

A large construction crane is the central focus, extending horizontally across the upper half of the image. The background shows a city skyline at sunset, with buildings and a clear sky transitioning from orange to blue. The crane's lattice structure is silhouetted against the sky. Below the crane, a construction site is visible with scaffolding and building structures.

Using Communication and Collaboration Technology to Keep Construction Projects On Schedule and On Budget

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Background

Drive by a new building or house and take a minute to marvel at the design and materials, and look how it fits into the surroundings. Was it magically built? Probably not, but the number of people, professions and materials that went into its creation would surprise most. Architects; general contractors; structural, civil, mechanical and electrical engineers; subcontractors; tradesmen; project managers; laborers; building suppliers; financiers; land owners; and even a building's owner all play a role in developing the project from the ground up. Not mentioned, but also a player in the project, are various government agencies that regulate and oversee building codes.

Building any complex structure brings together a diverse team of experts, professionals and craftsmen. How do you engage everyone working together when they are loosely connected and in dispersed locations? Each comes from a different perspective, with unique skills, who are challenged to collaborate through an extended network of systems and "my way of doing things" mentality. The need to effectively communicate and collaborate, from day one, is essential towards staying on schedule and on budget and ensuring the project is completed to the required specifications and quality standards.

A primary reason for cost overruns and delays, most often cited, is poor team communication and collaboration. A majority of projects face delays. The complexity and multiple points of view involved in a construction project, and any ineffective communication and collaboration will only exacerbate the problem all but guarantee no project runs on time. Unexpected changes or unplanned disruptions will occur. Fingers get pointed and work stops. Instead of solving the immediate problem, more complications develop. Minimizing these events and keeping them from escalating is a critical factor in ensuring a project's success. Proper communication and coordination between parties should be established right from the start and revisited during each phase of construction project; collaboration and communication are paramount in mitigating delays and reduce the risk of them occurring to begin with.

The challenge of uniting all factions into one cohesive team is critical, but it is not insurmountable. A breakdown can occur on any day, but engaging the various individuals quickly can get the project back on track with minimal delay. Change or unexpected issues are inevitable in a construction project, but how everyone deals with these will determine whether the project gets completed on time and on budget. Advancements in software technology and mobile enable better communication and engaged collaboration.

Traditional tools like email, project management software and even the telephone are often one-way communication activities. They lack the real-time collaboration elements necessary for connected engagement, discussion and approval process. Everyone knows and values the importance of working together effectively; unfortunately failure is more the norm than exception.

Success is dependent on three factors working in harmony: people, systems and organization (of people, processes and documents). Technology cannot fix the people issue, but it can impact how people work together to create an efficient working environment.



People – Systems – Organization

A construction project's people component is constant; multiple individuals, with different perspectives and expertise coming together to fulfill a vision. It is a group of outsiders coming together to form a "team." The "team" must recognize, from the outset, that each person represents a different company or organization.

Implementing strong systems, communication and accountability from the start can be the catalyst to keep the project on budget and on time. In particular, collaboration between investors and designers during the planning phase plays an important role in reducing the design changes during construction and sets the benchmark for ongoing communication and collaboration throughout the project. Regardless of what tools and technology based systems are used, everyone involved need to be "on-board." Who does what, when and how will go a long way towards dealing with disputes and changes when they arise.

Plans, drawings, RFI's, change orders, scheduling, orders, invoices and general conversation/communication are just some of the "assets" used and exchanged between participants in a project. That list didn't even include contracts, specifications, reports, manuals, drawings, project schedules, photographs, meeting agendas and synopsis of meetings. Delays created by lost information and documents, or the need to track down who has what and where, can cripple a schedule. The concept of silos is endemic when you have a team of individuals

from various companies all focused on their specific aspect of the project. How the "team" organizes document and asset flow needs to be addressed early in the process. If you want to stay on schedule and on budget, and allow for easy decision making, all information needs to be organized allowing for easy access by whomever, whenever and wherever they're needed. Numerous research studies, from around the world, highlight that the time taken to discuss and make decisions was a primary factor contributing to delays because of the many interested parties involved. Visibility and transparency are required for a strong organizational foundation. Not just planning how a project will be managed, but what technology, tools and systems will be used.

Sockenplan subway train station project, Sweden [2006]

The participants in this particular project had worked together previously so ideal conditions for ensuring that the project and its communication needs could be managed carefully and in good order. Initially, the project management expressed an ambition to organize and control communication within the project via an Internet based project management network. Project management set up the network, introduced it to the project participants and encouraged its use. However, once the network had been set up, even the project management did not use it to its fullest extent. Planning and design documents were not distributed via the project network, but were distributed directly among the parties involved, either by e-mail or as regular paper copies. As a result, the use of the project network remained limited. Instead, information flowed in an uncontrolled manner among the members of the project team.

*"Rethinking Communication in Construction"
Professor Örjan Wikfors and Alexander Löfgren,
Lic. Eng. May 2007*

Technology and Mobility and the Modern Construction Project

Picture this – a busy, noisy job site, dozens of tradesmen working on their craft – a foreman onsite managing the pieces like a conductor leading a symphony – an engineer using a CAD program 300 miles away, a truck driver stuck in bad weather – a finance director noticing cost overruns destroying the budget estimate – a facilities manager worried he will have to report that the new building may be two months behind schedule because of a supply foul-up –



an electrical engineering company waiting for the go-ahead to schedule for pre-wiring. All of these individuals will interact with one or more of the others at some point in the project. Documents will need to be reviewed, discussed and decisions made; schedules created, reports issued and general updates communicated throughout organizations and the project team.

How will people communicate with each other on a project? How will documents and assets be shared? Will technology be utilized to streamline the process and track activities? Email? Telephone? Project Management Software? Regular mail? How and who will record every communication and sign-offs be tracked? In a paper intensive business, is there a way to reduce delays when dispersed people have to weigh in on a jobsite issue? Technology must foster collaboration. Seamless communication across devices and locations is a necessity not a luxury. How do teams communicate and collaborate? Let's look at the options.

Paper/Regular Mail

Paper has been the document choice, but paper requires copying, ensuring everyone involved has a copy and has the most current version. Who has what, and where the master located is, requires organizational skills and a project manager focused on the smallest details. Using paper and the mail system also involves time, and time is money. Paper is not collaborative unless all parties are in a room viewing the same document or set of plans. And, for an industry focused on using environmentally friendly products and processes, paper is not the way to go. Document printing will still occur, but reducing waste and version errors is an important factor in keeping projects on budget and on schedule.

Phone/Teleconference

The construction industry has been a leader of incorporating mobile communication into the workflow. Reliance on the phone for communicating addresses timeliness, but increases the risks pertaining to agreements and document understandings. Instant messaging allows for immediacy, however becoming too comfortable with instant communication opens the door for decision making for the sake of time rather than ensuring all parties are involved. Furthermore, additional processes and systems need to be created regarding all of the documents and assets involved in a project and written sign-off that is generally required to move forward.

Email

It is simple, available, albeit not so easily, track-able, efficient and generally productive, BUT, is email the best tool to manage a construction project? Is it the best tool to engage multiple people, in different offices, with different goals and organizations? Being simple and immediate does not mean it's the best solution. Just looking at an email inbox causes stress and panic in many and definitely an overwhelming sensation in most. There are just TOO MANY emails! As a McKinsey study found, 30% of the workday is spent on email. Email is static not active communication other than read and reply. Communication, especially in the workplace, is either social or business chat or task oriented. Add mobile to the equation and you have a negative multiplier effect on the situation. When texts and instant messages are added to the email dilemma productivity decreases even more. Email will not be replaced entirely anytime soon, but there is a platform that solves the problem and integrates with current tools.



Virtual Mobile Social

With the introduction of Vmoso, BroadVision created a platform addressing the communication and collaboration challenges seen in the construction industry. Vmoso profoundly changes the way people can communicate, assets and documents are organized and managed, and how tasks and activities are tracked. All this with enterprise-grade security built in.

Vmoso is five workplace activities in one platform. There is no longer a need to use an email platform, not integrated with a chat tool, that isn't connected to a task management solution or any and all that lack security features.

- email
- instant messaging
- content sharing
- task management
- social networking

With the proliferation of mobile and the timeliness requirements of construction projects, communicating and collaborating are critical to keeping projects on track. Spending time hunting for the most current document or tracking down individuals needed to sign-off on a request can be frustrating. Mobile creates expectations of an immediate response. Vmoso works seamlessly on desktop or mobile giving your team consistent access to real-time communication and instant collaboration—wherever they are, whenever they work, and on whatever device they use.

Vmoso allows project team members, in an office or in the field, a platform to easily share information and communicate effectively and efficiently. A project team, spread throughout multiple offices and job sites, has access to real-time communication, documents and critical information needed to make timely decisions. All of which are organized in a single-source-of-truth environment. Efficient and accurate workflow allows office workers to see what field workers see at the same time. No more delays involved in information transfer. Alerts, built in as a Vmoso option, will notify all participants of activity immediately. Problems or issues surface faster, addressed more quickly with more accurate resolution. As conditions change, everyone becomes aware and the right individual(s) can make quicker decisions.

With a 5 in 1 communication and collaboration platform users can:

Create **CHATS** - Relationship-based private channel communication for convenient/ongoing or persistent/long-lasting conversations;

Issue and respond to **TASKS** - Process/Issue/Case/Event-based private channel for more intensive/accountable workgroup collaboration – workflow and approval process improvement;

Make **POSTS** to the team - Community-based semi-private, semi-public, or public channel for sharing or obtaining knowledge both deliberately and serendipitously;

Create **SPACES** to organize, find and track documents and information - Universal location for grouping, catego-



rizing, sharing of anything with anyone from anywhere on any platform. Document management and versioning which is critical to the construction industry; and

Use **BIG DATA ANALYTICS** – to identify critical, continually used documents and the knowledge expertise often hidden in an organization. Use to pre-empt delays and create best practices for future projects.

Vmoso's 5 in 1 solution does not have to replace email, but is complimentary to it. Whether you choose a total engagement platform or a complimentary solution, team members who only have one or few interactions with the overall project can communicate and collaborate through Vmoso or adjacent to it through email.

Conclusion

With workers geographically dispersed, what happens when a crane falls on a jobsite; or thousands of critical bolts and steel rods fail after installation on a \$500 million dollar project? Dozens of people, from the jobsite to the communications department of the lead contractor to government agencies to engineers and procurement professionals all must jump into action. Finding and reviewing documents and discussions about the project history in order to understand the process and situation must take place while at the same time addressing the problem and providing a solution is required. What was once a manual procedure involving numerous individuals, today's technology can simplify and speed up the task.

Every employee, regardless of level or job, will demand a tool to both communicate and collaborate effectively and efficiently, and complete projects on-time and at budget. The fractured work environment, inherent in any construction project, makes this challenging. What is important to understand is that it is a process, one that involves people and assets requiring a constant exchange of communication and effective decision-making.

To the benefit of the construction industry, technology now exists which creates efficiencies in the office, field or expert's office miles away. Timely communication, access to information and data, in a solution ensuring effective processes and systems for the team to be successful is what construction personnel demand.

A better way to communicate, collaborate and organize documents, contained in a single-source-of-truth platform will help ensure an on-time, on-budget successful project's completion.



About Vmoso

Vmoso is a cloud application for conducting virtual enterprise communication, mobile workgroup collaboration, and social business engagement. It unifies email, instant messaging, content sharing, workflow, and social networking under a cohesive experience, empowering users and their extended organizations to get more work done in significantly less time and at much lower cost. Visit www.BroadVision.com/Vmoso for more details.

About BroadVision

Driving innovation since 1993, BroadVision (NASDAQ: BVSN) provides e-business solutions that enable the enterprise and its employees, partners, and customers to stay actively engaged, socially connected, and universally organized to achieve greater business results. BroadVision® solutions—including Vmoso for virtual, mobile, and social business collaboration, and Clearvale for enterprise social networking—are available globally in the cloud via the Web and mobile applications. Visit www.BroadVision.com for more details.

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About the Author

Ty Levine grew up in a family three generations deep in the residential home-building industry. His first paying job, at age four, was picking up loose nails on the jobsite, for which he was paid a penny per nail. From digging trenches for a French drain, to framing walls, to putting on a roof, installing appliances and cabinetry, to pouring concrete, Ty has done most jobs on a jobsite. The one thing he stays away from is electrical. Whereas his grandfather and great grandfather saw plots of land and envisioned subdivisions of custom homes, and made that a reality, Ty has taken the same focus to building and growing companies in the business world.

