



BUSINESS PLANNING & TECHNOLOGY DEVELOPMENT

Stoking the Fires of Innovation

With new business incubators opening literally every week, medical start-ups have more sources of support than ever.

Leslie Laine

Starting up a medical device business, or any business, takes a bold vision. As many new entrepreneurs quickly find out the hard way, however, it also takes a wise and experienced vision. In ever-greater numbers, new entrepreneurs are turning to business incubators for this experience and know-how. In response, incubators are proliferating even faster than business analysts and writers can devise new chicken metaphors to describe them.

One of the striking characteristics of business incubators today is their self-awareness as an industry, fostered in large part by the National Business Incubation Association (NBIA; Athens, OH), which is run by a board elected from leading incubators and is the only organization in the United States focusing on this market segment. Want to know how many incubators there are in the United States right now, or what percentage of them are Internet related? The NBIA can quickly provide that information, if it is not already posted on its [Web site](#).

Largely through the efforts of the NBIA, many incubator executives can also quote these types of statistics with an accuracy not common among executives in many larger and more established industries. With more than a thousand member incubators, the NBIA provides documentation, studies, training, and networking among incubators. In May this year, the NBIA held its 14th International Conference on Business Incubation in Cleveland.

The cohesiveness of the incubator industry seems remarkable given the group's relatively short history. After all, according to NBIA statistics, a mere 20 years ago there were only 12 incubators in North America. Then again, the recent interest in this segment is perhaps not so remarkable considering that the NBIA estimates that there are now 800 incubators in North America, with several more created each week. Added to this explosive growth is the rapid rise in incubators that are not just vehicles for community development, but are also highly profitable enterprises. With these two trends, the incubator segment has become one of the biggest stories in business.

According to Dinah Adkins, executive director at NBIA, "More than 100 incubators, the majority of them for-profit incubators focused on Internet companies, have opened in the past year. As a result, we estimate that the percentage of for-profit incubators has risen from about 10% to nearly 25%. It's hard to keep up right now because there's been such rapid growth in these incubators."

Sally Hayhow Linder, director of publications at NBIA, reports that incubators are opening at a rate of four per week. At the heart of this growth is a model that provides a substantial service to another rapid growth industry—business start-ups. "Business incubation catalyzes the process of starting and growing companies," says Hayhow Linder. "A proven model, it provides entrepreneurs with the expertise, networks, and tools they need to make their ventures successful. Incubation programs diversify economies, commercialize technologies, create jobs, and build wealth."

Hayhow Linder says NBIA research shows that 87% of companies that have graduated from incubation programs are still in business. In contrast, a study on small business released by the Small Business Administration in 1996 reported that fewer than half of all new businesses are still in operation after five years.

Internet companies are a major part of much of the growth of business incubation. The "dot-coms" offer the lure of unprecedented profits to investors. "Remember that until the Netscape IPO, a company normally had to have four to six quarters of profit before going public," says Adkins. "That has changed drastically in the Internet space, if nowhere else. So long as people aren't investing based on value, sales, or profits, and they can still cash out by selling stock that is valued so highly, we'll see more."

So what about the state of business incubation in the medical device industry? Adkins says that "until the Internet incubators came along, the medtech or biotech incubators were the most numerous industry-targeted incubators in the United States. While our list of those specifically targeting this area is rather small, it's estimated that there are more than 20 that either focus on medtech or biotech, have large clusters of these firms, or are in the process of setting up these incubators."

Start-up medical companies have special challenges that keep them from easily attaining the rapid investor profits of Internet companies, and medical incubators are certainly not growing at the rate of Internet incubators. Hayhow Linder says that although NBIA has not specifically researched this, the organization believes that "there continues to be a steady increase in the number of medical incubators, but the requirements of setting up such a facility (medical research institutions, entrepreneurial support, financing, and so on) probably create higher barriers to entry than for the Internet-focused incubators."

Although the incubator industry is cohesive in terms of knowledge and networking, the term *business incubator* actually encompasses a wide variety of business models. In popular fancy, business incubators provide warmth and nourishment to their fledgling companies until the little entrepreneurs are able to fly solo. Today, although many incubators do fit this image, many others actually own their member companies either partially or wholly, and while their fledglings may indeed fly one day, they will not fly solo.

Manufacturer Spin-Offs

Some medical manufacturers produce not only devices, but also entire companies based on either their own or licensed technologies. This nontraditional model is often referred to as business incubation by the manufacturers themselves as well as by others. Creating a number of smaller companies can often be the most successful marketing and product development model for a manufacturer that produces a diverse set of products.

Matech Advanced Materials and Biomedical Technologies (Westlake Village, CA) is a licensed medical device manufacturer. The company provides a variety of fluorescent reference standards for calibrating medical instruments, analytical instruments used in clinical diagnostics, high-throughput screening, drug discovery, and validation of instrumentation used by pharmaceutical manufacturers. The company's principal activity is manufacturing standards that are embedded in medical instruments.



Matech Advanced Materials and Biomedical Technologies (Westlake Village, CA)

Incubator type

Medical manufacturer that creates spin-off medical device companies.

Member companies

Global Strategic Materials: develops an aerospace ceramic composite.

Igori: develops solid-state assays for biological functions in which an entire sequence or chain reaction of protein pathways mimics cellular functions in the solid state.

Graduates

Solgene Therapeutics LLC: develops a biotech drug delivery and cell therapy in which human cells are treated so that they deliver drugs into the immune system.

Flat Panel Display (FPD) Technologies LLC: develops a fluorescent flat-panel LCD with a large viewing angle.

"Biomed or biotech is an area where if you have a winner it can be phenomenal."—Edward Pope, president, Matech

The company also produces spin-off companies. Since 1997, Matech has spun off two companies. The first is Solgene Therapeutics llc, which develops and commercializes a biotech drug delivery and cell therapy in which human cells are treated so that they actually secrete drugs into the immune system. The other

company, launched in 1998, is Flat Panel Display (FPD) Technologies llc, which commercializes a fluorescent flat-panel LCD with a large viewing angle.

This year, Matech is launching two additional spin-offs. Global Strategic Materials is intended to develop and commercialize an aerospace ceramic composite. Igori will focus on bringing to market solid-state assays for biological functions in which an entire sequence or chain reaction of protein pathways mimics cellular functions in the solid state.

Edward Pope is the president of Matech. "I have used Matech as the platform or, if you want to use the term, incubator, for launching these spin-off companies," says Pope. "What they share is that they are all founded on innovation in materials science. That's the commonality." Pope is either the inventor or the coinventor of the technology that fuels the spin-off companies.

According to Pope, medical manufacturing offers high potential profits for those who choose to start up business. "Biomed or biotech is an area where if you have a winner it can be phenomenal," says Pope. "Unfortunately, other more-prosaic, more-traditional industries are sometimes not as attractive for investors. They tend to be high volume and low value-added, whereas the exciting areas are the industry segments that are high value-added, such as medical products or drugs."

Pope says that his strategy in determining what types of business to start up has been to focus on producing finished devices rather than raw materials. In this way, he is able to take advantage of business opportunities that are large enough to create profit.

"Materials science is indispensable to almost every major discipline," says Pope. "The problem is that if your objective is to make the raw material that someone else makes into a finished material that someone else makes into a component that someone puts into an instrument or device, you are so far down the food chain that you're going to make pennies when the last guy in line makes thousands."

Making the Egg and Making It Hatch

If the definition of business incubators is envisioned as a range, with the traditional, nonprofit business model at one end and the manufacturer that produces spin-offs at the other, The Innovation Factory (TIF; Norcross, GA) would fall somewhere in the middle. A for-profit incubator, TIF selects promising new technologies and starts up companies with its own management team to develop the technologies.

The Innovation Factory (Norcross, GA)

Incubator type



For-profit incubator.

Services

- Licenses new technology and uses its management team and venture resources to start up the business.
- If proof of principal is achieved, raises a second round of venture capital and recruits a full-time management team for the new company.
- The principals of TIF remain actively involved in the new businesses, providing strategic resources through consulting relationships and board positions.

Member companies

At least two current projects.

Graduate

Cerebral Vascular Applications Inc.: develops devices that reduce the incidence of stroke in patients with atrial fibrillation.

Web site

<http://www.innofactory.com>

"When you think of incubators, you just think of someone dropping in an egg and then waiting for it to hatch. We make the eggs and we make them hatch."—
Tom Weldon, chairman and CEO, TIF

With TIF's unusual incubation model, Tom Weldon, chairman and CEO, is not entirely sure that he likes to use the term *incubator* to describe his firm. "When you think of incubators," he says, "you just think of someone dropping in an egg and waiting for it to hatch. We make the eggs and we make them hatch," he says.

According to Weldon, TIF's business model is a response to recent market pressures that make it more difficult than ever for independent entrepreneurs to start up medical businesses. "It's becoming harder and harder to make money in the

healthcare business," says Weldon. "The competition for capital is greater and payoffs are more long term. In terms of risk capital, the low-hanging fruit is gone. With the clinical data expectations for new devices, starting up can require large trials costing as much as \$50 million."

Weldon explains that the goal of TIF is to reduce the risk for investors by starting up several early-stage businesses efficiently and at minimal cost. The company is able to reduce costs by sharing its management team and other resources across the new ventures. The management team, with a résumé of more than 100 years of combined experience and more than 70 medical device patents, is also able to bring to each venture the kind of knowledge often lacking in new ventures.

The basic model of company development at TIF is to license a new technology, raise an initial round of venture capital, and share essential management and business infrastructure resources until the product concept has been proven. With efficient resource sharing, Weldon is able to move through this stage with a typical budget of \$500,000 to \$800,000 for each new company.

If proof of principal is achieved, TIF will raise a second round of venture capital and recruit a full-time management team for the new company. The principals of TIF will remain actively involved in the new business, providing strategic resources through consulting relationships and board positions. Successful companies are expected to move through the entire process and out of the facility within two years. (For more information on TIF's services, visit <http://www.innofactory.com>.)

The metaphor Weldon uses to describe his business is that "If you are going to try and hit home runs, you have to swing at a lot of pitches." Typical start-ups, says Weldon, have to raise at least \$2 million in the beginning. "Then everything often doesn't go as planned, but by the time you find out, you are several hundred thousand dollars down the road," he says. "At that price, you can't afford to swing at too many pitches."

To make his model successful, Weldon needs to be able to move very quickly on new business opportunities. To eliminate the typical six- to eight-month delay for closing a round of venture financing for each new business, he has entered into agreements that provide him with just-in-time access to large amounts of venture capital.


Another strategy that has helped Weldon to be successful is to focus on the large-market opportunities, such as stroke prevention, congestive heart failure, incontinence, fertility, obesity, and antiaging. He says that the three characteristics that would attract him to a new technology would be a large-market opportunity that is not well-served, sound intellectual property that can be protected, and dramatic improvement in clinical outcomes.

With at least two other companies in the offing, TIF has launched Cerebral Vascular Applications Inc., which focuses on developing devices that reduce the incidence of stroke in patients with atrial fibrillation.

Business Diversification

At the far end of the business incubation spectrum are traditional nonprofit incubators, such as the Fort Worth MedTech Center. Warren H. Webb, president of the MedTech Center, says that the incubator was founded to provide business diversification, not just development, to a city that was recovering from the loss of 44,000 defense-related jobs in the early 1990s.

Fort Worth MedTech Center (Fort Worth, TX)



Incubator type
Nonprofit incubator.

Services

- Provides assistance with all aspects of business development, such as business plans, marketing, public relations, and administration.
- Arranges introductions to investors.
- Uses business mentors for in-depth, specialized consulting.

Member company
SpiderMed.com: develops Internet information and transaction services for healthcare providers.

Graduate
Trincore Systems Inc.: develops a monitor to manage data from a variety of medical devices and patient care facilities. The company was purchased in 1999 by Data Critical Corp. (Bothell, WA).

Web site
<http://www.medtech.org>

"There should be an incubator on every block, because the resources they bring to the table are so valuable." —Warren H. Webb, president, Fort Worth MedTech Center

According to Webb, city leaders and officials chose to create an incubator focused on medical technology in recognition of the large concentration of medical businesses that already existed in a particular area of Fort Worth, often called the medical district.

"What we wanted to be able to do," says Webb, "was tell all the hospitals and medical educational institutions that if a doctor at your hospital or organization comes up with a new medical device, we would be happy to give that doctor business guidance so that the idea might be turned into a full-blown company

that will have a positive economic development impact on the community."

The MedTech Center provides a number of incubation services. According to Webb, the program for new companies includes extensive help with business plans and with such aspects of the start-up process as marketing, public relations, administration, and introduction to funding resources.

The MedTech Center has developed relationships with more than 25 companies in Fort Worth that act as business mentors, consulting with the member companies every three months to discuss specialized areas of concern. Local universities also participate in the incubator, allowing MBA students to work on various projects for new companies to gain real-world experience and school credit. (For more information on the MedTech Center and its services, visit <http://www.medtech.org>.)

According to Webb, the key to succeeding as an incubator is to actively work with companies—not to just wait for them to hatch. "There's nothing worse than just sitting in an incubator office and waiting for one of your participants to come in and tell you that they are having trouble with, for example, the accounting process," says Webb, "because by that time the damage might be done. We are going to sit down with the new company right away and see if we can find a mentor to revamp the business plan and identify how that company can succeed."

So far, the Center has not had the facilities to house its member companies in a central location, and has been operating as what Webb describes as a "virtual incubator." The city of Fort Worth is now working on a large business development campus that will include the MedTech Center and other business assistance resources, such as the Fort Worth Business Assistance Center. Webb says that the new facilities will greatly expand what the MedTech Center can offer in terms of such tangible resources as labs, conference rooms, media rooms, and even shared office equipment. He says that the new campus will make it possible for the MedTech Center to attract more of the companies that he looks for. "Build it and they will come," he says.

Finding participants that will be good fits for the MedTech Center is not easy, according to Webb. He is looking for medical companies that are past the research and development stage, which can sometimes take several years or even decades to complete, and are ready to begin the countdown to marketing their product or service, a process that typically takes about a year. Webb looks for companies in this stage of development that have a well-conceived if not necessarily well-presented business plan. "We want to make sure they aren't tire kickers, who basically have an idea, but no concept of the amount of effort that will be required to realize that idea," says Webb. According to Webb, many would-be entrepreneurs will kick the tires, but few are prepared to buy the car.

As difficult as it is to find the perfect opportunities, though, raising adequate capital for supporting these ventures can be even harder for a nonprofit incubator, says Webb. Nonprofits must compete for investors with the for-profit incubators, which can offer not only the satisfaction and indirect benefits of community enrichment to

stakeholders, but also sometimes very substantial profits.

Webb likens the constant search for money on the part of nonprofits to the efforts of charitable causes. Although the cause is worthwhile, he can sympathize with the reasons why people choose not to donate. "You ever find yourself at dinner when the phone rings, and it's, for example, the Texas department of public safety's officers association?" he asks. "They are calling for your support for officers who have lost their lives in the line of duty and they are asking you to give \$35. You have to say to yourself, that's a wonderful cause, and it is, but if you give to everyone who calls and asks for money, you'll be broke before the end of the year."

Bio/Start (Cincinnati)

Incubator type

Nonprofit incubator.

Services

- Wet or dry lab suites, tissue culture rooms, and entrepreneurial offices.
- Other technical support facilities (cold room, x-ray, photo doc, dark room, CAD/CAM).
- Operating support services (phone, fax, Internet, copying, reception, mailing, shipping).
- Business assistance.
- Pro bono professional services.
- Entrepreneurial education programs.
- Referral network.

Member companies

Apologic: develops drugs for treatment of ApoE-related diseases such as Alzheimer's, coronary artery disease, and other neurodegenerative diseases.

BioConcepts: develops innovative medical technologies emerging from research institutions.

CardioEnergetics: develops devices for the mechanical treatment of heart failure.

Cutanogen: develops cultured skin substitutes for patients with severe burns or

competent cells.

UMD: develops a drug delivery system for treatment of uterine muscle dysfunctions such as dysmenorrhea, premature labor, and endometriosis.

Viridae Clinical Sciences: develops knowledge and skills for the treatment and prevention of viral diseases.

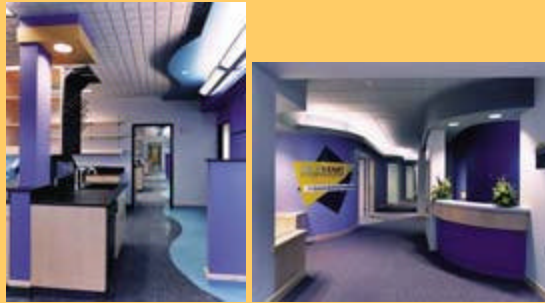
VQ Corporation: develops the V Quick Patch, a device to simplify the application of the electrocardiograph leads to patients in emergency situations.

Graduate

Inotek Corporation: develops pharmaceutical compounds for treatment of inflammatory conditions including septic shock, inflammatory bowel disease, and pulmonary hypertension.

Web address

<http://www.biostart.org> (under construction, expected launch summer 2000)



Photos courtesy of BIO/START

Although the initial investment in a nonprofit incubator does not mean a direct share in the profits of the new member businesses, there are some long-term financial incentives for the investing companies. One of the attractions of investing in the MedTech Center is that the incubator can foster relationships with potentially revolutionary companies, which may lead to more-lucrative associations later, such as partnerships or vendor relationships. Webb says that "the reason these companies are supporting us is twofold. The first aspect is community development, and the second is for the long-term relationships that they may develop with these start-up companies as they grow."

The MedTech Center's current participant is SpiderMed.Com, a company that provides Internet information and transaction services for healthcare providers. The company's mission is to use Web-based technology to help physicians with such daily administration activities as verifying medical coverage eligibility, making referrals, issuing prescriptions, and purchasing supplies.

The incubator has graduated Trincore Svstems Inc.. a medical software companv that

developed a monitor to manage data from a variety of medical devices and patient care facilities. The company was purchased in 1999 by Data Critical Corp. (Bothell, WA).

Webb is confident that the current trend of incubator proliferation, whether for-profit or nonprofit, will be beneficial for business in general. "There should be an incubator on every block," he says, "because the resources they bring to the table are so valuable."



Virginia Bio Technology Research Park (Richmond, VA)

Incubator type

healthcare."—Robert T. Skunda, president and CEO, Virginia Biootechnology Research Park

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Illustration by Nicholas Wilton/SIS

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