

# SYMETRI

ADDNODE GROUP

## The Ten Pillars of BIM-Readiness

Streamlining systems for consistency, best practice, a trustworthy basis for collaboration, and lower risk of human error



# The Ten Pillars of BIM-Readiness

In this opinion piece, Alec Milton, Head of DMS Development, presents ten foundational pillars for ensuring your document management procedures, forms, records and naming conventions align to the practices required by Building Information Modelling (BIM) Level 2.

## The Business Value of Best Practice

Architecture, Engineering and Construction are all based on creative thinking; people with outstanding ideas about improving and optimising the built environment, how it looks and functions and how it can make lives easier.

Architecture shapes and defines the environment we live and work in. It reflects and serves the needs of society and expresses confidence in the future and for future generations. Construction companies then take these ideas to fruition by literally building our world; every day, everywhere.

## What Can Possibly Go Wrong?

Back at the office, however, companies are sometimes less focused on the process details that help realise their vision. Sometimes it just doesn't seem overly important that documents should be named in a consistent fashion, for example, and if it is then surely the people producing the documents can sort it out for themselves? Can't the document authors use file names they prefer? Doesn't that make it easier for them to find the documents next time round?

The information flow pertinent to an individual project can seem excessive – emails, contracts, specifications, tenders, letters, all flooding in at pace, drawings running into multiple versions, co-authors saving in line with different ideas about where to save, how to signify updates, and what to call the document. With a crammed project schedule, the complications soon mount up. It's all allowed to go its own way with the unfounded assumption that if anything ever needs to be retrieved, it will be 'in there' somewhere.

Once again, an attitude prevails that surely people can get a grip on their own information? Maybe they can, but what happens when they need to share it with someone else, or another company or supplier or external approval body?

What happens if a dispute arises and a file cannot be located? How long can it be, on occasions, before the team discovers that the wrong version of a document was approved at a far earlier stage in the project, which would explain one or two significant problems on-site?

Best practice takes the risk out of any process. It protects an organisation from issues of professional negligence. It saves money, time, and effort. Best practice is consonant with the expertise of the people who design and build great structures. Now, with Building Information Modelling (BIM) best practice is not up for debate; it's mandatory. (BIM Level 2 was introduced as a requirement for all government construction projects on 4th April 2016).

## Introduction

### Information = Efficiency = Productivity

This paper will be of interest and value to all professionals in architecture, engineering and construction companies involved in the creation, development and use of drawings and models, documents and data, information and the exchanging and sharing thereof.

From the office to the site, anywhere at any time, the importance of 'fail-safe' strategies and approaches to the information environment that surrounds and supports the design process cannot be overemphasised. This paper explores why.

# The Ten Pillars of BIM-Readiness

## Section One: The Problems

The paper looks at the commonly encountered day-to-day problems that arise when there is no centralised approach to document management.

It covers the ten key areas that companies in the construction sector might consider to be 'back office' but need to be elevated to a high level of strategic priority.

## Section Two: The BIM Requirement

The industry has shifted to a new competitive environment and new opportunities wrapped up in BIM. BIM is catalysing new digital practices in the construction sector, designed to ease and accelerate end-to-end consistency in the treatment and interpretation of designs, drawing, and models. The question that every company in construction in the modern age should be asking itself is: How do we remain compliant with the standards?

## Section Three: Best Practice

In the third section, this paper discusses the solutions from the perspective of ensuring that alignment; the fundamental groundwork for building new opportunities.

We look at the role of the Document Management System (DMS) which, may sound laden with admin and tedium but its impact on efficiencies is precisely the opposite.

## Section One: The Problem - The Absence of a Document Management System

### Reducing Risk

It seems like a contradiction that the day-to-day 'pain points' for professionals in the construction sector are often not deemed to be in the main thrust of a company's activities. The value that these areas bring to projects and clients is often not recognised, yet it really needs to be front of mind when seeking to remove risk from critical processes. This is not just the risk that there may be minor bouts of protracted shuffling and searching for documents, the odd error here and there, some wasted time. This is the risk that the business itself, its reputation and its ability to be successful in future bids, can be significantly damaged through errors in documentation. They are more common than you may think. They may also be easier than you think to reduce.

A focus on a robust and reliable document management system – with a high degree of inherent automation within it to ensure that disciplines such as version control, approvals processes and integration with other essential systems and tools are triggered by software and not by people – should be a priority consideration by any company in any sector. In the construction sector, particularly in a BIM world, it is becoming increasingly important.

Admittedly a construction company, engineering or architecture practice, can continue to operate without the assisted quality and rigour that a document management system provides, but not consistently and not efficiently.

### Risk territory: Ten focus areas for improved efficiencies

Of the ten critical areas that offer scope for best practice enhancement, the three strategic areas shown here are of importance for the creation and maintenance of an operating environment that is protected, consistent and accessible. They are not directly associated with remaining BIM compliant, but should be seen and treated as essential factors in supporting coordinated document management systems; a core criteria for achieving BIM Level 2 Accreditation.

# The Ten Pillars of BIM-Readiness

## Central Access



Commitment to a single version of the truth is the essence of best practice. When documentation and the locations and/or formats in which it is stored multiply, then the potential for confusion and inefficiencies expands in direct proportion (or even greater). Time can be wasted in searching for documents if the author is not on hand to advise how they were named (if the author can remember). I have had reliable anecdotal evidence from companies that have spent upwards of four hours searching for a document. People keep their own copies, they file them into folders that make sense to them without realising that they should be elsewhere. Business units often keep their own copies of key documents local to them because it feels more efficient. So when they find the document, they can't always be sure it's the right one.

## Collaboration and Security



Just because a company has found a way to collaborate doesn't mean it's doing it in the best way possible or with adherence to robust security protocols. It is fairly common to use consumer-focused systems such as Google Drive, OneDrive, and DropBox to exchange documents. The security around such applications is variable and staff use personal sharing accounts which may be in breach of the software vendor's licensing terms. When construction companies share documents, security is an issue to all parties. Best practice in this regard is for companies to have their own company-branded file sharing site and to make detailed enquiries of the security position of those they partner with across the supply chain; you will increasingly find that your customers do exactly the same. They will expect sound strategies to be in play across your business.



Companies that use Windows folders to store their documents and drawings are limited by the security that Windows offers. Giving someone access to a folder deep in the folder tree, for example, will require them to have access further up. As they progress through the folder tree they could suddenly (inadvertently as opposed to intentionally) gain easy access to confidential documents they should not be able to view. There are also the admin issues of updating permissions when people join and leave.

A document management system allows access to be granted based on job roles which makes it easy to manage and hence more likely that projects will have sensible permissions rather than being open to everyone in the business.

# The Ten Pillars of BIM-Readiness

The seven operational disciplines discussed next itemise the most commonly encountered problems either triggered by or exacerbated by the absence of a consistent approach to document management...

## CAD and BIM Integration



Managing the creation and editing of drawing sheets in CAD and BIM applications can consume a huge proportion of time. The rising popularity of ISO 19650 and similar

standards has added its own complications, requiring staff to go back into the building models to change revisions, update suitability codes, and output them in multiple formats. These applications typically remember the last file name and path used, so in common with the problems of version control, staff can all too easily plot to the wrong folder with the wrong name or even overwrite earlier work.

## Search



With documents in so many places and with the slow performance of basic Windows search tools, it can be a complex and time-consuming process to

find anything. Such problems are compounded by the possibility of multiple versions of a document having been saved on the system. Searching becomes incredibly frustrating.

## Email Management



A disciplined individual may run a system of folders within their email client and may extract and file emails against job numbers, client names, project identifiers or any other of a number of logical labelling conventions. The problem is that not all individuals do this. Even among those that do, problems arise in the 'individual' nature of the system employed. What is common sense to one person is not necessarily so to another. Emails have assumed a star role within daily business

conversation, communication and notification. They are pivotal, particularly in the record-keeping efficiencies of a business.

Emails fall within the category of 'unstructured data' (not easily searchable or retrievable through search functions). If you have to reproduce an audit trail and your emails have not been rigorously and systematically captured and archived, you could be in for a huge company-wide quest if ever called upon to justify some aspect of your actions that was only ever subject to email communication.



# The Ten Pillars of BIM-Readiness

## Transmittals



Transmittals depend on rock-solid record-keeping to ensure correct versions, requisite approvals, up-to-date cross references, perfect distribution lists, appropriate format, correct suitability codes

and transmittal sheets that end up being a work of art. All too often, however, there are flaws. Should we really be operating in an environment where sending out information, regardless of form or complexity, eats up so much time and offers so much stress?

## Version Control



Who hasn't occasionally clicked on "Save" rather than "Save As" and suddenly overwritten earlier work? It's equally easy to inadvertently edit an earlier version of a file because Windows doesn't offer

alerts when somebody else may have created a newer version in the same folder. In the worst case, you could send the wrong version to a third-party.

## Quality Control



From ISO 9001, to BIM Level 2 or any other standard, it's a struggle to ensure that everyone in the same company is working to the standards, and that you will pass an audit. Ideally the systems should guide you, offering

templates that are approved for that project, automatically assigning permissions based on the document type and moving the document through an approval workflow so that nobody drops the ball.

## Workflow/Approval



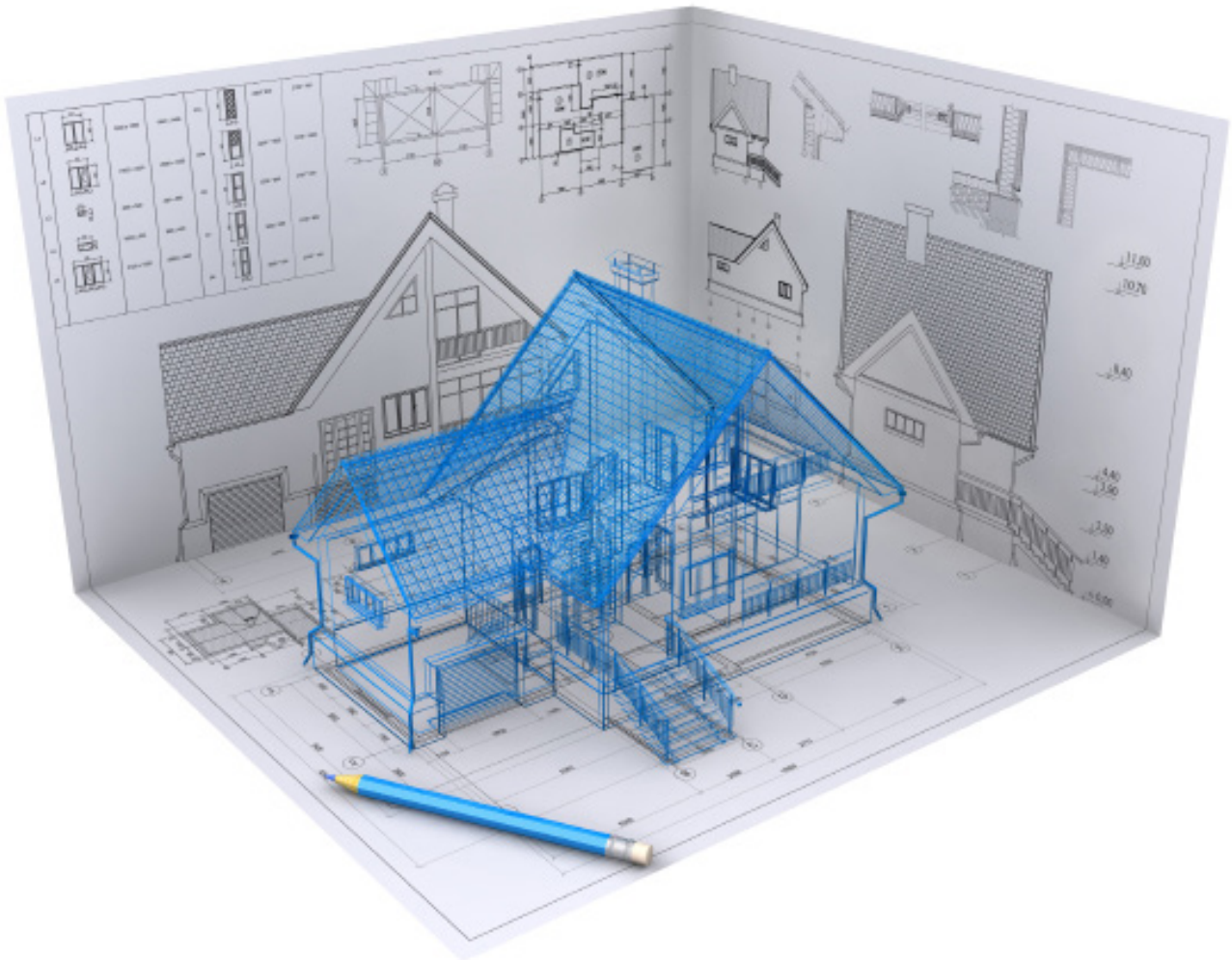
Whilst QA documents detail the procedures, staff often work to a plan that does not align with the procedures; they work to what they believe is the process. An automated workflow ensures that

they don't need to know and they can't circumvent it.

# The Ten Pillars of BIM-Readiness

## Section Two: The BIM Requirement - Preparing for the New Order

Organisations looking to participate as equals in today's technology driven environment are being encouraged to look inwards at their own practises before they can look outwards and gain projects where BIM is mandated (currently only in government sponsored projects).



In 2016, The World Economic Forum (WEF) published a report covering, amongst other things, the importance of technology in driving more reliable, collaborative, and data-driven processes to improve outcomes within the construction sector. “Shaping the Future of Construction: A breakthrough in Mindset and Technology”<sup>1</sup> is a wide-ranging snapshot of the industry which drew contributions from “many companies active along the construction value chain and planning firms – as well as project owners and developers, academics, and leaders from government, civil society, and industry organisations”. It’s a working summary of how the industry sees itself.

<sup>1</sup> A WEF ‘Industry Agenda’ publication prepared in collaboration with The Boston Consulting Group.

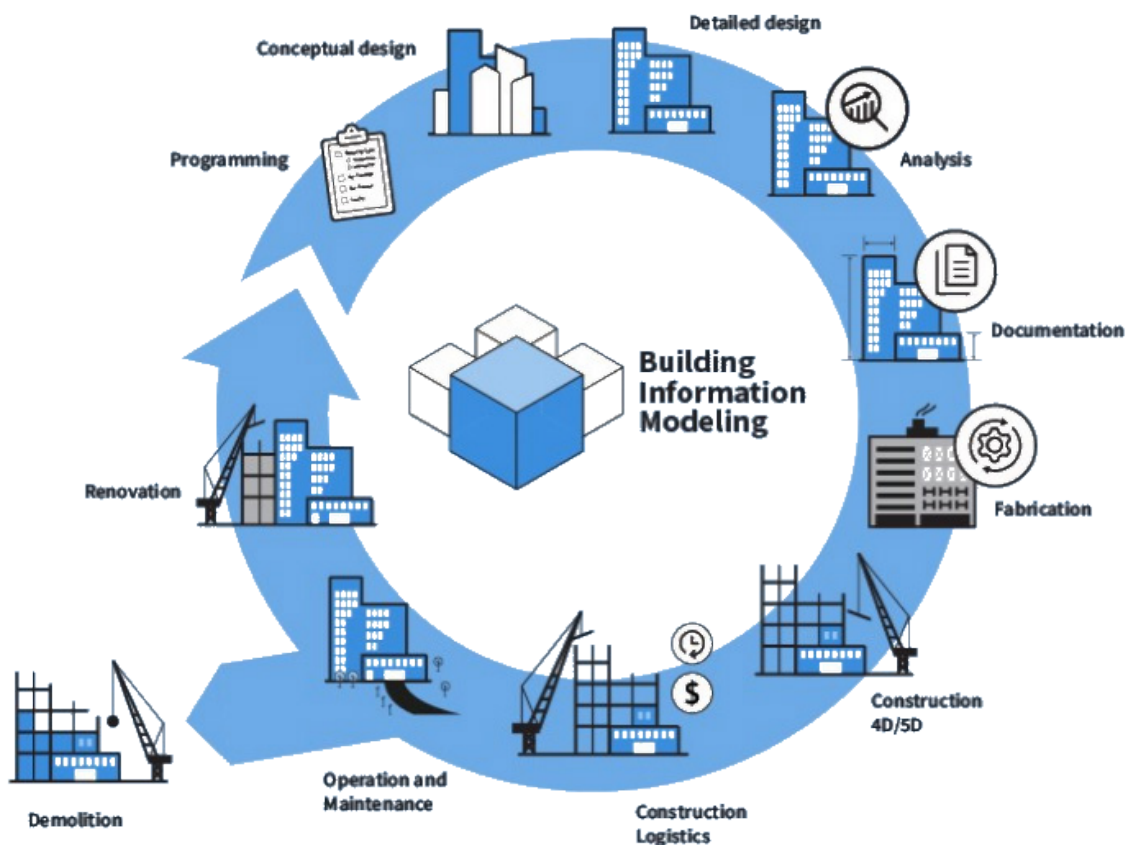
# The Ten Pillars of BIM-Readiness

Discussing the role of BIM in shaping the future of construction, the paper says:

**“BIM is gaining currency as a platform for central integrated design, modelling, planning and collaboration. BIM facilitates collaboration among all stakeholders – from early design through to O&M and even to the decommissioning phase – and thereby holds out the promise of large efficiency gains. All stakeholders can contribute information to and extract information from the central model. By providing a lifelong view of construction projects, including the TCO, it offers owners great benefits in the commissioning and operations phase, and enables new business models, particularly in asset management.**

**BIM eventually produces a continuous build-up of know-how, by enabling a seamless flow of information across different construction phases and stakeholders.**

**By providing a neutral and unbiased view, BIM can also contribute greatly to creating a level playing field in this regard, and more effective dispute resolution.”**



BIM Level 2 defines what, when, and how information should be created, shared and managed. Gaining accreditation involves an audit from an approved independent third-party.



# The Ten Pillars of BIM-Readiness

Symetri work in partnership with Lloyd's Register in the delivery of the BIM Accreditation process. This certifies organisations involved in the design and construction process as 'BIM ready'. Lloyd's Register states that it is: "...the only independently developed BIM Level 2 Business Systems Certification that ranges across the scopes of BIM involvement throughout construction's diverse supply chain."



Lloyd's  
Register

Of the numerous areas of a company's operations, structure and practices evaluated within a BIM audit in preparing for BIM readiness, the rigorously efficient management of documents features largely. This places considerable focus on the presence of a document management system to address the seven operational disciplines we have previously identified.

## Section Three: Best Practice - Getting the Order and Keeping it There

The objectives of document management within the context of BIM compliance are to support the BIM level 2 standards and procedures to drive secure and commonly understood collaboration from concept to handover and beyond, into the life-cycle of the built asset. They form the pillars both of BIM readiness and of all-round best practice, reducing risk, avoiding waste and confusion, and generally getting the house in order through a software approach that automates the frustrating though essential stages and procedures that trip people up and leave the door wide open for risk.

These are the very negatives that a coordinated document management system removes from the business; not just the admin and tedium of trying to get it right manually, but the nightmare of admin and huge potential costs involved in setting things right if they go wrong. In evaluating the benefits of an effective document management system, any business should look to achieve the following:

### CAD and BIM integration



Files should be automatically named, supporting the workflows and the document file naming of BIM standards. Title blocks should be automatically updated and you should be able to batch create multiple output formats without having to worry about names and locations. In construction, seamless integration with AutoCAD and Revit are also central to process efficiency.

### Email Management



All emails should be filed to the relevant projects and accessible throughout the company, from any device. The system should integrate with Outlook to enable effortless filing into the project central information repository.

# The Ten Pillars of BIM-Readiness



## Search

The search should be fast and the results relevant to you. You should only be offered the most recent version of each file and not every single one. A preview should highlight the keywords so that you can see where they are in each document and you should be able to search into email attachments.



## Transmittals

Ideally you will gain the ability with a document management system to select and re-issue a previous transmittal which has all the data about the documents and recipients. It would: select the latest approved versions of the files, allow you to change the recipients and add or remove files, then it would create the transmittal sheet to your preferred layout and create spanning zips for you.



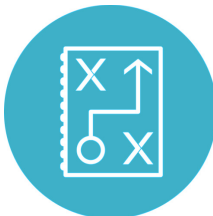
## Version Control

In an ideal world, staff would always be presented with the latest version of every document so that they cannot mistakenly edit or indeed send the wrong one out. Saving a file should automatically stack the versions.



## Quality Control

Preferably staff would be offered the correct templates for the project, the file names would be automatically generated to that project's standard, and staff would be guided through the procedures without having to know them. Where security is a key consideration, you can adopt digital signatures and an appropriate level of security right up to two factor authentication.



## Workflow/Approval

The systems within an organisation should know what the procedure/workflow is, and automatically guide the user and trigger the next events as stages are completed. Similarly, it should enforce approval and allow it to happen from any device given the increasing adoption of mobility in the construction sector, in common with most other industries.

# The Ten Pillars of BIM-Readiness

## Conclusion

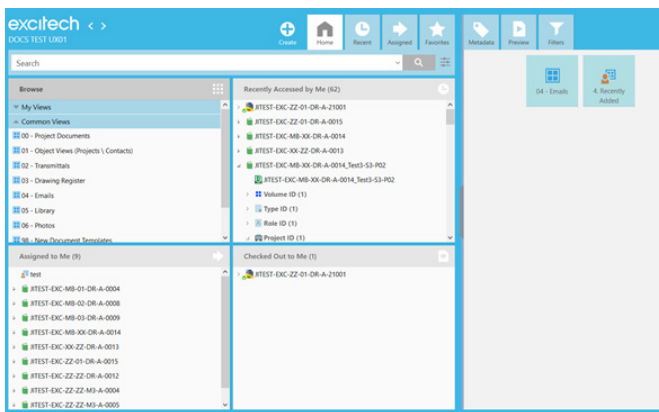
### A solid grounding for sustainable success

Whether or not a business intends to compete on government projects, BIM is rapidly entrenching its practices across the construction sector. Enhanced collaboration is key to project success; ensuring that all parties to a project are aligned, understand each other and are able to share information without the barriers caused by lack of internal process discipline arising from any one of the parties. No business wants to be that party.

Looking to long term business survival, the three strategic focus areas of centralised access to information, a culture and best practice change to facilitate greater internal and external collaboration, and enterprise-grade security are essential foundations. They are minimum expectations from customers, and they reflect the protected, efficient working environment that characterises today's digital world in any industry. Construction is no different to any other industry in this regard.

Where the industry does differ however is in the opportunities that BIM presents to spring-clean management practices to open up more business opportunities, to compete in a potentially bigger arena, remove the drudgery via automation and to minimise risk.

In order to help design professionals achieve this, we created our document management solution, Excitech DOCS, which is designed and tailored for the construction sector. It simplifies the process of BIM level 2 compliance, addressing each of the seven core operational disciplines discussed in this paper. It offers automated workflows and approvals processes and takes human error out of the equation whilst facilitating essential best practice.



# SYMETRI

ADDNODE GROUP

**Learn more:**

[www.symetri.co.uk](http://www.symetri.co.uk)

**Contact us:**

[info@symetri.co.uk](mailto:info@symetri.co.uk)

0345 370 1444