CoreNet Global

THE BIGGER PICTURE

THE FUTURE OF CORPORATE REAL ESTATE

CoreNet Global Report

CoreNet Global EXCLUSIVE RESEARCH

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Executive Summary

While no one can predict the future with certainty, this much is clear: the future of corporate real estate (CRE) won't look anything like its past.

We live in a world that is more globally connected than ever before, changing more rapidly than ever before, and constantly disrupted by technological innovation. It is replete with both risks and opportunities.

These and other major trends are transforming how, where and when global business is conducted. Now, more than ever, it is crucial that corporate real estate (CRE) professionals become not only students of the business, but students of the world and how it is changing. This is the purpose of this report: to place the future of CRE in the context of the bigger picture.

For example, a recent report by McKinsey points out that digital flows, while a relatively new phenomenon, now have a larger impact on Gross Domestic Product (GDP) than the trade in goods. This new reality means that CRE executives need to be aware of how this will influence their function, not only in regard to the real estate portfolio, but also in terms of attendant cyber security risks presented by today's sophisticated building management systems.

Technology is also impacting how cities are run, how they develop, and what kinds of talent and organizations they attract. Smart solutions for infrastructure challenges will be increasingly demanded from city planners and managers, and will become a key differentiator between cities. Urbanism is on the rise, and companies are increasingly drawn to growing cities in pursuit of young talent.

Risk management is not a new concept for CRE, but it is growing in importance and impacts the entire breadth of the CRE function. Country risks and physical security, climate change and its impact, weapons of mass destruction, and the water crisis in many countries and regions are the top risks that experts and decision makers are most concerned about, according to a risk assessment report by the World Economic Forum. Considering that location strategy is a key competency for many CRE organizations, attaining a greater understanding of what risks lie where is imperative in order to site new facilities, as well as adequately secure existing operations. This will also provide CRE professionals greater insights regarding potential threats to their company's supply chain and enable them to contribute to strategic conversations about business continuity planning.

Meanwhile, enhancing employee engagement, satisfaction and wellbeing continues to be a priority for many companies, driven by the need to attract and retain talent. CRE has a significant role to play in this, particularly as it relates to workplace design and helping deliver a quality workplace experience for employees.

Additionally, the so-called "gig" economy (driven by an increasingly contingent work force composed of freelancers, temporary contract workers and independent contractors) is expected to make a powerful impact on how organizations are structured, how they function and how they are staffed. How will these changes impact the need for workspace? How will they impact what kind of spaces are made available and where? These are the questions that the CRE executive will have to consider – and answer.

Sustainability and corporate social responsibility are now firmly embedded in the policies and objectives of many leading corporations, with numerous implications for CRE that go far beyond 'green' buildings.

Finally, as one of our expert interviewees put it, "We as a profession could get a lot better at scenario planning," pointing to the need to plan for multiple possible scenarios and update those plans regularly. CRE executives can also add value by being broadly "cycle aware" – paying attention to economic, business and real estate cycles. The C-Suite places a premium on flexibility and agility precisely because business conditions change rapidly, and there is much that CRE can do to support this imperative.

This report includes the key findings of a year-long project in partnership with CoreNet Global's Gold Strategic Partners to research the future of Corporate Real Estate. The effort would not have been possible without the collaboration, cooperation, and participation of the following Partners: CBRE, Deloitte, ISS, JLL, Newmark Grubb Knight Frank, Sodexo, and Steelcase. Our sincere thanks and gratitude goes to each of these companies, who gave us their advice, including suggestions for subject matter experts to be interviewed, guidance on what questions would be most pertinent, and generously gave of their time to support this project.

Acknowledgments

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Technology and the Internet of Things

Harnessing the power of tech

By Beth Mattson-Teig

Technology has its digital fingerprints on just about every aspect of business, government, culture and personal life these days. It is changing everything from how people shop and what they buy to how and where they live, work and interact with others. And that pace of change in this new digital era is only gaining momentum with major innovations on the doorstep and even more on the horizon.

The list of disruptive technologies is long and growing and includes everything from artificial intelligence (AI) and autonomous vehicles to virtual reality and the Internet of Things (IoT). Certainly, any one of those topics warrants a closer look. This section aims to provide a high level view of how technology is changing corporate operations, the workplace and the corporate real estate footprint. It will highlight some of the notable technologies that are already driving change, as well as those innovations still ahead. We'll also look at how technology is changing the role of CRE professionals and how they can leverage technology to add value to their organizations.

Technology in the workplace has been on a steady path of platform progression for the past several decades. The first platform emerged in the 1950s with the mainframe computer. The next major step came in the 1990s with programmable software and the personal computer. The third and current platform began in 2007 with the advent of cloud computing, mobile devices, more sophisticated analytics, social media and artificial intelligence. "These technology advances will have tremendous impact as to how digital and physical infrastructure will be organized and how smart workplaces and smart buildings will be designed, built and managed," says Peter Miscovich, Managing Director, Strategy + Innovation, JLL Consulting in New York.

As multiple innovative third platform technologies continue to morph together creating entirely new digital and physical human life experiences workers will have many more digitally augmented workplace options to choose from as to how, where and when they wish to perform work in these diverse capacities, says Miscovich. The digital and physical dimensions will continue to blur together to produce entirely new digital and physical experiential technology – human experiences embodied by new innovative physical environments. The next generation "Experiential Internet" will emerge within the next five to 10 years with people able to experience the Internet in three dimensions versus the two-dimensional Internet of today, adds Miscovich.

The Rise of Virtual Tools

Technology has created a tremendous amount of worker mobility in a relatively short period of time. The Internet, mobile devices and the cloud are giving people more freedom and autonomy to work and collaborate in entirely new and different ways. People will continue to have greater workplace choices as augmented reality (AR) and virtual reality (VR) technologies come into play. In fact, some believe that VR and AR could be two of the most disruptive technologies on the horizon as they will allow people to work with colleagues around the world in real time.

There are countless examples of how VR tech could be used across industries from product design and technical assistance to remote learning and training. For example, a contract manufacturer could use VR to bring colleagues together from different cities or countries to work on the design for a new electric car engine. In the past, there has been a lag in such project work as each person reviewed design specs, made comments or changes, and passed it along to the next person on the team via email or file sharing. Now those workers can work together on a 3-D design model, which greatly speeds up the design process.

There are many compelling reasons for companies to be using augmented technology, notes Steven Tiell, senior principal, Thought Leadership & Research, Accenture Technology Vision in San Francisco. For instance, field operations for oil and gas companies tend to locate in remote areas. If a piece of equipment needs repair that requires special expertise, rather than flying an individual in to fix the problem, the company can put that individual on-site virtually to talk someone else through the repair, he says.

VR is already in use today, and the implications of VR for the workplace – and even beyond that to homes and cities – are huge. A recent report on virtual and augmented reality published by The Goldman Sachs Group Inc. noted the potential to change both consumer behavior and business models across a wide variety of industries such as retail, entertainment, real estate, healthcare, education and engineering to name a few. Goldman Sachs estimated that the VR/AR market has the potential to grow to $80 billion by 2025.[1] Corporations have been using VR in targeted applications for the past 18 to 24 months. "I think we will see those technologies infiltrate markets outside of gaming in a meaningful way in the next three to five years. They have the potential to disrupt the workplace in the form of the amount and types of workspaces that are needed; these disruptions could be seen in as little as seven to 10 years," says Tiell.

The Internet of Things

IoT is already driving sweeping change across a variety of applications and those changes could be just the tip of the iceberg. IoT is machine-to-machine communication that relies on networks of sensors, devices and software to gather data, and cloud or local computing to analyze and act on that data in real time. Although it sounds simple enough, where it starts to become overwhelming is when one starts to consider the almost limitless applications for IoT that exist from wearable fitness devices and smart appliances to building security systems and connected vehicles.

Research by Gartner Inc. estimates that in 2016 there will be 5.5 million new things that will get connected to network infrastructure worldwide – each day. That rapid-fire expansion will enlarge the universe of connected things from an estimated 6.4 billion in 2016 to 20.8 billion by 2020.[2] Specific to CRE, IoT is gaining a bigger foothold in operations, building management systems and the ongoing evolution of smart buildings and smart cities. Sensors are gathering data in a myriad of different areas ranging from security systems to digital lightbulbs.

The value that IoT brings is the information that it creates. It has tremendous potential to improve analytics that can be used to drive efficiency. However, that biggest asset of capturing information creates a daunting challenge in the immense volume of data that is generated. Some industry research estimates that connected devices will generate 507.5 zettabytes (1 zettabyte equals 1 trillion gigabytes) of data per year by 2019, according to a report on "Tech Trends 2016 Innovating in the digital era" published by Deloitte.

Part of the challenge is doing "triage" on all of this data, which is why the data analytics piece of IoT is so critical, says Florence Hudson, senior vice president and chief innovation officer at Internet2,

[1] "Virtual & Augmented Reality: Understanding the race for the next computing platform," The Goldman Sachs Group Inc, Jan. 13, 2016. The Goldman Sachs Group Inc. (http://www.goldmansachs.com/our-thinking/pages/virtual-and-augmented-reality-report.html)

[2] "Tech Trends 2016 Innovating in the digital era," Deloitte. (http://dupress.com/periodical/trends/tech-trends?id=us:2ps:3bi:confidence:eng:-cons:030316:nonem:na:lUHFfn1H::11560519890:b:Branded:Branded_Tech_Trends_BMM:br)

a U.S.-based non-profit consortium of universities, corporations, regional networks and government agencies. "It is not just the sensors and the data that comes from those sensors, but you also have to have systems that are practical and that look at the data, do analytics against it and then make recommendations," she says. The analytics around the data that make recommendations is what drives value, such as by helping to reduce energy costs, improve security—or optimize the user experience.

The ability to integrate more AI into the process to interpret and act on the data being delivered is still evolving. "I think we will start seeing more AI embedded in systems wherever sensing is ubiquitous," says Tiell. Another challenge associated with the IoT is the greater risk exposure to hackers and cyber breaches. CoreNet Global takes a more detailed look at the risks related to IoT elsewhere in the section on Cyber Security.

Putting Tech to Work

Whether or not devices are fully connected to the IoT, there are a number of existing and new technologies that CRE professionals are leveraging to create more efficiencies in the workplace. "As we look to more efficient ways to manage the workplace environment, Deloitte has started to develop its own suite of mobile apps in order to empower our practitioners with the facts and insights required to maximize their effectiveness," says Francisco J. Acoba, MCR, SLCR, managing director, Real Estate & Location Strategy, Strategy & Operations Practice, Deloitte Consulting LLP. These mobile apps leverage the Internet of Things (IoT) to provide a rich data landscape that enables informed decision-making. "As organizations design new workplaces, they are outfitting the infrastructure with tens of thousands of sensors to generate data on every aspect of the environment. Whether you are looking to advance order your "usual" coffee drink at the café, lower the temperature by three degrees in your workspace, or find the nearest available conference room with HD VC capability, you do not need to go any further than your smartphone," he concludes.

Beacon technology is also generating a lot of buzz as a real-time marketing tool for use in industries such as retail, entertainment and travel. Companies are using the technology to reach out to customers via their smartphones. For example, an airline can push messages to its passengers about a flight delay or gate change.

In addition, beacon technology also can be applied to the office to help optimize the use of space and bring in greater personalization to maximize productivity. Common practice has been for employees to use software or an app to reserve a desk or meeting room. The individual checks into the meeting room via an ID or RFID card or at a touch screen at the room. Add beacon technology into that system and an individual doesn't have to manually sign in or out with their card. Beacon will recognize when that person enters or exits a room, which can assist in knowing when meeting rooms are in use.

Oftentimes, the reservation app might say that no space is available, when in reality half the meeting rooms are empty, says John T. Anderson, chief revenue officer at Condeco Software in Boston. Condeco develops and delivers a variety of workplace solutions such as room booking, desk booking and occupancy sensing tools. If a meeting ends early, beacon can send a message to John Doe asking if he wants to check-out. In addition, beacon tech allows for added personalized service. For example, when someone reserves a room it also reserves other preferences, such as catering history. "It is essentially freeing up that asset to use it, but also the employee is going to interact with real estate totally differently tomorrow than they do today," Anderson says.

Companies also can apply sensor technology underneath a dashboard to reserve and manage meeting room space or private work stations so that people can understand exactly what is available and companies can better optimize their space. Innovations in both sensors and IoT highlight how big data continues to move to the forefront for organizations. CRE professionals that have gathered the data are now struggling with how to best use it to drive efficiencies in their organizations. "We're taking big data and leveraging it into the real-time or just-in- time office," says Anderson.

For instance, a company can utilize sensors to track the actual use of a 20-person meeting room that often has a long wait list. However, sensor data shows that the average booking for the space is for 5 people. Companies can layer on space planning tools to create different scenarios for the best use of the space. Perhaps the best option for that space is to create two or three smaller meeting rooms, or one 10-person room and more private cubicles, says Anderson. CRE professionals are taking the data and extrapolating it to provide best case options to consider. "It's not just taking the data and looking at it. We're analyzing it and interpreting it and providing best case options to consider," he says. "So, you are kind of taking the thinking out of the game and giving people options to take back to the business. That is taking the big data concept to the next level."

The Next Generation Workplace

The increasingly mobile and connected workforce is changing real estate requirements as it relates to how much space is needed, where facilities will be located, and how that space is configured, utilized and managed. The next generation workplace likely will be built around workplace networks that will support this new mobile workplace complexity. CRE will need to provide technology-enabled workplace networks that will allow for greater agility and flexibility for both the organization and the employee, as well as long term enterprise workplace effectiveness for the corporation. For example, a corporate workplace network might include a headquarters and multiple regional satellite offices, as well as remote co-working sites that allow people to work from home, the coffee shop, airport or from their virtual reality headset.

In the future, multi-modal workplace networks will provide a greater number of workplace choices for people than ever before, says Miscovich. "I think the office space of the future needs to have that same level of workplace experiential engagement – environments that provide high quality aspirational workplace experience, such as the Apple retail store environment, so that people really want to make the effort to be in the office," he says. People will want to be in the office because that is where they "choose" to work and engage for a certain portion of their work week. "The experiential office becomes the preferred workplace network choice if properly designed and technology enabled," he adds.

"The experiential office becomes the preferred workplace network choice if properly designed and technology enabled."

Over the next 10 to 20 years, potentially 40 to 60 percent of the workforce that is now doing transactional work could be replaced and augmented by artificial intelligence, workforce automation and smart cognitive thinking machines, says Miscovich. There are a number of industries that will have to adapt to the shrinking human workforce as more and more occupations become automated and as artificial intelligence and the next generation of physical robotics continue to converge and evolve within the corporate workplace. “The reality is that no one can predict exactly what and where the impact of artificial intelligence and cognitive technologies is going to be,” says Miscovich. “What does seem evident is that increasing workforce automation will provide new levels of greater workforce efficiency, enhanced human to machine collaboration and new innovative machine learning capabilities that will drive business and financial performance.”

Clearly, companies are already well along the path in leveraging tech tools for space optimization. And those efforts are not just about cost reduction, but are also aimed at creating a positive working environment for collaboration. Oftentimes, that means designing a more mobile environment so that employees have the space they need during the day to use for group meetings, huddle space or private phone booths. “It’s about having the right space at the right time for the employee to maximize their productivity and innovation and collaboration,” says Anderson. “So, it is all combined in that conversation of how to utilize technology to help us make those decisions and help us to create that environment.”

Going forward, CRE professionals will have to provide more than a seat, a phone and a light overhead. Certainly, that is still part of the job description. But these days CRE professionals are increasingly leveraging technology to drive efficiencies for an organization and deliver tech-enabled workspace. In order to do that, CRE has to move outside of the “silo” it has traditionally operated in, and work more collaboratively with business units. “There is a huge change management aspect going on in these companies when you talk about redoing your portfolio, eliminating desks or creating these drop-in spaces,” says Anderson. The business side needs real estate to be driving that, and also real estate needs to partner with other areas such as IT and HR. “Real Estate increasingly needs to be a thought leader and an engagement manager,” he adds.

Many thanks to the following leaders and experts for their contributions to this section:

Peter Miscovich, JLL

Steven Tiell, Accenture Technology Vision

Florence Hudson, Internet2

John T. Anderson, Condeco Software

Francisco Acoba, Deloitte Consulting LLP

Risk Mitigation

CRE professionals assume bigger role in risk management

By Beth Mattson-Teig

Risk is nothing new to the corporate enterprise. It is an accepted part of doing business that stretches back centuries across a tumultuous history of wars, natural disasters and the ups and downs of economic cycles. Yet risks facing businesses today are more challenging than ever. Risks have evolved and expanded along with advancing technologies, new business practices and a changing climate. Those factors in turn are creating added vulnerabilities in key areas related to business continuity, infrastructure, data and personnel security. As companies expand globally, especially into emerging markets, they also assume greater location, geopolitical and reputational risk.

That is not to say that risk is standing in the way of business growth. It is important to note that organizations can operate successfully in most areas if they have the right approach, infrastructure and risk management methodology in place. "From a corporate real estate perspective, part of that involves taking a proactive approach to understanding, assessing and responding to risk, and that also may involve having very good, close, collaborative relationships with the security and the risk functions within the corporate," says Chris Rowley, managing director and co-founder at Source8, a consultancy and professional services organization headquartered in London that provides advice in the commercial real estate space with a specialty in technology and risk mitigation.

Organizations face both enterprise level risks, as well as those risks that directly impact corporate real estate. Enterprise risks are influenced by factors related to the industry and business model, and include categories such as reputation, compliance, legal and financial risks among others. Those big picture risks often trickle down into the CRE world. At the same time, CRE also is dealing with risks that directly impact facilities, the workplace and the supply chain.

"CRE can also help in developing a risk mitigated location strategy that addresses not just diversification of geography for disaster recovery but also talent pools. Entry of new competitors into a market can make it difficult and expensive for a company to find and retain talent. Alternative Workplace Strategies, remote working, workplace design, micro-level location decisions etc. can position a company as an employer of choice. This in turn impacts the reputation and image of the company leading to its ability to attract new talent," says Bob Hess, executive managing director, Newmark Grubb Knight Frank.

At the enterprise level, the focus is on big risks that can impact the entire corporation or entity, such as reputational, legal and financial risks, compliance and exposure to foreign corrupt practices laws. Given the digitally connected world that businesses operate in today, cyber risk also is viewed as a top concern for organizations. CoreNet Global takes a closer look at risks associated with technology breaches in a separate section on Cyber Security. CRE needs to be cognizant of those high-level risks that can impact the organization. Added to that, CRE also is keenly focused on those risks that directly impact its service delivery to the enterprise. Am I keeping my clients satisfied? Are the employees happy with the facilities, and is it a safe environment?

Companies prioritize risks differently depending on the company, industry and geographic footprint related to where the organization is operating. How much risk a company is prepared to absorb or try to deflect also varies by company and industry, as well as the financial consequence of that risk. For example, security risk is very different for Halliburton compared to Amazon.

One of the top risks that organizations face is reputational risk. It is something that can have the biggest bottom line impact on businesses. In fact, businesses can be fundamentally destroyed from a reputational risk perspective. Reputational risk also is the most precarious as it is very strongly related to a myriad of other risks that can come up related to cyber security, workplace health and safety and corporate wrong-doing among others. "Most risks could also lead to reputational risk. It kind of depends on the severity and implication of what happens," says Rowley.

Stepping Carefully in Foreign Markets

As companies expand operations into new and emerging markets, they do have to walk a careful line between following the laws and accepted practices in those countries, and still adhering to the laws of their home countries. International anti-corruption enforcement has been largely dominated by the U.S. Foreign Corrupt Practices Act (FCPA), which was first passed in 1977. However, Britain passed its own UK Bribery Act in 2010. The FCPA generally prohibits the payment of bribes to foreign officials to assist in obtaining or retaining business. It can apply to prohibited conduct anywhere in the world and extends to publicly traded companies and their officers, directors, employees, stockholders, and third party agents.[1]

> *"Corporations have to ask themselves whether they are contracting with unsavory elements, or with government officials where a payment might be seen as a bribe."*

"If you get caught in that particular net, it's going to cost you a lot of money," says Mark Gibson, a real estate and construction partner at EY. For example, Dutch-based telecommunications provider VimpelCom agreed in February 2016 to a $795 million global settlement to resolve its violations of the FCPA to win business in Uzbekistan. The Swiss-based pharmaceutical company Novartis AG also agreed earlier this year to pay $25 million to settle charges that it violated the FCPA when its China-based subsidiaries engaged in pay-to-prescribe schemes to increase sales.[2]

Not only are FCPA charges costly, they also can damage reputation. Companies don't want to be contracting with ISIS or other terrorist groups to buy fuel for a tanker fleet. Corporations have to ask themselves whether they are contracting with unsavory elements, or with government officials where a payment might be seen as a bribe. Sometimes that risk exposure comes through a vulnerability in the supply chain, such as a supplier or outsourcing partner. So, it is important to make sure those service firms are putting the necessary processes and checks in place to comply with FCPA, and that those providers also can verify those controls, says Gibson.

The main issues as they relate to CRE is who are they contracting with and how are they contracting with those vendors or third party agents. "Who are the landlords? Who am I contracting with to sublease space, clean floors or paint the building? In particular, there has been a bigger push within the past 12 to 18 months for CRE to better understand who they are transacting with on the landlord side," adds Sam Pickering, senior director and head of risk management at Source8. That flows back to the enhanced regulation that is coming out of the finance and insurance sector, where firms are being required to do screening on individuals and companies opening funds or bank accounts. "The enhanced scrutiny relates to government efforts to follow the money trail for terrorist organizations. As a result, more corporations are now carrying out enhanced due diligence and screening of the ultimate beneficiary business on the landlord side. Who owns that building from a company point of view and also from an individual point of view?" says Pickering.

1 "The U.S. Securities and Exchange Commission," (https://www.sec.gov/spotlight/fcpa/fcpa-cases.shtml)

2 "The U.S. Securities and Exchange Commission," (https://www.sec.gov/spotlight/fcpa/fcpa-cases.shtml)

Location Risk and Climate Change

The terrorist attacks of 9/11 in New York City elevated the focus on building security. Subsequent headlines related to workplace violence as well as the recent terrorist attacks in Paris and Brussels have kept companies keenly focused on building security, personal security and safety of employees and visitors to facilities. Having emergency preparedness, resiliency and contingency planning in place at the facility level is important, and those efforts also need to be localized based on the risks relevant to the specific location or region.

"In the past, parts of the Middle East, Asia and Africa were considered to be typical hot spots for location risk. What is interesting now is that the geopolitical situation and the ever-changing terrorism threat has meant that even very calm and safe environments are at risk for terrorism and violence," says Pickering. The terrorist attacks in Europe have put even those firms operating in relatively "safe" markets on high alert with greater focus on conducting more in-depth risk management related to security.

Climate change and the severe weather events it is perpetuating have emerged as another threat to the enterprise and to CRE. Weather events can have a physical impact on facilities, supply chains and infrastructure, as well as financial and reputational repercussions associated with interruptions to business continuity or violations of environmental compliance laws. For example, companies are starting to make location decisions based on anticipated rising sea levels and energy-source reliability – factors that would not have entered their consideration a few years ago, according to a recent report on risk management published by JLL.[3] The insurance industry is paying considerably more money on claims from severe weather events than it has in the past, because adverse weather events have gotten bigger. So, that is one area where risks are being profiled differently, according to Michael Jordan, managing director for JLL and lead of JLL's People & Process consulting practice.

CRE is uniquely positioned to monitor the long-term risks related to climate change, because it is on the front lines of the physical impact of changes in weather patterns or sea level change. "For the last few years, the discussion in sustainability circles used to focus more on mitigation and prevention," says Jordan. "How do we slow down climate change? How do we slow down the increased concentration of CO2 in the atmosphere? The conversation has started to shift from mitigation and prevention to contingency planning. What do we do when these things happen? How do we become ready? In the business world, no one is better positioned to have expertise in this area, to understand the risks to the physical assets, than the head of real estate," he adds.

Regulatory and Compliance Risk

Some risk priorities are industry specific. Pharmaceuticals, for example, has significant risk related to compliance, and regulators are getting more aggressive on safety and efficacy profiles. "We are looking for very high-potent compounds, and as a result, the regulated environment is changing very quickly," says Christian Bigsby, vice president of Worldwide Real Estate and Facilities at GlaxoSmithKline plc. The level of expertise required in the industry from the earliest compound identification to the latest clinical development activities is highly regulated. "We have to be so meticulous and thorough in how we look at things that it is creating a whole new skillset," he says.

Some of the biggest risks for GSK are increasing regulatory controls and increasing concerns about patient safety issues and breaches of data security. However, the bigger priority for CRE is a building system failure or breach that shuts down lab space, or any form of scientific space. "Lack of stable and controlled environments means a disrupted business and a risk to our regulated processes. In the regulated environments, lack of adequate facility services solicits an essentially zero tolerance, or binary response," says Bigsby.

3 "Are Hazards Blocking Your Corporate Real Estate Goals?" Michael Jordan. JLL. 2015.

The buildings themselves, the condition of the buildings, and the services within those buildings from cleaning to equipment maintenance, are all heavily regulated. For example, in accord with the good manufacturing processes (GMP) environment, if a company performs a calibration or routine maintenance on a piece of equipment all of the documentation has to be done meticulously. It doesn't matter if a company has done every bit of the work and done it correctly, if the documentation is not in place, then regulators view that the same as not having done the work, says Bigsby.

The Role of CRE in Managing Risk

Organizations are taking different approaches to risk management, and they also are at different stages in the development of their policies and procedures. From a base guidance level, it is important to have a full understanding of the risks and make sure there are comprehensive risk mitigation plans in place. There are a variety of tools and resources that can help in that regard. For example, sophisticated business intelligence tools have the ability to examine real-world risks, collect and analyze data, conduct predictive modeling and help prevent specific risks from occurring.

Some companies have very sophisticated risk management processes in place. For example, the CRE group at one high-profile MNC uses a 500-line item risk management spreadsheet valued out across 13 regions where it operates around the world. Each risk has a control against it and a frequency of control driven by the risk rating. That risk rating is updated every year. The company also tests those controls in the first, second and third lines of defense. "They take their reputation very seriously. Their risk view is extremely top-down driven and CRE gets caught in the net," says Gibson. CRE should conduct its own risk assessment at the process flow level and develop a risk and controls matrix based on that risk assessment. That may require making an investment in technology and people, or working with a third-party company.

Real estate and facilities as a corporate function has always been in the business of trying to prevent bad things from happening to the business. "Our understanding of the types of bad things that can happen has gotten more mature. So, our thinking of what we are preparing for needs to mature along with our understanding of those risks, and with our ability to use better data about our own portfolios and better data about emerging risks out in the world," says Jordan. That creates an opportunity to revise and update strategic thinking related to risk, as well as the tool kit CRE can use related to risk management, he says.

As part of its tool kit, CRE needs a thought process on how to talk about risks with the business. CRE also needs to have a better understanding of its ability to prioritize capital investments related to mitigating risks to the physical assets. CRE has a finite pool of capital that needs to be allocated across different functions or areas, such as space acquisition and disposition, capital improvements and facilities management. "To a certain extent, CRE has to understand which risks are more important to the organization so they know where to allocate capital, and how to make the business case to their C-suite colleagues for doing so," says Jordan.

How much CRE is brought into the conversation about risk mitigation varies depending on the company. However, it is evident that CRE executives are increasingly involved in risk management issues. In addition, professionals are facing risks that weren't even on their radar 10 to 15 years ago. "Viewing CRE in terms of finding the right building in the right place for the right price and keeping the lights on and the carpets clean, that is old school. You have to do that as the price of entry into CRE," says Gibson. "The excellence in CRE is managing risk appropriately."

Many thanks to the following leaders and experts for their contribution to this section:

Bob Hess, Newmark Grubb Knight Frank

Christian Bigsby, GlaxoSmithKline plc

Chris Rowley, Source8

Sam Pickering, Source8

Mark Gibson, EY

Michael Jordan, JLL

Cyber Security

Shoring up defenses against cyber threats

By Beth Mattson-Teig

There is no question that high-profile hacks have thrust cyber security to the forefront for organizations worldwide. Data breaches at major corporations such as Sony and Target have highlighted the havoc such attacks can wreak on reputation and damage, not to mention the costs related to lost business, lawsuits and the expense of repairing the breach.

Cyber security is moving higher on the short list of risks facing corporations, government agencies and non-profits, and the increasing reliance on digital devices and connectivity are throwing the door open wide to new threats from hackers and cyber criminals. For example, the U.K. government reported in May that two-thirds of the 1,008 firms it surveyed had detected security breaches on their systems over the past year. In addition, one quarter of those firms also said they were hit by a breach at least once a month.[1]

Cyber threats pose a serious problem that is likely to grow bigger as digital technology continues to advance and become more entrenched in business and everyday life. Today's workers expect a much more connected building and more sophisticated dashboards.

Yet the majority of organizations are still behind the curve and scrambling to catch up as it relates to putting the necessary security measures in place to manage those technologies. According to a 2015 EY Global Information Security Survey, 88 percent of the nearly 1,800 organizations surveyed across 67 countries said they do not believe their information security structure fully meets their organization's needs. The survey also found that more than one-third (36 percent) of global organizations still lack confidence in their ability to detect sophisticated cyber-attacks.[2]

Cyber security poses a risk on multiple levels – for employees' physical well-being and safety; for the viability and success of the company; and for the broader terror environment. "We are increasingly seeing cyberattacks used as a form of terrorism, and technology can be a significant risk factor for workplace violence and security threats. This also holds true for CRE technology – which is broadening the attack surface," says Colleen Conklin, MSPH, director of research – corporate services, Sodexo North America, the France-based food services and facilities management company.

Identifying Vulnerabilities

One of the big challenges for organizations is identifying potential risks. Credit card theft and exposure of sensitive financial and personal information is top of mind for companies. Retailers have been on the front lines of cyber-attacks, but the increase of online credit card or direct debit payment options now affects a wide variety of industries ranging from hospitals and utilities to hotels and airlines. Corporations are vulnerable to credit card theft in a company cafeteria or through corporate credit cards that are issued to employees for purchasing. Those are breaches

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1 "Government Warns Two-Thirds Of UK Firms Hit By Cyber Attacks." TechWeek Europe, Matthew Broersma. May 9, 2016. (http://www.techweekeurope.co.uk/security/uk-firms-cyber-attacks-191550#MwGmSgM7m1vf9pZV.99)

2 "Creating trust in the digital world: EY's Global Information Security Survey 2015." EY. (http://www.ey.com/Publication/vwLUAssets/ey-global-information-security-survey-2015/$FILE/ey-global-information-security-survey-2015.pdf)

that are not taken lightly as they can be incredibly damaging from a reputational and operational perspective, notes Christian Bigsby, senior vice president of Worldwide Real Estate and Facilities at London-based GlaxoSmithKline plc. More organizations also are allowing for bring your own device (BYOD) policies, which create another area of risk related to devices that may be vulnerable to a breach.

Yet the more serious cyber risks for CRE are breaches that would directly impact building control systems. For example, if someone were to be successful at maliciously accessing a pharmaceutical company's wireless network and connecting to the building control systems, they could potentially shut down power, water, HVAC, etc. Although it sounds like a minor inconvenience, shutting down systems to critical and controlled lab space where researchers are running active studies or long term stability studies could be devastating. "You can literally erase components of the research process, and that can absolutely be the difference between life and death for patients who are waiting for new products," says Bigsby.

The CRE group takes a lot of its guidance in this regard from the Chief Information Security Officer, but ultimately CRE is responsible for those building management systems and making sure those systems are secure. "We look at it in terms of how we control our systems, our access, our preventive measures, and are we sure that there are appropriate firewalls inside of our networks," says Bigsby. "We also look at how impervious our control systems are to the outside world." Three of the key levels of security to consider include:

1) Who has access to the systems?
2) How do those systems connect to the network?
3) How effectively are those systems encrypted at a software level?

Securing the Internet of Things

The rapid advance of the Internet of Things (IoT) is presenting huge operating advantages and equally large cyber security risks for organizations. The IoT is much like a central controller that relies on networks of sensors, devices and software to gather data, and cloud computing to analyze and act on that data in real time. As organizations begin harnessing the power of IoT networks, they introduce new risks related to protecting those devices, data and users. For example, every new device introduced in an IoT system adds a new entry point or opportunity for malicious attack. Likewise, there also is more exposure for "identity spoofing" or the ability for individuals to gain unauthorized access to a device.[3]

IoT applications depend on the closely coordinated actions of multiple players, from vendors along the supply chain to clients to end-use customers. Vulnerabilities exist within each node and hand-off seam between sensors, devices or players. "As you look at all of this technology, a lot of it is insecure, even to the very basic example of default passcodes not being changed when a piece of equipment is installed in a campus or industrial environment," says Florence Hudson, senior vice president and chief innovation officer at Internet2, a U.S.-based non-profit consortium of universities, corporations, regional networks and government agencies. "So, part of what we have to do is create practices, procedures and policies to make sure that doesn't happen," adds Hudson.

A key initiative for Internet2 is engaging the research and education community in developing end-to-end trust and security and open architecture for the IoT. The consortium and its partners are looking at a variety of security issues that include:

- How to use encryption between different parts or hand-offs within the system?
- How to create an integrated systems view?
- How to use IoT across industries from healthcare medical devices to smart buildings, and what are the requirements?

[3] Tech Trends 2016 Innovating in the digital era. Deloitte 2016 (http://dupress.com/periodical/trends/tech-trends?id=us:2ps:3bi:confidence:eng:-cons:030316:nonem:na:lUHFfn1H::11560519890:b:Branded:Branded_Tech_Trends_BMM:br)

In May 2016, Internet2's Chief Innovation Office (CINO) launched a Smart Campus Initiative – a forum for community members to share learnings and develop new insights and practical recommendations as IoT is increasingly deployed in campus environments. One of the first steps taken was to create an IoT Systems Risk Management task force. Internet2, IEEE and the National Science Foundation have worked together to define a framework invoking a series of basic risk management steps that can be used when a device is created or deployed. This framework is referred to as Trust Identity Privacy Protection Safety and Security (TIPPSS).

There are a growing number of cases that highlight why using such protocols at every step is critical. Cars have been hacked remotely and the engines turned off. Last year, there was a case where someone hacked his own insulin pump at a black hat conference to show that it could be done, says Hudson. That emphasized some of the vulnerabilities that exist for hacks at the patient end, such as through a Bluetooth connection, or at the end where a doctor is monitoring that device remotely where there could be a bad actor pretending to be the doctor. "If a device has a digital connection, it all has to be considered. The challenge is that end-to-end there are many different players in the whole eco-system around any of these examples, and you have to get them all in the boat to maximize the TIPPSS," says Hudson.

What is the Role of CRE in Cyber Security?

Both corporations and national security agencies have adopted technological systems that help them to monitor and predict potential threats. CRE increasingly needs to be a part of that discussion as the integration of technology and communication systems across functions is key. "On a macro scale, we have seen success of integration in the collaborations between homeland security agencies and the corporate sector, as well as marketing and social media organizations," says Conklin. On an enterprise level, the same principle could be applied for prevention of workplace violence and cybersecurity threats. Involving a cross-functional team can lead to more efficient management of the prevention process, expanded program oversight and a well-balanced solution approach. The best starting point to enable collaboration is to simply link the technological systems of the various functions so that they can more easily share information, adds Conklin.

CRE needs to forge a relationship with their IT and CIO leaders and understand the overall corporate strategy in this area. "Obviously, a lot of it starts with the basics. From a workplace context, how can you reinforce the company policy around security and password protection or things like thumb drives," says Karen Ellzey, executive managing director of consulting for Global Workplace Solutions at CBRE. When CRE has a system that it needs to introduce, it is important to work closely with IT to make sure they are going through the appropriate testing and that they have filters and security layers in place. "It requires a heightened sense of vigilance, much tighter partnership with IT and much more frequent communication and coordination," she says. CRE also will need to collaborate with other stakeholders on where to put resources or what investments would be advisable to put the appropriate safeguards in place.

"We work closely with our IT groups to ensure that from a technology standpoint we are doing what we need to do to make sure that our data is secure," says Adam Hoy, MCR, global workplace innovation & operations director at Unilever. In that regard, CRE often becomes the customer of the IT group. Although some might think of cyber security as an IT issue, high-profile cases such as the Target credit card breach show how cyberattacks can have a direct impact on CRE. The Target security breach came from a subcontractor that had security access to service Target as a client. So, cyber security threats across the supply chain will require some new thinking, adds Hoy.

In addition, cyber security in real estate is still heavily focused on access. It is important for CRE teams to focus on who is getting into your buildings and what are they doing. "Do we have the right protocols around how we bring people into our buildings? Do we have the right protocols on where they have access to within the building?" asks Hoy. In some cases, that may mean putting specific zones in place that allow visitors to access only certain parts of the building, while other areas remain off-limits to visitors. "So, it is about defining what goes on within facilities and then breaking down protocols behind those sections of the building," says Hoy.

Mitigating Cyber Risks

Technology can be a highly complex area. More upskilling, more ongoing training, more collaboration within organizations and working with very qualified suppliers is needed to manage IoT and the new cyber risks that are emerging. "I think the technology is changing rapidly. So, it is a case where CRE executives need to commit to being students," says Ellzey.

> *"Despite the rise in machine-to-machine communication, some of the biggest threats in cyber security still fall back on simple human error."*

Accenture put it fairly succinctly in its 2016 report on Continuous Cyber Attacks: Achieving Operational Excellence for the New Normal, "An organization's cybersecurity game plan needs the right mix of talent, skill, capabilities and technology."[4] It also requires a robust operating model that focuses the company's risk management strategy to accomplish three goals:

- Prepare and protect for the challenges ahead by delivering useful threat intelligence and providing a vulnerability management program that supports the company's business strategy.
- Defend and detect threats using a combination of advanced security analytics and advanced operational monitoring capabilities.
- Respond to and recover from attacks quickly and with the least exposure possible by employing state-of-the art security incident management approaches and adopting an active defense strategy.

There are a variety of tools and techniques that companies can utilize to manage cyber security risks today at the hardware level, the software level and the process level. For example, devices can be created with an added layer of security on a chip itself, "baked" into the hardware, or in the firmware or software, to make it more secure. Firewalls and software provide added layers of security. There also is a process level, such as identity verification or passcodes to validate individuals, data and authenticity. "There is more to be done on creating an end-to-end trust and security architecture where a device, such as an insulin pump, and the system or the cloud that is accessing that info has handshakes up and down so they can't be hacked at the device, on either end, at the data level or along the way," says Hudson. "So, it is a mix of different layers and it is a journey that we are going to be on for a very long time."

Despite the rise of machine-to-machine communication, some of the biggest threats in cyber security still fall back on simple human error. Employees have had their email commandeered to send false emails, or have opened emails or clicked on links they shouldn't have. So, it is important to train people to not open or respond to those fraudulent emails. People can be part of the problem,

[4] "Continuous Cyber Attacks: Achieving Operational Excellence for the New Normal," Accenture 2016 (https://www.accenture.com/t20160303T052330__w__/us-en/_acnmedia/PDF-4/Accenture-Cyber-Defense-Pov-2-Final.pdf)

and they also need to be part of the solution. For example, a company can put a high tech security lock on a door with biometric sensors or key card access to control and track who is entering through that door and when. But none of that works if someone leaves the door open. “So, you have to make sure the humans are using the things you have put in place to meet the goals that you have,” says Hudson.

Many thanks to the following leaders and experts for their contribution to this section:

Colleen Conklin, Sodexo North America

Christian Bigsby, GlaxoSmithKline plc

Florence Hudson, Internet2

Karen Ellzey, CBRE

Adam Hoy, Unilever

Environment, Energy and Sustainability

Corporations raise the bar on sustainable strategies

By Beth Mattson-Teig

Naturalist and author John Muir once said, “When we try to pick out anything by itself, we find it hitched to everything else in the universe.” That statement is an apt description for sustainability. A company’s efforts, or lack of effort, related to sustainability and energy efficiency creates a wide ripple effect on people, place and planet, says George Denise, CFM, CPM, FMA, RPA, LEED - AP, director of operations-RWS, director of sustainability-HQ at Oracle in Redwood City, Calif.

The discussion surrounding energy efficiency, environmental impact and sustainability has been ongoing for years, and in many cases, decades. Sustainability and energy efficiency took root during the 1970s energy crisis as prices escalated and companies looked for ways to reduce costs. Yet various corporations, and governments around the world for that matter, are at very different stages in putting strategies, initiatives and policies in place to advance sustainability. Some firms are taking the lead, while others are still behind the curve, and not everyone is moving forward at the same pace to drive change.

It is no surprise to find corporate real estate professionals on the front lines in developing and executing strategies specific to energy efficiency and sustainability. Buildings are one of the heaviest consumers of natural resources and account for a significant portion of the greenhouse gas emissions that affect climate change. In the U.S., buildings account for 38 percent of all CO_2 emissions and 73 percent of electricity consumption, according to the U.S. Green Building Council. The C-suite is increasingly focused on sustainability on a variety of fronts ranging from managing operating costs and business reputation to employee productivity, retention and hiring. In some cases, CRE professionals may be scrambling to keep up with an ambitious corporate vision for sustainable practices, while in other cases they may need to take the lead in helping to drive change within their organization.

At the same time, there are more regulatory requirements coming from the local, national and even international level that are pushing sustainability to the forefront. In December 2015, 195 countries signed the Paris Agreement, an historic accord that aims to take action on fighting climate change. Countries and local municipalities also are adopting their own sustainability and energy policies and building codes. California is considered to be a leader in the space. Its Title 24 building energy standards are among the most progressive in the U.S. The state is working towards a goal of achieving zero net energy (ZNE) for all new residential buildings by 2020 and ZNE for all commercial buildings by 2030. ZNE buildings leverage high levels of energy efficiency, as well as the addition of clean, renewable power generation to produce as much energy as they consume over the course of a year.

In the past, cost savings were the primary driver behind energy efficiency and sustainable initiatives. The recent drop in oil prices and energy costs is taking some of the pressure off of high energy bills, and those lower energy costs may have some unintended consequences in advancing sustainable initiatives. “It is a very active topic, but it may not be driven as much by cost and cost savings as it has in the past,” says Karen Ellzey, executive managing director of consulting for Global Workplace Solutions at CBRE. “I think it is going to be driven more by regulatory issues and companies’ perspectives on how this is going to support their broader brand and social responsibility objectives.”

Reducing the Carbon Footprint

Corporations are increasingly focused on reducing their carbon emissions. The strategies to achieve those reductions and move closer to ZNE often fall into three main buckets, notes Mike Bendewald, a manager at the Rocky Mountain Institute, a non-profit sustainability research and consulting firm based in the U.S. One is energy efficiency, including retrofitting buildings or constructing better buildings. Two is adding renewable energy on site. Third is off-site renewable energy purchasing, such as purchasing renewable energy credits (RECs) or power purchase agreements where firms contract to buy energy from a wind or solar farm. “Off-site renewables is the area where we have seen the most growth of activity from corporations,” says Bendewald. For example, in the last few years several Fortune 500 companies have entered into Power Purchase Agreements to source their energy from wind farms and solar, he says.

Certainly, it is important to note the progress that has been made in terms of increasing installation and use of non-carbon fuel sources. For example, there was a record global investment in renewable energy in 2014 with an estimated $391 billion invested in low-carbon technology and climate resilience, according to new analysis by the Climate Policy Initiative.[1] That represents an increase of 18 percent over the 2013 level of $331 billion invested. China was the biggest investor in renewables at $83 billion, followed by the U.S. at $38 billion and Japan at $36 billion. Globally, nearly half of all new power installed was from renewable sources.

There is a lot of exciting change around the ability of organizations to reduce their carbon footprints. However, businesses still need to approach their carbon footprint with the bottom line in mind, notes Chris Busch, director of research at Energy Innovation, a U.S.-based research and analysis firm. One way to do that is to reduce waste and increase energy efficiency with simple steps such as improving insulation and installing better quality windows to make sure the building envelope is tight to prevent unnecessary loss of heating or cooling. LED also has seen incredible advancement over the last five years where lights that use about 80 percent less electricity are now 90 percent cheaper than they were five years ago, says Busch.

As a second step, companies can look for lower carbon or zero carbon replacements where energy demand can no longer be reduced comfortably. To that point, the cost of solar and wind energy has dropped significantly in the past five years. For example, industry research shows that the average price of solar and wind are very competitive, and in many cases, lower than the cost of natural gas and coal.[2]

Renewable Sources		Conventional Sources	
Utility Scale Solar PV	5.8 – 7 cents/kWh	Natural Gas	6.8 – 10.1 cents/kWh
Wind	3.2 – 7.7 cents/kWh	Coal	6.5 – 15 cents/kWh

One of the most exciting trends is in the realm of demand response, especially smart technologies that can automatically adjust to real-time pricing signals, notes Busch. Historically, it has been necessary to build the electricity system to meet peak demand. “What they are finding, particularly in regions such as the northeastern U.S., is that it can be highly effective to have large industrial or commercial facilities sign up to lower their energy demand a little bit at peak times,” says Busch. “This enables us to right-size the electricity systems so we don’t have to build a bigger and bigger system just to meet peak demand, but instead we are doing a better job of managing supply and demand.”

1 “Global Landscape of Climate Finance 2015,” The Climate Policy Initiative, (http://climatepolicyinitiative.org/wp-content/uploads/2015/11/Global-Landscape-of-Climate-Finance-2015.pdf)

2 “Levelized Cost of Energy Analysis – Version 9.0,” Lazard 2015, (https://www.lazard.com/media/2390/lazards-levelized-cost-of-energy-analysis-90.pdf)

Building managers and corporate leaders have become more knowledgeable about climate change and the scarcity of resources. Yet there is still a lot of progress to be made on expanding the use of non-carbon based fuel sources to solve for the bigger issues of climate change. “I’m encouraged that large institutions are getting more aggressive about setting carbon footprint reduction goals and better managing carbon emissions – we need a lot more of that,” says Michael Jordan, a managing director for JLL and lead of JLL’s People & Process consulting practice. The industry has already seen a number of innovative and creative ideas to incorporate more sustainability practices into facilities from installing green roofs to capturing grey water. So, it is not always a matter of finding new creative solutions, but taking some of the ideas and best practices that exist and further incorporating them into facilities, adds Jordan.

“There is still a lot of low hanging fruit out there and the cost savings are probably still the most powerful metric for corporate real estate managers to show progress on, because it is quantifiable and it is something that the CFO can understand and value,” adds Bendewald. Companies can invest in upgrading HVAC systems, optimizing controls and introducing new lighting that all require resources, but tend to have paybacks within five years. The problem that CRE professionals often run into is that there is strong competition for capital within organizations and even within CRE. So, carving out a budget for this type of activity can be a challenge. CRE needs to present the value of that retrofit to their organization in terms of the return on investment.

In that regard, RMI has created some guides to help businesses calculate the value of retrofits. In addition, CRE needs to be aware of financing programs that can provide assistance. For example, Property Assessed Clean Energy (PACE) is a financing vehicle that is gaining traction in the U.S. Basically, the building owner works with a PACE lender to finance the project at no cost to the owner. The next time a building undergoes a property tax assessment, the property taxes go up in order to pay for the retrofit investment. So, effectively the cost is amortized over 20 to 30 years with the marginal increase in taxes —which can transfer to the new building owner upon sale—used to pay for the retrofit, says Bendewald. Since it was introduced in 2011, there have been approximately $2 billion in PACE deals completed in the residential and commercial sector. “That is something we see rapidly scaling in the U.S. right now,” he says.

Strategies Continue to Evolve

Companies have been embracing sustainability and energy efficient initiatives for decades. That is evident in the proliferation of green buildings worldwide. One of the leading standards in that regard is Leadership in Energy and Environmental Design (LEED), which is now used in more than 150 countries and territories worldwide. LEED has been used to guide the design, construction, operations and maintenance of more than 69,000 projects, including 12.4 billion square feet (1.1 billion sq. m.) of commercial and institutional construction space, and more than 181,000 additional residential units. What is happening now is that green strategies are evolving along with greater emphasis on climate change and goals to reduce carbon emissions.

Having a green building in the sense of energy efficiency and “doing less damage” to the environment is not enough anymore. Buildings and workspaces are now being asked to be regenerative, says Colleen Conklin, MSPH, director of research - corporate services, Sodexo North America, the France-based food services and facilities management company. One aspect is the production of electricity via renewable sources on-site to make buildings self-sustainable and move towards net-zero. Other aspects include the filtration and recycling of water and the use of outside spaces or rooftops as locations for food production and community networking. “We may also see the green movement take on a new direction, becoming more closely linked with initiatives aimed at health and well-being. There is a business case to be made for buildings that are not only green, but also healthy,” says Conklin.

Unilever is one company that has taken a very forward-thinking approach to sustainability. “Our company understands that we must be sensitive to the environment while growing our company,” says Adam Hoy, MCR, global workplace innovation & operations director at Unilever. Unilever launched its Unilever Sustainable Living Plan (USLP) in 2010 that aims to help the firm double the size of its business, while at the same time reducing its environmental footprint. “At the macro level, our company has set up a framework or roadmap on how we are going to operate sustainably, and then we have connected those specific metrics with groups that are responsible for those areas,” says Hoy.

“Doing less damage to the environment is not enough anymore... buildings and workspaces are now being asked to be regenerative.”

In addition, Unilever CEO Paul Polmon announced in November 2015 that Unilever will work towards a goal of being carbon positive by 2030. Essentially, 100 percent of its energy across operations will come from renewable sources, and with the help of partners, the company will directly support the generation of more renewable energy than it needs for its operations, making the surplus available to the markets and communities in which it operates. The company also announced late last year that Unilever Japan was its first business group to hit the milestone of using 100 percent renewable power for all of its domestic operations. That move alone allows Unilever to cut its carbon emissions by 3,600 tons each year. In addition, those products made in carbon neutral facilities, including brand name products such as Dove, Lux, Timotei and Lipton, also are able to carry the Green Power logo.

Sustainable strategies and initiatives are continuing to evolve as companies continue to pick the “low hanging fruit” and work their way up the tree, so to speak. Oracle is one firm that has already made tremendous strides in the past 10-plus years. At its 2.4 million-square-foot (222,967-sq.-m.) corporate headquarters campus in Redwood City, Calif., the company has reduced its per capita electricity use by 35 percent and it has reduced its natural gas use by 41 percent. Going forward, the firm is continuing to introduce more programs and products to reduce its energy consumption and its reliance on fossil fuels.

However, it continues to be a balancing act to implement programs that are wanted and needed – and yet still make financial sense. For example, Oracle wants to increase its use of solar. However, solar is still cost prohibitive in some areas. At its headquarters, for example, the estimated payback to add solar power on site would be in the 7.5 to 9.5 years range. “Right now, some of the best investments are still in energy conservation projects rather than alternative energy,” says Denise. That being said, Oracle has had success in introducing solar at other locations where those investments do make sense. For example, the company added a three-canopy PV system to its new Gold LEED

certified building in Burlington, Mass. The solar system sits atop a four-story parking deck and is expected to generate about 720,000 kilowatt hours after its first year of operation. That's enough energy to power about 80 average-size homes for a year.

Taking a Holistic Approach

Initially, the conversation on sustainability focused on the physical footprint and creating more energy efficient and green workspace. Companies are now looking at the broad topic of energy efficiency and sustainability holistically. As such, sustainability also is weighing more heavily on location decisions. Cars and vehicles on the roadways tend to be one of the biggest producers of carbon emissions. So, one of the simplest steps for businesses to create a substantive impact is to locate in a walkable neighborhood, which gives the employees the chance to live nearby and walk to work.

Businesses are putting a higher priority on locating near public transportation, such as bus, subway and rail lines. They also are more focused on policies that support employees that ride their bikes or buy hybrid vehicles by providing charging stations or bike storage and locker rooms. "There are a series of decisions and policies that companies can introduce that help the entire equation, and that is where I think you see companies focusing more on that employee engagement and looking at how the entire end-to-end focus on these issues creates the biggest impact," says Ellzey. Reducing the footprint is another easy solution to improving sustainability. "I always say that the greenest square foot is the one that you don't have," she remarks. Portfolio optimization and continuing to right-size the portfolio is probably one of the greenest things companies can do, because they are not taking on more space and devoting resources to heating and cooling that space, she adds.

Sustainability also goes beyond brick-and-mortar buildings to encompass urban planning and a desire to create more sustainable communities. "We're advocating for more compact, less sprawling urban areas as an important aspect of sustainability," says Busch. For example, a new directive from the State Council in China sets a new direction for urban development that aims to avoid sprawl and encourage more compact cities that are walkable, that provide good transit and enable people to get around in ways that are not dependent on cars.

Specific to CRE, there is a broad scope of solutions that developers, building operators and building occupiers can use to achieve greater efficiencies and work towards ZNE. "There is some further work to find exactly the right balance. But, there is no question that as people and economies and nations we need to move towards zero carbon by the middle of the century, or else we are going to be leaving our children a legacy of a deeply disrupted climate system and diminished future prospects. So, we need to make it happen," says Busch.

Many thanks to the following leaders and experts for their contributions to this section:

George Denise, Oracle

Karen Ellzey, CBRE

Mike Bendewald, Rocky Mountain Institute

Chris Busch, Energy Innovation

Michael Jordan, JLL

Colleen Conklin, Sodexo

Adam Hoy, Unilever

Corporate Social Responsibility

Corporations are increasingly looking at their external impact

By Keith Pierce

Businesses have not always been known for their commitment to being good corporate citizens, but for the better part of the past century they have become increasingly concerned with the world outside their walls. Corporate social responsibility (CSR) has become a tool for expressing the values of companies and their shareholders, a way of linking organizations to popular or important issues, and a point of pride for employees. In many cases CSR simply offers companies a path to doing business in a way that links them more closely to their communities, and helps the business thrive over the long term. And as with nearly every other aspect of a company's business plan, it can also be used to attract and retain talent by telling workers and candidates something about what is important to the organization.

Of course, CSR looks different in Africa than in London, and is worked out differently in a manufacturing plant than in a corporate headquarters. But most professionals interviewed for this believe that corporate real estate can play a part in CSR, expressing the values of the company and moving the needle in the right direction. In this way, a company's stated values can be aligned with business practices, and the actions of businesses can be measured against their statements in an increasingly transparent environment.

Sustainable Business

Sustainability has been a buzzword for companies for years, reflecting the desire to use resources responsibility. Nikki Barber, global public relations manager at Olam International, pointed out in an interview that for a business such as theirs, sustainable business practices are just that: a way to keep the business operating over the long term. For an agribusiness such as Olam, worsening climate change or farmers living at subsistence levels are not just ethical challenges, but also bad for business. Not to take away from good corporate citizenship, but the bottom line supports CSR for a company such as theirs. As an example, Barber shared that Olam invests in farmer training, micro-finance, schools, and infrastructure in countries such as Ghana. This not only helps to stabilize the area in which they operate, but also helps to secure higher crop yields and happier suppliers.

Alexandra Tarmo, global procurement director for Workplace & Travel Services at Unilever, acknowledges that a business has demands that must be met – profitability, meeting payroll, meeting shareholder expectations – but adds, "we believe we have a responsibility to the planet." This includes measuring and improving its societal and environmental impact and ensuring that its values are expressed in the way that it conducts business around the world.

Businesses are also intimately aware of the value of their corporate reputation. With the rise in available information, consumers and shareholders are far more aware than in previous decades of

where products originate and how a company's workers and contractors are treated. In this way, businesses are often encouraged by both their suppliers and their customers to take responsible action.

A 2015 report from Accenture points to a growing emphasis on making responsible practices support the bottom line. In Sustainability Value Management, author Alexander Holt notes that while some executives and investors remain skeptical that growth can be driven by environmental and social performance, others believe that sustainability practices can drive competitive advantage. The key to convincing more leaders of the value of these practices lies in being able to measure and place value on such behaviors. The report adds, "New valuation approaches are being pioneered to help business executives identify and measure value to business and society, and to inform and steer portfolios of sustainable products and services." If these approaches are adopted and applied consistently by businesses, it will become easier for sustainability practices to drive decision making and for investors and executives to measure their value to the enterprise. Still, businesses may not be willing to wait for a standard metric to be adopted across an industry. As the report states, "When it comes to metrics, companies cannot wait for standardization but need to take action now based on emerging approaches and techniques for valuing sustainable performance. Such approaches can quantify both value to business and value to society."[1]

Talent Attraction and Retention

While it can carry costs, CSR is best seen as the glue that holds an organization together and gives it a sense of purpose. Of course, CSR is also a tool for attracting and retaining workers who want their work to be aligned with their values. Indeed, Michael Jordan, managing director for JLL and lead of JLL's People & Process consulting practice, indicates that this may be one of the principal reasons companies continue in their CSR efforts, adding that, "people want to feel connected to a mission and a purpose." Sheridan Perkins, head of property, ASEAN and South Asia with Standard Chartered Bank, says that CSR is a major differentiator in attracting and retaining talent, and sees it as a way to bond employees to the organization. In fact, he puts the value of CSR in more personal terms: "It's not why I joined the bank, but it's one of the main reasons why I stay with the bank."

"It is increasingly clear that a company that places importance on these activities has the edge on its competition when recruiting new workers."

For many employees who work longer hours and sometimes endure longer commutes than their predecessors, CSR can be the primary way to become involved in an endeavor with a larger societal focus – whether it's volunteer opportunities offered through the workplace or simply the feeling that they are part of an organization that "gives back to the community." As such, company-led initiatives such as charity walks and fundraisers have been on the rise in recent years, and in many offices photos from recent events are prominently displayed where clients and job prospects can see them. Colleen Conklin, director of research - corporate services with Sodexo North America adds that, "CRE can help a corporation engage with the broader community. For example, we are seeing CRE groups taking on redevelopment of existing neighborhoods in cities and working hand-in-hand with organizations who wish to create a workplace that benefits both their employees and the larger community."

Perkins also points out the importance of CSR to younger professionals, noting the millennials "are interviewing us more than the reverse" and that they ask more questions about CSR and volunteer opportunities than they do about salaries. A recent report from ADP on the changing nature of work states that "today's workforce is more and more guided by a search for meaning or doing important work rather than by simply earning a paycheck with good benefits."[2] Indeed, Tarmo asserts that CSR

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1 "Sustainability Value Management: Stronger metrics to drive differentiation and growth," Accenture Strategy (https://www.accenture.com/t20151016T043701__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Strategy_6/Accenture_Sustainability_Value_Management.pdf#zoom=50)

2 "Evolution of Work," ADP 2016 (http://www.adp.com/tools-and-resources/adp-research-institute/research-and-trends/research-item-detail.aspx?id=DF55E8A7-906A-4E81-A941-E886886BC9B2)

is a major reason that people apply to her company in the first place. It is increasingly clear that a company that places importance on these activities has the edge on its competition when recruiting new workers.

Shifts in Corporate Social Responsibility

Corporate social responsibility has meant different things at times, and continues to mean something different to each company, based on its footprint, culture, and industry. Tarmo has seen CSR values implemented differently in various regions, noting that these concerns often impact her firm's decision as to whether or not to enter a new market. For instance, what are a region's land use policies, and should that land be used at all for business purposes?

Barber sees that the definition of what is "sustainable" differs from region to region, with mature Western markets having a more advanced notion of sustainability while emerging nations are less likely to have leadership pushing for sustainable practices. In those areas, non-governmental organizations (NGOs) and the United Nations (UN) are often the ones monitoring and encouraging more rigorous standards. NGOs can prod a country to embrace these principles, but companies may in fact take the lead in directing sustainability efforts in an emerging market, whereas they may follow governmental directives and cultural norms in the West.

Jordan has witnessed what he calls a virtuous cycle in sustainability over the past decade, from LEED certification to new innovation and social purpose. He notes that six to seven years ago, many of his clients were trying to get a grasp on sustainability basics. In the short time since then, their efforts have evolved from a focus on the low-hanging fruit of energy efficiency to more sophisticated and holistic endeavors including renewable energy, green leases, zero-waste goals, and employee inspiration.

In addition, capital markets take a closer look at CSR criteria when assessing financial decisions, and companies that practice CSR enjoy better lending terms. He adds that pleasing shareholders and activist investors, as well as workers, is of increasing importance – especially in a world where disclosure of any accidents or malfeasance is inevitable. In this way, not only can CSR aid in public perception of a company; its access to markets, financing, and permitting will also be improved by being a more responsible global citizen.

Real Estate as a Tool for Change

Can a company's real estate be used as a tool for corporate social responsibility? It is often not the primary venue for CSR in an organization, but it can contribute in many instances. Perkins says that corporate real estate is exploring ways to be more specifically involved in corporate social responsibility, but he sees it as more of general corporate initiative.

Jordan notes that whether one is looking at water consumption, energy usage, or the use of natural resources, buildings are the focal point of this use, and nearly every industry requires a building of some sort. In addition, service industries (law, banking, and professional services) see great expenses in the areas of paper, energy, and even cleaning chemicals. Aligning usage of these resources with a company's CSR values will realize significant cost, and resource, savings. Like many companies, Olam's Barber says that her firm publishes regular reports on its carbon and water footprint, allowing it the chance to be held accountable for the commitments it makes.

Unilever's Tarmo believes that real estate is a tool for CSR. This shows itself primarily in building efficiencies and land use policy, but Tarmo also notes that her company instituted a "Responsible Sourcing Policy" to guide the conduct of their business with integrity respect for human rights. The policy, launched in 2014, sets requirements on human and labor rights in business relationships that companies conduct with Unilever. This allows the company to use all tools at its disposal to effect change in the way suppliers and other companies act if they want to do business with Unilever. The company also has a “Unilever Sustainable Living Plan” (USLP), which serves as a blueprint for achieving growth while “decoupling our environmental footprint from our growth and increasing our positive social impact.” This plan sets targets for how they source materials and how consumers use their brands. While these initiatives are not specific to real estate, they do represent a company using all its available tools and resources to change the environment outside the company.

There are many in corporate real estate who believe that real estate offers an opportunity for corporations to implement and showcase their CSR commitment. For example, Conklin notes, “green buildings and operations unquestionably reflect a responsible company with a strong commitment to its sustainability objectives. CRE can also be a mechanism for corporations to foster improved employee health and wellbeing. While certain health and safety standards are a given, CRE can help corporations take this a step further through facility and space design, building in greater ease and efficiency of operational processes, giving occupants control over some aspects of their environment, and providing ergonomic elements and other environmental features.”

Rajeev Thakur, a location strategy consultant with Newmark Grubb Knight Frank, sees companies using their choice of location as a projection of their values. Many international firms with whom he works have chosen one city over another based on its green policies, friendliness to bikes and pedestrians, and use of electricity. If a municipality loses enough relocation prospects due to these kinds of reasons, it seems likely that it will begin to reconsider its policies. In this way, companies, their employees, and their customers can have a significant impact on local and even national policy.

Conclusion

Underlying all of these strategies is a desire on the part of business to have a seat at the table, along with governmental entities and private citizens, as decisions are made about the way the world will look in the future. In some cases businesses are prodded by the demands of workers, shareholders, or activists, but more often business sees itself as a leader and change agent, with an agenda that governments and citizens may follow. As a hypothetical example, just as Wal-Mart, the world’s largest retailer, has the clout to change the production and distribution of consumer goods, so a company like Coca-Cola could impact global water policy by putting its own rules in place regarding what water it would use and where it would be sourced.

In the next decade, corporate social responsibility may take new forms and pursue new initiatives in areas like fair labor practices, sustainable land use, air and water quality, the rights of indigenous people, and other areas perhaps not yet imagined. It is clear, however, that a corporate commitment to social responsibility is here to stay, and will likely only grow over time as today’s young professionals move into positions of leadership.

Many thanks to the following leaders and experts for their contributions to this section:

Michael Jordan, JLL

Sheridan Perkins, Standard Chartered Bank

Nikki Barber, Olam International

Alexandra Tarmo, Unilever

Rajeev Thakur, Newmark Grubb Knight Frank

Colleen Conklin, Sodexo

The Global Economy

Globalization demands both planning and flexibility

By Keith Pierce

In an era of rapid change, one factor that is now taken for granted is the globalization of work, culture, and the economy. The world is increasingly interconnected, with news circulating from San Francisco to Sydney in milliseconds and reams of information instantly available to anyone with a phone. This creates endless opportunities for business. Nearly every market in the world is open to everyone regardless of where home base is, and there often seems to be nothing standing in the way of growth.

But as anyone who has tried to open a satellite office knows, it is rarely that simple. For every opportunity, there is a challenge to be overcome. Issues of globalization necessarily lead to questions of local significance, as the governmental regulations and cultural norms in Lagos are very different than they are in St. Petersburg. And if most markets are open to competition, the rules governing that competition are not always the same. Finally, the openness of global markets means that problems in one city or nation are very likely to impact every other in some form.

Global and Local

Whether one is in banking, manufacturing, or retail, the temptation to enter markets outside of one's original home is overwhelming and, in fact, many companies now do not even identify with a nationality, a phenomenon which gave rise to the term "multinational." In this environment, companies relocate frequently and can open and close offices as quickly as business cycles demand.

Dr. Paul Luciani, Asia Pacific real estate leader with Ernst & Young, notes that balancing local cultural norms and global corporate culture is a challenging aspect of opening and maintaining a new office. He says that having a "one size fits all" global strategy is not a recipe for success, but that a country- or market-based approach is important. There has to be a balance between company culture and local sensitivities.

Offices may look different in each country, with hours, workspaces, and even dress codes impacted by local cultural norms. It takes patience on the part of CRE professionals to get this right, and a willingness to adjust global norms to local expectations. While larger companies are well-prepared to respond to local culture because they are conditioned to do so through long experience, younger businesses are also likely to be flexible regarding cultural differences from region to region. A recent report from ADP on the changing nature of work states that "those most likely to adapt to specific workplace trends include those defined as multinational corporations, those that have been in business for fewer than 20 years, and those that are located in the Asia-Pacific region.[1]

Roel Spee, global leader for IBM's Plant Location International location strategy practice, offers IBM as an example of a company that operates globally but implements strategy at a local level, giving

1 "Evolution of Work," ADP 2016 (http://www.adp.com/tools-and-resources/adp-research-institute/research-and-trends/research-item-detail.aspx?id=DF55E8A7-906A-4E81-A941-E886886BC9B2)

some local control to market leaders who understand the factors that make each location unique. He recognizes that a company has no choice but to adapt to local culture and legal and regulatory issues, adding as an example that workers in China are used to taking naps at work. Other professionals that were interviewed pointed out that a location in Japan may require different amenities from one in Europe, and in many Middle Eastern countries, women and men may not work side by side in the office.

Rajeev Thakur, a location strategy consultant with Newmark Grubb Knight Frank, offers the helpful reminder that even within a country there can be cultural differences, noting that “there’s a big difference between New York and Alabama, or Florida and Minnesota.” He adds that while “modern cities are starting to become more like each other,” companies are also more respectful and appreciative than they have ever been regarding differences between cultures. Of course, the decision to locate in a new market or culture is driven by the business itself, and a company has its own reasons for wanting to open a new location there. The due diligence that must be performed prior to that decision will uncover any local concerns that may impact the benefit of locating there, and if a decision is made to go forward it is likely that the pros outweigh the cons. Hiring strong local leadership will help to address any concerns about how best to operate in a new environment.

Still, globalization can bring its share of efficiencies to the enterprise. Luciani says that while he works in Australia, he has team members in India, New Zealand, and Hong Kong, as well as other locations. They work better than they would in the same office, in his opinion, because they cut down on redundancies while each brings an understanding of a local market to regional decisions. In this way a region representing 50,000-60,000 people and half a million square meters (5.3 million square feet) of office space can be managed by an eight-person real estate team. This allows CRE teams to operate efficiently with a leaner team and footprint, which sets an example for the rest of the enterprise.

Future-Proof? Planning in the Global Economy

If every economy (and every company) is vulnerable to upheavals in every part of the globe, the question arises: how can the organization plan for what is by its very nature unexpected? Can a

company be future-proof? It seems obvious that no one can adequately plan for every contingency or be immunized against every world event, but organizations have a responsibility to attempt to anticipate as much as possible, and prepare for the likeliest events. As Laurent Bernard, v.p. global talent management, Steelcase notes, “being nimble requires a company to be prepared even when it doesn’t know what’s ahead.”

Sheridan Perkins, head of property, ASEAN and South Asia with Standard Chartered Bank, says that it is imperative to remember that business is dynamic, and conditions will change – whether for better or for worse, change is inevitable. Even though austerity measures are a harder sell during boom periods, Perkins notes that when the economy seemed to be running smoothly in Southeast Asia, his firm was already planning for a future when things would be not be so good. By planning intelligently during good times, a company can be better positioned to weather harder conditions. He reiterates the importance of not getting caught up in either euphoria or gloom, because neither feeling will last forever.

Flexibility is the most important component of any location strategy, because it’s impossible to predict every outcome. There is no model that suits every company, but Spee notes that service-based firms can more easily react to unexpected conditions by moving offices, whereas a more capital-intensive business has likely made long-term commitments to locations that often include heavy machinery. Companies must put in place redundancies, such as multiple sites, and disaster recovery plans that allow a region’s critical tasks to performed from another location. He adds that, “with 3-D printing and other advances, you can do more with a smaller footprint, and closer to your customer.” While it is difficult to anticipate every eventuality, it is possible to spread risk – and opportunity – across multiple locations. This includes M&A activity which, as Spee points out, can change a company’s global footprint overnight.

Spee also points to the need on the part of major companies to monitor financial markets, the economy, and other elements that may impact stability in a region. These can include natural disasters, such as earthquakes and tsunamis, or political and security crises, such as those brought about in the wake of the Arab Spring. All of these preparedness initiatives have the added benefit of enabling a company to use the same techniques to respond to changing market dynamics, adding or removing capacity based on customer needs, currency fluctuations, and other changes.

Karen Ellzey, executive managing director of consulting for Global Workplace Solutions at CBRE, suggests that “we as a profession must lead in the area of scenario planning,” pointing to the need to plan for multiple possible scenarios and update those plans regularly. While CRE professionals traditionally tried to predict what would be needed next, Ellzey says that scenario modeling provides organizations with a range of ready options for maximum flexibility. CRE professionals can also add value by being “cycle aware” – paying attention to economic, business, and real estate cycles and offering a point of view about where conditions are headed in order to help executive decision-makers prepare for nearly any outcome.

Emerging Markets

One hedge against rising costs that has been in place for many years is the use of emerging markets as a cost-saving measure. This arguably predated many companies’ entry into those markets to service the local consumer market. Companies learned a few decades ago that they can reduce the cost of talent and real estate by putting some support people in less expensive markets. Sheridan Perkins points to the number of support and administrative staff his bank employs in India, while Luciani mentions that Ernst & Young has located support staff in locations such as Poland, South America, and the Philippines. This allows high-cost space in places like New York and London to have the smallest possible footprint.

Most emerging markets are chosen based on the availability of inexpensive and trainable labor, which leads companies to repeatedly reassess their location strategy based on local economies. As wages increase and labor costs rise, many businesses begin to explore the next cost-saving option.

Spee foresees a time when this dynamic could change. Between rising labor costs and an increase in automation, some emerging markets may lose their competitive advantage. As an example, what is the rationale for placing support functions in Southeast Asia if the same work can be accomplished for less cost in Detroit or Krakow? This could be good news for mature markets that are seeking to attract new investment and jobs.

Perkins expects the developing economy to be the growth engine of the world over the next 30 years; he reports that 30% of the world's middle class is in Asia, and that figure is expected to rise to 60% by 2030. Emerging markets also have higher birth rates and are replacing their aging workforces more effectively than the United States and Europe are. This will lead many kinds of businesses to reconsider their global strategies and potentially rebalance their staffing and real estate priorities. As a result, emerging markets may become even more attractive as customer markets, even as they lose some of their desirability as labor markets.

Effects of Automation

Of course, it is no secret that many support and administrative functions are become increasingly automated, and this will have ripple effects on the global economy as well as on income distribution. Indeed, the implications of automation can be fundamental for the global economy. Luciani notes that robotics and software are gradually replacing people for the kinds of tasks that do not require human interaction. While he does not believe that this will happen quickly, Peter Miscovich, Managing Director, Strategy + Innovation, JLL Consulting in New York, sees the change coming much more rapidly, expressing the belief that 40% of workers in some fields could be replaced by automation by 2025. It is already the case that much of what can now be done robotically was not possible as little as ten years ago.

"One-third to one-half of emerging market data-processing jobs will likely be eliminated in the next five years."

Perkins agrees with this in principle, adding that one-third to one-half of emerging market data-processing jobs will likely be eliminated in the next five years. Still, he points out that it is currently less expensive in some emerging markets to hire 5,000 workers than it is to automate. This will remain the case until labor costs rise beyond some threshold at which many companies will reassess and begin to invest more heavily in automation. When that happens, unemployment could rise steeply in many of the emerging markets. Growth in automation will have a significant impact in countries such as India, the Philippines, and South Africa, though it is unclear yet whether the impact will be large enough to cause turmoil in those economies.

A recent annual report on Global Location Trends from IBM asserts that, "the emergence of the Internet of Things (IoT) and the changes associated with the Fourth Industrial Revolution… will radically transform the global manufacturing landscape. These developments will usher in new opportunities for companies to operate complex networks of production, distribution and sales across multiple geographic locations, leveraging the power of data to drive value creation." Additionally, the transformation to increased automation in the workplace will necessitate greater cooperation between industry, government, and education. The IBM report adds, "public-sector leaders must improve alignment between supply and demand of skills and prioritize efforts to foster educational programs that better serve the skills requirements of industries."[2]

The phenomenon of automation impacts a wide variety of fields. Perkins recalls that on his last trip to London, he made a reservation, arrived, and checked in at a hotel without ever interacting with a person – adding that the check-in process took less time than the more traditional front desk experience. The room key card was automatically dispensed at the check-in machine, room service could be ordered on a screen, and no human interaction was required. Whether this is an improvement on older models remains to be seen, but it is unlikely that businesses that automate their services will go back anytime soon.

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[2] "Global Location Trends 2015," IBM 2015 (http://www-935.ibm.com/services/us/gbs/thoughtleadership/gltr2015/)

Conclusion

Globalization is not a new phenomenon, but neither is it a fixed star with predictable outcomes. The issues outlined here will change, ebb, and flow in the coming decades as labor costs, political instability, and even natural disasters alter the cost-benefit equation regarding where an organization prefers to operate. Global decisions will have local repercussions, and vice versa. The need to plan ahead will remain a critical component of business strategy, even as automation and changing dynamics in emerging markets disrupt businesses and even entire industries in way that are hard to foresee. It is not yet completely clear how these changes will impact business in general, and corporate real estate specifically, but it is evident that the events that change the way business is conducted will occur on a global stage. CRE executives need to watch these changing dynamics carefully in order to be prepared for a changing profession on an evolving global stage.

Many thanks to the following leaders and experts for their contributions to this section:

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Peter Miscovich, JLL

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Karen Ellzey, CBRE

Roel Spee, IBM

Vivek Arora, IMF

Laurent Bernard, Steelcase

People, Talent, Wellbeing

Pursuing and keeping skilled employees is imperative

By Keith Pierce

Businesses recognize that their most valuable resource is also their greatest cost, and it goes home at the end of every workday. People are a company's best source of innovation and the glue that holds the organization together. And with the rise of technology and declining unemployment, there has never been a higher premium placed on finding and keeping the right employees for each organization. In many industries this leads to a war for talent, with companies bidding for the best candidates with the most desirable skills. There is also a concern that the skills needed in the enterprise don't always match those that candidates, including recent graduates, possess.

In the midst of this dynamic, other changes are occurring that may alter the nature of work in coming years and decades. It goes by many names, but the "gig" or "contingent" economy allows companies to assemble teams for projects without fully upscaling their workforce, while also allowing workers that prefer flexibility to work for different companies on different projects. Of course, not every worker works in the manner by preference; these changes have already created an environment where certain tasks (particularly those in creative and technical fields) are almost exclusively filled by contingent workers.

All of this raises a number of questions that organizations must try to answer: if much of one's workforce is contingent, how does a business retain its culture? And how can the success of these new initiatives be measured? Are workers happy and engaged? Analytical tools are being sought that might address these questions, but it is clear that the relationship of workers to the work they do is in flux, and will likely remain so for the foreseeable future.

Talent Gap or War for Talent?

Most professionals interviewed for this report agree that there is a talent gap in existence today, but perspectives differ on what that means and how to solve it. Jim Ware, a workplace futurist and meeting design strategist, is the author of Making Meetings Matter: How Smart Leaders Orchestrate Powerful Conversations in the Digital Age. He is a professional speaker, trainer, and researcher. Ware acknowledges that there is a "shortage of quality talent, which leaves businesses scrambling for good talent." A 2013 study by Accenture which captured input from 400 executives at large U.S. companies found that nearly half of them were facing or anticipating a skills shortage, and nearly 30% anticipated a loss of business due to a skills shortage.[1] And a recent eBook published by Upwork showed that this has not improved since then. That report referenced results from a Challenger Gray study to the effect that "53% of business leaders said they faced a 'very or fairly major' challenge in recruiting."[2]

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1 "Closing the Skills Gap With a Talent Supply Chain," U.S. Chamber of Commerce Foundation, September 30, 2014 (https://www.uschamberfoundation.org/closing-skills-gap-talent-supply-chain)

2 "The Truth About the Talent Shortage: How It's Impacting Your Business and What You Can Do About It," Upwork E-book (https://pages.upwork.com/resources-ebook-truth-about-the-talent-shortage.html)

Sheridan Perkins, head of property, ASEAN and South Asia with Standard Chartered Bank, notes that the talent gap manifests itself differently based on the market. For instance, in the United States, it is relatively easy to find workers who can think strategically, but more difficult to find workers willing to do lower-level tasks such as maintenance or housekeeping. In Asia, he says, the problem is nearly the reverse, with a large gap in management leadership in emerging markets. Roel Spee, global leader for IBM's Plant Location International location strategy practice, sees a mismatch between skills and needs that can lead to shortages of critical skills, but holds up Ireland and Singapore as examples of places where this is being addressed creatively. In Ireland, a long-standing connection between government, industry, and universities enables all three to notice where the needs are increasing and ensure that those talents are developed. This approach has already proved successful with call centers, IT, pharmaceuticals, and social media, and it is being implemented now for the Internet of Things. This strategy allows Ireland to ensure that students are prepared for the work that businesses require, which suits that nation's overall vision of domestic growth fueled by foreign investment.

Within the corporate real estate field, Rajeev Thakur, a location strategy consultant with Newmark Grubb Knight Frank, sees a skills gap, particularly at the senior level as some of the most experienced professionals begin to retire. In addition, he sees a high demand for workers in the "sweet spot" of experience, which is three to five years. Thakur notes that these workers are ready be productive on day one with minimal or no training, unlike their entry-level counterparts, but are less costly to employ than more senior employees. Mark Gorman, MCR, SLCR, vice president of corporate real estate & facilities at Ciena, also sees a gap in talented senior workers, partially due to the fact that CRE professionals are less likely to grow from within than they once were. Increasingly, property and facilities management tasks have become outsourced to third-party providers. He reflects that he began work as a co-op student shadowing installation crews, whereas many entry-level jobs today are management- or transaction-oriented, leaving a dearth of technical skills.

Karen Ellzey, executive managing director of consulting for Global Workplace Solutions at CBRE, believes that there is talent available, but that finding and matching talent to existing needs is the challenging aspect of talent acquisition. She adds that location strategy can be driven by the need to access the right talent, which is one reason that companies tend to locate in urban areas or near universities.

Regardless of whether the gap is manifested in a lack of candidates or a lack of ideal candidates, those interviewed saw a need to become more effective at finding the right match and keeping those workers in place and helping them to grow within the organization. As Colleen Conklin, director of research – corporate services with Sodexo North America, puts it, "there always has been and always will be a need for new talent and thought in any industry. What we are seeing is the importance of offering potential and current employees a well-rounded workplace experience, appropriate benefits, and rewards. Companies that are successful in doing this will see their talent gap narrowing – or at least not widening."

Employee Engagement

Of course, one of the ways to retain the best talent is to ensure that workers feel engaged and connected to work that matters to them. Michael Jordan, managing director for JLL and lead of JLL's People & Process consulting practice, recognizes that the drive to support workers by engaging them more fully at work is a "hot topic" these days. While business leaders aren't sure how to measure knowledge worker productivity, many realize that it's important to invest in the employee workplace experience because engaged and supported employees are more focused and energetic about fulfilling the company's mission.

Gorman sees a need for companies to help workers navigate between work and the rest of life, noting that what is often called "work/life balance" requires far more than providing drycleaning and daycare on site. More companies are examining the impact that the built environment has on health and wellbeing, with many adopting Well Building standards that rate buildings on the seven categories of mind, comfort, fitness, light, nourishment, water, and air. He concludes, “To have productive employees you need to deal with the whole person.”

Perkins notices that location decisions and the desire to retain strong talent can overlap. In some cases, workers are transferred into emerging markets due to a lack of homegrown talent, but in other instances companies can find themselves putting their best workers in one location due simply to the fact that these workers insist on living in, for instance, London or New York. Even though these are some of the most expensive markets for real estate, a company will often work hard to accommodate its best and most talented employees if that keeps them engaged.

Ware says that 45% of millennials are more concerned with their work arrangements than they are with salary, and it’s not only millennials who feel that way. He sees the issue of employee engagement at least partly based in how employees are treated. The continued lack of flexibility offered in some industries can lead to some workers feeling mistrusted, and not without reason. Ware sees a shortsightedness in managers who ask, “if I can’t see them, how do I know they’re working?” Leaders need to create environments where workers feel valued and engaged, and offering the flexibility to work from different locations is a key to that dynamic, as well as a key to keeping workers from straying elsewhere. Ware adds that real estate and people are a company’s highest cost, and technology makes it possible to cut costs in both areas without sacrificing productivity.

“Employee engagement” is a necessarily vague term, covering as it does the way a given worker feels about work and the environment in which it is performed. Even so, Cristina Banks, director of the Interdisciplinary Center for Healthy Workplaces at the University of California, Berkeley, asserts that it is clear employees have a greater sense of engagement when their value and contribution to the business is appreciated. Whether that takes the form of formal recognition or simply the welcoming of ideas, engagement directly follows the sense of importance workers feel is attached to their contribution. In other words, when workers feel valued, they are in fact more valuable.

Healthy Work

It is not only important for workers to feel engaged; they must also be healthy. Healthy and engaged workers are greater assets to companies than those who are not, and companies are paying close attention to the role the workplace can have in the health of its workers. In fact, a lack of engage-

ment can itself have physical consequences. Banks sees this manifested not only in worker turnover, but in absenteeism and loss of productivity. Noting that workers spend most of their waking hours in the workplace she adds, “We’re at an inflection point where it’s understood that we need to get healthier.”

Ware also sees a greater focus on health and wellbeing in the workplace in recent years, largely but not completely driven by millennials. He notes that there is a link between workplace design and wellbeing. The nature of work, particularly in the West, is often tied to working long hours and enduring whatever treatment occurs there. But Gorman points to studies that show that working longer does not equate to increased productivity; more often the opposite is the case. Long work hours, especially in a sedentary environment, can lead to poor health and a depressed immune system, among other maladies, in addition to a diminished focus and quality of work product.

Banks sees a healthy workplace, in all the ways that is understood, as a critical part of both employee engagement and talent retention, noting that wellbeing leads to productivity. She points out that a sustainable workforce is not just good for the health of workers, but is also a business and policy imperative. “We need to utilize talent and we can’t afford to throw it away,” she says, but “we’re eroding the talent we have because of the way we treat them.”

Workplace health and wellbeing can be improved in a variety of ways, but each organization will need to assess the changes for itself. It’s important to look at the basic needs workers have (these include safety, respect, fairness, and a sense of belonging and value) and whether or not they are being met. An organization can then determine, often with the help of a consultant, which areas the workplace can improve upon. These can include physical changes, such as lighting, furniture, or healthy snacks in the breakroom. Changes can also be more broadly made to the work environment, such as flexible schedules and encouraging breaks or walks.

One challenge that Banks points out in implementing these changes is the need for leadership to understand their value. This may require a change in company culture, and it may also include some financial costs. These costs are much easier to quantify than the benefits, given current analytical tools. She believes the next opportunity for workplace health lies in finding the right data measurement tools to express the need for change in ways that will make sense to decision-makers.

Any changes implemented must also be tailored to the needs and schedule of the worker. For instance, if a firm installs a gym in the building for its employees but doesn’t give those workers time to use it during the day, then they are likely to prefer to drive home at the end of the day rather than to stay late (or come in early) to take advantage of it. In this way the improvement may not in fact benefit the workers who need it the most. With increased effort and attention, the workplace can become a healthier place to spend the day, which will yield improvements in employee engagement, retention, and performance.

The “Gig” Economy and Changing Nature of Work

On the other hand, the term “workplace” now carries a wide variety of meanings to workers, given the amount of time some spend working from home or a coffee shop. Increasingly, many workers find themselves in the “gig” or contingent economy, doing work for a variety of companies at once. This allows workers with a specialized set of skills to work for a number of companies, none of which might require those services on a regular basis. It also allows companies to scale up and back down quickly, based on new assignments that may or may not last. A recent report from ADP on the changing nature of work states that “today, many employees exercise more control and autonomy over their workplace conditions, with greater freedom to decide how, when, and where they work.”[3]

[3] “Evolution of Work,” ADP 2016 (http://www.adp.com/tools-and-resources/adp-research-institute/research-and-trends/research-item-detail.aspx?id=DF55E8A7-906A-4E81-A941-E886886BC9B2)

Peter Miscovich, Managing Director, Strategy + Innovation, JLL Consulting in New York, sees this changing dynamic as an opportunity for workers and businesses alike that will lead to a "Hollywood model of work" whereby teams are assembled for each project in much the same way as film casts and crews are hired. In this manner, a contingent worker might spend less time working and earn higher wages than a full-time employee in the same field, while also maintaining maximum flexibility for companies and cutting their occupancy and healthcare costs. He envisions technology-based assignments being bid out, fulfilled, and invoiced through online portals. This would make it possible for a knowledge worker to complete an assignment from anywhere, without being forced to live where the jobs are.

Miscovich also sees this change as inevitable. He has pulled together extensive research on this topic, and cites studies showing that 30-35% of the workforce is already contingent, with that figure expected to rise to 50% around 2020 and as high as 80% by 2030. This will have a disruptive effect on real estate, and drastically alter accounting and HR functions in many companies, while also potentially creating new opportunities for businesses that can specialize in these services. The ADP reports adds that "HR departments haven't kept up pace with new programs and services to ensure that teams remain seamlessly connected."

Not everyone participating in the gig economy does so by choice. As Ware points out, many people are still looking for meaningful full-time work. Still, the contingent industry is much larger than it was just a few years ago. This leads to greater possibilities for those not tied to a single employer, but it also requires greater effort on the part of the worker to manage his/her own career. This is already leading to growth in the field of career coaching. Indeed, Ware also imagines a "Hollywood" scenario in which one day everyone might have an agent – someone who finds work assignments and serves the kind of purpose agents perform for actors and musicians. It is possible that employment agencies like Randstad might learn how to do this and transition into that sort of role.

"Providing metrics and analytics will be the next frontier of managing a company's greatest resource – its people."

Gorman sees the question boiled down to whether a worker fills out a W-2 or a 1099, tax forms in the U.S. that reflect whether one is an employee or contract worker. This outlook affects the attitude of the worker, and the level of investment he or she has in the long-term prospects of the enterprise.

Furthermore, Gorman also points to the need for companies to recognize that workers who leave the organization don't necessarily do so forever. The notion that a former employee may return as a contractor emphasizes the value of keeping engagement with the "parent firm" as workers weave in and out of its orbit. This means that companies need to find ways to grow workers and celebrate their moves, even those that take them out of the organization. While every company may not have a revolving door, the employee who departs may return one day – as an employee, contractor, or even a customer. Businesses need to think of their circle of influence as expanding beyond the employee directory; in this way every departing employee can be encouraged to become an ambassador for the company and its values.

Conclusion

All of these changes – in employee engagement, the gig economy, and wellness – require metrics to gauge success and give business leaders feedback on progress so that they can make adjustments. Some of these analytical tools are available, and others don't exist yet. But business decisions are data-driven, even those related to how engaged employees feel. Dr. Paul Luciani, Asia Pacific real estate leader with Ernst & Young, notes that job satisfaction and even employee happiness can be measured, though it's not clear how accurate those are. And Cristina Banks expressed the need to find the right data to tell the wellness story to business leaders, as well as effective measurement tools to measure progress.

Corporate real estate leaders are not yet sure how to measure much of what needs to be measured, but everyone interviewed acknowledges that providing metrics and analytics will be the next frontier of managing a company's greatest resource – its people – and that whoever can provide useful tools to measure progress in these areas will certainly earn a seat at the leadership table.

Many thanks to the following leaders and experts for their contributions to this section:

Jim Ware, workplace futurist and meeting design strategist

Sheridan Perkins, Standard Chartered Bank

Michael Jordan, JLL

Peter Miscovich, JLL

Paul Luciani, Ernst & Young

Karen Ellzey, CBRE

Mark Gorman, Ciena

Cristina Banks, University of California, Berkeley

Roel Spee, IBM

Rajeev Thakur, Newmark Grubb Knight Frank

Colleen Conklin, Sodexo

The Future of Cities

Plan for Evolving Technology and Shifting Workstyles

By Keith Pierce

It's no surprise that business, and the economy as a whole, is becoming increasingly urbanized. For half a century, many companies moved from city centers to suburban campuses in order to expand, control their environments, and be closer to workers' homes. In the past decade, we have seen a reversal to this trend as many of the same companies relocated to urban hubs for a mix of reasons. Among these is access to transit and the most advanced technology, as well as the continuing desire for proximity to workers. What has changed in this last instance is that young professionals, as well as some empty-nesters, have made lifestyle decisions to live in the city centers that had fallen out of favor with earlier generations.

These developments have ramifications for cities moving forward – not just in the prevalence of good restaurants, but also related to infrastructure, governance, and technology, as populations increase and change, influencing different choices for their neighborhoods. In this section we will explore the future of cities and the effect of structural changes in urban environments on development, technology, talent acquisition, and governance.

Technology

Technology is driving growth and change in cities. The development of "smart cities" is changing urban environments in ways that may not yet be fully understood, but will have ramifications for decades to come. Smart technologies include sensors and meters that can capture and analyze data, and adjust in real time to redirect resources where they are needed. For instance, utility companies can apply knowledge about water, street lights, or traffic patterns to ensure that capacity is available where demand is greatest at peak hours while conserving resources during slower periods.

Smart cities are best understood as those cities that have seen investments in smart technology at the government and/or private level that have the potential to impact everyone, and not just those on a particular block or in one particular building. Copenhagen, Stockholm, and London were early adopters, but many other cities are moving in this direction as well. In many cities, these initiatives are launched within one district or neighborhood as a test case prior to scaling up.

Technological shifts in the way traffic, water, and other components of urban life are measured and distributed will necessarily impact the city's infrastructure. From the amount and kind of housing built to the value found in replacing old utility components with new and innovative equipment that can pay for itself over time, technology is likely to drive a wide range of decisions facing cities over the coming years. Gordon Feller, founder of Meeting of the Minds and Cisco consultant, notes that some – perhaps many - of these investments can easily pay for themselves within as little as a few years, as has already been shown with the move to LED lighting.

While costs can generally be recouped, the initial investment in can be significant. With this in mind, many municipalities are working with private companies to share the cost of upgrades, given that the amount and kind of data that can be captured by smart technologies may lead to new revenue streams and business models that make the costs worthwhile to private business.

Feller points to the need to integrate new technology into existing infrastructure whenever possible, rather than building completely new systems. The cloud and mobile tech can play a large role in these innovations, with apps that can be operated by consumers to help them find parking spaces or low-traffic routes. This allows existing innovations in personal technology (smart phones being the most obvious example) to contribute to the next level of technological advancement, which is found in the cloud and the added capacity for real-time analytics.

Like many of those interviewed, Peter Miscovich, Managing Director, Strategy + Innovation, JLL Consulting in New York, believes that technology will lead to a better quality of life and better workplaces, but adds that technology will become a key differentiator between cities. Feller adds that smart innovations will become increasingly crucial as cities seek to differentiate themselves in competing for talent and corporate relocations. Technology is already a tie-breaker for companies choosing between two or three otherwise similar cities. Dr. Paul Luciani, Asia Pacific real estate leader with Ernst & Young, points out that the way cities are using technology differs between mature and emerging markets; less mature markets are often more willing and able to adapt quickly, because there is less invested in the status quo. Regardless, real decisions are increasingly guided by the presence of technology in a given market, and CRE professionals are now asking more questions in this area when contemplating site selection decisions.

Development and Location

Just as technological changes will impact the city's infrastructure, corporate and speculative development will also see a shift in capabilities, use, and even location based on the changing preferences of workers and companies. Miscovich notes that "lifestyle is overtaking work style" as a priority for a new generation of workers, leading many young professionals to seek a style of working that supports the lifestyle they have chosen. As a result, cities (and urbanized suburbs) are now the preferred locations for companies.

According to a recent study conducted by Smart Growth America in partnership with Cushman & Wakefield, "hundreds of companies across the United States are moving to and investing in walkable downtown locations. As job migration shifts towards cities… American companies are building and expanding in walkable downtown neighborhoods."[1]

At the same time, Philip Ross, founder and CEO of UnWork.com, notes that with the rise of portable technology, unconscious connectivity, and the cloud, the capacity to do work is no longer tied to a building. As Ross says, "this has led people to wonder why they're in the office." This in turn leads to a need for companies (and building owners) to offer a rationale for coming in to the office. Workers must be assembled in the same place at times, in order for the organization to maintain its culture and benefit from the kind of unplanned encounters that lead to innovation and only take place when employees are regularly in one space together. He points to the new headquarters building for Commonwealth Bank in Sydney as an example of a building that was designed from the ground up to meet the changing needs of workers.

Luciani sees this trend resulting in "massive gains in efficiency" for the organization, but there are also improvements for workers themselves in creating a more pleasant place to work. Roel Spee, global leader for IBM's Plant Location International location strategy practice, sees quality of life for the worker driving much of the urbanization trend in both mature and emerging markets.

Rajeev Thakur, a location strategy consultant with Newmark Grubb Knight Frank, sees a trend toward urbanization in some, but not all, industries, noting that companies choose downtowns, midtowns, and suburban locations based on the nature of their workforce (call center employees still tend to live in outlying areas, for instance) and the work that is required. Michael Jordan, managing

[1] "Core Values: Why American Companies are moving downtown," Smart Growth America and Cushman & Wakefield 2015 (http://smartgrowthamerica.org/documents/core-values.pdf)

director for JLL and lead of JLL's People & Process consulting practice, adds that it's not enough for a company to decide to put an office Portland or Boston, but to pay close attention to which neighborhood or area is most desirable for their needs, with the amenities and services employees want.

The idea that different parts of an urban area may attract different workers is often overlooked in the competition between cities. Colleen Conklin, director of research – corporate services with Sodexo North America, asserts that smaller cities and even suburbs can still attract exceptional talent. "We are seeing increasing urbanization, particularly among younger generations. At the same time, we know that younger workers crave more freedom, balance, and connection to their employers. Smaller cities like Nashville, Charlotte, Portland, Austin, and Raleigh/Durham are attracting people who want a lower cost of housing and more opportunities for employment." She points to Sodexo's headquarters in Gaithersburg, Maryland, as an example of an attractive, lower-cost alternative to nearby Washington, D.C., and Thakur notes that Reston, Virginia, has many attractive amenities associated with the larger D.C. area, but in a quieter, more suburban environment. Several of those interviewed asserted that these smaller cities and suburbs can still compete for talent and companies if they have the right mix of urban amenities and suburban calm. While cities are more attractive options than they have been years, not every city, or every neighborhood, is right for every team. Each location decision will need to be guided by an understanding of the workers likely to occupy that space and the work they will asked to produce.

Talent Acquisition

As we have seen, the location and nature of the building is a valuable component to a company's decision to locate within a city center. As workers become more flexible, it's also incumbent on businesses to offer a premium office experience, both to retain employees and to convince them of the value of being present and interacting with others in the organization. According to JLL's Miscovich, "digital talent demand will drive corporate location strategies. If an employee is only going to visit the corporate office within brief intervals each week, then we really must provide the highest quality of enriched employee workplace experience." He adds that some businesses are already working to create more attractive and flexible work spaces, while others are looking to the Apple Store retail model for inspiration for the kind of rich collaborative environment workers want. Jordan notes that

the business world has learned that environment is an important component in their recruiting toolkit, adding that many companies are choosing to refresh and remodel their space more often to keep up with the changing preferences of workers and candidates.

Mark Gorman, MCR, SLCR, vice president of corporate real estate & facilities at Ciena, sees knowledge workers as the "new natural resource," noting that while businesses used to locate near forests, mines, or rivers to utilize those resources, now they need to be near their worker. Adding that people have been driving location decisions for some time now, Gorman sees employee choice as a key in the recruitment and retention of top talent. Karen Ellzey, executive managing director of consulting for Global Workplace Solutions at CBRE, adds that millennials are not the only people seeking to achieve a balance of work and life. Cities are attractive to all ages, because they offer a fuller menu of offerings to improve that balance. Laurent Bernard, v.p. global talent management, Steelcase adds that, "local lifestyle and company culture are key drivers for the new generations in choosing where to work. The locations in which companies operate must provide easy and affordable transportation and housing, and a vibrant cultural environment. Companies based in these desirable locations offer a culture where employees feel they can bring their whole selves to work and fully integrate themselves into their work."

A recent article in Greenbiz notes that, "The greatest competition in today's footloose economy is the fight for human talent, and urban quality of life strongly determines whether cities can attract a smart workforce." The article adds that "the talent pool these companies seek prefers both living and working in vibrant, accessible neighborhoods."[2] Just as CRE professionals must look at the existing workforce when making site selection decisions, they also will play a critical role in using real estate to attract the workers a company needs the most.

"One concern that has arisen recently in cities is that of income inequality and a growing lack of economic diversity."

Governance and Political Ramifications

It is clear that we can expect changes in both the way cities are managed and what is expected of them by its citizens and consumers. Entrepreneurs and technology workers expect cities to run on similar principles to their businesses: data-driven, agile, and efficient. Some cities will adapt better than others, but emerging markets have great potential, if they can sort out issues of infrastructure and governance. For instance, Luciani notes that Chinese cities are largely governed at the precinct level, with different personalities and rules from one area of a major city to another.

One concern that has arisen recently in cities is that of income inequality and a growing lack of economic diversity. Several professionals interviewed for this acknowledged that as land prices rise and housing options fail to keep up with demand, many of those whose work is found in the city center are unable to live near their places of employment. London and San Francisco are just two recent examples of a trend that is only expected to increase over time. Aside from lengthened commute times for these workers, there is a social cost to this dynamic that can be found in the dilution of diversity. If people from different backgrounds do not cluster near one another, the economy loses the benefit that can come from those citizens exchanging ideas that may lead to new innovations.

As cities increasingly become the economic engines, this will also lead to changing power dynamics between cities and other governmental entities, such as states in the United States and the central government in the United Kingdom. Cities attempting to solve their problems sometimes feel hamstrung by regulations imposed from outside, or above. Some in the U.S. have begun to wonder aloud whether states even fulfill a purpose anymore, with Miscovich pointing out that "California has eight or nine completely different economies now." There are numerous examples of cities putting policies in place to attract new business, only to have those policies overridden by the larger

[2] "How sustainable cities can drive business growth," Greenbiz.com, Hallie Kennan and Chris Busch, February 9, 2016,(https://www.greenbiz.com/article/how-sustainable-cities-can-drive-business-growth)

governmental entity. This will bear watching in coming years, and will likely be solved in many ways before any kind of consensus emerges. Corporate leaders have an opportunity to weigh in on these decisions, and CRE professionals could have a vital role in shaping the conversation.

Conclusion

In the future, cities will be impacted by technology, worker preferences, and other factors, which will in turn be changed by the nature of the cities in which those workers find themselves, in a kind of continuous loop. Other changes will work their way into this loop, such as the increase of contract labor and automation, which will see real estate space needs decline as companies become leaner. In what some are calling a fourth industrial revolution, as many as 50% of workers in some industry sectors could be replaced by machines in the next ten years. In the words of Miscovich, “what Google and Facebook are doing now, GE and Bank of America will be doing by 2025.” This will create new challenges and opportunities for corporate real estate professionals, perhaps leading to multi-story office buildings operating in a WeWork-like manner.

There are so many variables impacting the future of cities that predicting what will happen in 2025 or 2030 would be very difficult, but there is some consensus regarding the issues that will impact that future. Armed with these insights, corporate real estate professionals can understand what trends to watch and how to plan for the likeliest scenarios.

Many thanks to the following leaders and experts for their contributions to this section:

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