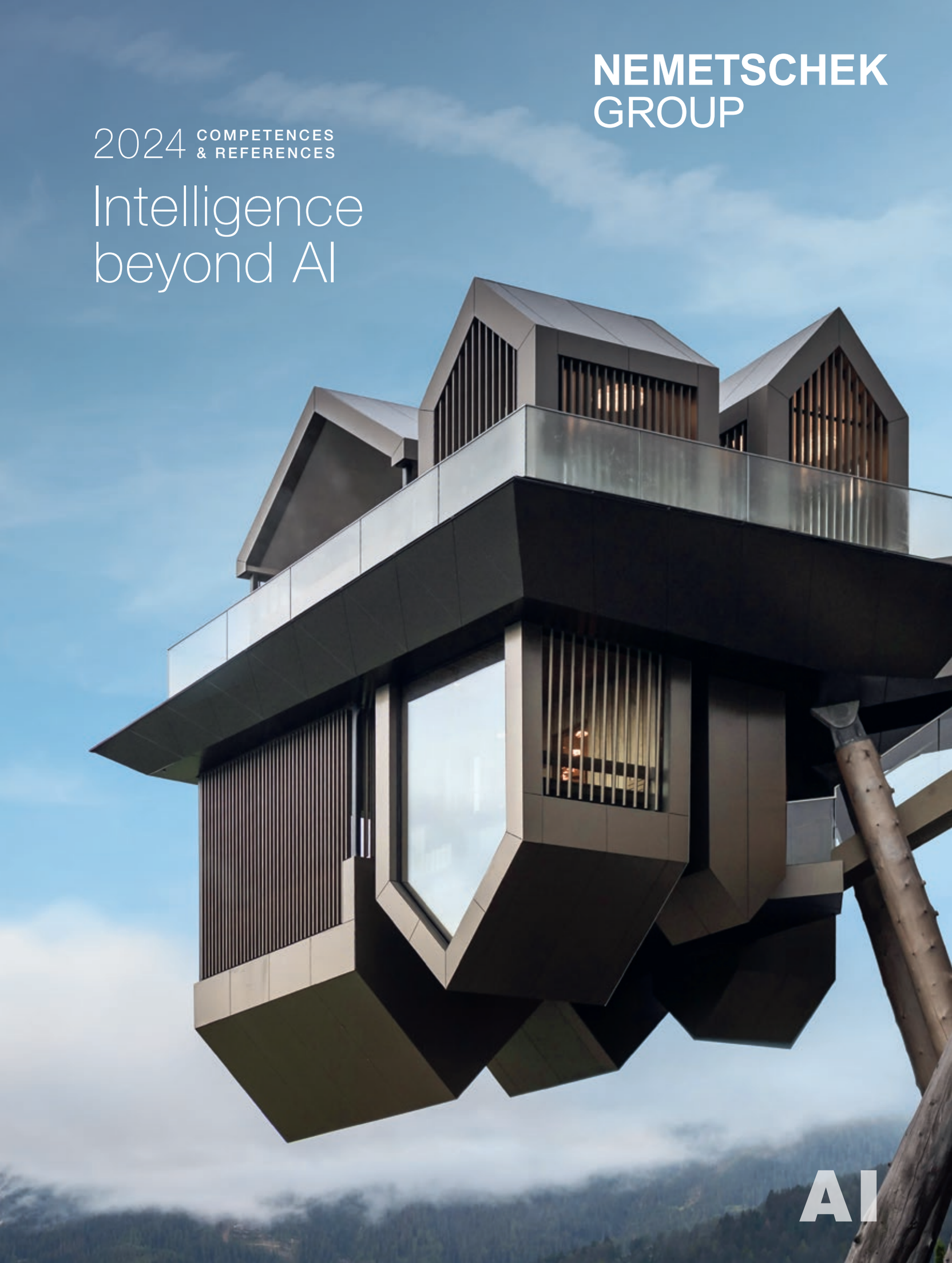
NEMETSCHEK
GROUP

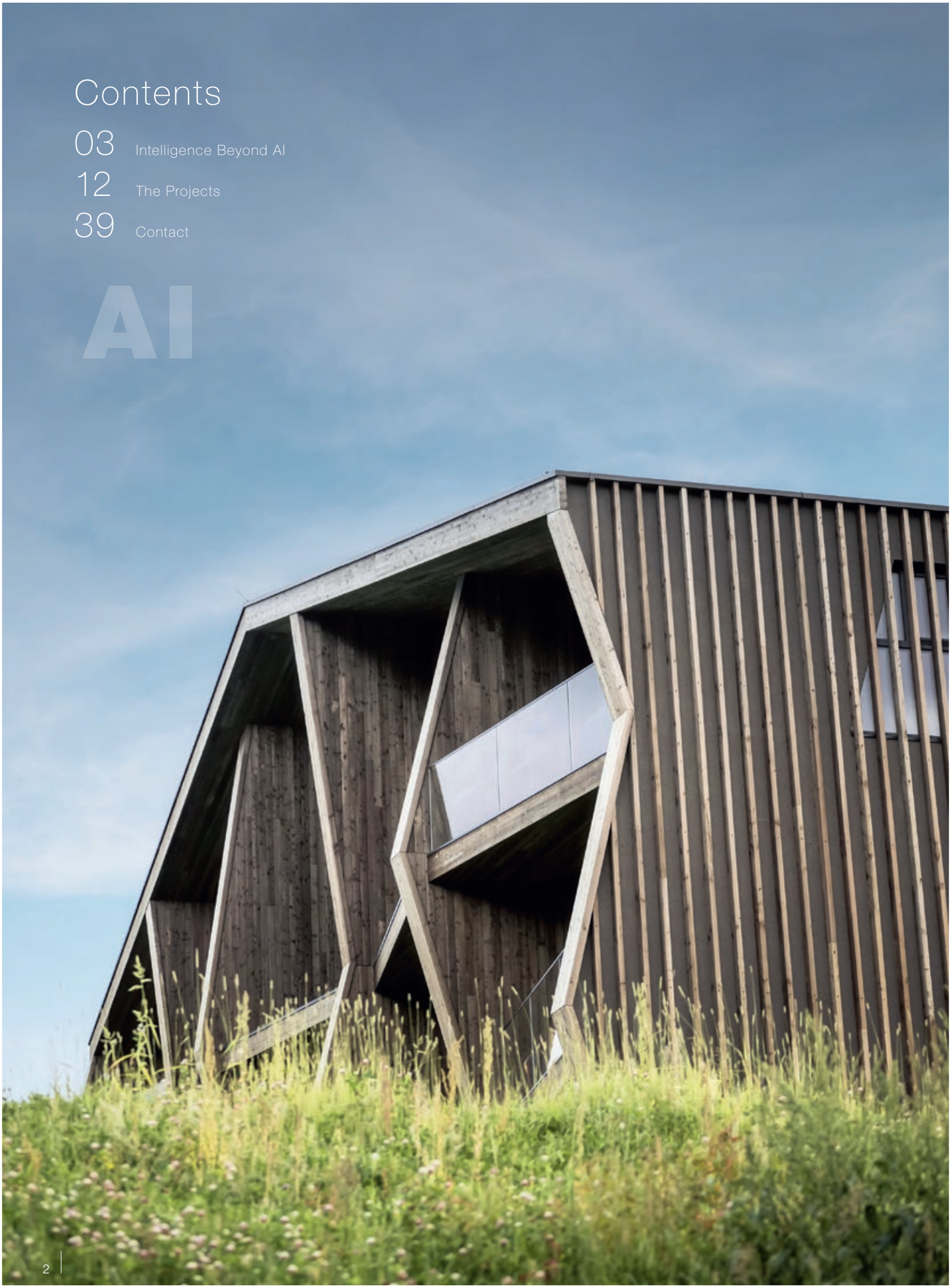
2024 COMPETENCES & REFERENCES

Intelligence beyond AI



Contents

AI



Intelligence Beyond AI

The construction and media industries are on the brink of a groundbreaking change determining on how smart technologies can boost human creativity and efficiency. Nemetschek's vision for AI goes far beyond existing and even near-term capabilities. We are only at the beginning of a long and increasingly transformative journey, in which we continue to push the boundaries of what AI can accomplish in the AEC/O and media industries – beyond even our own imaginations.

In construction, this means going beyond using AI just for tasks like scheduling or budgeting. It's about making creativity more creative and productivity more productive. By using AI for project predictions and resource optimization, the industry can complete projects faster, safer, and with a reduced environmental impact, fostering better, innovative, and sustainable solutions.

In the media world, we can foresee a future where artificial intelligence works alongside humans instead of replacing them. As creatives start using AI to help create content, they must find a balance between promoting efficiency and harnessing the unique spark that only human creativity can provide. By embracing AI as a partner, they can enhance their storytelling while ensuring that their content remains relevant and engaging. This exciting blend of technology and creativity opens up new possibilities for creating powerful narratives that resonate with audiences everywhere.

Leveraging Technology Easily and Trustworthily

Sustainable and resilient buildings and infrastructure for current and future generations.

For over six decades, Nemetschek has driven innovation in the architecture, engineering, construction, and operations (AECO) industry. Our journey started in 1963 with Georg Nemetschek's vision to revolutionize construction through computerization. Today, we continue in this spirit by embracing the artificial intelligence that will transform the built world. Machine learning has already improved our industry with predictive maintenance and energy optimization. The emergence of generative AI brings new possibilities, allowing us to reinvent workflows across the building lifecycle. AI can enhance efficiency, collaboration, and sustainability, accelerating the sector's digital transformation. At Nemetschek, we believe AI will boost productivity and creativity while creating more sustainable environments that benefit society.

From a user perspective, the evolution of AI adoption is progressing from passive assistance to active participation and agentic capabilities.

01. Passive Help: Product Assistance

In this stage, AI is being used primarily for passive assistance, such as providing product information or troubleshooting guides. This form of AI helps users by offering relevant data or solutions to common problems but does not actively influence decision-making or execute tasks.

02. Active Help: Task Execution

For advanced users, AI is offering active assistance, enabling it to perform specific tasks autonomously. For example, AI tools can automate routine processes, analyze data, or generate reports. This active role significantly enhances productivity by freeing users from mundane tasks.

03. Agentic AI: Goal-Oriented Execution

The latest development in AI is the emergence of agentic AI, which not only executes tasks but also takes over entire goals. Agentic AI can break down complex objectives into manageable tasks and execute them independently. This level of autonomy allows AI to adapt to changing conditions and make decisions based on real-time data, revolutionizing how tasks are approached and completed.

Nemetschek Group's AI Transformation

The Nemetschek Group is at the forefront of this AI evolution. Within the company itself, the Group is equipping its employees with AI tools to increase productivity and foster a culture of innovation, ensuring that technology serves as a trusted partner. This strategic approach not only transforms internal processes but also positions Nemetschek as a leader in efficiency, productivity and software innovation.

Building a Responsible AI Future

AI holds transformative potential for the AEC/O industry, yet its adoption in the AEC/O industry also comes with unique challenges. These include managing emerging risks related to business integrity and data security while ensuring compliance with evolving regulations. To navigate this landscape responsibly, an ethical and transparent approach is essential for a successful and sustainable transformation.

The Nemetschek Group has established six core principles to guide the ethical deployment of AI. These principles ensure that AI technologies across all Nemetschek brands and products are developed and integrated responsibly while fostering trust and ensuring accountability:

_ **Transparency & Explainability** AI-driven decisions must be understandable, with clear explanations provided to enhance trust and accountability.

_ **Privacy & Data Security** Stringent safeguards protect sensitive data, incorporating user consent and anonymization whenever possible.

_ **Robustness & Reliability** AI systems undergo rigorous testing and validation to ensure consistent performance and dependability.

_ **Accountability & Governance** Clear lines of responsibility within the organization ensure ethical and responsible AI usage.

_ **Sustainability & Societal Impact** AI is leveraged to drive sustainability and benefit society, aligning with Nemetschek's commitment to ethical innovation.

_ **Commitment to Responsible Innovation** Nemetschek is dedicated to shaping the future of AI in a way that enhances human capabilities rather than replacing them, fostering a digital transformation that empowers future generations.

AI Along the Construction Lifecycle

Disruptive technologies are revolutionizing the building industry in all areas, from planning
and design to construction, maintenance, and asset management.

Enhancing building projects from concept to upkeep

In the early stages, AI enhances site impact analysis, parametric design, and immersive visualization, allowing architects and engineers to create optimized layouts and predict energy consumption. Automated tools improve HVAC system efficiency and structural integrity, ensuring sustainable and cost-effective designs.

During construction, AI-driven solutions enable structural analysis, real-time project monitoring, and construction robotics, improving accuracy and reducing human error. Resource allocation optimization ensures efficient use of materials and labor, while defect detection and quality control help prevent costly mistakes. AI-powered simulations and lifecycle cost predictions further enhance decision-making, leading to safer and more efficient project execution.

Post-construction, AI continues to optimize building operations through predictive maintenance, energy management, and security threat detection. Smart monitoring systems enhance safety and efficiency, while lifecycle tracking of assets improves long-term facility management. By integrating AI with BIM and Digital Twin technologies, the industry is evolving into a more data-driven, collaborative, and sustainable ecosystem, ensuring better outcomes for future generations.

Nemetschek at the Forefront of Innovation

Along the building lifecycle, the Nemetschek Group drives innovation both through internal development, as well as by investing in disruptive startups. Those innovations not only aim to improve operational efficiency but also emphasize sustainability by reducing waste and energy consumption throughout the construction lifecycle.

At the forefront of Nemetschek's AI strategy are innovative tools designed to streamline processes and enhance collaboration. Notable advancements include:

_ **AI Assistant:** Coming soon as a new feature (and initially integrated into Allplan and Archicad), this tool simplifies workflows and improves collaboration through a unified user interface.

_ **AI Visualizer:** A feature in all design tools of the Nemetschek Group, that employs advanced algorithms to generate high-quality visualizations, significantly improving design efficiency.

_ **Nemetschek dTwin:** This platform leverages digital twin technology to optimize building management and operations, ensuring better resource utilization.

In addition, the Nemetschek Group is investing in disruptive startups to accelerate AI adoption in the AEC/O industry. Focused on digital transformation, it integrates AI-driven technologies to enhance efficiency, sustainability, and automation. By supporting startups in areas like generative design, predictive analytics, and digital twins, Nemetschek fosters innovation while providing customers with advanced tools to streamline workflows and reduce costs.


Net Zero
AI
OXYGEN
AI

AI to Drive Sustainability

Reducing emissions and waste in the construction industry.

The AEC/O sector is a massive contributor to greenhouse gas emissions and releases harmful waste into the environment. The need to promote sustainable practices and outcomes in our industry has never been more important. Studies show that the AEC/O sector could reduce emissions by up to 80% only through greater material efficiency, and that's what we at Nemetschek aim to support through our AI innovations.

For example, using Nemetschek's AI-driven design tools, we can ensure the creation of energy-efficient structures by producing optimized design simulations and generating increasingly accurate predictions around energy consumption. Moreover, by using AI to streamline construction processes for sustainability, it becomes much easier to identify ways to significantly reduce any associated material waste. Finally, with real-time monitoring via AI-integrated IoT devices, we can extend building lifespans through predictive maintenance, while employing analytics to adjust energy usage so that the built environment's carbon footprint can be minimized.

Additionally, AI can monitor equipment performance in real time, preventing costly downtimes and energy waste. Once buildings are operational, AI systems analyze energy consumption patterns to optimize heating, cooling, and lighting, ensuring that resources are used efficiently. Furthermore, AI facilitates the implementation of smart grids and renewable energy sources, further contributing to sustainability goals.

Finally, when a building reaches the end of its lifecycle, AI can aid in planning for deconstruction by identifying reusable materials and coordinating their recovery for future projects. This holistic approach not only promotes sustainable practices but also supports a circular economy within the construction industry.

A Look Ahead

AI's greatest potential lies not in replacing humans; it lies in assisting humans in their efforts to create previously unimaginable solutions.

The Nemetschek Group envisions a future where AI drives unprecedented levels of innovation in the AEC/O industries while adhering to ethical standards. The focus on ethical AI will ensure that technological advancements do not compromise creativity or intellectual property rights but instead foster a collaborative environment where all stakeholders can thrive sustainably.

_ The global market for AI in construction is projected to reach $13.5 billion by 2023.

_ Generative AI in particular is expected to see rapid adoption, with a compound annual growth rate (CAGR) of 35% between 2023 and 2032, ultimately reaching a market value of $3.3 billion.

_ The global market for AI in facilities management is expected to grow to $8.4 billion by 2026.

AI promises to revolutionize how we interact with technology and solve complex problems. As we take a look into the near future and beyond, several key developments are expected to shape the AI landscape:

Increasing Utility through AI Agents
AI agents are set to become more sophisticated, capable of autonomously breaking down and executing large tasks. These agents will be able to use computers on behalf of humans, directly utilizing software tools as needed. We can expect AI to proactively reach out to humans or other AI systems for input, creating a more interactive and collaborative environment.

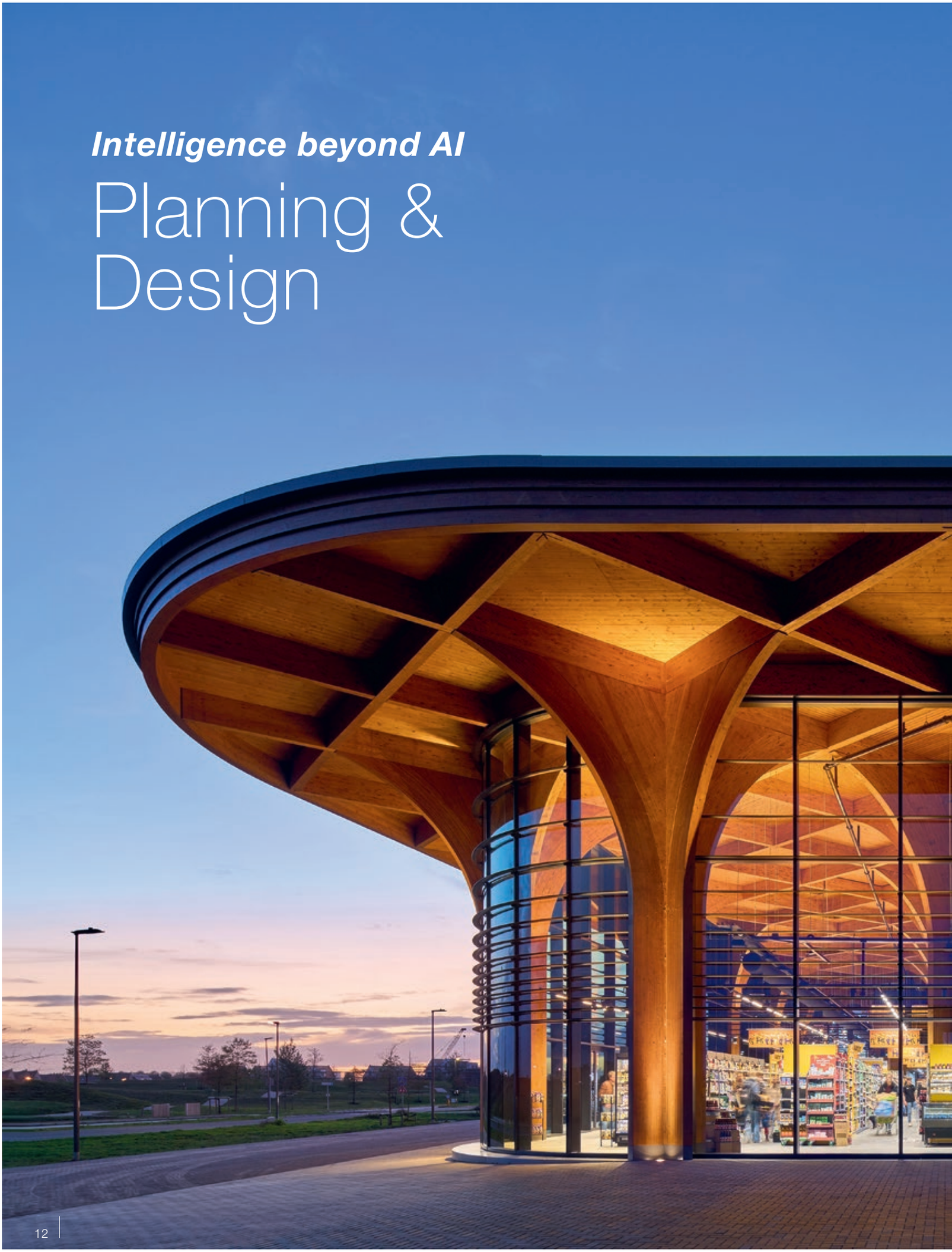
Smarter AI Models Are Coming
AI is getting better fast. Future models will remember past interactions instead of resetting each time, making them more helpful. They will also think through answers instead of just guessing. Excitingly, AI may even start improving itself, leading to even smarter systems.

Rapid Growth in AI Power
AI hardware is also advancing fast, with leading labs investing billions in GPUs. By 2027, compute clusters could be worth tens of billions, making AI models more powerful. Systems that once needed entire data centers may soon run on smartphones, making AI more powerful, accessible, and integrated into everyday life.

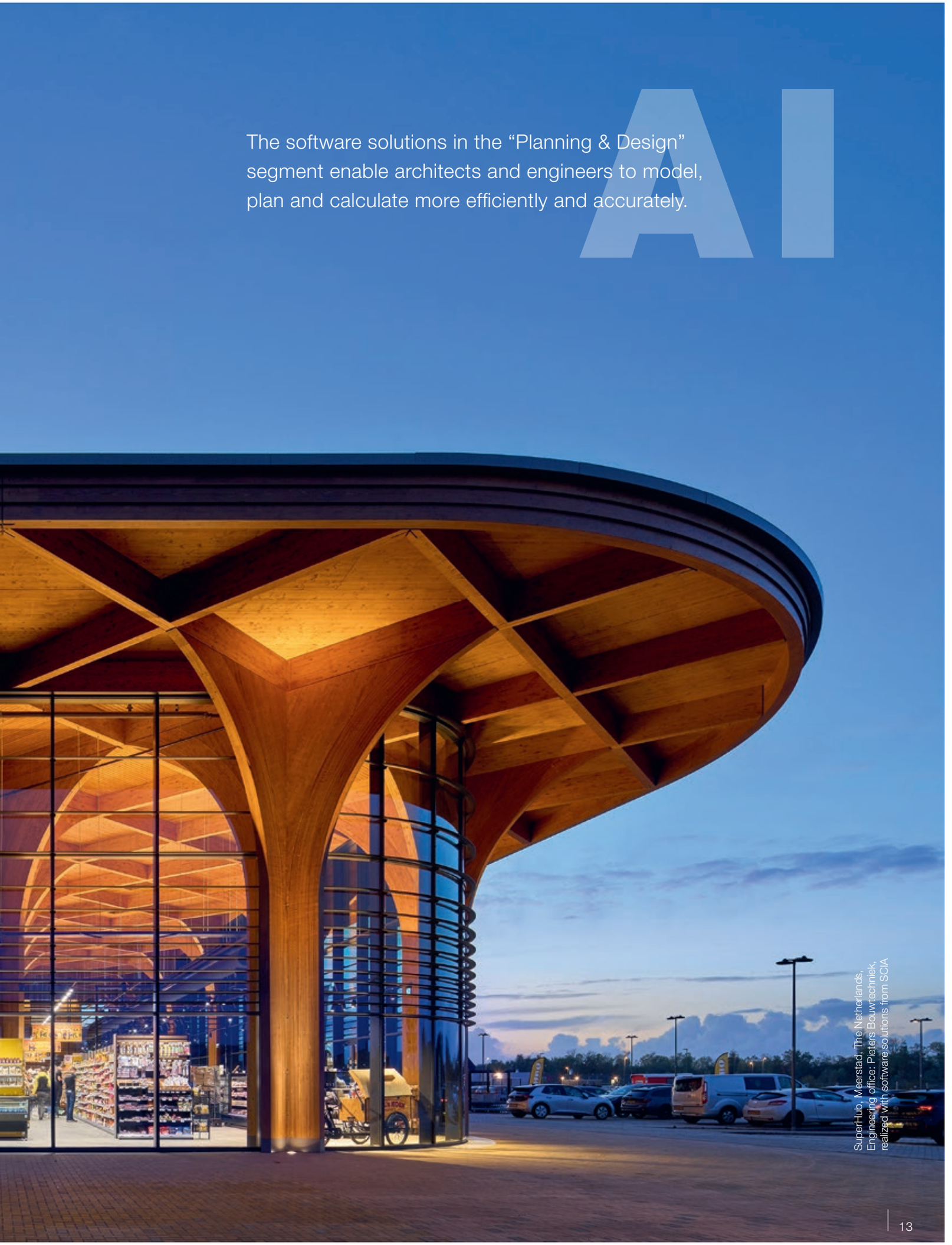
As we navigate an era defined by rapid technological advancement, the Nemetschek Group stands at the forefront of integrating AI with sustainability principles, paving the way for a more intelligent and responsible future in construction and beyond.

Intelligence beyond AI

Planning & Design



The software solutions in the “Planning & Design” segment enable architects and engineers to model, plan and calculate more efficiently and accurately.



SuperHub, Meerstad, The Netherlands,
Engineering office: Pieters Bouwtechniek,
realized with software solutions from SCIA

THE PROJECT

Block Heating Station

Leipzig, Germany

Heating supply as a work of art – The block heating station has been honored with the German Design Award. The extraordinary facade design made of triangular aluminum shingles in eleven different sizes is arranged to resemble a rippling water surface. The durability of the material and the residue-free dismantlability also meet the requirements for a sustainable building.

ALLPLAN

PRODUCT:
Allplan

WEBSITE: www.allplan.com

The Project

Passive House Block Development

Frankfurt am Main, Germany

On the way to CO_2-neutral living: The 259 residential units were built to the passive house standard, in order not to exceed the heating requirement of 15 kWh/m² per year. This value is achieved with highly efficient thermal insulation; excellent airtightness, even at low outside temperatures, and a modern ventilation system with heat recovery.

PRODUCTS:
Frilo analysis programs

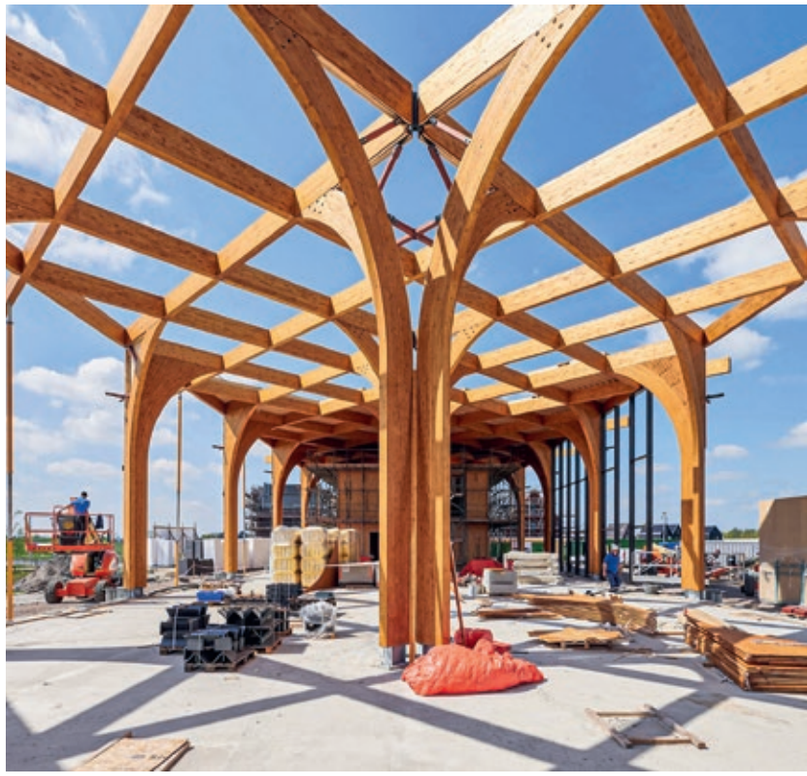
WEBSITE: www.frilo.eu

THE PROJECT

SuperHub

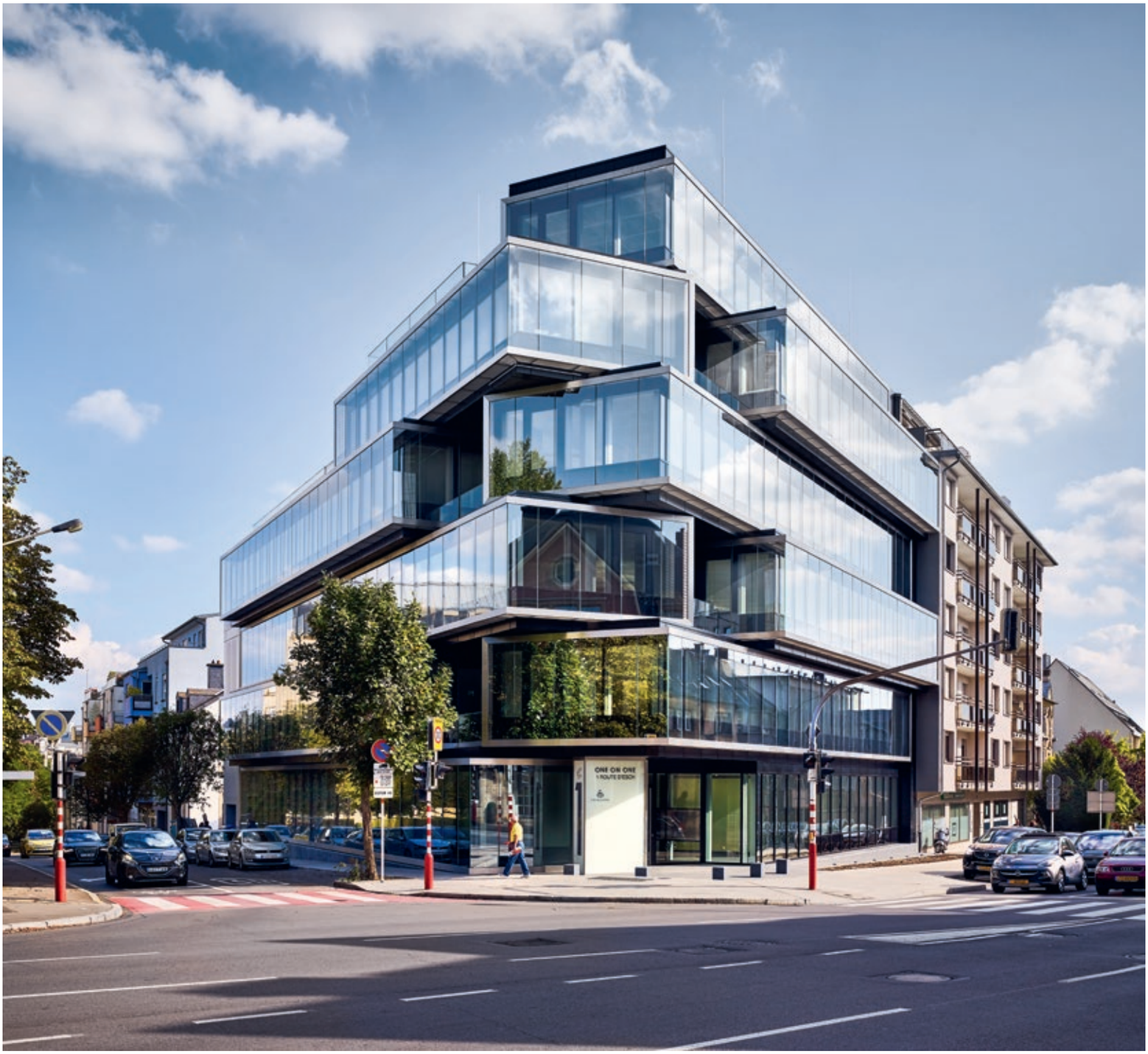
Meerstad, Netherlands

A future-proof and sustainably planned multifunctional building that serves as a social meeting place with shopping facilities. The timber construction, which currently houses a supermarket, a café and a health center, was completed in a short time thanks to the prefabrication of all building components. The spacious market hall, with its large span and nine-meter-high ceilings, resembles a cathedral.



PRODUCT:
SCIA Engineer

WEBSITE: www.scia.net



VECTORWORKS®

PRODUCT:
Vectorworks Architect

WEBSITE: www.vectorworks.net

THE PROJECT

Office Building One on One

Luxembourg City, Luxembourg

One on One is a new architectural reference in the Luxembourg landscape. The impressive glass and stainless steel shell is supported by a steel structure that seemingly defies the laws of gravity. The original design, with large flexible interior surfaces, provides 3,000 m² of office space and terraces with a unique view of the city on each level. Among other things, the building has been awarded for sustainability and is BREEAM Excellent certified.

SOLIBRI

PRODUCT:
Solibri Office

WEBSITE: www.solibri.com

THE PROJECT

Copenhagen Airport

Copenhagen, Denmark

Located just outside the center of the Danish capital, Copenhagen-Kastrup Airport handles around 30 million passengers a year, making it the largest airport in the Nordic countries in Europe. In order to accommodate all terminals and gates under one roof and to cope with the increasing number of passengers, around 100 different projects are carried out each year, for example, to adapt the transportation of particularly large pieces of luggage to the existing elevators.

GRAPHISOFT

PRODCKTS:
ARCHICAD, BIMx

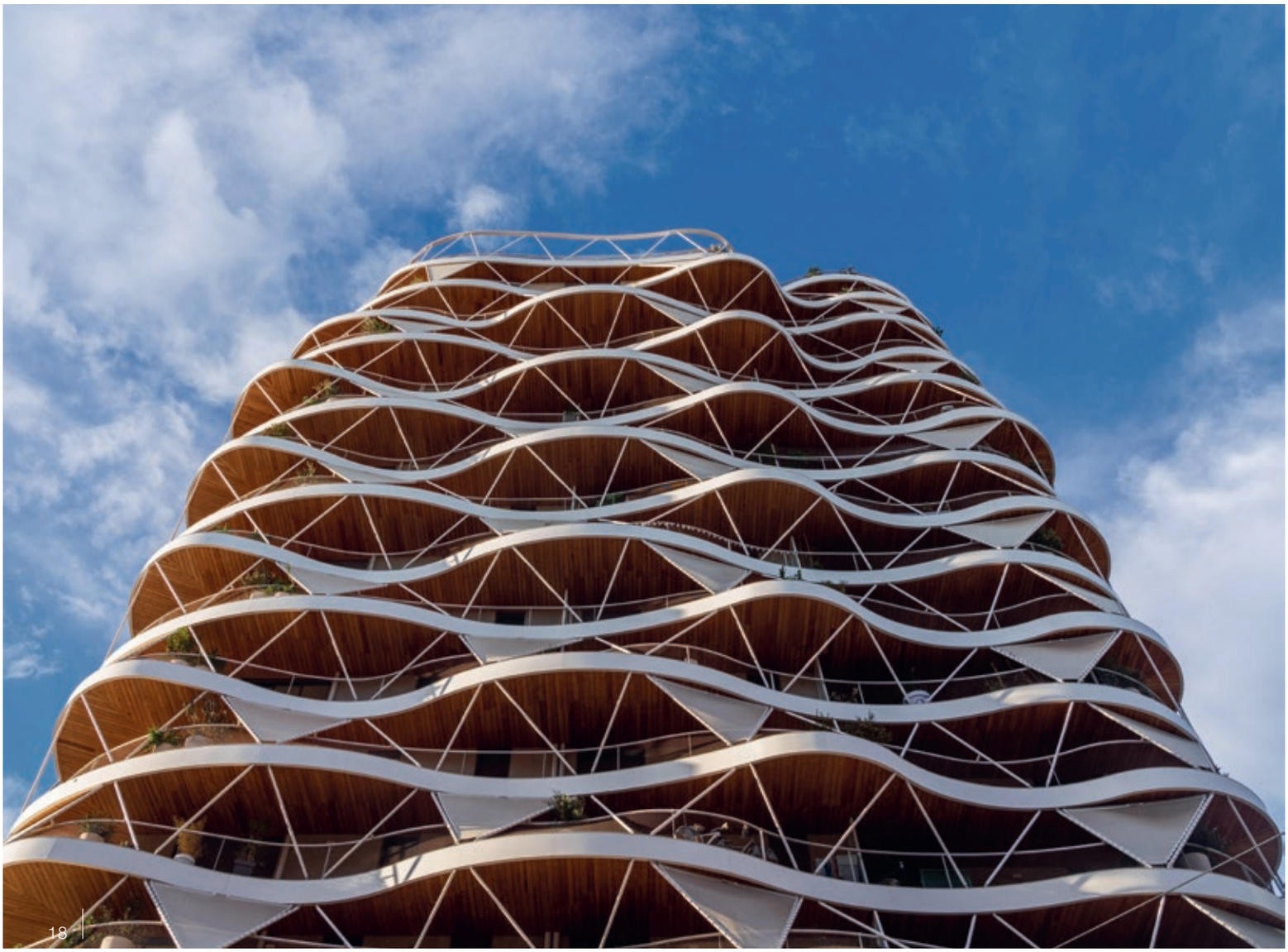
WEBSITE: www.graphisoft.de

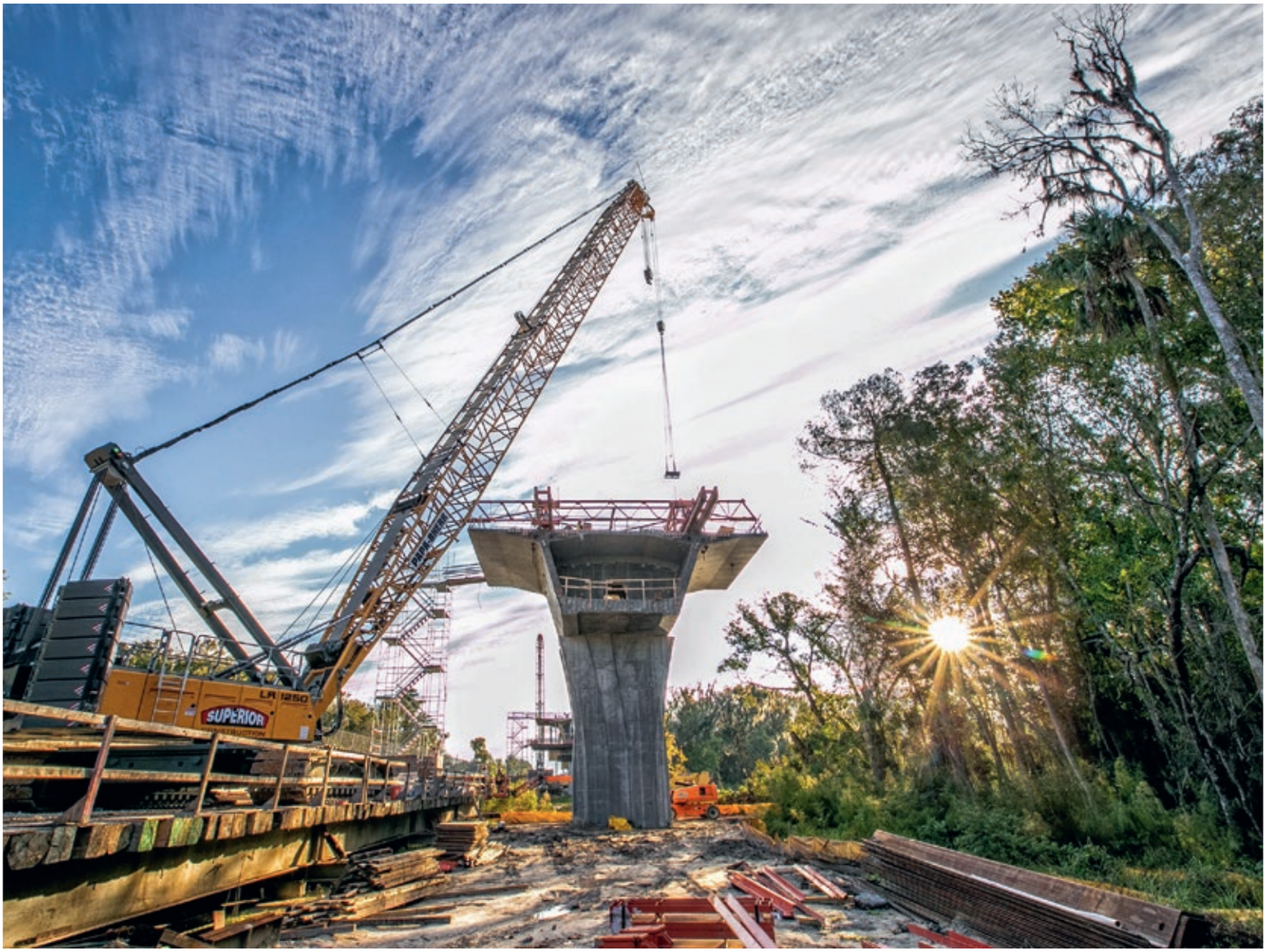
THE PROJECT

Higher Roch Tower

Montpellier, France

Inspired by the playful waves of the Mediterranean Sea and the ruffles on a flamenco dancer's dress, the high-rise's signature wave-like edges reflect the surrounding natural environment and culture. The generous terraces, which look like they were drawn freehand and cover at least 50% of the floor area of each apartment, capture the freedom of outdoor living.





THE PROJECT

Wekiva Parkway Highway Section

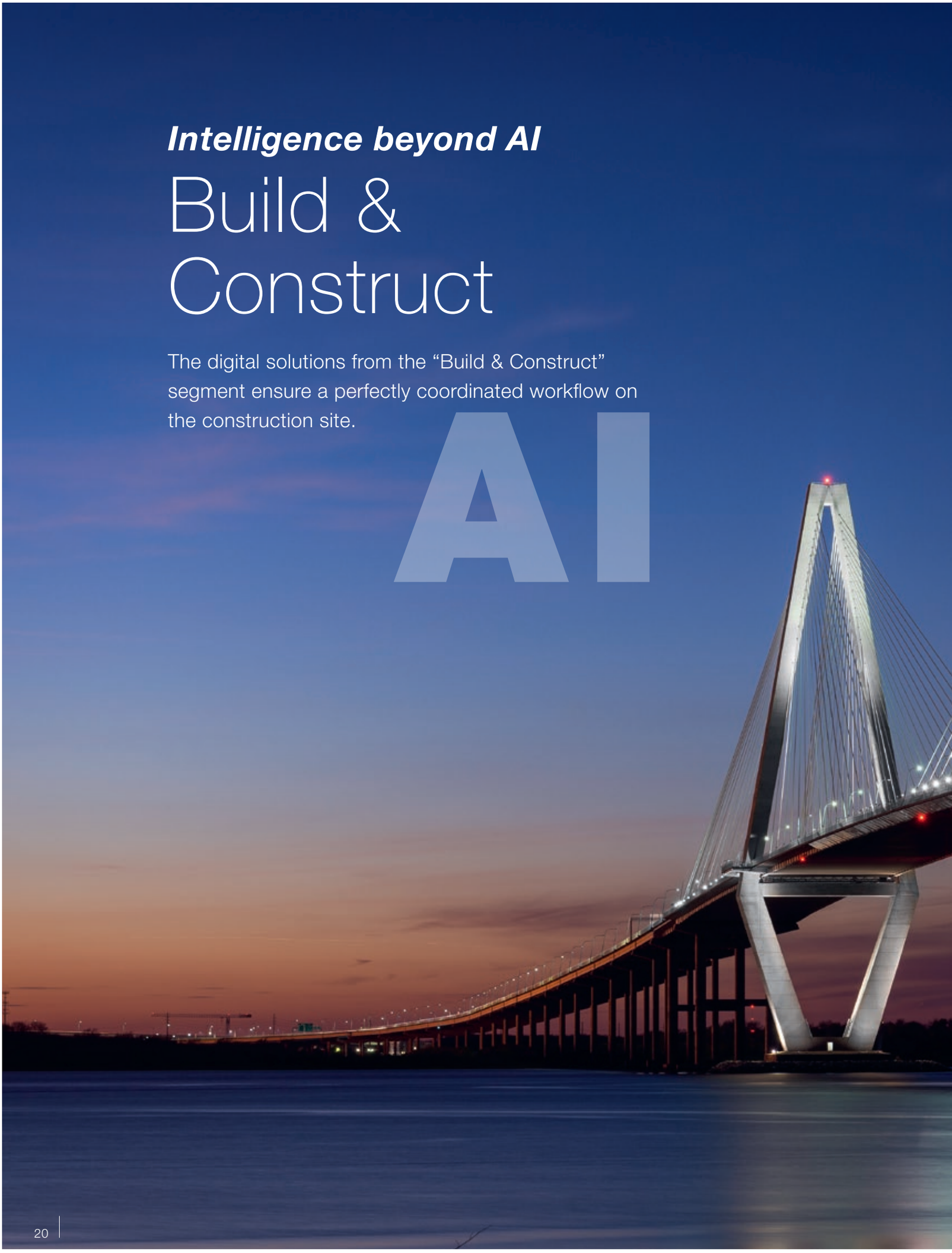
Florida, USA

The Wekiva Parkway completes the Central Florida Expressway Loop while also helping to protect the natural resources around the Wekiva River. A rerouting of the connection to the country road allows wildlife to move between their habitats more safely. The entire 1.6 billion US dollar project, done in several phases of construction, was successfully completed in 2024.

RISA®

PRODUCT:
RISA-3D

WEBSITE: www.risa.com



Intelligence beyond AI

Build & Construct

The digital solutions from the “Build & Construct” segment ensure a perfectly coordinated workflow on the construction site.

Arthur Ravenel Jr. Bridge, Charleston, USA,
Building management: South Carolina Department
of Transportation,
realized with software solutions from Bluebeam

BLUEBEAM

PRODUCT:
Revu

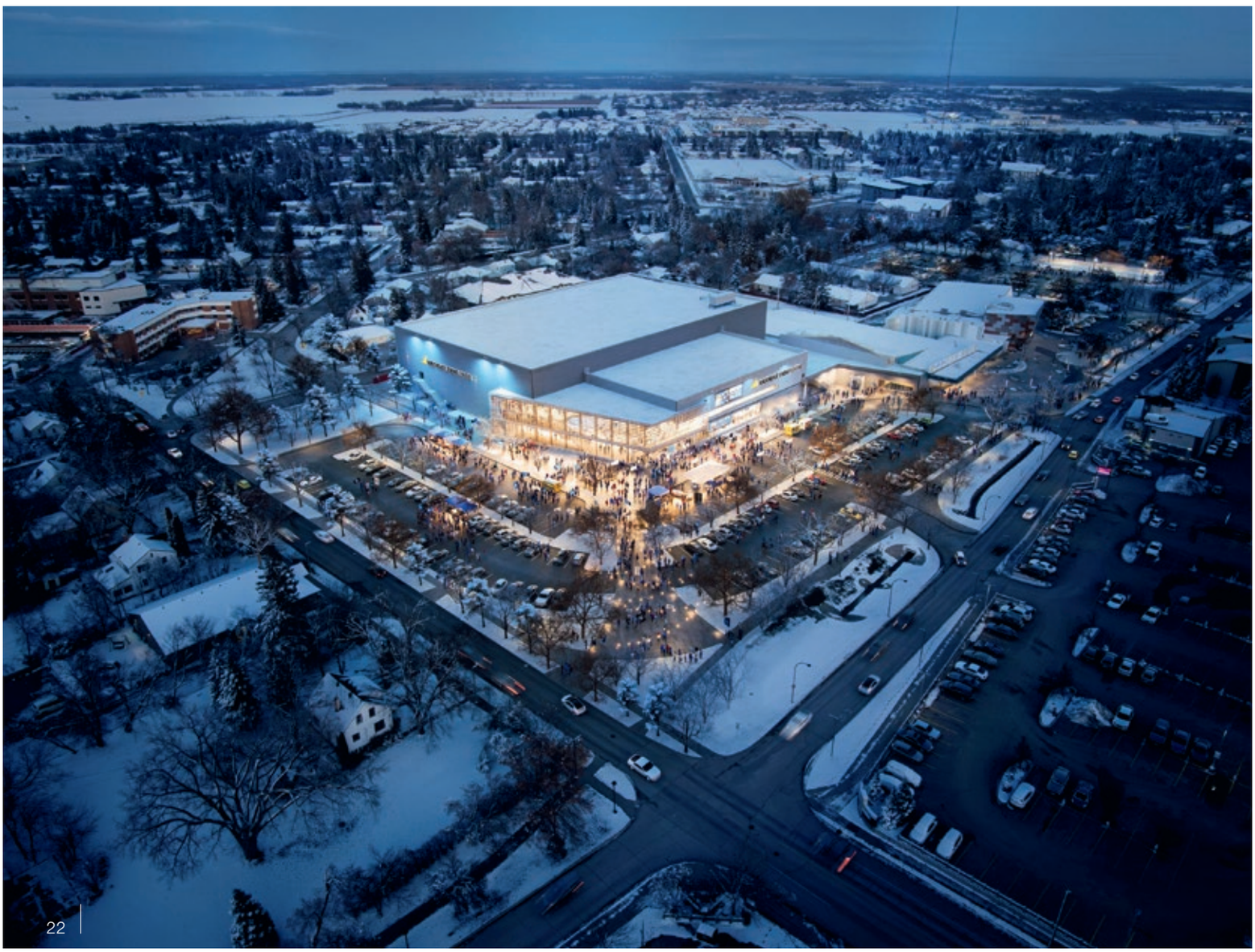
WEBSITE: www.bluebeam.com

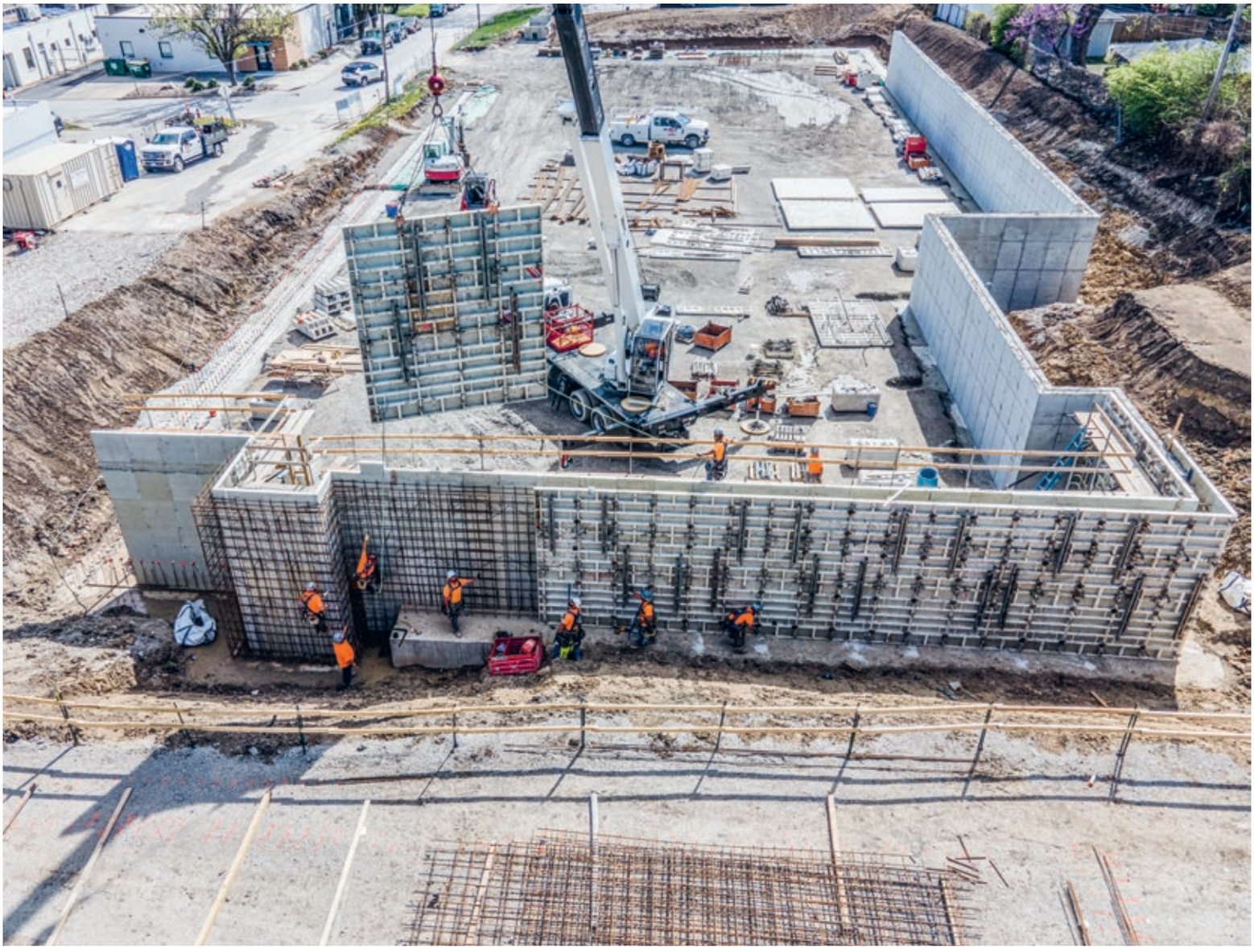
THE PROJECT

Southeast Event Centre

Steinbach, Canada

The facility, which covers an area of around 4,600 m² and represents an investment of 71 million euros, will serve the community as a venue for concerts, celebrations and trade fairs. In addition, the buildings include two covered ice rinks; a multipurpose gymnasium for basketball, volleyball and pickleball; a public area for gatherings; and a running track.





THE PROJECT

Storage Facility

Kansas City , USA

A lack of space can be a real challenge, so a temporary storage facility that offers flexible and secure storage space is the perfect solution. To keep the construction costs for a temporary storage facility in Waldo manageable, the contractor chose Bluebeam, with its advanced quantity takeoff functionality, to complete the work quickly and accurately, expand project management, and increase efficiency in construction planning.

BLUEBEAM®

NEVARIS

PRODUCTS:
NEVARIS Build, NEVARIS Finance

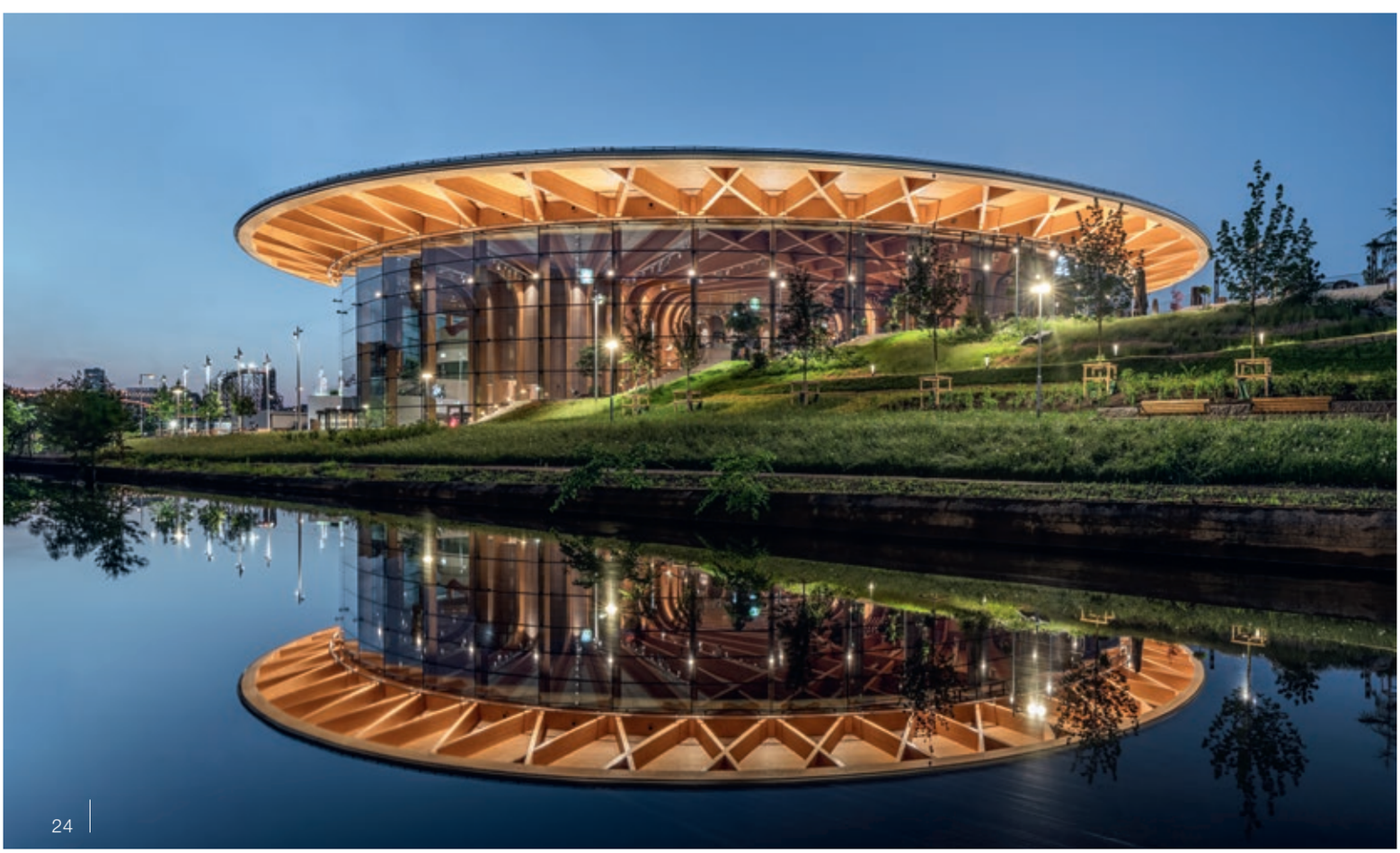
WEBSITE: www.nevaris.com

THE PROJECT

World of Volvo

Gothenburg, Sweden

World of Volvo is a unique experience center and meeting place for the famous Swedish brands Volvo Cars and Volvo Group in Gothenburg, which focuses on the Scandinavian landscape, environment and traditions. The reference to nature built into architecture – the arched “branches” and the “canopy” – are quite intentional: The building is ment to invoke the image of a mountain (the landscape and the base of the building) and a tree (the building itself).



THE PROJECT

Broadway Subway

Vancouver, BC, Canada

The project "Broadway Subway" is strengthening Vancouver's position as a world city and modernizing its infrastructure for decades to come. Running under one of the region's most important economic, health and residential corridors – home to the busiest transit line in Canada and the U.S., with over 100,000 trips per day – the project is transforming urban mobility.

gocanvas

PRODUCT:
SITEDOCS

WEBSITE: www.GoCanvas.com
www.SiteDocs.com

Intelligence beyond AI

Operate & Manage

Today, buildings are operated efficiently and in a way that conserves resources using software solutions from the “Operate & Manage” segment.

AI

Marina Tower, Vienna, Austria.
Building contractor: DRAMAC,
realized with software solutions from NEVARIS

THE PROJECT

Connex

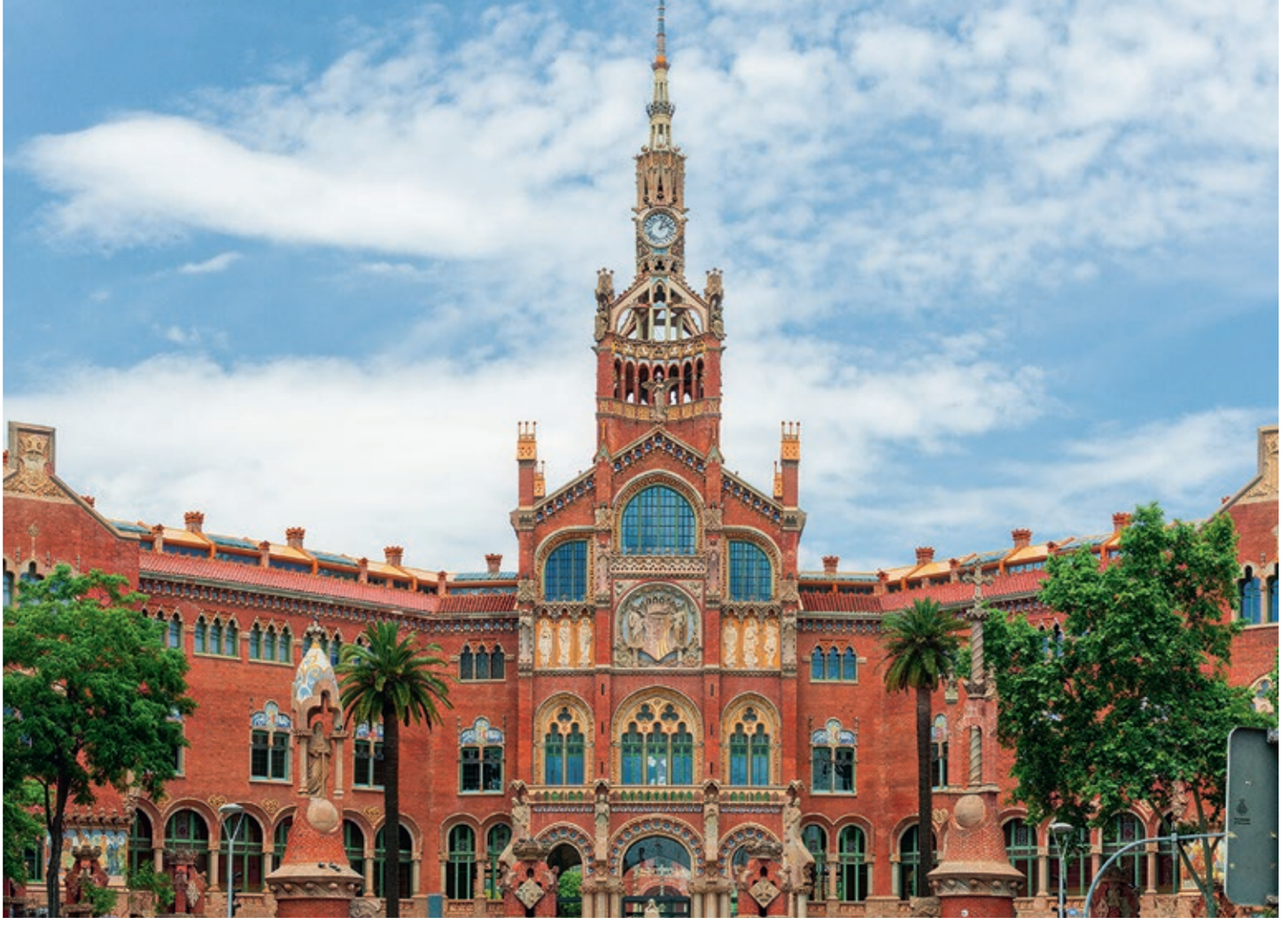
Munich, Germany

Connex in Munich is a state-of-the-art office and commercial building developed by Hammer Real GmbH. It is primarily used by companies in the automotive industry, their suppliers and consulting firms. Hammer Real GmbH provided all project development services from the initial planning concept to real estate management.

CREMSOLUTIONS

PRODUCTS:
Workplace Management, Workplace Experience & Workplace Analytics

WEBSITE: www.crem-solutions.de



THE PROJECT

Hospital Sant Pau

Barcelona, Spain

The former hospital is an Art Nouveau complex that was declared a UNESCO World Heritage Site in 1997 and is currently used for cultural, research and educational purposes. Since its recent restoration, which focused on sustainability and efficiency, energy management software has been used to monitor and analyze the buildings' energy consumption in order to detect inconsistencies in energy consumption and reduce manual monitoring to a minimum, thereby optimizing the buildings' consumption.

SPACEWELL

PRODUCT:
ENERGY MANAGEMENT SYSTEM (EMS)

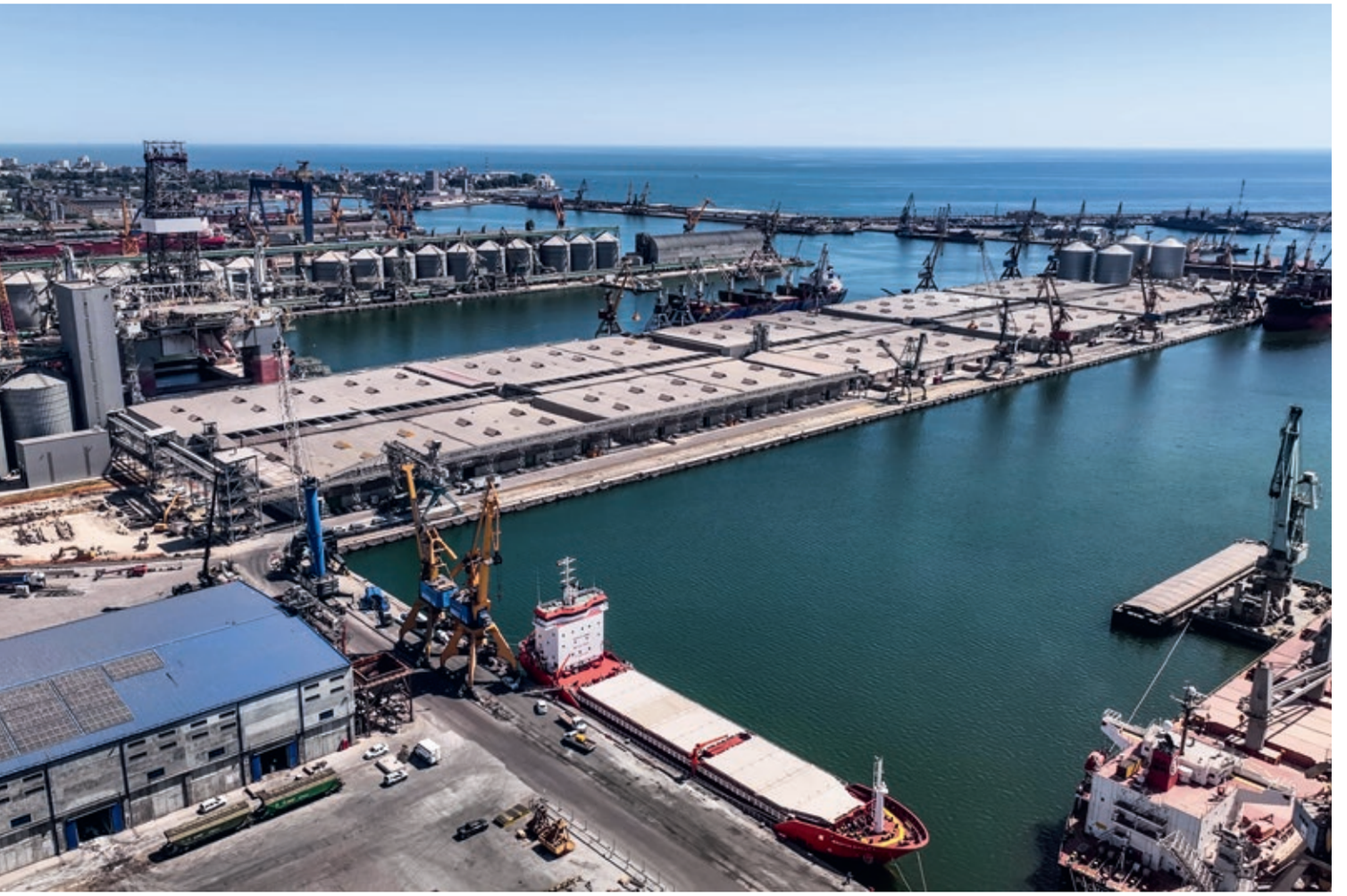
WEBSITE: www.spacewell.com

Edith Cowan University, Perth, Australia,
Architects: Lyons,
realized with software solutions from dRofus

Intelligence beyond AI

Digital Twin

The dTwin platform integrates BIM, IoT, and real-time analytics to provide actionable insights across the full building lifecycle.



THE PROJECT

Port Facility

Constanta, Romania

Managing constantly growing cargo volumes and many complex activities running in parallel requires top-notch software to ensure smooth-running operation. In the port of Constanta on the Black Sea coast, the digital twin helps the operator to handle large quantities of goods from neighboring countries. This allows the entire ship unloading process to be comprehensively monitored, sustainably increasing energy efficiency and productivity.

dTwin™

PRODUCT:
Nemetschek dTwin

WEBSITE: www.nemetschek-dtwin.com

THE PROJECT

Edith Cowan University

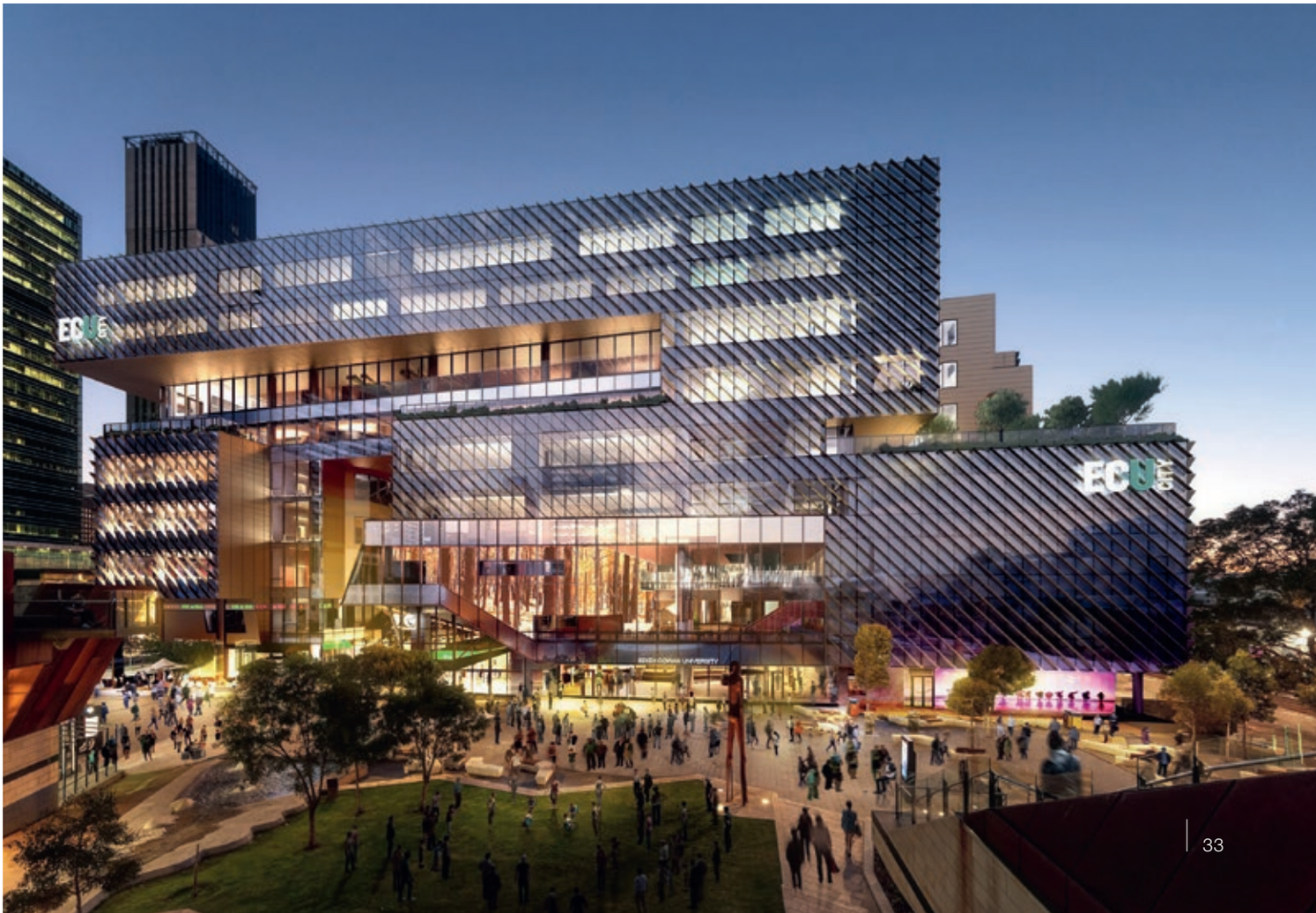
Perth, Australia

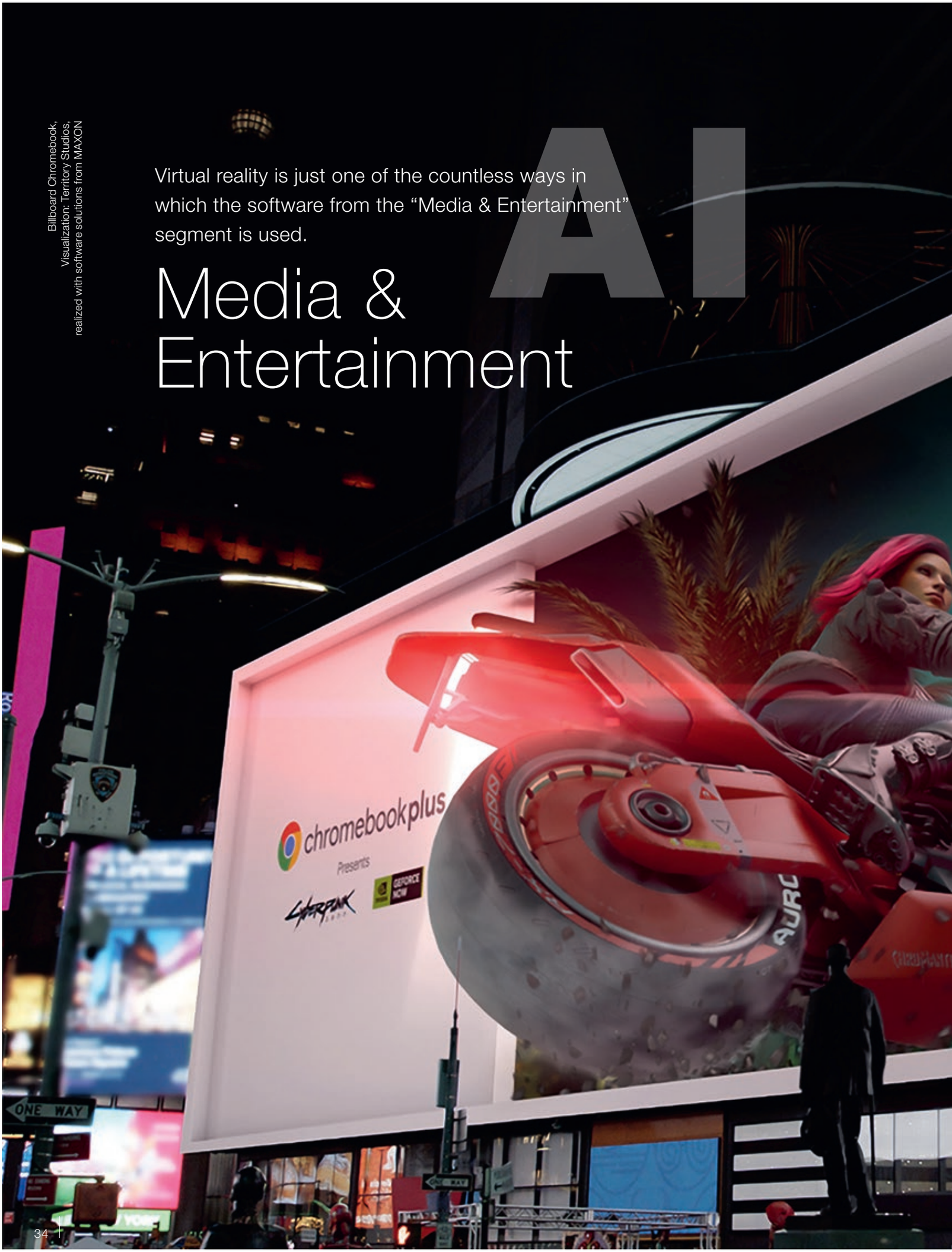
The ECU City Campus is the first completely inner-city university campus in Perth. It is designed to be a hub for innovative thinkers, adaptable learners and the leaders of tomorrow. The multi-story campus is unique among Australian university buildings and redefines the transformative potential for higher education. As one of the largest and most complex university buildings constructed in Australia, it is reshaping the heart of Perth and energizing the city's business, cultural and entertainment precincts.

dRofus

PRODUCT:
dRofus

WEBSITE: www.drofus.com



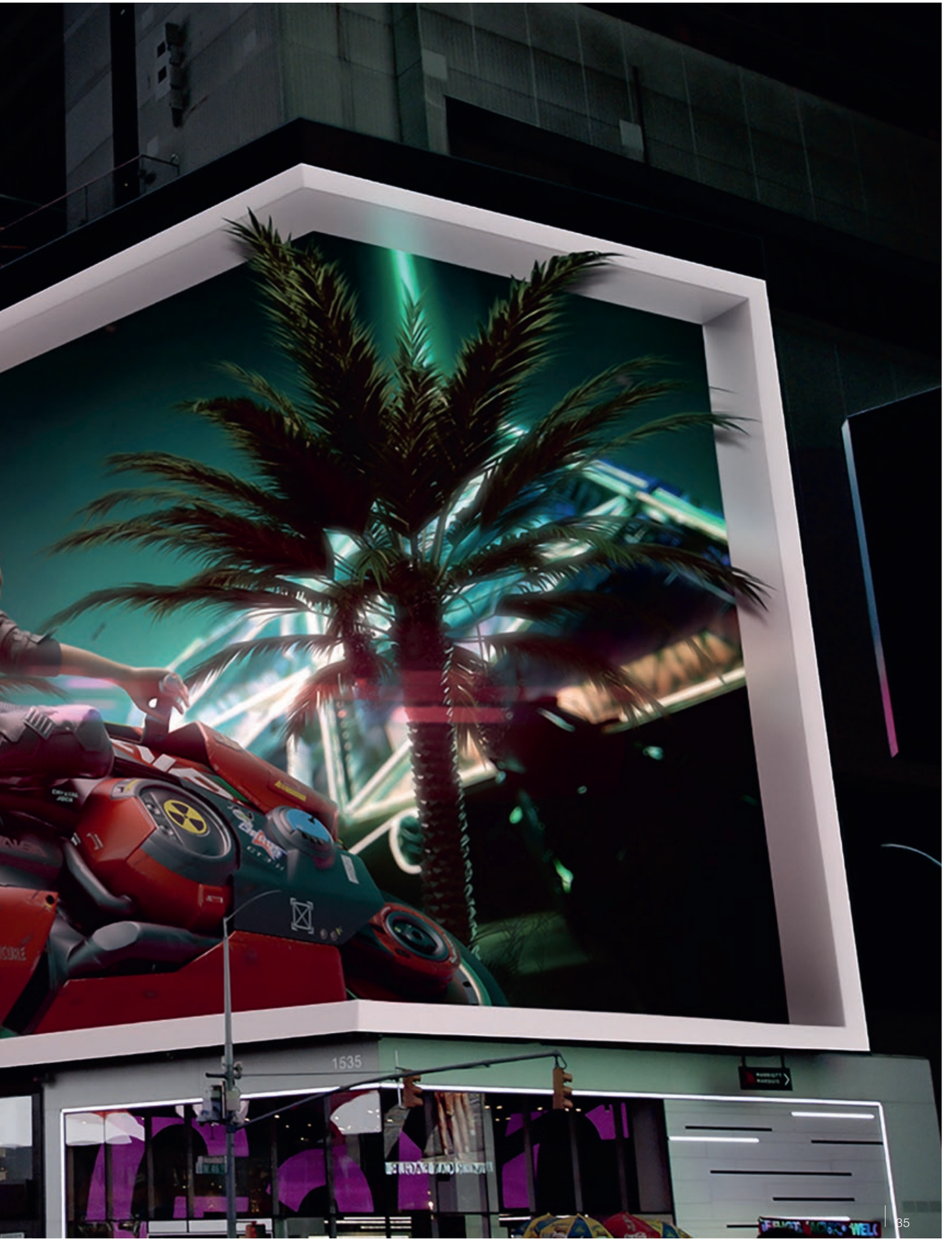


Billboard Chromebook, Visualization: Territory Studios, realized with software solutions from MAXON

AI

Virtual reality is just one of the countless ways in which the software from the “Media & Entertainment” segment is used.

Media & Entertainment


1535

THE PROJECT

Casa KF

Costa Rica

The villa impresses with its innovative design and unique layout. It has a two-story residential building with a guest house on the lower floor and the main house above. Its special features and prime location make it an outstanding project in the vibrant region of Costa Rica, embodying architectural excellence in every respect.

MAXON

PRODUCT:
Maxon ONE

WEBSITE: www.maxon.net

Picture Credits

Cover + inside: Hub of Huts, Olang, Italy;
Architects: NOA Network of Architecture; Image: Alex Filz

Page 5, 7, 8, 10, 11: Shutterstock

Pages 12/13 and 15: SuperHub, Meerstad, The Netherlands;
Engineering office: Pieters Bouwtechniek; Images: Ronald Tilleman (p. 12/13), Ronald Zijlstra (p. 15)

Page 14: Block heating station, Leipzig, Germany;
Architects: thoma architekten; Image: Ralf Dieter Bischoff

Page 15: Passive house, Frankfurt am Main. Germany;
Engineering office: bauart; Image: Tim Kullmann

Page 16: Office building One on One, Luxembourg, Luxembourg;
Architects: Moreno Architecture & Associates

Page 17: Airport Copenhagen, Copenhagen, Denmark
Building management: Copenhagen Airport

Page 18: Higher Roch Tower, Montpellier, France;
Architects: Brenac & Gonzalez & Associés; Image: Sergio Grazia

Page 19: Wekiva Parkway Highway Section, Florida, USA;
Construction office: Construction Technologies & Engineering, Inc.;
Image: Wantman Group Inc.

*Page 20/21:*Arthur Ravenel Jr. Bridge, Charleston, USA;
Building management: South Carolina Department of Transportation;
Image: Shutterstock

Page 22: Southeast Event Centre, Steinbach, Canada;
General contractor: Graham Construction

Page 23: Storage Facility, Kansas City, USA;
Building contractor: Musselman & Hall Contractors

Page 24: World of Volvo, Gothenburg, Sweden;
Building contractor: WIEHAG Bau; Image: James Silverman

Page 25: Broadway Subway, Vancouver, BC, Kanada;
Transportation authority: B.C. Ministry of Transportation and Transit

Page 26/27: Marina Tower, Vienna, Austria;
Building contractor: DRAMAC; Image: Stephan Huger

Page 28: Connex office & commercial building, Munich, Germany;
Building management: Hammer AG

Page 29: Hospital Sant Pau, Barcelona, Spain
Building management: UNESCO

Pages 30/31and 33: Edith Cowan University, Perth, Australia
Architects: Lyons

Page 32: Port Facility, Constanta, Romania;
Port management: UMEX

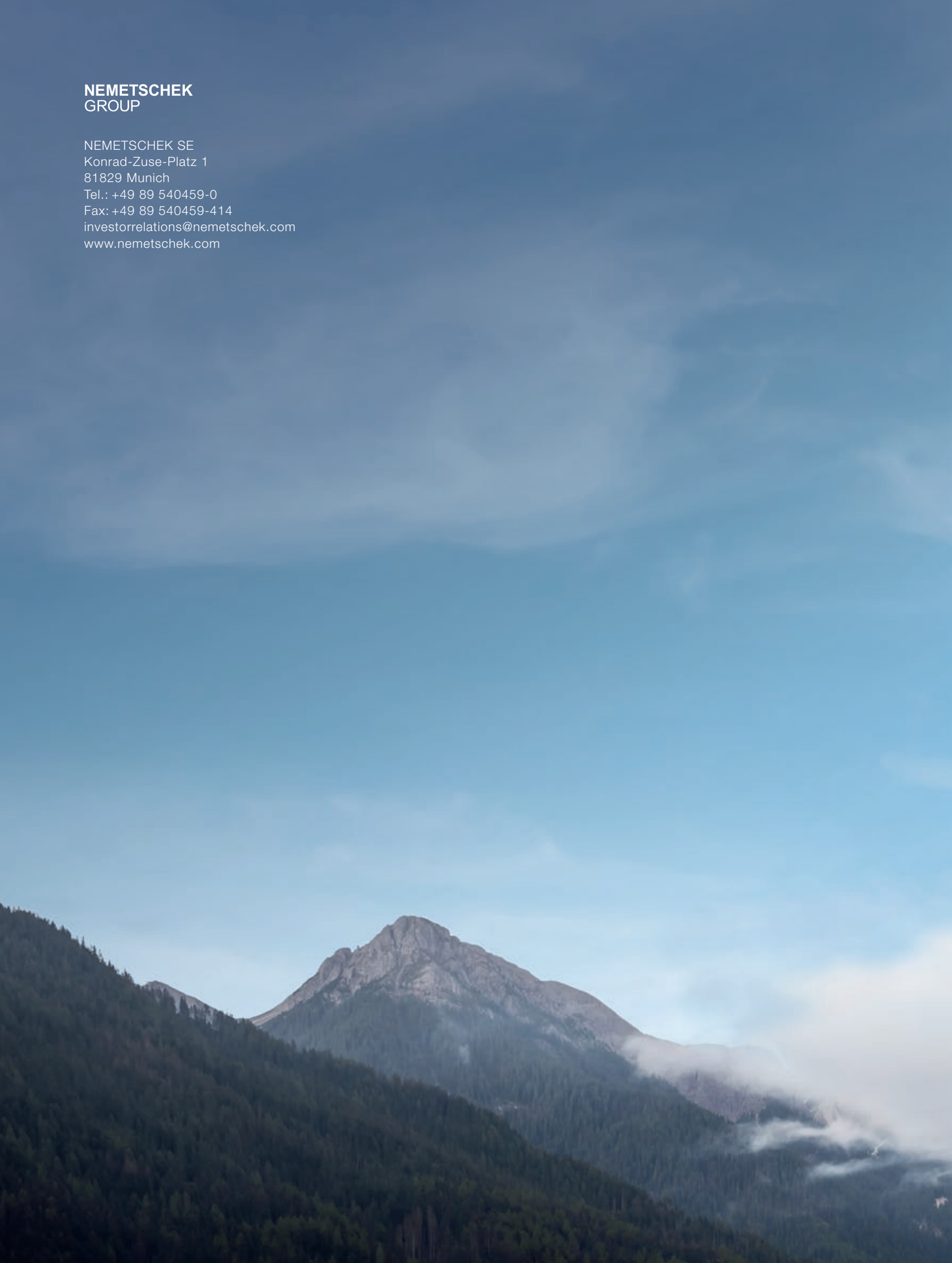
Page 34/35: Billboard Chromebook
Visualization: Territory Studios

Page 36: Casa KF, Costa Rica;
Architects: Selva Design; Visualization: Imminent Studio

NEMETSCHEK SE
Konrad-Zuse-Platz 1
81829 Munich

Tel.: +49 89 540459-0
Fax: +49 89 540459-414
investorrelations@nemetschek.com
www.nemetschek.com

NOTE: This supplement is an editorial article about the Nemetschek Group, published as a non-tested element together with the Annual Report 2024.



NEMETSCHEK
GROUP

NEMETSCHEK SE
Konrad-Zuse-Platz 1
81829 Munich
Tel.: +49 89 540459-0
Fax: +49 89 540459-414
investorrelations@nemetschek.com
www.nemetschek.com