



AUTODESK  
CONSTRUCTION  
CLOUD™

# The Ultimate Guide to Benchmarking your Workflows

UK & Ireland



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## Introduction:

# Measuring excellence, improving performance

Many companies use key performance indicators (KPIs) to gauge and compare performance in meeting both strategic and operational goals. The construction industry, however, lacks objective benchmarks or ways to measure excellence across the industry.

This eBook aims to outline simple KPIs that companies of all sizes can start capturing today by using technology that digitises this information, delivering shared access to critical project documentation and data to help project teams collaborate. Comprehensive analysis of this data across our industry will help improve processes and lead to better performance and project delivery.

### Gaining insights from data

One reason for the absence of industry benchmarks is the lack of centralised data necessary to establish standards. All contractors who use digital technology to manage their construction projects are generating data and information. Many say, however, they lack a single place to aggregate that information and don't know how to use it in a meaningful way.

Being able to analyse data such as project information around requests for information (RFIs) and change orders not only provides useful context, but also enables contractors to understand patterns of issues in their building processes.

### Drawing on industry expertise

Autodesk commissioned a study with Censuswide to survey more than 400 contractors, sub-contractors and project owners, in Ireland and the UK, to identify and analyse current processes for project planning and execution. The study revealed seven KPIs that companies say are especially useful when it comes to interpreting overall performance.

The findings suggest that by adopting specific processes for project management, contractors can reduce risk, thereby minimising downstream problems and improving performance.

The report covers seven categories of project activities, including:

- Problems discovered in construction documents
- RFIs
- Change orders
- Project programmes
- Safety/Inspections
- Labour productivity
- Quality and handover

**Read the key findings and see how your company measures up.**

# 7 KPIs of Construction

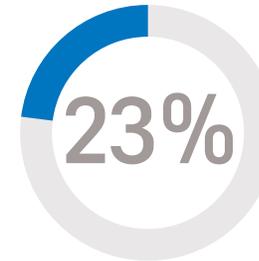
## 1. Problems found in construction documents

Errors at the tender phase of construction documents can ripple through a project. Seeing the issues that arise, and comparing them with similar previous projects can enable contractors to work to avoid the same problems in future.

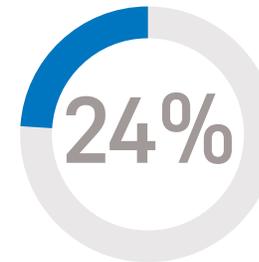
We wanted to understand how many contractors capture information about errors, omissions and constructability issues at the outset, how often they do so, how hard they find this work and how valuable they perceive it to be. Additionally, we also asked respondents about reporting and risk reduction in their projects.

### Notable Stats:

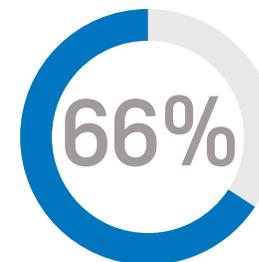
- **Sub-contractors and specialist contractors are markedly less likely to capture errors, omissions and constructability issues frequently\***, with only 16% doing so, compared with 25% of main contractors and 29% of project owners and clients.
- While it's important to capture issues on current projects, it's equally critical to set up standard processes to compare them to past projects. It's not habitual now, however. Of all respondents who capture issues frequently, just **24% regularly compare them to past projects.**
- Likewise, only about one in four of those who look for errors frequently report issues to senior management or see proactive risk reduction as a result.
- Those who track the data find it useful: **74% of those polled who find errors in tender documents say it's valuable or highly valuable.** Across the board, however, it's still seen as a challenge with 70% of all respondents saying it is difficult or very difficult to do. For main contractors, the time and expense involved is the biggest obstacle, while lack of senior management support is the challenge most cited by project owners, capturing and reporting this information in a succinct way becomes part of their standard operating procedure.



23% of respondents frequently capture errors, omissions and constructability issues discovered during the tender phase of construction documents.



24% frequently compare errors, omissions and constructability issues in construction documents to past projects.



66% say it would be valuable or highly valuable if they could capture issues more frequently.

\*Frequently = on over 50% of their projects

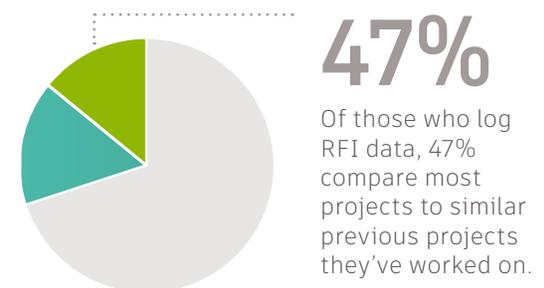
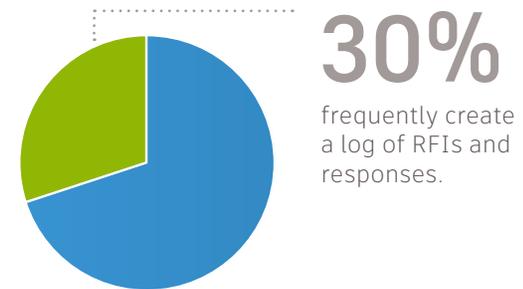


## 2. Logging RFIs and responses

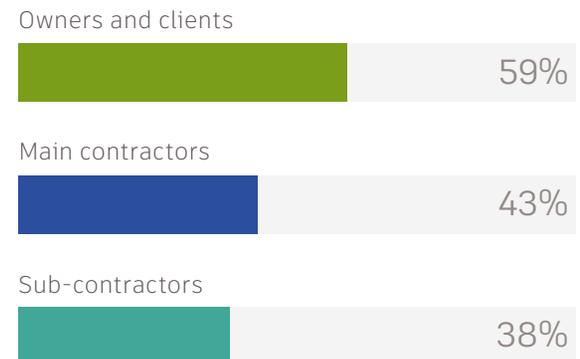
Requests for information (RFIs) and responses are another point in the project process where errors can occur, so we sought to determine how often those surveyed log RFIs and responses. We also asked how often those who create such a log compare it to previous similar projects and use it to proactively reduce risk.

### Notable Stats:

- 30% of respondents are logging RFIs and responses on over half of their projects.
- Project owners and clients are most likely to report RFIs to senior management as potential sources of risk, at 59%, with only 38% of sub-contractors doing so.
- Of those who create such a log, 74% say it is a valuable thing to do, with 82% of owners and clients agreeing it is.
- Contractors who don't log RFIs and responses digitally see the value in it. They find, however, that obstacles such as the potential time and cost involved, or resistance from others inhibit them from putting in place the necessary technology and processes.
- By using historical data to identify the root cause of the RFI and measuring the time to receive a response, contractors can see where potential breakdowns can happen in communication between teams. This helps them to implement more efficient practices on future projects.



### RFI logging by type:

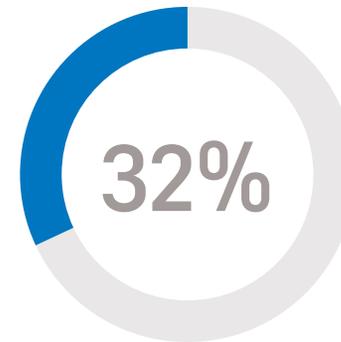


### 3. Documenting change orders

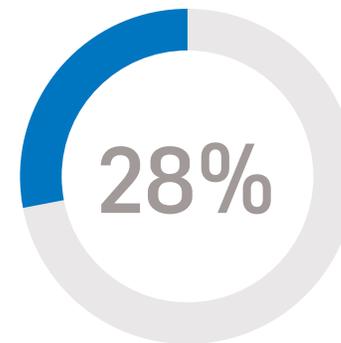
When the original project contract or schedule gets amended, it can cause delays and additional costs. We asked how often respondents collect and document change orders, including turnaround times, root causes and programme impact.

#### Notable Stats:

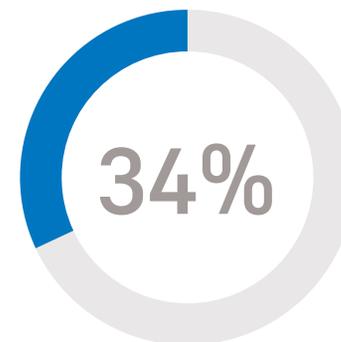
- 31% of respondents typically collect and document change orders on over half of their projects, with project owners and clients much more likely to capture this information -- at 39% -- than sub-contractors (27%).
  - This trend continues when we examine how often those surveyed capture turnaround times, root cause and schedule impact, with project owners and clients up to twice as likely to track these factors. If they have change order logs, some contractors may not see the need to keep one of their own.
  - Analysing data from change orders can help project owners and clients assess how well contractors perform and which contractors to use in future. What was the root cause of the change order? How long did it take them to turn it around? Data can show project owners the root cause of change orders and how long it took the contractor to resolve.
- **What's holding people back?** Survey respondents told us investing in processes to better capture and document change orders can be too time-consuming and too expensive. Furthermore, they can meet resistance from others or find senior managers don't support their efforts.
- Despite the potential cost implications and resistance it is worth pushing for documentation of change orders. Of those project owners and clients who do it, 91% say it's valuable to the overall project delivery process. Only two-thirds of sub-contractors see the value in it, however, so sharing information more widely about the benefits of doing this could be worthwhile.



32% frequently\* capture the root cause of a change order.



28% frequently capture start, finish, and turnaround times.



34% frequently evaluate the impact of change orders on project programmes.

\*Frequently = on over 50% of their projects



## Let's compare: capturing and collecting information

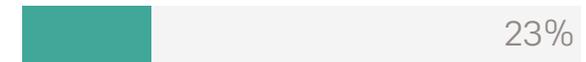
Along with understanding the headline figures, it's also useful to deep dive into the survey data to understand what information is most likely to be captured and which groups of those surveyed are more likely to collect critical project information.

- 1**
  - **Only 23% of respondents are capturing errors, omissions, and constructability issues in the tender phase of construction documents.**
  - **Why act on this?** Dedicating more time and resources to this phase could help contractors identify potential risks and issues earlier in the project process. This could lead to a reduction in RFIs and change orders downstream, meaning less disruption in scheduling and productivity.
- 2**
  - **30% of respondents create a log of RFIs and responses for most projects.** Project owners and clients capture and collect data around RFIs, responses, and change orders more often than main contractors and much more often than sub-contractors or specialist contractors.
  - **Why act on this?** If everyone spent more time reviewing documents before construction actually starts, RFIs and change orders could be markedly reduced.
- 3**
  - **Of all respondents, 31% told us they frequently collect and document change orders.** Project owners and clients are more than twice as likely to evaluate and include the impact to the project programme of change orders, when compared with main contractors and sub-contractors.
  - **Why act on this?** When all involved take the time to understand the impact of change orders on the project programme, it can lead to more united effort and avoid the factors that can cause significant project delays.

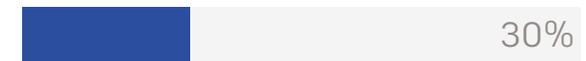
### Companies capturing and collecting critical project information on at least half of their projects



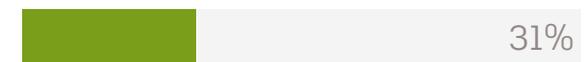
#### 1 | Capture errors and omissions



#### 2 | Capture a log of RFIs and responses



#### 3 | Collect and document change orders



Percentages of all survey respondents

## Let's compare: reviewing past project information

- 1**

  - Of those who look for errors during constructability reviews, only 24% frequently\* compare them with issues on past projects to find patterns and trends.
  - **Why act on this?** If others reviewed past information for errors, omissions and constructability issues, they could mitigate issues that happen during the build phase, such as schedule slippage and change orders.
- 2**

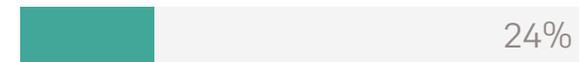
  - Nearly half (47%) of those surveyed who said they capture RFIs and response times also compare this information to historical project data.
  - **Why act on this?** By comparing today's projects to previous ones, contractors and project owners can identify and act on trends and patterns in RFIs and response times.
- 3**

  - Only 28% of companies review documents to uncover the root cause of change orders on over half their projects, with contractors much less likely to do so than project owners and clients.
  - **Why act on this?** Reviewing root causes could help prevent the same errors from happening again by enabling companies to catch them earlier in the design process.

### Companies seeking to understand trends and root causes of issues on more than half their projects



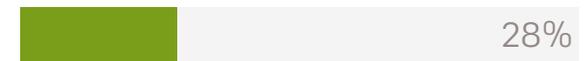
1 | Compare errors to past projects



2 | Compare RFIs & responses to past projects



3 | Seek the root cause of change orders



\*Frequently = on over 50% of their projects

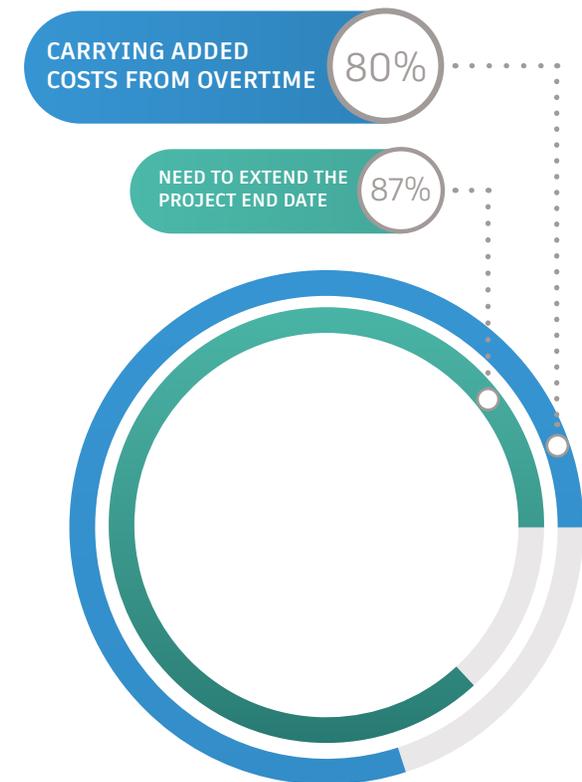


## 4. Updating the project schedule

To gain insight into the programming process and the prevalence of good programme maintenance, we asked respondents how often they updated their project schedule. We also enquired about related activities and outcomes, including the financial effect of slippages.

### Notable Stats:

- 36% of respondents reported they update project schedules daily or weekly.
- 20% of those surveyed said they update the schedule within two days of becoming aware of a situation that requires the schedule to be changed.
  - This number is extremely low, considering how important it is to capture schedule changes quickly so those managing and working on the project can have a clearer understanding of the status of the project—what’s completed, what remains to be done and so on.
- Over half of project owners and clients (55%) say they use overall and look ahead schedules on more than half of their projects. These respondents more than likely belong to companies who are adopting additional Lean practices on their construction projects. Contractors are far less likely to take this approach.

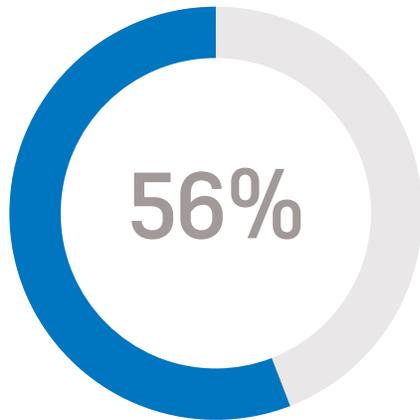


**80%** of project owners and clients are carrying added costs from overtime and related issues on at least three quarters of their projects due to schedule slippage, with **87%** of them needing to extend the project end date.

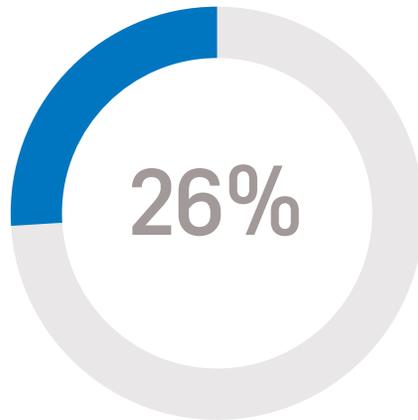
## 5. Software for safety & inspections

Being able to track and manage safety and inspection issues is crucial to sound construction project management. We asked respondents if, and how, they are using software to manage safety and/or inspections for their construction projects.

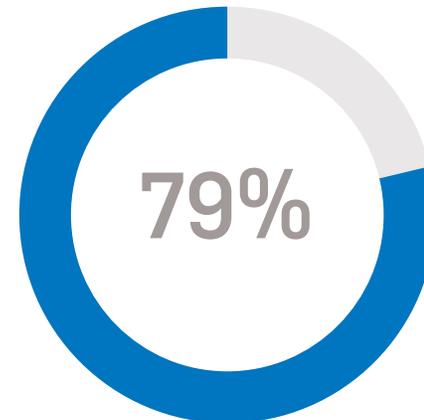
### Notable Stats:



56% of project owners and clients are using software to manage safety and/or inspections on at least half of their projects.



We see a significant drop in software use by sub-contractors and specialist contractors, with only 26% using it to track safety and/or inspections.



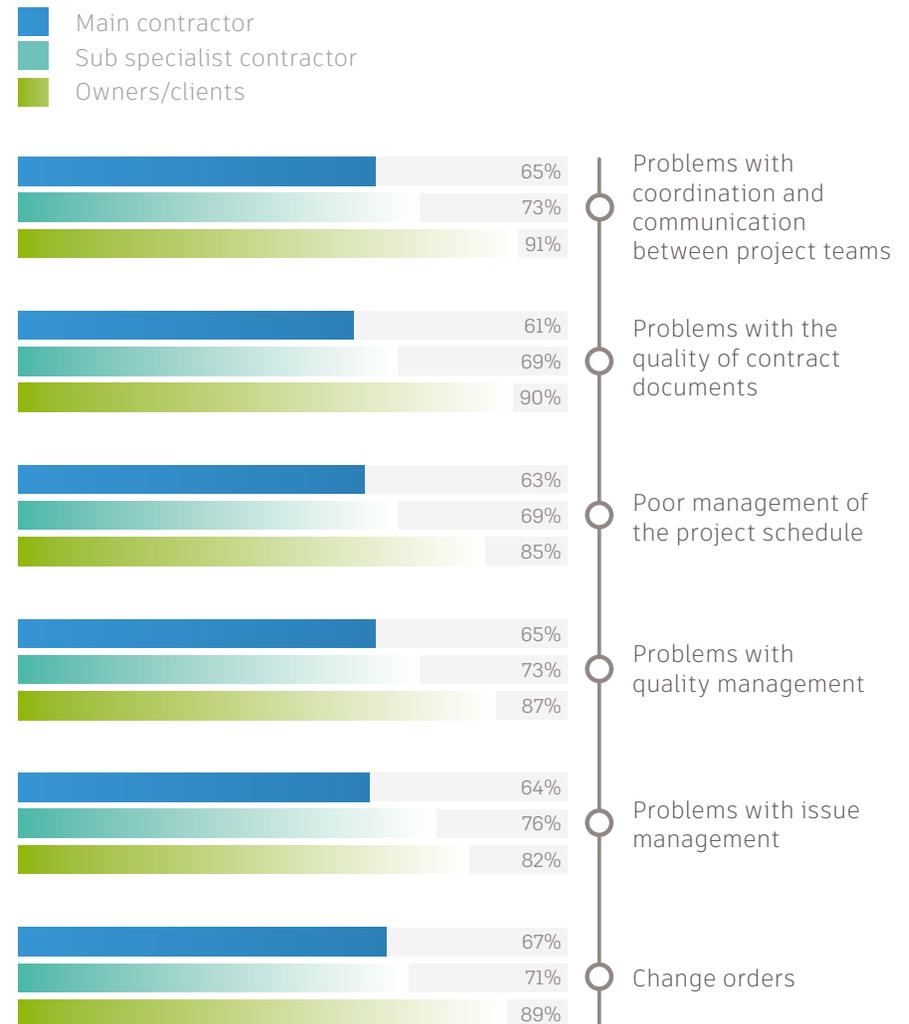
79% of all respondents who use software to manage construction safety and/or inspections say it is valuable or very valuable to do so.



## 6. Labour productivity

When it comes to effective construction project management, high levels of productivity on site and in the office is key. We asked respondents about the factors they believed are most likely to decrease productivity.

- For project owners and clients, problems with coordination and communication between project teams and problems with the quality of contract documents are the issues they see as most likely to affect productivity.
- Across the board, project owners and clients were much more likely than contractors to see any of the factors mentioned as having a negative effect on productivity. This is possibly because they are more likely to have a bird's eye view of projects.
- Main contractors, on the other hand, see change orders as the single greatest issue affecting productivity.
- Coordination and communications issues are also one of the biggest issues affecting productivity for sub-contractors and specialist contractors, while this group also sees issue management and quality management as some of the biggest productivity issues. This is likely due to their position in the project process.
- Regardless of their role, it's clear that better communication between everyone involved in a construction project is crucial to improving productivity, as is working to ensure that people across the project can access the information they need to do their job.

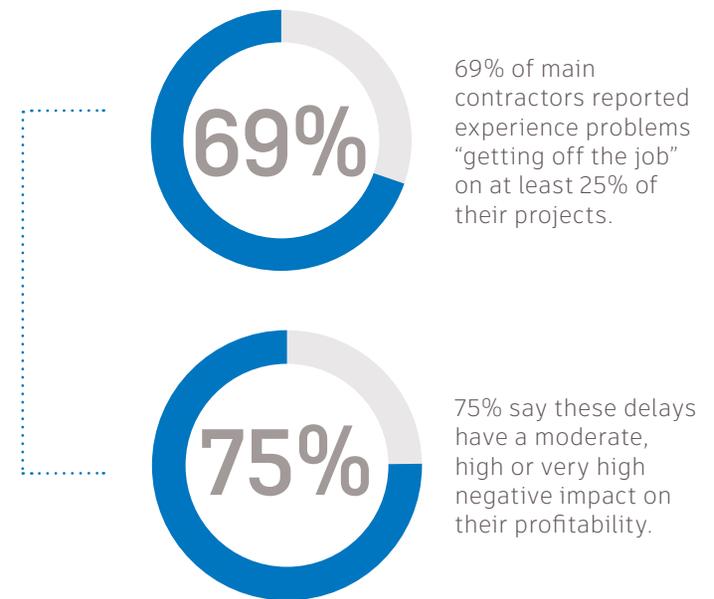


## 7. Quality and handover

While snag lists were traditionally done at the end of construction projects, snagging on the go can prove beneficial. We asked those surveyed which approach they prefer, and if they use software to manage snagging and project handover. Getting off the job isn't always easy, so we also asked respondents about the closeout problems they see, and the financial impact these can have.

### Notable Stats:

- Three quarters of main contractors and 95% of project owners and clients use software to manage snag lists and handover activities on at least 25% of their projects. For sub-contractors and specialist contractors, this figure is much lower at 68%.
  - Of all respondents who use software in this way, 79% rate its value as high or very high and cite it as a key factor in improving the process.
- 39% of project owners and clients are snagging as they go on at least half of their projects, while only about a quarter of contractors engage in this type of continuous handover activity.
  - Those who do snag as they go appreciate the value of doing so, with 76% saying it is valuable or very valuable to do this rather than snag everything at the end.





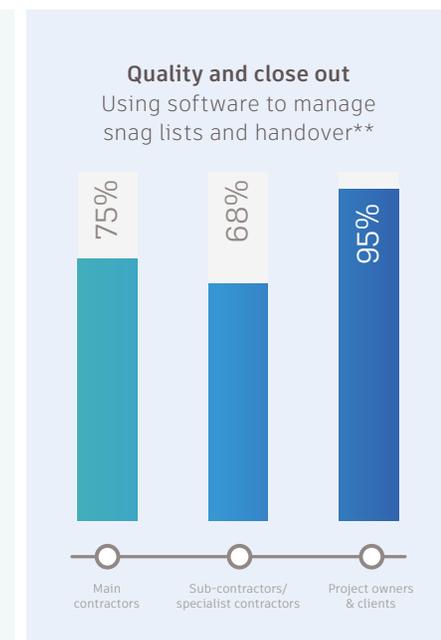
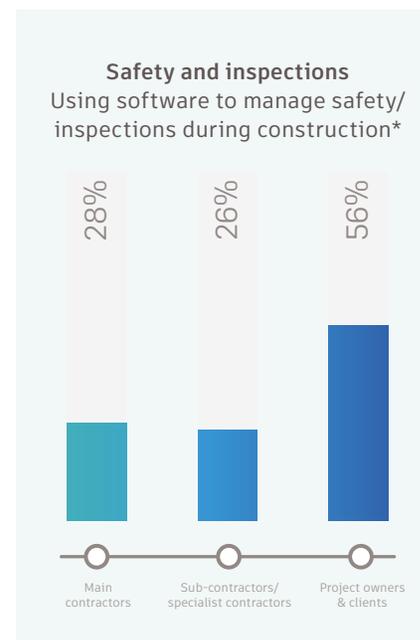
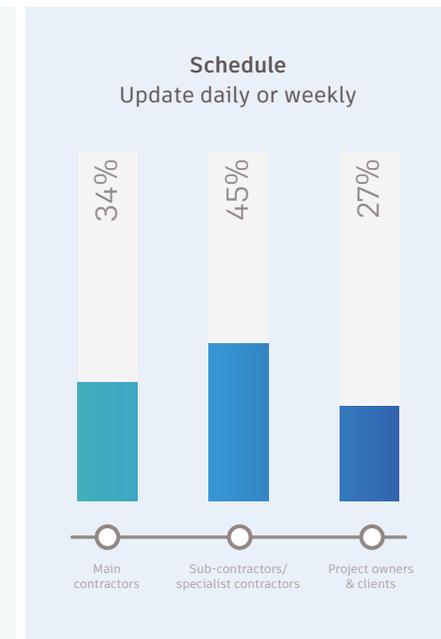
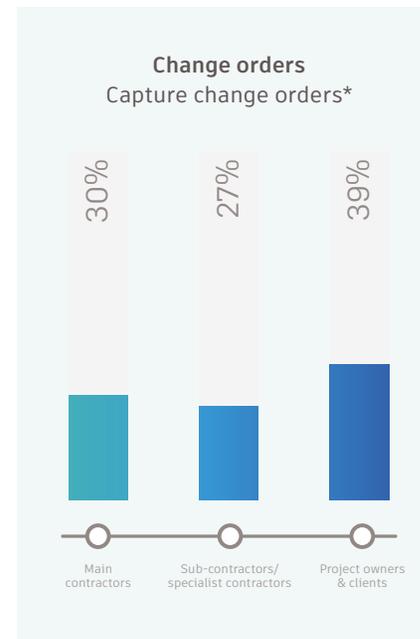
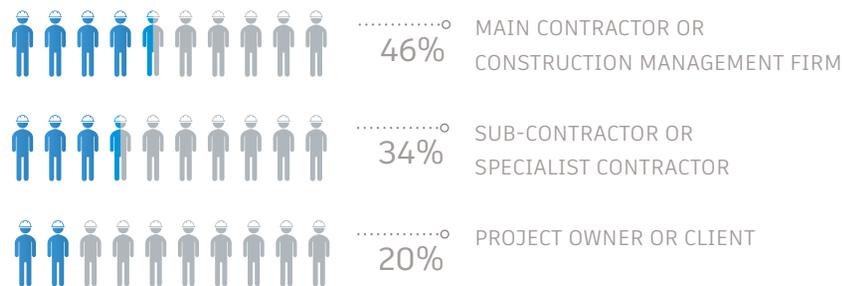
# Let's compare: KPIs side by side

## What is the process data telling us?

- We see a trend that, in most cases, smaller companies are capturing this data at a higher frequency than larger ones.
- This could be that, while larger companies are often more willing to try things on a one project/pilot basis, smaller companies are more successful at getting policies/practices implemented consistently over all or most of their projects.
- This research aims to put a spotlight on these process-based KPIs so that more people will be aware of them and therefore want to try implementing them.

## Respondent Demographics

402 Total Respondents



\*On more than half their projects \*\*On at least 25% of projects

## Conclusion:

# Improving project process and overall company performance

As an industry, where do we go from here? The data from the study tells us that adoption of best practices around these seven key activities is still relatively low, hovering at about a third for those companies applying them to over half of their projects. The data also shows, however, that companies that frequently follow these best practices see them as really valuable, confirming they see improved project performance through their implementation.

This study offers at least a general understanding of useful industry benchmarks. You can use these seven metrics to assess your company's operations, identify areas for improvement, and begin setting standards for best practices in your company.

### What gets measured gets managed

Over the past five years, the abundance of new technology tools available to contractors and project owners has helped them capture and track critical data and information on construction projects.

While metrics such as safety, profit and client satisfaction are vital, they only tell half the story, however. They won't necessarily help you improve outcomes on future projects. Looking for correlations between activities such as RFIs and change orders or RFIs and project programmes, will help you to better understand the causes of project issues.

If you're digitally capturing this information, the insights are there, you just have to dig them out and look for patterns that will help you identify areas for improvement.

### Take the next step

Gathering the pertinent data, analysing it and using it in a meaningful way will not only help you to improve projects, but also to boost the overall operational performance of your company. By understanding key trends, issues, and other barriers that erode your project margin, you can set goals to improve those specific processes.

While it's important to use KPIs to see how you stack up against the competition, it's critical to first set benchmarks within your own organisation. This will not only help you to maximise company profits, but also contribute towards your goal of creating a safe environment for your workforce while continuing to deliver high-quality projects to your clients.



# See the future of connected construction

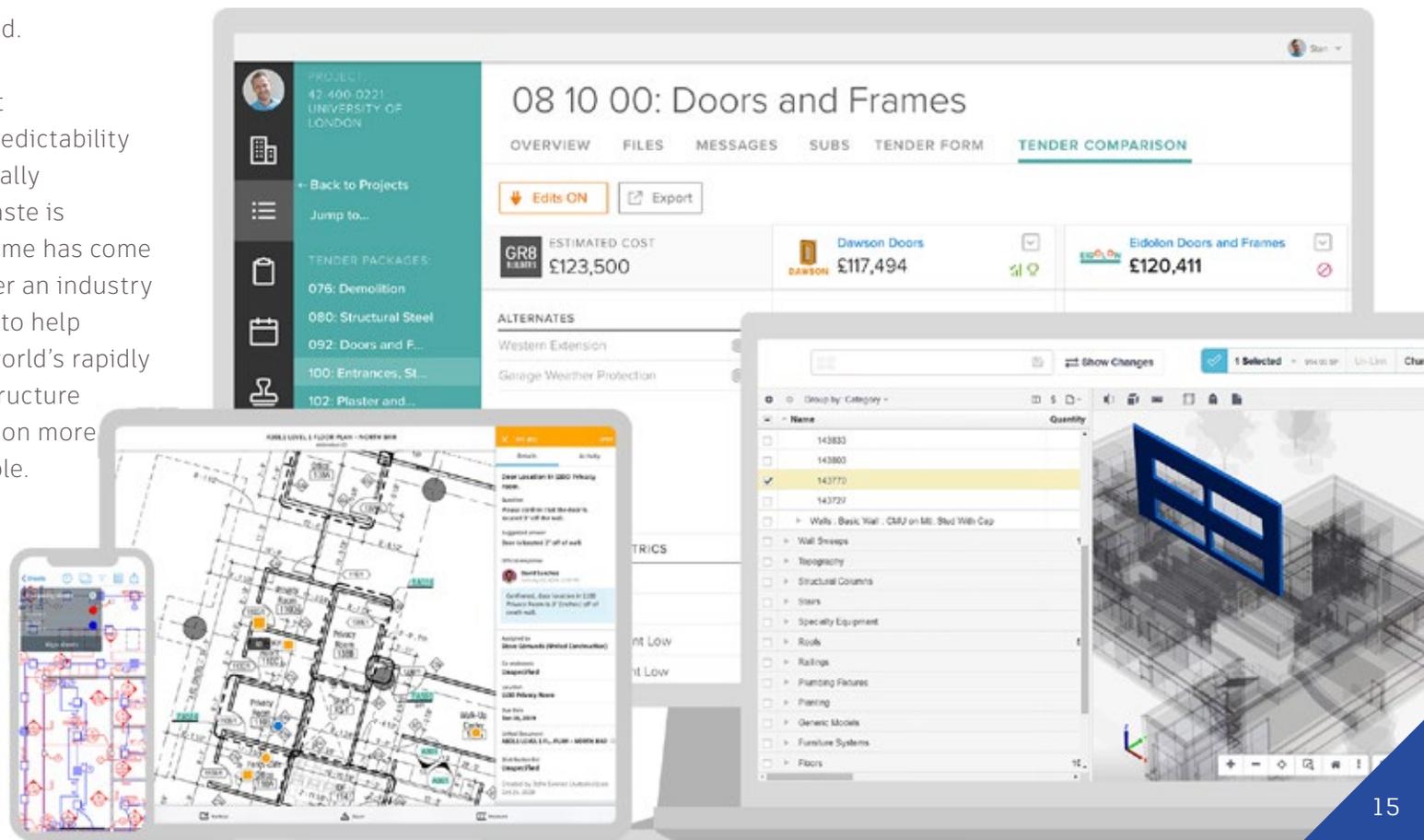
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In 2018, Autodesk announced that construction would be a key focus area to help our customers on their design and make journey. To capitalise on the opportunity, Construction became its own CEO-staff level organization, Autodesk Construction Solutions. This unique structure comprises product development, customer success, marketing, and field operations. The organization 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 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 project site waste is proportionately reduced. The time has come for a 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, including:

- architecture, engineering, and construction
- manufacturing
- 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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