



[CONSORTIQ]

CASE STUDY

Creating Safer Social Housing with Digital Asset Modeling



Drone overlooking a social housing high-rise building during digital asset modeling project.

Social housing companies have long been aware of the untapped potential of Building Information Modeling (BIM) when it comes to improving maintenance and safety in their housing units.

However, many stakeholders have found BIM processes to be too challenging and cumbersome for widespread implementation. Consortiq is changing this with their comprehensive and user-friendly 3D digital asset modeling and management service, which enables users to capture building data in as little as a few hours and create a 3D rendering in as little as a day.

In this case study, we'll dig into how the service is helping Stockport Homes reimagine their company's asset and safety management processes.

The growing demand for safer social housing

The 2017 Grenfell Tower fire has had far-reaching consequences for the social housing sector. In the years that have followed this event which claimed the lives of 72 individuals, various UK government bodies have worked together to identify the factors which led to the disaster, as well as measures that should be taken to prevent something similar from happening again in the future.

The fire, which was initially caused by a malfunctioning fridge-freezer on the fourth floor, would not have spread to other parts of the tower if proper fire safety measures were in place. However, investigations suggest that the fire was able to spread up the building's exterior, bringing fire and smoke to all the residential floors, due in large part to the building's unsafe aluminium composite material (ACM) cladding.

Since then, the UK government's Building Safety Programme has advised the government to identify and remove ACM cladding from all buildings higher than 18 meters, but a 2020 House of Commons report stated that 315 high rise buildings still had ACM cladding. Part of the reason for this is thought to be that even after the Grenfell Tower fire highlighted the hazard that unsafe cladding materials can pose, social housing companies simply did not know what type of cladding each of their buildings had.

Because they found gathering that information to be too costly and time consuming, they put off taking the measures necessary to meet the new safety requirements.

The Challenge

In order to protect the estimated 56,640 or more UK residents living in high rises with Grenfell-style ACM cladding, an independent inquiry was commissioned, led by Dame Judith Hackitt.

The resulting "Hackitt Review," recommends that for new builds, 'a Building Information Modelling (BIM) approach should be phased in' because having 'BIM enabled data sets during occupation means that dutyholders will have a suitable evidence base through which to deliver their responsibilities and maintain safety and integrity throughout the life cycle of a building.'

For existing social housing buildings for which the original fire safety design information may not be available, the Hackitt Review recommends that the government 'should work with industry to agree the type of information to be collected and maintained digitally'.

BIM might possibly integrate multiple types of data to produce a digital representation of an asset across its lifecycle, from planning and design to operations and maintenance. It is thought that BIM could theoretically prevent another Grenfell disaster by improving accountability and transparency. If there were accurate digital replicas of all of the key assets and materials of each and every social housing unit, social housing organisations, regulators, and other stakeholders would be able to do a much better job of identifying and addressing safety hazards.

But, since most social housing was built before the digital age, creating digital replicas is easier said than done. Making a 3-D building model of an existing building requires pooling data in multiple formats from many different sources, which can be challenging and time consuming for non-experts.

For instance, creating a good 3-D replica of a building often involves the pooling of LiDAR data, panoramic images, floor plans, and point cloud into one cohesive representation. Gathering this data requires entering some of the residents' housing units for the interior rendering, working with a UAS service provider to get the exterior of the building, and tracking down old architectural and maintenance documentation.

Even after a 3-D model is created, it needs to be user-friendly and include asset management features that allow key stakeholders to view and add key information on assets such as fire doors, smoke detectors, and cladding. Unfortunately, most BIM tools are not user friendly, and require degree-level skills to use effectively.

If it's not possible for all concerned parties to access and update the data on social housing units, then BIM will not in fact improve accountability, transparency, and most importantly, the safety of social housing residents.



The Consortiq solution



In 2020, a Consortiq team, led by Digital Innovation Manager John Gore, collaborated with Stockport Homes, a social housing company with a portfolio of properties in Greater Manchester to tackle this problem.

The objective of the collaboration was to leverage emerging autonomous technologies for the social housing company's asset and safety management needs.

An initial consultation confirmed that simply creating 3D models for the company would not necessarily lead to improved building safety and asset management because of how unwieldy and non-user-friendly most BIM platforms are.

Luckily, Consortiq had the experience and expertise to create a more effective solution.

"When we learned about the requirements for social housing to move to digital records, we knew that our expertise with digital twins and the 3D environment would be well suited to helping these organisations solve their challenges," Gore said.

Gore and his team organised a technical demonstration of Consortiq's 3D laser scanning and asset digitisation managed services. This service brings together Scan-to-BIM and asset management technology to allow for not only the efficient collection of data in an as-built state, but also the aggregation of data into a user interface that is easy to understand, accessible, and actionable for all interested parties.

Using a familiar and intuitive user interface, the platform allows users to combine multiple data formats such as LiDAR, point cloud, and BIM, and to interact with them either collectively or individually. It also allows users to tag assets in the 3D digital space, making it easy to store and interact with information about asset defects, installation dates, and maintenance schedules, and more.

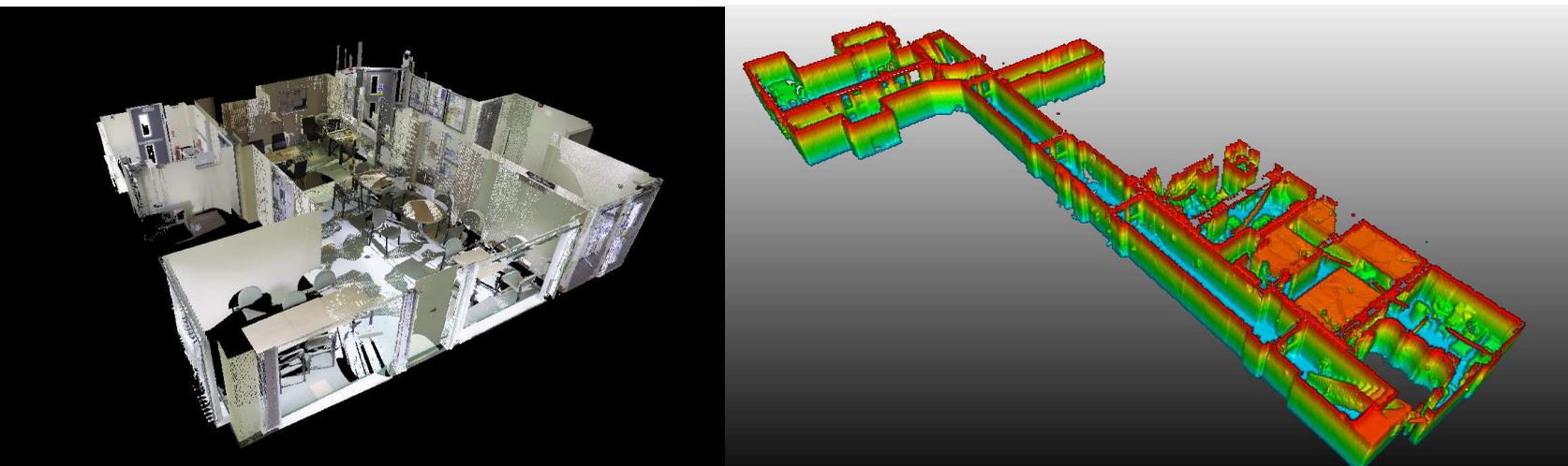
Best of all, once a digital representation has been created, users can move around the interior and exterior of buildings exactly as one can using Google street view. As they navigate the digital rendering of the building, users can click on assets and tag them with relevant information, such as defect details or even upload entire instruction manuals to be attached to the assets within the interface.

"The rate of development in autonomous data capturing and scanning technologies such as drones and laser scanners has enabled the capture of structures in their as-built state in a way that is efficient, safe and reduces the impact on residents," Gore said.

"This means that it is now a viable undertaking to scan pre-digital structures and give them a digital counterpart for the future. Our services are designed to be rapid and scalable, with digital twins of high-rise residential buildings turned around in less than two weeks, and utilising commercial-of-the-shelf scanning hardware, we can deploy multiple teams at once to handle large-scale programmes."

He added that the data capture process can take just a few hours, minimizing inconvenience to residents.

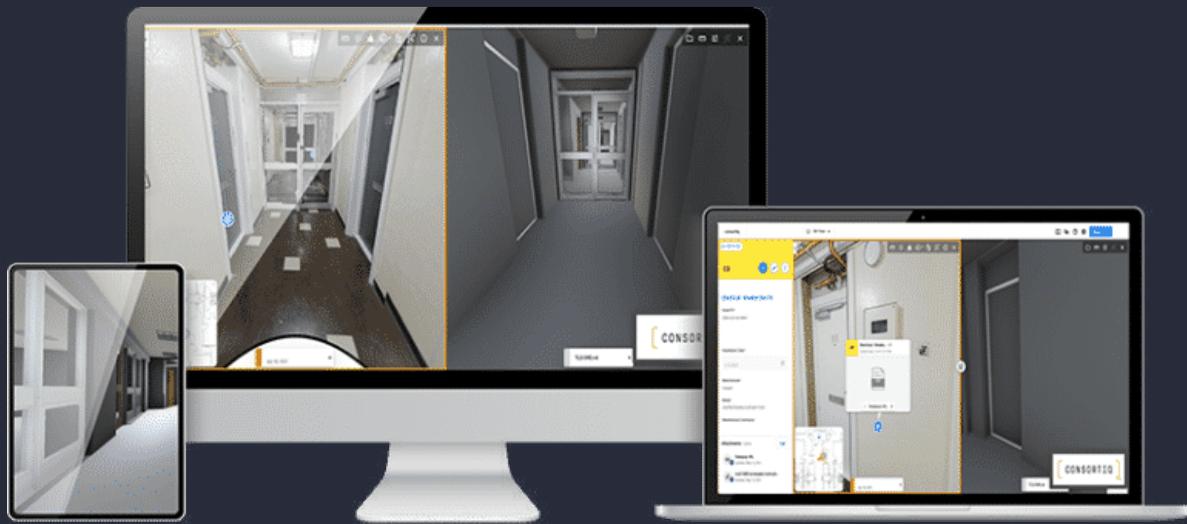
When presented with the results of the technical demonstrator, Stockport Homes responded well, confirming that the solution met with their vision and acknowledging that the data was easy to interact with and would solve a lot of cross-department coordination issues.



"The creation of a digital set of records was one of more than 50 recommendations set out in Dame Judith Hackitt's Review, 'Building a Safer Future', commissioned by the government following the Grenfell Tower fire in June 2017. She said clients should lead this digital transformation and mentioned specifically the use of Building information models (BIMs) as a tool to ensure there is a "golden thread of information" that runs through projects from design, completion, and operation," Nicholas Wilson, environmental projects coordinator at Stockport Homes Group, said.

"Stockport Homes manage 22 tower blocks across Stockport and didn't have current BIMS models in place. Initially it was important to find out what was available on the market and whilst looking into this via Procure Plus Consortiq offered a proposed model that would combine regular BIMS modelling with 3D visual modelling as well as it being able to incorporate Stockport Homes asset tagging software information within the models.

"Stockport Homes are currently working with Consortiq on a pilot [programme] at one of the managed tower blocks. Works being undertaken on the tower blocks, Covid issues and travel restrictions as well as Consortiq's issues with finding suitable software partners has meant the pilot hasn't been completed in the timescale initially set but this is now nearing completion and once completed it is hoped the pilot will provide proof of concept of the modelling and following procurement allow the project to be rolled out to the remaining 20 tower blocks."



The value of managed asset digitisation solutions

Consortiq's service — known as Digital Asset Modeling — has the potential to significantly reduce the time and resources required to mitigate safety risks through digital asset management.

With the service, it can take as little as a day to create the digital representation of an entire building- and just a few hours on site to capture the data- while legacy methods take weeks. The difference between days and weeks of an organisation's time and resources can be the difference of tens of thousands of dollars. With social housing budgets being squeezed due to the pandemic, this is a nontrivial opportunity.

Furthermore, the difference between the cost of a social housing organisation effectively reducing its hazards through an effective safety management program and the cost of a disaster such as the Grenfell Tower fire can be hundreds of millions of dollars.

A sector agnostic solution

The potential benefits of Consortiq's 3D digital asset modeling are not limited to the social housing sector.

By enabling companies in the energy, telecommunications, and a host of other sectors, to create effective condition-based maintenance and monitoring programs, the service allows for reduced risks and more proactive management of assets.

"We are able to break down the walls of department 'silos' giving each team and technical background a home on a platform that aggregates multiple data formats, and integrates with BIM and Project Management tools for maximum pollination of data that all lives in the digital twin," Gore said.

"With our managed service, users can see updates from design and construction teams as they make them with live integration with Autodesk, and track defect repair status through Procore integration. This level of data integration takes a standalone BIM and takes it to Level 2 on the 'BIM Maturity Scale', integrating other data types, right there on your model."

Digital twin technology has been shown to help companies negotiate more favorable insurance agreements, minimize facility downtime, and optimize supply chains.

"The vision has always been to provide something that went beyond simply being impressive – it had to be functional for a wide array of users," Gore added.

"We have solved each of the challenges along the way with the end-user at the forefront of our thinking, ensuring that everything we provide is meaningful and functional to people from all technical backgrounds."

If you'd like to learn more about digital asset modeling, make sure to watch the free webinar today, then connect with us for a free consultation!



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Watch the free webinar today!

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