

# FEDERATION OF PILING SPECIALISTS

## FPS Digital Progression Group Guidance Note 5

BIM Software Guidance

# BIM Software Guidance

This note has been written as a general guide only and to outline some of the current solutions available in the software selection process which will support the smooth transition and implementation of BIM (Building Information Modelling).

The solutions mentioned in this guide may not be suitable for your organisation and therefore it is recommended that in addition to this guide, your own research is conducted to find the correct solution for you.

Building Information Modelling (BIM) is a digital process for creating and managing information about a project and throughout its lifecycle. It is a collaborative process that enables all stakeholders to have access to the same information at the same time, regardless of their location.

BIM software is used in the Architecture, Engineering and Construction (AEC) industries to create, manage and visualise projects in a digital format.

Implemented properly BIM software can help to:

- Improve the efficiency of their design and construction processes
- Reduce errors and omissions
- Improve communication and collaboration with other stakeholders
- Enhance the quality of their work
- Increase competitiveness

Therefore, the choice of software will have a direct impact on the successful implementation of BIM within a business.

When selecting BIM software, consider factors such as your specific project requirements, team size, collaboration needs and interoperability with other tools. Its often beneficial to evaluate software through trials or demos to determine which one best suits your needs. Additionally, consider the availability of training resources, customer support and on going software updates as part of your decision making process. Therefore, factors to consider when choosing BIM software would include:

- The size and complexity of the projects that the business undertakes
- The level of BIM experience within the business
- The budget available
- The compatibility of the software with the software used by other stakeholders

It is important to choose software that meets the needs of the user and stakeholders. Some of the key features to look for include:

- The ability to create and manage 3D models
- Manage project data
- The ability to perform analysis and simulations
- The ability to generate documentation
- The ability to collaborate with other stakeholders using standard BIM formats

Once the right BIM software has been chosen, it is important to implement it carefully and effectively. This could involve:

(a) **Form a BIM team or a lead person.**

The BIM team or lead person should be responsible for developing and implementing the BIM plan, training staff, and managing the BIM process throughout the project lifecycle. The team could include representatives from relevant departments, such as design, engineering, and construction.

(b) **Develop a BIM implementation plan.**

The BIM implementation plan should define the goals of the project, the roles and responsibilities of the BIM team, and the timeline for implementation.

(c) **Cost**

What is the budget, look beyond the price of software and think about the overall financial impact and benefits.

(d) **Train staff.**

Before implementing BIM, it is important to train staff on how to use the software. This will help to ensure that everyone is on the same page and that the software is used effectively.

(e) **Manage the BIM process throughout the project lifecycle.**

The BIM process should be managed throughout the project lifecycle. This includes creating and updating the BIM model, sharing the model with other stakeholders, and using the model to inform decision-making.

To help in the decision making process a more detailed assessment of the key points noted above are presented:

**Functionality and Features:**

Evaluate the functionality and features of the BIM software and consider whether it provides the necessary tools for your specific project requirements as well as future project requirements. Look for features such as 3D modelling, clash detection, quantity take-off, scheduling, and collaboration capabilities and ensure that the software supports the disciplines you work with.

Investing in a software suite/package may not necessarily have everything that is needed to start and complete a project which means that in some cases multiple solutions may have to be considered. If this is the case, then prioritising specific features by way of importance may help in the overall decision.

**Interoperability:**

*Interoperability (the transfer of files without the loss of information) is the ability of 2 separate computer systems or programs to communicate with each other and exchange data in the form of CAD models and other types of data.*

BIM software should have good interoperability with other software applications commonly used in the AEC industry. It is important to check if the chosen software can import and export common file formats such as **IFC (Industry Foundation Classes), DWG, DGN or DXF**. Compatibility with other

design tools, analysis software, and project management platforms can streamline your workflow and collaboration with stakeholders.

Using **IFC (Industry Foundation Classes)** is becoming the Industry standard to facilitate interoperability and the exchange of BIM data between different software applications used in the construction Industry. The format is a standardised way of representing building and construction data which allows different software tools to exchange information seamlessly.

The IFC can contain detailed information about the construction project including property data sets, geometry, 3D spatial data and more. It allows other parties to work collaboratively by exchanging and accessing project data without losing crucial information during the process.

#### **Ease of Use and Learning Curve:**

Consider the software's ease of use and the learning curve involved. Evaluate the user interface, tool accessibility, and workflow processes. Some software may have steeper learning curves than others so assess the availability of training resources, documentation, tutorials, and customer support options. User-friendly software can help your team adapt quickly and maximize productivity.

#### **Collaboration and Teamwork:**

BIM involves collaboration among different stakeholders. Assess the software's collaboration features, such as the ability to work concurrently on a project, model coordination and cloud-based sharing and access. Look for tools that facilitate communication, document sharing, and version control. Integration using a CDE (common data environment) and collaboration platforms can enhance team collaboration and coordination.

*A single-source of information for any given project, used to collect, manage and disseminate all relevant approved project documents for multidisciplinary teams in a managed process*

The CDE could be in the form of a project server, a file based retrieval system, an extranet or any other suitable toolset which may mean the purchase of additional software, unless the chosen BIM solution package has the capabilities of setting up a CDE.

#### **Cost and Licensing:**

Evaluate the cost structure and licensing options of the BIM software. Consider whether it aligns with your budget and the specific needs of your organization.

Through research involving internet searches, technical forums and talking to existing customers within the construction industry, a list can be compiled of software vendors that can provide the services and software required.

Some software may require a subscription or perpetual license, while others may offer different pricing tiers based on features and usage. Factor in any additional costs for training, support, or software updates. At this stage a list of vendors should be shortlisted to 2 or 3.

Queries that can be raised at this stage can include:

- (a) What are the options and prices available for training and is there an element of training included in the overall price of the software.
- (b) Will there be a discounted cost if a rolling subscription was taken out?
  - ☐ It is important to buy the software on a subscription basis where a fee is paid every year which will include all upgrades to the latest version and any technical help that may be required.
- (c) Is the company reputable, are there any customer reviews.

### Cash Detection

Another key component within software solutions is clash detection (*Clash detection helps detect and resolve conflicts before and in some case during, construction begins*) and whilst traditional clash detection has related between architectural, structural, and MEP (Mechanical, Electrical, Plumbing) components, it does have its benefits in the geotechnical sector.

Within the BIM software range, some vendors do offer software tools that have the capability to perform clash detection.

As a guide, some popular BIM software vendors are presented. This is **not** an exhaustive list and readers are recommended to carry out their own product research based on their BIM requirements.



#### ➤ Autodesk **AUTODESK.**

Autodesk is a multinational software corporation known for its design software in various industries like architecture, engineering, construction, manufacturing, media and entertainment. They offer a wide range of software products such as AutoCAD, Revit, 3Ds Max and many others which are used extensively by professionals for designing, visualising and simulating ideas in 2D and 3D spaces. Autodesk offers a wide range of BIM solutions from specific visualisation and clash detection tools to full BIM suites which differ in complexity and cost.



#### ➤ Bentley Systems **Bentley®**

Bentley Systems is another prominent software in the field of software solutions for infrastructure engineering and construction. They specialise in providing software including MicroStation, Aecosim and ProjectWise which are all BIM ready solutions. Bentley software is widely used in the fields of civil engineering, architecture, transportation and utilities to design, build and manage infrastructure projects.

➤  **Graphisoft**  
A NEMETSCHEK COMPANY

Graphisoft is a company known for its BIM software called ArchiCAD. ArchiCAD is an architectural design and modelling software used by architects, designers and building professionals to create detailed 2D and 3D models of buildings and structures. One of the key features of ArchiCAD is that it allows multiple users to work on the same project simultaneously which promotes better communication and coordination among team members.

➤  **Tekla**  
A Trimble Solution

Tekla (which is part of Trimble Solutions Corporation) specialises in software for the construction and structural engineering industries. They are renowned for creating software for its capabilities in creating detailed 3D BIM models of buildings, infrastructure and other construction projects.

The above list comprises of vendors that offer multiple BIM solutions including BIM modelling, clash detection, file management and others which could potentially increase yearly costs, training needs etc but if the requirement is based around one area, there are software vendors available that specialise in particular areas of BIM such as the aforementioned above, data management, clash detection, etc. A guide to some of the more popular are presented below. As mentioned previously, this is **not** an exhaustive list and readers are recommended to carry out their own product research based on their BIM requirements.

➤  **SOLIBRI**  
A NEMETSCHEK COMPANY

Solibri is a software solution for model checking and quality assurance in BIM projects. It is designed to analyse BIM models for compliance, quality and coordination issues throughout the design and construction phases.

The software has the ability to perform extensive checks on BIM models identifying clashes, discrepancies and potential conflicts between different elements within the model. Solibri also has a visualisation tool which enables users to understand and resolve issues by visualising them in 3D which enables better communication among project stakeholders.



Dalux is a software company that specialise in cloud-based solutions for construction, architecture and data management. They offer a range of applications and tools designed to improve collaboration, communication and project management throughout the lifecycle of the project.

The software includes tools for various purposes including the following:

1. Construction Management
2. BIM Collaboration
3. Facility Management
4. Inspection and Snagging
5. Mobile and Cloud Integration

They have a user-friendly interface and mobile accessibility and aims to enhance communication and productivity among construction teams and stakeholders.



BIMcollab is a cloud based issue management platform specifically designed for BIM projects. Its main focus is on streamlining communication among various stakeholders involved in the design and construction phases of a project. The platform allows project teams to create, manage and to track Issues or clashes discovered within the BIM model. It also allows greater communication regarding any issues and facilitating collaboration between architects, engineers, contractors and stakeholders.

It is hoped that by following these notes members of the FPS can select and implement BIM software successfully and achieve the benefits that BIM has to offer.

If more information is required, please contact the FPS Digital Progression Working Group and we will endeavour to answer your queries as best as we can.