

Delivering Better Buildings: **THE RACE TO BIM**



Case Study: The Design Büro

When the United Kingdom's Cabinet announced in 2011 that all government buildings must be delivered using Building Information Modeling (BIM) by 2016, some architectural firms may have questioned their ability to meet this demand. The Design Büro, however, didn't bat an eye.

Upgrading their software and learning how to adopt a BIM workflow was crucial to The Design Büro because they primarily work on government-funded projects. Founded in 1991 in Warwickshire, United Kingdom, The Design Büro specializes in creating health and social care facilities that contribute to one's wellbeing. The firm's designers believe that environments play an important role in the healing process, so they work closely with the people who will use their buildings to ensure they get the features they need to meet their clinical goals. "Our designs focus on the needs of patients, their families, and the staff members who work in the facilities to provide a supportive, inspiring, and flexible environment," Marshall says. Doing all this while keeping their projects sustainable, practical, and within budget has made the firm successful.

"We didn't explore any other solutions prior to upgrading our office from Vectorworks Fundamentals to Vectorworks Architect. We had confidence that the product would meet the [BIM] mandate, and we've proven that Vectorworks delivers for us."

– Neil Marshall, Director at The Design Büro



Design Büro works with clients to maximize the design opportunities available to them to achieve their clinical aims effectively and sustainably while staying on budget.



The 7,800-square-meter Tamarind Centre provides treatment and rehabilitation for men who need care in a medium secure environment.

Test Project: The Tamarind Centre

Before the firm jumped directly into a BIM workflow, designers tested Vectorworks® Architect software with a traditional 2D process on The Tamarind Centre in Yardley Green, Birmingham, a state-of-the-art, medium-secure mental healthcare facility. Named after an African herb said to promote healing and recovery, the Centre, delivered in 2012, is important to The Design Büro. "We have a long-standing relationship with the Birmingham and Solihull Mental Health Foundation Trust, the client for this project," says Marshall. "We were involved with that project for six years, and it was extremely critical for us to meet the aspirations of the end users. We were very passionate about being able to understand what our client wanted from our architecture and delivering that to them."

The Tamarind Centre is a 7,800-square-meter, purpose-built, 89-bedroom facility that provides a cohesive healthcare campus and a high-quality, positive healing environment. The unit forms part of

the overall development plan for the Yardley Green Campus and was centrally located on the site to ensure that more quiet, therapeutic external spaces could be formed. Its location, away from main roads, also aids security and provides natural screening. The facility consists of a three-story administration building and seven single-story wards with space for patient bedrooms, a dental suite, occupational therapy rooms, and recreational open space. All wards and buildings are linked within a secure courtyard via covered walkways with views of the recreational sports area.

The Tamarind Centre was The Design Büro's last major project to be completed entirely in 2D. It won the Birmingham City Council Building Consultancy's 2013 Built in Quality Award due to the firm's high standard of work, excellent communication and collaboration with all parties involved, and careful attention to the requirements of the end users.



The three-story administration building comprises the front elevation of the Tamarind Centre, creating the screen necessary from the main roads and promoting a secure environment.



The Pathology Department building for the Ysbyty Glan Clywd Hospital was The Design Büro's first, large-scale BIM project.

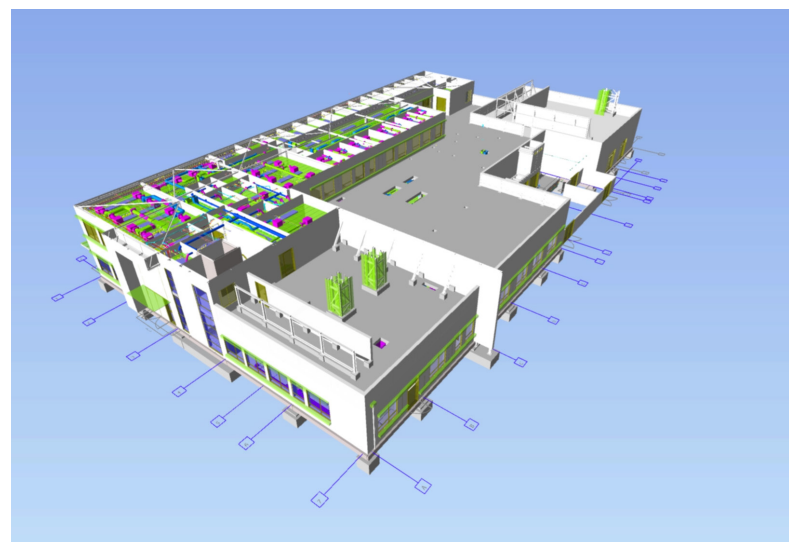
Taking a Leap of Faith with BIM

Entering the world of BIM was the next logical step for this successful firm, and its first, large-scale BIM endeavor was to design the Pathology Department building for the Ysbyty Glan Clywd Hospital in North Wales. "It was a leap of faith for us at the outset because we didn't really know what BIM meant at that time," Marshall says. The Pathology building has since become a landmark project for the firm. Completed in 2013, the facility houses the Microbiology, Histopathology, Cytology, and Blood Sciences departments on the ground floor, as well as staff facilities and offices on the top. For having such serious business completed within, the exterior of the building is refreshingly bright and vibrant. Multi-colored windows decorate the sleek façade, bringing light and warmth into the modern interior.

Close collaboration with key stakeholders was paramount to match functionality with design. The firm strived to use the full capabilities of BIM, freely exchanging information during the conceptual, design, and construction phases with specialist subcontractors brought into the workflow to help with building solutions and digital fabrication. "We were able to utilize our BIM model to have the building's pre-cast elements made off site by Laing O'Rourke's Explore Manufacturing," says Marshall. "This is where we started to see the real wins for BIM in cost, speed, and health and safety."

Since this was The Design Büro's prototype BIM project, the firm set up parallel design teams. One group worked in 2D to create signoff materials, and the other team worked in 3D to model the building. The contractor told them that they could revert to an entirely 2D

process if the BIM transition became too much to handle. However, designers picked up the intuitive workflows of Vectorworks Architect quickly and soon moved the whole project into 3D. "We realized as the project progressed that the 3D team was not only working faster than the 2D team, but that they were also producing better outputs from the model to aid user signoff," says Marshall. "We converted the 2D team to assist the 3D team, which ultimately delivered the project in a more efficient fashion."



Modeling in 3D with a BIM workflow enabled the firm to freely exchange information with collaborators during the conceptual design and construction phases.

New Workflows, New Strategy

The Design Büro learned a lot from its transition to BIM, as well as from the contractor who helped them through their first major project, teaching the firm its tested protocols for extracting information from models like floor areas, linear measurements, and wall areas, as well as how to use the model for clash detection. The Design Büro subsequently implemented a new business management strategy in January 2014 that defines the workflow for staff members to follow when completing projects using 3D with BIM. This evolution formally commits the firm to using the best practices available. “Our strategy enables the staff within the office to have a go-to guide in terms of how to put all the project and asset information, documentation, and data together, as well as how to set the model up to deliver it within the required standards,” says Marshall. “We have a central server of libraries through which we develop content, and we run everything through the Solibri Model Checker, a quality assurance solution for BIM validation, compliance control, design review, analysis, and code checking, to ensure our core content is correct.”

To further inform this strategy, the firm enlisted the help of Computers Unlimited, the Vectorworks software distributor in the UK, to train them in model setup and optimization. Designers also worked to improve their collaborative abilities through Industry Foundation Classes (IFC) testing. “We understood throughout the design process for the Pathology building, for example, that we needed to share our model, and the best way for us to do that with

such a design team was via IFC,” says Marshall. “We fully support the open standard and open route to BIM, so we’ve engaged with our consultants and the people in our supply chain to test how our models interact together through IFC, and we’ve proven that we can fully interact with other software platforms. We challenged the requirement for native models and delivered a successful project using IFC alongside other designers who use Revit® and Navisworks®. Vectorworks gave us true interoperability.” Marshall notes that while there are sometimes mental obstacles for collaborating parties to surmount when interacting with unfamiliar software, those issues soon disappear after they see how easy it is.

The firm also did a lot of reading, Internet research, and attended conferences to educate themselves on BIM. However, the best education came with working on a live project. For The Design Büro, the Pathology building provided that experience because the contractor defined a BIM workflow for designers to emulate.

Nemetschek Vectorworks also plays a role in The Design Büro’s transition to BIM as designers rely on tutorials listed on the Vectorworks YouTube page as part of their training. For example, when new employees come on board, they spend time watching the videos and exploring the software. After a short time, they become comfortable with the workflows and can begin doing more detailed work.



The Design Büro relies on a business management strategy that defines the workflow for staff members to follow when completing projects using BIM. These workflows still allow the creation of comprehensive 3D presentation drawings that help portray the design ideas..



The Design Büro has successfully set itself up to meet BIM's aspirational goals.

The Light Bulb Moment

All of this change, testing, and exploration meant a revamping of practices and strategies for The Design Büro, but designers overcame the challenges together. "People have a trusted way of getting their work done, and people naturally want to do it in a way that they understand," Marshall says. "You have to take a step back and show people that there is another route to delivering that information, which might take longer in the first instance, but once you get used to it, you've got a model that is a single source of truth. That for us at The Design Büro was the light bulb moment. Vectorworks continues to deliver for us."

The Design Büro has managed all new projects with a BIM route since January 2014, which gives the firm plenty of time in advance of the government mandated 2016 deadline to learn, to make mistakes, and to understand its new management system for delivering information and scheduling building construction from a BIM model. "We did a thorough job on that system, and that's enabled employees to jump onto new projects and have a good resource to help them move forward with speed and efficiency," says Marshall.

Currently, the firm is working on an integrated care facility in the UK for a large contractor, applying knowledge gained through projects it already delivered with a BIM workflow. "We have fed that knowledge back into the practice, and we've got a whole new team now working on that project that haven't previously been involved with a BIM project with Vectorworks," says Marshall. "We've set ourselves up to meet BIM's aspirational goals. This is going to transform our workflow, and it's going to make our business much more economical and much more straightforward."

Acknowledgements

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