



## **Visible Interactive (A)**

by

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In December 1994, a little over a year after quitting their jobs and moving to San Francisco, the pieces were starting to fall into place for Laurence Albuquerk (Chicago MBA '92) and William Waytena (Chicago MBA '92), and their startup company, Visible Interactive. Visible had developed a hand-held, interactive device based on an Apple Newton, called the Eye-Q, that could play audio as well as display text and graphics. The product was created for use in museums to guide visitors through both permanent and special collections. As 1994 ended, the response by museums had been very favorable, with the Smithsonian Institution going so far as to begin negotiating a contract for a tour through part of the National Museum of American History. For Larry and Bill, however, several large hurdles remained: figuring out a compression algorithm that would allow the Eye-Q to hold more than thirty minutes of audio, convincing museums to adopt their system over more established competitors, and, perhaps most importantly, raising additional capital.

### **Background**

Larry and Bill became friends after meeting in their Leadership Exploration and Development (LEAD) course during their first year at The University of Chicago's Graduate School of Business. Over their two years in school, the two had discussed a variety of businesses they might start, but without finding one they felt could succeed. When they graduated in late 1992, Larry went to work as a restaurant site developer for PepsiCo's Taco Bell division while Bill accepted a position as an analyst at Barrington Consulting, a litigation consulting firm. Exhibit 1 provides more detailed background information on Larry, Bill, and two of their key employees.

While working, Larry and Bill continued to discuss various business concepts. After initial

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<sup>1</sup> Graduate School of Business, University of Chicago. Copyright ©1996 by Steven N. Kaplan and Peter A. Pashigian. This case has been written for teaching purposes. Some of the assumptions and numbers have been disguised.

market research, the two finally agreed that the museum audio tour market represented a viable opportunity. In October 1993, they quit their respective jobs, moved to San Francisco, and formed Visible Interactive with \$30,000 of their savings as seed capital.

Once in San Francisco, the two performed additional market research and began to develop a museum tour product. After evaluating a number of potential hardware platforms, they settled on the Sony CDI Player as their development platform. The CDI could play audio and color video. At approximately half the size of a laptop computer and weighing two pounds, however, it was somewhat unwieldy. They spent approximately \$25,000 of their original \$30,000 to buy the hardware and to hire programmers to write the software needed to run it.

As they were evaluating and developing their platform, Larry and Bill began trying to schedule meetings with museums around the country to market Visible's new product. Eventually, they were able to arrange a meeting with the curator of technology at the Smithsonian Institution. They had their programmers develop a sample tour for the CDI Player for this meeting. Two days before leaving for the meeting with the Smithsonian, however, Larry and Bill happened upon a Casio Zoomer, a hand-held computer with a speaker. Thinking it might have potential, they spent \$900 to buy a Zoomer and to hire a local programmer to write a short demonstration tour for it. Larry and Bill picked up the Zoomer at 11 A.M. and proceeded to the airport to catch a noon flight for Washington with both the CDI Player and the Zoomer.

Expecting to spend the majority of the meeting discussing the CDI Player demonstration, Larry and Bill were surprised when the curator was more interested in discussing the Zoomer. The result of the meeting was very positive. The Smithsonian was interested in further discussions and went so far as to talk about signing a contract.

Elated by this success, Larry and Bill returned to San Francisco to begin the hard work of actually creating a system that could deliver the full museum tour they had proposed in the demonstrations. Throwing out their previous choices of hardware platforms, the two decided that the Apple Newton, a hand-held computer with a touch screen, microprocessor, sound processor, and external speaker, would be the platform on which they would develop the Eye-Q.

## **Market**

In 1994, there were approximately 8,200 museums in the United States: 55% were history museums or historic sites, 15% were art museums, and the remaining 30% were science, technology, natural history, zoos, botanical gardens and general museums. Each year, there were over 500 million domestic museum visits in the U.S., 250 million of which were at the 575 largest museums that Visible intended to target. The international museum and tour market, particularly Europe, was estimated to be at least as large as the U.S. market.

The size of the audio tour market was difficult to gauge. Larry and Bill estimated that the current audio tour market attracted 20 million visitors and generated total expenditures by those

visitors of roughly \$80 million per year.

To date, the overwhelming majority of installations of audio tour technology had been for traveling art collections, with few installations in permanent collections. The traditional technology used in the audio tour market consisted of portable cassette tape players or continuous radio broadcast receivers (radio wands). The audio tours from these technologies required users to follow a linear or predetermined route. It was because of their predetermined nature, that existing audio tours were most often used for traveling art exhibitions.

Visible was developing one of several next-generation products. (See the Competition section below.) These new products did not require visitors to follow predetermined routes, but allowed for random access. As a result, it seemed likely that these products would be more appropriate for permanent collections and would attract additional visitors.

There were several reasons that museums might demand these next-generation products. First, museums faced greater competition from theme parks and other destination attractions for visitors who increasingly looked to be entertained. At the same time, public funding for museums had become more limited, leading museums to look for additional revenue sources. Museums that looked to audio tours as a source of such revenue also had to respond to the recent passage of the Americans with Disabilities Act (ADA) in 1991. The ADA required that “public accommodations afford full and equal enjoyment of goods, services, facilities, privileges, advantages, and accommodations to an individual with a disability.” Thus, if a museum chose to provide audio tours as a service, the ADA might be interpreted as requiring the museum to undertake all reasonable measures to ensure that all visitors, including those with disabilities, have full and equal access to that tour.

Historically, museums signed one-year contracts with tour producers for old technology, cassette tape-based tours. Because the next-generation products required more content development and were more expensive to produce, tour producers were asking for and beginning to obtain longer-term contracts, in some cases for as long as five years.

## **The Eye-Q**

### **History**

To develop the Eye-Q, Visible hired a programmer, Charles Bulkeley, and began to develop the Eye-Q on their own. In February 1994, they also approached Apple Computer for help in turning the Newton into a museum touring device. In the initial meeting, the Apple representative rebuffed Visible, telling Bill and Larry that Apple could not help them unless they actually placed an order.

In April, Bill and Larry met a different employee of Apple’s Newton division at a trade show. He provided Visible with some technical information on the Newton and promised them additional engineering help. Although that help failed to materialize, Apple did send a sales

representative to attend subsequent meetings with the Smithsonian. By the end of 1994, Visible had an informal agreement with Apple that Visible would be the only company Apple would work with in the museum-touring area. It was not clear, however, what the agreement meant and who at Apple had actually signed onto the agreement. Apple also had promised to continue to provide marketing support. As with the Smithsonian, this essentially consisted of Apple sending a salesperson with the Visible team to museum presentations. Bill and Larry thought it unlikely that Apple would provide significant technical support in the foreseeable future.

Despite the limited help from Apple, Visible had been able to engineer two improvements to the Newton / Eye-Q on its own. First, Visible had figured out how to program the Newton to produce voice quality audio output. Second, because it had been designed for use with a stylus, the Newton did not have a (finger) touch screen. Visible devised a touch-screen for the Newton and had filed a patent for that solution.

By the end of 1994, Visible had made a great deal of progress, but still faced an important technological hurdle with the Eye-Q. The Eye-Q could play only a maximum of thirty minutes of audio. Because most museum tours would require between three and six hours of audio, Visible needed to find a suitable audio compression solution. Larry and Bill believed several solutions existed, but were uncertain about the time and money that would be required to implement them. On the bright side, they also believed that compression technologies, specifically, and hardware technologies, in general, would improve rapidly over the next several years.

### **The Product**

As a hand-held, interactive, audio touring device based on the Apple Newton, the Eye-Q allowed museum visitors to tailor their own experience by controlling the direction, pace and content of the tour. With the Eye-Q, visitors could choose topics that interested them via a touch screen, or allow Eye-Q's infrared sensors to passively cue the appropriate information as they walked through an exhibit. The Eye-Q could be used with or without headphones. Exhibit 2 shows a marketing piece for and picture of the Eye-Q.

Larry and Bill believed that the interactivity of the device was unique in the industry. Unlike traditional cassette tape tours, visitors could learn what they wanted, when they wanted. For example, a visitor might choose between biographical and stylistic material for a painting in an art museum, or between historical and political material in a history museum.

Because the Eye-Q was essentially a small computer, it was fully programmable and, therefore, could be tailored to suit each museum's particular needs as well as those of its visitors. Creative material could be developed in multiple languages, for different age groups, different levels of sophistication, entertainment or education. Larry and Bill hoped that by being able to appeal to different users, participation rates would increase.

In addition, the Eye-Q could provide a record of a visitor's path through the exhibit, allow

visitors to pre-select one of several tours and allow visitors to mark subjects of interest that the visitor could have printed out at the end of the tour. (Printing had the potential to be an additional source of revenue.)

A final advantage of the Eye-Q was that it could help museums achieve ADA compliance by providing audio for the visually impaired and text for the visually impaired (for those visitors who would have trouble reading labels with a small font size or from a distance), text for the hearing impaired, and text for the physically handicapped (for those visitors such as those in wheelchairs who would have trouble accessing labels).

Apple claimed that it had tested the hardware rigorously and that the Newton / Eye-Q would last several years under heavy usage. Visible planned to add neck-straps to prevent damage from dropping.

While Larry and Bill felt strongly that the Newton was the best hardware platform available, several other companies, including Sony, sold platforms that also might be suitable for museum tours.

## **Competition**

Two companies, Acoustiguide and Antenna Theater dominated the cassette tape audio tour market. In addition, several museums and tourist sites produced and operated their own tape tours. Indirectly, docent tours, books, brochures, and kiosks were also competitors.

### **Acoustiguide**

Acoustiguide was the oldest and largest producer of audio tours with annual revenues estimated to be \$20 million. Based in New York City, Acoustiguide was privately-held and had been purchased from its founder by a new owner in 1989.

Because of its long history, Acoustiguide had developed a reputation for reliability in completing projects. While reliable, Acoustiguide also had a reputation for creating conservative and dull cassette tours.

Acoustiguide had just introduced its next generation product which it called the INFORM system. The INFORM system resembled a wand with a keypad. A visitor punched in numbers corresponding to a specific object in order to hear a description of the object. Employing flash RAM storage technology, INFORM had several advantages over the current cassette-tape technology including the ability to hold four hours of audio and greater durability (there were no moving parts). Its drawbacks included no visual display, poor sound quality, and difficulty in reprogramming. The system had been installed in approximately 5 locations including the Philadelphia Art Museum and the Louvre, and was being tested at the National Gallery in

Washington D.C. Visible personnel had used the INFORM system and gave it low grades for audio quality and interactivity.

### **Antenna Theater**

Antenna Theater had produced cassette tape audio tours since 1984 and generated approximately \$5 million in revenues from such tours. Antenna originated as a theater group and consequently developed a reputation for creating lively productions that enriched narratives with music, interviews and sound effects. Based in Sausalito, California, Antenna was structured as a private, non-profit corporation.

Antenna invested heavily in and was planning to introduce its next generation product, the Gallery Guide. Employing a CD-ROM player, the Gallery Guide had several advantages over cassette tape players including the ability to hold over 40 hours of audio, to display three lines of text, and to allow for random access by the user. The Gallery Guide, however, had its drawbacks. It was expensive to update or change, and was physically large and fragile. Although it had initially scheduled the introduction of the Gallery Guide for March, 1994, Antenna was just beginning to introduce it at the end of 1994.

### **Prospects**

By the end of 1994, Visible was in negotiations to install an interactive audio tour using the Eye-Q system for the First Ladies exhibit at the National Museum of American History of the Smithsonian Institution. The exhibit, one of the most popular at the Smithsonian, received over one million visits each year. To gauge interest in an audio tour, the Smithsonian commissioned a survey which indicated that nearly 50% of visitors would be interested in a tape tour priced between \$2-\$4. Signing this contract would be very important to Visible because other museums looked to the large, nationally prestigious museums to take the lead in adopting new technology.

Visible had an explicit agreement with the Smithsonian for the Smithsonian's Freer Gallery to be a demonstration test site. Although the short demonstration tour would not generate revenue, it would allow Visible to develop a tour that it could use to market to other museums. Visible also had recently received free and favorable publicity in Museum News. (See Exhibit 3).

By the end of 1994, Visible had contacted approximately 40 museums. Larry or Bill, or both had demonstrated the Eye-Q system to approximately 30 of them. Active prospects included some of the most visited and best-known museums in the country.

### **Financing**

To finance product development, market research, and initial marketing, the two founders

contributed a total \$60,000 of their savings for 100% of Visible's equity. (This included their original \$30,000 investment and an additional \$30,000.) They also had raised \$300,000 in debt from friends and business associates. Larry and Bill did not draw salaries until July, 1994. As of December, 1994, the company had a remaining cash balance of roughly \$70,000.

## **Future Plans and Projections**

### **The First Ladies Exhibit**

Visible expected the First Ladies Exhibit to be its first installation. The exhibit covered approximately 9000 square feet of floor space. Visible expected to have it installed by April of 1995. Visible projected that three hundred thousand of the one million annual visitors to the First Ladies Exhibit would use the Eye-Q.

### **Subsequent Projects**

Visible projected that it would install an additional 10 projects over the next three years. Exhibit 4 details the assumptions that Visible used to generate its financial projections. Exhibit 5 presents those projections.

## **Financing Alternatives**

Armed with their financial projections, Larry and Bill needed to decide what to do next. There was no question they would have to devote resources to solve the audio compression problem and to sign up more projects. There also was no question that Visible needed to raise more money, preferably in the form of equity financing. They hoped to raise these funds from friends, contacts, or possibly a venture capital firm.

Larry and Bill were much less clear, however, on the details of such a financing. Before they could structure a transaction, they needed to agree on a value to place on the company. Exhibit 6 provides information on the interest rates that prevailed at the end of 1994. They also wanted to know how companies in similar businesses were currently valued by the stock market. It was impossible, however, to find an exactly similar company because Visible's main competitors were not publicly-traded. Instead, Larry and Bill calculated price-earnings and market capitalization-to-EBITDA multiples for several companies that they felt operated in businesses that shared some characteristics with Visible. These also are presented in Exhibit 6.

Once they agreed on a valuation, Larry and Bill had to decide how much money to raise and how to structure the equity investment. For example, they could simply sell equity in Visible. Alternatively, they could structure the financing as an investment in convertible preferred stock or convertible debt that would pay a dividend or interest, but would be convertible into equity in Visible.

## **Exhibit 1: Backgrounds of Key Personnel, December 1994**

**Laurence Albukerk**, co-founder of Visible, was responsible for general coordination of daily operations, developing new business and strategic planning. Previously, he had spent five years in business development and financial analysis roles at PepsiCo and JDI Realty. Mr. Albukerk earned an MBA from the University of Chicago in 1992, specializing in finance and economics, and a BSBA from Washington University in St. Louis in 1989.

**William Waytena**, co-founder of Visible, was responsible for coordinating the creative, technical, and service components of Visible's business as well as strategic planning. Previously, he had spent six years in litigation consulting at Peterson Consulting and Barrington Consulting. Mr. Waytena earned an MBA from the University of Chicago in 1992, specializing in finance and economics, and a BS from Cornell University in Mechanical and Aeronautical Engineering in 1988.

**Markos Kounalakis**, executive producer, was responsible for creating and overseeing the audio tours. He had over 17 years experience as a writer and producer, which included writing and producing audio tours for Antenna Theater. Before his stint at Antenna, he worked as a correspondent for NBC Radio Moscow, a producer for National Public Radio, and a reporter for Newsweek magazine. Mr. Kounalakis had written and produced material in most of the 11 languages in which he was fluent or had comprehensive ability. Mr. Kounalakis earned a Masters Degree in Journalism from Columbia and a BA from the University of California at Berkeley.

**Charles Bulkeley**, chief technology officer, was responsible for managing the technology component of Visible including overseeing all programming, hardware modification and coordinating system development with Apple Computer. He had experience as a software engineer and project manager and had led successful development efforts in robotics, electronic publishing and UNIX networked computing. Mr. Bulkeley earned an MBA from the University of California at Berkeley and a BS in computer science and electrical engineering from the University of Colorado.



**Exhibit 2: Picture of EYE-Q**

**Exhibit 3: Showcase from Museum News, November/December 1994**

#### Exhibit 4: Financial Statement Assumptions

|                     |                      |
|---------------------|----------------------|
| <u>Rental Price</u> | <u>Projects 1-11</u> |
| Price Year 1        | \$4.00               |
| Annual Price Growth | 10%                  |

|                                  |      |
|----------------------------------|------|
| <u>Rental Occasions per Unit</u> |      |
| # of Rentals/Unit - Daily        | 2.25 |
| # of Rentals/Unit-Annually       | 821  |

|                    |     |
|--------------------|-----|
| <u>Seasonality</u> |     |
| Quarters 2 & 3     | 1.2 |
| Quarters 1 & 4     | 0.8 |

|                                    |                                     |
|------------------------------------|-------------------------------------|
| <u>Direct Expenses</u>             |                                     |
| Direct Labor                       | \$0.20 per rental occasion          |
| Museum Royalties                   | 32% of gross revenue                |
| Cost of Eye-Q Unit                 | \$1000 with 3 year life, no salvage |
| Eye-Q Unit Price Decrease/Year     | 20%                                 |
| Programming & Content Production   | \$90,000 per project                |
| Project Enhancements/Addit'l Lang. | \$30,000 per project/per year       |
| Booth & Equipment                  | \$25,000 per project                |
| Maintenance, Repair & Theft        | 6% of gross revenue                 |

|  |               |
|--|---------------|
| <u>Selling &amp; Administrative Expenses</u> |               |
| Average Salary                               | \$65,000      |
| Annual salary growth rate                    | 10%           |
| Benefits & Taxes                             | 30% of salary |

|                              | <u>Quarter 1</u> | <u>Quarter 2</u> | <u>Quarter 3</u> | <u>Quarter 4</u> |
|------------------------------|------------------|------------------|------------------|------------------|
| Year 1 Full Time Equivalents | 5                | 7                | 11               | 11               |
| Year 2 Full Time Equivalents | 15               | 17               | 18               | 21               |
| Year 3 Full Time Equivalents | 25               | 30               | 30               | 30               |

| <u>Cumulative Installations / Units by Project</u> | <u>Year 1</u> | <u>Year 2</u> | <u>Year 3</u> |
|--|---------------|---------------|---------------|
| Project 1  | 350           | 350           | 350           |
| Project 2  | 200           | 200           | 200           |
| Project 3  | 500           | 500           | 500           |
| Project 4  | 700           | 900           | 900           |
| Project 5  | 0             | 200           | 200           |
| Project 6  | 0             | 400           | 400           |
| Project 7  | 0             | 500           | 500           |
| Project 8  | 0             | 200           | 200           |
| Project 9  | 0             | 700           | 900           |
| Project 10   | 0             | 200           | 300           |
| <u>Project 11</u>                                  | <u>0</u>      | <u>200</u>    | <u>400</u>    |
| Total Units  | 1750          | 4350          | 4850          |

**Exhibit 5: Annual Financial Projections, 1994-1997 (\$000)**  
**11 Projects in Three Years**

|   | <u>1994</u> | <u>1995</u> | <u>1996</u> | <u>1997</u> |
|---|-------------|-------------|-------------|-------------|
| Total Installed Units                   | 0           | 1750        | 4350        | 4850        |
| Total Revenue                           | \$0.0       | \$2,874.4   | \$11,707.7  | \$19,278.0  |
| Direct Expenses                         |             |             |             |             |
| Direct Labor                            | \$0.0       | \$143.7     | \$532.2     | \$796.6     |
| Museum Royalties                        | \$0.0       | \$919.8     | \$3,746.5   | \$6,169.0   |
| Depreciation of Eye-Q Units             | \$0.0       | \$479.2     | \$1,190.0   | \$1,443.3   |
| Software/Programming                    | \$0.0       | \$270.0     | \$360.0     | \$360.0     |
| Project Enh./Addit'l Lang.              | \$0.0       | \$90.0      | \$210.0     | \$330.0     |
| Booth & Equipment                       | \$0.0       | \$75.0      | \$100.0     | \$100.0     |
| Maintenance, Repair & Theft             | \$0.0       | \$172.5     | \$702.5     | \$1,156.7   |
| Total Direct Expenses                   | \$0.0       | \$2,150.1   | \$6,841.1   | \$10,355.6  |
| Selling and Administrative              |             |             |             |             |
| Salaries                                | \$114.0     | \$552.5     | \$1,269.1   | \$2,261.2   |
| Benefits & Taxes                        | \$34.2      | \$165.8     | \$380.7     | \$678.4     |
| General Legal/Finance                   | \$11.0      | \$33.0      | \$34.0      | \$47.0      |
| Patent/Trademark                        | \$10.0      | \$58.0      | \$48.0      | \$0.0       |
| Accounting                              | \$3.0       | \$18.0      | \$22.0      | \$28.0      |
| Rent                                    | \$15.0      | \$52.0      | \$66.0      | \$80.0      |
| Rent-Satellite Offices                  | \$4.5       | \$50.0      | \$112.0     | \$128.0     |
| Phone/Utilities/Postage                 | \$5.0       | \$27.0      | \$46.0      | \$59.0      |
| Office Supplies                         | \$0.9       | \$5.4       | \$13.2      | \$18.8      |
| Office Equipment/Furniture              | \$33.0      | \$54.0      | \$80.0      | \$40.0      |
| Travel/Meals                            | \$17.0      | \$80.0      | \$152.0     | \$204.0     |
| Marketing                               | \$19.0      | \$78.0      | \$120.0     | \$144.0     |
| Conventions                             | \$2.0       | \$32.0      | \$37.0      | \$43.0      |
| On-Site Demos                           | \$25.0      | \$0.0       | \$0.0       | \$0.0       |
| Research & Development                  | \$27.0      | \$90.2      | \$72.4      | \$85.4      |
| Management Bonuses                      | \$0.0       | \$0.0       | \$0.0       | \$0.0       |
| Miscellaneous                           | \$9.0       | \$24.0      | \$24.0      | \$24.0      |
| Total Selling and Administrative        | \$329.6     | \$1,319.9   | \$2,476.5   | \$3,840.7   |
| Total Expenses                          | \$329.6     | \$3,470.0   | \$9,317.6   | \$14,196.3  |
| Operating Profit                        | (\$329.6)   | (\$595.6)   | \$2,390.2   | \$5,081.7   |
| Outlays for Eye-Q Units                 | \$0.0       | (\$2,250.0) | (\$2,080.0) | \$0.0       |
| Depreciation Straight Line, 12 Quarters | \$0.0       | \$479.2     | \$1,190.0   | \$1,443.3   |

## Exhibit 6: Capital Markets Information, December 1994

### Interest Rates

|                           |        |
|---------------------------|--------|
| One-Year Treasury Bills   | 3.47%  |
| Ten-Year Treasury Bond    | 5.66%  |
| Thirty-Year Treasury Bond | 6.35%  |
| AA Long-term Debt         | 7.06%  |
| A Long-term Debt          | 7.27%  |
| BBB Long-term Debt        | 7.63%  |
| BB Long-term Debt         | 9.00%  |
| B Long-term Debt          | 10.55% |

### Summary Comparative Market Data for Selected Companies

|                      | Market Value<br>To EBTIDA | Price-to<br>Earnings Ratio | Equity Market<br>Capitalization<br>(\$ millions) | Business   |
|----------------------|---------------------------|----------------------------|--|--|
| Interactive Network  | N.M.                      | N.M.                       | 34   | Designs and develops interactive television entertainment systems. Uses hand-held control unit.                          |
| Marlton Technologies | 7.5                       | 11.4                       | 3.4  | Museum Exhibits. Designs and produces exhibits for trade shows and museums.  |
| NTN Communications   | 55.5                      | 88.6                       | 115  | Wireless Entertainment. Broadcasts live events for interactive play to bars, lounges, military bases, and country clubs. |
| Walt Disney          | 11.7                      | 20.8                       | 23,787   | Entertainment  |
| Compaq Computer      | 7.7                       | 12.0                       | 10,175   | Computer Hardware  |
| Dell Computer        | 6.1                       | 10.7                       | 1,611  | Computer Hardware  |
| Apple Computer       | 9.2                       | 19.5                       | 4,736  | Computer Hardware / Software   |
| IBM                  | 6.0                       | 15.1                       | 43,515   | Computer Hardware / Software   |
| Microsoft            | 17.8                      | 12.0                       | 35,602   | Computer Software  |
| Novell               | 12.0                      | 21.9                       | 6,218  | Computer Software / Networking   |

Market value of total capital is the sum of the book value debt, the book value of preferred stock, and the market value of equity less a firm's cash and marketable securities.

EBITDA is earnings before interest, taxes, depreciation, and amortization.