How To Raise $100 Million

128 Venture Capital Group – Dec. 12, 2002

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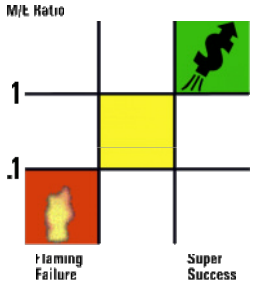


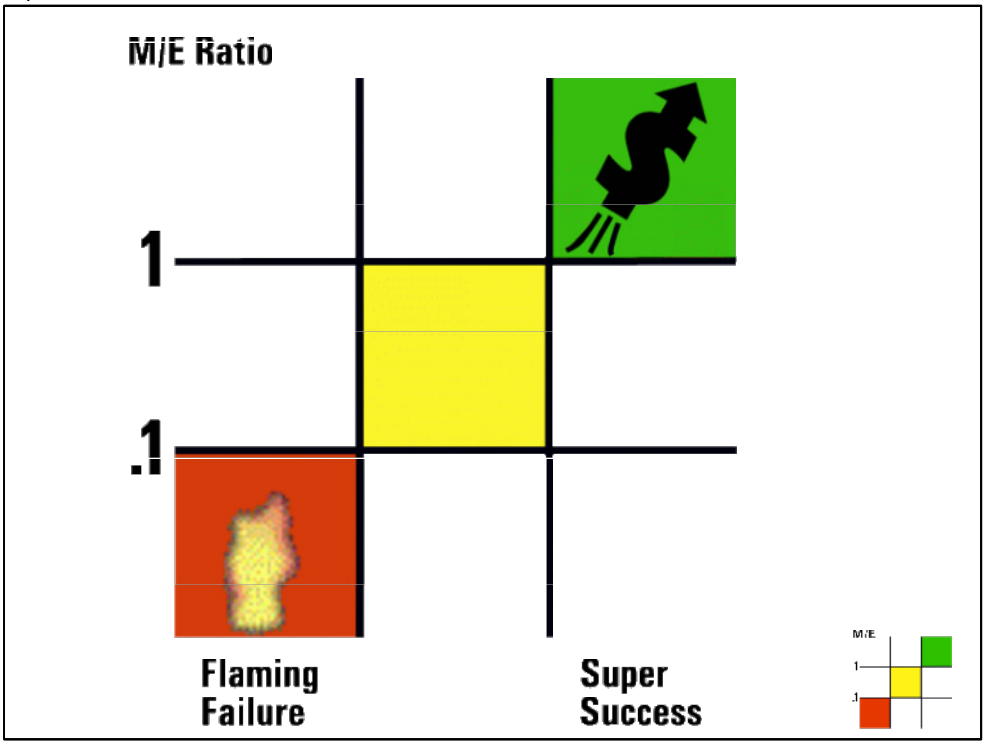
I am an engineer, an electrical engineer. In my career, I have experienced the excitement from being in successful companies, and the grief from working for failures and being laid off.

I have helped launch new products, new companies, and new fields; which are now worth more than ten Billion dollars. I earn my living as a VP of Marketing for startups, as a Marketing Consultant, and as a temporary executive. Pro-bono, I support the institutions of technology-based business and entrepreneurship, write about marketing, teach marketing, and research how marketing drives successful technology-based enterprises.

This morning, I would like to share with you some observations and data from those experiences. The graphic on the title slide is there for a reason. Let's take a closer look.

---- handout ----

Download a copy of the Marketing/Engineering Investment Ratio data at http://marketingVP.com/download/100mil.pdf. It includes company names, products, and dates. You may find it helpful to have a printed copy in front of you when reviewing slide 6, "the Evidence," slide 13, "How much did Stan invest in market research?" and slide 24, "Team with a market researcher."



You have just heard from an incredibly successful entrepreneur, Stan Lapidus. I would call him a ***"super success."*** Across the broad landscape of technology-based enterprises are other super successes like Dell Computer and EMC. There are also business basket cases such as Thinking Machines, Polaroid, and Genuity who have all gone down in flames in bankruptcy. I would call them ***"flaming failures."***

Here is a graphical way to summarize what we might learn from these outcomes. We can picture the relationship between investment in up front market research and success or failure. The axis on the left is the ratio of market research investment to engineering investment, called the Marketing-to-Engineering Investment Ratio (M/E Ratio), on a logarithmic scale.

Above (an M/E Ratio of) 1, the enterprise is investing more in market research than in engineering. In the right column are super successes. I have called the symbol in the upper right corner the "money rocket," because it represents the way entrepreneurs like Stan Lapidus rocket to financial success.

Below .1, there is essentially no investment in market research. In the left column are the failures. The flickering flame in the lower left corner symbolizes the high-flyer "going down in flames, crashing, and burning."

Why do market research?

- Technology-based enterprises which do not invest in market research fail
- Successes invest more in market research than in engineering
  - Surprising, counterintuitive data

I am often asked, "Who needs marketing? The product's not ready yet. How can you possibly suggest that we devote our precious capital to marketing, much less more to marketing than in engineering, when we have this heavy-duty technology to develop?"

Because the evidence shows that technology-based enterprises which do not invest in market research fail.

Invest more in up-front marketing, exclusive of promoting and selling, than in engineering! Furthermore, invest heavily in market research, either before the engineering begins, or concurrently with the engineering effort, or both; before the product is ready. To an engineering audience, to the technologists, that might seem outrageous.

In fact, the evidence shows that successful technology-based enterprises do just that. Super successes in this survey have a Marketing/Engineering Investment Ratio (M/E Ratio) greater than 1, investing, on average, more than two dollars in marketing, exclusive of promoting or selling, for every dollar invested in engineering. They invest up-front, before the product is ready. They maintain a higher investment in marketing even at the extremes of technology where you might expect more investment in engineering.

Every flaming failure suffers from an M/E Ratio of 0.1 or lower. The average failure invests only about two cents in upstream marketing for every dollar in engineering.

What is marketing?

- Market research
  - Not promoting or selling
- Up front, early intervention
- Fact gathering, analytical
- Understand the customer

Marketing is differentiated from promoting and selling in function, as well as by time.

Marketing is the upstream process that occurs before the product is ready; perhaps even before the product is committed to engineering. Marketing is an iterative process conducted as a team with technologists.

Market research is a simple name for a complex series of fact gathering, analytical processes including market segmentation, market sizing, market validation, Competitive Intelligence (CI), food chain analysis, modeling the customer, calculating customer payback, and quantifying customer needs.

Marketing is not selling.

Market research delivers

- Validates the market
- Guides engineering
- Steers the enterprise
- "Strategy must be based on facts, not on wishes."
  - Dr. Barry Unger
- Reduces risk

"Strategy must be based on facts, not on wishes. Market research is the fundamental intellectual discipline underlying the creation of effective business strategy."

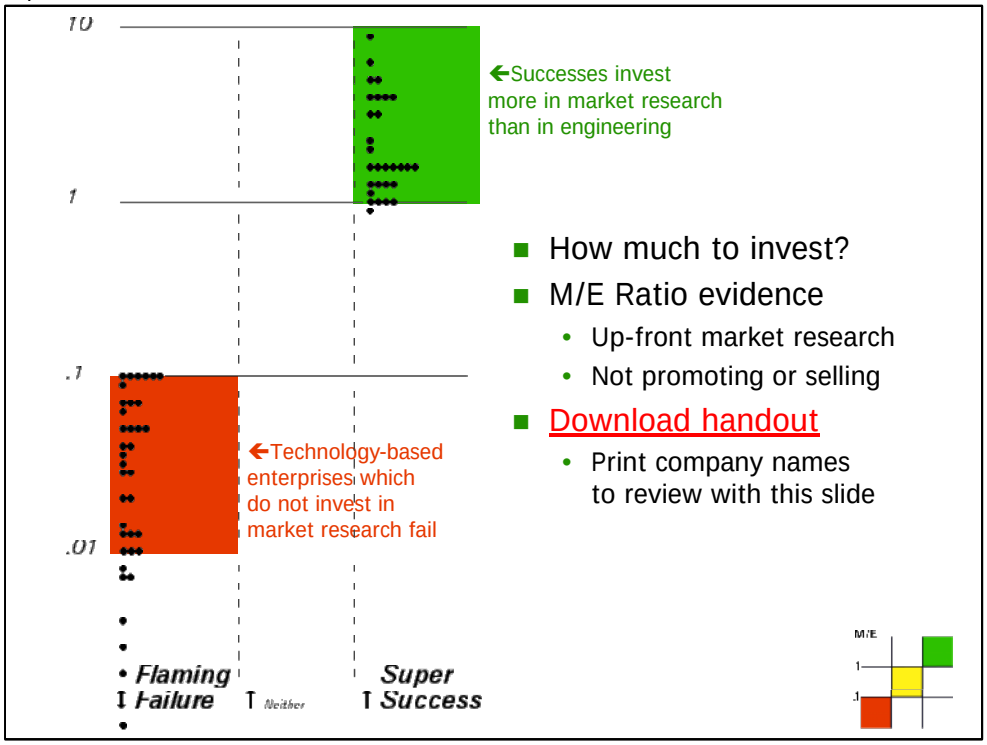
Dr. Barry Unger, co-Founder of the MIT Enterprise Forum and author of the SBIR act of 1982

"Market risk is the most deadly. Technical risk is the least worrisome."

L. John Doerr, a partner is the Silicon Valley venture-capital firm Kleiner Perkins Caufield & Byers, as quoted by John Heilemann in "Letter From Silicon Valley - John Doerr is revolutionizing the high-tech business, for the second time" The New Yorker (August 11, 1997) 28-36

Why do some new products take off, while others don't sell at all? What is the origin of the highly visible super successes, and outright failures, that are all around us?

Market research is the up-front process of ascertaining needs which customers are willing spend money to satisfy, thus guiding engineering to design products that sell successfully. How much shall we invest in market research to enable that success, and when? Engineers work out how to achieve an engineering challenge; sizing the engineering budget and staffing. ***How do we size, budget, and staff the corresponding marketing challenge?***



The magnitude of the upstream marketing process requires decisive resources. ***The enormity of the challenge simply requires it.***

Some have called me one-dimensional. I suggest that the evidence shows that ***upstream market research is the one dimension that matters.***

More than $1 Trillion is represented either in value creation by the successes, or in capital squandering by the failures. The human impact has been more than 400,000 jobs created by the winners, or lost by the basket cases; and more than 100,000 engineering slots fashioned or vanished. The data are consistent from the 1950s into the 2000s, from startups to Fortune 500 firms, and across a broad range of technology-based enterprises.

How much investment is needed to gather facts, to develop the questions, and to surface the answers? The MIT Enterprise Forum asked me to invent a method to answer these questions.

A new metric has been developed to address these issues, the Marketing/Engineering Investment Ratio (M/E Ratio). This model separates market research from the functions of promotion and selling. Formulating a ratio of marketing to engineering installs marketing concurrently with engineering, and sizes the marketing budget with a readily identified number (technology investment).

Thus the Marketing/Engineering Investment Ratio (M/E Ratio) was developed at the request of the MIT Enterprise Forum to guide technology-based enterprises. The theory, data, and practice of the M/E Ratio were then taught for several years during MIT's entrepreneurship program, and subsequently incorporated into the foundation of the popular MIT Sloan School of Management graduate course, "Starting and Running a High Tech Company."

What did Stan Lapidus do?

- Learn from his successes (and failure)
- Learn from other successes (and failures)

How much must we invest in marketing, when we have this heavy-duty technology to develop? Are there any ***data*** on how much companies like us invest in market research, to help us develop our marketing budget?

Collect data from successes and failures so that we might learn.

This invited paper was presented at the end of the 128 Venture Capital Group's twentieth year. In honor of the 128VCG, and its Chairman, Michael Belanger, I am publishing new M/E Ratio data this morning, including:

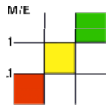
1 - Genuity, M/E Ratio = 0.013 -- Genuity declared bankruptcy as this talk was being composed, affecting about six thousand five-hundred employees and four thousand engineers.

2 - Fusion Lighting, M/E Ratio = 0.014 -- Fusion Lighting will close its doors in a few days after blowing through $90 million.

3 - Angstrom Medica M/E Ratio = infinity -- Grand Prize winner of the 2000-2001 MIT $50K Entrepreneurship Competition, creating artificial human bone from nanomaterials.

Magnitude of Stan's success

- Raised over $100 million
- Started multiple companies
- Achieved market value ~ $4 Billion
- Patents - 26 granted, 10 pending
- Faculty appointments MIT, Harvard, Tufts



For example, Stan was appointed Assistant Research Professor of Pathology at Tufts, New England Medical Center where he teaches medical students. Yet Stan has no medical degree. In fact, Stan has no advanced degree of any kind.

Stan ***understands the customer's language and needs*** so well that they made him a Professor teaching medical students. That is the result of market research.

Harvard HST / MIT Sloan Biomedical Enterprise Program

- John Akula, J.D., Ph.D.
- R. Rox Anderson, M.D.
- Ernst Berndt, Ph.D.
- Joseph Bonventre, M.D., Ph.D.
- Richard Cohen, M.D., Ph.D.
- George Daley, M.D., Ph.D.
- Elazer Edelman. M.D., Ph.D.
- Stan Finkelstein M.D.
- Howard Golub, M.D., Ph.D.
- Martha Gray, Ph.D.
- Frank Landsberger, Ph.D.
- Stanley Lapidus, B.S.E.E. - founding faculty member
- Richard Mitchell, M.D., Ph.D.
- Fiona Murray, Ph.D.
- Edward Roberts, Ph.D.
- Robert Rubin, M.D.
- Brian Seed, Ph.D.
- James Utterback, Ph.D.

The Harvard-MIT Division of Health Sciences and Technology (HST) and MIT's Sloan School of Management have jointly established the Biomedical Enterprise Program (BEP). Among the 18 distinguished faculty are

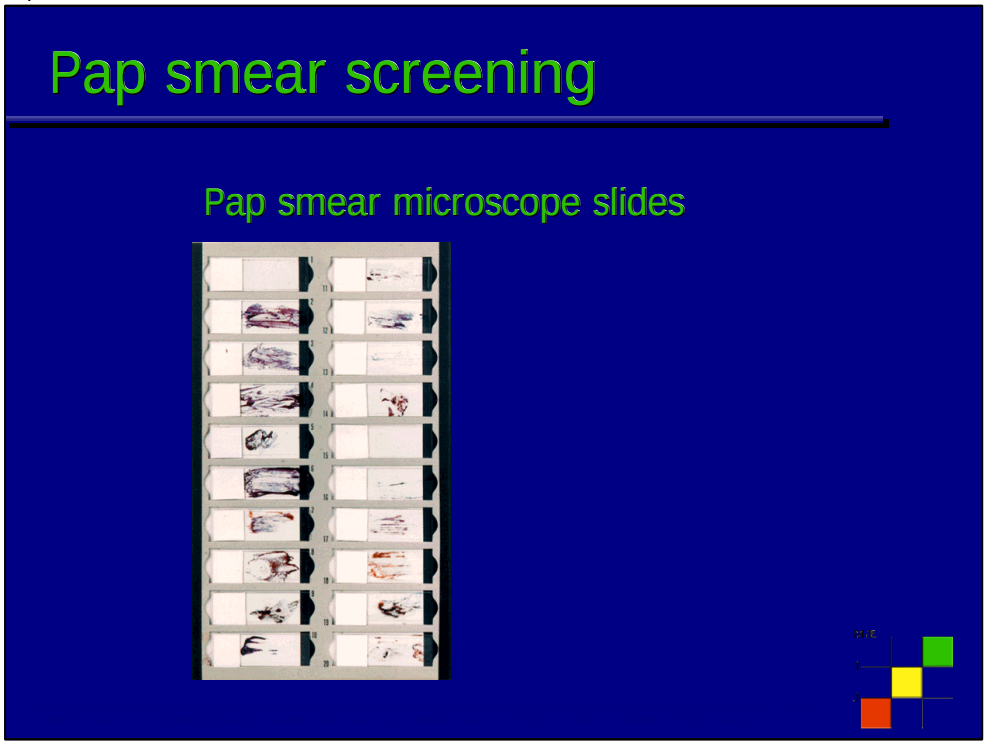
8 Ph.D.s
3 M.D.s and
6 with BOTH M.D. and Ph.D. degrees

But the faculty has only one B.S.E.E.; Stan Lapidus! Why?

- Because he ***understands the customer***.
- Because he ***speaks their language***.
- Because he can ***articulate their needs***.

In the 50 years since the Pap smear became widely used, cervical cancer deaths have declined 70%. It is the only cancer screening test in the world that has decreased the incidence and mortality (numbers and deaths) of a cancer.

Power Point slides, logo, graphics, and other materials used with permission of Cytyc.



The conventional Pap smear is made by hand; the physician "smears" the sampling device across a microscope slide to spread a layer of cells. Each physician may do it differently, leading to some slides with thick lumps and clumps, and some slides with clear areas of no cells.

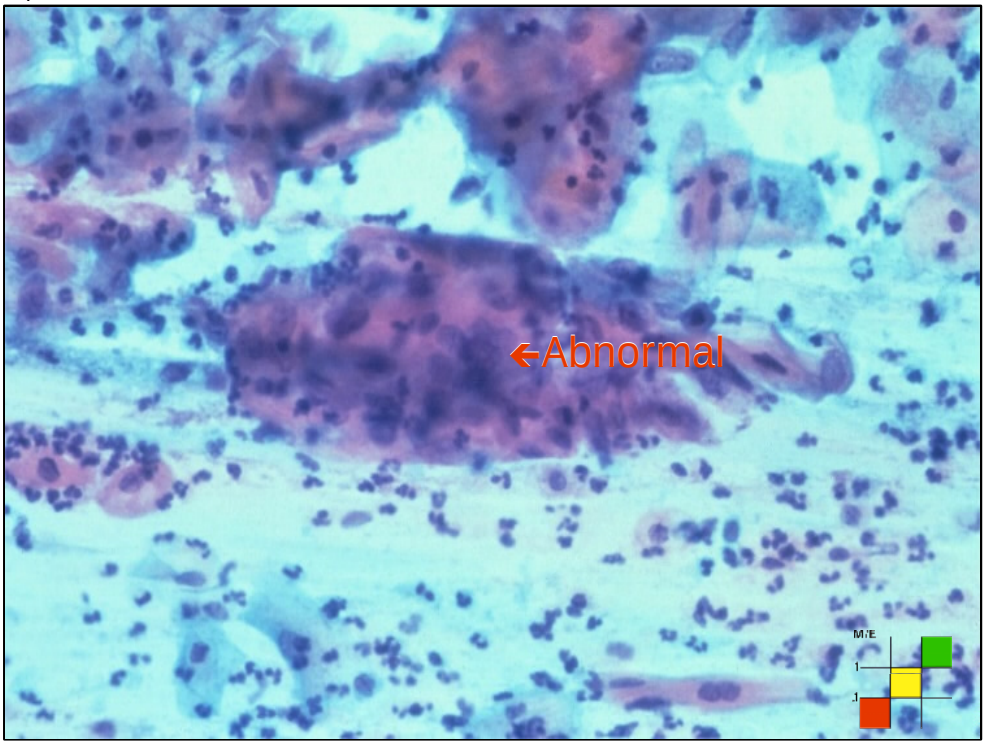
Advantages of the Pap test

Cervical cancer is a disease that progresses through pre-cancerous and cancerous stages over a number of years. More important, cervical cancer is virtually 100% curable if it is detected and treated appropriately in the earlier stages of progression. Conversely, the cost of treatment increases significantly if cervical disease is discovered at later stages. Detection of invasive cancer is not the purpose of the Pap smear. Rather, the Pap smear used to detect precursor lesions of cervical cancer, Cervical Intraepithelial Neoplasia, CIN.

What Is the Pap Smear?

The Pap smear is a painless screening procedure used to detect changes in cells collected from the cervix (the lower portion of the uterus). The sample is taken during a pelvic exam by a physician or clinician, who scrapes or brushes the specimen from the area in and around the cervix with a wooden scraper or a small cervical brush. The cells are smeared on a glass slide, fixed, and sent to a lab for examination under a microscope.

The test is very good at revealing precancerous and cancerous changes, which are nearly 100% curable. In developing countries, where there is no access to Pap smear screening, cervical cancer affects up to 5% of all women.



In the center of the microscope field is a mass of cells with abnormal, misshapen nuclei. This is exactly the ***indicator of a precursor of cervical cancer that the Pap screening is supposed to find.***

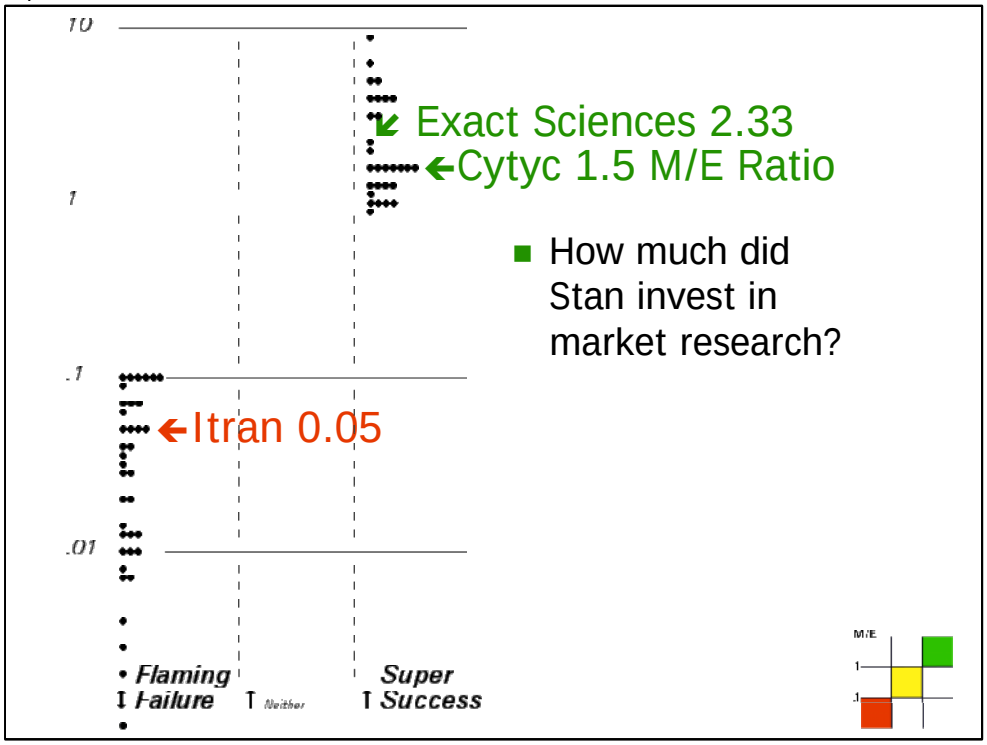
The conventional Pap smear has False Negative (FN) rates ranging from 10-55%. A human Pap reader must view about two thousand separate fields under a microscope, examining perhaps 250,000 cells to attempt to find a few cells (as little as five or six) that have slightly misshapen nuclei.

About one-third of the 15,000 women diagnosed with cervical cancer annually still die because the cancer was detected too late.

With the conventional Pap smear method, cells can be obscured by blood, mucus, and inflammation. Furthermore, the three-dimensional (3D) character of overlapping cells in lumps and clumps makes the examination a daunting challenge.

Accurate interpretation of up to 40% of conventional Pap smears are compromised by the presence of blood, mucous, obscuring inflammation, scant cellular material, and air-drying artifact.

The National Cancer Institute (NCI) estimates that about 3.5 million Pap smears are found to be inconclusive each year in the US which often lead to unnecessary colposcopy (internal exam), biopsy, and office visits. The average cost of the standard management of such cases is about $1,200 per case. The NCI estimates the cost to the US health care system at about $3.6 billion each year.



How much did Stan invest in market research to understand the customer, to speak their language, and to articulate their needs? Stan performed serious, formal market research up front (in concert with the technology development). He validated the market and validated the customer payback BEFORE (while) the technology was developed. He went to every Pathology, Cytology, and Pap screening conference in the world for years, sat in the front row, raised his hand, and asked questions. How much did this market research cost?

Cytyc, 1.5 M/E Ratio, while Stan was still in the basement

In his next startup, ***Exact Sciences***, Stan invested ***2.33*** times as much in market research as in engineering (1995-1996), while developing world-class molecular biology technology for colorectal cancer screening, arguably even more complex technology than Cytyc's.

Cytyc has 17 issued patents and 11 pending patent applications in the United States (Cytyc 2001 Annual Report), while younger Exact has 23 and 31, respectively. (Exact also has 8 issued foreign patents and 111 pending foreign patent applications as of September 30, 2002, from their Q3 2002 Report).

Itran 0.05

Before Exact, before Cytyc, Stan started Itran. With due respect to my friend Stan, ***Itran was a failure***. Stan launched Itran and took it to #1 in the machine vision market; an entrepreneurial and strategic success. However, the $15 million in VC investment only resulted in a company with $10 million revenue. Thus Itran was a financial failure.

Cytyc's super success - $$$

- Raised $174.4 million
  - $3.6 million first round
  - $43.6 million Venture Capital
  - $48 million IPO
  - $85.8 million secondary offering
- Achieved a market cap of $3.65 Billion

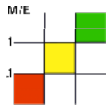
Cytyc's first round VC financing, $3.6 million, was huge for the late 1980s.

"It was hard to make a ***commitment to market research***, to asking the questions. Once I made the commitment, getting the answers was easy." Stan Lapidus

Cytyc achieved a peak market capitalization of $3.65 Billion. [Peak market value on October 21, 2001 at the day's high stock price of $30.22 times 120,776,000 (diluted) shares outstanding as of Dec 31, 2001.]

VCs invest in validated business

- Primary market research
- Payback faster than 6 weeks
- "A real breakthrough. You will have a gold mine! No, a platinum mine!!"
  "I will need 35 machines."
  - Heads of major clinical labs



VCs invest in validated business opportunities, not in technology.

Stan brought in a professional market researcher who conducted ***rigorous, formal, primary market research***. Every answer to every question was written up in detailed interview reports. This usually means investing more than twice as much time writing interview reports as was invested in the interview process.

"Deadly accurate!" was Stan's independent appraisal of the customer interviews.

He sized the big market opportunity. However, it was the detailed, bottoms-up market sizing, one potential large customer at a time, that validated the market and compelled investment.

He modeled the customer's business, both as it exists now and as how it might work with Cytyc's proposed new product, to calculate that payback might be less than six (6) weeks!

Exact quotations from potential customers were noted and written down to present to investors. Heads of major clinical labs exclaimed, "If you develop such a machine, you will make a real breakthrough and will be sitting on a gold mine! No, it will be a platinum mine!!." "I will need 35 machines."

Cytyc's super success - strategic

- Rapid market penetration
  - 57% market share
  - 75% of all insured US women covered
- Dominate the competition
- FDA approved labeling
  - ***Significantly more effective by 65%***
  - ***Specimen quality significantly improved***

•50% US market penetration in 13 months, as defined by # of insured women covered.

•While Stan was still in his basement, Cytyc carried out Competitive intelligence (CI) on an emerging competitor while that competitor was still in their garage. That competitor is still struggling.

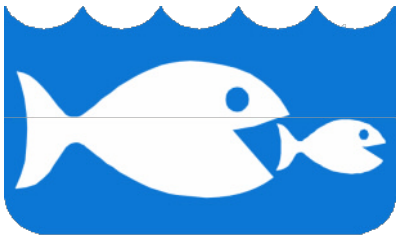
In order to address these problems, Cytyc Corporation has developed the ThinPrep® Pap Test®. In May 1996, the Food and Drug Administration (FDA) approved the ThinPrep® Pap Test® as a replacement for the conventional Pap smear. On November 6, 1996, the FDA approved labeling allowing Cytyc to claim that:

•The ThinPrep® 2000 System is ***significantly more effective than the conventional Pap smear***, improving detection of Low Grade squamous Intraepithelial (LSIL) and more severe lesions ***by 65%*** in screening populations and by 6% in hospital (high risk) populations.

•Specimen quality with the ThinPrep® 2000 System is ***significantly improved over that of conventional Pap smear*** preparation in a variety of patient populations.

By reducing the number of sub-optimal or "satisfactory but limited by" (SBLB) slides by as much as 50%, the number of return visits and repeat Pap smears is diminished. The significant improvement in specimen quality will substantially reduce costs and patient anxiety associated with re-screening and unnecessary follow-up testing.

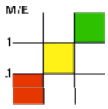
Food chain market research



Cytologists read Paps

- 65% schools closed
- 30% less Cytologists

- False Negative (error) rates up to 55%!



The first market research, while Stan was still in the basement, was about the food chain; the players and the concatenation of people, suppliers, and companies that make a market. The woman goes to the doctor who takes a Pap smear. This is a channel of collection, not a channel of distribution. The Doctor sends the Pap slide to a commercial clinical lab. At the lab are cytologists; the people with specialized degrees who read the Pap smear slides.

Market research converts anecdotes into quantified evidence! The ***fundamental driving forces were quantified*** and conveyed to potential investors to compel investment.

Cytyc market research, while Stan was still in the basement, revealed that 30% fewer cytologists were being certified per year in the prior 5 years. By mid-1987, only 41 cytology schools were still active, down from 117 in the 1960s, with 76 having closed or stopped training.

Why is this important?

•Because the job is difficult, tiring, and tedious, fewer entered the field.

•Because with too few cytologists to do the work, there was pressure to review (examine) more slides per day just to get the work done, and this led to missed warnings (False Negative).

Cytyc affected US laws

- Wall Street Journal exposé of “Pap mills”
- Cytyc’s market research used in testimony before Congress
  - While Stan was still in his basement
- New legislation resulted
  - Clinical Lab Improvement Act (CLIA)

A regulatory strategy and legal strategy should be an integral part of the business strategy. ***Market research is the fundamental intellectual discipline of strategy***.

Cytyc began working to understand customer demographics, market trends, and the industry drivers; which precipitated an exposé of "Pap mills." The outcry lead to Congressional Hearings in Washington, DC, under Massachusetts' Senator Edward Kennedy. By that time, their market research was available to be used in testimony before Congress, helping to result in new legislation focusing on quality and increased disease detection (that will speed market demand for their products).

New legislation resulted, limiting the number of smears a cytotechnologist may read in a day. This ultimately sped market demand for Cytyc’s products

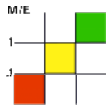
Because of poorly run labs (Pap mills), particularly after several deaths from misdiagnosis due to inaccurate lab results, Congress wanted to guarantee public safety and the best possible patient care.

The initial product idea was machine vision; a TV camera through the microscope lens, coupled to a special computer, which would examine 250,000 cells in two minutes and subject each cell to perhaps forty separate medical criterion in software. The machine vision would pre-screen every slide (without humans) to select the few "worst" cells from each slide for presentation to a human cytologist who would perform a medical determination. The intent was to replace the (tedious, error-prone) data processing of human eyeballs with (tireless, consistent) machine data processing.

This technology was fully developed and worked. It met its specifications. Cytyc made a production run of ten units and started clinical trials. Nevertheless, ***Cytyc continued primary market research.***

Market research leads to profound product changes

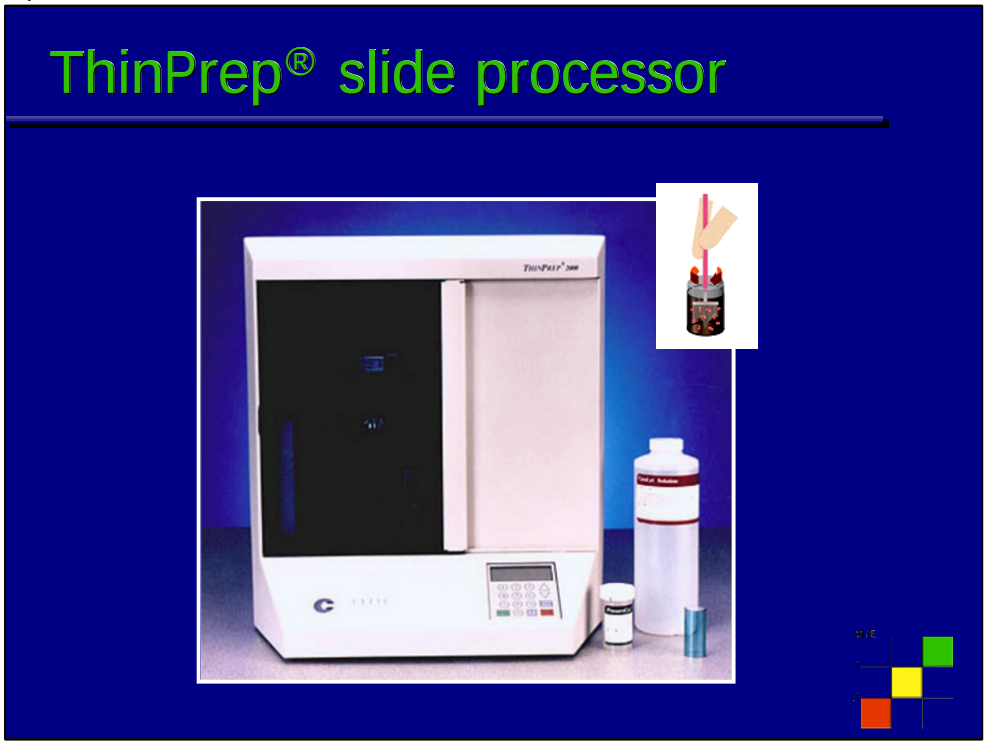
- "... quality of the smear taken ..."
- Identified the ***real customer problem***
  - Slide preparation, not slide reading!
- Engineering designed the right product
- ***65% more disease detection***



A special section of each market research report itemized each customer's concerns and comments, outside of the formal questions. It was exactly these comments that led Cytyc to identify ***profound changes from the initial product concept***.

For example, one Pathologist who was the Director of a major clinical Laboratory said, "The False Negative (FN) rate would, by conventional medical custom, not only include the FN rate of the proposed Cytyc machine vision unit, but would also include the quality of the smear taken by the physician." Similar comments kept reappearing.

Cytyc set the machine vision system aside, brought in an entirely new technical crew, and developed an entirely new technology. ***Because of Cytyc's compelling market validation, they were able to raise more VC money.***



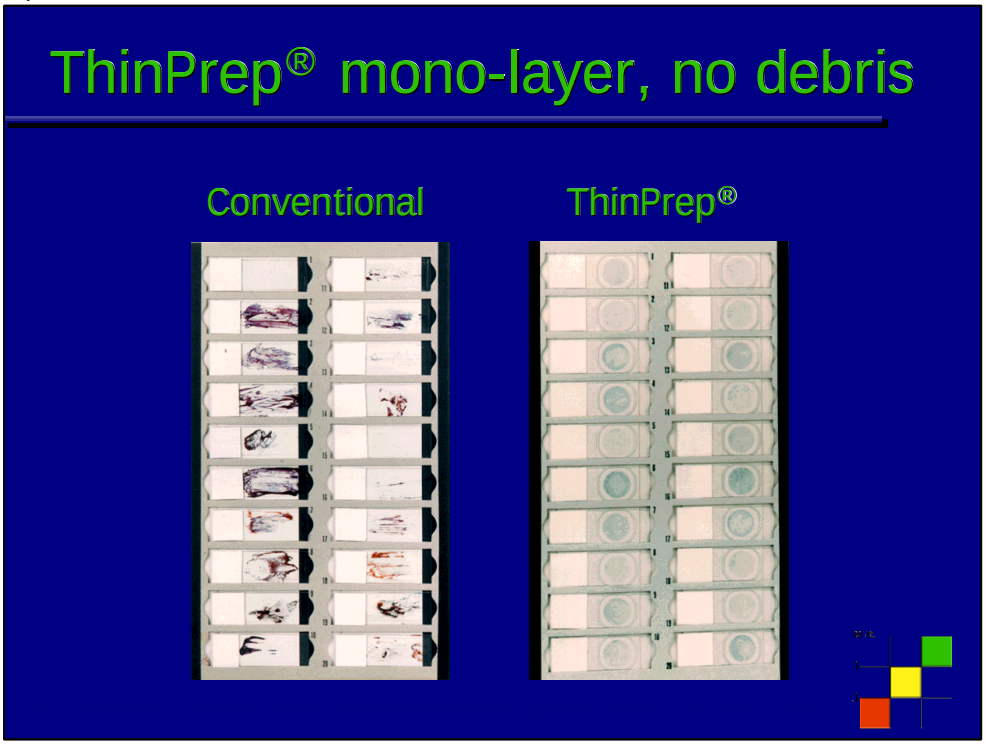
Early market research, in advance of engineering, identified profound changes from the initial product concept. ***Upstream market research identified the real customer problem;*** data gathering and data preparation of the Pap smear slide, before any human data processing. A patented slide prep system emerged, the ThinPrep® System, which adds to product differentiation and simplifies Pap screening. The ThinPrep® Pap Test® makes Pap smears by an automated slide preparation unit, the ThinPrep® slide processor, that produces uniform thin-layer slides, virtually free of obscuring artifacts such as blood, mucous, and inflammation.

With marketing guidance, engineering designed the right product, and captured the business opportunity. Cytyc developed the technology to fit the customer need.

Here is how it works. As before, specimens are first collected by the clinician with a cervical sampling device. Then, instead of smearing the cells on a slide, the device is rinsed into a ThinPrep® vial containing PreservCyt® transport medium. The vial is then labeled and sent to the lab for processing.

At the laboratory, the vial is placed into the ThinPrep® slide processor. First, a gentle dispersion step breaks up blood, mucous, and non-diagnostic debris; and then thoroughly mixes the sample. A negative pressure pulse is generated which draws fluid though a TransCyt® Filter that collects a thin, even layer of diagnostic cellular material. The ThinPrep® Processor constantly monitors the rate of flow through the TransCyt® Filter during the collection process to prevent the cellular presentation from being too scant or too dense.

The cellular material is then transferred to a glass slide and fixed. ThinPrep® slides are stained and then evaluated by laboratory personnel using criteria similar to the conventional smear. What is different is the ***marked improvement in clarity and specimen adequacy*** achieved with the ThinPrep® System.



The conventional Pap smear is made by hand; the physician "smears" the sampling device across a microscope slide to spread a layer of cells. Each physician may do it differently, leading to some slides with thick lumps and clumps, and some slides with clear areas of no cells. The conventional Pap smear has False Negative rates ranging from 10-55% and up to **90% of those False Negatives are due to limitations of sampling or slide preparation.**

In order to address these problems, Cytyc Corporation has developed the ThinPrep® Pap Test®. In May 1996, the Food and Drug Administration (FDA) approved the ThinPrep® Pap Test® as a replacement for the conventional Pap smear. On November 6, 1996, the FDA approved labeling allowing Cytyc to claim that:

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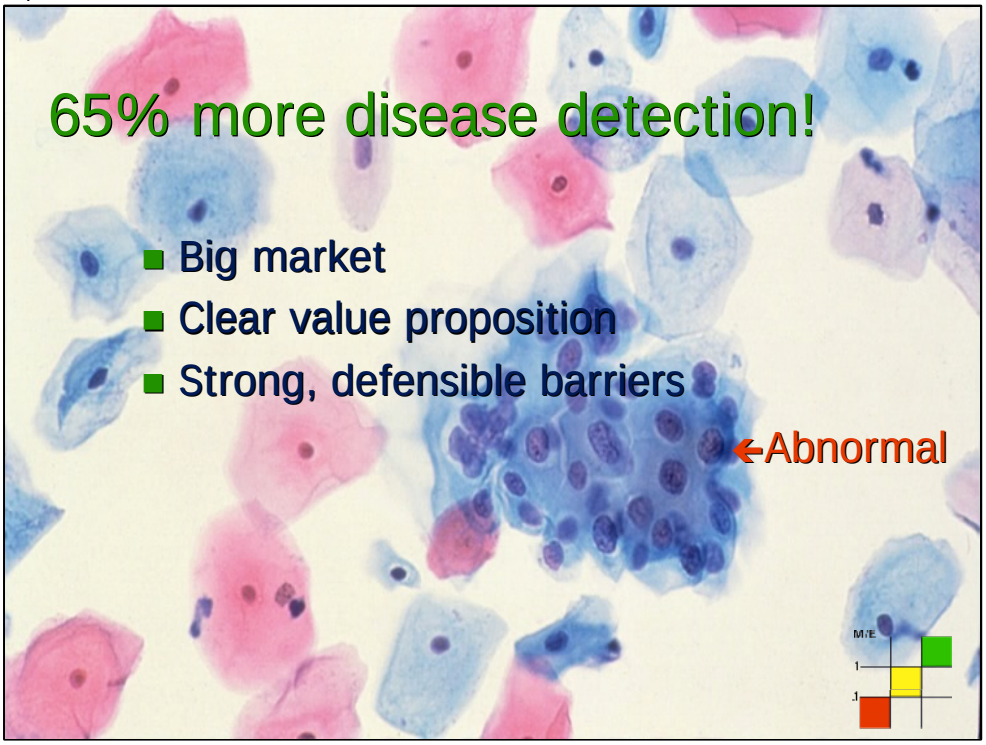
Cytyc established the new standard of care. Cytyc has 17 issued patents and 11 pending patent applications in the United States (Cytyc 2001 Annual Report).



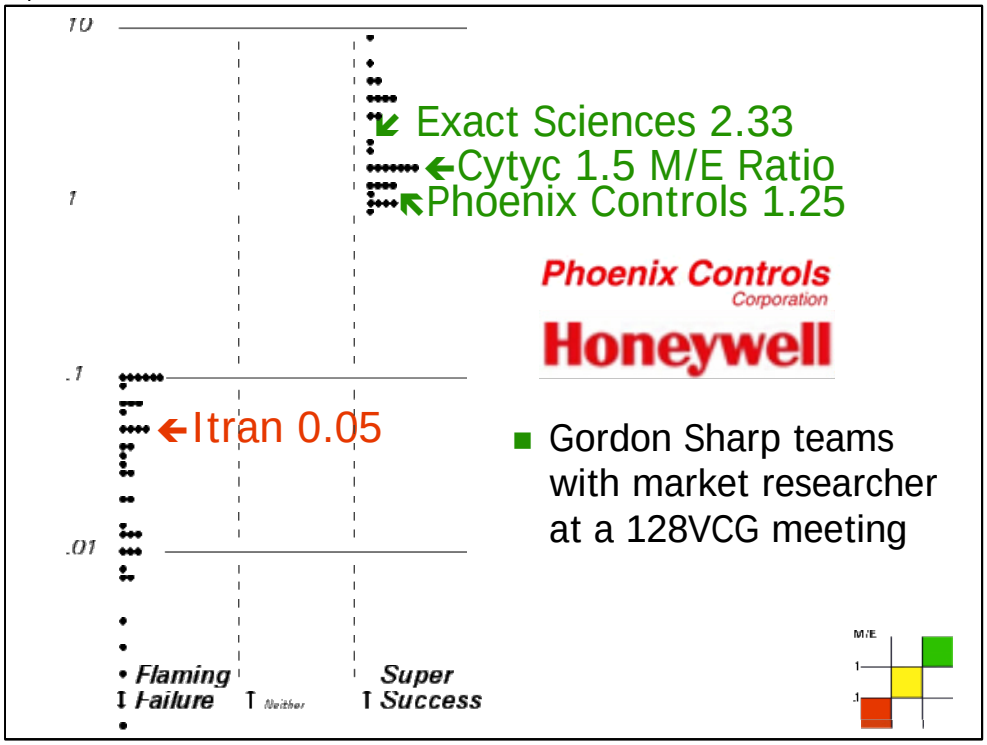
There is a mass of cells with abnormal, misshapen nuclei in the center of both this microscope view and the earlier slide, #12. This is exactly the ***indicator of a precursor of cervical cancer that the Pap screening is supposed to find.***

However, the warning cells are difficult to see in the first slide and more readily apparent here. The suspect cells in the first slide are obscured with medical debris and overlapping cells, and difficult to see because the layer is thick and hard to keep in focus under a microscope. The suspect cells in the ThinPrep® slide are more easily seen because they are free from medical debris and overlapping cells. The layer remains in focus since it is presented in a monolayer, one cell thick.

Clinical trials demonstrated that the ***ThinPrep® Pap Test® increases disease detection 65%,*** and reduced the error rate (False Negative) by a factor or four. Specifically, the clinical trials showed Cytyc's ThinPrep® System detected 65% more cancerous or precancerous samples when used in screening centers (where 95% of all Pap smears are processed) compared to the conventional Pap smear.

The ThinPrep® Pap Test® method preserves the cells and minimizes cell overlap, blood, mucus, and inflammation. It creates a mono-layer, a layer one cell thick, with no overlapping cells.

65% more disease detection!



You have seen this slide earlier, with data from Stan Lapidus showing how early teaming with a market researcher led to his success.

One purpose of the 128 Venture Capital Group, and other support organizations, is to foster team formation. Another entrepreneur, Gordon Sharp, came to one of the very first 128VCG events, nearly twenty years ago, because his startup was floundering. He had a unique electric motor controller for laboratory fume hoods used in chemical and biological sciences.

Gordon teamed with a market researcher at that meeting. Together, raising the Marketing/Engineering Investment Ratio to 1.25, they performed the up front marketing process to validate the market, establish customer payback, and launch the company. Most importantly, Competitive Intelligence (CI), led to significant product changes, two patents, dramatic product differentiation, decisive market viability, and a defensible position.

"Market research that gave us a handle on where to go," said Gordon Sharp. Phoenix Controls created a new market, Variable Air Volume (VAV) building controls, dominated their market, and was sold to Honeywell with a handsome return for the investors and for Gordon Sharp.

Look to your left. Look to your right. Ask each person if they know how to conduct up-front market research. If that person says, "Yes," inquire about his or her track record. If that person says, "No," then say, "Excuse me, I must ***find a market researcher***."

How To Raise $100 Million

128 Venture Capital Group – Dec. 12, 2002

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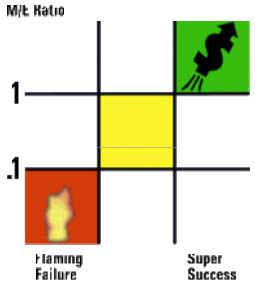

Invest more in Market Research than in Engineering.

Inquire not only about the quantity of marketing, but also about the relevance of the market research, the caliber of the market research staff, and the quality of their activities.

Failure of market research is not isolated to the market research department, but has consequences across the organization. Market research failure jeopardizes both the engineering investment and the enterprise. Companies which do not invest in market research fail.

Evidence is now available, demonstrating that successful technology-based enterprises invest more in market research than in engineering. The implication is a fundamental shift in management attention and investment commitment toward decisive, upstream marketing.

Aim for success, by demanding the appropriate

- Market research budget
- Market research staffing
- Market research methods
- Market research processes
- Market research tools