

## Four BT, LLC

Technology, cost data, and services supporting the efficient renovation, repair, & sustainability of the built environment - buildings, transportation, utilities.

## COLLABORATION IN CONSTRUCTION – WHITE PAPER

*Traditional construction procurement methods and daily operations are unreliable.*



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## INTRODUCTION

- Collaboration is critical to efficient construction project delivery.
- There are multiple levels of collaboration.
- Owners drive the level of collaboration for any project.
- The construction deliver method fundamentally supports or limits the level of collaboration, and significantly impacts success of failure.

### **Real property owners are the stewards of the built environment.**

Owners determine the approach for funding, using, sustaining and disposing of buildings and infrastructure. They also select the construction delivery method. It is the owner and the associated construction delivery method that set the tone, outline roles and responsibilities, establish timelines and deliverables, contractually determine the level of collaboration, and ultimately determine the success of failure of a project.

Shared responsibility for complex issues is extremely important. Owners must no longer position themselves the adversary, but rather a team member participant. A team member that is involved throughout the program/project. While owners must lead and guide the team, they should not “micro-manage” and/or exercise excessive management and control. Rather, decisions should be made jointly, and leverage the expertise of the best qualified team member.

The level of collaboration for a renovation, repair, or new construction project can range from virtually no contractual obligation being required, to a detailed collaborations requirements and processes as outlined in a multi-party contract and associated project implementation/execution guide.

### **Collaborative construction delivery methods**

The two most widely practiced collaborative construction delivery methods are Integrated Project Delivery, IPD (for major new construction), and Job Order Contracting, JOC, (for renovation, repair, and minor new construction).

Both have been practiced successfully for decades by a relatively small group of Owners, Architectural/Engineering Firms, and Contractors. They employ LEAN best management practices and require a higher level of communication, technical and management capability, versus traditional methods such as design-bid-build, DBB, design-build, DB, or construction management at risk, CM@R/CMAR. Trust, mutual respect and an on-demand service-orientation are just a few prerequisites for LEAN construction.

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IPD and JOC are currently among the highest forms of collaborative construction delivery and require greater expertise, transparency, and a somewhat non-traditional business philosophy. They also delivery significant benefits for all project participants. Both also focus upon best value and life-cycle costs and/or total cost of ownership versus first costs. As a result, the norm for IPD and JOC is higher quality projects are delivered on-time and on-budget, with far fewer change order or legal disputes. The Owner receives the greatest value at a reasonable cost, while other participants earn a reasonable profit and also engage in longer term, mutually beneficial relationships.

### WHY NOW?

Most readers are aware of the rampant mismanagement, waste, low productivity, life-safety issues, and major drain upon limited economic and environmental resources associated with constructing and maintaining the built environment. Notable examples being 20% or more of bridges in the U.S. being currently unsafe, as high as 48% of total U.S. annual energy consumption allocated to building operations and construction<sup>1</sup>, and as high at 57% of time, effort and material investment in construction projects not adding value to the final product<sup>2</sup>.

This point was highlighted by CURT<sup>3</sup> when they characterized the difficulties experienced on typical projects as “artefacts’ of a construction process fraught by lack of cooperation and poor information integration. The historical reasons for this dysfunctionality are many, including multiplicity of participants with conflicting interests, incompatible cultures among team members and limited access to timely information.|| Indeed, the goal of everyone in the industry should be better, faster, more capable project delivery created by fully integrated, collaborative teams.”

Both the environmental and economic landscapes have changed significantly. In order to remain competitive and to slow negative impacts upon the environment, better management of the built environment is becoming a global imperative.

### COLLABORATIVE CONSTRUCTION DELIVERY – IPD, JOC ...

Owners must lead the change as to how renovation, repair, and construction projects are delivered. They, and all participants must behave differently.

As noted, a small group of owners are successfully applying LEAN best management practice to construction. LEAN procurement and construction delivery methods are design to incentivize all project participants to collaborate. Job Order Contracting represents an excellent example of a contract and construction delivery method where participants agree to a shared set of terms, expectations, risk, and standardized information in order to drive better overall outcomes. Job Order Contracting and other LEAN construction delivery methods typically share the following principles.

- Best value procurement
- Early and ongoing collaboration among all project participants/open communication
- Jointly developed criteria/scope of work
- Financial Transparency
- Use of common terms, definitions, and data formats
- Monitoring and key performance indicators – KPI’s
- Shared risk/reward
- Ongoing education and training
- Organizational support, “top-down & bottom-up”
- Global oversight and local action
- Longer term relationships/commitments
- Continuous improvement

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<sup>1</sup> U.S. Energy Information Administration

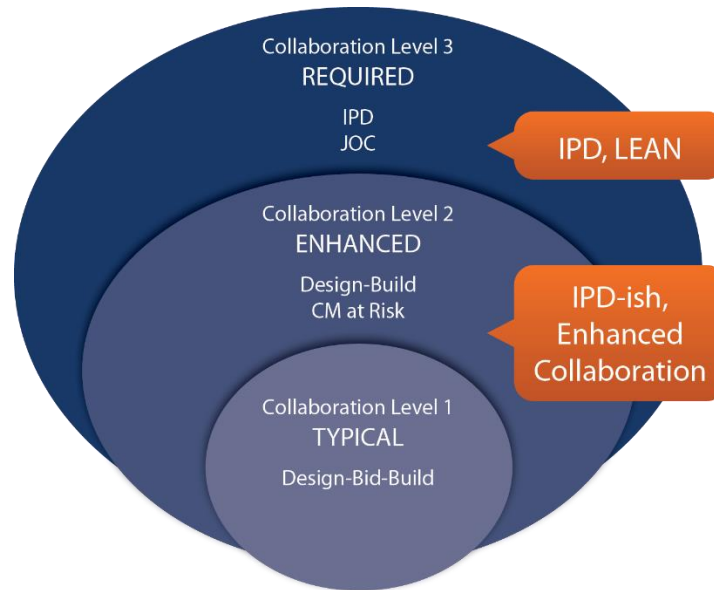
<sup>2</sup> Construction Industry Institute/Lean Construction Institute

<sup>3</sup> Construction Users Roundtable - Architectural Record

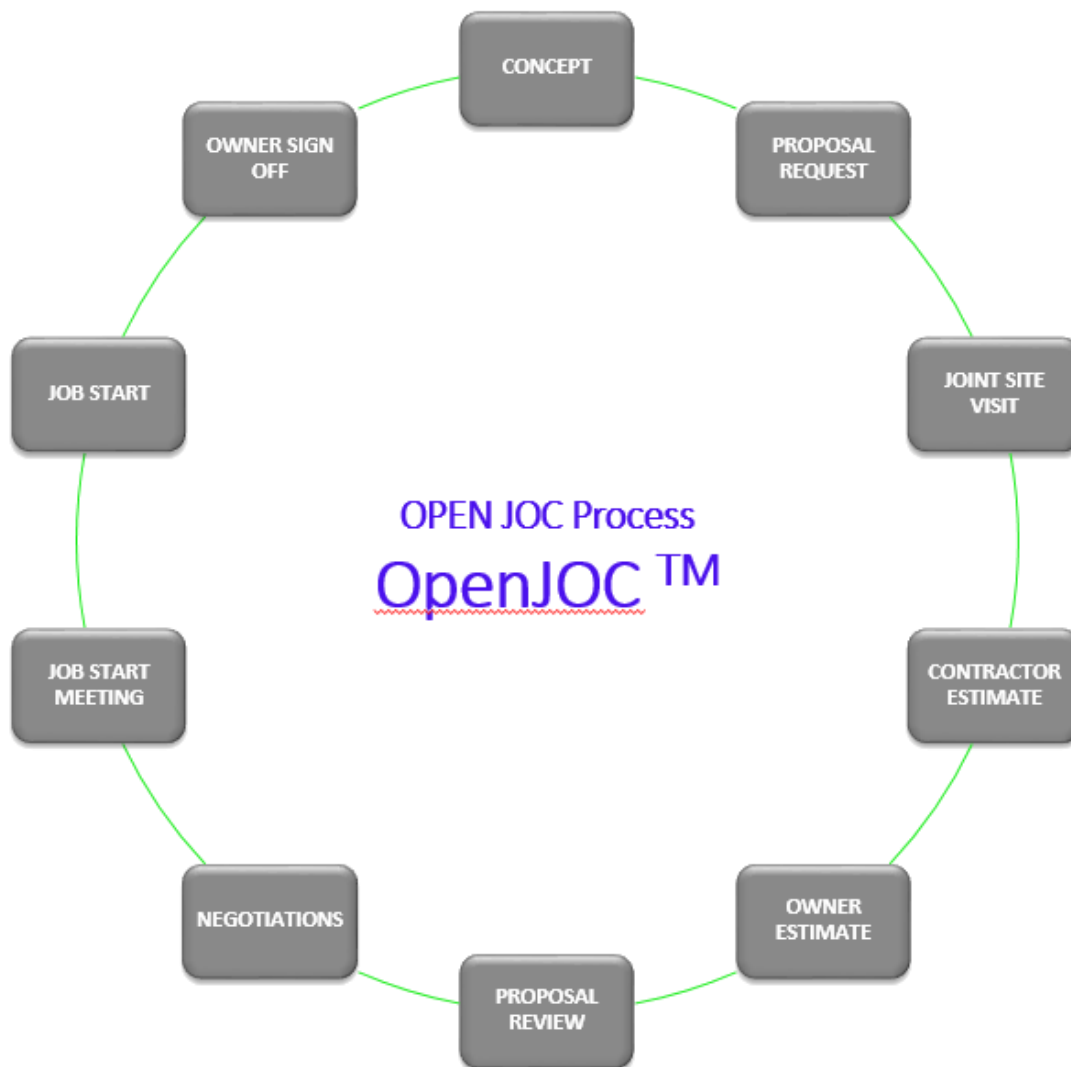
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- Supporting technologies
- Performance-based incentives
- Mutual trust and respect
- Detailed contract and program/project guide(s)
- Co-location of teams

The following graphics further represent how the LEAN collaborative construction delivery principles compare to traditional construction delivery methods.



TRADITIONAL PROJECT DELIVERY		INTEGRATED PROJECT DELIVERY
Fragmented, ad-hoc, hierarchical, controlled	<b>Project participants</b>	Team of project constituencies, open, collaborative
Linear, segregated, silo-oriented, limited information exchange	<b>Process</b>	Concurrent, project life-cycle oriented, shared information, collaborative
Individually managed	<b>Risk</b>	Collectively shared and managed
Cost-based, individually focused	<b>Compensation</b>	Performance and value based



## THE BENEFITS OF COLLABORATIVE CONSTRUCTION

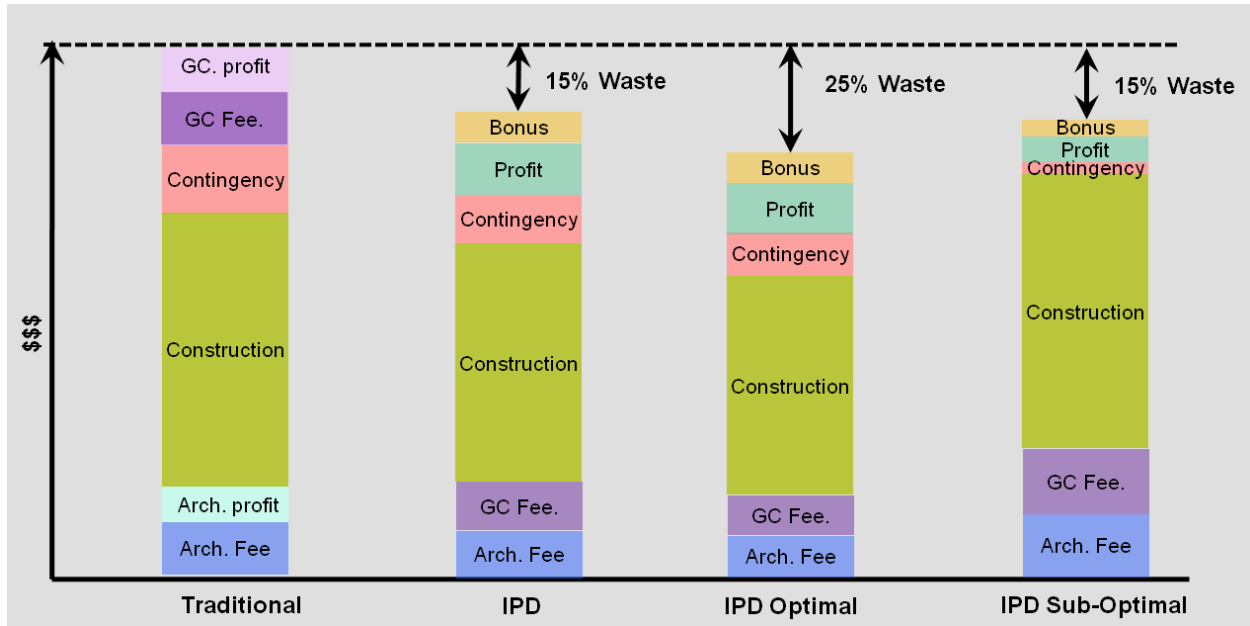
Consistent and beneficial application of collaborative construction delivery methods require that all parties agree on the contract, believe in the process, and possess required skills. The associated “culture change” is nontrivial, and all organizations may not be successful. The success of IPD, JOC, and similar methods depends upon the entire team working together in concert with the “new” process.

Should the collaborative construction delivery method be instituted and managed properly, the rewards are significant. The following results of a research study on “JOC ORDER CONTRACTING PERFORMANCE” published in 2016, demonstrates the higher levels of quality, satisfaction, as well as, significantly increased percentage of construction project completed on-time and on-budget that can be achieved through the application of collaborative construction delivery methods.

- 96% of projects completed with satisfactory results.
- 87% of projects delivered on time.
- 91% of projects are delivered on budget.

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- 24% average administrative cost savings versus traditional delivery methods.
- 30% increase in transparency versus traditional delivery methods.



KlingStubbins - IPD Budget Graphic