Planning for Success is a Science

By Barbara Punt

Over the past 10 years, science centers have shifted their views on capital projects. This has resulted in some differences in newer projects, compared with those undertaken prior to the 2008 financial crisis. The strategies can be different now and the paths to success have evolved. With a thoughtful strategy and the right team, science center design can be a winning endeavor for you, your institution, and your city.

The Arizona Science Center entry before renovation. Photo courtesy Ariz

The Arizona Science Center lobby after renovation. Photo courtesy Arizon

Two of the biggest changes in the past 10 years are the size and scope of new construction projects and new construction versus "reuse" (updating or renovating an existing structure). The practice of hiring famous architects and building new, large buildings has mostly given way to a focus on sustainability in every sense of the word: following a sustainable process (more online screen-sharing and less traveling for meetings); incorporating sustainable materials; and designing buildings for sustainable utilization rates and budgets (i.e., not overbuilding to the extent that the institution has large spaces to fill and an ambitious budget for which they have to carry substantial debt service). More science centers are forgoing new construction altogether, remaining in their current buildings and instead renovating to increase the flexibility of spaces and maximize revenue-generating activities like special events rentals.

Most science center professionals' core competencies relate to working within the existing building envelope (the architectural term for what's within the walls of the building). Few develop expertise in science center design and construction projects. However, since staff at every level are impacted by construction and renovation projects, it pays to understand the process. If you are one day involved in designing, renovating, or constructing a new center, the more informed you are about the process, the more likely the outcome will be as successful (and painless!) as possible.

ASSEMBLE THE RIGHT TEAM

For both renovations and new builds, you will need to assemble a project team. The project team consists of people at many levels of an organization who will review plans and provide input at various points in the process. The project team may also include a host of outside professionals experienced in designing and building exhibitions and buildings. The team should include input from those who will be most impacted by the outcome of the project, e.g., front line guest service and educational program providers, as well as exhibit and building operations staff. Marketing staff are key players in helping to determine the timing of gallery or building closures as well as the best time to reopen. Outside science advisory groups can be helpful in reviewing content at key decision points, including the accuracy of label copy. The process varies by institution, and some voices are included continuously throughout the project and some only intermittently.

Project management can take a variety of forms. Some institutions prefer to have project management handled by a

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staff person. Others hire outside consultants such as architects or construction managers. Still others hire what's known as an owner's representative or "owner's rep,"—a specific type of project manager who represents the institution's interest to outside parties.

The most important reason an institution may hire an owner's rep is that owner's reps don't provide other services to the project that could influence their advice (unlike the architect or construction manager who are responsible for building design and/or construction). Some owner's reps have prior experience on staff at science centers. They may have managed exhibit and construction projects and have detailed knowledge of the day-to-day functioning of a science center or museum. My work as an owner's rep is informed by the fact that I spent half of my career as an "insider" on staff at science centers. (I was an exhibit designer, developer, and owner's rep at the Brooklyn Children's Museum, the Franklin Institute, Liberty Science Center, and the California Science Center.) Whether your owner's rep is on staff or not, this person performs a key role in ensuring that the institution speaks with one voice. Good owner's reps are also fluent in architectural and construction lingo and can translate unfamiliar terms and requirements to both parties so they understand each other.

The decision as to how best to manage the project is driven by many factors, including whether there is sufficient in-house expertise with time available to manage the project (for a small project with an existing institution with a very experienced staff), whether the level of expertise is outside the current staff's capability, and whether the project is large and/or complex enough to warrant multiple managers.

Whatever paradigm you use to manage the project, it's essential to designate a single person who can represent the science center's direction to outsiders, including presenting final approvals and giving official direction as to how to proceed. For major decisions affecting cost, scope, and schedule, this position is usually cited in contracts as having the authority to speak on behalf of the owner and that the other party to the contract (e.g., designer, architect, etc.) may rely upon the approvals and instructions presented by the representative. It's essential that all parties are clear as to whose authorization represents the final word. This reduces unexpected change orders, scope creep, and schedule delays.

Check that work proceeds according to your direction. Have someone double-check meeting minutes to ensure decisions are properly recorded and drawings are correct. All too often, I've seen building plans change without anyone notifying the owner. It's not necessarily intentional, it's just that complex projects have many moving parts. As the party holding the purse strings, it's your job to keep track of what's happening so your vision can become a reality.

MAKE A GOOD FIRST IMPRESSION

Is your lobby inviting, with comfortable seating, good signage, and access to visitors' immediate needs (e.g., ticketing, bathrooms, coat check, etc.)? Is the signage clear, easy to read, and in the right places? Many science centers plan a "free zone" for public access to food service and retail prior to entering the "paid zone." Consider creating sufficient seating and reassembly areas in the "free zone" so families can get squared away with coats and strollers, plan their visit, and identify places to meet up if they separate. Also, having iconic elements can help to create navigational cues ("Meet me under the telescope!").

CREATE A REALISTIC PROJECT SCOPE

It's important to be realistic about your budget, schedule, and priorities (both

from fundraising and operational points of view) or you could be faced with a mismatch between expectations and available resources. Be strategic about timing (don't do major installations during your busiest season) and consider options that may make the project go more quickly or have fewer negative effects. It may be more cost effective to close for a week to build, repair, or install something that would take twice as long and detract from the visitor experience if you tried doing it during open hours. Consider doing fragrant or dangerous work (e.g., welding or installing components high off the ground) during off-hours or overnight. Is visitation low in September or January? Consider closing for a week to make the updates and also advertise what new things await when you reopen. Would the work you're doing be interesting to watch? Consider adding interpretation of some kind and make your construction an exhibit, albeit perhaps not an interactive one.

PLAN TO IMPROVE THE VISITOR EXPERIENCE

A study I conducted of visitor complaints showed the majority can be grouped into three categories. Consider how to proactively address them:

- **Cleanliness:** One visitor said "This place could be a science experiment. Everything's filthy and I imagine bacteria growing everywhere." I've overheard parents wondering if they should let their toddlers play with exhibits that they could tell would be hard to clean or sanitize, and who can blame them? A place full of interactive exhibits means things get touched...a lot. So be sure that exhibit designs allow for adequate cleaning. For example: it's reassuring to see a sign where 3D glasses are collected after a movie saying, "Please put your glasses here so we can sanitize them between uses." Likewise, those beautiful expanses of windows in the ceiling may become disgustingly dirty if they're too expensive to clean and the birds are enjoying them more than the people. Think ahead and keep operating costs front-of-mind when making design decisions.

- **Acoustics:** Another frequent complaint was "I can't hear myself think." Include an acoustics expert on the team, ideally before things get designed. Both material choices and room shapes and sizes affect how much sound is amplified. Remember that even sound amplified locally can be transmitted to other parts of the building. You can't reduce sound in every part of the building (and you might not want to, since it can be enticing to hear people having a good time) but you can certainly provide quieter zones for quieter activities, spaces for demonstrations where the audience can hear the presenter, quiet areas for reflection, and places to escape the din.

- **Maintenance:** You don't want visitors to have the perception that "everything's broken." Design at least some exhibits so they can be removed if broken. Evaluate the reliability of cutting-edge building technology so you don't frustrate rather than impress your visitors. Vet design choices with a realistic eye toward how well you can maintain, repair, or replace something if it becomes problematic. Ask other institutions what's worked for them. Ours is a very communal field, and between ASTC's communities of practice and your network of contacts, it doesn't take too many questions to find people who can help you.

PLAN FOR GROWTH AND CHANGE

If creating a new building, choose the site and orientation of the entryway with the idea that the building might need to grow over time. For example, one science center had a three-phase master plan and intentionally built an oversized lobby into the first phase, along with the electrical and structural capacity to add another escalator once future phases were built. If you expect large school groups and corporate guests, plan the parking lot to include spaces for buses and consider whether you'll need overflow parking down the line. When planning to increase revenue through special events, do you have the capacity for caterers to set up a small kitchen near the most desirable rental space?

Consider how often exhibits change, even in "permanent" galleries. Most new or renovated science centers include building features that make it relatively easy to add electrical wiring into the floor or ceiling, and/or include power and lighting in some kind of regularly spaced grid (e.g. in 10' x 10' intervals). It's far cheaper to add extra infrastructure now for additional power and data lines than to jackhammer out a floor later to add them. Think ahead for where you might want to incorporate a sink for an exhibit, lab, or demonstration area. Adding water service and drains post-construction can be particularly expensive compared with including them in the original design. Include an overhead system for hanging heavy objects (such as Unistrut) when doing the structural design for the entire building.

The glass ceiling above ArtZeum at theTelfair Museums' Jepson Center. Photo courtesy Greg Belew

You'll be transporting items into the building, down the hallways, into a freight elevator, and then onto another hallway. It's customary to have a "hold to" dimension so that an imaginary cube (strive for 10' x 10' or larger) can travel through all the areas leading to and from your galleries. This requires the architect to add more specificity to the building plans than is customarily done, so that none of the plumbing, ductwork, electrical runs, or any other types of obstructions hang down from the ceiling below that height. This includes the measurements of the freight elevator, the staging space just in front of it on every floor, and the entire path from the loading dock into the freight elevator. Draw a scale diagram of this path, make a similarly scaled forklift or dolly or whatever type of moving equipment you envision using, and ensure you have adequate turning radius around corners, columns, and pipes so that you don't encounter any points that would restrict the path of travel.

Keep in mind the weight of the forklift and its contents when having the floor loading engineered. I once watched a forklift sink into the ground when installing a piece of a traveling exhibition because the engineer had calculated the load the road could take and the weight of the *Titanic* hull they were moving but had neglected to include the weight of the forklift. Floors have both "live" loads and "dead" loads, so make sure you ask your engineer how these would affect what items your floor can carry. The minimum is usually 150 pounds per square foot, but if you're planning on installing space artifacts or aquarium tanks, that might be woefully inadequate for you.

CONCLUSION

Whether your plans include a renovation or new construction, good advance planning minimizes stress, maximizes what you get for your money, and helps alleviate the "Are we there yet?" fatigue that comes with the normal ups and downs of these projects. You'll want your project to come to a graceful halt before opening day and not a tire-crunching skid with gravel flying. As the playwright Oscar Wilde wrote, "Success is a science; if you have the conditions, you get the result." ■

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