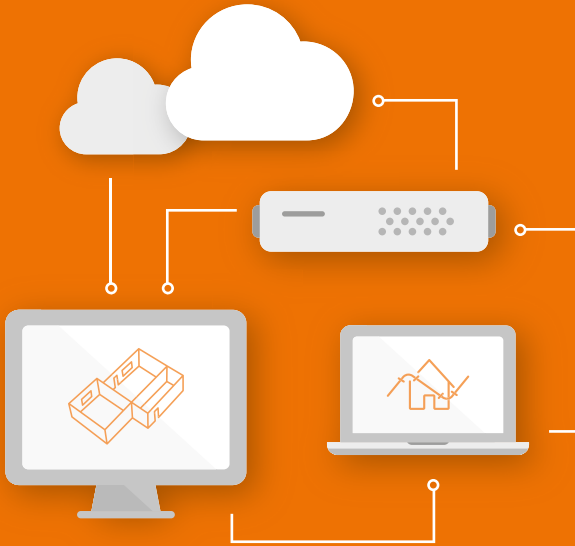


Why BIM?

How Collaboration Enables An Integrated Approach

This is the first in a series of three articles that looks at the benefits of BIM.





Architects report that **HIGH EXCHANGEABILITY**, better **COLLABORATIVE WORKING** and **EFFICIENCY** are the main success factors of BIM.



In Belgium, France and Italy **HIGH EXCHANGEABILITY** by using BIM is seen as a great advantage.

Almost **40%** of the **BRITISH ARCHITECTS** consider better **COLLABORATIVE WORKING** to be one of the advantages of BIM.



EFFICIENCY was seen as the third success factor.

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Building Information Modeling (BIM) is becoming adopted across the architecture, engineering, and construction fields. But for many designers, BIM appears to be complex and difficult to implement with unclear benefits. However, as BIM becomes increasingly required by clients, architects and engineers will need to implement new tools and methods in order to stay competitive.



1,400
ARCHITECTS
INTERVIEWED

A recent study by USP Marketing Consultancy, entitled the European Architectural Barometer*, conducted interviews with 1,400 architects in eight European countries to determine the factors that bring the most benefits to designers who use BIM. While there are regional differences, three key success factors emerged from the study: collaborative working, exchangeability of data, and improved efficiency. In this three-part mini-series, we examine each of these success factors and take a closer look at the advantages for architects, engineers, and specialist designers.



COLLABORATIVE WORKING

Collaboration – one of the main integral parts of the BIM workflow – is more than just an industry buzzword. When project teams work together, the outcome is a well-designed, well-built project that is fit for purpose, together with greater certainty that it will be delivered on time and on budget.

Collaborative working helps minimize design errors, improves decision-making, and streamlines project management activities. In this, the first of our Why BIM series, learn how an integrated approach using BIM and the latest cloud-based technology can benefit your design projects.

Collaboration and close cooperation in the early design phases – as well as a solution-oriented approach – are the most important aspects to get right when working with specialist designers, clients, investors, or users. A challenge which design offices can plan and manage optimally via an integrated working method. This includes focusing on a few practical design scenarios, clarifying early on the specific user requirements, economic constraints, or construction challenges, as well as developing internal professional knowledge and ongoing training of project staff. Many projects, particularly in the infrastructure sector, are currently using an integrated approach to develop and realize projects in parallel using the BIM method. In the building construction market, clients and investors increasingly call for the use of BIM as well. The added value of dovetailing the BIM method and integrated design is obvious: the work of all concerned in an intelligent and current BIM data model and collaboration within an integrated management framework complement one another perfectly. This is further enhanced with cloud-based technology, allowing the entire project team to collaborate and share information effortlessly.

> An integrated working method means having a multidisciplinary approach in terms of design and response, and – if possible – developing the optimum solution at the concept stage.



**LESS
ERRORS**

MINIMIZING INEFFICIENCIES AND POTENTIAL FOR ERRORS

In particular, international architecture and engineering offices, designers, and real estate developers are constantly faced with the task of managing complex projects. The multitude of interfaces with the various trades and responsibilities of the individual specialist designers constantly present new and major challenges. There are also regional issues, such as language barriers on the building site or country-specific regulations, and none of these elements should be underestimated. In order to avoid the project descending into chaos and the list of conflicts escalating, it is necessary to adopt a holistic approach to design and planning supported by the right tools.

An integrated working method means having a multidisciplinary approach in terms of design and response, and – if possible – developing the optimum solution earlier in the design cycle.

Experienced and highly disciplined designers often devise a preferred design option, via optimization and evaluation early in the project, which is then rigorously pursued. Important project parameters such as cubic volumes, construction methods, structural systems, technical standards, or key environmental decisions in the project must, therefore, be defined at an early stage. A further benefit of focusing on just one design variant is that the tasks of the individual design teams can be determined more easily, which considerably simplifies the collaboration between all designers.

> At present, the infrastructure sector as well as building construction benefits from BIM.

NECESSITY AND POTENTIAL OF THE INTEGRATED WORKING METHOD

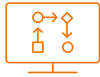
In an ideal world, the integrated design and working method enables an optimized project in terms of costs, benefits, or implementation time. The ideal is not the norm however, and the best external specialist designers or one's own experienced employees are often unavailable for the project since they are tied up elsewhere. The skills shortage and the diverse work and training landscape also exacerbate this problem. At the same time, clients increasingly demand certainties and quality which have a greater probability of being achieved with integrated project management and BIM-aided work processes. This is where the challenge lies for many architects, specialist engineers or general designers: the complexity of the projects and the demands on them are growing. Consequently, it requires effective management of the project teams and strict organization of the work processes in order to integrate new employees or inexperienced design partners successfully into the project organization. Regular meetings are an important tool for this purpose. They take place with the team leaders and are conducive to process control, cost and resource management, and – in particular – the holistic, systematic development of the project, thanks to the consistent data models used by all participants.



At present, the infrastructure sector as well as building construction benefits from BIM: bridges, roads and tunnels can be modeled digitally. This enables precise simulation of the construction process, and schedules – including the interfaces with and handovers to subsequent trades – which can be mapped and coordinated in detail.

MAKING DECISIONS THAT CONVEY DESIGN RELIABILITY

The BIM model requires information, structure, clarity, and consistency. Important choices – including financial decisions – for construction methods, materials, and technical building equipment must, therefore, be made by the architect, engineer, designer, or client at the start of the design process. This requires clarity in terms of desires, requirements, and demands on the structure to be constructed. The architect, engineer, or designer becomes the coach, psychologist, project manager, and trusted adviser of a client who is – on occasion – overstretched. For the client also needs to learn that they can best support a successful design process through cooperating and stating their needs and requests.



**MORE
CONSISTENCY**

BIM helps to minimize the design effort required and achieve cost reliability, delivery security and schedule reliability for the client and designer. This makes the method a tool which helps with not only integrated design processes and digital models to secure new business areas, but also safeguards and expands one's own position in the current project environment.

Architects, engineers, designers, or construction firms structured in this way position themselves as sustainable, important, and competent contract partners for their clients, investors, and expert colleagues. BIM helps to minimize the design effort required and achieve

cost reliability, delivery security and schedule reliability for the client and designer.

SUMMARY

At a time when projects are becoming more complex and more demands are being placed on designers, it is imperative that collaborative working becomes the norm amongst the project team. The best way to achieve this is through an integrated approach for the entire design, such as using the BIM working method supported by a cloud-based platform for easy collaboration. With BIM, even the largest projects with a multitude of teams – and therefore many different design interfaces – can be managed more effectively. It promotes communication, minimizes design errors, facilitates decision-making, and provides clarity to the entire project team as they work from a single shared source of truth – the BIM model. And with the latest cloud-based technology, such as Allplan Bimplus, the entire team can have real-time access to the model using open interfaces for unparalleled collaboration.

Read more about how real teams collaborate in our white paper:

COLLABORATION AND INTEGRATED PLANNING AS BLUEPRINT FOR SUCCESS





BEST PRACTICE: **GOTTHARD BASE TUNNEL (SWITZERLAND)**

Customer: Gähler und Partner AG, Ennetbaden (Switzerland)

89,000 CUBIC METERS OF CONCRETE SAVED

The scheduled commissioning on December 11, 2016, marked the end of the project of the century – the Gotthard Base Tunnel – after nearly 20 years of building time. The route – a length of 57 kilometers through the Saint-Gotthard Massif between Erstfeld and Bodio – makes the Gotthard Base Tunnel the longest rail tunnel in the world.

To save time and money, the construction work on different sections was coordinated and sometimes carried out simultaneously. Up to 2,600 people were involved in the implementation of the construction project of the century during the main construction phase.

Around CHF 19 million were saved in the northern sections of Erstfeld and Amsteg. This was thanks to the geometric optimization of the tunnel lining and the support from Allplan Engineering, meaning that a total of 89,000 cubic meters of concrete was able to be removed from the 57km project.

Read how the 3D model created in Allplan Engineering added value to this landmark project:

THE GROUNDBREAKING TUNNEL



ENGINEERING

DOWNLOAD



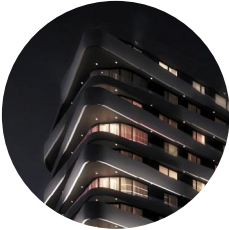
CASE STUDY

BEST PRACTICE:
ENGINEERS



>> *The Gotthard Base Tunnel was completed one year earlier than planned. One of the reasons: Cooperative collaboration within and across disciplines.* <<

Dipl. Bauing, ETH | SIA
Raphael Wick
Gähler und Partner AG
Chairman of the Executive Board



BEST PRACTICE:

SKY TOWER BIETIGHEIM-BISSINGEN (GERMANY)

Customer: KMB PLAN | WERK | STADT GmbH, Ludwigsburg (Germany)



ARCHITECTURE

The "SKY" residential and commercial building is one of the highest construction projects the town of Bietigheim-Bissingen has ever seen. The building will have 18 stories, and as a result, will soar above most of the buildings in the district capital on the Neckar and Enz rivers. Even the designers at the responsible architecture office, KMB in Ludwigsburg, were somewhat surprised that this huge building project – which, at 67 meters high, does justice to its name – has actually come about.

The first 10 floors are intended for commercial units from 95m² to 345m², and the top eight floors are for condominiums. The 24 apartments of two to four rooms measure between 70 and 170 square meters. The average price per square meter is approximately 4,200 euros. Two penthouses, each covering around 200m² over two levels, will be the pinnacle of residential comfort. In the pre-design phase, ten different three-dimensional high-rise models were produced, all of which were created with Allplan Architecture.

DOWNLOAD



CASE STUDY

Learn more about Allplan Architecture in practice:

SKY-HIGH BIETIGHEIM-BISSINGEN

About the Company



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ALLPLAN is a global developer of open solutions for Building Information Modeling (BIM). For more than 50 years, ALLPLAN has pioneered the digitalization of the construction industry. Always focused on our clients, we provide innovative tools to design and construct projects – inspiring users to realize their visions. With seamlessly integrated BIM solutions, ALLPLAN connects all project stakeholders:

- **Allplan Architecture** – for architects, delivers complete creativity and project control, enabling detailed design drawings and unparalleled information quality.
- **Allplan Engineering Building** – for structural engineers that do not wish to compromise. Models are created quickly and accurately, concrete reinforcement detailed and working drawings generated – all without switching tools.
- **Allplan Engineering Civil** – for civil engineers and structural draftsmen designing bridges and heavy civil projects. Structures with complex geometry can be fully modeled, reinforced, and detailed quickly and efficiently.
- **Allplan Bimplus** – the ultimate open BIM platform for all disciplines to collaborate efficiently in projects. BIM model data, documents, and tasks are managed centrally over the complete building life cycle.

Headquartered in Munich, Germany, ALLPLAN is part of the Nemetschek Group. Around the world over 400 dedicated employees continue to write the ALLPLAN success story.

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