Life Is On | Schneider Electric

Flexible Buildings

Five elements to create buildings ready for the new world of work

A report by Schneider Electric
in partnership with WORKTECH Academy

WORKTECH ACADEMY

Executive summary

The coronavirus crisis has been more than just a short-term shock to the system. It has prompted a profound long-term rethink of what office buildings are really for, and how they should perform in the future. With more flexible work patterns, flexible teams and flexible organisations, should we not also demand more flexible buildings? But what do we mean by a flexible building? How can we define its key attributes? What are the key benefits of developing a flexible building and how can real estate professionals go about delivering one? These are the questions that this report sets out to answer.

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1. Introduction

Before the rise of the smart building, most office buildings were essentially rudimentary containers for work. These buildings didn't know who was present, where employees were spending their time within the space and with whom they were interacting. Occupants were unable to alter environmental conditions such as light or temperature in all spaces; building managers had limited control over tracking energy use or adapting spaces for different uses; and building owners and investors fretted about attracting the right tenants and maintaining the value of their asset with such a basic and inflexible offer.

The global pandemic accelerated the trend to developing smart buildings which are more intelligent in terms of generating environmental and occupancy data to inform more effective corporate real estate decision-making. Today, very few organisations would consider refitting a building or developing a new office without taking into account the implications of digital transformation.

But Covid-19 did more than just speed up the journey to smart – it introduced remote work as a viable long-term option for workforces around the world. As a result, companies are now looking at a hybrid model as employees work more flexibly between the office, home and other spaces. Attendance at the workplace is likely to be more unpredictable than in the past, with more peaks and lows, requiring more flexible space use and more sophisticated building management. That means office buildings are not just required to be smart – they must also be flexible in terms of responding to changing occupier demands and meeting more stringent operational targets.

This report is based on a WORKTECH Academy survey of Corporate Real Estate (CRE) professional opinion which involved analysis of published sources, academic research and public webinars as well as selected in-depth interviews. Workplace leaders in a range of organisations from banking and life sciences to professional services contributed to the research.

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What we've learned from the survey is that a flexible working model depends on flexible office buildings being part of the mix. But there is an obstacle to change: existing buildings make up most of today's building stock with many of those buildings being more than 20 years old and expected to stand for more than 50 years. For owners and operators, buildings constructed at a time when flexibility was not a consideration presents a challenge when trying to adjust to new ways of working, different sustainability requirements, changing efficiency parameters and the needs of occupants.

A truly modern building will flex with changing demands. The building's infrastructure will adapt and accommodate new systems and devices. If organisations are to succeed in the new hybrid world of work, they will increasingly look to the new technologies that will bring greater flexibility to their facilities and operations.

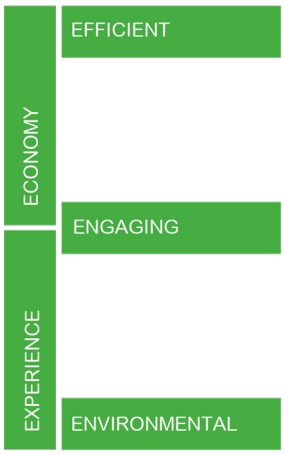
2. Executive Summary

This report uses a survey of opinion among Corporate Real Estate (CRE) professionals to define the key priorities around a safe, secure and effective return to the office. It identifies flexibility as an essential characteristic of the hybrid working model that is emerging - and explores how the flexible building can deliver change.

It examines why flexible buildings are important in an emerging context which must balance two main considerations: the need to enhance the employee experience in terms of safety, comfort, wellbeing and seamless connectivity; and second, the requirement to achieve greater operational efficiencies in terms of space management and energy use.

The paper goes on to explain what makes a flexible building. Key attributes include: the ability to provide people with more local control over their environment, such as raising blinds or adjusting temperature; the use of data analytics to enable the 'dynamic stacking' of office floors as attendance fluctuates; an open and innovative platform ensuring easy integration of different building systems and applications, including workplace apps; and the minimising of cyber-security risk.

Benefits of the flexible building are defined through the different perspectives of the building owner and the building manager. The first wants to maximise return on investment; the second wants the tools and systems to create the type of occupant experience that protects the value of the asset. The report presents the E5 Model to communicate the benefits of the flexible building:



E5 MODEL FOR THE FLEXIBLE BUILDING

The backbone of the E5 Model is a combination of **Experience** (creating a better and healthier occupier experience responsive to changing needs) and **Economy** (achieving economies of operation in space management and energy use). These are the twin goals identified by the CRE community.

The benefits delivered to the market are summarised by three values considered to be essential to the future: **Efficient** (maximising efficiency, reducing complexity and raising the visibility of operations); **Engaging** (improving occupier engagement with the building through data and design); and **Environmental** (delivering on key sustainability targets to address carbon reduction).

The report concludes with some practical considerations on how to specify and procure a flexible building. Designing for change, developing data science skills within the CRE team and treating flexibility as an office amenity are among the issues raised, as well as technologies to enable the flexible, modern building and allow owners and occupiers alike to future-ready the office.

3. Why are flexible buildings important?

Corporate Real Estate leaders are facing challenges and opportunities in equal measure as they plan for a safe return to the office and for the smart delivery of a hybrid working model. Clearly, office buildings must flex with changing demands. But why is it so important to build flexibility into the portfolio?

Corporate Real Estate (CRE) teams in large organisations are fast coming to terms with a new reality on the ground in the aftermath of the global coronavirus emergency. According to a survey of CRE leader opinion conducted by WORKTECH Academy for this report, there is a general recognition that there will be no going back to the old pre-pandemic model of working. Remote work became the only option as offices were out of bounds during the Covid-19 crisis – now it's set to become a permanent feature of a new hybrid working model in which attendance at an office is part of a mix that includes working from home or in other spaces.

Exact ratios of the hybrid approach vary by geography and sector: in the finance sector, for example, many banks have announced a 60:40 ratio in favour of the office, which translates into three days per week in the workplace, while some life science companies have opted for 50:50. This does not mean the office is about to lose significance amid new ways of working. Far from it, office buildings will continue to play a vitally important role in organisational performance. Nevertheless, the hybrid working model asks new questions about the purpose of office buildings and how they should operate in the future.

Undeniably, whatever ratio of remote and office-based work organisations decide upon, there is renewed scrutiny on the office building portfolio to deliver for owners, investors, operators and occupiers in ways it never has before. In one sense, a shift to more remote work and a different type of relationship with the office reflects an acceleration of trends that have been developing for the past decade. But there is now a critical difference: several CRE leaders told our survey that, before the pandemic, working from home only happened casually through local agreements and without being institutionalised. Now it has the official seal of approval at the highest levels of the organisation.

As a result, where there was previously a stable and predictable pattern to office occupation guaranteed by regular daily attendance, now there will be more dynamic and fluid conditions to manage. Office buildings will need to become more flexible and resilient to change, but many of today's stock of buildings are more than 20 years old and will be expected to stand for the next 50 years. How can they flex and adapt?

According to our survey, the challenges facing CRE decision-makers as they navigate the new landscape of work can be summarised under the following headings:

Safety first: Employee welfare, needs and expectations have all been changed by the pandemic. There is agreement that any return to the office needs to be accompanied by a total focus on staff safety, health and wellbeing. People need to feel that they are in control of their environment and not exposed to over-crowded spaces or poor air quality. Touchless, voice-activated and mobile access technologies are among the solutions under consideration to increase employee perceptions of safety. Mental health issues exposed by the coronavirus crisis are also leading many companies to pay more attention to psychological comfort and user satisfaction among employees.

Employee experience: Beyond basic health and hygiene factors, employees will seek an enhanced experience on their return. Several surveys conducted during the pandemic highlighted the desire of employees, especially younger cohorts, to return to the workplace. People missed social interaction and opportunities to learn and innovate in person, but they didn't want to return to the old baseline office. They wanted critical changes made to their environment in terms of more health-inducing amenities and less density, noise and distraction (Gensler 2020) – they wanted a more people-centric workplace to meet their revised expectations after a year of having more autonomy and control working at home. CRE professionals expect more use of workplace apps (for such purposes as way-finding, people finding and parking space assistance, as a few examples) to drive a more personalised employee experience.

Design innovation: New design features, amenity-rich spaces and different spatial formats are all on the new office agenda. A typical strategy will be to reduce the number of solo desks and increase cafe areas and collaboration zones where people can meet face-to-face. More spaces will become multi-functional, adapting to different needs at different times. This reflects the changing purpose of the office away from being a traditional container for routine individual work to becoming a destination of choice – a flexible, event-based hub for creating culture, communicating purpose and building social networks.

'There will still be a need for standard desks but as people get deeper into the hybrid working model, demand will go down and there will be an increase in collaboration spaces…'

Head of workplace at large European bank

Office as a platform: The CRE team must work with HR and IT departments to create a seamless employee experience both in and beyond the office, as more people work remotely in different spaces and require connection to the systems and software of the workplace. The office as a platform for employee experience is critical in the context of talent attraction and retention – it anticipates a new race for talent in the aftermath of the pandemic. Having open systems that ensure excellent connectivity and a technical infrastructure that is resilient and adaptable are part of this narrative.

Operational efficiency: While company leaders are keen to address employee experience and the talent agenda, they are also putting pressure on CRE professionals to deliver greater operational efficiency with cost savings to balance the economic damage caused by COVID-19. Many company boards see the pandemic as an opportunity to 'right-size' their real estate portfolio and streamline operations. There is a growing willingness among large firms to invest in digital transformation if it will contribute to raising the visibility of operations and reducing costs. According to an EY survey of C-suite executives, more than 70 per cent are planning to prioritise technology investments once the crisis is over. Among the operational issues keeping company leaders awake at night, cyber-security emerged as the top cause for concern among 500 global CEOs in the 2021 KMPG CEO Outlook Pulse Survey.

Learning from data: Linked to the drive for operational economies is a growing focus on capturing and analysing data to learn more about how the organisation really works. CRE leaders are looking at stepping up their data analytics capabilities to make more data-driven decisions in a host of areas, from proactively managing space and controlling energy costs to improving employee engagement. The office building will be required to be more responsive to fluctuating occupier demand, giving constant feedback via a network of IoT sensors to enable smart use of space and energy. AI is set to play a key role in space analytics leading to increased occupant satisfaction.

'Legacy building stock is harder to repurpose and retrofit but we're looking into it to achieve more flexibility - office by consumption is a fantastic model'

Head of workplace at global life science company

Sustainable goals: A sustainable approach to managing the office environment is high on the CRE agenda as building owners and occupiers alike recognise the far-reaching impact of the climate crisis. This is especially the case in sectors where green financing and sustainable business models have become more prevalent. Building technologies will be required to help organisations achieve key sustainability goals. Younger generations in the workforce will seek responsible global citizenship from their employers on climate action.

In essence, the above findings reveal that the CRE community is tasked with reconciling two conflicting corporate demands – the need to improve employee experience and engagement while simultaneously achieving operational efficiencies. Senior executives ask how to enable the company's talent in the same breath that they ask where cost savings can be made.

An important way forward is to build more flexibility into the office portfolio. Flexible buildings capable of adapting with speed and efficiency to the new world of work can deliver benefits in terms of employee engagement, operational efficiency and environmental control. However, corporate leaders need to become more familiar with the concept of the flexible building and more convinced of the value of this approach.

4. What makes a building flexible?

Flexibility takes many forms in corporate real estate but the most common requirements relate to proactively meeting changing occupier needs with more comfort and control, and dynamically stacking office buildings to improve operational efficiency as we anticipate less predictable participation in the workplace.

The flexible office building can be defined in a number of ways, according to our research with CRE professionals. Flexibility can be applied to office leases, enabling companies to move in and out of buildings quickly as headcount fluctuates. It relates to the rise of activity-based working (ABW) in offices, in which people work in a more agile way across a range of settings. Companies which have already introduced ABW strategies are widely seen as having a head start in applying a hybrid working model. Flexibility also references the flexible space market where coworking providers offer corporate firms plug-and-play space for special projects or overflow.

The most common definition, however, relates to making the infrastructures and spaces of the corporate building itself more **flexible and adaptive** in use. This way of seeing the flexible building opens up a host of possibilities. The internal environment (lighting, temperature, indoor air quality and so on) can be adjusted to suit the comfort and wellbeing of occupants, based on the Building Management System (BMS) interpreting a variety of external inputs such as weather patterns and user input. The flow of people through the building can be monitored and measured so that adjustments can be made – shutting off floors or closing down elevators, for example – in the event of lower levels of occupancy, thus saving on running costs. This process is described as 'dynamic stacking' by some European heads of workplace.

Flexibility extends to using **smart analytics** for proactive energy management so that the building dynamically takes energy from the supply grid at the right time to improve its environmental performance. It also supports the trend towards electric vehicles by providing charging stations. In general, a flexible building is associated with a data-driven environment. By capturing and leveraging sensor data, CRE professionals believe they can make intelligent decisions about the space utilisation and easily change physical space layouts. There is the opportunity to identify real estate savings while improving occupier engagement.

The most repeated definition of flexibility in office buildings relates to having an **open, integrated Building Management System (BMS)** capable of integrating different systems and applications, adding new services and being constantly upgraded so that occupier needs can be met as they evolve. The idea of the flexible building as being healthy and 'self-healing' through a process of occupancy and environmental data feedback and adjustment is one that appeals in the current safety-conscious climate – not just to corporate real estate managers but also to workplace strategists, heads of HR, corporate leaders and building owners.

We are entering a new age when the workforce will no longer be entirely office-based. Kristi Woolsey, head of smart environments and associate director at BCG (Boston Consulting Group), told our survey that there are now four main types of worker:

Type of worker:	Time in Office:	Example Job:
'Anchored operator'	80 – 100%	Lab scientist
'Creative collaborator'	50 – 80%	Marketing executive
'Focused contributor'	20 – 50%	Financial analyst
'Pattern specialist'	0 - 20%	Call center operator

Companies are adopting a retail strategy to bring people back - we will make the office so cool, so great with great coffee, great printing facilities and great comfort that you will choose to come in if even though you can work remotely'

Kristi Woolsey, associate director, Boston Consulting Group

It is clear from BCG's analysis that office occupation will be less regular and more unpredictable than before, but when people do attend they will want a great experience in the right settings with the right tools and the right people. BCG's Woolsey talks about a 'retail' strategy to woo people back to the office building. When workers have a choice to work elsewhere, they need a good reason to return – whether that is a comfortable environment, shared events, smart services or great coffee. The problem that many organisations face is that they are operating with older systems in inflexible office buildings no longer fit for 21st century purpose, especially after the pandemic. That 'retail' approach must also combine a consumer-centric approach with cost-effectiveness.

It is this context that Schneider Electric's technology for making buildings more flexible has been developed. Its EcoStruxure™ Connected Room Solutions offer is an open, interoperable platform harnessing the power of the Internet of Things that enables companies to prepare their office buildings for the future by creating the flexibility CRE teams require. But what are the benefits that flexible buildings bring?

5. What are the benefits?

Building owners want to maximise their return on investment by maintaining the life and attractiveness of their assets for as long as possible. CRE professionals want to enhance experience and upgrade services as efficiently as they can. Our E5 Model illustrates the benefits that can the flexible building can deliver.

Flexible buildings address a basic contradiction exposed by new ways of working. As an experienced workplace consultant told our survey: 'Work is becoming increasingly fluid, dynamic and agile but real estate has largely remained a static asset that does not change on an everyday basis – there is an opportunity to align work and real estate through flexible workspace.' Flexible buildings also create operational resilience throughout the building's lifecycle – from design and construction to occupancy – that the real estate industry craves.

Building owners want to maximise the return on their investment. That means making sure their buildings operate efficiently, have a longer life and maintain occupancy as much as possible. Building owners must be able to attract and retain premium tenants by focusing on meeting changing employee engagement, comfort and wellbeing needs. They also want to hit sustainability and well building targets while avoiding the need for expensive refurbishments. Flexible buildings hold the key to making all of this happen.

CRE professionals and facility managers want to make swift, intelligent, data-driven decisions that enable them to enhance occupant satisfaction, increase the daily operating efficiency of the building, reduce operating costs and minimise cyber-security risks. Flexible buildings are designed to increase user engagement and control of the work environment while giving building managers the system data they need to make informed choices at all times. CRE teams can upgrade space and reconfigure floorplans without major building refits, and introduce new, value-added services (such as automated fault detection, wellbeing and space analysis, and navigation) without replacing the entire BMS system.

E5 Model for the Flexible Building

This report sets out a new, outcome-based model – the E5 Model for the Flexible Building – to communicate what enhanced flexibility in the corporate office environment can achieve.

The backbone of the model is a combination of Experience and Economy – the twin goals identified by the CRE community. The benefits delivered to the market are summarised by three values: *Efficient, Engaging* and *Environmental*.

Experience: Flexible buildings deliver a healthier occupier experience by providing an environment that meets the functional needs of users, greater connectivity through an open system, the addition of people-centric services, more adaptability to changing needs and multiple ways to interact through voice, mobile and so on.

Economy: Flexible buildings provide a smart operational platform to give a better understanding of how the building is being used, so that economies of operation can be identified in terms of planned maintenance, space management and energy use.

Efficient: Flexible buildings deliver maximum productivity with minimum wasted effort by using data to determine the most efficient management of the building, an open system to reduce complexity, a modular approach to support integration and a single engineering interface to improve visibility of operations.

Engaging: Flexible buildings increase occupant engagement by using data analytics to respond to changing tenant requirements in real time; they allow occupants to become, in effect, data sources for how the system will control the environment, with the use of smartphone apps to bring a more consumer-centric approach to the workplace.

Environmental: Flexible buildings deliver on key sustainability performance targets with proactive energy management systems in place, thus advancing the green credentials of the real estate asset and the occupier.

Together, the components of the E5 Model provide a set of criteria for developers and occupiers to use when designing, specifying and procuring flexible building technology.

'Employees have wanted flexibility for years but organisations didn't want them to have complete control over it. Before, organisations could tell employees when and where they could work, now the power is with the people…'

Phil Kirschner, workplace consultant with Credit Suisse, JLL and WeWork

6. How to get a flexible building

Flexible buildings can only deliver the benefits set out in this report when they are commissioned, specified and procured with a vision for the future use of the work environment. Designing for change is essential in a world in which more accessible and affordable IoT technologies are set to play a growing role.

To deliver the benefits of flexible buildings described in this report, there are a number of practical issues to consider.

Design for change: It is important not to revert to pre-pandemic parameters for designing offices. There will be less predictable office populations in the near future and occupier needs will evolve over time. There will be different pressures on control, mechanical and electrical systems. It is important to think about future space use and what new scenarios might arise when selecting any new system or technology.

Holistic approach: It will not be practical or advisable to replace the Building Management System at regular intervals, nor to carry out costly maintenance works or spatial alterations. Taking a more holistic, longer-term approach to making the building future-ready to adapt to new technologies and systems will pay dividends over time.

Leverage IoT tech: New IoT technologies are no longer the stuff of science fiction. They are simpler, more accessible, more affordable and of better quality than before. So it's worth looking at what benefits and improvements can be gained by leveraging them and connecting them into the building ecosystem so that offices can become destinations of choice and an extension of the day-to-day work activities.

Open systems: The office building of the future will need to enable quick layout changes, add new functionality, scale up and down, and more, without the need to remove and replace physical infrastructure. Creating flexibility in the software architecture and open systems of the building is the smart way to create the flexible building.

Take data seriously: CRE professionals are working hard to bring data science expertise into their teams, which was not needed in the past. Data will be the fuel that drives more flexible buildings that offer occupants more comfortable and responsive buildings. However it is important to avoid 'analysis paralysis' – there needs to be a dynamic and proactive relationship with data so that building teams can make changes without waiting for the perfect picture to emerge through data.

Flexibility as an amenity: Making buildings more flexible requires a change of mindset. The development of greater flexibility in both existing and new buildings should be viewed not as a purely technical consideration but as an amenity for a fast changing and more demanding workforce.

7. A way forward

As a more flexible workforce starts to operate across a more flexible landscape of work, so the demand for flexible buildings delivering a wide range of occupier and operational benefits will grow. Schneider Electric's EcoStruxure Connected Room Solutions enable the flexible building and makes an innovative contribution to the debate.

Schneider Electric's EcoStruxure Connected Room Solutions have been developed as part of a set of technologies to enable the flexible building. It measures and controls the internal environment, making intelligent adjustments to temperature, lighting and shading to create a healthier occupier experience. It uses AI to identify high and low traffic areas in the building, leading to smarter space use. Its broad capabilities extend from energy management to predictive maintenance and equipment cycling and sequencing.

'The software tools are user-friendly and there is a wide range of possibilities in the communication protocols, which makes the Connected Room Solutions easy to integrate…'

Ferry van Yperen, Lead Engineer, TA Control Systems, The Netherlands

Open and innovative, the Connected Room Solutions securely connects hardware, software and services over an Ethernet IP backbone. It forms part of the EcoStruxure system, a secure, scalable and collaborative Internet of Things (IoT) solution capable of being integrated within a wider smart ecosystem to deliver analytics and services that can personalise experiences, predict failures, uncover energy efficiency and plan the use of spaces. Connected Room Solutions can be retrofitted to existing buildings as well as applied to new ones. System integrators interviewed for this report commented on the ease with which the solution can be integrated, enabling faster deployment of the technology.

As the CRE community surveys the flexible new landscape of work, so we can expect that the demand for flexible buildings capable of delivering a great occupier experience alongside operational economies will grow.

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Acknowledgements

This report is based on a survey of Corporate Real Estate (CRE) professional opinion on the post-pandemic future of work and workplace. The survey was conducted in spring 2021 and covered published sources, academic research, public webinars and selected in-depth interviews. Schneider Electric and WORKTECH Academy would like to thank the many individual and organisations whose ideas and comments helped to shape this report, including representatives from Boston Consulting Group, Deutsch Bank, EY, Fidelity International, GSK, Netflix, Nokia, PWC and UniCredit.

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Schneider Electric is a multinational company providing energy and automation digital solutions for efficiency and sustainability. We drive digital transformation by integrating world-leading process and energy technologies, end-point to cloud connecting products, controls, software and services, across the entire lifecycle, enabling integrated company management, for homes, buildings, data centres, infrastructure and industries. We are the most local of global companies. We are advocates of open standards and partnership ecosystems that are passionate about our shared Meaningful Purpose, Inclusive and Empowered values.

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About WORKTECH Academy

WORKTECH Academy is the world's leading knowledge platform and membership club exploring how we'll work tomorrow. The Academy's content is curated in six streams: people, place, technology, culture, design and innovation. It shares data, ideas and insights on the future of work and workplace from its extensive global membership base with workplace professionals worldwide. Schneider Electric is a corporate member of WORKTECH Academy.

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