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Beyond Multispace

Scenarios of altered requirements in office spaces and buildings in the urban context between now and 2030

Ed.: Wilhelm Bauer | Stefan Rief

Joint Research Project:

OFFICE 21[®]
Zukunft der Arbeit

Introduction



Dear reader,

Our working world is in a state of constant flux driven by the three Ds: demographics, digitalization and decarbonization. Most recently however, it has been the Covid-19 pandemic providing the big push towards the future in office work and the knowledge economy.

Will this development continue? What does the future hold for the office as we know it? It would be too easy if we could peer into a crystal ball and see the eventual outcome before us. The further into the future we try to look, the more uncertainties seem to appear and the more complex the interacting and interdependent factors. There is not one clear prognosis for the future. But in science, we have the opportunity to hypothesize, prepare for what's coming and to shape the future, too. The scenario management methodology is a particularly good tool for this.

Scenarios are by no means certain developments, but consistent and coherent visions for the future for the chosen scenario scope. They are based on a series of hypothesized events and show the possible developments and consequences of these. In this study, we explore selected scenarios to describe possible ways that the world of work will develop in the future. The scenarios described should serve to prepare readers for various development possibilities and can help them to derive suitable recommendations for actions in practice.

We hope you enjoy reading this study and find it a useful point of reference for your organization.

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Central findings of the study

Not just since the outbreak of the Covid-19 pandemic, the working world for office and knowledge workers has been in flux. For some time, the advancing digitalization of both the working world and our living environment has been driving a paradigm shift. An uptick in adoption of flexi-time and location-independent working models, the spread of agile methods and changed expectations on the part of employees are just some reasons for changing the way we work in office buildings. These changes have been boosted by the pandemic, gaining significant traction. Almost every organization was faced with the question of how future-proof workspaces and office buildings really are and how these office spaces and properties should be designed with regard to the very dynamic environment.

In order to look at these and future developments from multiple perspectives, we used a scenario development process as part of the Office 21® joint research project to tackle the following research questions: “How is the character of office and knowledge work changing and what implications does this have for office and building structures, district developments and associated services?”

This study illustrates future-oriented outlooks for office environments. We developed various scenarios for working in office spaces to support employee wellbeing as well as to foster productive working within the scope of office and knowledge work under the new circumstances. The scenarios describe the effects and the mutual interdependencies of various influence parameters (“key factors”) on office spaces and buildings.

In the scenario process, four scenarios came to light which present possible, consistent pictures for the future. From these scenarios we were able to derive similarities and define fields of action which are relevant for designing office workplaces with a focus on the future.

The following fields of action were identified:

- Hybridity – a mix of virtual and physical presence
- (Digital) networking – extent of cognitive environments
- Health and well-being – ergonomic quality of the working space
- Sustainability – Extent of environmental awareness and consistent action
- Office space requirements – changed demand for office spaces
- Staging – directing corporate culture, togetherness and inspiration
- Third places – workplaces not at home or the office
- Legislation – changed laws, guidelines and regulations

Work and office environments must be integrated into public spaces as complex ecosystems and considered in the context of social and political influences. The future world of work is multi-locational, diverse and experience-oriented, and is shaped by constant change and staging. The continually changing requirements for office property can be a challenge, but they also offer the opportunity to actively and constructively redefine and design the role of office spaces for the future, drawing on interactions between business, the public sector, politics and society.

In the scenario process, the following key factors which influence office and knowledge work were identified:



Figure 1: Key factors identified.

Overview of the scenarios developed:



Scenario 1: “New free world”

An experience and value-oriented society expects the highest level of flexibility in all areas. There has been an increase in environmental awareness and consistent actions in this respect throughout society. Technologies are designed to enable comprehensive flexibility and networking. Office and knowledge workers, who are legally guaranteed a high degree of individuality and flexibility regarding scheduling their working hours, work location-independent, whenever and for whom they choose. The line between work and private life, as well as the definition of the “office”, is fluid.

Scenario 2: “Back from the future”

The post-pandemic world of work has changed – but not to the degree that was expected during the pandemic. We continue down the path we had been forging until now, tentatively increasing our flexibility – but this does not apply to everyone and is not to an excessive extent, due to state intervention and regulation. This leads to polarization within the working population. The office as a place of work is experiencing a boom, becoming an all-round solution to meet a diversified range of needs





Scenario 2: “Back from the future”

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Scenario 4: “Individual focus”

Employees are primarily concerned with maximizing personal advantages and individuality. To meet these needs, the companies who can afford it offer their employees the greatest possible freedom and the newest technologies. Using various workspaces both outside and inside the office plays an important role in this. Employees, hungry for experiences, demand both flexibility and well-equipped, inspiring offices. Workspaces must have an exciting design and need to be changed and reimagined on an ongoing basis. Otherwise, employees get this experience outside the office environment in attractive and exclusive third places.



Objectives and procedure

Shortly before the outbreak of the pandemic, work began on the scenario development process described below. The methodology chosen is designed to help think about long-term developments. This allowed the knowledge gained from the ongoing pandemic to feed into the process. Fundamentally, these related to the wide-scale spread and acceleration of the developments named.

Thereafter, the methodology applied, the key factors identified for the scenario scopes and the four developed scenarios to describe possible developments in “Work in office buildings” are described. These scenarios should produce possible, but always internally consistent images for the future. This is not about predicting certain future developments, but rather about mapping corridors to possible developments which could occur in parallel in parts of working society.

The scenario development focused on the research question: “How is the face of office and knowledge work changing and what implications does that have for office and building structures, district developments and associated services?”.

To ensure that the scenarios are easy to read and compare, they are described with a unified structure. After an initial description of the scenario, the effects on the following areas are outlined:

- Society and economic environment
- Environment and state
- Technology
- Working and office world

Then, the effects of each scenario on office spaces and real estate are described. To aid visualization, every scenario concludes with a typical working day, utilizing personas.

After presenting the scenarios, there is a summary and comparison of the scenarios using the characteristic features which appear with varying intensity in each scenario and have therefore been identified as fields of action. This study concludes with recommended actions regarding the future of working and office environments.

The process

The first step involved a panel of experts comprising scientists from the Fraunhofer IAO and representatives from Office 21® partner firms, defining the scope of the scenario and its influence factors. This group defined the most crucial key factors by considering the mutual effects of over 50 possible influencing factors. The 21 factors chosen – called descriptors – show the highest dynamic and influence values in a defined scenario scope which includes all potential influence factors. The next step was to define two to three possible, future development paths for each of these 21 factors, known as characteristics.

The mutual compatibility of each of the characteristics is crucial for the development of an internally consistent scenario. Only then is a scenario considered rigorous in its internal construction. To calculate this compatibility, all characteristics were rated by the experts on their mutual inhibiting, neutral or supporting effect.

With this basis for evaluation, the precise combination must be chosen so that these characteristics counteract one another as little as possible in the overall context, in order to create a consistent scenario. With a total of 10,616,832 possible combinations (free combinations of the characteristics of all 21 key factors), technical support is required to check for consistency. For this purpose, we used ScenarioWizard, developed at the University of Stuttgart. ScenarioWizard is a software program for qualitative system and scenario analysis based on a Cross-Impact Balance Analysis (CIB).

The CIB method is a modern form of Cross-Impact Balance Analysis which is especially diversely, theoretically based, but is nonetheless easy to understand. It consists of a tried-and-tested combination of expert discourse and evaluation algorithms that has been harmonized on the basis of numerous experiences (University of Stuttgart – ScenarioWizard).

The CIB algorithm is used to define the consistent configurations (“consistent scenarios”) of the interdependency network which describe, in the form of scenarios, the possible developments of the whole system considering the direct and indirect system effects.

The first two scenarios introduced show the highest consistency values of all possible combinations of characteristics and were determined by the algorithm used to be self-contained and valid scenarios.

Because the scenarios relate to the future, these are obviously not completely certain. Many factors could result in changes. Unforeseeable and sudden events are marked in the scenario technology as wildcards. These can greatly influence the whole system. Wildcards could be, for example, the increasing greening of the population. Therefore, in the study, the relevant characteristics of the key factors which indicate increased greening were deemed “fixed” in ScenarioWizard. ScenarioWizard then checked the compatible characteristics of the other key factors and calculated another valid scenario. This is the third scenario introduced here, “New green Europe”.

The fourth scenario was created at the request of the partner companies. The wildcard in this scenario was a growing Me Culture and a society oriented around individuality.

Personas

Personas were developed for the processing of the results from the scenario process. The scenarios are illustrated using storytelling featuring personas to make it easier for readers to immerse themselves in the various worlds of work. The objective of this is to make the scenarios have a more tangible effect rather than simply describing them in an abstract way.

Personas are fictitious people which are often used for marketing or product development processes. Personas pool characteristics, wishes and expectations from typical customer groups into a sort of customer model. To create this, we first need to analyze the wishes, needs and problems of the target groups. The aim is to better understand the target groups and appropriately design the product offer and communication based on this.

The pictographic replication of a working day of the personas in the respective scenarios should help to derive the demands on the world of work and office buildings, as well as the associated required services.

Scope of scenario and key factors

To achieve the objective of developing scenarios with changed requirements for office spaces and properties in the urban environment, the scope of the scenario was defined as office and knowledge work, in particular working in office buildings. Knowledge workers have a high level of technical or specialist knowledge, education or experience and their main job is to create, disseminate or use knowledge (Davenport, 2005).

This investigation sphere is influenced by various factors. This investigation focused on the following categories: society, political framework conditions, technology, environment, infrastructure, market developments, district, world of work and workplace, with their determining factors for the research subject.

These 21 factors are listed below with their relevant definitions for the research subject. The order of the descriptors results from the process of determining key factors with the dynamic index, beginning with the highest value. The dynamic index value indicates the interconnectedness of a factor in the system considered – that is, how many other factors are influenced by it and the number of these factors that it is influenced by and to what extent. If the dynamic index value of a factor is high, it is strongly involved in the system.



Climate change

Definition: The human-driven increase in global warming. Consequences include a rise in sea levels, scarcity of drinking water, desertification, increased migration and more frequent extreme weather events, which altogether lead to increased global costs (Umweltbundesamt, 2016; Umweltbundesamt, 2014; Madry & Fischer, 2014).



Understanding of work

Definition: Individual understanding of work:
Work for a sense of purpose or “work to live”
(Hornik et al., 2020).



Working from home

Definition: Performing your role at home in any way, from occasionally working from home to regular mobile work, to classic teleworking models.



Third places

Definition: Offer of and working from alternative working spaces (such as coworking spaces, neighborhood offices, satellite offices) rather than from a traditional office, both in urban environments and the countryside.



Environmental awareness

Definition: Considering ecological principles in your day-to-day behavior (de Haan & Kuckartz, 2013, S. 104). Conscious handling of material resources and use of sustainable materials.



Sharing economy

Definition: This describes the principle of shared use rather than ownership (Haese, 2015, S. 1). Resources are shared on various levels, for example, mobility (car sharing), workplaces (desk sharing) or workspaces (coworking).



Conformity of values

Definition: Selection of products, services and companies in line with cultural and social values which match your own values (Do I identify with this company/product/service?) (Hornik et al., 2020).



Health safeguarding and awareness

Definition: Maintaining and promoting physical and mental health through preventative measures (Abel & Sommerhalder, 2015).



Experience seeking

Definition: People no longer want to simply satisfy individual needs, rather the "experience" is front and center (Schulze, 1992), both in a private and working context.



Labor law

Definition: Laws and regulations to regulate occupational health and safety or employee rights (such as workplace guidelines, the legal right to work from home).



Climate Law

Definition: Laws and regulations which aim to mitigate climate change and its effects (BKG, 2019), for example, climate-neutral construction or limiting flights.



Smart buildings

Definition: Smart buildings interact digitally with their users, systems and their environment. They learn from previous experience using real-time data and can increase building energy efficiency (Sinopoli, 2010).



(Wireless) communication technology

Definition: Communication technologies for data exchanges, for example, between mobile end devices, displays and the infrastructure/sensors in the room (e.g., 5G).



Flexibilization of working hours

Definition: The dynamic adaptation of working hours and working hours models to suit individual needs (e.g., four-day week).



Externalization of office spaces

Definition: Organizations' office spaces are supplemented by external areas such as coworking spaces.



Flexible workplace usage

Definition: Non-territorial workplace concepts and task-oriented workplace choice.



Workation

Definition: Mobile, temporary work from a vacation destination (Matsushita, 2021).



CO₂ tax

Definition: Environmental tax on CO₂ emissions (Parry, 2019) and, if applicable, other greenhouse gases. The aim of this kind of tax is to reduce the negative effects – especially global warming and acidification of oceans – caused by these emissions by creating a higher price for CO₂ (Handelsblatt, 2021).



Platform economy

Definition: Digitalization helps create new value creation mechanisms, which are primarily processed via platforms (in specialist service platforms) (Lenz, 2020; Bundesverband Industrie Kommunikation).



Gig working and freelancing

Definition: (Small) tasks are given to independent self-employed workers at short-notice (Deges, 2020). This usually takes place via online platforms which set out their own conditions/frame-work conditions and act as an intermediary between the customer and job-taker, whereby the operator earns a commission.



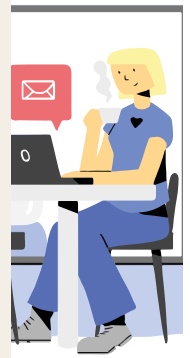
Automation

Definition: Use of software for the automated achievement of standardizable tasks (Das Lexikon der Wirtschaft, 2016) in the office and knowledge work environment (routine tasks).

Scenario 1: “New free world”

Short description

An experience and value-oriented society expects the highest level of flexibility in all areas and demands this in both purchasing and use decisions. Environmental awareness and consistent actions in this respect are increasing throughout society, supported by state interventions. Technologies are designed to enable comprehensive flexibility and networking in all areas. Office and knowledge workers, who are legally guaranteed a high degree of individuality and flexibility regarding designing their working hours, work in a location-independent way, whenever and for whom they choose. The line between work and private life, as well as the definition of the “office”, is fluid.



Society and economic environment

Simply earning a living is no longer enough for many people and society is increasingly hungry for experiences. People focus their efforts on finding experiences, both in their private lives and at work. Intrinsically motivated people strive for deeper experiences, with material remuneration losing its significance. This change is increasingly noticeable in the world of work. People no longer want to work to finance their lives, they want to glean personal value from work. As well as designing their free time to be oriented around experiences, they carry this sense of entitlement into their working life. Experience is increasingly in focus, both when choosing a job and in day-to-day work and thus must be addressed.

This is accompanied by an understanding that work is for a sense of fulfilment, a view which is true for a significant proportion of office workers. This “purpose economy” dissolves the understanding of “working to live”. This corresponds to Frithjof Bergmann’s thesis (2004), who connected this sense of fulfilment with New Work very early on and described it as part of a new understanding of work. A variety of workers take care to carry out work which, for the most part, they understand to be fulfilling. This stance is seen across all sections of society.

Society is focused on safeguarding personal health as a result of the Covid-19 pandemic. The need to protect and safeguard our own health by taking preventive measures is becoming a megatrend in office and knowledge work. This includes, as well as physical health, the safeguarding and promotion of mental health. A variety of measures, products and services for these purposes are increasingly being requested and used.

Purchase and use decisions are based on an alignment with a person's own values. This value conformity plays a key role in the selection of products, services and working for specific organizations. The price or effort to procure products and services are considered less important than value conformity. Selection takes place in accordance with cultural and social values which align with one's own values. This leads to a strong orientation towards value both on the market-side and on the part of the provider, as well as at companies, which stand for and embody particular values.

On the demand-side, the sharing economy experiences massive growth because the readiness to use infrastructures and capital assets as a community increases. This leads to a change in mobility, on the one hand, and on the other to a further restructuring of the use of property. The offers are increasingly attractive due to resource scarcity and other factors, such as increasing CO₂ prices. The advantages of shared use outweigh many other factors and thereby convince increasing numbers of people to embrace the concept of "use, don't own".

Almost every transaction on the market, not just sharing, takes place via platforms. The platform industry is experiencing a sustained triumph and extends its expertise to include arranging office places and workspaces, employees and other complementary services. Platforms are accessible anywhere, at any time, and are increasingly used by more people in this ever-more flexible world. This new economic environment uses freelancing to assign work for highly qualified, top professionals via platforms on a project-by-project basis. In this way, for example, companies can absorb short-term peaks of work and react more quickly to market-side requirements since this no longer requires a lengthy, long-term personnel procurement process. On the other hand, these developments lead to the formation of monopolies within the platforms.

Environment and state

Environmental awareness and consistent actions in this respect are increasing throughout society. Ecological principles are considered, people are conscious in their use of material resources and sustainable materials are used. People are aware of the effects of their actions on the environment and companies recognize their breadth of responsibility and design options. This changed environmental awareness is visible in various guises – it's no longer seen as a marketing instrument but as a part of corporate responsibility. Environmental awareness plays an ever-greater role in building and operating office properties and changes the planning and use of property. Needs analyses are increasingly critically checked and questioned on the basis of environmental aspects.

This development is driven by the state, which enacts laws, guidelines and regulations which are established quickly and effective on a broad scale. Companies are obliged to align themselves with this consistent political line of approach regarding climate change mitigation.

An important instrument here is CO₂ tax, which is continually increasing and expanding its scope. Because this tax is a relevant cost factor for both industry and consumers, there is an effective increase in the collective effort to reduce greenhouse gases. Simultaneously, the high CO₂ tax serves to remove or at least significantly reduce the cost disadvantage which frequently still exists for sustainably produced goods.

With the aim of slowing down the effects of climate change in Germany and Europe, measures are introduced to increase environmental awareness and the associated responsible behaviors. That said, this does not stop human-driven global warming or its consequences of rising sea levels, scarcity of drinking water, desertification, increasing frequency of extreme weather events and the resultant global migration, but at least these developments are not accelerated further.

In the area of labor law, the state forces increased flexibility in the world of work. This includes the regulations on occupation health and safety as well as a right to work from home. The regulations are designed so that companies can unbureaucratically ensure their employees have a high degree of freedom regarding designing their work day (place and hours). Liability and insurance-related questions are easily resolved without great effort. The advantages of a more flexible world of work outweigh labor law considerations, allowing society to achieve a high degree of flexibility.

Technology

In the realm of technology, technical opportunities are comprehensively implemented and used. Smart technology and new (wireless) communications technologies are increasingly established in office and residential buildings. The buildings become smart buildings, evaluating the use and real-time data from integrated technical systems and their environment, and interacting with their users. On the one hand, this supports the sustainable running of office buildings, while on the other it allows for wide-spread networking inside and outside the building. This again opens up new approaches to designing urban built environments and the development of the social sphere, which is now also making its way into the buildings. Temporarily opening parts of the building or outside areas (such as roof terraces) is easy to control via technology and allows the buildings to be used in new ways. Intelligent building control aids environmentally conscious building management and the megatrend of health safeguarding can also be supported using technological solutions, through which, for example, ventilation cycles can be dynamically linked with the current building occupation rate.

Working and office world

Technological development also continues its progress in the world of work. Thanks to new technological solutions in office and knowledge work, the majority of routine tasks are automated, freeing up capacity for creative work and new innovations. The priority is not to streamline the tasks, but to fully exploit the technological opportunities to levy new developments.

There are a variety of different, flexible working hour models in use. Whether changing daily, seasonally or based on other cycles, the design of working hours is largely left to the employees themselves. The diverse models are not individual exemptions, but rather fixed methods of personnel management. Employees allocate their time according to their personal needs and desires, on the one hand to allow harmony between their working and private life and on the other, to allow them to pursue personal projects, from social engagements to business ideas.

Home office is used flexibly by almost all office and knowledge workers. People's own homes play an important role in the workspace-mix. For some, it is their main place of work, while others only work from home occasionally or intermittently. There are various reasons for the differences in how home working is applied, ranging from reducing commuting times and organizing private appointments, to consciously withdrawing from being available to talk to in the office.

As well as, or instead of, working from home, some employees also use third places as workplaces. These third places include neighborhood offices, coworking spaces and alternative new workspaces, such as public or semi-public locations like train stations, educational facilities, sports and cultural spaces. Shops and hospitality locations are included in this category (cf. Papasabbas 2019).

People do not just do their work within the immediate surroundings of their working and living environment. There is a big demand for the "workation" concept, that is, temporarily working from places which are not where you live – particularly holiday destinations. The pandemic has shown that it is possible to work away from the office. In certain cases, it is no longer deemed necessary to limit remote working to your own home. Some hotels and regions have already become specialized in this area and offer specially equipped rooms and vacation properties for remote working with good internet connection. Workation can be used by a large proportion of office and knowledge workers and are no longer reserved just for digital nomads. The regulatory and labor law requirements which hinder temporary work from foreign countries are becoming increasingly simplified and harmonized, especially within the EU.

As a result of increasing freedom regarding working hours and locations, workplaces in office buildings are used flexibly by all office and knowledge workers. Simultaneously, having your own, personal assigned workspace is losing significance because the empty, unused office rooms seem nonsensical to employees in the face of the new working mentality. The dynamic requirements for collaboration can be met in the space in various ways, as required. This makes it possible for employees working together on a project to spontaneously come together with no difficulty, without needing to prepare the space or rearrange any furniture.

The office, as a consequence, becomes borderless and can be anywhere. Many people take out memberships for offices and workspaces. They can stop anywhere they would like to work and find a workspace. This results in new potential for collaboration and innovations. Gig working and freelancing models are expanding, fueling these developments further. Independent workers choose their work on a project basis by using a platform and then look for the ideal workspace in the same way.

Effects on office spaces and property

In a highly flexible working and social world, in which an experience and value-oriented society can work from anywhere, or indeed still in an office, what do organizations' office environments look like? The office building is not obsolete in this scenario, rather it is primarily the intensity and cycles of work that are seeing significant change.

Scenario 1 is one of maximum flexibility. This drastically changes the demands on offices. A considerable proportion of office workers use their legally guaranteed freedom to choose their own workspace and are leaving urban areas for the countryside. Another portion work periodically and on an intermittent basis – at times which were formally the off-season – from other locations, for example in other European countries using tourist accommodation or coworking/co-living spaces. At the same time, many people work from home. People whose homes are not ideal working spaces work in coworking spaces close to their homes, or in the suburbs. Public services especially have a pioneering role in equipping a variety of public buildings with coworking areas, because these offer a sustainable use of property.

As well as flexible working locations, a variety of different working models are being established. A high proportion of employees are reducing their working hours to focus on private projects or self-care. Workers who have families, or are in other phases of life, are instead adopting a Scandinavian working model. They work in the mornings and evenings and use the time in between for family. In this scenario, working hours are not limited to merely the typical, Monday to Friday working week. The opportunity to work anywhere at any time leads to employees selecting their own working days and sometimes working on weekends depending on personal preference and individual needs.

As a result of this extreme flexibility in work design, demand for office space in expensive downtown locations is declining. However, no one-to-one relationship can be established from this, because for a certain number of existing office spaces the purpose simply changes. For example, as a result of technical advances and automation of routine tasks, the creative roles in innovation generation increase. The design of working environments which promote creativity and the provision of interactive spaces for this has an important role to play in this scenario. Creative jobs, which are often associated with intensive collaboration between colleagues, could be a reason for spending temporary or long-term periods in the office. Depending on the sector and the requirements, there are companies in which the proportion of these environments which foster creativity are significantly higher than elsewhere. The focus here is on spaces for collaboration and (agile) project work. There will be a significant differentiation in the working environments of different organizations. Co-living spaces or opportunities to stay near work at the company site could be an option to aid employees with long commute times during phases of intensive work.

The changing use cycles and types for office areas present big challenges for organizations and especially for property planning. How can you achieve good utilization and optimum office space design when the number of users changes daily and is hard to predict? This is where smart buildings come in. With the help of predictive analytics, these buildings generate utilization predictions from data collected regarding utilization history in the building (e.g., from workspaces, creative project rooms, social spaces). Planned absences for vacations or workations are also considered in the algorithm. This allows required space, or free space to be repurposed, to be advertised.

Another possibility for coping with the new use cycles is multiple organizations sharing the same office space.

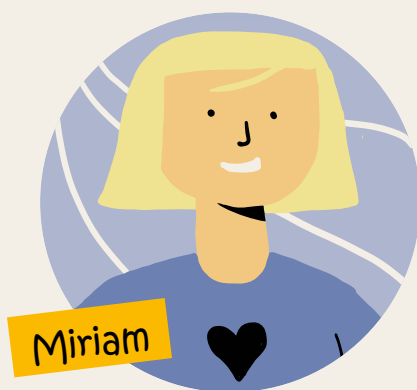
Alongside the above-mentioned developments, decentralized office structures such as office hubs are being established, offering mobile workers a sense of belonging to a firm, as well as providing supporting services. A digital, platform-based workspace sharing system, especially with a combination of small firms, becomes standard in this hyper-flexible world of work. Due to increasing flexibilization, the organizational culture is decisive when it comes to which companies succeed in the leap to the hybrid working world and are able to use this to their advantage. The further apart the working locations of employees are, the harder it is for them to maintain social contact. The office therefore becomes a sort of cultural anchor, which promotes a sense of togetherness and social exchange between colleagues.

Accordingly, the working environment must provide the right setting for the employees. It is no longer enough to reorganize this setting every few years, it needs to be continually adapted to the needs of the employees. The office must be able to adapt to its surroundings, like an amphibian. This adds a new role to traditional facility management. Technological tools support the preparation of the working environment currently required by the organization. Working environments are orchestrated and must distinguish themselves from mere working spaces, because, in this scenario, work can be done anywhere. High ergonomic standards can help to transform office rooms into oases of health.

A typical working day in the "New free world" scenario

The following section describes a typical working day in the "New free world" scenario. It should be emphasized here that in a flexible world of work, there can be no "standard" working day. Nevertheless, typical situations which characterize a working day in this scenario can be described.

The fictitious persona is Miriam; 35 years old, working as a UX designer in a large firm. She loves the freedom of being able to work from anywhere but still values and maintains her social relationships with her colleagues. She draws her creativity from being able to frequently change her working environment.



Age **35**

Income € € € € €

Living situation

Mobility

Civil Status

She enjoys...

Travel

Tech

Sharing

Working style

connected

creative

from anywhere

Values/Motivation/Life goals

Implementing ideas

Discovering new things

It is important to her that the office is a place where:

- she can discuss and share ideas with colleagues in a pleasant atmosphere;
- there is a set space for creative workshops;
- she can do focused work.

Miriam starts the working day at a café in her neighborhood. After being notified of her project partner's presence via an app, she drives to the office in a carsharing car.



Miriam reaches the office in time for lunch with her project partner. After eating together they go to a work lounge next to the canteen.



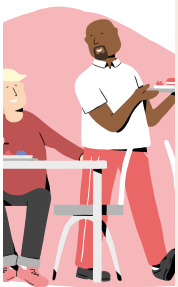
In the afternoon, Miriam takes part in a creative workshop taking place in a theater next to the office building which was rented out for the purpose.



After work, Miriam sets off for the train station. She takes advantage of the freedom her employer gives her for a two-week workation in the mountains.



Scenario 2: "Back from the future"



Short description

This scenario assumes a polarization of the working population. The post-pandemic world of work has changed – but not to the degree that was expected at the height of Covid-19. We continue down the path we had been forging until now, tentatively increasing our flexibility – but this does not apply to everyone and is not to an excessive extent, due to state intervention and regulation. The role of the office as a place of work experienced a resurgence and was required to become an all-round solution to meet wide-ranging needs. This scenario can be summarized as "Back from the future".

Society and economic environment

Climate change is ever-more perceptible in Germany and across Europe and associated weather events (such as extreme heat waves, flooding) occur at shorter intervals. Nevertheless, the population remains cautious in its awareness of the necessity for change in the way we live. Only in a few groups is environmental awareness increasing, with solid action being taken in accordance with this.

As a result of this, only certain groups make use of sharing offers to ensure they can maximize flexibility, sustainability and optimally use their resources. Sharing is making increasing progress in some areas of life, but is only utilized by a small proportion of the population, so it hasn't achieved market penetration.

Across all groups of society, purchase and use decisions are based on one's own values. This means that members of society behave according to their own individual guiding principles, which can lead to polarization. For example, parts of society place great value on their health and on preventive healthcare. Here, products and services for health promotion and safeguarding are increasingly in demand. Behavior regarding work reflects this. Employees value a healthy office environment, in regard to both mental and physical aspects. Office layouts with relaxation spaces and quiet rooms are one option to meet these desires, as are yoga courses and relaxation exercises. Certifications for appropriately designed office environments and working models resonate well with this group.

If an office does not have this kind of offer, these people tend to work from a well-equipped office at home. In this scenario, only a small proportion of people are focused on finding experiences. Temporary working from other locations, such as holiday destinations (workation), is rare and is a more unusual choice.

The sharing economy model is mostly driven via online platforms. This also has effects on the labor market. Gig working and freelancing roles are used by companies for cheap labor and jobs are dispensed in highly competitive platform environments. The economic advantages of this working model for the companies are obvious. But the model can also be useful for workers. The large majority of office workers see work, as they did before, as a means to secure their livelihood.

Environment and state

Platforms are used to disseminate sharing offers, and freelance and gig-working opportunities. The state is well aware of the risks of these business models. Especially in the realm of freelancing, a lack of regulation can lead to the exploitation of workers. In the platform industry, the state should intervene to prevent monopolies.

In general, politicians are motivated to regulate and intervene. The legislation attempts to mitigate the causes of climate change and the negative effects on the market with laws and guidelines. Legislative processes, guidelines and regulations on climate change mitigation come into effect, but with long grace periods and allowing numerous exceptions, whereby these areas are largely unaffected by legal regulation. CO₂ tax also remains largely ineffective (for example, because it is lost in the general price increases). Companies in this area still have great freedom and only have to slowly adjust to new regulations regarding environment and sustainability.

When it comes to labor law, the state is quicker to intervene. Here, there are still many bureaucratic obstacles which limit overly flexible workplace organizations. Therefore, working from home and third places is more of an unusual occurrence and the option is not used by the majority of the population. The workation is one of the concepts affected by this, especially in Europe, where the un-harmonized tax laws and social policies make it impractical for people to have workations across the board.

Technology

The state is also keen to regulate technology. Stricter regulatory frameworks (i.e., data protection), alongside technical and financial challenges mean that smart environments are only occasionally realized, for example. The potential of smart buildings or automation of routine activities, especially in the office environment, can only be realized to a limited extent. This is, on the one hand, socially acceptable in terms of preserving routine jobs and the associated employment opportunities, but on the other, it leaves the potential for innovation and opportunities from digitalization largely unexplored.

Additionally, in some areas there is a greater need for investment, as well as an overall investment backlog. For example, digital infrastructure as a whole is not as well developed as it would need to be for a flexibilization of the working environment. Wireless communication technologies are either not present at all or don't meet the necessary requirements for security and reliability, which limits both companies and employees greatly. In other words, there is still plenty of room for improvement as regards digitalization.

Working and office world

In general, in the world of work and offices, there are no noteworthy developments compared to before the pandemic – rather, the existing course is maintained. In some areas, some backsliding compared to the flexible options available during the pandemic may even be observed.

After the initial hype, working from home returns to almost pre-pandemic levels and the majority of workers continue to use the office as their main place of work, as before. People working from home are likely to be those who already did so before the pandemic and people who want to work from home for health reasons (for example, to prevent them from getting infected). The use of third places to work also doesn't see a particular increase, but rather is predominantly reserved for freelancers or for the rare, digitalized and flexible company.

Corporate coworking, which is the shared use or externalization of office spaces by various companies, is almost nonexistent. The company sites are, as before, only to be used by company employees and cannot be accessed by external parties. The potential for the flexible and economic use of office workspaces is not large. Only office and knowledge workers with a high proportion of mobile work (for example, at home, or third places) can use workplaces flexibly. The mobility of employees outside the office building is not high enough overall to allow for a comprehensive use of desk sharing. Means and ways therefore need to be found to increase the efficiency and economy of office spaces.

On the contrary, the gig-working economy offers plenty of potential for flexible workspace use. Gig working is used to outsource cheap labor via high-competition platforms and to manage short-term spikes in work. These external employees are integrated either virtually or on-site with flexible workspace solutions into companies with a high level of off-site mobility.

It became clear during the pandemic that flexibilise working timeframes also had negative

consequences. While the flexibility allowed employees advantages in designing their working day around their private lives, this can quickly lead to a blurring of work boundaries and employees becoming overworked. Team spirit and efficiency also suffered while people were working remotely. As before, the office is the primary workplace, but integrating freelancers and new employees, as well as management having an overview of the teams, is increasingly complex. The polarization of the very different job and career models, for example regarding flexible working hours, leads to discussions about fairness within companies. Time synchronicity therefore has a renaissance. Companies move back to fixed working hours, within which there is a strictly regulated flexi-time framework.

Effects on office spaces and property

In this scenario it is assumed that the world of work continues to change incrementally, but not to the extent that was expected at times during the Covid-19 pandemic. Work continues down the existing path with only tentative flexibilization, but the company's premises remain, as before, the primary workplace for most employees. This means that office properties have to become all-round facilities that provide all requirements of a changing world of work. This includes a huge variety of different work zones, as these are not automatically available as they would be with a location-flexible working approach.

After an intense period of working from home, many employees value being able to work in the office or on the company campus again, and again mostly use the office as their main place of work. Especially office rooms, which are both ergonomic and leave nothing to be desired in terms of technology, are preferred over working from home. Services, such as childcare or pet care and sport opportunities, are offered around and in the office buildings. Due to the high number of employees on site, these benefits bring good returns for the companies. If necessary, services can also be outsourced or shared with other companies in the neighborhood for a greater added value with an even more economical approach.

It is important here that companies not necessarily try to save space, but offer a good mix of office spaces which meet all the requirements of a working environment, allowing for concentration, collaboration, communication and relaxation. Communication, above all, is a key factor that should be seamlessly built into the office and workspaces. First and foremost, office concepts with a good zoning of office spaces are required. An important part of this is areas which are acoustically isolated and separated communication islands to minimize potential disturbance. Because there are lots of employees in the office who want to have face-to-face conversations, a variety of multi-use communication settings are required.

Additional offers such as relaxation rooms also appeal to those employees who value a healthy office environment, both as regards physical and mental health. Creating office spaces with appropriate quiet rooms and relaxation spaces is an opportunity to cater to these wishes, as are yoga courses and relaxation sessions. In this context, certifications resonate well with health-conscious employees and are a crucial factor in employer attractiveness.

Offices do not need be over-the-top exciting, but the employer should prepare offers required

to guarantee a good working atmosphere. This includes high-quality food options with balanced meals and the opportunity to eat together with colleagues and allow employees to network. The office must also be easily reachable with private or public transport to enable employees to commute daily.

Absences for business travel and – to a limited extent – mobile working must be precisely recorded and analyzed to fully exploit the potential for efficient use of space. Flexible workspace usage is predominantly practiced for certain roles with ways of working with a high degree of internal mobility (absence from desk). This could be the case with agile, project-based work, or organizations with a high variety of hands-on jobs in laboratories or production environments. When using flexible workspace solutions, an expansion of home zones increases space efficiency, and the growth of an organization is absorbed to a certain extent by existing office spaces. A blurring of spatial department boundaries between department home zones can also contribute to the dynamic change within the company and balance out the varying daily occupation rate. Further potential for flexibilization can be realized with furnishings and intelligent storage solutions. This ensures efficiency and profitability while a large number of employees are on-site.

Some employees work from home for health reasons. These flexible workers need to be equally integrated into the organization. To ensure effortless communication, meeting rooms must be equipped with the best technology available. In this context, hybrid rooms are required, which contribute to avoiding business trips or holding virtual business meetings. Studios for large digital events and live broadcasts are part of the standard equipment required for an office building in this scenario.

The regulatory intervention from legislation in the world of work also influences building design, which leads to polarization within the organizations as well as in society in general. There are some traditional organizations and, on the contrary, the non-conformist organizations which push boundaries. This results in a variety of office types and designs and the expansion of office products and services on offer. It is only possible for similar organizations to share their office spaces.

Time synchronicity is a central element in many organizations to achieve a higher degree of togetherness in both communication and collaboration. The trend is a traditional working hour models with a fixed flexi-time frame. For companies, this means factoring in a large number of employees on site at the same time. Many services are in demand from multiple parties at once and must be designed for synchronous use and high demand. Unified working hours do make planning and management of office spaces easier, but they also limit the options for use of said spaces for a longer, more flexibly designed period. With this in mind, it is difficult to design sustainable use cycles for the office infrastructure. Consequently, the need for office space remains consistently high to ensure space usage without a loss of quality.

Advancing climate change means that higher temperatures and flood risks need to be taken into account in town and district planning for office buildings. In this case, the requirements for office buildings have increased, not just in regard to sustainability criteria but also in terms of protection from extreme weather conditions.

Because the slow expansion of broadband here limits organizations' performance, a fast internet connection becomes a key factor in choosing locations. Decisions are made about good and expensive office locations wherever organizations rely on the surrounding periphery, because they cannot easily set up the necessary IT infrastructure themselves.

A typical working day in the "Back from the future" scenario

The following section describes a typical working day in the "Back from the future" scenario.

The fictitious persona is Malte, who is 40 years old and an account manager at a hidden champion. While Malte does work from home occasionally, you can usually find him in the office where he feels most comfortable. For Malte, a clear distinction between work and personal life is of fundamental importance.



Age **40**

Income € € € € €

Living situation

Mobility

Civil status

He enjoys...

Travel

Tech

Sharing

Working style

collaborative

conventional

communicative

Values/Motivation/Life goals

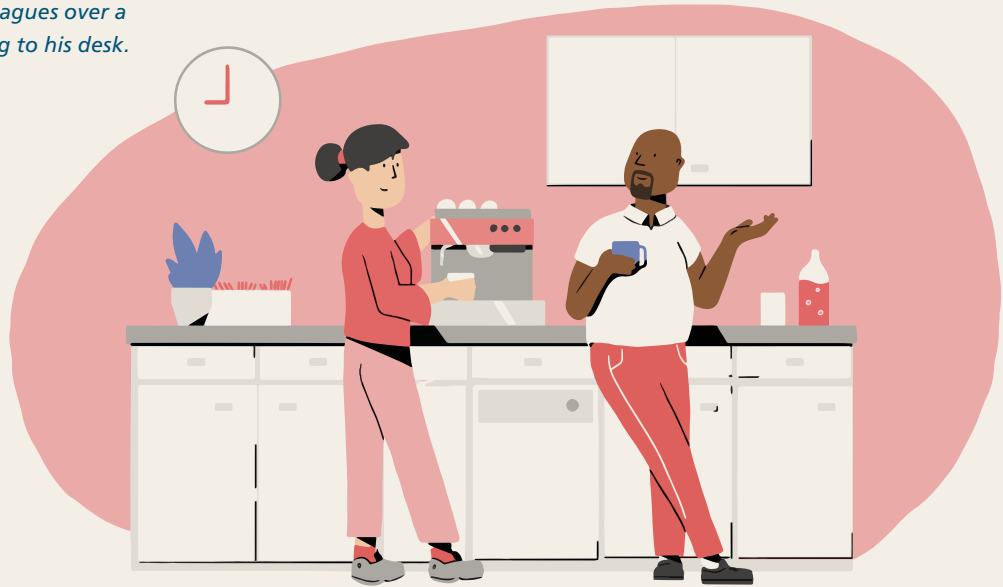
Working to live

Stability

It is important to him that the office is a place where:

- the workspaces are well equipped with ergonomic furniture and there is a practical layout to facilitate both independent work and collaboration;
- there are good transport connections nearby. Everyday necessities can be purchased close to the office.

Malte goes into the office almost every day. He usually starts his working day catching up with colleagues over a coffee, before heading to his desk.



Malte usually has lunch with his colleagues at the canteen, which provides him with a good service and high-quality meals.



His afternoons are characterized by a mix of quiet and communicative tasks. For this purpose, the office is separated into zones



For Malte, the end of the working day really does mean no more work. He views the journey home as the dividing line between professional and private life.



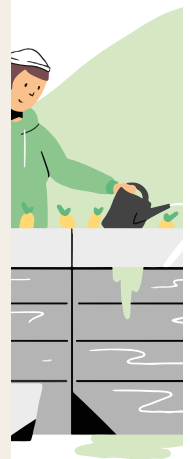
Scenario 3:

"New green Europe"

Short description

The aforementioned scenarios are the result of a structured scenario process. As the scenarios relate to the future, they are not completely certain. Many factors could result in changes. In this context, sudden, unpredictable events are referred to as wildcards. These can widely influence the whole system.

Wildcards could be, for example, the increasing ecologization of the population, which might be triggered by a natural disaster. To that end, the scenario "New green Europe" was developed, which addresses a society that is increasingly focused on sustainability. This new Europe is focused on flexibility – but not at any price. When weighing up the pros and cons of actions and measures, environmental issues also play a decisive role for office workers. This means that a large proportion of employees choose their working location for environmental reasons. Coming into the office or going on a business trip thus becomes a conscious decision – one which takes into account both the journey to and from the office and use of the office buildings once there.



Society and economic environment

The signs of climate change are ever clearer in Germany and across Europe (e.g., extreme heatwaves, flooding) and associated weather events are increasingly common – sometimes with disastrous consequences. The result: more votes for environmentalist parties at government level and a sharp rise in environmental awareness and consistent actions in this respect throughout society. This manifests itself in a variety of ways, one of which is consumer habits. Consumers base their purchasing or use decisions on their own values, which are influenced less by economic principles and more by environmental ones.

In this context, "sharing economy" is a key word. This system ensures sustainability and optimum utilization of resources while providing maximum flexibility. As a result, the sharing economy experiences strong growth in the areas of infrastructure and capital goods, among others. High demand drives the desired economies of scale and price effects, meaning that sharing also becomes economically viable.

In this regard, there is also a shift away from hedonistic lifestyles. The strong pursuit of experiences is reserved for individual, adventurous people, most employed people most working people strive for special experiences to a normal degree.

Environment and state

Politics is committed to regulating the areas of environment and ecology. For example, legislation is a tool used to try to mitigate both the causes of climate change and the market's other negative effects. Climate change laws, but also directives and regulations, are quickly implemented on a large scale. However, the state also partly relies on companies' own sense of individual responsibility and pressure from consumers to achieve its environmental objectives.

While environment and ecology are governed by state measures, the labor market is subject to far less stringent regulation. Politics only regulates certain basic conditions in the area of work. As a consequence, flexibility in the working world can further increase, opening up new freedoms and creative possibilities for both employers and employees in line with their respective needs.

Gig working and freelancing also have a key role to play: For some, including office workers, this type of employment becomes the norm. A wide variety of services and skills are offered via web-based platforms. These platforms with their office and knowledge work offers experience a real boom: They supply companies with office spaces, workers and services (e.g., "home office as a service," the leasing of office furniture for employees' home offices, including the necessary risk assessment). This leads to the emergence of near-dominant suppliers, who recognized the utilization and growth potential of such services early on and skillfully positioned themselves in the market.

Technology

Leveraging technologies becomes a clear guiding principle that translates into consistently considering the cost-benefit ratio. This means that technological solutions are used to support knowledge and office workers in their daily work – but only to the extent that it is economically viable and not at a cost to the environment.

In this case, there is huge potential for combining ecology and technology. For example, the automation of routine tasks provides the opportunity to conserve resources and to redesign working processes so that they are more efficient. This is made possible thanks to the absence of overly restrictive legal provisions in this area. The automation of routine work frees up capacity, which can then be focused on higher-value tasks, such as improving communication within the company, driving innovation or managing sustainability issues.

Using automation and artificial intelligence (AI), ecological aspects can also be taken into account and calculated when choosing alternative strategies and other processes.

With regard to using technologies, care is taken to ensure that the required materials are employed in the most environmentally friendly way possible and that they are recycled after use. Although the issue of how digitalization can achieve potential savings is not yet fully resolved (for example, large server rooms require sufficient cooling and are therefore very resource intensive), many companies have now recognized its advantages and are willing to promote innovation.

Furthermore, thanks to digitalization, there is also great potential for the efficient use of resources in the areas of construction and building utilization.

Working and office world

Smart technologies are increasingly deployed in office and residential buildings. New wireless technologies are also extensively implemented and used productively in the office and knowledge worker environment. They facilitate an efficient and flexible work structure, as working will be possible from anywhere and semi-automated. Smart buildings interact with their users, integrated systems and surroundings. The buildings learn from historical and real-time data, adapting to their users. This not only supports the sustainable running of office buildings but is an important step towards large-scale networking inside and outside buildings.

Flexibilization also has an impact on the place of work itself. The majority of office and knowledge workers work from home and this is their primary workplace. Desk sharing (a practice where employees share flexible workspaces rather than being assigned permanent desks) is implemented at the office to utilize the available office space as efficient as possible. From both an economical and environmental viewpoint, it makes little sense for employees to have their own desk at the office if they have a fully equipped workstation at home and only come into the office every so often.

Furthermore, employees can also switch to other locations: Third places (e. g., neighborhood offices, coworking spaces and satellite offices) are in high demand by many office and knowledge workers. Less restrictive labor laws mean that these locations can be used in compliance with the law, thereby making them an attractive option for the general public. In addition, the resultant reduction in commuter traffic makes third places more efficient and environmentally friendly. Third places also offer another advantage: They can be collectively used by several organizations. For example, several companies can jointly run a satellite office in a semi-public or public building in order to benefit from synergy effects (economic, environmental).

However, the use of holiday locations as temporary places of work ("workations") is excluded from the widespread use of third places. While this phenomenon is possible due to flexibilization, it is only applicable if it is ecologically sound (if, for example, it saves kilometers of travel and no additional mileage is incurred). This is the case for seasonal work, for example. As part of the flexibilization of the working environment, flexibilization of working hours is also required to accommodate changing needs. For this purpose, a variety of different working hours models are used. Examples include lifetime working time accounts and seasonal working time arrangements. In both of these models, overtime can be accrued during convenient periods, which can then be used at a later date.

This also contributes to a greater sense of security among employees because this time credit can be built up and then claimed in the case of health problems (both mental and physical). This approach means that employees have the option of taking an extended leave of absence in case of sickness beyond that stipulated by statutory regulations. They can even use this time credit to simply have more time for themselves (for example, to practice a hobby or recharge their batteries, or for individual further training and education). Protecting and safeguarding your own health becomes a megatrend in office and knowledge work. There is a new awareness of the danger of mixing private and professional life, including the associated negative consequences. Health-conscious employees are actively involved in their health promotion and demand relevant offers or services.

Effects on office spaces and property

This scenario is characterized by flexibility – but not at any cost. When weighing up the pros and cons of actions and measures, environmental aspects play a decisive role for office workers. This means that a large proportion of employees choose their working location for environmental reasons. Employees primarily work from home. Working in the office is only scheduled if the added value goes hand in hand with climate protection.

Particularly from an economical – but also environmental – perspective, duplicating structures with a permanent workstation at the office and a fully equipped home office is not expedient. For eco-minded employees, a high degree of flexibility in office workspace usage is a matter of course. Available office space must be utilized as efficiently as possible. This is ensured by means of a tightly allocated desk sharing ratio. In order to distribute the utilization rate evenly, incentive systems that encourage even utilization of the office can be implemented. Possible examples of this are bonus point systems ("green credits") that reward employees who use the office on Mondays and Fridays, or incentives such as discounted lunch on these days. Sustainable and practical utilization management plays a key role and becomes the main task of office managers and facility management.

Additionally, employees can switch to alternative locations during peak utilization times. In a very environmentally conscious approach to work, these third places assume a greater importance than is currently the case. They provide the opportunity to actively incorporate existing spaces into the workplace mix. A huge variety of usage models are conceivable. In urban areas, organizations can individually or collectively share public places and the services available there, for example in gastronomy. During periods with a low number of guests, individual organizations can even be granted exclusive use of these areas. Companies can therefore cover their space requirements without new space consumption by, for example, temporarily outsourcing meeting and project areas as needed. At the same time, existing areas are placed in a greater overall context and utilized more sustainably. When making decisions regarding choice of workplace as well as other factors, applications can help by showing alternatives and evaluating the different options (ecoscore).

In addition, parts of office buildings can be made accessible to the public, for example gastronomy or outdoor areas. As a result, new utilization cycles are developed and the scope of use is expanded in the sense with sustainable space utilization. For example, employees can make use of certain areas of the building in the evening and organize events with colleagues or friends, such as "cook and chill" evenings in the office kitchen.

However, third places do not include the use of vacation locations as temporary places of work. While this phenomenon is possible due to flexibilization, it is only applicable if it is ecologically sound, for example if the resources required for the journeys can be justified by a correspondingly long stay or if the workation is combined with other travel. In this context, the term "bleisure travel" is used (i. e., the combination of business and leisure travel).

In this scenario, offices must also continue to provide an ideal working environment for employees. Office environments must be designed for a variety of activities and requirements, although not all of these have the same level of importance. When sustainably choosing a workplace, identifying the respective requirements is extremely important for employees. The working environment must offer significant added value compared to working from home. This can be achieved with dedicated coworking areas for better collaboration or well-equipped focus rooms, for example.

Only materials and products manufactured in the most climate-neutral manner possible are now used in office buildings. Product life cycles are redefined and it is clarified right from the procurement stage how long products should last and which recovery/recycling options are available.

In addition to the interior design of office buildings that is suitable for the needs of the users, the outdoor areas also play a role in generating added value. These can be used to produce energy, for example. Another conceivable possibility is urban farming as a means of promoting sustainable management. The role of the office changes – it is no longer simply a place of work but a multifaceted service offering – and, in doing so, generates greater ecological added value for society.

To be able to utilize office buildings sustainably, technological potential is harnessed and used in a targeted manner. Resource utilization can be monitored and controlled digitally. For this purpose, data on space utilization, energy consumption, etc. are analyzed. Energy-efficient air conditioning is thus not just a convenient solution but one that provides advantages for building utilization. In principle, employees have an insight into energy consumption and can then act accordingly. This is supported by user interfaces and a user experience that highlights the most environmentally friendly alternative. Another tool for encouraging employees to act in a more environmentally conscious manner is so-called "nudging." This strategy is employed to influence the decision-making process, for example when choosing a suitable means of transport for business trips or what lunch to have at the canteen/restaurant.

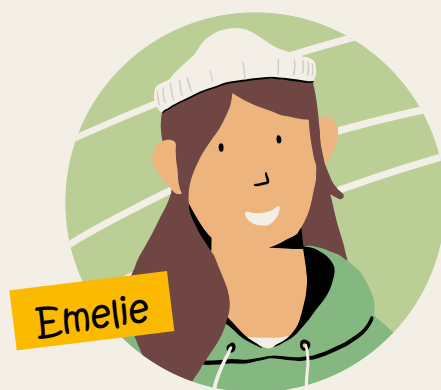
The use of technologies must always be evaluated from an environmental perspective, as it can lead to increased energy consumption in this context. Energy-efficient solutions involve, for example, the use of waste heat from server rooms to heat greenhouses for urban farming (Schulz et al., 2013).

"Green" services (e.g., collective urban farming areas, concepts for sustainable mobility, etc.) in cooperation with other organizations are also conceivable for the purpose of sustainable district management. In this way, even small organizations can offer their employees sustainable added value and achieve better resource utilization beyond organizational limits.

A typical working day in the "New green Europe" scenario

The following section describes a typical working day in the "New green Europe" scenario. It should be emphasized here that in a flexible approach to work, there can be no "standard" working day. Nevertheless, typical situations which characterize a working day in this scenario can be described.

In the "New green Europe" scenario, the fictitious persona is 28-year-old Emelie, who feels completely contented in this scenario. She is a climate protection manager at a medium-sized company. Having flexibility in her private life is especially important to her, as are sustainability and environmental awareness. She tries to incorporate these aspects into her professional life too.



Age **28**

Income € € € € €

Living situation

Mobility

Civil status

She enjoys...

Travel

Tech

Sharing

Working style

connected

digital

environmentally conscious

Values/Motivation/Life goals

Networking and community

Resource and environmental protection

It is important to her that the office is a place where:

- particular attention is paid to sustainability in terms of equipping and running the office building;
- there is an appropriate digital infrastructure and equipment to allow for a flexible approach to work;
- there are good transport connections.

Using an ecoscore app, Emelie chooses an environmentally friendly workplace based on her tasks and convenience preferences (climate).



In the canteen, Emelie bases her meal decisions on environmental and personal preferences with the help of her ecoscore app.



She takes a longer break to tend to the plants grown as part of the company's urban farming project, positively influencing her ecoscore. Afterwards, she returns to work in the office.



In the evening, Emelie makes use of one of the office's public areas with a kitchen to hold a "cook and chill" evening with friends and colleagues.



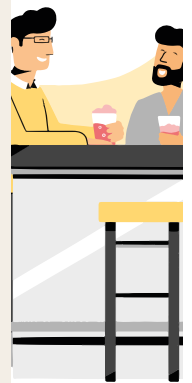
Scenario 4:

"Individual focus"

Short description

The third scenario described a society that grew closer together as a community to tackle the environmental issues of the future. However, what would it look like if – instead of this "Group Culture" – an individualistic culture prevailed? This scenario is described below.

The majority of people strive to maximize personal benefits, with individuality taking precedence. Companies that can afford it offer their employees the greatest possible freedom and the newest technologies. Using various workplaces both outside and inside the office plays an important role in this. Employees, hungry for experiences, expect not only flexibility but also very well-equipped, inspiring offices. Workspaces must be designed to be exciting and need to be continually changed and reimagined. If this is not the case, employees get this experience outside the office environment in attractive and exclusive third places.



Society and economic environment

Environmental values are secondary to individualism: Life in this society is characterized by personal values. The ultimate goal of personal experiences and maximization of benefits influences people's behavior in both their professional and private lives. This is reflected in the fact that working temporarily from different locations, particularly holiday destinations, is very popular and increasingly taken to extremes. Cost, comfort and convenience are the deciding factors when purchasing products and services. The sharing principle only applies in very few areas and even then it must be a means to an end and provide benefits.

Environmental awareness is nowhere near as important in this society and is only considered essential by individual groups – pursuing maximization of personal benefits is generally of greater significance. As a consequence of this carelessness and prioritization of the needs of individuals, climate change is accelerated in Germany and Europe.

Environment and state

In this liberal scenario, the market is self-regulated and pursues the individual satisfaction of needs. Without strict market requirements, there are different labor standards in companies and across society. Labor laws only provide framework conditions and facilitate increased flexibility in the world of work.

Online platforms for providing workers, services, office spaces, etc. are in high demand. As a result of low levels of regulation, monopolies are formed, which exploit their dominant position in the market.

The state even takes a back seat in the area of environmental protection. Relevant legislative procedures, guidelines and regulations only come into effect with long grace periods and permit numerous exceptions. The CO₂ tax is set too low and therefore remains largely ineffective. Accordingly, both companies and citizens have a large amount of freedom in this area.

Technology

Thanks to relaxed legal requirements, companies and individuals alike can always use the latest technologies – so long as they can afford these.

The market is highly competitive and shaped by consumers who are hungry for experiences. New innovations and technology solutions are constantly being developed. Smart technologies are increasingly used in office and residential buildings, but they are not affordable for all demographic groups and companies.

Organizations that can afford to do so implement new wireless communication technologies for office and knowledge work to further increase efficiency and productivity in day-to-day work. Routine tasks in office and knowledge work are also automated where possible, which creates capacity for more innovation. This is realized thanks to cautious legislation in the area of data and labor law.

Working and office world

There is huge variation between companies in terms of their flexibility – even within the group of office and knowledge workers. Companies that can afford it offer their employees the newest technologies as well as various options to facilitate work in order to gain a competitive edge and thereby attract top talent. For the vast majority of applicants, personal values hardly play a role when choosing an employer: Work continues to be regarded as a means to earn a living as well as the key to a higher standard of living. Income is therefore invested in employees' own individualization and experiences.

Flexible workspace usage also has a role to play in this scenario. Companies are in constant competition with their rivals and employ suitable solutions to make running office buildings as economical as possible. Company sites are not accessible to external parties; however, certain office-specific services can be shared to optimize costs. However, employees also want flexible work. The freedom to choose where they work – both inside and outside the company – is important for individual development and is ensured by implementing a flexible concept in the office and providing the option to work from home. Outside the office premises, the majority of employees have a workstation at home that is equipped to meet their own needs. The workation concept enjoys ever greater popularity. On the hunt for exciting new experiences, employees are switching to more exotic third places to take full advantage of individual freedoms and to discover something new. Work-related considerations, such as whether this maximum workplace flexibility could interfere with business deadlines or collaboration within the team, are secondary to employees' own interests and preferences.

In some parts of the population, this "Me first Culture" results in increased health awareness. Individual groups attach great importance to health and safety as well as preventive healthcare, and demand that offices are designed accordingly. If these prerequisites are not met, then they choose to work from home.

Working hours must be just as flexible so that individual freedoms are not infringed upon when choosing a place of work. For this purpose, a variety of different working hours models are used. Employees have the freedom to choose their working hours and this is not just limited to the working week or month – seasonal working time arrangements and working time accounts are also offered to allow for a better work-life balance. For freedom-loving people who are hungry for experiences, working as a freelancer is often the logical consequence.

Effects on office spaces and property

In a culture focused on individuality, companies that win the talent war will be those that can satisfy all of their (potential) employees' requirements: upgrading their professional status as well as meeting individual demands and needs.

Companies that can afford it offer their employees the greatest possible freedom and the newest technologies. Using various workplaces both outside and inside the office plays an important role in this. Employees' individuality finds expression in, for example, their ability to choose their workplace based on their personal preferences.

The office becomes a place of expression – the company's stage if you will. An organization can express its individuality here spatially and set the scene. In this scenario, staging the office working environment is of key importance. Just like a visit to the theatre or museum – or any public event – where the experience is paramount, going to the office should also be an experience. The aim is to appeal to as many senses as possible.

Office environments are places of inspiration, where new ideas and innovation come to light. The office should evoke positive associations and any time spent there should be enjoyable. By setting the scene, the working environment can tell a story and thereby provide the opportunity to foster inspiration and encourage identity and company loyalty in a targeted manner.

To set the scene and meet employees' individual needs, a new profession is created: A curator, acting as a host, is responsible for the spatial realization of a wide range of requirements and is tasked with continuously adapting the office environment – just like a set designer for a play in the theater. Their responsibilities go beyond those of a chief happiness officer. This host role can either be developed within an organization or be outsourced.

Employees must be given the opportunity to tend to their individual needs at the office. A variety of different work settings and personalization options are required for this purpose. A high degree of individualization in the workplace presents major challenges for both real estate operators and facility managers. Flexibility must take center stage if a range of individual requirements are to be satisfied.

The versatility of the office and its ability to completely transform – just like a stage – are especially important for highly flexible employees as well as gig workers and freelancers. The latter forms of work enjoy increasing popularity in this scenario because at any given time these workers have the autonomy to choose new tasks and projects based on their personal interests.

To optimize the focus on experiences, third places are increasingly used as a supplementary offer to office workplaces. These locations hold the promise of new experiences and stand out from typical office buildings. Companies join forces to establish networks so that they can offer their employees the greatest possible selection of such third places. This offer contributes significantly to employer attractiveness. This includes offers in the neighborhood, just like the viewing platform of a TV tower, for example.

The workation concept enjoys ever greater popularity. There is a whole spectrum of offers available across different price ranges, from standard hotels to specially designed workation resorts that provide coworking spaces and additional training. Insurance cover and work permits are included in such offers.

Technology is an important design feature in an inspiring, individual world of work. The extensive use of digital technological solutions in office buildings enables flexible and personalized work. For example, upon entering the office, employees can be greeted in person or digitally by reception and be safe in the knowledge that there are a number of workspaces (experience areas) that are completely tailored to their individual needs. Broadcasting studios for digital events and live shows become the norm to allow for professional staging in the digital sphere.

A typical working day in the "Individual focus" scenario

The following section describes a typical working day in the "Individual focus" scenario. It should be emphasized here that in a world of work characterized by a high degree of individuality, there can be no "standard" working day. Nevertheless, situations that characterize what a typical working day might look like in this scenario can be described.

The fictitious persona is Philipp, a 45-year-old HR manager at a major corporation. He likes working from his office but also from exciting third places equipped with top-of-the-range facilities that satisfy his need for variety. Individual experiences and the latest trends are very important to him.



Age **45**

Income € € € € €

Living situation

Mobility

Civil status

He enjoys...

Travel

Tech

Sharing

Working style

connected

independent

from anywhere

Values/Motivation/Life goals

Profit-oriented

Luxury

It is important to him that the office is a place where:

- effort has been made in terms of appearance and it looks stylish;
- there are excellent office-related services;
- employees can benefit from state-of-the-art technology and top-quality equipment.

Scenario 4: "Individual focus"

Philipp is greeted at reception by a digital concierge who offers him different workspaces and services for that working day based on an AI-driven preselection and who informs him of exciting daily offers and social events (e.g., influencer lunch, board member sports event and tax optimization seminar).



At lunch, Philipp uses the exclusive meal service provided by his company and enjoys his food in the lounge overlooking the city.



In the afternoon, Philipp has a hybrid meeting with colleagues, facilitated by the latest technological solutions, in an exclusive conference room.



Philipp networks in the evening in the company's lounge, which is equipped with a bar. His employer's grocery service packs his order for him to take away.



Summary of scenarios and identification of fields of action

Now that all four different scenarios have been individually examined in detail, we will consider which topics appear in every scenario. The common topics, eight in total, have been identified as fields of action for the future of working and office environments given their relevance to all scenarios.

Depending on the scenario, the topics identified vary in terms of the form they take and their intensity. In the interests of clarity and comparability, the fields of action and their degree of expression in each scenario are shown in the diagram on page 48. The line colors each correspond to a scenario. The closer the line is to a factor, the more relevant (i.e., more pronounced) this factor is in the respective scenario.

The specific fields of action are as follows:

Hybridity: a mix of virtual and physical presence. This describes the extent of hybrid collaboration in the world of work. Providing a high degree of flexibility and autonomy in the choice of workplace requires a higher level of hybridity to ensure that all parties involved are on equal terms when it comes to being included in the communication network and information flow. A hybrid approach to work is characterized by a diverse mix of formats for collaboration from different locations – both digitally and at the office. Depending on the scenario, the extent of hybridity varies and results from the chosen working style. As a result, office properties have a different proportion of hybrid spaces. Organizations that are committed to a high degree of freedom in terms of work design require a higher proportion of hybrid settings in their working environment than those that prefer an in-person working approach. Hybrid working models are not just the result of a high degree of flexibility in the approach to work but can be a consequence of geographically distributed organizational structures comprising several locations.

Office space requirements: extent of demand for office space. Does an organization need to downsize its office or is there a surge in demand for office space? Or has demand stayed the same? This depends on the overall workplace strategy. Flexible workspace usage, which is usually accompanied by fewer workstations than employees, can lead to reduced demand for office space. At the same time, attractive value-added offers as well as temporary working and collaboration opportunities are required. How office space is used has a significant impact on demand for office space. The actual demand for office space is different for each organization and depends on the respective organizational structure (which in turn affects utilization of office space), a simultaneity factor and the degree of staging of the office space.

Staging: directing corporate culture, togetherness and inspiration. The degree of staging of office space is defined by how much office spaces are constantly adapted and reinvented to create varied and exciting workspaces. In this respect, there are major differences between the individual scenarios as well as between organizations. The requirements for and degree of staging are determined by task requirements, process stability and reorganization dynamics within an organization. Employee expectations and an organization's self-perception are additional decisive factors for the degree of staging.

Health and well-being: ergonomic quality of the working space. This should be taken into account not only at the office but also in workspaces at home and in third places to prevent any possible damage to health. This includes both physical and mental health. The challenge is that organizations do not have a direct influence on certain situations, for example if the employee works from home or in a work environment of their choice. Nevertheless, the employer still has a duty of care. Rules that give equal consideration to the needs of the company and employees must be established. Raising awareness is an important tool in this respect. Irrespective of the working model – whether a highly flexible approach to work or a model with a greater focus on time spent in the office – health and

well-being must be taken into account and incorporated into the organizational culture. Relevant offers should also be used to promote health and well-being. Most notably, the differences between the individual scenarios and organizations lead to new, hitherto unknown challenges. The major challenge lies in considering each individual's needs in terms of health and well-being along with the new realities in the world of work and meeting them in the best possible way.

Third places: degree of utilization of workplaces not at home or the office. This also includes workations (combining work and vacation). The boundaries between workation and bleisure (i. e., combining business travel with leisure) are fluid. In terms of using third places, the differences between the individual scenarios are significant. Third places can play an active role in the workplace mix or continue to be used only as temporary places of work, as and when needed. They can expand an organization's office space and thus provide an external solution for temporary utilization peaks. Using third places as workplaces is a conscious decision that organizations must make in terms of opening up to the outside world and integrating public and social spaces into their world of work.

Networking: extent of digital networking. For example, this might be cognitive environments or opportunities to interact with buildings and the environment. Cognitive environments can be used for environmental reasons or to maximize experiences in conjunction with staging measures. The demands on a highly networked environment are much higher for organizations that have a very mobile approach to work (i. e., workspaces that change frequently) than for those with a small spatial radius of action.

Sustainability: extent of environmental awareness and consistent action. How offices are run and other aspects of workplace organization (e. g., business trips, mobility) reveal a lot about the importance of sustainability to an organization. In this regard, the scenarios differ considerably from each other. Organizations are a reflection of society, thus revealing private environmental awareness and whether workplace behavior is at odds with this. Organizations can consciously exert an influence on this by establishing an environmentally sound way of working and a corresponding approach to workspaces and resources. Opening up spaces and sharing value-added spaces are examples that can reduce individual space consumption and facilitate conscious utilization of resources.

Legislation: changed laws, guidelines and regulations. The extent and nature of legal frameworks influence the way in which organizations operate. Various levels of regulation are conceivable and must be considered. Both comprehensive legislation and limited state intervention in the area of workplace organization are possible in the future and the world of work must prepare for this. This means monitoring possible developments and, where appropriate, proactively entering into a dialog with social partners and interest groups to be able to react appropriately. Organizations only have a limited influence on the regulations adopted; however, they are responsible for their interpretation and, above all, their implementation. In this respect, they can to a certain extent influence how the legislation should be handled in the organization.

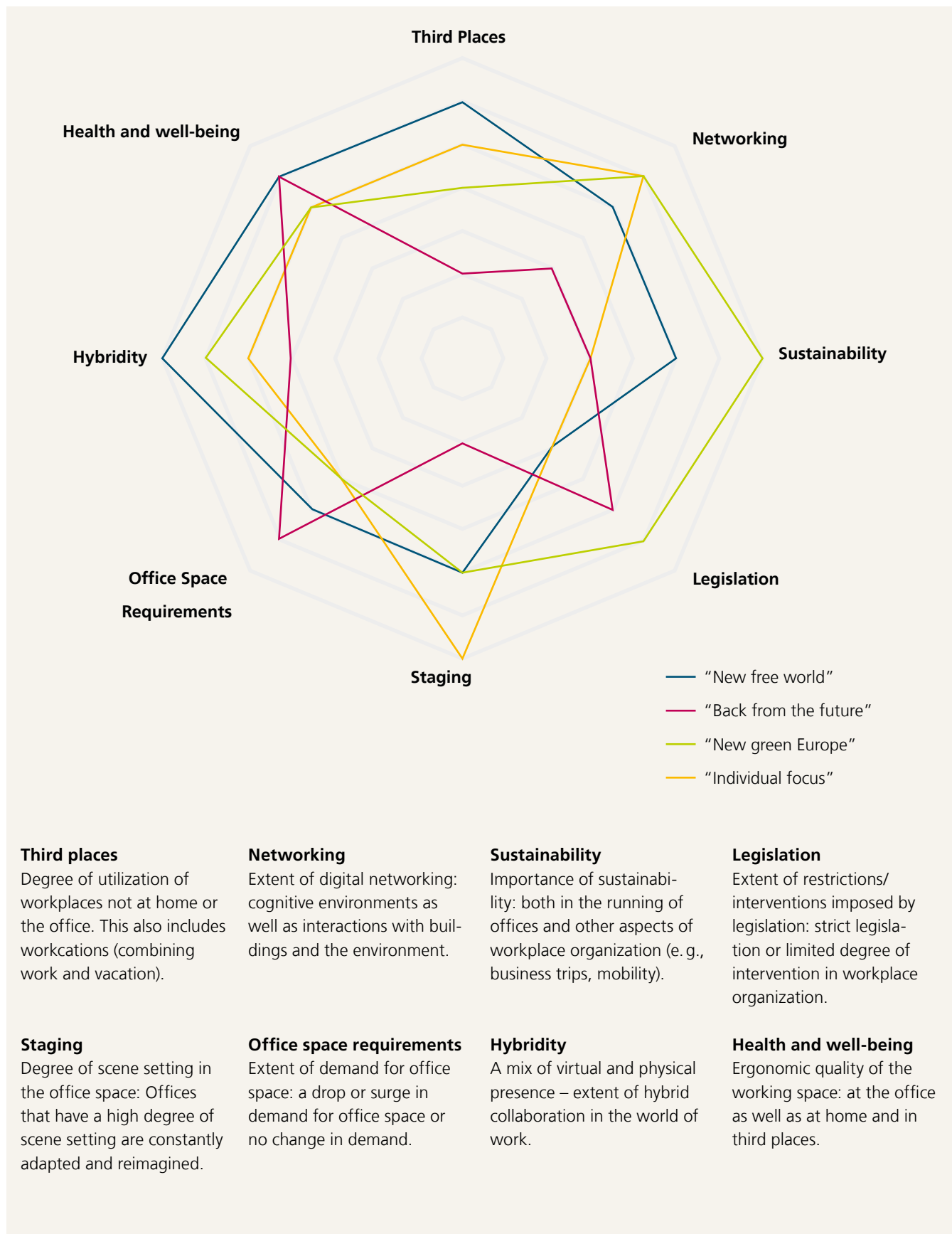


Figure 3: Commonalities between the scenarios – fields of action for the future of working and office environments.

Recommended actions to help shape the working and office environments of the future

Due to the experiences gained during the pandemic, working and office environments could develop in different directions. To map these potential developments as accurately as possible, the scenario methodology was applied in the previous sections. This provided the opportunity to identify various future scenarios according to the interplay between the influencing factors and to derive possible impacts on office spaces and buildings. The individual scenarios are neither good nor bad and should instead be considered value-neutral – one scenario is not better than another.

The scenarios present many challenges and risks, but they also offer opportunities for future developments. The scenarios presented should act as a guiding framework and reveal new possibilities for office spaces and buildings in the period through to 2030. In all four scenarios, individual aspects were highlighted and overarching fields of action were identified. These can be used as the starting points for transforming working and office environments.

It is likely that the individual scenarios will not be implemented to the letter, but rather several scenarios might apply to an organization. Hybrids of the different scenarios are also conceivable. Using Figure 2 (see page 48), the degree of expression can be determined for the central fields of action, depending on the organization, in order to develop the most coherent picture possible of the future working environment.

In doing so, organizations can either focus on the respective influencing factors or take a proactive approach and develop appropriate strategies to shape the future world of work based on their own preferences and ideas. Organizations must identify which scenario they should adopt based on their self-image and corporate philosophy.

Which scenario is suitable for each organization and group of employees depends on many influencing factors. For example, one factor is the age of employees. Based on their year of birth, people can be subdivided into cohorts or even

generations. These generations will share some common ideas about work and the working world (Kugler, 2020), although there will be some differences. Both how employees perceive themselves in the working environment and how organizations perceive their employees are of crucial importance for the choice of scenario. Employees can either be seen as resources – a means to achieve the company's goals – or as individuals who need continuous development and support if they are to drive the organization forward. This perception is partly embodied in organizational and leadership culture. Conversely, a company's workplace organization (line organization, project organization, matrix organization with direct and lateral leadership) can open up or limit the possible courses of action for the relevant scenarios. An organization's strategic orientation, market position, business model and industry all contribute to the choice of scenario. A company's overall economic situation also has a significant influence on the choice of courses of action.

Four layers can be defined for the design of future working and office environments. Their interplay is the decisive factor in determining the direction in which an organization develops and which of the four scenarios are applicable. This study provides a brief overview of these levels before they are transmitted into specific office concepts and innovative usage models as well as new employee typologies as part of the next Office 21® research phase.

Activity-based level

How the working world is structured in an organization is to a certain extent dependent upon the job profile of the employees. Both the job itself and the place of performance determine the decisive framework conditions for the working environment. Activity-oriented, customized work concepts can be derived by identifying work types and their composition within an organization (Jurecic, Rief and Stolze, 2017).

Some of the identified fields of action, such as hybridity and third places, are more strongly influenced by activity type than others. In principle, every activity must allow for a certain degree of freedom for a flexible approach to work. If this prerequisite is met, the individual and cultural levels play a greater role in the choice of working approach.

As the scenario process implemented essentially focuses on office and knowledge work, restrictions arising from production/laboratory activities are expected only in isolated cases. Further restrictions may occur as a result of activity requirements in terms of special work equipment, such as measuring devices. However, topics such as gender equality and a uniform organizational culture must not be neglected when designing the future world of work.

The basic idea behind an activity-based choice of workplace is that the requirements for the working environment are determined by the respective activity. This means assessing the focus of activity of individual employees in order to check which scenarios and which characteristics of the fields of action are suitable for the organization or parts of the organization. If an employee's workload primarily comprises focused, independent work because they are a clerk, for example, or if intensive teamwork is required of them, this affects the possible characteristics of the scenarios. The degree of collaboration should therefore always be a sub-factor in the activity analysis because it can greatly influence the respective approach to work. The focus of activities can vary from organization to organization and affect the presence of employees at the office. In the future, work strategies will primarily be geared towards optimally determining activity types and their respective proportion in day-to-day work and in workplace organization.

Furthermore, technological progress and digital solutions provide the opportunity to work increasingly independent of location. The use of digital signatures alone often led to a more flexible way of working during the pandemic. VR solutions can also be of assistance here. The more realistic collaboration and technical work appear using VR solutions, the more flexibility there is in terms of work location. Previously inaccessible

working locations can be opened up by means of new technologies, thereby enabling the shift to other scenarios. All of these things must be considered when evaluating, categorizing and designing strategies for future ways of working.

Individual level

In addition to the activity-based level, there is also the individual, personal level. This comprises two aspects: While employees' personalities and their individual preferences are key factors for the ideal conception of the future world of work, their personal situation also determines to a considerable degree their current preferences and options in terms of choice of working approach.

In psychology, there are different concepts to determine personality traits. One of the most well-known is the five-factor model of personality (FFM), also known as the "Big Five." According to this model, every individual can be ranked on a scale determining the individual level of expression of the following factors: openness to experience (open-mindedness), conscientiousness (perfectionism), extroversion (sociability, extroversion), agreeableness (consideration, willingness to cooperate, empathy) and neuroticism (emotional instability and vulnerability) (Asendorpf and Neyer, 2012). In occupational psychology, variations of this classification are used for employee recruitment or talent and leadership development. The sub-traits measured on this scale include, inter alia, gregariousness, activity, hunger for adventure, openness to aesthetics and ideas, dedication to performance, self-discipline and trust, which are all relevant in the context of work performance and make up the individual characters of employees. Depending on their personality type, people accordingly have different preferences in terms of their work. For example, it can be assumed that staging in the office and the use of third places and workations would greatly appeal to those who are driven by adventure, which is a result of high scores on openness and extraversion.

In a study conducted by the joint research project "Future Meeting Space" (Naujoks, Rief and Schultze, 2018), communication (activity/passivity and willingness to communicate), technical affinity and career orientation (whether private life takes a back seat for professional goals) are identified as key criteria for differentiating employee typologies. These characteristics also form important parameters that play a decisive role in terms of the requirements for the future working environment.

Personal circumstances change throughout the course of our working lives and must therefore be continuously evaluated. Our living situation is particularly important in this regard: Whether we live alone, in a couple, with family, in a shared apartment or with pets has an impact on our design requirements for the world of work. The question of how remote working from home can be organized and whether employees prefer this over working at the office depends on living situation. The distance to the office and choice of transport also play a role and are shaped by individual considerations – what one person considers an acceptable commute will be out of the question for another. Personal values, as the aforementioned concept of generations tries to cover, are also important in this context and can be shaped by stage of life, for example. Personal situations are also relevant in terms of using third places: Whether and which third places are considered for each personal situation is an exciting and open field of research.

In principle, personal circumstances and living situation can facilitate productivity with regard to working from home; however, whether working at the office or in a third place is preferred is determined by personal preference. In the future, particular attention should be paid to the living situation, although this should always be considered in conjunction with individual preferences. Individual components play an ever greater role when choosing scenarios and designing work and office environments. A wide range of possibilities for designing the work environment promotes individuality and will therefore be an important factor in identifying employee typologies in the future.

(Organizational) Culture level

The third level that plays a role in choice of scenario is organizational culture. One might think that organizational culture is only the sum of employee preferences and is therefore equivalent to the individual level. However, this is not the case. Organizational culture is instead an independent component that can develop dynamically.

An organization's culture is very specific and can be understood as a "system of shared patterns of thinking, feeling and acting, and the standards, values and symbols that they establish within an organization" (Haas, North and Pakleppa, 2022). These shared values, standards and attitudes influence all employees and their behavior. In general, organizational culture is considered to be changeable. Employees can shape the culture by way of a bottom-up approach, changing it based on their own ideas. However, organizations usually try to choose new employees whose cultural values match their own. In this context, it should be noted that the strategy for organizational

culture and employer strategy (internal and external employer branding) might not correspond to the prevailing organizational culture.

In a virtual or hybrid world, it is especially difficult to develop a sense of organizational culture. This is because not all aspects of culture are apparent at first sight (Schein, 1985). While artifacts render culture visible in the physical office design, culture cannot always be clearly deciphered (Thom and Ritz, 2016). Organizational culture can be classified based on various areas of conflict: safety-oriented versus willingness to take risks, sense of self versus sense of unity, control versus trust, precision versus pragmatism, confidentiality versus transparency, and tradition versus change to name just a few examples. The direction in which certain fields of action are expressed depends on value orientation. In the case of a team-oriented organizational culture, it is likely that the organization's campus is a place of communication and exchange in which a Group Culture predominates. In summary, it is fair to say that: Organizational culture has a significant influence on the design of the future world of work and can be reflected in the demand for office space.

Organizational culture is also dependent on the strategic visions and guidelines that exist within an organization. There can be organizational cultures in which employees only come together every two to three months and spend the rest of the time working from a location of their choice. In other organizations, the opposite is true: In this case, employees work two to three days a week from home or at third places, and the remaining time is spent at the office. There might be other organizations that prioritize togetherness and thus working away from the office is the exception. When establishing the organizational culture, the organization's maturity level and its economic situation can also play a role.

In the future, authentic work and office concepts that are tailored to the respective organizational culture will be in demand: For each of the four established scenarios, there will be correspondingly designed organizational cultures.

Digital level

The digital level will also be relevant in dynamically shaping the future world of work. The level of digital networking of employees, buildings and resources depends on the degree of expression of the fields of action such as third places, staging and hybridity. The requirements for the digital level and its design are closely interrelated: While the digital level influences the scenarios' different fields of action, it is in turn influenced by these. This makes it a game changer because it allows for an extremely flexible and intensive staging of work and office environments. At the same time, the individual scenarios place high demands on the digital level and the associated possibilities.

If we consider the eight central fields of action, the digital level's various possible applications can be identified (Käfer, Dienes & Rief, 2022). In terms of health and well-being, an app can provide tips on proper equipment of the workplace in the home office. An app can also be used to provide employees with greater visibility into and control over their maximum-permitted number of days working from home. If third places (or workations) are used for work, such a tool can be used to ensure transparency in terms of locally distributed work, thereby facilitating the planning of tasks and in-person meetings for a select group (e. g., team colleagues, disciplinary and lateral managers).

This also applies to hybrid collaboration. An intelligent system can link the workplace to meeting invitations and (for virtual or hybrid meetings) suggest or book a room that is suitable for the respective purpose based on size and technical equipment. Employees can also select their office workspace and environment preferences in the app to establish optimum working conditions (cognitive environments). Sensors at the workplace are able to analyze employees' current working modes and accordingly block or allow incoming communication as needed (Stolze, 2019). Intelligent software can link the information supplied by the sensors and the users to learn from environmental and behavioral data. This means that buildings can be run in the most resource- and energy-efficient way possible while providing every employee with a customized experience. In addition, other functions can ensure sustainability: With regard to travel reservation and the composition of the canteen's menu, the most sustainable respective option can be highlighted to encourage employees to act in a sustainable way ("green nudging") (Bockstahler, 2020). If a booking system is integrated into the software, automatic workstation allocation (in the case of desk sharing) can be used to ensure that a certain section of the building is fully occupied before releasing capacity in other areas. This prevents the whole building from being used at the same time (e. g., heating, air

conditioning), which is particularly beneficial for days on which there is only a small number of employees on-site. In addition, this type of office attendance forecast, based on anonymized usage and occupancy data, can provide valuable findings for services and reveal demand for office space, which can be used to better adapt the work spaces to the needs of the employees and the organization. The last example of how digital services can support the future world of work is the purposefully staging of the office space. The creation and shaping of experiences offers employees significant added value. Just like on a social intranet, employees can contact each other, create offerings and gain experiences (Dienes, Ruess and Rief, 2022). Office spaces can be changed as needed to encourage inspiration and innovation.

In the hybrid working world of the future, office buildings can only be attractive to users and organizations if their spaces and services combined form an overall composition that harnesses digital solutions to proactively – in the best-case scenario – react to the dynamic needs.

Office 21® joint research project

Fraunhofer IAO is researching the current and future development of office and knowledge work in collaboration with an interdisciplinary network of research staff, solution providers and forward-thinking industrial partner organizations as part of the Office 21® joint research project. The objective is to identify any changes and innovations ahead of time and to develop tangible courses of action to successfully design and implement new working environments in organizations.

While we are already living in the middle of the changing (and interesting) new world of work, there are still a number of unanswered questions: How can we shape this transformation in terms of space, technology and organization and, most importantly, what resources can we use to do so? The research focuses on answering these as well as other questions.

Further explanations and more detailed information on the Office 21® joint research project and current research topics as well as publications can be found online at www.office21.de.

Cooperation partners

- B·A·D Gesundheitsvorsorge und Sicherheitstechnik GmbH
- BMW AG
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- KYOCERA Document Solutions Deutschland GmbH
- Nurus GmbH
- Office Group GmbH
- officeMEDIA visuelle medientechnik gmbH
- Plateau RED GmbH
- Sedus Stoll AG
- Soennecken eG
- THOST Projektmanagement GmbH

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