CASE STUDY

vrame Consult Creates a Digital Twin of Siemensstadt Square, a "City of the Future" for Work and Living

Bentley Applications Help Teams and Stakeholders Collaborate and Receive Requested Information within 12 Seconds

REVAMPING A HISTORIC WORK DISTRICT

More than a century ago, the company that would grow into the leading technology conglomerate Siemens began purchasing land in Berlin to expand its production capacity. This area became known as Siemensstadt. As the years progressed, it grew into a 76-hectare site with numerous production and development facilities, as well as living quarters. Today, an array of Siemens divisions operate in the area, including Siemens Smart Infrastructure, Siemens Technology, and Siemens Energy.

Though Siemensstadt has always been the site for cutting-edge technological development, the district has aged. People and corporations, Siemens among them, now expect more from infrastructure, such as lower carbon emissions and walkability. Rather than replace buildings piecemeal, Siemens sought to establish a unified vision for redevelopment and transform the entire area into a welcoming, sustainable urban environment. They turned to vrame Consult, a consulting and project management firm for digitized construction projects, to help shape Siemensstadt Square.

MANAGING DIVERSE DEVELOPMENT FOR THE LONG TERM

By 2035, developers will build nearly 100 new buildings with a combined 1 million square meters of space, mixing industrial operations, commercial activities, research, education, social infrastructure, and 2,700 modern apartments. Siemens expects 35,000 people to live, work, learn, and research at the site. "This makes the project a monumental urban development, with significant public profile for Berlin, as well as for the whole of Germany," said Jens Bredehorn, CEO of vrame Consult. Beyond its size, Siemensstadt Square has

a mandate for being carbon-neutral, constructing low-emission buildings with modern architecture, incorporating new forms of mobility, such as electric planes and unmanned vehicles, and ensuring a focus on people and their wellbeing. In short, it should be the city of the future.

Developing such a huge and ambitious new urban district is a challenge, even with the 2035 deadline. Managing Siemensstadt Square involves coordinating experts from many different fields, from real estate management to architectural design to construction. All participants must work together to ensure that elements complement one another and contribute to the project's shared vision. Additionally, as thousands of people already call the Siemensstadt area home, project teams must determine how to redevelop the area over the next decade without causing major disruptions. vrame Consult realized that they needed to move beyond traditional BIM development and use new techniques to visualize the district.

COMBINING ALL ELEMENTS, NO MATTER THE FORMAT

vrame Consult determined that they could establish an intuitive, holistic view of Siemensstadt Square that combined macro- and micro-level details by creating a digital twin of the entire campus with Bentley applications. They first established a common data environment with ProjectWise, helping all teams contribute with the confidence that all information is up-to-date. Within that system, they collaborated and created individual models with third-party applications. However, vrame Consult still needed a way to combine these models into a digital twin.

With the openness of the iTwin Platform and OpenCities, teams can combine every 3D model – no matter what application was used to create them – into a unified digital twin of the campus. Not only does the digital twin ensure that every stakeholder

PROJECT SUMMARY
ORGANIZATION
vrame Consult

SOLUTION
Facilities, Campuses, and Cities

LOCATION
Berlin, Germany

PROJECT OBJECTIVES
- To develop a digital twin of Siemensstadt Square.
- To establish a platform for quick, intuitive data sharing among teams and stakeholders.

PROJECT PLAYBOOK
iTwin® Platform, OpenCities®, ProjectWise®

FAST FACTS
- Siemensstadt Square is a 76-hectare site with nearly 100 new buildings mixing industrial operations, commercial activities, research, education, social infrastructure, and 2,700 apartments.
- The site will be carbon neutral, incorporate new forms of mobility, and ensure a focus on people and their wellbeing.
- vrame Consult needed a digital twin to help all contributors to share in the overall project vision and coordinate the numerous unique elements.

ROI
- Within the iTwin Platform, information that once took hours to find can now be found in less than 10 seconds, and users can question the validity of information even after formal reviews.
- The digital twin currently serves the needs of 50 direct users, with the ability to scale up to over 200 as construction projects begin, matching the current state and scale of development.

can access the data, it can also easily keep the model up to date. "In case there is a new version of an existing model, the solution is updating the models straight away, which makes a huge impact on how trustworthy this solution is," said Bredehorn. Teams also used OpenCities Planner to overlay a project masterplan created by third-party software onto the model without compatibility issues, helping them to analyze and update area sizes, building uses, and density. All assets are tagged with unique identifiers that are extracted from the feature classes of BIM data, as well as relevant documentation.

INSTANT DATA FOR ALL
The digital twin of Siemensstadt Square now serves as the central source of information for the project, and can provide accurate 1D, 2D, 3D, and 4D data to stakeholders and the public at any time. "It's not just data, but information and insights [that] they can understand and trusted," said Bredehorn. Information that once took hours to find can now be found in less than 10 seconds, and users can question the validity of information even after formal reviews. Investors now receive information on a building within 12 seconds without having to sort through plans for the entire

development. Dashboards can present information in an intuitive way, with the ability to compare existing buildings with proposed changes. Teams are now gaining more value from data, and are using it to identify new project services that they had previously not considered. As the digital twin is based on open-source technology, vrame Consult has future-proofed the project and its ecosystem, ensuring that it will seamlessly meet Siemens' 25-year vision.

With easier access to more intuitive information, teams have improved collaboration, and elements of the project are commissioned faster. vrame Consult continues to flesh out and enrich the digital twin as the project develops. "This has allowed us to perform while transforming," Bredehorn said. The digital twin currently serves the needs of 50 direct users, with the ability to scale up to over 200 as construction projects begin, matching the current state and scale of overall development. Information in the evergreen digital twin can be easily repurposed from design, to construction, to operations and maintenance, and as Siemensstadt Square takes shape, the digital twin can be used to inform proactive maintenance and measure energy consumption, water use, and the carbon footprint.

Within the iTwin Platform, information for Siemensstadt Square that once took hours to find can now be found in less than 10 seconds, and users can question the validity of information even after formal reviews. Image courtesy of vrame Consult.