Understanding Which Delivery Model is Best for Your Project

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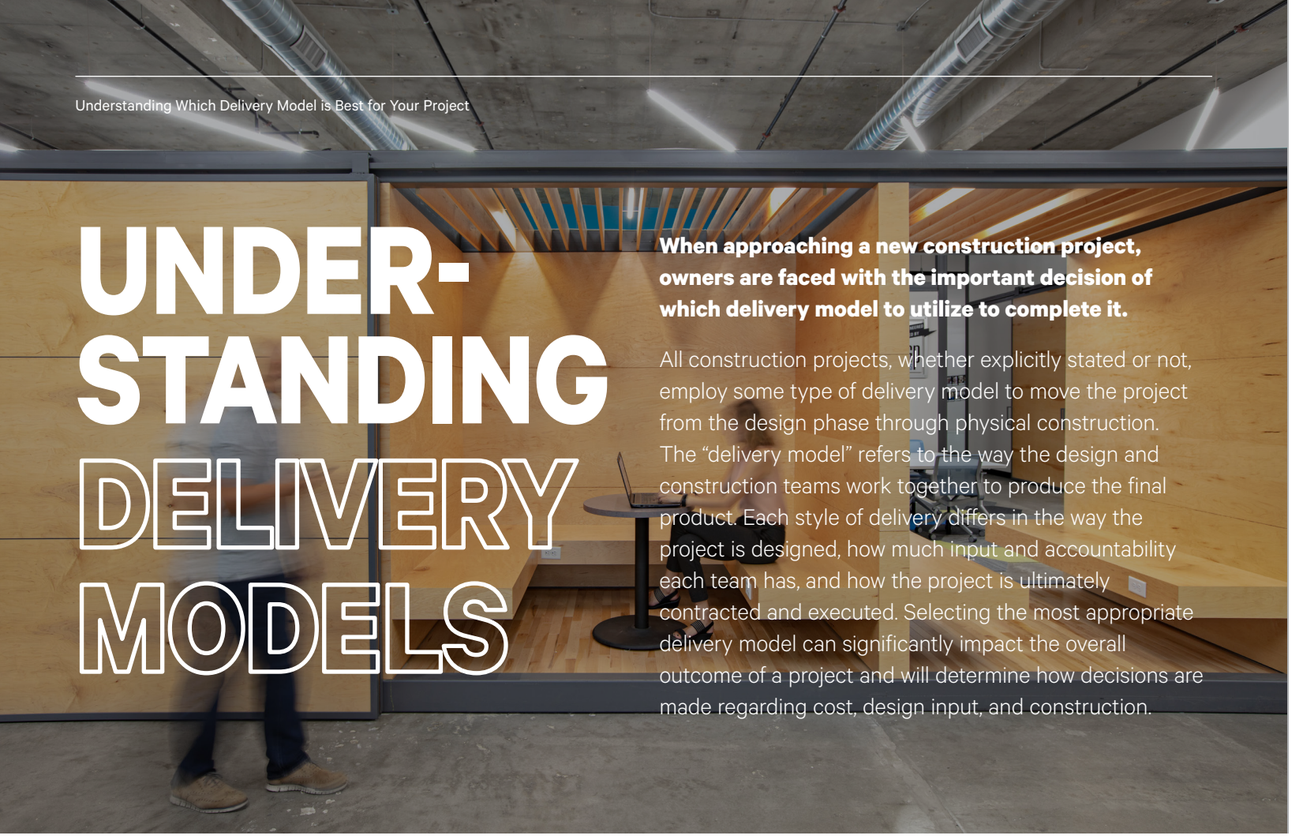


UNDER-STANDING DELIVERY MODELS

When approaching a new construction project, owners are faced with the important decision of which delivery model to utilize to complete it.

All construction projects, whether explicitly stated or not, employ some type of delivery model to move the project from the design phase through physical construction. The “delivery model” refers to the way the design and construction teams work together to produce the final product. Each style of delivery differs in the way the project is designed, how much input and accountability each team has, and how the project is ultimately contracted and executed. Selecting the most appropriate delivery model can significantly impact the overall outcome of a project and will determine how decisions are made regarding cost, design input, and construction.

There is no shortage of conversation in the architecture and construction industries regarding how to reduce costs and shorten schedules through better communication between design teams, engineers, and contractors. Many attempts have been made to foster a more collaborative environment where all parties stand to benefit from clear goals, efficient communication, and shared incentives. Many stakeholders often enter a project with reservations and concerns about the tumultuous road ahead. It stands to reason that many organizations within the industry would seek to put clients at ease through promises of a smooth and cooperative process, where they will save time and money. While this is no doubt a sincere aspiration, it is often easier said than done. In the end, it is important for owners to understand the full spectrum of delivery models in order to make the best decision for their project. There is no perfect model and all construction projects will have challenges. However, having a basic knowledge of the differences in how these models work, and what they attempt to achieve, can help set expectations from the outset.

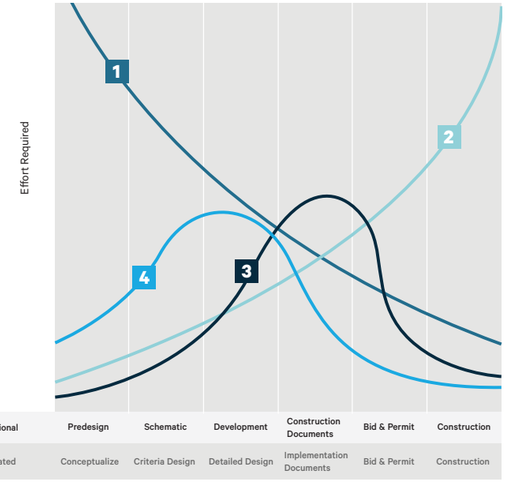
Traditional Delivery - Design-Bid-Build

One of the most widely used methods of delivery is the Design-Bid-Build model (DBB). This is a traditional approach where “the owner contracts separately with a design team and a contractor” (*Spellerberg*). The design team is contracted first and begins by establishing the design criteria, construction documents, and specifications. They will incorporate the owner’s project goals and implement the various design elements of the project and produce a set of documents that are to be used for permitting, bidding, and construction. During the bid process the owner will likely approach multiple general contractors (GCs) to provide bids for the project, and a general contractor is subsequently engaged. With this method, the goal is typically to award the work to the lowest bidder, though, other criteria may be considered. Each GC will typically send the construction documents out for individual trade and subcontractor bids, and will provide the owner with a complete construction bid to complete the work as designed. The general contractor and subcontractors will often request additional clarifications to provide a hard cost bid.

Though this method can be very successful in providing the owner with a low-cost option, one of problem that often arises is that the estimated cost of construction exceeds the owner’s expectations and original assumptions. Even though the design and engineering teams may have developed a cost estimate of their own, little cost input is typically solicited from contractors in the design process. Therefore, the owner must wait until the construction documents are completed to get any tangible feedback. This can cause sticker shock, and may result in additional fees from the design team to re-design towards the owner’s original budget expectations.

In the end, this amounts to using even more of the project funds on the design portion before any physical work begins. In such cases, the owner bears the burden of dialing in the design elements and going back and forth with design team and general contractor until they reach their desired budget. With two separate parties that are not in contract together, this can result in a lengthy and arduous process for the owner.

The graph below is referred to as the "Maclemy Curve", which articulates the concept of "shifting the effort” with regard to design development. The diagram illustrates the notion that the further a project team is through the design process, the greater the cost of design changes.



Another issue to consider with DBB is that the contractor has usually been excluded from the design and visionary conversations. While much time may be spent between the owner and the design team, the GC may not fully understand certain design intentions or be fully aware of what the owner is hoping for. If the design documents don’t exactly capture the design intent, then the expression of such designs may not be executed per the owner/design team expectations. As discussed by *ArchToolbox*, “since this method isolates the contractor from the design process, there is a high potential for project cost increases due to conflicts between the design documents and the constructability of the project in the field.”

It should be stated that this tried-and-true method is not without benefits. If cost is the driving force for a project, then this approach will likely result in a scenario where contractors compete for the work. Assuming that the design documents are complete, and the details have been thoroughly represented, then all bidding parties should have interpretive access to the same information resulting in an “apples to apples” comparison of construction costs. It is often mandated in state funded and public projects that this delivery method be used since the bottom-line cost is the driving force for whether a project is approved. This delivery method will continue to be widely utilized across all spectrums of the industry.

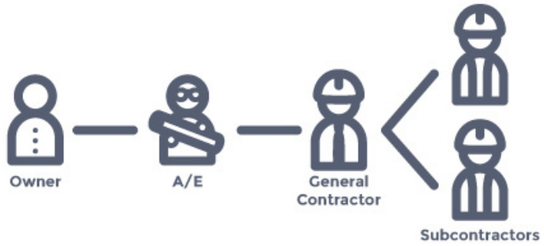
BENEFITS

- Traditionally defined roles and responsibilities: Architect, Engineer, General Contractor
- The process is more sequential and the overall schedule remains more linear and predictable
- Owner retains control over what firms are invited to bid for the work (Both design and Construction)
- The Construction is competitively bid between numerous contractors and likely to result in lowest initial cost
- Owner involvement on day to day basis is minimal

CONSIDERATIONS

- The Owner may use up significant project funds in the design process before gaining a full understanding of Construction costs from contractors
- The A/E are responsible for initial opinion of cost estimates as well as estimated Construction schedules. The Construction process does not begin until the design is complete
- Potential conflict between the A/E and the contractor due to different interpretations of CD's and scope. Owner may need to be arbitrator to resolve conflicts
- The General Contractor and trades are not able to offer valuable input and feedback during the design process. Owner has no direct control of subcontractors
- The Owner is more susceptible to change orders and delays from the contractor if there are conflicts in the design documents

Design-Build Team Structure



Collaborative Delivery Methods - Design-Build

In response to many of the challenges that arise in the traditional delivery model, significant effort has been taken to foster collaboration between the design and construction industries. Cost is a consideration in any project, and there are other means of reducing cost that do not necessarily manifest in the competitive bid process. Time is money, and any efficiencies gained through better planning and teamwork also may offer savings to a project. So, while competition for the work may help drive down costs, so too can the right team of designers and contractors.

The most common collaborative method is Design-Build, or some variation, with the most notable characteristic being that the competitive "bid" process has been eliminated from the equation. Instead, an owner has pre-selected a design and construction team with whom to partner. Often, the design team is selected first, and is solicited for recommendations of contractors they have worked with in the past and may be a good fit for the project. With that said, it can be just as valuable to interview contractors to find out which design teams and designers are most amenable to work with on a design-build project [in a leased facility, some building managers or landlords may have a preferred design-build team to complete the project].

Once the two parties are established, the design team will typically begin with a schematic design set that can be shared with the contractor to begin generating a construction budget. It is common to have a project kickoff with all parties involved followed by touch base meetings along the way. This helps to ensure that everyone is in the loop and many of the initial details and specs are flushed out up front. It is also important at this stage to establish how the parties will work together, exchange and share information, and document changes and progress along the way. One important element in the design-build model is the level of accountability each party has regarding cost, schedule, and design input, and how that is represented contractually. This varies on a case-by-case basis and owners should express a clear expectation at the beginning of the project, as include it as part of the contract.

In Design-Build there are several overarching efficiencies to be gained. The following is a look at the big three:

Constructability – There is more than one way to solve every problem. This holds true in construction as well. There are more and less cost-effective ways to complete a particular scope of work. Whether it be structural steel and framing, material types and sizing, or more efficient ways to specify and install mechanical systems, having direct input from the construction team during the design phase can provide valuable cost savings. Contractors are well versed in the best materials and methods to achieve a desired outcome. Leveraging this knowledge and including it in the documentation will go a long way in allowing for great communication and understanding across the project team, and ultimately help facilitate smooth operations in the field.

Schedule – By reducing the need for a completed set of construction drawings, the design team can usually work towards a pricing set of drawings and specs that can be used to initiate the budgeting and contracting portion of a project. This provides the contractor the overall concept of the project scope and can help flesh out any ambiguous details. Also, since the contractor is confident that they have been awarded the project, they can begin to plan for the work within their schedule and can be ready to commence when appropriate. It is not uncommon for the contractor to perform some demolition work or site prep with an early start permit if the authority having jurisdiction (AHJ) allows such practices.

Integrated cost feedback – When a contractor knows they are selected for the work they are willing to invest more time in costing exercises to help drive different packages towards budget. This can take place during the design process before construction documents are finalized. Injecting this feedback into the equation can help dial in costs earlier instead of having to circle back around and fully revisit each scope. In additional, not all competitive bidding is lost. Many GCs will send the project to multiple subcontractors to achieve the most competitive sub-contracts for each bid package.

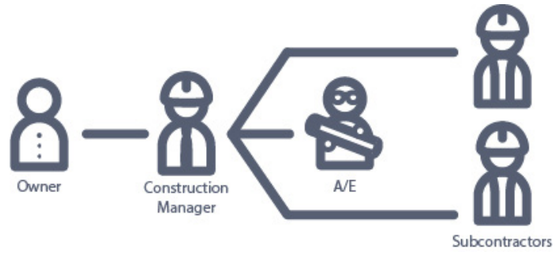
BENEFITS

- GMP (Guaranteed Maximum Price) established early in project to control Owner's financial risk
- Limited change orders (unless Owner initiated)
- Cost sharing opportunities through creative design/Constructability methods
- Projects can be "fast tracked" and schedule can be accelerated
- Accelerated schedule can reduce overall cost by shortening project duration and other general conditions

CONSIDERATIONS

- Process may not combine best designer/builder. Team may be based on relationship rather than qualifications
- Owner initiated changes may be charged at a premium and result in redesign
- Competitive bidding less likely to occur other than at subcontractor level
- More complicated scheduling, communication, and real-time decision making needed.
- Contractors incentive to complete faster/cheaper may compromise material quality and craftsmanship

Design-Build Team Structure



The Construction Manager - CMa & CMr

Another collaborative approach that is frequently utilized is to have a Construction Manager involved in the design process. The major benefits are that "a skilled construction manager can provide input on value engineering, perform constructability and budget reviews, and provide a contractor's input during the design of the project" (*Gaudet*). This is through previous experience, strong contractor and sub-contractor relationships, and ability to garner current, real world pricing information. Since the construction manager is engaged to serve the interests of the owner, they can provide a level of comfort in the early stages of the project when an owner is facing an influx of information. Guiding the owner and making decisions alongside the design team can set the stage for a smooth transition from design to construction once design is complete.

The owner may choose to move into a CMa (Construction Manager as Agent) agreement, where the construction manager would help advise the owner and manage the construction, while the owner contracts with a separate general contractor or directly with the trades.

CMa is typically a fee-based contract, where an owner sees the direct costs of construction without passing through a general contractor. The overall project budget can still benefit from competitive bidding, as the construction manager will help to evaluate bids and contractor qualifications.

Another direction this relationship may take is to transition to a CMr (Construction Manager at Risk) contract, whereby the construction manager becomes the builder of the project. They would perform in a role similar to a general contractor, assuming the financial and schedule risks on the project. The construction manager holds one contract with the owner and all the sub-contracts with the trades. This may be more beneficial for the owner and save them time from reviewing and signing contracts.

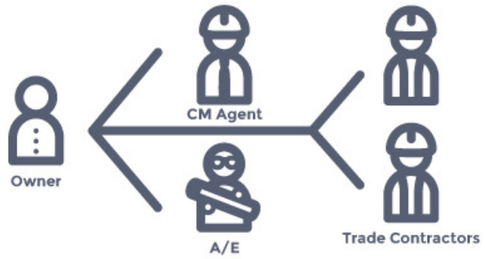
BENEFITS

- For Owners that are comfortable with Construction risk, this can provide cost savings by having the CM manage the work while the Owner holds the contracts
- If a CM is engaged early in the process they can provide valuable Construction input to the design process before trade contractors are selected
- The CM acts as an advisor/representative of the Owner and serves their best interest. CM is also able to help review construction documents
- CM can help in any vetting process and ultimately assist Owner in trade contractor selection
- CM can transition to an "at risk" manager at the time of Construction where they perform and manage the work similar to a General Contractor

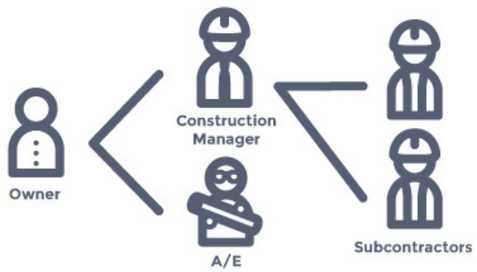
CONSIDERATIONS

- Requires the Owner to be engaged and available as the project progresses and as any changes occur.
- The relationship with the Owner/CM is only effective if the Owner is willing trust the expertise and information that the CM provides
- Higher levels of scheduling, coordination, and communication
- More complex contracting process

CMa Team Structure



CMr Team Structure



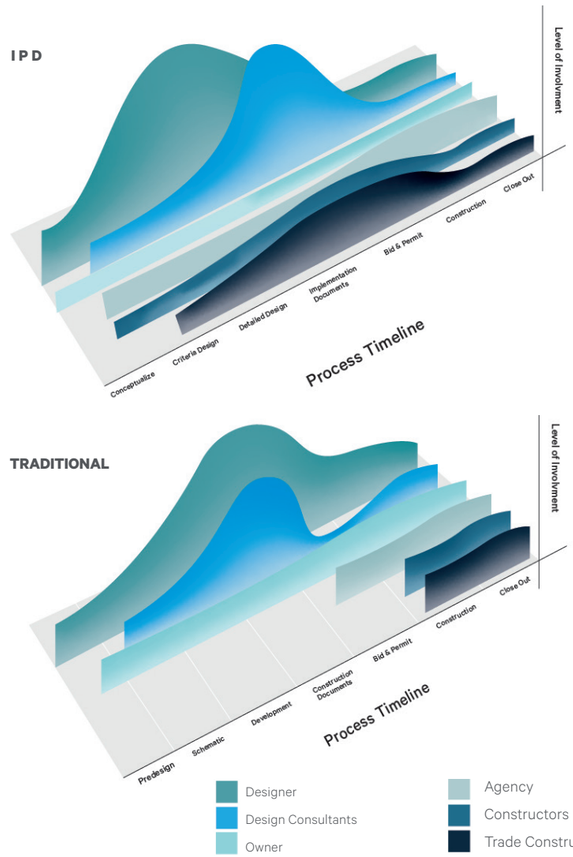
Integrated Project Delivery

While this method has been around for about twenty years, recent trends are also favoring a unique delivery model that seeks to elevate interdisciplinary collaboration to new levels. This method is known as IPD (Integrated Project Delivery) and its popularity is growing within the industry. While it is considered another collaborative approach, it is structured with a multi-party agreement so that each participant shares the risk, reward, and liabilities of the project. Integrated Project Delivery operates differently than the previous methods, resulting in more productivity, efficiency, reduced risk, and loss. The project focus shifts from "how does my organization succeed" to "how do we ALL succeed."

Rather than the owner initiating separate contracts with the designer and the contractor, this arrangement utilizes a single contract with multiple parties. The intention is to promote the highest level of proactive engagement from the earliest stages of the project. In most standard delivery models where each party is contract separately, each participant can be focused on their own individual area of expertise and how to create as much efficiency and profitability within the model. Even though collaboration may be encouraged, the design team and contractor still may be inclined to preserve their own self-interests and their bottom line.

To solve for this, IPD creates a working relationship where all participants must consider the implications to the overall project and are held accountable throughout the process. In doing so, IPD delivery can optimize for the highest levels of design coordination and constructability. "Since this model is based on the principle of shared risks/rewards, the participants have more incentive to improve costs, optimize scheduling and increase the overall quality. So, when an issue arises…[it] is evaluated on a 'best for the project' basis" (*Benarroche*).

Throughout the design process, the owner and design team benefit from the contractor's involvement early on in the delivery process. Key components of this are continuous budgeting, integration of design and constructability between the three parties, and the incorporation of technology that assists in evaluating the project's data. Contrary to the traditional method graph below, the IPD graph depicts a higher level of involvement of all parties in the early project stages. The result is that the project is defined and coordinated to a much higher level prior to construction start than is typical with traditional delivery methods, enabling a more efficient project overall.



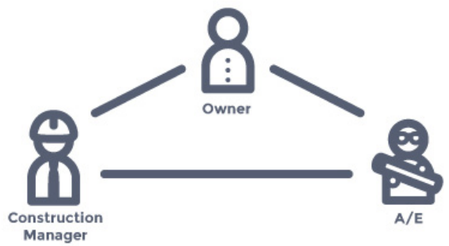
BENEFITS

- Multiple contract variations available based on Owners comfort level and preferences
- Joint contract spreads accountability across the entire project team. Higher level of Owner involvement is encouraged
- Established rapport and efficient working relationships with Architect/Engineer/CM
- Financial alignment between all parties established at the outset. Project success and outcome is not based on individual firm performance
- Collaboration allows increased flexibility to deliver projects within schedule

CONSIDERATIONS

- Most complex initial contracting process
- Lesser qualified firms have the potential to disrupt and diminish the effectiveness of the delivery model
- Trust must still be cultivated, especially when new parties participate in the delivery method for the first time
- Newer delivery model presents learning curve for those not familiar with its intricacies. Final costs may not be established until later in the process
- Highest level of schedule coordination and team competency required

IPD Team Structure



Beyond IPD: The Ultimate Resource

Most delivery models, including IPD, typically involve an owner building a team which consists of an architect, designers, and a contractor. Those parties may be handpicked by the owner, or perhaps brought together through the recommendation of the architect. Either way, there is an up-front time investment to assemble a team and get things started. However, there are some entities that can offer those services under one umbrella. This can provide a one-stop-shop for owners/clients that are looking for one team to handle their project. Rather than having separate parties to form an IPD team through a contract, some firms can offer, architecture and design, some form of construction management, combined with an owner's representative. This is what SHYFT refer sto as Integrated Project Delivery Plus (IPD+).

The result is a delivery model tailored to the client's needs. Frequently, owners are busy with everyday business concerns and operational needs, so seeking out a company that can bring all these resources to them can provide peace of mind. Companies like SHYFT that can offer the full bundle of services are uniquely positioned to provide efficient and creative handling of a client's project needs. With one source handling the design, budget, scheduling, and construction, the risk of miscommunications and finger pointing is greatly reduced, and efficiencies can be realized in full. In this setting, IPD+ really benefits from a team mindset where each individual truly is working in the same organization and a team victory is a company victory.

Additional efficiencies gained when moving to IPD+, specific to the owner's representative role include:

- The owner has a main point of contact throughout the duration of a project
- The owner's rep acts as the lead coordinator with the clients' in-house resources involved on a project – IT, Communications, HR, Legal, Facilities, etc.
- Project decisions consistently evaluated from an owner's perspective, ensuring overarching project goals/objectives are being met
- Ensures the design of separate scope packages (FF&E, AV, network/technology, prefab product, graphics/way-finding, etc.) are integrated with overall architectural and interior design
- All non-construction related scopes (FF&E, AV, network/technology, prefab product, graphics/way-finding, move planning, etc.) in conjunction with build-out activities
- Maintain master project budget/schedule inclusive of all scopes
- General oversight for all scopes of work during execution phase

In design and construction, how projects are delivered determines how teams work together. No project or delivery model is perfect, and each will carry with it a unique set of goals and challenges. Owners will want to consider the most important elements specific to their needs including cost, design, control, schedule, and accountability. Being equipped with a basic knowledge of the benefits and drawbacks of the different models will help to empower owners as they seek to assemble the proper team. SHYFT is built to offer clients the ease of a single point-of-contact.

We provide peace of mind for clients so they can move forward with their daily work knowing that SHYFT is handling all the details through the IPD+ delivery model. We know that many clients have existing relationships with design or construction partners which may influence or dictate a different or delivery model, so there is no 100% right solution 100% of the time. As you can see from our research, no delivery model fully addresses the collaboration and communication issues that can occur in projects, but we believe our Integrated Project Delivery Plus (IPD+) model provides the greatest opportunity to address them.

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SHYFT Collective offers a full spectrum of services from real estate planning, architecture and design, and project management, along with construction management and integrated project delivery models tailored to a client's specific needs. We are prepared to help answer any questions related to our services or project delivery!

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