PRESS RELEASE

BAU 2021 Trade Show: Digital Interior Specifications

Digital Assistant for Building Owners

Estimating the cost of a major construction project is complicated and time-consuming. That is why a Fraunhofer team developed a tool that makes the planning process and cost estimates in particular significantly easier – digital interior specifications, which will be exhibited at the online BAU 2021 trade show from January 13 to 15, 2021. It is especially suited for recording the specifications of complex research facilities that do not come off-the-shelf.

Constructing a public building and a research institute in particular is tough work since such facilities are not off-the-shelf buildings. Laboratories with special equipment or special ventilation systems have to be designed and built properly in keeping with specifications. A lot has to be thought about already during the design phase. Although directors of research organizations and professionals from an institute's administrative services unit know exactly what they need for research operations, translating their wishes into and costing an entirely new building that meets every demand and even every building code requirement is another thing entirely. That is why a digital tool was developed at the Fraunhofer Institute for Factory Operation and Automation IFF in Magdeburg, which simplifies and makes recording the specifications of public buildings more transparent **–** digital interior specifications, a software tool that compiles and saves all specifications of a new or remodeled building digitally. It establishes the basis for budgeting, planning and executing a construction project. Digital interior specifications will be presented at the online BAU 2021 trade show from January 13 to 15, 2021.

The Tool Supports the BIM Method

Digital interior specifications follow the idea of digitalized construction for which the Building Information Modeling (BIM) method is an essential foundation. With BIM, the construction industry is getting rid of standard, static two-dimensional blueprints that repeatedly gave rise to misunderstandings. The heart of BIM is a three-dimensional image of a real building including all data, hitherto frequently still scattered confusingly in Word tables and Excel spreadsheets, technical drawings or even paper blueprints.

The BIM idea facilitates digital interior specifications, something initially developed at Fraunhofer Institutes for new or remodeled buildings. It especially helps optimize collaboration among the Fraunhofer-Gesellschaft's institutes and its main Department of Building in Munich. What is more, it will be made available to similar public sector organizations in the future. It meets two challenges. First, the demands made on any

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new or remodeled facility are very specific since every Fraunhofer Institute is different. A standard building, such as a chain grocery store, is not enough here. That means that costing and planning more or less have to start from scratch every time. Second, institutes' construction managers, executive directors and delegated employees usually have no experience with construction.

Guiding Construction Managers through Planning

Digital interior specifications create transparency here: They help institutes' construction managers design rooms and estimate workspace demand. "Digital interior specifications propose model rooms to an institute's construction management team from which they can select suitable ones," explains Stefanie Samtleben from the Fraunhofer IFF in Magdeburg, who designed the digital interior specifications together with colleagues. The software guides construction managers through very extensive specifications, which include every specification and attribute that a facility must meet: the number of sockets in rooms, the floor's bearing capacity, window type, openable or not, the need for shade. "We thus ensure that every attribute important to an initial cost estimate at the Fraunhofer-Gesellschaft's main Department of Building in Munich is in fact factored in," says Stefanie Samtleben. Then, a construction project proposal based on this cost estimate can be submitted to the national and state government.

Digital interior specifications rapidly crosscheck the original building owner's model comprised of the specifications with the architectural design developed from it. "This enables us, for instance, to see very quickly whether the usable floor space has been distributed correctly," says the mathematician.

Other Construction Projects as Models

Digital interior specifications will do even more in the future. They will keep every new project, every budget plan, and every cost estimate from starting "with Adam and Eve". "So far, there is no way to learn from past construction projects and estimate the cost of a new building based on similar buildings," explains Stefanie Samtleben, describing the problem. "The data simply aren't available in a usable form, thus making it impossible, for instance, to generate a euro value from the distribution of the usable floor space, offices and laboratories." Digital interior specifications are intended to change that. "We want to build an archive in it where information from completed construction projects can be stored so that price information can be extracted from it." The goal is for digital interior specifications to identify comparable construction projects in the database automatically. That would shorten cost planning for new buildings dramatically.

Although digital interior specifications were initially developed as a BIM tool for the Fraunhofer-Gesellschaft, they will be available to other users for public construction projects in the future. They are currently being tested in construction projects of Johannes Gutenberg University Mainz and the Helmholtz Association. The Fraunhofer

Institute for Industrial Engineering IAO, the Fraunhofer Institute for Building Physics IBP and the Fraunhofer-Gesellschaft's Department of Building and Real Estate Management were involved in the development of the digital interior specifications along with the Fraunhofer IFF.

Picture 1: The Fraunhofer Institute for Casting, Composite and Processing Technology IGCV's new facility in Garching was a pilot project designed with digital interior specifications.

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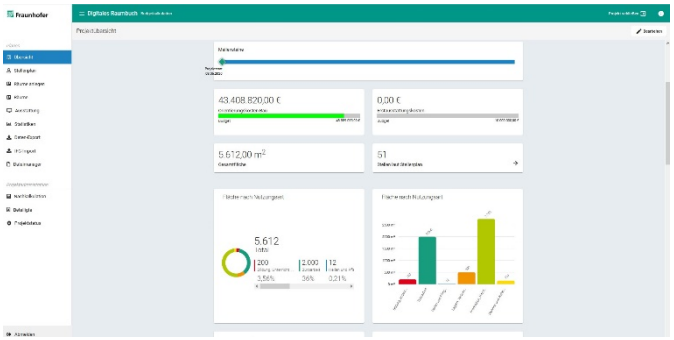

Picture 2: Digital interior specifications facilitate budgeting too.

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