

FOUR WAYS MODERN DOCUMENT MANAGEMENT OVERCOMES CONSTRUCTION COMPLEXITY



PROVEN PROJECT CERTAINTY.

The recent history of capital construction can be summed up in two words: Increasing complexity. Every stage and aspect of construction, from project scoping to facility acceptance, is affected by it. Crossing every project stage as it does, the document management function is hit especially hard by complexity, and document managers and controllers need help to stretch their already overburdened departments to accommodate.

A range of industry trends drive the increased complexity document managers wrestle with.



- Projects themselves are changing. An increasing percentage of construction projects meet the definition of megaproject (more than \$1B in capital expenditures), up from 3% of the total to 33% in just five years. A growing focus on environmental, sustainability, and governance concerns adds more layers of complexity that transcend project size.
- Partnerships and funding structures for capital construction are more complex and carry more requirements for collaboration, reporting, and interconnected accountability. Many funding streams, like those authorized by the \$1.2T Infrastructure Investment and Jobs Act, carry specific requirements that must be documented and accounted for.
- The rising popularity of alternative construction methods and approaches also boosts complexity. Integrated project delivery, offsite construction, performance-based contracts, and sustainable building practices – to name a few – all introduce their requirements and documentation needs.

Construction is a late-adopter industry when it comes to software, so many organizations use document management solutions that aren't up to the challenges posed by increased complexity. Older and outdated software struggles to keep

up with the sheer volume of documentation and relies on expensive and cumbersome on-premise solutions and data storage. Software built for smaller firms or simpler business models struggles to handle demands like frequent

revisions and multiparty approvals. General-purpose document management systems can't automatically handle file types common to construction, don't offer appropriate workflow templates, and struggle to account for regulatory requirements.

Trends transforming the construction industry act as fuel for change, but often, a crisis or opportunity provides the spark. Perhaps a new partnership or funding source carries requirements your current system can't easily meet, or looming litigation inspires a reckoning about your document control practices and capabilities.

Whatever your inspiration for change, embrace your belief that you shouldn't stay shackled to document management software that can't meet your evolving needs. Better document management software that tightly connects field and office can deliver significant benefits, including cutting errors and rework, reducing delays related to approvals and workflows, providing increased accountability, and saving time you currently waste on processes that don't create value.

HOW CONSTRUCTION STRUGGLES TO KEEP UP

The construction industry struggles with lagging productivity and profitability compared to other sectors. Key statistics show the scale:

1% 

- Construction labor productivity has grown at just 1% annually over the past two decades, compared to 2.8% for the world economy. ([McKinsey Global Institute](#))

2.4% 

- The average net profit margin is 2.4% for general contractors and 4.2% for specialty trade contractors. ([CFMA 2021 Construction Financial Benchmarker](#))

30-45% 

- Capital projects typically overrun budgets by 30-45%. ([McKinsey survey](#))



Rework accounts for between 2% and 20% of total project costs.

CUT REWORK AND ERRORS

Blaming all rework and errors on document management would certainly not be a defensible position, but document management does play a role in both the problem and the solution. The need is real: Rework accounts for between 2% and 20% of total project costs. That's especially problematic because delays and overruns are common, with large projects across asset classes typically taking 20% longer to finish and running up to 80% over budget,

according to McKinsey. According to an FMI study, data — including the data housed in document management systems — may have caused \$1.8 trillion in losses worldwide in 2020 and may be responsible for 14% of avoidable rework, which amounts to \$88 billion in costs.

Document management software fails to deliver value when it can't scale to the demands of projects, an increasingly common problem in a world of increasingly complex construction.

You're right to worry that your aging or non-industry-specific document management system delivers some unwelcome outcomes:

Wasted Time: According to a survey by FMI, construction professionals spend 35% of an average 40-hour workweek—14 wasted hours per employee each week—on tasks that don't move projects forward, such as searching for the latest information, resolving conflicts, and reworking due to mistakes.

Increased Error Potential: When documents are incorrectly or incompletely indexed and organized, mistakes become more likely, leading to costly errors and rework. Every project management team has its share of nightmare stories: the work began without approvals, the work package was executed entirely from outdated plans, and the cascade of rework and rescheduling that results.

Inefficient Collaboration: Good collaboration in large construction projects depends on easily sharing and managing documents—internally and across organizations. When the latest versions of plans, specifications, and reports aren't easy to access, decisions get delayed, and their quality degrades.

Security Concerns: Construction companies and owners using spreadsheets and older or generic document management software face risks of cyberattacks and data breaches. Incidents that have led to business disruptions, emergency work suspensions, and significant fines illustrate and highlight the crucial need for bulletproof document security to prevent breaches and the financial and reputational risks that go along with them.

Amplified Risk: When embankment dams crumble, bridge spans collapse, and high rises crumple, the world watches while people in the industry wonder about the cause. Mistakes in construction can have serious consequences. OSHA violations can lead to huge fines, sometimes to the tune of hundreds of thousands of dollars. Contractors face lawsuits for missed deadlines and unsafe conditions. Wrong or outdated documents can turn profitable projects into financial disasters, especially when delays or maintenance are unplanned.

“We needed to ensure that our project stakeholders had a single source of truth for all project engineering documents and data. They needed to have the latest information at the right time and for the right purpose.”

- Joseph Lopez, Manager of Information and Records, Transurban

DREAM BIG WITH MODERN DOCUMENT MANAGEMENT

Imagine a world where all stakeholders have immediate access to a unified source of truth, just as Joseph Lopez from Transurban visualized. Workflows have been re-envisioned from the ground up. Communication and information sharing is effortless. Decisions flow. You're better equipped to navigate construction complexities.

With modern document management systems, that vision is a reality.

- **Centralized Information Hub:**
Store everything you need, from engineering documents to compliance records, in one accessible place. No more emailing, Slacking, or sifting through files and conflicting versions.
- **Real-Time Updates and Accessibility:**
Get the latest project data when and where you need it. Whether in the field or the office, updated plans, specifications, and reports are at your fingertips.
- **Streamlined Collaboration:**
Experience seamless communication across teams and organizations. Share documents easily, make decisions faster, and keep everyone on the same page.
- **Enhanced Security and Compliance:**
Protect sensitive data with advanced security features. Audit trails and controlled access mean tight compliance and data breach safeguards.
- **Error Reduction and Time Savings:**
Reduce the risk of costly mistakes and rework. Expect more efficient operations and better decision-making with automated workflows and accurate indexing.

Streamlined document management simplifies complexity and leads to successful construction projects.



Document managers know all too well that delays in approvals, reviews, and changes have obvious effects on project progress, timelines, and cost.

REDUCE DELAYS TIED TO COMMUNICATION

The average delay for a project is 200 days. It's discouraging but unsurprising, especially when many layers of review are involved between multiple stakeholders. Complex review and approval processes lead to ongoing project adjustments, rescheduling, and extra costs. While it can't be blamed specifically on a document management system, the California High-Speed Rail project provides an object

lesson in timely project progress. Delayed approvals have driven the estimate from \$33 billion to more than \$100 billion—and the project is still incomplete.

Even in less extreme examples, efficiency suffers when document reviews and approvals involve many parties and span multiple organizations. Teams must manually route documents through



multiple approvals. Planners stress as these complex steps eat into their schedules, and field teams waste time waiting for updates and revised schedules. Even small changes in a document can mean starting the whole approval process again, wasting time and squashing productivity.

Document managers know all too well that delays in approvals, reviews, and changes have obvious effects on project progress, timelines, and cost. Other complications, even though slightly removed from the build process, are common and no less worrisome. Inadequate document management systems give rise to:

Communication Breakdowns: When projects span multiple teams, which happens with increasing frequency, it's common for teams to fall into intractable misunderstandings. Far-reaching consequences to project efficiency, profitability, and even completion often trace back to problems related to document management.

Legal and Compliance Issues: Failure to properly manage complex approval processes can also lead to legal issues. Consider the Atlantic Coast Pipeline (ACP) and Cape Wind projects. The ACP was canceled after years of delays and an extra \$4 billion in costs. Cape Wind, an offshore wind energy project spanning multiple groups and agencies, also faced regulatory delays and permitting challenges that drove up costs and left it dead in the water.

Loss of Cross-organizational Trust: Complicated review and approval processes across organizations also damage trust. For example, if document-driven communication between engineers and contractors is garbled or approvals are slow, the stakeholders might start doubting each other. This lack of trust and increased skepticism makes sharing information hard and complicates decision-making.



MODERNIZING FOR THE DIGITAL AGE

Graham Construction's High-Speed Connection

For more than 20 years, Graham Construction relied on an internal “Toolbox” system to track documents, bids, estimates, and more. But in the cloud era, with IoT connectivity and real-time data access, the solution was holding the company back. Data was siloed. New hires had difficulty learning the system, and estimators constantly recreated estimates from scratch. It was time to modernize and find a construction technology partner to bring leadership’s vision of a single source of truth to life.

Enter InEight Document. Graham brought on the platform in a controlled way to demonstrate its value to long-time employees without overwhelming them. The system is now central to how teams work, managing more than 80 projects. Estimates are more accurate and easier to create. Stakeholders across organizations can access real-time data in the field and the office. Teams deliver more accurate work faster. And overall efficiency rose. With InEight Document transforming document control and connectivity, Graham Construction handed teams the keys to unlock productivity and steer business performance into the future.



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BE CLEAR ON ACCOUNTABILITY

Accountability in document management can range from tactical considerations related to project execution — RFIs, change orders, approvals — to legal liability issues if serious problems arise. Happily, every project stakeholder aims to avoid situations with legal consequences. Clear, auditable accountability throughout the project through excellent document management practices is the best protection for most high-stakes conflicts around accountability.

However, outdated tools and manual processes make it likely that even the most vigilant document managers struggle to deliver true accountability. When you're missing detailed, auditable records of decisions, approvals, and changes, it's hard to know who should be held responsible for what, creating a cycle of finger-pointing and distrust that can affect projects and future partnerships.

PAVING THE WAY FOR ACCOUNTABILITY AND HIGH PERFORMANCE

Australia's \$16.8 billion WestConnex Tunnel Motorway project needed to coordinate across 500 employees and more than 520 companies to deliver \$300 million of work—a situation that called for tight communications and strong accountability. But issues arose because legacy systems and email communications caused information access issues, and administrators were overloaded with handling document requests.

Transurban, which is delivering and maintaining the project in collaboration with the New South Wales government, implemented InEight Document to become a single source of truth for the multi-stage initiative, helping manage more than 350,000 documents. Permission levels improved user accessibility and supported collaboration across teams and during operations in the defects period. With InEight Document, the consortium achieved fully electronic project handover, a first for the lead government agency.

Without an audit trail, document managers know that all projects – especially highly complex projects -- run the risk of additional challenges, too, like:

Litigation Risks: Without a clear, technology-supported documentation trail, the risk of litigation skyrockets. The California High-Speed Rail project is an example of poor documentation contributing to significant delays and cost overruns. The auditor's findings suggested that simply having documents available is not enough to establish a clear, auditable trail. The scenario underscores how a shortfall in documentation increases vulnerability in legal disputes and threatens project timelines, budgets, and reputations.

Project-wide Accountability Issues: Without audit trails, potential problems lurk around every corner. Project managers can't confirm whether safety officers did their checks correctly. Engineers can't be sure if the construction team followed their designs properly. Subcontractors end up wrongly blamed for upstream mistakes. This confusion, combined with "New Blame" thinking, fosters mistrust and defensiveness, slowing progress and harming relationships.

Lack of Continuous Improvement: The lack of detailed, technology-enabled records also limits the opportunity to learn from past projects. This shortfall means each new project starts from square one without the benefit of previous lessons, leading to repeated mistakes. In an industry that's advancing with the help of technology, this constant reinvention puts your company at a competitive disadvantage.

UNLOCK PROJECT ACCOUNTABILITY WITH CLOUD-BASED DOCUMENT MANAGEMENT

Construction projects are a maze of data and documents. McKinsey reports that for every \$1 billion in project value, 30,000 to 40,000 documents are typically generated. This volume of data often leads to fragmented document management, with documents stored in overburdened local file shares or managed through personal productivity tools. This fragmentation is why some 70% of construction professionals resort to makeshift solutions like spreadsheets and email for organizing files—an approach that dampens efficiency, threatens work quality, and significantly undermines accountability.

Cloud-based document management systems bring order to this chaos. They centralize documents in secure, online repositories, which eliminates data silos and enhances accountability. Teams can effortlessly connect and track information, reducing time spent on searching for files, reconciling different versions, and navigating other system limitations. Today's advanced systems — especially those designed specifically for large-scale construction projects — streamline processes for all users, whether in the office or field or inside or outside the organization, bolstering accountability at every step.

Key benefits of cloud-based systems for accountability include:

- **Traceability:** Robust search functions and centralized data make tracking document changes and decisions easy.
- **Transparency:** Clear, consistent access to the latest documents for all team members encourages open communication and responsibility.
- **Control:** Centralized repositories prevent version confusion and ensure that everyone works from the most current information.
- **Security:** Advanced controls and audit logs offer a comprehensive view of document access and modifications, safeguarding against data breaches.
- **Mobility:** Access to information anywhere, on any device, empowers teams to make informed decisions in real time.

Cloud-based systems like InEight Document exemplify such solutions, transforming how document managers and teams work by promoting the alignment, clarity, and availability of project documentation. When every piece of data reinforces a culture of responsibility, accountability rises across the project lifecycle.



The closeout phase often highlights the accumulation of misses in document management.

SAVE TIME AT CLOSEOUT

Project delays can have many causes, but routine document management tasks needn't be among them. Automating or speeding up standard processes gives you a natural place to look for efficiencies and time savings, especially when the cost of delayed completions can be significant. For example, a \$250 million project with a three-year timeline

experiencing the average 30% delay would add \$68,493 daily to its costs, or an additional \$75 million over the three-year period, bringing the total project cost to \$325 million.

The closeout phase often highlights the accumulation of misses in document management and becomes a migraine

Streamline your workloads and deliver overall business value by modernizing documentation management and automating and simplifying tasks.

headache when documents have been mishandled or lost. Why aren't the operations manuals complete? Where are the inspection reports? Why can't the team find information on the critical system safety checks, or the release of liens?

You can streamline your workloads and deliver overall business value by modernizing documentation management and automating and simplifying tasks. Project closeout is the best example, but other key areas of concern include:

Legal Documentation: Properly organized documentation is critical for ensuring and proving that projects adhere to every relevant regulation and that contractual obligations have been met.

Quality Control: Incomplete or poorly organized quality documentation casts doubt on project integrity and safety. Documentation gaps can lead to increased inspections, potential reworks, added costs, and broken trust.

Post-completion Issues: Unclear or incomplete handover documentation can also lead to issues for owners. The problems may be minor inconveniences, like difficulty locating utility access points, challenges matching paint colors, or confusion over warranty details. Problems may also be significant operational challenges, like an inability to perform essential maintenance due to missing schematics, retrofitting challenges due to unclear structural details, or even safety hazards from the unknown properties of construction materials. This confusion disrupts day-to-day operations and makes it hard for owners to respond effectively.

Long-term Operational Inefficiencies: An inefficient handover affects the long-term operational efficiency of construction assets. Overlooking crucial details in this final phase can cause ongoing issues throughout asset lifecycles. Missing critical operational and maintenance guidelines can lead to frequent repairs, higher maintenance costs, and disruptions in functionality, shortening the asset's lifespan and affecting its performance and sustainability.



STREAMLINE TO SAVE AT CLOSEOUT

Transforming Closeout Efficiency with Modern Document Management

Efficient document management at project closeout is necessary for successful project delivery. By streamlining this critical phase, you save time and safeguard the integrity and profitability of the entire project.

- **Avoid Costly Delays:** Automate routine tasks to prevent delays that add costs. A smoother closeout means staying on budget and schedule.
- **Ensure Complete Documentation:** With everything in one place, easily find operations manuals, inspection reports, and safety check information. No more searching for missing pieces at the last minute.
- **Reduce Post-Completion Issues:** Clear and organized handover documentation prevents post-completion challenges, from maintenance hassles to compliance headaches.
- **Enhance Long-term Asset Management:** A well-managed closeout phase sets the stage for better long-term maintenance and operational efficiency, saving time and resources in the future.

Tailored, construction-first document management solutions give your company the control and insight you need to adapt to today's realities.

MODERNIZE YOUR DOCUMENT MANAGEMENT

You're wise to be thinking about improving your document management capabilities with up-to-date software, and you're not alone. With the fast pace of change in the industry, owners and contractors are moving toward more efficient systems that use cloud technology designed for large-scale construction projects. This modern approach turns challenges into chances for improvement and growth. Tailored, construction-first document management solutions give your company the control and insight you need to adapt to today's realities.

InEight Document, created by construction experts for the industry and its intricate challenges, is a robust yet easy-to-use platform that targets the key issues you face with document management, combining the latest cloud-based technology with an intuitive interface. InEight Document puts all project stakeholders on the same page—and keeps them there throughout a project's lifecycle.

We invite you to experience the transformative power of InEight Document. Take the first step toward modernizing your document management technology and processes.

REQUEST A DEMO



About InEight

InEight provides field-tested project management software for the owners, contractors, engineers and designers who are building the world around us. Over 575,000 users and more than 850 customers worldwide rely on InEight for real-time insights that help manage risk and keep projects on schedule and under budget across the entire life cycle. From pre-planning to design, from estimating to scheduling, and from field execution to turnover, InEight has powered more than \$1 trillion in projects globally across infrastructure, public sector, energy and power, oil, gas and chemical, mining, and commercial. For more information, follow [InEight on LinkedIn](#) or visit [InEight.com](#).

