



Integrated Project Delivery or Conventional Wisdom: *Getting the Best of Both*

By J. Manning and Jeanne Kopacz

E Ink is a leader in display and digital signage technology whose capabilities enable a wide range of technical products produced by others. In a word, they are innovators. So it is not surprising that the design and fabrication of the recently opened E Ink Innovation Center in Billerica, Massachusetts was not constricted by conventional wisdom. As with any in-house project, E Ink's management team used its resources at hand while developing new methods in real time to capture collective wisdom and move development of the new facility forward in a timely way. What they discovered is worth sharing.

The E Ink Innovation Center was planned as the new 140,000 square foot US headquarters for the company, containing customized research & development labs, office space, and collaboration spaces. It involved the significant rehabilitation of an existing building, including added building structure, new windows and rework of the building envelope, a new front entry addition, complete replacement of all interior buildout, new MEP/FP systems, and a significant amount of new rooftop equipment.

The project was initiated with many of the usual participants in place. There was a strong construction management team in the form of JM Coull, Inc., a design team with much depth, led by Industrial Facilities Design Inc.(IFDI), some independent project management, and an in-house team of lab experts, facilities managers, and move coordinators. MEP & FP systems were designed by RDK Engineers and corporate spaces by Allegro Interior Architecture. Each party had conventional contracts in place. Unfortunately, initial efforts to develop designs for the facility were not as conclusive or fast moving as hoped, so the team looked hard at their process for ways to get better results.

One epiphany came to light when the authors were attending an IFMA Boston roundtable presentation in February of 2012.

The topic was Integrated Project Delivery (IPD), and the presentation focused on the methods available for team engagement through IPD methods. As many IFMA members have come realize, the key benefit of IPD is that we get direct engagement between builders, designers, and users all at once from the beginning through value engineering. Because of insights shared by others during that presentation, the authors realized what their own project needed. So they asked themselves the question: how do we facilitate an IPD level of engagement between users and the design/build team under the terms of conventional contracts? And how can we get the benefits of true collaboration when the nature of our current agreements clearly assigns independent risks?

The conclusion is best expressed by J. Manning, Director of New Projects for E Ink. "Everyone has to take on some risk. Fear of risk causes people not to want to work through problems, but rather to stand back in a self-protective mode. The owner has the ability to eliminate the fear of risk and get people engaged in solutions. Ultimately, we own the results of the project no matter how contracts are written. So we can all work from our individual perspectives and make it easier for the lawyers later if issues arise. Or, as the owner, we can take the fear of risk off the table, and motivate people to meet the challenges we give them by taking on more of the risk ourselves." As innovators, E Ink's managers understand issues of risk management, and recognized the need to move forward in a new way.

IPD Practices with Conventional Agreements

With the project already underway in the winter of 2012, and an opening target date less than a year and a half later, the Innovation Center project was past the point of implementing some basic IPD tools. Time could not be lost in the re-writing of contracts, and not all the design and construction collaborators could move to Building Information Modeling

(BIM) as the primary means of documentation. Yet, after some thoughtful considering, four changes were made to the E Ink project process, all modeled after IPD success stories. Together these helped the innovation company realize the results they were looking for.

Pit teams: Users need to take some responsibilities away from the steering committee. In the case of an R&D lab, the lead users are the owners of the labs. Ideally, they lead the design of the lab that they will ultimately be responsible for managing. So a "pit team" was built around each lab to encourage direct engagement between the lab manager, appropriate staff who will utilize the lab, and the individuals on the design and build teams who will be responsible for developing and implementing the lab. The pit team leader had ultimate responsibility for eventual effectiveness of his or her lab.

Once a pit team was established, the team walked the active lab to identify existing equipment and establish the production baseline that would be used to define the new lab design. They set up workbooks with information about their respective equipment, identified capabilities delivered by the lab, and noted when that functionality would come online in the new facility. They set up matrices for equipment, recorded old and new locations, noted timing of decommissioning and subsequent rebuilding at the new site, and tagged which pieces of equipment would need to move together. This was done to limit downtime of any one lab function to two weeks—one for decommissioning and one for assembly in the new space. The company had grown quickly from a small MIT trained start-up, and they needed baseline documentation of what actually existed in Cambridge before they could establish what was needed in Billerica.

Steering Committee: Not surprisingly, the steering committee had overall responsibility for the creation of the facility and was made up of the company's vice presidents and directors. Management decided where product investments will be made. Based on this, the steering committee did the overall layout, corporate space programming and proportionate space allocation, but did not dictate the program for the labs. They projected long-term space needs according to the growth in the number of people (for corporate space), or the number of products to be developed (for lab space). The steering committee relied on the heads of the pit teams to communicate best practices for the lab and to report on the design direction being taken within the overall project parameters. The sooner the pit teams embraced parameters set by the steering committee, the faster they were able to move their lab design along.

Sub-contractors: Bid pricing was not the only vehicle used to select the best fabricators for the building re-construction. Sub-contractors were vetted by the E Ink project managers who led the pit teams. Selection was based on the ability of the subs to present reasonable qualifications and pricing, their attitude about project facilitation, and a willingness to share alternatives that would positively impact the process, the bottom line, and the long term effectiveness of the space. As with IPD team building, E Ink project managers were looking for the right fit. Knowing that the sooner the subs were on board, the sooner they could give input from their prior experience, the sub-contractor selection process was implemented before a full design was developed. Subcontractors were incentivized by sharing with them the cost containment goals of the project. If the builders could collectively meet the target budget, the project would proceed for all involved.

Collocation: Eventually the lines of distinction between owner and builder disappeared as the population grew at the construction site and collaboration moved away from the conference table. Collocation became the means E Ink used to

ensure that the owners would continue to be treated as team members rather than visiting dignitaries to their site. E Ink personnel involved in the design and development of the new center moved out of the Cambridge office and into a trailer on the site near the builders' trailers so that they were readily available to participate in the resolution of surfacing issues. The owner also built a lunch space on site so that workers wouldn't go to their trailers and trucks to eat, but would sit and talk with their respective pit teams in the nicer lunch room.

With all affected parties onsite, discovery could be addressed by marking up a plan by hand and quickly pricing it as a change order. Changes were made in the moment with everyone's buy in, with a focus on how to facilitate ongoing improvement. The team was asked not to worry about whether something was a mistake, or a bad request. This philosophy, in combination with the owner's ongoing site presence, reduced the proverbial red tape often associated with conventional construction.

The Center is Live

The mind shift that evolved on the E Ink design and build team did not eliminate the need for conventional tools and documentation. There were 30 addendum and 100 change orders, as one might expect for a project of this scale. What it did offer the owners was the means to identify needs as soon as possible through reinforced engagement between users, designers and fabricators. It allowed the lab spaces to evolve as new insights about functionality came out of the functioning research and development lab experiences—innovations for the innovators, if you will. And it enabled E Ink to bring a large technology facility online at a scale that will support 400 employees in the months to come.

The new center has also been good for the local community. Just as pit teams worked to engage people in the development of labs, teams of E Ink human resource, finance and management personnel engaged with representatives of local and state government to address issues of employee transportation, mutual training, and opportunities for tax incentives. Several good things resulted from these efforts.

An employee directory of local businesses and attractions was distributed to relocated personnel. A leadership development program was established with the local community college and partially funded by a state grant. And a transportation shuttle is currently running between Cambridge and Billerica to help employees transition to their new facility. This later resource is now being shared with other companies at Technology Park Drive who want to attract people from Cambridge to Billerica. As evidence of their collaborative success, E Ink received the Silver 2013 Team Massachusetts Economic Impact Award for the Northeast region, which is awarded annually by MassEcon.

The E Ink Innovation Center will continue to evolve as its new technologies are embraced by business partners developing new products. We are pleased to have been a part of the effort in Billerica and we look forward to seeing what new steps E Ink takes in the development of its other centers around the globe.



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