AUTODESK
Construction Cloud

The Payback of Project Management Software

Table of Contents

Intro to The Payback of Project Management Software Ebook

Submitting RFIs, reviewing submittals, issuing meeting minutes, and schedule management are inevitable parts of every construction project, but these workflows can be inefficient and time-consuming. Teams have started to digitize their workflows, but systems and data are often not connected, and they're frequently stored in separate locations. This runs the risk of incorrect or missing information, which can ultimately lead to rework and derailed workflows.

However, it's not too late for teams to turn this around, and an ideal solution is the adoption of a single cloud-based construction management platform. A single platform lets project teams collaborate on coordinated, shared designs – regardless of location, role in the project, or stage of the project. Varying needs of teams and contract structures can be fully supported by digital project controls.

Whether team members need real-time access to shared workspaces, or more strict access control and permissions around specific files and versioning, cloud-based technology solutions give teams flexible yet strict permission levels to control those collaboration styles. Let's specifically look at how the adoption of a cloud-based construction management platform can help teams optimize their project management workflows.

"With connected workflows, we can eliminate data loss and broken communication between one entity and the next. Technology is the glue that holds the project together and creates success by removing data silos and streamlining access to information in a central location."

–Melissa Schulteis, Virtual Construction Specialist, Miron Construction

Connected Project Management Workflows—RFIs

Requests for Information (RFIs) are a painful, yet contractually necessary part of any project. Whether you're the one submitting or the one responding, without seamless workflows to account for them, your process will suffer without fail. RFIs are essential, of course, ensuring that the crew builds correctly, reducing rework and bad blood. But for all that they're essential, RFIs are some of the biggest roadblocks of a project. Traditional RFI processes are disconnected, relying heavily on email to move items through the workflow. Not only does this run the risk of response delays and miscommunication, but once an RFI is submitted, the creator has zero visibility into the status of the item.

And when it comes to generating reports, it isn't an uncomplicated process and is limited to the information captured in the RFI log. Instead of relying on manual, disconnected processes, teams can utilize a cloud-based construction management platform to automate and simplify the RFI process with standardized workflows that create clear accountability and maintain transparency while meeting contractual obligations.

Cloud-Based Platform Benefits for RFIs:

Manage RFIs in the Field and Office

Seamlessly create construction RFIs on web and mobile and provide critical context for faster RFI resolution by posting to specific areas of any 2D document or 3D model, adding multiple pushpins or markups, and taking photos in the field and linking them directly to RFIs.

Configure RFI Workflows

One size does not fit all. Customize your construction RFI workflow to meet your project or company needs with multi-step reviews. Designate RFI actions for individual users, roles or company including control over who can submit, create, respond to, and approve RFIs.

Connect RFIs Across the Project Lifecycle

Streamline workflows and provide access to all critical information. Connect Issues, RFIs and Change Orders across the project lifecycle.

Avoid duplicate data entry by escalating Issues to construction RFIs or by linking Issues to existing RFIs. To track the origin of the Change Orders, create a PCO from an RFI, or link existing RFIs to PCOs.

Provide Transparency and Create Accountability

Quickly understand where the RFI is within the workflow, what the next steps are, and who is accountable.

View the status of construction RFIs with color-coded indicators, identify ball-in-court, and seamlessly progress RFIs through the process with the click of a button.

"With seamless RFI management, project teams have access to the same dashboard and can track the progress of an RFI over the course of its life."

–Weston Short, VP of Engineering and Innovation, Gaylor Electric

RFIs

+ Create Item

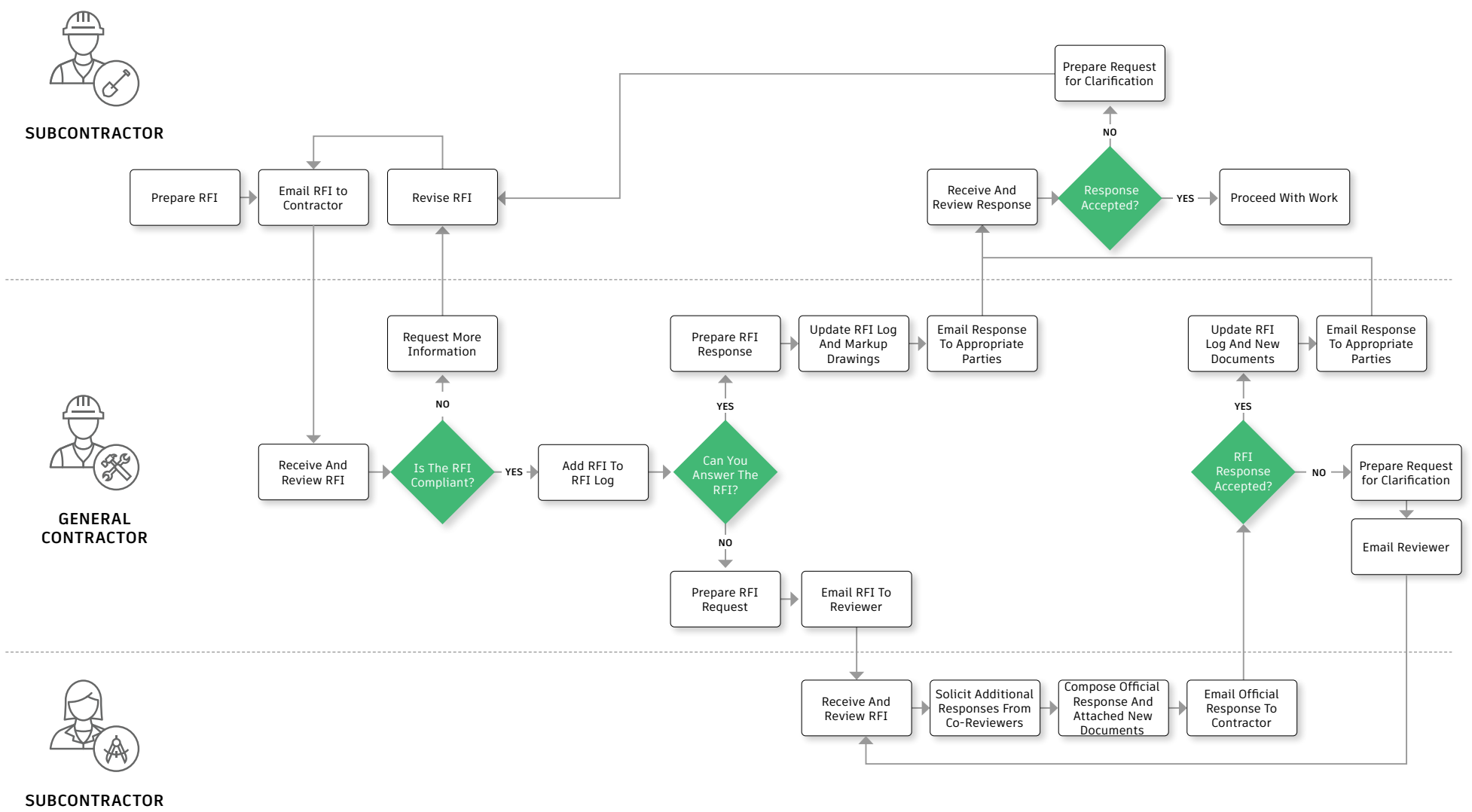| #65 | Open In Review |
#66	Open Answered
#67	Closed
#68	Draft

Create RFI

Status *
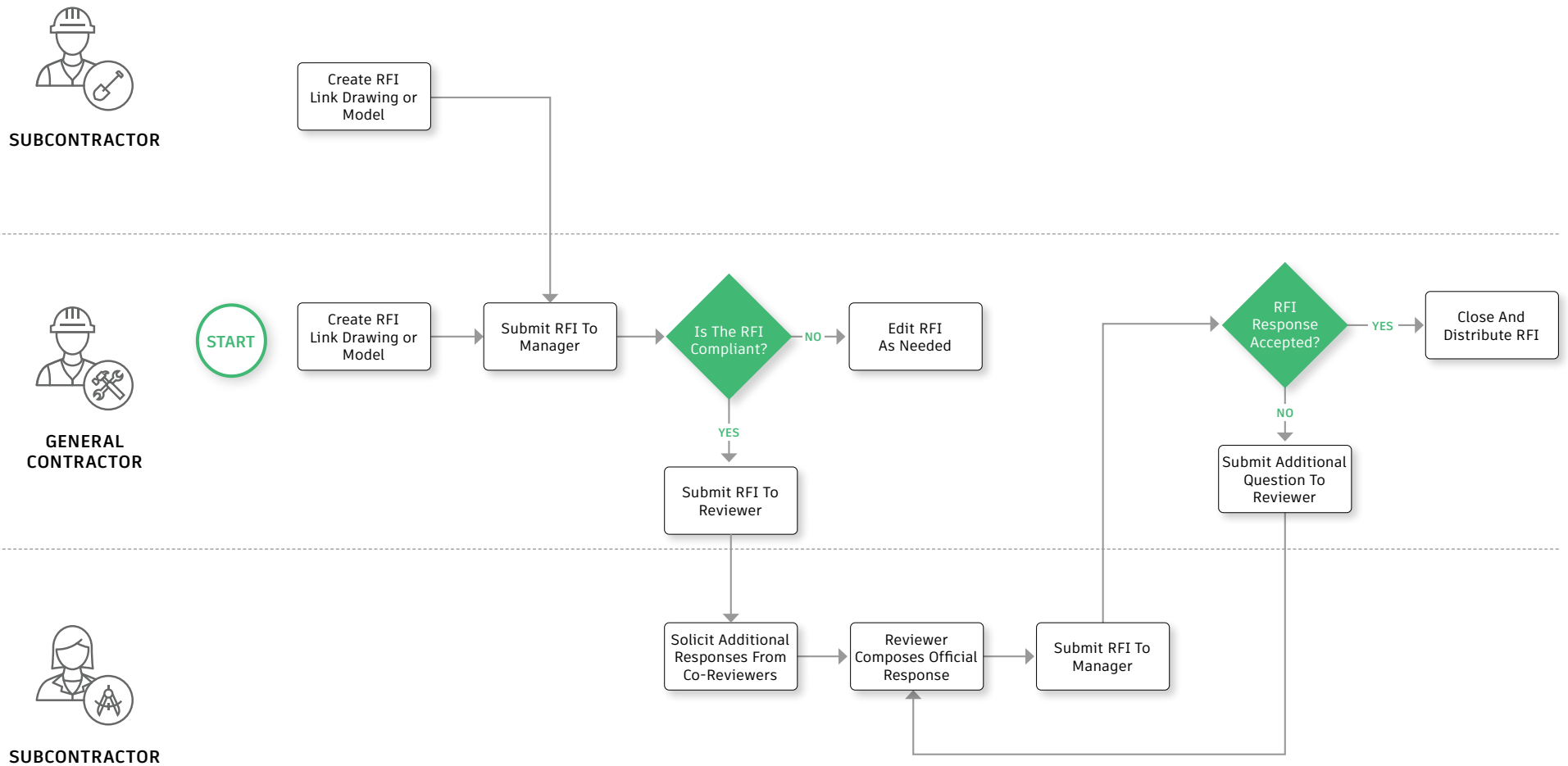
Open

RFI number *

Title *

Traditional RFI Workflow

Time Consuming · Manual · Higher Risk for Miscommunication · Siloed · Restricted Visibility

SUBCONTRACTOR

GENERAL CONTRACTOR

SUBCONTRACTOR

Prepare RFI → Email RFI to Contractor → Revise RFI

Request More Information

Receive And Review RFI → Is The RFI Compliant? — NO → Request More Information

Is The RFI Compliant? — YES → Add RFI To RFI Log → Can You Answer The RFI?

Can You Answer The RFI? — YES → Prepare RFI Response → Update RFI Log And Markup Drawings → Email Response To Appropriate Parties

Can You Answer The RFI? — NO → Prepare RFI Request → Email RFI To Reviewer

Receive And Review Response → Response Accepted? — YES → Proceed With Work

Response Accepted? — NO → Prepare Request for Clarification

Receive And Review RFI → Solicit Additional Responses From Co-Reviewers → Compose Official Response And Attached New Documents → Email Official Response To Contractor

RFI Response Accepted? — YES → Update RFI Log And New Documents → Email Response To Appropriate Parties

RFI Response Accepted? — NO → Prepare Request for Clarification → Email Reviewer

Cloud-Based RFI Workflow

Streamlined · Controlled · Clear Accountability · Real-Time Status Visibility · Collaborative · Instant · Automatic Audit Trail

SUBCONTRACTOR

Create RFI
Link Drawing or
Model

**GENERAL
CONTRACTOR**

START → Create RFI Link Drawing or Model → Submit RFI To Manager → Is The RFI Compliant?

Is The RFI Compliant? — NO → Edit RFI As Needed

Is The RFI Compliant? — YES → Submit RFI To Reviewer

SUBCONTRACTOR

Solicit Additional Responses From Co-Reviewers → Reviewer Composes Official Response → Submit RFI To Manager

RFI Response Accepted? — YES → Close And Distribute RFI

RFI Response Accepted? — NO → Submit Additional Question To Reviewer

Connected Project Management Workflows—Submittals

Submittal management is one of the most important construction workflows to start off a project on the right foot, and one of the most time consuming. Typically, the Submittals review process is long and brutal. Stakeholders need to aggregate them from all engaged contractors, ensure they cover each aspect of the project, and input them into a system—often manually, which introduces mistakes and omissions. This can take weeks or even months, and as the project grows in size and scope, so do the errors.

The process can be improved by using a cloud-based construction management platform. Teams can efficiently create, coordinate, and manage all aspects of Submittals in a single document library. Initiate requests, manage reviews and approvals, and sync critical information to mobile devices for offline access.

Cloud-Based Platform Benefits for Submittals:

Simplify the Construction Submittal Workflow

Easily create and organize individual submittal items and move submittals through the review process efficiently with actionable and conflict-free responses.

Streamline review process by adding co-reviewers during reviews to ensure all necessary team members have an opportunity to review and comment.

Start the Project Faster

Leverage an automated submittal log to get the project started faster. Understand your construction submittal project requirements in finer detail when you have all of your action submittals, products, closeout submittals, QA/QC requirements, and more at your fingertips.

Provide Real-time Visibility Into Submittal Status

Seamlessly track and review submittal progress. As submittal items move through the workflow, the system automatically tracks and displays transition dates.

Easily track submittals assigned to you or the entire project and see recently closed construction submittals in an activity log.

Seamlessly Annotate Submittals

Reduce the need for additional software with process with project management software that allows you to markup and annotate submittals directly. And with Built-in Stamps, quickly create stamps with custom text to clearly convey your feedback.
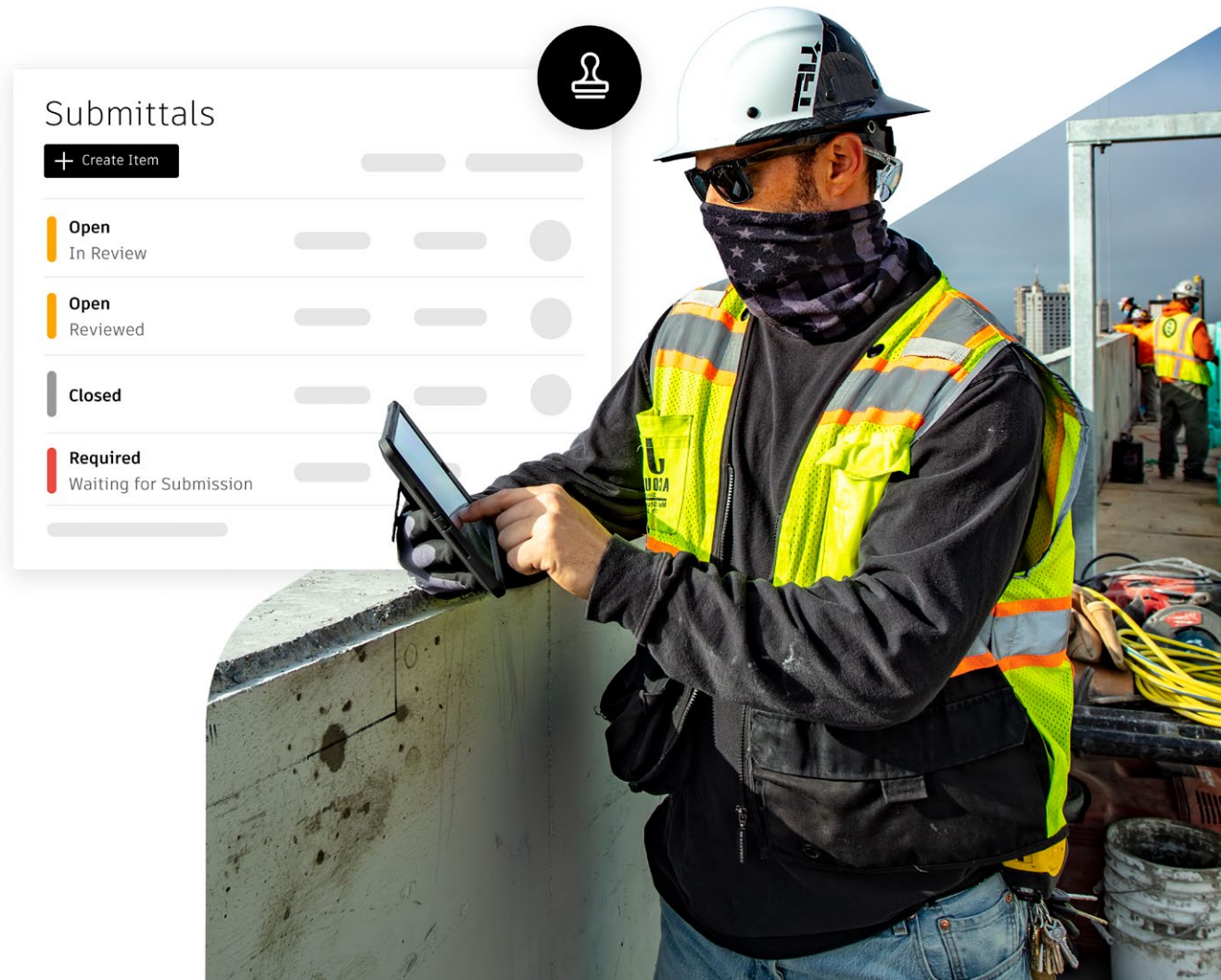
Share Submittals Instantly

As soon as a submittal is approved, it's immediately accessible in the mobile app, ensuring field teams have the more most up-to-date information to build accurately.
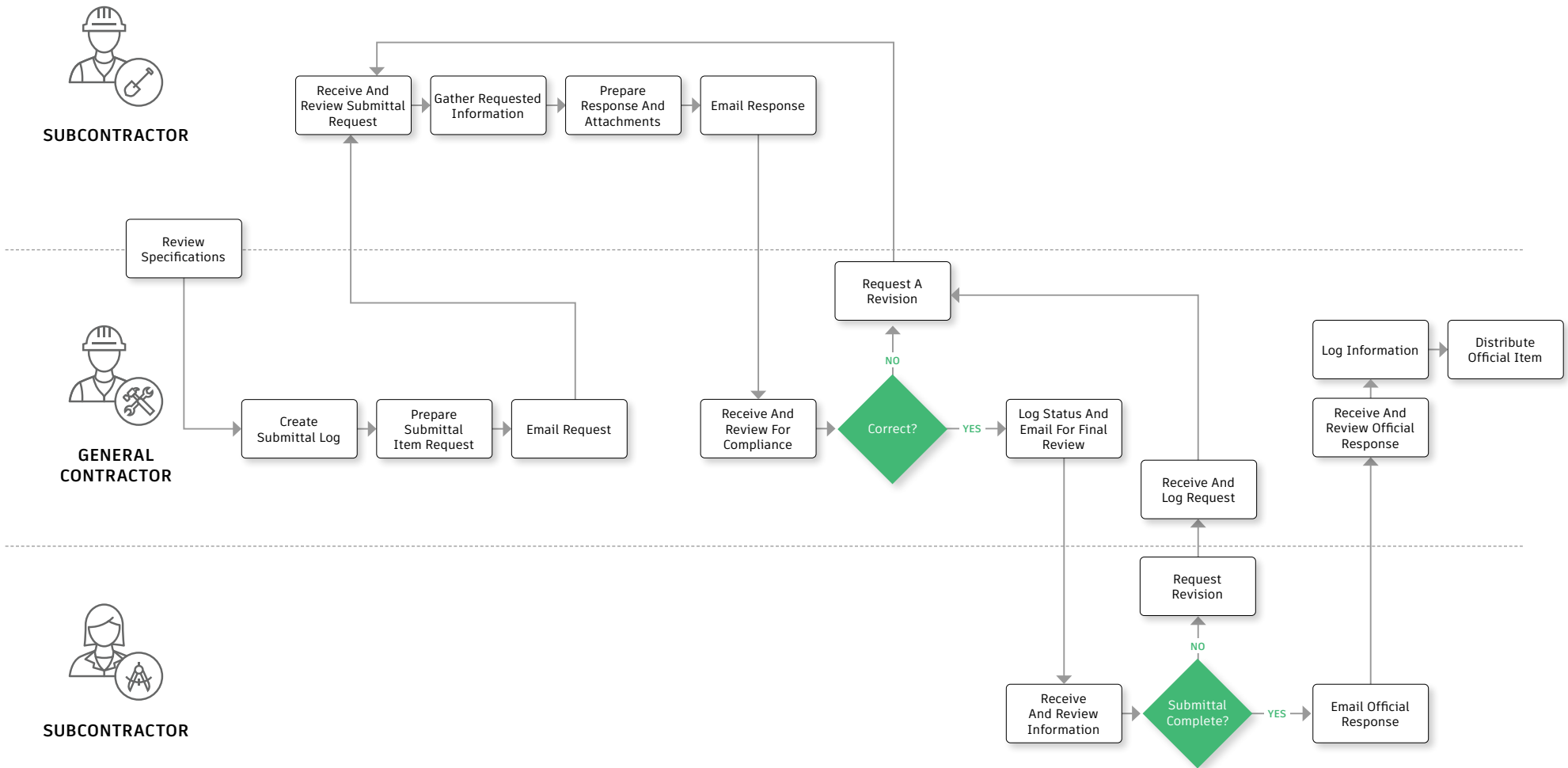
"The ability to go to one place to get my plans, my submittals, my RFIs … it is going to save a lot of time."

–John Mack, Virtual Design Department Manager, Dome Construction
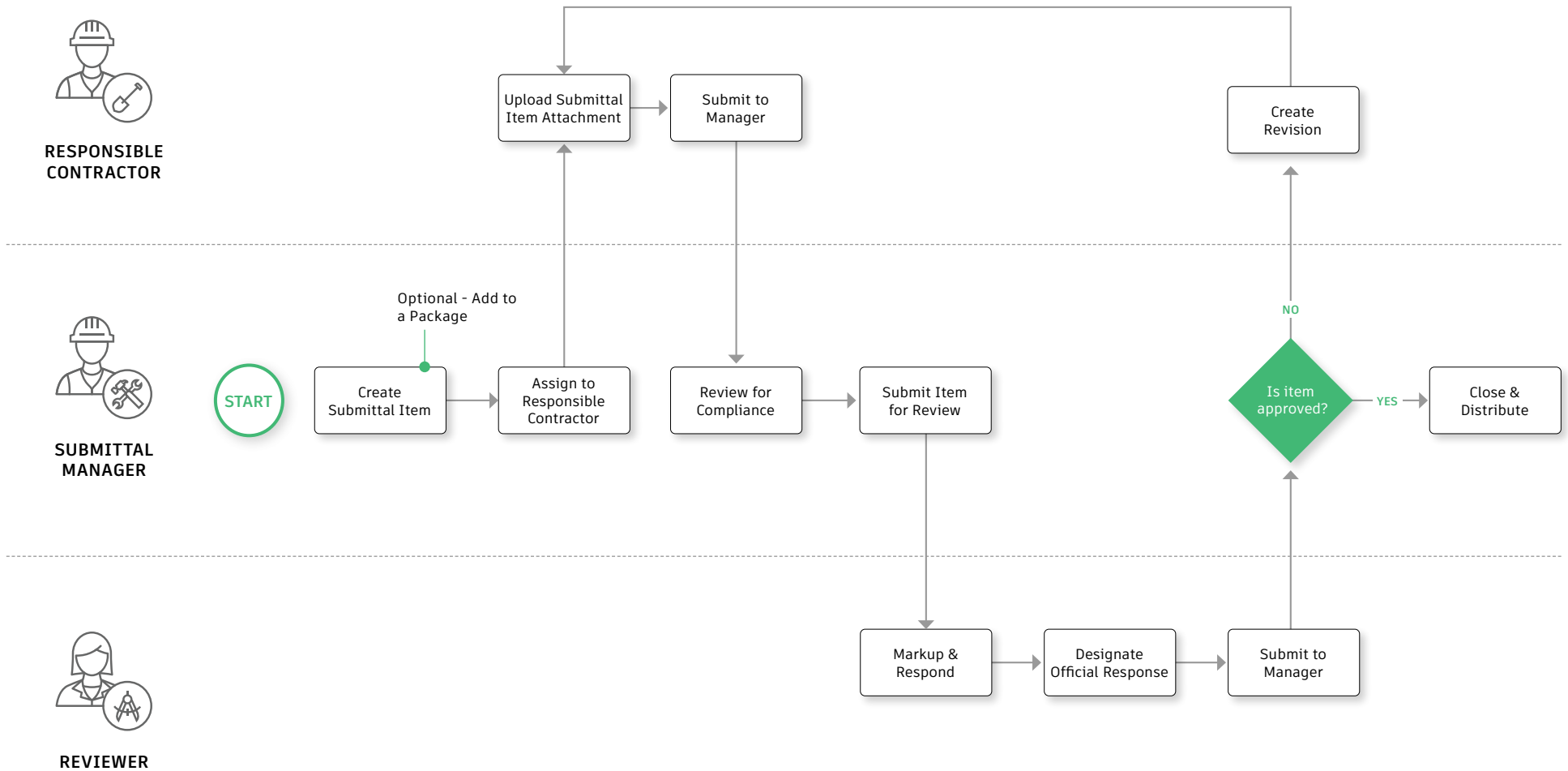
Traditional Submittal Process

Complex • Lengthy Process • Siloed • Limited Visibility • Higher Risk of Missing Data • Restricted Visibility

SUBCONTRACTOR

Receive And Review Submittal Request → Gather Requested Information → Prepare Response And Attachments → Email Response

GENERAL CONTRACTOR

Review Specifications

Create Submittal Log → Prepare Submittal Item Request → Email Request

Receive And Review For Compliance → Correct? — NO → Request A Revision / YES → Log Status And Email For Final Review

Receive And Log Request

Log Information → Distribute Official Item

Receive And Review Official Response

SUBCONTRACTOR

Receive And Review Information → Submittal Complete? — NO → Request Revision / YES → Email Official Response

Cloud-Based Submittal Process

Automated · Clear Accountability · Improved Accuracy · Automatic Date Tracking · Real-Time Status Visibility · Collaborative

RESPONSIBLE CONTRACTOR

- Upload Submittal Item Attachment
- Submit to Manager
- Create Revision

SUBMITTAL MANAGER

START → Create Submittal Item → Assign to Responsible Contractor → Review for Compliance → Submit Item for Review

Optional - Add to a Package

Is item approved? — NO — YES → Close & Distribute

REVIEWER

Markup & Respond → Designate Official Response → Submit to Manager

11

Connected Project Management Workflows–Meeting Minutes

In all phases of construction, meetings are critical to the success of a project. They provide a time to collaborate by bringing multiple team members and stakeholders together to check in on action items, coordinate activities, and bring up issues to establish a plan for resolution. The decisions and plans made during the meeting must be accurately documented as meeting minutes serve as a record in case of future cost impacts or litigation. But without a standard agenda and meeting minute format, it's not uncommon for note-takers to miss something.

If official minutes are only distributed via email, you run the risk of critical decisions going unseen, which can lead to delays in critical, actionable information being made available and solutions not being implemented during construction. Adopting a cloud-based construction management platform can help teams keep effective meeting minutes. Robust meeting minute toolsets can help make meeting management effortless, provide clear visibility into the commitments made, and offer an organized and easily accessible history of all meeting records.

Cloud-Based Platform Benefits for Meeting Minutes:

Centralize Meetings
Improve team coordination and project tracking. Whether its design collaboration, model coordination, or construction, centralize meetings and minutes.

Create agendas, schedule follow-ups, send email notifications, integrate virtual meetings, and provide an organized history of all meeting records.

Document Key Decisions
Make decisions actionable and accountable. Capture decisions made during meetings and create next steps by assigning individuals, roles or companies to specific items.

Open action items will automatically populate in follow-up meetings, making it easy to track action items to completion.

Increase Access to Critical Meeting Information
Bring attention to the things that need it most. Increase accessibility to information by linking Documents, Sheets, Issues, and RFIs directly to meeting items.

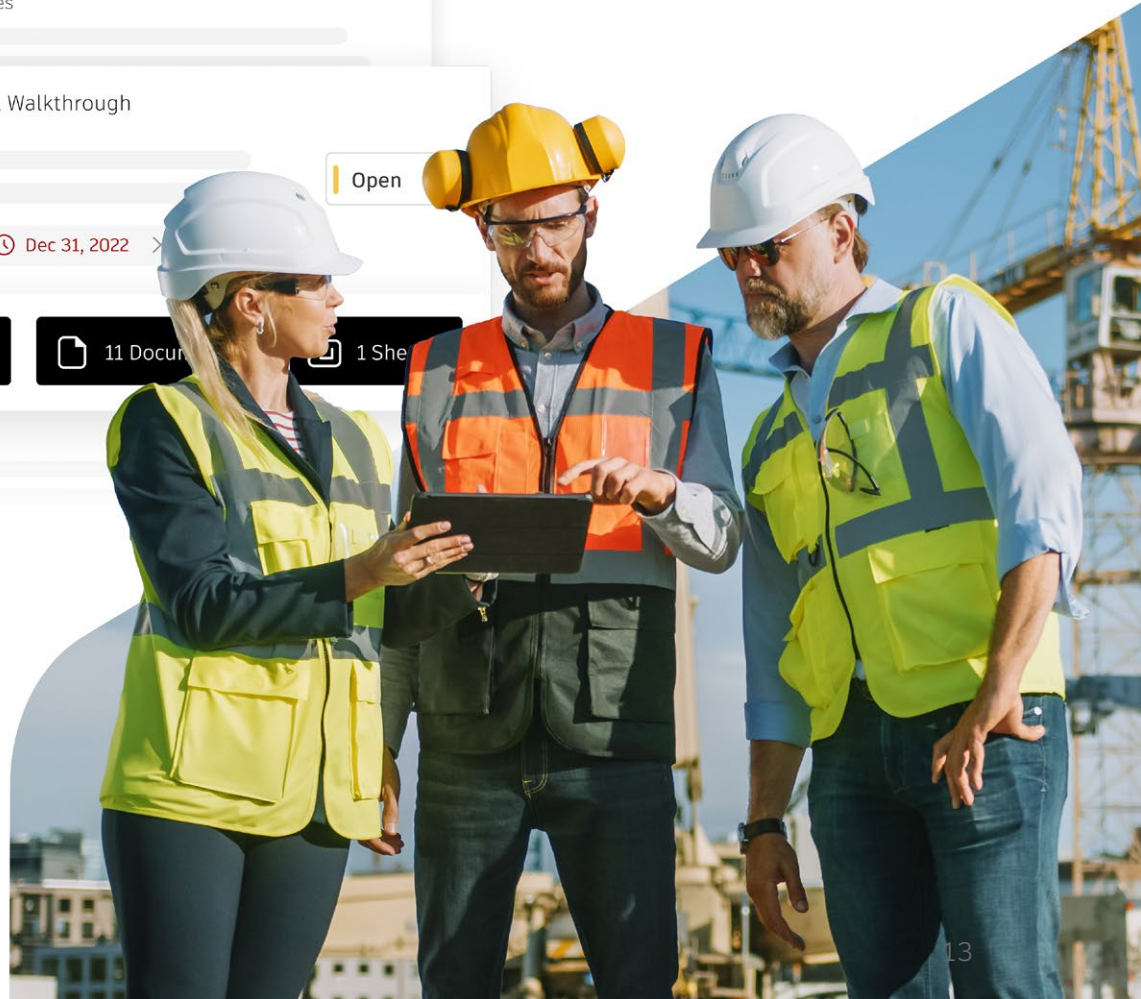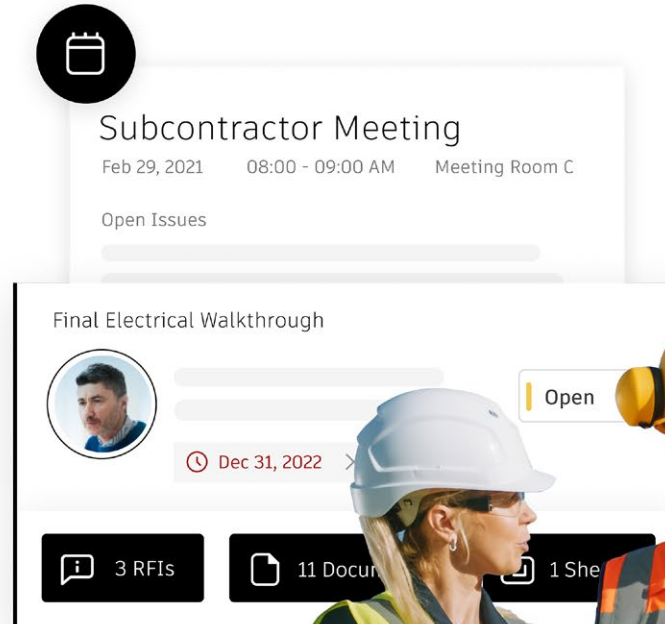Team members can easily find all information with search and filter functionality.

Access Meetings in the Field and Office
Keep critical meeting information
at your fingertips in the
field and in the office.

With Meeting Minutes on mobile, access
meeting agendas and records, view
linked items, and search meeting titles
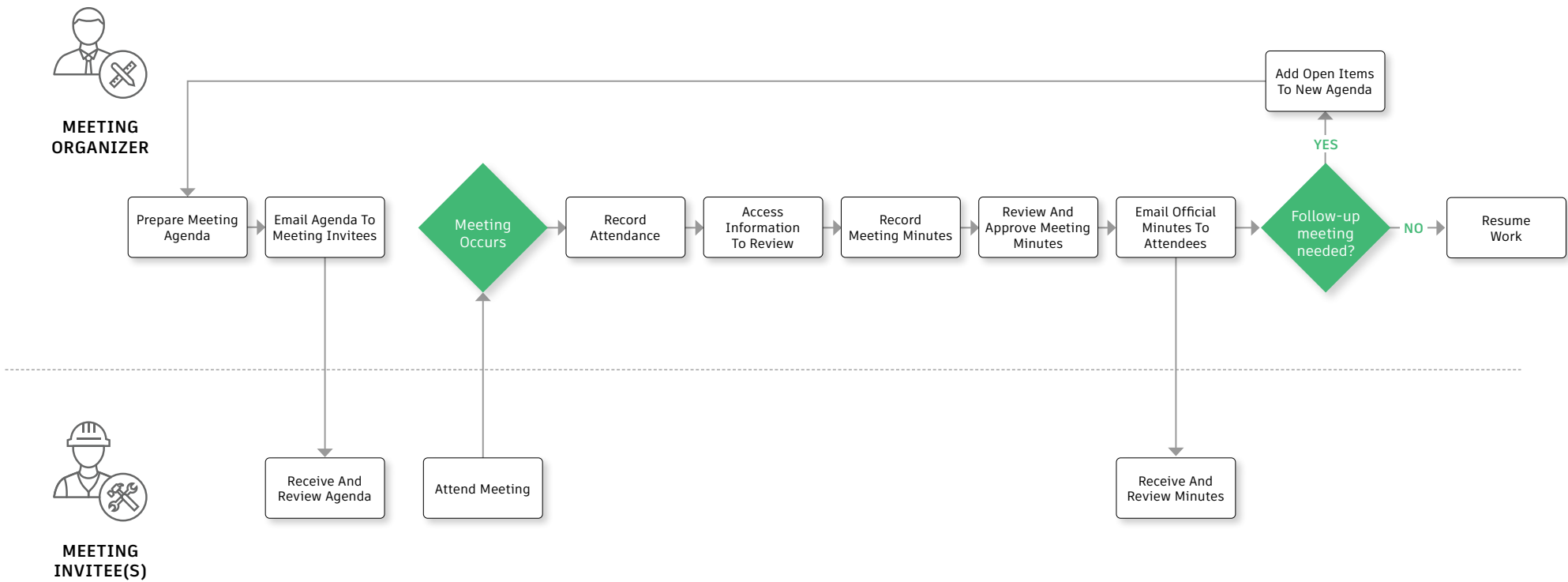to quickly find the information you need.

"With the ability to link and
assign attendees to meeting
items with due dates, we can
keep track of information
in real-time instead of
circulating a word document
24 to 48 hours later. Having
all of the historical project
data in one location creates
transparency across project
teams and minimizes the
risk of miscommunication."

**–Kaitlin Frank, Superintendent,
Dome Construction**

Subcontractor Meeting

Feb 29, 2021   08:00 - 09:00 AM   Meeting Room C

Open Issues

Final Electrical Walkthrough

Open

Dec 31, 2022

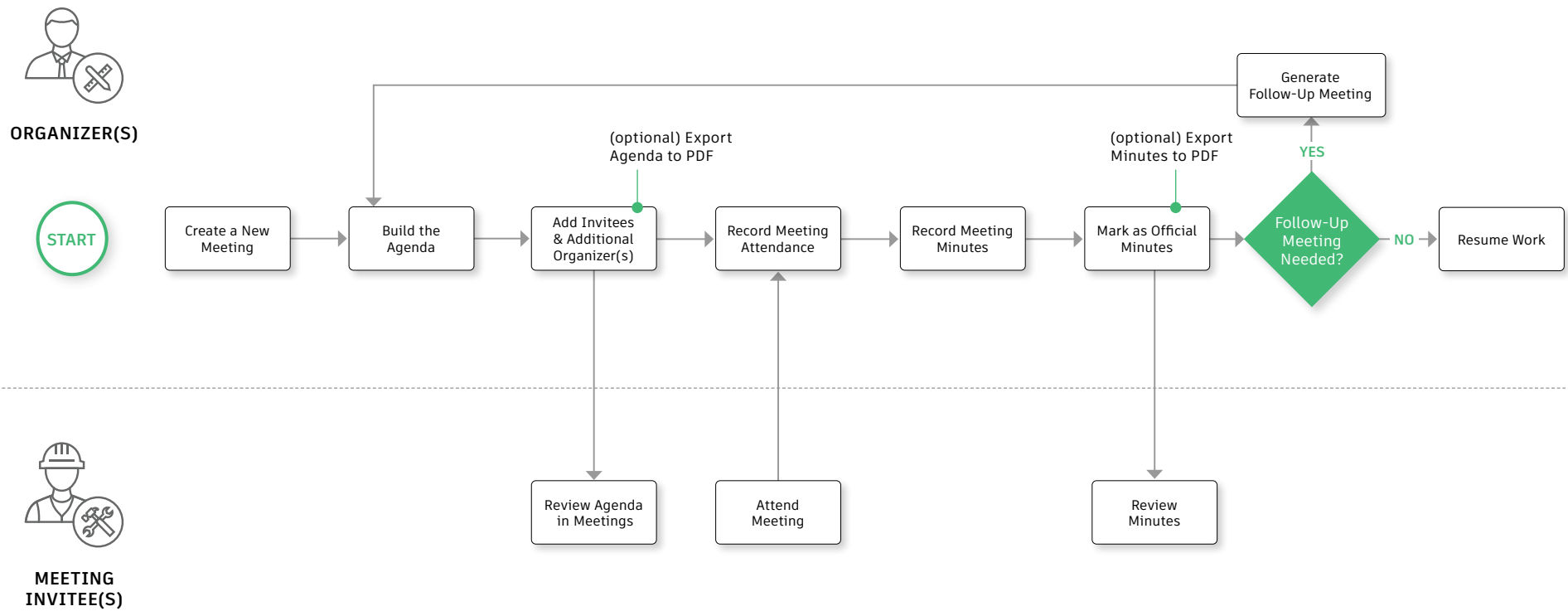3 RFIs   11 Docum   1 She

Summary

Traditional Meeting Minutes Workflow

Manual · Risk of Information Loss · Risk of Lost Records · Tedious Meeting Follow-Up Creation · Not Easily Accessible

MEETING ORGANIZER

MEETING INVITEE(S)

Prepare Meeting Agenda

Email Agenda To Meeting Invitees

Meeting Occurs

Record Attendance

Access Information To Review

Record Meeting Minutes

Review And Approve Meeting Minutes

Email Official Minutes To Attendees

Follow-up meeting needed?

YES

Add Open Items To New Agenda

NO

Resume Work

Receive And Review Agenda

Attend Meeting

Receive And Review Minutes

Cloud-Based Meeting Minutes Workflow

Effortless Management · Standardized Format · Centralized · Connected Data · Accessible · Automated Follow-Up Creation

ORGANIZER(S)

START → Create a New Meeting → Build the Agenda → Add Invitees & Additional Organizer(s) → Record Meeting Attendance → Record Meeting Minutes → Mark as Official Minutes → Follow-Up Meeting Needed?

(optional) Export Agenda to PDF

(optional) Export Minutes to PDF

Generate Follow-Up Meeting

YES

NO → Resume Work

MEETING INVITEE(S)

Review Agenda in Meetings

Attend Meeting

Review Minutes

Connected Project Management Workflows—Schedule Management

Construction projects are getting more and more complicated. Tight margins, resource constraints, and labor shortages are forcing companies to get creative to keep projects on track. Add to that every trade involved on a given project. It's no wonder construction schedules get extremely complex and consist of thousands of schedule activities.

68% of trades point to poor schedule management as one of the key contributors to decreased labor productivity on the job site.[1] With centralized project schedules, you can collaborate, integrate, and connect the schedule with the rest of the project and keep the stress of schedule changes to a minimum.

Cloud-Based Platform Benefits for Schedule Management:

Share the Schedule, Instantly
Eliminate delays, reduce miscommunication, and share the schedule with the ones that need it most. Update the schedule from headquarters and instantly get it to the field.

Connect the Schedule to the Entire Project
Link critical construction documents like Files, Photos, Issues, Sheets and Assets to schedule activity items. Integrate your schedule with cost management software to connect the project schedule to budget to plan time-related costs and to establish cash flow.

Find What You're Looking For, Quickly
Save time and get information faster. Search thousands of schedule items or filter by date, resources or status and sort to quickly find the critical schedule information.
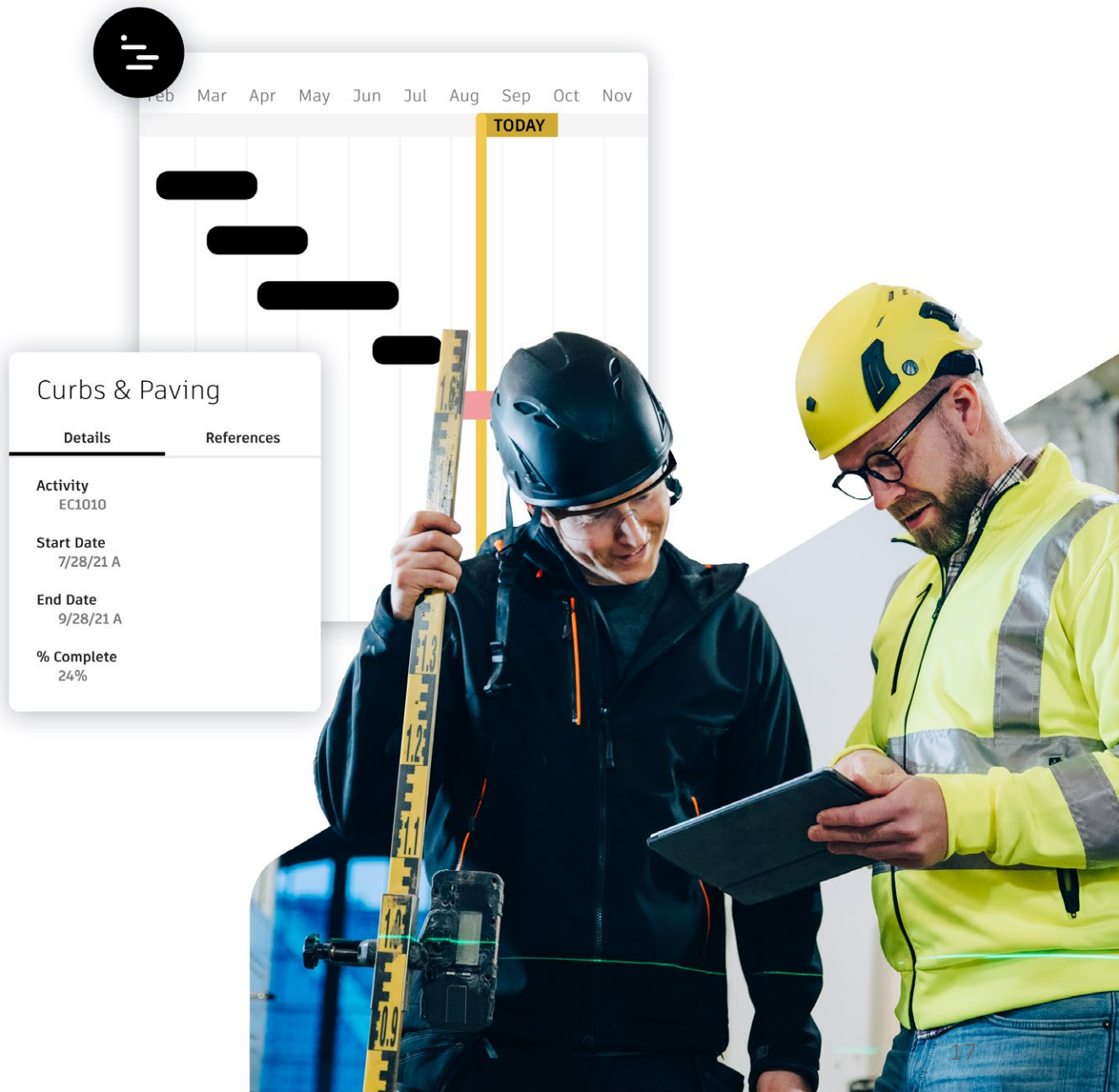
Access Construction Schedules, Anywhere
Stay updated on schedule activities in the field and in the office. With your schedule on your mobile device, view activities happening that day, week, or month. Use the search to quickly find the exact activity that you are looking for.truction RFIs with color-coded indicators, identify ball-in-court, and seamlessly progress RFIs through the process with the click of a button.
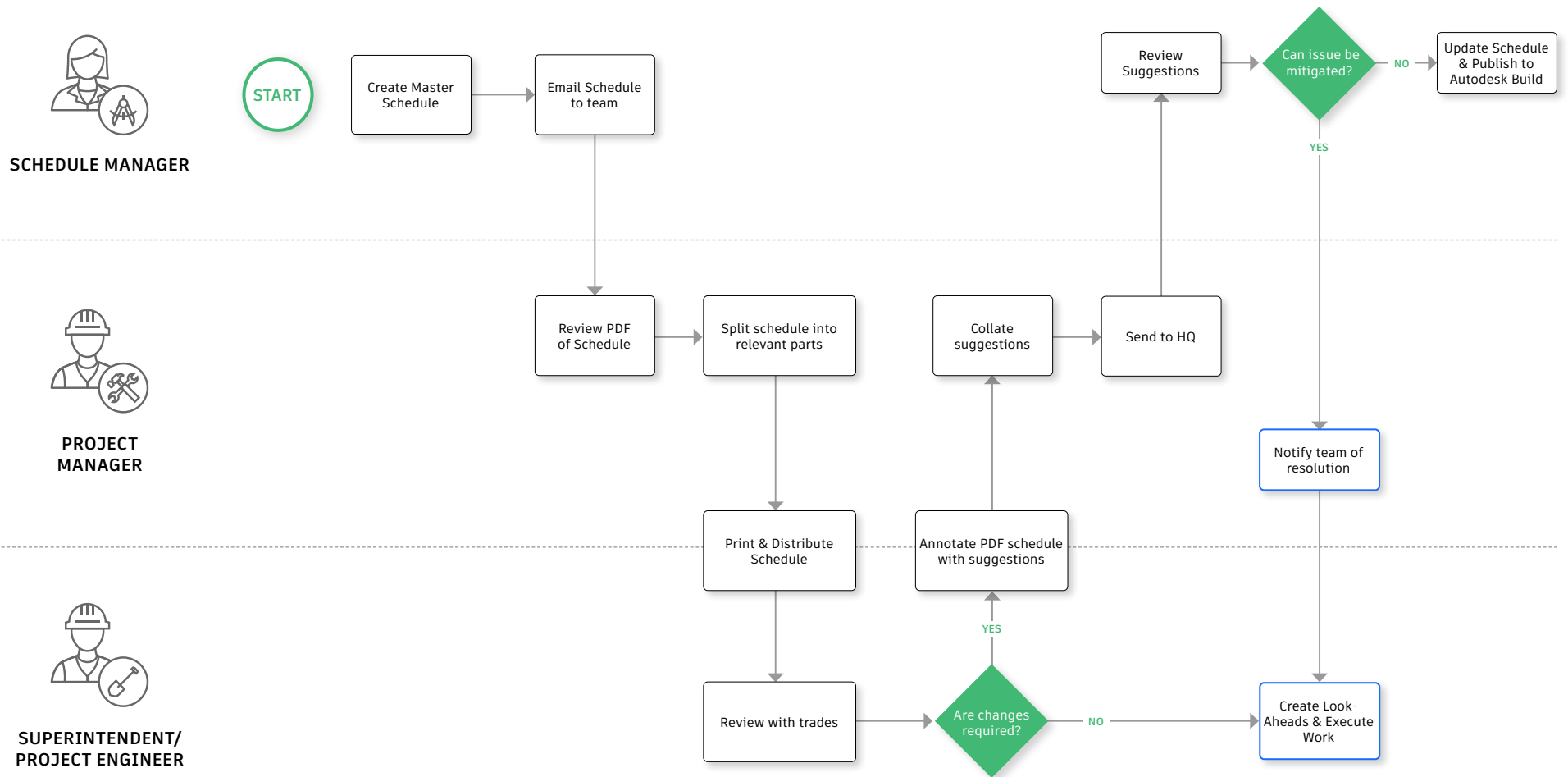
"Distributing schedules across the team and ensuring everyone is on the same page is often time-consuming. Traditional and siloed schedule management requires updating spreadsheets, publishing them as PDFs, and emailing them around to the team. By automating schedule communication in cloud-based schedule management technology, we save valuable project time and keep our team updated on the latest, while remaining in the same solution that houses our other critical project information."

−Bryan Nuckolls, Project Manager, BOLDT

Feb   Mar   Apr   May   Jun   Jul   Aug   Sep   Oct   Nov

TODAY

Curbs & Paving

Details   References

Activity
EC1010

Start Date
7/28/21 A

End Date
9/28/21 A

% Complete
24%

Traditional Schedule Management Workflow

Lengthy Process · Siloed · Higher Risk of Outdated Information · Not Easily Searchable

SCHEDULE MANAGER

START → Create Master Schedule → Email Schedule to team

Review Suggestions → Can issue be mitigated? →(NO) Update Schedule & Publish to Autodesk Build

PROJECT MANAGER

Review PDF of Schedule → Split schedule into relevant parts

Collate suggestions → Send to HQ

Notify team of resolution

SUPERINTENDENT/ PROJECT ENGINEER

Print & Distribute Schedule

Annotate PDF schedule with suggestions

Review with trades → Are changes required? →(NO) Create Look-Aheads & Execute Work

Are changes required? →(YES) Annotate PDF schedule with suggestions

Can issue be mitigated? →(YES) Notify team of resolution

Cloud-Based Schedule Management Workflow

Instant• Streamlined • Real-Time Status Visibility • Collaborative • Easily Searchable

SCHEDULE MANAGER

START → Create Master Schedule → Publish Master Schedule to Autodesk Build & Share

Review Suggestions → Can issue be mitigated? —NO→ Update Schedule & Publish to Autodesk Build

PROJECT MANAGER

Add Comments

Add References
- ✓ Files
- ✓ Photos
- ✓ Issues
- ✓ Sheets
- ✓ Assets
- ✓ Forms
- ✓ Submittals
- ✓ RFIs
- ✓ Cost

Notify team of resolution

SUPERINTENDENT/ PROJECT ENGINEER

Review Schedule Details

Suggest Schedule Update — Optional If Needed

Submittal Complete? —NO→ Create Look-Aheads & Execute Work

YES

YES

19

How Using Digitally Connected Workflows Improves Five Essential KPIs

To truly improve project performance, it's essential to track leading indicators, or predictive measurements[2] —and that's where using technology to create connected workflows[3] comes in. What are the specific outcomes you should think about as you leverage construction technology and build out your workflows internally?

❶ Winning Business

Speed and accuracy are crucial in winning bids—and connected workflows yield both. For example, design-build projects are completed 102% faster than traditional design-bid-build projects, according to DBIA.[4] Here are other ways connected workflows help win more business:

Increased Bid Efficiency
Using technology and automation can dramatically increase efficiency in delivering compliant/innovative bids that differentiate the contractor from the competition.

More Successful Projects
Using connected workflows helps projects stay on budget, on time, and incident free with high quality. But key project metrics must be captured to identify areas for continual improvement.

Better Stakeholder Engagement
Technology enables visualization and other tools that get the client to actively participate in all phases. Measuring engagement through post bid surveys following successful bids will help identify what differentiated the contractor during the bid stage.

Higher Bid Win Rate
Lost bids are a cost to the business. Using tech to monitor win rate is a key metric for bid teams.

Expanded Service Offerings
Such services include self-perform, investment, facilities management, industrialized construction, using digital technology and BIM, and providing sustainability or post occupancy services. These are all opportunities to increase the profit margin or reduce cost or risk on a project.

"Autodesk Construction Solutions give us visibility on risk and a higher degree of focus. Construction IQ is identifying the problems and constraints that now act as leading KPIs for BAM to identify hotspots, rather than relying on traditional construction intuition. We're having less reactive conversations with more emphasis on KPIs that can drive continual improvement. The simple visualization of the challenge or the issue alone helps us bring that focus."

−Michael Murphy, Digital Construction Operations Manager, BAM Ireland

❷ Cost

Fully 69% of owners say poor contractor performance is the single biggest reason for project underperformance,[5] yet only 23% of firms are taking steps to improve jobsite performance with lean construction techniques, tools like BIM, and offsite prefabrication.[5] Connected workflows help contractors get a true picture of performance—and control costs—in the following ways:

More Accurate Forecasting
Accurate and timely reporting that gives the true story of a project's financial health is imperative. Staying true to forecast shows good management of the business in line with senior leadership and owner/shareholder expectations.

Better Cost Controls
Cost management of change orders and pay application processes ensures sound cash flow management for project stakeholders.

Reduction in Nonrecoverable Costs
Issues that can't be contributed to a third party (such as poor or missing materials or lost time due to poor scheduling/delays) must be covered. Connected workflows show key value metrics, including actual profit margin versus project profit margin, percentage of contingency attributed to nonrecoverable costs, and amount of nonrecoverable costs per project value.

Improved Subcontractor Qualification
Assessing subcontractor performance versus cost allows a contractor to mitigate costly risk. Technology shows key risk metrics, such as risk of subcontractor default and subcontractors with poor track records.

❸ Quality

In 2018, 52% of rework was caused by poor project data and miscommunication—the equivalent of about $31.3 billion in the U.S. alone.[6] Here's how connected workflows address those issues and reduce those costs:

Less Rework
Technology brings together key workflows—fabrication planning, design detailing, visualization, site administration, layout, commissioning, quality management and document management—to reduce, and even eliminate rework.

Fewer Constructability Issues
Incomplete design and lack of design review cause expensive field issues. Connected workflows ensure collaboration between all project stakeholders and a robust review process to manage all issues before they lead to rework on-site.

Reduction in Defects at Handover
High aftercare (warranty) costs erode a project's profit margin. With connected workflows, a data trail ensures that defects are addressed before handover.

Better Overall Handover Experience
Warranty and poor handover experience impact worker and customer satisfaction. Enhanced digital documentation supports the customer in moving from construction to operations—and provides an opportunity to increase customer satisfaction and contribute to the contractor's reputation.

❹ Schedule

Schedule slippage results in added costs from overtime/second shifts for more than 65% of general contractors, according to a Dodge/Autodesk report.[7] Connected workflows address those issues in the following ways:

Optimized Schedule
Identifying opportunities to reduce risk and optimize the schedule leads to potential savings for the client and the contractor. This optimization can also reduce the likelihood of claims if program dates/schedules aren't hit. reduce, and even eliminate rework.

Improved Plan-to-Actual Ratio
Improving plan-to-actual ratios in schedule builds floats into the program and provides the opportunity for contractors to deliver the project early and enhance their fee.

Better Schedule Control
Schedule control is about how the master program is related to monthly, weekly and daily planning of tasks/activities. Effective short-term planning (such as pull planning) can ensure correct discipline in scheduling.

More Efficient Resource Planning
Correct allocation and planning of resources (labor, materials, etc.) are essential to ensuring that the master program is followed. The better resources and logistics are sequenced, the less chance there is of project overruns.

❺ Health, Safety and Environment

Nearly 40% of firms aren't using any technology to gain a strategic advantage.[8] But 60% of general contractors and trades feel using software to manage safety and/ or inspections during construction is of high value to improving this process. Connected workflows are key to that goal in the following ways:

Better Safety Awareness and Education
Using connected workflows gives construction teams better awareness of project risks with timely information based on real-time reported incidents–a proven method to reduce risk and increase hazard identification on projects.

Lower Insurance Premiums
Demonstrating better working practices through robust processes/ use of digital technology can reduce a construction company's exposure to risk. Demonstrating this ability to insurance providers can help reduce insurance premiums.

Fewer Work Hours On-Site
Careful logistics, schedule, and process planning, together with the use of technology, can reduce the number of hours workers must be on-site. This can reduce the risk of being exposed to hazards that can cause harm.

Less Environmental Impact
Connected workflows allow contractors to source materials and products with health and the environment in mind. Demonstrating a positive effect on the community and wider society can boost employee morale, attract talent in a labor shortage, lead to greater productivity and innovation, attract loyal customers with their own CSR requirements–all while delivering better project performance.
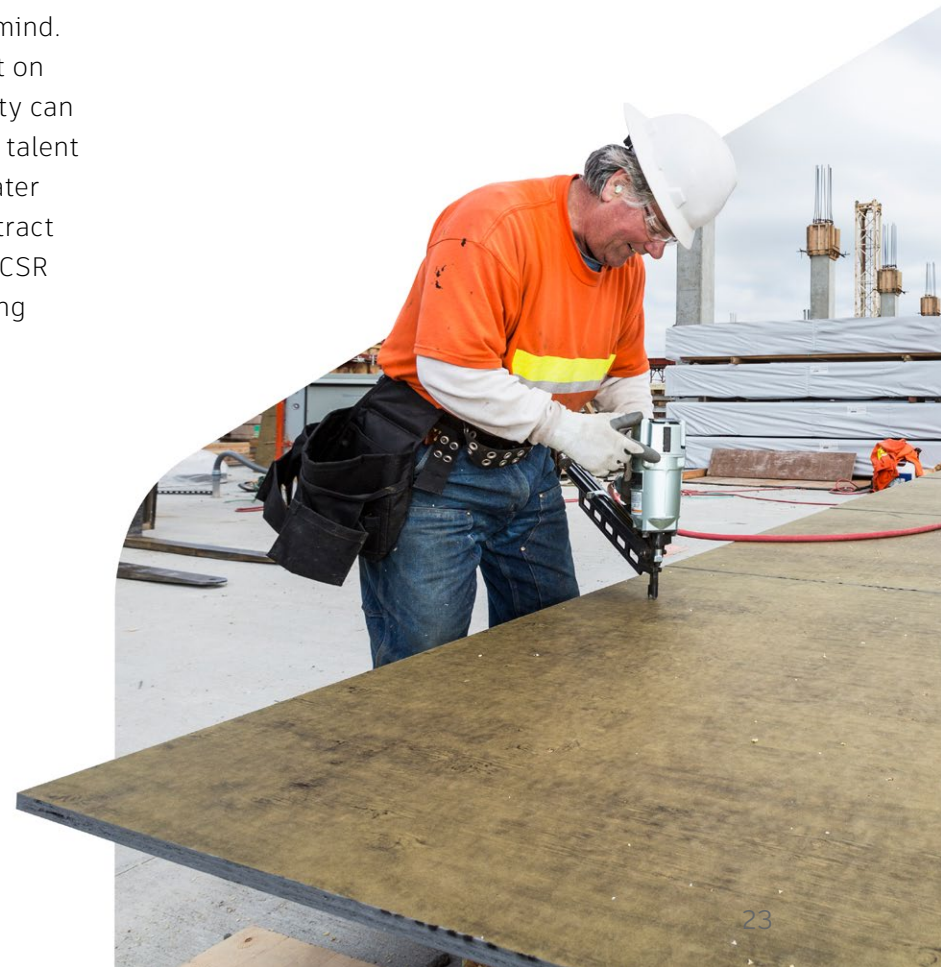
Conclusion

Using manual processes and disconnected systems for RFIs, submittals, meeting minutes, and schedule management workflows is not only inefficient but runs the risk of error and data loss. There are several cloud-based tools available to help you streamline these processes. But to ensure you remove data silos, disconnection, and duplication, select a cloud-based technology solution that integrates seamlessly with other construction software.

Consider adopting industry-specific tools from Autodesk Construction Cloud™. Autodesk Construction Cloud combines next-generation technology, a robust network of professionals and firms, and powerful predictive analytics to help your business thrive across all phases of construction.

"The benefits associated with connected construction are having accurate information ready and available at any moment during the process for the client, the design team, and the construction team. Having the ability to adapt to unforeseen changes and have the information available in real-time helps deliver an efficient and quality project to the client."

–Gilbert Garcia, VDC Engineer, Turner Construction

References

[1] 3 Ways to Avoid Being Overwhelmed by Complex Schedule Changes
Autodesk Digital Builder Blog, 2022

[2] How Autodesk Build Will Deliver on Key Value Drivers in Construction
Autodesk Digital Builder Blog, 2021

[3] Why Connected Construction Workflows Power Better Building
Autodesk Digital Builder Blog, 2021

[4] There's a better way to build
DBIA, 2021

[5] Climbing the Curve: 2015 Global Construction Project Owner's Survey
KPMG International, 2015

[6] Construction Disconnected: The High Cost of Poor Data and Miscommunication
Plangrid Blog, 2018

[7] The Key Performance Indicators (KPIs) of construction
Autodesk, 2019

[8] JB Knowledge 2020 Construction Technology Report
JBKNOWLEDGE

Ready to try out for yourself?

Start a free trial and streamline your RFIs, Submittals, Meeting Minutes, and Schedule Management today. ❯

See the Future of Connected Construction

construction.autodesk.com

Our industry requires solutions that connect their information, teams, and technology —breaking down data silos and disconnected processes that hinder true transformation. As we navigate the ever-present push to do more with less, we need to uncover new ways of working, enhance connected digital workflows, and incorporate advanced analytics. To support us on this journey of transformation, we must lean into tools that connect construction – from design to plan, build, handover, and operations.

Built on a unified platform and common data environment, Autodesk Construction Cloud is a powerful and complete portfolio of construction management products that empowers general contractors, specialty trades, designers and owners to drive better business outcomes. Autodesk Construction Cloud combines advanced technology, a unique builders network and predictive insights to connect teams, workflows and data across the entire building lifecycle.

While the industry experiences unprecedented transformation, our mission remains the same: to help construction teams meet the world's rapidly expanding building and infrastructure needs while making construction more predictable, safe, and sustainable. And we've remained steadfast in our promise to deliver the industry's most compelling solutions, connecting data, teams and workflows from the field. This is our commitment to connected construction.
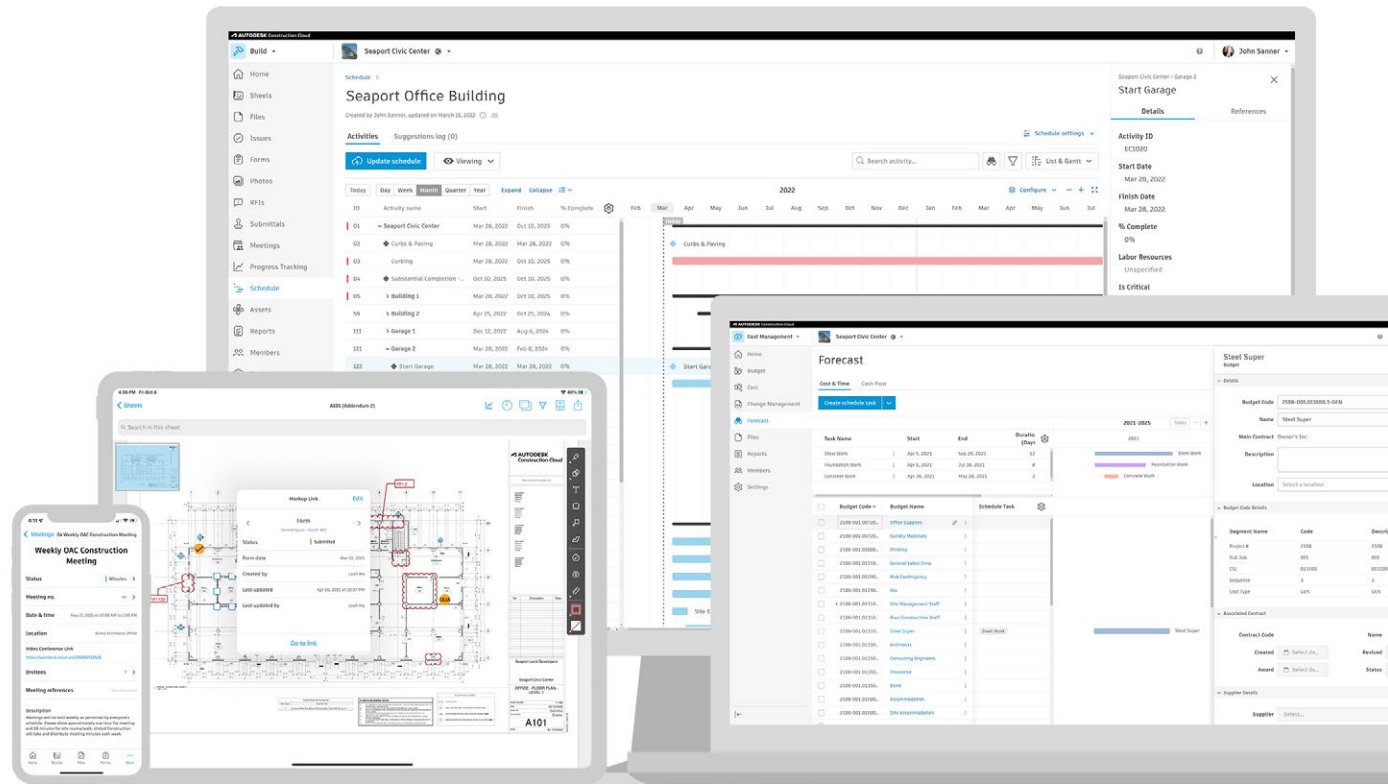
AUTODESK

Autodesk is changing how the world is designed and made. Our technology spans architecture, engineering, construction, product design, manufacturing, media, and entertainment, empowering innovators everywhere to solve challenges big and small. From greener buildings to smarter products to more mesmerizing blockbusters, Autodesk software helps our customers to design and make a better world for all. For more information visit **autodesk.com/construction.**

Connect with ACS

United States
+1 (866) 475-3802
construction.autodesk.com

Australia & APAC
AUS +61 1800 314 435
acs.apac@autodesk.com
construction.autodesk.com.au

UK & EMEA
+44 808 1892 253
acs.emea@autodesk.com
construction.autodesk.co.uk