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The USC School of Cinematic Arts:

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The Legal Revolution in Construction

How collaborative agreements, BIM and lean construction methods support integrated project delivery

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REVOLUTIONARY COLLABORATIVE AGREEments are the keystone to construction productivity and energy savings that flow from the intelligent use of building information models and lean construction processes.

New contracts are being developed that assist use of advanced technologies in innovative and profitable ways.

Effective use of BIM software and lean construction processes are proven to work in case-by-case applications. However, to assist repeatable processes and predictable results, it is important to establish a flexible legal form of agreement that can give confidence to teams ready to produce significant work on accelerated schedules.

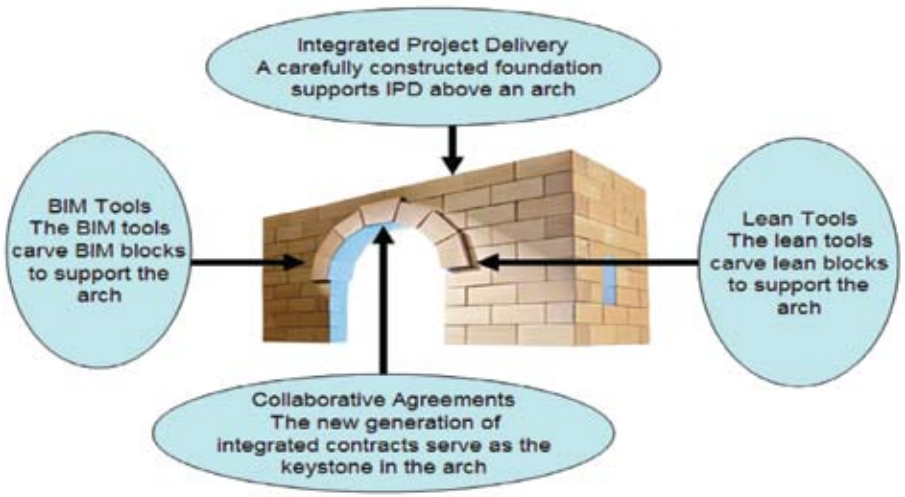
With BIM and lean construction processes acting as two supporting segments of an arch and collaborative agreements as the keystone of the arch, together they support productive and profitable integrated project delivery.

THE BIM AND LEAN SEGMENTS

Building information model software supports collaborative teams by making it easy to say, "I SEE what you mean." It also helps to automate code checking, cost reporting, energy analysis, system clash detection and other powerful design, planning, scheduling and implementation processes.

Defining BIM often devolves into semantic gymnastics. Suffice it to say, for purposes of this article, that BIM represents the full range of next generation software tools and processes that are supplanting CAD tools and processes. There are some aspects of CAD that will remain in the definition of BIM, but we must acknowledge the rapid creation of powerful new tools that support the productivity revolution needed in the building industry. BIM allows stakeholders to plan and design facilities in animated computer models linked to live data. These processes allow knowledge from more people to positively influence productive and profitable projects.

Lean Construction methods and techniques are an outgrowth of the Lean Production techniques Toyota brought to the U.S. Automotive Industry. Adapted to the building industry and referred to as Lean Construction, it systematically cuts waste and inefficiency out of the processes and supply chains prevalent in the Construction Industry. Moving to zero waste, as the Toyota method encourages, allows projects to report saving more than $100,000 on dumpster fees. BIM animations allow smoother construction processes that save 1.5 days per floor on an 80-story high-rise. Many other compelling benefits are contributing to growing acceptance and implementation of BIM throughout the industry.



Simply allowing contractors' experience to be contractually relevant in the early design phase of a project consistently results in the common Lean Construction benefits of saved time and reduced costs, as reported by researcher Dr. Martin A. Fischer of Stanford University. He has been addressing this subject since 1997.

Chaotic delivery systems and a culture of adversarial relationships have been the norm in almost all building related industries for far too long. Today, new BIM software and Lean Construction tools have proven their truly revolutionary ability to increase quality, reduce costs and improve schedules. To derive the most value from these new business processes a new generation of integrated or collaborative contracts must be used.

THE KEYSTONE: COLLABORATIVE AGREEMENTS FOR INTEGRATED PROJECT DELIVERY

There are many versions of the keystone or Collaborative Agreements: ConsensusDOCS, LLC, the American Institute of Architects, the Army Corps of Engineers, private entities, and others have all drafted integrated or collaborative agreements of varying quality.

The ConsensusDOCS 300 Standard Form of Tri-Party Agreement for Collaborative Project Delivery, released in September, 2007, was the first such collaborative agreement released in the U.S. and was quickly followed by similar offerings from the American Institute of Architects (AIA) in May, 2008. The Collaborative Project Delivery Guide, (CPDG) created by the AIA California Council and published nationally by AIA, provides a good overview of IPD concepts and serves as a backbone for the AIA's new General Conditions Document, AIA A295-2008 and the latest generation of AIA IPD Documents released in 2008.

The ConsensusDOCS 301-2008 BIM Addendum, AIA's E202-2008 Building Information Model Exhibit and Protocol, the Army Corps of Engineer's Building Information Modeling Road Map (October 2006) and the AGC Contractors Guide to

BIM, can all provide elemental components to the specific collaborative agreement for a project. Team members collaboratively decide what contractual building blocks they want to use for that specific project. With the speed and value of projects varying based on relationship to mission priority, putting the proper legal relationship tool in place for the right job can be a significant element of mission success.

The foregoing instruments are all rooted in the breakthrough Integrated Agreement for Lean Project Delivery authored by Will Lichtig in collaboration with members of the Lean Construction Institute on behalf of Sutter Health in California. The creation of that legal tool was inspired by Alliance Contracts that originated in Australia in the 1990s.

Collaborative agreements provide simple, yet dramatically beneficial process improvements that result when experienced professionals work toward shared rewards in legal comfort. Waiver clauses, laddered alternative dispute resolution provisions, and innovative pain share gain share addendums are a few of the more effective features found in this new generation of legal instruments.

BENEFITS OF THE REVOLUTION

While Revolutions are messy and do not immediately provide statistical benefits for every category of a complex industry, there is overwhelming evidence from the field, case studies and award winning projects that clearly indicate what the rewards will be.

The Dispute Review Board Foundation has tracked more than $90 billion in construction projects since 2001 and found that advisory opinions issued by dispute boards are accepted by the parties at a phenomenal rate of 98.7 percent. That means collaborative agreements almost eliminate litigation costs from $90 billion in construction…a stimulus-sized savings by any calculation.

In the Midwest a core design and construction team built one arena using traditional methods and the second one with BIM. For the traditional project, there were 60 major Requests For Information and $357,000 in change orders. For the BIM project, there were only two (2) Requests For Information and only $26,000 in change orders, both of which were related to work by subcontracts that did not use BIM tools.

Existing insurance industry data confirms the power of the waiver provisions. On typical design-bid-build projects over 80 percent of the claims made are instigated by core project participants, such as owners, contractors, designers and subcontractors and more than 87 percent of the claims paid fall in that category. Collaborative agreements attack this problem by waiving certain claims and certain types of damages, establishing laddered dispute resolution processes, selecting project neutrals in advance and intelligently managing and mitigating risks through pain share gain share agreements.

An institution of higher education was expanding it's research capabilities by building two identical research buildings, one at a time. After finishing the first building with traditional processes, a new team built the second with BIM and related processes. On the BIM project, Requests for Information on the foundation construction declined by 74 percent, RFIs for the steel erection went down 47 percent and there was a 31 percent reduction in change orders overall.

Yes, there are examples of misused tools causing problems, but when the proper approach is used in creating collaborative project teams, there is significant evidence of reduced risks. In fact, insurance companies and financial institutions are beginning to explore new products that will promote integrated project delivery.

BIM SOFTWARE TOOLS
Autodesk Revit
Autodesk NavisWorks
Autodesk Buzzsaw
Beck Technology's D-Profiler
Bentley Architecture
Bentley Generative Components
Bentley Project Wise
Excel
Gehry Technologies Digital Project
Graphisoft Archicad
Google Earth
ONUMA Planning System

LEAN TOOLS
Lean Project Delivery System
Last Planner System ™
Lean Project Delivery System™
Collaborative Const. - IDP in 3D™

LEAN SYSTEMS
Enterprise Certification
Supply Chain Management
Continuous Product Improvement

BIM SUPPORT ORGANIZATIONS
BIMWiki
buildingSMART alliance™
AGC's BIM Forum
NBIMS Protocol Committee

THE COLLABORATIVE REVOLUTION

Integrated Project Delivery allows new forms of legal collaboration by definition. BIM and Lean Construction encourage collaboration and provide the best results when collaboration is at its best. A natural result of a revolution is new and better forms of legal collaboration. By working together, individual project benefits will accumulate in an overall benefit to society that can truly be revolutionary in terms of reduced energy use, reduced waste, reduced risks and increased productivity.

In integrated project delivery (IPD) the disparate legal, design and construction communities have a project delivery model that empowers committed stakeholders to take advantage of design and delivery innovations simultaneously. The keystone that supports the effective and simultaneous use of innovations manifested by BIM and Lean Construction is the new generation of Collaborative Agreements.

Revolution is not easy. By definition, revolution requires change. But also by definition, building industry professionals are committed to constantly improving their skills and abilities in order to better serve the society that requires and enables their specialized knowledge.

The foundation has been laid. The tools are in place. They require practice and patience, but the results of legal collaboration that supports collaborative building processes can be personally satisfying, professionally profitable and socially significant. Being familiar with the new collaborative legal agreements and how they can benefit you will lead to success on many levels. ■

James L. Salmon, Esq. President and Founder, Collaborative Construction Resources, LLC is a strategic and collaborative consultant and the creator of IPD in 3D™, an innovative program for achieving IPD. Salmon advocates the use of advanced BIM technologies, lean construction methods, collaborative agreements and other IPD in 3D™ processes for the benefit of the building industry. *Salmon would like to thank Michael Bordenaro, Co-Founder of the BIM Education Co-op™ for editing assistance with this article.*