



# Experiences in Collaboration: On the Path to IPD



**AIA** National | **AIA** California Council  
The American Institute of Architects

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In 2007, The American Institute of Architects, California Council published *Integrated Project Delivery: A Working Definition* to describe the IPD project delivery method. In 2008, in conjunction with The American Institute of Architects, National office, *IPD: A Guide* was published. In addition to defining IPD, the *Guide* describes how traditional project delivery methods can benefit from adopting individual concepts and tools from the IPD method.

Integrated Project Delivery (IPD) is gaining momentum. Many projects are in development or have been completed utilizing the principles of IPD. However, it is also clear, that many professions are struggling to understand “how” to make it work; questioning “what is the value”? And “what is the impact” to business and professional practices? Similarly, many owners, designers, and builders are saying “we are already doing IPD or “always have been”.

In lieu of exhaustive case studies, in 2008, AIA California Council’s IPD committee organized an initiative to pull together practitioners involved in projects that were based on the IPD methodology or specific concepts of IPD. The basis of this initiative was focused on “anecdotal” lessons learned, as hard data was not yet available.

The purpose of this document is to describe the highlights from the symposium of industry leaders, and to capture the conversations discussed as a basis of applied principles to utilize when embarking upon an IPD project. This document represents the lessons and experiences of the participants and doesn’t indicate any recommendation of processes followed, but hopefully will provide project teams with useful insight into some of the opportunities and challenges facing the owner and the design and construction industry as they embrace this new delivery method.

## The Symposium

A group of 32 participants attended the IPD Lessons Learned Symposium: owners, architects, general contractors and subcontractors who were involved in or had recent experience in alternative project delivery methods including IPD concepts. One interesting item of note realized during this gathering - while all of the participants fundamentally believed in an IPD approach, the level of experience with a “fully implemented ” IPD project was very limited.

The agenda for the day included several topics. For each topic, small groups were formed with representation from each discipline. Their charge was to discuss the issue in terms of the following:

- What was the plan?
- What worked?
- What could have improved the process?
- What changed, or needs to change, in each discipline’s business practice in order to achieve the result?

The group used the following definition and the nine fundamental principles of IPD as a basis for their discussion (from *IPD: A Guide*):

*Integrated Project Delivery (IPD) is a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction.*

*IPD principles can be applied to a variety of contractual arrangements and IPD teams can include members well beyond the basic triad of owner, architect, and contractor. In all cases, integrated projects are uniquely distinguished by highly effective collaboration among the owner, the prime designer, and the prime constructor, commencing at early design and continuing through to project handover.*

# Fundamental Principles of IPD

## **1. Mutual Respect & Trust.**

In an integrated project, owner, designer, consultants, constructor, subcontractors and suppliers understand the value of collaboration and are committed to working as a team in the best interests of the project.

## **2. Mutual Benefit & Reward.**

All participants or team members benefit from IPD. Because the integrated process requires early involvement by more parties, IPD compensation structures recognize and reward early involvement. Compensation is based on the value added by an organization and it rewards “what’s best for project” behavior, such as by providing incentives tied to achieving project goals. Integrated projects use innovative business models to support collaboration and efficiency.

## **3. Collaborative Innovation & Decision Making.**

Innovation is stimulated when ideas are freely exchanged among all participants. In an integrated project, ideas are judged on their merits, not on the author’s role or status. Key decisions are evaluated by the project team and, to the greatest practical extent, made unanimously.

## **4. Early Involvement of Key Participants.**

In an integrated project, the key participants are involved from the earliest practical moment. Decision making is improved by the influx of knowledge and expertise of all key participants. Their combined knowledge and expertise is most powerful during the project’s early stages where informed decisions have the greatest effect.

## **5. Early Goal Definition.**

Project goals are developed early, agreed upon and respected by all participants. Insight from each participant is valued in a culture that promotes and drives innovation and outstanding performance, holding project outcomes at the center within a framework of individual participant objectives and values.

## **6. Intensified Planning.**

The IPD approach recognizes that increased effort in planning results in increased efficiency and savings during execution. Thus the thrust of the integrated approach is not to reduce design effort, but rather to greatly improve the design results, streamlining and shortening the much more expensive construction effort.

## **7. Open Communication.**

IPD’s focus on team performance is based on open, direct, and honest communication among all participants. Responsibilities are clearly defined in a no-blame culture leading to identification and resolution of problems, not determination of liability. Disputes are recognized as they occur and promptly resolved.

## **8. Appropriate Technology.**

Integrated projects often rely on cutting edge technologies. Technologies are specified at project initiation to maximize functionality, generality and interoperability. Open and interoperable data exchanges based on disciplined and transparent data structures are essential to support IPD. Because open standards best enable communications among all participants, technology that is compliant with open standards is used whenever available.

## **9. Organization & Leadership.**

The project team is an organization in its own right and all team members are committed to the project team’s goals and values. Leadership is taken by the team member most capable with regard to specific work and services. Often, design professionals and contractors lead in areas of their traditional competence with support from the entire team, however specific roles are necessarily determined on a project-by-project basis. Roles are clearly defined, without creating artificial barriers that chill open communication and risk taking.

## Presentation of the Lessons Learned

Participants' conversation were recorded and used to provide the content of this document. The topics are presented in the same order as the processes would most likely be found in an integrated project.

- **Value proposition** – what extraordinary results can be achieved by using IPD?
- **Building an integrated team** – explore process and criteria utilized to build collaborative teams.
- **Determining and managing the project budget** – explore experiences with target costing and management of design process to meet targets through project completion.
- **Contracts** – what instruments encouraged collaboration and which discouraged or inhibited?
- **The process immediately after the award of the project** – what was the first thing done to begin the collaborative process?
- **Ownership/specifications of BIM** – what can be done to optimize utilization and project results utilizing BIM?
- **Reality of group decision making** – explore enabling and managing group decision making including tools and processes to achieve decisions.

Each group had varying constituents with unique perspectives. Every section in this document reflects the synthesized outcome of each session and are documented to reflect the discussions and knowledge gained.

*"There seems to be thinking out there that there's got to be a better way to do this than the way we've been doing it? In response, "I think there's a lot of people sort of nibbling at the edges of this great potential that we call Integrated Project Delivery (IPD)." – Designer*

Projects are becoming more complex, building codes more restrictive, business entities more specialized, with a higher probability of claims and litigation. *The frustration "comes with having projects that end up taking a lot more Maalox and Tylenol than you would think it should take." – Constructor* For designers the frustration is inefficiency in the design process or constant "value engineering" to meet budget. For builders it is inefficiency and loss of productivity in the field due to incomplete or less than desired coordination in the documents. Excessive change orders and Requests for Information slow the construction process and add cost. For owners, the risk is a project that ends in a less than desired result with high risks for unpredictable costs, delays and unanticipated compromise to project goals. For all parties, there is a higher risk for financial loss.

IPD recognizes and intertwines two concepts to optimize value. These are "collaboration" and "integration" managed by a virtual or project specific organization composed of the owner, designer(s) and builder(s) from project inception. *"When you look at other industries where an entity has control of the design, the fabrication, the financing, and the marketing of a product like the aircraft industry or like Apple – look what they've done as a computer company, versus other PC type companies. In short, IPD is a project specific business entity composed of the owner, designer and builders created mutually and collaboratively to manage the planning, design, fabrication and construction process as opposed to tradition methods that are silo based, linear, or place control solely with the designer(s) or builder(s)." – Owner*

## **EFFICIENCY: RIGHT THE FIRST TIME**

Collaboration results in efficiency, with an incentive to design and build the project right the first time, reducing redundancy in the document phase and lowering the risk of additional costs delays in the construction phase. *"The big difference between the traditional process and the principles of IPD...teams have to come together and stay together, working through the solutions versus somebody catches up with an idea, 'throws it over the wall' and someone else catches it and decides whether it's a good idea, then 'throws it back' over the wall and says, that is not a good idea, go work on it again!" – Designer*

For the designer(s), IPD means a higher probability of drawing it once and getting it right the first time. "Design teams usually... want to draw the detail once... You don't want to have to modify it, re-modify it and modify it again because that takes away from our value. The more efficient and productive you can be with your design...you are going to make money".

For the builder(s), *"Contractor's...make money by getting the job done quickly...that's where the value is added. Changes are always sort of hiccups, so Integrated Project Delivery allows the contractor to have information in a timely fashion and that's the part that's really critical." – Constructor*

*"A day in pre-construction is just as valuable as a day in construction. In pre-construction, I can deal with an issue with a handful of people. But if I'm dealing with that issue in construction, I have 30 trades waiting around for an answer." – Constructor*

*"We'll provide the model and you can add your intelligence to it to drive the manufacturing. We're even working right now, with a steel fabricator...we give them the actual steel superstructure and they will detail it with*

*the model, and return it...as a shop drawing so we can avoid all the paper exchange." – Designer*

## **COST MANAGEMENT: PREDICTABLE AND CONTROLLED**

In other delivery methods, *"there's every incentive in the world to do what you know is going to work even if it costs more because it protects you the engineer. We've done peer reviews for people and they'll look at it and I say, 'why on earth did you do that?' Then follow up with 'because we were sued five years ago for not doing it and now we do it on every project, whether it makes sense or not', and we have to get past that." – Constructor*

As opposed to other delivery models, at project inception, the IPD team is responsible for determining specific project cost targets in alignment with the owners business and project goals. Once established, decisions are managed in real time throughout the duration of planning, design and construction. *"What is this going to cost? Don't come back and tell me a month from now what it's going to cost I need to know today. We are finding that we need to shift effort earlier in a project. A good example, is rather than estimating at certain points (ie: SD estimate...the DD at 75 percent...100 percent and so on)...there is this continuous estimating effort." – Constructor*

*"Hopefully it's going to come in somewhere around the budget. That's the old model. But the value of timely information sharing is you can say, if I do it this way it's on budget. If I do it that way it's not, and you can tell me that in a few days or in a few hours. Our design decisions are made without the value of your input." – Constructor*

## **OPTIMAL RESULTS: MEETING THE METRICS**

In the IPD model, results are measured against optimizing numerous project metrics reflective of the owner's business case. Aside from budget, schedule and quality, additional metrics include design, profitability/incentives and sustainability. In other delivery methods, these metrics may be incompatible. Maximizing sustainability may be one of these metrics. *"Most of the populous thinks that we could buy ourselves out of this little pickle. That if you buy the right dishwasher and you buy the right bamboo floor, we'll be okay. But what we're really talking about are systems and assemblies, and operations and lifecycle costs, and it's a lot more thorny than just bamboo..." – Designer*

Given that the IPD method starts at project inception, the project team can test numerous concepts and alternatives early and continuously to decide what is best for project.

## **FLEXIBILITY: RESPONSIVENESS TO CHANGING MARKETS**

*An integrative project delivery model allows greater flexibility to real time, responding to changing market conditions, "as we have seen in California, where the market has had opportunities to spike dramatically. If you were just doing the traditional design-bid-build, we wouldn't know until it got on the street. It is what it is". – Constructor*

*"That's really true, especially like you said, as we've seen with the spikes due to the global market. But also, in technology, where technology moves so rapidly, that while we are designing it, bidding it, and building it-it changes. We need to have the flexibility to incorporate changing technology in the project...by those that will be building the project." – Designer*

## **SUMMARY**

In summary, the value proposition of IPD, is a project delivery method that maximizes the opportunity for extraordinary results. IPD maximizes project team collaboration to focus on project success; success of individual team members or the individual firms within the business entity.

# Assembling the Project Team

It takes a team to program, design and build an IPD project. More importantly, it takes the right team to do it well. And having the proper individuals actively involved is as important, if not more so, than engaging suitable companies.

With IPD, possibly more than with any other form of project delivery, getting started on the right foot is critical. This all starts with assembling the right team. It is the team, the "WHO" in IPD, that determines the "HOW". The "HOW" can range from big picture decisions to the smaller details. IPD requires a lot of attention and effort up front.

In assembling the project team for a project using IPD there are three main players, as with any project. The owner, the architect (and supporting consulting engineers and specialists) and the general contractor (and supporting subcontractors and suppliers). In order to successfully implement IPD all three parties must bring a collaborative approach to the process and be willing to sign-on to common goals.

***"The first thing that came to my mind when you said that is I would start with who do you trust? Do you have somebody you trust today?" – Designer***

***"And if you have individuals who are so immersed in the old approach they can't reach that point of trusting, in my opinion, it's not going to work." – Designer***

The glue that holds the integrated team together is TRUST. The team members must be willing to embrace TRUST in their relationship to fully assume the collective risks and rewards. Team members include companies, and, more importantly, people in those companies. The firm's best players must be committed to the IPD projects.

## **HOW OWNERS BUILD A TEAM:**

- Determine, who do you trust? (who would feel comfortable inviting to your home?)
- Define your goals and communicate them to the entire team.
- At the same time, understand the goals of all team members.
- Assemble the team.
- Identify owner, designer, contractor point persons.

***"Certainly having an owner that's engaged and committed to the IPD team is crucial in facilitating their success by being part of the team. Having commitment from all the prime stakeholders to the team is critical..." – Designer***

Certain stakeholders must be involved at the outset. Most notably of course, is the owner. IPD is a process that is usually selected by owners for its projects with the desire to select a team that can work collaboratively to consider alternatives, determine best value and execute the design with predictability of outcome. Owners and other team members may need IPD education with different models. Owners need to understand that IPD is a process that requires their direct input throughout the project, from design to construction. It is not simply a way to put a design/construction team together, and shift risks to that entity. Selection of the team members is accomplished through a process that includes interviews, where potential team members' attitudes and collaborative mentality are assessed, as well as their technical capabilities. Criteria for selection of team members are usually weighted across the following:

- Experience with IPD, particularly with a similar project type.
- Collaborative approach demonstrated by the proposed team members.
- Assessment of the ideas they can bring to the project.

***"I think there is a bit of this human nature [in assembling the team]...but, there still has to be some heart and soul to this thing. Why would you want to do it? Well, there's got to be some joy. There's got to be fulfillment. There's got to be I'm learning something better." – Designer***

While it is true that experience with IPD is an important criteria for assembling a team, getting the right people with collaborative mindsets involved (at all levels) is critical to the success of using an IPD model. Leadership, management capability and technical excellence are required. The best team members are the ones that get excited about the risk opportunity and enjoy working with the other team members. Equally critical is the owner's investment in the process, because collaboration starts at the top, and this is where trust is built.

Qualities and attitudes that team members must bring to the process, as noted above, must include a "built-in and second nature" collaborative approach. Architects look for general contractors who know how to design as well as build, and vice versa. With IPD, an owner can bring on an architect first and then interview prospective general contractors, or the other way around. Either way, the key elements that define effective team members is that they are willing to understand what the other team members are doing, bringing ideas, and considering ideas and suggestions from all participants.. Assembling the team is the first task of the process and can demonstrate the collaborative approach of prospective team members.

***"...we should be careful that IPD is not packaged and bundled as something that you can pull off a shelf and not have to participate in." – Designer***

IPD is not an "off-the-shelf" process, nor should it be considered as "one size fits all". Each project is unique and each team member brings differing talents and experience to the project. IPD should be promoted in the right environments and not "force fed" where the project or team is not appropriately suited. Owners considering IPD need a clear understanding of what IPD can achieve and how it can go about doing so. Roles and responsibilities of each of the parties, as well as risk and reward need to be defined and outlined. Building the team is key to the success of IPD and the "team building" process needs to be designed at the outset. Remember, first "WHO", then "HOW". The owner must be a partner in this process, engaged and committed, not just bringing the money to the table.

***"There is a DNA issue here and I think the best team members we have are the ones that get excited about the risk opportunity and actually love working with each other's team members and parking their egos at the door. It's almost like you draft the best player, the best athlete, not specifically the one you need for a position." – Designer***

***"...we're hiring for technical skill but more for attitude and DNA, and fit with the culture of our company. We can train for skill." – Constructor***

Project design and construction practices are changing. We must be vigilant and not fall into old patterns. Hire more for attitude and a "fit" for a certain project. Technical training can follow. Place the more experienced people on IPD projects. IPD requires the best.

Education is also a key element in the successful application of IPD. The owner, as well as other key team members, needs to understand what others' individual goals, and work to synchronize them with the common goals of the team. The team, working together, has to understand and continually strive to meet the needs of all team members including the owner, designers and contractors.

## **SUMMARY**

In summary, the formation of the team starts with a clear understanding of the IPD process. With this established, the next step is to build and establish trust, which is done through the communication of goals and the risk/reward propositions. Through this process, roles and responsibilities are defined to work toward a successful project – which is measured by everyone achieving their goals.



# Determining and Managing the Project Budget

The project budget is conceptually the owner's vision of desire, with validation and management of project stakeholders (owner, designer and constructor). Developing a budget is different than managing a budget. The project construction budget is much better informed with a collaborative delivery model, because the stakeholders can own the pieces of the budget as opposed to bidding on it in a vacuum. The budget development is a linear process that is organically executed. Managing a budget is an ongoing process that relies on repetitive processes to allow for predictability and accountability.

A project budget has many variables that include but are not limited to:

- Project vision
- How the project fits into an overall facility master plan
- Programmatic functionality
- Desired quality and performance
- Internal organization risks
- External uncertainties (i.e. market conditions)
- Operational dollars that can be converted to capital dollars to reduce life-cycle costs based on a sound return on investment analysis
- Availability of funding (single event vs. multi-project)

The following is what the participants shared regarding collaborative budgeting on the path to IPD.

## ***"Historical data coupled with trends, informs a project budget but should not set it."* – Owner**

Cost information needs to be referenced to the specific requirements of the desired development and known market challenges. Every project is unique. The project team needs to examine the information and extract the relevant factors that can be applied to their project. There is tremendous likelihood that the outcome will be forced to meet a cost not realistically connected to the program, or desired quality and performance needs if the budget is developed without a serious attempt to validate the inputs and the current conditions of the market.

## ***"The need to invite project stakeholders (the designer and constructor) is most valuable when the budget is least defined."* – Designer**

One of the participants recommended several recently published books; *The Wisdom of Crowds: Why the Many Are Smarter Than the Few*, and *How Collective Wisdom Shapes Business, Economies, Societies and Nations*, by James Surowiecki, shows how the collective is more informed than a single mind.

## ***"Trust is the foundation of IPD."* – Constructor**

It is this basic principle where the owner can rely on their "trusted advisors" when defining the project. Previous similar projects can inform the planning of future projects. This data needs to be the beginning of the budgeting process and not the outcome. Through a series of analysis of project assumptions, the team of advisors can confirm that a budget is suitable for the proposed building. Many owners invest a significant amount in maintaining cost models and historical information, as accurate cost estimates are clearly important to them. The reason that input from project stakeholders is needed is because commodity prices can create uncertainty, as well as the availability of subcontractors and trades people. Engineering is approximately half of the cost of many projects, and the engineer can offer options that are less traditional and less expensive. ***"Typically, engineers respond to the budget as opposed to influencing it. It is there where very positive outcomes can be realized, especially on the system complex projects. The key goal of this process is to***

***"...have an intelligent...conversation about the choices"* – Designer.** Traditionally, an estimator sets the construction budget. The lesson learned is that the estimator will still set a construction target with input and validation of the project design and construction stakeholders. Early and consistent integration between the designer and the builder is the best recipe for success on setting and tracking targets.

## ***"An open book or transparent process allows for all the stakeholders to have input and confirm the project direction."* – Constructor**

Trust allows the elimination of "fear money" included in bids, to address commodity/labor escalation. Separating the basic components of the budget, scope and escalation, can allow for a more focused and collaborative effort. Teams are more creative when there are clear goals as opposed to them managing the scope and the risk of a project. This need for transparency should also influence the design. Performance needs for the client should be validated during the design on all levels to ensure the solution is responsive to the needs of the project and just not fulfilling the desires of a stakeholder. The example given in the session had to do with a building system's performance as it relates to one person's operational efficiency desire, as compared to the least acceptable solution that met the project's first cost reality.

## ***"The timing of the involvement of project stakeholder's can be affected by, and/or inhibited by procurement requirements."* – Owner**

The trusted advisor collaborative model can more easily be accomplished in the private sector. Design-Build is sometimes the only integrated delivery model for public owners because of state or local laws. The challenge for any owner using design-build delivery is to adequately scope and program the design-build package without designing it. The best way to do this is to have a designer validate that the proposed design-build scope can be executed in an acceptable fashion without sharing the result with the potential design-build team. This allows for the design-build team to take ownership of the project and to creatively solve the proposal.

## ***"Internal owner consensus can be a challenge."* – Owner**

One owner shared their experience of disbelief from their senior management of what the budget was recommended to be to address the project conditions. This disconnected steering of the project goals caused certain potential participants not to bid on the project because they felt they could not deliver the scope in the project. Trust is a pinnacle of an IPD team and this needs to be extended within all participating organizations.

## ***"A budget is a target whose sub-targets will fluctuate to respond to the development of the project and realities of the market."* – Designer**

An informed budget target can be set very early in the design phase with confidence. The sub systems will ebb and flow throughout the design process. A greater level of understanding earlier in the project can help avoid cost jumps between initial concept, and/or schematic design and design development. Even if the initial design is to be done in narrative form, more resources need to be expended earlier to generate this greater level of detail. An important consideration is how one sub-system decision affects the other systems. Saving money in one area and causing more cost in another is not value added. With this said, designers need to work with the constructors to balance the need on both sides of the delivery equation.

***“Contingencies need to be included in the project budget to respond to unforeseen situations, and not laziness or lack of creativity of the project team.” – Constructor***

In a Guaranteed Maximum Price (GMP) or design-build environment, as opposed to a Time and Material environment, the party carrying the ultimate responsibility for cost has to have a contingency. ***“There has to be a safety net built into the contingency. If there’s a way to structure a contract so that the general contractor and subcontractors are under one GMP, the team could then release some of that money earlier in the process so it could actually be used during the life of the construction effort to fund unforeseen conditions to maximize the value of the project team, and not turn back significant savings.” – Owner*** It is also important to differentiate and use allowances and contingencies. Allowances are for things yet to be quantified, but known issues and contingencies are for the truly unknown. One method of doing this is to make it clear to separate the design contingency from inflation contingency. Clients are trying to reduce the amount of fear money in GMPs. The way fear money is calculated, clients are often giving up desired components to fall within the guidelines. However, when this happens (over the course of many phases of a large project), the total can be substantial, and from the client’s perspective, they may prefer to make fewer concessions than have such a sum returned. This is especially true in the public environment where budget cycles are often long and inflexible.

***“There have been multiple approaches tried to accomplish sharing of risk.” – Owner***

One owner gave the option to the contractors in the RFP process to tie a certain number of worrisome factors to a neutral third party for both commodity/labor escalation and de-escalation. Another approach was to set up an optional lump sum buyout whereby the owner transferred all escalation risk to the contractor in return for the buyout option. Because the escalation risk was then transferred to the contractor, they employed high levels of creativity to avoid cost overruns.

***“Once the budget has been set it has to be managed.” – Owner***

It is best to have frequent quick checks on costs as opposed to milestone bottom-up estimates to minimize surprises. Technology is getting closer to automated costing. However, the skill of an experienced estimator is needed to translate the data from information to value. Quantity take offs from Building Information Models, (BIM), are the most accurate method to extract data. This information does not give true costs because the data does not reflect market conditions, complexity of construction and the reality of waste that needs to be factored into a price. The art of cost estimation is being reinforced by science and will always need to be crafted to ensure the value that this information needs to provide.

***“BIM’s should not be an indicator of the development of the design” – Designer***

Just as with Computer Aid Drafting (CAD), the seemingly complete appearance of documents overshadows the need for confirmation of assumptions and the ability to properly execute them based on the design. BIM further allures a level of completeness when in fact additional validation from project stakeholders is needed to confirm the design.

***“Reconciling estimates offer consensus and certainty in understanding project construction costs.” – Owner*** One owner calls this the ***“fourth estimate.”*** ***In this approach, estimates are done by cost estimators for (1) the designer, (2) constructor, and (3) owner’s representative. Then, the three estimators are forced to come up with a consensus estimate which proves more accurate. This***

***owner states, “We were experiencing a change in pricing that was so out of everybody’s experience that nobody knew how to react to that. But by combining all the knowledge together to make that work, we solved it...so then we could track how much the deal was going to cost and how much cement is going to cost, and since we did that two years ago, every project we’ve opened has been, basically, on budget.”***

***“Discipline to set a budget and stick to it is especially critical in a multiple project environment; if this discipline is not present, the initial projects consume budget set aside for later projects.” – Owner***

One owner shared that a major complication is when core factors (such as cost per square foot) increase, which creates a need to either reduce the scope of one or more projects, or impact the budgets and/or schedules of downstream projects. One way to offer a cushion in the targeting process, but requires discipline, is setting your target lower than what your real budget is. This reduced target is a method to incentivize the team to both meet the lower target and be rewarded by the success of doing so, as well as giving money back to the owner.

***“Doing a good job is motivation by itself.” – Owner/Designer/Constructor***

Several of the participants said that financial incentives are equally as important to project constituents, as team work and project outcomes. Pride and ownership of work products makes a significant difference in a collaborative team as compared to the more traditional teams that have silo perspectives. This new paradigm reinforces the need to have the right person on the team as opposed to staffing a project without understanding what the deliverable needs are.

***“Divide and conquer.” – Constructor***

Monitoring the cost of sub-budget targets can be delegated to smaller multi-disciplinary groups whose cost information is aggregated to the overall construction costs. ***“These smaller groups, or clusters, are comprised of the general contractor, subcontractor, owner and designers. There are many ways to define a cluster group. The cluster can be for an area and include all trades, or it can be for a specific scope, i.e. electrical or exterior wall” – Constructor.*** The cluster group is delegated with responsibility for the budget, schedule, and quality of a particular scope. The ones that work, are those that have people who are talented and empowered to make decisions, coupled with a culture of communication and openness. Firm lump-sum contracts create an attitude of self-defensiveness on the part of all parties. There seems to be a consensus that while teams perform better than individual participants in a traditional relationship, shared reward does help. Greater financial links between the various disciplines help create teams, but having the right players on the team is more important than having the right reward structures. Shared reward also allows creativity to continue after the contract is signed as opposed to traditional project delivery where the scope is more fixed. One project, where cluster groups were used, the steel trade returned a seven figure contingency to the owner. This would have not been realized in the traditional environment.

***“Performance trumps process.” – Designer***

No two projects are the same. There are many models in how a project can be assembled, budgets determined and target value costing executed. Nimbleness in process is important. The project team should check in with how the process is going throughout the project to ensure the outcome is achieved. This has been done in monthly senior leadership meetings where the firm principal’s who have teeth in the game, meet to confirm that the process is working, and if it is not, to correct it.

## What Contract Language Encourages Collaboration, and What Discourages it?

At the heart of IPD is collaboration, best-for-project thinking, and the quest for innovation. Traditional contracts often tend to discourage this kind of thinking by creating incentives for individual firms to protect their own interests at the expense of the project. However, contracts have been developed that disincentivize this protectionism and create an environment where the individual firms are best served by openly collaborating and innovating. This section explores some specific contract features and how they affect IPD goals.

### SHARED RISK/REWARD POOL

The group felt that structuring participants' compensation to be raised or lowered according to performance against predetermined targets is the most important and effective driver – it provides a monetary reason to collaborate.

Risk and reward need to be balanced – contracts that focus on penalties alone are not successful at encouraging collaboration for a number of reasons:

- They require participants to include contingencies, which drives up price.
- They don't promote relationships, which can be important in solving problems.
- Without the potential for reward, there is no incentive to innovate (i.e., no incentive to do anything other than what's safe).

***“Contracts that strictly focus on the penalties really discourage collaboration.” – Constructor***

Determining the risk/reward pool.

- One method is to have all participants put a percentage of their profit into the pool.
- Some feel this amount needs to be equal for all participants in order to provide equal level of risk for decision making; to avoid the perception that one is going to win more than another. This requires agreement on what is profit vs. cost of work or overhead.
- On one project, the team determined the total size of the pool significant to the owner, then worked backwards to a percent of profit for everyone.

Once the initial pool is decided, it will increase or decrease depending on whether the project exceeds or falls short of predetermined goals. The group noted that single-minded focus on first cost can promote poor decisions relative to life-cycle cost or other goals. Base terms and conditions can be set to incentivize performance toward goals important to the owner:

- First cost.
- Design quality.
- Schedule.
- Energy performance.
- Sustainability goals such as LEED or Green Globes rating.

***“Single-minded focus on first cost and schedule may cause poor life-cycle decisions to be made.” – Designer***

### DISTRIBUTING THE POOL

There was consensus that distribution of the pool should not vary from the percentages set at the outset of the project (Participants are not singled out for individual contributions or failures – the team “sinks or swims together”). Although some contracts allocate responsibility traditionally – E&O to designers, coordination to the contractor, many don't allocate – if one makes a mistake, all share the cost.

### OTHER COST ISSUES

One owner eliminates GMP on some projects – this greatly reduces risk; reinforces the concept that owner, designers, and builders all have a vested interest in the project thus, reducing the likelihood of litigation.

The idea was raised that fees should be fixed at project inception and not be reduced if a participant turns over work to another who might be able to do it more effectively. For example, if an engineer turns over detail drawings to the subcontractor, their fee is not reduced. In this case, this is just avoidance of duplicated work, (the subcontractors often re-do the detail drawings anyway). However, in some cases, another participant would be picking up additional work and would require additional compensation.

### CONSENSUS-BASED DECISION MAKING

True collaboration requires shedding egos and accepting input from all who have the expertise. This is one of the hardest things to mandate – not everything can be put in the contract, much still depends on relationships.

***“We can contract something to death, but what's important is who you want to work with.” – Designer***

### MULTI-PARTY AGREEMENTS

The importance of everyone signing a single multi-party agreement rather than individual 2-party agreements was discussed. The group was definitely in favor of the former, feeling that aligning participants' goals with each other, as well as the project is much harder unless everyone buys into a single agreement.

### MOVING WORK UPSTREAM

Implementation of the “MacLeamy Curve” may require restructuring of the design fee schedule; more work is done sooner. The contract Sutter Health developed in house incorporates this restructuring and also provides for bringing on subs when needed and compensating them for preconstruction services. The group felt that it is easy to demonstrate this approach significantly reduces RFI's during construction and consequently the cost of processing them.

### **PROBLEM PARTICIPANTS**

The group discussed the problem that one participant not playing the game correctly can disrupt the entire concept. For example, a prime goal in limiting participants' risk is to eliminate the need for them to carry contingencies – sometimes one player refuses to do that and bases his price on the worst case scenario.

Peer pressure was seen as the first choice to remedy this, but sometimes that doesn't work and a participant must be removed. The preferable way to handle this is that the whole group must agree, but the owner can override.

### **OTHER ADDITIONAL ISSUES**

Involving major consultants in the contract negotiations provide more equitable agreement, and more complete buy-in.

Mandating the use of BIM enhances collaboration. It should be noted though, the use of BIM in no way guarantees that the primary principles of collaboration, and best-for-project thinking will be followed.

***“IPD without BIM is better than BIM without IPD.”***  
***– Designer***

The advent of IPD is influencing hiring practices toward people with collaboration skills.

### **SUMMARY**

The two contract elements that are most effective in promoting collaboration are:

- A balanced risk/reward incentive structure where the owner, designers and constructors all have a vested interest in the project and all win or lose together according to the success of the project.
- A multi-party agreement rather than separate two-party agreements.

# The Process Immediately After Contract Award

After the team has been selected and contract terms agreed upon, it is time to go to work. This chapter focuses on the first steps to be taken and the importance of effective planning and leadership, particularly the leadership of the owner, as the IPD project gets started.

The specific activities required in an IPD project depend upon the procurement model used for each individual project. The discussion focused on lessons learned in a two-phase procurement process, such as commonly used in public procurement for design-build. However, the beneficial discussion stemming from experiences of the group members with this model applies to any IPD project.

It bears repeating that with IPD, possibly more than with any other form of project delivery, getting started on the right foot is critical. This is particularly true regarding the process immediately after the award of the project. With IPD most of the owner's "heavy lifting" shifts to what happens during the team selection process. After contract award the "heavy lifting" shifts to the IPD team during the collaborative design process. That effort must carry the momentum already invested by the owner as the collaborative process moves forward; how does this happen?

First "WHO", then "HOW". The process after contract award is the first step toward implementing the concept of gathering the "WHO" to determine the "HOW" to move on with the project. The process may or may not be specified in the RFP.

***"The owner's role was to participate and make sure that we didn't have instances where we were not maintaining the project goals...we had significant owner input on the strategy and the owner challenged our team to employ everything possible in order to receive benefits from improved schedule, improved quality and lower costs..."***  
– Designer

Regardless, the contract process after award all starts with the owner, who establishes cost, schedule and quality parameters, but sometimes is led by the owner who may elect to bring the team aboard in stages. This will also be the first step in the co-location process, if employed.

***"...bring anyone who has a significant influence on the success of the project, whether it be schedule, or cost, or quality..."*** – Constructor

The team is identified and each member is brought on board as soon as possible. This process may occur in stages. The core team (consisting of the owner or owner's representative, lead design professional(s), and general contractor, at a minimum) prepare a work plan determining how the team will work together as a group. Understand the dynamics of the individuals in the group first, then get to work. Decide how often meetings will be held. Perhaps weekly is appropriate in the design and construction phases of a project. In the middle, when fewer decisions need to be made, less frequent meetings may be an option. The group of early collaborators may also participate in the selection of subcontractors, creating a sense of ownership in the project outcome. Leadership of the core team during this process will usually consist of one main point of contact with the owner and one (or two) team leader(s) with the lead designer and/or general contractor.

With IPD, we do not need all of the pieces and components of the building in place on day one. The work plan will determine how the team will work as a group and may include assigning clusters of team members who focus on aspects of the project related to their disciplines while other clusters focus on other areas related to their disciplines, thus creating a more efficient use of all team members' time. The work of the cluster groups, roll up to the summary core group. Regardless of the manner in which the team works together, it is always better to have all key team members involved up front.

***"...if the key members are brought in one at a time, the goals are reinforced and reiterated every time a new player comes in. That's the owner's role to do that."***  
– Designer

New team members should be brought into this process quickly and provided formal orientation with other team members, as well as the process. This orientation should focus on communicating an equal understanding of project goals and expectations at the beginning of the process to avoid any member not feeling as though they are a part of the team.

***"...the team rallies and lifts up that team member that has fallen and brings them back up..."*** – Designer

***"...when that one team member starts to slip, you see it right away because you're there so you can rally around them and bolster them up, so that they don't lag or fall behind."*** – Constructor

Meeting together as a team as soon as possible has several advantages. It provides a forum for all members of the team to "buy in" to common goals and realize that the responsibility of producing a project which meets or exceeds the owner's expectations, lies with the team. The team begins to rely on each other. With this realization and acceptance of responsibility, team members will quickly recognize if another team member falters and will rally and help pick them up for the good of the project and the team as a whole. A high level of TRUST is required from all team members amongst themselves. Do not violate the TRUST.

The core team will decide the hierarchy of the team (different levels of involvement) and which other stakeholders should be brought into the process. Other stakeholders may include: key subcontractors, manufacturers or suppliers, end users, M&O, agency representatives, local utility company representatives, local fire authority, or any other entity that may have a vested interest in the outcome. The core team will also lead the effort to introduce the players, establish the project culture, assign roles and responsibilities and establish project goals. Project goals should stretch achievement expectations and may belong to a cluster or the team as a whole. Tasks should be assigned to the best person, or cluster to do the job.

The overwhelming consensus from the discussion group, is that personal, face-to-face communication is by far superior to any other form. Video conferencing is also beneficial, and in some cases desirable due to geographic constraints, but is not as effective as direct personal communication. If video conferencing is utilized, the team members should meet face-to-face prior to the subsequent video conferencing sessions. For the sake of efficiency, large, high quality, flat screen TV monitors should be used with a quality audio system. As technology continues to improve, the selected use of video conferencing and web meetings may become more effective.

***“If the designer is not willing to co-locate, then we won’t partner, because we have experienced both and every project that we’ve co-located on, the design-build has been successful and more successful, than the ones we haven’t...” - Constructor***

Co-location is a valuable tool for team communication and may occur at various stages of project development in clusters and/or with the team as a whole. Whether together or in clusters, co-location should include all team members. Team members should be notified in advance if co-location will be required on the project. It takes the right people to adapt to co-locating and it may not be suited for everyone. The co-locators are separated from the organization they call home, away from their home offices, and it becomes harder for their companies to manage. Everyone needs to keep on pace, moving forward, solving problems in real time, as they go. Co-location may also be as simple as having the A/E stationed on-site during construction.

The design process must also be established immediately after the contract award. The design schedule should include the priority of design, placing early emphasis on the first portions of the project to be constructed. Considering just-in-time delivery of design packages will, in turn, set the stage for just-in-time material and equipment delivery for construction packages. During the design process it is important to keep in mind that one cannot make decisions in an IPD environment alone. The team must agree early on regarding the format and responsibility for the design delivery model. The subconsultants, general contractor, subcontractors and others critical to the design process must be brought on early to avoid potentially “unwinding” the proposed scheme later in the process. If BIM is employed, the team must understand and agree how the BIM will be developed and shared as a group, and who has primary responsibility for the model. The design team must decide and agree on BIM standards, interoperability, and what will actually work for all team members and the project, including to what extent the BIM will be used for scheduling, conflict resolution, estimating, and interpersonal interaction, information storage and other capabilities of BIM technology. Co-locating is helpful in tracking the design in digital fashion. A virtual “punch list” is helpful in managing design expectations. Conveying design requirements to the field may employ computer stations and flat screen monitors at the site, both at the office and field work area locations. Additionally, consider the regular use of a virtual model, providing better visualization, during design for the owner’s review with stakeholders.

The owner’s role, and the manner and timeliness of information and resources provided by the owner, is critical to the successful outcome of the project. The owner should be involved day-to-day, ensuring they are getting what they want while providing timely information needed by the team. Although the owner has many stakeholders, each having their unique requirements, only one individual should represent the interests of all owner’s stakeholders to the team.

***“If you do not have a mechanism to pay your subcontractors and your contractors, don’t bother starting the process. You’re going to have somebody burn through a bunch of money and not be prepared, and you will kill the team spirit.” – Owner***

The owner also holds the responsibility to pay for services and other items related to the project in a timely manner. Therefore, the manner in which costs are identified, tracked and ultimately accounted for are important to the entire team. The owner will have expectations regarding transparency. The designers and contractors will have expectations regarding prompt payment. The owner needs to define a payment commitment, to the level they can accomplish, and stick to it. The timing of the payment commitment is less important than consistency and reliability. In IPD, there is more cost up front for owners. The team can spend significant amounts in the IPD pre-construction phase. Owners therefore need an identified funding source to pay consultants and contractors involved in the preconstruction phase. Designers and contractors must provide a coordinated effort to accomplish estimating, pricing and design controls during the design process to meet the owner’s budget goals while preserving quality and design goals. A common tool used to accomplish this control is a Value Stream Map, also called a Trending Analysis. The Trending Analysis will periodically evaluate the design as compared to the budget to determine if costs are going up, down, or remaining neutral. This process creates benchmarks for budget accountability to the owner. Another factor that should be considered by the team is escalation versus the cost of construction. An escalation plan should be established by the team to handle the issue in a fair and balanced manner.

***“But it was an absolute watershed moment where all of us all of a sudden realized we have to listen very carefully to everybody else. If we don’t understand quite what they’re saying, we need to ask questions.” – Designer***

The “Red Flag Rule” – This was thought by many to be one of the most important tools to foster efficient communication and reduce wasted time during the preconstruction and construction phases. The concept is simple: If anyone has a question or concern with the way things are going, bring your question up to the team. Don’t wait, resolve early, before proceeding further. Stop and ask, “what does this really mean?” When a new idea is suggested, be sure it is well thought out and discussed before proceeding. If someone is uncomfortable, find out why. A culture of openness should be established to the point whereby any member of the team has the freedom to call attention to a concern. The team then addresses that concern before moving on with the task at hand. Sometimes you have to go slower to go fast. Spending more hours early in this manner, means spending fewer hours overall.

***“It [collaboration during the IPD design coordination process] is very trying at times and it is somewhat frustrating at times, but there is that acknowledgment when it’s all said and done that everybody contributed and you couldn’t have done what you did without everybody’s involvement.” – Constructor***

At the end, celebrate your success as a team!

# Ownership and Specification of the Building Information Model

In integrated projects, BIM is used as a collaboration tool – there are usually multiple models, each with input from multiple participants. This can cause a lot of confusion unless BIM use is carefully structured. This section examines questions related to this structure, and discusses approaches that have proved useful in resolving the issues.

## MODEL USE

The group agreed that there will be multiple models on a project, and that it is important to define; what's being modeled at what level of precision, and what a particular model will be used for. It's important to do this at the beginning of the project – changing the rules later on causes inefficiency.

Varying opinions exist on whether the architect's model can be used directly by the contractor for quantity take-off purposes. The group was not aware of anyone actually doing this currently. At the least, there are issues to resolve before this becomes a practical process. For example, under current practice, architects are not modeling everything builders need for quantity take-off. For example, architects' models usually do not differentiate between walls that stop at the ceiling and those that extend to the structural floor above.

Generally, design models show intent but do not show exact dimensions of every component. Shop drawings/models show more at a higher level of detail and precision because the constructor has to build from them.

Currently, the contract and approvals are usually based on 2D drawings. The team needs to make sure that the 2D drawings and the 3D model(s) are in sync. This problem is well addressed if the 2D documents are generated directly from the 3D models. The group noted that documentation needs to differ between a bidding environment and one in which constructors are on board during design.

With 2D drawings, dimensions are called out and it is usually explicitly forbidden to determine any dimensions by scaling from the drawing. This group, however, agreed that for a model to be useful for construction it is necessary to allow scaling.

***"...it has to be allowable to scale off the model, otherwise what's the point of the model?" – Designer***

## MODEL "OWNERSHIP"

Given that there are multiple models, two questions arise: who creates the various models: which model controls, and which one is considered correct in the event of a discrepancy?

Who creates the various models?

- Several issues must be considered:
- Participants' skill and experience at modeling.
  - Who has the capability to take a model to a given level of detail?
  - Who has the most risk if the model is inaccurate?
  - Designers are reluctant to commit to exact dimensions - this is usually left to constructors in the shop drawing process.

***"Ideally, the steel model would be done by the steel fabricator because he's the one who's going to build from it." – Designer***

These issues indicate that it is most effective to distribute modeling to multiple participants, including constructors, as well as designers. This approach has its own issues under current practices.

- Many owners are reluctant to pay for early involvement of additional participants such as constructors during design.
- Many owners still think they will get the best value by keeping constructors out of the design process and using a hard bid approach.

***"Even now we're still struggling to get the owner to get some of the key players around the table." - Constructor***

A point in support of having constructors on board during design is that as the model progresses, more information is added. This makes changes more time-consuming and expensive, so it is important to make decisions in the right order. Also, without constructor involvement, the owner often doesn't know the full cost of making a design change – if they did, the decision on the change may have been different.

Another issue raised was that in the past five to ten years, architects have let the contractor take over coordination and have lost some ownership over critical aspects of design. Perhaps architects need to take back responsibility for coordination.

## WHICH MODEL CONTROLS?

The issue of who has the capability to take the model to the necessary level of detail and who has the most to risk from inaccuracies bear on this question as well.

One possibility is the shop drawing approach, where the appropriate constructor or fabricator creates a particular model, and the model is subject to review by the architect. The group proposed that some time during the Detailed Design phase control passes from the architect's design model to the contractor's construction model, and the architect goes into review mode to assure compliance with design intent.

The group noted, though, that even if the construction model controls during construction, the design model needs to be maintained to deal with owner-driven changes and the like.

## MODEL FUNCTIONALITY

The group noted that there are several capabilities necessary for effective use of BIM's that are not yet well developed in available modeling tools:

- The ability to flag important dimensions like "clear", "minimum", etc.
- The ability to denote tolerances. The group agreed that tolerances vary with the system being modeled. For example, in general MEP systems are at a tighter tolerance than architectural and structural.

In addition, processes must be developed to take better advantage of existing functionality. Teams need to agree on:

- Methods of prioritizing and filtering clashes (automatic clash detection can show too many clashes).
- Ways to indicate level of certainty of various items within the model. For example, is a wall's location and thickness as shown, precise or approximate?
- How much detail is modeled vs. overlaid on the 2D views?

# Assembling and Managing the Project Team: The Reality of Group Decision Making

Leadership and structure are the guiding lights in a group decision making process that would otherwise be fraught with frustration and chaos. All the participants indicated that the collective provides better outcomes than singular solutions. The dynamics of navigating the different communication methodologies makes this aspect of collaboration and integration the glue that bonds the team as one. Recurring themes that supported the group decision making process include:

- Begin as early as possible in the process to collaborate.
- Individual roles and paths of communications need to be established.
- A person or a body needs to have final decision authority.
- The person that is the most vocal is seen as the person that should be listened to.
- The group needs to have a person to ensure that the commitments are being met.
- Too much information bogs down the decision making process.
- The closer the project gets to construction the larger the decision making body becomes.
- Rapid prototyping galvanizes the group into a more focused decision making body.

***“You can’t make decisions in an IPD environment by yourself...” – Constructor***

The successful integrated project has decision making methods and processes that each team member accepts and agrees to abide by. In a fully integrated project, ultimate decision making abilities are not vested in a single team member. Rather, all decisions are made unanimously by a defined decision making body. Regardless of how the parties decide to structure the decision making body, in an integrated project one overriding principle directs the decision making body; all decisions are made in the best interest of the project. The composition of the decision making body varies from project to project, but always consists of some combination of the primary participants and key supporting participants working collaboratively to render decisions in the best interest of the project. The actual composition of the decision making body is determined at the outset of the project and reflected in the various agreements between parties.

***“It seems like the more people you have at this table, the more confusing and cumbersome the process becomes and the more important it is to have very clear rules of engagement, and a very clear decision making process.” – Constructor***

In a traditional project delivery process, there is not always adequate communication between members of the team. Even if you are able to get participants together, the decision making process is fraught with challenges.

***“...we all just kind of sit around the room and we talk to each other and we all go home, and three weeks later we realize we never made a decision. It’s scary and somehow our industry needs to embrace project management specifically.” – Designer***

In practice, team decision making is the area in which the distinction between primary participants and key supporting participants is most apparent. The primary participants, by virtue of their constant involvement on the project, are always part of the project’s decision making body. This hierarchical structure in an integrated process includes representatives of the owner, contractor and architect as the core team.

Although possible, key supporting project participants are typically not part of the decision making body, but they serve as advisers to the decision making body regarding topics corresponding to their areas of expertise. Through the involvement of all project participants in the decision making process, (whether as a member of the decision making body or in an advisory role), the project benefits because the process allows all project participants to bring their expertise to the issue at hand.

In order to provide regular, timely and consistent decisions, the decision making body meets regularly according to a collaboratively set schedule. The more frequent the meetings, the greater the decision making body’s ability to adapt to project circumstances. In addition to regular meetings, IPD also requires a process by which team members can call for emergency meetings to address issues that arise without notice and require immediate resolution. Without this flexibility, the project team cannot promptly respond to, and resolve, critical issues arising during the project.

***“Every week we have a planning session, (it can be sometimes on the phone or in person), and we decide what actions we’re going to take; who is going to do what to resolve what issue.” – Designer***

There are a variety of tools enabling this collaboration. Generally, the project team prefers to review the process graphically. Whether it be done using technology such as “value stream mapping” (which richly depicts the process), or using a building information model as a rapid prototype, these tools often focus the decision making process for the team.

***“I’ve found that one of the great things about having a prototype that you’ve thrown together is it really helps. It’s like the notes on the wall. We’re more engaged when we see things visually and if we can get a graphic produced in real time.” – Constructor***



Regardless of the technology, at the end of the day it's all about the people and how they interact. Below is one example of how this decision making process worked in real time.

***"We have this high room with the big boards and the models up, and the coordination was on. Early on, the design team was there, but then we recognized that this is really about the subcontractors vying for space, not about the design, so we started to fade out. We would dial in on the following, but they are in the meeting and if an issue came up they could say, "Hey, we need to go back to the design team. We need to get a decision made," they would call us up and patch us into the model, via WebEx or something like that -- and they would get the decision maker from the design team on the line. He could tell them, typically right away, "Yeah, go ahead do that. That's not a problem." So it didn't take everybody's time, but it made those meetings more effective." – Designer***

Whether all the team members are in one room or are connected virtually, individuals have to be present and or available to make the decision making process work. Hearing, "I will get back to you" demonstrates a lack of presence and commitment to the job, and the decision makers need to know that they can rely on who's on their team.

***"Just decide." – Owner***

Ultimately, you need someone to demand results and not allow latency to drive consensus. Many larger groups suffer from analysis paralysis mentalities and leadership within the group needs to drive the members to results.

***"There was an orientation to reinforce the mindset shift...we retrained you as soon as you started the job." – Constructor***

Working in groups requires unique skills. Providing the structure and protocols is essential in a multi-decision making process. Leadership is key. Consensus can only be achieved by communication. The group's communication process conduit is the framework on how its members can interact with one another and hold people accountable. Last Planner processes, in terms of making commitments and follow through, is one way to provide that forum. Breaking the decisions into palatable sizes so individual stakeholders can process and succeed on their assignment is important to the outcome ensuring results.

***"I was given a 60 page schedule...I didn't get past page 1." – Designer***

Information needs to be packaged in the right size so it can flow and produce an outcome. The digital age we currently live in allows us to inundate with data instead of selecting relevant information to get to the appropriate answer. Often, this process takes reformatting and/or editing to get the information in a package that is usable.

*Experiences in Collaboration: On the Path to IPD* are the personal vignettes of those who are in the process of changing the industry. We want these stories to inspire you and cause you to ponder how to embrace the IPD fundamental principles to change the way you work and improve the project delivery methods of your business.

The stories compiled in this document represent industry exemplars of perspectives to guide us to a better way of delivering buildings. The value proposition section ties the reason for collaboration and represents the optimization of business outcomes for all parties involved with the delivery of the project. Once the value of this is understood, the project's owner needs to build a new kind of team that is integrated with the right mindset. We know that all owners have their unique set of challenges. The stories shared, represent the experiences of the different team members who joined teams at different times of the project for the project's benefit. The goal of building an integrated team is to move it to getting optimum results. In many cases, the baseline of a project's results is how the budget is set and managed. Too often, a budget is reacted to instead of collaboratively distilled from the different project stakeholders. This reactivity to the needs of the budget continues for the remainder of the project if there is no buy-in as to what the budget is and what it represents from a quality and performance level. Once a budget is properly set an agreement can be negotiated and executed. Clarity can exist on the targets of scope and quality when the parties agree to what the budget is. This alignment behavior is influenced on how the team responds to the project immediately after the contract is awarded. The initial experiences after the contract award sets the stakeholders on a path for the balance of the project. BIM has become the tender for designers to communicate intent. Many BIM's are robust enough to transcend the boundaries of design and construction. Who owns what in the BIM feeds the emotions to how groups react. The reality of group decision making is the one variable that is tied to who you get to do the job, as opposed to any metric.

The participants in the lessons learned symposium all had one purpose in attending: to share their stories on how they experienced a better way to deliver projects. The journey to IPD is a long one.

Our industry requires leadership. There is no singular methodology for project delivery. The solutions are all different. Putting the project first, enabling others to succeed and not positioning for individual business interests are simple to say, yet, at times, impossible to react to. IPD is the goal and collaboration is the first step to that destination. We hope that you continue this journey and want to contribute to the movement and share your experiences in collaboration on the path to IPD.

## Owners:

**Linda DeSilva – Executive Director of Construction Planning**  
San Mateo County Community College District

**Larry Eisenberg – Executive Director for Facilities Planning Development**  
The Los Angeles Community College District

## Designers:

**Bruce Starkweather, FAIA – Chairman**  
Lionakis

**Steve Newsom, AIA – Associate**  
LPA Architects, Inc.

**Strachan Forgan, RIBA – Architect & Director of Digital Design**  
Sasaki Associates, Inc.

**Mark Tiscornia, AIA – Project Manager**  
Anshen and Allen

**Henry Mahlstedt, AIA – Senior Project Architect**  
Hawley, Peterson Snyder Architects

**Walt Vernon – Electrical Engineer**  
Mazetti & Associates

**Paul Audsley – Director of BIM Operations**  
NBBJ Architects

## Constructors:

**Richard Henry – Vice President**  
McCarthy

**Curtis Johnson – VP and Operations Manager**  
HMH Builders

**Dean Reed – Lead Coordinator**  
DPR Construction

**Teri Jones – VP and Business Development Manager**  
Sundt Construction

**EJ Saucier – Project Executive**  
Turner Construction

**Kim Lum – Regional Manager**  
Pankow Builders

**Jes Pedersen – VP of Operations for Northern California**  
Webcor

**Robert Hazelton – Vice President**  
Structural Steel Fabricators and Erectors

## Symposium Committee Members:

**Howard Ashcraft, Hon. AIACC – Principal**  
Hanson Bridgett LLC

**Jim Bedrick – Vice President**  
Webcor

**Cliff Brewis, Hon. AIACC – Senior Director Editorial Operations**  
McGraw-Hill Construction

**Karin Carlson, Hon. AIACC – Manager Global Accounts**  
McGraw-Hill Construction

**J. Stuart Eckblad, AIA – Director of Design and Construction**  
UCSF Medical Center (Chair)

**Robert J. Hartung, DBIA**  
Alternative Delivery Solutions LLC

**Michael Hricak, FAIA – Principal**  
Michael Hricak Architects

**Zigmund Rubel, AIA – Principal**  
Anshen & Allen

**Alex Tsai, Assoc. AIA – Project Manager**  
Anshen & Allen

**Nicki Dennis Stephens, Hon. AIACC**  
The American Institute of Architects, California Council

What we've learned is there is not consensus on IPD. There is consensus and commitment on finding a better way. Join us in changing the industry and sharing your experiences on approach to project delivery. In time, the process will get to be more solid and the outcome more predictable. We want you to be a part of it.

Visit our website at [www.ipd-ca.net](http://www.ipd-ca.net) and send us your comments and stories.

*Experiences in Collaboration* is published by The American Institute of Architects, California Council in partnership with AIA.

Thanks to all the individuals and organizations who reviewed and contributed to this work. The following members of the design and construction industry served as authors and editors of this document.

## **AIA National Integrated Practice Discussion Group**

**Pamela M. Tuschner, FAIA - chair**  
WWCOT  
Palm Springs, CA

**Kevin J. Connolly, AIA**  
Connolly Architects, Inc.  
Milwaukee, WI

**Robert P. Smith, AIA, LEED AP**  
Culpepper McAuliffe & Meaders, Inc.  
Atlanta, GA

**Charles G. Hardy, AIA**  
Elmhurst, IL

**Michael Whaley, AIA**  
Madison, WI

**Erleen Hatfield, PE**  
Thornton Tomasetti  
NYC, NY

**Renee Cheng, AIA**  
University of Minnesota  
Minneapolis, MN

**ExCom Liaison**  
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Manlius, NY

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