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4 ways to transform EPC contracting

See how a Common Data Environment can improve productivity and profitability in large-scale process engineering projects

ASt Advanced Spatial technologies

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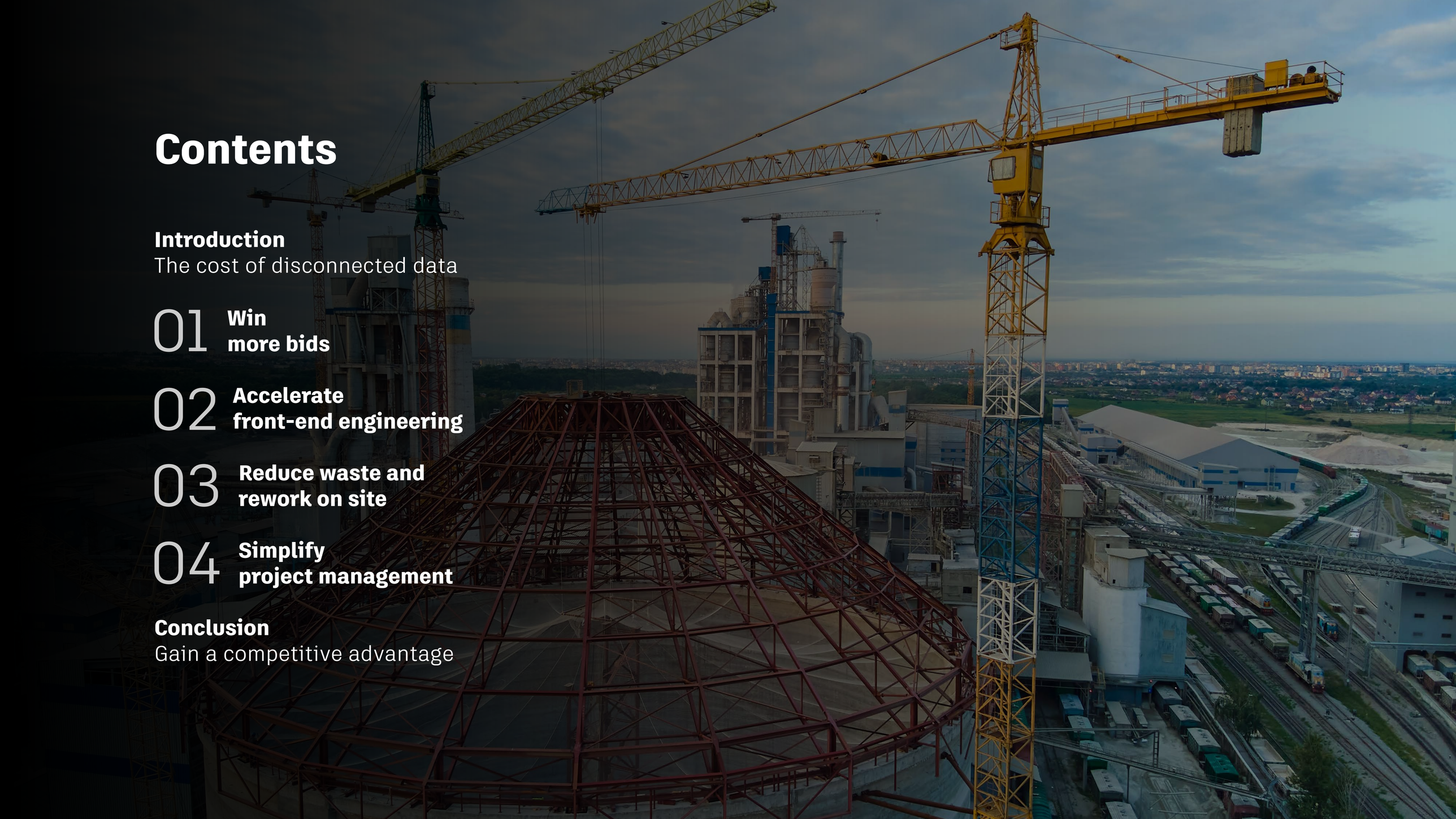


The cost of disconnected data

Why traditional workflows can’t keep up with current conditions

“Our order books have never looked better, but…”

Does this sound familiar? Right now, capital held back during the global pandemic is flowing back into new process engineering projects. That is welcome news for engineering, procurement, and construction (EPC) firms. But it is tempered by an environment characterized by rising inflation rates, chronic supply chain issues, and labor shortages.

Bottom line, EPC firms need to do more with less to take full advantage of this onrush of new work. The question is how. And the answer could be data.

Every day, EPC firms coordinate a complex array of workflows, teams, providers, subcontractors, and stakeholders within tight timelines and even less forgiving budgets.

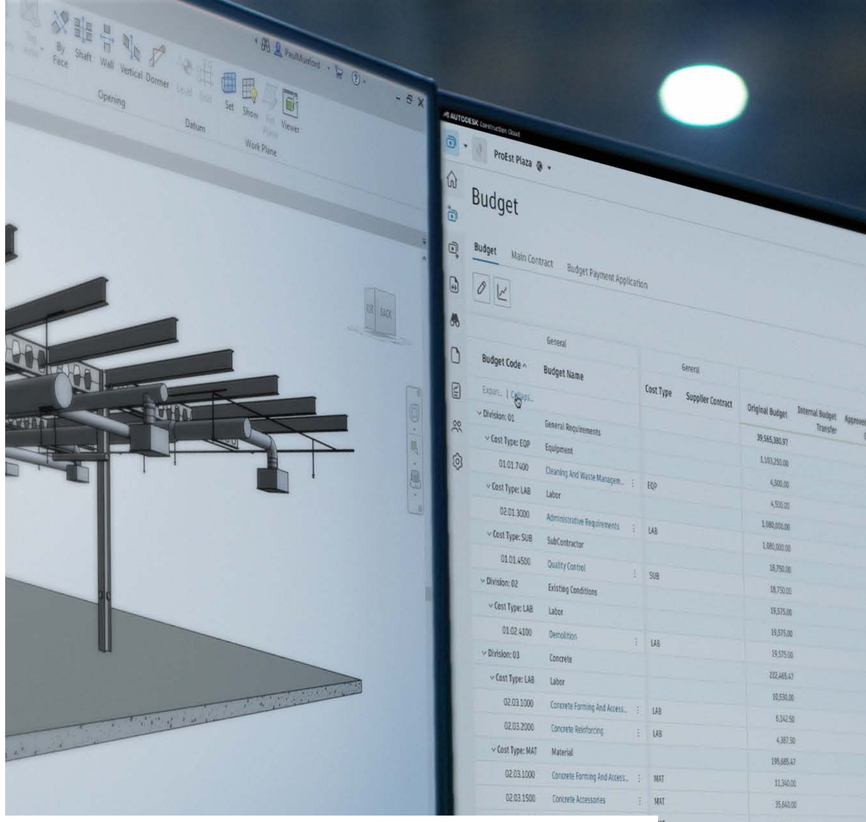
In this world, data is a persistent challenge. Fragmented, isolated, and disconnected data raises the risk of incomplete files, errors, poor communication, and decisions made with incomplete or out-of-date information. Whenever this happens, the outcome can slow progress, cause rework, or worse.

In fact, 62% of general contractors say that poor coordination among teams is a top factor hindering productivity.[1] And construction professionals may waste up to 35% of the work week dealing with these issues, such as hunting down project details, resolving conflicts, and untangling mistakes.[2]

What’s going on here, exactly? In the digital age, there is simply too much information changing too quickly for EPC firms to rely on traditional paper documents, manually updated spreadsheets, and disparate software systems. This approach is not efficient, not connected, and not scalable.

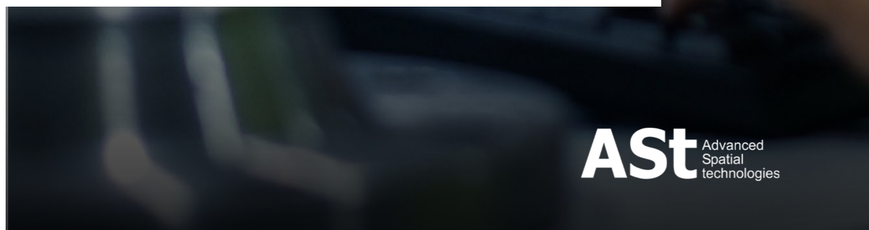
The Common Data Environment (CDE) points the way to a significantly more efficient future, one in which accurate data flows easily among all teams, at all times, no matter where they are, keeping key decision-makers up to date and in the loop through a single, trusted platform.

In this e-book, we’ll show you four ways a CDE can help EPC firms in process engineering move forward on the digital transformation journey and get ahead of the competition.



What is a CDE?

A Common Data Environment is a single, secure, cloud-based platform that captures all the data involved in a complex construction project and makes it available to multiple organizations. Authorized users can access specific data sets and bring them into any number of other applications, confident they are using current, accurate information to move forward.



[1] The KPIs of Construction. Autodesk and Dodge Data survey, November 2019.
[2] Construction Disconnected. FMI report, 2018.

01 Win more bids

Use a CDE to create highly accurate bids more efficiently

Large-scale process engineering plants are costly and complex to design and build. There is a lot at stake with every decision, so the sales cycle can be slow and complicated.

The sales team must carefully nurture every bid through multiple stages. Bid too high, and the project may be lost. Bid too low, and the profitability of the job could suffer.

Accurate, efficient bids depend on high-quality, easily accessible data. But this data is often difficult to locate quickly, as it is stored in a mix of paper documents and electronic files generated with a handful of different applications, each of which may present data slightly differently.

> “Bid too low, and the profitability of the job could suffer.”

With a CDE, it is much easier for sales teams to generate accurate bids. Instead of spending time comparing notes with engineering, construction, and procurement teams, teams can tap into a cloud-based CDE to:

- Access bid information, engineering data, documentation, standards, current and previous quotes, and vendor specifications – all in one place
- Create takeoffs automatically with trusted data from 3D models
- Capture detailed quantities to ensure accurate project scope
- Produce bids with integrated takeoffs and quantities
- Leverage a single inventory of 2D + 3D quantitiesfrom bidding to construction
- Reuse design assets from previous projects without consuming valuable engineering time
- Automatically share data collected through RFIs with construction teams
- Bring in costing data from profitable winning bids directly from accounting systems

Ultimately, a CDE helps sales teams automate as many steps in the bidding process as possible, which improves efficiency as well as consistency from bid to bid. Plus, leveraging trusted data from the bid forward can help reduce rework down the line.

The end result? More accurate bids produced more quickly, which enables sales teams to increase the win rate and build confidence in every project’s profitability.

02 Accelerate front-end engineering

Deploy a CDE to deliver high-quality designs in less time

When it comes to front-end design, EPC firms can struggle to find the ideal balance.

The more time and resources invested up front, the more optimized—and potentially profitable—the project will be. At the same time, spending excess time on front-end work may tighten the timeline too much for manufacturing and construction.

Front-end design is best understood as a risk reduction exercise. Proper planning and consideration of contingencies reduce the chance that a mistake or unforeseen outcome will derail the project. Because the old adage remains true: mistakes in manufacturing cost 10x more to fix than those in design, and mistakes on the job site cost 10x more to fix than those in manufacturing.

With a CDE, firms can create a “best of both worlds” scenario in which front-end design delivers the high-quality results you demand—but on a faster timeline.

Using a CDE during the design stage allows teams to:

- Standardize and automate repetitive tasks, such as file naming and version control
- Automate design of standard components within complex configured systems
- Repurpose trusted designs from previous successful projects
- Eliminate slight variations in how different teams design the same part, component, or system
- Use legacy project data to optimize designs for lower material or labor costs

The goal of a CDE in design is to minimize time spent on well-known, low-risk elements and maximize design resources devoted to new or complicated challenges. This sharpens front-end design work and helps teams deliver the best possible result on the fastest possible schedule.

03 Reduce waste and rework on site

Ensure access to accurate data on job sites with a CDE

The second you set foot on a job site, the information you have about the project may be out of date.

This is especially true with traditional, paper-based processes. Moving paper from one team to another, even by highly skilled and conscientious professionals, raises the risk of poor coordination. If one element of the design of a large processing system has changed—such as where or how the system will connect to utilities, for example—it can lead to work that is done incorrectly, work that does not meet an updated specification, or work that is done in the wrong order.

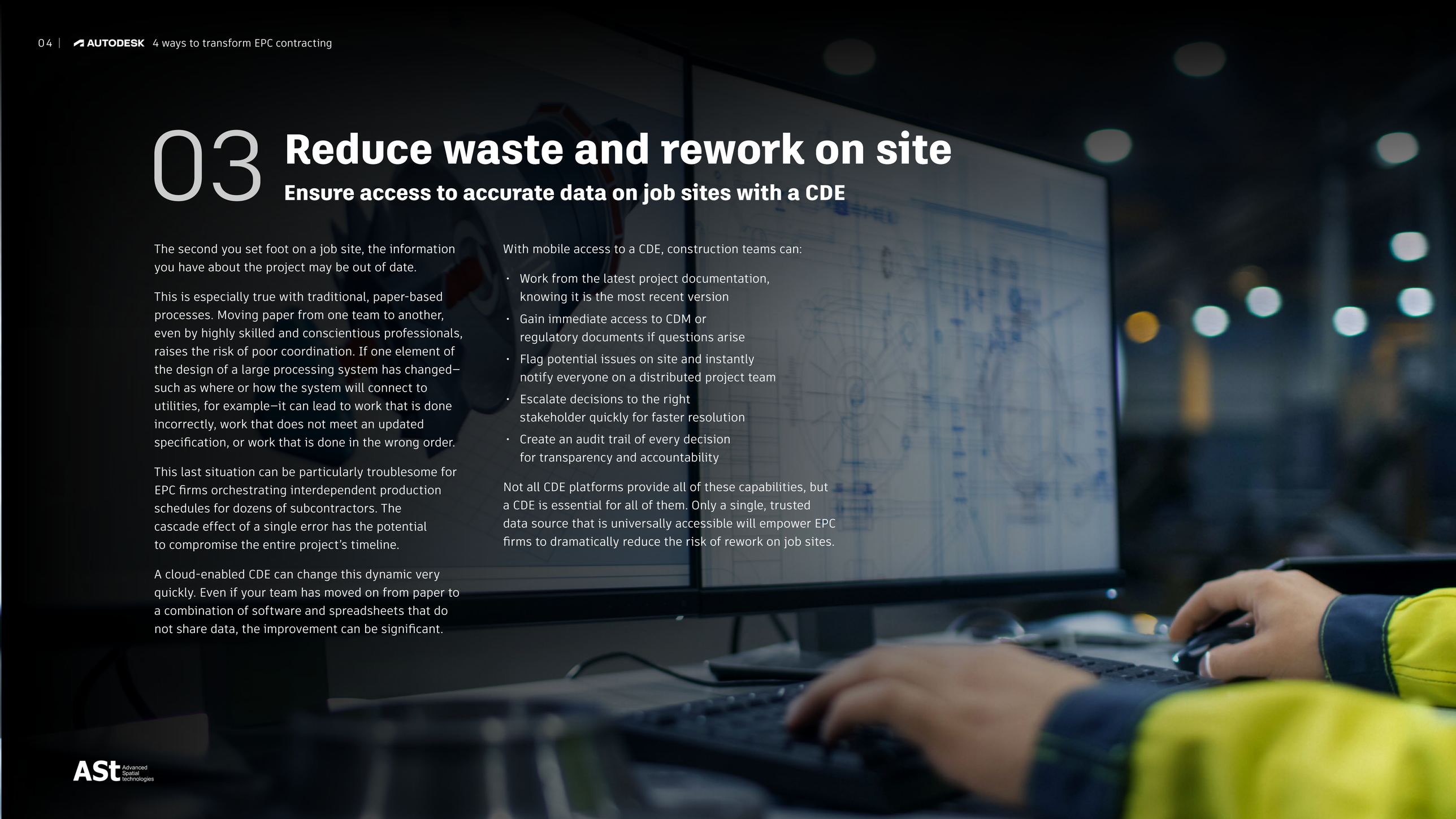
This last situation can be particularly troublesome for EPC firms orchestrating interdependent production schedules for dozens of subcontractors. The cascade effect of a single error has the potential to compromise the entire project's timeline.

A cloud-enabled CDE can change this dynamic very quickly. Even if your team has moved on from paper to a combination of software and spreadsheets that do not share data, the improvement can be significant.

With mobile access to a CDE, construction teams can:

- Work from the latest project documentation, knowing it is the most recent version
- Gain immediate access to CDM or regulatory documents if questions arise
- Flag potential issues on site and instantly notify everyone on a distributed project team
- Escalate decisions to the right stakeholder quickly for faster resolution
- Create an audit trail of every decision for transparency and accountability

Not all CDE platforms provide all of these capabilities, but a CDE is essential for all of them. Only a single, trusted data source that is universally accessible will empower EPC firms to dramatically reduce the risk of rework on job sites.



04 Simplify project management

Gain insight into project progress with a CDE

Every day, EPC project managers are tasked with getting their arms around extremely complex projects that must be completed on time, within budget, and in compliance with all specifications, while protecting the health and safety of all the people involved.

Project managers must evaluate the risk of every decision, as well as how every decision could affect every other decision. Contingency planning and risk prevention are always top of mind.

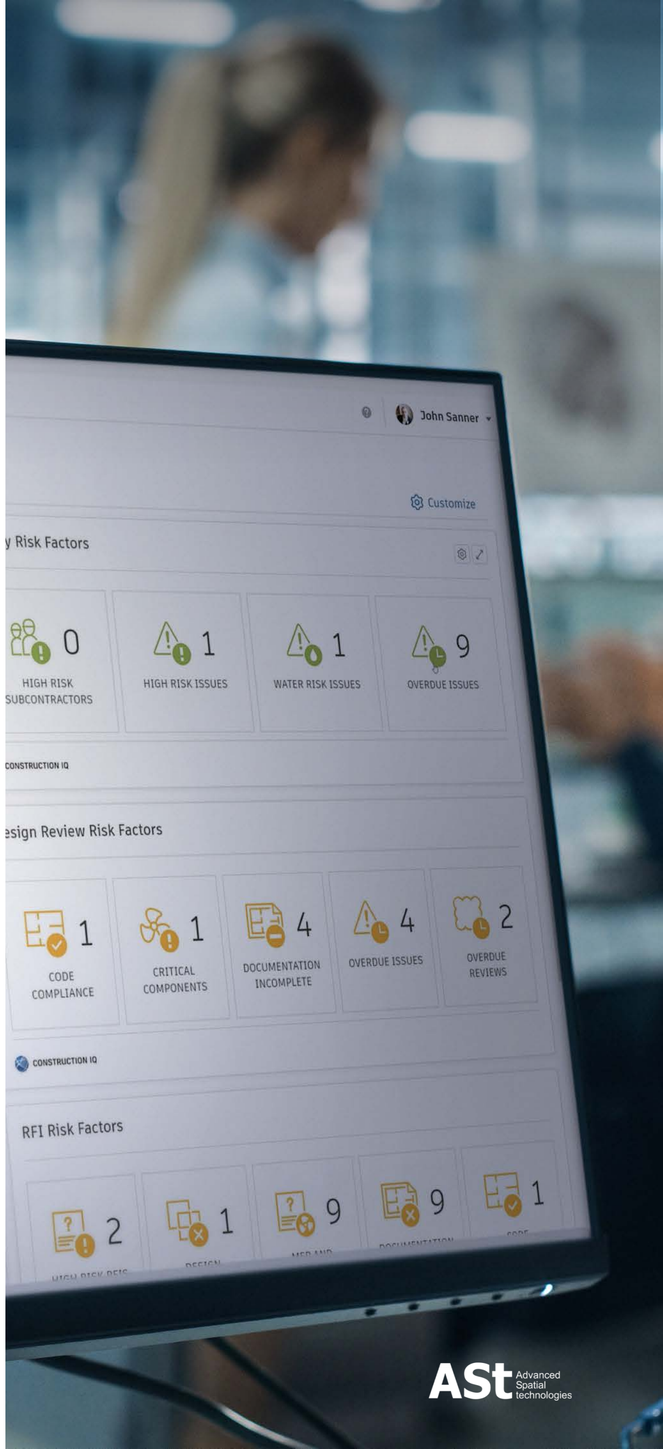
But when a chemical processing plant actually goes into production, for example, the pace of all these decisions and evaluations increases to almost inconceivable levels. When issues arise, project managers must assess the problem at hand, understand its impact on the project as a whole, and uncover the source of the problem so it will not be repeated.

All the while, other issues are cropping up. And project managers know that the data they have right now may be incomplete or out of date. The information is out there, but locating it is a barrier.

Implementing a CDE solves this problem. It brings together all of the data about the project into one repository. There are no data silos or applications that can't talk to each other. Instead, the CDE enables project managers to:

- Gain insight into projects through KPIs that draw on all available project data
- Communicate, coordinate, and share insights with decision-makers within one experience
- Create dashboards that track finances, submittal packages, RFIs, commissioning, area sign-off, health and safety, and more
- Generate accurate progress reports and share them more easily

There are even tools available that use the power of artificial intelligence (AI) to analyze project data and find patterns that reveal potential issues before they occur.



Gain a competitive advantage

The current economic climate is good for the order book but bad for profitable execution. In order to complete projects successfully and maintain profitability, EPC firms in the process engineering space will need to find ways to improve overall efficiency.

The problem with traditional approaches is twofold. Paper-based workflows, spreadsheets, single-use software tools, and disconnected data sets—or any combination of these—are both inefficient and non-scalable. They simply can't handle the pressure as data volumes increase.

Implementing a CDE puts your firm on a more streamlined and seamlessly integrated path. With a CDE, you set the stage for more accurate bids, faster front-end design, less rework, and easier project management.

Because the data you need isn't hidden away, or the wrong version, or in an unreadable format, or compromised by human error.

It's right at your fingertips, whether you're preparing an RFI, building a 3D model, installing a system on site, or checking in with subcontractors to make sure everything happens on schedule.

Take the next step
Autodesk can help your EPC firm understand all of the opportunities a CDE can bring to large scale process engineering projects:

Learn more

Watch a case study
See how Andritz used a cloud-based CDE for efficient ordering of spare parts:

Watch here

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