



AUTODESK
CONSTRUCTION
CLOUD™

Construction Safety in the Technology Age

How Cloud-Based Technology
Creates Real-Time Improvements



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Introduction

In the construction industry, safety is the central theme of all projects. Construction professionals recognise the risks of running any construction site and look to mitigate these risks through improved strategy. Here we will discuss the current state of safety in the industry and identify areas for improvement. We'll give you a strategy to build a digital technology foundation for your organization, with a deep dive into the benefits of construction technology focused on safety. Finally, reporting will be demonstrated as a mechanism for constant improvement to the safety process.

The Current State of Safety

According to industry safety bodies across the globe¹, one in ten construction workers is injured annually. Unfortunately, reducing this number isn't easy. Every project is complex and managing construction safety is equally complicated.

Fortunately, with numerous moving parts, the construction industry is ideal for technological applications that help drive improved site safety. However, Dodge's study reveals there are still gaps in the use of technology.

This data clarifies that while over half of construction professionals feel it is important to utilise technology regarding safety processes, the adoption of technology is lagging. This is notable with trade contractors. Many safety processes are still being documented via an analog system, creating silos that do not allow for transparency in reporting across teams.

53%

of large main contractors utilise software to manage safety and or inspections on at least half of projects

19%

of trade contractors utilise software to manage safety and or inspections on at least half of projects

60%

of construction professionals feel using safety inspection software is a high value

Building a Technology-Based Strategy

Improving safety requires a clear strategy that involves the ability to track and adapt, ensuring that safety improvements are continuous.

A technology-based strategy can allow construction professionals to create true change in the industry. From real-time collaboration to improved transparency into safety reporting, modern solutions offer tangible progress. However, before a technology-based strategy can be built, the right technology must be chosen.

Choosing the Right Technology

What makes a specific software solution the right one for any given construction company?

For starters, the solution needs to allow safety processes to take place in real time from anywhere. With cloud-based solutions, the tedious old processes often led to corners being cut and mistakes being made. Rather than creating in-field documentation that must then be brought back to a physical location, a cloud-based safety solution allows data to be entered and tasks to be undertaken from anywhere.

Secondly, the right technology promotes collaboration across job roles. No longer should one person be responsible for safety on the construction site; rather, it should involve a collaborative effort.

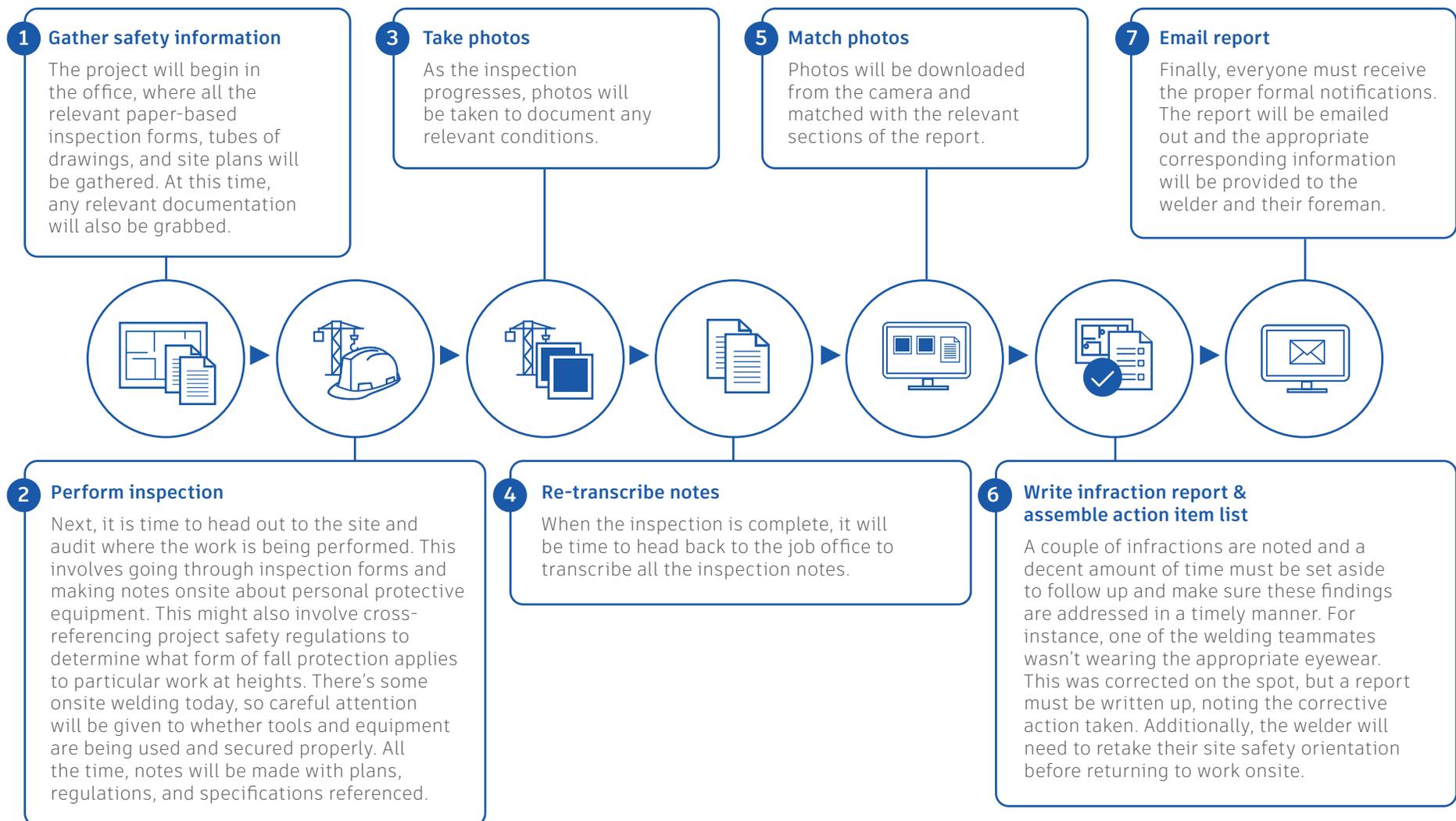
Finally, the right technology should be customisable to any given team. It should allow for current processes to be implemented into the new system.

To think about how cloud-based technology should work for a construction company, let's consider a real life example. Compare the process of performing a general daily site safety audit with – and without – cloud-based, mobile technology.



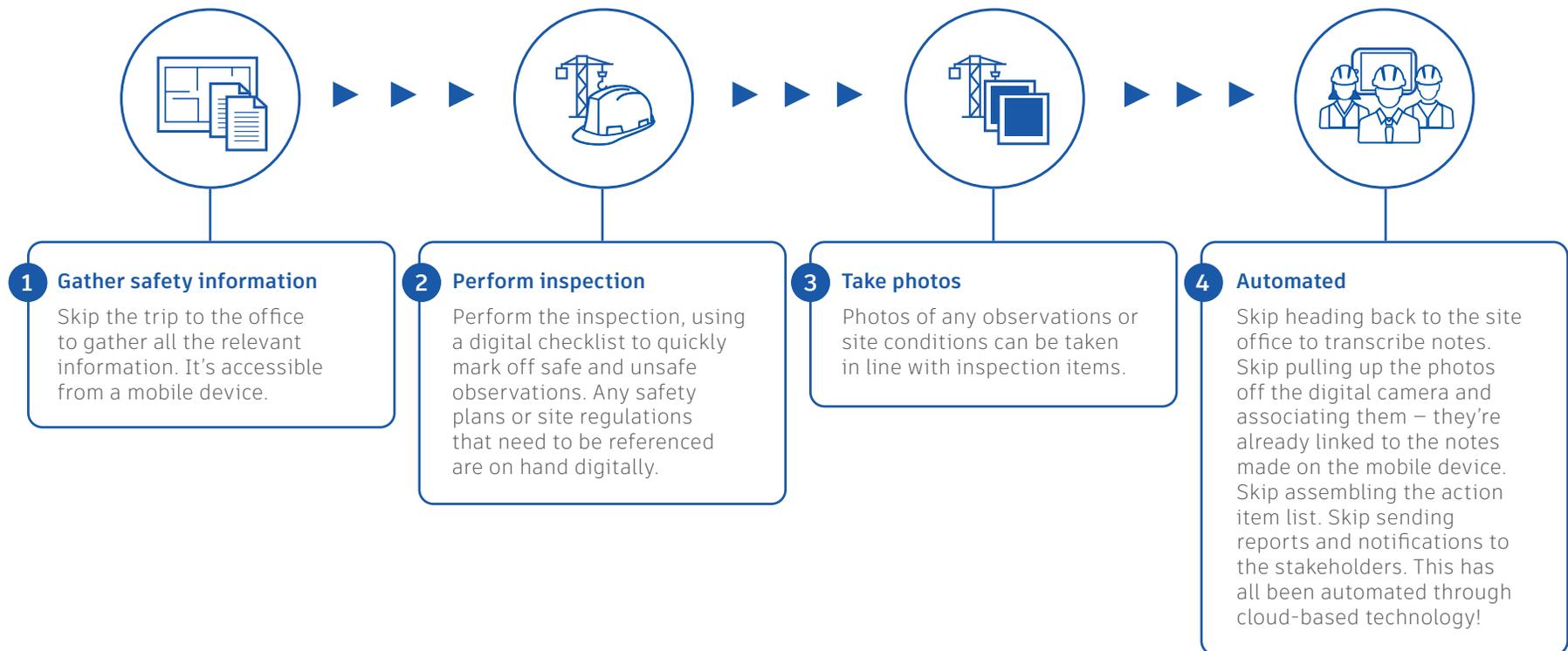
Safety Inspection Process Without Mobile Technology

This infographic showcases the many labour intensive steps involved in conducting a thorough safety inspection without utilising mobile safety technology. An infographic showing the simplified steps necessary to manage this process using mobile technology can be found on the following page.



Safety Inspection Process With Mobile Technology

This infographic showcases the streamlined approach to safety inspections when using mobile technology out on the project site. This is much less labour intensive than the typical process documented on the previous page.





Creating a Strategy for Lasting Adoption

Even if the ideal technology is chosen, the only way to improve safety procedures with this technology is by wholesale adoption across all job roles.

Lasting adoption involves planned strategy. The following tips can help pave the way for long-term adoption of new technology.

Make It a Cultural Focus

For a company to enact true digital transformation regarding safety, both safety and innovation must be a cultural focus. Safety should be emphasised as critical to success, and innovation should be encouraged at the center of everything done.

For example, Bancroft Construction demonstrates a safety culture by taking an in-depth look at safety on all projects. According to a brand manager for the company, “We build safety into our projects from the very beginning so that the wellbeing of workers, facility users, adjacent property owners, and the general public is identified as a priority.”

No team member should view safety as someone else’s responsibility. Instead, company culture should dictate that everyone is equally responsible for a safe construction site.

Prepare with Awareness

The worst way to introduce a major technological shift in a company is by blindsiding employees with the change. Take time to add in an awareness stage. During this time, employees can be prepared for what the change will look like and why it will improve safety for every single person.

Equip with Training and Reinforcement

Another meaningful practice for driving adoption of new technology is to ensure staff are trained adequately and that employee engagement is positively reinforced. This is not simply a stand-alone training session but rather a constant engagement with employees, ensuring everyone is equipped to handle new processes.

Gone are the days that the sole person responsible for onsite safety is a single safety manager. Safety is the responsibility of every single person who steps foot on the site.

An issue with this improved methodology is that not everyone has had the same safety training, experience, or knowledge. For this reason, equip employees with the reference information they need to ensure everyone feels capable of taking ownership for safety.

Utilise a cloud-based document management solution to ensure real-time access to the right information at the right time. Additionally, ensure the solution utilised has permission levels based on role, company, and specific users.

Finally, to ensure safety procedures are ingrained in the company culture, drive reinforcement through incentives, recognition, or other methods.

Demonstrate Value through Streamlined Processes

Finally, ensure that any technology implemented is actually improving safety processes and procedures. In many cases, short cuts are taken because the processes in place are impractical and require tedious steps to be followed. Driving adoption is much simpler when the technology offers a streamlined approach to safety.

Follow through on Plan Execution

Once a meaningful strategy has been devised and the right technology chosen, the next step is to follow through with the execution of new processes. For execution to succeed, the following components must be part of every process change.

1. Transparency

When utilised well, technology fuels transparency. This transparency will become a core element of safety culture. Communication and collaboration in real time using the right digital platform makes understanding risks and hazards simple.

The entire team should have access to up-to-date information in real time, rather than relying on outdated methodologies, such as emailed reports or Excel spreadsheets.

Documentation backed by cloud-based software will capture all changes in real time, reducing the risk of missing information and data. More information also helps to paint a clearer picture of what is happening, ensuring teams are always prepped for the task at hand.

2. Simplification

Technology allows teams to simplify what were once complex projects. Completing construction reports often involves tremendous work, but the right technology will make it faster to navigate lengthy checklists. Additionally, the right tools will often reduce duplicated work, as data can be entered into a system one time, with mobile connectivity allowing immediate storage of the data.

3. Consistency

Implementing new technology will also ensure better consistency across a site. Many siloed safety systems involve submitting checklists and reports in a variety of formats. When this happens, consistency is lost. The right software will establish standards that ensure everything from Incident Reports to Safety Checklists are handled the same way every time. This improves documentation and increases capability to analyse data.

4. Cloud-Based

When software can be used in real time to capture issues and inspections, it's more likely to improve safety outcomes with accuracy. Aim to adopt software platforms built for mobile. Mobile applications are easy and fast to use across devices, and cloud access ensures changes can be captured even without service or Wi-Fi.



Tie New Processes Together with Transparent Reporting

One of the best ways to tie together the entire digital transformation strategy is through transparent reporting. From capturing unsafe observations to documenting positive safety wins, a collaborative approach to reporting allows for improved transparency and the ability to adapt strategy according to real-time results.

Report on Unsafe Observations

Digitally capturing all the information surrounding any unsafe observation, be it an incident, infraction, or a near miss, makes it easier to analyse it and ensure misses don't happen again. This is critical to ensuring risks are lowered.

Report on Safety Wins

Documenting safe observations is also critical, for three main reasons:

1. It provides the ability to prove that a particular body of work or area has been inspected for safety.
2. It encourages a culture where good behaviors are recognised and encouraged.
3. When assessing safety programme performance, a much more complete picture is painted when the number of unsafe observations is presented in relation to the total number of observations.



Reinforce the Benefits of a Digital Safety Programme

Companies that prioritise safety save costs and prevent significant losses. Studies indicate that the indirect costs of injuries can be as much as 17 times the direct costs². Reinforcing the benefits of a digital safety programme helps to close the adoption loop. Emphasising the following five key benefits can help drive the use of new digitally focused, cloud-based safety solutions.

1. Increased Sense of Responsibility

The use of mobile technology can make every person who steps foot on the job site feel a sense of responsibility for safety. Safety is no longer just the responsibility of the safety manager. Mobile technology provides instant access to accurate and up-to-date safety program information, accessible via a screen tap or two. It creates a sense of accountability for the quality of the safety data. A safety programme and inspections processes can likewise be decentralised and collaborated on by construction site workers, third-party stakeholders, and subcontractors.

2. Increased Efficiency and Productivity

With information at their fingertips, construction site workers no longer need to waste time on valueless tasks like making trips back and forth to the site office to get their safety plans, drawings, and forms. Nobody has to drive back to the office to transcribe notes or assemble reports. When correctly set up, a cloud-based safety programme provides safety checklists via mobile apps that make data collection fast and efficient. The time saved on valueless tasks can be applied to value-add activities, like additional site safety inspections or more time working in the field with your trades and subcontractors.



3. Improved Office and Field Communication

When someone in the field notices a safety issue, they can report it immediately to the office to resolve immediately – making the information available to anyone else who might encounter the same or a similar situation. When there is little to no lag time between identifying and then reporting an issue, accuracy is improved and response time shortened.

4. Enabled Use of Leading Indicators

A well-designed digital safety programme enables site workers to document site conditions in real time. This improves the quality and timeliness of data used for analytics allowing for leading indicators of potential incidents, infractions, and near misses. Today, most companies rely on lagging indicators to track and understand their safety record. While it's important to address issues when they occur, it's even better to prevent them from happening in the first place.

5. Safety Meetings and Training in the Field

When data can be accessed by anyone anywhere, it's easy to schedule briefings and safety training in the field. The context for the meeting is apparent – improving the quality of training by conducting it in the environment or with the relevant equipment.



A New Frontier

While safety in construction has long been a challenge, the good news is that a whole new frontier of technology-focused safety strategies can be explored. By utilising cutting-edge solutions, companies can become smarter in their approach to safety. From improved data capturing to real-time communication across teams, the right forward-thinking technology connects every component in a safety strategy, creating an integrated and innovative approach to improving safety on construction sites.

One area of great interest is in the implementation of machine learning. For example, Smartvid.io is a photo and video analytics platform that can help construction companies manage visual data from construction sites. This platform automatically labels every piece of incoming visual data, making searching and sorting simple. On top of this, it uses machine learning to detect common safety risks, offering valuable predictive insights to management.

Technology is truly turning new corners for safety in construction, and as machine learning and other innovative platforms evolve, the risk savings are sure to be immense.





Conclusion

Implementing technology is crucial to ensuring jobsite safety. By strategically seeking out a digital transformation focused on real-time collaborative data, construction safety can be dramatically improved. In an industry ripe for change, innovative companies that implement a digital-focused safety strategy can see vast improvement while rising above the competition and increasing employee safety.

References

[1] [Occupational Safety and Health Administration](#)
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[2] [The ROI of Safety \(with infographic\)](#)
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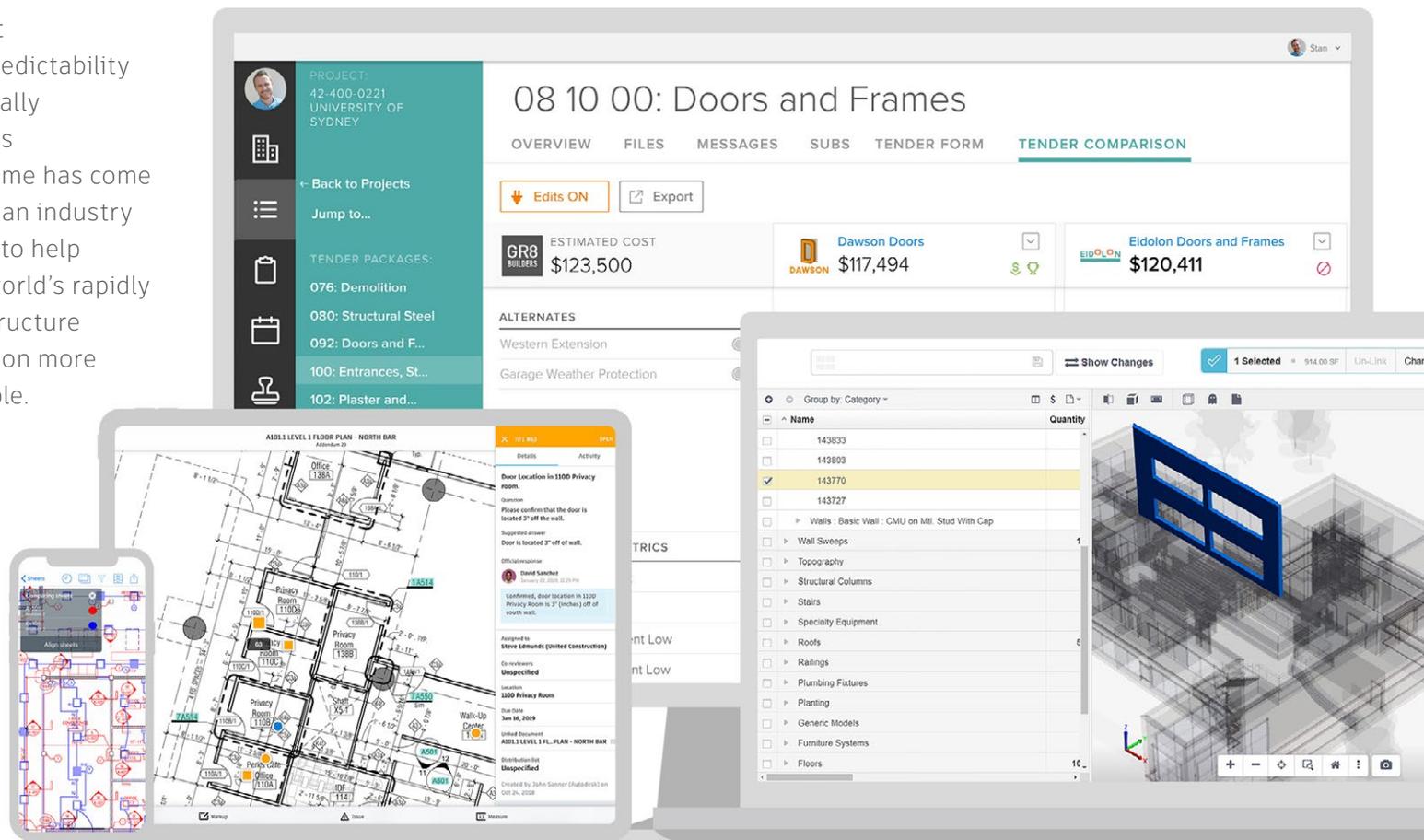


See the Future of Connected Construction

construction.autodesk.com

In 2018, Autodesk announced that construction would be a key focus area to help our customers on their design and make journey. To capitalise on the opportunity, Construction became its own CEO-staff level organisation, Autodesk Construction Solutions. This unique structure is comprised of product development, customer success, marketing, and field operations. The organisation is designed to move at the speed of the market and serve customers on a level playing field with other solution providers. Autodesk Construction Solutions offers products that cover the entire construction lifecycle, from design through plan to build and operate, including the Autodesk Construction Cloud which brings together our cloud-based solutions Assemble, BIM 360, BuildingConnected and PlanGrid.

Our vision is to create a vibrant construction industry where predictability and productivity are exponentially increased, while jobsite waste is proportionately reduced. The time has come for platform that will empower an industry transformation. Our mission is to help construction teams meet the world's rapidly expanding building and infrastructure needs, while making construction more predictable, safe and sustainable.





With Autodesk software, you have the power to Make Anything. The future of making is here, bringing with it radical changes in the way things are designed, made, and used. It's disrupting every industry: architecture, engineering, and construction; manufacturing; and media and entertainment. With the right knowledge and tools, this disruption is your opportunity. Our software is used by everyone - from design professionals, engineers and architects to digital artists, students and hobbyists. We constantly explore new ways to integrate all dimensions of diversity across our employees, customers, partners, and communities. Our ultimate goal is to expand opportunities for anyone to imagine, design, and make a better world.

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