

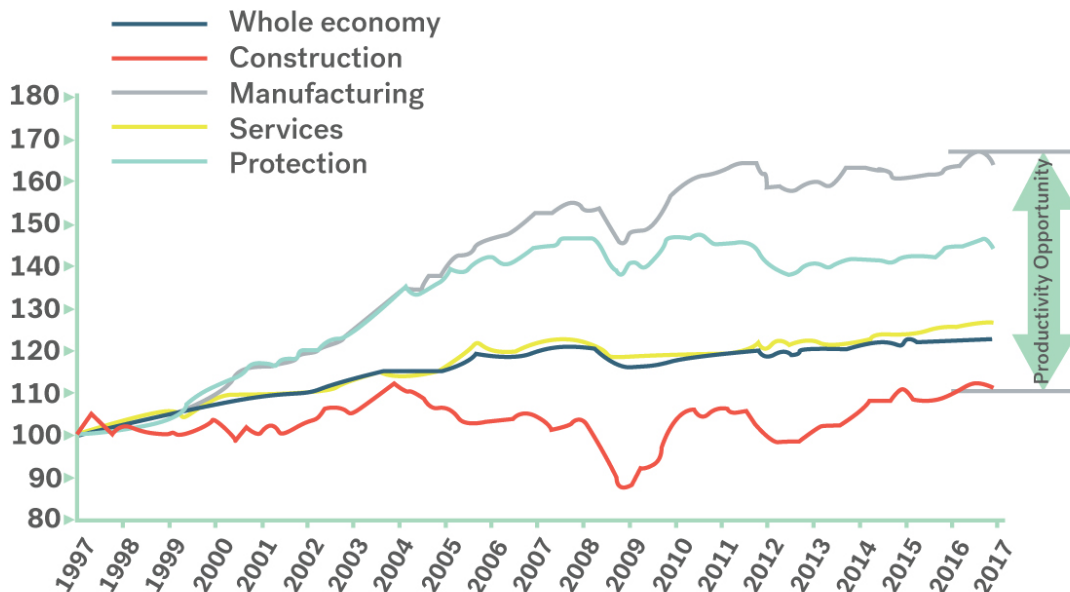
# The Risks and Rewards of Integrated Project Delivery

By Laurie Canup, AIA

Historically, the design and construction industry has created silos around the owner, designers, and builders in an attempt to protect each from liability. While this may have reduced exposure in some instances, it has resulted in a lag in innovation and productivity in the industry. Owners have experienced this firsthand, and many forward-thinking owners are embracing a variety of collaborative delivery models, including Integrated Project Delivery (IPD), Integrated Design Build (IDB), Integrated Form of Agreement (IFOA), Tri-Party Agreements, and other similar models which share risk and reward to break down the traditional team silos, reduce waste and optimize productivity.

In many of these collaborative delivery models, project risks are proportionately shared along with rewards for the team members who participate in risk and reward as part of their contracts. This paper will outline the benefits of integrated delivery and uncover the risks that can accompany risk and reward contracts, including some that are uninsurable. In addition, it will offer some possible strategies that may help to mitigate these risks.

## PRODUCTIVITY GROWTH - OUTPUT PER WORKER (1997 = 100)



Note: We can bridge this productivity gap by shifting from service-to product-orientation-by adopting manufacturing principles.

Source: McKinsey & Co.

## A Brief History

IPD is founded on the simple idea that project teams should not spend time protecting their own interests and instead should focus on innovating and delivering projects that meet and exceed their clients' needs. Unfortunately, the realities of project liabilities and the potential for lawsuits has caused contractors and design teams to operate in siloes to protect themselves. Clients can contribute to creating this problem by approaching projects with the intent to shed their own risk and assign responsibility for failures (or successes) to specific team members instead of working collectively.

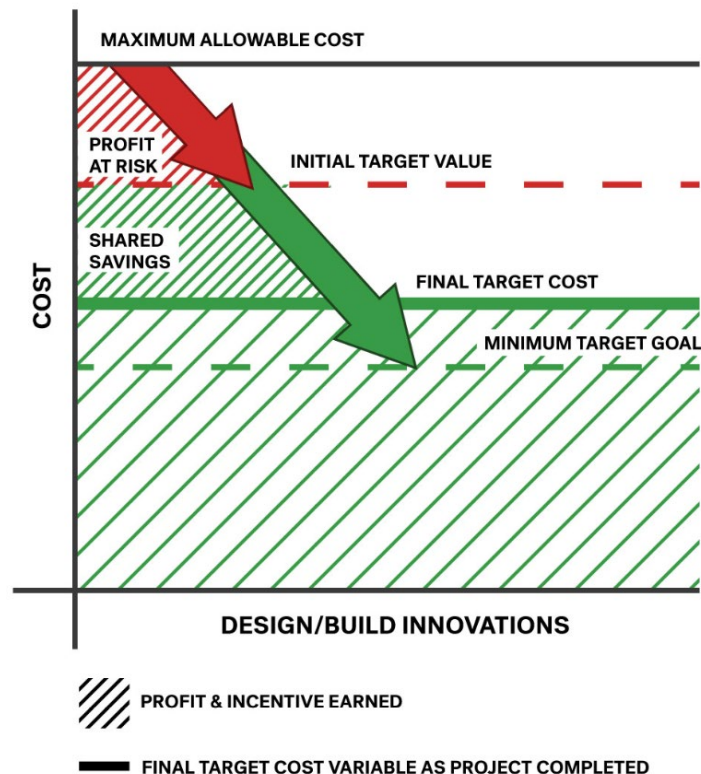
It is difficult for siloed teams to deeply collaborate and innovate together when the work is not always done with the consideration of other team members' workflows or efficiencies in mind. One example of this siloed culture is evident with the simple field task of survey and locate services. Years of general contractors and sub-contractors working to protect themselves from each other's mistakes have led to survey and locate teams for every trade. This is not only redundant, but it also occasionally leads to coordination busts. A collaborative project culture encourages teams to go back to assigning one firm the responsibility for survey and locate. IPD is trying to change the culture from a defensive one to a collaborative one to harness efficiency and high levels of productivity.



When costs and schedules miss the mark, the risk ultimately lands back in the owner's lap. In Renee Cheng's article, [Confessions of a Social Researcher in the Building Industry](#), she acknowledges that most projects are over time and over budget with some figures as high as 70%, but these stats raise more questions than answers about who is setting these budgets and how accurate this data is, since definitions vary. But there is data to support that when silos are removed, transparency is embraced, and the team's psychological safety is harnessed, great outcomes can be achieved.

The article [IPD Super Teams](#) in Building Design + Construction, which evaluated ten projects using shared risk agreements delivered in 2017, shows that the projects provided an 8 - 14% savings as compared to similar projects using standard delivery methods. This article highlights the IPD experience of several organizations like Advocate Health Care, Sutter Health, Brown University, and T. Rowe Price saving millions of dollars on projects while increasing scope and completing ahead of schedule. The outcomes of these projects and others that have been analyzed reinforces the conclusion that risk and reward sharing can deliver amazing results.

## Financial Terms



### First the contract: Sharing Risk and Reward

In risk sharing models, the teams that sign onto the risk and reward contract put some or all profit at risk. In return, they become eligible for a share of an additional incentive bonus pool if they drive the project cost below the allowable budget and/or achieve incentivized milestones or behaviors. The potential total reward can capture the full profit + incentive pool, which is shared based on their proportion of project investment across the participating risk and reward team members and can lead to great margins.

Taking on this reward comes with more risk. It is worth noting that risk allocations made by the contracts may not be insurable under current professional liability policy language. Depending on how the project ends, if the team exceeds the allowable target cost, all or part of the shared incentive pool and profits can be lost. Incentives are typically held aside in a shared savings (profit pool) along with the project contingencies. The structure for the profit pool varies from client to client either by building an escrow or savings account over time or by including a claw back provision which requires that risk and reward team members pay back their portion of cost over runs at the end of the project.

The contracts typically outline a sharing scenario based on the team members that participate in the risk and reward pool. Risk and reward members are those who can move the needle on value. Commodity-heavy trade partners like flooring for example would be less suitable. The risk and reward team would typically include the General Contractor, the Architect, and key design consultants and trade partners. Those can include landscape architecture, structure, building enclosure, mechanical, electrical, plumbing, fire protection, and low voltage design and build partners, but they vary from project to project, employing fixed fee / lump sum contracts for the smaller portions of the work.

Most risk and reward agreements proportionately spread the risk based on each team member's projected and final profit. Once the contracts are signed and the team gets started, their energy should be spent innovating and collaborating rather than protecting themselves from liability. The goal is to create a project first culture, in which the team works together to find the most efficient solution to each problem. This might mean giving up scope to someone else who can achieve the same task more efficiently, or alternatively might mean investing more design time to innovate and save field labor and improve project productivity targets. The team is responsible for designing the project to meet the program, cost, and schedule objectives while managing the project risks. Projects do whatever it takes to meet the schedule even if it costs more to do so. At the end of the job, if the allowable target value is not hit, the incentive is reduced first and then the profit pool is depleted dollar for dollar until the cost is covered.

### **A Gap in Professional Liability Insurance (PLI) Coverage**

Currently, the standard-of-care for design professionals does not necessarily apply to construction cost management and until now, tracking team productivity and field performance goals has not been tied to negligence and the standard-of-care. IPD projects begin to merge design and construction, and through deep collaboration with multiple parties including the owner, it blurs the line of who's responsible for the design. In this scenario, our industries are now being asked to participate in each other's areas of expertise. To date, PLI has not caught up with these issues.

For the sake of this discussion, let's consider issues outside of errors and omissions, which would be bracketed by the standard of care and covered by PLI. Cost overruns in the construction phase are often the result of many issues that can quickly compound costs at the end of the job. Therefore, if a project team misses the maximum target value due to a series of productivity and field challenges, it would be difficult to tie to negligence, leaving an exposure not covered by PLI, which could lead to financial vulnerability. To the extent that the contractually assumed liability is greater than the coverage, a firm would be responsible for the delta from its own resources.

In risk and reward agreements such as IPD, IFOA, IDB, tri-party, etc., managing the budget and schedule is inherently the contractual responsibility that the team must assume. When failures in budget management occur, the impact is proportionately spread team-wide between the risk and reward partners. If reasonable contingencies are established and the team's collective profits are at-risk, the cost overruns would have to be extremely significant for this cost exposure to come into play, but it is not out of the realm of possibility.

To date, there is no litigation from any project team in a risk and reward contract, so it is hard to provide data on the insurance gap scenario. Perhaps this lack of litigation is some evidence of the success of collaborative delivery, but that does not mean it is a good fit for every firm. Some team members see the clauses for their portion of this risk and wonder if risk sharing is right for

them. There have been a few instances where some of the industry partners have avoided signing up for the risk and reward team structure or have required modifications to that structure. Escrowing team profits can also be difficult for smaller businesses because slim margins make it challenging for them to run a business on reduced cash flow. Team members need to understand the true nature of the risk that the project is asking them to assume and get comfortable with their participation in helping to manage it before they commit to risk and reward sharing.

### **Bridging the PLI Gap**

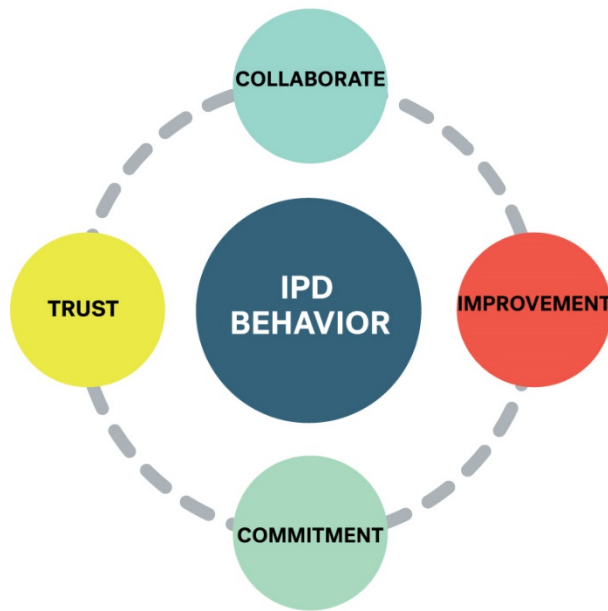
Project-based insurance helps teams come together as a business enterprise. Most commonly, each firm brings their own liability insurance coverage independently. However, if the team were to purchase project insurance, errors and omissions of the collective could then be covered under the project insurance. But one gap will remain because the scenarios under which project insurance covers cost overruns usually tie to an allegation of negligence made against the design team. Generally, the pattern follows that an owner makes a claim that had it not been for the negligence in design, the cost overrun would not have happened. But in the collaborative design scenario, the owner is often at the table participating in and guiding the design process. Perhaps that is why to date, there are no known claims for collaborative project delivery.

The AIA Trust published an article, [Project-Based IPD Insurance Coverage](#), specifically discussing insurance products to address these unique challenges, including project insurance policies developed in collaboration with Victor/CNA and how they work. It is important to note that COVID has caused underwriting challenges and some of these new products are difficult and expensive to purchase, but they might be worth exploring.

*An example of the risk gap:*

**2.4.1.1** In the event that the Final Actual Cost exceeds the Final Target Cost (subject to Modification) upon Final Completion, then any earned Incentive Compensation will first be reduced, dollar for dollar, by the amount of the difference until the Incentive Compensation is eliminated. Next, all Fee will be reduced, dollar-for-dollar, by the amount of the difference until all Fee is eliminated. Any remaining excess Chargeable Costs will be split evenly (50-50) between the Owner and the Design-Builder until the Owner has expended the Maximum Contract Amount. If the Maximum Contract Amount is exceeded, the Design-Builder is responsible for 80% and the Owner is responsible for 20% of all other Chargeable Costs.

*In a recent contract for one public University (see reference above), if the project runs over budget at completion, including expending all contingencies, the incentive, and their fees which were at risk, and the maximum contract amount is exceeded, the risk and reward team is responsible for 80% of all other cost overruns. The team understands that if they miss the mark, have document and/or field errors, and/or productivity challenges, all profits could go out the door along with the Incentive Pool. In a worst-case scenario, this could be more risk than the incentive and profit combined, and if cost overruns were from a series of issues tied to productivity, these costs would not be covered by PLI. This could lead to overruns that come out of businesses' bottom lines. It will take active participation by leadership and proactive project management of the team's progress and milestones to carefully manage this risk.*



### A New Mindset

Once you've determined that the risk and reward contract is right for you and your team, the next step is to consider the right mindset when building your team. Collaborative delivery models require players that are willing to invest in building and maintaining a team culture that focuses on solutions rather than blame. Teamwork, commitment, trust, and continuous improvement are the foundation for this culture. This is a deeply engaging process that requires full commitment from a representative of each of the primary legs of the stool – the owner, the designer, and the builder - who collectively manage scope, budget, schedule, and project risks. (In some contracts all members of the team who have signed the risk and reward contract participate in managing the contingency and profit pool.)

Too often, teams get excited to win "the big job", only to revert to old behaviors if there isn't a leadership structure that is committed to reinforcing the team's collaborative values. Hanson and Bridget asked a group of owners about their integrated projects in a paper called [The-Owner's-Perspective](#) and most owners suggested that it requires owner leadership to establish the desired behaviors. "...if the owner's commitment is lacking, team behavior will not change."

In a world where owners, designers and builders may speak different languages and have different goals, it is important for teams to take the time to build and nurture a collective culture. A key component of this is active listening to build trust and understand each team members' perspectives. In the article, [Why Lean and Diversity are Going to Get You the Best Results](#), Renee Cheng explains that innovation and high-level creativity is much more likely with a diverse team because groupthink is less likely and the best ideas rise when diverse points of view are welcome.

IPD teams inherently provide diversity of thought and expertise. She notes that teams that learn how to work with and across differences can result in higher productivity and better outcomes. She also notes that this is not a given – if teams do not learn how to work across their differences, it can lead to misunderstandings and problems. There are a few ways to help teams

do this work. One can encourage teams to invest in building their foundation by creating a Project Charter that defines team cultural norms and might include a team's mission statement, the team success criteria, and the team's communication plan – which includes a structure for making decisions, such as a RACI matrix. The matrix outlines who is Responsible, who is Accountable, who Contributes, and who needs to be Informed. As the team slowly builds and grows over time, new team members should be onboarded to help them align with the team's desired behaviors, values, and goals.

### **Target Value Programming**

With the team values and goals defined, it is now time to begin work and leverage the potential of integrated delivery to reach beyond the base budget and provide added value and scope or provide the base scope for a lower cost. We refer to the beginning of the process as Target Value Programming.

Traditionally during the programming phase, stakeholders are asked what they want or need. It is common for perceived stakeholder needs to exceed the project budget. With Target Value Programming, the team begins the programming phase by defining the cost drivers for the site, followed by determining the base costs for core and shell, structural and MEP systems, all of which are driven by the owner's goals for envelope aesthetic, building performance goals, and jurisdictional requirements. Lastly, it is important to determine the Tenant Improvement (TI) costs for the program typologies.

Once this foundation is set, the team uses a modeling tool while working with the stakeholders to define a program that meets the project targets. This requires extensive cost estimating and conceptual design to be done prior to completing the program. With robust cost data forming the backbone of the modeling tool, the team can plug and play a variety of program options and work with the stakeholders to come to a program that meets both their needs and the budget. The conversations change - the questions are not "What do you need?" but instead become "These are a few options for your program. What works for you and supports your goals within the budget?"

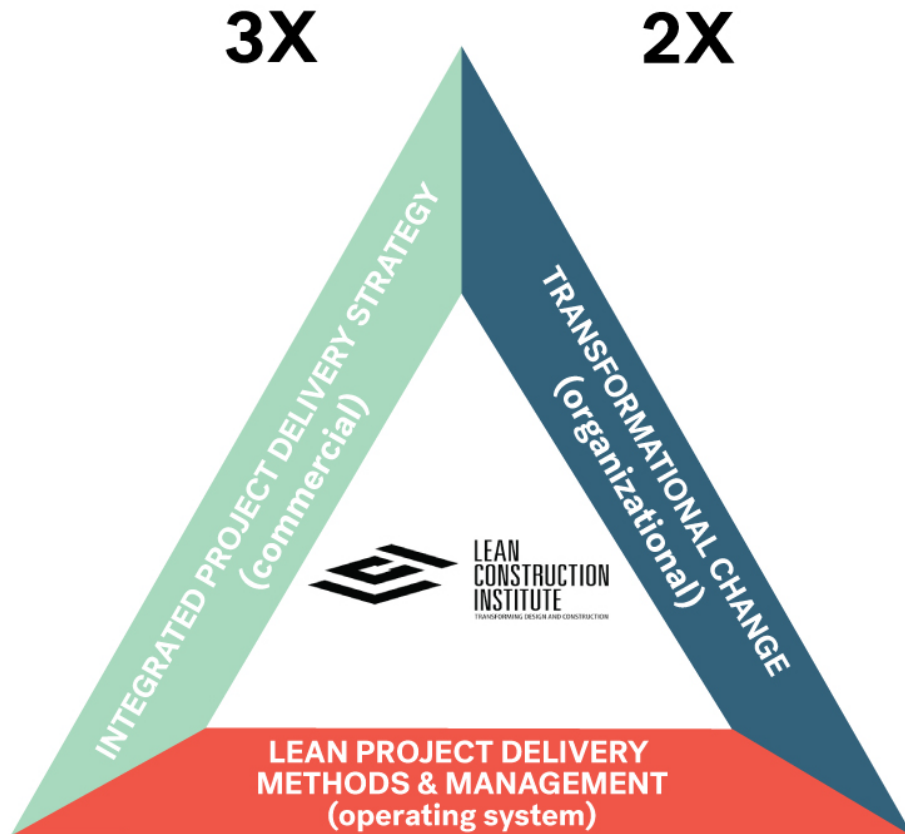
### **Estimating Accuracy to Manage Risk**

Some subcontractors are not facile with conceptual estimating because their business models to date have been based in quantifying materials. During the early design phases, material costs and quantities have not been defined. Conceptual estimating forms the foundation for the project and the basis of the programming and validation phases that define the scope to which the team commits.

Excellent conceptual estimating comes out of a deep understanding of benchmarks and a good database of costs. Site constraints, jurisdictional codes, envelope quality, sustainable goals, building systems, and program complexities all mean that every project has cost drivers that are unique to that project, making some database information nonapplicable. A clear understanding of the specific project drivers along with a broad data set and possible assistance from third-party cost estimators might help smaller or less sophisticated trade partners participate who might not have the depth of a database as compared to other large firms doing similar work.

It is important to encourage teams to be open to a variety of ways to define the benchmark cost data points that lead to the base target cost and program established in the validation phase. Once the programming is in alignment with the budget, the team is ready to complete the validation phase by providing the primary deliverables, which likely include the base program, the target budget, the target schedule, and a project risk log.

**PROJECTS WITH HIGH LEAN INTENSITY  
ARE MORE LIKELY TO COMPLETE  
AHEAD OF SCHEDULE & UNDER BUDGET**



**Active Management of Cost and schedule**

Once the team collectively defines the scope, schedule, risks, and budget, they work together to meet and hopefully exceed the objectives. Budgets are often challenging, and many owners push teams to the edge to leverage the process for best value. Project costs can often be 5% to 10% over the allowable target budget when programming is complete and there is much work to do to get the project in line with budget goals. On top of that, the team will also set a stretch goal of either extra scope or a lower project cost. Public sector projects with a fixed budget sometimes develop a buy-back list that can be tied to the team's incentive plan. Through hard work, collaborative teams can find ways to build more efficiently with unique products and creative solutions that meet the cost and performance criteria.

For most risk and reward agreements, the basic premise is reliant on a cost-plus scenario in which the "cost of work" covers the cost to do business and the profits of designers and builders are at risk. With contracts that use "cost of work" instead of "lump sum", every hour spent on the job comes out of the bottom line and when productivity levels rise, so should profitability targets. One way to keep track is to create a culture of accountability by tracking all risk and reward team members with a monthly or quarterly "cost to complete" report.

One of the tools that helps to manage the risk of meeting project budget objectives is to develop cashflow projections which are tied to manpower workplans for the anticipated workflows. These projections should align with project milestones so that as each milestone is hit, the team demonstrates if they are hitting their planned projections. If they are not, then it is time to re-evaluate their approach and drive-up productivity. Is there a different partner who can do the work faster or cheaper? Are there things the team can do to help them achieve their goals? It is important to remember that one underperforming partner can throw off the project's objectives. By tracking the productivity of each risk and reward partner, the team can step into help the struggling risk and reward partners to get them and the entire team back on track.

### **Management during the construction phase**

The design phase is sometimes referenced as the "Go Slow to Go Fast" phase because changes during the design phase have less of an impact on cost and budget than changes and challenges that come up during construction. The design phase also provides the trades time to plan their work and develop prefabrication and lean strategies for their field crews. The goal is to have a well-coordinated set of documents that allows the field crews to fly. It is also understood that conflicts in the field can lead to multiplying costs.

Team mismanagement and a couple of critical field errors could potentially bleed the contingencies and profits leading to real risk for the partners participating in the risk and reward pool. In some cases, more time is required by design teams during the contract administration phase to help manage this potential, by providing an on-site integrated team to quickly troubleshoot inevitable field challenges. Teams should also establish an integrated leadership team or a governance structure to proactively track progress and risks and who are actively engaged throughout the process, including representatives from the owner, the designer, and the builder.

### **Last Responsible Moment (LRM) Decisions**

One common tool within the integrated team model is the LRM Log. Much of the added value for projects is easier to achieve later in the construction phase once the early risks of site and unforeseen conditions and the buyout and escalation risks have been mitigated. As the team innovates and solves their budget challenges, more scope can be slowly folded into the project. These could be documented as alternates, allowing the process to add scope back incrementally as risks are avoided. The log is built with the timing of each decision that needs to be made to avoid backtracking or rework to optimize best value.

### **Scenario**

Cost overruns can easily happen if the team does not focus on manpower and cost trends that align to milestone objectives. Consider this scenario:

A roughly \$200M project with a triparty agreement had a roughly \$4M incentive pool that was to be shared across all risk and reward team partners. Late in the construction phase, things were looking very strong. The Owner had directed the team to maximize the scope and expend all available funds. The leadership team used the "Last Responsible Moment" decision log to add scope into the project. This was the team's first IPD experience, so they were not used to the cost-plus contracting scenario which requires a focus on productivity tracking and accurately predicting costs at completion.

The team was so busy working on field challenges and managing the aggressive schedule that they did not realize that a few of the subcontractor's estimated cost-to-completion were much higher than the team realized and therefore the leadership team did not have accurate information when making decisions to add scope. One trade partner had a roughly \$150K incentive at stake with labor overruns closer to \$500K, meaning the trade labor projections far exceeded their portion of the incentive pool.

Unfortunately, the failed tracking of cost-to-completion was widespread, including many sub-contractors, which resulted in comparatively large overruns for the project. Not only did this deplete the remaining contingency, but it depleted the incentive and a small portion of the profit at risk. Overall, for the owner the project was successful because it came in on time and on budget with an additional \$15M value above the base scope at the completion of the project, but an overall strong effort by the design-build team was undone by the cost-tracking failures of a relative few.

## Conclusion

Design firms and construction companies need to understand each other's businesses and how the business of the collective enterprise will be successful, not just their individual parts. There are several things that teams can do to manage their collective risks.

1. **Build the Right Team Culture:** Teams should take the time to vet their values and goals before they head into business ventures together and work to create the desired culture by emphasizing the advantages of psychological safety for the team to drive innovation and create alignment.
2. **Consider Project-based Insurance:** Approach the project as a business with insurance provisions that treat the team as a business enterprise to reinforce collective behavior.
3. **Understand the data behind targets:** Take time early in the programming phase to understand the unique cost drivers for the project that are used to develop the target program.
4. **Hold the team accountable:** The project's leadership team needs to keep eyes on the productivity of their teams and require accurate tracking of projected costs with either monthly or quarterly "cost-to-complete" reports.
5. **Help each other succeed!** When the job is running smoothly, team members help one another achieve and exceed their productivity goals, and team members lean into solving each other's problems – this is the sign of a winning team!

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**Laurie Canup, AIA**, Principal at SRG Partnership, has an impressive portfolio in higher education, healthcare, and research facilities. Recognized as an esteemed leader, a champion of mentorship, and a trailblazer in Integrated Project Delivery, she is team leader for the University of Washington Behavioral Health Teaching Facility, Washington State Vancouver's Life Sciences Building, and OHSU's Knight Cancer Research Building. Laurie is passionate about the power of integrated design to advance innovation and creativity for a better world.