

## Guidance for **Owners** and **Developers**

LOCATION PLAN



This is a section of the document "CEC, 2015. *Improving Green Building Construction in North America: Guide to Integrated Design and Delivery*. Montreal, Canada: Commission for Environmental Cooperation. 84 pp." The full document is available at: <http://www3.cec.org/islandora/en/item/11661-improving-green-building-construction-in-north-america-guide-integrated-design>.

## Role to Play in an Integrated Approach

Integrated design and delivery has to-date mostly been an owner-driven process, with the owner or developer requiring this approach from the outset, beginning with the team selection. In integrated projects, the owner will take a more active role in selecting and engaging with the project team. An openness to a new business model, which often requires more investment upfront, and to a high level of engagement throughout the process, is crucial for success.

### Key Points:

- **Initiate an integrated approach.**
- **Commit to staffing decisions and engaging differently with staff.**
- **Embrace new financing models and invest more money upfront.**

## Opportunities

Although employed at a very high level on relatively few projects, owners who have pursued integrated design and delivery approaches report better outcomes in terms of value and cost (Ashcraft 2013). The owner becomes an influential partner in the design process and helps establish the project's values and goals during steps 1 and 2 of the Guide. If sustainability objectives have been established, integrated teams also have higher potential to deliver those outcomes and the owner will be more confident of getting a project that is truly green. The integrated design phase requires the teams to think about the full potential of a project (in step 1), which often results in qualitative improvements. For example, The Sarah E. Goode Academy achieved LEED Gold even though it was programmed for LEED Silver (see p. 63). Moreover, owners often experience benefits in costs and schedule. In *Integrated Project Delivery: The Owner's Perspective* (Ashcraft 2013), multiple owners in projects of different scales had projects come in ahead of schedule and under budget. The Mosaic Center (see p. 60) was five percent under budget and five months ahead of schedule at the time this report was written.

**“ Our facilities are LEED Gold, net zero, etc., and we attribute most of that to hiring teams that were best integrated and were able to incorporate energy goals. ”** – Shanti Pless, National Renewable Energy Laboratory

### Integrated design and delivery provides:

- **what you want, because your voice is heard throughout the process,**
- **better outcomes in terms of value and cost,**
- **the potential for exemplary energy savings and occupant comfort at no added cost, and**
- **teams that are innovative and creative.**

## Initiating an Integrated Project

Integrated design and delivery is often an owner-driven process because the owner assembles the team and sets the project parameters. Whether drawn to integrated design and delivery out of frustration with current methods, out of interest in a value-based approach, or based on an early recommendation from a member of the project team, the owner must be willing to take the lead in requiring collaboration as a parameter and committing to that requirement all the way through the process.

### **Initiating an integrated project requires owners to recognize that:**

- **Integration is often an owner-driven process.**
- **It requires leadership and commitment.**
- **It requires efficient and clear decision pathways.**

## Selecting the Team

The biggest decision the owner will make in a construction project is selecting the team. The success of an integrated project is highly dependent on the caliber of the team; the owner will have a vested interest in choosing parties that are committed to an integrated approach and that work well together. That means judging all parties—including the general contractor—on quality and character rather than on lowest cost.

As Oscia Wilson writes in her book, *The Owner's Guide to Starting Integrated Building Projects* (Wilson 2014), “When a building team is hired through the lowest bid process, construction is erroneously treated as an interchangeable commodity, as if one team is as good as any other. The small savings gained with this tactic disappears if the general contractor lacks the experience or sophistication for the project, or if the team doesn’t work well together, doesn’t share ownership towards the project goals, or feels resentful at being forced to low-bid a project at a possible loss.”

It is also best to work with those who have experience with integrated design and delivery projects and who have worked together before. However, because relatively few individuals have that experience, the owner might have to weigh candidates’ capacity to work in an integrated fashion. The owner could engage a trusted builder first and then work to find an architecture firm that’s complementary, or vice versa.

Leading Integrated Project Delivery expert, Howard Ashcraft, compares creating an integrated team to a corporate merger (Ashcraft 2011). In a successful merger, members from different firms create a single organization with a common culture that reflects their beliefs and values. Choosing team members or partnering with firms with which the owner has a strong confidence in their ability to work collaboratively helps ensure cultures are complementary rather than antagonistic. It may be in the owner’s interest to engage the subcontractor and key trades to provide accurate cost and constructability feedback to the architect.

### **Select all partners based on quality. Work with those you know if you can, but if you do choose new partners:**

- **select for competency and capacity,**
- **prefer team members with an interest in collaboration, and**
- **engage the contractor and key trades as early as possible.**

## Selecting the Team: In the Interview

If it is not possible to select a firm with which one already has established rapport, the selection should be based on the prospective firm’s capacity to adjust to a new system, its demonstrated ability to adapt to and commit to a culture of collaboration, and experience it has had with Lean design and construction, or integrated design. The owner should beware of candidates who claim that integration is “in their DNA” or that “they have always worked that way,” because that suggests a misunderstanding about the extent to which an integrated design and delivery process differs from the conventional model. A track record of sustainable design performance, such as applying the American Institute of Architects’ 2030 Commitment, also helps differentiate teams interested in valuing final outcomes.

### **Key Points in interviewing:**

- **Interview teams rather than individual firms.**
- **Make selections based on an individual firm’s prior experience.**
- **Probe claims. Ask, “How did you collaborate differently on that project than on others?”**

## Overcoming the Learning Curve: Managing the Team

The owner must be willing to participate actively and engage all the way through construction; committing to the process and reinforcing the notion that collaboration and early alignment really is a requirement for the project. Even after design, it is essential to have someone representing the owner onsite to make decisions about construction. Owners typically report that integrated projects require more of their time, but that the additional time is worth it in the end (Ashcraft 2013). Furthermore, the added time is often a different kind of engagement that is intellectually stimulating and fulfilling, rather than time spent simply fighting battles (see the Mosaic Center case study, p. 60).

The owner will have to be clear about expectations while also being open to being challenged by the group. This may allow the team to fulfill needs that go beyond the owner's expectations. Whoever is the internal champion for integrative design and delivery within the owner organization may have to overcome significant management resistance. In tough economic times, executive managers can push hard for low-bid procurement and may be hesitant to try a new approach. By referencing successful projects and demonstrating effectiveness in practice, the internal champion can get beyond this resistance. However, as mentioned in step 1 above, aligning the organization internally and defining clear decision pathways before pursuing an integrated project will help to prevent those problems in the first place.

### Key Points in being a successful manager:

- **Integrated design and delivery is not a spectator sport: How fully is your organization ready to engage in the process?**
- **Being clear about expectations is of even greater importance in performance-based contracts.**
- **Ensuring internal alignment helps avoid managerial resistance.**

## Utilizing BIM

BIM models can be very useful during post-construction if they have been created with that use in mind. Thus, the owner needs to plan and communicate to the design team how he/she might use these 3-D, data-rich models to improve operations and maintenance once the building is constructed. Some of these uses might include transferring the as-built data into the facility management system, running ongoing analysis of operational capabilities, or using the models to support future renovations. This would require specifying requirements for interoperability and an as-built model up front. For an easy reference, the owner should look for BIM programs that have been verified compliant with the Construction Operations Building Information Exchange (COBIE).

### Key Points:

- **Decide early on if and how you might want to use a 3-D, data-rich model of your building after occupancy.**
- **Specify up front your requirements for interoperability.**
- **Consider including in the project requirements an accurate as-built model to be completed after construction.**

## Building on Lean Practices

With the mantra of “maximizing value while minimizing waste,” Lean design and construction practices encourage collaboration as a means to efficiency and provide an entry point into integrated design and delivery because of some of their overlapping principles. To that end, many Lean practices could be useful tools in an integrated project: The Last Planner® System consists of layers of increasingly detailed schedules that help create a more reliable production schedule during construction, created by “collaborative pull scheduling;” Just-in-time Delivery offers a system that minimizes materials waste and storage problems; and Root Cause Analysis offers a collaborative problem-solving tool. These tools and more may all be incorporated into the construction process, but a focus on early alignment and participatory input in early design is still needed to ensure that they are successful.

### **Examples of key Lean practices to implement:**

- **Last Planner® System**
- **“Pull” planning and production**
- **Just-in-time Delivery**
- **Root Cause Analysis**



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