



Building More Efficiently, Sustainably, and Durably with Digital Solutions

Productivity in the construction industry has increased by just one percent per year over the past 20 years. At the same time, projects are becoming increasingly complex – with more and more stakeholders and growing demands for efficiency and sustainability. It doesn't add up. A profound change in the industry is needed to secure the future of the industry and achieve climate goals.

Yet the answers have long been available. With digital solutions, buildings can be planned, built, and operated more efficiently and more sustainably at the same time. However, for this to happen, the various trades must work hand-in-hand and open standards must become commonplace. The construction life cycle should be seen as a cycle and building should be thought of differently.

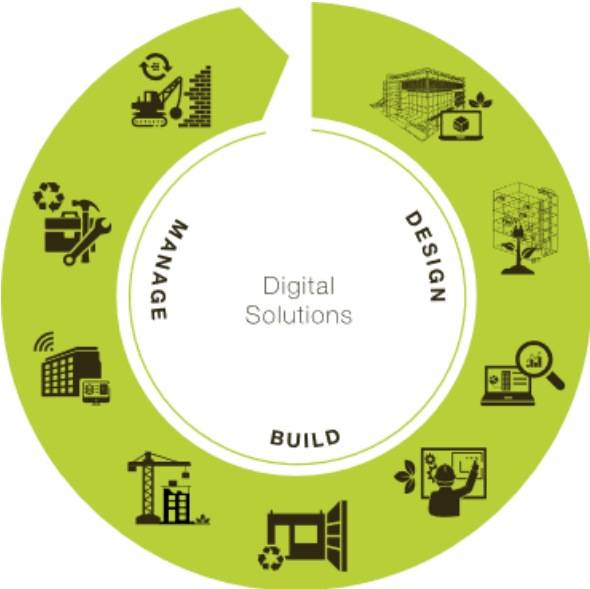
The foundation for more efficient construction is laid as early as the planning phase – with Building Information Modeling (BIM), the digital working method, all disciplines can work together accurately, flexibly, and efficiently. Structures are first built virtually and then in reality by means of digital twins. This avoids budget- and material-intensive errors and defects before the actual construction process begins. After all, numerous current large-scale projects clearly show how time-consuming, resource-intensive, and costly errors in construction can be. Software can also be used to perform concrete sustainability analyses and calculate the carbon footprint of materials. The designer can then consider more sustainable alternatives. Here, innovative organizations such as Madaster, an online materials registry, are particular driving forces.

In addition, buildings today need to be designed differently. 80% of all design work is now remodeling, as opposed to new construction – a relatively new field for most architects and planners. Buildings today often need to be repurposed or renovated – in keeping with the circular economy. With the help of the digital twin, such changes in building use can be modeled in the planning phase. This allows various possibilities to be simulated. Based on these simulations, the most efficient and sustainable variants can be selected. In combination with continuous quality control, it is also possible to extend the economic service life of buildings. Defects are detected immediately and can be remedied.

However, the enormous potential of digitalization is not limited to planning and the construction process, but also includes the operation and maintenance of buildings. In the finished building, there are numerous aspects where more efficient and sustainable action can be taken. Integrated Workplace Management Systems (IWMS) can be used to control heating, ventilation, and lighting in an optimal and resource-saving way. In addition, the demand for office space is measured; this means that only the space that is needed has to

be planned. These are important levers for greater sustainability. The beneficial additional effect is that employees benefit from a positive working environment thanks to the right temperature, ventilation, and surroundings.

Even the reuse of raw materials from deconstructed buildings is possible using BIM solutions. Thanks to seamless documentation, it is possible to locate exactly which material was used where, even years later. The building is thus a future supplier of raw materials in a closed building life cycle.



At the Nemetschek Group, we regard the building life cycle as a cycle in which data is continuously collected and reused. This creates a holistic view of a building and its raw materials – and later, an entire complex, neighborhood, and even whole communities or cities. This not only ensures that the construction industry becomes more productive, but also that ambitious climate targets are met.



The Nemetschek Group is a pioneer in digital transformation in the AEC/O industry and covers the entire life cycle of construction and infrastructure projects. The Nemetschek Group leads its customers into the future of digitalization with intelligent software solutions.