

BUILDING CONNECTIONS

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Planning for Success What Designers Should Know About Technology

by Craig Park, FSMPS

What does today's smart architect, interior designer, or building specifier need to do in the planning and budgeting process for technology? How can you make sure the latest, cutting edge AV and IT systems are successfully designed for and installed?

New technology focus has increased to the point where digital data and multimedia applications are mission-critical to the clients who occupy the spaces architects are designing. Now more than ever, the design professional needs to have an increased awareness of relevant technologies and what impact they may have on the design and construction of their projects.

"It's a changing world. Technology expertise is needed on virtually every project to make our design more responsive to our client's requirements," commented Jim Follett, FAIA, Managing Principal for Gensler in Chicago.

As the building's infrastructure requirements have grown, increasingly the architect turns to specialized engineers and consultants to help design these systems into the project. The demand for new multi-modal applications that combine data networking, digital telephony, and distributed audio/video information systems, has added new and complex criteria to meet the client's functional requirements. The architect's latest challenge is to design for

these technologies without compromising the overall design and ergonomic goals of the architecture and interior planning.

When faced with esoteric terms like DSP (digital signal processing for audio and video media), MPEG (compressed audio/video signals for routing/streaming media), GUI (interactive systems for touch-screen and web-based control); Wi-Fi and Bluetooth (the latest in wireless technology), and H.323 and H.320 (industry standards for collaborative networking and videoconferencing), it is easy for the non-technical architect to become frustrated. Learning and applying technology-related "rules of thumb" (e.g., the height of a projection screen should be 1/6 the length of the room) can provide simple direction, but long-term planning will demand a more detailed awareness of technology's impact on design.

Technology industry trade associations like NSCA, ICIA and BICSI provide educational resources to help educate architects, designers and specifiers with key considerations and terminologies and provide resources and references to their consultant and contractor members. Similarly, organizations like ANSI, SMPTE, TIA and EIA help establish technical standards for infrastructure, cabling and grounding that can be used in specification to help ensure technology installations meet relevant criteria.

Unfortunately, with this explosion of technology in projects from the office the classroom, many designers wait until the end of the design (or worse, into construction) before someone says "Just call the IT (or AV) guys, and let them deal with it."

To ensure a smoothly operating system once a new building or retrofit is open, there are several key things you need to understand about planning for technology and working with the professionals who drive these systems.

A New Approach to Planning

When the goal is a highly integrated environment, planning for the project's technology infrastructure becomes critical. The interface between multimedia, telecommunication and information technologies has implications to other building systems as well. Coordination with electrical, mechanical, lighting and acoustical disciplines ensures that the result is a well-planned and documented concept.

Planning for technology in the first stages of a project's **Programming** phase has several distinct advantages. First, it identifies the client's technology needs and requirements, and documents the impact on the project's footprint, the inter-relationship between spaces, and the budget. IT-critical spaces (e.g., MDFs, IDFs, and MPOE that accommodate horizontal, vertical and point-of-entry for telecommunications wiring), as

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well as multimedia projection and broadcast media control rooms, are often overlooked in initial programming efforts because they fall out of the traditional “user” spaces.

Learning the basics of technology can help ensure that the project’s space program is accurate. Early planning can help “future-proof” the building by defining critical infrastructure elements and criteria. This initial screening of the potential impact of technology on the project can save significant money (if the project’s infrastructure is designed to anticipate and accommodate technologic advances) and improve the quality of the resulting implementation.

Five Steps to Better Technology Programming

Some common practices contribute to healthy multimedia and information technology planning processes regardless of the size and type of project. The following five-step method is designed to fuse these practices into the comprehensive A/E programming approach. This methodology should be viewed as an adaptive model rather than as a blueprint, and should be adjusted for both small and large projects, and for both private and institutional clients.

Step 1 – Review the client’s technology objectives. During the initial building space programming interviews, it is important to bring senior members of the client’s technology organization, identify their priorities, and solicit feedback on ways in which technology might --- or might not --- support the organizational objectives they consider to be most critical. Too often, this step for is taken for granted by the customer, only to

discover later that provisions for critical long-term technology strategies have not been considered. This kind of oversight can lead to disaster.

Step 2 – Establish a framework of technology objectives.

In order to build a strategic framework for technology objectives, an effort should be made to survey all relevant organizational constituencies. Typically, this involves a survey of selected groups who are stakeholders in the success of technology initiatives. This can include communications (e.g., media, sales, marketing, public relations, etc.), management and finance, human resources (particularly training), as well as the obvious information technology and information systems groups. This survey can be brief and should focus on soliciting information about current applications, problems and unmet needs, and future goals. This type of data gathering should concentrate on strategic objectives rather than on technological details.

Step 3 – Prioritize objectives.

The resulting list derived from Step 2 can be formidable. Therefore, the focus should be to identify broad points of convergence and to prioritize them according to costs and benefits. The effective horizon of the master “wish list” should not be more than three to five years. When the client’s organization collaborates in this decision process, the results are less likely to be controversial after the project is complete.

Step 4 – Identify the impact on infrastructure.

Before the technology objective priorities are finalized, they should be vetted against the infrastructure required to support them. With

technology criteria established early, the architect can make allocations for necessary support spaces and adjacencies. If conflicts between design and aesthetic goals are identified, the client has the opportunity to make an educated choice between form and function.

“The benefits of early planning for the impact of technology is the fundamental lesson that every architect should learn,” said David Labuskes, Vice President with RTKL, architects and engineers based in Baltimore. *“These requirements will ultimately drive the design for everything from infrastructure to casework.”*

Step 5 – Establish a responsible budget.

Change is a given when it comes to technology. Establishing an appropriate and responsible budget takes into account this change. On large-scale projects, the envisioned technology may have changed sufficiently in the time between initial design concepts and the day of beneficial occupancy, to render the plan obsolete. One way to avoid this is to focus on infrastructure (that accommodates both growth and change), and plan for the responsible minimum investment in the actual technology. This allows demand to drive actual investment in IT and multimedia hardware and software, and preventing major demolition or interruptive new construction.

While it may not be possible to justify future technology needs in detail, good planning should permit an organization to estimate the level of financial resources that it can and should devote to technology for a period of several years. By allowing unused funds to carry forward across fiscal years, an institution can establish the type of budgetary flexibility that will allow it to maintain technical

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stability despite the peaks and valleys in user demand, infrastructure modification, and technology innovations.

Ongoing Input

The impact of technology on the architectural design continues through **Schematic Design, Design Development** and **Construction Documentation** phases. It is at this point in the design process that the architect can focus on the physical manifestation of the technology plan.

Conduits and cable trays, duct banks and service closets define the horizontal and vertical pathways for technology. Their location, size and relationship to other functional spaces in a project are not only important to the technology application itself, but may determine the usability of the project in both the short and long term.

Similarly, the visible multimedia devices that reproduce sound (e.g., microphones and loudspeakers), provide display of images (e.g., television monitors, cameras, projectors, projection screens, etc.), and provide the human interface (e.g., control switches, remote control units, touch-

screens, etc.) have specific location, structural, housing and mounting requirements, that are best included in the design planning and detailing early if they are to become "invisible."

"Increasingly in the future the architect will be called on to provide truly integrated design for their clients. It is important to get education in these technologies to allow for early coordination and appropriate budgeting," said Daniel Burlingham, architect with Burt Hill Kosar Rittelmann Associates in Butler, Pennsylvania.

"Details ranging from finishes to ceiling plans, wall elevations and millwork can be better coordinated with early input that includes all of the multimedia, communication and other technology elements."

ROI Benefits

The architect, who acknowledges technology, takes the time to gain reasonable awareness, and plans for its impact, will create better buildings and satisfy a greater number of clients. Establishing a design process that ensures that technological missteps are rare, resources are optimally deployed, and users needs are responsibly met is far more likely to serve the

strategic needs of the client and engender lasting, rather than transitory, recognition and value.

IT and AV engineering and design consultants are important to the design process. Technology consultants and systems contractors can be valuable resources to ensure that the latest technologies are identified, that appropriate technologies are utilized, and that the integration of technologies is consistent with the design goals for the project. However, the use of an outside consultant should not be viewed as a way to relieve the architect of his/her responsibility to define priorities and understand the full implications of designing for information or multimedia technology.

The key to making optimal use of your time, energy, and resources is to understand the important issues associated with technology planning. It is equally important to focus on process rather than technological features, and to devise an architectural infrastructure that enables technology assets to be readily implemented and re-allocated, as the clients' circumstances require.

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