

# How a Neutral Collaboration Platform Drives Project Success

Overcoming challenges in construction engineering projects

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## INTRODUCTION: 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.

This white paper examines 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
- How the most widely used online collaboration platform for the industry builds trust through neutrality, robust functionality, training, and support.

This white paper examines how the nature of project relationships—particularly a lack of trust—presents obstacles to collaboration, and how a neutral collaboration platform can facilitate building trust for the successful management of large-scale construction, engineering, and infrastructure projects.

## 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, firms often use different 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**

*"Inflection Point: Defining the Future of the Worldwide Construction Industry", 2009*

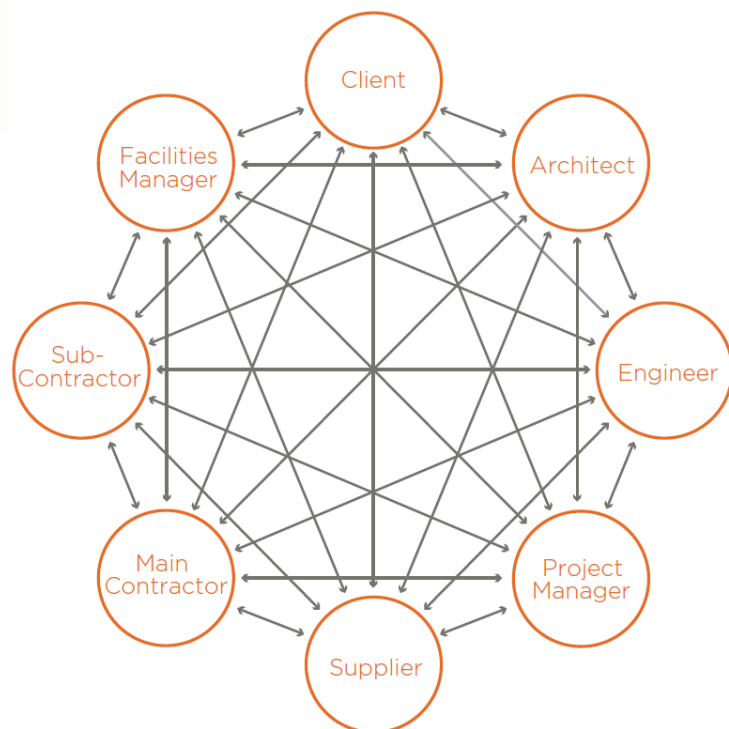


Figure 1. Complex networks characterize construction and engineering projects

## 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.

### How Poor Relationships Increase Project Costs

As early as 1993, a study of more than 260 construction and engineering projects (entitled “Cost-Trust Relationship,” conducted by the Bureau of Engineering Research at the University of Texas at Austin, and sponsored by the Construction Industry Institute) found proof for “the intuitive notion that mutual trust and project cost are correlated.” In other words, lack of collaboration on projects created inefficiencies that were a direct cause of increased project costs and diminished profit margins.

### 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. 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.

**“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*

**Table 1. 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, rework, and abortive work	Time, cost, and quality
Incomplete specifications and drawings	Rework and abortive work	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...”<sup>1</sup> However, as more proof is found that adversarial relationships damage business operations, the idea that collaboration can—and should—be facilitated is gaining momentum.

### The Critical Role of Trust

The Economist Intelligence Unit identified the basic elements required for excellence in collaboration as “trustworthy people, processes, and technology.” 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. 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 tangible structures 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.

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. For a collaboration system to work, it should be operated by a neutral third party.

## WHAT IS COLLABORATION?

According to EIU study, collaboration is often confused with cooperation or coordination, but it's fundamentally different.

- Coordination results from a specific direction: "Get this done."
- Cooperation 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.

### 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.

### 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. 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 the 2004 survey, close to 80 percent 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 percent) 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."

### 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.

### 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
- Administrative costs

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

<sup>1</sup> The Economist Intelligence Unit. "The Role of Trust in Business Collaboration." London: EIU. 2008.



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.

### **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.<sup>2</sup> 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.

### **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. Therefore, usage should be monitored throughout the life of the project to ensure proper operation of the collaboration platform and to 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.

## **CHOOSING A SOLUTION**

There are many factors to choosing an online collaboration solution. Table 2 identifies a few key criteria to consider.

**"Nearly 80 percent of owners believe project collaboration software can help avoid disputes and miscommunications, but about 65 percent still do not mandate its use on their projects...75 percent 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."**

***CMAA/FMI Fifth Annual Survey of Owners***

*"Start-up and Completion Continue to Challenge Construction and Engineering Projects"*

<sup>2</sup> Athanasios Nikas, et. al. "Antecedents and Drivers Affecting Adoption of Collaboration Technology." Elsevier *Automation in Construction*. August 2007.



**Table 2. Checklist for Evaluating Online Collaboration Systems**

CRITERIA	CAPABILITIES
<b>Functionality</b>	<ul style="list-style-type: none"> <li>• Easy to understand and use</li> <li>• Easy to set up new projects</li> <li>• Provides a view of all projects in one place</li> <li>• Works equally well for all participants</li> <li>• Highly configurable</li> <li>• Highly secure</li> </ul>
<b>Neutrality</b>	<ul style="list-style-type: none"> <li>• Managed by an independent third party</li> <li>• Protects all participants' information rights</li> <li>• Ensures each participants' information is accessible only to those whom they authorize</li> </ul>
<b>Performance</b>	<ul style="list-style-type: none"> <li>• Fast, accurate information retrieval and delivery</li> <li>• No limitation on storage capacity, uploads, or downloads</li> </ul>
<b>Ownership</b>	<ul style="list-style-type: none"> <li>• Allows users to register new projects</li> <li>• Allows users to retain ownership of their data</li> <li>• Offers access control by individual, level, role, or group</li> <li>• Allows complete handover of project data for maintenance and operations purposes</li> </ul>
<b>Interoperability</b>	<ul style="list-style-type: none"> <li>• Can work with a range of standard systems/databases</li> <li>• Helps extract more value from internal and project management systems</li> </ul>
<b>Support and training</b>	<ul style="list-style-type: none"> <li>• Low or no support costs</li> <li>• Available to all project participants</li> <li>• Accessible from various locations and time zones</li> <li>• Fast response times</li> <li>• Experienced staff with construction industry background</li> </ul>
<b>Vendor capabilities</b>	<ul style="list-style-type: none"> <li>• Recognized provider to construction, engineering, and infrastructure market</li> <li>• Broad customer base</li> <li>• High levels of customer satisfaction</li> <li>• Global operations, support, and training</li> <li>• SaaS delivery model for scalability and easy deployment in days, not months</li> </ul>

**Requirements for Trust Building**

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.

**THE ORACLE ACONEX PLATFORM**

**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. The Oracle Aconex Cloud platform—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.

The Oracle Aconex platform—with Oracle Aconex Cloud Service at its core—is the leading cloud solution to manage information and processes for the world's largest construction and engineering projects. With more than 500,000 users and over US\$1 trillion of project value delivered in 70 countries, it is the industry's most widely adopted and trusted platform. The Oracle Aconex platform's global customer base includes nine of the top ten engineering, procurement and construction (EPC/EPCM) firms, 23 of the 25 largest global design firms, and nearly all Fortune 500 construction and engineering companies.

### **Deep Commitment to Information Rights**

Customers who choose Oracle Aconex Cloud Service credit the neutral platform and Oracle's 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 Oracle 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 Oracle Aconex online collaboration platform than when they used Documentum.

### **Focus on Optimizing and Monitoring System Usage**

The success of a collaboration solution depends on the people that use it. That's why Oracle offers unparalleled 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 Oracle team quickly configures the system to fit the needs of the participants. The platform is easy to understand and Oracle also provides training to bring everyone on board. Going the extra mile, Oracle ensures 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 Oracle to increase levels of information capture, improve control, and contain project complexity.

### **Minimizing Risks and Maximizing Return**

Oracle Aconex Cloud Service 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, Oracle Aconex Cloud Service 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.

## CONCLUSION

With Oracle Aconex Cloud Service, Oracle provides the leading cloud solution for managing information and processes for the world's largest construction and engineering projects. The Oracle Aconex platform gives owners and contractors projectwide visibility and control across the many different organizations collaborating on their projects. Construction and engineering firms across the globe recognize that the Oracle Aconex solution—rich in features that support industry processes—meets or exceeds their internal security and data management standards. It is backed by unmatched client service that ultimately drives user adoption and insights, maximizes return, mitigates risk, and promotes project success.

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## Integrated Cloud Applications & Platform Services

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