Living
Workplace

ARUP

May 2017

ARUP

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Contents

Executive summary

From the demise of mono-functionality to reductions in size and scale, the character of the office is being redefined towards a more fluid entity, capable of expanding and contracting on demand. Technology now allows us to work anywhere and at any time. In an economy of knowledge workers where creation of value is no longer fixed to a physical space, we are witnessing an extreme diversification of working styles and patterns.

To reinstate the workplace as a destination, employers and developers are experimenting with alternative modes of working. Moreover, offices are being embedded as the beating heart of mixed-use developments blending public space with retail and lifestyle offerings.

Now is a critical moment to recalibrate our understanding of the workplace. This report considers a broad spectrum of research and trends relevant to this transforming typology, including digital services, emerging business models and workforce wellbeing. By analysing what aspects need immediate attention and action, the report aims to help developers, tenants and designers better understand the forces shaping the workplace of the future.

1 Multi-functional spaces and service ecosystems

From accommodating rapid change to reductions in size and scale, the character of the workplace is being redefined towards a more fluid entity, capable of expanding and contracting on demand.

2 The city as a network of workplaces and workspaces

There is a shift from a highly-centralised workplace model to one characterised by constellations of distributed 'urban innovation nodes', where workers congregate in order to use facilities and collaborate on the delivery of projects.

3 Improved space utilisation as an ever-growing priority

New business- and operational models deliver a highly-flexible approach to commercial space utilisation, including co-working spaces, new leasing models, new forms of community living and 24-hour workplace access.

4 Digital redefines the value of property portfolios

Adding a digital layer across commercial assets and portfolios allows property owners and operators to offer new services, create new revenue streams, and enable more flexible on-demand access to space.

5 Towards tailored and targeted approaches to employee wellbeing

Sensors and data analytics are providing a more granular picture of the actual performance and quality of commercial spaces, thereby increasing our ability to create healthier and more productive workplace environments.

6 The strategic need for workplace curators

Workplace curators operate at the intersection of HR, corporate strategy and facilities management in order to manage the changing requirements of stakeholders, and utilise the workplace as a strategic tool for the business.

Towards a living workplace

In 1981 futurist Alvin Toffler wrote about a rapid increase in telecommuting technology that would make offices irrelevant and see a decentralised workforce connected through "electronic cottages", essentially networked home offices. Nearly 40 years later, and we are moving closer and closer towards a hyper-connected fabric of workplaces, where autonomy and individual preferences take priority and the workplace itself flexes and adapts. [1]

With a shifting, increasingly informal economy and a new generation of knowledge workers entering the workforce, the workplace as a typology is undergoing significant changes. From the demise of mono-functional space to reductions in size and scale, the character of the office is being redefined towards a more fluid entity, capable of expanding and contracting on demand. The meaning and manifestation of 'the workplace' is increasingly hard to define. Technology now allows us to work anywhere and at any time. In an economy where creation of value is no longer fixed to a physical space, we are witnessing a diversification of working styles and patterns, where the behaviour and needs of individual workers can vary considerably across regions, ages, disciplines and lifestyles. At the same time, technology is enabling new forms of platform-based collaboration, where teams come together for a short period of time before moving on to the next assignment.

These shifts challenge the traditional notion of workplaces. How do you estimate your spatial requirements, when you cannot accurately predict the working patterns and needs of your employees? The uncertainties that developers, designers and tenants increasingly face are not unsolvable, but they do require a different approach to the creation, operation and utilisation of commercial space. Technology is part of the answer. Advances in building operating systems, smart components, sensors and flexible fit-outs are already enabling spaces with a high degree of flexibility and adaptability. We also now know much more about the science of work, including the factors that affect worker productivity, team composition and the wellbeing of the workforce. Utilising this growing body of knowledge will lead to a much deeper understanding of the relationship between people, spaces and technology; and should ultimately lead to designs that are more user-centred and flexible.

The living workplace: an ecosystem of people, spaces and technology

people

increased cultural and generational diversity

managing diverse workplace requirements

technology

towards fluid networks of virtual and physical facilities

providing ubiquitous access to people and information

living workplace

facilitating cooperation and knowledge exchange

facilities that foster a sense of community, collaboration and innovation

spaces

The workplace as an ecosystem of people, spaces and technology

New findings show the importance of an individual's behaviours on where and how they work, with personality-based studies revealing more about workspace preferences than those based on age or discipline.

There is an increasing demand for office layouts that allow individuals and teams to choose the best setting for a given mood, task, project or activity. Employees who can choose their own work setting are 1.5 times more likely to work in an environment comprising both shared and private spaces, where they also report higher scores across performance indicators. [2, 3] Providing true workspace diversity that caters for the needs of staff and maximises their productivity is, however, a big challenge for an industry that has come to depend on the open-plan office as a catch-all solution.

In most white-collar industries the conventional, uniform working pattern is shifting towards flexible working delivered by highly-mobile workers. The value of a diverse workforce is increasingly being recognised, with individuals differing in their many tastes, cultural viewpoints, beliefs, eating habits and attitudes, as much as in their working styles. These employees bring their various perspectives to bear on the same environment, responding differently. The workplace should help encourage the proliferation of new working practices and viewpoints: non-prescriptive, adaptable spaces enable discovery and modification, with each person using the facilities to best suit them. In future, the 'living workplace' will no longer be considered as a definitive environment, but will resemble a service or set of facilities that focus on the requirements of a variety of users and their desired contexts. Larger occupiers will be able to create diverse, flexible environments within their leased space. Smaller occupiers, or satellite offices, will need landlords' help in creating that same environment.

Like working patterns, the workplace itself is no longer singular; it is increasingly developing into an ecosystem of different types of workspaces — from home offices to co-working spaces — dependent less on the central offering of a single employer and more on the employee and their specific needs. To some extent, this has seen the 'domestication' of work, both in terms of work being done in the home and in the provision of living services within the office environment, for example laundry services and grocery delivery.

At the city scale, a more autonomous workforce is supporting the proliferation of workspaces where individuals can choose where and when they work, the project they are delivering or the people they are collaborating with. This freedom has reinforced a culture of work in 'third-spaces', outside both the home and the traditional workplace, expanding the boundaries of the office as well as reshaping how the city is used and explored. It is also indicative of a long-term shift from a highly-centralised workplace model to one characterised by constellations of 'innovation nodes', where workers congregate in order to use facilities, collaborate or even compete. [4]

The rise in digital freelance platforms and services is supporting this shift, providing employers with access to a pool of remote talent, for example Upwork and Freelancer; Upwork alone has more than 10 million freelancers registered from 180 countries. [5] This platform-based economy is reshaping

Arup office, Sydney

Prior to an office move in 2018, Arup's Sydney office is conducting an in-house experiment with new models of working. The project aims to cater for individual needs rather than rolling out generic options. There has been careful consideration about how shared and individual spaces are curated and managed on an proactive basis, going beyond the use of support staff and cleaning contract arrangements. The experiment seeks to push boundaries, trial new technologies and allow Arup to think more strategically about how the workplace and business work seamlessly for its staff, stakeholders and clients.

our understanding of how careers develop, how projects are delivered, and how teams are set-up, disrupting conventional constraints such as location and contract length.

This developing ecosystem of flexible offices, third-spaces and a diverse workforce is underpinned by advances in digital technology. While the office used to be synonymous with fixed capital equipment such as desktop computers and fax machines, today's mobile devices and virtual networks have enabled individuals and teams to work virtually anywhere — from a hot desk to another time zone — with the basic requirement being connectivity to the organisation's network. The increased adoption of cloud-based services reduces the need to invest in high cost computing equipment at every desk. The 'thin client' approach allows workers to connect to a virtual desktop anywhere in the world, at a fraction of the cost. 'Farms' of virtual machines allow organisations to flex their technology requirements depending on the volume of work required without needing to invest heavily in capital equipment at a fixed location. As such, many organisations find that their value is increasingly delivered through virtual collaboration tools and platforms. And while collaborative environments are gaining ground in physical workplaces, there is an associated trend towards more private and individually-tailored workstations. Here, multi-platform digital collaborations can take place within the wider workplace ecosystem free from both disruption and geographical constraints.

Key takeaways

1 Diversity of opportunities

A diversity of user behaviours calls for a combination of physical and virtual opportunities that allow users to identify where they would rather do their preferred task.

2 A network of workplaces

New digital platforms and tools, together with a culture of work in third spaces, are transforming the city into a network of workplaces.

3 More privacy, more collaboration

On the one hand there is a trend towards more collaborative environments and on the other, there is a trend toward more private, personal settings.

Left: ARK Centre's main staircase acts as a vibrant anchor for the surrounding spaces.

13

Sarah Lloyd
@curisarah

#flexibleworking is not #lazy! it enables #choice of being in the #office or #remote when needed #videorocks

8:30 PM - 20 Feb 2017

17   15

Jonathan Denby
@jonathan_denby

Anyone have any #coworking #office space suggestions or just great places to work in #Europe? Need a few days out of London! #AskTwitter

8:30 PM - 20 Feb 2017

1

Catherine Hofmann
@crhofmann

jumpstarted the inactive #slack at my coworking space today and immediately met 4 people face-to-face. #coworking #community #cowork #philly

10:48 PM - 27 Feb 2017

2

Tailored offerings and emerging business models

The increased autonomy of and competition for workers is fuelling demand for dynamic working environments, disrupting conventional tenancy models and asset utilisation rates.

"The overwhelming takeaway was the need for a radical change in philosophy: to think more like a hotelier than a real estate company."

— James Cooksey, The Crown Estate [6]

The search for the ideal workplace outside the office by mobile workers and freelancers has boosted the number of businesses that provide tailored, affordable and flexible workplace options. WeWork, for example, founded in 2010, now operates in 156 locations across 38 cities. [7] Not only do these businesses provide prime locations and shared facilities, they also offer membership of a workplace community of like-minded individuals; their success emphasises the importance that people place on office culture and participation within it. Larger organisations have also become more supportive of co-working, enabling individuals to be more productive, expand their professional network and deliver higher quality outcomes by flexing between co-working spaces, home offices and third spaces based on their schedule, project or mood.

The increased autonomy of the worker and the importance of workplace culture is reflected in the attempts by organisations and developers to differentiate their offering and its urban context. As the line between living and working continues to blur, jobs are

Left: a co-working space in Thailand featuring a library and temporary exhibition space.

15

increasingly seen as the key determinant of a person's lifestyle. Hence there is a growing desire for dynamic urban environments or 'innovation districts', with a vibrant mix of retail, residential, educational and commercial spaces where people choose to be based. These developments use placemaking as an evolving anchor to build the desired sense of community.

In larger-scale mixed-use developments, workplaces are seeking to connect with the wider urban fabric, supporting and contributing to an area's attractiveness. The revitalisation of King's Cross by developer Argent is widely hailed as a successful example of this, with tenants in the 67-acre site including Google and Louis Vuitton. New business and operational models also require a more flexible approach to space utilisation, whether new forms of community living or 24-hour workplace access. Tenancy

"In a well-designed place, uses feed into each other. But offices can act as an anchor to a successful mixed-use area."
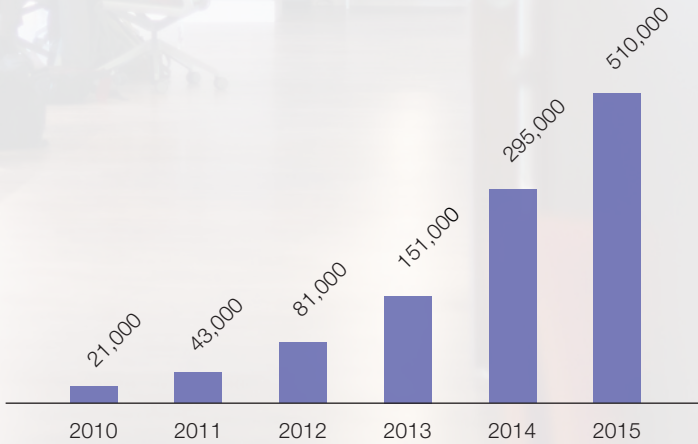
— David Pringle, Co-operative Group [8]

Amorepacific HQ, Seoul

Designed by David Chipperfield Architects Berlin, Amorepacific's Seoul headquarters blends public and private, indoor and outdoor, in its multistory headquarters. The enclosed spaces are clustered around a central courtyard that both illuminates and ventilates each storey, while elevated gardens provide recreational space for staff. The project will also feature a conference area, auditorium, retail facilities, restaurants and a public art museum receiving visitors alongside the company's offices.

Number of co-working spaces worldwide [9]

2006

2010

2014

2018

30

600

5,780

37,000
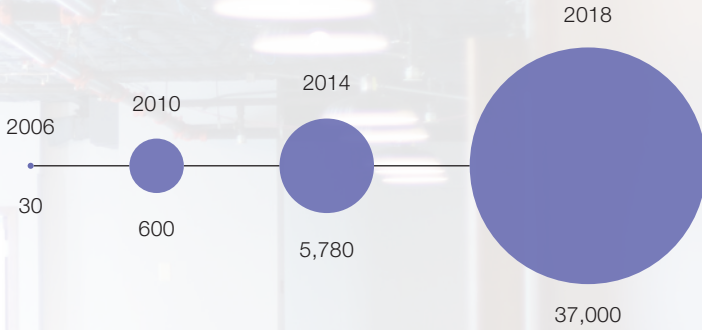
Number of people working in co-working spaces worldwide [10]

21,000	43,000	81,000	151,000	295,000	510,000
2010	2011	2012	2013	2014	2015

length is likewise being affected. Smaller companies are now able to expand and contract more quickly without losing the benefits of long-term agreements. In many cases five-year plus lease terms no longer suit the ebb and flow of modern business.

But while flexibility can partly be met through serviced offices or co-working hubs, for many firms this is not ideal over longer time periods. Drawbacks include the significant premium paid for short-let serviced space, the need for security, and the inability to manage the workspace for the specific requirements of their workforce and its culture. [11]

Online platforms that enable workplace flexibility are gaining ground, further disrupting traditional models. These allow occupiers to rent out desk space they don't need or to rent additional space. Examples of platforms facilitating this market are Hubble in the UK and LiquidSpace in the US. This trend will require stakeholders to increasingly consider the divisibility of office floors, and whether they are easy for occupiers to rent out while also protecting privacy and security. For tenants, more flexibility around physical separation requirements is also needed to satisfy their desire to take advantage of this increased flexibility and to allow them tailor their workplace offering.

Key takeaways

1 Community as destination

Co-working spaces enable access to workplace culture and like-minded individuals as much as beneficial locations and shared facilities.

2 Placemaking as an anchor

Placemaking helps give shape to evolving innovation clusters and is crucial to developing a sense of community.

3 Space utilisation as a priority

Emerging new business and operational models have a focus on flexible approach to space utilisation, whether new forms of community living or 24-hour workplace access.

The digital concierge: optimising performance and adaptability

Emerging workplace design approaches are moving away from mono-functional spaces in favour of flexibility and adaptability. The office as a typology is turning into a multi-functional body that accommodates rapid change and configuration, supported by furniture solutions and building management systems that enable spatial flexibility and are less reliant on technical support.

The flexibility and mobility of the workforce is increasing as quickly as corporate culture will allow. As a consequence, the design of workspaces is starting to shift from a catch-all philosophy — where layout and components follow a standardised system — to a design approach more closely related to the curation of a user-experience, with users able to discover and adapt spaces and systems according to their needs. This manifests itself in tailored design, strategy and operations of individual organisations and their specific cultures rather than a one-size-fits-all approach. As such, both employers and developers are gravitating towards intelligent asset management in order to manage diversity with a high level of control and efficiency. [12]

A growing enthusiasm for the use of sensors, data analytics and visualisation tools is a direct consequence of this approach. These help stakeholders understand and manage workplaces based on real-time performance, and help to ensure buildings are performing as well as they were designed to. Further enhancing long-term performance, reactive and intelligent building operating systems commonly include open source components, systems and platforms that can be adapted, extended and fine-tuned.

The move from condition-based maintenance (i.e. maintenance when the need arises) to performance-based maintenance (i.e.

IoT Desk, London

The Internet of Things Desk is a research project, which looks at the changing shape of technology and occupant interaction within buildings. Arup has constructed six desks within its office that utilise low voltage direct current and open web technologies to provide users with more granular and responsive control of their environment. The desks explore the use of common data and power distribution, open source controls and sensing, data collection and analysis, and direct user interfaces to access, control and personalise their surrounding environment. Benefits include improved staff productivity and wellbeing, reduced operating costs.

©Oliver Ukat

proactive maintenance informed by sensor data) reduces costs, increases comfort and provides evidence to support more frequent adaptation. This can in turn, through improved suitability, lead to enhanced productivity. Performance-based facilities management might include the monitoring and automation of internal lighting levels for example, or temperature control via intelligent sensors. The use of low-cost sensors as part of a performance-based approach is indicative of the burgeoning 'Internet of Things'; by 2020, the number of physical objects connected to the internet will grow to 50 billion. [13]

The 'performance' of the workforce is likewise being addressed and improved by advances in IoT and wearable technology. Wellbeing, explored further in the final section, is increasingly marked as a key performance indicator and monitored in relation to the work environment.

A symptom of this emerging interest can be seen in the global wellness wearable market, which is expected to see a US$17m increase by 2021. [14] The integration of both building performance and people-related operational data can help build a better understanding of the interactions between users and buildings, ultimately developing into a cycle of identification, rectification and verification. This can underpin a more efficient, cost-effective approach to asset management, and ultimately a more comfortable and productive environment for users.

"Our thinking about digitization is fundamentally shifting from a tactical approach (broadband, email, a little BIM / GIS, some visualisation, rent accounting, spreadsheets, old school FM) to being informed by a strategic vision that drives better end-user experiences, unlocks portfolio-level operational improvements, and improves financial outcomes."

— Commercial Property Executive 2.5 million Sq m office portfolio [15]

A conceptual illustration showing how temperature, lighting, carbon dioxide, carbon monoxide and VOC can be actively monitored in a variety of assets in multiple portfolios. These could be visualised in a realtime dashboard for more effective asset utilisation.

Beyond the two existing layers of any workplace (i.e. the building a workplace sits in, and its position within the network of assets in a portfolio) there is an emerging third layer in form of a 'digital concierge'. The digital concierge is the interconnectivity of clusters of spaces spread over a portfolio of assets, which are governed and accessed through apps or other interactive platforms. This helps make an otherwise discrete group of spaces and environments part of a cohesive whole.

An example of such a digital layer is Breather, which offers a wide range of flexible, on-demand spaces to businesses and individuals alike. The company's distributed network of spaces provides a meeting room solution for the increasingly mobile workforce, with a growing portfolio of more than 250 spaces across 10 global markets. [16]

This approach also has the potential to greatly reduce the need for certain physical spaces, for example reception and administration areas. When integrated to its full capacity, the digital layer can add to the monetary value of assets, by introducing more flexibility and reducing the cost of fine-tuning for potential new tenants or landlords. [17]

Key takeaways

1 Adaptability

There is a growing interest in intelligent asset management where spatial diversity can be managed with a high level of control and efficiency.

2 Digital concierge

The digital concierge supports the interconnectivity of clusters of space, which are governed and accessed through apps or other interactive platforms. This approach could greatly reduce the need for physical space for superfluous functions, and increase the monetary value of assets.

3 Smart maintenance

The move from condition-based maintenance to performance-based maintenance reduces costs, increases comfort and can enable more frequent adaptation, resulting in enhanced productivity.

Photo: Arup office in Cork, Ireland.

The workplace as a destination: user-centricity and workforce wellbeing

User-centric design — from satisfaction and wellbeing to speciality spaces — will both drive and be informed by the development of new organisational cultures. It will underpin the role of the workplace as a destination and a source of organisational identity.

Putting people first and foremost in workplace design has led to a reassessment of the open-plan office. The tension created in open-plan office layouts — for example due to a lack of acoustic privacy — exemplifies the need to identify technological solutions and design approaches that limit the adverse impacts of such plans. [18, 19] A growing understanding of the effect of noise and light on productivity and wellbeing is generating demand for office landscapes with diverse qualities in terms of light, acoustics and comfort.

This demand has also led to evolving concepts

Influence of environmental conditions on performance [20, 21]
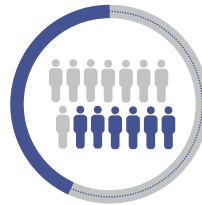
66%

drop in performance experienced by 53% of workers when exposed to distracting noise

15%

report a higher level of wellbeing when exposed to natural elements

6%

experience more productivity when close to greenery and sunlight

Left: Staff discussing a prototype in the maker space in Arup's Sydney office.

29

Sky Meeting Centre, London

Designed by Amanda Levete's studio AL_A and PLP Architecture, the project sits on the frontier of innovative workplaces. Thresholds between creative, technical, production and corporate have been softened using a variety of open, flexible, private and shared working environments grouped in clusters of neighbourhoods. Offering employees a degree of choice and control, the building continually balances collective endeavour and the expression of the creative individual.

© Hufton+Crow

for circadian workspaces and lighting solutions. Widespread acknowledgment of the importance of worker health and wellbeing has contributed to the development of new processes for the certification of buildings and spaces. Such standards act as complementary components to sustainability certifications. This increasingly user-centric mindset necessitates a holistic approach to workplace design, which might include factors such as air and water quality as well as policies for nutrition and worker wellbeing.

Research carried out by Arup using the BUS methodology (an occupant satisfaction evaluation), driven by a database of 800 buildings, showed that increased use of visual display units and purely open-plan working arrangements were associated with negative occupant perceptions. This suggests that privacy and personal communication may be defining issues for occupant satisfaction, with implications for space planning. Significantly different perceptions towards air quality were observed between gender. Findings also showed that perceptions towards seasonal conditions might be improved by providing local control to mechanical services, for example ventilation around a workstation, task lighting or even opening a window. Control and management systems in high-performance buildings can be used to learn from those occupying the building over time and adapt service provision accordingly. [22]

Performance-based monitoring and maintenance could trigger the transition from universally-applicable standards to tailored

and targeted standards; the targeted standard is also informed by an understanding of comfort as something that varies depending on context. Such measures require close engagement of users through qualitative interviews and design probes or digital platforms such as mobile apps which make the process more personal. In other words, a vocabulary of sensing should be developed for each context the standard operates in. With its decreasing cost of implementation, this approach will become more accessible to a wider range of companies. [23] An example of such close engagement is the Occusense app. Occusense is a prototype mobile application developed by Arup to actively collect continuous feedback from building occupiers in order to understand the experience of using an environment. User inputs are enhanced by applying data-mining analytics, with user sentiment within a building measured and then displayed on a mobile application. A dashboard helps to visualise these analytics, from which action can be taken manually or automatically. It also helps to visualise performance and feedback for staff to better utilise and adapt facilities based on performance. By offering back control to the user it also has the potential to supersede facilities management systems, enabling more rapid adaption and implementation on a large scale. As well as a user's physical experience of a space, one aspect of worker wellbeing that is increasingly being acknowledged by employers is their mental state. Indeed, mental health problems are one of the biggest contributors to employee absenteeism. [24]
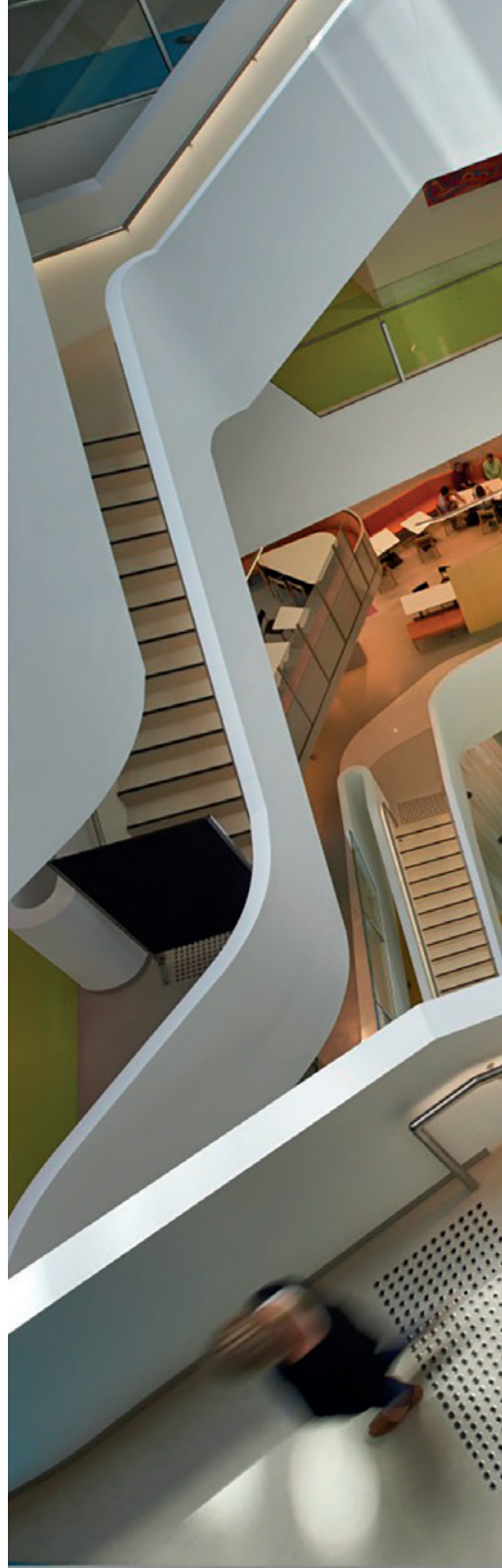
Medibank HQ, Melbourne

Designed by Hassell, the integrated workplace interior reinstates Medibank's ambitions as a health insurance company. A double stair system woven around the central atrium has replaced elevators. Designed around mobility and physical movement, workforce wellbeing is captured as a priority. To further enhance physical, mental and social health, breakaway opportunities have been placed around the office. Crafted by landscape designers to resemble an urban park, these spaces help balance the intensity of day to day work. The result has been a huge increase in engagement and collaboration unimaginable prior to the move.

© Earl Carter

Arup office, Cork

© f22 photography

Siemens HQ, Munich

© Siemens AG, Munich/Berlin

Arup Cork's move to a new city centre office was seen as an opportunity to capitalise on an already positive office culture, improve the working environment and develop work practices. All staff took part in a bespoke survey to determine the environmental, functional and cultural requirements of the office. Vision workshops were also held with staff and, combined with the survey, they set the brief for the new workplace. With staff needs identified, recognised and met, the new office has helped to grow a collaborative working culture and sense of community. The post-occupancy assessment recorded a 26% increase in perceived productivity and acknowledged a high satisfaction rating for the environmental factors.
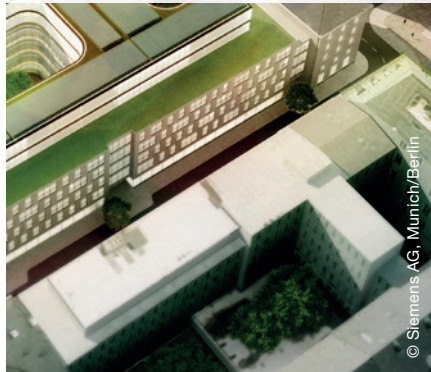
Completed in 2016, the new Siemens corporate HQ in Munich, Germany, embodies the company's values and ambitions. The 45,000 sqm structure is built around and above a series of publicly-accessible courtyards that provide pedestrians with a new route between the city centre and its museum district. This design helps to connect Siemens with the city, as well as promoting knowledge-sharing and interaction. The internal structure is likewise a beacon for the latest working practices, encouraging comfort, innovation and sustainable resource use.

A sense of community and a sense of purpose have been found to be prominent factors which help prevent issues such as depression and burnout, and keep employees more mindful and engaged. Creating a shared culture also helps attract and maintain talent, both essential drivers for the future workplace.

The rise of user-centricity is perhaps most clearly seen in the changing role of the corporate HQ. These are transforming into physical representations of an organisation's values, supporting collaborative working, attracting clients and future employees as well as providing a home to innovation and speciality spaces, including lecture theatres, laboratories and makerspaces.

These specialised spaces work as a differentiator, setting the workspace apart from competing environments and companies. This is also indicative of the workplace becoming a key tool for the realisation of corporate strategy and a reflection of company brand. It is here that the role of 'workplace curators' comes into play. Strategic curation of workplace environments is a key factor in keeping a balance between the integrity of an internal community culture — vital for workforce wellbeing — in relation to the diverse set of requirements of internal and external stakeholders. It is a role that overlaps HR, corporate strategy, events and facilities management, and which bridges people, space and technology.

Key takeaways

1 **Diverse landscapes**

There is strong demand for office landscapes with a broad range of diverse spatial qualities in terms of light, noise levels and comfort.

2 **Tailored standards**

Performance-based monitoring could trigger a transition from universally applicable standards to tailored and targeted standards.

3 **Workplace curation**

Strategic curation of workplace environments is key to keeping a balance between the integrity of the internal community, and the diverse requirements of internal and external stakeholders.
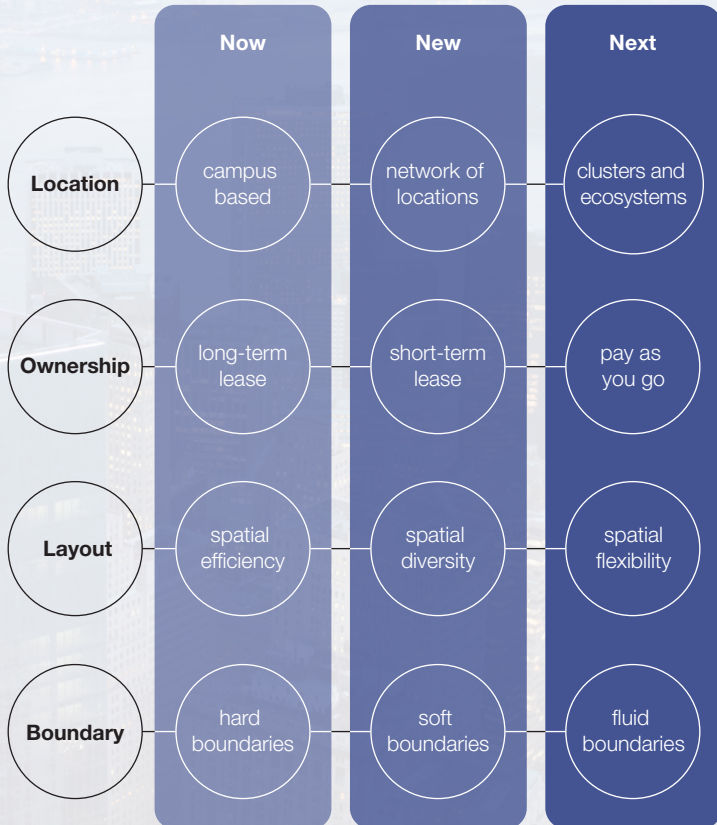
Conclusions

The workplace of the future is a living workplace, where employee wellbeing and autonomy take priority, and where services and environments are characterised by user-centric design. These workplaces are ecosystems of high-quality shared, private, interior and exterior spaces clustered across a city. Diversity and adaptability are crucial for attracting and retaining talent and enabling flexibility across time and space.

Beyond the physical environment, the living workplace recognises the importance of the seemingly invisible, including the value of workplace culture and the health of individual employees. These factors differentiate locations and encourage participation. The workplace will be seen as a destination, with a carefully curated set of experiences, spaces and interactions.

For the future workplace, technologies and digital business strategies are the dominant enablers of rapid and efficient adaptation. For the employee of the future, the key requirements are increased productivity, and better health and wellbeing. Designers, developers and property operators do have the tools and capabilities to deliver this shift. However, it requires a rethinking of established ways of working, a shift to more flexible contractual arrangements, and a growing investment in spatial flexibility and digital technologies.

Transforming qualities of the workplace

	Now	New	Next
Location	campus based	network of locations	clusters and ecosystems
Ownership	long-term lease	short-term lease	pay as you go
Layout	spatial efficiency	spatial diversity	spatial flexibility
Boundary	hard boundaries	soft boundaries	fluid boundaries

Developers

Assess the potential of new commercial developments in the context of changing working patterns, including the availability and demand for shared workplaces across city districts.

Focus on the creation of spaces and assets that can cater for more flexible and diverse space utilisation, including 24-hour usage, shorter lease times, and relevant support services across IT, security and FM services.

Explore opportunities for a more integrated approach to the management of property portfolios, by utilising technology for real-time information on multiple assets.

Seek collaborations with potential tenants in order to ensure that commercial offerings can better support and enable the implementation of the tenant's corporate strategy and company values.

Recognise the importance of culture, community and identity in creating environments that are attractive to a diverse range of knowledge workers.

Tenants

Assess commercial space requirements in the context of changing working patterns and shifting employee expectations.

Focus on the provision of high quality shared and private spaces that encourage collaboration and that enable employees to choose where and how to work.

Request information on the actual operational performance of buildings in the context of worker wellbeing, including indoor air quality and provision of natural lighting.

Recognise that the quality of the working environment is perceived in the context of workplace policy, the provision of staff services, and employee benefits.

Utilise facilities management as a strategic function that actively works with human resources in the implementation of workplace-related corporate strategy.

Don't underestimate the importance of technology provision to enable the workplace of the future, including choice, reliability, multi-platform and multi-device.

Designers

Support the sharing of knowledge and best practice around changing working patterns and associated demands for spatial performance, layout and design.

Design buildings and spaces that actively support enhancement to worker health and wellbeing, including strategies for better ergonomics and environmental quality.

Develop building systems that utilise open source protocols in order to increase system adaptability and to foster better integration of products across the industry.

Invest in further research to understand the fundamentals of human space utilisation and the impacts of environmental conditions on worker health and productivity.

Discuss the lifecycle of commercial buildings at the outset of a project in order to encourage refresh and end-of-life strategies, and a focus on operational performance.

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Publications

Foresight can be applied to a broad range of business contexts. These include strategy, risk and innovation processes as well as the delivery of marketing, design and engineering projects. All of these benefit from a critical exploration of the future. The aim is to ensure that future opportunities are maximised and that risks are minimised.

An introduction to corporate foresight provides an introduction to the practice of foresight, including key principles and methodologies, and examples of application within the context of the built environment.

Reimagining property in a digital world highlights that the property sector has not yet fully committed to operating digital property portfolios. Individual initiatives are often isolated, and as a result the full benefits are not realised. The message for developers and corporate real estate executives is that every business will need its own digital strategy if it wants to achieve improved operational performance, a better end user experience and consequently higher long term valuations.

The circular economy in the built environment identifies how the circular economy can benefit Arup, our clients, and the built environment sector. We reflect on the economic, social and environmental advantages of employing circular principles. We propose strategies to progress our offering, deliver new services, engage a wider network of stakeholders and unlock opportunities for all parties in the value chain.

Green building envelopes can help to reduce the urban up-heating (heat island effects), filter fine dust on the streets and reduce noise levels. Within this edition of *Cities Alive* report, experts from eight Arup skill networks across the globe cross-examine these questions with a view to shape better cities. The comprehensive research considers whether green building envelopes can have a special role to play in improving our cities for their inhabitants.
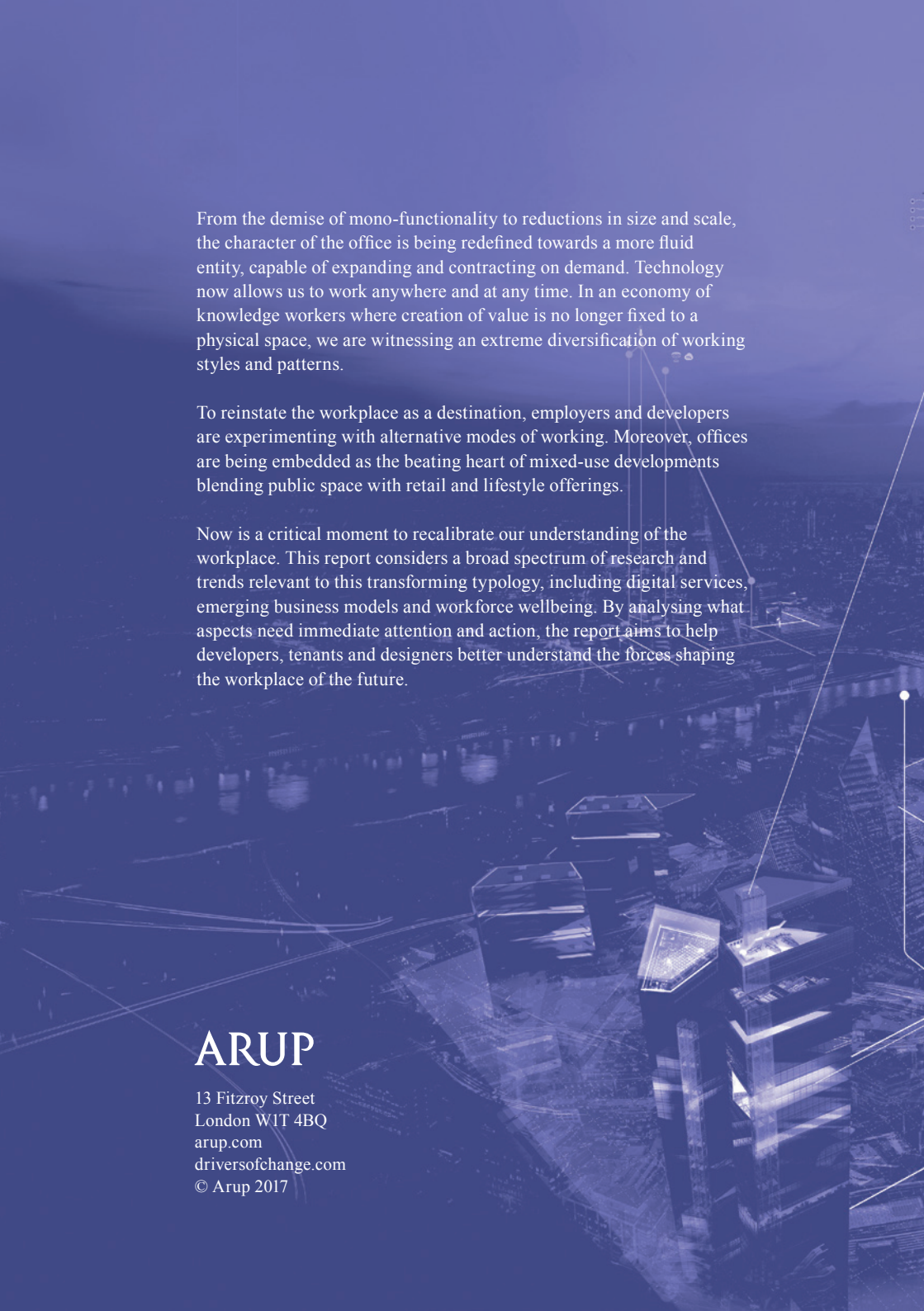
About Arup

Arup is the creative force at the heart of many of the world's most prominent projects in the built environment and across industry. We offer a broad range of professional services that combine to make a real difference to our clients and the communities in which we work.

We are truly global. From 100 offices in 38 countries our 13,000 planners, designers, engineers and consultants deliver innovative projects across the world with creativity and passion.

Founded in 1946 with an enduring set of values, our unique trust ownership fosters a distinctive culture and an intellectual independence that encourages collaborative working. This is reflected in everything we do, allowing us to develop meaningful ideas, help shape agendas and deliver results that frequently surpass the expectations of our clients.

The people at Arup are driven to find a better way and to deliver better solutions for our clients.

We shape a better world.

From the demise of mono-functionality to reductions in size and scale, the character of the office is being redefined towards a more fluid entity, capable of expanding and contracting on demand. Technology now allows us to work anywhere and at any time. In an economy of knowledge workers where creation of value is no longer fixed to a physical space, we are witnessing an extreme diversification of working styles and patterns.

To reinstate the workplace as a destination, employers and developers are experimenting with alternative modes of working. Moreover, offices are being embedded as the beating heart of mixed-use developments blending public space with retail and lifestyle offerings.

Now is a critical moment to recalibrate our understanding of the workplace. This report considers a broad spectrum of research and trends relevant to this transforming typology, including digital services, emerging business models and workforce wellbeing. By analysing what aspects need immediate attention and action, the report aims to help developers, tenants and designers better understand the forces shaping the workplace of the future.

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