

## Guidance for **Architects**



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

When using an integrated design and delivery approach, the architect is asked to make a significant departure from his usual way of doing business. One important difference is the presence of the owner as a team member at the predesign phase. This means that the responsibility of controlling communication with the owner will be partly replaced with coordinating with the contractor and educating the whole team about the significance and interconnectedness of design decisions. Other responsibilities include:

- **Welcome cross-disciplinary input during early design.**
- **Engage contractor and key trades so that they understand key design decisions.**
- **Educate the owner about alternate options that might lead to higher performance.**

## Opportunities

Use of a collaborative model during the design stage may be seen by some architects as a burden and a disruption to the problem solving that they are trained to do. It may also feel restrictive to some architects, who are used to taking the lead. However, in most cases, implementing full alignment, changing the business model, and adopting an IPD agreement will be worth the time invested.

Following performance requirements set by the whole team instead of just specific details provided by the owner will give the architect more freedom to innovate and create. From the beginning, trades and contractors can provide information about the effectiveness and constructability of alternate concepts, which will help architects choosing systems and layouts iteratively to efficiently achieve the project goals. The architect can feel confident suggesting ideas that might meet or exceed the initial performance goals while staying on budget and resulting in fewer surprises during construction.

**“ We are seeing a shift from a siloed approach to trans-disciplinary approach, but we need to ultimately get to a transcendence that operates across boundaries. ”** – Jennifer Cutbill, Dialog Design

**Integrated design and delivery might feel cumbersome or repetitive. But if implemented at all levels you'll see:**

- **more leeway for creative design;**
- **quality feedback on the effectiveness and constructability of alternate concepts;**
- **whole-team commitment to the project's overall success, including green performance; and**
- **fewer changes in construction that alter design.**

## Initiating an Integrated Project

The architect is well positioned to initiate an integrated design and delivery approach because, as a trusted voice for the owner, he can usually propose an integrated approach before the project is too far along. It is helpful to clarify how integrated design and delivery benefits all parties and to give examples from projects already realized. If the owner is hesitant about the process, it may be helpful to suggest an integration consultant or facilitator for the project.

### Key Points:

- **Propose integrated approach as early as possible.**
- **Make the case by appealing to the owner.**
- **Suggest a facilitator, if needed.**

## Selecting the Team

The success of an integrated project is highly dependent on the caliber of the team. For that reason, the architect will have a vested interest in the other parties that are selected for the team. The architect can suggest to the owner that he or she ask for proposals from pre-assembled teams, instead of individual parties. That would allow the architect to submit a proposal with a contractor with whom he already has a good working relationship and who ideally has experience with integrated design and delivery approaches.

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 working relationship helps ensure cultures are complementary rather than antagonistic.

If it is not possible to advocate for hiring a firm with which the architect already has an established rapport, the architect would ideally select firms who have demonstrated an ability to adapt to a new system and make a strong commitment to a culture of collaboration.

**If you can, work with those you know or with whom you have done previous integrated projects. If you do choose new partners:**

- **select for competency and capacity, and**
- **prefer team members with an interest in collaboration.**

## Selecting the Team: In the Interview

The architect can demonstrate a capacity for collaboration even without prior experience on an integrated design and delivery project. Capacity for collaboration can be demonstrated by emphasizing experience with Lean design and construction, or integrated design, and by describing ways in which the party adapted to more collaborative projects.

### Key Points:

- **Emphasize consideration of an individual's prior experience.**
- **Specify claims: Ask, "How did you collaborate differently on that project than on others?"**
- **Engage contractor and key trades as early as possible.**

## Overcoming the Learning Curve: Co-learning and Joint Decisions

Integrated design and delivery has a steep learning curve, but from existing case studies it is clear that once a team successfully completes one integrated project, that team will be much more efficient on successive projects (case study: Lion's Gate Wastewater Treatment Plant, p. 59). It is the architect's role to foster a culture of collaboration and to be persistent in engaging all participants. For the team members, adjusting from being "the expert" to being a "co-learner" will be possible only in an environment of collaboration, where suggestions and openness are encouraged.

“ [Integrating a team] is not just pulling together a multi-disciplinary team, though that's an important first step. It means that each person in the room needs to have both the right expertise and the right posture. Without both, you can still end up with just another building. ”

– Laura Lesniewski, BNIM

### Key Points:

- Teams that have done one or more truly integrated project(s) are likely to be successively more efficient on others.
- Learning how to make joint decisions is a skill.
- Fostering a spirit of collaboration is everyone's responsibility.

## Taking the Role of Educator

As seen in steps 1 and 2 above, integrated projects are structured to deliver on the values and goals that the project team establishes. If sustainability objectives are not established, the architect might have to educate the team about those benefits. Associating green features with reduced operational costs and reduced time to market may help to make sustainability part of the conversation. The authors of *The Integrative Design Guide to Green Building* (7group and Bill Reed 2009) suggest that working with "nested systems" helps bring sustainability objectives to the surface. Examining how a project affects the primary systems within the whole of the environment—defined as habitat, water, energy, and materials—reveals the relationships between smaller and larger systems.

### Key Points:

- Integrated projects will deliver only on the values and goals that are expressed.
- If sustainability values are not already a focus, you might have to play the role of educator in order to bring those goals to the surface.



**“ BIM is an attitude for how information is exchanged. ”**

– Phil Bernstein, Autodesk

## Utilizing BIM

Over 70 percent of architects use BIM, according to a Smart Market report (Smart Market Report 2012). However, many limit the use of these software tools to creating 3-D renderings and understanding the performance and cost of a near-final design (Malin 2007). Architects can use BIM more economically—and help ensure sustainability goals are incorporated into the project—by doing simple box models to evaluate the energy performance of different conceptual designs before schematic design has even begun, looking at factors like massing, orientation, and percentage of glazing. Such models would be done using energy modeling programs before moving into full-fledged BIM design tools.

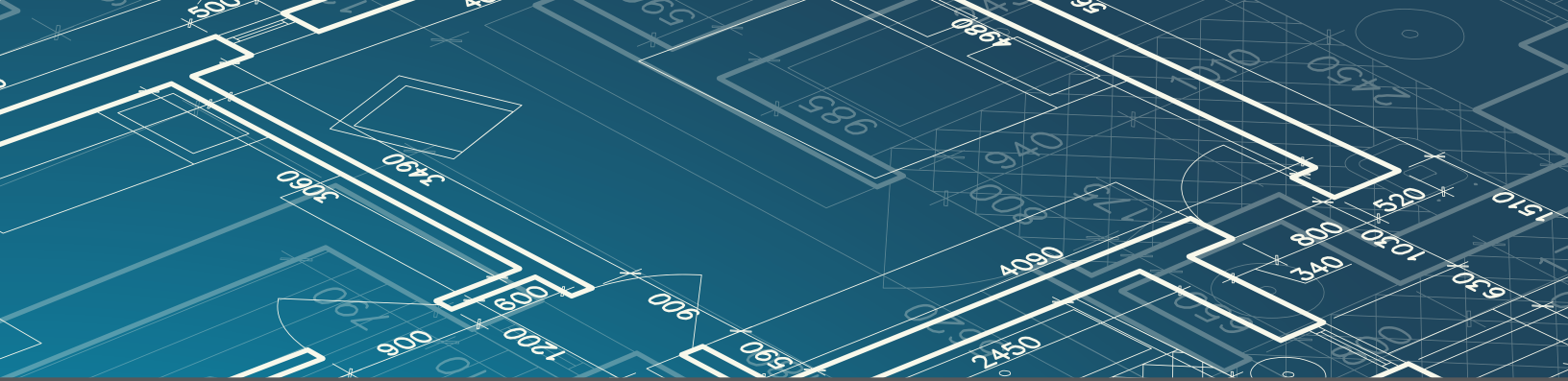
BIM can also be used as a communication tool to drive collaboration among team members. With the development of cloud-based BIM servers, multiple users can access a BIM model and changes made will appear for the other users in real time.

### Key Points:

- **Utilize BIM to compare alternate concepts, not just to model performance of final design.**
- **Use the rich data sharing as a collaboration tool.**

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