

A white paper from Informatix Software International

Beyond the Handover

Build Lifecycle Management using BIM

Introduction

Despite the fact that the concept of a comprehensive Building Information Modelling (BIM) system has been around for a number of years, the recent marked increase in publicity surrounding this important subject has brought product awareness right back into the forefront of market focus. We are already aware that the ability to collect accurate build information at the planning stage, the ability for multiple stake-holders to each have a say in their particular aspects of the build, and the ability to control documentation at specific points, both through the project development stages and at handover in the “Built State”, have provided high value cost benefits; and it goes without saying that successful architects, prime contractors, and sub-contractors also earn their professional respect by delivering their projects on time, on budget, to specification, and with full documentation.

But this still begs the question: “Why should the process stop with the facilities department once the tape has been cut and the plaque unveiled?”

You have made the savings in the pre-build or refurbishment of your new prized asset. You have all of the documentation needed to maintain the building and its infrastructure; but now the building is going to be occupied by people and other non-fixed assets, and these are now as important to your Return on Investment (ROI) calculations as were the other items at their specific times in the cycle.

This white paper proposes that the current view of BIM is just a starting point; and that once the building is in the possession of its owner, it’s not just the facility management department that should benefit from the BIM data that was collected during the sophisticated CAD plan and build processes.

The Build Process:

When an Architect takes on a project there a number of stages that they adhere to:

1. Establishing the client brief
2. Sketching the model, and outlining the core elements of the concept
3. Presenting the concept and making additional changes until the client is happy
4. Designing the building
5. Passing the design to other stake-holders for their services to be included
6. Handing over the building to the new owner

During all of the above stages the role of the Prime Contractor is paramount. They should be monitoring the processes at pre-specified points and looking at all aspects of the build; thus ensuring the project is delivered on time and on budget. Similarly, whilst executing these tasks they should also be keeping an accurate inventory and maintenance record for all aspects of the building; both electronically and on paper.

Although the above descriptions are just a brief snapshot of some of the key project stages it is self evident, even in the simplest build, that the benefits of good BIM data collection as an integral part of the necessary use of your CAD software tool, can ease the management process and provide the necessary structure to manage such important tasks.

So what exactly is BIM

As defined by The National BIM Standard (part of the global buildingSMART alliance, BIM is *"a digital representation of physical and functional characteristics of a facility...and a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition."*¹

¹ <http://www.buildingsmartalliance.org/index.php/nbims/aboutnbims/>

.....and what should a BIM solution provide?

A quality BIM solution should at a minimum give you the ability to:

- Identify what infrastructure is contained within the building
- Provide you with quick and easy access to the building inventory
- Store documents and data in the relevant place – i.e. provide easy access to part codes, quotations and supplier details for each element of the build
- Review where specific working parts are within the building giving you a checklist for each area
- Display what elements are due for maintenance, or how long it was since it's last check
- Manage any recalls on specific parts or inventory within the building in a quick and efficient manner
- Manage occupancy
- Keep track of office inventory
- And many more tasks that go beyond the concept, design, build and handover stages

The Handover:

At the moment many CAD software vendors, limited by the functionality of their software, pitch BIM as only being part of the build process, with some few extending it out to the facilities management team. But, as already discussed, BIM is much more than this. It is an environment where many further client benefits can be delivered throughout the lifecycle of the building – months and years after it has been handed over.

To make BIM work throughout the building lifecycle the data transferred at the handover stage is critical. Displaying how the building works, what infrastructure is contained within the building, where everything is located, when it needs maintenance, and what its part code or asset number is, is now a must for a successful project handover.

When it is successfully handed over to the new owner and the facilities department has all of the vital information on the building – a sub-set of this data is then typically imported into a facilities management software tool. At this stage some of the fundamental parts of the build are filed away in draws and cupboards never to be seen again; until, of course, something catastrophic happens and the department realises that they missed that fundamental piece during the transfer.

One solution to this is to use a BIM data model that works for architects, designers, engineers, facility managers, and any other line manager active in the building. To achieve true BIM capabilities this product needs to be pre-built with interoperability and collaboration in mind; irrespective, wherever possible, of the function that the user needs to perform. It will also need to integrate seamlessly for the non-CAD user to access (and add to) the data; and to do so without compromising the quality and integrity of the data collected during the built stage.

Going Beyond the Handover:

The building has become a living form – it functions, it provides and it breaks. Now the building has people, assets, office space, kitchens, meeting rooms, PC's, printers, and photocopiers!

The building has now evolved; it has changed; and everything in it has become mobile.

Using the same principles as BIM, the post-handover solution should not be confined to the facilities department. Now all parts of the building have the ability to share data, they can manage the assets, moves, changes, issues and growth – all of which are an inevitable consequence of occupying a building.

The software used to build the building should be used not only to manage the maintenance of that building, but to also manage the contents for the lifecycle of that building.

The ability to take the drawings on completion and manage where each and every asset within the building is; where every member of staff is sitting; what IT assets are they using; when did they have their last performance review; what do they look like; who do they report to; how easy will it be to move a department from one floor to another or from one building to another? Answering all of these questions within the BIM CAD data set is the key to continued return on investment in the building.

Extending this logic then why shouldn't BIM CAD software be used by:

- IT
- Helpdesk
- Departments: e.g. Sales, Accounts etc
- Personnel
- Security

Potential Interested Parties:

Information Technology (IT)

When moving into a new or refurbished building the IT department will be responsible for the management of the IT infrastructure. They will have to ensure there are enough power points, data sockets etc. for a successful occupancy of that building. They may have paper access to the CAD drawings. They may even get to see the CAD system itself; although they will not typically use the system.

IT will have probably invested significant time and money on a company Microsoft Architected infrastructure and most IT Directors would be resistant to implement a solution that does not conform to this strategy and associated Standard Operating Environment (SOE). It therefore makes sense when looking for a BIM CAD solution to look at one that is 100% Windows compatible, was built for Windows, and will conform to future Microsoft strategies. For these reasons a BIM CAD solution should also be able to link to existing implemented Software Infrastructures for example the LANDesk helpdesk system, SAP HR and ORACLE Financials.

Once the office has been populated and people have their IT assets on their desks, the network printers and photocopiers are installed in the best locations; and all of the wiring closets are in place, this data should be included in the BIM CAD software. The IT department should then be able to link their LANDesk, Tivoli and HP OpenView to the BIM CAD software so they can see at a glance where each asset is. They can also quickly review such details as; what is the asset number; what software is this user running; have they got the latest security software installed?

When an IT department needs to be involved in a move (Gartner states a typical office department will move up to 3 times a year) BIM ensures that all of the key information is at their fingertips. Instant resolution of a resource nightmare!

Having multiple systems to do a single job is not good for ROI:

IT has finished their role in the new building; everyone is at a desk; the other infrastructure is in place; there is an issue with someone's IT equipment.

Not exactly an uncommon scenario!

The Helpdesk is called; an engineer is required. Where is this person? On the 3rd floor? Whereabouts are they are on the 3rd floor? In the south wing?

IT Helpdesks should also have access to the BIM CAD system. They should at the click of a button be able to see who is calling (the solution could be linked to their IP telephony system showing the data on screen when the call is taken), what their IT asset details are, where they are on the 3rd floor.

Department Managers

Departmental managers are often faced with managing staff that are located not only in a single building, or in multiple buildings, but potentially across the globe. To ensure proper management of the team they may need simple but fast access to information such as:

- Payroll Number
- Salary Details
- Review data
- Cost centre No

You are probably running SAP, Oracle or SAGE for this information and you may have to open and access multiple systems to get access to this data. The department is growing or changing and you need to move; what are your options; where can you go; who do you have to call to plan the move?

An easy option would be to have access to the BIM CAD system via the intranet or the Internet. Perhaps look at areas that potentially have the ability for occupation, and simulate the move. If it works then inform all of the stake holders of your intentions. When data is fully integrated from the various systems via the BIM CAD solution you could also simulate the cost of the move.

Whilst you are doing all of this, you can check on how many staff are due a review or who is senior in the department that may require a bigger desk or office etc.

You have then made the move and you have a few extra desks available, you can then turn them into hot desks for others to use when they visit the building. Accessing the BIM CAD System via the intranet/internet a “hot-desker” could search the system and book the space. Once booked, you can cross or externally charge via BIM. The same applies to the meeting rooms, ensuring that all your resources are delivering a return. Wooden dollars can be as important as real ones.

Personnel

Using SAP, ORACLE or SAGE to manage staff has become second nature to many businesses. As has the tasks of monitoring managers to ensure that they have filled in the relevant paperwork. But wouldn't it be so much easier if you had a graphical presentation, at the touch of a button, of those staff that are overdue a review, probation, retirement? Where are they sitting? In which part of the building, or in which building?

Security

We have all done it. We rush to get to work and forget our security badge; our company has outsourced the security and the new person does not know who we are. Using a desk or employee number, the security guard can then click on a button and either through the picture the system holds on me, or by answering some security questions HR have set, and verify my credentials. Access is quick and simple.

Security also may want to know where all of the CCTV cameras are at a glance; they may also want to know what RFI receivers are in the building to track assets. All of this information would be easier to access and manage if represented in a graphical format.

Facilities

In all of this we cannot forget Facilities. Although they are the proud owners of the BIM model, the drawings, and the documentation, they still have a role outside of the simple managing the building. They will be instrumental in ensuring that the moves are planned and managed properly, helping IT and Department Managers through the process.

As an example, take the scenario where IT has implemented 1e or Verdiem software solutions to manage power usage of all IT assets within the buildings. The data provided from this investment would not only help reduce power consumption on the PC/Laptop but by linking to the BIM CAD solution facilities can look at what areas of the business have the highest consumers of power, or identify if a particular technology is being used that is giving off significant heat output etc.

Facilities can then use this data to plan aircon distribution; they are more informed and can better calculate air conditioning costs, using the tools to cross charge those who are using resources based on their consumption. In addition, they can also use the data to help IT justify the investment in the software solution.

The BIM CAD model is the heart of the building.....for the entire building lifecycle

Summary:

BIM has many facets in both the pre-build and the handover phases. The solution has been proven to give good Return on Investment in building costs and ongoing building support, but why should it stop there?

The building has a long lifecycle and it will evolve, it will contain many assets and people; these will move, change and require maintenance. The building requires people to work in harmony with it to ensure its continued success.

In BIM and Build Lifecycle Management, the current “Phase 1” is the concept and build stage. However, Informatix believes future system development phases will continue to evolve, just like the building itself. The BIM CAD solution that you implement today will need to withstand this evolution and grow with your business. It should be able to be handed over to new stake-holders in the building, and it should continue to give return on investment. It should be flexible enough to ensure that all existing IT infrastructure and investment is protected.

When considering BIM CAD software solutions the ROI it must deliver is more than financial.

Specifically it must offer:

- Design benefits:
 - The ability to create complex 1st class architectural designs
 - Provide the functionality for collaboration across multiple services
 - Allow users to work on the project simultaneously

- IT benefits:
 - Use very little storage space for files
 - Have a small bandwidth between offices
 - Be able to work in a thin client environment
 - Allow the maximisation of existing IT investments e.g. integrate with Microsoft Environment, using Office, SharePoint, SQL, Exchange, etc
 - Be easy to integrate, manage and maintain

- Business benefits:
 - Be easy to implement, learn and use
 - Be able to be extended past the built stage of a project
 - Have full Build Lifecycle Management capabilities
 - Deliver a substantial and quick return on investment

ISI do not believe that BIM CAD solution is solely for Architects, Contractors, or Facility Management specialists. It should be viewed a Enterprise product, designed to meet the needs of all interested parties in that build, and its subsequent occupation.

To look at BIM as the solution for just the Built Environment is not to look at the whole picture. To get real ROI from the BIM model the return needs to continue throughout the complete lifecycle.

Many of our customers would say that we have been enabling them to use the principles of BIM for a number of years. These principles have not changed,; but the market has moved on and is now demanding that market leading system providers are able to road map a move to full BLM functionality.

About Informatix Software International

Informatix Software International Limited was founded in 1997 to develop 2D and 3D software for the architectural, engineering, construction, and facility management industries. This British based company sells in 70 countries around the world from its head office in Cambridge, UK.

Over the last decade Informatix has further developed their software portfolio to provide solutions to extend far beyond the demands of the initial architectural stages through to managing the entire building. Their solutions graphically display and seamlessly integrate data for the concept, build, occupation and management stages of the building lifecycle.

Their products have been used on large scale projects including Heathrow Terminal 4, the Channel Tunnel, BT Head Office in St Pauls, London, Sprint Campus in the US and The Boston Big Dig. Customers who trust in Informatix software for their architectural and interior design, floor planning, building/asset maintenance and graphically displaying data include Debenhams, Scott Brownrigg, HLM Architects, Manchester City Council, Miller Hare, Foggo Architects and many more.

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