

How To Choose the Right Construction Common Data Environment

A UK Case Study Approach



Trimble
Construction

Building Information Modelling (BIM) is becoming increasingly commonplace in construction projects but a key element of fully realising its benefits is having the right common data environment (CDE).

A common data environment, or CDE, provides a single source of information to collect, manage and distribute the 3D model and data, whether created in a BIM environment or conventional data format, to an entire project team.

Putting the right CDE in place for your construction company can facilitate better collaboration, smoother workflows and significant productivity gains, while helping to avoid duplication and mistakes. Choose poorly, however, and a project can suffer from disconnected data, interrupted workflows and delays that impact on the bottom line.



BIM Level 2 Fuels CDE Demand

The UK's Government Construction Strategy 2011-2015 required that, from April 2016, "fully collaborative 3D BIM would be a minimum requirement on all centrally procured projects." BIM Level 2 was developed to meet this collaborative approach, mandating that all project and asset information, documentation and data is electronic to support efficient delivery at the design and construction phases of a project.

The mandatory processes necessary to achieve BIM Level 2 are set out in the following standards:

BS EN ISO 19650-2:2018: Organisation and digitisation of information about buildings and civil engineering,

including building information modelling—Information management using building information: Delivery phase of the assets.

BS EN ISO 19650-3:2020: Organisation and digitisation of information about buildings and civil engineering.

These requirements, together with the rising adoption of BIM to deliver housing, commercial, civil engineering and infrastructure projects, has led to increased demand for CDEs to facilitate collaboration. The 2020 annual BIM report by NBS showed BIM adoption had risen from 48% of respondents in 2015 to 71% in 2018.

Supplier vs Client-Provided CDEs

BIM adoption brings challenges and adopting a CDE is often no different. Standards call for a single environment for all stakeholders to work within for the lifecycle of the asset. There are two options for achieving this: a supplier-provided CDE or a client-provided CDE.

Who should own and/or be responsible for the management of the defined CDE. One argument is that suppliers and contractors are more likely to have the resources and skills to manage the environment. In such cases, the client must be clear in defining its expectations and deliverables as early as possible.

On the other hand, if clients have the ability to manage a CDE, they are ultimately in control of the data and therefore have oversight of everything within the project, regardless of any disputes that arise or suppliers coming and going.



CDE: A Detailed Evaluation

Before choosing a CDE, a thorough assessment is needed to evaluate the options available. For many, being PAS 1192 certified is a fundamental requirement of selecting a CDE.

Now superseded by **BS EN ISO 19650**, the **PAS 1192** certification was introduced in 2013 to provide specification for standardised information management on construction projects using BIM.

It comprises a series of documents covering the construction (capex) phase, setting out the roles and responsibilities for collaborative BIM working and expanding the scope of the CDE; the operational (opex) phase, focusing on the use and maintenance of the Asset Information Model for facilities maintenance; a code of practice for the implementation of Construction Operations Building Information Exchange (COBie).

PAS 1192-2, which focuses on project delivery, and PAS 1192-3 (the documents covering the operational phase) both state that the same process should be used for sharing information in the CDE.

That all starts with Work In Progress (WIP), where

non-verified design data, such as draft and development concepts, are used by the in-house design team only. Although only viewable to this team, the standard is clear that all this information should be present in the CDE to ensure checks and approvals are recorded, so if in the future there is a problem it is possible to go back and ensure those processes took place.

Once approved, the verified design data is shared with the other members of the design and construction team. Sharing this information allows for coordination and clash detection, as well as allowing the client to view and comment.

After it is shared and authorised, the next stage is “Published.” This section of the CDE contains coordinated and validated design outputs for the whole project team, such as production information suitable for tender, manufacture or planning applications.

The final stage is “Archive,” where the CDE maintains a record of the project history, including as-built drawings, as-constructed models, change audits and health and safety information.

CDE Security

With the CDE sitting at the heart of a BIM project, its security is essential.

The recently published ISO 19650-5: 2020 specifies the principles and requirements for "security-minded" information management in BIM projects, setting out the steps required to create an appropriate and proportionate security mindset and culture across organisations with access to sensible information, including the need to monitor and audit compliance.

The approach outlined in the standard is application throughout the lifecycle of a project or asset, whether existing or planned, where sensitive information is obtained, created, processed or stored.

In the UK, the government-backed, industry-supported Cyber Essentials scheme has been created to help organisations protect themselves against common online threats.

It offers two levels of certification, the self-assessment Cyber Essentials option for covering the basics of technical controls against common cyber attack, and Cyber Essentials Plus, which involves a hands-on technical verification.

The latter, along with the **ISO 27001** standard for information security management systems, should form the backbone of a good CDE.



Viewpoint for Projects: The Right Choice for a Construction CDE

Viewpoint For Projects is a cloud-based document and information management solution, which enables customers to share, control and collaborate on project documents with dispersed projects teams. Designed for construction, Viewpoint For Projects provides contractors with better control over, and insight into, their projects by streamlining data and workflows.

It was also designed to meet contractors' needs for BIM and grow along with BIM technologies. Viewpoint For Projects provides users with a powerful BIM collaboration management far beyond modelling as clash detection. Share data from feasibility to planning to operations and maintenance.



Case study: Sons & Co

Why Sons & Co chose Viewpoint for
Projects and Field View to help scale and
streamline its construction projects.



Sons & Co was founded in 2014 by brothers Alex and Christian Stocker, along with Simon Roberts, to specialise in high-end residential projects in central London. Since then, the company has worked on the development of over 550 apartments and houses. In March 2020, Sons & Co London was 100% acquired by JTRE London.

JTRE London was founded in September 2019 by one of central Europe's leading property developers, Slovakia-based JTRE. The company entered the UK real estate market in 2018, having acquired its first prime central London asset for development on the South Bank—Triptych Bankside.

Sons & Co was appointed as the project manager responsible for the development and delivery of the £400m-plus scheme. The combination of Sons & Co's knowledge of the London market with JTRE's substantial resources and international experience cements JTRE London's presence in the UK and paves the way for it to make a real impact on the London market.



The Challenge

The Triptych Bankside project is a mixed-use development designed by renowned London architects Squire & Partners. It is located near London's South Bank, with neighbours including the Tate Modern and Shakespeare's Globe theatre. Construction began in April 2019 and, when completed by the start of 2022, it featured 169 apartments across two residential towers, as well as a low-rise office building, retail spaces and a cultural facility.

The acquisition of the site at 185 Park Street represented a considerable increase in scale and complexity compared to previous Sons & Co projects.

The electronic document management software that was initially put in place was simple, with basic functionality. While the program's relatively easy-to-use interface was well-suited to smaller developments, it was not scalable to a project the size of Triptych

Bankside. In order for Sons & Co to meet UK BIM Framework standards, there had to be consistency as well as project collaboration throughout.

The main reason for this was the absence of workflows to manage and log the consultant review process for incoming drawings—a lot of additional work was required to manage the drawing reviews, including creating and manually updating trackers in Excel. Sons & Co needed to find software capable of storing large amounts of data in a way that was not just organised but also easy to retrieve.

The team behind the original DMS conceded that Triptych Bankside had outgrown its software. As Sons & Co aspired to pick up other large-scale projects further down the line, the leadership team made the decision to seek a more comprehensive package that could grow with their company.

The Solution

Charlotte Thorburn, document controller for Sons & Co, was the project lead and after considering various products in the market, the company selected **Viewpoint For Projects** (VFP). This followed recommendations from other vendors the company worked with.

VFP is a cloud-based and offline mobile solution that streamlines field tasks and automates workflows for quality assurance and control, safety, project delivery and handover. VFP's powerful document control features integrate with **Viewpoint Field View**, a cloud-based and offline mobile solution that replaces pen and paper in the field for quality, safety, project delivery and closeout/commissioning.

Thorburn said that the Sons & Co team was fully supported and guided throughout the setup process, with a Viewpoint consultant assigned to be their point of contact and provide the training. Thorburn noted that the designated Viewpoint consultant went out of his way to answer any questions the team had in a thorough and timely manner.



The Result

Sons & Co has saved vast amounts of time spent on day-to-day tasks by using Viewpoint For Projects. Consultants can upload information quicker, site users can find this information quicker, and it is easier to manage. The comprehensive searching and filtering functionality, coupled with a high level of customisability, allows users to find and view information easily and in the formats they prefer. Sons & Co was also able to enforce a naming convention for all uploaders, which made searching even easier. This has helped the company gain complete control of its data and workflows.

The responsibilities for consultants and contractors became clearer with the My Action Items section of VFP, providing every site user with a clear "to do" list, from which items are removed once completed. This encourages timely responses throughout a project and ensures everyone sees critical information or actions.

Workflow processes make it very clear which drawings have been approved for construction and ensures that only approved drawings are accessible to contractors. This reduces the risk of working with the wrong drawings, with potentially costly and time-consuming repercussions.



BIM is becoming an increasingly important part of the construction process, and Triptych Bankside is working to full BIM Level 2. Viewpoint's built-in model viewer allows all site users to view and federate models in-browser, and to raise tasks based on the BIM models. It makes the project's 3D models accessible to everyone with access to a tablet or mobile on-site.

Since the Triptych project started on-site, Sons & Co also used Viewpoint's Field View software. This enabled the introduction of an efficient QA and snagging system for all site work. It helped keep numerous site forms in one place and greatly reduced paperwork and filing. Field View is enabling the company to build up the QA records needed with ease to provide as evidence for warranties and eventual handover information.

Between the Viewpoint for Projects and Field View solutions, Sons & Co now has comprehensive audit trails and records of design and construction information - users can look back on exactly who did what, who saw what, what was issued to whom, and when. This puts huge amounts of very precise and detailed information at their fingertips, which reduces risk and protects the company's interests in the event of any disagreements arising between parties.



What Should Document Controllers Look for in a CDE?

Six software features document controllers should look for in a Common Data Environment

Many teams are involved in the lifecycle of a construction project. What one may consider an essential functionality for a software platform, another team may never use. That is why it's important to know what "good" construction software looks like from the perspective of different team members so you can make an informed decision in choosing a platform that ticks the right boxes for employees across multiple teams.

Document controllers—who must keep track of project plans, blueprints, vendor contracts, drawings and data back-up and security—need construction software to enforce consistency and make documents easy to share.



These are the key features documentary controllers should look for:

1. BIM framework
2. Integrated drawings viewer
3. Markup and revisions
4. Repeatable, collaborative workflow
5. Quick search functionality
6. Unlimited document storage

Charlotte Thorburn, document control at Sons & Co, coordinated her company's move to a Common Data Environment (CDE) to standardise, simplify and scale-up how it managed projects.

Here, she outlines why these six key features were essential to the **roll out of the new system.**

1. BIM Framework

In order to achieve Building Information Modelling (BIM) Level 2, a document controller requires a few critical features:

- A consistent approach across drawings and consistent naming conventions
- The ability to ensure that all stakeholders can collaborate
- The ability to export the Construction Operations Building Information Exchange (COBie) data from these documents

It may seem simple, but a consistent, logical naming convention saves time and increases overall project organisation. It also allows the team to combine relevant documents and construct a federated model.



2. Integrated Drawings Viewer

Being able to see documents in one place, rather than having to leave the system just to see a document in full, was an essential functionality.

Navigating in and out of the system slowed down all users because it required them to download documents that took up space on their computer. This became a problem because team members would then rely on their saved documents, instead of the updated source material, which may have added edits or comments.

“When the drawings were taken offline,” Thorburn said. “We forfeited live visibility of a project and created a break in the project timeline.”

Site drawings (DWGs) often go on-site earlier than their corresponding PDFs, so it was **vital that these documents could be linked at all times**. Document controllers need a system that avoids the need to store DWGs and PDFs in different locations.



3. Simple Mark-Up and Revisions

Mark-up is a common occurrence during a construction project. When consultants were not able to view, mark-up or comment on documents, they had to spend their time downloading, manually adding comments and mark-ups, and then re-uploading the amended documents. This caused delays in response—and therefore action—every time a mark-up or comment was added.

Good construction software for document controllers enables consultants to annotate, stamp and sign off drawings digitally—without leaving the system. This keeps project momentum high and avoids unnecessary delays.



4. A Repeatable, Collaborative Workflow

"As a document controller, I'm more than aware of **the importance of integration** between project drawings and drawings for comment," Thorburn said.

"Lacking a standardised, automated workflow with updates and sign-offs leads to delays, as well as confusion over which drawings to work from. It also increases the risk of beginning a build with incorrect drawings, which we definitely do not want to happen!

"Sons & Co wanted a standardised workflow in place to prevent items from getting lost in the review section."

Sons & Co created customisable workflows that connect the review process to the main document repository. This means all versions of a document are in the same place and that all teams are **collaborating on the latest version** of the drawing or document.



5. Quick Search Functionality

Project lists can be 200 items long. Not having search functionality can make tracking down the relevant design review or RFI difficult, to say the least. Even with manual tracking, it was arduous to update the project list and required a time commitment from the project manager and administrative support.

As document controllers must split their time between these extra admin tasks, this adds up to hours and money over a project.

“Construction software with comprehensive search functionality helps our team search and sort RFIs. Each user has a dashboard linking them directly to items assigned to them, doing away with the need for a manual tracker, and the hours spent updating it,” Thorburn said.



6. Unlimited Document Storage

Document storage is something no document controller wants to worry about spending more money on.

Thorburn knew the price of document storage was rising and larger items like photos and CGIs had to be stored elsewhere to save money.

"To prevent data storage costs from eating into our project profit margins, we resorted to storing things in multiple locations, which made it difficult to find items quickly," Thorburn said.

By choosing a construction software where the storage cost was allocated per project, she knew the team gained access to unlimited data storage and everything could be stored in the same place. And as a document controller, that made life easier for Thorburn.





Learn how **Viewpoint For Projects** can streamline your project workflows and documents, bringing more accuracy to your project teams.

About Trimble Viewpoint:

Trimble Viewpoint construction software solutions, part of Trimble Connected Construction, allow contractors to better manage their projects, processes and people, using the data gathered to lower risk and improve margins. With more than 40 percent of the ENR 400 on our platforms, Trimble Viewpoint innovations are transforming the construction industry by connecting operations across financial and HR systems, project management tools and mobile field solutions. For more information, visit: www.viewpoint.com.

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