

Contract Matters	
IPD Forms of Agreement	<p>The Integrated Form of Agreement (IFOA), Consensus Docs 300, AIA C195 are relational contracts that value the relationship of the parties more than the buying and selling of risk. These Forms of Agreement view the project as the chief goal of the contract and therefore structures the relationship of the parties in the manner most advantageous to completing the project. Risk is shared among the parties in a variety of different ways but risks are typically capped for the owner over the expected maximum cost of the project.</p>
Risk sharing /Shared Incentive Pool	<p>Since risk is shared under these Forms of Agreement until the expected maximum cost of the project is reached, rewards are also shared. Most IPD contracts typically provide for the negotiation of the risk incentive pool after the expected maximum cost of the project has been determined. This means that the parties have a contractual relationship long before all the terms of the contract are negotiated.</p>
Core Team	<p>Most Forms of Agreement provide that the contract and the project (at the site) are managed by a Core Group made up of representatives of the Owner, the Designer and the Contractor.</p>
Project Governance Structure	<p>Different projects have different governance structures. With respect to a single project, these Forms of Agreement generally provide responsibility for managing the project by the Core Group.</p>

Tools	
Pull Planning	Pull planning is a tool that has been adapted to lean projects from the Toyota Production System. In general, it starts planning with the finished product (project) and moves backwards to discover and incorporate all the steps (but only those steps) that get to the finished project. Instead of “pushing” a project through production, pull planning establishes what is necessary to pull it towards completion.
Supply Chain Purchasing	Supply chain purchasing looks at cost efficiencies that can be built into the production/delivery system through organized purchasing. It not only takes advantage of size (bulk ordering or discounts due to reliability of payment) but also takes advantages of efficiencies in design that allow pre-fabrication, standard work (and standard purchases like hardware and doors) and delivery “just in time.”
Work Register or Weekly Work Plan	The Work Register or Weekly Work Plan organizes the work after weekly check-in sessions. It is the place where commitments from one tradesperson or worker to another are maintained in order to allow hand-offs to be accomplished as promised. Unfulfilled commitments are examined to determine what went wrong and how to fix it.
Retrospective	On a regular basis, project participants hold a facilitated meeting to discuss what is working on the project and what is not (what should the participants keep doing, stop doing and start doing?).
Study Groups	Study Groups are teams that study a subject together—often reading a book together so that the team benefits from the perspectives of each of the participants. It is a way of developing a community of practice around topics that are essential to efficient project delivery.
A-3s	A-3s are one page reports that document an often lengthy process of developing options (counter-measures) for dealing with a specific problem or issue. They are a valuable record of all the considerations that went into deciding on a solution for a problem and the various resources consulted. A-3 thinking is what drives the production of the document; A-3 thinking is discussed under “Processes”.
Value Stream Mapping	Value Stream Mapping is an important tool that analyzes business processes step by step. The “current” state of the process is mapped graphically. Then the participants in that business process eliminate those steps that do not add value to the process (e.g. redundant reviews, additional paper copies, waiting for multiple approvals). Before a current process can be broken down, the outcome of the process or conditions of satisfaction must be determined. Clarifying the conditions of satisfaction illustrates who the customer is and where the value added steps in the process lie.
BIM	Building Information Modeling (BIM) is an assemblage of software programs that coordinate design and estimation. Architectural drawing and rendering software coordinates in 3D and 4D to assist planners,

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	<p>designers and contractors to determine inconsistencies and “clashes” in design. It ensures that changes in a plan change all of the related items in other plans and budgets. It maintains a current record of what is built (developing real-time “as built”). It also allows set-based design and the development of a variety of “what if” scenarios so that the best options for resolving space and operational concerns can be determined.</p>
<p>Choosing by Advantages™</p>	<p>CBA is a system that assumes that choices are made based only on the importance of advantages, rather than a calculation of the differences between advantages and disadvantages. CBA recognizes that no decisions are truly objective. Its goal is to establish and record the considerations that lead to important decisions.</p>
<p>Cross-functional teams</p>	<p>Cross-functional teams are created to take advantage of competencies across company and departmental lines.</p>
<p>Daily check-in meetings</p>	<p>Daily check-ins are stand up meetings where progress from previous days is discussed with the team and plans for the next work to be accomplished is determined. Anomalies or missed commitments from other work are also discussed and addressed and the plan is adjusted accordingly.</p>
<p>5 Whys</p>	<p>The 5-Why process insures that enough questions are asked to find the root cause or defect in a system. It is based on the Plan-Do-Check-Act cycle (“PDCA”). Asking “why” a problem exists at least five times often drives the investigator to the real answer. The “real answer” is important so that appropriate countermeasures can be adopted to resolve the issue.</p>

Processes	
A-3 Thinking and Analysis	<p>A-3 Thinking structures effective and efficient dialogue that fosters understanding followed by the opportunity for deep agreement. It's a tool that engenders communication and dialogue in a manner that leads to better decisions, where the proposed "countermeasures" have a better chance of being effective because they are based on facts and data gathered at the place where the work is performed, from the people who perform it. The term "countermeasures" recognizes that there is no one-time fix or solution to a problem, but that steps are taken to mitigate the problem while we are continually striving for better answers.</p>
Last Planner System	<p>The Last Planner System incorporates four levels of planning. The degree of detail in plans is refined and uncertainty is reduced through each level by careful consideration of what SHOULD (1) and CAN (2) be done. WILL (3) is the actual work that has just been completed or just going to start. DID (4) is tracking what is completed and what was learned from that activity. The result of implementing all four levels is predictable work flow from one crew to the next, ultimately reducing waste.</p>
PDCA	<p>The "Plan-Do-Check-Act/Adjust" (PDCA) cycle is at the heart of lean problem analysis, resolution and continuous improvement. PDCA starts with examining an existing process, condition or standard procedure and then refining and improving it to create a new standard. PDCA consists of four stages, including:</p> <ol style="list-style-type: none"> 1. Plan – Investigate the cause of a troublesome condition and create a proposal for its modification or resolution. 2. Do – Perform a test implementation of the plan. 3. Check – Assess the results of the test for effectiveness. 4. Act/Adjust: <ul style="list-style-type: none"> ○ If the results are satisfactory, modify the original condition or define a new standard procedure. ○ If the results are not satisfactory, refine the plan and repeat the cycle until satisfactory results are achieved. ○ The new improvement becomes the standard, when the process may begin again to attain the next improvement.
Production System Design	<p>While most owners expend considerable resources on planning and designing the facility to be built, fewer resources are expended on designing the most efficient and cost-effective way to deliver (construct)</p>

Processes	
	the project. Production system design is the process that designs how the project will be delivered on site.
Set Based Design	Multiple designs are created and kept alive until gradually they are eliminated and a “best choice” is made. Best choice will come from a combination of economics, constructability, performance, function and so forth. Set based design is a logical extension of the Lean principle that one should "decide at the last responsible moment." In this case, it is the architecture that is being locked down at the last responsible moment.
Target Value Design	A collaborative design process involving designers, builders, suppliers, estimators and owners co-located in one place to produce a design that provides the best value for the owner. The team designs to the budget instead of the conventional process of estimating the cost of the design, and then re-designing to eliminate overruns. Once the expected cost is validated, a target cost is set to create a sense of necessity in driving further costs out of the project through a Target Value Design process.
Work Flow (Pull)	Integrated Project Delivery presupposes that reliable workflow is based upon commitments being kept. In turn, commitments must be planned and re-planned as events inevitably unfold in ways that are different than the plan. A planning system is a system or process that defines how one will plan. Workflow is best managed if it is pulled toward completion of the project rather than having the completion of various tasks push the project to completion.

Other Concepts	
Big Room planning	Co-location of project teams works best in one large space where questions can be asked and answered by all project stakeholders: owners, users, designers, consultants, contractors and specialty tradespeople immediately. Big Room planning naturally results in cross-functional teams which allow the team to draw from the various competencies available from all companies collocated in the space. The time allotted for co-location to the Big Room varies greatly from project to project.
TVD Clusters	TVD Clusters are groups organized around the various disciplines that are necessary for effective Target Value Design.
Conditions of Satisfaction	Conditions of Satisfaction (CoS) are at the heart of reliable promising. When making a promise, the promissor must understand exactly what it is he/she must do to satisfy the customer—what are the customer’s conditions of satisfaction? Unless the promissor meets those conditions, the results of the actions, however well intentioned, have missed the mark.
Projects as Production Systems	Lean project delivery looks at projects as production systems—i.e., as a flow of work rather than as discrete inputs and outputs of work and information. Once a project is organized as a production system, it is possible to “pull” the work through the system with maximum value and minimum waste.
Decisions at the “Last Responsible Moment”	Traditional contracting asks for all kinds of decisions to be made because a checklist or system has demanded a decision. Lean project delivery postpones decisions until the last responsible moment. For instance in a traditional project, specific floor plans have to be designed before steel can be ordered from a fabricator. In integrated project delivery, steel can be ordered as soon as the maximum weight that must be borne by any given floor is determined.