

by Adrian Williamson and Nigel Marland

Transitioning from 2D FlatCAD to 3D BIM

Welsh architectural practice, WM Design, has been working with Building Information Modelling (BIM) for over three years and the practice is currently going from strength to strength. It has recently completed a £1.5 million health centre with two more in the pipeline and has residential projects on the books that range from barn conversions and private houses to developer-led schemes.



1. Typical lightworks rendered perspective image from ArchiCAD.

“Around 75% of our work is currently housing,” says Director Adrian Williamson, “with the balance in the health sector. In addition to that, we also provide a 3D design service to quickly visualise the projects on behalf of other clients”

Adrian Williamson and Nigel Marland formed WM Design Partnership in 2003. It is a CIAT (Chartered Institute of Architectural Technologists) practice. Prior to forming WM Design, both worked for over a decade in the estates department of the North West Wales NHS Trust specialising primarily in schemes of up to £1m involving major conversions and extensions.

“It was at the Trust that we realised the potential of CAD, and, in particular that of 3D representation,” says Marland. “For instance, it made it much easier to communicate our ideas using 3D presentation than to try and get clients to understand 2D plans. It was really against this background that we were committed to making 3D design a part of our practice from the outset.”

“The Health Service was using AutoCAD LT and ADT but we quickly found this combination limiting and no more than a glorified 2D CAD system with some pretend 3D thrown in” says Williamson.

“We needed something that was more architecturally-led. Initially, we worked with SketchUp and AutoCAD but that was a bit of a halfway house and any BIM benefits were lost. We looked at other solutions such as Revit, both pre Autodesk and since its acquisition, but decided we wanted a well established,

“Our initial impressions regarding ArchiCAD on all fronts have proved that it is very much the architect’s software and is extremely intuitive and logical to learn.”

Nigel Marland – WM Design



2. Abbey apartments front elevation.

tried and tested solution with full support and a track record. With Graphisoft’s ArchiCAD, we found the full benefits of an architectural design tool, combined with the capacity to do scheduling immediately, made us more productive. We decided to go for ArchiCAD, believing it would sit best with the practice requirements, our future development goals and give our clients the confidence that we can deliver from concept to site”

The WM Design Partnership LLP is an innovative, ecologically aware architectural practice situated in Menai Bridge, Anglesey, North Wales. Favoured for their experience by local Health boards and Trusts, developers and self-builders in the North Wales region, the partners have a broad range of skills that cover all aspects of modern architectural design and construction. The practice is able to provide CAD, Visualisation services, advice on Building Regulations and Planning, site supervision and monitoring, contractual management, and architectural design consultation.

WM Design Partnership LLP

Pier House
St Georges Road
Menai Bridge
Anglesey LL59 5EY
t: +44 (0) 1248 717230
f: +44 (0) 1248 714930
www.wmdesign.co.uk

It’s easy to think that WM Design’s methodical approach resulted in a smooth transition from 2D drawing to 3D BIM. However, just like anything else there is a learning curve and managing this within the practice was the key to integration. “Initially we gave ourselves a year to convert from AutoCAD to working with ArchiCAD 10. However, during that time ArchiCAD 11 came out and we brought that time down because actually it was a far easier version to use,” says Williamson.

“When people ask you ‘is there a good time to convert to new software’, the answer is there is never a good time but there is not a bad time either. You just have to find the right project to start with and do not try to design it in tandem with your existing software, because you’ll end up spending too much time on both systems. Find the right project: it could be a house, it could be an extension, anything but be sure to run through the whole process from feasibility to planning, visualisation, then detail design and construction information. Try it out on a project that isn’t massively time constrained and where you know the client: then you can get to properly understand the new software.”

Since dipping their toes into the water three years ago, WM Design has, as new projects have started, worked up to designing 75% of its projects using ArchiCAD. It aims for that to be 100% within the next six months. "Our initial impressions regarding ArchiCAD on all fronts have proved that it is very much the architect's software and is extremely intuitive and logical to learn," says Marland. "However, like any new software you need to put the time in to both training and use before the benefits unfold. Probably the most difficult for me was the transition to a different way of thinking and operation of a new workflow. That said, for one of our most recent employees he was able to adapt to the workflow very quickly as he had no past experience with a CAD system, preconceptions or bad habits. I would say to anyone going to BIM, putting previous knowledge aside is, funnily enough, a bigger hurdle than that of just learning new information. However, once you've got it, you realise it's not a complete sea change. You are still working in the same way but in a more productive, more holistic manner with the whole design process: it's not just 2D, it is model based 'virtual building' information."

And, it is this Virtual Building Model that enables architects to maximise their design skills and output. "One of the processes you are always doing with 2D information is checking and counter checking between plans, elevations and sections to make sure they match up," says Williamson. "ArchiCAD has certainly taken away that element of wasted time because in implementing a building model, as soon as you put the information in, in terms of where windows are, where doors are etc., it populates this throughout the model. So, if you go into the elevations and you don't like the look of the windows, you can change them in that view and they will change throughout the whole model. The software very much keeps you on track and any changes you might make in section, elevation, plan or even in the model will be reflected everywhere, and in real time. These features of the Virtual Building will save any practice a great deal of time and also produce more accurate designs. The time lost in training, getting up to speed, and setting up a new way of working therefore becomes irrelevant."

The ArchiCAD software does this by using parametric building components. Put simply, these components know what they are (floor, wall, window, etc) and how they relate to other components, so where one component is changed, the change also impacts on all other related components, automatically. So, resize or change the position of a window and everything else is re-aligned automatically. And changes can be made in any part of the design – 3D model, 2D drawings, schedules, etc.

BIM technology also allows easy integration with other software. "We are keen users of SketchUp," says Marland, "and the import to ArchiCAD is just brilliant. Again the conversion process into DWG is very good, providing you save files as editable

3. Abbey town houses front elevation.

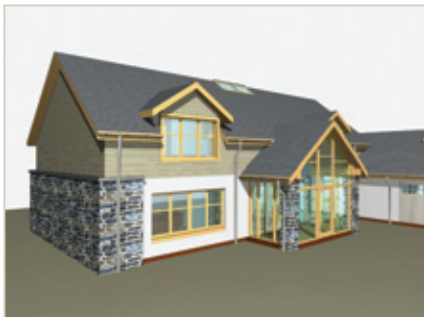
4. Abbey apartments 3D Cutaway.

5. Abbey apartments rear elevation.



“One of the processes you are always doing with 2D information is checking and counter checking between plans, elevations and sections to make sure they match up. ArchiCAD has certainly taken away that element of wasted time.”

Adrian Williamson – WM Design



6. Cioma House front perspective.

content. We have not experienced any headaches with it. It seems to be very fluid; we have even had drawings output in AutoCAD, amended, and then brought back into ArchiCAD to adapt to the changes. So, say a structural engineer wants to work in more steelwork or columns, it's no problem providing you can adapt and bring that information back in; it is a good two-way process.

“Most clients also have e-mail, so, in the early developments stages we will issue them with a set of PDF files via the embedded writer. For other consultants, who might be working in native AutoCAD applications, ArchiCAD's ability to save, plans, elevations or sections in AutoCAD format is a benefit. Obviously you can also save them as image files if needs be, for publication maybe, but in general we tend mostly to save to AutoCAD format or PDF.”

WM Design likes to work in great detail on all of its designs and as such it often works on drawings at scales of 1:5 or 1:10. “We have never concentrated on doing small sections of, say, 1:50,” says Williamson. “We have always done larger details at 1:20, and bigger. I think the more you enjoy using the software the more you like to do. In a sense you can explore your own drawings and obviously you will do more details of certain elements. If you wanted to do 1:1 detail you could do that as easily as creating something at 1:50.”

“This level of detail doesn't slow the software down much either. The only time we find that happening is on Health Centres designs where we included all of the equipment in the model. Now obviously, we have done that for layout purposes but for rendering or generating the elevations you don't need all that detail. So, providing you organise it in layers, or a combination of those layers, you can turn off the information and it does not overload the model or reduce the speed.”

“ArchiCAD brings more out of you because you want to put more into it,” says Marland. “It encourages you to use 3D not just for the sake of it but because you can look at the building as it would be built. I mean, we are building in 3D not 2D, so ultimately that it is the enlightened route to go down with any software package”.

Adrian Williamson and Nigel Marland are founding partners of WM Design Partnership LLP based in Anglesey, North Wales.

www.wmdesign.co.uk

About Graphisoft

Graphisoft is the pioneer and leader in developing Virtual Building™ solutions. It is widely acknowledged as the world's #1 supplier of model-based software and services for the building industry. Our clients are at the forefront of the industry – delivering projects that are better designed, more predictable to construct and less expensive to operate.

For more information, please contact:

Graphisoft UK Ltd. 21-25 Church Street West, Woking, Surrey GU21 6DJ
Tel: +44 (0)1483 263 150 Email: mail@graphisoft.co.uk www.graphisoft.com