



# Integrating IT Systems Into Facility Design

The infrastructure supporting IT systems is no less important in the design and construction of a facility than electrical service and water utilities. Unfortunately, many decisions related to the construction of IT systems are delayed until costly revisions are required and compromises must be accepted by the owner or the end user.

Convergence has not just brought voice and data together, it also has connected security, video-teleconferencing and building automation technologies to the corporate network. What were once separate systems in limited locations now reach out to diverse corners of the facility, including mechanical and electrical spaces, boardrooms, parking garages and even door jambs.

Today's architecture, engineering and construction teams are comprised of diverse experts with equally diverse points of view, which creates a myriad of challenges during design and construction. IT professionals, architects, constructors and other project stakeholders all speak different languages. The ability to properly discover, document and communicate IT infrastructure requirements—not only verbally, but also within design documents—is vital.

Owners often cannot articulate their needs clearly, and the construction team may not be equipped with the requisite knowledge or experience to ask the right questions. Without the ability to thoroughly communicate those needs across the entire spectrum of stakeholders, integrating quality technology infrastructure into a project on time and within budget is virtually impossible.

IT professionals, who are used to being the “go-to guys” for everything technology-related, also may find themselves in unfamiliar territory. Although IT infrastructure design is obviously related to IT, the process and deliverables are vastly different.

During the last 25 years, architects have evolved as technology has become a more integral part of the building process. There is an ongoing transition from senior architects who dealt sparingly with technology to younger architects who grew up so immersed in technology that they take it for granted. Previously, the naiveté of the architectural design team with respect to technology infrastructure resulted in inadequate pre-design budgets and design omissions. Consequently, many critical design elements such as cabling systems, MEP loads and audio-visual systems were not considered until it was too late to

economically or effectively integrate them into a construction project.

## BEHIND THE WALL

A building's IT infrastructure can be described as the spaces, pathways and associated systems that provide telephone service, network and web access, data storage, critical power systems, audio/visual controls, and an increasing list of other building systems. This equipment does not stand alone passively like a piece of furniture, but rather consumes space, requires power, generates heat and requires connectivity throughout the facility. By planning, designing and integrating the infrastructure necessary to support a client's technology needs early in the process—not as problems emerge—construction and design teams can be proactive and prevent costly redesigns.

For example, a small, mission-critical server room can require anywhere from 100kw to 250kw of uninterruptable power. What if the building's core and shell mechanical and electrical systems do not take this critical load into consideration? Does the building's electrical service, switchgear and distribution have this capacity? Can the building's chillers and air distribution system provide enough

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heat exchange to cool the space on a daily basis? Do these systems possess adequate redundancy for unexpected failure or routine maintenance? What are the consequences if these questions aren't properly answered, or the budgets for these systems are found to be inadequate?

Simply put, the IT infrastructure must be included early in the design and budget process, and the coordination must be comprehensive to allow the construction team to provide quality installation.

#### **LOOKING BEYOND TODAY**

Because of the fluid nature of IT systems, it can be difficult to predict what will be required six months from now, much less two to five years down the road. Planning room for growth and the ability to deploy new equipment and services, or "future-proofing," is crucial. Typically, more, rather than less, hardware is needed as time goes on. Simple and cost-effective accommodations can be made when designing a space's technology infrastructure to allow for the growth of a client's organization, as well as enable the addition of equipment and migration to new, unknown technologies.

Technology enhances the ability of organizations and individuals to do their work. With this increased role, however, comes increased dependence. Ensuring technology not only functions, but does so at an optimal level, is a high-stakes game companies cannot afford to lose. Designers and contractors must see the infrastructure supporting their client's technology as an integral part of the entire project, not simply a piece that can be added at a later stage.

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