

severely challenged by the fact that the project was already 18 months behind schedule when they began work on the project. Second, the technology team issued releases throughout the project that did not meet end-user expectations and eroded confidence in the project. Third, the BBC focused more on the technological development rather than on encouraging organization-wide changes in workflow that would encourage adoption. Finally, the NAO concluded, the DMI lacked governance arrangements for the scale, risk, and complexity of the project.

Do research online to identify the capabilities of digital asset management software. What are the top rated digital asset management software products? Who uses this software?

Given the NAO's findings and what you discover about available off-the-shelf products, would it have been wiser for the BBC to adopt a collection of these existing products? What actions would be necessary to gain the cooperation of the business units to incorporate this collection of products into their work processes?

CASE STUDY

Webcor: Building Buy-In in the Brick-and-Mortar Business

Founded in 1971, Webcor Builders is one of the largest construction companies in California and one of the largest green construction companies in the United States. Committed to innovative practices, Webcor has gained considerable attention due to its award-winning construction, historic restoration, and seismic renovation work. As Webcor expanded from multifamily residences to commercial offices, interiors, retail, public works, parking structures, and federal, education, and health-care facilities, the company opened offices first in San Francisco, and then in San Diego, Los Angeles, and Alameda. Its merger with the large Japanese construction firm Obayashi positioned the company to reach customers along the Pacific Rim, with a new office in Honolulu.

Along with developing innovations in building materials and methods, Webcor has leveraged cutting-edge information technologies—in an industry that is often slow to consider, accept, and adopt IT advances. As early as 1984, Webcor integrated the Apple desktop into its work process. In 2011, Webcor made a significant commitment to virtual design and construction in its public sector building projects. Adopting Vico Software's 5D Virtual Construction application allowed Webcor to estimate costs, schedule projects, and manage projects with increased efficiency. With this software, Webcor can take its customers through a series of what-if scenarios that allow them to make key design decisions from the start. Frank Haase, Director of Virtual Building at Webcor, explains, "We have amassed a knowledge base of real data—from past projects and from our subcontractors—that when combined with the integrated 5D approach gives us an unprecedented planning and management capability on all projects. The precise information derived from this approach, both in preconstruction planning and in ongoing construction operations, helps us to resolve issues early and to make prompt fact-based decisions." Using the software, Webcor can also predict the scheduling and cost impact of changes that occur throughout building design and construction.

The big question many observers asked was, "How did Webcor Builders manage to persuade its workforce to adopt the new technologies?" The decision to adopt the system involved fairly high risks, given the potential resistance of its end users. As Vince Sarrubi, Webcor CIO, explained the complexity of the challenge, "Blue collar industries tend to focus on completing tasks, meeting deadlines, and doing what they know how to do best to minimize time loss. New technologies

mean changes to physical work practices, which could mean missing a deadline. These workers live in the physical world and have been manually practicing their art for years. There's a mentality of 'head down and nose to the grindstone gets the work done' and 'if it ain't broke, don't fix it.' "

So, how did Webcor achieve this success? First, Sarrubi is not alone in leading the call for innovative IT utilization within the company. Webcor cites innovation as one of its strengths, and its top management has been firmly committed to technological innovation. Company CEO Andy Ball spearheaded the virtual construction project. He insists, "Change is never easy, and it has an emotional toll and it has a financial toll. Initially, it has a reduction in productivity in order to have a significant gain in productivity. So all of these things sort of work against change, but if you don't embrace it and you don't move forward, you're just going to move backward and fall off the back because it occurs every day." The management of Webcor understands the risks and advantage of innovation and is fully invested in seeing it through.

With the firm backing of the top management team, Sarrubi has used two tactics to persuade his blue-collar workforce to adopt technological innovation. First, Sarrubi searches for and hires what he calls technology "cheerleaders," young college graduates who are more collaborative and who have embraced technology from their early years as a means of producing higher quality work in less time. "Once older workers see a 'greenhorn'—a new construction worker—using technology to manage a job, the older, senior superintendents begin to see the benefits of the technology and start to hop on the wagon," Sarrubi confides. This strategy successfully persuaded older employees to adopt Box, a cloud-based storage platform for the company's architectural drawings and financial documents. Cloud technology has facilitated low-cost collaboration and electronic document management for both Webcor and its subcontractors. For a small fee, workers can use the Box application and an iPad to access drawings and 3-D models, report problems, submit inspections, and notify all stakeholders of issues or changes.

Sarrubi recalls how Webcor adopted Box technology: "Our enterprise adoption of Box grew out of a trial at one job site and just took off, caught fire, adoption-wise.... All of a sudden, what started as a small group test project grew into almost one hundred Box users within a few weeks. The match that lit the Box fuse was word-of-mouth employee testimonials within the company."

In addition to his cheerleader approach, Sarrubi also makes sure that working with the new technology is "as easy as using Amazon." Cost, scalability, and return-on-investment are important factors the company considers when making IT decisions, but end-user preference is also a big factor in what technologies the company adopts. When deciding between different technology solutions, Sarrubi tells Webcor's top management to "slip on the user's boots and walk a mile." That he feels will lead to the best IT choice.

Discussion Questions

1. How has Webcor used technology to support project management in the construction field?
2. List the main lessons IT managers can learn from Webcor Builders about the successful adoption of new technologies.
3. Webcor bought an application called PlanGrid to mark up construction blueprints on iPads. PlanGrid can be used when the workers are offline and later syncs up with files on the Box platform. Webcor frequently follows this approach of buying applications and then building application programming interfaces (APIs) to connect these programs to its main enterprise systems. What are the advantages and disadvantages of this IT development process?

4. How might developing whole IT systems themselves, rather than adopting already developed solutions and integrating them using APIs, change Webcor's ability to encourage IT adoption?
5. What obstacles do companies face when developing customized IT systems themselves? Under what circumstances does it make sense?

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