

# **TechWorks! Strategy**

**May 2016**

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## Part I TechWorks! Economic Potential Analysis

### May 2016 Update

Based on analysis and report by Thomas Martin,  
ConsultEcon, Cambridge, MA, December 2006

2015 data and interpretation by Nancy Tran and Chris Li  
Binghamton University, School of Management  
Management Analyst at  
Center for Technology & Innovation  
Binghamton, NY, Summer 2015- Spring 2016

This report summarizes the market potentials, operating parameters and financial potential and construction of TechWorks!, a destination attraction proposed for development by the Center for Technology & Innovation (CT&I) on the waterfront in downtown Binghamton, NY. CT&I, the legal entity for the TechWorks! initiative, is a 501 C (3) non-profit organization, incorporated in 1996. The assumptions made are based on the market potential identified for the project, the proposed facility size, and additional research on operating and development factors that would be associated with an attraction of the profile being considered. Major changes since the 2006 ConsultEcon report include acquisition of a larger site closer to downtown, increased vibrancy in the adjacent hotel and restaurant district, easier highway access to downtown when Interstate 86 project is complete, epic floods in 2006 and 2011, and national scale shifts in funding, investment, and consumer behavior patterns associated with 2008 economic crisis. All necessary government reviews required for development to move forward, including City Zoning Commission and State Historic Preservation Office of the TechWorks! Development Concept and Series A Site Plan, have been approved. This analysis will require refinement as the project continues to moves forward into programming and interior design phases.



Proposed South Entrance Energy Exhibit of emerging New York State technologies

## OPERATING AND REVENUE ASSUMPTIONS

As a major visitor attraction, TechWorks! would operate under the norms of such facilities nationally, adjusted for local conditions. The operating assumptions are as follows:

Center for Technology and Innovation, and its TechWorks! development, are assumed to operate as a private, not-for-profit enterprise. As such, this analysis does not include any property or corporate taxes, nor does it include depreciation, bond or mortgage payments, or management fees. This report focuses on estimating net operating income.

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TechWorks! will be well designed and constructed. It will be of a scale in size and in quality to be recognized nationally as a facility of excellence. This operations analysis assumes a facility with approximately 30,000 sq ft, with interior visitor experience space of 26,000 sq ft. The 2006 *Exhibition Programming and Concepts*, prepared by Eisterhold Associates, revised in 2011-12 for the 321 Water Street facility, informs this operating plan. The additional 5,000 - 10,000 sq ft of outdoor space for programming, anticipated in the *Garden of Ideas* and the *Riverview Terrace*, is not included in this analysis of operating costs or net operating income; nor is the audience attraction potential of these elements considered.

Attendance potential at TechWorks! is based on the analytical structure evaluated in prior reports by ConsultEcon, Inc., destination economics specialists, Cambridge, MA, 2006. Attendance is a function of the available markets and the size and scope of the project, its location, its marketing profile, and ticket prices. The mid-range attendance potential level of 70,800 visitors per stable year is used in this analysis. Based on the experience of other attractions, a surge in attendance during the first few years of operation occurs before reaching stable attendance in Year 4. This analysis is based on stabilized attendance estimates, i.e., Year 4 and forward.

TechWorks! will be open year-round, seven days a week. In addition, special events and facility rentals could occur at the facility when they do not disrupt regular visitation.

The proposed project will be well managed. The structure, visitor experiences, finishes, mechanical equipment, and support systems will be well maintained to minimize insurance risks and unexpected repair expenditures. Maintaining the facility in excellent condition is central to customer satisfaction. TechWorks! will develop a positive reputation, with a compelling organizational vision, strong and distinguished advisors and staff, and it will have a broad base of community support. The project will be used for special events and cultural activities after hours to promote

community support and generate additional income. Educational groups will be invited to visit at discounted prices, and will receive a worthwhile and enjoyable educational experience. Community outreach will be a cornerstone of the programming effort.

TechWorks! will develop an aggressive marketing program to achieve and maintain attendance and continually attract new visitors. Ticket pricing will be attractive and commensurate with overall visitor experience and value delivered. The project will also be managed to provide dynamic and effective educational programs, as well as dramatic and continually evolving new visitor experiences.

Numbers cited in the text are rounded from those numbers that appear in the tables. Some outputs of computer models used in this report are rounded. These outputs may therefore slightly affect totals and summaries.

Every reasonable effort has been made in order that the data contained in this memorandum reflect the most accurate and timely information possible and it is believed to be reliable. The original 2006 study was based on estimates, assumptions and other information developed by ConsultEcon, Inc. from its independent research efforts, general knowledge of the industry, and consultations with the client, based on data available in November-December 2006. This 2015 update follows the ConsultEcon analytical structure, using current data from publically available sources, including 2010 Census, regional attraction pricing and attendance (Museum Association of NY and member reports - 2013-14), and 2015 IBISWorld Industry Report on Museums in US. Other factors not considered in the study may influence actual results.

The audience market potential for TechWorks! was analyzed in detail by ConsultEcon, Inc., in 2006. Their results are found in Part I Section C, where 2015 updated data are presented side by side with 2006 data for comparison. Updated demographic data to 2014-2015 shows a slight decrease in estimated visitation. This report uses the 2015 mid-range estimate of 70,800 visitors per year, bracketed by the low range estimate of 43,200 to high range estimate of 98,300 visitors per year. Visitors are expected in nearly equal numbers from local area, day-trippers from within 50 miles, and overnight visitors travelling more than 50 miles to TechWorks! -23,100; 22,600; and 25,100, respectively (2015 data). Detailed description of audience estimates and methods of estimation are found in ConsultEcon's 2006 Audience Potential Study, which informed the Center's decision on facility size, location, and parking requirements.

## **OPERATING REVENUES**

TechWorks! operating revenues will derive mainly from ticket sales, but substantial additional revenue will be derived from sources such as gift shop sales, memberships, and use of the facility for receptions and special events. The revenue potential for TechWorks! is estimated as follows:

### **Ticket Revenues**

Average per capita admissions revenue is a product of ticket prices and the mix of ticket

types sold (adults, children, etc.). Ticket prices are assumed to be \$9 for adults. Discounts for children, youth, seniors, and groups would be offered, with a net per visitor revenue of \$6.15. This ticket pricing policy is designed to reflect the quality experience proposed and also to encourage strong attendance levels. Higher ticket prices would likely result in lower attendance levels. Ticket price assumptions used in this report are in current dollars. Ticket prices are assumed to increase at a rate of 5.5% percent every other year, a rate above inflation. Since TechWorks! is a new attraction, ticket prices will be value-priced in early years to encourage attendance, and to escalate above inflation rate over time to match the value the attraction offers as it becomes established in the marketplace.

Data in Part I Section B Table 1 present the assumed cost and distribution of tickets and ticket sales by visitor type (2015 data). Members are assumed to enter free of charge. There is also provision made for a limited number of complimentary and VIP tickets. These are included in the Complimentary category, which is largely composed of children under the age of 5 who would attend for free.

Ten-year attendance, ticket revenue, and membership assumptions for TechWorks! are presented in Part I Section B Table 2. Student group attendance will be an important, but not dominant component of local visitation. Based on market size, the student groups are assumed to number 15% of attendance in a stable year.

Data in Part I Section B Table 3 reflect the range of operating and revenue assumptions and form the basis for the revenue potential for TechWorks! In general, they are informed by the experience of comparable facilities nationally and regionally. Other revenue assumptions are described in more detail below.

### **Retail and Other Sales**

Gift store sales are an important revenue source for many visitor attractions. Following is a discussion of some of the issues relating to retail shop sales volume.

#### **Issue**

The size of the gift store and its ability to accommodate peak period audiences.

#### **Discussion**

The program for the proposed project should provide enough retail space to support peak period attendance. The proposed program of spaces for TechWorks! includes 1,000 sq ft for the Techno Whimsey Gift Shop. The bulk of gift store square footage should be selling space, which can accommodate a wider variety of merchandise as well as allow more space for customers. The Concept Plan allows for second floor gift shop sales to accompany special and/or travelling exhibitions.

A wide variety of merchandise and knowledgeable and successful merchandising.

An adequately sized gift store should allow for strong depth of presentation in best-selling clothing, souvenir and toy lines, as well as additional merchandise lines in categories such as books and educational games geared to young adult and travelling baby-boomer audiences. Such broad offerings will allow for strong per-capita sales.

The physical location within the facility complex; and the visitor circulation patterns to and through the gift store, its visibility and attractiveness.

The Techno Whimsey Gift Shop is located at the entrance to foster use of the shop by TechWorks! visitors and shopping public. All visitors will enter and exit near the gift store. The shop should be designed and fitted out in a first-class fashion

Spending of \$3.60 per capita at the gift store is assumed for all visitors. Cost of goods sold is estimated at 52 percent of gross sales. The gross sales volume potential in current dollars for a stable year of attendance is estimated at \$200,000 for a 1,000 sq ft store, or \$200 in gross sales per sq ft per stabilized year. Sales volumes of \$240 per square foot have been achieved at many attractions with sufficient retail store space. The annual net sales revenue for TechWorks! is estimated at \$121,300. A dramatic shift in museum retail nationally since 2010 is likely to have impact on the Retail and Other Sales assumptions.

### **Food Service**

Visitors typically desire a drink or a light snack when they visit. However, economies of scale dictate that profitably operating extensive food service facilities typically requires much higher attendance than the attendance potential of TechWorks!. As TechWorks! is within walking distance of Binghamton's restaurant district, this analysis assumes minimal food service in the form of a kiosk or food cart on site for the busiest days of the year, which would include light snacks and beverages. In addition, vending machines could be offered. The food service could be operated by the facility or through a subcontractor. Based on these factors, per capita food service sales are estimated at \$1.50 per attendee; net proceeds are estimated at 15 percent of all sales.

### **Memberships**

Memberships can be an important revenue source. TechWorks! membership has good potential, because the type of educational offerings planned are repeatable, and the price of a family membership versus the price of general admission will be favorable. Free admission with the purchase of a membership is an important economic incentive for becoming a member. This analysis has assumed that about 9 percent of attendance will be derived from members, based on about 760 memberships in a stable year, of which about 700 are family and individual memberships and the remainder supportive-type memberships. An average membership cost is estimated at \$80 in current dollars.

## **Facility Rentals and Special Programs**

Increasingly, specialty venues are targeting groups, facility rentals, and special events and programs. Rental of TechWorks! for events, along with catering income events at the facility can be a substantial revenue source. In addition to local business, educational, and social use of the facility, tour groups, conferences, and university-related groups could also be served at TechWorks!. The assumptions regarding facility rentals are based on a facility design that is assumed to be accommodating to such programs with a moderately scaled lobby, auditorium, outdoor event areas, and a strong outreach and marketing program. An estimate is made of approximately 15 rentals annually, averaging approximately 48 people per rental. As is typical for smaller venues, this analysis assumes that outside, qualified caterers will be used for events, who would share their proceeds with the Center for Technology and Innovation.

## **Contributed Revenues**

TechWorks! will, and must, be active in generating substantial contributed (non-earned) revenues for the facility. This analysis assumes that the Center's internal capacity to fundraise will be enhanced. The Center is expected to engage in ongoing fundraising, to establish financial reserves and endowment, and to secure operating grants from foundations and government sector support for capital development as available.

Endowments and financial reserves are essential to providing a predictable source of revenue, and in assuring other funders of the financial viability of the organization. For the purposes of this analysis, TechWorks! is assumed to be a breakeven operation. In other words, this report establishes a minimum amount of contributed revenues that are expected to fill the difference between earned revenues and operating expenses. Contributed revenues comprise approximately 21 percent of total revenues to support TechWorks! operation, and earned revenues comprise 79 percent. As summarized in Part I Section B Table 4, an estimated \$180,000 in annual, current dollar contributed income will be required for break-even operation in TechWorks! first decade.

## **Revenue Potential**

Based on the planned program for the facility, its attendance potential, ticket pricing, memberships, and assumptions regarding contributed revenues, Part I Section B Table 4 presents a ten-year estimate of revenue potential. The initial years of operation benefit from higher attendance levels than is expected in the stable year. The first year estimate is in current dollars, with future years expressed in "future value of the dollar" assuming a 5.5% percent annual inflation rate. The actual dollar amounts for Year 1 and subsequent years will depend on future rates of inflation, project performance, and the number of years the project takes to develop before opening.

The stable Year 4 earned revenue potential for TechWorks! is estimated to be approximately \$720,200, based on the findings and assumptions outlined above. This includes total ticket revenue in a stable Year 4 of \$468,400, membership revenue of \$75,800, and net retail and

food service revenue of \$176,600. Contributed revenue is estimated at \$212,800 in Year 4.

## **OPERATING AND MANAGEMENT EXPENSE PROFILE AND ANALYSIS**

TechWorks! is assumed to provide educational benefits to residents of Binghamton and surrounding region, and to be substantially reinforced as a visitor attraction that enhances the city and region's tourism economy.

The projected operating expense estimates of TechWorks! were prepared to reflect the facility program and the experience of other comparable. The expenses reflect a tightly operated project with a "bottom line" orientation. Inputs to the operating expenses analyses include the experience of comparable facilities and the metrics of the new facility — its size, program, and attendance potential. It should be noted, however, that each comparable facility has its unique characteristics, programs and operating procedures — the experience of other comparable facilities should be regarded as a guide for planning only. Increasingly detailed operating expense plans can be made in subsequent planning, design, and construction phases.

Data in Section V of the *2006 Market Potential Study for the Center for Technology and Innovation* provides selected operating data on science and technology museums nationally, and regional museums. These data help set parameters and benchmarks for traditional facilities. While there are no exact comparable facilities to the dynamic visitor experience proposed for TechWorks!, as a group these institutions provide important guidance in establishing appropriate operating parameters.

### **Personnel Expenses**

Personnel are a key component to an operating plan for a new attraction. Data in Part I Section B Table 5 provides an analysis of the recommended staffing plan. The demands of the new facility indicate a need for approximately 9 full-time and 6 part-time positions. Paid staff positions would be supplemented by volunteers, who would have interpretative duties as well as assisting with education, visitor services and maintenance of vintage technology. The total payroll for TechWorks!, based on this staffing profile, is estimated at \$466,700, inclusive of overhead and benefits. Personnel direct salary and fringe benefit costs are approximately 54% percent of total facility operating expenses, which is typical of attractions of this scale.

### **Non-Personnel Operating Expenses**

Data in Part I Section B Table 6 provide a stable year attendance operating expense estimate in current dollars based on detailed factors for individual expense items for TechWorks!. Expense categories include the following:

Professional Services – Includes consulting fees, financial statements and audit, legal fees, security, and temporary office services, office equipment maintenance contracts, consulting contracts for marketing, benefits, information technology, etc.



Supplies and Materials – Supplies and materials include consumable items such as office supplies, custodial and building maintenance supplies, paper products, educational aids and exhibit tools. Factors for supplies and materials have been provided for office, curatorial and educational/programming functions as well.

Administrative – Other administrative expenses include telephone, postage and shipping, equipment rental, travel and development, dues and subscriptions, and other costs. These equal about \$2,000 per FTE, and are estimated at \$20,000 annually. Other operating costs account for operating contingencies and discretionary departmental expenses.

Advertising, Printing and Publications – Includes the design, production and distribution expenses for newspaper ads, payments for tourism organizations and cooperative advertising, brochures for distribution at visitor centers and hotels, and other printed matter including office stationary and letterhead, press release packages, educational kits, tour guides, and others.

Utilities, Repairs, Maintenance, and Insurance – Estimated utility costs were based on comparable attraction data and utility costs during prior operation of warehouse at 321 Water Street. As a modern rehabilitated facility, allowances were made for efficiencies within the facility's design. Further savings are expected from energy conservation and recycling efforts. The utilities budget includes electricity costs (including outdoor lighting), air handling, lighting, as well as other uses, energy for heating and cooling, public services, and charges for water and sewer. Repairs and maintenance were based on a newly redeveloped building, and insurance costs are based on typical amounts for attractions of this scale.

The proposed South Entrance Energy Exhibit, design concept approved in 2012, is expected to reduce these operating costs to near zero if the geothermal well is implement. It is further anticipated that the Energy Exhibit will generate revenue from contributions of unused energy to NYSEG's electrical grid. Given the uncertainties of future energy costs, these savings are not included in this financial analysis. It is within realistic expectations that energy savings of \$100,000 per year and unknown amount of revenue generated by the South Entrance Energy Exhibit will reduce the amount of annual Contributed Revenue required for break-even operation by 50% or more.

Attraction Reinvestment – Reinvestment in visitor experiences is essential to maintaining a "fresh" face to the public and in keeping the facility in good working order. Replacement of visitor experiences over time would be based on new capital campaigns, and the costs would be a capitalized expenditure. Annual repair and improvement however should be budgeted as a recurring and ongoing process.

Capital Reserves – A capital reserves fund should be in place to cover major non-recurring expenses for mechanical, electrical and plumbing repairs, and maintenance contracts. These costs are expected to be less during the early years of operation due to new construction and extended warranty periods. Capital reserves may also contribute to future changing visitor experiences, minor building improvements, and replacement of large equipment under heavy use such as HVAC units. This reserve can also double as an operating expense contingency fund in emergencies. Contributions to this fund are usually made from surplus net operating income, but can also be funded through fundraising. An annual budget of approximately 3 percent of total operating expenses for capital reserves is included in this analysis.

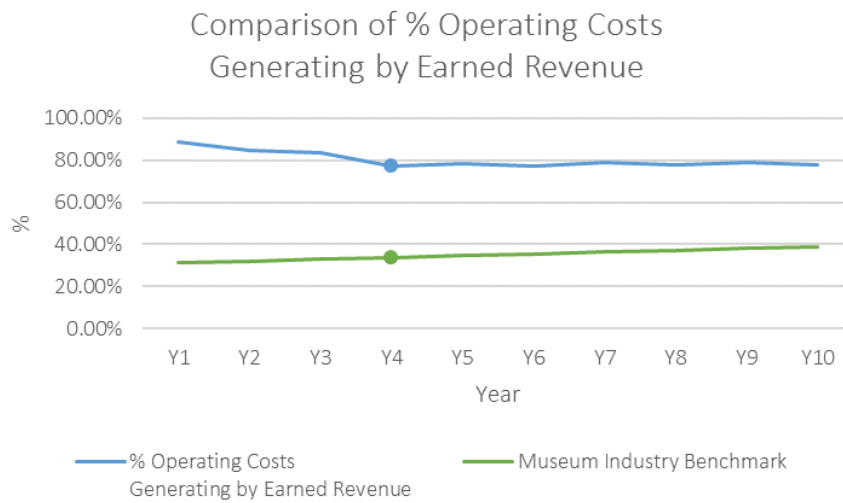
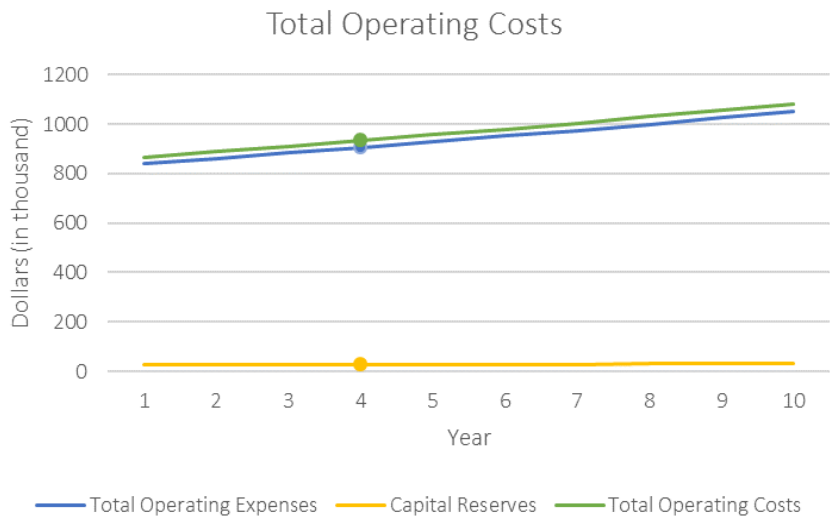
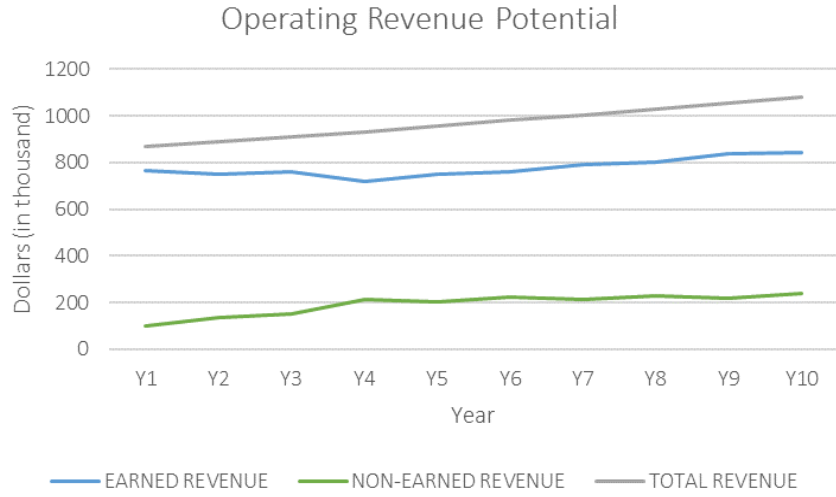
Total operating costs are estimated at approximately \$877,400 in a stable year or about \$28.88 per sq ft of interior facility space and \$12.25 per visitor. These unit expense analyses are within the typical range of comparable venues. Section V of the *Market Potential Study for the Center for Technology and Innovation* analyzes this data to identify industry benchmarks of comparable institutions. Facilities whose recent performance data are available, report a weighted average ratio of earned revenue to operating expenses at comparable facilities of approximately 53 percent. These data underscore the importance of maximizing both earned and contributed revenues.

Data in Part I Section B Table 7 summarize the projected operating costs of TechWorks! for a ten-year period. It is important to note that Year 1 of the plan is in current dollars. The actual amounts for Year 1 and subsequent years will depend on future inflation, the number of years before opening, and the actual budgets put into place.

### **TECHWORKS! NET OPERATING INCOME POTENTIAL**

TechWorks! has a strong capacity to generate earned revenue. At the same time, it is a complex operation that will have considerable operating costs. This analysis assumes that the new facility, its organization, and the level of service provision to the community will allow TechWorks! to generate contributed revenues to meet its operational requirements. Earned revenues represent about 80% percent of total needed revenues to support operations in a stable year. Contributed revenues should be targeted at levels higher than contained herein, as these would allow more robust levels of service provision, would create revenues to cover shortfalls in earned revenue that may occur, and could contribute to increasing the financial reserves and endowment the venue should build over time. With the efforts of the facility's board of trustees, as well as with an active development and fundraising program, this should be an attainable goal.

Based on the detailed earned revenue potential and operating expense analyses presented earlier, data in Part I Section B Table 8 provide combined operating revenue and operating expense scenarios for the project, based on a mid-range attendance scenario. Over a ten-year period there will be some variability in operating performance based on the years' individual circumstances, with higher levels of contributed revenue allowing higher levels of cash flow and/or enhanced operations.



----Average Industry data, 2015 IBISWorld Industry Report 71211 Museums in the US

## **COMMUNITY ECONOMIC IMPACT**

The impact of visitors to TechWorks! on the economy of the Greater Binghamton community is estimated at \$6 million per year, plus creation of more than 100 jobs in the hospitality and service sector. In addition to estimates of visitor spending and job creation at TechWorks!, detailed above, data on visitor spending in the community have been provided by the Greater Binghamton Convention Visitor Bureau. Hospitality job creation factors are based on NYS Dept. of Labor estimates. As indicated in Part I Section B Table 9, approximately 10% of the economic benefit will accrue to TechWorks!, with the remaining \$5.4 million per year spent at restaurants, hotels, and shopping.

## **SUMMARY**

Based on this update to the 2006 foundational analysis, TechWorks! has the potential to operate successfully over time, if the assumptions regarding quality of facility development, operations, and fundraising are met. This project will derive substantial income from tickets, memberships, and retail; however, active and successful fundraising is necessary to sustain TechWorks!. A directed set of fundraising and giving programs will help to accomplish this goal. The operating profile of the facility is similar to many of the comparable institutions, whose operating strategies have been used in preparing the operating plan. Many projects of this type have seen attendance levels fall off substantially from opening year performance. This pattern has been included in this plan, and the operating plan is based on stable year performance. Diversified and creative sources of revenue and sound fiscal management will assist TechWorks! to sustain its operations and provide a valuable center for learning and enjoyment in Binghamton.

# **FINANCIAL DATA TABLES**

## **CT&I Update 2015**

**Table 1 Admissions and Membership Analysis for Stabilized Year in Current Dollars Center for Technology and Innovation**

(Prepared by CT&I in 2015)

	<b>% to Total Attendance</b>	<b>Attendance By Type</b>	<b>Ticket Price <sup>1/</sup></b>	<b>Achieved Per Capita</b>	<b>Cap % to Total</b>
Adult	38.0%	26,894	\$9.00	\$3.42	55.7%
Seniors / Youth	12.0%	8,493	\$7.00	\$0.83	13.5%
Children (5-12)	21.0%	14,863	\$6.00	\$1.16	18.9%
School Group	15.0%	10,616	\$5.00	\$0.73	11.8%
Members	9.0%	6,370	\$0.00	\$0.00	0.0%
Rentals	1.0%	708	\$0.00	\$0.00	0.0%
Complimentary <sup>2/</sup>	4.0%	2,831	\$0.00	\$0.00	0.0%
<b>Total</b>	<b>100.0%</b>	<b>70,774</b>		<b>\$6.14</b>	<b>100.0%</b>

<b>Memberships Estimates</b>	<b>Total</b>	<b>Membership Types</b>	<b>Percent to Total</b>	<b>Estimated Number of Memberships</b>	<b>Average Price By Type</b>
No. of Member Attendances	6,370	Individual	20.0%	152	\$25
Less Assumed Corporate Member Attendances <sup>3/</sup>	300	Family	73.0%	554	\$50
Average Annual Attendances Per Membership <sup>4/</sup>	8	Sponsor	4.0%	30	\$450
<b>Est. Total Memberships</b>	<b>759</b>	Patron	3.0%	23	\$700
Membership Revenue <sup>5/</sup>	\$60,720	<b>Total</b>	<b>100.0%</b>	<b>759</b>	<b>\$80</b>
		Corporate Memberships		10	\$1,000

<sup>1</sup> Ticket prices in current dollars, with prices increase at rate of 5.5% every other year.

<sup>2</sup> Complimentary - includes children under 5, VIPs, special guests etc.

<sup>3</sup> Assumes 30 visits per Corporate Membership.

<sup>4</sup> Typical families assumed at 4 persons. Does not include Corporate Memberships.

<sup>5</sup> Does not include Corporate Membership revenue.

Source: TechWorks

Numbers have been rounded to the nearest ten BO

**Table 2 Attendance, Ticket Revenue, and Membership Assumptions** (Prepared by CT&I in 2015)

% to Total Attendance	Stable									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Adult	41.6%	40.4%	39.2%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%
Seniors / Youth	13.0%	12.7%	12.3%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Children (5-12)	23.0%	22.3%	21.7%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%
School Group	9.0%	11.0%	13.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Members	8.7%	8.8%	8.9%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Rentals	0.7%	0.8%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Complimentary	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Attendance By Type</b>										
Adult	32,386	30,880	29,131	26,894	26,894	27,163	27,163	27,432	27,432	27,701
Seniors / Youth	10,121	9,707	9,208	8,493	8,493	8,578	8,578	8,663	8,663	8,748
Children (5-12)	17,906	17,045	16,246	14,863	14,863	15,011	15,011	15,160	15,160	15,308
School Group	7,007	8,408	9,732	10,616	10,616	10,722	10,722	10,828	10,828	10,935
Members	6,773	6,726	6,663	6,370	6,370	6,433	6,433	6,497	6,497	6,561
Rentals	545	611	674	708	708	715	715	722	722	729
Complimentary	3,114	3,057	2,995	2,831	2,831	2,859	2,859	2,888	2,888	2,916
<b>Total</b>	<b>77,851</b>	<b>76,436</b>	<b>74,313</b>	<b>70,774</b>	<b>70,774</b>	<b>71,482</b>	<b>71,482</b>	<b>72,189</b>	<b>72,189</b>	<b>72,897</b>
<b>Percentage of Adult Ticket Price</b>										
Adult	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Seniors / Youth	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
Children (5-12)	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%
School Group	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
Members	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rentals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Complimentary	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Ticket Price Analysis<sup>1/</sup></b>										
Adult	\$9.00	\$9.00	\$9.50	\$9.50	\$10.02	\$10.02	\$10.57	\$10.57	\$11.15	\$11.15
Seniors / Youth	\$7.00	\$7.00	\$7.39	\$7.39	\$7.79	\$7.79	\$8.22	\$8.22	\$8.67	\$8.67
Children (5-12)	\$6.00	\$6.00	\$6.33	\$6.33	\$6.68	\$6.68	\$7.05	\$7.05	\$7.43	\$7.43
School Group	\$5.00	\$5.00	\$5.28	\$5.28	\$5.57	\$5.57	\$5.87	\$5.87	\$6.19	\$6.19
Members	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Rentals	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Complimentary	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Per Capita Average Revenue</b>	<b>\$6.48</b>	<b>\$6.41</b>	<b>\$6.69</b>	<b>\$6.62</b>	<b>\$6.98</b>	<b>\$6.98</b>	<b>\$7.36</b>	<b>\$7.36</b>	<b>\$7.77</b>	<b>\$7.77</b>
<b>Membership Analysis</b>										
Membership Attendance	6,773	6,726	6,663	6,370	6,370	6,433	6,433	6,497	6,497	6,561
Memberships	809	803	792	755	751	759	755	763	760	768
Average Membership Fee	\$80	\$80	\$85	\$85	\$89	\$89	\$94	\$94	\$99	\$99
<b>Corporate Membership Analysis</b>										
Corporate Membership Attendance	300	300	330	330	360	360	390	390	420	420
Number Corporate Memberships	10.0	10.0	11.0	11.0	12.0	12.0	13.0	13.0	14.0	14.0
Avg. Corporate Membership Rate <sup>2/</sup>	\$1,000	\$1,000	\$1,055	\$1,055	\$1,113	\$1,113	\$1,174	\$1,174	\$1,239	\$1,239

1/ Ticket prices are in current dollars in Year 1. Ticket prices are assumed to increase at a rate of 5.5% every other year.

2/ Memberships and corporate membership rates are assumed to increase 5.5% every other year. Membership fees are rounded to the nearest dollar.

Source: CT&I

**Table 3 Operations Analysis Assumptions in Stabilized Year Current Dollars** (Prepared by CT&I in 2015)

<i>General</i>	
Gross Square Footage of Phase 1 <sup>1/</sup>	30,000
Exhibit Square Feet	26,000
Mid-Range Attendance	70,774
Rate of Inflation	0.0%
Annual Attendance Growth after Year 5	1% every other year
Other Revenue As a % of Earned Revenue <sup>2/</sup>	1.0%
<i>Admission Fees and Revenue</i>	
Adult Ticket Price	\$9.00
Per Capita Ticket Revenue	\$6.14
Ticket Price and Membership Price Increase % every other year	5.5%
<i>Retail</i>	
Per Capita Retail Sales	\$3.57
Cost of Goods Sold as a % of Retail Sales	52%
<i>Food Service</i>	
Percentage Buying Food / Drink	50%
Average Sale	\$4.30
Per Capita Café/Kiosk/Vending Sales	\$2.15
Facility Share of Gross Sales	15%
<i>Special Programs</i>	
Special programs are an important component of future operations of CTI. Their scale and focus have not been determined yet. These may add earned revenues and grants & gifts, and corresponding program expenses.	
<i>Family &amp; Supportive Memberships</i>	
Number of Individual, Family & Supportive Memberships	759
Average Membership Fee	\$80
Annual Attendances Per Membership	8
<i>Corporate Memberships</i>	
Number of Corporate Memberships	10
Number Increase in Corporate Memberships Every Other Year	1
Avg. Corporate Membership Rate	\$1,000
Attendances Per Corporate Membership	30
<i>Facility Rentals and Receptions</i>	
Facility Rentals Per Year	15
Number of Attendees Per Facility Rental <sup>3/</sup>	48
Target Attendance in Stable Year	713

1/ From Exhibition Programming and Concepts by Eisterhold Associates.

2/ Other revenue includes incidentals such as stroller rentals, cloak room collections, etc.

3/ Number is rounded, derived from target attendance and number of facility rentals.

Source: Eisterhold Associates and ConsultEcon, Inc.



**Table 4 Operating Revenue Potential** (Prepared by CT&I in 2015)

	Stabilized Year in Current Dollars	Stable									
		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
<b>TOTAL ATTENDANCE</b>	70,774	77,851	76,436	74,313	70,774	70,774	71,482	71,482	72,189	72,189	72,897
Per Capita Ticket Revenue	\$6.14	\$6.48	\$6.41	\$6.69	\$6.62	\$6.98	\$6.98	\$7.36	\$7.36	\$7.77	\$7.77
<b>EARNED REVENUE</b>											
Ticket Revenue	\$443,755	\$504,792	\$490,179	\$499,014	\$468,392	\$494,054	\$498,991	\$526,390	\$531,604	\$560,639	\$566,137
Membership Revenue <sup>1/</sup>	60,720	64,720	64,240	67,320	64,175	66,839	67,551	70,970	71,722	75,240	76,032
Corporate Membership Revenue	10,000	10,000	10,000	11,605	11,605	13,356	13,356	15,262	15,262	17,346	17,346
Retail Net of COGS	121,278	133,405	130,981	127,343	121,278	121,278	122,492	122,492	123,703	123,703	124,916
Food Service	22,825	25,107	24,651	23,966	22,825	22,825	23,053	23,053	23,281	23,281	23,509
Special Programs <sup>2/</sup>	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Facility Rental	21,419	21,419	21,954	22,503	23,065	23,642	24,234	24,839	25,460	26,097	26,749
Other Earned Revenue <sup>3/</sup>	7,197	8,212	8,418	8,628	8,844	9,065	9,292	9,524	9,762	10,005	10,256
<b>Total Earned Revenue</b>	<b>\$687,194</b>	<b>\$767,655</b>	<b>\$750,423</b>	<b>\$760,379</b>	<b>\$720,184</b>	<b>\$751,059</b>	<b>\$758,969</b>	<b>\$792,530</b>	<b>\$800,794</b>	<b>\$836,311</b>	<b>\$844,945</b>
<b>NON-EARNED REVENUE <sup>4/</sup></b>	<b>\$179,161</b>	<b>\$98,700</b>	<b>\$137,590</b>	<b>\$149,835</b>	<b>\$212,785</b>	<b>\$205,234</b>	<b>\$221,232</b>	<b>\$212,176</b>	<b>\$229,029</b>	<b>\$219,258</b>	<b>\$237,013</b>
<b>TOTAL REVENUE</b>	<b>\$866,355</b>	<b>\$866,355</b>	<b>\$888,013</b>	<b>\$910,214</b>	<b>\$932,969</b>	<b>\$956,293</b>	<b>\$980,201</b>	<b>\$1,004,706</b>	<b>\$1,029,823</b>	<b>\$1,055,569</b>	<b>\$1,081,958</b>

**Table 5 - Operations Analysis Assumptions - Personnel Expenses** (Prepared by CT&I in 2015)

<b>Title/Position</b>	<b>Number of Full-Time</b>	<b>Number of Part-Time</b>	<b>Number of Volunteer</b>	<b>Assumed Full-Time Annual Salary</b>	<b>Total Salary</b>
<b>Administration, Finance &amp; Management</b>					
Executive Director	1			\$80,000	\$80,000
Business Manager / Bookkeeper		1	4	\$50,000	\$25,000
Office Administrator / Receptionist			3	\$35,000	\$0
<b>Marketing &amp; Development</b>					
Director of Marketing	1			\$40,000	\$40,000
Development Director / Membership Coordinator	1		4	\$40,000	\$40,000
<b>Education &amp; Exhibits</b>					
Education and Exhibits Director, and Curator	1			\$40,000	\$40,000
Educator	1	1	6	\$25,000	\$37,500
Exhibit and Computer Technician		2	6	\$25,000	\$25,000
<b>Operations</b>					
Facilities / Maintenance Manager	1			\$30,000	\$30,000
Volunteer Coordinator		1		\$30,000	\$15,000
Custodian / Groundskeeper			6	\$26,000	\$0
Store Manager / Facility Rental Coordinator		1		\$50,000	\$25,000
Cashiers - Admissions / Retail		2	3	\$25,000	\$25,000
<b>Total Salaries</b>					<b>\$382,500</b>
Percent of Taxes & Fringe of Total Salaries	22%				\$84,150
<b>Total Salaries, Taxes &amp; Fringe</b>					<b>\$466,650</b>
<b>Total Personnel</b>	<b>6</b>	<b>8</b>	<b>32</b>		
<b>FTE Positions <sup>1/</sup></b>		<b>10</b>			

**Table 6 - Potential Operating Expenses in Current Dollars** (Prepared by CT&I in 2015)

<b>Project Parameters</b>			
Project Square Footage (SF)	30,000		
Annual Attendance	70,774		
Full-Time Equivalent Employees (FTEs)	10		
<b>Detailed Budgetary Analysis</b>	<b>Annual Amount</b>	<b>Expense Factors <sup>2/</sup></b>	<b>Percent to Total</b>
Salaries (FTE,PTE)	\$382,500	See Personnel Schedule	44.15%
Taxes / Fringe	84,150	@ 22.0% Based on employee mix	9.71%
Professional Services	25,000	@ \$2,500 Per FTE	2.89%
Administrative <sup>3/</sup>	20,000	@ \$2,000 Per FTE	2.31%
Supplies and Materials	15,000	@ \$1,500 Per FTE	1.73%
Advertising	70,774	@ \$1.00 Per Attendee	8.17%
Printing & Publications	28,310	@ \$0.40 Per Attendee	3.27%
Utilities	105,000	@ \$3.50 Per SF Interior	12.12%
Insurance	30,000	@ \$1.00 Per SF	3.46%
Repairs & Maintenance Interior	30,000	@ \$1.00 Per SF	3.46%
Exhibit Reinvestment / Maintenance	35,387	@ \$0.5 Per Attendee	4.08%
Other Miscellaneous / Contingency	15,000	@ \$0.5 Per SF	1.73%
<b>Subtotal Operating Expenses</b>	<b>\$841,121</b>		<b>97.09%</b>
Capital Reserves <sup>4/</sup>	\$25,234	3% of Total Op. Expenses	2.91%
<b>Total Operating Expenses</b>	<b>\$866,355</b>		<b>100.0%</b>
<b>Operating Analysis</b>			<b>Percent to Total</b>
Operating Expense Per SF	\$28.88	Personnel Costs	53.86%
Operating Expense Per Visitor	\$12.24	Non Personnel Costs	46.14%
Attendees Per FTE	7,077		
Op. Exp Per FTE	\$86,635	Taxes & Fringe Per FTE	\$8,415
Square Feet Per FTE	3,000	Taxes & Fringe Per Employee	\$6,011

**Table 7 Projected Total Operating Costs** (Prepared by CT&I in 2015)

<b>Operating Expenses <sup>1/</sup></b>	<b>YEAR 1</b>	<b>YEAR 2</b>	<b>YEAR 3</b>	<b>Stable YEAR 4</b>	<b>YEAR 5</b>	<b>YEAR 6</b>	<b>YEAR 7</b>	<b>YEAR 8</b>	<b>YEAR 9</b>	<b>YEAR 10</b>
Personnel Salaries (FTE, PTE)	\$382,500	\$392,063	\$401,864	\$411,911	\$422,208	\$432,764	\$443,583	\$454,672	\$466,039	\$477,690
Taxes and Fringe	84,150	86,254	88,410	90,620	92,886	95,208	97,588	100,028	102,529	105,092
Advertising, Printing & Publication	99,084	101,561	104,100	106,703	109,370	112,104	114,907	117,780	120,724	123,742
Other Operating Expenses	275,387	282,272	289,328	296,562	303,976	311,575	319,364	327,349	350,762	343,921
<b>Total Operating Expenses</b>	<b>\$841,121</b>	<b>\$862,149</b>	<b>\$883,703</b>	<b>\$905,795</b>	<b>\$928,440</b>	<b>\$951,651</b>	<b>\$975,442</b>	<b>\$999,829</b>	<b>\$1,024,824</b>	<b>1,050,445</b>
<b>Capital Reserves <sup>2/</sup></b>	<b>\$25,234</b>	<b>\$25,864</b>	<b>\$26,511</b>	<b>\$27,174</b>	<b>\$27,853</b>	<b>\$28,550</b>	<b>\$29,263</b>	<b>\$29,995</b>	<b>\$30,745</b>	<b>\$31,513</b>
<b>Total Operating Costs</b>	<b>\$866,355</b>	<b>\$888,013</b>	<b>\$910,214</b>	<b>\$932,969</b>	<b>\$956,293</b>	<b>\$980,201</b>	<b>\$1,004,706</b>	<b>\$1,029,823</b>	<b>\$1,055,569</b>	<b>\$1,081,958</b>

NOTE: Year 1 is in current dollars.

1/ Year 1 shown in current dollars with 5.5% assumed inflation rate thereafter

2/ Capital Reserves include funds for equipment replacements and minor capital building improvements

**Table 8 Net Income Summary** (Prepared by CT&I in 2015)

	Stabilized Year in Current Dollars	YEAR 1	YEAR 2	YEAR 3	Stable YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
<i>Revenue</i>											
Total Earned Revenue	\$687,194	\$767,655	\$750,423	\$760,379	\$720,184	\$751,059	\$758,969	\$792,530	\$800,794	\$836,311	\$844,945
Total Non-Earned Revenue	179,161	98,700	137,590	149,835	212,785	205,234	221,232	212,176	229,029	219,258	237,013
<b>Total Revenue</b>	<b>\$866,355</b>	<b>\$866,355</b>	<b>\$888,013</b>	<b>\$910,214</b>	<b>\$932,969</b>	<b>\$956,293</b>	<b>\$980,201</b>	<b>\$1,004,706</b>	<b>\$1,029,823</b>	<b>\$1,055,569</b>	<b>\$1,081,958</b>
<i>% Operating Costs Generating by Earned Revenue</i>	<b>79.3%</b>	<b>88.6%</b>	<b>84.5%</b>	<b>83.5%</b>	<b>77.2%</b>	<b>78.5%</b>	<b>77.4%</b>	<b>78.9%</b>	<b>77.8%</b>	<b>79.2%</b>	<b>78.1%</b>
<i>Total Operating Costs</i> <sup>2/</sup>	<b>\$866,355</b>	<b>\$866,355</b>	<b>\$888,013</b>	<b>\$910,214</b>	<b>\$932,969</b>	<b>\$956,293</b>	<b>\$980,201</b>	<b>\$1,004,706</b>	<b>\$1,029,823</b>	<b>\$1,055,569</b>	<b>\$1,081,958</b>
<b>Net Income</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

1/ This analysis assumes a break-even operation. To achieve this break-even operation, the Non-Earned Revenue assumption will need to be met through such potential sources as contributions, sponsorships, grants, interest income from endowment, or perhaps sale of surplus electricity from South Entrance Energy Exhibit to NYS grid.

2/ Includes Capital Reserves, including funds for equipment replacement and minor capital building improvements.

**Table 9 Economic Impact**

TechWorks! Economic Impact				
	# visitors per year	\$ per visitor	Visitor spending	Jobs generated
Residents	23,272			
\$ @ TechWorks!		\$10	\$232,720	9 FT,6 PT
Day Trip Visitors	22,764			
\$ @ TechWorks!		\$10	\$227,640	9 FT,6 PT
\$ in community		\$50	\$1,138,200	25 jobs
Overnight Visitors	25,252			
\$ @ TechWorks!		\$10	\$252,520	9 FT,6 PT
\$ in community		\$169	\$4,267,588	75 jobs
Annual Totals	71,288			
TechWorks! revenue			\$712,880	9 FT, 6 PT
\$ spent in community			\$5,291,968	100 jobs
			\$6,118,668	112 jobs
Data Source:	Consult Econ Market Potential Study, 2006	Greater Binghamton CVB - 2015		Consult Econ 2006; NYS Dept. of Labor

# **MARKET POTENTIAL DATA TABLES**

- ConsultEcon 2006**
- CT&T update 2015**

**Table III-1**  
**Resident Market Area Estimated 2005**  
**And Projected 2010 Population Center**  
**For Technology and Innovation**  
(Prepared by ConsultEcon in 2006)

<b>Resident Market Area</b>	<b>2005 Estimated</b>	<b>2010 Projected</b>	<b>Percent Change</b>
<i><b>Primary Market Area</b></i>			
Broome County, NY	198,700	196,700	-1.0%
Tioga County, NY	51,800	51,800	0.0%
Susquehanna County, PA	41,600	42,390	1.9%
<b>Total Primary Market Area</b>	<b>292,100</b>	<b>290,900</b>	<b>-0.4%</b>
<i><b>Secondary Market Area</b></i>			
Chemung County, NY	90,100	89,000	-1.2%
Chenango County, NY	51,900	52,300	0.8%
Cortland County, NY	48,800	49,000	0.4%
Delaware County, NY	47,000	47,300	0.6%
Otsego County, NY	62,500	63,400	1.4%
Tompkins County, NY	103,600	111,100	7.2%
Bradford County, PA	62,600	62,500	-0.2%
Lackawanna County, PA	209,400	205,600	-1.8%
Wayne County, PA	49,800	50,100	0.6%
Wyoming County, PA	28,300	28,500	0.7%
<b>Total Secondary Market Area</b>	<b>754,000</b>	<b>758,800</b>	<b>0.6%</b>
<b>Total Resident Market Area Population</b>	<b>1,046,100</b>	<b>1,049,700</b>	<b>0.3%</b>

Source: Sales and Marketing Management, 2005 Survey of Buying Power.

**Table III-1**  
**Resident Market Area Estimated 2015**  
**And Projected 2020 Population Center**  
**For Technology and Innovation**  
(Prepared by CT&I in 2015)

<b>Resident Market Area</b>	<b>2014 Estimated</b>	<b>2020 Projected</b>	<b>Percent Change</b>
<i><b>Primary Market Area</b></i>			
Broome County, NY	197,349	199,743	1.2%
Tioga County, NY	49,870	48,337	-3.1%
Susquehanna County, PA	41,920	42,335	1%
<b>Total Primary Market Area</b>	<b>289,139</b>	<b>290,415</b>	<b>0.4%</b>
<i><b>Secondary Market Area</b></i>			
Chemung County, NY	87,770	85,524	-2.6%
Chenango County, NY	49,426	48,154	-2.6%
Cortland County, NY	49,024	49,008	0.0%
Delaware County, NY	46,581	46,717	0.3%
Otsego County, NY	61,128	62,094	1.6%
Tompkins County, NY	104,691	101,732	-2.4%
Bradford County, PA	61,784	64,106	3.8%
Lackawanna County, PA	212,719	221,688	4.2%
Wayne County, PA	51,401	53,511	4.1%
Wyoming County, PA	28,131	28,460	1.2%
<b>Total Secondary Market Area</b>	<b>752,655</b>	<b>760,994</b>	<b>1.1%</b>
<b>Total Resident Market Area Population</b>	<b>1,041,794</b>	<b>1,051,409</b>	<b>0.9%</b>

Source: 2014 Estimated: State & County QuickFacts (United States Census Bureau)

2020 Projected: Cornell Program on Applied Demographics

Pennsylvania Population Projections the Center for Rural Pennsylvania



**Table III-3**  
**Estimated School Age Children in the Resident Market Area**  
 (Prepared by ConsultEcon in 2006)

	<b>School Age Children</b>
Primary Market Area	46,900
Secondary Market Area	118,200
<b>Total Resident Market Areas</b>	<b>165,100</b>

Source: Sales and Marketing Management, 2005  
*Survey of Buying Power*, and ConsultEcon, Inc.

**Table III-3**  
**Estimated School Age Children in the Resident Market Area**  
 (Prepared by CT&I in 2015)

	<b>School Age Children</b>
Primary Market Area	43,907
Secondary Market Area	109,171
<b>Total Resident Market Areas</b>	<b>153,078</b>

Source: United States Census Bureau, 2015

**Table VI-1 Visitation Parameters Center for Technology and Innovation** (Prepared by ConsultEcon in 2006)

	2010 Population	Market Penetration		Visitation Range		
		Low	High	Low Range Attendance	Mid Range Attendance	High Range Attendance
<i>Resident Markets</i>						
Primary Market Area	290,900	6.0%	10.0%	17,454	23,272	29,090
Secondary Market Area	758,800	2.0%	4.0%	15,176	22,764	30,352
<b>Subtotal</b>	1,049,700			32,630	46,036	59,442
Average Penetration Rates for Resident Market		3.1%	5.7%			
Visitor Market as a Percent to Total Attendance Subtotal		25.0%	40.0%	10,877	25,252	39,628
<b>Total Attendance Range</b>						
<b>Mid Range Attendance</b> <sup>1/</sup>				43,500		99,100
				71,300		

**Table VI-1 Visitation Parameters Center for Technology and Innovation** (Prepared by CT&I in 2015)

	2020 Population	Market Penetration		Visitation Range		
		Low	High	Low Range Attendance	Mid Range Attendance	High Range Attendance
<i>Resident Markets</i>						
Primary Market Area	289,139	6.0%	10.0%	17,348	23,131	28,914
Secondary Market Area	752,655	2.0%	4.0%	15,053	22,580	30,106
<b>Subtotal</b>	1,041,794			32,401	45,711	59,020
Average Penetration Rates for Resident Market		3.1%	5.7%			
Visitor Market as a Percent to Total Attendance Subtotal		25.0%	40.0%	10,795	25,063	39,330
<b>Total Attendance Range</b>				43,196		98,350
<b>Mid Range Attendance</b> <sup>1/</sup>					70,774	

Note: Rounded to the nearest person

**Table VI-2**  
**Early Year Attendance Patterns Center for Technology and Innovation**  
 (Prepared by ConsultEcon in 2006)

	Stable Year									
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
<b>Percentage Difference From Stabilized Attendance</b>										
Percent of Stabilized Attendance	110%	108%	105%	100%	100%	101%	101%	102%	102%	103%
<b>Annual Attendance Potential</b>										
Annual Attendance	78,430	77,004	74,865	71,300	71,300	72,013	72,013	72,726	72,726	73,439

**Table VI-2**  
**Early Year Attendance Patterns Center for Technology and Innovation**  
 (Prepared by CT&I in 2015)

	Stable Year									
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
<b>Percentage Difference From Stabilized Attendance</b>										
Percent of Stabilized Attendance	110%	108%	105%	100%	100%	101%	101%	102%	102%	103%
<b>Annual Attendance Potential</b>										
Annual Attendance	77,851	76,436	74,313	70,774	70,774	71,482	71,482	72,189	72,189	72,897

Rounded to the nearest attendance

**Table VI-3**  
**Estimated Monthly Attendance**  
**Distribution Center for**  
**Technology and Innovation**  
 (Prepared by ConsultEcon in 2006)

	Low Attendance Scenario		Mid-Range Attendance		High Attendance Scenario	
	Projected Seasonality	Total Attendance	Projected Seasonality	Total Attendance	Projected Seasonality	Total Attendance
January	4%	1,740	4%	2,852	4%	3,964
February	5%	2,175	5%	3,565	5%	4,955
March	7%	3,045	7%	4,991	7%	6,937
April	9%	3,915	9%	6,417	9%	8,919
May	9%	3,915	9%	6,417	9%	8,919
June	11%	4,785	11%	7,843	11%	10,901
July	12%	5,220	12%	8,556	12%	11,892
August	14%	6,090	14%	9,982	14%	13,874
September	7%	3,045	7%	4,991	7%	6,937
October	8%	3,480	8%	5,704	8%	7,928
November	6%	2,610	6%	4,278	6%	5,946
December	8%	3,480	8%	5,704	8%	7,928
<b>Total</b>	100%	43,500	100%	71,300	100%	99,100

Rounded to the nearest attendance

**Table VI-3**  
**Estimated Monthly Attendance**  
**Distribution Center for**  
**Technology and Innovation**  
 (Prepared by CT&I in 2015)

	Low Attendance Scenario		Mid-Range Attendance		High Attendance Scenario	
	Projected Seasonality	Total Attendance	Projected Seasonality	Total Attendance	Projected Seasonality	Total Attendance
January	4%	1,728	4%	2,831	4%	3,934
February	5%	2,160	5%	3,539	5%	4,918
March	7%	3,024	7%	4,954	7%	6,885
April	9%	3,888	9%	6,370	9%	8,852
May	9%	3,888	9%	6,370	9%	8,852
June	11%	4,752	11%	7,785	11%	10,819
July	12%	5,184	12%	8,493	12%	11,802
August	14%	6,047	14%	9,908	14%	13,769
September	7%	3,024	7%	4,954	7%	6,885
October	8%	3,456	8%	5,662	8%	7,868
November	6%	2,592	6%	4,246	6%	5,901
December	8%	3,456	8%	5,662	8%	7,868
<b>Total</b>	100%	43,196	100%	70,774	100%	98,350

**Table VI-4**  
**Facility Peak In-House Attendance**  
**And Parking Demand Evaluation**  
**Center for Technology and Innovation**  
 (Prepared by ConsultEcon in 2006)

	<u>Mid-Range Attendance</u>	<u>High-Range Attendance</u>
<b>Annual Visitation</b>	71,300	99,100
Peak period July - August	18,538	25,766
High Week (13%) of peak period	2,410	3,350
Peak day (20%) in high week	482	670
<b>Average Length of Stay</b>	<b>(1.25 hr. stay - 22%)</b>	<b>(1.5 hr. stay - 30%)</b>
<i>Peak in-house population</i>	106	201
<b>Peak Parking Demand <sup>1/</sup></b>	42	80
<b>Public Space Sizing</b>	<b>(25 sq.ft./attendee)</b>	<b>(25 sq.ft./attendee)</b>
Range of Public Circulation Space	2,651 SF	5,024 SF
<b>Facility Sizing</b>	<b>3.0 to 4.0 Times</b>	<b>3.0 to 4.0 Times</b>
Total Facility Size Range	7,953 SF	15,073 SF
	to	to
	10,604 SF	20,097 SF

<sup>1/</sup> Based on 95 percent auto usage during peak period weekends (bus usage is higher during the shoulder season weekdays from school groups and tour groups). 2.5 persons per vehicle. Plus 5% turnover requirement. Does not include employee parking.

Source: ConsultEcon, Inc./Office of Thomas J. Martin

**Table VI-4**  
**Facility Peak In-House Attendance**  
**And Parking Demand Evaluation**  
**Center for Technology and Innovation**  
 (Prepared by CT&I in 2015)

	<u>Mid-Range Attendance</u>	<u>High-Range Attendance</u>
<b>Annual Visitation</b>	70,774	98,350
Peak period July - August	18,401	25,571
High Week (13%) of peak period	2,392	3,324
Peak day (20%) in high week	478	665
<b>Average Length of Stay</b>	<b>(1.25 hr. stay - 22%)</b>	<b>(1.5 hr. stay - 30%)</b>
<i>Peak in-house population</i>	105	200
<b>Peak Parking Demand <sup>1/</sup></b>	42	80
<b>Public Space Sizing</b>	<b>(25 sq.ft./attendee)</b>	<b>(25 sq.ft./attendee)</b>
Range of Public Circulation Space	2,625 SF	5,000 SF
<b>Facility Sizing</b>	<b>3.0 to 4.0 Times</b>	<b>3.0 to 4.0 Times</b>
Total Facility Size Range	7,875 SF	15,000 SF
	to	to
	10,500 SF	20,000 SF

<sup>1/</sup> Based on 95 percent auto usage during peak period weekends (bus usage is higher during the shoulder season weekdays from school groups and tour groups). 2.5 persons per vehicle. Plus 5% turnover requirement. Does not include employee parking.

Source: CT&I

**FINANCIAL DATA TABLES**  
**- ConsultEcon 2006**

**Table 1 Admissions and Membership Analysis for Stabilized Year in Current Dollars Center for Technology and Innovation**

(Prepared by ConsultEcon in 2006)

	<b>% to Total Attendance</b>	<b>Attendance By Type</b>	<b>Ticket Price <sup>1/</sup></b>	<b>Achieved Per Capita</b>	<b>Cap % to Total</b>
Adult	38.0%	27,094	\$6.50	\$2.47	55.7%
Seniors / Youth	12.0%	8,556	\$5.00	\$0.60	13.5%
Children (5-12)	21.0%	14,973	\$4.00	\$0.84	18.9%
School Group	15.0%	10,695	\$3.50	\$0.53	11.8%
Members	9.0%	6,417	\$0.00	\$0.00	0.0%
Rentals	1.0%	713	\$0.00	\$0.00	0.0%
Complimentary <sup>2/</sup>	4.0%	2,852	\$0.00	\$0.00	0.0%
<b>Total</b>	100.0%	71,300		\$4.44	100.0%

<b>Memberships Estimates</b>	<b>Total</b>	<b>Membership Types</b>	<b>Percent to Total</b>	<b>Estimated Number of Memberships</b>	<b>Average Price By Type</b>
No. of Member Attendances	6,417	Individual	20.0%	152	\$25
Less Assumed Corporate Member Attendances <sup>3/</sup>	300	Family	73.0%	555	\$50
Average Annual Attendances Per Membership <sup>4/</sup>	8	Sponsor	4.0%	30	\$450
<b>Est. Total Memberships</b>	760	Patron	3.0%	23	\$700
Membership Revenue <sup>5/</sup>	\$61,150	<b>Total</b>	100.0%	760	\$80
		Corporate Memberships		10	\$1,000

1 Ticket prices in current dollars, with prices increase at rate of 8% every other year.

2 Complimentary - includes children under 5, VIPs, special guests etc.

3 Assumes 30 visits per Corporate Membership.

4 Typical families assumed at 4 persons. Does not include Corporate Memberships.

5 Does not include Corporate Membership revenue.

Source: ConsultEcon, Inc.



**Table 2 Attendance, Ticket Revenue, and Membership Assumptions** (Prepared by ConsultEcon in 2006)

% to Total Attendance	Stable									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Adult	41.6%	40.4%	39.2%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%	38.0%
Seniors / Youth	13.0%	12.7%	12.3%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Children (5-12)	23.0%	22.3%	21.7%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%
School Group	9.0%	11.0%	13.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Members	8.7%	8.8%	8.9%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Rentals	0.7%	0.8%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Complimentary	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Attendance By Type</b>										
Adult	32,627	31,110	29,347	27,094	27,094	27,365	27,365	27,636	27,636	27,907
Seniors / Youth	10,196	9,780	9,208	8,556	8,556	8,642	8,642	8,727	8,727	8,813
Children (5-12)	18,039	17,172	16,246	14,973	14,973	15,123	15,123	15,272	15,272	15,422
School Group	7,059	8,470	9,732	10,695	10,695	10,802	10,802	10,909	10,909	11,016
Members	6,823	6,776	6,663	6,417	6,417	6,481	6,481	6,545	6,545	6,610
Rentals	549	616	674	713	713	720	720	727	727	734
Complimentary	3,137	3,080	2,995	2,852	2,852	2,881	2,881	2,909	2,909	2,938
<b>Total</b>	<b>78,430</b>	<b>77,004</b>	<b>74,865</b>	<b>71,300</b>	<b>71,300</b>	<b>72,013</b>	<b>72,013</b>	<b>72,726</b>	<b>72,726</b>	<b>73,439</b>
<b>Percentage of Adult Ticket Price</b>										
Adult	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Seniors / Youth	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
Children (5-12)	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%
School Group	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
Members	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Rentals	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Complimentary	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Ticket Price Analysis <sup>1/</sup></b>										
Adult	\$6.50	\$6.50	\$7.02	\$7.02	\$7.58	\$7.58	\$8.19	\$8.19	\$8.84	\$8.84
Seniors / Youth	\$5.00	\$5.00	\$5.40	\$5.40	\$5.83	\$5.83	\$6.30	\$6.30	\$6.80	\$6.80
Children (5-12)	\$4.00	\$4.00	\$4.32	\$4.32	\$4.67	\$4.67	\$5.04	\$5.04	\$5.44	\$5.44
School Group	\$3.50	\$3.50	\$3.78	\$3.78	\$4.08	\$4.08	\$4.41	\$4.41	\$4.76	\$4.76
Members	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Rentals	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Complimentary	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Per Capita Average Revenue</b>	<b>\$4.59</b>	<b>\$4.54</b>	<b>\$4.84</b>	<b>\$4.79</b>	<b>\$5.17</b>	<b>\$5.17</b>	<b>\$5.59</b>	<b>\$5.59</b>	<b>\$6.03</b>	<b>\$6.03</b>
<b>Membership Analysis</b>										
Membership Attendance	6,823	6,776	6,663	6,417	6,417	6,481	6,481	6,545	6,545	6,610
Memberships	820	810	790	760	760	770	760	770	770	770
Average Membership Fee	\$80	\$80	\$87	\$87	\$94	\$94	\$102	\$102	\$110	\$110
<b>Corporate Membership Analysis</b>										
Corporate Membership Attendance	300	300	330	330	360	360	390	390	420	420
Number Corporate Memberships	10.0	10.0	11.0	11.0	12.0	12.0	13.0	13.0	14.0	14.0
Avg. Corporate Membership Rate <sup>2/</sup>	\$1,000	\$1,000	\$1,080	\$1,080	\$1,170	\$1,170	\$1,260	\$1,260	\$1,360	\$1,360

1/ Ticket prices are in current dollars in Year 1. Ticket prices are assumed to increase at a rate of 8% every other year.

2/ Memberships and corporate membership rates are assumed to increase 8% every other year. Membership fees are rounded to the nearest dollar. Source: ConsultEcon, Inc.

**Table 3 Operations Analysis Assumptions in Stabilized Year Current Dollars** (Prepared by ConsultEcon in 2006)

<i>General</i>	
Gross Square Footage of Phase 1 <sup>1/</sup>	22,000
Exhibit Square Feet	14,600
Mid-Range Attendance	71,300
Rate of Inflation	2.5%
Annual Attendance Growth after Year 5	1% every other year
Other Revenue as a % of Earned Revenue <sup>2/</sup>	1.0%
<i>Admission Fees and Revenue</i>	
Adult Ticket Price	\$6.50
Per Capita Ticket Revenue	\$4.44
Ticket Price and Membership Price Increase % every other year	8.0%
<i>Retail</i>	
Per Capita Retail Sales	\$2.50
Cost of Goods Sold as a % of Retail Sales	52%
<i>Food Service</i>	
Percentage Buying Food / Drink	50%
Average Sale	\$3.00
Per Capita Café/Kiosk/Vending Sales	\$1.50
Facility Share of Gross Sales	15%
<i>Special Programs</i>	
Special programs are an important component of future operations of CTI. Their scale and focus have not been determined yet. These may add earned revenues and grants & gifts, and corresponding program expenses.	
<i>Family &amp; Supportive Memberships</i>	
Number of Individual, Family & Supportive Memberships	760
Average Membership Fee	\$80
Annual Attendances Per Membership	8
<i>Corporate Memberships</i>	
Number of Corporate Memberships	10
Number Increase in Corporate Memberships Every Other Year	1
Avg. Corporate Membership Rate	\$1,000
Attendances Per Corporate Membership	30
<i>Facility Rentals and Receptions</i>	
Facility Rentals Per Year	15
Number of Attendees Per Facility Rental <sup>3/</sup>	48
Target Attendance in Stable Year	713

1/ From Exhibition Programming and Concepts by Eisterhold Associates.

2/ Other revenue includes incidentals such as stroller rentals, cloak room collections, etc.

3/ Number is rounded, derived from target attendance and number of facility rentals.

Source: Eisterhold Associates and ConsultEcon, Inc.

**Table 4 Operating Revenue Potential** (Prepared by ConsultEcon in 2006)

	Stabilized Year in Current Dollars	Stable									
		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
<b>TOTAL ATTENDANCE</b>	71,300	78,430	77,004	74,865	71,300	71,300	72,013	72,013	72,726	72,726	73,439
Per Capita Ticket Revenue	\$4.44	\$4.59	\$4.54	\$4.84	\$4.79	\$5.17	\$5.17	\$5.59	\$5.59	\$6.03	\$6.03
<b>EARNED REVENUE</b>											
Ticket Revenue	\$316,216	\$359,915	\$349,444	\$362,712	\$341,513	\$368,834	\$372,522	\$402,324	\$406,307	\$438,812	\$443,114
Membership Revenue <sup>1/</sup>	61,150	65,978	65,173	68,730	66,120	71,440	72,380	77,520	78,540	84,700	84,700
Corporate Membership Revenue	10,000	10,000	10,000	11,880	11,880	14,040	14,040	16,380	16,380	19,040	19,040
Retail Net of COGS	85,560	94,116	94,715	94,386	92,139	94,442	97,771	100,216	103,738	106,331	110,058
Food Service	16,043	17,647	17,759	17,697	17,276	17,708	18,332	18,790	19,451	19,937	20,636
Special Programs <sup>2/</sup>	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Facility Rental	15,000	15,000	15,375	15,759	16,153	16,557	16,971	17,395	17,830	18,276	18,733
Other Earned Revenue <sup>3/</sup>	5,040	5,627	5,525	5,712	5,451	5,830	5,920	6,326	6,422	6,871	6,963
<b>Total Earned Revenue</b>	<b>\$509,008</b>	<b>\$568,282</b>	<b>\$557,991</b>	<b>\$576,876</b>	<b>\$550,532</b>	<b>\$588,851</b>	<b>\$597,937</b>	<b>\$638,952</b>	<b>\$648,669</b>	<b>\$693,967</b>	<b>\$703,244</b>
<b>NON-EARNED REVENUE <sup>4/</sup></b>	<b>\$368,418</b>	<b>\$309,144</b>	<b>\$341,371</b>	<b>\$344,969</b>	<b>\$394,360</b>	<b>\$379,663</b>	<b>\$394,790</b>	<b>\$378,594</b>	<b>\$394,315</b>	<b>\$375,091</b>	<b>\$392,541</b>
<b>TOTAL REVENUE</b>	<b>\$877,426</b>	<b>\$877,426</b>	<b>\$899,362</b>	<b>\$921,846</b>	<b>\$944,892</b>	<b>\$968,514</b>	<b>\$992,727</b>	<b>\$1,017,545</b>	<b>\$1,042,984</b>	<b>\$1,069,059</b>	<b>\$1,095,785</b>

NOTE: Year 1 is in current dollars.

1/ Does not include corporate membership

2/ NC means not calculated at this time. Note that corresponding program costs have not been included in expenses as well.

3/ Other revenue includes incidentals such as stroller rentals, cloak room collections, etc.

4/ The Non-Earned Revenue assumes a breakeven operation. Potential non-earned revenues sources include contributions; sponsorships; outside grants and/or foundations; donations; local, state and federal funding; interest income from endowment and other sources; annual gala and other fundraising events; and other non-earned revenue sources.

Source: ConsultEcon, Inc.

**Table 5 Operations Analysis Assumptions in Stabilized Year Current Dollars**

(Prepared by ConsultEcon in 2006)

<b>Title/Position</b>	<b>Number of Full-Time</b>	<b>Number of Part-Time</b>	<b>Assumed Full-Time Annual Salary</b>	<b>Total Salary</b>
<b>Administration, Finance &amp; Management</b>				
Executive Director	1		\$75,000	\$75,000
Business Manager / Bookkeeper		1	\$42,000	\$21,000
Office Administrator / Receptionist	1		\$28,000	\$28,000
<b>Marketing &amp; Development</b>				
Director of Marketing	1		\$38,000	\$38,000
Development Director / Membership Coordinator	1		\$45,000	\$45,000
<b>Education &amp; Exhibits</b>				
Education and Exhibits Director, and Curator	1		\$42,000	\$42,000
Educator		1	\$28,000	\$14,000
Exhibit and Computer Technician		1	\$35,000	\$17,500
<b>Operations</b>				
Facilities / Maintenance Manager	1		\$32,000	\$32,000
Volunteer Coordinator		1	\$22,000	\$11,000
Custodian / Groundskeeper	1	1	\$19,000	\$28,500
Store Manager / Facility Rental Coordinator	1		\$38,000	\$38,000
Cashiers - Admissions / Retail	1	1	\$20,000	\$30,000
<b>Total Salaries</b>				<b>\$420,000</b>
Percent of Taxes & Fringe of Total Salaries	22%			\$92,400
<b>Total Salaries, Taxes &amp; Fringe</b>				<b>\$512,400</b>
<b>Total Personnel</b>	<b>9</b>	<b>6</b>		
<b>FTE Positions <sup>1/</sup></b>		<b>12.0</b>		

1/ FTE, or Full Time Equivalent, positions are estimated based on full time personnel plus part time workers at 50% of full time. For instance, a 50% position could represent two 25% of full time positions for the cashiers.

Source: ConsultEcon, Inc.

**Table 6 Potential Operating Expenses in Current Dollars (Prepared by ConsultEcon in 2006)**

<b>Project Parameters</b>			
Project Square Footage (SF)	22,000		
Annual Attendance	71,300		
Full-Time Equivalent Employees (FTEs)	12.0		
<b>Detailed Budgetary Analysis</b>	<b>Annual Amount</b>	<b>Expense Factors <sup>2/</sup></b>	<b>Percent to Total</b>
Salaries (FTE,PTE)	\$420,000	See Personnel Schedule	47.9%
Taxes / Fringe	92,400	@ 22.0% Based on employee mix	10.5%
Professional Services	30,000	@ \$2,500 Per FTE	3.4%
Administrative <sup>3/</sup>	24,000	@ \$2,000 Per FTE	2.7%
Supplies and Materials	18,000	@ \$1,500 Per FTE	2.1%
Advertising	71,300	@ \$1.00 Per Attendee	8.1%
Printing & Publications	28,520	@ \$0.40 Per Attendee	3.3%
Utilities	77,000	@ \$3.50 Per SF Interior	8.8%
Insurance	22,000	@ \$1.00 Per SF	2.5%
Repairs & Maintenance Interior	22,000	@ \$1.00 Per SF	2.5%
Exhibit Reinvestment / Maintenance	35,650	@ \$0.50 Per Attendee	4.1%
Other Miscellaneous / Contingency	11,000	@ \$0.50 Per SF	1.3%
<b>Subtotal Operating Expenses</b>	<b>\$851,870</b>		<b>97.1%</b>
Capital Reserves <sup>4/</sup>	\$25,556	3% of Total Op. Expenses	2.9%
<b>Total Operating Expenses</b>	<b>\$877,426</b>		<b>100.0%</b>
<b>Operating Analysis</b>			<b>Percent to Total</b>
Operating Expense Per SF	\$39.88	Personnel Costs	58.4%
Operating Expense Per Visitor	\$12.31	Non Personnel Costs	41.6%
Attendees Per FTE	5,942		
Op. Exp Per FTE	\$73,119	Taxes & Fringe Per FTE	\$7,700
Square Feet Per FTE	1,833	Taxes & Fringe Per Employee	\$6,160

1/ Operating expenses for Museum only. Does not include site costs. 2/ Factors are estimated on industry standards and the specific attributes of the project and local conditions. 3/ Includes: Telephone, Office Supplies, Postage & Shipping, Equipment Rental, Travel & Development, Dues & Subscriptions etc.4/ Capital Reserves include funds for equipment replacements and minor capital for building improvements. Source: ConsultEcon, Inc.











## DEVELOPMENT OF TECHWORKS!

Development of TechWorks! as a showcase of regional technology - past, present, and future is an ongoing initiative that addresses both components of the Center's mission: *To document and present in context, the inventions and industrial innovations of New York's Southern Tier* (adopted June 2003).

The overarching goal of the TechWorks! development is to create a destination where adults from 15 to forever can experience innovation - past, present, and future. The Center explores the fundamental question of Why is Binghamton (and surrounding region) such a creative community, from the 19th century to present? With more than double the US patent productivity rate as reported recently by Michael Porter, Harvard Business School, the Binghamton Metropolitan Statistical Area (MSA) has a technology talent pipeline that runs several generations deep. The intent of TechWorks! is to inspire in its visitors comfort with change, flexibility in thought, and ingenuity in action.

Dynamic displays of technology in action and emerging innovation are planned to inspire a continued flow in the technology talent pipeline that runs generations deep in this part of NY. The cost to develop TechWorks! is estimated at \$13 - \$15 million, based on Museum Concept Plans, which have the government approvals, needed to proceed, including zoning and State Historic Preservation Office. Opening of TechWorks! is projected for 24-30 months after capital funds are secured.

The TechWorks! development strategy is to adaptively reuse the 30,000 sf vintage brick ice cream factory on a 2.1 acre site on Binghamton's water front, donated by Edward R. and Karen D. Levene, Sept 2009. A 5,000 sf roof top Riverview Terrace will be added over the central block and the 1912 south loading dock area will be replaced with a 2,500 sf barrier-free entrance. The new entrance will house the South Entrance Energy Exhibit, showcasing operational energy generating, storage, and conservation technologies. Display of daily and long-term outputs will be visible from the street to engage passersby in energy decision making concepts, supplemented by a mural illustrating energy balances painted on the floodwall flanking the west edge of the new entrance. The nationally-recognized design team of Bucher Borges Group, Washington DC, (architecture) and Eisterhold Associates, Inc., Kansas City, MO (exhibit design) was selected for their expertise and experience in integrating historic preservation, green design, and design of dynamic visitor experiences rooted in history and geared to adult and young adult audiences, respectively.

TechWorks! visitors will explore the following trends and ideas:

*Out of This World Technology*, showcasing pioneering advances in avionics, flight and engine controls, navigation, simulation, and electronic packaging durable enough to withstand extreme environments of space.

*Hall of Ones & Zeroes* demonstrating the evolution of managing information with punched hole technology from player piano rolls and punch cards through vacuum tubes and solid state electronics to photonics and beyond.

*Technology of Music from the Heart of NY* from pipe organs to high-fidelity audio from McIntosh Laboratory and roots of electronic music by Moog and Theremin.

*Mobile Communications* - Wireless networks from telegraph systems to Twitter have depended on Southern Tier advances - from Ezra Cornell's *Mole Plow*, making installation of telegraph lines profitable to Corning's revolutionary low-loss optical fiber (1970) optics, extended to WiFi in vehicles with Corning's super flexible fiber optics (2014). Eighteen months after the *Titantic* sent rescue calls, the world's first land-based text messages were sent between moving trains from stations in Binghamton and Scranton, PA (November 1913). Miniaturization of circuitry and lithium ion batteries are key to devices that fit on your wrist or in your ear.

*Energy Technology* - In addition to the building addition, energy related events, programs, and temporary exhibits will derive their momentum from several recent state level initiatives, including *Reforming the Energy Vision (REV NY)*, 76 West competition for funding from the NYS Energy Research and Development Agency (NYSERDA) and NY Battery and Energy Storage Technology (NY BEST). The Center's archive team is working with these groups to document energy technology advances that result from these initiatives.

*Imaging technologies – TechWorks! imaging technologies theme will explore pioneering advances in photography, photochemistry, and digital imaging systems from the 1860s to present. Led by E. H. Anthony, Ansco, and successor companies, Agfa-Ansco, GAF, Anitec produced the first flexible roll film and John Glenn's camera and film. In the 21st century, Corning's Gorilla Glass and digital imaging advances by Binghamton Simulation Coalition members, continue to lead the industry. Visitor experiences range from 3D holography to a walk-in Pinhole Camera.*

*Flight simulation - TechWorks! flight simulation theme will trace the beginnings of the industry in Binghamton in the 1930s with the mechanical Link Instrument Flying Trainer to the ever evolving state of the art simulation technology as advanced by Southern Tier companies. Visitors can take brief flying lessons in a Link Pilot Maker in the TechWorks! collection, which includes a trio of devices from the 1940s, 1960s, and 1980s. Pending restoration is the visual system from the Apollo Lunar Module Simulator, on long-term loan from the National Air and Space Museum. When the star field generating equipment is operational, it will demonstrate for TechWorks! visitors the unique 1960s technology that produced the superb resolution necessary to train Apollo astronauts in mission-critical navigation tasks. One of the most important of these tasks was to precisely synchronize Lunar Module lift-off with the Command Module to assure rendezvous and docking for the return trip to Earth.*

*Imagination Zone* - will explore the process of change in a designed, dynamic environment.

We are building TechWorks! from the inside out, pending capital investment. In November 2015, two icons of globally important, locally grown mid-20th century breakthrough technology were added to the TechWorks! experience.

NASA's Lunar Module Simulator visual system (1968), designed and built by GP-Link at BGM airport, is at TechWorks! on a 30 year restoration loan from the Smithsonian Institution's National Air and Space Museum (NASM). The goal is to refurbish the telescope display system that pre-dates digital imaging, used to train Apollo astronauts to navigate without GPS. The star fields generated will be recorded for display to visitors both at TechWorks! and at NASM's Destination Moon gallery on the Mall in DC, slated to open in 2019. The optics technology will be illustrated with a laser ray trace through vintage LEM window display equipment. The combined product will be a focal point in the proposed Out of This World Technology gallery at TechWorks!.

The IBM 1401 mainframe system (1959) - with printed circuit electronics pioneered, manufactured, and programmed in Endicott, NY - changed the way the world handles information, bringing sophisticated electronic data analysis out of the realm of a few advanced laboratories and into the hands of business, large and small. In five years, 10,000 IBM 1401 systems were installed, doubling the global computing capacity. In 1962, data transmitted by Telstar, the world's first television satellite, was processed by IBM 1401 systems in LaGaude, France and at the IBM Endicott Laboratory. One of a dozen extant IBM 1401 systems, including CPU, card reader, six tape drives, and 1403 high-speed printer, was donated to the TechWorks! Vintage IBM Computing Center (VICC) by Portland, OR collector Paul Pierce, with cross-country shipping underwritten by IBM Almaden Research Lab. VICC is one of five places in the world, the only one on the East Coast, where functioning historic computers are on display.

#### Art at TechWorks!

The TechWorks! development plan calls for multiple outdoor art installations in several scales and formats - from a rooftop sculpture visible from the highway to bike racks shaped like electronic resistors. Most of the vertical surfaces visible from Water Street are slated for murals or perhaps low relief sculptural panels. The Center has a 30 year permit from NYS - Dept. of Environmental Conservation (NYS-DEC) to paint murals on the floodwall that spans the west edge of the TechWorks! site; design review by Binghamton's Committee on Architecture and Urban Design (CAUD) is not required.

#### Sculpture

The largest outdoor artwork planned for TechWorks! is the roof top sculpture, conceived as a series of question marks arrayed in a circle to form a light bulb, evoking the concept that the search for new ideas begins with questions.

The first task is to define the scale of the sculpture, through the observation of weather balloons at known heights, photo documentation, and gathering community response with surveys. In addition, Watson School students and the local engineering community will be invited to prepare a structural analysis of wind and water tolerance. The results

of these data collection efforts will drive the specifics of a national competition for sculpture design and fabrication drawings. Funding for the rooftop sculpture will be sought from the National Endowment for the Arts and private donors.

The TechWorks! site plan, approved Nov 2012, calls for plaza in front of the new South Entrance to be called the Garden of Ideas. The Garden of Ideas will include seating, WiFi access, and sculptural Decision Trees. Design of the Decision Trees will be based on a national Call for Artists.

The smallest sculptures at TechWorks! will be bike racks in the shape of electronic resistors. The design concept grew out of a 2012 community survey, with particular input from Binghamton Bridge Pedal participants. The Southern Tier Bicycle Club installed a prototype bike rack to test size and materials.

## Murals

In 2015, the first phase of the floodwall murals at the south end of the site (A) - *Four Seasons Along the Chenango River* - was painted by JoAnne Thorne Arnold, with help from David Arnold and United Way Day of Caring volunteers. The two remaining floodwall segments visible from the street to illustrate (B) emerging energy technology issues and environmental justice (on floodwall between building and railroad trestle, adjacent to the proposed South Entrance Emerging Energy Exhibit), and (C) principles of floodwater management in regional development context. In order to serve as a basis for community conversations, these two floodwall mural panels are likely to resemble technical illustrations more than inspired artworks.

Facing downtown, a timeline mural that places in chronological context inventions from Binghamton's Water Street companies - including audio, avionics, electronics, and simulation; amplifiers, clocks, combs, egg beaters, flexible shafts, and player pianos - will welcome visitors to Noyes Island, designate as Binghamton's first industrial park in 1911.

The largest of the building murals is the *Big Map Mural* on the north end of the East facade. The *Big Map Mural* delineates the geography of the TechWorks! ideated, helping visitors and passersby to visualize spatial relationships and the role that topography and water play in development as well as a social context of the Southern Tier. The 48' long mural will reproduce early 20th c. U. S. Geological Survey topographic quadrangle maps from Cooperstown in the NE to the OH/PA border on the SW.

A starfield mural, 60 sf, in dark, dusky blue with a grey moon and gold stars will be installed near the center of the Water Street façade. The star field mural will pay homage to the wide range of Southern Tier pioneering advances in support of NASA's

space exploration from the moon to Mars and Skylab to the International Space Station, contributions that are likely to continue in future missions; beckoning passersby to visit the Out Of This World Technology exhibit inside TechWorks!.

The theme for the mural at the south end of the East façade has yet to be determined.

## Development Cost Estimate

Space	Space Total	Construction Cost	Exhibit Cost	Soft Costs + Endowment
South Entrance - Lobby	\$ 1,012,736	\$ 723,350	\$ -	\$ 289,386
Dynamic Zone	\$ 451,516	\$ 172,500	\$ 150,000	\$ 129,016
Hall of Enterprise	\$ 871,533	\$ 172,500	\$ 450,000	\$ 249,033
2nd fl-Archives, Off, Mtg	\$ 1,268,000	\$ 920,000	\$ -	\$ 348,000
Hall of Ones & Zeroes	\$ 1,163,031	\$ 430,733	\$ 400,000	\$ 332,298
Imagination Zone	\$ 1,127,898	\$ 165,600	\$ 640,000	\$ 322,298
Energy-Inside 1st/2nd flr	\$ 285,962	\$ 109,250	\$ 95,000	\$ 81,712
Riverview Terrace	\$ 762,021	\$ 542,021	\$ -	\$ 220,000
Out of this World Technology	\$ 2,156,216	\$ 485,254	\$ 1,054,900	\$ 616,062
North Bldg	\$ 1,705,633	\$ 718,463	\$ 499,800	\$ 487,370
Site work-1st phase	\$ 1,319,120	\$ 765,300	\$ 100,000	\$ 453,820
Energy Exhibit	\$ 1,050,000	\$ -	\$ 750,000	\$ 300,000
Rooftop Sculpture	\$ 280,000	\$ 140,000	\$ 100,000	\$ 40,000
Garden of Ideas - Sculpture Artist fees & donors variable		\$ -	TBD	TBD
<b>TechWorks! Total Cost (2012)</b>	\$ 13,453,666	\$ 5,344,971	\$ 4,239,700	\$ 3,868,995
<b>TechWorks! Total Cost (2016)</b>	\$ 14,328,154	\$ 5,692,394	\$ 4,515,281	\$ 4,120,480

Estimated 2016 costs scaled by 1.065 per R. S. Means Historical Construction Cost Index

# TechWorks! Development Timeline

TASK	MONTH								
	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9
Owner	Contract	Proceed	Approve	Approve			Approve		Approve
Architectural Design	Program	Schematic Design		Construction Documents					
Structural Design	Program	Schematic Design		Construction Documents					
Site Work Design	Program	Schematic Design		Construction Documents					
MEP Design	Program	Schematic Design		Construction Documents					
Geotechnical	Testing								
Environmental	Testing								
Archaeology	Investigation								
Interior Exhibit	Survey	Concept	Schematic Design				Design Development		
Exterior Exhibit	Concept		Schematic Design				Design Development		
Building permit		Submit	Review				Submit	Review	
SHPO Review			Submit	Approve			Submit	Approve	
Bidding									Bid Package
General construction									

	M 10	M 11	M 12	M 13	M 14	M 15	M 16	M 17	M 18	M 19
Owner		Approve		Approve			Approve			
Architectural Design			Construction Administration							
Structural Design			Construction Administration							
Site Work Design			Construction Administration							
MEP Design			Construction Administration							
Geotechnical				Testing						
Environmental	Remediate	Remediate								
Archaeology										
Interior Exhibit			Bid package			Shops	Prefabrication			Prototyping
Exterior Exhibit										
Building permit	Approve					Close In				
SHPO Review										
General construction	Bid GC	Contract					Close in			

	M 20	M 21	M 22	M 23	M 24	M 25	M 26
Owner	Approve	Punchlist	Occupancy			Punchlist	
Architectural Design							
Structural Design							
Site Work Design							
MEP Design							
Geotechnical							
Environmental							
Archaeology							
Interior Exhibit		Fabrication			Installation	Opening	
Exterior Exhibit							
Building permit	Final		Occupancy				
SHPO Review							
General construction		Punch					

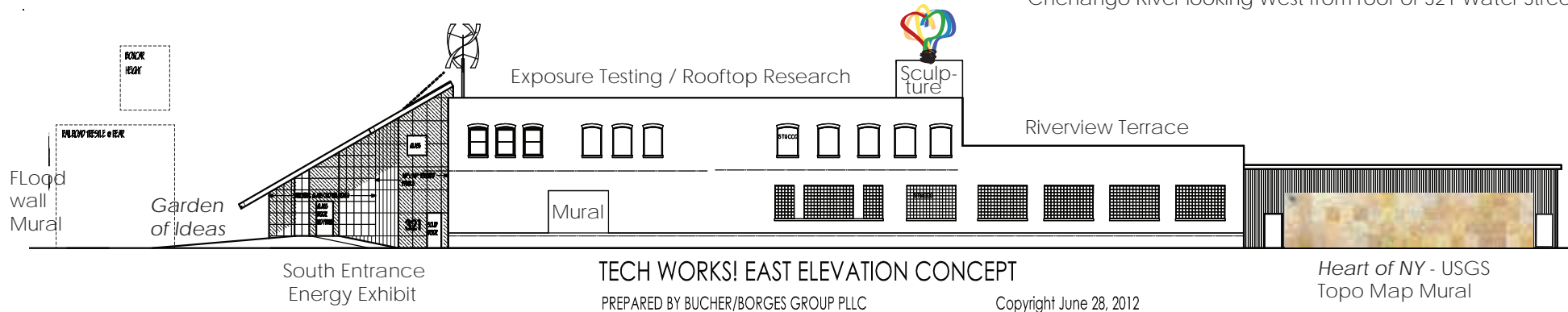


# TechWorks!

Experience Innovation  
Past, Present, & Future



Chenango River looking West from roof of 321 Water Street

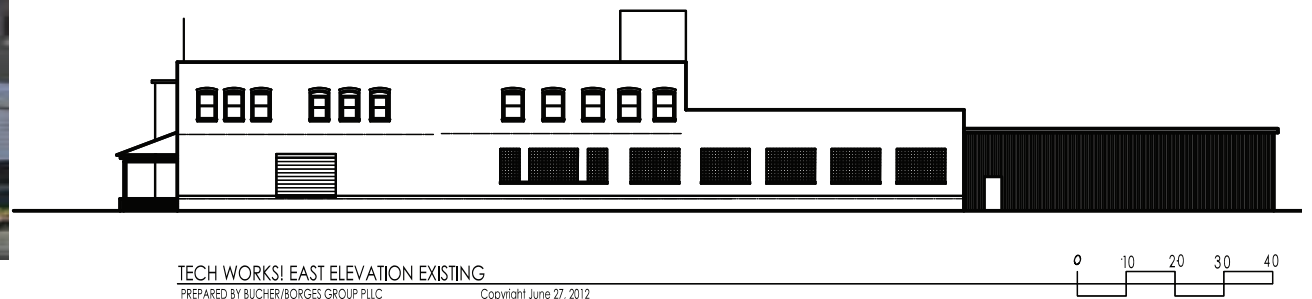


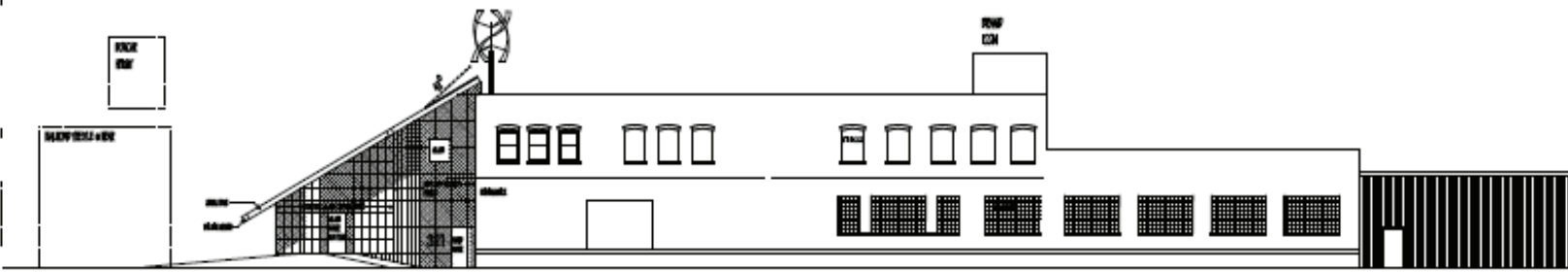
The *TechWorks!* design integrates green building, historic preservation, and outdoor art, bringing life to the creative legacy & resilient spirit of the region – past, present, and future.

The 30,000 sf vintage brick ice cream factory will be renovated, adding a second floor river view terrace and pervious paving throughout the site. The new, accessible South entrance will monitor energy production by a range of technologies – roof top wind turbines, cornice of photovoltaic panels, roof clad with solar thermal panels, glass walls embedded with solar collectors, and underground geothermal system. Plans include a rooftop sculpture visible from three Interstate highways; a *Garden of Ideas* with seating and sculptural decision trees, and several murals of the Upper Susquehanna watershed and the *TechWorks!* ideashed.



321 Water Street, South Front - as is, pre-renovation

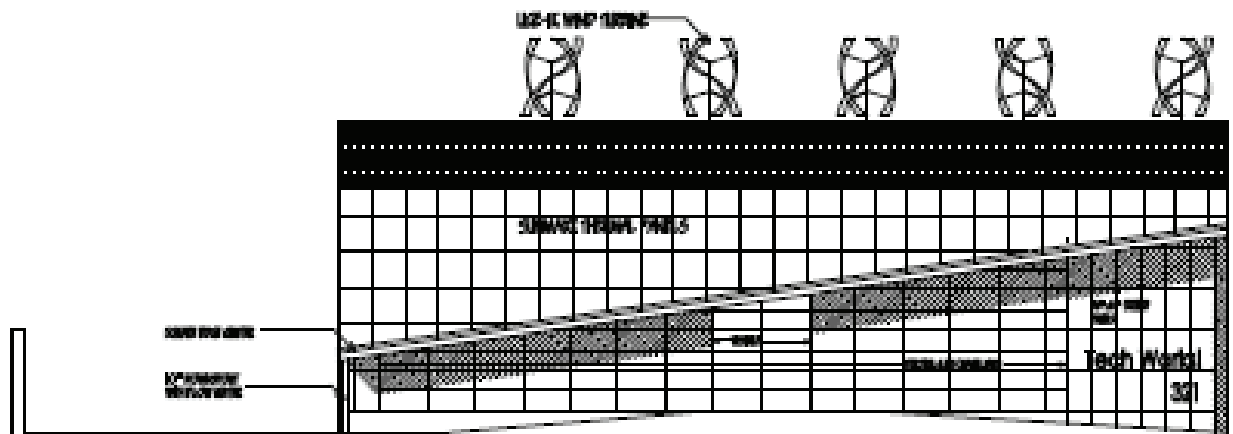
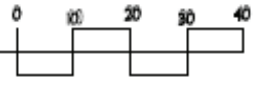




**TECH WORKS! EAST ELEVATION CONCEPT**

PREPARED BY BUCHER/BORGES GROUP PLC

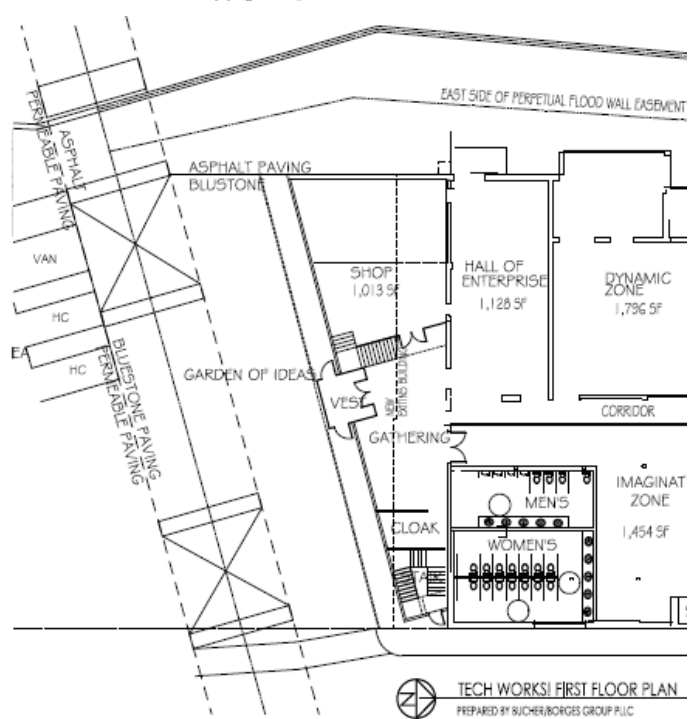
Copyright June 28, 2012



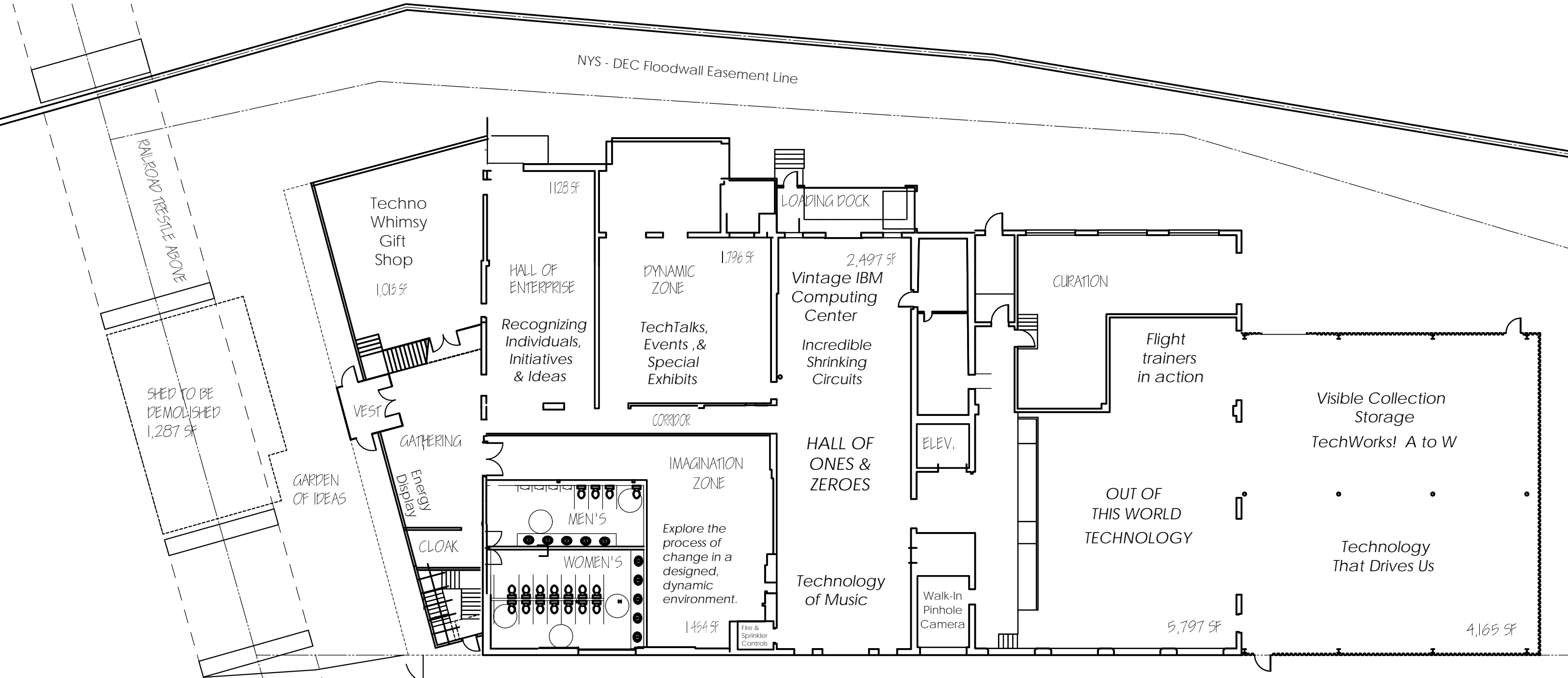
**TECH WORKS! SOUTH ELEVATION CONCEPT**

PREPARED BY BUCHER/BORGES GROUP PLC

Copyright July 10, 2012



**TECH WORKS! FIRST FLOOR PLAN**  
PREPARED BY BUCHER/BORGES GROUP PLC



**TECH WORKS! FIRST FLOOR PLAN**

PREPARED BY BUCHER/BORGES GROUP PLLC JUNE 23, 2012  
 Updated by Center for Technology & Innovation, Binghamton, NY March 2015

**TechWorks! Visitor Experiences and Naming Opportunities**

**FIRST FLOOR GROSS FLOOR AREA**

EXISTING MAIN BUILDING	21,550 SF
EXISTING SHED	1,287 SF
TOTAL EXISTING	22,837 SF
MAIN BUILDING REMOVED	-1,282 SF
SHED REMOVED	-1,287 SF
NEW CONSTRUCTION	2,555 SF
TOTAL PROPOSED	22,823 SF

GARDEN OF IDEAS 3,700 SF

## ONLY A FEW PLACES HAVE FUNCTIONING VINTAGE COMPUTERS ON DISPLAY



Bletchley Park, UK



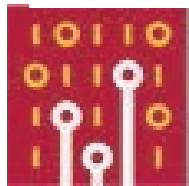
Museum of Computing's mission is "To collect and restore computer systems particularly those developed in Britain and to enable people to explore that collection for inspiration, learning and enjoyment."

House for the History of IBM Data Processing, Boeblingen, Germany. 120 years of IBM machines, restored and operated by retired IBMers.



Moved from Sindelfingen in 2013

Mountain View, California

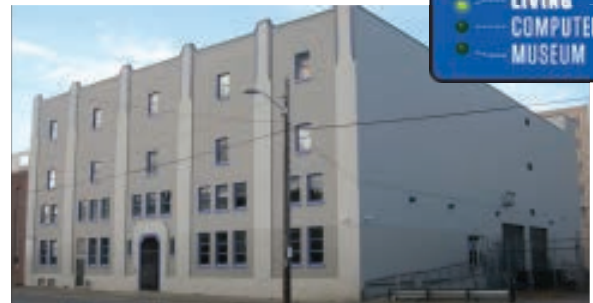


Computer History Museum



The Computer History Museum is the world's largest history museum for the preservation and presentation of artifacts and stories of the Information Age located in the heart of Silicon Valley.

Seattle, Washington



The Living Computer Museum presents the meaningful milestones in the evolution of computers and how people use them.

Assembled by Microsoft Co-Founder Paul Allen

## TechWorks! - Showcasing Upstate NY ingenuity - past, present, & future



Pre-renovation, the TechWorks! operates vintage equipment from IBM, Link, Raymond, & regional companies, testing visitor response to diverse experiences.



Design Concept for South Entrance Energy Exhibit has all government approvals needed to develop TechWorks! and its Garden of Ideas in a vintage ice cream factory along the Chenango River Trail in downtown Binghamton, New York.



Water Street Inventions - 8' h x 36' w (facing S, downtown)  
Chronology & Connections of Ideas - Audio, Avionics,  
Electronics, Flexible Shafts, Music, & Simulation



Giant Camera Aperture Wall 7' h x 9' w  
Star field mural - Dark, dusky blue ground with  
gold stars, monochrome moon



Floodwall mural - A *Four Seasons Along the Chenango*  
JoAnne Arnold (2015)



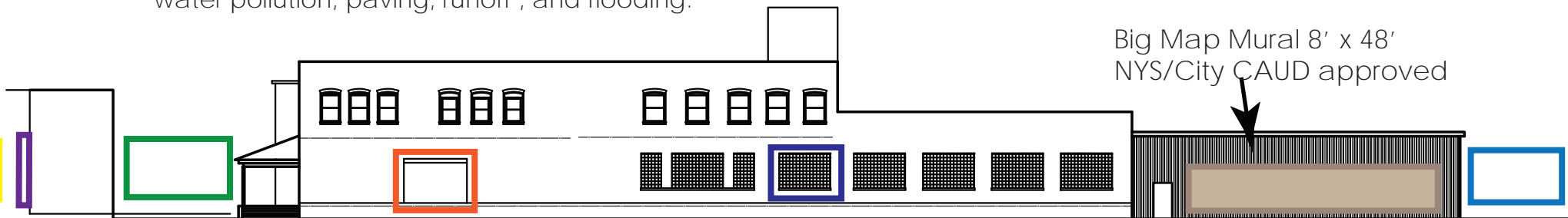
Floodwall mural - B 7' h x ~30' w Energy Technology in  
Context - Use, Generation, Storage, and Distribution  
Environmental and social justice considerations.



Floodwall mural - C 7' h x ~30' w Watershed Management  
Environmental and social justice issues of development -  
water pollution, paving, runoff, and flooding.

# Center for Technology & Innovation 321 Water Street, Binghamton, NY TECHWORKS! MURALS

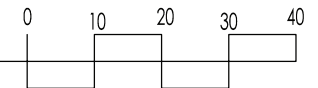
February 2016



Norfolk  
Southern  
RR trestle

TECH WORKS! EAST ELEVATION EXISTING

PREPARED BY BUCHER/BORGES GROUP PLLC SEPTEMBER 26, 2011



Building Blocks

South - Brick, 2 Story, 1912

Central - Brick, 1 Story, 1946

North - Metal, 1 story, 1972



Replace white plastic strips w/ Di-Bond panels printed with transit vinyl and/or applied bas relief  
8' h x 12' w Graphic concept and design options - TO BE DETERMINED

The public programs of the CTI have an overarching theme with national, and timeless, resonance and interest. At the same time, because of the rich history of technological development in the valley, the interpretive program is site-specific, that people will have to come here to see.

While it important that the museum remain a vehicle for collection and remembrance, its interpretive programs build on history to define stories that are educationally relevant to formal programs (school tours and seminars), and informal education. A careful balance must be maintained between stories that are too specific and too local, which risk losing the national audience, and stories that are too general, which might be told anywhere else in the country.

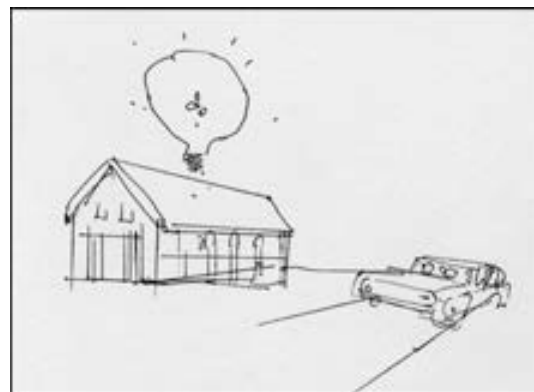
One of the problems the museum has (and it's a problem that most museums wish they had) is that there may be too much material to draw from, and without a proper framework, story editing may be difficult. An incredible amount of Technology came out of this area. Possibly more than any other 100 square mile area in the United States. It would seem that in it's day, the Southern Tier was in a league with Silicon Valley, Silicon Alley, or Bell Labs.

CTI is emphatically not a Science Museum. It does not focus on basic science. Its subject is Technology and Innovation: real-world, Applied Science. We think that this intersection of Creativity, Technology, and Entrepreneurship gives CTI a viable theme with a lasting, worldwide interest. And there are many significant historical examples to draw from.

## Approach

From the approach roads, the CTI facility should be identified as something singular - with an icon that says

"this place is special". The icon should be carried through with all of the Center's identity, from site, to gift-shop items, to stationary. And "idea light bulb", is an image familiar to almost everyone. A better icon might be a thought balloon as a recurring framework, in which we can place a "library" of sub-images, depending on topic. (Reference the Nickelodeon identity system).



## Setting the Tone: Garden of Ideas



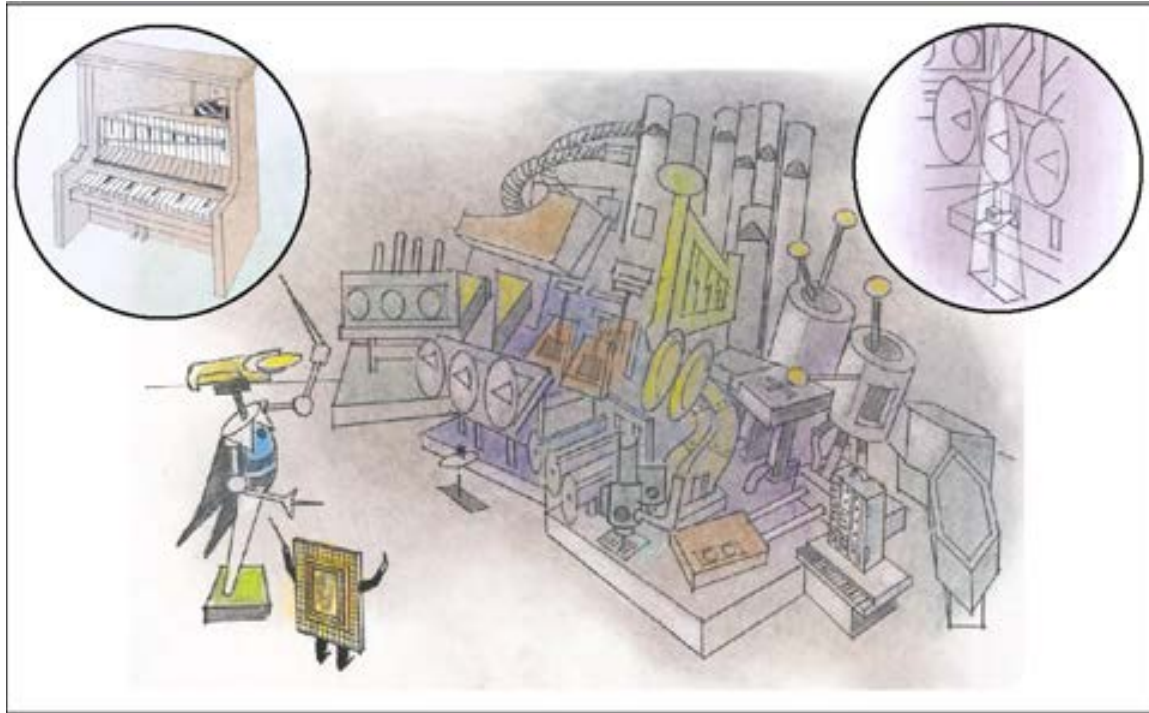
The pedestrian approach should be graceful and inviting. Many public facilities use plazas embellished with –planting to create a transition zone from the "street world" to the story-space of the institution. We use tech sculptures that have an aesthetic quality, but each tells an inherent "hidden" story. After a visit or two guests will become familiar with the knowledge embedded in the decision trees, plotted plants, etc. Each –"decision tree" should represent the history of a Southern Tier company, or invention. Paths untaken (by management, or the inventors) would represent unrealized branches. At some point, the decisions would bear fruit. Creativity would flower. And money might be found to grow on trees.

## Reception



Here, visitors purchase tickets, and can package their experience, selecting from additional up-charge items such as guided tours and special presentations

## Stating the Theme: Orchestra Works!



This is the area that tells visitors what the Center is all about. In the military, they say "tell them what you will tell them, then tell them, then tell them what you told them". This area tells them what we're going to tell them: Stories of Technology, and its genesis. The show begins with an overture played on a Link Player Piano: the mechanical musicians become more complex, until the full orchestra, conducted by a mechanical conductor (or perhaps a small, semi-conductor), leads us through an outline story of the development of technology. For the finale, the spot focuses more and more tightly, down to the final player – a teeny iPod, with rich digital sound that still fills the auditorium.

## Personalizing the Visitor Experience

Technology is a complex subject. In any museum, and particularly in one that deals with this subject matter, the ideal exhibit presentation is geared to the interest and level of familiarity that the visitor brings with him/her.

The Center has an opportunity to use Technology in its presentations, and can even craft a content delivery that is specific to the interests of its visitors. In order to do this, the first necessary step is to find out what the visitors' individual interests are. Then, CTI can give the visitor a unique identifier device that they can use to activate specific storylines in the exhibits.





The specific technologies and logistics for this require some development and evaluation: if done thoroughly, and will an appropriate respect for the technological processes that it is representing, as well as embodying, we may achieve a goal that has been much talked-about, but never realized in an integrated way within the museum community.

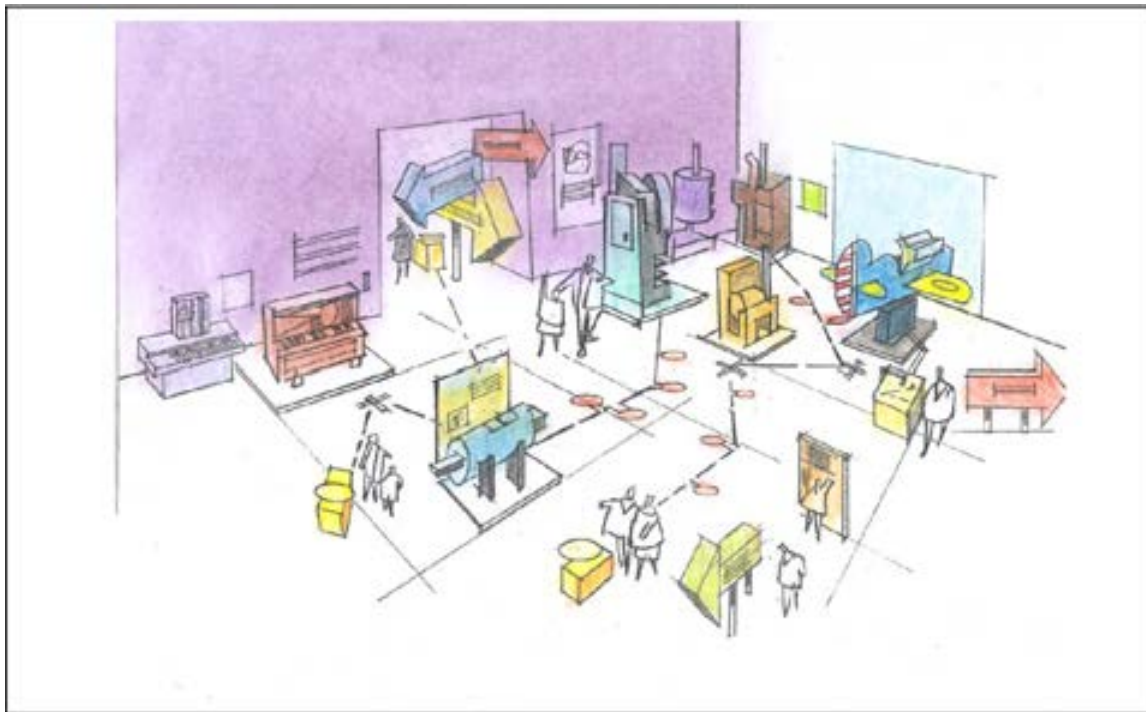
The system would be made up of several components (each testable)

1. TechWorks! Asks, Who Are You? What is the most efficient (meaning, best tradeoff between accuracy, non-invasiveness, and speed)
2. This information accompanies the visitor throughout his/her museum visit.
3. This personalized information is presented to address different pathways, learning styles and interests.
4. We will explore ways to extend the experience beyond the four walls, and create a long-term relationship with the visitor.

### Connecting Exhibits and Ideas

The rest of the exhibits elaborate on variations of the theme "Technological Developments". Historical artifacts, or expositions of stories, are displayed in a web-like that maximizes visual and spatial links between topics, depending on how the subjects are developed.

Via the personalized thin-screen display system, the Center could deliver information pertinent to a visitor's individual interests - how the technology operated, how it was made, how it was marketed, or the personalities involved.



But the organization of the displays is built around their conception and development. (This information may need to be developed for some story sections, as you proceed with your oral histories and collections acquisition).

Selection of primary displays will be based on the richness of connections to other displays and presentations, as per thematic threads below:

#### 1. Automation

- sequence and synchronization
- feedback and control
- measuring/sensing/optics
- precision manufacturing
- chemistry/coatings
- resources (clear cold water)

#### 2. Creative Process

- thinking with their hands – iteratively improving through repetitive
- making connections, evolving from past models Eureka moments?
- systems integration – putting things together
- scenario-testing

#### 3. Cultural Context of Technology

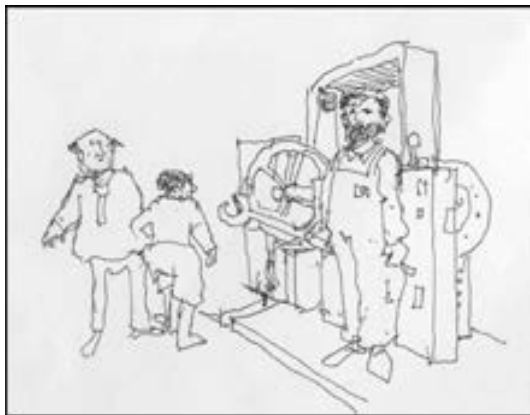
- overall business system that embraces externalities, availability of capital, to the business economics of the enterprise, to undesired affects.
- govt. Environment conducive to tech...govt research, local supportive zoning... definition of pollution/levels of what is acceptable

- distribution/transportation
- standards and innovation
- work Culture (training, unions, benefits, community quality of life)

4. Biography: people stories, about the inventors, workers, or users



Altogether, these exhibits will show that the critical mass of technologies in Broome County fed on one another, creating a unique synergy.



### Entropy

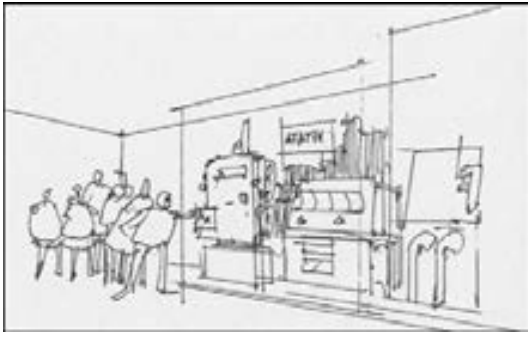
Since things break down, and since CTI has a unique collection and opportunity to showcase things that "work", and a stated commitment to feature non-electronic interactives and working devices, the (inevitable) repair of these mechanisms can be featured as interpretation tools.

### Open Storage

More materials are being collected that can be fit into the exhibits in a comprehensible way. These can be displayed in open storage cases. Information about the individual items can be displayed on interactive labels that illuminate various aspects of the items.

There may also be an opportunity to display, here or in a "science/art

gallery", objects that are beautiful because of their form: an artistic/aesthetic presentation of technology.



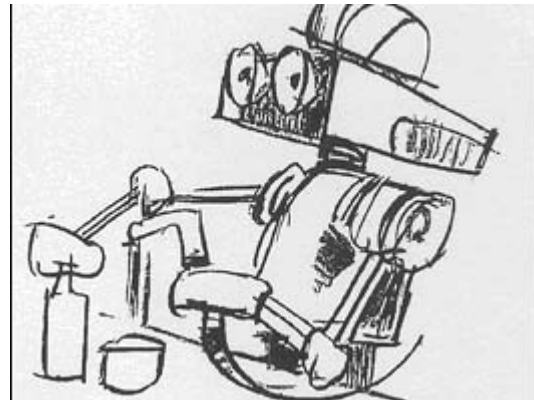
### Gift Shop

With a serious development effort, the CTI Shop could create and market it's own properties, if it can establish itself as a primary source for cool technology merchandise, and create a lively internet business.



### Food Service

With a visitor's stay of 1-2 hours, food service will be a much-appreciated amenity. And, for a small charge, Mr. Spigot, the robotic bar-thing, will serve you up a nice cool drink.





## Auditorium

An auditorium of 108 seats can be used for public presentations, or to show introductory film

## Classroom space

Special classrooms can be fitted with support materials that point to the collections, strengthening the link between school classes, the CTI collections, and be a place to showcase the remarkable technical and historical depth of the museum's docents.



## Dynamic Donor Board

As our Donors are Dynamic, their recognition will be Dynamic as well.

Appropriate to the subject and nature of its presentations, the Donor Recognition device for CT&I is an active, dynamic tribute to our supporters, that is itself a display that celebrates the technology that the Museum commemorates.

Since the Museum is a comprehensive survey of the development of technology in the Southern Tier as it progressed from analogue systems to digital, the Board's display methodologies are a recapitulation of the progression of output technologies. Early "foundation" gifts, are recognized as permanent character displays. Subsequent gifts that support operations and ongoing interpretive programs are recognized via active, changing digital character readouts, with each gift receiving proportional display time.