



How a Neutral Collaboration Platform Drives Project Success





Today's challenges in construction and engineering

Large-scale construction, engineering and infrastructure initiatives typically involve hundreds of stakeholders in an elaborate web of relationships, executing a complex sequence of tasks that has to be completed with pinpoint timing. Sometimes this complicated network of teams operates across wide geographical areas. Streamlined communication and collaboration are crucial to delivering these projects on-budget and on-schedule. In surveys conducted by the Construction Management Association of America (CMAA) and FMI Corporation, improving project communication and collaboration were high on project owners' list of concerns, and problems with collaboration were mentioned as a source of cost overruns.¹

This paper looks at how the nature of project relationships—particularly a lack of trust—presents obstacles to collaboration and how a neutral collaboration platform can fully enable trust to drive the successful management of large-scale construction, engineering and infrastructure projects. Topics include:

- › How the nature of business in the construction industry can impede collaboration and frequently creates adversarial relationships
- › How poor relationships result in inefficiencies that contribute to higher project costs
- › Why trust is central to collaboration, and how collaboration systems are the foundation for building trust
- › Why participants may resist using online collaboration systems and how to overcome that resistance
- › The most widely used online collaboration platform for the industry and how it builds trust through neutrality, robust functionality, training, and support

¹FMI/CMAA Fifth Annual Survey of Owners, 2004

Organizational and cultural differences

Participants in construction and engineering projects are often highly specialized organizations with unique work processes and systems. Their management practices vary significantly because of differences in ownership, areas of expertise and styles of work, and the types of labor forces they employ. In today's global economy, it's also possible that workers won't all be located in the same region, let alone on the same project site. As a result, coordination across multiple cultures, languages, and geographies can be difficult. To make matters more challenging, it's highly likely that the firms don't use the same technology platforms for project management, communication, document control, and other information-driven functions.

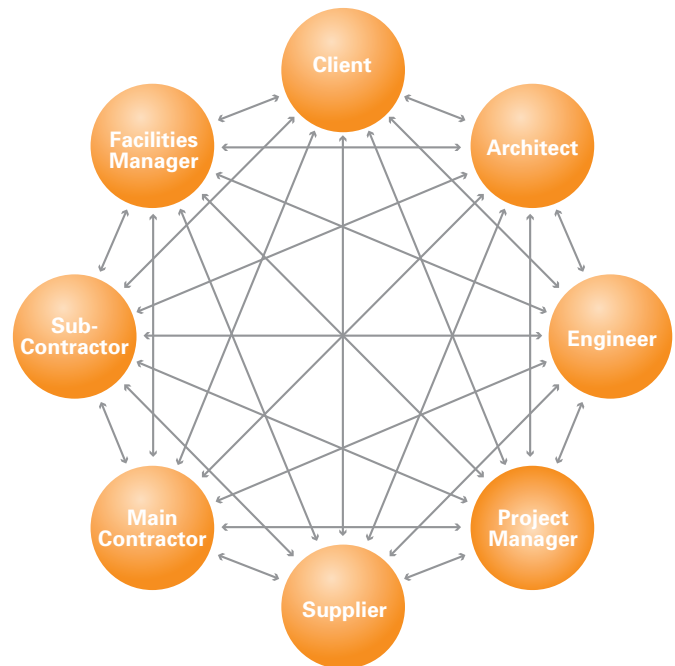
Short-term, project-driven relationships

Most arrangements within construction and engineering project stakeholders are short-term and dictated by the nature of a specific project. When choosing to work together, factors such as cost, location, and availability often outweigh the compatibility of corporate cultures or the existence of prior successful working relationships.

In fact, given the project-driven nature of the engineering and construction industry, it's not uncommon for "partners" on one project to be "competitors" on another. As a result, an inherent lack of trust is the norm. Firms are reluctant to share information with each other, fearing a loss of competitive advantage. The focus is on driving accountability and holding to the bottom-line, not on team-building, sharing, or collaboration.

"The *Tenth Annual Survey of Owners* portrays an owner community striving to cope with changed economic conditions and new priorities in building projects and programs. In general, owners are meeting this challenge by adopting a more comprehensive, strategic view of their activities and relying on service partners to support a wider range of functions than ever before...Team coordination in some form was mentioned most often across all provider categories."

FMI/CMAA Tenth Annual Survey of Owners, 2009



Complex networks characterize construction and engineering projects

The high-stakes construction, engineering and infrastructure environment

Construction today is an unpredictable and high-stakes endeavor. With thousands of contingencies large and small, the level of risk is very high and the pressure on margins is constant. Engineering and construction firms also operate under greater scrutiny by regulatory bodies than ever before; they need to demonstrate unprecedented levels of transparency and accountability. All this requires costly layers of people, processes, and systems dedicated to ensuring compliance.

Under these unstable conditions, relationships between project stakeholders can quickly become adversarial. Anything from a missed deadline to an actual defect can—and frequently does—cause a breakdown in working relationships leading to costly delays and disputes or litigation.



“Too often, owners and providers of construction services are engaged in adversarial relationships...A contract is not a relationship. It is a legal document. Without relationships where trust has developed and been validated over time, the industry continues to keep the lawyers and claims consultants robustly employed...This is changing for the better in many corners of the industry as both owners and construction service providers come to realize that everyone benefits when there is an atmosphere of information sharing.”

FMI/CMAA Fifth Annual Survey of Owners, 2004



How poor relationships increase project costs

As early as 1993, a study of more than 260 construction and engineering projects sponsored by the Construction Industry Institute found proof for “the intuitive notion that mutual trust and project cost are correlated.”² In other words, lack of collaboration on projects created inefficiencies that were a direct cause of increased project costs and diminished profit margins.

²Bureau of Engineering Research, The University of Texas at Austin. “Cost-Trust Relationship.” Austin: Construction Industry Institute. 1993.

“Problems with communication and collaboration are...one of the reasons that projects run over budget...Communication and collaboration depend on trust, and trust is the result of relationships and reputations built up over time.”

FMI/CMAA Fifth Annual Survey of Owners, 2004

Mistrust creates multiple inefficiencies

The 1993 study, and others that have followed, looked at how lack of collaboration affects the operation of a construction project. For example, when firms start with an attitude of mistrust, they are compelled to add more controls and legal support to protect themselves against potential conflicts with other parties. They compensate for lack of trust by creating redundant processes and systems. They institute defensive procedures such as creating complicated reporting structures and pushing decisions and approvals much higher in the organization, which adds cost and time to the project process.

Because communication is less open, team members don't always have access to the information they need to do their jobs, affecting their ability to meet key milestones and causing schedule delays. Misunderstandings or incomplete data result in change orders, late payments, and rework. As the overall quality of work erodes, the risk of serious problems increases. Many times the very conditions these companies sought to avoid are actually created through their inability to share and collaborate.

Going from bad to worse

In the absence of effective collaboration, unnecessary costs add up on a daily basis. But when disputes arise and relationships turn openly adversarial, construction management firms and owners bear the additional financial burden of arbitration or litigation, and potentially settlement payments as well. On projects where margins are already thin, these costs eat into profits and compromise the overall financial health of the engagement and of the companies driving it.

Legal disputes also damage good reputations built over years of hard work, and destroy relationships that would have created other business opportunities—which means they directly threaten a firm's future revenue stream as well.

The cost, time, and quality impacts of poor communication

ACTION →	RESULT →	IMPACT
Inefficient communication system between the project team	Delay	Time
Inability to locate drawings or documents when required	Delay	Time
Loss of important documents	Delay	Time and cost
Works being carried out using outdated information	Disputes, delays, reworks/ abortive works	Time, cost, and quality
Incomplete specifications and drawings	Reworks/ abortive works	Time, cost, and quality
Non-compliance with site and works inspections due to incomplete or inaccurate documentation	Delay	Time, cost, and quality



The conditions for successful collaboration

In a paper entitled, “The Role of Trust in Business Collaboration,” The Economist Intelligence Unit (EIU) found that “few companies are focused on collaboration itself as a capability, or on instituting the kind of trust standards that can speed and ease collaboration, or on properly aligning corporate culture, processes and technology around the collaborative strategy...”³ However, as more proof is found that adversarial relationships damage business operations, the idea that collaboration can—and should—be facilitated is gaining momentum.

³The Economist Intelligence Unit. “The Role of Trust in Business Collaboration.” London: EIU. 2008.

“Fear of losing control can prevent the organization from forming effective connections and leveraging institutional knowledge...respondents say disclosing proprietary information is among the greatest risks posed to them by a collaborative venture.”

“The Role of Trust in Business Collaboration,” The Economist Intelligence Unit. 2008

The critical role of trust

The Economist Intelligence Unit identified the basic elements required for excellence in collaboration as “trustworthy people, processes, and technology.”⁴ However, establishing trust isn’t the same as creating a code of ethics or standards for corporate governance, which is where companies tend to focus their energies when they want to establish a reputation for integrity.⁵ Trust goes beyond ethics. It requires an atmosphere of openness and flexibility as well as fairness and honesty, starting within the firm and moving outwards to encompass its partners and customers as well.

Collaboration systems are the foundation for building trust

Trust begins with intangible factors such as “trustworthy people” and a dedication to mutual understanding. However, as with any other aspect of business, it needs “tangibles” in order to work: clearly defined processes, the right technology, and properly trained employees who have bought into using the systems.

Because communication and information sharing are fundamental to the successful operation of a large-scale project, often the best place to start building trust is through an online collaboration system. The primary deliverable of this type of system is transparency—the ability for participants to share information and to see the work of others when appropriate to do their jobs effectively.

Of course, the perceived risk associated with transparency is high. Most project participants may feel they are not equipped to “safely” share proprietary information, especially in today’s highly competitive global economy. Therefore, all parties involved have to be reassured that the system has the appropriate levels of security to protect the sensitive information being exchanged.

“Elements of the AEC [architecture, engineering, and construction] industry have started to move away from traditional communication methods, which are typically time- and labor-intensive resulting in higher costs and inefficiencies, and have started to rely heavily on online collaboration and project management technology.”

“Computer Aided Collaboration in Managing Construction,” Harvard Design School Department of Architecture Design and Technology, 2006

^{4,5}The Economist Intelligence Unit



Lastly, to promote fairness, the system must treat all participants equally in every form of information exchange. The system should not be the property of, and therefore controlled by, a single party in the transaction. In fact, the traditional ownership model upsets the balance of power and by its very nature breaches trust. In order for a collaboration system to work, it should be operated by a neutral third party.

What is collaboration?

According to a 2008 study by The Economist, collaboration is often confused with co-operation or co-ordination, but it's fundamentally different. Co-ordination results from a specific direction: "Get this done." Co-operation starts with a specific requirement: "We need to..." Collaboration is the process of finding new ways to meet mutually recognized needs: "I wonder if we could..." It requires high levels of commitment and trust, and this investment in the relationship is rewarded by the creation of something new of value to everyone.

"The Role of Trust in Business Collaboration," The Economist Intelligence Unit, 2008

Online collaboration improves corporate governance

An online collaboration system creates a "virtual workplace that provides a repository recording of the process of the group." All documents and correspondence of every type—files, emails, drawings and photographs, audio and video conference recordings, and notes from electronic whiteboards—are logged, stored, and available for easy retrieval. In the event of any dispute, compliance review, or audit, this secure document repository ensures that there is an unbiased source of truth. For this reason, such systems are becoming a best practice in good corporate governance.

"Antecedents and Drivers Affecting Adoption of Collaboration Technology," Elsevier Automation in Construction. October, 2006

Project cost factors affected by trust

The Construction Industry Institute identifies the following cost factors as being affected by the level of trust between parties on a project, in order of significance:

- › Team efficiency
- › Timing of decisions
- › Project schedule
- › Project performance/quality
- › Timing of approvals
- › Amount of rework
- › Admin costs

"Cost-Trust Relationship," Bureau of Engineering Research, The University of Texas at Austin, 1993



Overcoming resistance to online collaboration systems

As mentioned earlier, in-depth surveys of construction and engineering project owners by CMAA and FMI Corporation have uncovered a high level of concern about project communication and collaboration between service providers and owners.⁶ At the same time, however, CMAA/FMI found a substantial gap between the perceived need for new collaboration methods and a relatively low level of adoption of collaboration systems.

In one survey, close to 80% of project owners said they “believe project collaboration software can help avoid disputes and miscommunications.” Seventy-five percent said “there should be a contractually mandated specification regarding communication on projects.” But just slightly more than a third (35%) of the owners mandated the use of project collaboration software for their service providers. Reasons included that the software was too complicated, too costly, and “it won’t work in our organization.”⁷

^{6,7} FMI/CMAA Fifth Annual Survey of Owners, 2004

Fear of exposure compromises collaboration

Traditionally, the construction industry has been slower to adopt new technologies than other sectors, but general resistance to technology doesn't explain the difficulties here. The August 2007 edition of the Elsevier journal *Automation in Construction* included results of a study about the introduction of collaborative technology in a construction consortium, which uncovered the primary issue: fear of possible exposure among the users.⁸ The new technology imposed serious changes on work practices. Users didn't trust the system or the changes in culture it was creating. Instead of sharing information, they began to withhold it. Eventually, their lack of willingness to accept the new framework interfered with coordination and destabilized their projects.

Adoption, trust, and neutrality

Recently, on large, complex public or public-private projects, there has been a trend toward including RFP specifications for a project collaboration platform that is operated by a neutral third-party—not owned by a single stakeholder in the project ecosystem. In the “neutral ground” of such a platform, participants can control how, when, and by whom their sensitive information is accessed. The owners and builders mandating the use of such systems have discovered that this ability allows them to stop competing and start collaborating successfully, while also enabling the higher level of accountability that is required for high-stakes projects.

In fact, anecdotal evidence gathered from several firms suggests that stipulating a neutral platform is especially helpful in joint ventures and similar structures, and having project data that is not owned and controlled by one party has proven invaluable in resolving disputes.

“Nearly 80% of owners believe project collaboration software can help avoid disputes and miscommunications, but about 65% still do not mandate its use on their projects...75% of respondents said, “There should be a contractually mandated specification regarding communication on projects”, and that the owner should “define the procedures for ‘formal’ communication between parties” on their projects.”

“Start-up and Completion Continue to Challenge Construction and engineering projects,” CMAA/FMI Survey, 2004

⁸ Athanasios Nikas, et. al. “Antecedents and Drivers Affecting Adoption of Collaboration Technology.” *Elsevier Automation in Construction*. August 2007.

Supporting users with training

Without easy-to-access training and on-going support, adoption rates for the collaboration platform may never reach the “critical mass” required for effective collaboration. Participants need to see that the system supports their specific workflows and communication needs. The only successful approach is to deliver training and support to all project partners during the “ramp-up” phase. This not only builds their confidence in the system but also ensures that it will be used consistently and optimally. Of course, participants must also have confidence that the solution provider’s platform is reliable, secure, and continuously managed to ensure that all records will remain available at all times.

However, successful adoption doesn’t end with initial deployment and training; users may revert to old habits if the right behavior isn’t reinforced continuously, and new organizations and users can join a project at any stage. Usage should be monitored across the life of the project to ensure proper operation of the collaboration platform and emphasize compliance with agreed-upon process workflows.

Traditional solution providers generally focus their support resources only on the purchaser of the solution; few, if any, resources are invested in the other project participants, even employees of other firms who did not fund the solution. Having already established their neutrality and commitment to all participants, third-party operators are the best equipped to offer fair and equal treatment in the areas of training and service as well.

Some of the key requirements for building trust through an online collaboration system include:

- › Supports broad project management and communication needs
- › Provides appropriate levels of security to protect against external threats
- › Operated by a neutral third party; not controlled by one firm
- › Offers fair and equal treatment of all participants
- › Protects information rights of each firm



Choosing a solution

There are many factors to choosing an online collaboration solution. Here are a few key criteria to consider:

Checklist for evaluating online collaboration systems	
Functionality	<ul style="list-style-type: none">Easy to understand and useEasy to set up new projectsProvides a view of all projects in one placeWorks equally well for all participantsHighly configurableHighly secure
Neutrality	<ul style="list-style-type: none">Managed by an independent third partyProtects all participants' information rightsEnsures each participants' information is accessible only to those whom they authorize
Performance	<ul style="list-style-type: none">Fast, accurate information retrieval and deliveryNo limitation on storage capacity, uploads, or downloads
Ownership	<ul style="list-style-type: none">Allows users to register new projectsAllows users to retain ownership of their dataOffers access control by individual, level, role, or groupAllows complete handover of project data for maintenance and operations purposes
Interoperability	<ul style="list-style-type: none">Can work with a range of standard systems/databasesHelps extract more value from internal and project management systems
Support & training	<ul style="list-style-type: none">Low or no support costsAvailable to all project participantsAccessible from various locations and time zonesFast response timesExperienced staff with construction industry background
Vendor capabilities	<ul style="list-style-type: none">Recognized provider to construction, engineering and infrastructure marketBroad customer baseHigh levels of customer satisfactionGlobal operations, support, and trainingSaaS delivery model for scalability and easy deployment in days, not months



Aconex: the most widely used online collaboration platform for engineering and construction

The demanding operating environment of construction and engineering projects is a challenge for any technology solution provider. Aconex, as opposed to generic document management and file sharing tools such as Documentum eRoom and Microsoft SharePoint, has been specifically built to handle complex construction- and engineering-related workflows that typically span multiple organizations. There's clearly a need for a robust, secure, and neutral collaboration solution tailored specifically to engineering and construction, operated by an experienced, neutral provider—a provider like Aconex.

Aconex is the most widely used online collaboration platform for multi-party engineering and construction projects worldwide. The global leader in Software as a Service (SaaS) in this industry, Aconex manages 160,000 users in over 6,000 projects in 70 countries. The Aconex platform incorporates best practices from all of these projects, and is well-suited for even the most complex relationships and communication paths required by Public-Private Partnerships, Design and Build, Joint Venture, and Alliance contract arrangements. Aconex customers are among the world's largest, most respected firms, including builders and developers of "mega projects" with values in the hundreds of millions or billions of dollars.

Deep commitment to information rights

Customers who choose Aconex credit the company's neutral platform and its deep commitment to protecting all participants' information rights. This commitment, and the advanced technology that supports it, enables stakeholders to trust the system with even their most sensitive documents. By keeping information always accessible, accurate, and secure, the Aconex platform consistently drives adoption to the highest levels among project participants, which in turn results in lower risk and better return to its clients. For example, a large petroleum gas operator in India recently reported that they were able to capture 10 times more data using the Aconex online collaboration platform than when they used Documentum.

Focus on optimizing and monitoring system usage

Aconex recognizes that the success of a collaboration solution depends on the people that use it. That's why Aconex offers unlimited support to all stakeholders—clients, architects, engineers, project managers, suppliers, contractors, and facilities managers—no matter their location or level of usage, throughout the life of the project.

During implementation, the Aconex team quickly configures the system to fit the needs of the participants. The platform is easy to understand and Aconex also provides unlimited free training sessions to bring everyone on board. Then Aconex goes the extra mile to ensure that stakeholders continue actively using the system, performing regular health checks and recommending process improvements when needed. No construction collaboration solutions provider does more than Aconex to increase levels of information capture, improve control, and contain project complexity.

Minimizing risks and maximizing return

The Aconex platform is built around the principle of trust and fair treatment, linking all project partners through a single, secure, common collaboration solution. By delivering more control over schedules, quality, and costs, Aconex minimizes the inherent risks and maximizes return to each participant—enabling them to do their jobs better and faster, and to compete more effectively in the global engineering and construction market.

For more information

Aconex.com or contact your nearest Aconex office.

Further reading

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www.aconex.com