to identify the level of collaboration being undertaken in open workspaces, which helped in assessing the need for sufficient open collaboration settings adjacent to the primary working zones.

## Choice work settings

Figure 8: Considering new ways of working informed by a wealth of data.



Workstyles of the various staff groups also helped the project group determine the quantity and type of choice workplace seats that were required from a strategic perspective in the new site. As part of the change management programme, C&W also recommended that a post-occupancy utilisation survey using Vantage Space was carried out to ascertain the effectiveness of the interventions taken by the project group.

### Says Adithya:

“The Time Utilisation Survey (TUS), which lasted ten business days, utilised Vantage Space and a team of four dedicated surveyors, through which we were able to capture a wealth of information that informed a workplace consolidation exercise. A key scenario under consideration was bringing together three rather diverse facilities, each from a different legacy organisation with distinct workstyles and patterns of utilisation. While the TUS was one leg of a major workplace engagement initiative undertaken (which included an online workstyles survey, staff focus groups, leadership workshops, and an in-situ study of their premises), the data outputs produced were a critical benchmark in initiating meaningful conversations with both staff and leadership. With a quick glance at the final reports, the client was able to discern the difference in workstyles adopted by the three sites, and quickly identified the change impact that a consolidation exercise might have on the end-users of the space. At the end of the day, it’s not about what we build, but how people use the space that delivers real value to the organisation and its people in return.”



**Adds Carol Wong, Director, Head of Workplace Delivery,  
Global Occupier Services, Asia Pacific:**

“Previously, time utilisation surveys were conducted in an extremely manual and old-fashioned manner – using pen and paper – which took a much longer time and was more prone to human error.

*“Vantage Space has the right interface for the floor plan and extracting the data. It’s easy to use and it has a wealth of information both on occupancy and other data points such as workstyles and technology activities. While many companies within an industry or specific job functions exhibit relatively similar ranges of occupancy, the workstyle of a company, which includes behavioural elements, is what changes when we observe a variety of different companies and teams. Vantage Space helps us get some insight into the way they work – its app allows us to capture not just binary occupancy data, but also an element of the technology in use and the activities the surveyed staff are undertaking.”*



## The future

The next big thing in space utilisation studies is sensor technology. Vantage Space has focused to date on facilitating and making workspace utilisation easier. Sensor technology is gathering pace, and this data can also be of additional value to give insight into how the space is used, based on hard information, rather than observation.

**Says Sarah:**

“Sensor technology is still quite expensive and currently unable to measure a number of important situations like the broad range of activities people do, variety of technologies people use, and capacity calculations in unexpected locations, which is why most companies don’t go for that option. But as the technology improves over the next few years, we will also be looking to integrate that if it is of benefit to our clients. Augmented reality is another idea that we are playing with, prototyping the use of AR for the display of utilisation and occupancy data.”

The main advantage for Cushman & Wakefield has been increased efficiency. The app – which can be programmed entirely by the end-user – enables massive amounts of data to be consolidated almost instantly, leading to quick analysis that can then be acted upon.

**Says Carol:**

“There is already a lot of technology out there today on sensory utilisation, but it requires a significant amount of capital for full implementation. We’re keeping a close eye on what could be the next generation method and a more sustainable and economical way to implement such technology.



*“Essentially, we aim to provide tailored solutions to meet the needs of different clients. For some projects where an initial assessment is required, leveraging Vantage Space in TUS would most probably be the appropriate solution. For clients who are looking for sustainable ways to continuously monitor their space utilisation so they can plan their occupancy better, a space occupancy technology such as sensor technology might be the more appropriate solution.”*



# Chubb Fire & Security

Smart security and facilities management

## Introduction

We live in a connected world, and buildings – be they public hospitals and shopping centres, or private businesses and residences – are increasingly utilising technology to master real-time activities, manage building systems, and create better efficiencies. Buildings themselves are static objects, but the activities within them are numerous and ongoing, around the clock. Security is a huge issue for organisations dealing with sensitive material – from healthcare centres to laboratories to schools to factories to data centres; all need their assets protecting, and in a more technologically streamlined way than traditional video recording.

Video analytics analyses live or recorded video streams to detect, classify and track pre-defined objects and behaviour patterns via CCTV video images. This sophisticated technology can also detect advanced events such as objects left or removed, direction of travel and loitering. The system can alert Remote Video Response (RVR) to trigger a response dependent on pre-defined procedures. This area of proptech is fast developing, and being used to safeguard both people and assets.



# Chubb

## Chubb Fire & Security

Chubb Fire & Security has roots dating back to 1818 due to the impact on society of the industrial revolution and the resulting increase in crime. Two enterprising brothers, Charles and Jeremiah Chubb, invented what was called the 'Detector Lock' – the first and original secure lock mechanism whose design and construction has remained largely unchanged for nearly 200 years.

Over the years, Chubb has expanded to offer installation and maintenance of fire and security systems to customers with sites stretching from Canada to France and New Zealand and China. Chubb has been developing fire and security solutions in the Hong Kong, Macau and Mainland China region for over 40 years, with the first branch set up in Hong Kong in 1977, Macau following in 1985 and Mainland China in 1995. The company has close to 900 employees in the region, across five offices, three workshops, four warehouses, and two monitoring centres.



Today, Chubb is a leading branch-based global provider of end-to-end fire safety, electronic security and monitoring solutions, delivering tailored solutions to meet local, national and global customers' needs. Chubb draws on more than 200 years of experience to provide branch-based, high quality, reliable safety and security solutions from design and installation to monitoring and ongoing maintenance. One of the best-known global safety and security providers, Chubb offers a full range of services, including video surveillance/CCTV, intruder alarm, access control, fire detection, fire extinguisher, hose reel, sprinkler, installation, inspection, monitoring and response services, as well as personal emergency response services.

In Hong Kong, Macau and other developed cities in Mainland China, in addition to fire and security systems, it also provides value-added solutions to customers to further improve building operational efficiency by leveraging fire and security technologies.

Its 250-branch network of 14,000 qualified and trained engineers deliver essential safety and security systems, solutions and services across more than 17 countries. Working to make the world a safer place, Chubb provides monitoring 24/7, 365 days a year, to 1.3 million sites worldwide from its 22 monitoring centres.

In Hong Kong, Macau and Mainland China, it supports businesses and organisations of all sizes and sectors with practical but innovative solutions across the public and private sectors, from single- to multi-location sites including commercial buildings, banking, retail, data centres, logistics and infrastructures.

**Says King-Tao Yiu, Managing Director, Hong Kong, Macau and Mainland China, Chubb Fire & Security:**

*“Chubb Fire & Security is a global and local company committed to continuously invest in our capabilities and talents, providing innovative technologies to accelerate the implementation of more efficient security solutions – to respond more acutely to varying needs of building owners and operators.”*

## Video analytics

Chubb utilises innovative technologies to deliver tailored solutions to make buildings smarter, more operationally efficient, safer and improve the customer experience. One of its technology-driven solutions is the video content analysis for surveillance.

Video content analysis (VCA) is the capability of automatically analysing video to detect and determine temporal and spatial events. This technical capability is used in a wide range of domains and its algorithms can be implemented as software on general purpose machines, or as hardware in specialised video processing units.

Hong Kong, Macau, Shanghai, Beijing and Guangzhou are some of the most vibrant cities globally. In this environment, for businesses and buildings to stay competitive and meet future expansion, they must have a hybrid of security and other building technologies, incorporating business intelligence to boost operational efficiency and customer satisfaction while elevating security to protect their people and assets.





In December 2017, the Hong Kong Government released the [Hong Kong Smart City Blueprint](#), outlining its vision to build Hong Kong into a world-class smart city. The Blueprint maps out development plans over the next five years, aiming to enhance the effectiveness of city management and improve people's quality of living as well as Hong Kong's attractiveness and sustainability by making use of innovation and technology.

The Internet of things (IoT) will undoubtedly play an increasingly prominent role in driving smart cities. In Hong Kong, the IoT is ubiquitous. For instance, many building systems such as fire safety, security, HVAC, elevator, escalator and building automation systems are connected to optimise the level of safety, comfort and efficiency offered by the building.

The rising trend in building system integration and video content analysis is also undoubtedly a crucial aspect for the future of smart property/facility management for both global and local businesses.

Video analytics makes surveillance systems more efficient, reduces the workload on security and management staff, and helps businesses capture the full value of their IP camera system.

As indicated in the [Global Intelligent Video Analytics Market 2017-2021 Report](#) by TechNavio, smart cities around the globe are using numerous technologies to ensure sustainable and efficient environments within different fields, including commercial settings. It is expected that the global video analytics segment will grow at an annual rate of 30.52% during 2017-2021. Boosting operational efficiency and customer satisfaction are two of the key goals of businesses.





## Keeping assets safe

In addition to traditional surveillance/CCTV systems, there is a growing demand for video content analysis for immediate detection and retrieval of valuable data from surveillance footage to create a connected environment. This serves to:

- replace manual/time-consuming tasks;
- understand and prompt actions that enable facility managers to proactively master different real-time situations in the building; and
- make smarter decisions to improve building operations and security.

Typical features of video content analysis include detecting abandoned suspicious objects that might pose a security risk and persons sojourning inside a monitored area for more than a user-selected period of time, and detecting a crowd if the density of people in a monitored area exceeds a predefined threshold (%) for better people traffic management and staff deployment. Companies with demanding security requirements – such as the plethora of data, internet and media platforms that have emerged in China and the surrounding regions in the last 20 years – need to know that their assets (both physical and intangible, such as data) are protected, without compromising the working environment.

**Says King-Tao Yiu:**

*“Many people think improving security systems in existing buildings causes substantial disruption to the operations, or that there are too many barriers to integrate new technologies with the existing systems. This is not true. For example, sourcing the suitable software and a reliable contractor are all that’s needed to add the video content analytic features to your surveillance system. The installation only takes days with minimum hardware installation.”*

## Case study: Tencent Holdings

**Founded in 1998, Tencent Holdings is a Chinese multinational investment holding conglomerate, whose subsidiaries specialise in various internet-related services and products, social media, e-commerce, financial services, entertainment, AI and technology, both in China and globally, with revenues of over US\$45.5B in 2018. Its headquarters are among the best-known buildings in China and consist of twin skyscrapers in Shenzhen.**

Tencent's mission is to "improve the quality of life through Internet value-added services", via the delivery of integrated internet solutions to billions of netizens through its "user oriented" business philosophy.

In order to improve threat detection and prevention capacity across its urban offices and to protect the large volumes of data and sensitive information it holds, it is extremely important that Tencent has an integrated security solution, complemented by data analytics, to protect it from threats.

As a large, growing technology company, Tencent needed to future proof its security strategy, which involved improving the clarity, resolution and quality of both its security images and videos to enable better image and video content for a number of purposes, including improving the level of detection and prevention capability in its facilities. While expanding its business, Tencent is acquiring greater numbers of employees, equipment and facilities, meaning a more comprehensive and highly efficient security system is essential to protect its employees and premises to continue providing high quality services to its customers.

To support its future security strategy, after identifying the company's unique and demanding security requirements, Chubb upgraded the company's CCTV system in order to have high quality images and video to enable integration with future requirements for intelligent features such as data collation systems, security information systems, video tracking and remote monitoring and video content analytics.

Chubb was able to successfully meet Tencent's security needs through retrofitting superior connected technology across the sites, including upgrading 350 CCTV cameras to IP cameras for three key facilities – Tencent Building and Tengyun Building in Shanghai, and Tencent Building in Chongqing – without compromising 'business as usual'. This transition was aided by a high level of support and maintenance throughout the process.

**A security spokesperson for Tencent said:**

*"We are one of the world's largest tech companies and are therefore very demanding of our security partners to ensure the safekeeping of confidential company and customer information. We are pleased that Chubb helped us to further enhance our security through providing successful upgrades to the CCTV systems."*





## Case study: Beijing Western Academy School

**Founded in 1994, Western Academy of Beijing (WAB) is an international school providing kindergarten, primary school, junior and senior school education. It has around 1,400 students from 56 countries and regions.**

As parents increasingly require higher safety standards for their children, WAB in turn was looking for more efficient safety and facility management. The previous CCTV system could no longer accommodate the academy's needs as the school needed a video management system integrated with intelligent features to elevate the security of the campus and facility management efficiency.

**Chubb China therefore upgraded the CCTV system, focusing on video content analytic features, including:**

- full CCTV monitoring coverage, including panoramic and fisheye cameras to maximise monitoring coverage without the need for many more cameras;
- automatic calls to police can be triggered when pre-defined circumstances are met – in particular this can be applied to perimeter protection to achieve pre-accident warning and minimise loss;
- smart search – the system can show a list of all events within a selected area in just one second, improving management efficiency; and

- cameras with facial recognition were installed, allowing the system to determine the exact location of a student on campus within 30 seconds. Facial recognition improves the efficiency of security guards and helps to avoid accidents. In addition, it can compare the detected face with a pre-defined black/white list upon visitor arrival at the entrance and provide automatic responses, such as real-time remote gate operation or police calling.

**Says Philip Jiang, Purchase Manager at WAB:**

“Chubb understands the specific security needs of schools very well and provided WAB with advanced and effective solutions. The new video management system has not only improved the security of campus, but has also enhanced our facility management efficiency, allowing us to continue to focus on delivering high quality education services.”



## What will proptech bring in the future?

Many sizable and expanding buildings and enterprises in this area of the world are actively looking for opportunities to unlock potential efficiencies in their security systems and facility management in order to adapt to the changing business environment.

Proptech provides innovative solutions to major operational dilemmas that can be found across different industries in China and other countries. By combining security, building management systems and connected applications, systems can work with each other, delivering capabilities to access, diagnose and suggest the best solutions to incidents – unlocking opportunities to optimise user experience and productivity.

Chubb’s integrated CCTV and fire alarm systems enable cross-application synergies to elevate safety and response to fire incidents. When a fire alarm is triggered, the system notifies the building manager with a live camera feed based on which the fire detector is activated. The building manager can then make a quick judgement as to whether it is a false alarm or classify its level of emergency and make better arrangements within the building with more accurate escape instructions.

In addition to operational efficiency, facility managers and tenants are also looking for innovation to improve employee productivity and save administration costs. Chubb recently designed and integrated a QR code based access control system to a customer’s employee mobile app that enables access to the office, wayfinding and facility booking capabilities. Using virtual credentials instead of traditional plastic cards, the QR codes are sent to employees’



mobile phones, which they can use to access the office and their lockers. Employees can also invite visitors and allow access to their office, saving administration costs and improving the management of access cards, as well as managing keys for lockers when employees come and go.

Newly installed CCTV IP cameras are capable of integrating with video content analysis, video tracking and remote monitoring in order to elevate the security of facilities and improve operational efficiency.

Although the opportunities for developing the uses of security solutions continue to evolve, security managers often have to explain that the hi-tech solutions portrayed in movies may not yet have a corresponding reality of what can realistically be delivered – yet.

**Says King-Tao:**

*“The rising trend in building system integration, video analytics, IoT and big data is undoubtedly a crucial aspect in the future commercial development and facility management for both global and local businesses. Interfacing security systems and other applications provides a more synergised solution, utilising information about different activities in the building, immediate detection and retrieval of images and surveillance footage by replacing manual and time consuming tasks – a much smarter way to improve security and optimise the use of resources.*”

“Security systems are increasingly used for business intelligence purposes beyond just security needs. For example, facial recognition can now help retailers better understand their customers by helping identify the gender, age and shopping habits of its customers. It could, for example, find heat spots in customer retail stores to increase their understanding of customer behaviour to help plan store layout. This can also be used in airports to provide data to analyse operational efficiency around movement of passengers and baggage.

“Although the hi-tech solutions portrayed in movies may not have yet a corresponding reality, their evolving development in security solutions means we will get there very soon, as we work to make the world a better and safer place to live.”

## Conclusion

In the future, security systems will not only keep people, buildings and data safe, but they will also improve the operational efficiency of buildings and in turn the quality of the service provided to customers.

Improving the quality of image and video content to provide a more comprehensive and efficient security system – to protect employees, students and premises and data, and provide high quality services to customers – will help prepare for the intelligent, connected requirements of the future.





# Acknowledgements

**Alex Davies** is Community Manager at International Workplace. She has written extensively on best practice in the industry and is experienced in PR, social media and content management.

International Workplace is an award-winning learning provider founded in Cambridge, a global centre for education and technology.

Our combination of subject-matter expertise and technical innovation helps organisations to drive performance and individuals to realise their potential.

The IFMA-RICS Collaboration represents a very significant chapter in the history of facility management (FM), providing an unprecedented level of industry support to meet the growing demands of the 25 million FM practitioners around the world. The two organizations are aligning standards and professional development for the industry, uniting the global FM community to increase consistency and unification of strategy across the life cycle of the built environment.

The collaboration jointly supports the market with opportunities for professional recognition in facility management, providing global stature for FMs of all educational backgrounds, skills, work experiences and career goals. These efforts serve to raise the profile of FM, giving a greater voice and increased status to the profession to shape the future of the built environment and enable business success.

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