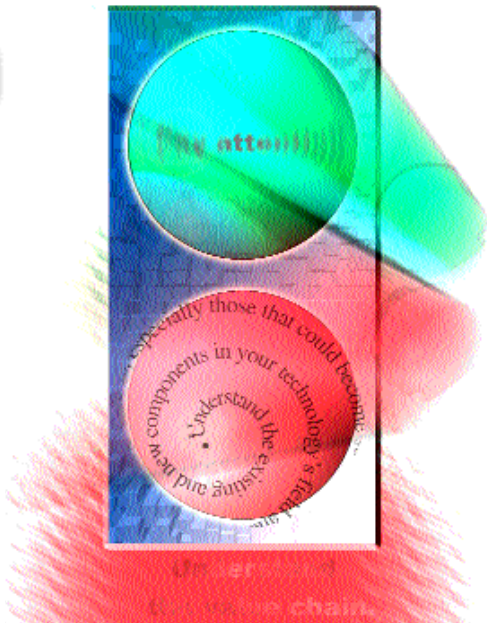
Will Your New Business Succeed?



What underlies success or failure when one commercializes an emerging technology? The example I describe here illustrates the challenges one confronts when trying to bring a new product to the market, and provides some useful guidelines for both established technologists and would-be entrepreneurs.

In 1996, Bellcore (Morristown, NJ), developed a flexible, lithium-ion (Li-ion) polymer battery targeted to applications in portable computers, personal digital assistants, and cellular telephones. Many battery manufacturers wanted to commercialize the technology, and Bellcore licensed some of them to do so. However, these companies experienced some difficulty in scaling up Bellcore's polymer process.

This situation presented a new business opportunity for a California electronic original-equipment manufacturer, whose product lines included circuit-protection devices used by most battery makers. The company had experience in polymer processing and was known for its innovations in materials sciences. It believed that an alternative process might be used to manufacture the battery components at lower cost. Market analysis led the company to consider two possible approaches for exploiting the alternate process. It could launch the battery itself, or it could supply components to the battery companies licensed by Bellcore. The company's inexperience in battery assembly, and its desire to avoid competing against its existing customers, led it to choose the latter—to supply the battery components rather than manufacture a complete battery assembly.

Initially this approach seemed justified. Within one year, the company had made a significant breakthrough in technology—the alternative processing technique delivered performance equivalent to Bellcore's. In addition, samples sent to potential customers received high marks. Yet, within the same year, after investing a significant amount of money, the company decided to shut down the project because it was no longer economically attractive.

How could such a seemingly good idea fail? The reasons behind the company's decision elucidate some of the complex, often unanticipated events and trends that can derail the commercialization of an innovative advance. Among the problems that specifically affected the project:

- The battery industry is highly competitive, and manufacturers closely guard the proprietary secrets of their active materials. The company found that potential customers wanted to contract out the production of components, which consisted of a layered assembly of an anode, cathode, separator thin film, and two current collectors. However, they would only use their own compositions of active materials for making the anode, cathode, and separator layers. Thus the company would have to supply each battery maker with custom-made components rather than provide the same ones to all. This dilemma left the company with two choices. It could either locate a processing operation at each customer's site or supply components to only one large customer. Either choice would significantly reduce the company's potential profit.
- A detailed cost analysis revealed that, contrary to initial impressions, the savings conferred by processing components were insignificant because they accounted for only a portion of a battery's cost. Although the cost savings on the components were significant, the overall cost advantage of the finished goods was not.
- About the same time, another company developed a simpler component process and a battery that was believed might yield better performance at lower cost. Other small innovators were also working on improved polymer batteries.
- The delay in bringing the Li-ion polymer battery to the market meant that other events influenced the need for it and its future. For example, makers of nickel metal hydrate (NiMH) batteries continued to maintain their market share by continually improving battery performance and lowering cost. Lithium batteries also became safer, more compact, and lower-priced as several major battery manufacturers each sought to capture a larger market share.

This cautionary tale teaches us many lessons, which are worth heeding when bringing an innovative technology to market. I am certainly doing so at my new company, SpectraLane, Inc. (Santa Clara, CA). The key lessons are:

- Understand the existing and new components in your technology's field and any competitive technologies, especially those that could become substitutes. Remember that existing products will improve by the time your product is released.
- Pay attention to shifts in science and the marketplace that might affect your product, and remain flexible as you develop it.
- Understand and continue to explore your customers' needs.
- Understand the value chain. You need to know where you can fill a niche in your industry and how you can add value to your customers' products or services.
- Time your market. Once you spot a niche, make your product available before someone else meets the need.

At SpectraLane, we are developing a unique optical networking subsystem. Learning from experience, we have sought specific ways to avoid the same mistakes as we develop our product for the telecommunications industry. Our operating philosophy holds that:

- A start-up must have people with business acumen and marketing experience who understand the importance of a busi-

ness plan and a well-defined research strategy, and how to execute both.

- It pays to spend the time to understand what your technology can do, what the greatest demand is that it can fill, and what competing technologies exist. This information will direct you to the best product to develop.
- Customers can be a great source of information in the early stages of development, providing insight about their specific needs. Talking with customers helps to identify early adopters—those more apt to try your product and give you useful feedback on it. However, be aware that all customer feedback is somewhat biased, so try to speak to more than one to confirm your information.
- While you may have a product that provides a benefit, customers will buy it only if they perceive the benefit as being worth the cost. A rigorous cost analysis will help you assess the market value of your product.
- Making a prototype can be far easier than producing a stream of devices. You need to determine the challenges and cost of scaling up production.
- If you are going to supply components or subassemblies that are tied to a certain final system, your fate is tied to the fate of the final system. Understand its probability of success as well as your own.

Also, to launch a new business requires a good team, a good business strategy, and a thorough marketing plan.

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