



Economics Research Associates

Memorandum

Date: November 26, 2007

To: The Salt Lake City Council

From: Economics Research Associates

RE: Due Diligence Review of The Leonardo Business Plan

ERA Project No. 17478

INTRODUCTION

The Leonardo is a proposed science center to be located in the old Salt Lake City Library building. A \$10 million bond has been approved to help subsidize The Leonardo's capital costs, but it is currently estimated that an additional \$14 million will be required in order to complete the project. Before considering providing additional capital for this project, the City would like to better understand the long term operational viability of this new cultural facility.

The Leonardo has prepared a business plan which the City has asked Economics Research Associates (ERA) to review. Some of the key questions which the City asked ERA to consider include:

- Will The Leonardo be able to sustain itself on an operating basis through a mix of contributed and earned income?
- What are areas of risk within the business plan?
- Is the attendance projection within the business plan reasonable?
- How does the fact that this is a merger between three organizations affect the facility's viability?
- Is the event rental / catering component reasonable?
- Is the contributed income projected in the business plan reasonable?

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- Do museums and cultural institutions generally face challenges raising capital funds for publicly owned facilities?

METHODOLOGY

As part of this assignment and our due diligence review, ERA conducted the following tasks:

- Met with City staff in order to understand key issues, project background, and goals for ERA's work;
- Reviewed the business plan for The Leonardo;
- Visited the project site and toured the building with staff from The Leonardo in order to develop a clear understanding of the proposed design and concept for the facility;
- Met with The Leonardo staff twice in order to fully understand elements of the business plan and the proposed concept;
- Reviewed key operating characteristics, including attendance, visitor origin, pricing, and financial information for approximately 30 comparable science centers and other museums throughout the United States, and, based on this data, developed ratios and industry benchmarks such as resident and visitor market penetration rates, visitors per exhibit square feet, and operating budget per square foot;
- Researched attendance and pricing characteristics of local attractions that are part of the competitive environment;
- Interviewed several of the major event spaces in Salt Lake City, including hotel and non-hotel event spaces to find out about rates and event frequency;
- Met with other people in the visitor and events industry such as the Salt Lake City Convention and Visitors Bureau and the Chamber of Commerce to identify industry trends that may affect The Leonardo;
- Analyzed key performance metrics of The Leonardo relative to comparable institutions;
- On a preliminary basis, developed hypothetical attendance and financial projections based on The Leonardo's concept and scale, market demand factors, and standard industry benchmarks and methodologies.

REPORT OUTLINE

ERA has divided our analysis into the following categories:

- Summary of conclusions;
- Review of market factors and attendance projection;
- Analysis of earned income components;
- Review of other issues, including contributed income, operating budget, initial year projections, and capital campaign viability.

SUMMARY OF CONCLUSIONS

It is ERA's opinion that The Leonardo has undertaken a comprehensive business planning effort considering many of the important factors which contribute to cultural facility viability. They have also demonstrated a collaborative spirit and willingness to improve their business plans as necessary.

The attendance projection and overall stabilized (third year) operational budget described in The Leonardo business plan are within a reasonable range and in general adhere to industry ratios and benchmarks. It is possible that there may even be a slight upside potential to their attendance projection. There are markets throughout the United States that are much smaller than The Leonardo that have thriving, successful science centers, and generally speaking, it is our opinion that Salt Lake City should be able to support a science center given its market size and demographics. The proposed site for The Leonardo is an exceptionally strong location and should have a favorable influence on attendance.

Furthermore, we have conducted a detailed penetration rate analysis based on the scale and characteristics of the resident and visitor markets, and feel that the size of the facility as currently planned is of an appropriate scale to serve the needs of the local market. This is important, as many cultural facilities often encounter budgetary challenges as a result of operating costs that are too high due to overbuilding, or face capacity constraints due to being under built.

Similar to all science centers, The Leonardo will receive annual operating funds from a mix of earned and contributed income, and the proposed mix is similar to what other science centers achieve nationally. The operating budget is also well within the range of operating budgets and ratios of science centers in the United States.

There are, however, a number of specific issues which we have identified within the business plan that we feel The Leonardo should examine or reconsider. Some of these issues could affect the ability of The Leonardo to achieve its potential and include:

- *Mix of cutting edge programming versus traditional exhibits* – While in many ways, The Leonardo is at the forefront of new ideas in the science center industry, we believe that it will be very important to have a balance of these components as well as traditional exhibitry that does not rely as heavily on high quality staff programming.
- *Admission price structure and overall yield* – We would recommend that The Leonardo retain the services of a museum pricing specialist to assist in the development of an admission price structure. It is our opinion that while the admission price is within market parameters, the current structure is overly complex, particularly given the layer of upcharges that is also proposed. We also feel that the admission yield (ratio of average per capita price to the full adult admission price) resulting from the mix of attendance and admission prices is slightly high and for planning purposes should be lower. We do think that that family admission fee is an appropriate idea for this market.
- *Absence of a membership program* – We understand that The Leonardo is currently opting for a multi-visit pass system over a membership program. It is ERA's experience that a membership program is critical to the development of a strong individual donor program, a key component of contributed income.
- *Event rental income estimate is aggressive* – The event rental income is divided into two types of events: evening event rentals and daytime meeting rentals. The number of events and pricing for the evening events are reasonable. However, the average size of each event, which affects catering income and could affect rental fees, is aggressive for planning purposes. Furthermore, we do not believe that there is a strong enough day-use conference market to depend on for planning purposes.
- *Workshop income may be slightly high* – Program income for science centers has a high degree of variability across institutions. While the estimates in The Leonardo's business plan are close to averages for similar institutions, it may be slightly high on a per capita and percentage basis, particularly given the relatively large household size and lower per capita income in the Salt Lake City market.
- *Retail store operations* – The per capita retail spending estimates in The Leonardo business plan are relatively low for science centers, which typically have fairly

successful retail operations. We also would recommend that The Leonardo operate its own store which would also increase revenue from this income stream.

- *Reliance on corporate sponsorships* – The budget presented in The Leonardo’s business plan is highly dependent on corporate sponsorships. In fact, the revenue from corporate sponsorships as a percentage of giving is the same as the average of total private giving for science centers in the United States. While this may be possible, it is a risky strategy that could also have programming implications which may be detrimental for an educational institution such as The Leonardo.
- *Contributed income strategy* - We understand that there was a fundraising feasibility study conducted for the capital campaign / bond match. We would strongly recommend that this study is extended to develop a more detailed contributed income plan for the ongoing operations of The Leonardo. The current business plan does not include a detailed contributed income strategy and should be further developed.

ERA developed our own financial analysis for The Leonardo, making adjustments for all of the issues discussed in the above section. Based upon our analysis, we believe that The Leonardo is likely to be a viable organization on an ongoing, operational basis, should these issues be addressed. The Salt Lake City market currently does not have a science center and certainly has the market size and demographics to support one. The attendance, overall operating budget, pricing, and mix of earned and contributed income within the business plan are within industry standards. However, the specific issues discussed above should be addressed in order to ensure that The Leonardo is able to achieve their targets.

ATTENDANCE POTENTIAL

Attendance is one of the most important components in determining earned income potential. In evaluating attendance potential at cultural facilities, ERA typically considers a number of quantitative and qualitative factors, including: project concept and scale, site strengths and challenges, size and demographics of available resident and tourist markets, key characteristics of comparable facilities and competitive environment. We use a market penetration approach, which is based on the ability of the proposed facility to capture various market segments.

The Leonardo business plan includes two attendance projections for a “normal” and a “conservative” scenario. The normal annual attendance for a stabilized year of operations is approximately 213,000, with an estimate of approximately 160,000 in the conservative scenario. These attendance projections include all general admissions, group admissions, and special programs such as “Club Leo” for teenagers and visits from the multi-entrance “Aficionado” program. It should be noted that while The Leonardo business plan separates attendance into two categories of base and ancillary attendance, for purposes of analysis, we have included the sum of these two, excluding attendance from event rentals. People who attend events organized by third parties (and the subsequent income) is not typically categorized as attendance. A summary of the two projections in The Leonardo business plan is shown below:

Table 1: Projected Attendance in The Leonardo Business Plan

Admission Category	Normal	Conservative
Adult	55,700	41,800
Child / Student / Senior	14,800	11,100
Family Fare	12,700	9,500
Return Admissions	4,500	3,400
Complimentary Admissions	14,300	10,700
School Groups	47,500	35,600
Promotional Groups	15,200	11,400
Special Exhibit Admissions	25,300	19,000
Club Leo Admissions	3,800	2,800
Aficionado 3 visit	9,100	6,800
Aficionado 5 visit	6,300	4,700
Aficionado 10 visit	3,700	2,800
Total Annual Attendance	213,000	160,000

In order to determine the reasonableness of The Leonardo’s’ attendance projection, ERA conducted our own attendance analysis, evaluating the relevant factors discussed above and then applying penetration rates to the available markets.

As part of our research, ERA reviewed key operating characteristics of approximately 30 science centers throughout the United States of similar scale to The Leonardo. Operating characteristics include: annual attendance, visitor origin, size (gross and exhibit square feet), pricing, operating budget, and earned income ratios. From this data we calculated key ratios such as penetration rates of resident and visitor markets, visitors per exhibit

square foot, and operating budget per gross square foot. We also reviewed industry averages for science centers in the size and budget range of The Leonardo. Results for selected science centers from our research can be found in **Appendix Tables A-1 through A-6** and were used to inform our analysis.

Concept and Site

The quality and appropriateness of the concept and site are both important components in determining attendance potential for cultural attractions.

Concept

The Leonardo is proposed as a science center with a blend of interdisciplinary exhibits and programming, all centered on creativity and invention. There are many science centers throughout the United States that have this focus of creativity and also incorporate a mix of disciplines. The unique aspect of The Leonardo is its focus on programming rather than traditional exhibitry, which is somewhat reflective of new, cutting edge philosophy in the “industry” of science centers. ERA’s comments related to the concept are as follows:

- Ideas within the concept have been implemented successfully at other science centers nationally. The emphasis on programming and interaction is on the cutting edge of science center philosophy about the visitor experience. Since The Leonardo is a new facility, it is able to capitalize on the latest in industry ideas.
- While we think it is important for The Leonardo to incorporate some of these cutting edge ideas, they should also include proven exhibitry that has traditionally been successful throughout the years at science centers. We are slightly concerned that if the marketing and visitor experience is too focused on the uniqueness of The Leonardo, the audience will not clearly understand the product.
- The concept is heavily based on programming rather than exhibits, which will require a higher level and dependence on high quality staffing.
- The Leonardo is a merger between three organizations. It will be important for The Leonardo to have clear branding (i.e. be perceived as a unified institution in the market), resolve governance issues, and ensure a cohesive visitor experience. Should these three issues be successfully addressed, the merger is likely to have a positive influence on The Leonardo operations, ensuring a broader base of support.
- The amount of exhibit square footage of approximately 33,200 appears adequate for the scale of the Salt Lake City market, and the ratio of exhibit to gross square feet at

42 percent is similar to the average of 40 percent for science centers of this size. The proposed program for The Leonardo is shown below:

Table 2: Proposed Allocation of Space in The Leonardo

Function	Size (SF)
Exhibits & Workshops	33,200
Classrooms	4,650
Theater / Auditorium	2,575
Gift shop	1,200
Food & Beverage	2,370
Other Event Space	6,500
Offices	3,425
Storage	14,430
Other Areas	10,545
Total Facility	78,895

Site and Building

The site for The Leonardo has numerous strengths and opportunities. The old Salt Lake City public library site is a strong, central location with high traffic due to the new library. It is located on the TRAX line and also has convenient access to the I-15. The City Creek Center project in downtown Salt Lake City could also create additional visitation to the area surrounding the project site when it is completed. The site is relatively close to Temple Square, one of the top visitor attractions in Salt Lake City, and shared parking is available with the new library. The building is of a sufficient scale to build a regional science center, with a building interior with free span, high ceiling space which allows for flexible use.

There are a few limitations to the site. It is not located within walking distance to the Salt Palace and major convention hotels, and the building requires alterations in order to be functional for a science center. Overall, however, we find the site and building to be a positive factor for attendance potential.

Available Markets

The size and characteristics of the local and visitor markets of Salt Lake City are generally favorable towards attendance.

The resident market is moderately sized and certainly large enough to support a science center. The relatively large household size and young population base are also supportive factors. There is a rapidly growing secondary market, which means that The Leonardo should pay attention to marketing to population centers between 25 and 50 miles from their site. The household income is higher than the national average, although per capita income is lower due to the higher average household size. As a result, discretionary spending power may be limited and The Leonardo should account for price sensitivity in developing its pricing structure and business plan.

The visitor market is also of moderate size and has favorable characteristics. However, a portion of the visitor market includes ski visitors, who are not likely to attend a science center as part of their trip.

Finally, there is a growing science and technology industry in the Salt Lake City region, and state leadership is highly proactive in education and science issues, which has positive implications for contributed support for The Leonardo.

Table 3: Summary of Available Markets for The Leonardo

Market Segment	Current Market Size (2007)	Estimated Future Market Size (2009)	Estimated Future Market Size (2011)
Primary Market (0 to 25 miles)	1,141,000	1,172,000	1,205,000
Secondary Market (25 to 50 miles)	813,000	872,000	935,000
Subtotal Resident market	1,954,000	2,044,000	2,140,000
Overnight Leisure Visitor Market	4,200,000	4,456,000	4,727,000
TOTAL AVAILABLE MARKETS	6,154,000	6,500,000	6,867,000

Attendance Projection Conclusions

ERA conducted a detailed penetration rate analysis based upon market demand and compared the results to the scale of the facility. Our conclusion is that the attendance projection in the normal scenario (213,000 visitors annually) of The Leonardo business plan is reasonable, and may even have a slightly upside potential. Specific comments related to this conclusion are as follows:

- Salt Lake City is an underserved market for science centers.
- The concept is good overall, although we believe that a blend of traditional exhibits along with state-of-the-art programming would be best for attendance.
- The site is well-located and will overall be a positive factor for attendance.
- The resident and leisure visitor markets are both of moderate size. The resident market household size is favorable for attendance, but the lower per capita income will likely have implications for admission pricing and per capita spending.

While detailed estimates of attendance and key attendance ratios can be found in the Appendix tables, a summary of median and average ratios is displayed below:

Table 4: Comparison of Key Attendance Parameters

	Attendance	Ratio of Visitors to Exhibit SF	Penetration Rate	
			Resident Market	Visitor Market
The Leonardo - Normal ¹	213,000	6.4	8.0%	0.9%
The Leonardo - Conservative ¹	160,000	4.8	6.0%	0.7%
Median - ASTC 2006 Survey of Science Centers with 25,000 to 50,000 Exhibit SF	219,665	6.4	n/a	n/a
Median - ASTC 2006 Survey of Science Centers w/ budgets between \$2.5 & \$6.5 M	239,592	8.0	n/a	n/a
Average - ERA Comparable Science Centers	320,000	7.2	8.9%	1.9%
Median - ERA Comparable Science Centers	191,000	6.0	8.6%	0.9%

EARNED INCOME

The major sources of earned income in The Leonardo business plan include:

- Admission fees;
- Food and beverage and retail expenditures;
- Catering and event rental income; and
- Workshop / program income.

ERA has reviewed each of these revenue categories in depth. We have summarized our analysis for each category below.

Admission Price Structure

- Prices seem to be in line with other similar attractions in the Salt Lake City market, with an adult admission price of \$8, discounted to \$6 for seniors and students and less for groups. The price of \$8 is also the median price for similar-sized science centers in the United States.
- The “Family Fare” admission category is a concept that is highly appropriate for this market, given the relatively large average household size, lower per capita income, and resulting price sensitivity.
- We do not believe that the marginal income resulting from the out-of-state price is worth the potential disincentive and added pricing category.
- The pricing structure is overly complex, with too many categories and potential for multiple permutations. We recommend that The Leonardo retain the services of a museum pricing specialist in order to help work through the pricing structure.
- We strongly encourage The Leonardo to reconsider developing a membership program rather than the Aficionado pass, as a membership program is typically the basis for a strong individual giving program. There have been science centers in the past who tried to use a multi-visit pass system, but this typically undermines membership and/or giving programs, and most institutions have returned to a traditional admission / membership structure.
- The overall admission yield of 73 percent is slightly high and should be more in the range of 65 to 70 percent.
- While this is a technicality, the revenue from event rentals should be included as part of the rental income and not included as part of admissions.

Expenditures on Food and Beverage and Retail

- The average per capita expenditures projected for food and beverage sales are reasonable. The Leonardo business plan assumes that the food and beverage outlets are run by an outside operator, which is typical for science centers. The revenue is a percentage of gross sales.
- The per capita spending estimates for retail at under \$1.00 are somewhat conservative, as science centers have the potential to do better sales. The median for

retail sales for science centers comparable to The Leonardo is \$1.55, although sales can go up much higher to \$4 or \$5 per capita.

- The plan for the gift shop has not yet been determined, but ERA recommends that The Leonardo operate its own shop to maximize revenue potential from this source. The current estimate only includes a percentage of revenue allocated from retail sales.

Event Rental and Catering Income

The event rental income projected for The Leonardo is comprised of two types of events: evening event rentals and daytime meeting rentals. The first category, evening event rentals, generates income from rental fees as well as a percentage of gross revenue for catering sales. The second category generates income from rental fees only. The Leonardo has had conversations with potential caterers who have indicated interest in assisting with the event operations for the space. Evening rentals are expected to come largely from convention events.

Event rentals are increasingly becoming an important source of income for museums nationwide. In order to evaluate the reasonableness of the estimates, ERA interviewed several major event spaces in Salt Lake City. ERA's comments related to this category of revenue are as follows:

- For evening events, the overall volume of events appears within reason. The pricing also appears to be at market rate. However, the average event size is fairly aggressive for planning purposes and should be lower.
- ERA is skeptical about the potential for day-use meeting rentals, particularly of the scale and frequency cited in the business plan. Day-use conference centers are typically not profitable, and while there may be some demand for meeting rentals, it is not prudent to include this in the business planning stage.
- The business model assumes that the catering company provides a marketing and events coordinator. This is a key assumption for the success of the event rental component. It should be noted that the marketing person would have an incentive to primarily focus on catered events as opposed to meeting rentals.

Workshop Revenue

Program income is highly variable across science centers in the United States, as shown in Appendix Table A-6. ERA reviewed program income as a percentage of total operating budget and on a per capita basis for several science centers. It is our opinion that the estimate in The Leonardo business plan of \$3.05 per capita and close to \$650,000 total is slightly high on both a per capita and percentage basis, although still achievable. For planning purposes, we would likely use a slightly lower estimate.

The Leonardo should also closely examine their system of upcharges to achieve the workshop or program revenue, since some of the proposed upcharges are relatively unconventional. The basic visitor experience should be clearly defined and perceived as a good value..

Summary of Earned Income Analysis

ERA prepared a separate hypothetical financial analysis based upon our review of the attendance projection and earned income sources. We made the following adjustments to the earned income projection from The Leonardo business plan:

- Increased the attendance slightly;
- Reduced the admission yield percentage and average per capita weighted admission price;
- Added in membership income;
- Eliminated rental fee from day-use meeting rentals;
- Reduced the average price per evening rental as well as the average event size;
- Increased the per capita retail sales slightly and took out the cost of goods sold rather than taking a percentage of revenue; and
- Lowered the workshop revenue slightly.

The resulting earned income was slightly higher than the “conservative” scenario in The Leonardo business plan, but below the “normal” scenario.

OTHER ISSUES

Contributed Income

The overall amount and percentage of contributed income proposed for The Leonardo falls within industry averages for science centers of comparable scale. Science centers of

similar size, on average, raise approximately 50 percent of their income through sponsorships and philanthropy. However, ERA questions the composition of specific contributed income sources and recommends that a more detailed contributed income strategy be developed. While the earned income strategy is extremely detailed, the contributed income strategy needs to be further developed. We understand that a fundraising feasibility study was conducted for the capital campaign / bond match, and we suggest that this study should be extended to evaluate contributed income potential in detail on an operating basis.

ERA's comments on specific elements of contributed income projections in the business plan area as follows:

- The percentage of income from corporate sponsorships, at approximately 22 percent, is similar to the percentage of total private giving, including both corporate and individual donations, for science centers of this scale. We see several potential problems with this reliance on corporate sponsorship, including: 1) There is no evidence in the business plan to suggest that The Leonardo would be different from other science centers in its ability to garner such high levels of corporate income; 2) Income from corporate sponsorship can also come with certain programmatic requirements, which may constrain the work of an educational institution such as a science center; and 3) Corporate sponsorships are a fairly risky form of funding, highly vulnerable to economic downturns and changes such as acquisitions or mergers of specific corporate partners.
- The business plan does not include "conservative" estimate for contributed income. While contributed income is differentiated from the traditional definition of earned income, it does still need to be earned and subject to variance.
- We believe that The Leonardo should reconsider its decision not to have a membership program. Well-managed membership programs are often an important mechanism for identifying information about potential high level donors and are traditionally an integral facet of a successful individual giving program, and over 90 percent of U.S. science centers have membership programs. Not counting donor-level memberships, even the smallest museums have a median membership of 1,700, and science centers can typically attract membership levels between 1 to 2 percent of attendance. Given this pattern, The Leonardo could expect about 3,400 members,

which would yield about \$250,000 in annual revenue and provide a rich database of prospects for larger gifts.

- We believe that a level of \$750,000 for foundation giving seems achievable, but likely sources should be identified and explored further in a detailed contributed income study.
- The business plan includes relatively low projections for annual giving from individuals. Typically, individual giving is a pillar of revenue for cultural institutions and includes a membership program, a major gifts program, and a planned giving program. These are all components that should be outlined in a more detailed contributed income strategy.
- The estimate for ongoing support from public funds is also relatively low, at about 50 percent of average levels for other science centers. This may be wise, as the bulk of public funding tends to go towards the larger institutions for specialized programs. However, The Leonardo's programs and educational outreach may well attract more public funding, particularly given the commitment of the current state leadership to science education.
- The business plan estimates \$90,000 net revenue from two equally sized fundraising benefits. While this amount is reasonable, we recommend that The Leonardo consider one larger event in order to avoid the staff burnout associated with multiple fundraisers on an annual basis.

In sum, we feel that the concept and market opportunity for The Leonardo will lend itself to numerous sources of contributed income that can be realized with a well-researched and clearly-designed strategy. We encourage The Leonardo to commission a study of donor prospect sources for ongoing annual support that would allow them to develop a more detailed contributed income strategy.

Operating Budget

ERA reviewed The Leonardo operating budget, analyzed operating budgets and operating ratios at selected comparable science centers, and also examined industry averages for all science centers of comparable scale in the United States.

Our comments related to The Leonardo's proposed operating budget are as follows:

- At \$59 per gross square foot, the overall operating budget is on the high end of averages for other comparable science centers in the United States. As shown in the

table below, the average operating cost per gross square foot for science centers of a similar scale as The Leonardo is \$39, and for museums of a similar operating budget is \$41 per square foot. For the science centers reviewed by ERA, the median ratio was \$49 and the average was \$51, although the range was from \$16 to \$139.

- The staffing costs are estimated in the business plan to be approximately \$2.6 million, which is 57 percent of total operating expenses. The median for science centers of their size is \$1.9 million and 55 percent.
- The number of employees, however, is lower than the median for science centers in that category. On average, science centers of comparable scale have 36 full-time employees and 36 part-time employees, and a total of 60 full-time equivalent (FTE) employees. The Leonardo business plan has 34 full-time employees and 21 part-time employees, for a total of 47 full-time equivalent employees. While this is still within the range for comparable science centers (33 to 78 FTE employees), it may be slightly low given The Leonardo's proposed program.
- The costs put forth in the business plan for the first two years of operations are basically the same as for the third, stabilized year. It is our experience that the first two years of operations typically have higher operating costs (and revenues) due to higher attendance levels and special events associated with the initial opening.
- Other major operating expenses appear to be within a reasonable range for planning purposes.

Overall, we find the operating budget to be reasonable given The Leonardo's proposed concept and scale. However, the staffing levels and costs should be closely examined to ensure adequate staffing for the proposed programs.

Capital Campaigns in Publicly-Owned Buildings

The City specifically requested that ERA comment on the viability of non-profit cultural institutions raising private funds to pay for improvements to public buildings. ERA interviewed several museum directors in public buildings and also consulted with capital campaign consultants. The results of our research are highlighted below:

- There are numerous examples of museums located in public buildings raising funds for capital improvements.

- Private donors contributing to such institutions typically require a long-term lease, and it is sometimes necessary to educate donors to help them understand that they are funding the museum rather than the public entity.
- Major capital contributions donated by individuals are subject to the specific beliefs and preferences of the individual donor. It is possible that a specific donor could be resistant to the idea of “subsidizing” the government. However, this would be a specific situation rather than a general industry practice.
- Capital costs for cultural institutions of all types are typically a combination of public and private financing. The percentage of each is highly variable and depends on a variety of political, economic, and social factors. While there are situations where all of the capital is raised privately or publicly, most new facilities require a mix of both. It is not unusual for the final cost of a new facility or expansion to be higher than the original estimate, and it typically takes a mix of funding to close the gap.

Table A-1
KEY CHARACTERISTICS OF SELECTED SCIENCE CENTERS

Museum	Location	Attendance	Size		Admission Fee*	
			Gross SF	Exhibit SF	Adult	Discounted
Ontario Science Center, Canada	Toronto, Canada	1,509,912	538,000	140,000	\$11.25	\$6.45
St. Louis Science Center	St. Louis, MO	1,099,930	297,969	95,350	\$0.00	\$0.00
Fort Worth Museum of Science and History	Fort Worth, TX	654,423	118,000	26,000	\$8.00	\$7.00
Exploratorium	San Francisco, CA	547,800	110,000	n/a	\$13.00	\$8.00
Science City at Union Station	Kansas City, MO	436,378	1,000,000	68,000	\$13.95	n/a
Rochester Museum & Science Center	Rochester, NY	392,061	277,500	43,825	\$8.00	\$6.00
New York Hall of Science	Queens, NY	374,000	110,000	100,000	\$11.00	\$8.00
Tech Museum of Innovation	San Jose, CA	360,000	132,000	38,000	\$8.00	\$7.00
North Carolina Museum of Life & Science	Durham, NC	319,000	3,484,800	34,900	\$9.50	\$7.50
Witte Museum	San Antonio, TX	296,000	100,260	30,290	\$7.00	\$5.00
Springfield Science Museum	Springfield, MA	214,268	47,000	25,500	\$10.00	\$5.00
Leonardo Normal Scenario	Salt Lake City, UT	213,000	78,895	33,200	\$8.00	\$6.00
Museum of Science and History of Jacksonville	Jacksonville, FL	198,580	n/a	n/a	\$9.00	\$7.00
Miami Museum of Science and Space Transit Planetarium	Miami, FL	195,000	55,000	25,000	\$18.00	\$12.00
Explora!	Albuquerque, NM	191,161	50,000	20,000	\$7.00	\$3.00
EdVenture, Inc.	Columbia, SC	184,542	66,484	35,000	\$8.95	\$6.95
Louisiana Art & Science Museum	Baton Rouge, LA	184,000	n/a	n/a	\$6.00	\$5.00
Science Spectrum	Lubbock, TX	182,000	80,000	60,000	\$6.00	\$5.00
Leonardo Conservative Scenario	Salt Lake City, UT	160,000	78,895	33,200	\$8.00	\$6.00
Science North	Sudbury, Canada	151,000	219,000	68,000	\$14.33	\$13.43
Cranbrook Institute of Science	Bloomfield Hills, MI	146,219	85,200	24,000	\$7.00	\$5.00
Milton J. Rubenstein Museum of Science & Technology	Syracuse, NY	120,100	100,000	35,000	\$4.00	\$3.50
Fresno Metropolitan Museum of Art, History, and Science	Fresno, CA	95,100	51,000	16,533	\$8.00	\$3.00
Mary Brogan Museum of Art and Science	Tallahassee, FL	85,000	35,000	15,000	\$6.00	\$3.50
Evansville Museum of Arts, History and Science	Evansville, IN	72,500	65,000	45,000	\$0.00	\$0.00
Corpus Christi Museum of Science and History	Corpus Christi, TX	58,823	84,000	40,000	\$11.50	\$6.00
The Works: Ohio Center for History, Art & Technology	Newark, OH	27,600	217,800	n/a	\$6.00	\$2.00
<i>ASTC Average -Science Centers 25,000-50,000 Exhibit SF</i>		<i>219,665</i>	<i>88,619</i>	<i>34,450</i>	<i>\$8.00</i>	<i>\$6.47</i>
<i>ASTC Average -Science Centers with Operating Budget \$2.5-\$6.5 Million</i>		<i>239,952</i>	<i>88,000</i>	<i>30,000</i>	<i>\$8.25</i>	<i>\$7.00</i>
Average		313,644	299,272	45,730	\$8.43	\$5.67
Median		195,000	100,000	35,000	\$8.00	\$6.00

* Admission fees in US Dollars.

Source: Official Museum Directory, Association of Science-Technology Centers, Individual Facilities, ERA.

Table A-2
PENETRATION RATES FOR SELECTED COMPARABLE INSTITUTIONS

Museum	Location	Attendance	Visitor Origin		Penetration Rates	
			Resident	Tourist	Resident	Tourist
Explora!	Albuquerque, NM	191,161	77%	23%	18.5%	0.9%
Science City at Union Station	Kansas City, MO	436,378	70%	30%	15.5%	1.6%
North Carolina Museum of Life & Science	Durham, NC	319,000	80%	20%	14.9%	6.0%
Museum of Science and History of Jacksonville	Jacksonville, FL	198,580	80%	20%	11.7%	n/a
Science Spectrum	Lubbock, TX	182,000	20%	80%	11.5%	2.4%
Witte Museum	San Antonio, TX	296,000	70%	30%	10.8%	0.8%
Tech Museum of Innovation	San Jose, CA	360,000	97%	3%	6.5%	0.2%
Exploratorium	San Francisco, CA	547,800	50%	50%	5.2%	4.0%
Fresno Metropolitan Museum of Art, History, and Science	Fresno, CA	95,100	70%	30%	5.0%	n/a
Corpus Christi Museum of Science and History	Corpus Christi, TX	58,823	35%	65%	4.3%	0.5%
New York Hall of Science	Queens, NY	374,000	80%	20%	1.7%	n/a
The Works: Ohio Center for History, Art & Technology	Newark, OH	27,600	90%	10%	1.3%	0.2%
Average		257,204	68.2%	31.7%	8.9%	1.9%
Median		247,290	73.5%	26.5%	8.6%	0.9%

Source: Official Museum Directory, Association of Science-Technology Centers, Individual Facilities, ERA.

Table A-3
RATIO OF ATTENDANCE TO SQUARE FEET FOR SELECTED MUSEUMS

Museum	Location	Attendance	Size		Ratio of Attendance to Exhibit SF
			Gross SF	Exhibit SF	
Corpus Christi Museum of Science and History	Corpus Christi, TX	58,823	84,000	40,000	1.5
Evansville Museum of Arts, History and Science	Evansville, IN	72,500	65,000	45,000	1.6
Science North	Sudbury, Canada	151,000	219,000	68,000	2.2
Science Spectrum	Lubbock, TX	182,000	80,000	60,000	3.0
Milton J. Rubenstein Museum of Science & Technology	Syracuse, NY	120,100	100,000	35,000	3.4
New York Hall of Science	Queens, NY	374,000	110,000	100,000	3.7
Leonardo Conservative Scenario	Salt Lake City, UT	160,000	78,895	33,200	4.8
EdVenture, Inc.	Columbia, SC	184,542	66,484	35,000	5.3
Mary Brogan Museum of Art and Science	Tallahassee, FL	85,000	35,000	15,000	5.7
Fresno Metropolitan Museum of Art, History, and Science	Fresno, CA	95,100	51,000	16,533	5.8
Cranbrook Institute of Science	Bloomfield Hills, MI	146,219	85,200	24,000	6.1
Leonardo Normal Scenario	Salt Lake City, UT	213,000	78,895	33,200	6.4
Science City at Union Station	Kansas City, MO	436,378	1,000,000	68,000	6.4
Miami Museum of Science and Space Transit Planetarium	Miami, FL	195,000	55,000	25,000	7.8
Springfield Science Museum	Springfield, MA	214,268	47,000	25,500	8.4
Rochester Museum & Science Center	Rochester, NY	392,061	277,500	43,825	8.9
North Carolina Museum of Life & Science	Durham, NC	319,000	3,484,800	34,900	9.1
Tech Museum of Innovation	San Jose, CA	360,000	132,000	38,000	9.5
Explora!	Albuquerque, NM	191,161	50,000	20,000	9.6
Witte Museum	San Antonio, TX	296,000	100,260	30,290	9.8
Ontario Science Center, Canada	Toronto, Canada	1,509,912	538,000	140,000	10.8
St. Louis Science Center	St. Louis, MO	1,099,930	297,969	95,350	11.5
Fort Worth Museum of Science and History	Fort Worth, TX	654,423	118,000	26,000	25.2
<i>ASTC Average -Science Centers 25000-50000 SF</i>		<i>219,665</i>	<i>88,619</i>	<i>34,450</i>	<i>6.4</i>
<i>ASTC Average -Science Centers with Operating Budget \$2.5-\$6.5 Million</i>		<i>239,952</i>	<i>88000</i>	<i>30,000</i>	<i>8.0</i>
Average		326,540	311,044	45,730	7.2
Median		195,000	85,200	35,000	6.4

Source: Official Museum Directory, Association of Science-Technology Centers, Individual Facilities, ERA.

Table A-4
FINANCIAL OPERATING CHARACTERISTICS OF SELECTED MUSEUMS*

Museum	Attendance	Gross SF	Operating Budget		Earned Income	
			Operating Budget	Operating Budget per Sq. Ft.	Earned Income	Earned Income Ratio
Ontario Science Center, Canada	1,509,912	538,000	\$28,435,833	\$53	\$14,631,666	51 %
Tech Museum of Innovation	360,000	132,000	\$18,400,000	\$139	\$5,200,000	28%
Science City at Union Station	436,378	1,000,000	\$15,683,000	\$16	\$6,344,000	40%
New York Hall of Science	374,000	110,000	\$15,243,654	\$139	\$3,066,664	20%
Fort Worth Museum of Science and History	654,423	118,000	\$9,389,462	\$80	\$5,303,549	56%
Science North	151,000	219,000	\$9,270,186	\$42	\$6,260,997	68%
St. Louis Science Center	820,453	297,969	\$7,251,616	\$24	\$7,103,902	98%
Rochester Museum & Science Center	392,061	277,500	\$7,088,052	\$26	\$4,240,296	60%
Witte Museum	296,000	100,260	\$5,700,000	\$57	\$1,750,000	31%
Leonardo Normal Scenario	213,000	78,895	\$4,652,258	\$59	\$2,814,528	60%
Cranbrook Institute of Science	146,219	85,200	\$4,641,559	\$54	\$1,381,043	30%
Leonardo Conservative Scenario	160,000	78,895	\$4,581,008	\$58	\$2,176,210	48%
Fresno Metropolitan Museum of Art, History, and Science	95,100	51,000	\$3,905,770	\$77	\$628,883	n/a
Explora!	191,161	50,000	\$2,904,333	\$58	\$1,222,524	42%
EdVenture, Inc.	184,542	66,484	\$2,524,383	\$38	\$1,551,193	61%
Milton J. Rubenstein Museum of Science & Technology	120,100	100,000	\$2,163,926	\$22	\$1,255,439	58%
Zeum		34,000	\$1,865,328	\$55	\$744,807	40%
Evansville Museum of Arts, History and Science	72,500	65,000	\$1,710,371	\$26	\$631,144	37%
Corpus Christi Museum of Science and History	58,823	84,000	\$1,600,000	\$19	n/a	n/a
Mary Brogan Museum of Art and Science	85,000	35,000	\$1,534,014	\$44	\$432,223	28%
Science Spectrum	182,000	80,000	\$1,496,930	\$19	\$1,259,761	84%
Springfield Science Museum	214,268	47,000	\$743,005	\$16	\$163,138	22%
<i>ASTC Average -Science Centers 25,000-50,000 Exhibit SF</i>	<i>219,665</i>	<i>88,619</i>	<i>\$3,452,268</i>	<i>\$39</i>	<i>n/a</i>	<i>n/a</i>
<i>ASTC Average -Science Centers with Operating Budget \$2.5-\$6.5 Millior</i>	<i>239,952</i>	<i>88,000</i>	<i>\$3,623,041</i>	<i>\$41</i>	<i>n/a</i>	<i>n/a</i>
Average	320,000	165,827	\$6,853,849	\$51	\$3,245,808	48%
Median	191,161	84,600	\$4,611,284	\$48	\$1,750,000	45%

* Recorded in US Dollars.

Source: Official Museum Directory, Association of Science-Technology Centers, Individual Facilities, ERA

Table A-5
KEY CHARACTERISTICS OF LOCAL ATTRACTIONS

Attraction	Size				Visitor Origin		Penetration Rates		Admission Fee	
	Attendance	Gross SF	Exhibit SF	Ratio of Visitors to Exhibit SF	Local	Tourist	Local	Tourist	Adult	Discounted
Beehive House	200,000	16,200	12,960	15.4	15%	85%	1.5%	4.0%	Free	Free
Chase Home Museum of Utah Folk Arts	11,000	3,600	1,600	6.9	50%	50%	0.3%	0.1%	Free	Free
Clark Planetarium	350,000	53,000	10,000	35.0	80%	20%	14.3%	1.7%	\$8.00	\$5.00
Daughters of Utah Pioneers Memorial Museum	36,263	30,403	27,363	1.3	80%	20%	1.5%	0.2%	Free	Free
Discovery Gateway (formerly Children's Museum of Utah)	305,000	70,000	38,000	8.0	85%	15%	13.3%	1.1%	\$9.50	\$7.50
Museum of Church History and Art	218,130	65,000	28,000	7.8	60%	40%	6.7%	2.1%	Free	Free
Red Butte Garden & Arboretum	160,000	784,080	776,239	0.2	50%	50%	4.1%	1.9%	\$6.00	\$4.00
Salt Lake Art Center	14,000	30,000	7,000	2.0	50%	50%	0.4%	0.2%	Free	Free
This is the Place Heritage Park	300,000	19,602,000	1,960,200	0.2	75%	25%	11.5%	1.8%	\$8.00	\$6.00
Tracy Aviary	63,700	348,480	313,632	0.2	72%	28%	2.3%	0.4%	\$5.00	\$3.00
Utah Museum of Fine Arts	75,000	n/a	n/a	n/a	92%	8%	3.5%	0.1%	\$5.00	\$3.00
Utah Museum of Natural History	169,260	83,000	35,000	4.8	74%	26%	6.4%	1.0%	\$6.00	\$3.50
Utah State Historical Society	75,000	50,000	8,000	9.4	80%	20%	3.1%	0.4%	Free	Free
Utah's Hogle Zoo	900,000	1,829,520	n/a	n/a	65%	35%	29.9%	7.5%	\$8.00	\$6.00
Average	205,525	1,766,560	268,166	7.6	66%	34%	7.1%	1.6%	\$6.94	\$4.75
Median	164,630	65,000	27,681	5.9	73%	27%	3.8%	1.1%	\$7.00	\$4.50

Source: Association of Science-technology Centers, Individual Facilities, ERA.

Table A-6
Program Income for Selected Science Centers

Name	Attendance	Operating Budget	Program Income		% of Budget
			Total	Per Capita	
Science Place Dallas	148,377	\$4,070,000	\$1,465,801	\$9.88	36%
Exploratorium	547,800	\$26,641,760	\$2,739,518	\$5.00	8%
Science Spectrum	182,000	\$1,496,930	\$723,030	\$3.97	48%
Louisville	123,000	\$5,831,543	\$426,270	\$3.47	7%
North Carolina Museum of Life & Science	240,460	\$5,686,369	\$678,551	\$2.82	12%
Orlando Science Center	196,311	\$6,500,000	\$515,000	\$2.62	8%
Museum of Science & History of Jacksonville	198,580	\$2,680,973	\$518,131	\$2.61	19%
North Carolina Museum of Life & Science	319,000	\$5,686,369	776,747	\$2.43	14%
Explora (NM)	191,161	\$3,190,242	\$382,505	\$2.00	12%
Explora!	191,161	\$3,190,242	382,505	\$2.00	12%
New York Hall of Science	374,000	\$13,313,206	671,880	\$1.80	5%
EdVenture, Inc.	184,542	\$4,153,036	280,258	\$1.52	7%
Fort Worth	654,423	\$9,137,012	\$753,699	\$1.15	8%
Median	196,311	\$5,686,369	\$671,880	\$2.61	13%
Average	273,140	\$7,044,437	\$793,377	\$3.18	19%
The Leonardo - Conservative	160,000	\$4,524,138	\$586,980	\$3.67	13%
The Leonardo - Normal	213,000	4,581,000	\$648,900	\$3.05	14%

Source: Economics Research Associates.