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Getting together with BIM

Andy Beckerson extols the virtues of intelligent 3D, 4D and 5D BIM models for collaborative working within the AEC sector

Building Information Modelling (BIM) relies on intelligent models to create and manage construction projects ... a development that is transforming project delivery, construction, and design. While traditional data management methods can all too easily lead to disconnected project data and disconnected teams, one of the greatest benefits of BIM collaboration software is the opportunity to build a project in a virtual world before construction begins, thus minimising the risk of costly errors and on-site rework, all of which can compromise completion dates and budgets. However, the adoption of BIM models is leading to an increase in digital information that needs to be managed for the whole life cycle of a project, not just its construction phase.

This enormous increase in data could lead to data management difficulties. However, with data held in the cloud and managed by

proprietary BIM collaboration software (to simplify complex model management and help connect models, project data and teams on a simple collaboration platform), such difficulties are minimised.

Digging deep

The data is generally produced in the form of an intelligent 3D model, but this model can also be in so-called 4D, adding time or more accurately scheduling, or 5D, adding scheduling and budget.

A BIM model that contains the 3D geometry, the 4D schedule, and the 5D costing information looks exactly like a 3D model. It just so happens that if you click on any element within the building, you see its costing data, the quantities, the specifications, etc. With this depth of information, you can ask the model: how would the cost and schedule change if we substituted block for brick in walls, or

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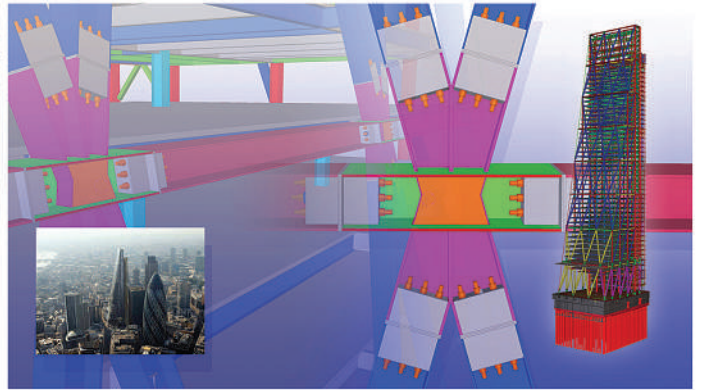
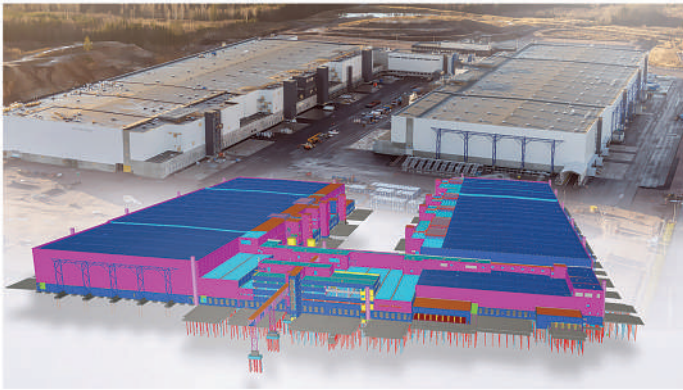
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Whether for an out-of-town logistics centre (left) or a landmark city centre office development (right), collaborative working with intelligent BIM models can yield big efficiency savings. Tekla Structures Models courtesy of Trimble Solutions UK

upgraded the reception tile floor, or altered the pitch of the roof?

By having these models in the cloud they can be accessed anywhere, by any stakeholder on a web browser, including of course on-site via smartphones and tablets. Interested stakeholders, who can be designers, contractors, manufacturers, sub-contractors, clients or investors, who could possibly be in different geographical locations and time zones, can then manage, share, visualise, use and contribute to the model or 'collaborate' on the project.

Total collaboration

This collaboration should involve everybody on the project and not just a handful of disciples of BIM. If there is not total collaboration the model becomes disconnected with some parties being less informed than others. This is a recipe for costly disasters and rework sometime in the future. Furthermore, the collaboration needs and requirements are for the project and are not the individual needs and requirements of a particular company.

This total collaboration makes actionable, accurate, and accessible information available to all the interested stakeholders, enabling them to make well-informed choices, respond expeditiously to project needs, and support better business decisions. This data not only contains a traditional 3D model but also additional information such as workflows and email linked to the model. Thus by selecting a particular component in the model you are linked to all the documentation relating to it whether it be detailed design drawings, schedules of goods and supplier information. The link to the selected component can also be embedded in email thus ensuring synchronised communication that is not open to interpretation. Again, this leads to better decisions that can be made quickly and without confusion.

Leveraging good information

Perhaps the final word on BIM Collaboration should be the conclusion and recommendation from the RICS – Collaborative Building Information Modelling (BIM) report published in February 2015.

“Collaboration can help to align the incentives of clients and suppliers, but – even with the best will in the world – communication and



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coordination can be difficult to achieve, particularly for complex projects. If properly designed, collaborative BIM can provide solutions; well-designed BIM tools kits can leverage the value of good information, enabling better co-ordination, synchronisation and sequencing of projects, by allowing all project participants to access and interrogate project information; and, at higher levels of BIM, by enabling better clash detection. If BIM innovations can also be designed to enable interdisciplinary learning and promote collaboration throughout a project supply chains, then the efficiency savings are likely to be large”