

Five Ingredients for Financing Nanotech Ventures

August 2001

Nanotechnology Resources, Issue 1

by

Neil Gordon
Partner – Nanotechnology
Sygertech Consulting Group, Inc

Expertise for Building Nanotechnology Companies Worldwide

North America



Europe



Asia Pacific



Nanotechnology Resources

Issue 1 – Five Ingredients for Financing Nanotech Ventures

Issue 2 – Tips for Bringing Nanotech Products to Market

This document may be reproduced in full or in part provided that any reproductions include the following legend:

Copyright © 2002 Sygertech Consulting Group Inc. All rights reserved

Five Ingredients for Financing Nanotech Ventures

By Neil Gordon, Partner – Nanotechnology, Sygertech
Initially Featured in Steve Lenhart's About.com Nanotechnology

Five Ingredients for Financing Nanotech Ventures

While each VC has its own preferences and expertise, here are five ingredients that should be considered in your approach. This is simply put as:

-  **The Story** - How your nanotech venture will make money for the investor
-  **The Numbers** - How much value will your venture create and when
-  **The Package** - How do you convey your story and overall image
-  **The Target** - Who should you seek for the investment
-  **The Connection** - How should you approach prospective investors

Introduction

Financing a nanotech company can be as challenging as attaining milestones in nanoscience research. Without a sufficient input of resources and creativity in either task, the corresponding output will likely lead to disappointing results. While there is no doubt of the potential from nanotechnology, fledgling nanotech ventures must overcome some severe structural and communications hurdles to convince investors to buy their shares.

Financers such as Venture Capitalists (VCs) raise money from institutional and private sources by promising to increase the value of their holdings. To do so, they invest in companies that have a considerable potential to increase in value then sell the shares at a later date for a higher price. Simply stated, buy low - sell high, assuming that someone (anyone) will want to buy the shares.

Nanotech companies face an uphill battle since the number of well-known commercial nanotechnology successes can fit on the head of a molecule. Recent financial horror stories from tumbling share prices of previously solid blue chip technology stocks and the dot.com fiascos have scared many money men away from technology investments.

On the other hand leading business sources are helping to create a buzz around the upside potential of nanotechnology. One recent story featured on Forbes magazine's July 23, 2001 cover describes nanotechnology as the "[Next Big Idea](http://www.forbes.com/forbes/2001/0723/096.html)" (see <http://www.forbes.com/forbes/2001/0723/096.html>).

While the number of dedicated nanotech venture capitalists are scarce, there appears to be more traditional VC's making investments in nanotech companies. Those VCs who have already tested the nanotech waters seem to be increasing the number and size of their investments. This trend is good news for nanotech entrepreneurs.

While there is no way of knowing for sure if a prospective nanotech investment will be a dud or a Dow (Chemical), there are clues that help financiers evaluate the potential of a venture before making their decision to invest. Knowing in advance the valuation criteria on which your nanotech venture will be measured can help you better prepare and subsequently increase your chances of getting funded.

Ingredient #1: The Story

Exploring the surfaces of fullerenes, making molecules rotate like propellers, and understanding how monolayers can self-assemble are fascinating concepts. However unless there is a convincing story of how your specific research will transform into a revenue-generating venture by adding investment dollars, there will be hesitation for an investor to proceed.

Investors want to know the story of how your innovation will evolve into a company that will appreciate in market value. As part of their evaluation, they seek to uncover this story by directly and indirectly asking a series of questions that uncover its potential, including the market opportunity, competitive situation, management team, business strategy, financial projections and exit strategy.

Typical Questions

In no particular order, investors want to know what is the commercial opportunity from your research. Will you be developing a product that substitutes an existing industry standard in an established market, or will you be creating a new market that doesn't currently exist? What are the products and services that you will make and what is the value they offer to potential customers (e.g. lower cost, better performance, ability to meet new industry guidelines)?

Who will buy or license your products? How much will they pay? Who are the principal competitors of bulk products that your technology will replace? How will competitors react to a new company in this field? How will potential customers hear about your products? How will customers buy your products? How will your products be distributed? Who are the best-suited strategic partners who can help your business succeed? Who will be your first customer, and why?

What's the value of your technology in terms of its originality, its innovative aspects, its positioning and its competitive advantages compared to existing technologies and those under development? What are the risk factors related to R&D, technical difficulties to pass the production from lab scale to industrial scale, time to market, cost control, quality assurance and other potential challenges such as regulations, environmental standards, retaining key people, access to raw materials, machinery and equipment, etc?

At the completion of your research will be some intellectual property. Will your venture own the IP? Can the IP be adequately protected and defended through patents, and non-legal means? Are there any claims on the IP by individuals, universities or research centers for joint ownership and/or royalties?

Who will be heading up your nanotech venture? Is there sufficient expertise working full time for the venture to make it a commercial success? Who are the non-researchers on your team with competencies in production, marketing, finance and management?

Five Ingredients for Financing Nanotech Ventures

Universities, professors, companies and government agencies often have pre-existing strategic alliances for collaboration on research, jobs for graduates, funding and other joint activities. Many universities also have mature mechanisms in place for spinning-off ventures and licensing technologies. Good stories will build upon these relationships and provide the best scenario for investors.

A Sample Story

While each story is unique and applies to the situation at hand, and without breaching any non-disclosure agreements, here's a sample nanotech venture story described in terms that a VC might best comprehend.

After seven years of research our team has developed a new nanomaterial which offers improved performance in electrical, optical, catalytic and thermal properties. Derivative products can be made for dozens of industrial applications. Customers in the first market being targeted bought \$750 million of similar bulk products last year just in the US. Our nanomaterials will match or exceed the performance of the industry leader while costing us less than 1/10th of the price to manufacture. Users will buy from us because the existing bulk materials are more expensive, in short supply, and have raw materials produced in politically unstable countries. Furthermore, new US government regulations will mandate more stringent performance levels that will increase the quantity of bulk materials required in the target application, further increasing the cost spread between us and the leading suppliers.

Letters of interest have been provided to us by 4 of the top 10 users who will convert their pilot orders into more significant volumes once they validate our test results. We expect to enter into strategic alliances with 2 of these users for distribution arrangements into the European and Asian markets.

Our intellectual property is covered by a series of patents on the nanomaterials and production process, and is entirely owned by our company. Our university partner has zero ownership on the patents, but has a 10% royalty on our first \$100 million of sales. Our team comprises the 5 principal researchers plus a CEO from the industry with proven sales and management experience. A production VP and CFO have been identified and will be brought on-board within 6 months of the investment. We are seeking \$5 million that will be used for productization and commercialization activities.


Ingredient #2: The Numbers


While your story might illustrate how your nanotech venture will make money for the investor, assumptions and corresponding *numbers are needed to quantify how value in the venture will be created. Estimates do not need high precision to be acceptable, however you do need to demonstrate solid thinking behind the numbers.

Revenue Generation

The starting point for assessing nanotech ventures is usually the ability to generate revenue. More specifically, investors are primarily interested in seeing real nanoproduct and MEMS device revenue streams beyond R&D contracts, lab equipment and nano-powders shipped in sample volumes. What's important is the entrepreneur's perception of when and how much money will be generated through the sale of products.

Revenue projections are usually decomposed into the following assumptions:

 **Units shipped** - For the next 3 to 5 years, you might want to estimate the number of units to be shipped whether in absolute number, weight or volume. Units shipped are expected to increase over time as more customers become familiar with your products.

 **Price per Unit** - This is the corresponding price your customers will pay. The unit price is likely to decrease over time with competitive products hitting the market in future years.

By multiplying the units shipped by the price per unit, the result is a revenue projection which enhances the overall story. For example, suppose your company estimated that it could sell 1,000 devices in 5 years time at an average price of \$10.00 per unit. The total sales potential of \$10,000 would be a clearly unrealistic target for an investment of \$5 million. With a \$10 unit price, the sales potential should be in the millions or else the chance of getting funded would be virtually zero.

Developing and Calibrating the Financial Model

The numbers can be further elaborated by developing a complete financial model containing income statement, balance sheet and cash flow. These statements can be derived by a financial specialist or a pre-programmed spreadsheet by making a series of additional assumptions by year on the cost of raw materials, direct labor for producing each unit, royalties, manpower, equipment costs, depreciation rates, marketing expenses, etc.

The real value of the numbers comes from calibrating your story and the corresponding assumptions to create a financial return on the requested investment that meets the investor's expectations for both the investment amount and associated risks. Different scenarios can be generated to show variations of the possible outcomes. For example, what would be the financial impact if you were to speed up marketing with an additional \$1 million?

Another important point is calculating when the venture is expected to breakeven (i.e. earn back as much money from operations as the proposed investment). The sooner this can happen, the more attractive a nanotech venture will be assessed. A target payback period should be 2 to 3 years.

Ingredient #3: The Package






Your story and numbers are assembled in a package comprising a series of documents and interfaces with the investors, and conveys a certain image of your company. This package offers additional clues on how your company might be perceived by prospective customers and business partners who are critical to your commercial success.

Picture your banker as someone with the same background as the VC who is also evaluating your potential as a financial investment when you are seeking a home or auto loan. With your banker, you may help your cause by supplying documents communicating what you are buying and how much you need, providing evidence that you are a good commercial risk, supplying credit references who could be contacted to validate your financial stability, and even dressing appropriately to give a professional and responsible image.

"One thing worth considering is that every VC has a different take on a biz plan. I've met some who won't touch anything unless intellectual property is nailed down. Others are willing to take a chance on time to market and worry about IPR later. Some won't invest less than 5 million, others will go as low as 100k. I'm always happy to look at any opportunity - sometimes a good VC team can spot hidden potential that entrepreneurs may have missed, or may have the connections to take the enterprise in a totally different direction. My personal opinion is that if a VC says 'But...' more than a few times forget them. If they say 'What if...' or 'Couldn't you...' then you've found a good partner. After all, entrepreneurs & VCs should have the same objectives!"

**Tim Harper, CEO,
CMP-Cientifica**

The same is true when seeking financing for a nanotech venture. Here are some points to consider:

-  Provide an easy to read "Reader's Digest" version of your story as a quick introduction with limited scientific explanations.
-  Present a well written business plan which provides a) your story with a business and non-technical focus, b) corresponding numbers and assumptions, and c) supplementary materials in the appendix that support your claims (e.g. market study, magazine articles, scientific papers, patents, third party testimonials, independent lab results, etc).
-  Convey your materials with an appropriate image which may position your products and the target applications.
-  Complete your team with strong and complementary scientific and management personnel, strengthened by an outside scientific committee and business people on the board of directors.
-  Supply a list of third party references including potential customers who can be called upon by the VC to validate your claims.

Your image is also reflected in each exchange with the VC - from the appearance of your personnel and your web site, to a courteous and rapid response to phone calls. VCs expect to be treated as your partners who contribute to the success of your company with money, contacts and know-how. Their expectations need to be addressed in the image you convey.

Ingredient #4: The Target

As VC's tend to specialize, the most likely VC sources for near term nanotech investments are traditional VC's having technology

Five Ingredients for Financing Nanotech Ventures

portfolios that are evolving into nanotechnology. For example, a VC that focuses on the electronics industry can invest in nanolithography without going beyond its investment charter. The same goes for advanced materials VCs into nanomaterial ventures, industrial products VCs into MEMS startups, and biotech investors in biosensors and nanomedicine.

Once you identify the most likely financial sources for your venture, you also need to be aware that different VCs have varying investment objectives and preferences. Some VCs are early stage while most prefer to see some commercial activity such as minimum revenue before they invest. Some VCs will only invest in companies that are within a two-hour flight. Still others prefer a certain size of investment - too small is overly expensive to administer while too big may exceed their tolerance for risk. Most VCs prefer to invest with other investors to diversify their portfolio over a wider range of potential investments. Also important is timing, as the VC has to have available funds to make new investments at the time of your request.

Wise entrepreneurs will seek other avenues of financing in addition to the VCs to maximize their chances of getting funding and ultimately striking the best possible deal. This is particularly important for early stage companies seeking seed money. Some of the likely alternative sources of financing include government (see www.nanoledge.com as an example), corporate investors including potential customers of your venture's products, and angel investors who are successful entrepreneurs that have previously built successful companies and can add business savvy as members of your board of directors.

Other important criteria include the personal chemistry between the personnel of the investor and the nanotech venture (as people invest in people), and a clear vision of how the investor will ultimately get its money back. "Exit strategies" can include selling its shares to a later stage investor or multinational company, merging your company with another company in its portfolio, or selling its shares on the stock market through an initial public offering (IPO). In all of the above cases, nanotech ventures are likely to be considered along side of all other investment opportunities without any special consideration for the nanoscience involved.

Ingredient #5: The Connection

If Bill Gates was introducing a software venture to potential investors with a personal endorsement as the next Microsoft, one can envision sparks coming off the pens of prospective investors as they race to sign their checks. Contrast this with the same software company sending its business plan in the mail unsolicited. Obviously the right connection, message and influence with the money people will help your case.

Many investors have dozens or hundreds of business plans routinely pass their desks. Having a credible connection particularly with a history of delivering successful ventures to the investor may leverage your nanotech investment opportunity into a priority position.

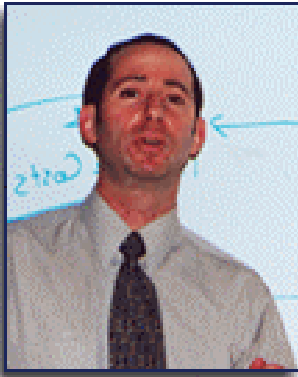
"We're proactively out looking for our deals, so when an unsolicited opportunity passively comes through, it is more likely to catch our attention if it comes through someone in our network. Neil's Bill Gates-anecdote certainly rings true. Having validation (and instant 'cred') gives a leg up on all the other plans we see. For all intents and purposes, the first layer of our due diligence process is taken care of. That speeds up the process and piques our interest. Another word of advice: applications first, technology second. Don't just evangelize the potential of the technology. Your preaching to the choir. Make sure your 'story' drills down into the core business and then explains why the technology behind it not only enables the opportunity, but provides a defensible barrier of entry to others."

Josh Wolfe, Managing Partner, Lux Capital

Five Ingredients for Financing Nanotech Ventures

Having the right connection to well suited target investors with an effective story, attainable numbers and appropriate package, are five ingredients that can increase your chances of getting funded. And if you don't have all of these ingredients, you may be wise to devote the resources and creativity to develop them if you are serious about building a commercial nanotech venture. While there are never any guarantees in closing financing deals, it is clearly in your best interest to do everything you can to improve your chances.

About the Author: Neil Gordon



Neil Gordon is Partner - Nanotechnology with Sygertech, a Montreal-based management-consulting firm. He specializes in growing nanotechnology ventures and in helping investors evaluate nanotechnology opportunities. Neil has hands-on experience in launching new technologies, developing business plans and marketing plans, defining market opportunities and sales tactics, and describing advanced technology to non-technical people. He has a bachelor's degree in metallurgical engineering from McGill University, an MBA from the University of Western Ontario, and 20 years of senior management, marketing, and operational experience with diverse technology companies and as co-founder of two technology start-ups. Neil is on the Advisory Board of the Nanotechnology Opportunity Report due out in March 2002, a contributor to the former About.com Nanotechnology site, and on the Nanotechnology steering committee for the City of Montreal.

Neil can be reached at (514) 351-7878 extension 299, by fax at (514) 351-7545, or by e-mail at n.gordon@sygertech.com.

About Sygertech

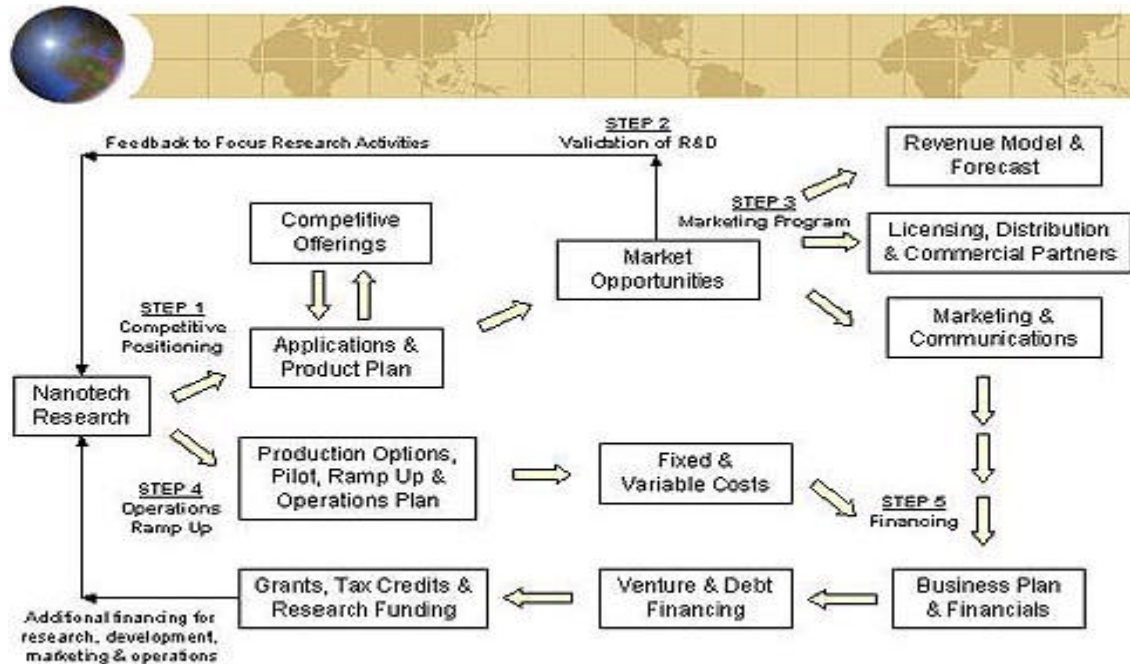
Sygertech is a management consultant for technology companies. The firm tackles critical challenges where external analysis, fresh insights and fast turnaround have the biggest impact on performance.

Sygertech's team of 30 business and technology specialists including a core group of twelve have been extending management in key matters such as marketing, product development and finance since its inception in 1992. Areas of focus include Information Technology, Industrial Technologies and Nanotechnology.

Sygertech offers a five-step approach for bringing nanotechnology research from the lab to a commercial enterprise. Depending on their current status and internal resources, Clients can select some or all of the following:

- Competitive Positioning - to find a long term sustainable position that maximizes commercial potential
- Validation of R&D - to focus research activities and protect intellectual property
- Marketing - with complete marketing plans and communications programs
- Operations Ramp Up - to evolve the research output from lab activities to mass production and related staffing
- Financing - raising funding for continuing research, marketing and operations

An overview of how Sygertech helps commercialize nanotechnology research is as follows:



How Sygertech Helps Commercialize Nanotech Research

About CMP Cientifica

CMP Cientifica is Europe's only nanotechnology integrator, with activities spanning from basic research, through scientific networks to investment appraisals and due diligence. CMP is in constant contact with over two thousand scientists, businesses and investors active in the nanotechnology world. *Activities fall into three related areas, [research & consulting](#), [networks](#) and [information](#).*

- **Research:** CMP Cientificas virtual lab concept gives access to state of the art nanofabrication and analytical tools on a global basis. Unlike traditional analytical laboratories with high fixed capital cost and limited flexibility, CMPs unrivalled array of instruments in both academic and industrial laboratories, allows it deliver tailor made solutions for every customer. CMP also offers consulting services, either stand alone or with partners in the US & Japan, to conduct market analysis and technical due diligence.
- **Networks:** CMP Cientifica is a pioneer in using the Internet to form scientific networks focussed on developing applications of nanotechnology. The company's first network sponsored by the European Science Foundation, EuroFE brought together a community of over 150 previously widely scattered researchers in field emission, attracting 50% of them from industry. The second network, Phantoms, funded by the EU, brings together researchers in nanoelectronics with a European focus, linking 60 universities with a growing number of industrial companies. A third network, NanoSpain has recently been approved by the Spanish government and is expected to start operating Q1 2002.
- **Information:** CMP Cientifica provides electronic information, and organises conferences for both the academic and scientific communities. The weekly e-mail newsletter TNT Weekly goes out to over 1300 subscribers worldwide, ranging from partners in venture capital funds to university professors, and is the first choice for anyone wishing to cut through the nanohype. The forthcoming Nanotechnology Opportunity Report (January 2002) will provide the first global view of nanotechnology markets and technologies, profiling over 800 nanotechnology companies, research groups and investors worldwide. The White Paper issued in November 2001 was the first analysis of nanotechnology to be judged useful by the whole nanotechnology community, ranging from science to finance. The nanotechnology conferences TNT (science) and I2Nano (finance) are both unique interdisciplinary events attracting the brightest and best in the field of nanotechnology.

About nABACUS

nABACUS (www.nabacus.com) is a Hong Kong based company specializing in Nanotechnology Investment and Consulting. We deliver high quality consulting to Governments and Industry, creating value for –those who are or who aspire to be at the forefront of the nanotechnology arena. We are building a portfolio of strategic investments and also assist other investors in the identification, management and exit from Nanotechnology ventures.

nABACUS has developed an approach to the Nanotechnology Service Industry based on know-who as much as know-how. In October 2001, nABACUS launched the Asia Pacific Nanotechnology Forum (www.apnf.org) creating the first Asia-based Nanotechnology Summit meeting as well as an on-going association for Nanotechnology Leaders across all Industry sectors.

Through [global](#) alliances nABACUS ensures its clients are satisfied in every aspect of Nanotechnology from the science to the stock exchange.

Expertise for Building Nanotechnology Companies Worldwide

North America



www.sygertech.com

Europe



www.cmp-cientifica.com

Asia Pacific



www.nABACUS.com

Montreal

Sygertech Consulting Group Inc.
407 St. Laurent Boulevard,
Suite 500
Montreal, Quebec, Canada
H2Y 2Y5

Tel: (514) 351-7878
Fax: (514) 351-7545

Madrid

CMP Científica sl
Apdo. Correos 20
28230 Las Rozas
Madrid, Spain

Tel: +34 91 640 7440
Fax: +34 91 640 7186

Hong Kong

nABACUS Limited
Shanghai Industrial Investment Building
Suite 1303
60 Hennessy Road,
Wanchai, Hong Kong

Tokyo

nABACUS Limited Partnership
1-10-13, 1F
Kamiuma
Setagaya-ku
Tokyo 154-0011, Japan

Fax: 81-3-5430-2624