

## **Case Study — Madenta Communications Inc.**

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## **Background**

One Saturday morning in April 1996, Randy Marsden hopped into his car and began a hunt for warehouse space in Edmonton, Alberta. Marsden, the owner of Edmonton-based Madenta Communications Ltd., was desperate to rent space in order to manufacture a new product. Fortunately, even though it was the weekend, he had been able to contact the owner of a certain warehouse. Marsden couldn't wait until Monday to make arrangements — he needed a warehouse and he needed it now.

Marsden's desperation was the result of an overwhelming demand for the Tracker, the newest product in Madenta's comprehensive line of assistive technologies for disabled persons. The Tracker is a computer access tool that allows people to perform mouse functions without using their hands. A fully portable device, it attaches to the top of a computer and translates head movement onto the monitor by tracking a reflective dot worn by the user. When the user moves their head, the cursor moves on the screen.

Heralded as the latest in assistive technology, Madenta wasted no time in promoting the Tracker. In fact, the product was promoted even before it was manufactured. The market responded enthusiastically. Orders flooded in. Distributors began to switch orders they had already placed for PROXi, another Madenta product, to orders for the Tracker. This created a serious problem because Madenta was relying on PROXi sales to fund the Tracker's development. Delays in getting the Tracker to market resulted in a backlog of orders, angry distributors, and investors who were stretched to the limit.

But the Tracker was finally ready for market. As Marsden drove to meet the warehouse owner, he reviewed the issues that Madenta had faced in the past and contemplated the upcoming stages of development.

## **The Company**

### Beginnings

Randy Marsden grew up on a farm in southern Alberta. He had a creative mind and was always generating money-making ideas. As a teenager, he started up his own company specializing in odd jobs — rototilling gardens, delivering papers, and mowing lawns. His dream was to one day own and run a much larger business venture.

In 1985, Marsden enrolled in the Engineering co-op program at the University of Alberta in Edmonton. In his third year, Marsden and Les Tanne, a fellow engineering student, began work on a project inspired by the needs of a mutual friend. He was a C1 quadriplegic unable to communicate through speech. When they saw the technology that he was using to communicate, Marsden and Tanne felt that they could build something

better. They embarked on an ambitious project to build a computer to help non-vocal handicapped persons speak.

Seeing that their project was considerably more ambitious than what was assigned, their professor took them under his wing and gave them a space in his lab. Marsden recalls graduate students “looking down their noses at the two little undergraduates who invaded their lab.” Nevertheless, the two undergraduates carried on and developed a prototype, which they entered in the Western Engineering Competition.

The project won first place, which meant that Marsden and Tanne would represent western Canada at the 1987 National Engineering competition. They came second in the entrepreneurial category and won the social merit award.

They also entered the 1987 Rehabilitation Engineering Society of North America (RESNA) competition. The RESNA competition resulted in a number of job offers for the young students. Marsden and Tanne were excited about the job offers and began considering the companies that they might work for.

For Marsden, excitement gave way to second thoughts as he began questioning why these companies were so anxious to have them and their project on board. Perhaps there was some commercial value in their project. Marsden suggested to Tanne that they form a company and develop rehabilitation technology.

Marsden, who was married and had a child, wanted to stay in Edmonton to concentrate on the company. Tanne wanted to form the company as well, but he also wanted to pursue a job offer in San Jose, California. They agreed to start a company, and split it 50-50. Tanne acted as an absent partner, taking the job in San Jose and leaving Marsden to run the company.

### Start-up

Madenta Communications Ltd. was incorporated in 1988, before Marsden and Tanne had even graduated. Start-up funding came from the Industrial Research Assistance Program (IRAP) of the National Research Council of Canada. Madenta’s office was in Edmonton’s Advanced Technology Centre, a business incubator. Madenta had enough money to pay Marsden’s salary for a year.

Marsden soon discovered that industry was considerably different than academia. Their class project has been limited by the technology available in the lab; many of their ideas were not truly “new”. Marsden spent the first months after incorporation determining what Madenta could do that was different and unique.

One niche, which was not being addressed by the industry, was Macintosh software for people with disabilities, especially in an educational setting. Madenta’s first few years

were dedicated to the development of software to assist people who are unable to use their hands.

### A question of ownership

After about a year and a half of running the company, the long distance partnership of Marsden and Tanne started to be cumbersome. Since incorporation, Tanne had stepped into the office only once. Every decision was made over the phone or by e-mail, and those decisions were time-consuming.

Lack of funding also became a problem. In 1990, Marsden approached the Alberta Opportunity Company (AOC) for venture capital funding. By this time, the software was well along in development, and its market prospects looked good. AOC said that it would invest in Madenta on the condition that Marsden remained with the company. (AOC had never met Tanne.)

At the same time, Tanne made the decision to pursue an MBA at Stanford University. He asked Marsden to give him another two and a half years as an absent partner, and then he would come back to help run the company. Faced with having an absent partner for at least another two years, Marsden chose to force the issue of company ownership. The result was a Forced Buy-Sell clause triggered in the Unanimous Shareholder's agreement. Tanne had no choice but to give up Madenta. If he took over Madenta, the company would have no funding because AOC would not invest without Marsden's involvement.

On September 13, 1990, Marsden purchased all of Tanne's shares in Madenta. Tanne retained a small royalty on future sales.

After consolidating ownership, Marsden strengthened the company's ties to the AND group, a Calgary-based software company. AND bought a small percentage of shares in Madenta. New shares were also sold to the AOC's Seed Fund Division. The new shareholders provided the necessary capital and business experience to continue development. As of January 1991, Marsden owned 55% of the shares, AOC 40% and the AND group 5%.

Marsden found the ownership change alleviated a great deal of stress. "Once that was done it seemed like I got more done in three months than I had in the whole year," Marsden said. "The lesson is: don't have an absent partner."

In addition to the equity investments from AOC and AND group, Madenta received funding from the National Research Council's IRAP program, the Alberta Heritage Foundation for Medical Research (AHFMR), and Alberta Technology Research (TRT) and Telecommunications, a provincial government department. Funding from AHFMR and TRT was royalty repayable; IRAP funding was not.

## Entering the Marketplace

Madenta's first product was **ScreenDoors**, introduced in June 1991. It is a Macintosh program for universal computer access. Using ScreenDoors' on-screen keyboard and word prediction, users can type and perform all keyboard functions in any application. The keyboard palette floats on the screen above all active applications and windows.

Throughout 1991 and 1992, Madenta released additional computer access products. They included: **RevolvingDoors**, a single switch access package for the Macintosh; **Switch-Back**, a switch interface for the Macintosh that allows the use of six different switches for controlling the Macintosh; **Telepathic** word prediction software to increase typing speed; and **Pre-Dict-ate**, a voice keyboard allowing voice access to the Macintosh.

### Marketing and distribution

Madenta's number one problem was marketing and distribution. The advice given to Marsden was that he should find someone else to market and distribute Madenta products.

Marsden looked for a distributor with its own full-time dealer network. He went to two of the companies that made him and Tanne job offers: Adaptive Communication Systems (ACS) and the Prentke Romich Company (PRC). ACS was interested; PRC was not because the company only distributed its own products.

After a year and a half of dealing with ACS, a contract between the companies had not yet been signed. About the same time PRC took a second look at Madenta's software. PRC was developing the Head Master, a head pointing device that performed the same function as a mouse without requiring the use of the hands. When PRC saw the compatibility of Madenta's software with the Head Master, the company offered to act as a distributor.

Marsden made the decision to end relations with ACS as a distributor in favour of PRC. A legal dispute ensued. (ACS eventually filed for bankruptcy after being found guilty of copying technology.) PRC acted as Madenta's exclusive distributor from mid-1991 to early 1992. Marsden appeared in PRC booths at all the trade shows. He learned the ropes of marketing and began to realize that it was something Madenta could do itself.

Marsden got more encouragement on marketing from a focus group, which was organized with help from AHFMR. The focus group reviewed Madenta's marketing strategy and recommended that the company initiate its own marketing rather than relying on PRC.

In 1992, the exclusive agreement between Madenta and PRC was terminated. PRC continued to sell Madenta software, but Madenta pursued its own marketing strategies.

Whereas PRC had relied on its reputation to generate sales, Madenta took a different approach to establish relations with its customers. Marsden already had an impressive database of contacts which he had made at trade shows. Madenta started marketing by contacting the people in the database and running its own booth at trade shows. As a result of this more aggressive approach, Madenta's sales doubled.

### Introducing a new product line

To become the leading supplier of assistive technology to people with disabilities worldwide, Madenta targeted three primary markets in the field of assistive technology.

- Alternative Augmentative Communications (AAC) - devices that generate artificial speech for those unable to communicate with their own voice.
- Computer Access (CA) - making a standard computer accessible to a person with a physical disability.
- Environmental Control Units (ECU) - technologies that enable disabled people to regulate their surroundings i.e. turning lights off and on, opening doors.

Historically, each area had been addressed separately by individual companies. (See Appendix A: Competitors.) A disabled user faced purchasing a communication aid, a separate computer, and a separate ECU system. Because each unit operated independently, the result was a non-integrated combination that was expensive, cumbersome and difficult to use. Madenta sought to tie these areas together into a single integrated solution, by having all three systems on the same platform.

To achieve this vision of integration, Madenta began to develop a second major line called **PROXi**. PROXi is a fully integrated home and office automation solution that lets users take control of their surroundings. With a simple voice command, keyboard stroke, point-and-click, or touch of a single switch, the user controls the phone, 256 electrical items, eight remote controls, a hospital bed, and an intercom system.

The initial stages of PROXi's development were supported by the Alberta Workers' Compensation Board, which supplied funding for the development of twelve systems. Built on a shoestring in about a year, PROXi was ready to be shipped in January 1994.

Madenta considered the integration of these three systems on one computer its key advantage in a highly competitive industry. There were 1.5 million people across North America alone who could benefit from this integration, including people with quadriplegia, cerebral palsy, and multiple sclerosis. Similar market needs existed in Europe, Asia, Australia, and New Zealand. The combined market size for an integrated system was estimated at \$65 million in 1991, and was forecast to grow to \$100 million by 1995.

But PROXi immediately met with resistance from the marketplace. Users were more accustomed to three different systems.

To curb resistance, Madenta dedicated the next few years to educating the market. Marsden described his strategy as “breaking all the rules and telling people what they wanted rather than giving people what they wanted.” By mid-1995, sales of PROXi had grown to about 5 systems per month. Projections had been on the order of 25 systems per month.

### New investors

In February 1994, AOC announced that it was getting out of the venture capital business. Madenta was given six months to find another investor or AOC’s shares would be sold without consulting Madenta.

Immediately, Marsden began to look for a new investor. He contacted an Edmonton-based venture capital company, Western New Ventures Capital Corp. After a month of investigation, New Ventures decided not to invest in Madenta. Its two main concerns were:

- the unique and highly specialized market in which Madenta had to operate
- the potential buyers of assistive technology depend upon funding in order to finance purchases of this expensive equipment; funding was often difficult to obtain

Marsden was not so easily discouraged. He managed to convince New Ventures to change its mind. In November 1994, New Ventures purchased the AOC’s shares.

### **New Product...New Problems**

In October 1993, Madenta became aware of a new product called a HeadMouse, made by Origin Instruments from Dallas, Texas. Designed as a virtual reality device, the HeadMouse was originally intended for the games and architectural design markets. Madenta recognized the potential for this device in the field of assistive technology and it made arrangements with Origin to distribute the HeadMouse.

The HeadMouse became one of Madenta’s biggest sellers, accounting for over 50% of Madenta’s sales. However Origin, a two-person company, couldn’t keep up with the supply demands.

In an attempt to resolve the disparity between supply and demand, Madenta made several offers to Origin, all of which were refused. Origin wished to remain small, and concentrate on the research and development rather than manufacturing. Meanwhile, the demand for the product was growing. It was clear that Madenta had to do something to meet this demand.

With the financial backing of New Ventures, Madenta built its own head pointing device called the **Tracker**. Madenta had made several adaptations to distinguish the Tracker

from other head pointing devices, one of which was an injection molded case that gave the Tracker a compact, sleek design. A patent application for the Tracker was filed in July 1995.

The Tracker is a computer access tool that gives full mouse control to those not able to use a standard desktop mouse or trackball. It allows the user to perform mouse functions hands-free. It is a fully portable device that attaches to the top of the user's computer and translates the user's head movement onto the screen, by tracking a reflective dot worn by the user. When the user moves their head, the cursor moves on the screen.

The Tracker is a cheaper, stronger and lighter head pointer than similar products on the market. It is certified in North America and Europe for office and home use. The plan was to have the Tracker on the market by November 1995. But the prototype was flawed and difficulties were encountered in the first production run. The Tracker was finally shipped in March 1996.

Upset by Madenta's plans to manufacture a head pointer similar to its own, Origin cut off supply of the HeadMouse. This left Madenta without its main revenue generator and the company relied heavily on New Ventures during the Tracker's developmental phase.

As Madenta struggled to complete the Tracker, demand grew. The company had backlogged approximately 200 orders for the Tracker. "I learned that having too much demand for a product is a serious problem," notes Marsden.

### Growing demand

Throughout 1995, demand for the Tracker grew steadily. Marsden discovered an area of diversification through his involvement with Calgary-based Outsource Management Inc., the company that designed the injection molds for the Tracker. The president of Outsource, Keith Hanna, requested that Madenta conduct a user survey to confirm demand for the product. The survey revealed a high demand for the device in playing computer games. With minor adjustments the Tracker could not only be used with Macintosh and IBM compatible computers, but with Super Nintendo Entertainment Systems. An estimated \$200,000 in Tracker backorders were for recreational use.

Demand for the Tracker was also fueled by a change in distribution. Typically, distribution of assistive technology is performed by "mom and pop shops", the owners of which usually have a disabled child or are ex-therapists. These distributors sell what they can quickly and are not always interested in new technology. About 30-40% of Madenta's sales depended on these type of outlets and Marsden felt the need to explore other areas of distribution.

Marsden considered selling Madenta products through durable medical equipment (wheelchair) outlets. These dealers are well-funded, make contact with the same users as

Madenta, deal with the same funding agencies, and have stores for demonstration, training and sales.

By May 1995, Madenta had signed 21 wheelchair companies in the United States. Because the companies had little experience with computer technology, Madenta put together a training program called PathFinders. It trained people in Madenta products for a fee. Marsden envisioned a network of trained therapists, which would further expand Madenta's market.

As the wheelchair dealers learned more about Madenta's products, orders for PROXi were being changed to orders for Tracker. This created a serious problem because PROXi sales were intended to fund Tracker development and manufacturing costs. Although some Trackers were shipped, limited manufacturing capabilities and re-adjustments kept Madenta struggling to meet the demand.

### Sales

Changes in Madenta's gross revenues give an idea of the impact of Tracker development.

July 31, 1993 gross revenue = \$150,000  
 July 31, 1994 gross revenue = \$300,000  
 July 31, 1995 gross revenue = \$700,000  
 July 31, 1996 estimated \$200,000 loss

Much of the loss was attributed to the delay in getting the Tracker to market and the loss of the "HeadMouse" to generate income. Once the Tracker was up and going Madenta's projected sales were \$80,000/month. Marsden believed that in two to three years Madenta would be generating \$4-5 million in sales.

### **Issues**

#### International marketing

Although PRC had approached Madenta for the exclusive rights to sell the Tracker in Europe, Madenta pursued its own plan to penetrate the European market.

Marsden's European connection was a Norwegian company, Handy Trading. The company was small and had limited venture capital, but Marsden felt confident in Handy Trading's ability to represent Madenta in Europe. However relations between the two companies became strained when there were problems with the delivery and quality of Trackers.

To gain easier access to the US market, Madenta planned to establish an office in Salt Lake City. Madenta was doing approximately 75% of its business in the US. Customs brokerage fees, delays in shipments, and higher travel costs made it very expensive to operate only from Canada. It cost Madenta an estimated \$2000 per month to operate in

Canada, over and above the costs of operating in a US office. The start-up office would be small with only part-time persons staffing it. It was expected that this office would become more and more integral to Madenta's operations as time and resources permitted.

Marsden also established relations with Access International, a distributing company in Japan. Access International was very successful in selling Madenta's products. Marsden believed that a key partnership was being forged.

### Advertising and promotion

Through trade show activity and by word of mouth, Madenta has established a reputation as a company on the cutting edge of technology. At trade shows, people go to Madenta's booth to see the "next cool thing". Madenta's challenge is to turn that interest into sales.

The number one focus for Madenta's marketing department is setting up a dealer network through wheelchair dealerships. This involves creating support materials such as signage, presentations, product demos, and training material. Dealers are required to purchase \$5,000 U.S. worth of Madenta's products and take a training course before representing Madenta. As a result, the duties of in-house sales people have changed from direct sales to dealer support.

Madenta has a mailing list of over 20,000 names in North America and Europe, to whom they mail their catalogs. Besides its own products, Madenta's catalog resells over 30 complementary third-party products. Each is scrutinized for quality and applicability in the marketplace. The result is an offering of products unequaled in scope by the industry. (See Appendix B: Products.)

### Corporate structure

As of January 1998, Madenta employed 17 people: six in marketing, three in administration, three in production, and five in research and development.

As Madenta has grown, particular groupings of functions and employees have changed. For example, Madenta now outsources its raw manufacturing, and does final assembly in-house. At the same time, increased emphasis was placed on marketing. Marsden believes strongly in the "marriage between marketing and research and development."

Marsden describes the majority of his staff as "young and enthusiastic". Heavy reliance is placed on Madenta's more experienced board of directors for direction and major decision making.

Two board members are from Western New Ventures. They have offered a wealth of knowledge to Madenta, which Marsden believes is key to the success of his company. The exchange of ideas between Madenta and Western New Ventures provides a solid balance between experience and enthusiasm.

Marsden himself has worn many hats as the president of Madenta, and has learned where his strengths lie. In a sense, the development of Madenta reflects Marsden's development. In 1996, Marsden hired someone to control the operations of the company, allowing him to concentrate on the conception of products, research and development, and marketing.

### **The Next Step**

Marsden climbed back into his car. He had seen the warehouse and decided to rent it in order to manufacture the Tracker. If he could get the Tracker to market an end to Madenta's losses was clearly in sight. Marsden was determined to get Madenta back on track.

## Appendix A: Competitors

Randy Marsden, president of Madenta, describes one of his worst moments as the time he discovered that a rival company had launched a device almost identical to one that Madenta had been working on. As a result, the two companies split the market and neither one received the sales that they anticipated for their innovations.

Madenta has found a toehold but in order to stay and expand, the company must continue developing innovative technologies and innovative methods to market those technologies.

### Computer access

**Don Johnson Development Equipment (DJDE)** was Madenta's primary competitor in Computer Access. Two of its products — Ke:nx and Co:writer — overlap with Madenta's products.

Ke:nx provides computer access solutions similar, but not identical, to Madenta's ScreenDoors and RevolvingDoors. DJDE was very much geared to young children, while Madenta's products were generally more suited to cognitively intact adults.

Co:Writer is a word prediction package that competes directly with Madenta's Telepathic. Both products have similar functionality, and are similarly priced. Madenta's new Telepathic 2.0 has features that go far beyond those of Co:Writer. However, it is expected that DJDE will match the new product with improvements to Co:Writer in the future.

The industry views DJDE with high regard. The company has a fine reputation in Computer Access and a long-standing relationship with Apple. No other competitor has the reputation, market presence, or greater revenues than DJDE.

Madenta established positive relations with DJDE, and there was a talk of working together whenever possible. In fact, DJDE had explored licensing Madenta's Magic Cursor technology, a computer utility that eliminates the need for a button or switch to do mouse functions.

**Words+** is a California company and the most prominent computer access company on the DOS side of computing. As such, Words+ is not a direct competitor to Madenta, but as a popular alternative platform. The company markets through a dealer network, much like Madenta. Many dealers carry both Madenta and Words+ products.

**WiVik (Windows Visual Keyboard)** is a product of the Hugh MacMillan Rehabilitation Center in Toronto, and marketed by Prentke Romich Company. WiVik operates for the Windows market, and so is not a direct competitor to Madenta. Madenta has a good working relationship with the Hugh MacMillan Center and Fraser Shein, the creator of

WiVik. A WiVik keyboard was developed to support Madenta's PROXi environmental control, giving it access to the Windows environment.

### Environmental control

Madenta conducted a thorough study of the Environmental Control Unit marketplace. It determined that PROXi held up very well to the competition.

### Augmentative alternative communications

Madenta's major competitors in the field of Augmentative Alternative Communications are PRC, SST, ACS, and Zygo. All of these companies have some form of stand-alone device that produces synthesized speech for non-vocal users. Most are sold through dealer networks, except for products from, which has salaried consultants. PRC has about 60% of the AAC market.

## **Appendix B: Products**

Apart from PROXi and the Tracker, Madenta offers a number of other products. They include:

- **ScreenDoors**, a Macintosh program for universal computer access.
- **RevolvingDoors**, a predictive scanning keyboard and cursor for the Macintosh
- **Switch-Back**, a switch interface for the Macintosh that allows the use of six different switches for controlling the Macintosh.
- **Telepathic** word prediction software which increases typing speed.
- **Pre-Dict-ate**, a voice keyboard that allows voice access to the Macintosh.
- **Magic Cursor** eliminates the need for a button or switch to do mouse functions.
- **KeyMagic** allows users to customize their keyboard layout.

**1995/96 Pricing**

<b>Product</b>	<b>US\$</b>	<b>CDN\$</b>
Tracker	\$1,695.00	\$2,350.00
Tracker- Sip/Puff	\$1,995.00	\$2,775.00
Wireless- Sip/Puff	\$449.00	\$625.00
ScreenDoorsII	\$595.00	\$825.00
SDII Upgrade	\$95.00	\$135.00
TelepathicII	\$295.00	\$410.00
TelepathicII Upgrade	\$95.00	\$135.00
ScreenDoors 1.3	\$385.00	\$535.00
Telepathic 1.2	\$295.00	\$410.00
RevolvingDoors	\$195.00	\$275.00
Magic Cursor	\$195.00	\$275.00
KeyMagic	\$95.00	\$135.00
ScreenDoorsII	\$395.00	\$549.00
Specials:		
Evaluation Bundle	\$4,995.00	\$7,100.00
Tracker-SreenDoors Mac	\$1,950.00	\$2,700.00
Tracker ScreenDoors IBM	\$1,950.00	\$2,700.00
PROXi:		
PROXi Phone Base	\$1,495.00	\$2,100.00
256 Electrical Control	\$495.00	\$689.00
Infrared Device Control	\$595.00	\$829.00
Bed Controller	\$595.00	\$827.00
HD Wireless	\$1,100.00	\$1,589.00
Comrad	\$695.00	\$985.00
Intercom Module	\$795.00	\$1,100.00
PROXi Complete	\$2,495.00	\$3,470.00
UPS Battery Back-up	\$449.00	\$695.00
Link Power	\$395.00	\$549.00