UP-GRADING INSTEAD OF TEARING DOWN:

The best years have yet to come

DREES & SOMMER

dreso.com
ISSUE 3
08/21

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FOREWORD

From Dierk Mutschler,
Member of the Executive Board,
Drees & Sommer SE

REVITALIZATION WITH VALUE ADDED

Dear readers,

Whether staying the night at a hotel, living in an apartment, working at the office, and shopping at the supermarket: things aren't quite so straightforward anymore. Lifestyles and user habits are undergoing a massive shift, which is also triggering changes in the demands placed on real estate. People in their early 20s are consuming, working, living, traveling and eating differently than past generations. In addition to everything else, there is the collective experience of the coronavirus pandemic, which is accelerating this transition.

Which space concepts will users look for in office properties in the future? Will they manage to create an environment that is both appealing and professional, while also offering extra room for communication and informal exchanges as well as technically flawless furnishings? Will the Hospitality sector be able to leverage new services to compensate for the decrease in business trips? What will happen with retail properties? Will they transition to new mixed uses of residences, logistics, retail, and hospitality?

Many questions have concrete solutions. Owners are working hard to develop digital business models, turning their buildings into service providers. In this way, they are generating additional sources of income. From smart hotel rooms to the family package for neighborhood residents replete with child care and shopping services to smart energy consumption in the office or mall: It comes down to recognizing needs as well as creating – and monetizing – real added value. With all these approaches, it is important to remember the following: the building should not be viewed separately, but rather as part of an interconnected district.

In addition to digitization, sustainability is another important topic that has been brought to the fore by the intensifying climate change. ESG – Environmental, Social, Governance – seems to be everywhere. Real estate companies targeting long-term success cannot help, but act in an ecologically and socially responsible manner. The portfolio's quality – and thus its total value – is more important than the best short-term yields. We're witnessing how all professional real estate parties have started working on this process – starting with the financing bank and the project developer to the real estate manager and end investor. This applies to new structures and especially so to existing buildings.

Now is the best moment to take a close look at the existing properties in your portfolio. All buildings are subjected to regular energy-related or technical renovations, if only to increase the property's value. Investors now also have the opportunity to organize their assets in such a user-centric manner that they carry into the future – with everything necessary for people's evolving behaviors and needs. The ruthless truth is that those who miss this chance will lose their tenants. This is because trends indicate that the absolute amount of commercial space required will decrease whereas residence requirements will increase.

Our experts are working on both interim and long-term solutions that address this reality. By providing their expertise for numerous revitalization projects, they are also gaining new, valuable experience, which in turn leads to new projects – for us too! Because, as an enterprise on its way to becoming a Beneficial Company, our goal is to create the greatest possible benefits for the environment and society.

At Drees & Sommer's Munich location, our colleagues worked with the New Work Hub to present pioneering working environments to the floor. My own office in Stuttgart is located in a building from the 1980s, in a former industrial bookbinder's. We've sustainably converted it into our Innovation Hub, with attractive spaces that illustrate the future of work. Nearly 100 years older is the building in Zurich where our Swiss headquarters are. What was once 1,100 square meters of space is now a work environment featuring the latest insights from workplace design, ergonomics, innovation management, and workplace health. It's obvious that even our offices are no longer merely for working ...

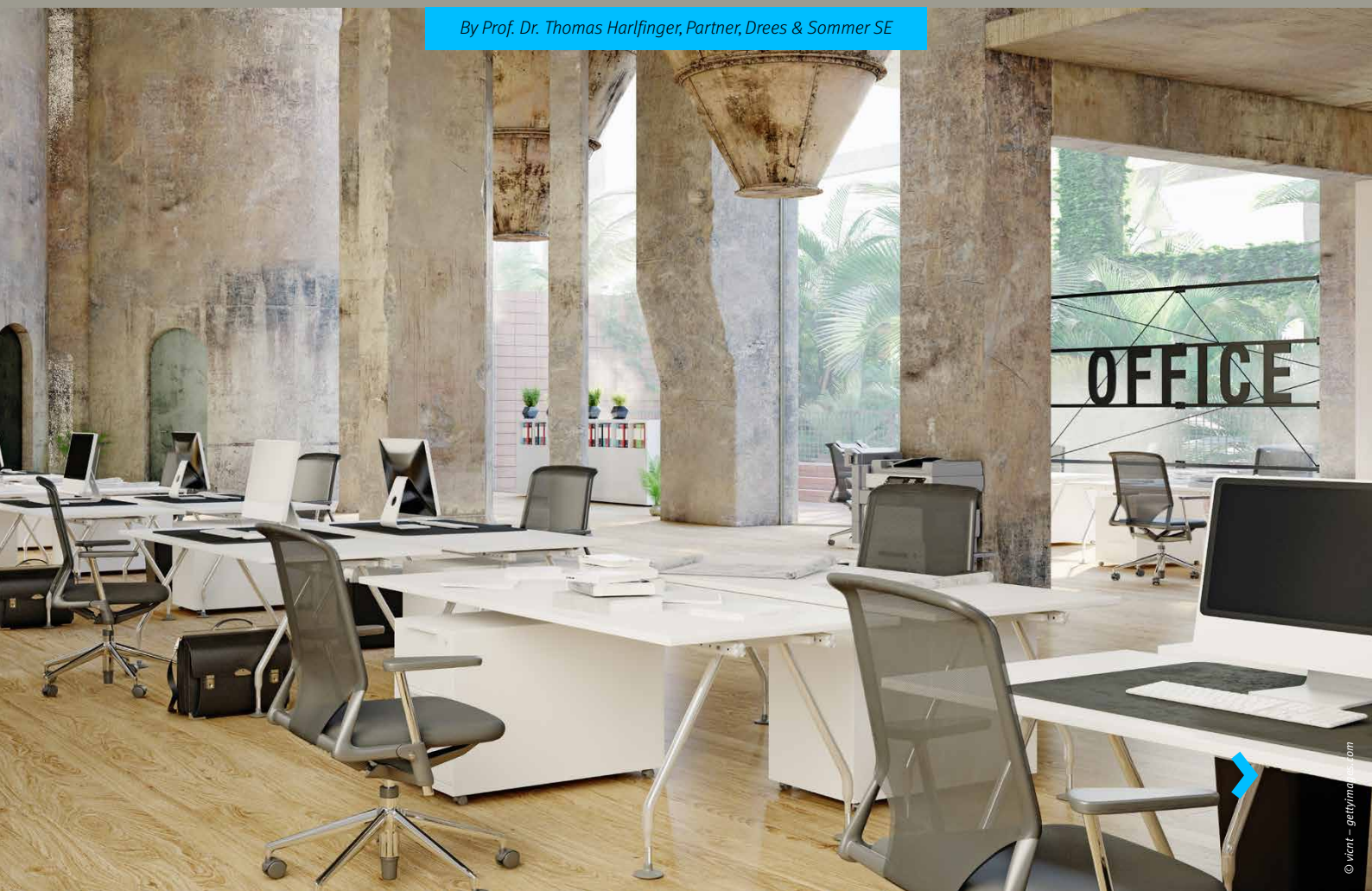
I wish you an insightful read and motivation for your own projects!

Dierk Mutschler
Member of the Executive Board, Drees & Sommer SE

EXISTING PROPERTIES: EVERYTHING POINTING TOWARD CHANGE

“There is nothing permanent, except change.” This quote from Greek philosopher Heraclitus is timeless. Why is it especially applicable to existing real estate? It has to do with climate policy and social shifts. Even more exciting than the reasons are the conclusions that investors, owners, and managers should draw from them.

By Prof. Dr. Thomas Harlfinger, Partner, Drees & Sommer SE



The construction and real estate industry is undergoing a transformation. Major challenges such as climate change and the Covid-19 pandemic are causing complex changes that at times overlap.

Climate change is driving renovations

Climate change is real! There is now a political consensus of its serious ramifications. Climate neutrality by 2050 – Not only did the European Union call for such, it also laid the major political groundwork by which it intends to halt climate change. There are chiefly two components of climate policy that have a direct impact on the construction and real estate industries. The first is the taxation of CO_2 emissions, a matter which concerns nearly all sectors of the economy. Secondly, strong steering power comes from the introduction of ESG criteria (Environmental, Social, Governance) for capital investments in real estate.

This has a major impact on real estate portfolios in Germany and Europe. From a climate protection perspective, it will increasingly become the best option to optimize and continue to use existing properties. The government has recognized this and is offering a comprehensive funding program for climate protection via the European recovery fund. The aim is to double the rate of renovation in the coming months and years via a package of funding incentives!

The building sector is responsible for more than one-third of energy consumption and CO_2 emissions in Europe: A renovated and improved building stock in the EU will help achieve a low-carbon, clean energy system. The renovation of public and private buildings is a crucial step. It is included in the European Green Deal as a key initiative for increasing energy efficiency in the construction and real estate sectors.

When it comes to adhering to the ESG targets, regulatory authorities, investors, stakeholders, and the public are increasingly expecting the same of real estate companies. This is why, in the future, only ESG-compliant existing buildings will have attractive exchangeability and thus be available for use by third parties. Both the building owner and the user are equally required to meet the ESG requirements for materiality as well as CO_2 and energy consumption.

Telli: Living under new roofs

24 buildings, 581 apartments, around 1,000 residents: The Telli high-rises in Aarau, Switzerland, constructed in the 1970s and '80s, take up a large area. Just as large is the challenge for the owner, AXA Anlagestiftung, as it tries to make the complex more sustainable and fit for the 21st century. With a four-year time frame, the renovation began in February 2020 and is expected to last until April 2023. After one year, the progress is visible: A number of stairwells, elevators, and underground garages have already been renovated, and some entrance areas are shining like new. Building B is already complete.

Drees & Sommer Switzerland and the architecture firm Meili Peter & Partner were commissioned to plan the implementation of this renovation of an area where the existing standards must be preserved. The objective: retain the buildings' shape and quality while adapting them to modern energy and safety standards. Drees & Sommer Switzerland was appointed as a general partner for overall guidance and building management for the project and is using lean construction management (LCM®) to ensure efficient and smooth processes as well as adherence to the project deadlines.

Along with a completely new building shell including roofs, windows, and ventilation in the apartments, the safety standards will be improved with new fire safety doors. In addition, there is the renovation of the elevators and stairwells and the redesign of the entrance areas. 1,200 doors, 1,800 new facade elements, 9,500 meters of balcony rails – these figures illustrate the dimensions and the challenge of planning this large-scale project.

"One particular challenge is that the renovation work is being done in the buildings' current state," says Drees & Sommer Project Manager Julian Kommer. In order to ensure the necessary, tight deadlines – the tenants have to leave their apartments for about two weeks and can then return to their renovated state – a lot of pre-made components and modular construction must be used. The scalability of this approach is a major advantage. The project can be executed in a structured fashion while meeting the needs of the property manager.

Coronavirus as game changer for many segments
Both the outbreak and the aftermath of the coronavirus pandemic have, without question, led to fundamental changes in our society. New housing, shopping, travel and workplace requirements are impacting demand and the requirements of existing properties greatly.

When it comes to the workplace, the pandemic fired the starting shot of an unprecedented sprint to digitization. Particularly in the service sector, this revealed considerable potential for efficiency. Temporarily living and working at home has redefined the requirements of office and residential properties. Large companies like BMW, Siemens, and Allianz offer their employees flexible working arrangements. On the one hand, the so-called “next level of work” reduces the quantitative need for office space. On the other hand, the requirements of the remaining office spaces have changed considerably. A higher level of collaboration in conjunction with an increased sharing rate is leading service companies toward new office concepts.

Furthermore, the Covid-19 pandemic has resulted in different **shopping and travel needs**. This has had the most immediate impact on retail and hotel properties, in both a quantitative and qualitative sense. In the **hotel segment**, the trend is expected to shift considerably toward consolidation. After a ten-year boom in hospitality, changed user behaviors and the next level of work have subjected this trend a sustained slow-down. It should be assumed that business trips will become less common. For this reason, it remains important for managers and owners of hotel properties to shape their unique user promise both conceptually and architecturally – particularly for existing properties. Only then can they stand out from the cut-throat competition.

Retail properties give our inner cities life. For a spell, they lost some of their allure, due to the pandemic, when online retail took the upper hand. Building owners and managers of retail properties are now competing for the remaining customers. Their chances are good if they set aside their silo mentalities and pursue mixed concepts. Living above the supermarket,

Digital park Fechenheim: Germany’s first heritage-protected data center

A state-of-the-art data center with a touch of the old: Interxion, one of the world’s leading colocation providers, is creating a modern data center with a capacity of nearly 200 megawatts with the Digital Park Fechenheim, on the former Neckermann premises. After all, the demand for new data center capacities is great: digitization, big data, and cloud computing are expanding data traffic every year.

Drees & Sommer was involved in the planning early on, providing preliminary support with a feasibility study and cohesive planning and consultation services, and is tending to all the processing steps with general construction management (GCM). This is because, during the conversion of the former shipping headquarters into multiple data centers, many structural elements of the heritage-protected, 984-foot long, 213-foot wide, and 82-foot high building will be retained in order to preserve the architectural legacy of Egon Eiermann, whose magnum opus this building is considered to be.

Interxion and Drees & Sommer are making use of modular planning to create a sustainable campus on the 107,000-square-meter property. The existing area was initially segmented, and white spaces, substations, and energy supply facilities were planned as recurring elements.

Energy supply facilities and technical expansions can thus be constructed modularly and placed at the respective location. Deviations in stock can be compensated by transitional components. The advantage of this method is that the planning, construction, and management can benefit from standardized solutions. Society is becoming increasingly aware of such sustainable implementation concepts and the revitalization of buildings. One major advantage is the planning based on the BIM model, which has already been used for the technical due diligence and throughout the entire planning process in accordance with the principles of integrated design.

Renovation on the south portion of the building began in the first quarter of 2021. The framing work on the Eiermann building will follow in the summer following approval of all necessary documentation. The first phase of commissioning of the data center capacities is planned for the third quarter of 2022. The entire project will take eight years.

doctor's office, or restaurant? Why not? Demand is steadily increasing for compact cities. Even if building measures for mixed use are often more challenging, they are often the only way to even get space, especially in the grocery sector. Shopping centers would also do well to shed their learned habits and focus on the unique character of their buildings. This was also the case before the pandemic.

Due to the virus, **residential properties** have increasingly become the focal point for people's lives! The next level of work is also changing the requirements for space in this asset class – such as through floor plans that allow for working from home – in the home itself, or as a co-working space within a neighborhood. In combination with the EUR 2.5-billion funding program of the recovery and resilience fund for renovating existing residences, as well as the EUR 5.5-billion climate immediate action program for buildings in Germany, housing is becoming the segment that offers the strongest incentives for energy-efficient renovation with reduced CO_2 emissions.

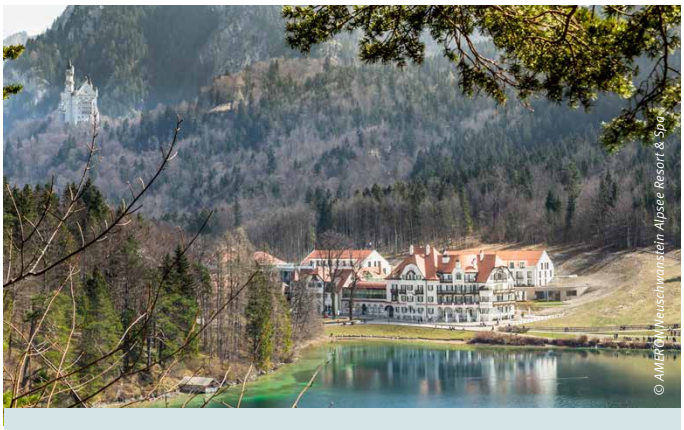
Last but not least: **Digitization.** The coronavirus has resulted in progress that would otherwise have taken a decade. The one important aspect is making existing properties in all asset classes "digital ready." As a building type, computer and data centers are becoming more and more important. Why? Because computer centers have now become one of the biggest consumers of energy in the world. Capital investors and the renters of computer center spaces are applying more pressure to act, as they use ESG criteria for property appraisal. More than 150 data center providers in Germany, with 95 percent existing properties, have to change course – energetically and strategically. To do so they need sustainability and energy concepts that they can implement and that keep their existing data centers modern, interchangeable, and profitable.

Realizing the shift economically

Comprehensive renovation projects are costly and take a long time – at least, that's what many owners fear. But it doesn't have to be that way. Modular construction offers high scalability and the possibility of economic realization of complex projects. Especially with existing buildings, such as those from the 1960s, one often encounters regular structures, meaning those which hold high potential for modular construction. An initial inspection reveals the opportunities for savings.

Modular construction is not only suitable for entire projects, but also for individual components of an existing building, such as the facade or a new technical module.

Because everything is manufactured in advance and just has to be installed, this reduces the execution time on site. This is one advantage that shortens the time – such as with residential building projects – in which tenants cannot use their homes.



AMERON Neuschwanstein Alpsee Resort & Spa: Spend the night like a king

The world-famous, white castle Neuschwanstein gazes over the land from the mountaintop like a sovereign figure: lakes, hills, treetops, and a deep canyon. In the alpine foothills of the Allgäu, the building constructed by the Bavarian king Ludwig II looks almost unreal, as though taken out of a fairy tale. The picture is completed by Hohenschwangau Castle, opposite Neuschwanstein. Once intended as a retreat for an unsociable king, it now attracts millions of tourists from across the globe.

And there is a variety of hotels at the foot of these two royal castles from the 19th century, in the village of Hohenschwangau. One is especially modern, as it has been recently renovated: The AMERON Neuschwanstein Alpsee Resort & Spa. WAF Immobilien GmbH expanded and modernized the existing Hotel Alpenrose across the entire area of about 20,554 square meters, renovating the three buildings Alpenrose, Jägerhaus, and Schlosshotel Lisl, some of which are 100 years old, in accordance with the latest energy standards. Together with two new buildings, the Galeria and Seehaus, all the buildings were consolidated into a new ensemble that unites tradition and modernity.

The main challenge was ensuring structured construction logistics in the high-traffic tourism environment during the building period from 2015 to 2019. Drees & Sommer ensured a smooth construction process and also tended to the tendering, contracting, and property supervision. The results speak for themselves: A total of 137 rooms and suites, state-of-the-art meeting spaces, a large spa with a direct view of the Alpsee, a kids club, and various dining options are grouped together in the large hotel premises. This lets the guests feel like royalty.

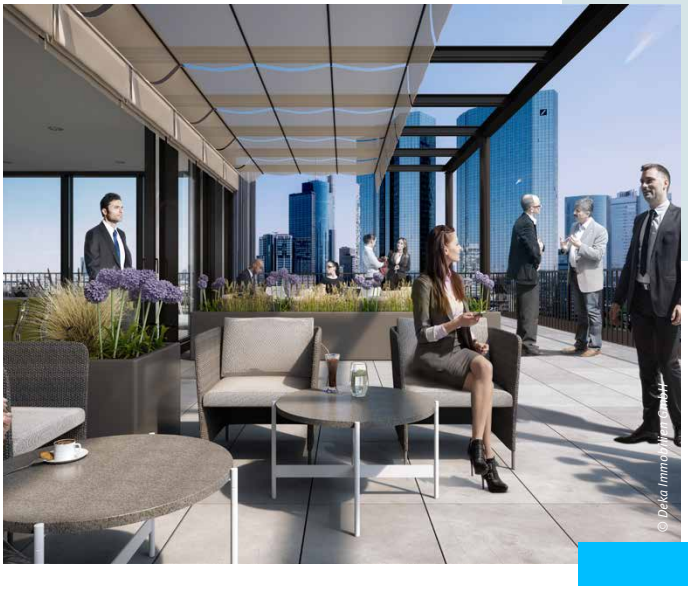
Westend Sky:
Phenomenal views of Frankfurt's office market

This was once home to the SEB-Bank, and then the office tower constructed in Frankfurt's Westend in the 1970s stood vacant for several years. And then Deka Immobilien Investment GmbH, working with Drees & Sommer, began an extensive building project in 2015 named "Westend Sky" in order to put Ulmenstraße 30 back on the map.

"The project, which was completed in 2019, was very challenging because not only did the building have to be brought down to its carcass, and the facade and large portions of the technical installations had to be replaced, but also because the building was to get LEED Gold certification for sustainability," explains Julia Michalski, Project Manager at Drees & Sommer. The cramped inner city location also posed considerable challenges with regard to organization and building logistics, and communication with the neighbors had to begin early on.

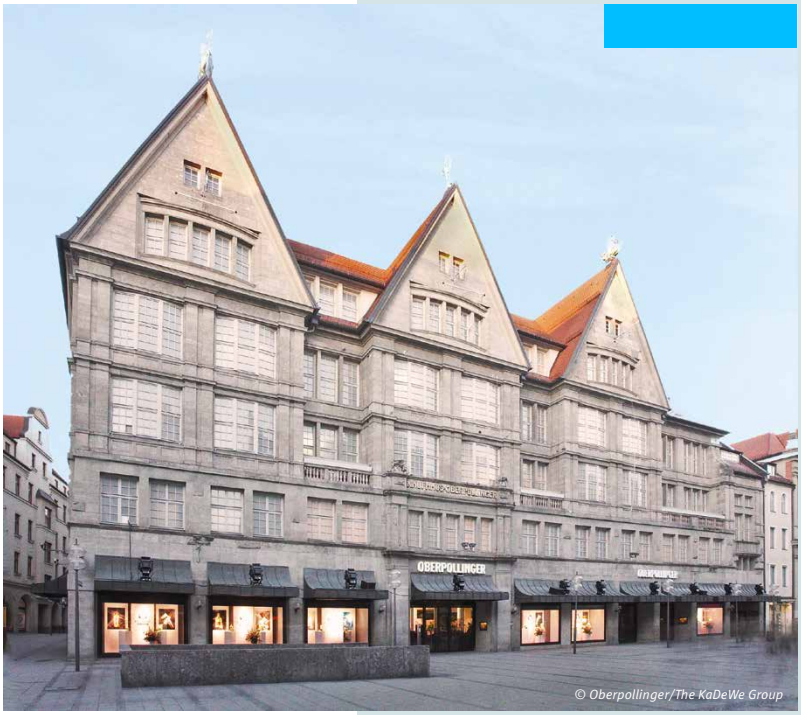
The results speak for themselves: The existing building received a nine-story annex as an elegant perimeter development near Bockenheimer Landstraße. Its exterior shines while the interior contains state-of-the-art technology that meets the highest energy efficiency standards.

Drees & Sommer implemented a modular execution system that ensured agile market appeal, integrated tenant requests in the planning and building process, and ultimately helped "Westend Sky" become fully rented out one year after completion. Furthermore, Drees & Sommer implemented detailed cost monitoring and developed a tendering and contracting strategy that considered the project's specific requirements. Stefanie Lütteke, Head of Property Companies, Drees & Sommer, summarizes: "The old office building was converted into a modern property which meets the highest standards and which has become a beacon in Frankfurt's Westend."



Modern and forward-facing: Oberpollinger shines with a new look

More and more warehouses around the world are turning into experiences that aim to appeal to the senses and turn shopping into an enjoyable activity. Leading this movement in Germany is the KaDeWe Group, whose department stores KaDeWe in Berlin, Alsterhaus in Hamburg, and Oberpollinger in Munich are among the most renowned in the world. The open layout designed for Oberpollinger by British star architect John Pawson is at the forefront.



© Oberpollinger/The KaDeWe Group

This set a new bar for retail in downtown Munich. A modern interior architecture, designed and realized by the world's most famous architects, new brands and places of recreation and relaxation underline the character of a market place where the clientele enjoys spending its time in a casual, inspiring atmosphere.

The extensive renovations were completed during the lockdown in 2021. Both the design and the structure of the historic shopping center were revamped. Oberpollinger is working with renowned concession partners so that it can best present the individual brands. Each brand is presented in a space with a design that reflects the respective brand's identity. Concession systems comprise a variety of individual furnishings that, ideally, are modularly pre-manufactured. "This has a number of benefits," emphasizes Tasja Schneider. Drees & Sommer's retail expert monitors Maanesten's brand positioning at the KaDeWe Group's department stores in Berlin, Hamburg, and Munich. "In such cases, we utilize modules so that the construction goes by more quickly. Time is particularly important for a warehouse that is being converted to continuous use, as any temporary closure of spaces can have a negative impact on revenue." Anyone who, for example, modularly prefabricates counters, shelves, or partitions including power cables no longer has to mount each individual screw on site. Instead, to the extent possible, the individual furnishings are pre-manufactured before being delivered to the construction site. This saves time and reduces sound, dust, and waste.

Good building logistics are especially crucial in inner cities, where there are limited time windows for material deliveries. Each truck that delivers materials should take unneeded parts or material waste from the site on the same trip. Trips without cargo unnecessarily waste time and resources. "A project like that can quickly derail without good coordination among those involved," says Anne-Marie Kubik, who is in charge of Building Management for Drees & Sommer. She and her team were responsible for renovating the men's wear section on the second floor, including the tendering, contracting, and property management. "Because men's wear used to be located on a different floor, we had to completely rebuild the area with its individual shops and spaces. Good communication, lean processes, and a schedule planned down to the day are important for making sure the teams don't work right past each other," Kubik explains. With this approach, the renovation was complete on time and on budget.

Rhein-Ruhr Zentrum:
More variety, more service, more time

Shopping can be done online – the coronavirus pandemic made this painfully clear for brick-and-mortar stores – and shopping centers in particular. If you want to keep up, you have to offer customers something that takes them away from their couch and provides an experience. That's exactly what the Rhein-Ruhr Zentrum in Mülheim an der Ruhr has in mind as it is reinventing itself as part of an extensive revitalization campaign: The goal is to completely redesign the entire rentable space of 138,000 square meters. Specifically, it aims to improve visit quality, offer customers more variety and service, and thereby increase the amount of time visitors spend at the mall. At the same time, the property is to become future-proof and sustainable by becoming as energy-efficient as possible. This will be documented by BREEAM certification.

The investor – a joint venture comprising the "North Haven Real Estate Fund IX Global" real estate fund managed by Morgan Stanley Real Estate Investing (MSREI) and redos real estate – was aware that a sustainable shopping center is more likely to retain its value. The ultimate goal is to increase customer frequency through an improved range of offers. Drees & Sommer's retail experts are there to help the investor to achieve this: One of the priorities is to implement the structural measures within the agreed time, cost, and quality parameters and ensure tenant coordination for the project development. This required comprehensive project management and monitoring.

After all, renovating an operational shopping mall is a big challenge. The customer should feel as unimpeded by the sounds of construction and dirt as possible. This also applies to the tenants, who rely heavily on their revenue after the long lockdown period.

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Conclusion: There are technical and conceptual challenges during development and construction, but above all else there are opportunities. The use of existing buildings conserves resources. Energetically optimizing and reducing CO_2 consumption have almost become standard procedures. Anyone who also makes use of recyclable materials and digitization, while also keeping the usage of existing properties flexible is securing the future of their portfolio. Now is the time to take a whole new approach to the inevitable topic of renovation. Digital, sustainable, economical, and innovative!

Prof. Dr.Eng. Thomas Harlfinger
real estate economist (IREBS), MRICS
Partner and Location Director for Bavaria, Drees & Sommer SE

Thomas Harlfinger joined Drees & Sommer in 2006. He has since become the Location Director for Bavaria, and since 2017 has been a Partner of the management, planning, and consulting firm specializing in construction and real estate. In 2020, he received an honorary professorship for Project Management in Urban Planning at the University of Leipzig. His dissertation covered redevelopment of existing office properties. As a real estate economist, he works with the technical and economic aspects of construction with existing buildings.

ESG: SUSTAINABILITY LASTS

With objectives like the Sustainable Development Goals (SDGs) or criteria like the ESG approach, policymakers are trying to obligate companies to be more sustainable. The finance industry in particular is to serve as the lever for this large-scale transformation toward a sustainable future. But how do systems like ESG work with existing real estate?

By Dr. Maximilian Riede, Head of Sustainability, Drees & Sommer SE and Claudio Tschätsch, M.Sc., LEED® AP BD+C, Senior Consultant, Drees & Sommer SE

The idea that abnormal situations are occurring throughout the world ever more often has been fuelled by the coronavirus pandemic. And in light of the financial crisis, refugee migrations, climate change, and the impending collapse of biodiversity and the precarious state of our oceans, there is even talk of an era of multiple crises.

Policy and business have taken a more assertive stance on these issues for some years now. One of the greatest milestones was with the Paris Climate Agreement of 2015, aiming to limit global warming to 1.5 degrees Celsius. The European Union's Green New Deal stipulated green growth in 2019. And global SDGs serve as guidelines and a foundation for all further regulatory instruments.

Now, the parties involved require reliable means of orientation. A necessary evaluation system has become increasingly significant in a short amount of time, in the form of the ESG approach. But what does ESG stand for, and how does it affect existing properties?

ESG must be considered in relation to other sustainability systems: For example, the EU taxonomy serves as a catalog of criteria for sustainability with direct implementation of the environmental factor. On the other hand, the sustainable development goals (SDGs) of the UN lay down political goals in exceptionally diverse spheres. These include improving education or sustainable consumption and production.

The potential for ESG in existing properties
What makes the ESG approach interesting for existing properties? Existing properties are responsible for about 40 percent of global CO2 emissions. With an annual renovation rate of under one percent, it will take 100 years for the building stock in Germany to be prepared. But we don't have that much time, as these goals must be achieved in the next 30 years. This also means that existing properties are a major step toward achieving the climate targets. This is also reflected in a property's further growth in value. The ESG evaluation acts as a hinge of sorts that connects technical-economic measures and measurable ecological impacts and underlines the nexus between them.

ESG stands for "Environmental Social Goverance"

No longer externalizing environmental and social aspects
ESG stands for "Environmental, Social, Governance." These three terms refer to an economic practice that strives for financial success as well as improvements for the environment, society, and governance. In other words, it refers to environmentally conscious, socially responsible (corporate) management.
The ESG approach is a system of indicators and revelations that allows progress in these three areas to be measured. The goal is to evaluate E, S, and G as fields for future risks.

NB: The binding CO2 reduction targets stipulated by the state and European Union for each industry are becoming more and more intense. The real estate industry, in particular, is under special scrutiny, as it and the mobility sector are the primary sources of greenhouse gas.

Against the backdrop of this escalation, the ESG and EU taxonomy offer the opportunity to work toward a sustainable future while avoiding economic disadvantages like cost increases. The horror scenario of stranded assets has been effectively ruled out.

Added value is already apparent

Regulations such as ESG create transparency, and not just for the future of a property or portfolio. Their current state can thus be examined. This is an important requirement for crisis-proof decisions, such as when assessing purchases. Furthermore, it is thereby easier for parties involved to obtain much more favorable financing for assets. It is assumed that banks and insurance providers will increasingly focus on factors like ecology or social aspects alongside the core economic criteria. The latter category includes matters of the increase and disclosure of user quality of existing properties. This includes aspects like productivity, well-being, comfort, connectivity, mobility, etc.

It is becoming increasingly clear that the real estate industry must seize the moment. In light of the “multiple crises”, there is currently a time window in which climate change and other challenges can be combated effectively. At the same time, there is also an opportunity to optimally position the market for the future. ESG provides transparent criteria for financial market participants and parties in the “traditional” industries, especially for existing properties.

Dr. Maximilian Riede
Head of Sustainability
Drees & Sommer SE

Maximilian Riede has been with Drees & Sommer since 2020 and is in charge of Sustainability & ESG for all of Drees & Sommer SE. He is based in Stuttgart. As an internationally experienced consultant and PhD in geography, he is the contact person for all matters concerning utilization of companies’ potential for sustainability. One of his chief areas of expertise is the development and implementation of companies’ transformation strategies into future-proof, sustainable assets. In so doing, he focuses on connecting profitability with the requirements of sustainability. Furthermore, he is in charge of the Blue City Team Stuttgart, which works, inter alia, with the challenges posed by climate change for neighborhoods and cities.

Claudio Tschätsch
M.Sc., LEED® AP BD+C
Senior Consultant
Drees & Sommer SE

Claudio Tschätsch is a Lead Specialist in Energy & Sustainability at Drees & Sommer, where he provides sustainability consultation on sustainable finance, ESG and green building. Since 2016, he has been advising Drees & Sommer customers from Germany and Europe with innovative services and strategy consultations for sustainability.

BUILDING A WORLD WITH SUSTAINABILITY AT THE CORE

The real estate industry plays an important role in achieving the climate goals. Yet there is much to be desired in many areas where sustainability is concerned, as resource consumption remains high. This can be changed with concepts like Cradle to Cradle® and urban mining, which are becoming more important with existing buildings as well.

Sustainability is an age-old principle that has its origins in forestry. It comes down to using resources only to the extent that they can be reused in the future. Anyone sustainably cultivating a forest can only fell as many trees per year as can grow back. Anyone using power from renewable sources ensures that fewer fossil fuels are consumed. And anyone who designs buildings such that they use as little energy as possible during construction and use, and can be reused after their service cycle, ensures that our planet's resources can be used in the long term.

"The future viability of companies, countries and cities hinges on careful utilization of ecological resources,"

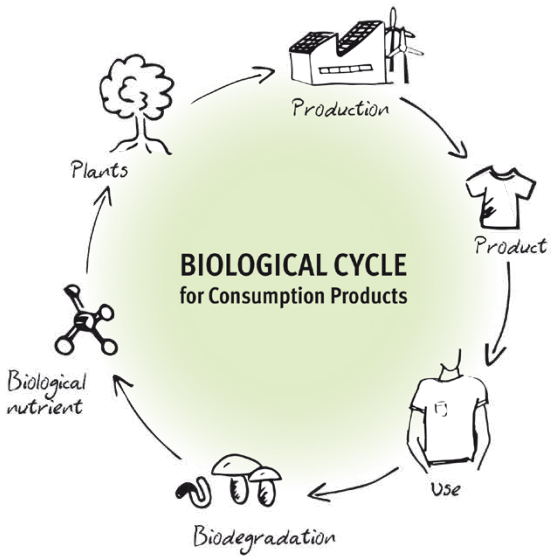
"The future viability of companies, countries and cities hinges on careful utilization of ecological resources," says Dr. Peter Mösle, Partner at Drees & Sommer and Managing Director at EPEA GmbH – Part of Drees & Sommer. "This also applies to working with existing buildings." This is because the construction and real estate industries play a central role in achieving the climate goals. They are responsible for 38 percent of the global CO_2 footprint, 50 percent of European waste generation, and 90 percent of mineral resource consumption in Germany. "There's great potential here for changing direction," emphasizes Mösle. Especially since the EU Green Deal and EU taxonomy have rightly prioritized these issues.

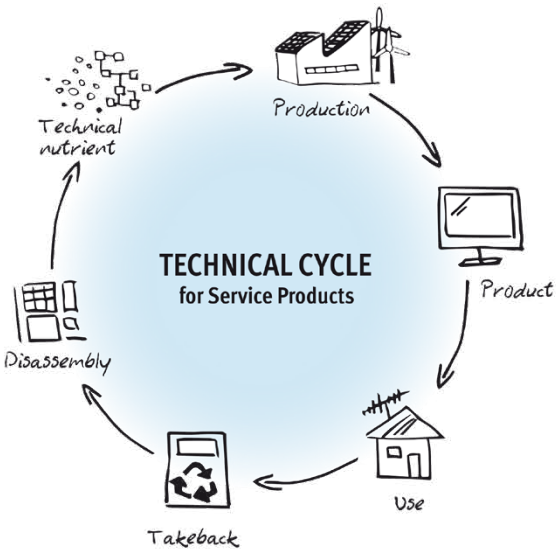
Cradle to Cradle:
Recycling management for building materials

The construction and real estate industries are major consumers of global resources and must deliver effective responses to matters of climate and resources. Some building materials are recycled during demolition or renovation work, but not nearly enough to help solve problems of resource consumption and environmental harm. Real recycling management is required, and that starts with proper product design.

Anyone constructing a new building or renovating a building must take a thorough approach to the building materials used. As many natural materials as possible must be used, such as cob walls or carpeting made from recycled materials – i. e. recyclable components that leave no or only a minor CO_2 footprint during their manufacture. Users are free to select the materials. This could be cement or concrete if it has been decarbonized in advance – e.g. if the CO_2 emitted during production is used for other industrial processes, stored, or at least compensated for. Usage of such building materials keeps the buildings sustainable, even if they are demolished decades after the end of their service life. It should then be possible to use the products in high quality or to return them – fully biodegradable – into an organic recycling cycle.

This principle is known as Cradle to Cradle. When one service life ends, another begins. This results in high ecological added value and can be illustrated economically: It can be verified which materials were used and what their chemical characteristics are. A material verification provides detailed information, and similar to the energy identification, this is an increasingly important factor for eventual sale or leasing of the building and has an impact on financing.





Urban mining: Buildings becoming resource depots

There are about 15 to 16 billion tons of various resources within buildings in Germany – and almost as much is tied up in infrastructure. If one considers buildings to be disposable products, these resources have simply been consumed. But it doesn't have to be that way: The use of recyclable materials turns buildings into resource banks. At the end of its service life, the building is demolished and the resources within are available for reuse. The capital linked with the materials is not entirely lost, but rather is made available once more when they are recycled – similar to a middle- to long-term investment. This turns the property into a resource depot, the value of which can grow continuously in times of increasing scarcity.

When it comes to new buildings, this is relatively easy to implement through careful selection of materials during the planning phase. In most existing buildings, there are no recyclable materials, but here, too, there is great room for processing and reuse during renovation. This requires a careful separation of the various materials. On top of this is the matter of planning buildings in advance such that they can be repurposed and used for secondary or tertiary purposes without significant effort. This also applies in particular to inevitable renovations.

The recently founded platform Madaster is making great strides toward establishing this recycling management: As a digital material registry for the industry ecosystem Circular Real Estate, the platform offers solutions for urgent matters of resource use in real recycling management. It not only provides information on the origin and quality of building products, but also a foundation for documenting material- and building-specific data.

This makes resource information transparent and brings recyclable real estate management one step closer to becoming a reality. Real recycling management begins with the right mindset and concerns not only products, but also internal and external corporate processes – and thus entire ecosystems. Instead of thinking of buildings, materials, energy supply and mobility as separate, they are now closely interlinked and part of the same system. They must thus be considered equally on the road toward more sustainability.

The usage of natural components like clay or wood also ensures a more pleasant indoor climate and directly benefits the users. And sustainable architecture also means helping people to feel comfortable in the buildings. It ultimately comes down to building a world where sustainability is at the heart of everything.

Peter Mösle (Dr.Eng.)
Partner, Drees & Sommer SE and Managing Director of EPEA – Part of Drees & Sommer

Since 1996, Peter Mösle has helped countless national and international building projects become green buildings. Professionally, he focuses on the areas of energy design, energy management and the development of sustainable districts. As the Managing Director of EPEA GmbH – Part of Drees & Sommer, he also champions and pioneers the Cradle to Cradle principle within the construction sector.
Peter is a member of the DGNB executive committee and is the chair for the area of system development and sustainable urban districts. He finished his studies in mechanical engineering (with a specialization in energy technology) at the University of Stuttgart and Tucson, US, and earned a doctorate from the University of Stuttgart in 2009.

EXIT THE VICIOUS CIRCLE OF WASTE THROUGH CONTINUOUS CYCLES OF URBAN MINING

The conventional mantra for renovations is "out with the old, in with the new." Not anymore, as Jagori Dhar finds out in a conversation with Michael Moradiellos del Molino, Head of Real Estate, EPEA – Part of Drees & Sommer, BeNeLux, and France. We do not need to dig deep into the bowels of nature. Most precious raw materials exist in the form of rock, gravel, cement, and soil in our buildings, and they can be mined to feed the appetite of our mushrooming metropolises from within.

While taking a stroll around the city, regardless of your geographical whereabouts, have you ever been left wondering about the infinite resources hidden in nature, such as trees and ponds? The same principle applies to our built environment, they are not merely temporary structures, standing tall for 50 to even 200 years, and, at the end of their lifecycles, finding an unceremonious burial in a heap of debris. Currently, most of our building materials meet the same fate: a journey into landfills, where they are either destroyed or downcycled into products of much lower value, resulting in a major loss of priceless materials. Our resources, as we know, are finite. Given the burgeoning stress of urbanization and ballooning populations, it is predicted that the global demand for materials will triple before 2050. More than 450 million tons of construction and demolition waste is generated every year in the EU alone.

Cities as reservoirs of raw materials

What if I told you that, towering edifices like the Eiffel Tower, Big Ben, or the entire city of Rome are repositories of rich raw materials which need to be nurtured, not only because of their historical heritage, but also to break the vicious cycle of waste. Our cities are dynamic, manmade stock with a unique metabolism, and we are surrounded by more than 50 billion tons of valuable materials, so why don't we tap the massive assets our forefathers created and preserve them for our posterity?

Michael Moradiellos del Molino, Head of Real Estate, EPEA – Part of Drees & Sommer BeNeLux and France points out: "The time is up for fence-sitters. Inaction is not going to be good enough anymore! We need to evolve with the new ways of living. There is enormous pressure on our environment and resources. The first step is to identify and review the existing materials of our buildings and move away from the mindset of demolition. Our cities and buildings are warehouses, and their rich content needs to be mined to retain their value and recycle for construction purposes."

Urban mining found its genesis a few decades ago, emerging due to environmental concerns of recycling scraps and garbage. However, the real estate and construction sectors still need to fully warm up to the practice. It takes a comprehensive view of raw materials and how to best recover them, seeing products, buildings, infrastructure, as supplies comparable in value to those found in the innermost layers of the earth. In this approach, the wood from a dismantled building is not seen as scrap anymore, but a raw material with the endless promise to be reused as window frames, doors, or even the roof over your head.

Europe's largest urban mining development

"Urban mining offers a range of benefits, particularly in ensuring secure and sustainable supply chains. It unlocks resources closer to where they are needed, increasing resource independence, and significantly cutting down transportation costs and energy use," explains Michael, who is putting all this into practice at the "ZIN" project by renovating towers 1 and 2 and the new construction of tower 4 of the Brussels World Trade Center.

Multi Tower's multi sustainability strengths

It's not just the ZIN project. Michael and his team have their hands full with the renovation of another tower in Brussels: the Multi Tower, a major renovation project by Whitewood, which acquired the building at the end of 2015. When the renovation is complete, Multi Tower will offer some 44,000 m² of office space and retail units and aims for the BREEAM "Excellent" certification. This is another urban mining monitoring project that Drees & Sommer is supporting with building circularity passport services. Thanks to its energy and carbon performance, as well as the circular economy credentials, the French group TOTAL has chosen to rent the building.

In 2016, the Brussels Capital Region adopted the Programme Régional en Economie Circulaire (PREC) with the objective of mobilizing resources and minimizing waste in the region by developing ambitious circular economy policies in the city. Now demolition in the Brussels region is not allowed unless there is a good urban mining plan, and the new construction follows the "design for disassembly" principle. The "ZIN" project, developed by Befimmo and Open Minds, is deemed the largest urban mining project in Europe. With its unique mix of sports facilities and residential, office, hotel, and coworking space, the towers will make a key contribution to the diversity of the business district. The project has a floor area of over 110,000 m². At the heart of refurbished structure lies the concept of circular economy, through the inventory and reuse of a maximum of materials, as well as the Cradle to Cradle certification. Michael explains, "A major part of the existing materials will be either retained, reused on other sites, or recycled. We are providing support for the dismantling, processing, and enhanced reuse of recovered materials in other construction projects. To date, over 1,050 tiles, as well as insulation, doors, and kitchens, have been reused, and 140 tons upcycled. A Material Passport will certify that most of the new materials used are certified to C2C standard or the equivalent."

Towards a healthier future

Apart from evident environmental benefits, treating the built environment like a store can be easier on your pockets and have added health benefits, too. Material Passports provide detailed information on each material's chemical composition, which enables the use of non-toxic materials in construction, thus eliminating health risks at the material sifting stage.

It is projected that the new environmental regulations will make urban mining competitive. Developers will be wary of the additional price tag or ending up with stranded assets if their buildings are not compliant with the new construction standards and future sustainability requirements.

"Like any market, you have the front runner and laggards. To make a successful transition to circular real estate, we need collaborative momentum. A string of reforms alone will not see the implementation through. We need a willingness to invest in innovation. Banks, investors and developers need to think outside the box, but look deep within existing constructions to enable sustainable change," adds Michel.

So, the next time you pass through a skyscraper, you do not need x-ray glasses to see the untapped possibility in it, only "circularity" tinted ones would suffice to unearth what lies inside.

Michael Moradiellos del Molino
Head of Real Estate, EPEA – Part of Drees & Sommer BeNeLux and France.

After completing his education in architecture at the ISAVH in Brussels, Michael moved to Spain to write his doctoral thesis on "Sustainable Urban Planning". He started his professional career on international projects like the Madrid pavilion at Shanghai Expo 2008, DreamHamar in Sweden, and Mexico new square, to name a few. An expert in circular economy and Cradle to Cradle, Michael is driven by the desire to innovate in co-creation with stakeholders and to develop good practices that have a positive impact on people and the planet. He joined Drees & Sommer in Belgium to grow the Cradle to Cradle design principle in the French-speaking markets and to meet the growing demand of private and institutional clients on sustainability and circular economy issues, working on some super sustainable projects in line with the Paris climate goals.

ONE GIANT LEAP TO "PARIS PROOF" BUILT ENVIRONMENT IN THE NETHERLANDS

The reinvention of the modern workplace, is a silver lining of the pandemic with a greater spotlight on health, wellbeing, sustainability, and innovation. Additionally, international climate accords have sent real estate developers and occupiers scurrying to conform to the new regulatory norms. An environment trailblazer, the Netherlands introduced the "Paris Proof" standard of reducing energy consumption in the built environment by two-thirds compared to the current average by 2050. Mayada Shaaban, Director Projects, EDGE and André Leeuwis, Managing Director, Drees & Sommer Netherlands share the blueprint of the "biggest and coolest" redevelopment project by ABN AMRO.

The interview was conducted by Jagori Dhar

Since its inception in the 1990s, Netherlands based real estate developer, EDGE has taken a 360° approach based on well-being, sustainability, design, and technology. So when ABN AMRO pledged to slash its energy consumption in a matter of a decade to meet the Paris climate targets by 2030, EDGE approached the international banking group to support their real estate strategy and the ambitious renovation of their Foppingadreef office in Amsterdam. They appointed Drees & Sommer Netherlands to manage the design and deliverable processes.

What hurdles did you encounter at the Foppingadreef campus?

Mayada Shaaban (M.S.): *By definition, an existing building is more challenging as you have to work with the existing structure. In an existing building, you never know what to expect! We often see that the drawings don't exactly match the conditions on-site. We have to perform analyses to fully understand the existing structure. And even after that, in our experience with redevelopments, it's not until the demolishing phase that you really find out how the building is constructed.*

How do EDGE and ABN AMRO approach sustainability in redevelopments?

M.S.: *ABN AMRO and EDGE are both strong advocates of sustainability and circularity, not only in their real estate portfolios but also in their company strategies. ABN AMRO created Circl in Amsterdam as the ultimate example of a circular building. They decided to piggyback on the scheduled maintenance of their bank office in Foppingadreef to redevelop it as a model of circularity and sustainability, striving for at least a BREEAM "Excellent" rating. We will incorporate many existing elements of the office building in the new extension. For example, the current concrete facades will be removed to create open facades towards the foyers that will be completely integrated into the new office floors. The existing facade elements will be reused elsewhere throughout the building.*

Why did you partner with Drees & Sommer to work on this project?

M.S.: *We felt that Drees & Sommer could identify with the elements that are important for this redevelopment and bring an added value as there is so much expertise within the company.*

The emission goals have been brought forward by 20 years for this project. What were the initial challenges when you were brought on board?

André Leeuwis (A.L.): *Where sustainability is concerned, we are on the same page with EDGE, currently project managing their Valley project also in Amsterdam, another landmark in modern ecological buildings. When we were assigned in April 2021, we were faced with the challenge of delivering a preliminary design in line with the agreements with ABN AMRO. However, we truly understand their vision and are familiar with their practices.*

Energy efficiency and reduction are at the heart of this project. What measures have you undertaken to bring down energy consumption by 75 %?

M.S.: *We are focusing on improving the internal climate by renewing the installations with a more energy-efficient set-up, replacing the glass facades with insulated glass, adding heat cold storage and solar panels on the roof and facades. We would be installing energy-efficient smart ceilings with LED lighting, the sensors in the ceiling also make it possible to control the heating and cooling of individual workspaces. The new building will generate energy through its solar panels and heat-cold storage. We've also paid special attention to the green cover both inside and outside by reusing existing plants and trees as far as possible. The greenery in the atrium will also improve the air quality.*

A.L.: *Around 10,000m² of solar panels (comparable to two football fields) will be added to the complex's rooftop and facades. The combination of high-end technology and the commitment to invest in a healthy, sustainable, flexible and cost-efficient office building will make this property future-ready. Thanks to our Cradle to Cradle expertise, we would add value by bringing an informed perspective on all circularity related issues The most remarkable aspect of such developments is that we will maximize the Floor Space Index (FSI), thus creating new square meters without taking up more land.*

What role does digitization play in redevelopment projects?

M.S.: *Creating a smart, innovative building is one of the drivers for EDGE. We have modelled the entire building on BIM. It means that each discipline in the design team integrates its design into a 3D model. This allows for clash controls in an early stage of the process. When completed it will be a smart building, an office ready for tomorrow. It's like putting the existing building in a time machine and fast-forwarding it from the 1980s to the 21st century. We do not envisage an office to be just a place where users plug in a laptop and get on with work but an ecosystem facilitating smart interfaces and interaction.*

What is the most exciting element of this project?

A.L.: *Often referred to as the coolest redevelopment in the Netherlands, what is most satisfying is that we can contribute through our international wealth of experience and the know-how of managing complex redevelopment projects in the Dutch market. When completed in 2025, the building will not only be a smart and sustainable structure but also an inspiring avenue for its users to come together and enjoy the unbeatable combination of modern technology and sustainable principles.*

Did you know? Digitization: Smart buildings are efficient

By Klaus Dederichs, Partner and Head of ICT, Drees & Sommer SE

Digitization holds great potential on the road toward an ecologically sustainable real estate stock. Smart buildings, due to their networking, help lower energy consumption and reduce CO_2 emissions because they make it possible to coordinate processes and sub-systems within the building and regulate them when necessary. This means rooms are only heated or cooled if they are actually being used, and the lights turn off automatically when no one is in the room. This helps drastically reduce energy consumption and, from the investors' perspective, is an important step toward fulfilling the ESG criteria. The necessary software and hardware (IoT) can also be retrofitted in existing buildings. Smart grids also make it possible to increase energy efficiency. With this, smart buildings can be interconnected with a smart power grid to replace energy easily and efficiently with the surrounding urban infrastructure when necessary.

However, digitization also helps ensure more efficiency when building and renovating buildings. Building information modeling (BIM) creates a digital clone of a building in a virtual space. This makes it possible to calculate the comfort criteria at different times of the day or year on the basis of weather data, lighting, insulation, heating and cooling, and ventilation. The necessary parameters for the lowest possible energy consumption with simultaneously high comfort for the users are the chief focus in the planning phase.

"Redevelopment is by definition the highest form of sustainability and circularity in the built environment."

"Unlike the impression that in the Netherlands, everyone is a circularity champion, we do still have skeptics. But with reliable business cases, a lot of owners are willing to take chances."

Mayada Shaaban,
Director Projects, EDGE

Mayada brings 11 years of experience in real estate (re)development. As one of the project directors at EDGE, she is responsible for the complex redevelopments with a key focus on sustainability and energy efficiency. She is passionate about developing sustainable buildings, that adds value to the built environment in terms of quality and architecture. She holds a master's degree in Real Estate and Housing from the Technical University in Delft. Apart from this, she is currently working on the Edge Amsterdam West project, scheduled to be delivered later in 2021.

André Leeuwis,
Managing Director, Drees & Sommer Netherlands

As one of the Managing Directors at Drees & Sommer Netherlands, André is responsible for managing the quality of the Dutch office's services along with building performance and project management assignments. As a senior team leader, he brings almost 40 years of experience in engineering, consulting and project management. He studied Building Techniques in graduate school. André has extensive expertise in dealing with complex project environments from design to execution stages

WHEN INTERNAL AND EXTERNAL VALUES COUNT EQUALLY

Older existing buildings are known for being energy hogs. This can be changed with comprehensive energy renovation. This includes measures on the building's outer shell, as well as the interior technology and surrounding infrastructure.

By Prof. Dr.Eng. Michael Bauer, Partner, Drees & Sommer SE

Around 35 percent of energy consumed in Germany is attributed to residential buildings, especially for heating and hot water. And wherever a lot of energy is consumed, a lot of energy can be saved: The energy shift, which in recent years has chiefly focused on power generation, is now reaching the building sector. This is also known as the decarbonization of the heating infrastructure. The federal government's energy policy objectives are also quite ambitious in this area: By 2050, the domestic real estate stock is to be nearly climate-neutral, meaning that virtually no CO_2 will be emitted during heat generation in net terms. The majority of German buildings would have to be brought up to par with regard to energy. Yet, the rate of renovation is still falling short of the expectations: Just one percent of buildings undergo energy renovation every year. At this rate, the goal will not even be half met.

There are many energy problems faced by existing buildings: Firstly, the heat protection of the outer shell is poor, and secondly their interior heating systems are powered by fossil fuels, thus making them rather inefficient because of their high level of consumption.

More than two thirds of heat consumption in existing German residential buildings comes from before 1979, but according to the German Federal Statistical Office these only make up one third (38 percent) of the domestic building stock. In comparison to that, renovated buildings achieve consumption values that only make up a fraction of this. The great need for action and significant potential thus chiefly lie in the energy renovation of existing buildings.

To make use of innovations in this area is to make a considerable contribution toward more sustainability. It is important that heat no longer be generated from fossil fuels like gas or oil, but rather to use heating pumps, because electricity is the energy of the future. Heating pumps make use of the natural heat of the ground and air. Cooling agents are steamed by ambient heat at a low temperature. This gas is condensed in the compressor so that, with high pressure and a high temperature, the heat in the condenser can be transferred to the building heating system. The heating pump only needs 25 to 35 percent power to generate 100 percent heat for a building. The remaining 65 to 75 percent is ambient heat.

SQUARE Mannheim

© GBG Mannheimer Wohnungsbaugesellschaft mbH

SQUARE Mannheim:
Searching for the best energy solution

Two buildings, two standards, one goal: The GBG – Mannheimer Wohnungsbaugesellschaft is developing a model project for energy renovation of buildings with its project SQUARE (Smart Quarter and Urban Area Reducing Emissions). Two identical residential buildings from the 1950s, once used by the Americans, will be renovated with 24 apartments each, with various energy standards and technical concepts – one based on the current Energy Saving Ordinance (EnEV 2016), the other based on the Passivhaus standard for modernizing old buildings (EnerPhit). After the project is complete, it will be determined which building is more energy-efficient.

The development of solutions and concepts in the neighborhood sector in order to achieve national and European climate targets is ultimately one of the big challenges of our time. Yet, there remains disagreement about how to achieve the best results. The demo project in Mannheim will provide points of reference and present integrated solutions for reducing CO_2 at the neighborhood level. Buildings will receive installations as technical possibilities permit – from seasonal heat retention via ice storage to energy meters for users. EnerTouch is the central control element for adjusting the target parameters of the respective room temperatures, central controls for blinds and lighting. At the same time, it serves to counteract the rebound effect. Energy-efficient and energy-saving concepts tend to cause the users to neglect energy-saving behaviors. Users of the home receive constant feedback on their power, heat, and water consumption via a central touchscreen in the home. These values are both absolute and evaluated on the basis of projected values.

Drees & Sommer is supervising the model project funded by the European Fund for Regional Development: Real estate experts are responsible, inter alia, for taking stock, selecting investors, overseeing sales negotiations, and general construction management. They are also in charge of the technical monitoring in order to ensure optimal operations and use of sustainable energy systems. "The solutions found during the SQUARE project are intended to help reduce the CO_2 footprint of residential neighborhoods and their networks. Ultimately it's about creating models for the implementation of sustainable solutions for our building stock," says Simon Dietzfelbinger, Partner and Residential Properties Expert at Drees & Sommer SE.

The power required to operate heating pumps should come from sustainable sources. In addition, users can install photovoltaic systems on the roof, for example – or modular photovoltaic facade elements. These can ensure that the facade not only is energy-efficient, but also generates power. Curtain, double-glass, and integrated facades play an important role in increasing energy efficiency and are also made from recyclable materials that can be reused after the end of their usage period. This also applies to wood paneling, which offers the advantage of good insulation characteristics and recyclability.

Against the backdrop of increasing global urbanization and construction density, constructive and aesthetic facade solutions are facing increasing demand for existing and new buildings. However, the technology in existing buildings must also be replaced and the infrastructure adjusted accordingly. Many building owners and real estate managers are not yet aware that investors expect this and want sustainable, energy-efficient buildings. For example, photovoltaic installations pay for themselves within less than 10 years. The payoff period of geothermal installations, which can be used for heating with a heating pump in the winter and cooling during the summer, is generally 10 to 12 years for office buildings.

Turmcenter Frankfurt

Turmcenter in Frankfurt: Exemplary beacon of energy use

The facade as a year-round energy collector: The Turmcenter in Frankfurt has an innovative energy concept that makes the office tower on Eschersheimer Landstraße, constructed in the 1970s, a lighthouse project of energy use. In the winter, the building draws on its installed energy displacement and storage system: The heat absorbed by the side facing the sun is transferred to the side facing away from it, meaning the rooms can be heated naturally. Together with solar thermics, a heating pump, and heat recycling from thermal discharge, the heat regeneration is up to 90 percent regenerative. In the summer the solar radiation is upcycled via a solar thermic system, regeneratively producing cold. 65 percent of the building's cooling is through solar energy.

This sustainable energy concept that makes the office building a European trailblazer was developed by Drees & Sommer. "The focus lay on less but more innovative technology that considerably increases efficiency. As a result, the building's annual consumption is particularly low: It is 40 percent below the EnEv 2014 requirements and 15 percent under the Green Building Standard", explains Norbert Otten, Partner, Drees & Sommer SE. The technology used reduces the energy costs to well below EUR 1 per square meter per month. This concept pays off: It increases the efficiency and attractiveness of the spaces while improving the building value, which has paid for itself both via leases and sales.

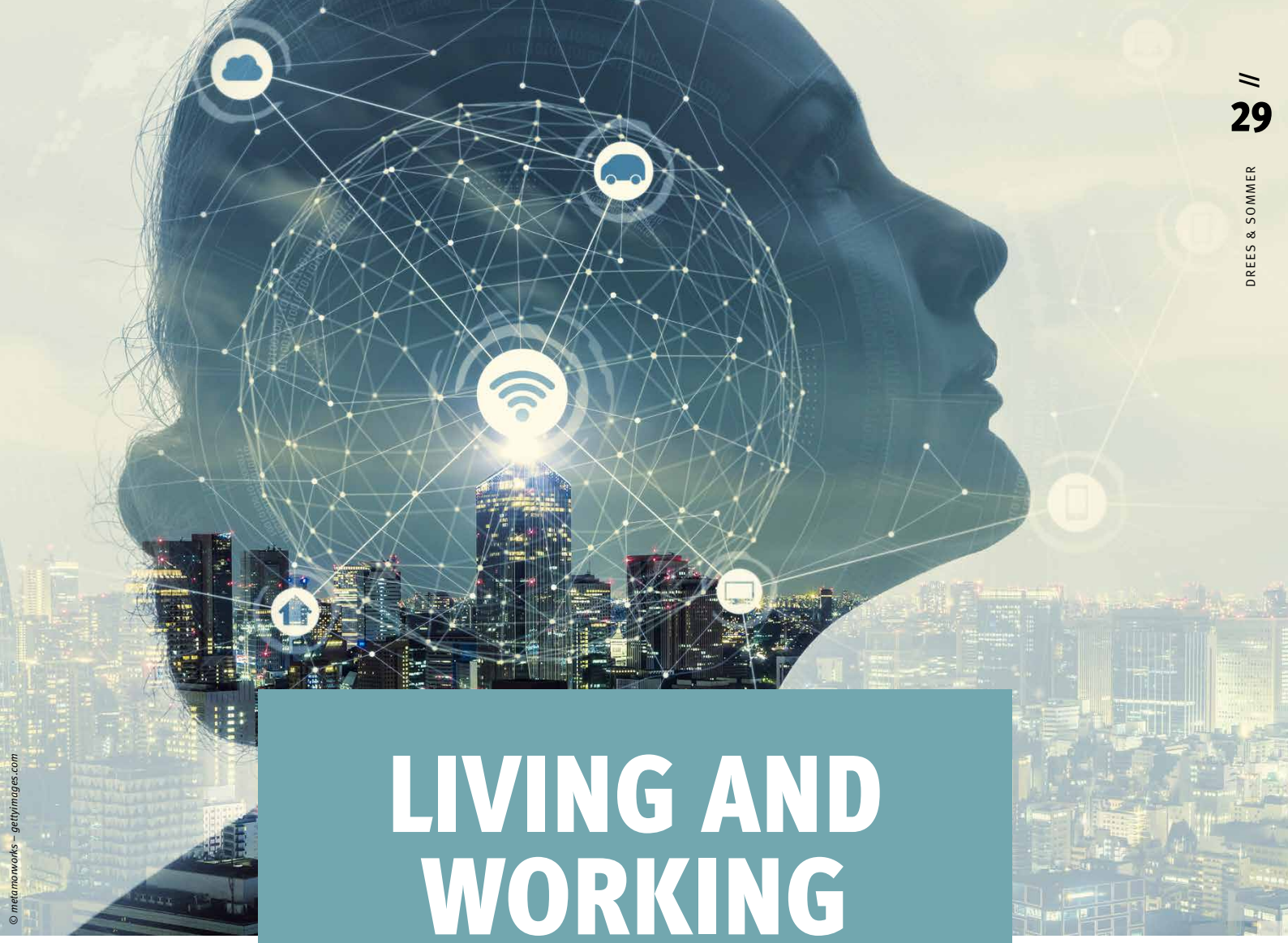
In addition, the Project Managers at Drees & Sommer supported then-investor Benson Elliot during the LEED Gold sustainability certification and oversaw the implementation of the fire safety measures. Thanks to its innovative energy concept, the building achieves the energy balance of current new structures while facilitating maximum profitability with additional expenses, which amount to less than EUR 4 per square meter. This means that the operating costs are more than 35 percent lower in comparison to other high-rises. The revitalized office high-rise was sold to UBS Asset Management in late 2018.

However, there must be a holistic approach to achieve profitable overall results. This means, in metropolitan areas, in particular, renovating the district heating infrastructure to become climate-neutral across the entire network. Following Denmark's example, district heating should be converted from high to low temperature, which entails replacing heat exchangers in the existing buildings equipped with district heating. The pioneers in this regard are often industrial plants in which there is a strategic conversion of buildings and infrastructure with five-to ten-year plans. The funding landscape also offers many opportunities to support conversion to a sustainable infrastructure.

Because only with a holistic view of buildings and the surrounding infrastructure will it be possible in the future to make buildings truly CO2-neutral. The status quo is not enough if the federal government's energy policy targets are to be even somewhat met.

Prof. Dr.Eng. Michael Bauer,
Partner, Drees & Sommer SE

Michael has been a Partner at Drees & Sommer since 2005. He is responsible for the engineering consultancy practice, specializing in energy design, energy management, building technology, green building, sustainability, carbon dioxide, ESG, climate-positive buildings and infrastructure, and networked buildings. In addition, he has expertise in developing innovative energy systems, new implementation methods and technical project management. He has worked on a range of cutting-edge projects such as Freiburg town hall, the Experimenta Science Center in Heilbronn, the Neue Messe in Stuttgart and the A-plus terminal at Frankfurt airport. Michael graduated in energy-efficient building technology from the University of Stuttgart, where he also completed a PHD in simulating energy-efficient heating installations. Today, he keeps one foot in academia as an honorary professor and lecturer at the Institute for Building Energy Infrastructure, Thermotechnology and Energy Storage and at the Institute for Construction Management. He has shared his expertise in multiple publications, including co-authoring the book "Green Buildings". Michael also volunteers on the Expert and Guidance Committees at the VDI and DGNB.



LIVING AND WORKING SMARTER IN EXISTING PROPERTIES

From offices to hotels, retail spaces to residential buildings: Smart buildings are a part of the future, as they improve user comfort and increase yields for investors, owners, and operators. The corresponding technology can be realized not only in new structures – but the retrofitting of existing buildings is also becoming increasingly important.

By Klaus Dederichs, Partner and Head of ICT, Drees & Sommer SE and Stefanie Lütteke, Head of Property Companies, Drees & Sommer SE

From The Ship in Cologne and cube berlin to Hammerbrooklyn Hamburg and the Heidestrasse in Berlin: Innovative buildings and neighborhoods throughout Germany are making use of digitization. But more and more existing properties have to be made smart in the future in order to tap into financial and sustainable potential for users, building owners, investors and, of course, the environment.

Smart technology ensures more efficient processes and optimized operations. They thus directly increase the property's profitability. Because they transparently provide data required for the increasing reporting requirements, the buildings are also indirectly more profitable. At the same time, they form the basis for new data-based services with the use of digital platforms so as to meet users' digitization standards, as these users are increasingly becoming digital natives. Furthermore, GDPR compliance requirements must be met and cybersecurity strategies developed that ensure long-term, stable operation, and thus stable returns. Over time, smart buildings will even evolve into cognitive buildings that, with artificial intelligence, will learn from experience and data analyses from its own operation and automatically operate the building itself.

Over time, smart buildings will even evolve into cognitive buildings

In the future, people will need to think in systems in order to succeed. This especially applies to existing buildings. The costs of asset management, property management, facility management and corporate real estate management can be significantly reduced if the right data are available at all times. Smart existing buildings can make a significant contribution toward achieving the ESG criteria through reducing energy costs, and in so doing help achieve our climate protection targets. Owners and investors are increasingly becoming platform operators that offer pay-per-use business models. Energy consumption can be reduced to a minimum and costs saved when smart building controls automatically detect peak times and vacancy. Digitization and sustainability thus go hand in hand.

Effective data management will be the key to successful building management. Digitization serves as a tool for retrieving data and making them usable. The requirements of disclosure and reporting obligations for the sustainability targets (Green Deal / EU taxonomy) can often be met only in this way.

The evaluation catalogue for properties will thus also change in the long term. Characteristics like location, usage type, and tertiary usability will continue to play a significant role. However, profits will become increasingly dependent on the digital infrastructure and connectivity beyond the level of individual buildings. With new, service-based business models, investors, building owners, and operators will be able to tap into entirely new markets that the real estate market had never focused on before. These offer attractive profits in the long run, especially with regard to the booming construction costs.

Existing buildings hold especially great potential for digitization.

From retail spaces and hotels to office and residential buildings: Connectivity and data analysis are becoming a competitive factor. Even today, property owners, as well as asset and portfolio managers do have access to a variety of information, such as data on buildings, their surroundings, their use, their energy consumption, billing data, and tenants and market developments. Yet, this information is often only available in so-called "data silos" and cannot be interlinked. A real estate platform that sensibly consolidates this information allows these parties to derive customized solutions for their real estate portfolios, the buildings, and the users themselves. For example, offices could offer mobility, delivery and pick-up, dining, athletic or residential services that can be viewed in the building app. Such services can be considerable sources of additional income in times of massively increasing maintenance costs for building owners.

Hotel owners and operators also benefit from the networking: For example, digitization can improve the guest journey in that a guest is automatically assigned a room before arrival and the check-in can be performed in synchronization with arrival through the sending of an "electronic room key." Preferences like desired room temperature or diet requirements can be conveyed during the hotel stay. During the next check-in, all these data are available and the room would already have the preferred room temperature or diet plan upon entry. Such services not only provide a high degree of service, but also optimal operations. Because such smart building controls can, with the room's occupancy plans, automatically deduce entire unused areas from the cleaning staff's service schedule and reduce energy consumption to a minimum.

Properties that can think

While people otherwise have to think in conjunction with the building and engage manually, digitized buildings ideally operate entirely on their own: They learn from their users and adapt to their individual needs via a sort of centralized mind. Artificial intelligence (AI) connects all technical systems, sensors, and planning, usage and user data in accordance with the highest IT security standards, thereby controlling the processes within the building. And so the "mind" is always learning. It learns from operational data, user data, and ambient data, which it uses to generate suggestions for improvements.

For example, the smart building detects needs for repairs, notifies the service staff, and guides them to the respective facility with specifically defined access monitoring. If areas are not being used, the system detects this vacancy and turns off the installations in these areas – i.e. heating, cooling, ventilation, light – in a targeted manner. Sensibly configured sensor tracking also displays the paths that persons have taken through

the buildings. This helps continuously improve work processes, increase their efficiency, and adjust the workplaces to the real needs of the users. With apps, the tenants can control optimal comfort in the building, access monitoring, parcel station, and much more.

The trend of sharing

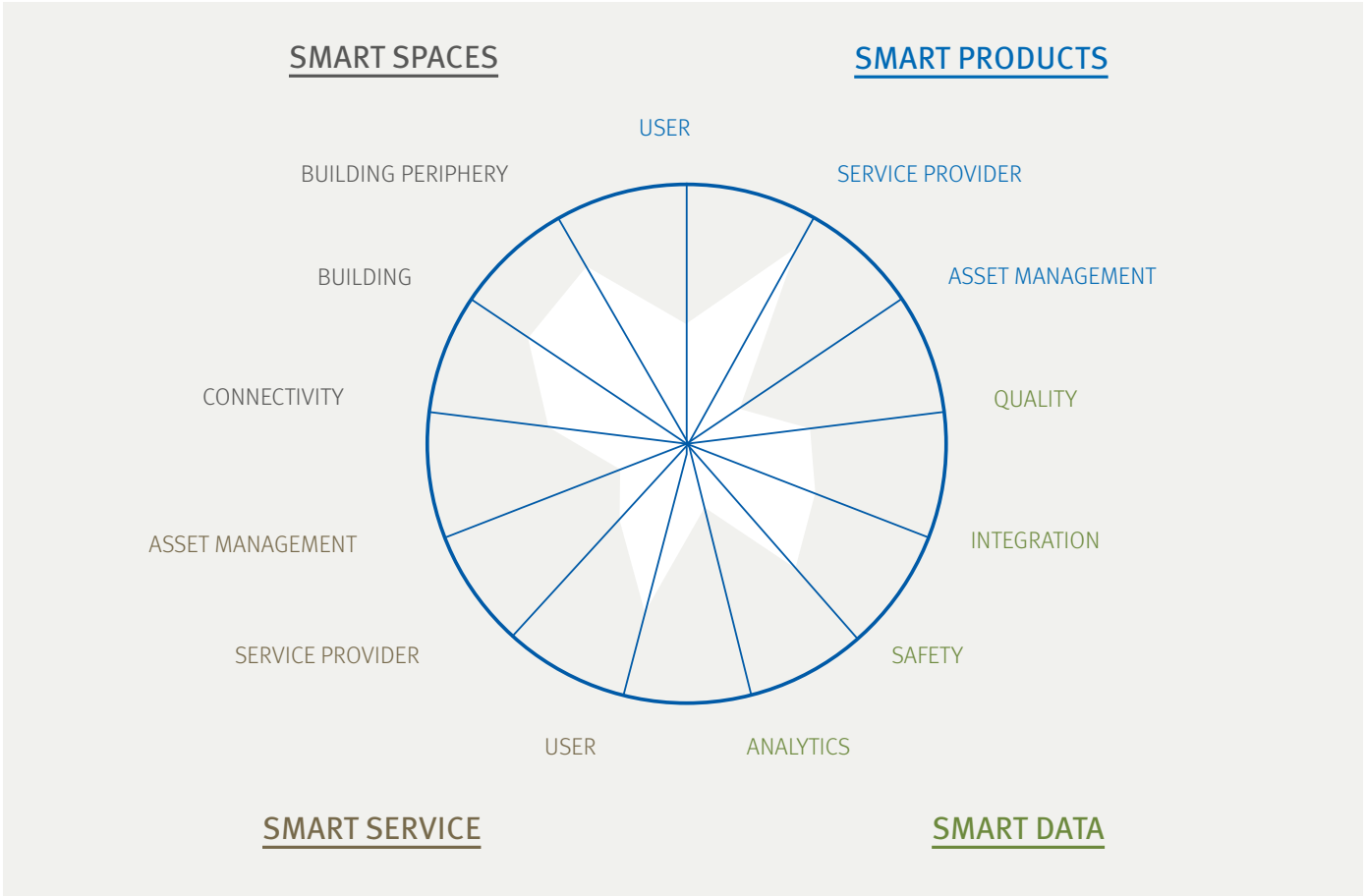
But artificial intelligence can do much more: In order to generate income from the data flow in the smart buildings, a clear strategy is required. It must be possible to consolidate and evaluate all relevant information in the simplest way possible, ideally at the push of a button. In the best case scenario, artificial intelligence helps analyze all the compiled information and deduce new service offers for the property users from that information. This is not about big data, but rather select data containing corresponding KPIs. Space-as-a-service concepts are especially promising. This is a paradigm shift in the real estate industry: The surface area is no longer the deciding factor, but rather the current space availability. The legal basis is not the rental contract, but the service contract. Based on the concept of the sharing economy, office and parking spaces that employees do not use in the evenings can also be leased out, for example.

Investors, building owners, and operators are increasingly becoming platform operators who facilitate usability, ideally by smartphone in a building app.

Digitizing existing buildings

It's not only new buildings that benefit from such digital technology. A majority of existing buildings can also be turned into smart structures. The first step is to install a data collector that connects to the building's existing interfaces. This is often possible without any major construction work. The data collector is a cloud-based system that, with machine learning and artificial intelligence, reads and evaluates the data from the building technology. The system detects errors in a building's programming or hydraulics. It also presents the potential for a building's energy optimization. Existing buildings are often discovered to have up to 20% energy savings potential. But it is also usually easy to retrofit sensors (IoT technology) in existing buildings. The sensors can often be installed in the room with an adhesive pad and wirelessly transfer their measured values to a gateway in the building. This means less work for building management, since the entire system can also actively indicate errors by increasing the availability of technical systems like cooling, heating, ventilation, and power.

Digital Approved criteria catalogue



The development of a suitable digitization strategy begins with assessing the requirements (IT infrastructures, technical infrastructure, networkability, cybersecurity, etc.) with regard to digital readiness (the Digital Ready Check). Using concrete criteria and evaluation aspects, the level of digitization of the property must be defined and the resulting insight implemented into practice. The “Digital Approved” criteria catalogue developed between Drees & Sommer and the Smart Commercial Building center at the RWTH Aachen offers measurable and reproducible added value. The criteria catalogue is based on a reproducible, scientific approach to defining requirements for planning smart buildings. Every building does not need to have the same level of digitization, but rather the building must be customized to suit the respective users’ needs. The deciding factor here is which data and data quality the building can provide in order to improve the processes and user experience, ensure the property’s sustainable operation, and facilitate new business models.

Klaus Dederichs
Partner and Head of ICT
Drees & Sommer SE

Klaus Dederichs started as Head of ICT at the building, property and planning consultancy Drees & Sommer in 2015, becoming a partner in 2019. He is the Managing Director of the company’s location in Aachen and his remit covers ICT, digitization, business transformation, IoT, big data, industry 4.0 and data centres, preparation and planning. After studying physical engineering at FH Aachen, he spent several years working for various engineering firms. Klaus set up the Smart Building Solution Congress in partnership with the Center Smart Commercial Building at RWTH Aachen and acts as its organizer and moderator. In 2019, he became Chair of the ULI Product Council Future Cities – Smart Cities.

Stefanie Lütteke
Head of Property Companies
Drees & Sommer SE

Stefanie Lütteke has been with Drees & Sommer since 2008, based in the Düsseldorf office, she is responsible for the Property Companies sector. As an architect, Master of Construction and Real Estate Management, and certified Project Management professional, she is the contact for all matters concerning utilization of the potential of real estate. One of her chief areas of expertise is the transformation of existing buildings into assets that will last for the future. In doing so, she focuses on linking profitability with the requirements of digitization and sustainability.

FOCUSING ON THE CUSTOMER AND THEIR NEEDS – ESPECIALLY FOR EXISTING BUILDINGS

The coronavirus pandemic has upended our way of working. The office and business trips are becoming less important. As a result, home life and work are coming closer together. In our interview, Daniel Seibert – Partner, Drees & Sommer and expert in New Work – and Mustafa Kösebay – Associate Partner, Drees & Sommer – discuss the future of urban districts and the challenges facing owners of existing properties.

The interview was conducted by Harald Czycholl-Hoch

Daniel Seibert (D.S.), you are an expert in the field of new work across industries and formats and always focus on the customer. What does this approach mean for existing properties?

D.S.: *We have to go a little further afield to answer this, since the collective experiences during the coronavirus pandemic have extended much further. We've all noticed that mobile work is possible, and across all industries. It's become the new normal during the long lockdown period. For companies, the efficient use of available spaces has become an important topic – and now it concerns existing properties as well. Put simply: If you work from home two out of five days per week in the future, the employer can have 30 to 40 percent of the available space available to them.*

But not everyone wants to work from their home office.

D.S.: *Of course, one realizes that the home office isn't always conducive for working efficiently. But decentralized work will become more important. It comes down to creating work spaces closer to home because employees have warmed up to the short commutes. In your home office, there is no commute. And during the pandemic, we have all noticed that our altered behaviors have directly benefited the environment, such as less traffic. This poses considerable challenges for building owners because if a large corporation thinks about mobile work, it is not uncommon to lose tenants over 300,000–400,000 square meters. These spaces are then put back on the market.*

And what can building owners do in that case?

D.S.: *It's about redesigning existing buildings. And it's important to offer what the home office cannot, namely room for communication and networking with colleagues. And at the same time, you have to create networking in the surrounding neighborhood and find points of connection.*

Mustafa Kösebay (M.K.), neighborhood development is your area of expertise. What does the situation described by your colleague mean for the development of urban districts?

M.K.: *From an investor's point of view, the requirements have changed. Take office properties, for example. The most important thing here used to mean being as centrally located as possible.*

Stadtcarré Stuttgart

Heading toward the future with a smart redevelopment concept

An aged, inner-city area, repositioned: Following its extensive renovation, the Stadtcarré Stuttgart, an office property in the east side of the city with a gross floor area of 58,000 square meters, has become a new, vibrant, urban space. Although the building complex had a traditional cellular structure of offices, clinker facade, and a sheet-coated mansard roof from the 1980s and 1990s, it was extensively renovated on the basis of a feasibility study by Drees & Sommer – who presented a sustainable concept for the future of the entire area. This concerns the facade design and the office structure.

At first, it was about closely analyzing the status quo of the area and building stock in order to develop the necessary measures for a smart redevelopment concept. For this purpose, Drees & Sommer's experts had to prove that the comfort in the offices can be improved by breaking through the cellular office concept and using high-end materials. The building now contains a combination of multi-spaces and individual workspaces.

The measures were implemented with general construction management, which Drees & Sommer was also responsible for. With this model, the specialists can plan the necessary work and effectively conduct the tendering and contracting of the project. Along with the integrated planning and workplace consulting, a team also assisted the customer Flanders Stuttgart with the lease contract negotiations. The results speak for themselves: The innovative concept brought Stadtcarré Stuttgart back on course.

Now it's about the proximity to one's home – and that will shape the neighborhood of the future. An owner of an office property must think about what will happen around their property, whether there is enough housing, dining, kindergartens, and many other services in the area so that the property is sufficiently attractive. It comes down to creating multifunctional properties that facilitate hybrid working and living and are part of a complete system. A neighborhood like this has to be professionally managed during the development stage in order to get all the parties involved.

It comes down to creating multifunctional properties that facilitate hybrid working and living and are part of a complete system.

A grown urban neighborhood is also primarily defined by its existing structures. There isn't much to be done about them.

M.K.: *That's precisely the challenge. It's about repurposing existing buildings and spaces, about the complete revitalization and reactivation of certain uses, maybe about mixed uses as well. You have to invest, and you have to think carefully beforehand who the future users will be, what their needs will be and how much networking is possible both among users and from the perspective of energy, infrastructure, and technical elements.*

D.S.: *I also think that it's not a one-sided topic. An owner of an existing building can't do much alone. You have to look at the big picture to really realize sustainable neighborhood development. The general concept here plays a big role. It's about mobility, connection, digitization – and all based on the needs of the users who will eventually live and work here. You have to view the neighborhoods based on the users' living situation, and the neighborhoods also have to be geared toward the goal that generations will be able to live and work there.*

What does that mean for an owner working with renovating an existing property: what specific aspects need to be considered?

D.S.: *There is no one-size-fits-all solution. You have to look at the individual situation for what it is, always based on the surroundings and the target group that you want to come to your building. So it's about developing a clear view of target customers and aligning yourself accordingly. The fundamental aspects are flexibility, networking, and digitization. It's always about what makes life easier for the user of a building. Then, of course, sustainability also plays a role: Firstly, it comes down to the selection of building materials and a good energy balance, but also the needs of the users, such as a healthy diet and athletic services. But it's also about the target customers: If you have two law offices, you need a different range of services for your property than you would if those were start-ups or grown-ups.*

And, as an owner of a hotel property, what do I do once business trips are in less demand after the pandemic, since many things can be taken care of via video conference?

D.S.: *This, too, requires taking a look at the surroundings. Video conferences do work well, of course, but if they are to replace in-person meetings in the long run, there are other requirements for your own spaces in order to optimize the technical demands. The conference room becomes a studio, but this is technologically difficult and thus cost-intensive, and not feasible for every single user. This is where the concept of sharing comes into play – and with it the hotels, who can provide these studios to nearby companies. Likewise,*

You have to view the neighborhoods based on the users' living situation, and the neighborhoods also have to be geared toward the goal that generations will be able to live and work there.

they can create a sort of neighborhood cafeteria. Fewer employees are at the office, so those companies might not need their own dining areas anymore – but they will need a communal cafeteria for all the companies in the area. This can give rise to new opportunities and usage possibilities for hotels.

M.K.: *Hoteliers have to concentrate on what can be done really well, and hotels' main strength is service. The hotel's dining services can have a draw on the surrounding area, just like the laundry or services within a building like the provision of collaboration areas. Meeting spaces already exist, but they have to be fitted with different pieces of equipment and marketed in a different manner too. Some of the rooms can also be repurposed into a sort of serviced apartments – e.g. for persons with care requirements. This would reinforce the aspect of multi-generational living within the neighborhood.*

Are such mixed-use models a thing of the future?

M.K.: *Mixed uses will definitely play a bigger role in the future. This can be the combination of local provisions and housing, with sales areas on the ground floor and multiple floors of apartments. This concept could be possible for various service providers: Housing up top, with dining, medical practices, salons, or co-working spaces below. There is a shift occurring here. While real estate portfolios were separated by asset class in the past 25 years, the trend is now moving the opposite direction – away from purely homogenous uses like office silos, residential high-rises, and commercial streets toward a city of short commutes in which working, living, and local supply are within the direct vicinity.*

This means that everyone in the neighborhood is ultimately asked to form their own ideas.

M.K.: *Yes, but you also have to coordinate with each other. You need a shared plan that consists of many individual puzzle pieces. The administrative bodies, who have to conduct real neighborhood management that considers the possible uses as well as the users and their needs, play an important role as well. This includes the most attractive possible design of the public space through open areas and leisure activities. The pandemic has taught us that it's possible to impose curfews even in Germany. And that wasn't easy for individuals with a tiny apartment and no balcony. When we talk about neighborhoods, it's not just about properties, but also the spaces around them.*

D.S: *Sometimes it helps to explore the neighborhood on foot or by bike, and consider what needs there may be as well as how and where to connect with other users. You should actively approach your neighbors and figure out how to cooperate with each other. Because, ultimately, a neighborhood is built on successful coexistence.*

Mustafa Kösebay
Associate Partner, Drees & Sommer
in Real Estate Consulting

Mustafa Kösebay studied Civil Engineering at the Hochschule für Technik in Stuttgart. As an Associate Partner at Drees & Sommer, he manages space developments and master planning domestically and abroad. He specializes in real estate management consulting for property owners and investors. Furthermore, he supervises the implementation and construction processes from development to transaction within the project development stage. He furthered his experience in neighborhood development, combined with the trends for smart cities, with the Blue City project at Drees & Sommer. Mustafa Kösebay has been a member of the Royal Institute for Chartered Surveyors since 2016. He also teaches Project Development and Real Estate Management in the Architecture and Urban Planning Master's programs at the Stuttgart Technology University of Applied Sciences.

Daniel Seibert
Partner, Drees & Sommer SE

Daniel Seibert is responsible for New Work User Centric Consulting & Design within the Drees & Sommer group. The user's needs are the primary focus. The key to future-proof workplaces is personal and customized. Perfect integration of user requirements into planning and realization processes is one of the biggest challenges. Daniel Seibert has over 25 years of experience in the planning and implementation of major user and building projects

CONCLUSION

THE EXISTING STOCK BELONGS TO THE FUTURE

Those who don't revitalize will fall behind. They will lose users, rent, value. Those who work hard on their real estate stock and make it fit for the future will profit.

Innovative usage concepts based on users' needs are the starting point. What do the people of today and tomorrow want from their buildings and neighborhoods? How and where do they want to live, work, shop, and spend their free time? Building owners who answer these questions for their properties are doing a lot of things right. Ideally, they develop the solutions together with other building owners and managers in their area. Because no building is an island.

Sustainability is possible with existing buildings. Because of their spike in CO_2 due to the current building substance compared to "demolition plus new building," existing buildings are more "sustainable" so to speak. Energy renovations also significantly reduce energy consumption. Existing buildings are also recyclable and even serve as a resource depot with the Cradle to Cradle principle. This is because the materials can be reused in high quality after their service life. Digitization ensures that innovative, sustainable concepts function and are economically implementable. And they pave the way for new, digital business models in existing buildings.

A lot is possible but what makes sense?
Because of the wealth of possibilities, building owners do well to find a partner to accompany them throughout their project. One who is there from the start and, if so desired, stays until the end. One who plays through various scenarios with them and implements them if needed. One who understands their business model and introduces new, digital ones. They need someone who can keep their eye on the big picture and pours their expertise into every detail. With whom they know what to expect, but who still surprises them with innovative ideas.

At Drees & Sommer, we get to know building owners and their properties. We understand the task assigned to us. Sometimes we have to define that task together. From our experience, it's important during this phase not to focus on specific ideas too early, but rather to approach the topic with an open mind and a holistic approach – and incorporate every aspect that plays a role.

Sustainable, digital, innovative and economical – these aspects always play a role.

We create grounded decision-making foundations by observing a project from all sides and showing how various scenarios play out. Sustainable, digital, innovative, and economic – these aspects always play a role. They are just heavily influenced by the project and are interconnected.

If a building owner decides to implement a scenario, we accompany the project. If desired, we tend to the entire processing and combine project management, planning and building management, including direction, in one full package without any middlemen. As the phrase “general construction management” implies, this means one thing for our customers: security from a single source.

Our methods, such as lean construction management and building information modeling, create transparency and security, and reduce risks in all phases of the renovation project. Building owners must be scaled through modular construction. Even complex projects can be economically realized in this manner. We also never lose sight of the company at any point, such as with BIM2FM. CAFM (Computer-Aided Facility Management) systems ensure transparent and efficient building management. Consulting, planning, building, and operating: We believe this is not a chronological sequence of service phases. Instead, we should always be thinking about and doing what the building owners and project require.

What do you require?

DREES & SOMMER: YOUR INNOVATIVE PARTNER FOR CONSULTING, PLANNING, CONSTRUCTION AND OPERATION

As the leading European Consulting, Planning and Project Management enterprise, Drees & Sommer has worked with private and public clients from construction bodies to investors on all types of real estate and infrastructure projects – both analog and digital – for over 50 years. With its pioneering and future-shaping consulting, the company offers solutions for successful buildings, high-return portfolios, powerful infrastructure and livable cities. Over 4,000 employees in interdisciplinary teams based at 46 locations worldwide support clients across a wide spectrum of sectors. All the services provided by the partner-run company take into consideration both economic and ecological concerns. Drees & Sommer calls this holistic approach *'the blue way'*.

DREES & SOMMER

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