What does BIM Level 2 compliance mean and how do I get there?

The Lloyd’s Register Route

www.lr.org
What does BIM Level 2 compliance mean and how do I get there?

Whether you are an organisation with mature BIM related processes and competencies or whether you are an organisation with aspirations to enter into the sector, understanding the applicable standards, protocols, collaborative working requirements and classification systems and the extent to which they may apply to you, in your role/intended role within the BIM process can be quite daunting.

All companies have different starting points as well as varying client expectations and project types and therefore potentially different routes to become BIM Level 2 compliant.

Lloyd’s Register recognise this and will help direct you towards your level 2 compliant goal by performing a one day gap analysis, based upon interviews and discussions with key members of your team. This process allows us to understand the context of your business and map across your descriptions of what you do and how you do it, to establish BIM compliance.

The gap analysis is the starting point – no documentation is required. Depending on the maturity of your BIM processes and systems, a full implementation audit and certification may follow. In the case of less mature systems, an iterative gap analysis may be needed, supporting your route to certification on a staged basis.

Lloyd’s Register (LR) is the only Third Party organisation offering BIM Level 2 Business Systems Certification across the range of scopes of BIM involvement throughout the supply chain, to facilitate ease of access to BIM projects.

LR is a global brand and its certification represents international recognition of assurance and technical credibility.

The LR BIM Level 2 Certification Scheme was developed with the intent of achieving a balance between rigour of assessment and pragmatism. We require no documentation to be provided in advance of the assessment, as we have found both the collation by the client and the review in isolation from the client, to be too time consuming for both parties and not cost effective.

The assessment process is detailed in the LR BIM Guidance document which can be found on our website the link for which is www.lr.org/bim but the principle areas of assessment are as follows:

- BIM competencies
- IT infrastructure and tools
- BIM project risk management
- PAS 1192 compliance
- Documented processes and implementation against a live BIM project
The initial stage of the LR assessment is the Gap Analysis. During this phase one to one interviews with key staff, with responsibilities across the full spectrum of the required BIM scope of accreditation, will be undertaken. We have found this to be the most effective and efficient means of understanding the context of the processes under assessment and culture of the organisation which helps to build confidence, supporting our risk based approach to certification.

The benefit of this approach is that it provides the freedom of the interviewees to explain their BIM management processes without concerning themselves with how the described system meets PAS 1192, it is the responsibility of the auditor to map across the described processes to the applicable standards.

The objective of the one day Gap Analysis, is to identify at a high level, any major gaps against the applicable standards and scheme principles and report any such gaps/identified weaknesses.

The Gap Analysis concludes with a report which initially takes the form of verbal feedback, the focus being on how the organisation can introduce changes which will take them closer to a BIM level 2 compliant system.

The Gap Analysis feedback is followed by a detailed report of the findings and discussions around measures to address the identified gaps.

When the organisation under assessment is satisfied that the reported gaps/weaknesses have been closed, the next stage is the implementation assessment.

The implementation assessment will initially focus on the findings of the Gap Analysis and the associated closure of such identified gaps, but will additionally seek evidence that the BIM Management system fully conforms to scheme requirements and this assessment is undertaken against a live BIM project. In the event that a live BIM project is not available to be assessed,
then, subject to confirmation of a compliant system, partial certification may be awarded, with full certification being awarded once effective implementation of the assessed systems could be verified against the live BIM project.

An important area to be examined at this stage is the relationship of the organisation under assessment with his supply chain. This is to ensure that the cultural shift from the traditional contractual adversarial relationship to one of collaboration is being progressed.

Provided that upon the conclusion of the implementation assessment against a live BIM project, no major deficiencies are outstanding and that an action plan has been established to address any outstanding minor deficiencies, then BIM Level 2 Business Systems Certification can be awarded.

The awarded BIM certification, together with the listing on the LR website will include the name of the awarded organisation, offices included in the certification, validity of the certification and scopes of accreditation which may include:

- Tier 1 BIM Project Provider
- Tier 2 BIM Project Provider
- BIM Project Engineering Consultant
- BIM Project Architect/Designer

The successful level 2 organisation may also use the LR BIM Level 2 Mark:
The validity of the awarded certificate is for a three year term, during which a surveillance programme will be undertaken.

The surveillance programme serves to not only verify the maintenance of the standards, competencies and processes, against which certification was originally awarded, but also to verify management commitment to continuous improvement as measured against adherence to the action plan to close out the minor deficiencies, agreed prior to award.

Lloyd's Register BIM Level 2 Business Systems Certification represents independent confirmation of BIM Management systems conformity to recognised good practice leading to best practice through defined continuous improvement milestones, set over the three year accreditation term. A confirmation delivered by a brand with global assurance credentials.

For further information on the Lloyd's Register BIM level 2 Certification contact Terry Mundy.

Terry Mundy

Business Development Manager
Tel: 07712 787 851
Email: terry.mundy@lr.org
www.lr.org/bim
Open standards and the win for BIM

Richard Petrie, CEO of buildingSMART International explains that by adopting the open standards approach to BIM will mean you are always a winner...

The good news on BIM: we’re all converts now. The bad news: the road we’re travelling is a bit longer and even trickier than we realised. We’re not sure we’ve got the whole map, and there appear to be gaps. Worst of all, we’re treating it a bit like a race, when actually it’s a team event.

Let’s go back to the good news first, to cheer ourselves up. 98% of clients surveyed by McGraw Hill Construction back in 2014 said they used BIM in some projects, with 86% using it in more than a quarter of contracts. 78% of UK owners believed BIM in facilities management would add significant value, with 98% anticipating its use in FM by 2019.

There are few who don’t recognise the range of benefits on offer, from faster construction and reduced risk and costs, through to greater environmental impact control and ease of maintenance with reduced running costs. So perhaps it’s surprising to learn from that same report that only 20% of clients owned the software they needed to edit BIM files, and only 60% could even open them. 88% of respondents to an NBS study last year admitted that they didn’t pass the model on to building occupiers.

Why? It all comes down to communication. And that’s where buildingSMART comes in. As it stands, BIM is getting increasingly good take-up. Perhaps in part because of organisations’ understandable and inevitable urge to get ahead of the competition, it seems people aren’t very good at sharing. As well as tools developed in-house within various companies, there’s a choice of BIM tools available across the industry, each offering certain functionality and certain areas of application. But, they’ve all been written in different software languages, which creates a compatibility issue. So when architects, contractors and developers do share, they’re sharing something that needs translating. Except there’s no single tool to translate it all.

It’s somewhat ironic, isn’t it, that the chief benefits of BIM (aka, enabling collaboration and common understanding across disciplines and across the entire lifecycle of assets) are being side lined because too many companies are trying to go it alone?

If you want to take advantage of the full range of benefits of BIM, if you want to be attractive to all potential clients and if you want to know that your supply chain is being as accurate and efficient as possible, you should all be using tools capable of conversing with each other freely.

buildingSMART is taking the initiative. Major BIM software houses are now working with us collaboratively to address those key issues of compatibility and translation.

Think about your smartphone. Apps are tools developed for a particular operating system. But they won’t work on a phone running a different operating system without some serious human coding intervention. At buildingSMART we’re creating open data standards. We’re developing our solutions with an ‘operating system’ and ‘apps’, just like your phone; our operating system is the Industry Foundation Classes (IFCs), and our apps are the Model View Definitions (MVDs). The system and apps work inter-
nationally and universally by accessing our data dictionary, which manages language translations. Unlike your smartphone, where an Android app won’t run on an Apple phone, the idea is that the IFCs are platform-neutral and can all access the same multi-lingual dictionary. This means they can share digital information easily. They govern the rules and guidelines that allow anyone to create apps and products that will work on any device. Use the IFCs to define your software or products, and you ensure compatibility with all other compatible systems and BIM models.

Open formats will result in increased collaboration, communication and universally usable tools. But it is a work in progress. Far-reaching in scope and complex in nature. Some IFCs are already in use—and to great success. Danish civils and construction firm MT Højgaard's research into projects where it had been using buildingSMART’s IFCs, revealed an increased design quality of 33%. The principles—and the IFCs—work.

We’re working with standards organisations ISO, CEN and OGC to build a common set of international standards. Our Strategic Council will consist of architects, contractors, consultants, manufacturers, software vendors and building operators and owners, from Europe, Asia and the Americas, all working towards a common goal that will benefit the entire industry. Such influential names as Autodesk, Arup, HOK, Kajima Corporation and Nemetschek Group are already on board and helping to advance the cause.

But we’ve heard a plaintive cry of ‘IFC doesn’t work’. The truth is that we are still at the early stages of developing the capability everybody needs and have much more to do. Some tools are complete, while others are yet to be developed. You can view a list of certified compliant and compatible tools at www.buildingsmart.org/compliance/certified-software. The truth is that a certain level of technical knowledge is involved if you want to get into the nuts and bolts (although you don’t have to, to benefit from their use!). The truth is that with such a simultaneously broad and deep scope, we’re only at foundation level, to use a construction analogy. It will take time, patience, and the investment of expertise. And that’s where this race becomes a team event. For BIM to achieve its potential and for us all to reap the benefits, we need to work together.

“98% of clients surveyed by McGraw Hill Construction back in 2014 said they used BIM in some projects, with 86% using it in more than a quarter of contracts. 78% of UK owners believed BIM in facilities management would add significant value, with 98% anticipating its use in FM by 2019.”

As we progress, the conversation will naturally move from being what can sometimes be deeply technical, to focussing on the issues of construction and asset management.

Work alone, with proprietary or in-house BIM software, and you’ll make a large investment in something that can never reach its potential. Your map is incomplete and you’ll never finish the journey. Join the open-source digitisation of the industry, truly collaborate rather than trying to look for some short-term gain, and we’ll all be the winners.

To find out more, become a partner or member, or just to contribute to the progress of a universal set of standards, visit www.buildingsmart.org/about/community.

Richard Petrie
CEO
buildingSMART International Ltd
contact@buildingsmart.org
www.buildingsmart.org
www.twitter.com/buildingSMARTIn
Cost management and Level 3 BIM

Alan Muse, Director of Built Environment Professional Groups at the RICS considers how Level 3 BIM will impact on cost management and the wider construction industry...

On construction projects, cost is a function of change. However, the cost implications of change need to be assessed from many stakeholders and inputs and from various project participants. Therefore, BIM, as a collaborative tool, offers great potential to improve cost prediction, assess alternative scenarios, control change and provide the data to solve disputes more pro-actively.

At the moment, quantity surveyors and cost managers are still grappling with Level 2 BIM, but adoption is improving. As with any transformation, there is a wide disparity in take-up. The work of Level 2 has defined new working methods and controls for procuring, validating and processing standard open data. The principles are based on data exchanging, and already people are asking how we can make this faster and more efficient. How can we include geometry and data in the same package, how can we do it on the web across the world?

Early BIM adopters, however, will be aware that the government has recently (see the Government Construction Strategy 2016-20, published in March 2016) re-affirmed its commitment to push forward with BIM implementation at Level 2 and Level 3.

What implications may Level 3 BIM have for quantity surveyors and cost managers? Firstly, however, what is the vision for Level 3 BIM?

The vision for Level 3 is to provide a seamless transition from the achievements of Level 2 in to an environment where technology and working with technology is second nature. The expectation is that progress will be made as more people and organisations find that it is quicker and easier to work this way.

There are a number of organisations already in the market providing parts of these solutions. Building SMART, of which RICS are members, has long advocated such an approach with their interoperability strategies, and the time has come for us to find out how we complete the necessary standards not only to enable interoperability in the design and delivery stages of a project, but more importantly, in the operational phase.

We are also seeing new market demands driven from outside the traditional construction sector. The broad IT industry sees construction as a prime candidate to which to sell technology and services which has traditionally been the domain of indigenous tier one providers. How will this play out? Will IT businesses morph into tier one suppliers themselves, and where does the opportunity end?

There are also the concepts of the Smart City and Smart Grid. These approaches seek to use technology to provide better services and environments through the use of technologies and information, but where does that information come from?
The answer of course is the assets and services the construction industry delivers, so conceptually we traditionally look at the world “bottom up” whilst the Smart agenda is looking “top down”. A key to the delivery of this strategy is how we ensure our disparate approaches meet in the middle.

Hence, Project Level 3A will look at how we move from data exchange to interoperability, thus improving transparency and access, with a particular focus on reducing transactions costs.

Level 3B is the integration of as many industry sectors (transport, buildings etc.) as possible across a single open data exchange platform to enable the sharing and Big Data analysis across the sectors. Clearly a challenge for the provision of this scenario is to articulate the benefits to those who we would like to see the data, and the provisions of enabling incentives as well as protection in terms of cyber security and controls.

For cost managers, whole life cost considerations will therefore become more important. Since we now have a standard cost classification for maintenance costs (RICS New Rules of Measurement – NRM 3), cost data for whole life analysis will become more easily available and should improve through Level 3 BIM. Indeed, the government construction strategy recognises this: ‘Early adopter departments will seek to understand the full potential benefits of BIM Level 3, including increased capability for whole-life cost measurements’.

Allied to this, as data develops, carbon counting and environmental performance will become more inextricably linked to design and cost decisions.

Real-time data will enable better and faster information to be available at the project level, but, along with this, there will be an increased need to analyse, distil and present the information so that clients understand the decisions that they are taking.

In addition, standardisation of technical processes becomes increasingly important in order to harness the full power of digital construction. Global standard classifications in specification, space measurement, cost reporting, sustainability measurement and the like will become more important. That is why the RICS are part of global coalitions to develop international standards in property measurement (IPMS) and cost reporting (ICMS). Further details can be found at: www.ipmsc.org and www.icms-coaltion.org.

All this data will enable developments in artificial intelligence. This is not utopian. Technology companies, including Google, Facebook, Microsoft and Baidu, are racing to expand their artificial intelligence capabilities. Last year they spent some $8.5 billion on research, deals and hiring (source: Quid). Experts in machine learning are most in demand to work in the field of ‘deep learning’. This is where computers draw insights from large data sets, such as could be used in Smart Cities.

New research from McKinsey (Four fundamentals of workplace automation – November, 2015) shows that technology-driven automation will affect almost every occupation and will change work. However, technology is not poised to replace, but change professional roles. Cost managers in construction can develop new skills and service streams such as whole life and carbon data analysis, better predictive cost and risk tools and managing change in real-time environments – while automating more administrative tasks.

---------------------------
Alan Muse
Director of Built Environment Professional Groups
RICS
Tel: +44 (0)24 7686 8555
contactrics@rics.org
www.rics.org/uk
www.twitter.com/RICSnews
An FM guide to operational readiness

Mike Packham, Partner of Bernard Williams Associates and BIFM member reveals the detail behind the newly released Operational Readiness Guide for Facilities Managers and how it can help with BIM and Soft Landings...

My previous article in this series took Star Wars as its inspiration (BIM 4 FM – May the force be with you) but this time I am afraid that I have been sadly lacking on the imagination front and the best I can come up with is the BREXIT debate. However, rest assured that I am not going to spend the next two pages rehearsing the in/out of Europe debate, but simply use it to draw comparison with the discussions that we have been having within BIFM about how we can help our Members and FM generally get to grips with BIM and Soft Landings.

To start from the beginning, a little over a year ago, a somewhat disparate group of interested individuals morphed into what is now known as the BIFM Operational Readiness Group. Membership is (deliberately) drawn from a widely diverse background that is intended to represent FM at its broadest definition; the group, therefore, includes service providers, clients, academics, software developers and people such as myself representing the consultancy side of things.

As you can probably imagine, with such a broad range of interests represented our discussions were “lively” on occasions and it is this that brought to mind the current BREXIT situation. It is unfair to compare our BIFM “minder” (Laura) to Jean Claude Juncker, but I am sure that she felt as frustrated as the EC President on occasions – just when she thought she had got us all going in the same direction we would suddenly head off somewhere completely different!

Anyway, to cut a long story short, after much debate and having re-invented the wheel several times, BIFM’s Operational Readiness Guide for Facilities Managers was made available on 4th April to coincide with the official go “live” date for the UK Government’s BIM Mandate. In developing the guide we were conscious of the need to build on (and supplement), rather than replicate the body of work which has already been carried out. Equally, we recognised that FM’s are typically busy with their day jobs and that to expect them to read through yet another lengthy BIM related document was likely to be wishful thinking.

What we have aimed to produce therefore is a kind of “ready reckoner” of how FM can/should get involved
in the capital project development and delivery process. This, with the overall objective of enhancing the operational and occupational performance of the end “product”. In doing so we have referred to, but not repeated, the underlying alphabet spaghetti (my kids used to love it when they were younger) of supporting standards and the like as represented by PAS 1192, Parts 2 and 3, BS8536 etc., etc.

So what does the guide look like? Well, it is structured around the RIBA Digital Plan of Work (DPoW) and has eight sections to reflect the various design stages of the DPoW. For each stage it sets out the envisaged role of the FM representative; thus, by way of example at:

- **Stage 0 – Strategic Definition:** “The FM, as the representative of the end user of the building with a detailed understanding of their key (core business) requirements, has the opportunity to ensure that the client’s business case and the strategic brief are fully considered from a Facilities Management perspective.”

- **Stage 3 – Developed Design:** “During this stage, the FM role is to continue to ensure that the client/end-user’s operational and occupational requirements for the premises are appropriately considered and incorporated into the developing design proposals. The FM should, therefore, be involved in reviewing on an ongoing basis drawings and specifications as they are produced by the design/construction team.”

- **Stage 7 – In Use:** “The FM should co-ordinate the post-handover aftercare period to ensure the building operates and, where necessary, adapts in accordance with the design intent and operational demands.”

Clearly these statements are at least partly aspirational and, being the practical souls that we FM’s by nature are, the guide then goes on to identify the underlying activities that are considered necessary to achieve the “aspiration”. These activities are grouped under the headings of Compliance, People, Process, Procurement/Finance and Technical, with each section (stage) following the same format.

As I said earlier the guide is intended exactly as what it says on the “tin”, i.e. as a guide; it is not intended to be prescriptive in any way. In this context, we recognise that the role to be played by FM will vary for each RIBA stage depending on the nature of the project (e.g. new-build/refurbishment, complexity, procurement methodology, etc.) and the requirements of the client or end-user (NB. not necessarily the same organisation). Thus, some flexibility about when specific activities are to be undertaken is to be anticipated. As a consequence the cost of the FM support required in each stage will vary accordingly to what activities are required to be undertaken and other variables such as the level of involvement of the service provision supply chain.

To conclude and return (somewhat tenuously) to where I started with this article, the process that BIFM’s Operational Readiness Group has been through in developing the guide bears some resemblance to the BREXIT negotiations. Its production has involved much discussion, some heated debate, and eventual compromise. Unlike BREXIT though it is not a once in a generation “in or out” decision. We fully recognise that we almost certainly have not got it 100% right, and in this respect, we look forward to receiving the industry’s feedback.

---

**Mike Packham**  
**Member**  
British Institute of Facilities Management (BIFM)  
Tel: +44 (0)127 971 2620  
info@bifm.org.uk  
www.bifm.org.uk  
www.twitter.com/BIFM_UK
For information on the Lloyd’s Register BIM Level 2 Accreditation Scheme please visit the BIM scheme guidance document on our website which may be accessed by clicking on the publication above, or by the following link:


Or contact:

**Terry Mundy**  
*Business Development Manager*  
Tel: 07712 787 851  
Email: terry.mundy@lr.org