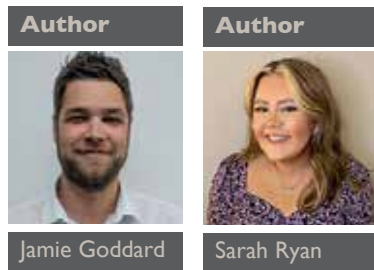


Case Study Title: The Journey to Our Digital Transformation

Company Overview | WALLS CONSTRUCTION | walls.ie

Walls Construction Limited (WCL) provides Building Contracting, Design & Build, Construction Management and Management Contracting services across a wide range of industry sectors including residential, commercial office, data centres, pharmaceutical and life sciences, public sector and hotels and leisure. The business was established by PJWalls in 1950 and is today recognised as one of Ireland’s leading construction companies, with a reputation for quality

and building excellence and customer service. In 2015, the executive team, supported by private investors including members of the Walls family, acquired the company and this investor blend has enabled us to continue to expand the business. Since our foundation over 70 years ago, the company has grown significantly, and it employs a total of almost 400 staff.



Overview & Background to the Lean Initiative

Nothing better exemplifies the appetite for Lean Initiatives within Irish construction than the use of BIM for the design, coordination, and delivery of projects. We must embrace BIM (Building Information Modelling) at all levels to achieve efficiency and streamline all aspects of our business. As a lead contractor we acknowledge that this is the future of construction, and we must grow alongside it.

with BIM in a way that they feel comfortable with and grow their confidence in their abilities.

As part of our ongoing company strategy to maximise BIM adoption, we believed one of the hurdles facing us was the perception that many at site level may feel apprehensive of engaging with the required digital technologies. To verify this, we conducted a skills gap analysis which confirmed our perception (see Figure 1).

To address this, we decided to identify and trial an introductory app which could serve as a stepping stone to other more complex BIM programmes. The app should allow people on site to interact

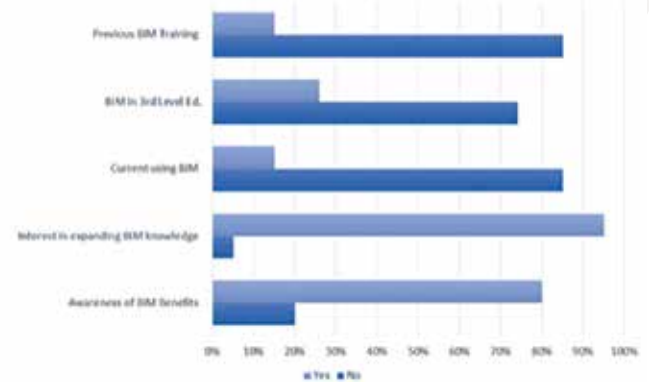


Figure 1: Percentage responses with respect to BIM

Lean Initiative Undertaken – Lean Thinking, Tools, Techniques

The tool chosen to both improve our BIM capabilities and expand the knowledge and confidence of our employees was Dalux BIM Viewer. Dalux was identified as the best tool to increase digital engagement at operational levels, other options were also considered but were deemed to be too advanced and/or too time consuming to implement. Dalux is a user-friendly 3D BIM viewer which brings the familiar 2D drawings to life within the 3D environment (see Picture 1) – an ideal programme to be used as the stepping stone to more complex BIM software solutions.



Picture 1: Dalux BIM Viewer layout, familiar 2D drawings brought to life within the 3D environment.

To assess if Dalux would be a suitable tool for us, a single construction project was selected for a pilot case study. Employees were informed by email of the Dalux implementation and were asked to download the app on their phones. Training was organized and delivered to the site team with demonstrations being organized to enable staff to learn through observation. Through completion of this method

an opportunity to engage with the trainer while using the app was provided, this allowed the staff to explore the programme without

feeling intimidated. The site team then continued to use the app regularly and soon started to appreciate its benefits; they could access 3D visuals in a matter of seconds at the location of the work being completed, reducing the time it would otherwise take them to return to their workstation, print drawings and interpret them (see Figure 2).

The 3D model is updated regularly on projects to reflect any design changes and updated in Dalux environment so that the project team was always looking at the latest design information. By completing project design updates in Dalux this method waiting time is greatly reduced along with the risk of defects using old, uncontrolled documentation (see Figure 2).

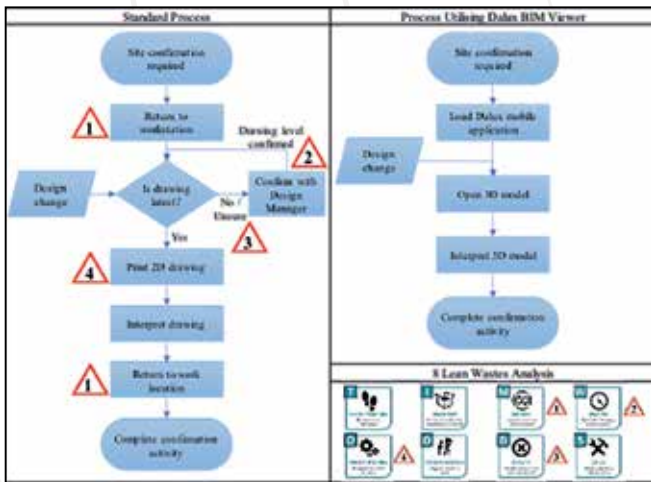


Figure 2: Comparison and waste analysis of the standard process vs the process utilising Dalux BIM Viewer.

It was clear at this point that Dalux was an excellent tool to introduce some of our less technically aware site members to digital construction. Where Dalux was part of the construction process, early evidence-based benefits included reductions in material waste, increases in on-time delivery and right first-time installations. Since the introduction of Dalux in 2019 we have seen an increase in active users proving its value within the company (see Figure 3).

To understand the savings that Dalux would benefit us with along side the development of our employees we completed an analysis of the motion waste identified on one of our trial sites. In the case of this site, due to location restrictions, we were unable to locate the site office at the point of construction (see Figure 4). The distance required to walk between the construction site entrance and the office location is 500m taking approximately 6 minutes to walk each way, considering the 5 regular Dalux users at this location over a year this allows us to save approximately 4 weeks of total walking time and reduces motion by 750KM."

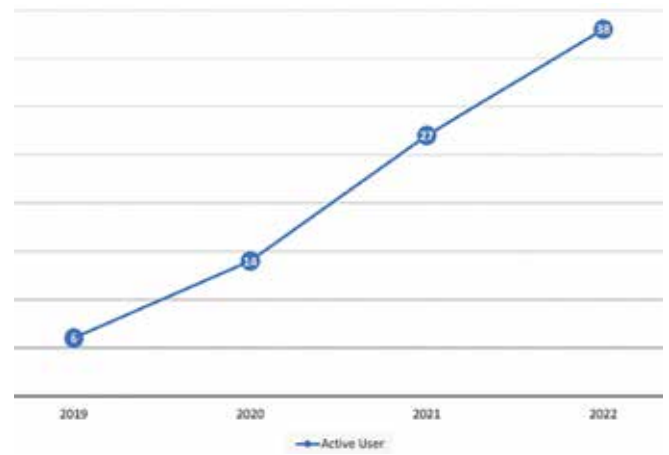


Figure 3: Increase in successfully engaged users within Walls Construction Limited at a site level.

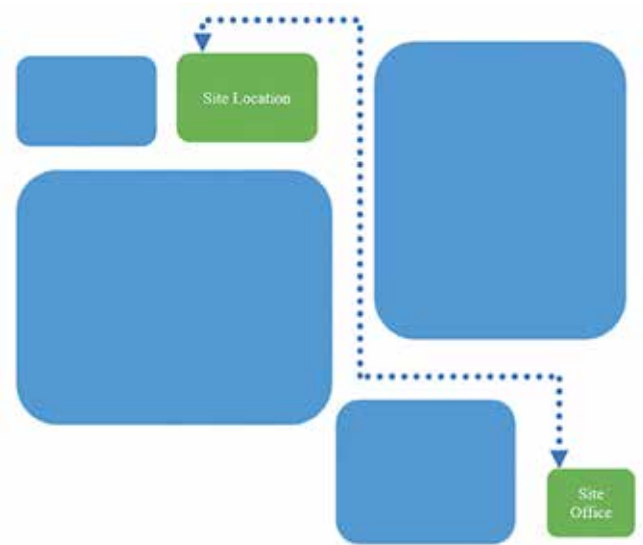


Figure 4: Motion waste without using Dalux.

Following our case study, the company has invested in additional and more advanced training courses. Several Walls Engineers have attended the Naviswork Essential course and another cohort will attend the BIM ISO 19650-2:2018 Delivering Information Management over the coming months. We are also seeking to identify more tools that will improve digital engagement at operational level. Recently we have been using, on a trial basis, the OpenSpace App. OpenSpace provides 360° construction photo documentation software, and it allows us to do virtual walk throughs. It also accurately provides measures and quality checks of 3D spaces. We are very excited to assess the outcome of this trial and establish if this App can be added to our BIM tools box.

Lean Initiative Improvements & Impact

With the increased use of BIM on our projects, we recognised that the implementation and use of 3D models increased our efficiency by replacing processes such as the printing and reviewing of 2D drawings. This is a poor use of management time and results in material waste e.g., paper but also potentially causing costly mistakes when people are unknowingly looking at old revisions.

3D models are now updated regularly on projects so that site teams always have access to the latest design information. A vital component in the sustainability of this transformation journey was the establishment in 2021 of a Digital Project Delivery Department, where qualified personnel with BIM knowledge provide expert support throughout the business.

By making BIM development and education a key aspect of Walls Construction Limited, we gain invaluable possibilities including improving scheduling, improving snagging methods, preventing injuries, and aiding communication. It also aids dramatically in our goal to improve sustainability across all our projects by identifying practices and materials that are increasing our carbon emissions, doing harm to the environment. Essentially, BIM can provide a world of improvements in construction – but they are not achievable until our workforce have a tool like Dalux to help ease into it.

Walls Construction Limited is determined to play its part in increasing residential construction output in Ireland. Digital technology and Lean Initiatives can tackle long standing problems in the construction industry such as incompatibility among systems and manual processes that create waste, lead to cost overruns and reduced value for money. By contrast, BIM increases productivity, collaboration, and improved cost management. We have experienced the benefits of BIM after a relatively small case study, and we are excited to see the changes in our building processes and our ability to increase our delivery of residential and other buildings.

Summary and Lessons Learned

By giving the facilities for people on site to expand their knowledge on BIM, the overall standard across the company will improve and lessen the identified skill gap. It also provides opportunities for staff to develop further and expand into roles that they hadn't previously thought possible. Additionally, by increasing the number of workers familiar with these systems we can start to look at introducing the likes of 5D models in the future, integrating scheduling and financial information to improve the overall efficiency of our project management.

With the active involvement of our employees, our journey to lean and digitalisation is underway and tremendous progress is being made. Our senior management team is fully committed both in terms of both the time and financial investment required and by showing leadership in terms of fostering and maintaining an environment where ideas are shared with creativity and innovation encouraged and acted upon. This initiative provided us with training and technology needed to have the first taste of the benefits of BIM and we look forward to continuing our journey.