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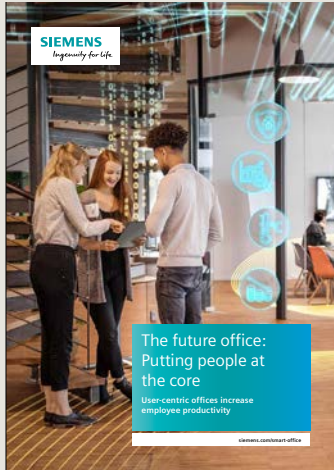
The future office: Putting people at the core

User-centric offices increase employee productivity
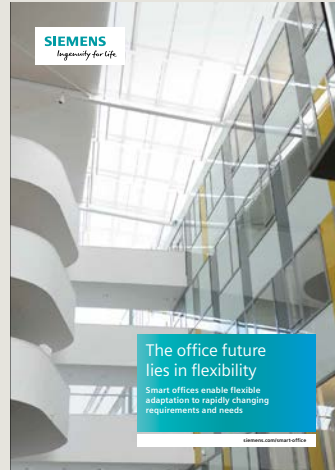
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White paper series on the journey towards a smart office

User centricity

The future office: Putting people at the core

User-centric offices increase employee productivity

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Flexibility

The office future lies in flexibility

Smart offices enable flexible adaptation to rapidly changing requirements and needs

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Sustainability

Offices at the forefront of creating sustainable buildings

Smart offices enable sustainability for people and spaces

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User centricity
The future office: Putting people at the core

Office workers across all generations want more collaborative, user-centric work spaces to unleash their full potential. User-centric offices help increase employee productivity because employees are healthier, collaborate more easily, spend their office time effectively on value-add tasks, and feel more accomplished. Apart from productivity increases, user-centric offices can help secure future talent for companies, while non-movers risk loosing in the war for talent.

Foreword

This white paper is part of a series of three white papers discussing key trends for office development in a global perspective over the coming 10 years. The white papers are based on market insight and expert interviews jointly conducted by Siemens and Roland Berger in Summer 2020. The three whitepapers show Siemens and Roland Berger joint view on three topics: user centricity, flexibility and sustainability. This paper discusses user centricity. For more information, please refer to the other two white papers of the series.

Content

The future office: Putting people at the core

What's happening?
New worker generations, technology and COVID-19 are changing the way we work at the office

Three major developments have significant impacts on the current office landscape, and they affect both corporate and commercial real estate players and their stakeholders, the tenants and employees who work in the buildings.

First, millennials (born 1981–1996) have entered the workforce and made themselves felt as drivers of change. The next generation of workers, Generation Z (born 1997–2012) is in the starting blocks and will be entering the workforce over the coming decade. They demand different work conditions. Work-life balance is more important than salary, work hours and location must be flexible, and work and life should blend effortlessly.[1] But new generations also want to interact physically with their colleagues. They want offices to be spaces of community and seamless collaboration, where they can achieve their full potential and are not afraid to work long hours.[2]

Second, technology is becoming effortless, meaning that we can customize the physical environment to the needs of the individual regardless of age, requirements or technological savviness. With modern IoT sensor technology driving the convergence of IT and OT, the connectivity of data streams at 5G speed, self-learning algorithms and powerful devices at everyone's fingertips, we can monitor complex physical spaces in

real time and have the office flexibly adapt to the needs of its occupants so that it works for everyone.

Third, the new normal brought by COVID-19 calls for a rethink. Offices need to contribute to the health and safety of their occupants and to become resilient in times of crisis. They need to be prepared to respond to threats intelligently and flexibly as a key element of business continuity management.

Harnessing these trends will transform the office into an active contributor for teams – future offices are a success factor for the teams working in them.

Where to? The mindset shift to a user-centric office based on productivity KPIs

To best harness the trends and opportunities at hand, companies need to change their mindset and put the needs of the office user at the heart of their thinking. Typically, the management of an office real estate portfolio is a corporate real estate task, with asset efficiency defining the relevant KPIs, like FTE per square meter, kWh per occupied hour, cost per square meter,

1 PWC. 2011. "Millenials at work: Reshaping the workplace." pwc, accessed August 4th 2020. https://www.pwc.de/de/prozessoptimierung/assets/millennials-at-work-2011.pdf
2 Gensler. 2020. "U.S. Work from Home Survey 2020." Gensler, May 26th 2020. https://www.gensler.com/uploads/document/695/file/Gensler-US-Work-From-Home-Survey-2020-Briefing-1.pdf

"Enabling the intelligent use of data in the smart office serves not only the facility manager but also the employer – and, more importantly, the employer's HR department. People are the key to success."

Project Manager, Digital Solutions Provider

3,000 USD

is spent on personnel, 300 USD on rent and only 30 USD on utilities on average

cost per employee and OPEX. These KPIs need to be amended to incorporate KPIs for users' needs to reflect what employees seek in offices: places where they can work most effectively, which help them achieve their tasks better and which support the office community. User centricity defines the new mindset: the office provides an effortless, human-centric experience, which drives both productivity and asset efficiency.

There is also a good argument on the cost side. According to a rule of thumb, for every square meter of office space, USD 30 is spent on utilities, USD 300 on rent and USD 3,000 on personnel. With this price tag, employers should certainly take action to ensure that they are getting the most out of the USD 3,000.[3]

3 Jones Lang LaSalle (JLL). 2016. "A surprising way to cut real estate costs." JLL, accessed August 4th 2020. https://www.us.jll.com/en/trends-and-insights/workplace/a-surprising-way-to-cut-real-estate-costs
4 Dolak, Franziska and Daniel Schröder. 2018. "Das Gebäude als Interface zwischen Mensch und Raum" Wirtschaftsinformatik & Management 2018, No. 04. https://www.springer-professional.de/das-gebaeude-als-interface-zwischen-mensch-und-raum/16029110

In a user-centric office, employee productivity is the focus KPI. Does the office help them unleash their productivity potential? There are four dimensions to office productivity:[4]

1. Physical health and comfort:
The office needs to support its users' physical health and personal comfort. Only the right ambient environmental conditions enable users to focus fully.

2. Wellbeing and private life:
Offices must cater to fluctuating energy levels over the course of the day. Personal life and mental fitness are successfully integrated into people's working life.

3. Collaboration and community:
Office workers must be able to give and receive feedback and seek inspiration from colleagues. Offices must support open communities and natural collaboration through spontaneous interaction.

4. Personal achievement and progress:
Making progress means feeling productive. Offices must foster productivity by enabling users to spend their office time on value-adding tasks. **graphic A**

What is to gain and what's to lose?
Profiting from more productivity vs. losing the war for talent

Realizing the user-centric office requires investment, so what is the return? Productivity gains can be measured with KPIs developed to reflect the investment in office quality. As illustrated below, employees spend a lot of time in the office doing non-value-adding tasks – arranging visitor passes, booking meeting rooms and finding people, for example. Minimizing the time spent on such "office gymnastics" lets employees spend more time on value-adding tasks and reduces personnel costs. Productivity gains also increase employee satisfaction, especially among employees who emphasize working in collaborative environments. In turn, retention rates increase.

The ROI – return on investment – is mirrored by another ROI – risk of inaction. Should employers not invest, they risk losing on productivity and personnel costs vis-à-vis rival firms, and over the long term they're also in danger of

A Four dimensions of productivity

Personal health and comfort

Users feel healthy and comfortable in the right, personalized ambient environmental conditions

Wellbeing and private life

Users find suitable spaces for all energy levels and achieve an optimal work-life blend

Productivity

Personal achievement and progress

Users can maintain their "state of flow" and feel productive and effective throughout the day

Collaboration and community

Users are well situated in an open community and find natural ways of collaborating with their colleagues

"COVID-19 clearly demonstrated the ROI: Companies with flexible working arrangements and smart technology were much better prepared because they could adapt easily."

Elisa Rönkä, Business Development Innovation Manager, Siemens Smart Infrastructure

B The three layers of the smart office

People
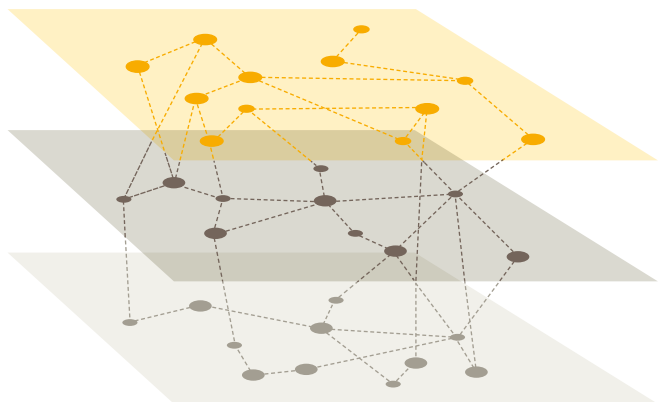are at the core of the smart office – maximizing their productivity is the goal

Spaces
are the physical structure of the smart office – they flexibly and seamlessly adapt to users' needs

Infrastructure
makes the office smart – it knows & learns what users want and provides the data for adaptation

losing the war for talent. Both candidates and employees will prefer an employer committed to providing the best, healthiest and safest office possible. In fact, most smart building occupants report higher retention rates.[5] How then do employers invest most sensibly?

How do we make offices user centric? Connecting people, spaces and infrastructure to become a smart office

Realizing the user-centric office means making it smart. The smart office of the future will be based on data, allowing it to become flexible and self-optimizing. But not every smart office is user centric. To fulfill that goal, its infrastructure must be an empowering toolkit at employees' fingertips.

Smart offices are equipped with intelligent sensors and controls that constantly monitor the infrastructure of the building in real time. Alongside system-based sensors as employed in HVAC systems, smart offices use additional space-monitoring sensors that generate data, such as on lighting, noise levels, temperature, air quality, movement

or occupancy. Non-building-related data – such as traffic and weather data – can also be drawn upon.

Next, smart offices contextualize the data to be intelligently analyzable by relating it to the space in which it was generated. Smart offices know how rooms are perfectly lit, they are aware of how users move through spaces and can minimize noise in designated areas. They can track health diagnostics and spot where people gather to then adjust ventilation and air quality accordingly while enabling remote monitoring and servicing for facility management. Intelligent infrastructure learns and adapts by facilitating interaction between people and spaces. To do so, central platforms integrate all data into one ecosystem, which allows for insight across data types and can operate all building controls. **graphic B**

Smart offices optimize themselves. Machine learning algorithms interpret collected data and present it in comprehensive dashboards that provide actionable insights into both human-focused parameters like occupancy, interaction, noise and satisfaction, as well as infrastructure-focused parameters such as building status, environmental factors and resource efficiency.

Users can manually adjust building functions in a device-based app. While most data is generated anonymously, users can benefit from sharing personal data in return for personalized services. The app is the gateway to these services for the user, which ensures seamless and comfortable interaction with building functions for individual customization.

5 Attema, Jeremy et al. 2018. "The financial case for high-performance buildings." stok, accessed August 4th 2020. https://stok.com/wp-content/uploads/2018/10/stok_report_financial-case-for-high-performance-buildings.pdf

"The aggregation of data in the cloud is easy – making the hardware collecting the data compatible will be the key challenge for existing infrastructure."
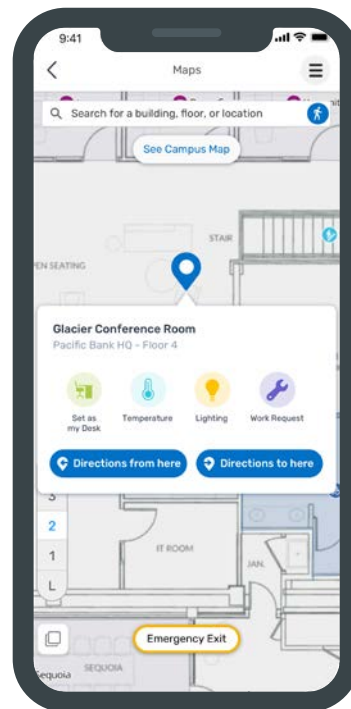
CEO, Real Estate Developer

Where we are: Productivity barriers in typical offices

Today's offices are rarely characterless cubicle towers. But even comfortable, open-space environments have productivity barriers for their users. Office users spend time on non-value-adding, time-consuming activities like searching for meeting rooms and are often annoyed by nuisances like glaring light. Typical offices hinder productivity in all four productivity dimensions.

Factors like unpleasant temperatures and humidity or lack of air exchange contribute to higher levels of exhaustion, impeding **physical health**. Unsuitable conditions such as improper lighting and uncontained noise decrease **comfort**. Especially in offices with assigned work spaces, the sense of **community** and spontaneous **collaboration** is minimal, since exchanges are typically confined to breaks. Office workers are limited in their choice of work space – quiet areas for high-concentration work are a privilege reserved for private office users, while creative spaces are only available when booked in advance. With little opportunity to adjust to fluctuating energy levels, users≤**wellbeing** takes a hit. Elevator queues, guest check-in processes and finding colleagues take valuable time away from real work, reducing the sense of **personal achievement and progress**.

A recent study by the Fraunhofer Institute of Industrial Engineering among 6,000 office workers illustrates these factors. Users emphasize the importance of high-quality surroundings, good acoustics, the availability of quiet spaces for concentration and relaxed spaces for breaks, fresh air and the opportunities for spontaneous conversation as key factors for high productivity. On the other hand, lack of distance to others, distractions due to movement, dry air, insufficient or glaring lighting, a lack of cooling, and isolation impede productivity. So how do smart offices increase productivity?

App as gateway to smart office functionality

Where we need to go: The user journey in a user-centric smart office

Smart offices eliminate the productivity barriers of typical offices and offer additional, productivity-generating benefits. Also, smart offices form the center of an ecosystem, relating the building to its surroundings and extending the office experience to home.

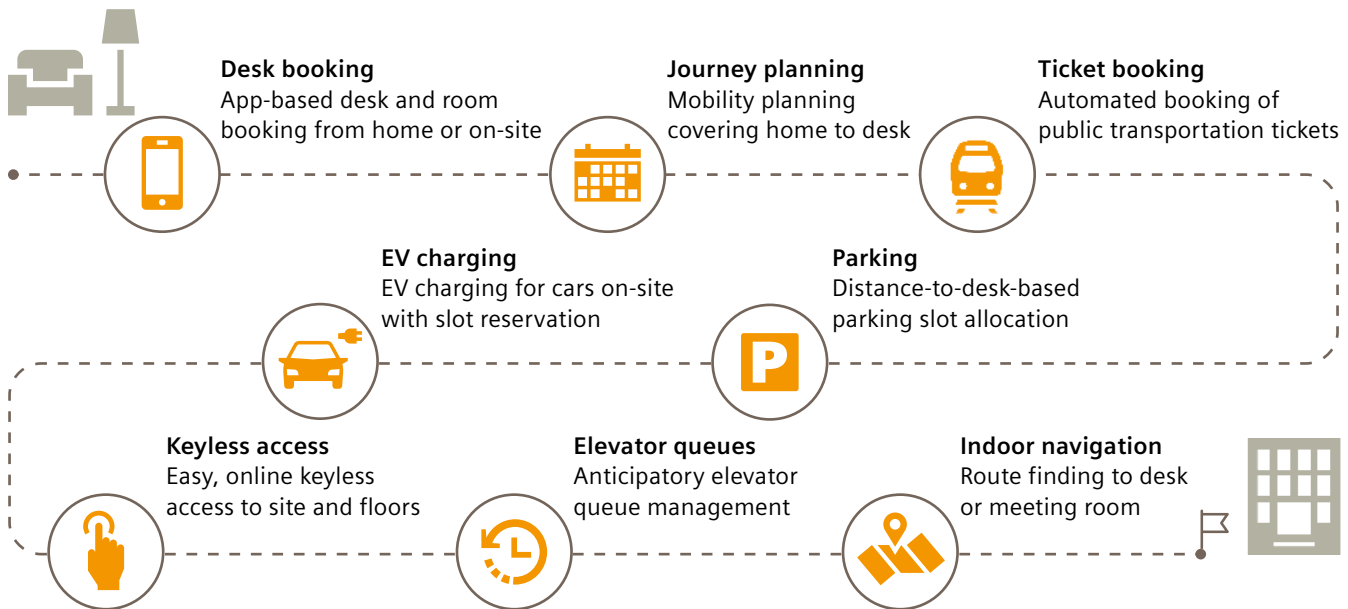Office users overcome productivity barriers by using a smart office app. They manually adjust ambient environmental conditions to their personal preferences or enable automatic adjustments. Combined with state-of-the-art building technology, this enables users to feel **comfortable** and **healthy**. The app lets users find colleagues, as the smart office is aware of people's locations across floors and rooms, helping to build a stronger sense of **community**. Desk and room booking features maximize the opportunities to **collaborate** with colleagues. Meeting or team working rooms, quiet spaces for concentration, or a phone booth to make a quick private call can be booked for instant use, fostering **wellbeing**. The smart office also optimizes elevator queues such that waiting times are avoided, and can take care of visitor passes, guest check-in and guiding visitors to their meeting room. With these time-consuming tasks taken off their hands, office workers can spend their time on value-adding tasks, making **progress** and experiencing a feeling of **accomplishment**.

C User journey in the smart office

Desk booking
App-based desk and room booking from home or on-site

Journey planning
Mobility planning covering home to desk

Ticket booking
Automated booking of public transportation tickets

EV charging
EV charging for cars on-site with slot reservation

Parking
Distance-to-desk-based parking slot allocation

Keyless access
Easy, online keyless access to site and floors

Elevator queues
Anticipatory elevator queue management

Indoor navigation
Route finding to desk or meeting room

The smart office offers additional benefits through background optimizations for even higher productivity. It handles conflicting room requests and optimizes bookings to give everyone what they need. Even if issues arise, users can easily report them in the app. It intelligently reminds users to take breaks and consume sufficient water, while also notifying them about distracting building systems tests such as fire alarms. To foster a sense of community, the smart office engineers serendipitous encounters with colleagues working on similar topics. For increased comfort, the app manages keyless access to building and floors. The office user can capitalize on gains such as better work flow or a more creative mindset. **graphic C**

The smart office is the center of an ecosystem: The journey to and from the office and the home as well as breaks inside and outside of the building become part of the office experience. The smart office can take care of identifying an optimal route from home to desk, booking public transportation tickets or guiding the user to an EV charger. During lunch breaks, it suggests suitable restaurants in the vicinity or manages the user's time intelligently to allow for a gym workout or a yoga class to fit into their schedule. For typical errands around the workday, it manages appointments conveniently and coordinates time slots. Office users save time by blending work and life, increasing their satisfaction and productivity levels. **graphic D**

"In the smart office, the experience of being inside and outside of the office will be linked – the office is the center of an ecosystem incorporating the journey to the office, lunch breaks, events and services that office users always need."

Benjamin Anthony, Vice President Digital Buildings Middle East & Asia Pacific, Siemens Smart Infrastructure

"The smart office is desired, and it is desired now.
While different world regions need tailor-made solutions
to address local challenges, solutions to realize
the smart office everywhere are readily available."

Richard Nowak, Segment Head Building Automation North America, Siemens Smart Infrastructure

D The smart office at the center of an ecosystem

Arranging errands like
dry cleaning or shoe repairs

Synchronizing
deliveries

Managing appointments
based on schedule
and occupancy rate

Suggesting lunch places based
on preferences or occupancy

Coordinating with amenities
around the office,
e.g. physical exercise

Keeping track of events
around the office, pre-book-
ing and notifying of changes

Source: Roland Berger

How to start? What decision makers need to do to make the office smart

Decision makers should think about a strategy to make their offices smart. C-suite management attention is required to build a holistic office real estate portfolio strategy, and human resource management must bring their perspective to the table. A holistic review of the office portfolio is defined at company level but addresses globally varying local needs and requirements: In the US or Europe, green-field office buildings are rare. A careful retrofitting of existing infrastructure is required to make offices smart. This is very different in Asia or the Middle East, where there is ample opportunity to design new office buildings from scratch and bring in state-of-the-art technology.

An experienced, reliable and strong partner can help companies implement these changes. Harmonizing the portfolio across locations and technologies seems daunting, but efficient solutions exist and can be integrated with current building technology. With personnel costs being the biggest cost factor, maximizing productivity is crucial. The smart office based on productivity KPIs is the way to get there.

User centricity is not the only key differentiating factor of smart offices. Both corporate and commercial real estate stakeholders require more flexible offices that easily adapt to changing needs and requirements. This is what we will discuss in the next white paper in this series: flexibility.

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people and helps customers to better use resources.

It helps our customers to thrive, communities to progress
and supports sustainable development.

Creating environments that care.
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