



IPD & Lean Operating Systems

An Introduction to Collaborative Project Delivery

If you work in the construction industry or follow industry events, newsletters, podcasts or social media accounts, there's a good chance you've heard of Integrated Project Delivery (IPD). However, if you ask owners or project managers what IPD is, you'll likely get a variety of responses. The industry's understanding of IPD, and Lean design and construction principles has become muddled as each person introduces their own opinion and perception. This confusion can often sway owners, consultants and contractors from giving this new collaborative model a try.

We sat down with industrial engineer, consultant, Lean integration coach and National Director of our IPD and Lean practice, [Carla Ciepliski](#), to help clear up some of the confusion surrounding this collaborative approach.

Q: What is Integrated Project Delivery (IPD)?

Carla: IPD is a shared risk/reward contract model that was developed to maximize value from the owner’s perspective through process transparency and increased collaboration between all involved parties. Unlike traditional contracts that are made up of a series of bilateral contracts, IPD is a single relational contract where all signatories work together, placing their profits ‘at risk,’ waiving liability amongst themselves and engaging in a rigorous, joint, risk-mitigating project management approach.

Q: What is Lean design and construction?

Carla: There are many misconceptions about Lean in the construction industry. The term Lean was created in connection with the study of Toyota as a production and business system in the 1980s. Lean principles made their way into the design and construction industry through the [International Group for Lean Construction](#) (IGLC) which was founded in 1993. The IGLC evolved Lean into a project delivery methodology and operating system that focuses on maximizing customer or end user-defined value. When the U.S.-based [Lean Construction Institute](#) (LCI) formed in 1997, Lean advanced further and its value was translated into applications and processes that work within the constraints of schedule and budget.

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Lean can also be applied to other industries and sectors. For example, take the use of Lean design in the healthcare sector. Initially, the patients, nurses, doctors and administrators who use the space daily will define the project value in specific ways. This multi-faceted value definition will include things like patient outcomes, staff efficiencies, safety, response times and other project-defining characteristics.

Similarly, design and construction teams will focus on delivering value propositions such as long-term sustainability and other goals to stakeholders and users of these facilities. Lean practices flush out these value definitions thoroughly and integrate them into the project delivery process very deeply. The next step

in Lean delivery is to remove activities that don't add value, like rework, which is referred to as removing ‘waste.’ Historically, our industry has tolerated waste as a normal part of doing business and struggled to find deep value integration in favor of scope trade-offs. This is why applying Lean during the project definition and design phases is so important.

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Q: How does Lean design and construction relate to IPD?

Carla: To properly answer this, we need to talk a little bit about its history. The first Integrated Form of Agreement (IFOA), which we now call IPD, was developed in 2004 to allow the benefits of Lean project delivery to actually happen. This agreement was created by representatives of LCI who concluded that current practices (or traditional delivery models) made implementing Lean more difficult. IPD is now casually used as a term to represent a project delivery method. However, this has been misleading. Broadly speaking, IPD works as a clearing house to set up a work environment that allows Lean’s project performance to really shine.

An integrated Lean project delivery approach will always be about breaking down barriers between parties involved in all aspects of execution, realigning personal motivations and incentives, and discouraging adversarial behaviours. Lean thinking, principles and practices can be implemented regardless of contract type; however, the contract will limit its effectiveness. We often say that the IPD contract sets the stage for a positive relational culture, but it’s the Lean operating system that effectively enables the owner, designers, consultants and construction teams (including general contractors and trades) to optimize their roles, work collaboratively and productively in a way that puts the best interests of the project first.

Q: How are IPD projects structured?

Carla: When it comes to IPD, the project lifecycle and its phases are different than those delivered under traditional methods. After the best team is selected (based more on qualifications and teaming capabilities rather than price), the IPD contract signatories engage in a validation phase. This is the most distinct phase in IPD. Validation is performed by the team jointly to confirm that they can build what is expected within the maximum allowable budget, in the time allowed and within other constraining requirements.

Validation is done as a collective process. It is not performed separately by each discipline or team. It is an innovative process to ensure all parties align on the project's key assumptions and big ideas, and is supported by cost modelling and risk mitigation work – all before finishing design. Through this validation process, IPD teams commit to a base program that can be built for the base target cost, and a governance structure that the team will work within.

After validation is approved by the owner (in a Go/No Go step), the IPD team proceeds to manage the project jointly, working through detailed design and construction adaptively to achieve the base program while maintaining the base target cost. This is done in a transparent fashion with open pricing that manages direct reimbursable costs separately from IPD team profit payments, which are managed as an IPD team collectively. The validation process eliminates all conventional change orders. Thereby allowing for continual improvement of the entire implementation strategy, and new opportunities to find additional savings through innovation and execution strategies to meet or exceed the budget, schedule and other project expectations. In this process, the entire IPD team, including the owner, shares in the risk and rewards together.

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Q: How do IPD teams behave differently from teams working under more traditional delivery methods?

Carla: IPD teams establish a level of trust through transparency and respect that's imbedded in all aspects of how the team functions. Incentivized by the collective distribution of profits, they manage the project jointly, not separately, and are motivated to make the collective team successful. This requires a shift in their mindsets, an openness to share, and a willingness to try new approaches – which is often where Lean operating systems come into play. Lean practices are a critical part of shifting away from traditional design and construction approaches. Lean practices or operating systems intentionally create a positive project-first culture, establish more flow-oriented design coordination, improve handoffs within construction, and reduce rework (or waste) throughout the project. IPD teams are flexible, adaptive and truly focused on what is best for the project, as they carry the mentality that they will all win (or lose) together.

We have learned that sometimes a contract alone (including shared profits) isn't enough to convince owners, consultants and construction teams to adapt to the necessary collaborative practices. This is why a robust use of Lean principles and practices is needed to support IPD. This total package of Lean and IPD incentivizes teams in all three domains of project delivery (operating system, commercial terms and team management) to collaborate to achieve the best possible project based on their ability to deliver stakeholder value proposition.

Q: What are the benefits and drawbacks of IPD?

Carla: There are several advantages to using IPD. Some of the biggest include a high level of budget and schedule reliability after validation, and the ability to maximize the integration of deep, user-defined value on the project. IPD teams are incentivized to collaborate through profit sharing and joint management of risks and project controls, which starts on day one. This means that IPD teams can manage and offset the impacts of project challenges (such as supply chain and labour disruptions) with results unmatched by any other delivery model. A joint project management approach also comes with increased transparency and clarity for the team (including the owner), meaning everyone is more aware of what is happening and what to expect

during each phase of work. This reduces the need for additional layers of non-value adding project management. Additionally, IPD's team environment supports more creative, innovative and sustainable solutions.

When it comes to disadvantages, the majority of IPD's limitations come from unfamiliarity with the contract and proper Lean operating systems as well as the upfront investment of time needed from both the owner and involved parties. An IPD project's success also relies heavily on selecting the best possible team through targeted and engaged procurement, and providing that team with

appropriate guidance through each of the project's subsequent phases. It's been proven that teams without the proper foundation, education and experience will deliver projects that likely fall short of the owner's expectations.

The Lean Construction Institute's Introduction to [Integrated Project Delivery](#) is a good resource to gain more insight into IPD and Lean.

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Carla Ciepliski

National Director, Lean Practice
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Carla is a Lean integration coach, industrial engineer and consultant with more than 25 years of multisector experience. She specializes in Lean design and construction, continuous improvement methodologies, and helping project owners achieve operational excellence. Over the course of her career, she's provided in-depth and direct Lean coaching to every stakeholder in the construction supply chain, including architects, engineers, contractors and owners. She is an influential leader within Canada's dynamic Lean Design and Construction movement, participating in speaking engagements and lending her expertise as an approved trainer

through the Lean Construction Institute's continuing education for CM-Lean program. Carla is also a board member for the national Integrated Project Delivery Alliance (IPDA) and the founding Chair for the newly formed Lean Design & Construction Canadian organization. Carla brings a drive and passion to project engagements that broadens team perspectives and helps teams discover innovative ways to achieve next level results. As the National Director of our IPD and Lean practice, Carla oversees the design and implementation of the department's strategic plans and works with owners to help them achieve their collaborative project delivery goals.

