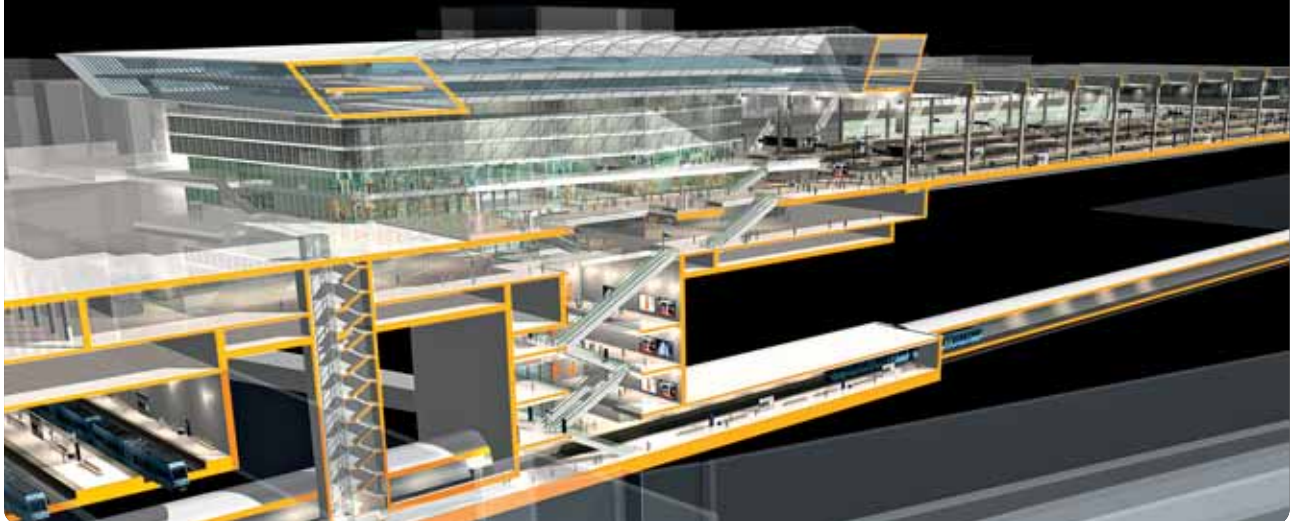


ViCon: The Virtual World of Construction

Something which long ago became an everyday part of development work in the automotive industry is also becoming increasingly important in the construction industry: virtual construction by means of computer-controlled 3D models and simulations. HOCHTIEF has developed the ViCon service concept from the technologies that are already available. Virtual Design and Construction (ViCon) is based on a 3D computer model which can be expanded to

include any information of relevance to the building work (4D model). The objective is to save time and money when building and to identify possible defects or critical phases at an early point in time. In the words of Dirk Schaper, managing director of ViCon GmbH, "We use software, hardware, and services to form products which create added value for everyone involved in the construction. Our objective is to integrate ViCon into lean construction processes with the ▶



help of Porsche Consulting. We will then finally enter a new world of construction.”

The old world is more akin to the following scenario: On the building site of a complex €150 million building construction project, every day 30 to 50 plans arrive (36 months of construction time, this makes around 40,000 plans); they relate to a wide range of problems, and must be taken into account. It is not easy to maintain an overview, and defects often are not discovered until very late on, which may result in time delays and additional costs. In contrast, ViCon combines all the information, which can be retrieved at the touch of a button and can be understood very clearly in the 4D model. Thus, ViCon enables reconciliation of the actual and target schedules so that it is possible to react at an early point in time. Additionally, exact quantities of materials—ranging from steel and concrete to the sloping ceiling area—can be calculated. A 3D module testing for building services conflicts provides protection against unwelcome surprises, for spatial conflicts between the building services subsections (heating, air conditioning, electrics, sanitary fittings) can be identified and thus corrected early on. According to Schaper, “It is very difficult to identify such problems on 2D plans.” ViCon is also already in use on the pilot lean building sites, such as the one in Bingen.

The possibilities are practically limitless. Currently, ViCon has 45 “i-rooms” in use. With the aid of interactive whiteboards, a user can set off on a virtual walk through the building on two large screens, stop at critical points, directly enter his remarks, create a photo, and e-mail it to those concerned. Since April 2004, ViCon has been used worldwide on more than 300 construction projects, and has so far been in particular demand in the United States. For Jörg Kaiser, principal at Porsche Consulting, one thing is clear: “We will define the process regarding when and

how ViCon can be used meaningfully. Ultimately, this service is also an excellent tool to control the subcontractors even better.”

Incidentally, even if construction work is running to plan, ViCon has not exhausted its possibilities. The building information system provides the operator with details of the maintenance cycles and other important data and facts. Even the people who subsequently live in the building can gain great benefit from ViCon at an early stage. In a similar way to Porsche’s Car Configurator—which anyone interested can use on the Internet to put together the color and fittings of his vehicle visually, with the costs included—the Building Configurator provides clear proportions: the right color for the bathroom tiles, the kitchen fittings—everything can be displayed beforehand in 3D format on the computer. And you know immediately what it costs. ◀



Working with the “i-room”: Everything can be simulated