

Wicked Tools for the BUILT Industry



This article continues the Wicked Series begun in the September issue with the Wicked Primer. Last month we looked at Wicked Problems in Construction and this month we explore Wicked Tools for the BUILT industry. Wicked tools exist in every industry—though few use those tools effectively—and the BUILT industry, which lags other industries from an innovation perspective, needs to seize the opportunity to take a quantum leap forward by leveraging wicked tools pioneered elsewhere.

Wicked Tech, Wicked Business Processes, and Wicked Legal represent three categories of Wicked Tools the BUILT industry needs to leverage more effectively. Wicked Tech, characterized by Building Information Modeling (BIM), cloud computing, and efforts to manage information more efficiently through local and worldwide computer networks, rightly captures much of the BUILT industry's attention. Wicked Tech, well advanced in other sectors and expanding in the BUILT industry, arms innovators in the BUILT industry with an impressive arsenal. Wicked Biz Processes arise out of lean business processes such as Six Sigma, Last Planner System^{TM1} and lean supply chain logistics. Wicked Legal

tools create legal agreements that serve as keystones in overarching legal structures that support and enable the use of BIM and other virtual design tools—i.e., Wicked Tech—on the one hand, and new generation lean business processes—i.e., Wicked Business Processes—on the other.



Wicked Tech

Virtual design and construction, information technology, the Internet, and cloud computing represent a brave new world for BUILT industry professionals. These tools, used for years in manufacturing, finance and other sectors, provide the BUILT industry with exciting, though challenging opportunities. BIM software, manifested in the virtual design and construction arena, often takes top billing, but cannot function effectively in a vacuum.

Dozens of software developers provide BIM software for the BUILT industry. BIM software makers² compete vigorously, rapidly commoditizing BIM software tools. The commoditization of BIM software and the inability of many project stakeholders to successfully deploy those tools has led to a rise in BIM consultants³, capable of overseeing the development and deployment of multiple BIM tools in-house, in the field, and across platforms. The amazing potential of BIM—reflected in the slick presentations of the software makers' sales staff—often clashes with field-level reality. However, as in other industries, reality-potential gaps close swiftly and truly effective and integrated BIM solutions are now emerging in the marketplace.

Wicked problem solvers, like those involved in creating and deploying BIM software, enable integrated teams to identify and test alternative solutions to complex design and constructability conundrums on a scale and with a rapidity never seen before in the planning, design and construction world. A strong team of BIM consultants can help project stakeholders leverage BIM tools effectively.

Wicked Biz

Lean business processes, championed by Toyota and popularized in the US by the Six Sigma and similar tools, are gaining

popularity in the construction industry. Six Sigma, lean supply chain management, real-time tracking systems, the Last Planner System™, and similar tools provide stakeholders on major construction projects with new and improved project management techniques. Deploying these tools in technologically antiquated environments, where key metrics languish in handwritten reports and lonely file cabinets, frustrates advocates and novices alike. Thus, few invest in these processes in the absence of a robust and functional information technology environment. In other words, users of Wicked Business Tools rely on Wicked Tech to maximize the value of these innovative new processes.

Armed with Wicked Tech, advocates of lean business processes in the construction industry have set forth to slay the dragons of inefficiency that plague the BUILT industry. Unfortunately, many of the culprits of inefficiency lie in silos beyond the reach of these lean tools. Lean business processes deployed horizontally by a single entity in a factory setting, or even corporate wide, tend to be more successful than lean processes deployed on construction projects where a myriad of disparate, disjointed and too often dysfunctional stakeholders view the effort with skepticism. Innovators armed with BIM and lean processes have now begun forming integrated teams capable of collaboratively delivering in an integrated environment. These integrated teams are now demanding new legal agreements to support their efforts.

New generation legal agreements, crafted, negotiated, and implemented in a collaborative manner by integrated teams, support and enable the intelligent and effective use of Wicked Tech and Wicked Business tools in an Integrated Project Delivery (IPD) environment.

Wicked Legal

The Wicked Tech train left the station long before the lawyers realized a tectonic shift was coming to the BUILT industry. Accordingly, innovative technology dominates the conversation while the legal framework required to deploy advanced BIM software solutions receives short shrift. In reality, resolution of wicked problems requires simultaneous leveraging of technology, legal structures, and new-generation business processes. Integrated teams that invest the time and energy required to hammer out new processes that enable use of these tools—Wicked Tech, Wicked Biz, and Wicked Legal—increase the efficiency with which those teams deliver a wide range of services.

Traditional legal agreements in the BUILT industry, usually negotiated between owners and providers of specific time-limited services, tend to compensate entities for delivery of a designated scope of work and most entities entering into such agreements complete their work in a silo, ignorant of the scope and nature of the work delivered by others on the same project. Wicked Legal Tools enable key stakeholders to tear down those silos, build bridges, collaborate on a cross-disciplinary basis, and deliver functional digital assets in every phase of a project.

Multiparty legal agreements between owners, contractors, and designers—including the ConsensusDOCS 300 Series, the

AIA C195 (Single Purpose Entity), the AIA C191 (Three Party Agreement) Sutter Health's Integrated Form of Agreement (IFOA), Collaborative Construction's IPD in 3D™ Agreement and its Strategic Alliance Agreement, Hanson Bridgett's IPD Agreement and other similar instruments—provide excellent starting points for integrated teams seeking to create an effective legal framework that supports and enables IPD, BIM, and lean business processes. BIM Addenda, Real Time Tracking Service Agreements, BIM Communication Protocols, BIM Implementation Plans, and dozens of other Wicked Legal Tools can be incorporated into multiparty agreements or modified and attached to traditional agreements.

Integrated teams that utilize integrated multiparty agreements enjoy greater success than the disjointed adversarial teams found on traditional projects. Collaborative creation integrated agreements that support and enable BIM-enabled teams capable of operating in an integrated lean business environment provides one of the best mechanisms available for successfully wielding Wicked Tech, Wicked Business, and Wicked Legal tools on a project.

Conclusion

Typical construction projects give rise to a series of Wicked Problems. Those problems manifest themselves throughout the lifecycle of the planning, design, construction, operation, and maintenance of a facility and any supporting infrastructure. Wicked Tools required to solve Wicked Problems exist, but few in the BUILT industry deploy those tools effectively. The combined use of Wicked Tech, characterized by BIM, the web, cloud-based computing and other information technology-related advances, Wicked Business, including Six Sigma, the Last Planner System and similar processes, and Wicked Legal agreements empowers integrated project teams to deliver services more efficiently.

The challenge of using the Wicked Tools effectively will be the topic of next month's BUILT – BIM to FM article. We will explore Wicked Solutions in that article, including enterprise-level software tools, collaborative workshops, and industry-wide initiatives.



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Characteristics of a Wicked Problem

Evolving definitions.

The definition of a wicked problem evolves, triggering solutions that, in turn, change the definition of the problem.

Continuous solution cycle.

Because the definition of the problem continues to evolve, solutions emerge continuously, concluding when problem solvers run out of time, energy, money, or some other limiting resource.

Perfect solutions prove elusive.

Objective solutions elude wicked problem solvers with most ranging from best to worst or acceptable to unacceptable.

“One off” problems.

No two projects are alike and thus, no two wicked problems are the same.

One shot solutions.

Wicked problems feature one-shot solutions as every solution impacts the problem and everything the problem touches.

Creativity and judgment drive solutions.

Pursuit and implementation of wicked solutions depends on the creativity and judgment of the stakeholders.

¹ The Last Planner System™, developed by the Lean Construction Institute, is specifically tailored to the needs of the construction industry.

² Autodesk, Bentley, Archicad, Nemetschek, VICO, Tekla, Onuma, Inc., Primavera, Beck technologies, and EcoDomus are a few of the several dozen such software tools available on the market.

³ Design Atlantic, the BIM Education Co-op, IPROBLUE, Virtual Building Logistics, MySmartPlans, PhiCubed, Summit BIM, PlanIT, BIM Elevations, and dozens of similar consulting firms offer a wide range of BIM consulting services and innovative insights into the intelligent and effective use of BIM software tools.