

SPOTLIGHT REPORT

Integrative Process: Pathways to Performance and Regeneration



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Casa Adelante at 2060 Folsom, designed by Mithun

Photo: ©Bruce Damonte

About BuildingGreen

BuildingGreen is an independent consulting and publishing company committed to providing accurate and timely information to help building industry professionals and policymakers improve the environmental performance and reduce the adverse impacts of buildings. Our purpose is to foster a thriving and equitable world through a regenerative and resilient built environment. To this end, BuildingGreen facilitates collaboration, learning, and trust to accelerate the transformation of the building industry into a force for positive change.

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Integrative Process: Pathways to Performance and Regeneration

An integrative process can streamline workflows and drive higher performance. But if you do it well, it's so much more.

By Paula Melton

“It should be intuitive, but it’s not,” said Pauline Souza, FAIA, partner and director of sustainability at WRNS Studio. The “it” in question is the *integrative process*—ongoing interdisciplinary collaboration that begins during early design and ideally continues well into occupancy. Although project team integration may seem ubiquitous these days, most experts agree that any perceived change in how buildings are designed and built is largely superficial. As Souza put it, most teams are practicing “coordination, not collaboration.”

Yet, done right, the integrative process holds great promise. Practitioners say it improves building performance while identifying cost savings, helping teams arrive at unique solutions and opportunities that would not otherwise be discovered. Indeed, many believe true sustainability, in the form of regenerative design and construction, cannot be achieved without these intense levels of collaboration. Proponents also point to other benefits, including shorter project timelines (because of extra time spent upfront on pre-design), as well as something more intangible—a more humane, inclusive, and even joyful work climate.

But the barriers to this method of working—conventional contractual structures, lack of owner awareness and buy-in, and entrenched disciplinary boundaries—are immense. That’s probably why the industry has yet to overcome them.

In this report, we’ll discuss how to implement the integrative process by

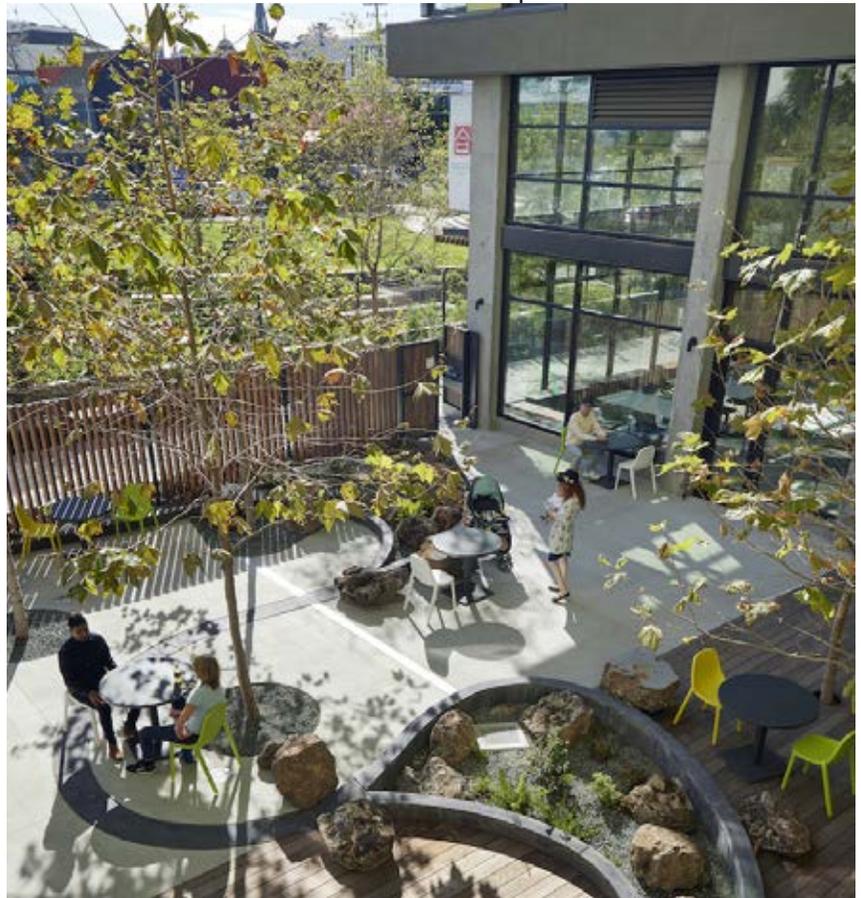


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recognizing and making corrections when it’s *not* happening, overcoming the significant barriers to culture change, and leveraging existing drivers of integration. Then we’ll explore how the integrative process has improved outcomes—both tangible and intangible—for real projects.

Are We Doing It Wrong?

There are different flavors of integrative process, advocated by various proponents in the industry.

Casa Adelante at 2060 Folsom, designed by Mithun, is a 127-unit building consisting mostly of two- and three-bedroom family apartments in San Francisco’s Mission District. An integrative process helped the team achieve goals like equitable electrification and has continued into occupancy through resident assistance with HRV system instructions.

Some project teams focus primarily on reducing first cost through system integration. That often dovetails with life-cycle cost savings that come from better system performance—and better system performance also improves environmental outcomes. Pushing still further, some integrative process experts call for deepening relationships among team members, as well as the local community and ecosystems likely to be impacted—or, preferably, regenerated—by a building project.

But most projects lack even the fundamentals.

“Firms still do not consistently set goals for every project,” said Barbra Batshalom, Assoc. AIA, executive director of Sustainable Performance Institute. The nonprofit offers education and consulting on integrative process and firm-wide change management. Even if teams do set goals, Batshalom continued, there’s seldom adequate collaboration to achieve them, in part because there’s almost never any accountability or any appetite for follow-up or continuous improvement. “If you’re not taking that seriously, to design the process to match the outcome you want, it’s just never going to happen,” she added.

That requires engagement with the owner, who has a more prominent role and can even take a leadership role in an integrative process, as well as among team members.

What the integrative process is not

“For the most part, from my perspective, I would say most of the market is not doing integrative design,” agreed Marcus Sheffer of 7group, a coauthor of the 2009 classic *The Integrative Design Guide to Green Building*. “It’s a little better maybe than what they had been doing.”

“Most architects think coordination is integration,” echoed Bill Reed, AIA,

principal at Regenesys, Inc. and another *Integrative Design Guide* coauthor. “Everybody does coordination to various levels,” Reed noted, “but true integration allows emergence to happen. ... It isn’t a linear process. It’s a pulse. Breathing in and breathing out, breathing in and breathing out.”

If you think that sounds like “woo woo,” Reed won’t argue with you. In fact, that’s his own phrase. Successfully managing the process, he said, requires “a different kind of being-state” characterized by “humility, inquisitiveness, and curiosity.”

Having a big charrette, setting goals together, sharing spreadsheets and BIM models—all this is vital, but these are tools, not outcomes.

What the integrative process is

“The short description of integrative practice for me is that it’s systems thinking applied to building design,” Sheffer told BuildingGreen. “Part of it comes from a realization that the project isn’t actually the building.” Instead, he said, the “project” is whatever effect the building is trying to achieve. “There is a mindset shift about building projects—buildings as an instrument for achieving an effect, not the end in and of itself.”

If Reed’s way of talking about integrative process sounds abstract, his implementation is far from it. During a Zoom interview, he shared his screen to show a colorful, intricate process roadmap for a project Regenesys is currently working on. “This one took me 40 hours to develop,” Reed said, because there are “320 deliverables” for the billion-dollar project from its 150-person design team. The roadmap reveals not just a timeline but also different process dependencies, with each workshop color-coded to show the different deliverables that will be addressed during that session. (He shared a sample roadmap with BuildingGreen that you can [download here](#).)

No Performance Goals? Building Certifications Can Help

Building rating systems have helped teams set meaningful performance goals, and in some cases, meaningful integration follows. LEED and the Living Building Challenge have also tried to explicitly incentivize integrative process, but that may not be what ends up driving true collaboration.

LEED v4 and v4.1

When it was released in 2013, LEED v4 included a new credit category—Integrative Process—consisting of a single credit with the same name. The v4 version requires the team to demonstrate it’s done early analysis of potential energy and water systems. Under v4.1, the team can choose any two from among five options for analysis starting in pre-design: energy, water, site selection, social equity, or health and well-being.

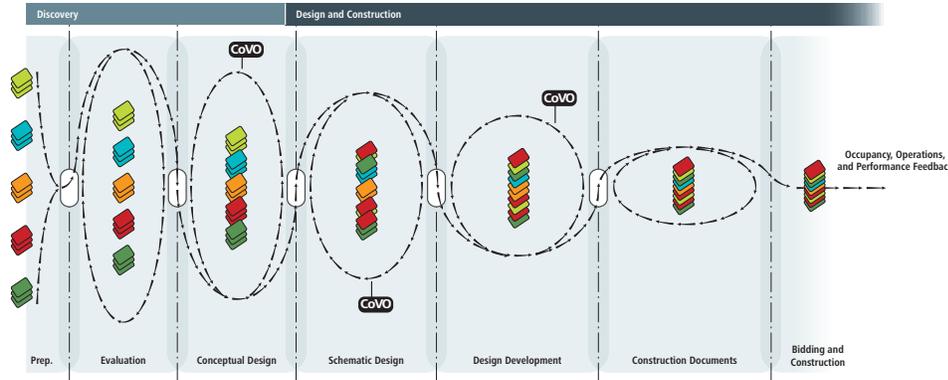
Given the depth and scale of change required to realize true integration, many have found the credit to be a good start but not the whole picture.

“When that first was released, our whole firm felt like, ‘Wow this is great, a credit that recognizes this process we’ve been going through,’” said Lake|Flato’s Heather Holdridge. But after looking at the details, they changed their minds. “It’s a step in the right direction, but to me that credit doesn’t really prove that you’ve [done] an integrative design process.”

“The purpose was to get some of that early-phase analysis going,” said Marcus Sheffer of 7group. “I think what’s broken is the evaluation of [the credit] and a lack of understanding in the market of what it’s trying to achieve.” Too often, he said, owners and teams are still deciding to pursue LEED as an afterthought—foregoing the main value of the rating system and wasting money on green

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Integrative Process



Traditional Process

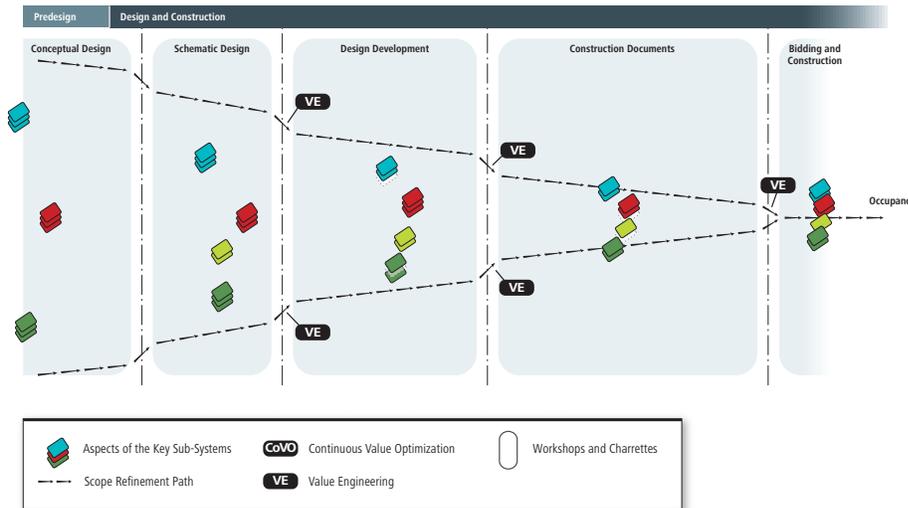


Image: 7group

This illustration from The Integrative Design Guide to Green Building contrasts integrative process with conventional design.

The roadmap development “wasn’t giving answers at all, just organizing their meeting points and what they were covering,” Reed explained. “We spent four hours on what was going to be accomplished at every workshop. We had an arc that everybody agreed to. We imaged the project together.”

The goal? “We are not controlling the outcome, but we’re controlling the interactions,” Reed said. “We identify all the different intervention points and the dates that that happens. We don’t manage the design; we’re managing the nodes of co-creativity.”

Batshalom says these meeting points are their own design problem. “We do these workshops for meeting facilitation and

charrette design,” Batshalom said, “and it all comes down to: How do you design an experience and not a meeting? What do you want them to feel? How do you want them to contribute?” She urges teams to take the same care in designing charrettes as they do in designing projects.

In the end, working together is all about our humanity and our relationships, and Batshalom doesn’t shy away from what that implies. Decades after the introduction of integrative process as a concept, “architects are still complaining about engineers and vice versa,” she lamented. “They need marriage counseling in the worst way!” The integrative process must “proactively manage

add-ons when they could have gotten better performance at a lower price. “The fundamental idea behind the whole credit,” he said, is that performance starts “really early in the process,” but there’s “a perpetual problem in the market of people in [design development] deciding to do LEED.” Sheffer thinks it would be great if LEED had “a whole integrative process category that comprises a whole bunch of points, so people who don’t engage it early would have difficulty getting certified.”

With that said, achieving higher levels of performance to hit LEED Platinum—and sometimes even Gold—typically requires a certain level of integration, according to Michael Pulaski, Ph.D., vice president at Thornton Tomasetti and the director of the firm’s Portland, Maine office. That’s especially true when trying to meet energy and embodied carbon goals, he said.

Passive House

Pulaski also said that Passive House projects, with some exceptions, typically require some level of integration. “Lots of Passive House projects have kind of figured out the recipe for that building type,” Pulaski explained. “For affordable housing projects, this is the kit of parts that you need to put together” as long as your window-to-wall ratio is “reasonable.” But for larger buildings, offices, or even smaller projects with more glass, “it resets that, and it’s much more complicated.”

Living Building Challenge

Most people agree that the Living Building Challenge (LBC), even the less intensive Core program, requires an integrative process.

Because LBC gives you “a real number to design to” rather than a reduction against a theoretical baseline, pursuing it “produces a better process,” Sheffer argues. And because it requires a year of performance metrics during occupancy, “it forces designers to more seriously engage the operations side,” he added.

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this relationship,” in which, historically, people’s needs have not been met, she said. “There are expectations we may not understand of each other. We need to get on the same page.” Unfortunately, Batshalom added, “There is a lack of self-awareness organizationally about what it really takes.”

Telltale signs of a lack of integration

If people think they’re engaged in an integrative process but aren’t, what does that look like? Experts offered various telltale signs.

Lack of specificity

“If they cannot articulate how their process is aligned with their goals, that’s a sign” a team hasn’t achieved adequate integration, argued Batshalom. “We’ve asked, ‘How do you achieve design excellence consistently?’ If they point to a green consultant or can’t really give an answer that has specifics, that’s a sign.”

Chaos

The iterative process of brainstorming, collaboration, and continuous improvement can create an initial sense of uncertainty. But should be short-lived and is different from disorganization, which Batshalom warns against. If “the experience of living your project is there’s a lot of uncertainty and chaos, a lot of things that were unexpected,” you’re probably not experiencing integration, she said. The difference is that the initial sense of uncertainty and exploration during the discovery phase of the integrative process is front loaded, with goals and their achievement becoming more solid over each iteration.

Narrow mindset

“When you’re examining an entire, whole system, which is kind of what a building is, if you’re not examining the relationships between the parts and pieces of the system, there’s a sign for

me you’re not practicing integrative design,” Sheffer said. “Are you looking at the synergies between systems to achieve some sort of aim? And it could be first cost reduction, and that’s fine. It’s still integrative practice.” For example, Sheffer said an integrated team will examine “cost bundles” instead of individual line items so they can find inter-system synergies “that allow you to reduce first costs.” Often, he said, a truly integrative process leads participants to contemplate what he calls the “nested systems” in which the building project is located, and engage on regenerative issues like social equity, environmental justice, and ecosystem restoration.

Lack of a work plan

“If they don’t have some form of project roadmap that’s co-created by the team, like a work plan tied to goals, that’s another sign that they’re not on the same page,” Batshalom noted. “They haven’t created the sequence of what needs to happen when.” She said this must go well beyond a LEED or WELL timeline. “It’s a goal-driven process work plan. If that doesn’t exist, then what is it?” Related to that are consultant scopes of work, Batshalom said, which consultants should have input on, especially “whoever’s doing analysis related to the goals.”

No pre-charrette research

Reed argued that, too often, goalsetting happens in a vacuum. “I think we can get 70% efficiency or net zero,” he said a team might decide. “Have you actually done some work?” The 2012 [ANSI/MTS Integrative Process guide](#), whose writing Reed helped lead and which is currently being updated, specifies a pre-design research and analysis phase that takes place even before the first workshop and requires strong buy-in and leadership from the owner. “Have all the consultants work on issues,” Reed advised, citing things like shoebox energy modeling, research on how climate change

“We have a number of projects using the Core system right now,” said Pulaski. “It’s a much more kind of mainstream system they have available for projects that’s still very aggressive but achievable without dramatic cost premiums.” Its energy performance, embodied carbon, and materials requirements encourage team integration, Pulaski specified. “It forces those deep conversations and instills an iterative process you have to go through to figure that out.”

See a cost-bundling case study on page 14.

Like the more stringent Living Building Challenge, Pulaski said, the Core program has one explicit integrative process requirement: a biophilic design charrette.

2030 Commitment

Owners and teams can be finicky about rating systems—whether to even use them and what level achievement to strive for—and they vary from project to project. But the 2030 Commitment is a portfolio-wide program with a specific performance goal. Barbra Batshalom thinks it’s done more than anything else to encourage integrative process at architecture firms.

“It’s the first program ever that requires looking at your practice,” Batshalom said. “Any rating system only demands or requires the attention be focused during the life of a project.” In contrast, she went on, “The 2030 Commitment is the first time where you had to actually look across an entire portfolio.” Its holistic approach “starts to trigger questions”—namely, “What do we need to change in our processes in order to raise the bar across an entire portfolio of work? There was nothing that has forced that self-reflection before.”

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is affecting the site (if chosen), and preliminary water budgeting. “Come with all those issues to the first workshop, and then you do those roadmaps.” Reed emphasized that in this phase, there are “no experts, only co-learners.”

Not enough conflict

“If you did a confidential survey of the team members, would they feel like their input was welcome and invited at all times?” asks Batshalom. The lack of psychological safety in the group—and the absence of the kind of conflict that should go along with that safety—is a hallmark of a dysfunctional process. The job of the process facilitator is to “draw out the conflicts, make conflict comfortable,” she argued. For example, she said, the engineer or construction manager might have “strong opinions about how something should have been done and didn’t feel like they could advocate for that,” because they were “either shut down or not invited at the right time.” Batshalom says a good project manager

needs to be able to support constructive conflict, both in and between workshops.

Lack of performance

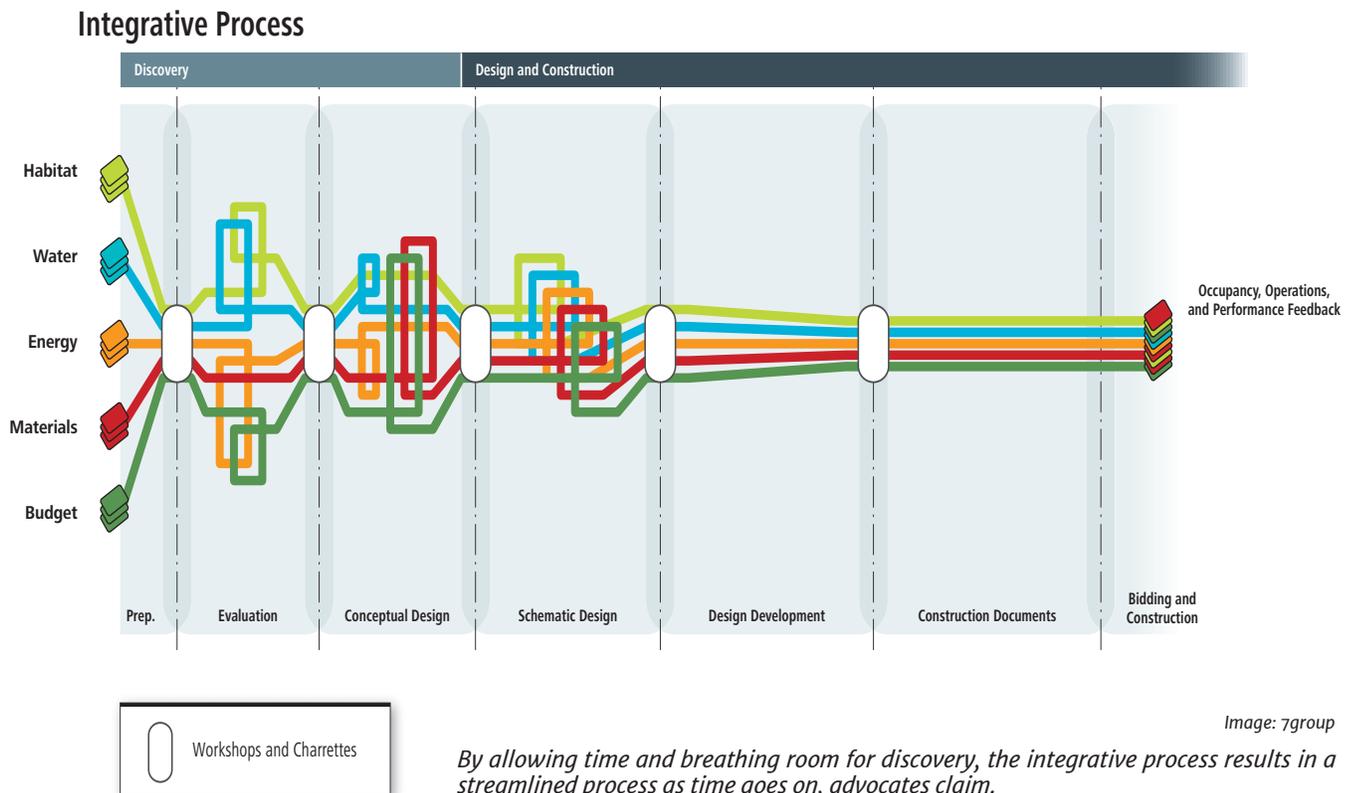
“The biggest, most obvious sign of failure is the outcome,” Batshalom noted. “If you haven’t met performance, or there are huge cost impacts that are not related to anything external, those are two signs” of a lack of integration.

Overcoming Barriers to the Integrative Process

As mentioned, the institutional barriers to integration are formidable. Adopting consistent, effective process transformation across the firm requires nothing short of radical culture change, argues Batshalom.

“Firms as a corporate culture have never, in general, understood change management,” Bathshalom told BuildingGreen. Change management “is a whole career

At the same time, Batshalom said, “It’s a shame that 2030 is limited to energy and carbon right now,” but she argues it still lays the groundwork for firms to do more, especially by requiring them to create a sustainability action plan. “The program has had a good impact,” she said.



for some people. It's not something we get in education for architecture or engineering. It's not something that is part of our management practices." Batshalom cited only one architecture firm she's ever heard of that hired a change management expert (from the tech world) to help teams adopt new processes.

Related is the idea of measuring "collaboration effectiveness," Batshalom said. "Facebook and some of the others, they literally do measure collaboration effectiveness. But our industry doesn't." That's absurd, she thinks, and results in "the same dysfunctional relationships limping along." She added, "We're not pumping out widgets. Our product is 100% based on collaboration, and we never measure the effectiveness of our collaboration. To me that is a huge cognitive disconnect."

Here is how some firms are finding their way.

Changing contractual structures

The classic (and still most common) way that projects are delivered is through a design-bid-build contract: architects, in consultation with mechanical engineers and other specialists they hire, draw the building and then, in Souza's words, "throw it over the wall" to the contractor—a company usually chosen based on the size of its bid.

Some teams find a way around the limitations of design-bid-build. For example, many architecture firms will bring a contractor—even if it's not the one that will ultimately build the project—into design early to advise on constructability and cost. Getting design assistance from subcontractors is even better because they're the ones who know how things really get built.

Integrated project delivery is perhaps the ideal contractual structure for encouraging an integrative process. (Don't confuse contract and implementation:

the legal relationships aren't the same as the process, which is about human relationships.) Integrated project delivery involves all parties to the agreement, primarily the owner, architect, and general contractor, sharing financial risks and rewards, and having joint project control. As a result, teams typically begin collaborating outside of disciplinary silos.

Yet integrated project delivery can be complex and remains rare. At the same time, design-build is becoming more common. Under this scenario, the owner hires a single entity to both design and construct the project. Often, the entity is a general contractor that then subcontracts design services from other firms; alternatively, a contractor and architecture firm may form a legal entity and go after a project together. The design-build contractual structure is frequently praised for encouraging more collaboration among design and construction teams while also saving time and money. It also creates more flexibility that can facilitate better integration.

But even when there's a more favorable contractual structure, teams sometimes replicate the relationship limitations of design-bid-build. And the vast majority of people are stuck with that delivery method anyway.

In short, the integrative process requires awareness, attention, and advocacy regardless of how the contract is written.

Changing owner–team dynamics

If you really want an integrative process that improves building performance, you first need to get the owner engaged, argues Patrick Thibaudeau, Assoc. AIA, principal sustainability officer at JLG Architects.

Sheffer agreed. "There are some designers out there really doing a good job of integrative process," he said. "But in most of my experience, it's the owner

Example: Community Master Planning Project
Integrative Process Map
 6/1/16

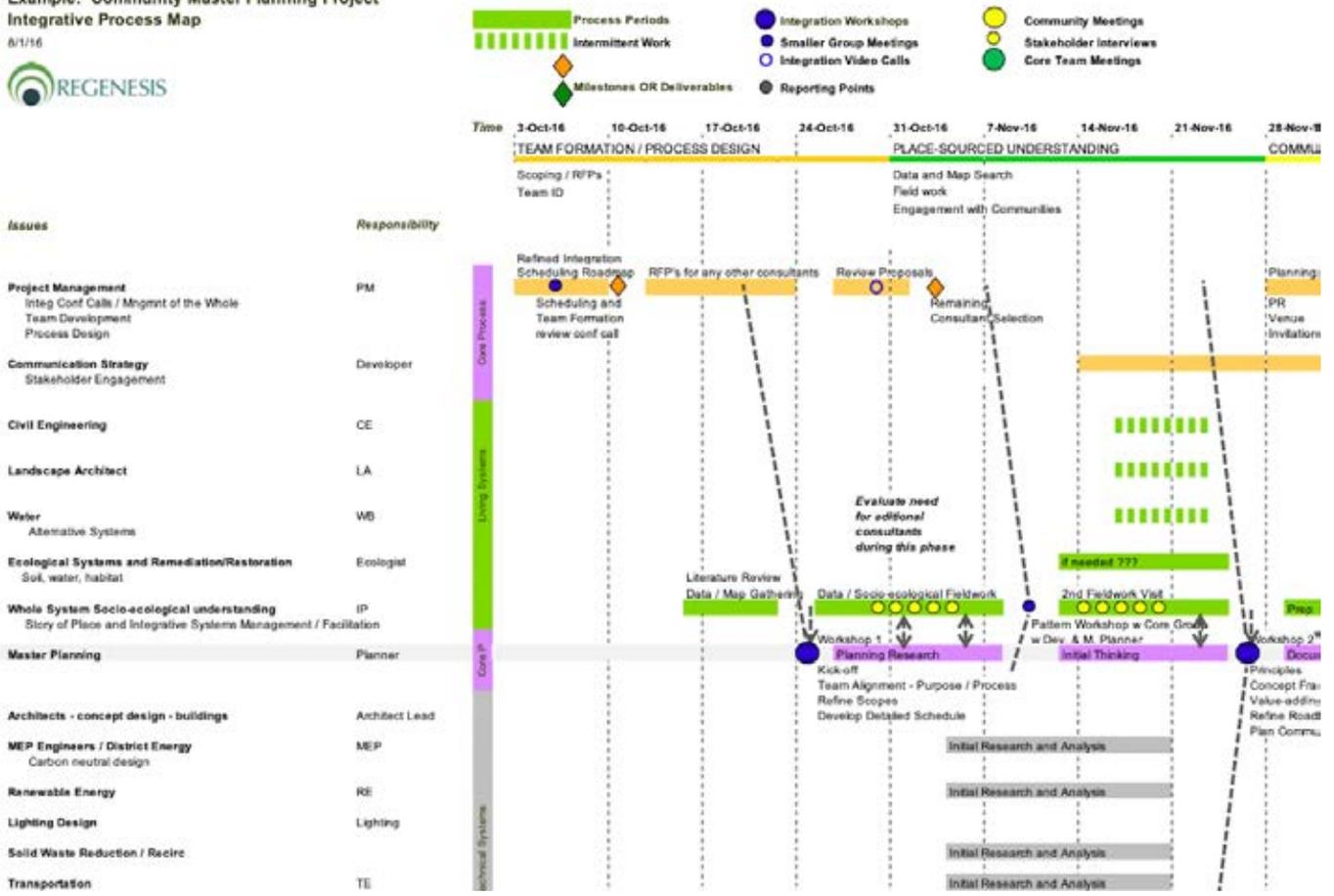


Image: Bill Reed

This section of an integrative process roadmap from Regenesys shows a variety of collaboration points with bands of individual work for each discipline in between.

that can truly effectively drive it.”

“It has helped when the client has a clear goal or sustainable target,” said Souza. “Whether it’s a benchmark like LEED or net-zero carbon, whatever it is, it helps if the client says, ‘I want to get here.’ Otherwise, it’s just business as usual.”

Kevin Kampschroer, chief sustainability officer in the Office of Government-wide Policy at the U.S. General Services Administration (GSA), would agree, and adds that participation in the process it also key. “As the owner, put your heart, your soul, and your time into the building also. Don’t think that you can just hand it over to somebody that you’ve contracted with, and then miraculously two years later, you will have the building of your dreams,” Kampschro-

er warned. If that’s the way you work, “the chances of getting a fairly ordinary, cookie-cutter building are fairly high.”

And that’s no good for anyone—not designers, not contractors, not owners, and certainly not occupants (not to mention the planet). Like other integrative process experts, Kampschroer says that the conversation and work should be all about what the building is meant to do—in this case, to support vital human endeavors—not about the building itself (what Sheffer calls “the stuff”). “Our focus is almost 100% controlled by the idea that the building isn’t just a nice object that gets plunked down in the city or the country somewhere,” he said. “A building, for us, is something that we deliver so that other parts of the federal government

See the GSA case study on page 15.

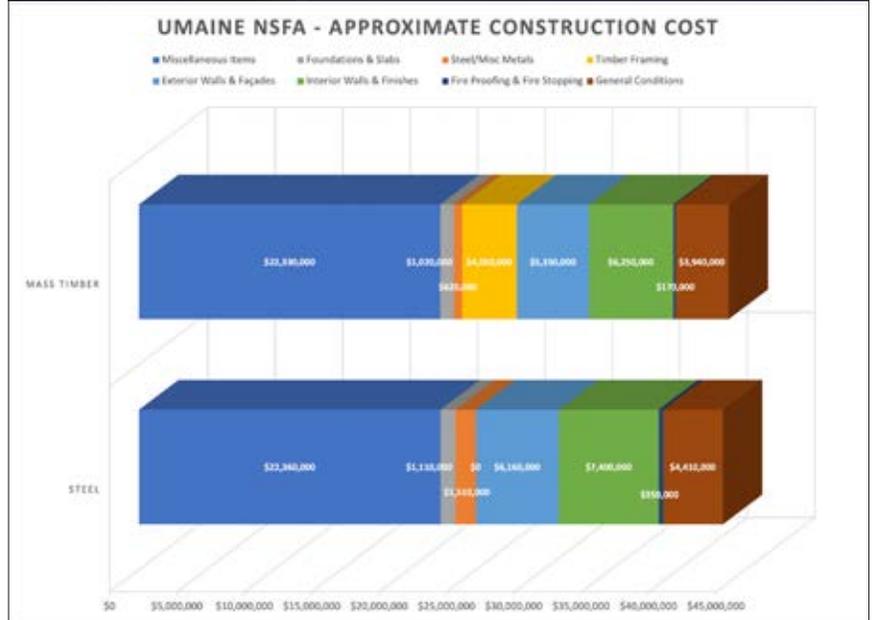
can deliver on their hugely important missions.”

There are steps project teams can take to better engage disconnected owners. “Too often, we make assumptions about how the building’s going to be operated,” Sheffer lamented. “What’s the equipment power density? Let’s pick a number out of this ASHRAE table.” The same goes for details like plug loads—not even finding out how many computers are likely to be demanding power.

JLG designers are taught to speak in clients’ own vocabulary about the value of integrative design and excellent building performance, focusing on the total cost of ownership. “When design options come back, we’re speaking to them in their terms with design options that have specific value to them,” said Thibaudeau. That flows from upfront work identifying targets early based on what clients say they want and need. “If [designers] follow through and are not using internal industry jargon but instead speaking the client’s language and speaking to them in the way they’re familiar with, there’s a lot of success and a lot of enthusiasm” for the process, Thibaudeau said.

But generally, owners have increasingly been more comfortable setting performance goals. “We’re over the tipping point,” said Joseph Marfi, senior sustainability specialist at Turner Construction. “We’re not pushing with the architects for green; the owners are coming to us asking for LEED Platinum and low carbon.”

Marfi’s colleague argues this is partly attributable to environmental, social, and governance (ESG) programs. “They’re designing for resilience, for the future, trying to look ahead,” noted Lisa San Filippo, a design specialist with the Turner Engineering Group, which offers design assistance on projects. “They’re coming to us for innovative ways that might not be there yet.”



Image, above: Simons Architects. Source, below: Thornton Tomasetti

Working with Simons Architects and other team members, Thornton Tomasetti helped optimize the mass timber design of the University of Maine College of Natural Sciences, Forestry, and Agriculture such that there was only a 1% cost premium.

What’s more, Marfi added, “Ultimately, the green stuff that we do nowadays is bringing money to the owner, not costing.”

Kampschroer has come to the same conclusion. GSA is focusing more and more on long-term value and performance, to the point where operational goals are contractual.

“As we go out with requests for proposals now, we have a lot of things that weren’t in there before, Kampschroer told BuildingGreen. The agency is

more likely to ask open-ended questions about performance opportunities and to focus on long-term value. “These are large, complex procurements,” he said. “It’s not like we’re going out and doing a low-bid proposal.”

And performance incentives are becoming increasingly common at GSA. “In one project, we had part of the performance fee that was set aside for a year after the delivery and occupancy of the building,” which firms would only receive if the building met performance specs, Kampschroer explained. “All of a sudden, the whole team doesn’t walk away and say, ‘Here you go! It’s your building; you figure it out.’ You get people who stick around,” training facility teams and adjusting instruction manuals. “It’s not just about design and construction. It’s about design, construction, transfer of responsibility, operations, and maintenance.” He told BuildingGreen he’d even heard of schools in Finland with 25-year performance guarantees. “I would like to see us go to design-build-operate,” said Kampschroer.

Changing the fundamentals of how we do business

The roots of institutional inertia run deep. Despite the success stories about lower costs, higher performance, and deeper relationships, business as usual continues. Owners don’t want to pay for the necessary early engagement. Or people do try to get together for a workshop, but instead they just have presentations because someone on the team has pre-conceived ideas about how things should go. Or one or two people dominate the room while everyone else clams up, often because they don’t feel qualified to speak to issues they view as outside their area of expertise. Or that first workshop inspires people, but back at the office, the pressure to get things done as quickly as possible overrides the original commitment to integration. What’s going on? And how can we fix it?

1. Anticipate and encourage vulnerability

Inviting many stakeholders into a big room to share their ideas and, yes, navigate conflict, is an intimidating prospect for most people. Getting to the point where there are “no experts, only co-learners,” as Reed puts it, can feel elusive, even threatening.

There are also practical matters: when occupant groups talk about their hopes and dreams, for example, owners sometimes balk. Who’s in charge here, anyway?

“We have owners that get really nervous about users,” explained Heather Holdridge, associate partner at Lake|Flato Architects. “A lot of times, the user group isn’t defined yet,” for example in higher education. “They don’t want to communicate that someone will have their office in that building.” Nevertheless, she argues, “even if it’s not the users who will be using that building, it’s perspective. They have the same concerns and issues.”

Meanwhile, “another struggle that we run into is the facility operators and engineers,” Holdridge added. “It’s sometimes hard to get them an invite to the workshop. Even if they get it, they don’t seem like they feel empowered to share their perspective.” That needs to change, with clear communication about how important this feedback is. “The energy and water and daylighting systems, and their level of comfort with those systems and controls, is going to determine success,” Holdridge said. Teams may need to work with owners to demonstrate that more exploration and stakeholder input serves the higher purpose of better building performance.

And it cuts both ways: even owners can be closed out of the process. “I used to be afraid to have the client in the room” for early workshops, admitted Souza, because their presence can sometimes

make the pros more reluctant to argue and brainstorm. “When the client gets in the room, [the team members] feel like they have to behave more,” Souza said. Now, she sets things up so the team can “have messy conversations first, so everyone feels comfortable with each other. When the client comes into the room, a lot gets shared. Setting those stages of comfort for the integrative process is important.”

Even so, some people are just too darned polite, Souza said. “Sometimes the engineer is maybe too respectful,” she said. Many engineers think, “That’s what you wanted because you gave me that drawing,” Souza said, so architects need to be proactive, and then follow up so their desire for collaboration is truly heard. “That’s just a starting point: tell us what else we could do,” the architect needs to say, according to Souza. “It’s a lot of listening, a different mindset, and you have to kind of make it together.”

The common thread is that our all-too-

human flaws can break the process. By extension, it’s only our shared humanity that can ultimately make it work.

“I think some people are afraid of losing control,” says Reed. “You’re basically in an integrative process that looks for the unknown,” he continued. “That’s not the way we’re taught: we’re told that we’re in charge.” But, he argues, “You have the least amount of opportunity when you try to control.” The only way out is to view the process as “a personal development journey, if you will. ... Who do we need to be to heal the earth? We heal ourselves to do so.”

Unprofessional? Not really, Reed argues. “It’s about time that we started acknowledging” that our own personal growth is “integral to our lives. It’s not separate from work.”

Especially when it comes to the difficult process of building and maintaining the relationships necessary to deliver better performance.



When Microsoft moved into Silicon Valley, it undertook a place-based rebranding effort designed to retain tech employees they anticipated being in high demand in the area. With the help of WRNS Studio, this effort set the stage for water performance targets and a conversation about how much the client was willing to invest in hitting them. An integrative process and design-build contract helped the team hold fast throughout the process to the client’s choice of onsite blackwater treatment, two 60,000-gallon rainwater tanks, and the infrastructure necessary for net-positive water in the future, when Microsoft hopes to get code approval for potable rainwater treated onsite.

Photo: WRNS Studio

2. Equip and empower people to participate

Even if a client, architect, contractor, and other firms all come together to commit to an integrative process, it's unusual enough that individual team members may be at a loss about how to participate. Many need training and support from beginning to end.

"The biggest element that we are trying to instill in staff as we're looking at projects and our teams is kind of a deep sense of curiosity ... not being afraid to ask the questions that push the team a little bit further to that next level of thinking," said Michael Pulaski, Ph.D., vice president at Thornton Tomasetti and the director of the firm's Portland, Maine office. He wants to see team members "explore alternatives that might not be completely mainstream."

Creating the conditions for curiosity and exploration is the tricky bit.

Patrick Thibaudeau is striving for firm-wide culture change around integrative process. At JLG, new hires get extensive training about the integrative process and related performance expectations. In addition, every new project that comes into the firm starts with "equipping sessions" to provide tools and strategies for participation in the process.

Also, Thibaudeau said, the firm has institutionalized learning from prior work. "We're not starting from a blank page," he added. "We are continuously building our starting files so the starting point for every new project includes institutional knowledge we can wrap around the equipping sessions." This happens, he said, with "every team, every time, for every project." After that, senior sustainability specialists meet monthly with each project team for a status check. "We're doing quite a bit to help them along," said Thibaudeau. "We keep it small and project focused."

But it's not all hand holding: team mem-

bers must also have the power to be creative and take initiative. "This is really key," Thibaudeau emphasized. "We want people to act." The sustainability team provides the tools, but it's up to the project team members to use them.

3. Hold people accountable

Batshalom says the next step is crucial: accountability—or, as she sometimes calls it to be more positive, supportability. "How do we know if it's happening?" she asks. "Can we measure? How do we support the people who are struggling? Is it happening across all projects? How do you even know?" Batshalom says that "a lot of times, I'll get pushback from leadership" who think holding people accountable is "mean." On the contrary, she says, "It's not about being mean; it's about understanding what's going on and supporting people." She emphasizes that the lack of follow-through doesn't come from a lack of desire or intention, but rather "a disconnect between the ideas, the concept, and how to operationalize it."

At WRNS Studio, like at JLG, the green team plays a project support role through a "buddy system" with project team members. As part of that, the green team "buddy" helps project team members articulate project goals and status at each design phase through a "four sheets" exercise. Each "sheet" is actually a slide that visually presents an aspect of the design, such as a water or energy performance goal. "The idea is to simply and graphically put into a product what your ambition is for that phase," explained Souza. "At every phase, you've memorialized your ambitions." She said this exercise often helps people catch up on things they'd lost track of, even basics like, "What does your energy model report say?"

"It's helpful to have someone in the firm be the champion" for the integrative process, says Holdridge, but that does require staffing. "One person oversee-

ing 50 projects and making sure they're meeting identified goals is unwieldy." As a result, things can be uneven—especially as pressure mounts to deliver things more quickly and at the same time more cheaply. "The design process is moving faster than ever," said Holdridge, which makes it harder to "take needed periods of pause ... and make sure we're tracking on all our goals. It feels like that's pervasive in our profession right now." Being accountable to someone outside the firm—namely the client—helps a lot. On projects with Georgia Tech, for example, "the owner asked about it regularly," Holdridge related. "They always expected a slide that updated on it. We were much more rigorous about it when we were being asked about it."

JLG has developed an internal infrastructure to make accountability more consistent. Thibaudeau describes how

reviews scheduled for each phase of design are tied to the American Institute of Architects' Framework for Design Excellence (as modified by the firm to implement its own vision). "Every person who comes to the design review comes and says how JLG has addressed the Framework for Design Excellence" for the project, he explained. The design is tied to measurable performance indicators, and an energy model is required for every project. "On the back end, besides all of that equipping and embedding and design reviews, we have a QA manager." That manager scores projects using a design excellence matrix. If those scores are "trending down, we're going to intervene," Thibaudeau said. "I get an email ... and we deploy a team member to help out." Even after design is completed, "our construction team monitors it throughout," he noted.

See the case study on page 16.



Image: Ayrie Cunliffe

The goal of the Playa Viva resort in 2008 was regenerative development that would restore both habitat and local economic vitality. The same philosophy driving that process has inspired operations and led to biological and economic restoration.

And newly, JLG is even tying project performance goals to employees' annual reviews. Project profitability, technical QA scores, and sustainability QA scores "show up in project profiles in our review platform," said Thibaudeau. This is designed to encourage a conversation, not retaliation. "Let's celebrate your successes," first of all, he said, and then, "if you were on a project that got a low score, what did you do? What are you going to do next year?" It's an opportunity to provide more training and set new goals.

What Does Success Look Like?

When asked to name the most important outcome of an integrative process, Reed didn't hesitate. "A new sense of being in relationship with each other," he said. "A new way of being with each other that they could carry with them to other projects."

Said Sheffer, "We certainly encourage aspirations that would be high aspirations relative to all those building performance metrics that we look at," but that's "not the only thing. We're trying to expand not just the metrics but those intangibles, those things you can't measure directly." That includes the impacts of the project on the neighborhood and surrounding ecosystems. "Are your aspirations merely just kind of abstract, quantitative performance metrics?" Sheffer asks. "Or are they ... building relationships?"

Some might not be quite willing to go that far; for them, the most important outcomes will still be about the building. But with an engaging, collaborative process, those project outcomes are based on a nuanced understanding of value to the owner and to the community. To get there, Batshalom urges people to "get into conversation from a value standpoint, and advocate for a better process."



Photo ©Bruce Damonte

Souza long ago realized how joyful a different kind of process could be. While working on her first LEED for Commercial Interiors project, the team pursued "a different language and a different kind of conversation. It was inspiring, and it was fun because everybody was just trying to get to the better. ... I think for me it was not only fun to learn what others saw, but we were improving what architecture and space-making could be." At the time, thinking about acoustics, thermal comfort, and indoor air quality was relatively new, and that all "translated to a next project" with the same team, she said.

These benefits extend beyond the team itself and even beyond the client's demands. "For us, it's really about elevating the everyday and designing for a thriving life," said Thibaudeau. "That's a different kind of engagement." Often, the integrative process leads naturally into community engagement because it's already a practice based on inclusion. "It's more than just responding to what our clients are asking for. It's understanding the lives and challenges and concerns and needs of people."

In addition to electrification inside the building, an integrative process for 2060 Folsom inspired landscape architecture that included biofiltration planters and large boulders where children can play.

Case Study 1:

Cost estimating while reducing embodied carbon

“Most of our projects have three predominant high-level goals,” Michael Pulaski told BuildingGreen. These are operational carbon reductions, embodied carbon reductions, and responsible materials. “These are themes that we run through most projects,” he said, though each one also has other goals.

Once the team has set targets around each of these, “we have our first design phase in schematic design, exploring alternatives,” Pulaski went on. Folks from Thornton Tomasetti, which is an engineering and green building consulting firm, work with architects on “integrated systems analysis, identifying all the different strategies that can be implemented, how to do those in a cost-effective way and how to bundle them together,” he said. One place this pays off is in explorations of mass timber structural systems, which use engineered wood members instead of steel or concrete.

Pulaski’s team doesn’t take a conventional approach to mass timber. “Many projects will start off with a traditional design layout for steel or concrete,” Pulaski said, but that’s usually a mistake. “When you take that form and that layout and overlay timber framing and CLT [cross-laminated timber] decking, there are a lot of inefficiencies in that process, so it usually costs more.” Instead, Pulaski explained, “We start with timber as the focus. We can always switch to steel and concrete later.” Even for the preliminary analysis, the team—including structural engineers, sustainability consultants, architects, and contractors—gets “deep into schematic design” looking at “all the cost tradeoffs.” Pulaski says teams typically find savings on finishes and even mechanical systems since “ductwork layout and configuration can be modified with a different structure.” Bundling efforts turn mass timber structural design into “an integrated solution,” he said. “It all has to go together and be looked at in a different way than a traditional building frame system.”

But that’s just the beginning. The team uses iterative analysis for the structure and façade, “similar to how we do energy modeling,” Pulaski noted. “There’s been plenty of talk over the years about integrated solutions on the energy side ... but I think we really need to apply this integrative thinking and process to mass timber” because if teams aren’t doing iterative analyses to find cost savings, mass timber “can be quickly dismissed” as over budget. But, Pulaski argues, “If it’s looked at in a holistic and detailed way, you can find tradeoffs to offset many of those costs. We have multiple projects where that storyline is the case,” including a University of Maine building where there was a 1% cost difference between conventional construction and an optimized timber structure.

Case Study 2:

When owners are on board for ‘intense engagement’

As an owner, the U.S. General Services Administration (GSA) has taken the reins of the process ever since 2009, when the American Recovery and Reinvestment Act (the economic stimulus package passed under President Barack Obama) suddenly gave new life to several “shovel-ready” federal building projects. Most of the projects funded under the Recovery Act had already been designed, but with the new infusion of cash, GSA went back and asked for changes, said Kevin Kampschroer, chief sustainability officer in the agency’s Office of Government-wide Policy.

“We did 40+ major building modifications and renovations” during that time, Kampschroer said. “We went back to the teams and said, ‘Is there anything that you could do [better] if you could rethink your original design?’” Initially, he had realized, “we wanted lots more performance than the minimum, and we just didn’t articulate that.” With the new money available, “we were really articulating what the government’s goals were and saying to companies, ‘How fast can you get to those goals? How well can you get to those goals?’” He said designers came back with 40% to 200% performance improvements on key metrics for every project. “That change opened our eyes at GSA,” Kampschroer recalled. “A lot of it has to do with how we communicate. That’s how we do it in requests for proposals going forward ... putting in incentives for people to deliver performance that is above and beyond what we say we absolutely have to have.”

Now GSA uses a “negotiated procurement” model. “We’re looking to have a dialogue during the bidding process and the post-bidding process,” said Kampschroer, who encourages even private owners to learn from the government’s strategy. Although he cautions that it does take intense engagement on the part of the owner, Kampschroer argues that’s critical to getting your money’s worth.

Case Study 3:

A retreat that embraces

When Bill Reed recently called a former client, owner of the Playa Viva resort on the western coast of Mexico, to check in, he said, “The results were fantastic.”

The goal of the resort in 2008 was regenerative development that would restore both habitat and local economic vitality. To do that absolutely requires an integrative process, argues Reed. “In addition to natural beauty, which is an attractor for visitors, there is also a fishery” that is a profit center for Playa Viva. To maintain their famous turtle habitat (a preserve, not a profit center), they hired former poachers. Meanwhile, a permaculture system improves soil health and provides fresh food (not only for visitors but also for the entire region), as well as bamboo as a building material. And 500 people “moved from subsistence farming” into employment at the resort and throughout the newly revitalized town, Reed noted. “That was the integrative process amping up and multiplying” all the opportunities, he claimed, and the same philosophy has driven operations ever since.

To make this happen, the team harked back to the site’s history. “It was originally a 10,000-person Aztec tributary city,” Reed said. This is typical of the process at Regenesys, which Reed explained as “Helping the community and the ecosystem ... and understanding how life works in that place.” The team even discovered a pyramid on the site.

But it was all in service of the region’s future. “The village has added 200 people,” Reed continued. “Teenagers are staying; young adults are moving back into town. That’s the best metric. It shows things are working.” Meanwhile, the average daily room rate (a success metric used in the hospitality industry) is \$439. “It’s massively profitable,” Reed said. So in addition to promoting “social and ecological health,” it’s also making money. “That’s a good example of integration. I’m proud of it.”



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Description

The integrative process seems to be everywhere. But although it may seem ubiquitous, most experts agree that any perceived change in how buildings are designed and built is largely superficial—that teams are practicing coordination, not collaboration.

Yet, done right, the integrative process holds great promise. Practitioners say it improves building performance while identifying cost savings, helping teams arrive at unique solutions and opportunities that would not otherwise be discovered. Many believe true sustainability, in the form of regenerative design and construction, cannot be achieved without these intense levels of collaboration. Proponents also point to other benefits, including shorter project timelines and something more intangible—a more humane, inclusive, and even joyful work climate.

But the barriers to this method of working are immense. And the industry has yet to overcome them.

In this course, we discuss how to implement the integrative process by recognizing and making corrections when it's not happening, overcoming the significant barriers to culture change, and leveraging existing drivers of integration. We also explore how the integrative process has improved outcomes—both tangible and intangible—for real projects.

Learning Objectives

Upon completion of this course, participants will be able to:

1. Identify different “flavors” of the integrative process and explain how each can improve environmental, social, and economic outcomes.
2. List three building rating systems that help teams set meaningful goals, encouraging an integrative process in the service of improved environmental and health performance.
3. List seven telltale signs that a process is not integrative and three ways to remedy the problem.
4. Understand through case studies how an integrative process led to better environmental, social, and economic performance in four project types.



**EDUCATION
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QUIZ QUESTIONS

1. Which ones can be a barrier to an integrative process? (Choose all that apply.)

- a. Contractual structures
- b. LEED
- c. Lack of owner buy-in
- d. Accountability
- e. Setting goals
- f. Disciplinary silos

2. The LEED v4.1 Integrative Process credit differs from the LEED v4 Integrative Process credit because it has:

- a. Fewer ways to meet the requirements
- b. More ways to meet the requirements
- c. Neither; they don't differ

3. Which TWO goals are specifically identified as encouraging an integrative process? (Choose two.)

- a. A reasonable window-to-wall ratio
- b. Sharing BIM models
- c. Chaos
- d. Energy performance
- e. Embodied carbon

4. Which building rating system requires at least a year of occupancy before certification?

- a. Living Building Challenge
- b. 2030 Commitment
- c. Passive House
- d. LEED v4.1
- e. All of the above
- f. None of the above

5. The 2030 Commitment can encourage an integrative process because it ____.

- a. Is a better rating system than LEED
- b. Requires change across entire portfolios
- c. Only focuses on energy and carbon
- d. Has a kit of parts

6. Which is the most stringent?

- a. Core
- b. 2030 Commitment
- c. Living Building Challenge
- d. Biophilic design

7. An integrative process roadmap ____.

- a. Answers questions about how each system will be designed
- b. Is an abstract goal-setting document
- c. Is documentation required for LEED v4
- d. Defines when team members will collaborate and what they will talk about

8. Which are signs that a team is NOT collaborating well? (Choose all that apply.)

- a. Lack of specificity
- b. Uncertainty during the discovery phase
- c. Systems thinking
- d. Lack of a work plan
- e. No pre-charrette research
- f. Debate among team members
- g. Lack of performance
- h. Psychological safety

9. Which contract type is most likely to lead to an integrative process?

- a. Design-bid-build
- b. Design-build
- c. Integrated project delivery
- d. None of the above

10. Which concept can help owners buy into an integrative process?

- a. Equipment power density
- b. Total cost of ownership
- c. Value engineering
- d. Low-bid proposal

11. Which U.S. law helped the federal government start using an integrative process?

- a. Inflation Reduction Act
- b. Federal Building Performance Standard
- c. American Rescue Plan
- d. American Recovery and Reinvestment Act

continued

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QUIZ QUESTIONS

12. Which one does NOT make the integrative process go awry?

- a. Environmental, social, and governance programs
- b. Time pressure
- c. Having presentations instead of a workshop
- d. A failure to invest in early engagement

13. Which agricultural method became part of a regenerative design?

- a. Organic farming
- b. Permaculture farming
- c. Subsistence farming
- d. Industrial farming

14. Which are elements of the “culture change” taking place at JLG to make the integrative process more consistent? (Choose all that apply.)

- a. Cultural place-keeping
- b. Equipping sessions
- c. AIA Framework for Design Excellence
- d. Monthly status checks
- e. Equitable electrification
- f. Employee annual reviews

15. Which was the major element driving San Francisco’s decision to electrify Casa Adelante at 2060 Folsom?

- a. Cost
- b. Displacement
- c. Occupant health
- d. Complexity of heat-recovery ventilation

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