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STRATEGIC RATIONALE

Should a Firm Build a Strategic Alliance?

In Brief

Today's business environment has changed. Amid rapid and dramatic change heavily driven by globalization, increased business complexity, diversified customer needs—and simply speed—companies need to respond and adapt accordingly if they are going to survive and grow. Alliances serve as an important business strategy to respond to the business environment, and they increasingly define the structure of entire industries, as is the case in the multimedia, telecommunications, automobile, and biotechnology industries.

And they work. Companies that successfully embrace alliance strategies consistently perform better than those that do not. These companies benefit from alliances in a variety of ways, including sharing cost and risk, pooling their respective strengths, and leveraging complementarities. How much importance and stake is placed in forming an alliance should be directly proportionate to the degree to which the alliance supports a company's overriding business strategy. Simply stated, if it is going to be instrumental in achieving its long-term business objectives, the company managers will want to put into it suitable time and resource commitment to ensure its success. In contrast, if it is not as strategically important, prudence needs to be exercised in making a commitment.

Deciding to commit is only part of the readiness question. It is essential to take a close look at the internal structure, policy, and culture of the organization to make sure the internal machinery is indeed setting the company up for success. Sometimes, managers may discover they must first get their house in order before they should entertain forming an alliance with another organization because those alliances that are not managed well can prove to be very costly!

Firms of all sizes are looking to create and maintain a competitive edge in a business climate where the abilities to adapt and respond are critical to survival. Traditional organizational boundaries and business models have been redefined, with more emphasis being placed on alliances. Among large companies, alliances have become the norm, with companies engaging in anywhere from 30 to 100 alliances each.[1] Why? The belief is that alliance models are highly flexible, are generally lower risk, and enable companies to respond to rapid and sometimes radical changes in the marketplace and technology.

What Are Strategic Alliances?

A strategic alliance is a formal and mutually agreed to commercial collaboration between companies. The partners *pool, exchange,* or *integrate* specific business resources for mutual gain. Yet partners remain separate businesses.[2] Alliances can be either equity or non-equity based and typically start with one cooperative agreement that evolves into a portfolio of arrangements built over time.

Alliances are not risk free, however, and many studies cite 40% to 50% success rates.[3] Other research points out these rates are not dissimilar to alternative strategies, including wholly owned subsidiaries,[4] but the bottom line is *there is much opportunity for improvement.* Managers are well served to invest effort in managing their alliances well. If poorly managed, they can be very costly distractions wasting resources, destroying morale, and resulting in a loss of competitiveness. Even ventures that ultimately succeed are seldom problem free, and at least half can expect to see serious operational challenges within the first 2 years.

In spite of this sobering rate, enthusiasm for alliances continues to grow. A 2004 PriceWaterhouseCoopers study of 201 senior finance executives finds that nearly two thirds of respondents were more willing to strike alliances than they were 3 years earlier.[5] Another study of *Fortune* 500 companies shows that the top 25 that successfully embrace alliance strategies consistently performed better than those that do not.[6]

Partnering for Growth

Ask Jeeves is a highly popular Internet site that allows visitors to type questions in ordinary language and receive relevant answers. The core strength of the Web site is the company's natural language search technology. In 2000, the company enjoyed a strong brand within a competitive search engine space. Management wanted to capitalize on their leadership position and swiftly expand into the lucrative enterprise market. Using alliances as a vehicle to achieve market growth, Ask Jeeves announced partnerships with several customer support outsourcing companies already serving *Fortune* 1000 companies. While alliance partners gained access to leading-edge search technology to improve their outsourcing solutions, Ask Jeeves gained accelerated entry, forecasting a 20% increase in its customer base over the next 12 months as a result of the alliances.

Why alliances? Alliances are viewed as an excellent vehicle to obtain market growth amid market conditions that are rapidly and dramatically changing worldwide. Globalization, the growing complexity of the business environment, increasingly diverse customer needs, and the need for speed and momentum are the underlying factors. In this climate, alliances are an excellent way for organizations to share risks, pool strengths, and integrate business operations for their mutual benefit.

While growth and profitability are typically the common end goal, alliances satisfy a variety of needs for individual companies and can be a valuable tool across a company's entire business system, as indicated below. Moreover, alliances have been increasingly used to construct broader business systems by linking a company's internal core competencies with the "best of breed" capabilities of allies.

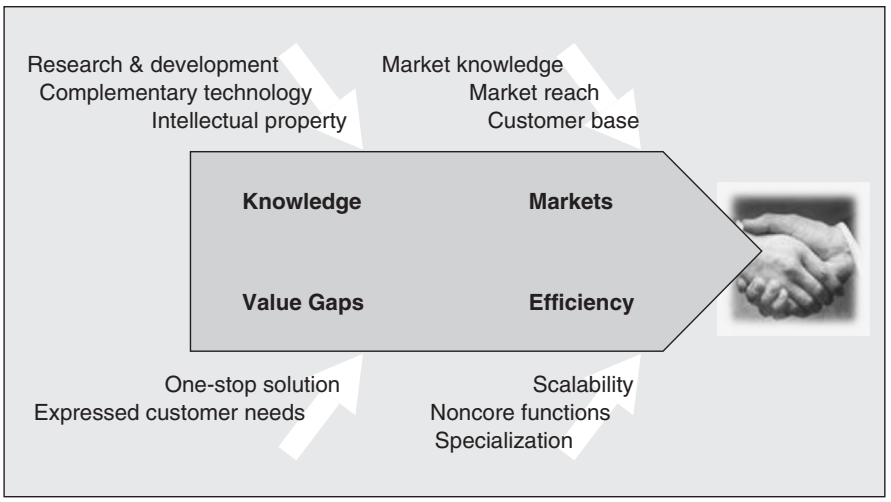

Figure 1.1 Why Cooperate?

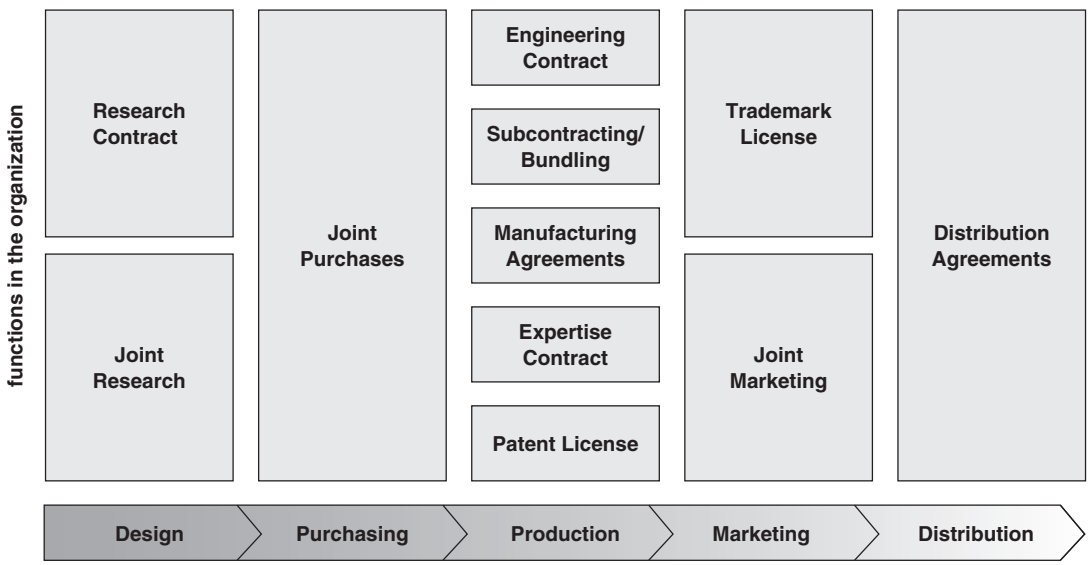

Figure 1.2 Where You Might Cooperate

Source: Sabine Urban and Serge Vendemini, *European Strategic Alliances: Cooperative Strategies in the New Europe* (Oxford, UK: Blackwell, 1992), 131.

The growth of alliance-based businesses has led some experts to conclude that competition is becoming as much a battle between competing and often overlapping coalitions as it is between individual firms. Alliance networks, or business webs, increasingly define the very structure of an industry, as is the case with industries including multimedia, telecommunications, networking, automobile, and biotechnology. Cisco, Dell, and, more recently, Nortel are examples of *virtual integration,* where noncore competencies in the value chain are distributed across alliance partnerships. For smaller companies, this means understanding—and targeting—the ideal ecosystem within which they want to participate and understanding what the resulting implications of membership are.

Competing Industry Alliances

Juniper Networks develops high-performance networking products for the growing Internet market. The Mountain View, California, firm has directed its technology at the heart of Cisco in the Internet core. In 1998, it raised venture financing and partnered with a number of Cisco competitors, including Ericcson, Nortel, the Siemens/Newbridge alliance, 3Com, Lucent, VVNET Technologies Inc., and ATT Ventures. For Juniper, this represented a partnership with companies that collectively represented more than $75 billion in annual sales to virtually every major networking customer. These alliances provided a foundation for the delivery of Juniper's technology around the world. Its partners had the opportunity to integrate Juniper's leading-edge technology with their existing product lines and services worldwide.

Outsourcing is another form of alliance that has evolved particularly in the area of information systems (IS). What is remarkable is that industries, such as banking, are choosing to outsource IS while they consider it to be a core competency that, intuitively, one expects would not be outsourced.[7] In these instances, the strategic drivers, which include changing organizational boundaries, organizational restructuring, and risk mitigation, supersede the traditional view.

The Benefits and Challenges of Strategic Alliances

When successfully built and managed, alliances can provide both strategic and financial benefits to participating firms:

- Reduced costs and risks
- Access to needed technology and distribution
- Access to new markets and customers
- Faster acceptance of new technology
- Enhanced credibility
- Increased investment
- Boost in stock market value
- Opportunities to learn
- Opportunity to build new skills

From a financial perspective, the evidence of the impacts on the bottom line due to alliances is impressive, pointing to substantial impacts on return on investment (ROI) and return on equity (ROE). Among large alliances, there was a substantial share price change in 52% of the alliances, and 70% of these were share price increases. It is interesting to note that this figure represents substantially higher effects than from acquisitions.[8]

It is clear that, when managed well, alliances can create tremendous value. In terms of revenue, in a 2002 International Data Corporation study, 90% of survey respondents reported their alliances contributed between 5% and 50% of corporate revenue.[9]

So although there are cautionary statistics on alliance failures, there is also evidence of significant potential. Alliances will remain a strategic business model. The fundamental

question therefore becomes, What drives successful alliances for both large and small companies?

Problematic alliances can be the result of many factors, including industry dynamics (e.g., regulatory changes), new technologies, new entrants, or economic cycles. The ability to weather external forces as well as maximize internal alliance potential is heavily driven by establishing a solid alliance foundation that includes experience, mutual trust, strong relationships, and sound business rationale.

Understanding What a Firm Really Needs From an Alliance

The rationale for a strategic alliance needs to be firmly grounded in a clear strategic understanding of a company's current capabilities and those it will need to be successful in the future. First, managers need to establish their company's strategic objectives and then evaluate their resources and capabilities to see if they are capable of executing on their own. The clearer the significance of the alliance for the success of a company's future strategy, the more committed it will be to work at its success.

The process starts by developing a realistic appraisal of what resources are required to meet a company's long-term strategic goals; that is, what capabilities will provide a competitive advantage in 3 to 5 years?

These capabilities might include credibility, geographical presence, distribution, technology, or money. Then managers need to objectively state what their firm's current capabilities really are.

	What Is Needed?	**Measure Gap**	**Current Capability?**
What **market strengths** are needed? (e.g., credibility, channels, offering, customer & industry relationships, etc.)	1. 2. 3.	1. 2. 3.	1. 2. 3.
What **human resources and expertise** are needed? (e.g., technical skills, industry experience, etc.)	1. 2. 3.	1. 2. 3.	1. 2. 3.
What **financial resources** will be required? (e.g. capital investments, working capital, etc.)	1. 2. 3.	1. 2. 3.	1. 2. 3.
What kind of **infrastructure** will be required? (e.g., manufacturing capacity, service fleet processes, etc.)	1. 2. 3.	1. 2. 3.	1. 2. 3.
What other competencies are of crucial importance to achieving our company objectives?	1. 2. 3.	1. 2. 3.	1. 2. 3.

Figure 1.3 Analyzing Current Capabilities

An understanding of the gap between what a company might be able to accomplish internally and what it needs helps to develop the profile of the best partner (if any). With this undertaking, managers begin to establish their criteria for rating partnership opportunities if this is an option they choose.

Alliance or Acquisition?

Managers also need to assess their company's readiness to embark on an alliance. The process should involve an evaluation of various alternatives and the pros and cons of each. In many cases, a strategic alliance may not be the most appropriate vehicle for meeting a company's strategic needs. Studies show that alliances work best for companies entering new geographic markets or related industries. Acquisitions, which should be viewed as an alternative to alliances, are more likely to be effective in core business areas or existing, highly competitive markets.[10] Make note, however, that a study by McKinsey & Company found that using an alliance to hide a weakness—as opposed to leveraging strength—was rarely a successful strategy.[11]

Identify the Real Costs

Before deciding that an alliance is the way to go, the potential costs involved need to be considered—for example, technology transfer, coordination, and management costs, which can be particularly high in international alliances. Potential costs can also include reduced control, reduced flexibility in optimizing global production and marketing efforts, lost opportunity costs, or even creating or strengthening a competitor. Moreover, if differing operational and financial structures exist, an alliance may strain a company's ability to deal with more pressing internal, competitive, or operational issues that need attention. Managers need to ask themselves what they are *not* going to be able to do if they pursue an alliance.

Is the Organization Alliance Friendly?

One of the greatest determinants of alliance success is the experience one or both companies have in managing them. Experienced organizations know what it will take and will likely have gotten their own house in order to support additional alliances. If this is its first alliance, a company should look carefully at its internal policies and practices and evaluate to what degree they will help or hinder an alliance. For instance, an organization with shaky internal communications practices or with incentive programs focused on individual performance can place significant strain on an alliance relationship. It is best to modify internal practices as necessary before introducing a third party.

Even if the review shows a firm that it is not capable of managing an alliance right now, it should clarify what capabilities it needs to develop, what capabilities the firm brings to the table, and the timeframe that it needs to achieve a specific partnering goal.

In the end, alliances are only one strategic approach. They make most sense when other internal options are not viable or when it would be foolish to go it alone. In today's environment, however, it is frequently the case that going it alone is less and less a viable option.

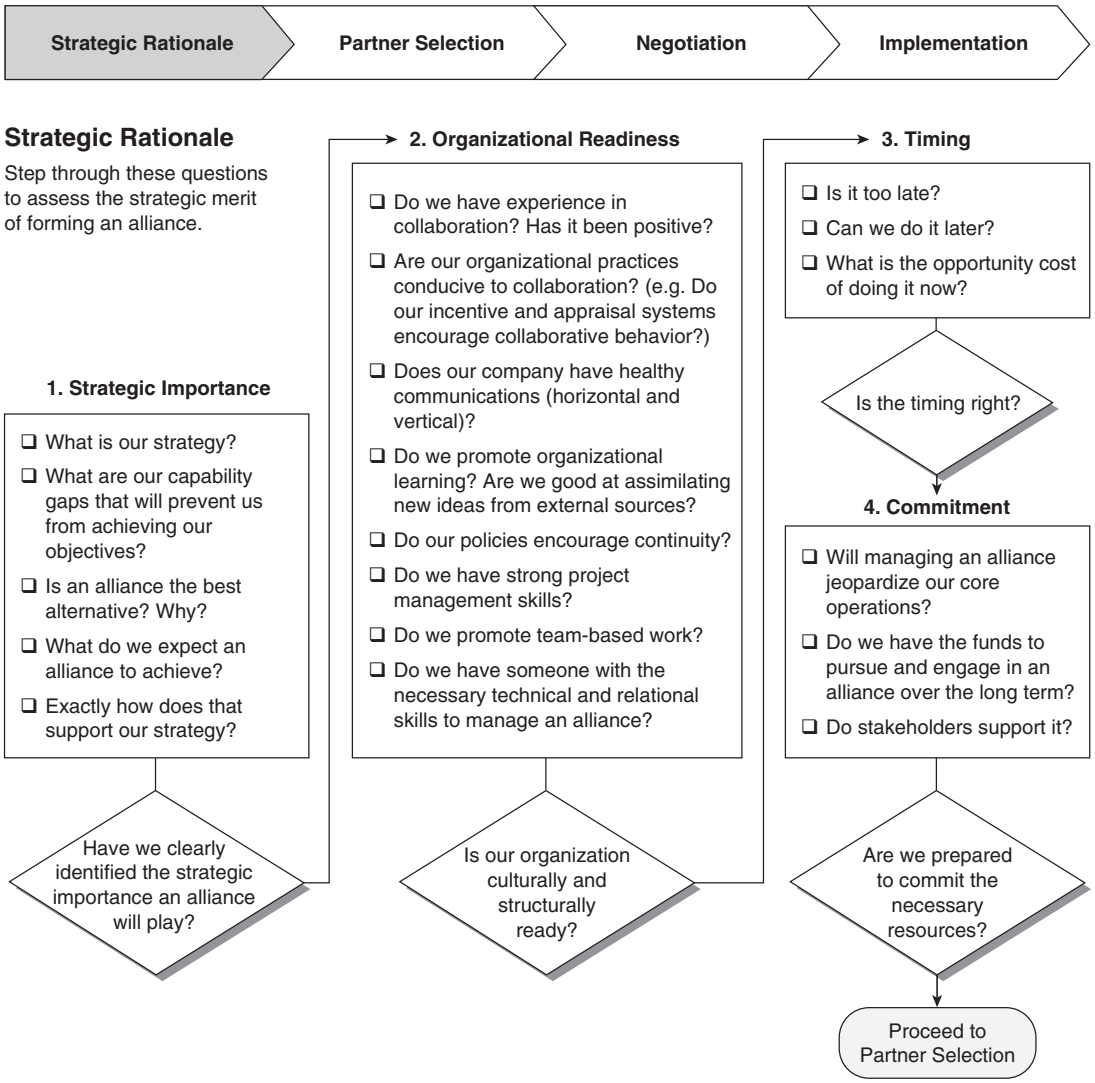

Figure 1.4 Strategic Rationale Flowchart

CASES

Cambridge Laboratories: Proteomics

Cambridge Laboratories is essentially a fee-for-service provider of laboratory tests. It spends less than 0.5% of revenues on research and development and holds relatively few patents for a biotech company. It now has an opportunity to invest $5 million to establish a joint venture with an Australian proteomics company that operates on a drug

discovery (royalty) model. The founder of this company believed that his technology could eventually result in the discovery of new drugs that would generate significant royalties. While the proteomics firm has superb technology, some of the intellectual leaders in the field on its staff, and partnerships with some impressive companies, its technology is yet unproven. Cambridge Labs is also concerned that its existing relationships with big pharmaceutical companies could be jeopardized if it begins to take an intellectual property position in proteomics. In addition, the Australian company consists primarily of Ph.D.s in molecular biology, while Cambridge Labs is dominated by business executives whose primary focus is generating strong financial returns for shareholders. The cultural differences between an Australian science-oriented laboratory and a publicly traded American outsourcing company become apparent during the negotiation phase of the joint venture proposal. Students are asked to evaluate the joint venture and consider whether the cultural and strategic differences can be reconciled.

Assignment Questions

1. Should Cambridge Laboratories (Cambridge Labs) invest in Canterbury Proteomics Ltd. (CPL)? Why or why not?
2. As Paul Henderson, what questions do you want more answers to before investing in CPL?
3. Compare the respective business models of the two companies.
4. Compare the cultures (organizational and national) of the two companies.

Fishery Products International Ltd.—A New Challenge

Fishery Products International (FPI) is one of the largest seafood companies in North America. FPI has experienced its best performance in a decade and has recently survived a hostile takeover bid by three competitors who acted in concert. The chief executive officer (CEO) has just returned from New Zealand, where he was visiting a major competitor to see if there was the possibility of a strategic alliance. The CEO knew he had to do something to prevent another hostile takeover and to continue to grow shareholder value while still maintaining the social conscience of FPI. Some of the issues facing FPI were performance, strategic leadership and corporate governance, and implementing an integrated product differentiation/cost leadership strategy.

Assignment Questions

1. Complete an analysis using the value chain and Value, Rareness, Imitation, Organization (VRIO) framework (see table on page 11 in Barney, 2002) and discuss FPI's sources of sustainable competitive advantage (SCA). Refer to Barney's VRIO framework.[12]
2. Sources of SCA include legitimacy and reputation, strategic leadership, quality image/reputation, and brand loyalty (see table on page 11 in Barney, 2002). How would you describe FPI's performance? Why hasn't FPI been able to create shareholder value?
3. FPI's performance is comparable with its competitors' performances—below the industry's in some respects and below other industries. The most significant challenges in creating shareholder value include industry difficulties in the early 1990s (stock depletion, quota restrictions) and the nature of the industry (overcapacity, volatility of natural resource supply, uncertain pricing). As Vic Young, what business and/or corporate strategies might you consider? Which would you select and why?

NonStop Yacht, S.L.

NonStop Yacht, S.L. is a Web site that provides e-commerce service to the mega-yacht industry. Originally, the founder had planned to run NonStop Yacht (NSY) as an Internet business. However, success with this business model is proving elusive, and investors are growing restless as performance continues to fall short of the business plan. Substantial pressure to improve the company's performance had the founder considering a variety of alternative business models that would enable him to more effectively capture value from the concept of nonstop parts procurement for high-end yachts. These options involve key decisions about the strategic positioning of the company and the relative advantages and disadvantages of pursuing strategic alliances with players at different points in the industry value chain.

Assignment Questions

1. What is NSY's strategy?
2. Why didn't the NSY Web site receive a positive market response?
3. What are the key success factors in the parts procurement segment of the mega-yacht industry?
4. Does NSY have the basis for competitive advantage?
5. Which business model makes the most sense for NSY?
6. To what extent does your answer differ if you are evaluating these options from the perspective of Metcalf? His investors?

Strategic Direction at Quack.com (A)

Quack.com was in dire straits. An early entrant in the voice portal market, Quack was quickly running out of money. The company's management team had just returned from a road show for a second round of venture financing, but they had been unsuccessful. To exacerbate this issue, Quack's two major competitors had each received substantial funding. At the current burn rate, Quack could survive on its bridge financing for only 3 more months. Moreover, after the first few months of running the voice portal, Quack's business-to-consumer (B2C) model for voice portals was already showing signs of weakness. Quack's management believed the failure of its road show could be related to its B2C focus. The company was facing many major decisions that would reshape and dictate the future of the firm.

Assignment Questions

1. Where do you see the market unfolding, and where do you see each of the major players on the industry value chain?
2. How should Quack deal with its financing issues?
3. What strategic direction should Quack take? Specifically, on which products and market should it focus?
4. What do you foresee as the best and worst scenarios for Quack?
5. What is your contingency plan?

Pharma Technologies Inc.

A new biotechnology firm, Pharma Technologies, has developed a competing method for the treatment of erectile dysfunction that promises significant advantages over Pfizer's blockbuster drug, Viagra. With deep-pocketed pharmaceutical companies also pursuing product development efforts, the president of Pharma Technologies is charged with deciding how to leverage his company's superior proprietary technology into a viable product before the window of opportunity closes. Students can explore the trade-offs in pursuing internal versus external development of new technology, the strategic implications of in-licensing and out-licensing, and the criteria used in identifying potential alliance partners to expedite the commercialization of new technology.

Assignment Questions

Assume the position of Blair Glickman, president of Pharma Technologies, Inc. (PTI). Develop a plan for commercializing Factor X as a treatment for male erectile dysfunction. Your plan should include the following:

- A clear explanation of PTI's strategy for taking the technology to market, in terms of the role that in-licensing, out-licensing, and/or partnering should play in moving forward, including whether you would make any trade-offs in the other areas of technology development the company is pursuing
- A detailed set of action priorities that will support your strategy, including timeframes for their execution
- An estimate of the resource implications of your intended strategy

ALPES S.A.: A Joint Venture Proposal (A)

The senior vice-president for Corporate Development for Charles River Laboratories (CRL) must prepare a presentation to the company's board of directors requesting up to $2 million investment in a Mexican joint venture with a family-owned animal health company. However, the chief executive officer views the proposed joint venture as a potential distraction while his company continues to expand rapidly in the United States. He is also worried about the risks of investing in a country such as Mexico and about the plan to partner with a small, family-owned company. Moreover, the Mexican partner is unable to invest any cash in the joint venture, which would need to be fully funded by Charles River Laboratories.

Assignment Questions

1. As a member of the CRL's Board of Directors, should CRL go ahead with this proposed joint venture? Why or why not? Be prepared to argue your position.
2. As Alejandro Romero, why do you want this joint venture? Are there realistic market opportunities? What issues or problems do you foresee?
3. If the board approves the joint venture, what advice would you give Dennis Shaughnessy as to how to proceed?

NOTES

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CAMBRIDGE LABORATORIES: PROTEOMICS

Prepared by David Wesley under the supervision of Professors Henry W. Lane and Dennis Shaughnessy

Paul Henderson scanned the headlines of *The Boston Globe* before beginning his Monday morning commute to Cambridge, Massachusetts, where he served as senior vice-president for corporate development and general counsel for Cambridge Laboratories (Cambridge Labs). What caught his eye this morning was a headline titled, "Midsize Biotech Firms Take Hit, Many Struggling to Raise Cash."[1]

As Henderson scrutinized the newspaper article, he could not help but notice the contradictions. On the one hand, the paper rightly pointed out that biotech firms "are struggling to raise cash, and many are trading at a small fraction of what they were worth just two years ago during the biggest boom in the industry's history." Yet, "there's been a resurgence of interest . . . in early-stage companies," an industry

analyst was quoted as saying. The journalist added, "Investors are placing a premium on companies that are focused on producing drugs."

The Globe article reiterated much of what Henderson already knew: namely, that many genomics and proteomics firms had benefited from a short-lived "irrational exuberance"[2] that created spectacular valuations and allowed some laboratories to raise significant capital through public offerings. Investors eventually realized that drug discovery was a long process and that many years would pass before most of these companies would ever recognize revenues. As suddenly as they had risen to prominence, many labs had become pariahs of Wall Street. Meanwhile, researchers remained optimistic about the potential to revolutionize health care by treating disease at the molecular level.

As head of his company's mergers and acquisitions, Henderson reviewed many potential biotech partnerships and acquisitions. Recently, he had received a joint venture proposal from Canterbury Proteomics Ltd. (CPL), a small Australian proteomics firm that wanted to enhance its drug discovery research by establishing a presence in the United States. Canterbury Proteomics had patented technology that the company's founders believed would eventually lead to the discovery of blockbuster drugs. In exchange for start-up capital amounting to US$5 million,[3] CPL promised millions of dollars in downstream drug royalties for Cambridge Labs.

Although CPL's managers seemed confident in their ability to deliver a competitive product, Henderson wondered if a drug development "premium" was really warranted. Was proteomics another scientific fad that consisted of more hype than substance, or would it usher in a new and unprecedented age of discovery leading to the development of new drugs to treat everything from infectious disease to cancer? The Cambridge Labs management team constantly received investment proposals from high-potential firms, but only invested in five per cent to 10 per cent of the proposals reviewed. Henderson wondered if Canterbury Proteomics should be one of them, and if so, under what terms.

CAMBRIDGE LABORATORIES

Founded in 1947, Cambridge Laboratories provided laboratory services for use in drug discovery research and the development and testing of new pharmaceuticals. At the height of the technology stock market bubble, Cambridge Labs launched an initial public offering (IPO) that raised $257 million, facilitating further expansion (Financial summaries are provided in Exhibits 1–3). When the economy began to falter in 2001, Cambridge Labs remained one of the few companies that continued to grow.[4]

Cambridge Labs served hundreds of laboratories in more than 50 countries worldwide. These were primarily large pharmaceutical companies, including the 10 largest pharmaceutical companies (based on 2001 revenues). Together with biotechnology firms, pharmaceutical companies accounted more than 75 per cent of the company's sales. The remaining customers included animal health, medical device and diagnostic companies, as well as hospitals, academic institutions and government agencies. The company did very little of its own research and development in the creation of new laboratory services.[5] Instead, most of the company's technology was licensed or purchased from third parties, or developed through collaboration with universities and biotechnology firms.

As a result of its leadership position in the laboratory outsourcing services, Cambridge had not lost any of its 20 largest customers in more than 10 years, while its largest customer accounted for less than three per cent of total revenues. The company maintained 78 facilities in 16 countries and had nearly 5,000 employees, including approximately 250 with advanced degrees such as DVM, PhD or MD.

The Cambridge Labs publicly announced its strategic growth objectives to grow its existing businesses by between 12 per cent and 15 per cent annually and its entire business by 20 per cent. This left a "strategic growth gap" of five per cent to eight per cent each year. Cambridge Labs then pursued technology platform acquisitions, joint ventures, technology licensing and strategic partnerships to fill the gap. Henderson commented:

Period Ending	2001	2000	1999
Total Revenue	$465,630,000	$306,585,000	$219,276,000
Cost of Revenue	(298,379,000)	(186,654,000)	(134,592,000)
Gross Profit	$167,251,000	$119,931,000	$84,684,000
Operating Expenses			
Selling General and Administrative Expenses	(68,315,000)	(51,204,000)	(39,765,000)
Other Operating Expenses	(8,653,000)	(3,666,000)	(1,956,000)
Operating Income	90,283,000	65,061,000	42,963,000
Total Other Income and Expenses Net	2,465,000	1,715,000	489,000
Earnings Before Interest and Taxes	92,748,000	66,776,000	43,452,000
Interest Expense	(22,797,000)	(40,691,000)	(12,789,000)
Income Before Tax	69,951,000	26,085,000	30,663,000
Income Tax Expense	(27,095,000)	(7,837,000)	(15,561,000)
Minority Interest	(2,206,000)	(1,396,000)	(22,000)
Net Income From Continuing Operations	$40,650,000	$16,852,000	$15,080,000
Nonrecurring Events			
Extraordinary Items	(5,243,000)	(28,076,000)	2,044,000
Net Income	$35,407,000	$(11,224,000)	$17,124,000

Exhibit 1 Cambridge Laboratories Income Statement (for years ending December 31)

> If we were satisfied with just growing our existing business we would be too risk averse. Our investors have come to expect that we will deliver on our commitment each quarter, which creates additional pressure to perform particularly when the stock price reached $40 in 2002 from an IPO price of $16.

In 2001, Cambridge Labs increased revenues to $465 million, a 50 per cent improvement over the previous year, and enjoyed a profit margin of about 20 per cent. Much of the company's growth was due to two large acquisitions that enhanced revenues by $100 million. The company was also the recipient of numerous accolades and honors from prominent business journals and newspapers.

Laboratory Services Division

Laboratory Services was Cambridge Labs' largest and fastest growing division (a summary of other services offered by the company is provided in Exhibit 4). By employing technologies that were licensed or purchased from universities and biotechnology firms, Laboratory Services sought to predict the potential success of new drug candidates. Laboratory service firms, such as Cambridge Labs, expanded in order to meet demand from biotechnology and pharmaceuticals firms. The company's chief executive officer (CEO) commented on the impact this was having on Cambridge Labs:

> Laboratory Services is our fastest growing business, which is well in excess of 40 per cent annually. Much of this expansion is driven by genomics, which is a field that is growing worldwide, and we expect to see this growth continue for the foreseeable future. Our facilities here, as well as in California, Japan and France have all had to expand to meet demand.

Pharmaceutical clients were interested in outsourcing many routine trials as long as laboratory service firms were able to provide quality,

Period Ending	2001	2000	1999
Net Income	$35,407	$(11,224)	$17,124
Cash Flow Operating Activities			
Depreciation	28,578	25,370	15,643
Adjustments To Net Income	$28,246	$28,928	$7,723
Changes in Operating Activities			
Changes In Accounts Receivables	(27,505)	(843)	5,346
Changes In Liabilities	13,227	(1,965)	(3,547)
Changes In Inventories	(3,762)	(2,343)	133
Changes In Other Operating Activities	(2,893)	(4,155)	(4,854)
Cash Flows From Operating Activities	$71,298	$33,768	$37,568
Cash Flow Investing Activities			
Capital Expenditures	(36,406)	(15,565)	(12,951)
Other Cash Flows From Investing Activities	(55,515)	989	(21,217)
Cash Flows From Investing Activities	$(91,921)	$(14,576)	$(34,168)
Cash Flow Financing Activities			
Dividends Paid	(729)	—	—
Sale Purchase Of Stock	118,954	235,964	102,993
Net Borrowings	(70,995)	(235,182)	323,086
Other Cash Flows From Financing Activities	—	—	(437,583)
Cash Flows From Financing Activities	47,230	782	(11,504)
Effect Of Exchange Rate	$(1,465)	$(1,855)	$(1,697)
Change In Cash And Cash Equivalents	$25,142	$18,119	$(9,801)

Exhibit 2 Cambridge Laboratories Cash Flow Statement (for years ending December 31) ($000s)

reliable service. Cambridge Labs prided itself on that ability as Henderson commented, "We can conduct these trials faster and cheaper than pharmaceutical companies can internally, and without sacrificing quality."

With demand for outsourced laboratory services continuing to grow, expanding existing facilities became a priority, and Cambridge Labs could not hope to meet that demand alone. The company's CEO explained:

> We absolutely need several players to service the outsourcing trend. We have backlogs of several months across the board in our toxicology business and a lot of that is contractual in nature, contracts lasting from 90 days to a year. In response, we continue to add space, as do other companies. It's clear that biotech companies want to continue outsourcing these services. And as long as they have good companies to outsource to, I'm sure they will.

Drug Discovery

The Role of Chemistry

The growth of the pharmaceutical industry depended on its ability to develop new drugs. Thus, drug companies spent from 10 per cent to 20 per cent of revenues on R&D, or some $50 billion a year industry-wide. Despite

Period Ending	2001	2000	1999
Current Assets			
Cash and Cash Equivalents	$58,271	$33,129	$15,010
Net Receivables	107,179	48,087	38,158
Inventory	39,056	33,890	30,534
Other Current Assets	5,648	4,631	6,371
Total Current Assets	210,154	119,737	90,073
Long-term Assets			
Long-term Investments	3,002	2,442	21,722
Property Plant And Equipment	155,919	117,001	85,413
Goodwill	90,374	41,893	36,958
Other Assets	18,673	16,529	13,315
Deferred Long-term Asset Charges	93,240	113,006	115,575
Total Assets	571,362	410,608	363,056
Current Liabilities			
Payables And Accrued Expenses	75,389	58,685	58,550
Short-term And Current Long-term Debt	933	412	3,543
Other Current Liabilities	22,210	5,223	7,643
Total Current Liabilities	98,532	64,320	69,736
Long-term Debt	155,867	202,500	382,501
Other Liabilities	14,465	13,531	2,469
Deferred Long-term Liability Charges	—	—	4,990
Minority Interest	12,988	13,330	304
Total Liabilities	281,852	293,681	460,000
Stockholders' Equity			
Redeemable Preferred Stock	—	—	13,198
Common Stock*	442	359	198
Retained Earnings	(283,168)	(318,575)	(307,351)
Capital Surplus	588,909	451,404	193,742
Other Stockholders' Equity	(16,673)	(16,261)	(9,929)
Total Stockholders' Equity	289,510	116,927	(110,142)
Net Tangible Assets	$199,136	$75,034	$(147,100)

**Outstanding shares numbered approximately 46 million.*

Exhibit 3 Cambridge Laboratories Balance Sheet (for years ending December 31) ($000s)

generous increases in annual R&D budgets, few new drugs reached the market, while the cost of bringing a single drug to market increased to more than $800 million in 2001 from $230 million in 1987.[6] Jim York, a senior scientist from Cambridge's Discovery Services division, explained:

> The industry is in a well-publicized R&D productivity trough, and hence there is great interest in small companies that are well along in the development of new compounds. The lack of R&D productivity has also led to the increased valuations for those small companies with well-developed compounds to serve as stopgaps for large Pharma's pipeline woes.

Pharmacokinetic and Metabolic Analysis conducted pharmacokinetic studies to determine the mechanisms by which drugs function in mammalian systems to produce therapeutic effects, as well as to understand how drugs may produce undesirable or toxic effects. Metabolic studies also revealed how drugs are broken down and excreted, and the duration that drugs or their byproducts remain in various organs and tissues. These studies were often performed as part of the drug screening process to help identify lead compounds, as well as later in the development process to provide information regarding safety and efficacy.

Bioanalytical Chemistry Services supported all phases of drug development from discovery to non-clinical studies and clinical trials. Researchers designed and conducted projects, developed and validated methods used to analyse samples, conducted protein studies and performed dose formulation analysis.

Pharmacologic Surgery studied drugs designed to be administered directly to a precise location within the body using surgical techniques. The development of these and certain other drugs required the use of surgical techniques to administer a drug, or to observe its effects in various tissues.

Specialty Toxicology Services were undertaken by a team of scientists that included toxicologists, pathologists and regulatory specialists who designed and performed highly specialized studies to evaluate the safety and toxicity of new pharmaceutical compounds and materials used in medical devices.

Medical Device Testing provided a wide variety of medical device testing required by the Federal Drug Administration (FDA) prior to the introduction of new materials. Cambridge Labs maintained state-of-the-art surgical suites where custom surgery protocols were implemented on behalf of medical device customers.

Pathology Services identified and characterized pathologic changes within tissues and cells as part of the determination of the safety of new compounds.

Biotech Safety Testing determined if human protein drug candidates were free of residual biological materials. The bulk of this testing work was required by the FDA before new drugs could be approved. As more biotechnology drug candidates entered development, Cambridge expected demand for these services to increase.

Biopharmaceutical Production Services maintained production facilities for the development and manufacture of drugs in small quantities for clinical trials.

Exhibit 4 Other Services Offered by Cambridge Laboratories

Meanwhile the expiration of patents led to pricing pressures as more generic drugs entered the market. Even when drug companies lowered prices, they often saw their market share decline by as much as 80 per cent during the first year following the launch of an equivalent generic brand.

In the past, drug discovery was focused on chemistry, as researchers attempted to identify compounds that could target specific diseases. Improved instrumentation allowed the number of compounds being reviewed to increase substantially in the 1980s and 1990s. Nevertheless, higher throughput did not deliver many promising drug prospects. Henderson recalled a recent visit by a lead scientist from a major pharmaceutical company:

> This person was in charge of 400 chemists all working on identifying new drugs. In more than 20 years, his team has yet to identify one candidate for a new drug. He seemed discouraged by the fact that 20 years of work had been wasted. And his experience was not unusual. In the last 50 years, drug companies have only brought 500 new drugs to market, and most of those have been improvements on drugs that already existed.

The Shift Toward Genomics and Proteomics

In the 1990s, drug discovery began to move away from its roots in chemistry to rely increasingly on biological research. Advances in genetics, for example, gave researchers new hope that the foundation for many diseases could be found in a person's genes. They sought to identify measurable changes in biological systems, known as biomarkers, which increased the propensity for disease. High cholesterol, for example, would be considered a biomarker for heart disease. In this case, cholesterol reduction through medication and diet could help patients to reduce the risk of heart attack. Genetic biomarkers worked on the same principle. By identifying differences between healthy individuals and diseased individuals at the molecular level, new drugs could be developed to specifically target key genes and proteins. Some chemical compounds that could be used to treat disease probably already existed in large pharmaceutical laboratories around the world, but had yet to be matched with appropriate biomarkers.[7]

The greatest challenge for researchers was to process the massive amounts of data encoded in living cells.[8] Cataloguing that data in large relational databases consumed all the resources of many of the most advanced computers available.[9] One such process was the sequencing of the human genome, which began in earnest in 1988 as a government-funded project administered by the National Institutes of Health (NIH) and the Department of Energy (DOE). By 1998, advances in computer systems[10] allowed a privately funded company, known as Celera Genomics, to enter the fray with a promise to sequence the entire human genome by 2001. With great fanfare, both organizations published their results in February 2001.

Amazing as this feat was, it represented a small (but important) step toward understanding the role of genetics in regulating biological processes. According to industry analyst, Dr. Kevin Davies:

> Mining the human genome is a massive computational problem, but nothing compared to the daunting problems posed by proteomics—the total characterization of the identities, structures, complexes, networks and locations of all the proteins in the body. Understanding the properties of a single protein is hard enough. It takes a couple of months for a Cray T3[11] to simulate the folding of an average protein in [the lab]; the natural process takes mere microseconds.[12]

Not only were proteins more complex than DNA (genes had four bases while proteins were made from 20 amino acids), the number of proteins in the human body was estimated at more than one million, as many as 30 times the number of genes. As well, although DNA remained relatively stable throughout the human body, each cell expressed different proteins that interacted with each other in different ways. Moreover, protein expression changed with time, as aging, diet, stress and other external factors took their toll.

To characterize the sheer magnitude of the difference between genomics and proteomics, when Celera and the U.S. government completed the sequencing of the human genome in 2001, proteomics researchers at various sites around the world were still struggling to identify the proteome of a single strain of yeast (an organism that contained only a fraction of the number of genes contained in the human genome). "The mouse genome is more than 99 per cent the same as the human genome," explained Henderson. "But genomics doesn't matter because only four per cent of the proteins expressed from those genes mimic humans, and everything about disease depends on the expression of proteins."

Leading Companies in Genomics and Proteomics Research

Beyond university and government laboratories, which tended not to commercialize their discoveries, the number of entrants into the field of proteomic research services was limited.

A lack of technological expertise and/or capital tended to act as barriers to entry.

Some of the more well-known companies were Celera Genomics, Large Scale Biology, MDS Proteomics, Oxford GlycoSciences, Millennium Pharmaceuticals and GeneProt. The business models for each of these were based upon lucrative royalty arrangements with partial payments upon initiation and potentially large payments upon the successful development of new drugs. All were in the process of becoming drug companies to some degree.

Millennium Pharmaceuticals had essentially become a drug development company, while Large Scale Biology and Celera were still at an early stage of the process. For each of these companies, initial commercial deals were either collaborations or based on the payment of royalties. These collaborations were few in number and large in scale. For example, approximately 80 per cent of Large Scale Biology's revenue was derived from a single collaboration with Dow AgroSciences (a division of Dow Chemical). Likewise, GeneProt derived most of its revenue from collaboration with Novartis.

After seeing meteoric valuations in 1999 and 2000, shares for the entire sector plunged in 2001 as investors pulled away from small loss-making technology companies. Oxford GlycoSciences (OGS) was the first company to enter the field of proteomics on a large scale, raising $230 million from stock offerings in 1999 and 2000.

With its primary focus being drug discovery, OGS had already amassed a large database of patented biomarkers. The company planned to release its first drug in early 2003, a compound used to treat a rare illness known as Gaucher Disease.[13] Eventually, OGS hoped that additional discoveries would allow it to compete with leading pharmaceutical firms.[14] In the first half of 2002, Oxford GlycoSciences reported a loss of $31 million on $9.3 million in revenues. The company's market value plunged from more than $4.5 billion in March 2000 to just over $138 million in 2002, even though the company had more than $240 million in cash and no appreciable debt.[15]

Toronto-based MDS Proteomics, another important player in the proteomics field, posted a loss of $35 million on revenues of $2 million for 2001. The company said that its main challenge was "the building of relationships with potential pharma and biotech partners"[16] in its quest "to become a world-leading proteomics drug-discovery business."[17]

Large Scale Biology of New Jersey was nearly bankrupt after its contract with Dow AgroSciences, which accounted for more than 80 per cent of the company's revenues, ended in August 2001. The company posted average annual losses of more than $23 million from 1999 to 2001, and saw its stock price decline by more than 97 per cent between August 2000 and June 2002. In the future, the company hoped to be able generate revenue from contract research and licensing agreements.[18]

Other companies did not fare much better. Millennium Pharmaceuticals' stock was down more than 90 per cent after posting losses of nearly $200 million in 2001. Celera Genomics, which moved away from genetic sequencing after completing the Human Genome Project, was down more than 93 per cent on a loss of more than $40 million for the same period. A spokesperson for Celera Genomics commented:

> We believe that Celera remains the most promising company to discover and develop pharmaceuticals and diagnostics from an understanding of disease through molecular biology.[19]

Investors were skeptical that a research laboratory could compete with large pharmaceutical companies. Celera founder Craig Venter shared that opinion. Shortly after resigning as CEO, he reflected on his own situation. "I made a million dollars the hard way. I started with a billion dollars and worked my way down!"[20]

GeneProt described itself as "a global industrial-scale proteomics company" involved "in the discovery and development of new therapeutic proteins, protein drug targets and protein biomarkers." The privately held company used technology licensed by OGS and housed the world's largest commercial supercomputer at its facilities

in Geneva, Switzerland. The company's partners included several leading biotechnology and pharmaceutical firms, including Novartis.[21]

Few companies developing proteomics technology were interested in providing outsourcing services to large pharmaceutical and biotechnology companies. Instead, most believed that the identification of potential drug targets was worth far more in terms of future royalties than could be gained by selling testing services or technology.

Two companies that did provide research and testing services on a fee-for-service basis or through contracts were Genomic Solutions and Proteomic Research Services, both based in Michigan. Proteomic Research Services was a relatively new company with a small staff and little instrumentation. Genomic Solutions, a company that designed and manufactured genomic and proteomic instrumentation, had been around longer, but services were minor component of the company's overall business, accounting for approximately eight per cent of revenues ($1.2 million in 2001).

The Joint Venture Proposal

The PMC Acquisition

In February 2001, Cambridge Labs purchased Premier Medical Corporation (PMC) for $52 million, making it the company's largest acquisition to date.[22] Based in Amherst, Massachusetts, PMC was an international contract research organization that provided pre-clinical drug discovery and development services to the biopharmaceutical industry. Services included safety, efficacy and quality control testing for early stage pharmaceutical products. Reflecting on the acquisition, one PMC scientist noted:

> We had been bought and sold a number of times before by organizations that didn't know what we did. Cambridge certainly knew what we did. They had a really good brand name and that made it a good fit for us because it got us through the door with important clients.
>
> Cambridge has very disciplined business practices. That was probably the biggest organizational adjustment for us. They brought a higher level of discipline and a higher level of expectation than the companies we were with before.

Even while the integration of PMC was still a work in progress, three senior PMC scientists, Jim York, John Post and Peter Kingston, began evaluating proteomics companies and technologies that they believed could provide important growth potential for their business. They concluded that Canterbury Proteomics Limited of Australia provided the best fit with their existing business and began talks with CPL management about ways that they could work together. After several discussions, CPL proposed that Cambridge Labs invest in a new U.S.-based joint venture to conduct high throughput proteomic analysis in order to identify drug targets that could lead to important new discoveries.

Canterbury Proteomics Limited: Company Background

CPL was founded in 1999 by a group of scientists from Monash University in Australia, under the direction of biologist Dr. Lewis Edwards. In the 1980s, Edwards was involved in a biotechnology company that attempted to produce biological agents that could be used to treat parasitic infections. When the venture failed, Edwards joined Monash University as director of the Center for Biochemical Analysis. Established in 1992 with funding from the Australian government, the center's goal was to develop improved instruments for the analysis of proteins. Clark Wilson, a PhD student at the center, soon began investigating proteomics as a counterpart to genomics. Specifically, proteomics referred to the study of "the complete set of proteins encoded in a genome."[23] Edwards commented on the significance of that event:

> When Clark Wilson presented his work at a conference in Italy in the fall of 1994, our intention was to draw attention to the need to focus on proteins as

the functional molecules of biology. We did this at a time when much of the scientific world's attention was focusing on genomics. Of course, developers of drugs had always been interested in proteins as they are the major targets for new drugs.

In 1997, the center submitted a proposal to the Australian government for approximately $44 million to expand the center. When the proposal was rejected, Edwards became concerned about his ability to retain skilled researchers at the center. Ultimately, his solution was to separate from the university and establish CPL as a privately-funded proteomics company. Initially five other scientists from the center joined Edwards, including Clark Wilson. The company later grew to more than 70 scientists and staff members, the majority of whom were PhDs.

After receiving a government grant for new technology start-ups and initial venture capital funding, CPL successfully solicited its first research contract from Dow AgroSciences.[24] At the time, Dow was eager to capitalize on improved agricultural products through genetic modification. Monsanto and others had already created crops that resisted disease, parasites and herbicides. However, Dow pulled out of the venture in 2001 on growing public opposition to genetically modified food.[25] The company then turned its attention to proteomics, improving on its existing technology to create a fully integrated protein analyser (see Exhibit 5).

The Proteomics Analyser was used to identify and analyse proteins as they are expressed from DNA. CPL partnered with several other companies, including IBM and Japan Biotech Corporation (JBC) to provide a complete product. IBM provided the information technology platform needed to store biological information in very large databases and compute the interrelationships between various protein components. Over a period of five years, proteomics research was expected to generate 1,000 times the data generated from genomics.[26] JBC was responsible for constructing much of the analyser system from specifications provided by CPL. The analyser would sell for as much as $8 million for a complete unit. Canterbury Proteomics held more than 20 technology and process patents for components of the system, some of which were believed to provide the company with distinct competitive advantages (see Exhibit 6).

The Proposal

The senior PMC scientists, York, Post and Kingston, had been discussing the technology with CPL. They proposed to Henderson that if Cambridge Labs were to invest $5 million for a 20 per cent share of a new U.S.-based proteomics venture, CPL would contribute the technology and expertise needed to bring products (i.e., biomarkers) to market. In return, Cambridge Labs would provide capital, industrial knowledge and client relationships. Henderson, who was by no means an expert in the field of proteomics, had to rely on the expertise of his scientists. However, he wondered whether the company was ready to enter into a joint venture so soon after the PMC acquisition.

"You know that every $1 million in earnings equals one cent in earnings per share (EPS)," he explained.

> If we end up writing off the goodwill on this investment, it will cost us five cents a share, and that is probably equivalent to about $1 billion in market capitalization, because I'll miss the numbers by five cents. For a company our size in this market, investing $5 million is very risky. Having said that, I rely on you guys to tell me if this is the right technology for us. Is this the best technology?

Without hesitation, York responded:

> Absolutely! We have looked at other companies, such as BioRad, but frankly they are not very innovative. I may be wrong, but I think the folks at CPL have the best long-term vision of where this field is headed.

Kingston added:

> I don't know about their business or their management abilities, but their technology is superb,

Product news
received on 5 June 2002
from Canterbury Proteomics Ltd.

Next generation proteomics platform

Combination of separation technology, robotics, mass spectrometry and enterprise level computing delivers "comprehensive outcomes" through its ability to decipher proteomic complexity

Canterbury Proteomics has announced the release of the Proteomics Analyser, an integrated comprehensive solution designed to accelerate proteomics research and the discovery of new drugs to treat diseases such as cancer, infectious diseases and others.

The analyser brings together niche sample preparation and analytical technologies with enterprise level computing and extensive training and support programmes to offer an end-to-end solution for proteomics research.

Clark Wilson, executive vice president of bioinformatics, said: "We have created the analyser from the ground up for proteomics, combining the latest proteomics technology into one seamless platform. The combination of separation technology, robotics, mass spectrometry and enterprise level computing is unique to the analyser, which delivers comprehensive outcomes through its ability to decipher proteomic complexity."

Alliances with key partners such as IBM, Japan Biotech, Millipore, Sigma-Aldrich, and ThermoFinnigan enabled Canterbury Proteomics to accelerate the development of the Protein Analyser.

Lewis Edwards, CEO, Canterbury Proteomics said "The analyser will revolutionise and accelerate research in the pharmaceutical and biotechnology sectors, through its broad application in the discovery of diagnostic and prognostic markers, and an ability to identify and validate drug targets.

"Our technology has been developed by practitioners of proteomics, specifically for proteome research, and has been rigorously tested in our in-house projects in cystic fibrosis, cancer, infectious diseases and aging.

"Our ability to test our approaches in demanding in-house discovery programmes sets us apart from other vendors of proteomic technology," he said.

The Proteomics Analyser includes patented technology for protein separation, analysis and informatics, which together delivers faster, more reproducible results.

This empowers researchers to focus on their discovery outcomes while the analyser produces data and assembles it into useful biological information.

The Proteomics Analyser is integrated via a sophisticated informatics package that controls laboratory instrumentation and centralises all research outcomes into an IBM DB2 database software hosted on IBM eServer pSeries systems.

The software provides sophisticated analysis tools that allow information and projects to be shared between sites.

Mike Svinte, vice president of worldwide business development for IBM Life Sciences said: "Canterbury Proteomics has delivered a powerful solution for rapidly deciphering complex protein data. The Proteomics Analyser brings together leading edge technologies, including an information technology infrastructure based on IBM eServer and DB2 data management systems, that will support proteomic research today and scale to meet future requirements."

Exhibit 5 Canterbury Proteomics Press Release

Electrophoresis

- Electrophoresis Apparatus Method (pending)
- Cassette for Electrophoresis (pending)
- Increased Solubilisation of Hydrophobic Proteins (pending)
- Improved Gel for Electrophoresis (pending)
- Immobilized Enzyme Reactor
- US patent 5,834,272 and Italian patent M195A0113
- CPL has agreed to purchase the above patents from a consultant
- Multi-Compartment Electrophoresis (pending)
- Improved Electrolyser (pending)
- Coated Hydropholic Membranes for Electrophoresis Applications (pending)
- Electrophoretic Apparatus (pending)
- Electrophoresis Apparatus Incorporating Multi-Channel Power Supply (pending)
- Electrophoresis System (pending)
- Electrophoresis Platform (pending)

Image Analysis

- Imaging Means for Excision Apparatus (pending)
- Analyzing Spots in a 2-D Array (pending)
- Method for Locating the Edge of an Object (pending)
- Methods for Excising Spots from a Gel Under White Light (pending)
- Method for Locating the Coordinates of an Object on a Flat Bed Scanner or the Like (pending)

Protein Processing

- Liquid Handling Means for Excision Apparatus (pending)
- CPL and Japan Biotech are joint owners/applicants
- Sample Collection and Preparation Apparatus (pending)
- CPL and Japan Biotech are joint owners

Bioinformatics

- Method and System for Picking Peaks for Mass Spectra (pending)
- Annotation of Genome Sequences (pending)

Exhibit 6 Patents and Patent Applications Related to the Proteomics Analyser System

absolutely superb. And their people are unsurpassed intellectually. In terms of integrated systems, CPL's technology is the best. What we don't want is to buy instruments from vendors that we have to piece together ourselves.

York rejoined:

My only concern is that CPL is a small entrepreneurial company. They are ambitious, but I am not sure that they have the business discipline to deliver a sophisticated system on the scale that we need. On the other hand, I am more confident knowing that they have strong partnerships with companies like IBM and Japan Biotech.

Henderson agreed that Cambridge Labs should meet with CPL to evaluate the opportunity for a joint venture. He first presented the plan to the board of directors, which gave its approval to begin negotiations. Two weeks later Edwards and some of his colleagues met with Henderson and the PMC team.

The Meeting

Edwards began with a presentation about CPL, its technology and the analyser platform. He explained:

> Our primary goal is to be a discovery company which develops new diagnostics and drug targets. We have a team of highly skilled problem-solvers and we expect to be amongst the first proteomics companies to provide valuable and interesting outcomes. Many of the best-selling drugs either act by targeting proteins or are proteins themselves. In addition, many molecular markers of disease, which are also the basis of diagnostics, are proteins. The analyzer will automate much of the process of identifying potential targets. This will have major implications for pharmaceutical research and development.

Although the system was currently only able to process a few samples per hour, Edwards believed that it could be improved to a rate of 1,000/hour (the minimum effective rate needed for drug discovery) within a year. He continued:

> Imagine the potential. This is an emerging technology that will result in lucrative deals for early entrants. For example, early entrants in the field of high throughput combinatorial chemistry and high throughput screening struck attractive intellectual property positions and royalty arrangements. The same is true for genomics companies like Celera and Millennium. If we sell a marker to a pharmaceutical company that eventually results in a drug worth $1 billion in revenues, we stand to gain $100 million in royalties. If you are willing to invest in our technology, eventually we think we can give you $50 million a year in royalties.

Henderson was concerned about how Cambridge's clients would react to the idea of paying royalties:

> Drug companies are already seeing their margins eroded by generic competition for many blockbuster drugs. They can ill afford to give away their intellectual property and downstream revenue.

He was interested in the technology however. He explained:

> Most of our clients have begun their own proteomic programs and would probably be interested in outsourcing much of the routine lab work. But it's really proteomic fee-for-service analysis that we are interested in providing to pharmaceutical and biotech clients. They would be the ones looking at new targets. I think it could help them with their early screening, but it's really the service, as opposed to the product, that we're interested in.

Henderson knew that most pharmaceutical companies had already announced proteomics programs in one form or other, and that the total proteomics market was estimated to be more than $2 billion in 2002, growing to $6 billion in 2005. Laboratory services had the potential to eventually win as much as 20 per cent of that business.

Henderson adjourned the meeting for lunch, giving both sides an opportunity to consider and discuss the morning's issues amongst themselves. Shortly afterward, he confided in his team that he didn't think the two companies were compatible:

> I really have a hard time understanding Edwards. Forgive me for saying this, but he is too much of an academic. This is a university spin-off company. That doesn't necessarily make them great businessmen. Are they going to meet deadlines? They have a great concept in theory, but as they are talking about all this cutting-edge technology, all I can think about is deadlines and deliverables.

Expertise Versus Capital

After lunch, the two sides reconvened. Henderson began:

> One of my big concerns is whether you will be around to support this venture. You're not a public company, so I can't see you're financial records. It doesn't seem like you have raised any capital. If I put $5 million into this venture, what happens if you go away next year?

Edwards was sure that CPL could raise the capital they would need. "We are going to raise $15 million from one investor, and possibly another $5 million from another."

Henderson asked, "Have you raised any money recently?"

Edwards replied, "Well, not yet. This is a tough market to raise capital in. However, we have some very strong partners in IBM and Japan Biotech. They wouldn't have partnered with us if they didn't believe in our long-term potential."

Anne Chifley, head of Discovery Programs for CPL, interrupted the conversation to suggesting that CPL's business model had the best long-term potential. She explained:

> If we discover biomarkers through this joint venture, that is IP (Intellectual Property). It is *our* biologists, *our* scientists coupled with pharmaceutical companies and other partners who are discovering these biomarkers. We believe that pharmaceutical companies will want to partner with us because this is not an easy field to get into. It is a very difficult space to work in and you really have to understand what you're doing. The timing to capitalize on proteomics is extremely ripe right now.

Henderson was unconvinced. He countered:

> Pfizer has 5,000 scientists searching for targets, while the joint venture would initially only have five. Cambridge Labs has never sought to earn royalties in any of its businesses and I doubt that we would be willing to diverge from our business model.
>
> My biggest concern, however, is whether this will really work, because if it doesn't I'll miss my quarter. How is this going to impact my financial statements, if it doesn't work?

"So what if you miss the quarter," Edwards retorted. "This will work; it is just a matter of time."

Henderson explained:

> You don't understand, I have to show a 20 per cent margin in the first quarter. No place in the world is like the U.S. with our focus on quarter to quarter results. Unfortunately, in American business the focus is on what this will do to my financial statements right now, not three years from now.

Edwards was adamant. "That's so short-sighted. It's going to work. Either you're in or you're out."

Henderson explained that much more had to be done before a decision could be made. For one, Cambridge Labs had to be sure that the technology did not infringe on any existing patents. Within 10 days, CPL had to prove that it owned the patent rights for the Proteomics Analyser system.

"We won't get sued. And if we do, we'll stop," they replied.

Being a lawyer, Henderson knew all too well the pitfalls that CPL's approach implied. The United States was a much more litigious country than Australia, and any patent infringement damages under American law could prove costly.

After the meeting, Henderson asked his team for alternatives.

Post suggested, "We could go ahead with the joint venture, but until their technology is proven to work, I don't see any reason to pay goodwill on the IP."

Kingston responded:

> We could buy a Proteomics Analyser system for between $8 and $10 million and do it ourselves. However, there are several problems with that approach. First, we don't know if the system will actually work. We also will probably not be able to get fee-for-service exclusivity if we go that route. And finally, we don't have the same level of expertise in proteomics that they have.

York sat back in his chair with a facetious look on his face. "Or we could buy their company!"

"I *hate* that idea!" exclaimed Henderson. Everyone laughed.

Although he still had doubts in the back of his mind, Henderson was comforted by CPL's strong external partnerships. Therefore, at the next board of directors meeting he sought approval to enter into a joint venture with CPL under the following conditions:

1. The joint venture would provide proteomics testing and analysis on a fee for service basis to pharmaceutical and biotechnology clients.
2. Cambridge Labs would purchase 80 per cent of the shares for $4 million and CPL would purchase 20 per cent for $1 million.

3. The joint venture would be prohibited from pursuing drug discovery and development, but CPL could still pursue drug discovery outside of the joint venture.
4. The joint venture would have exclusive worldwide rights (with the exception of Japan where CPL already had assigned rights to its Japanese partner) to any proteomics services using CPL technology.
5. CPL would have the right to sell their systems to pharmaceutical companies that wanted to do their own, in-house proteomics services. However, these services could not be offered by the purchaser to other customers or spun off into a stand-alone company to provide services for a fee.

The Offer

Later that month Henderson again met with the CPL team to present his offer. Prior to the meeting, Kingston expressed concern.

> I don't know how Edwards is going to react to our proposal, but I know that most companies would probably drop it and walk away.

Nevertheless, Henderson felt strongly that both parties brought equally valuable resources to the deal. Therefore, the equity stake of each partner should reflect its financial contribution.

When Kingston presented the terms of the deal to CPL, they were stunned. Did Cambridge Labs not value the technology, patents, and unique expertise that it would bring to the joint venture? Not only did Canterbury Proteomics own the intellectual property and patents that were the basis for the venture, it had the technical expertise that would allow Cambridge Labs to access this emerging scientific field. In addition, CPL brought valuable partners, such as IBM and Japan Biotech. One employee of Japan Biotech had even won a Nobel Prize for his work on protein analysis. With its assembled expertise, finding valuable drug targets would only be a matter time.

Kingston explained:

> Proteomics Analyser is a new and unproven technology. Cambridge, because of its brand, has access to a lot of customers that, frankly, you will have a hard time getting through the door with. These relationships, along with our reputation as a premier quality service provider, have created a powerful brand image in the industry.

Edwards was incredulous:

> Our scientific staff alone, along with the Proteomics Analyser technology platform could potentially find several important drug targets. This will be worth hundreds of millions of dollars in royalty fees to be shared between the partners. By the third year of the venture the two companies will likely be sharing millions of dollars in revenue. Royalties clearly offer the greatest long-term payoff.

To prove Edwards' point, the CPL team produced a spreadsheet showing annual projected earnings from royalties.

Henderson conceded:

> I don't doubt your projections, but we don't want to charge our customers royalties. We want to say to anybody that is interested in this technology, "Come and get it. Just pay us X number of dollars per sample." With more and more samples, we can drive the cost per sample down.
>
> On the other hand, if you go off and do a deal with somebody and take a royalty, typically those people are going to say, "Well, you're not going to be able to do for somebody else what you did for us. We're paying you five per cent of the drug revenue, so you can't do the same for our competitors."
>
> Beyond that, charging royalties is inconsistent with Cambridge's reputation in the pre-clinical industry. We don't take intellectual property positions with customers.

Finally, Henderson raised the issue of providing options to the PMC scientists who would manage the joint venture. They also wanted the right to spin off the joint venture through an IPO that would also grant them founders' shares. "These people will be critical to the joint venture," Henderson explained. "If they were to leave, the joint venture would be finished."

At first, the CPL team did not seem to understand what Henderson was saying. By Australian standards, the management team would be earning

very lucrative salaries. Now they wanted shares in the company! For Edwards, this was the final straw. He suggested that if Cambridge Labs could not present more reasonable terms, CPL would have no choice but to look for another partner.

Henderson replied:

> Try raising $5 million in venture capital in the current market. I think you will find it very difficult. It is a very tough environment for people to write big checks.

NOTES

1. "Midsize Biotech Firms Take Hit, Many Struggling to Raise Cash," *Boston Globe*, June 10, 2002.

2. Alan Greenspan used the term "irrational exuberance" to refer to stock market valuations that were not supported by economic performance. From a speech given at the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute for Public Policy Research, Washington, D.C., December 5, 1996.

3. All monies in US$ unless otherwise specified.

4. In early 2000, the failure of prominent Internet companies, such as E-toys and Value America, caused many investors to reevaluate the market. As bearish sentiment began to take hold, the technology shares entered into an extended downward spiral. In March 2000, the technology laden Nasdaq exchange peaked at 5,000. By year's end, approximately half of that index's value had been erased.

5. Research and development (R&D) expenditures were approximately $500,000 in 1999, $1 million in 2000 and $2 million in 2001.

6. "Research Cost for New Drugs Said to Soar," *The New York Times,* December 1, 2001.

7. Biomarkers were commonly interpreted to be different from drug targets. While biomarkers and drug targets were often the same, usually biomarkers were surrogate measures of the **impact** of dysfunction generated by disease, condition or treatment. Treatments directed at the target can use biomarkers to assess their impact, efficacy, treatment scenarios, etc.

8. The genetic code of a human being comprised more than 200 times the data in a New York City phone book.

9. One example was the $45 million National Science Foundation-funded Terascale Computing System in Pittsburg, Pennsylvania. Completed in 2001, the system was roughly the size of a basketball court, used 14 miles of interconnect cable, seven miles of copper cable and a mile of fiber-optic cable for data handling. It consumed 664 kilowatts of power (equivalent to 500 homes) and produced heat equivalent to burning 169 pounds of coal an hour. It was cooled by 900 gallons of circulating water per minute and 12 30-ton air-handling units (equivalent to 375 room air conditioners).

10. For more information on supercomputers and their role in Life Sciences, see *Note on Supercomputing,* Northeastern University Case Series No. 9B03E004, Ivey Publishing, 2003.

11. The Cray T3 was ranked 15 among the 500 most powerful computers in the world in 2001.

12. "Bio-IT: When Two Worlds Collide," *Bio-IT World,* March 2002.

13. "From Proteins to Profits," *Business Week,* December 26, 2002.

14. "The thing is: CAT/OGS," *Independent on Sunday,* January 26, 2003.

15. "From Proteins to Profits," *Business Week,* December 26, 2002.

16. "MDS Reports Fourth Quarter Fiscal 2002 Results," *PRNewswire,* December 12, 2002.

17, "Science Firm MDS Eyes Drug Discovery," *Montreal Gazette,* April 1, 2002.

18. Source: Large Scale Biology SEC filings.

19. "Genome Pioneer Celera Lays Off 132," *The Washington Times,* June 12, 2002.

20. "A Bubble Punctured by Realism," *The Financial Times*, November 11, 2002.

21. "GeneProt Licenses OGS' Automated Proteomics Patents," *Oxford GlycoSciences Press Release,* February 8, 2002.

22. The PMC acquisition added $75 million to revenues, which was nearly double any previous Cambridge acquisition.

23. "Prime Time for Proteomics," *Bio-IT World,* March 2002.

24. Initial funding included a $2 million grant from the Australian government and $10.2 million from private investors in exchange for 10 per cent of CPL's equity.

25. For a complete discussion of the issue of genetically modified food, see Ivey cases *Monsanto Europe (A) & (B),* Ivey #9B02A007 and 9B02A008, 2002.

26. "Venture Capital the Cool-headed Way," *The Financial Times,* June 21, 2001.

FISHERY PRODUCTS INTERNATIONAL LTD.—A NEW CHALLENGE[1]

Prepared by Tammi L. Hynes and W. Glenn Rowe

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BACKGROUND

It was early September 2000, and Chief Executive Officer (CEO) Vic Young was reflecting on the past few months. Since 1984, Young had led Fishery Products International Ltd. (FPI) through a host of challenges, ranging from the fishery crisis in the early 1990s to a recent hostile takeover bid by three united competitors. Though the bid was rejected, Young recognized that another takeover attempt was very possible and wondered if he could convince shareholders to remain confident in FPI's management team. FPI had experienced one of its best performances in more than a decade, with a projected annual earnings target of net income in excess of Cdn$0.75 per share. This compared with Cdn$0.51 per share in 1999. In late August, Young traveled to New Zealand to explore opportunities to give FPI a more international flavor in the fish-marketing business (see Appendix E for more details).

HISTORY

From its beginnings in the Atlantic Canadian fishery, FPI had grown into an international seafood company, producing and selling a complete range of seafood products around the world. Publicly traded and among the largest seafood companies in North America, FPI was headquartered in St. John's, Newfoundland, Canada. From its offices in Canada, FPI managed the operations of its subsidiaries in the United States, the United Kingdom and Germany.

The fishing industry has a long history in Atlantic Canada, dating back to the 1500s. By the early 1980s, however, over-fishing, over-capitalization (i.e., an excess of production plants), and a recessionary economy led to a collapse of fish stocks and a fishery crisis. Several fishing companies had gone under or were near bankruptcy, and the federal and provincial governments stepped in to restructure the industry. In the mid-1980s, Fishery Products Ltd., the Lake Group Ltd., John Penney and Sons Ltd. and other seafood company assets were amalgamated into Fishery Products International Ltd. Through a cash infusion and conversion of debt to equity, the federal government gained 63 per cent of the new company; the Newfoundland government, 26 per cent; and a bank, 11 per cent.

For three years, Fishery Products International Ltd. operated as a crown corporation, until being privatized in 1987, after a profitable 1986. The firm was restructured and in an attempt to preserve local interests and prevent private control of a government-funded company, the provincial government passed the Fishery Products International Limited Act, limiting FPI's share ownership to 15 per cent of the voting, common shares, a restriction mirrored in the company's bylaws. According to the Act, a single shareholder could not own more than 15 per cent of the shares of the parent company FPI Ltd. and could not combine resources to acquire control of FPI.

In the late 1980s and early 1990s, FPI faced ongoing struggles. The whole industry was weakened by declining cod stocks, worker demands for wage increases and a high Canadian dollar that hampered exports. FPI was already operating below capacity when the federal government severely reduced cod total quotas to 132,000 tonnes on July 2, 1992. On September 6, 1993, the federal government and the North Atlantic Fisheries Organization[2] (NAFO) imposed a moratorium on flatfish species (e.g., American

plaice, yellowtail, flounder) on the Grand Banks and further quota reductions in other groundfish stocks, including cod, a traditional key species.

Over time, FPI responded to these resource issues by sourcing fish internationally (including fish from Alaska and South America), by adding more value to its cod-based products and by moving away from cod and into other types of seafood, such as shrimp. The 1989 purchase of Clouston Foods Canada Ltd., a Montreal seafood brokerage, was an example of this shift in strategy, as was the company's 1992 purchase of Halifax-based National Sea Products' U.S. food service operation to use as a shrimp plant.

Industry Overview

As a global commodity, seafood was sourced, processed, sold and consumed worldwide. The market was competitive, with buyers at all levels demanding high quality and service along with competitive prices. Processors purchased raw material (fish) from seafood harvesters and developed the primary product into basic or value-added packaged seafood products. These processors typically distributed and marketed the products to wholesale and/or retail buyers in established markets around the world. Typically, firms were vertically integrated, procuring some supply from company-owned vessels, processing in company-owned plants and distributing and marketing through in-house representatives positioned in strategic markets. Generally, margins remained higher with the fish harvesters on one end and retail chains and restaurants at the other end; processors, whose margins were typically less, were required to be highly efficient.

In 1998, Japan and the United States were the top seafood importers. Most of Canada's fish products were exported to the United States, where consumers spent approximately Cdn$50 billion per year on fish and shellfish products, followed by Japan, then the United Kingdom. Export information is detailed in Exhibit 1.

Seafood companies encountered competition both in procuring raw materials and in marketing end-products. In Canada there were nearly 150 companies that varied widely in size, sales volume and product delivery. None of Newfoundland's 16 seafood companies had a disproportionate share of the market for raw material and all competed with local and foreign processors.

> Competition among different Newfoundland producers is particularly painful in this market. Because the market is somewhat fixed in size, when there is severe competition over price, all sellers have to lower their price, but they get virtually no return in terms of increased volume sales. Instead, each seller is simply undercutting other sellers, all fighting for the same customers.
>
> Presentation to Howard Noseworthy,
> Selector/Arbitrator for the 2000 Shrimp Fishery

Capital costs for startup were high, and a processing licence had to be obtained from the

Origin / Destination	January 1998	January 1999	January 2000
Canada to United States	649	807	1,106
Canada to All Countries	1,480	1,603	2,052
Canada to All Countries—shrimp, scallops, crab, filleted groundfish only	909	964	1,215

Exhibit 1 The Value of Canadian Fish Exports (in Cdn$ Millions)

Source: "Trade Data Online," Industry Canada, 2000, retrieved at www.strategis.ic.gc.ca, June 26, 2000.

provincial government. The provincial government was inclusive in trying to give these licences to as many communities as possible. New processors might have had difficulty obtaining raw material, as harvesters had established relationships with or financial ties to existing processors.

Procurement and Pricing Issues

A critical issue in the seafood industry was resource sustainability. Significant over-fishing in many parts of the world had caused serious depletions of certain species stocks, threatening the viability of both harvesters and fish processors who relied on those stocks. In countries such as New Zealand, industry and government had collaborated to jointly manage fish resources and ensure a sustainable resource base. In Canada, the Department of Fisheries and Oceans (DFO) established fish quotas through the "total allowable catch" (TAC) while provincial and territorial governments issued processing licences. It was evident that DFO usually worked with the provinces and territories to sustainably manage fishery resources and balance quotas with processing capacity.

In most countries, raw material was purchased through free markets, auctions and direct sales. Newfoundland legislation, in an attempt to protect harvesters, required joint processor and harvester negotiation of minimum prices paid to harvesters for raw material. Unique to Newfoundland, this negotiation between processors, through the Fisheries Association of Newfoundland and Labrador (FANL), and harvesters, through the Newfoundland Fishermen, Food and Allied Workers' Union (FFAW), had occasionally delayed the fishing season and caused lost revenue for harvesters and processors alike. Beginning in 1998, both parties agreed to a task-force-recommended final offer selection process; in the event an agreement could not be reached, an arbitrator would determine a minimum price. In June 1999, an arbitrator was required to establish capelin prices and to establish and renegotiate shrimp prices in August 1999 and March 2000.

Market and economic conditions ultimately drive the market price of raw material. Driven by supply and demand, global market prices drive what processors will pay for raw material or processed product. For example, in the United Kingdom (where 46 per cent of worldwide cooked and peeled shrimp is consumed), shrimp prices declined between 1996 and 2000. In addition, foreign exchange rate fluctuations, oil price increases and even natural disasters can affect the cost of raw material. Protective economic barriers, such as tariffs, add costs and reduce margins and, therefore, influence the prices producers will pay to harvesters. Fluctuations in the Canadian dollar versus the U.S. dollar also affect prices foreign buyers are willing to pay to Canadian processors, though in recent years, the Canadian-U.S. dollar exchange rate has strengthened seafood exports, adding flexibility to the prices that processors are willing to pay for fish.

Seasonal variations in yields and the level of buying competition also affect prices. During summer months, shrimp yields decline as they become softer and harder to peel, effectively raising raw-material-per-pound or finished-product costs. Icelandic and Greenland companies were competing with FPI for Newfoundland shrimp supply, and this higher competition helped to raise shrimp prices. To avoid losing relationships with fishermen for species such as crab, processors invested Cdn$110 million in Newfoundland shrimp processing facilities.

While the negotiated prices were "minimums," a shift in market prices might cause individual processors and harvesters to negotiate pricing arrangements above this minimum. The effects of competition, economic conditions and other market volatilities made it virtually impossible to accurately predict annual raw material costs from year to year.

Industry Consolidation

Industry mergers and consolidations increased as companies attempted to leverage the benefits of technology and the Internet. The fishing industry

was highly competitive, and industry margins were historically tight. Consequently, firms were looking to merge with or acquire other seafood companies. In mid-1999, a New Zealand firm, SIF Ltd., participated in several mergers and acquisitions, notably a merger with a major Icelandic seafood player, Iceland Seafood International. In late 1999, NEOS Seafoods Inc. (NEOS), a newly formed consortium of three companies from Newfoundland, Nova Scotia and Iceland, attempted an unsuccessful takeover bid for FPI Limited, which would have created a significant global industry player and U.S. supplier. On May 6, 2000, Icelandic Freezing Plants Corporation (IFPC) Plc., one of the companies that attempted the takeover, purchased 14.6 per cent of FPI's shares, citing an interest in FPI's U.S. market presence. The FPI Act ownership restrictions prohibited an individual shareowner from owning more than 15 per cent of FPI's outstanding common voting shares, and shareholders could not act together to acquire FPI. IFPC had also bought five per cent of each of High Liner Foods in Nova Scotia and Pescanova S.A. in Spain. To gain a stronger foothold in Europe's frozen flatfish market in the United Kingdom, IFPC purchased Árnes Europe, a subsidiary of the Icelandic fish and processing firm Árnes. Canadian firm High Liner Foods diversified its holdings into non-seafood products by acquiring Italian Village, a pasta products operation.

Business-to-business commerce on the Internet was generating substantial interest as companies could bring buyers and sellers together and automate transactions. In 2000, FPI, with eight players in the seafood market, announced the formation of "SeafoodAlliance.com." The participating companies hoped the "vertical portal" would help reduce transaction and processing costs in the seafood industry and enhance the development of individual e-commerce strategies. In addition to Sanford Limited, Scandsea and Young's Bluecrest Seafood Limited, which joined in July 2000, the group included Pacific Seafood Group, American Seafoods Inc., SIF Group, Pacific Trawlers/ Crystal Seafoods Inc., Clearwater Fine Foods Inc., Coldwater Seafoods (a subsidiary of IFPC), the Barry Group of Companies, High Liner Foods Inc. and FPI. These major seafood competitors operated globally and were headquartered in Canada, the United States, Iceland and New Zealand.

COMPETITION

Seafood Products

In addition to raw material competition, FPI faced direct product competition from other seafood products and seafood brands. Significant competitors were established companies offering full product lines of groundfish and shellfish and serving many or all levels of the food service industry, including food service, industrial and retail. Alternatively, some served many segments but also targeted niche markets. Branding was important, and seafood companies generally distributed and marketed their own recognized brands. All maintained rigorous quality standards, frequently citing their adherence to the Hazard Analysis Critical Control Point (HACCP) systems. Originally developed by the Pillsbury Company to provide safe food for American astronauts, the HACCP systems integrated inspecting food production at different levels of processing (rather than simply at the end product) and were designed to improve quality output.

Because many seafood competitors were privately held, availability of comparative financial information was limited. Several of FPI's competitors were involved in the e-commerce alliance: U.S.-based American Seafoods Group (ASG), Frionor (an ASG Company), Pacific Seafood Group and the Canadian-based firms Clearwater and the Barry Group. These firms offered complete lines of seafood products that included primary-processed and valued-added products. Value-added products included primary-processed seafood products that had been further processed through the addition of non-seafood products such as batter, stuffings and sauces. Frionor ("Frozen of the North"), an established Norwegian-based firm owned by privately held American Seafoods Group, produced

frozen fish fillets, as well as value-added products (from pollock and other groundfish), such as Tortilla Crunch, marketed under the brand name, Ocean Cuts & Crunch.

Publicly held competitors included High Liner Foods Inc., Sanford Limited, SIF Limited, and Icelandic Freezing Plants Corporation (IFPC) Plc (see Exhibit 2). The Sanford group was vertically integrated, both harvesting and processing a wide range of seafood products with its primary fillet products coming from whitefish species, such as hoki. New Zealand's

Firm[1]	FPI Ltd.	High Liner Foods Inc.	Sanford Limited	SIF Limited	IFPC Plc.
Headquartered	Canada	Canada	New Zealand	Iceland	Iceland
Revenue	708,911	302,392	265,555	675,982	760,125
Net Income	10,026	(4,067)	40,740	850	(3,731)
Total Assets	314,412	219,901	297,979	436,903	381,425
Current Ratio	3.32	1.68	1.25	1.14	1.14
Cost of Goods Sold/Revenue	0.89	0.74	Not Published	0.89	0.87
ROE (After Taxes)	6.14%	(0.06)%	18.4%	0.01%	(6.28)%
ROE (Before Taxes)	9.00%	(0.05)%	22.0%	N/A[2]	N/A[3]
Earnings per Share	0.66	(0.56)	0.41	0.03	(0.12)
Ownership/ Shareholders	Maximum of 15% of shares per shareholder	No restrictions (2 shareholders own in aggregate over 50%)[4]	2547 shareholders; no maximum evident (1 shareholder has 37%)	1964 shareholders; maximum of 10% of shares/ shareholder	N/A
Subsidiaries & Associates	4	3	18	23	6
Number of Employees	3,000	1,500	1,300[5]	1,700	1,300

Exhibit 2 FPI Competitors

Note:
All figures in Canadian dollars with Sanford, SIF and IFPC foreign exchange conversions using nominal rate as of January 1, 2000. With the exception of Notes 4 and 5, all data are from corporate Web sites. Web sites are: www.fpil.com; www.high linerfoods.com; www.sanford.co.nz; www.sif.is; www.icelandic.is.

1. All figures shown are on a consolidated basis for 1999.
2. SIF experienced an operating loss; i.e., net income before financial items was Cdn$1,916, but SIF was able to show net income due primarily to the gain on asset sales and income tax carry-forwards.
3. Write-offs, e.g., sale of Russian operations.
4. C. Milton, corporate secretary and treasurer, High Liner Foods Inc., e-mail communication, July 26, 2000.
5. E. Barratt, director, Sanford Ltd., e-mail communication, July 25, 2000.

largest aquaculture company, Sanford, exported primarily to Europe (31 per cent of sales) followed by North and South America (23 per cent). The company credited success in the U.S. market to its consistent quality and supply.

Headquartered in Iceland and with 10 subsidiaries, IFPC Plc., a global, vertically integrated firm, offered more than 40 species primarily harvested near Iceland. Primary customers included large supermarkets, distributors, wholesalers, and restaurants and food processors in Europe, United States and Asia. Committed to customer-centered product development, the company sold whole frozen fish, fillets and fillet portions, shellfish and a wide variety of convenience products.

Canadian-based High Liner Foods Inc. (formerly National Sea Products) was the largest Atlantic Canadian supplier of fresh groundfish to the U.S. market. It processed and marketed seafood and frozen pasta products under High Liner® and other brands and was strongly positioned in the retail frozen seafood market. The company operated in Newfoundland, Ontario and the United States and employed 1,500 people. Like FPI, it was vertically integrated, harvesting about 11,000 tonnes of seafood each year from Nova Scotia to Labrador. Though the company's processing facilities, featuring flow line technology, operated at about 41 per cent capacity, High Liner procured most of its raw material internationally.

Non-seafood Products

Non-seafood products that were typical alternatives to seafood also affected seafood consumption. In 1999, the per capita consumption of value-added seafood dropped from 1998, due to competition from lower-priced poultry and pasta. Rising seafood costs were partially passed on to the end-consumer, making seafood products less competitive with their substitute products, poultry and pasta. Rising costs led FPI to increase prices in 1998 and 1999, though it managed to minimize the price increases and maintain market position.

Despite price increases, worldwide per capita consumption of seafood products continued to grow, indicating seafood was becoming a dietary choice. In addition to being low in fat, cholesterol and calories, seafood was high in protein, easily digested and provided an excellent source of polyunsaturated fats and omega-3 fatty acids (believed to actively combat cholesterol buildup and reduce the risk of heart disease). As well, with an increase of disposable incomes worldwide, consumers had greater purchasing ability for more expensive seafood products. In Europe, there was concern that changes to the European Community's Common Agricultural Policy would reduce livestock production costs and lower the price of poultry and pork, making seafood exports to Europe less competitive.

FPI LTD.

Products and Marketing

To compete in its key markets, FPI maintained sales offices in Canada (St. John's, Montreal, Toronto, Calgary and Vancouver), the United States (Danvers, Massachusetts and Seattle, Washington), Reading, England and Cuxhavin, Germany and a brokerage and distribution network throughout North America and Europe (see Exhibit 3). Integrated information systems connected employees around the world (e.g., sales staff could log on to the company's intranet site to gather product nutritional and ingredient information).

FPI produced and marketed primary- and secondary-processed seafood products, including cold-water shrimp, snow crab, sea scallops, cod, flounder, sole, redfish, pollock, Greenland halibut, haddock and capelin. It also marketed and earned commission income on black tiger and warm-water farmed shrimp, king crab, farmed scallops, North Atlantic lobster, salmon and sea bass, sourcing these products from North America, Southeast Asia, South America and Europe. FPI was also the exclusive distributor of crab products from Atlantic Queen Seafood,

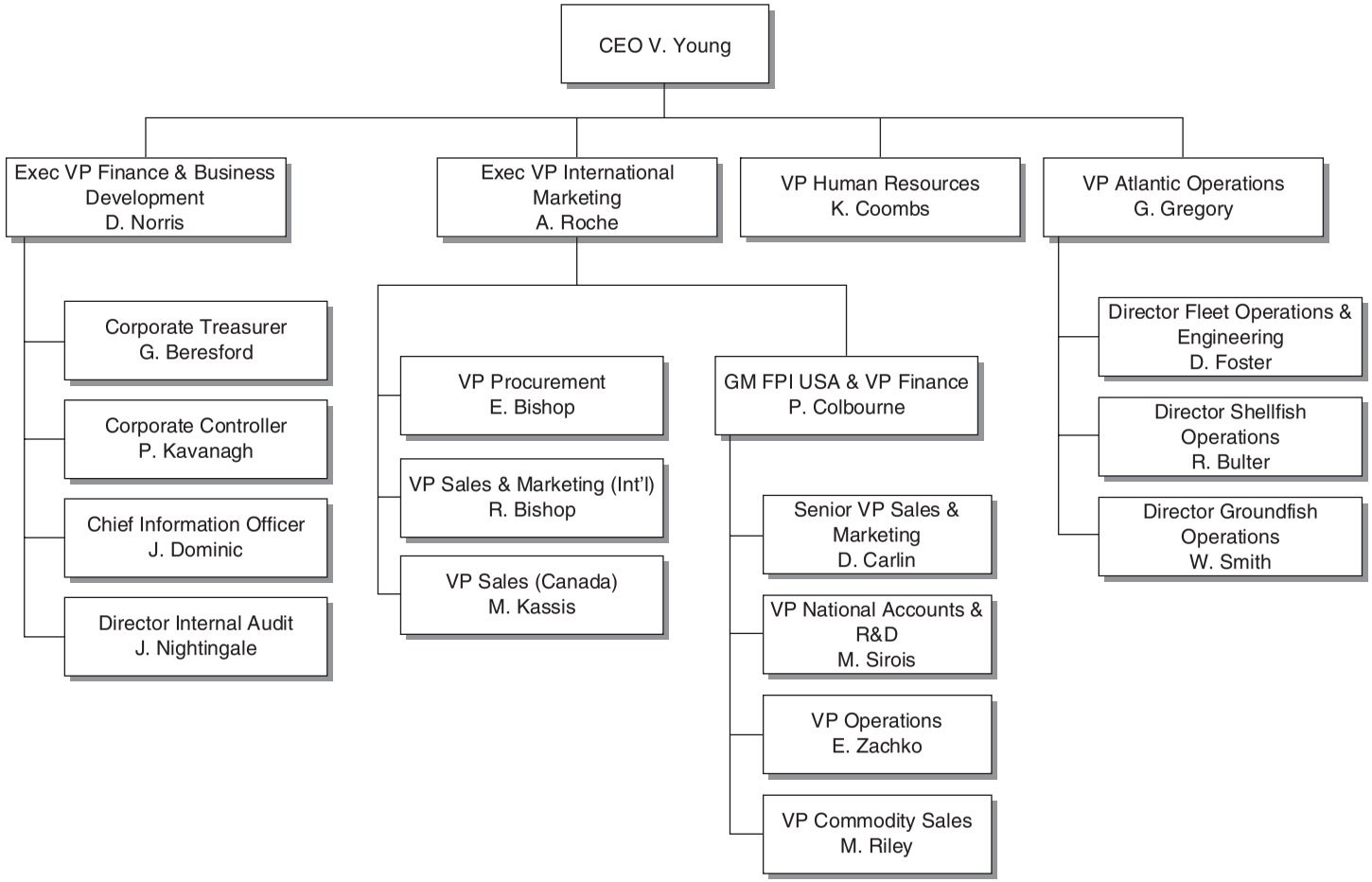


Exhibit 3 FPI's Organizational Structure

Source: P. Kavanagh, "Personal Communication and E-mail Communication," May-August 2000.

based in Atlantic Canada and Quebec. Exhibit 4 details FPI's product range.

FPI sold primarily to wholesale and foodservice markets, including family restaurants, airline caterers, warehouse clubs and major grocery chains. It was the leading supplier of seafood to the North American foodservice market and Canada's private label retail sector (e.g., President's Choice), and was a leading supplier in marketing cold-water shrimp and snow crab in Europe, North America and Asia. With three-quarters of its value-added groundfish and shrimp products going to the North American foodservice market (mainly in the United States), the remaining 25 per cent was bought by the retail and club store industry sectors in the United States, Canada and Switzerland. In 2000, Switzerland was the only tariff-free European country for Canadian seafood exports.

FPI had been regularly recognized by industry associations and independent trade associations for its sales and marketing excellence. In 1999, FPI received several supplier awards from North America's largest independent foodservice distributor, several national restaurant chains and North America's largest retail chain, U.S.-based supermarket grocery retailer Kroger Company. The company's product innovation was maintained by full-time food scientists and food technologists.

FPI had developed a strong reputation for quality and brand leadership through new primary products, such as FPI ice shrimp and the reintroduced FPI flounder. Customers requested FPI by name, reflecting a commitment to brand loyalty. To fully incorporate customers' needs into product design, FPI's development staff would often act as an "extension" of the customer menu development department, combining efforts to generate new process concepts and value-added products, such as Italian Style Mussels and Thaw'n Eat Seafood Medley. Such value-added products typically generated more than 15 per cent of sales.

A challenge for all large seafood companies was that large customers, such as McDonald's, Price Club and Red Lobster demanded top quality and excellent service and competitive pricing.

Brand	Products	Producer
FPI (e.g., FPI Ice Shrimp, Thaw 'n Eat Seafood Medley)	North American groundfish (flounder, redfish, cod) and shellfish (cold-water shrimp, crab, scallops)	FPI
Mirabel (e.g., Catch of the Day family of shellfish)	Premium, specialty products; easy to serve and versatile.	FPI
Luxury, Atlantic Queen and Classic	3 "quality lines of shellfish" from Atlantic Queen: snow crab, rock crab, Atlantic crab	Atlantic Queen Seafoods
Clear Springs Idaho Rainbow Trout	Rainbow trout	Clear Springs
Freshwater Fish	Whitefish fillets, white fish, pickerel fillets, dressed lake trout, northern pike fillets, dressed tullibee	Freshwater Fish Marketing Corporation
Acadian Supreme	Atlantic lobster—boiled and tinned meat	Acadian Fisherman's Co-op
Hillman	Oysters	Hillman Oyster Co.

Exhibit 4 FPI's Product Range

Source: www.fpil.com/Canada/brand.htm, May 15, 2000.

While customers tended to be flexible regarding price (if they were assured of a stable, quality supply), there was a price point beyond which buyers would switch either to other seafood companies, to other seafood products or to substitute products, such as chicken and pork.

Operations

FPI harvested, procured, produced and marketed seafood through three operations: primary processing, value-added processing and seafood trading. Primary processing included sourcing and processing groundfish (such as cod, flounder, and turbot) and shellfish (such as cold-water shrimp, snow crab and sea scallops) into either ready-to-market products or further value-added products. All primary processing was done in Atlantic Canada through nine processing plants. One issue for FPI was how to use its extra capacity. For example, could the batter currently being used on fish be effectively used on other products, such as chicken, and be produced in one of the state-of-the-art plants that operated only part of the year?

Value-added or secondary processing involved sourcing, processing and marketing groundfish, shrimp and other shellfish. In other words, FPI increased the value of the primary-processed products by adding non-seafood ingredients such as batter, stuffings and sauces. FPI's value-added processing plant in Burin, Newfoundland, served its Canadian market while its plant in Danvers, Massachusetts, served the U.S. market. The company's seafood trading business involved brokering internationally sourced seafood products: warm-water shrimp, representing about 60 per cent of seafood trading sales in 1999; and king crab, lobster, scallops, salmon, sea bass, cold-water shrimp and other shellfish and groundfish accounting for, at most, eight per cent of trading sales in 1999. A challenge for FPI's operations was to increase the current level of integration between the operations group, which was cost-driven and the marketing group, which was revenue-driven. Through greater integration, plants that were treated as cost centers might be able to operate as profit-driven centers. In 2000, the plants appeared to be given little, if any, information on the revenue-generating effect of what they produced.

Quality Assurance

FPI's strong reputation for quality seafood products was the result of quality assurance practices and processing facilities that continually met or exceeded the regulatory requirements of the Canadian Food Inspection Agency (CFIA). In addition, FPI was periodically audited by the CFIA, the U.S. Food and Drug Administration, the U.S. Department of Commerce and, of course, its customers. FPI's quality management programs were based on the principles of HACCP. Many importers, such as U.S. companies, accepted seafood products only from foreign suppliers using an HACCP system.

Procurement

In addition to using 12 groundfish vessels, five sea scallop vessels and one shrimp vessel to harvest seafood species off Newfoundland and Nova Scotia and purchasing raw material from more than 3,000 independent Newfoundland fishers, FPI procured more than 25 seafood species in over 30 countries. Vertically integrated, FPI could reduce volatility in raw material costs and secure a certain volume of supply; however, environmental or natural conditions were beyond its control. In the past, ice conditions off the coast of Newfoundland and Labrador had delayed the fishery season. Furthermore, quotas restricted FPI's catch. As in many industrialized countries, Canada's fisheries were managed under a quota system, where quota licences provided harvesters with a "quasi-property right" to harvest certain quantities of fish. Processing licences were also required for each species. Since the government relaxed a freeze on crab processing licenses in 1996, the

number of licences had increased from 19 to 36, all owned by 16 different companies. Although a company purchased a licence, it could choose not to use it if supply was not available or if processing was not economically viable.

Primary-processed shellfish had become an increasingly important business for FPI. Cold-water shrimp resources off Newfoundland were the world's largest, and the DFO controlled the total allowable catch (TAC) of cold-water shrimp. Since 1995, the TAC for shrimp off the northeast coast of Newfoundland and southern Labrador had increased by 166 per cent to 108,300 tonnes. This was divided between the inshore (small vessel) and offshore fisheries, with the inshore harvesters' quota having increased from 3,500 tonnes in 1996 to 47,400 tonnes in 1999. The Newfoundland government required that all of the inshore catch be processed ("cooked and peeled") in the province.

FPI obtained cold-water shrimp from two main sources: purchases from independent inshore harvesters and frozen-at-sea landings from its fishing vessel, the Newfoundland Otter. FPI was Newfoundland's largest cold-water shrimp processing company. Its 1999 supply was 16,100 tonnes, of which the NF Otter harvested 4,700 tonnes; more than 80 per cent was produced in "shell-on market-ready form" for European and Asian customers while the remainder was processed at two FPI plants. In 2000, FPI's total supply of shrimp was expected to be nearly 18,000 tonnes. By offering competitive prices and service, FPI purchased 9,300 tonnes of snow crab in 1999. While the TAC for snow crab had increased by 95 per cent since 1995, quotas were expected to decrease in 2000, due to recommendations based on scientific data. FPI's main competitive region for snow crab was Alaska, and market prices were expected to remain constant.

Meanwhile, sea scallops were sourced off Nova Scotia using five offshore vessels. In 1999, FPI was awarded 17 per cent of the 5,350 TAC. Due to an increase in sea scallop resources, FPI's quota was expected to increase by 20 per cent, and market prices were expected to drop in the United States, Canada and Europe.

Groundfish, including cod, greysole and yellowtail flounder, came from FPI's offshore groundfish fleet and independent inshore fishers. The government had slowly increased cod quotas since the early 1990s, but some scientists indicated that stocks were not rebuilding and recommended quota reductions.

Teamwork and Innovation

FPI employed 3,400 people worldwide, with 3,000 in Atlantic Canada. The company credited its successes to employee commitment and teamwork, particularly through challenging industry times. The company had co-packing arrangements in shrimp processing plants in Thailand, Ecuador, Indonesia and Mexico; at fish processing facilities in Norway and Chile; and at aquaculture farms and secondary-processing plants in China. The company had sales offices the United States, Europe and Canada. There was low turnover among staff and executive management, reflecting FPI's commitment to employees. During an attempted takeover bid in November 1999, the company regularly advertised in local newspapers to publicly praise employees' work and dedication. In 1997, FPI appointed its first female plant manager, Angela Bugden, at its scallop harvesting operation in Riverport, Nova Scotia. Bugden was also responsible for the five scallop trawlers and the refit yard for the trawlers. Since 1997, FPI had also invested in teamwork training for the plant management teams at its two state-of-the-art shrimp plants in partnership with the Centre for Management Development at Memorial University of Newfoundland. FPI had to contend with the close relationships among members of the plant management team, plant employees and the fishers who supplied the plants. Such interpersonal relationships negated the sharing of sensitive cost information with outsiders, in turn, preventing the information from being used in subsequent negotiations between FPI and the employees' unions and between FPI and the fishers' association.

Trawler workers, plant workers and fishers were unionized through the Fishermen, Food and Allied Workers (FFAW) or the Canadian Auto Workers (CAW). The company enjoyed a positive relationship with its employees and the communities in which it operated as well as with union representatives; this relationship was particularly evident during the takeover bid, largely due to Young, whose negotiating abilities extended beyond his company's doors. As a special mediator for a 1994 labor dispute between Newfoundland teachers and the provincial government, Young was credited with preventing a bitter strike.

Innovation and Environmental Awareness

FPI believed in "quality, honesty, teamwork and innovation" and continually invested in its primary- and secondary-processing operations to remain competitive, having invested more than Cdn$65 million since 1995. Spending Cdn$11 million to convert a groundfish plant and Cdn$6 million for new flow line processing technology in its largest primary-processing facility, FPI had two state-of-the-art shrimp plants and a world-class primary-processing facility. It had made significant investments in new technologies such as automated weighing, packaging and freezing technologies that had improved efficiency in its two value-added plants. These investments were considered vital to remaining competitive and meeting customers' changing needs.

FPI also remained committed to sustainable resource management. Its environmental monitoring committee's operational practices ensured regulatory compliance and sound environmental policies. As well, the company had partnered with the Marine Institute at Memorial University of Newfoundland to research and develop leading and sustainable harvesting processes, and with Memorial University to research oceanography and fish conservation. FPI had also worked with the DFO to gather scientific resource data for more accurate allocation of quotas. In 1999, the company pioneered the use of groundfish seining technology, reducing unwanted by-catches and unwanted contact with the ocean floor.

Performance

In the early 1990s, the company struggled through severe industry supply shortages and recorded provisions of Cdn$65 million and Cdn$20 million in 1992 and 1993 respectively. With the exception of losses in 1995 (due to lower groundfish and scallop quotas, a drop in crab prices, and poor U.S. and Mexico market conditions), profitability had slowly improved. From 1995 to 2000, operating and net margins remained relatively stable, and income per share had slowly climbed (see Exhibit 5). Despite a special charge of nearly Cdn$1 million related to the takeover bid, the company recorded a 1999 profit of Cdn$10 million (Appendix A), and, for the first time in 11 years, paid shareholders a dividend.

	1999	1998	1997	1996	1995
Weighted net income per share	0.66	0.55	0.51	0.37	–0.20
Operating margin	11.16%	10.19%	9.66%	9.30%	8.29%
Net margin	1.41%	1.24%	1.21%	.92%	–.51%

Exhibit 5 Net Income Per Share, Operating Margins, and Profit Margins 1995 to 1999

Source: FPI Ltd. (1994–1999) Annual Reports.

In the next few years, FPI had shifted its focus from sales to margin growth, and these higher margins led to a Cdn$9 million increase in gross profit, and a gross margin increase of nearly one per cent. Both Canadian and U.S. earnings have generally trended up. There was a significant drop in U.S. sales in 1998 when FPI focused on margins rather than sales volume, as warm-water-traded shrimp margins were relatively low and extremely volatile.

Canadian domestic sales grew 19 per cent from 1995 to 2000, reflecting increased crab quotas and production. Over the same period, U.S. domestic sales rose less than 2.5 per cent, attributed to intense competition from lower-priced poultry and pasta products. See Exhibit 6 for sales information segmented by line of business and dating back to 1996, when the company began capturing and publicizing this data. An increase in both the value-added and primary-processing lines reflected stable groundfish sales and a significant growth in shellfish sales, which had more than doubled since 1996. Sales of primary seafood products such as cold-water shrimp, snow crab and sea scallops increased more than 23 per cent to Cdn$217 million in 1999. Primary groundfish sales also increased more than Cdn$8 million in 1999, mostly because more groundfish was sourced domestically than internationally. Commission sales on shellfish declined by nearly eight per cent over the four-year period.

Financial ratios were generally comparable with industry averages or slightly below industry averages, with debt and liquidity levels remaining strong (Appendix B and Exhibit 7). Like other local seafood companies, FPI financed independent harvesters and secured these by mortgages over vessels. Credit risk was minimized as FPI's 10 major customers contributed less than 30 per cent to sales, and no single customer contributed more than six per cent. In 1999, the majority of FPI's combined sales were denominated in U.S. dollars, exposing the company to the impact of the weaker Canadian dollar. FPI maintained natural hedges through operating, costing and borrowing in U.S. dollars as well as through foreign exchange hedging practices. FPI remained firm, stating that "Fishery Products International is

		1999		1998		1997		1996	
Primary Processing		%		%		%		%	
	Groundfish	$69,883	9.9	61,667	9.0	58,170	8.6	64,949	9.8
	Shellfish	142,078	20.0	105,375	15.5	72,619	10.7	68,098	10.2
	Other	5,145	0.7	9,102	1.3	8,664	1.3	11,119	1.7
		217,056	**30.6**	**176,144**	**25.8**	**139,453**	**20.6**	**144,166**	**21.7**
Value-added Processing									
	Groundfish	170,822	24.1	160,019	23.5	147,088	21.8	135,862	20.4
	Shellfish	53,641	7.6	58,487	8.6	57,724	8.5	47,844	7.2
		224,463	**31.7**	**218,506**	**32.1**	**204,812**	**30.3**	**183,706**	**27.6**
Seafood Trading									
	Shellfish	200,728	28.3	210,623	30.9	260,851	38.6	236,871	35.6
	Other	66,664	9.4	76,290	11.2	70,828	10.5	99,884	15.0
		267,392	**37.7**	**286,913**	**42.1**	**331,679**	**49.1**	**336,755**	**50.6**
Total Sales		**$708,911**	**100.0**	**681,563**	**100.00**	**675,944**	**100.00**	**664,627**	**100.00**

Exhibit 6 Segmented Sales Information (In Cdn$000s)

Source: Data from FPI Annual Financial Statements, 1996–1999.

Ratio	FPI (%)	Fish and Seafoods Industry (%)	Prepared Fish or Frozen Fish and Seafoods Industry (%)
Gross Margin	10.69%	17.30%	11.00%
Profit Before Taxes[2]	1.99%	2.60%	1.80%
Current Ratio	2.32%	1.30%	—
ROA Before Taxes	4.49%	5.30%	4.10%
ROE Before Taxes	8.65%	—	21.70%

Exhibit 7 Comparative FPI and Industry Financial Ratios[1]

Source: Statistics taken from "Manufacturing—Prepared Fresh or Frozen Fish and Seafoods; Wholesale—Fish and Seafoods," Robert Morris and Associates (RMA) Guide, 1999.

1. Canada, the United States and Mexico have adopted the North American Industry Classification System (NAICS) for industry product classifications; however, historical financial data is available only under SIC/ISC codes. SIC codes 5146 (Fish and Seafoods) and 2092 (Prepared Fresh or Frozen Fish & Seafoods) compare with FPI's NAICS code, 31170.

2. Data are for companies with US$25 million and over in revenue.

committed to maximizing long-term shareholder value."

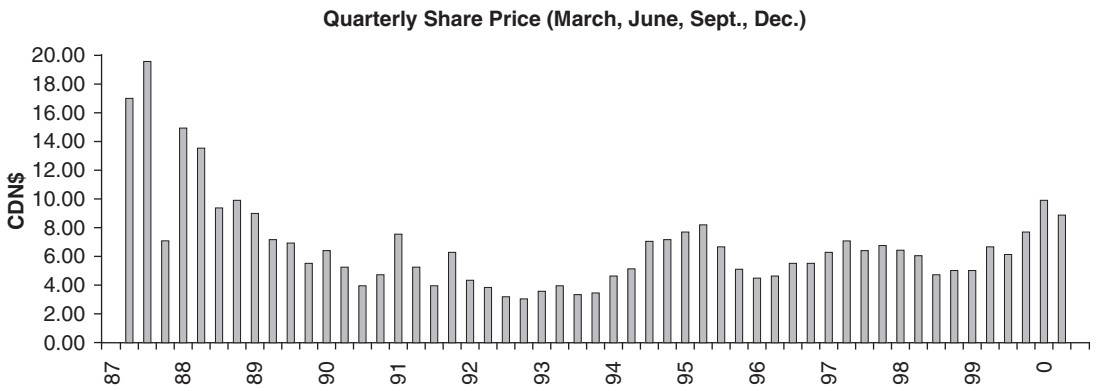
Over all, share prices had declined since the company's initial public offering in April 1987, ranging from Cdn$5 to Cdn$7 from 1995 to 2000, with the exception of a price increase during late 1999 because of the hostile takeover bid by NEOS. Daily trading volume was comparatively low, ranging from approximately 61 to 1,500 trades versus 20,000 to 200,000 for Nortel; however, this did not appear to influence share price. Although EPS has increased each year since 1996 from Cdn$0.37 in 1996 to Cdn$0.66 in 1999, the Total Return Index Values chart (see Exhibit 8) demonstrates that FPI has not afforded shareholders the same return as other food processing companies or the equities market.

Stern Stewart offers an alternative method of corporate valuation through "market value added" or MVA. The greater a company's MVA, the higher its ranking versus other firms across industries. Nortel Networks Corporation has maintained strong and consistent rankings and created value for its investors while FPI has not (see Exhibit 9 and Appendix C). Additionally, both FPI's and High Liner's rankings have dropped since 1989. However, as can be seen in Appendix C, costs of funds for both firms have decreased significantly since the early 1990s.

Ownership

The Takeover Bid

On November 5, 1999, FPI announced it was the target of an unsolicited takeover bid. NEOS offered Cdn$9 per share to acquire 100 per cent of FPI's 16 million outstanding shares. This bid was subject to the provincial government and FPI's shareholders approving removal of the 15 per cent ownership restriction. CEO Vic Young promptly responded that the offer was below book value of Cdn$10.75 and "extremely low." He pointed out that the FPI Act required any successful bid on FPI to have approval from FPI's shareholders and the provincial government to lift this restriction. The 15 per cent shareholder restriction was known as a "poison pill" and made a significant equity purchase of FPI impossible.



Source: Data taken from the TSE Review, Toronto Stock Exchange, 1987 to 2000, July 20, 2000.

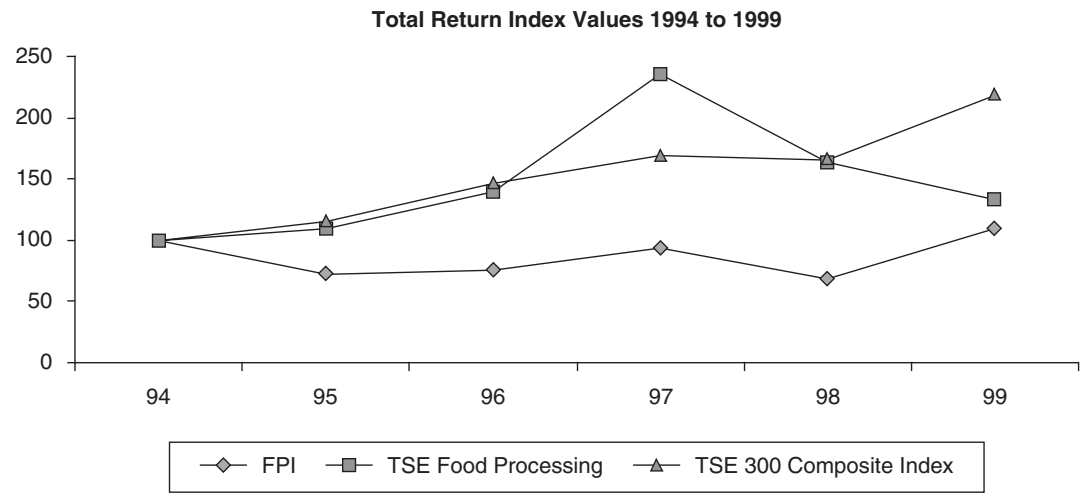


Exhibit 8 Quarterly Share Price 1987 to 2000

Source: BMO Investorline 2000b, bmoinvestorline.com/QuotesCharts, July 5, 2000.

Having set the 15 per cent ownership cap during FPI's conversion from a crown to a public corporation in 1987, the government stated it would not lift this restriction unless the takeover group could show how it could add value to Newfoundland's economy versus FPI's shareholders, in particular. The government indicated it would consider lifting the restriction, given a "deal specific" acquisition or merger opportunity that was, in FPI's point of

MVA Ranking	1998	1997	1989	MVA 1998	EVA 1998	Operating–Capital year end	Return on Operating Capital	Cost of Capital
Nortel Networks	1	1	6	23,369,461	156,402	30,306,396	12.3	11.7
FPI Ltd.	251	270	189	–133,365	–8,967	361,549	4.3	6.9
High Liner Foods	202	253	85	–26,933	255	281,468	7.0	6.8

Exhibit 9 Comparative MVA Data for Nortel, FPI and High Liner Foods

Source: Richard Grizzetti, e-mail communication and www.sternstewart.com, July 2, July 28, 2000.

view, in the best interest of both its shareholders and the province.

During November and December 1999, FPI and NEOS appealed to shareholders, the public and other stakeholders. To alleviate employee concern, FPI ran ads in Newfoundland newspapers praising employees' commitment. NEOS ran its own ads highlighting its intention for the new private company. The two unions and several municipalities opposed the takeover and urged the government to maintain the ownership cap. Both the FFAW and CAW cited a positive labor relations climate at FPI as a primary reason for objecting to NEOS's bid, expressed concern about a concentration of fish-buying power and questioned NEOS's promises. FPI also began exploring other options, including an alternative bid from a "friendly partner." A few weeks after the initial bid, the government announced it would not remove the ownership restriction, and NEOS withdrew its offer.

FPI later stated that the two arguments against removing the restriction—concentration of fish-buying power and negative community response—were no longer relevant. It supported lifting the restriction in order to develop international alliances and partnerships, which otherwise could not be accomplished. FPI also felt there were enough dual-level government restrictions, making ownership restrictions unnecessary. If FPI could not grow through international partnerships, it might become unable to compete with larger firms.

Institutional Ownership

Canadian fishing companies were subject to foreign ownership restrictions and required majority-ownership by Canadian interests; U.S. companies faced similar foreign ownership restrictions. Unlike FPI, some competitor seafood companies were majority-owned by one or two investors. As well, institutional investors were the primary investors in many seafood companies. For example, ASG was controlled by an investment firm, one shareholder owned 37 per cent of Sanford Ltd. and two corporate investors owned the majority of High Liner's shares.

Occasionally, institutional owners had exerted pressure on a company's board when they disagreed with board decisions (e.g., in 1999, investors questioned an executive compensation scheme at Canadian pulp and paper firm, Repap Inc.) As of December 31, 1999, two-thirds of FPI's shares, including mutual funds and pension funds, were controlled by institutional investors who had the potential to exert pressure on the board. During the takeover attempt, institutional investors holding more than 50 per cent of FPI's shares requested FPI hold a timely meeting to evaluate NEOS's proposal. Many also lobbied the government to remove ownership restrictions.

An interesting issue for Young and his senior management team was that this share ownership had dramatically changed by July 2000. Sanford still owned 14.7 per cent, Hamblin Watsa owned 14.6 per cent and the Ontario Municipal Employees Retirement Fund still owned 11 per cent. Two new major shareholders were IFPC (an Icelandic seafood company) and Clearwater (a Canadian seafood company), both partners with the Barry Group in the unsuccessful takeover bid in November 1999.

Leadership and Governance

In 1984, Young became chairman and CEO of Fishery Products International. He was not expected to retire any time soon; however, it was not immediately evident who might replace Young or whether that person would possess Young's ability to build a strong culture and team commitment.

As chairman, CEO and president, Young was the only management member on FPI's board of directors. The chairperson of the human resources committee functioned as the lead director, overseeing the relationship between the board and senior management. At each meeting, the board held discussions without the CEO in attendance. It was not unusual for senior management to attend board meetings to present business information.

Board membership was fairly stable with a good mix of long-term members and newer members. Of the 11 unrelated members of the board, seven were from Newfoundland, three were from Ontario and one was from New Brunswick. Two new directors were elected to the board in 1999. Appendix D presents a detailed summary of the current board.

The Future

Young believed FPI needed to focus on growing shareholder value. To do this, he believed in motivating employees to embrace the concept of growing shareholder value and "energizing" them to "make it happen."

FPI was focused on growing its EPS and restoring shareholder value by using key traditional groundfish, value-added and seafood trading operations, along with increasing shellfish operations. Young also hoped to grow through international alliances, mergers and acquisitions. The question now facing Young: how exactly should FPI increase shareholder value?

Notes

1. This case has been written on the basis of published sources only. Consequently, the interpretation and perspectives presented in this case are not necessarily those of Fishery Products international Ltd. or any of its employees.

2. Founded in 1979, NAFO comprises 18 countries including Canada, United States, the European Union, Cuba, Korea, Denmark, France (St. Pierre and Miquelon), the Russian Federation, Iceland and Norway. Its goal is to guide management and to conserve fishery resources in the northwest Atlantic within the 200-mile limit (NAFO Convention). A map of this area is available at www.nafo.ca/imap/map.

APPENDIX A: FISHERY PRODUCTS INTERNATIONAL LTD., CONSOLIDATED FINANCIAL DATA (FOR YEARS ENDING DECEMBER 31) (IN CDN$000S)

	1999	**1998**	**1997**	**1996**	**1995**
Sales	$ 708,911	681,563	675,945	664,598	643,009
COGS	633,124	614,467	613,617	606,473	593,096
Gross Profit	75,787	67,096	62,328	58,125	49,913
Commission Income	3,327	2,382	2,968	3,665	3,394
Operating Income	79,114	69,478	65,296	61,790	53,307
Administration and Marketing	45,456	42,152	39,963	39,865	39,711
Depreciation and Amortization	9,883	8,967	8,656	7,872	8,484
Profit sharing	1,541	1,088	1,063	840	
Interest	7,146	7,467	5,890	5,669	8,242
	64,026	59,674	55,572	54,246	56,437
Operating Income before undernoted	**15,088**	**9,804**	**9,724**	**7,544**	**(3,130)**
Exchange Gain					
Gain (loss) on disposal of PP&E				21	438
Equity in loss of joint venture					
Unusual item(s)	(965)				
Net income before taxes	**$14,123**	**9,804**	**9,724**	**7,565**	**(2,692)**
Income taxes	$4,097	1,378	1,531	1,455	587
Net Income	**$10,026**	**8,426**	**8,193**	**6,110**	**(3,279)**
Weighted net income per share	0.66	0.55	0.51	0.37	(0.20)
Gross Margin	10.69%	9.84%	9.22%	8.75%	7.76%
Operating margin	11.16%	10.19%	9.66%	9.30%	8.29%
Net margin	1.41%	1.24%	1.21%	0.92%	−0.51%

Source: 1995 to 1999 Annual Reports.

APPENDIX B: FISHERY PRODUCTS INTERNATIONAL LTD., CONSOLIDATED BALANCE SHEET AT DECEMBER 31, 1999 (IN CDN$000S)

Assets	
Current Assets	
Cash	$916
Accounts Receivable	80,664
Inventories	119,471
Prepaids	5,637
Total Current Assets	206,688
Property Plant and Equipment	93,677
Other Assets	14,057
Total Assets	**314,402**
Liabilities and Shareholders' Equity	
Current Liabilities	
Bank Indebtedness	43,124
Accounts payable & accrued liabilities	37,252
CP LTD	8,351
Total CL	88,727
LTD	62,323
	151,050
Shareholder's Equity	
Share Capital	48,044
Contributed Surplus	75,083
Retained earnings	41,535
Foreign Currency Translation Adj.	(1,310)
Total Equity	163,352
Total Liabilities and Shareholders' Equity	**$314,402**

APPENDIX C: 2000 STERN STEWART MVA RANKING INFORMATION, FISHERY PRODUCTS INTERNATIONAL LTD. AND HIGH LINER FOODS (IN CDN$000S)

MVA	1999	1998	1997	1996	1995
FPI Ltd	(98,526)	(130,317)	(93,338)	(105,870)	(103,387)
High Liner Foods	(70,809)	(18,434)	(24,250)	(38,591)	(45,074)
Stock Market Value					
FPI Ltd	245,220	229,117	249,901	195,309	191,083
High Liner Foods	177,205	254,894	173,552	157,001	154,602
Operating Capital Year-End					
FPI Ltd	342,830	358,502	337,630	296,198	289,010
High Liner Foods	240,540	272,969	191,235	195,321	197,870
EVA					
FPI Ltd	(5,465)	(8,745)	(9,455)	(16,262)	(30,764)
High Liner Foods	(20,456)	499	(2,932)	(7,842)	(8,388)
Return On Operating Capital (r)					
FPI Ltd	4.9%	4.3%	4.5%	3.7%	0.5%
High Liner Foods	–1.0%	7.2%	6.1%	3.9%	4.1%
Cost of Capital (C*)					
FPI Ltd	6.5%	6.9%	7.7%	9.3%	11.5%
High Liner Foods	6.5%	7.0%	7.6%	7.9%	8.4%

Source: Richard Grizzetti, e-mail communication, www.sternstewart.com, July 2 and 28, 2000.

APPENDIX D: FISHERY PRODUCTS INTERNATIONAL LTD., BOARD OF DIRECTORS

James C. Ballie	1992 – present	Partner, Tory, Tory, DesLauriers & Binnington, Toronto, ON
R. William Blake, PhD	1999 – present	Dean, Faculty of Business Administration, Memorial University of Newfoundland, St. John's, NF
Bruce C. Galloway	1999 – present	Company Director, Oakville, ON
Janet C. Gardiner	1987 – present	Treasurer, Chester Dawe, Ltd., St. John's, NF
Michael F. Harrington	1998 – present	Senior Partner, Stewart McKelvey Stirling Scales, St. John's, NF
Albert F. Hickman	1984 – present	President, Hickman Motors Ltd., St. John's, NF
Thomas E. Kierans	1990 – present	Chairman & CEO, Canadian Institute for Advanced Research, Toronto, ON
Rev. Desmond T. McGrath	1987 – present	Education Officer, Fish, Food & Allied Workers, St. John's, NF
Frances M. Nichols, FCA	1991 – present	Chartered Accountant, Grand Falls-Windsor, NF
Elizabeth Parr-Johnston, PhD	1994 – present	President & Vice-Chancellor, University of New Brunswick, Fredericton, NB
Vincent G. Withers	1995 – present	Company Director, St. John's, NF
Victor L. Young	1984 – present	Chairman & CEO, Fishery Products International Ltd., St. John's, NF

Committees of the Board of Directors		
Audit	**Growth & Diversification**	**Human Resources**
Vincent G. Withers (Chair)	James C. Baillie (Chair)	Albert F. Hickman (Chair)
Janet C. Gardiner	R. William Blake, PhD	James C. Baillie
Michael F. Harrington	Bruce C. Galloway	R. William Blake, PhD
Alfred F. Hickman	Thomas E. Kierans	Bruce C. Galloway
Rev. Desmond T. McGrath	Elizabeth Parr-Johnston, PhD	Michael F. Harrington
Frances M. Nichols, FCA	Vincent G. Withers	Thomas E. Kierans

APPENDIX E: A NEWSPAPER INTERVIEW WITH VIC YOUNG, THE TELEGRAM—AUGUST 26, 2000

Fishery: FPI Boss looking for business in New Zealand

Young seeks more international flavour: Telegram Correspondent

Fishery Products International (FPI) chairman and CEO Vic Young will travel to New Zealand next week to explore opportunities that he hopes will give FPI a more international flavour in the fish-marketing business.

Young said the full week of discussions will include talks with several New Zealand seafood companies, including Sanford Ltd., which owns 14.7 per cent of FPI.

He said he will be exploring opportunities associated with the potential for FPI to market New Zealand products in North America and for New Zealand companies to market FPI products in New Zealand and Australia.

Co-operation

He said the issue of international co-operation in the fishing industry is becoming increasingly important as the battle with the chicken, beef, pork and turkey industries intensifies.

Recently, FPI and a consortium of 12 international seafood companies announced the formation of Seafood Alliance.com.

Members of the alliance have agreed to investigate industry-wide opportunities arising out of the Internet and business electronic commerce.

The total sales of the companies in the alliance is US$5 billion.

The list of major shareholders of FPI has undergone significant change in the last several months. There are now five shareholders that own approximately 64 per cent of the outstanding shares in FPI.

These major shareholders include: Sanford; Hamblin Watsa (a Canadian investment firm) at 14.5 per cent; IFPC (an Icelandic seafood company) at 14.6 per cent and Omers (a Canadian retirement fund) at 11 per cent.

In addition, Clearwater Fine Foods, a Canadian seafood company, owns approximately nine per cent. Clearwater and IFPC were partners in an unsuccessful FPI takeover bid that was launched in November last year.

FPI is experiencing one of its best performances in more than a decade this year.

In its recently released second-quarter report, the company indicated its annual earnings target for 2000 was net income in excess of 75 cents per share, compared with 51 cents per share earned in 1999.

"If achieved, this would represent FPI's best performance on a fully-taxed basis in over a decade," said Young.

The company has indicated it will continue to pursue potential mergers, acquisitions, international alliances and other growth opportunities.

He said that one of the things he will be exploring while in New Zealand is the use of New Zealand hoki (whitefish) as raw material in value-added products in North America.

He said he will also be looking at the potential for technological and personnel exchanges in the areas of harvesting and fish processing.

NONSTOP YACHT, S.L.

Prepared by Ken Mark and Jordan Mitchell
under the supervision of Professor Charlene Nicholls-Nixon

 Version: (A) 2004-06-22

INTRODUCTION

On February 17, 2003, Paul Metcalf, founder of NonStop Yacht S.L. (NSY), wondered how best to pursue growth for his startup. NSY provided a central, one-stop Internet e-commerce Web site to service the mega-yacht[1] industry. Metcalf's business concept was to provide captains and crew with information and the ability to shop online for any parts or services related to the functioning of their vessel: from finding a light bulb, to selecting a new satellite system, to arranging a photographer in the Cayman Islands.

Based in Barcelona, Spain, NSY grew rapidly, achieving sales of US$200,000[2] in its first year of operation. But second-year sales were below Metcalf's expectations and the two-year-old NSY had yet to post break-even results. With cash becoming an issue and investors reluctant to provide further capital, Metcalf felt it was time to revisit whether he had chosen the most appropriate business model to capture value from the NSY concept. He was keenly aware that he had to make a decision quickly. There would be no margin for error.

THE RECREATIONAL MEGA-YACHT INDUSTRY

A mega-yacht was loosely defined as any yacht greater than 45 metres in length. Owning mega-yachts was a hobby of the immensely wealthy. Despite the global recession, the yachting world was still growing rapidly because "yacht owners were typically high net-worth individuals and corporations with cash to burn."[3] In 2003, there were approximately 5,000 mega-yachts in the world, ranging in cost from an average of $10 million to $50 million and higher. The industry included another 5,000 superyachts[4] in its boat count.

Examples of mega-yachts included the following, rated by Power and Motoryacht as the top two mega-yachts in 2002:[5]

- The Savarona: 124 metres in length, featuring a Turkish bath with 300-ton marble fountains and basins that are more than 200 years old, 39 bathrooms, 17 bedrooms and an exquisite gold and marble balustrade.[6]

- The Alexander: 121 metres in length, launched in 1976 and owned by Greek real estate billionaire John Latsis. The mega-yacht was in the headlines in 2000 when Prince Charles of Britain and his lover, Camilla Parker Bowles, were photographed cruising in it.

Economic activity in the mega-yacht industry was estimated at $1,035 million worldwide, of which new builds accounted for $383 million. The maintenance, refit and repair business sectors accounted for the other $652 million. (At any time, there were about 1,600 mega-yachts docked for service.) In September 2002, consultants estimated that demand in the worldwide market would continue to increase by six per cent per year and even more in the near-term outlook.[7]

Ports of Call

There were a few key ports of call for mega-yachts: South Florida, Majorca, the French Riviera, and St. Maarten. The impact of mega-yachts was not to be underestimated: South Florida alone claimed that mega-yachts were a

significant portion of the $9-billion per annum recreational marine industry.[8] Frank Herhold, executive director of the Marine Industries Association of South Florida, a trade group with about 800 members, stated:

> Mega-yachts are a very fragile, mobile community. About 900 mega-yachts visit South Florida each year, and 800 of them stay. They spend about $500,000 per visit.[9]

Various economic impacts included purchases of goods and services, as well as maintenance, repairs, refittings and docking fees (between $7 to $10 per foot per day) billed by local marinas and boatyards. In South Florida, the recreational marine industry directly employed an estimated 39,000 people and generated indirect employment for another 109,000.[10]

To attract visitors and support the community, South Florida also held the Fort Lauderdale Boat Show, displaying $1.6 billion of boats, mega-yachts and accessories to thousands of visitors. The show's average $500-million annual impact was welcomed by the city.[11]

Customers

Americans purchased 45 per cent of all superyachts and mega-yachts, up from 10 per cent to 12 per cent a decade ago.[12] Customers bought mega-yachts and superyachts in the same way they bought other large-ticket items. Within their network of contacts and friends, they located yacht brokerages that could equip them with the most impressive yacht they could afford.

Mega-yacht owners typically spent six to 10 weeks a year onboard their yacht, frequently entertaining guests' with the key but subtle aim of putting their immense wealth on display during this short period of time. Typically, no expense was spared to provide the highest levels of comfort and luxury for guests—fresh, premium food was cooked by chefs, crews were fully staffed, and the mega-yacht had to be in pristine condition at all times. A typical mega-yacht would have six crew members, including a captain, mate, chief engineer, cook, stewardess and deck hand. In extreme cases, the mega-yacht had 90 to 100 full-time crew.

When not in use by the owner, mega-yachts were often made available for charter. During this three-to-four-month time period, the yacht owner turned over the care of the vessel to the chartering party and the yacht management service. The level of luxury depended on the amount the party was willing to spend.

For the rest of the year, the mega-yacht was moored in port, in dry storage or in dock for repairs. The generally accepted industry rule was that operating expenses accounted for 10 per cent of the yacht's value per year. Of this amount, a quarter was due to spare parts, consumables and upgrades. The other three-quarters covered fuel, food, communication costs, docking fees, crew payroll and repair and refit yard fees. Every four to five years, a mega-yacht required a major refit costing up to 20 per cent of the yacht's value.

Yacht Builders

At any time, there were about two dozen specialty yacht builders in the world constructing mega-yachts. Mega-yachts took between one and three years to build. In 2002, 56 per cent of new mega-yachts were built in Europe, 35 per cent in the United States, and the remainder were built in Asia and South Africa. In 2002, industry observers calculated that yacht builders were completing 482 mega-yachts for 2003, a 4.7 per cent drop from the previous year.[13] Although yacht builders focused on construction, related services could add substantially to their bottom line. Rybovich Spencer, a West Palm Beach, Florida-based full-service shipyard and shipbuilder, said its service and dockage business, consisting of repairs and refits for over 80 mega-yachts, brought in an additional $5 million in sales during a six-month period between 2001 and 2002.[14] Yacht builders invested between $2 million to $15 million to upgrade current facilities to serve mega-yachts.[15]

The growth in the industry had led to a proliferation in the number of yacht builders, and in 2002, signs of consolidation appeared. Palmer Johnson Inc., a shipbuilder and refitter based in

Sturgeon Bay, Wisconsin, announced its intentions to focus on the mega-yacht industry with its acquisition of two Fort Lauderdale marine companies specializing in supplying parts, equipment and fuel to the yachting sector.[16]

Yacht Management Companies

There were dozens of yacht management companies providing such services as parts procurement, crew hiring and management, coordination of yacht maintenance, and organizing charters. As an example of a service provided, organizing charters helped mega-yacht owners recoup some of the investment in their vessel: rental rates ranged from $50,000 per week to $584,000 per week for the 325-foot Christina O, a yacht for up to 36 people that once belonged to the late Aristotle Onassis. These costs did not include tips, food, alcohol and fuel (which could add another 20 per cent to 40 per cent to costs).[17] The fees for dockage in the Mediterranean could range from $1,000 to $2,000 per night. The yacht management company's commission, included in the total amount, would be between 10 per cent to 20 per cent.

Consolidation in this industry was also starting to take place, as transnational players began moving into the lucrative U.S. market. In 2002, the Rodriguez Group, a French yachting services company, purchased Fort Lauderdale-based Bob Saxon Associates Inc., a yacht management and charter company with 27 employees.[18]

The Parts Procurement Process

Given the nature of conspicuous consumption in the mega-yacht industry, most mega-yachts were filled with specially made and expensive parts (see Exhibit 1). There were three main categories of boat parts:

1. *Spare parts*—typically more urgent than anything else, this category referred to parts that had unexpectedly broken down. Examples included: a replacement pump for the head (toilet), a new hydraulic seal for the steering system, a non-standard valve in the sewage system or a new electronics board for the unit that closes the curtains in the owner's stateroom.
2. *Consumables and stock spares*—this category included parts that were less urgent but necessary to have in the case of a breakdown or replacement. Examples included: oil and fuel filters, light bulbs, pump seals, electronic switches, crockery (pots and pans) for the galley (kitchen), charts and tools.
3. *Upgrades and refits*—this category included a range of products from fire and safety to the entertainment or communication systems.

Because the range of products required by mega-yachts was so great, suppliers were located around the world. The majority of the suppliers were located in the United Kingdom, Germany, Holland, France, United States, Australia, Scandinavia and Japan. As the industry continued to mature, more standardization and consolidation of suppliers was expected to occur.

There were four main suppliers to mega-yachts:

- Commercial/Industrial—engines, laundry, kitchen and electrical system suppliers
- Consumer Products—entertainment systems, fixtures in bathrooms, furniture, etc.
- Small Yacht Products—rope handling equipment, navigation equipment, electronic system suppliers
- Dedicated Suppliers—small number of manufacturers that catered to the mega-yacht market

The thousands of parts and equipment manufacturers sold their wares through exclusive distributors. Analysts indicated that Germany had a 26 per cent share of the market, followed by the United Kingdom and the Netherlands each with an 18 per cent share, the United States with 14 per cent, Norway with nine per cent, France with six per cent and Finland three per cent.[19]

Owners rarely ever dealt with the purchasing of boat parts or servicing, leaving these duties to the crew (40 per cent of the time) and yacht repair and refit specialists (60 per cent of the time). The crew dealt with ongoing or emergency

The scope of supply included any parts for the following systems aboard a mega-yacht or superyacht:

- Main Engines
- Propulsion Units
- Generators
- Air Conditioning
- Refrigeration
- Water Makers
- Shorepower Conversion Units
- Sewage Systems
- Stabilization Systems
- Bow Thrusters
- Fuel Purification
- Oil Purification
- Fresh Water System
- Hot Water System
- Communication Systems
- Navigation Electronics
- Compressed Air Systems
- Entertainment Systems
- Fire Fighting Equipment
- Safety Equipment
- Hydraulics
- Sails and Rigging
- Kitchen Equipment
- Cranes
- Tenders
- Jet-skis
- Diving Equipment
- Anchor Handling Equipment
- Alarm Systems
- Charts
- Helicopters
- Other Sea Craft

Exhibit 1 Parts Requirements for Mega-Yachts

repairs while yacht repair and refit specialists handled regularly scheduled maintenance. The crew had several ways to deal with parts procurement: They could leave the task to the yacht management company; they could rely on a purchasing agent; or they could approach parts distributors (see Exhibit 2).

Yacht management companies and purchasing agents would locate the products from their database or collection of catalogues. They would then order the part, look after the paperwork and have the part shipped to their warehouse or directly to the yacht. Typically, they would add a percentage fee, ranging between five per cent to 10 per cent of the cost of the part. For important customers, the purchasing agent would have the clout to negotiate a cheaper price than the yacht owner would receive by dealing directly with the manufacturer. Parts could also be obtained through local yacht agents. Like purchasing agents, local yacht agents (who typically also managed many other sideline businesses), generally had local knowledge of their port, any local suppliers and local import laws. The yacht agent would add a small percentage to the cost of the product or service.

Alternatively, crews could pursue parts procurement independently. This approach usually involved a lengthy investigation period where they would have to track down products and product information through contacts, magazines, catalogues and the Internet. In some cases, crews were able to contact the distributor or manufacturer directly and arrange to have the product shipped to the yacht. Although contacting parts suppliers was not simple (there were thousands of suppliers), extra commissions for intermediaries would not have to be paid.

Crews could also locate and purchase boat parts by directly contacting yacht builders and/or repair and refit yards. Yacht builders would typically specialize in parts they used to equip the vessels they were building. Repair and refit yards did not always have a wide contact base of suppliers and would add 10 per cent to 15 per cent onto the cost of the product or service. Their businesses were based on charging for the labor component of the refit or repair. In most major ports, there would be

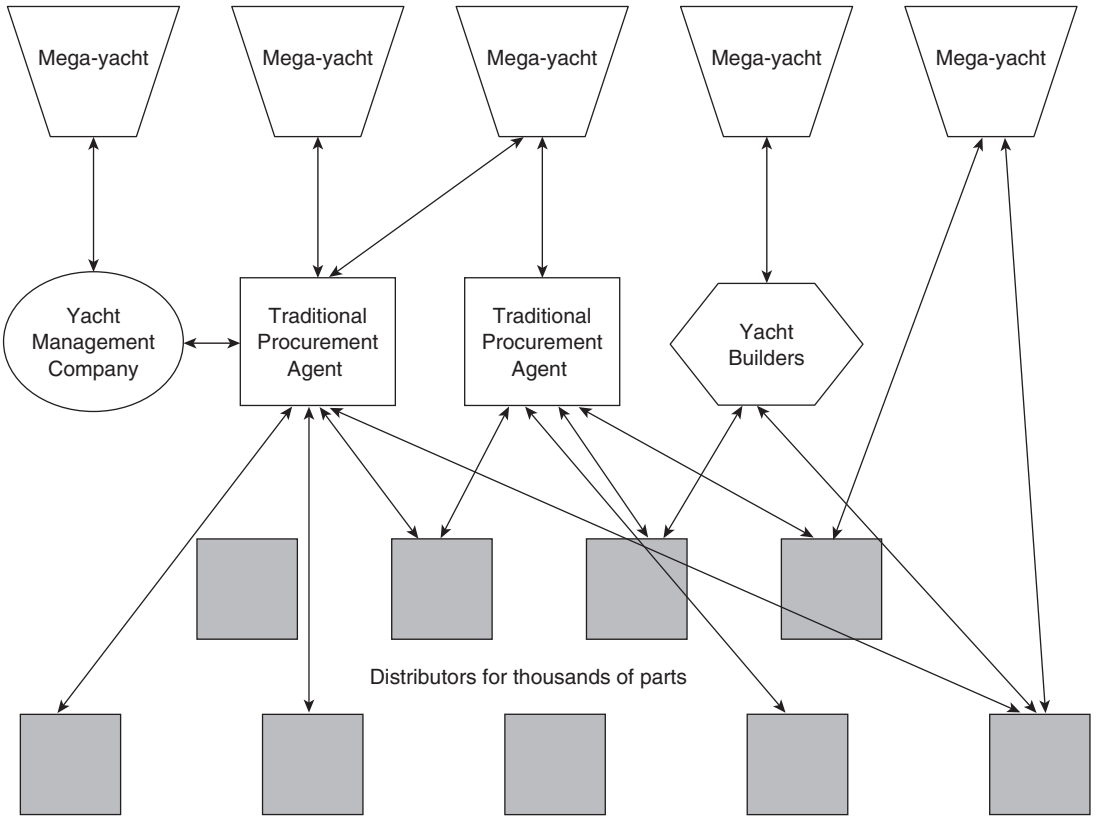


Exhibit 2 Traditional Parts Procurement Process

one or two major refit yards. For example, the predominant refit yards in Spain included MB 92 in Barcelona and Izar in Cartagena.

The NSY Value Proposition

Because mega-yachts were transient sea craft that sailed frequently from port to port, supplies and equipment were often needed on a last-minute basis. Locating the right spare or replacement part was often a frustrating endeavor for mega-yacht crews; there were literally thousands of manufacturers worldwide, each making non-standard boat parts. Attempting to describe the boat part while connected to procurement agents on satellite telephone was not the ideal solution. Often, agents themselves had to resort to haphazard guessing to correctly identify the item requested. To compound the problem, most parts suppliers did not have their catalogues online; the catalogues were often in paper form and updated annually.

Metcalf believed that his company's e-commerce Web site had an advantage over traditional methods of procurement. While connected to the Internet, mega-yacht crews could browse the catalogues of a variety of suppliers on the NSY site. Instantaneous access

to current product information would virtually eliminate many of the problems crews commonly associated with parts procurement, including: how to find and contact the manufacturer and local distributor, describing the part, ensuring appropriate measurements (metric versus imperial), managing time zone differences, dealing with communication problems, locating—sending and receiving agents, managing customs clearance and arranging payment.

Metcalf explained why he chose to operate NSY as an e-commerce site:

> I thought the Internet was the best method of delivery to a customer base that was located all over the world and constantly moving. The fit was perfect! I felt the problem of parts procurement could be better addressed using the Internet. The biggest problem in getting boat parts was getting the right information about the product. So, I figured if I could have an Internet site and an up-to-date catalogue on CD that gave the information *and* delivered the product, it would be better than the current method of finding the parts yourself or by using an agent who is serving dozens of other customers. My plan was to have a huge catalogue of everybody's catalogue. A person from the boat would order a part and say, "Okay, I'm in this place," and the product would be dropped shipped from the supplier in that area. (see Exhibit 3).

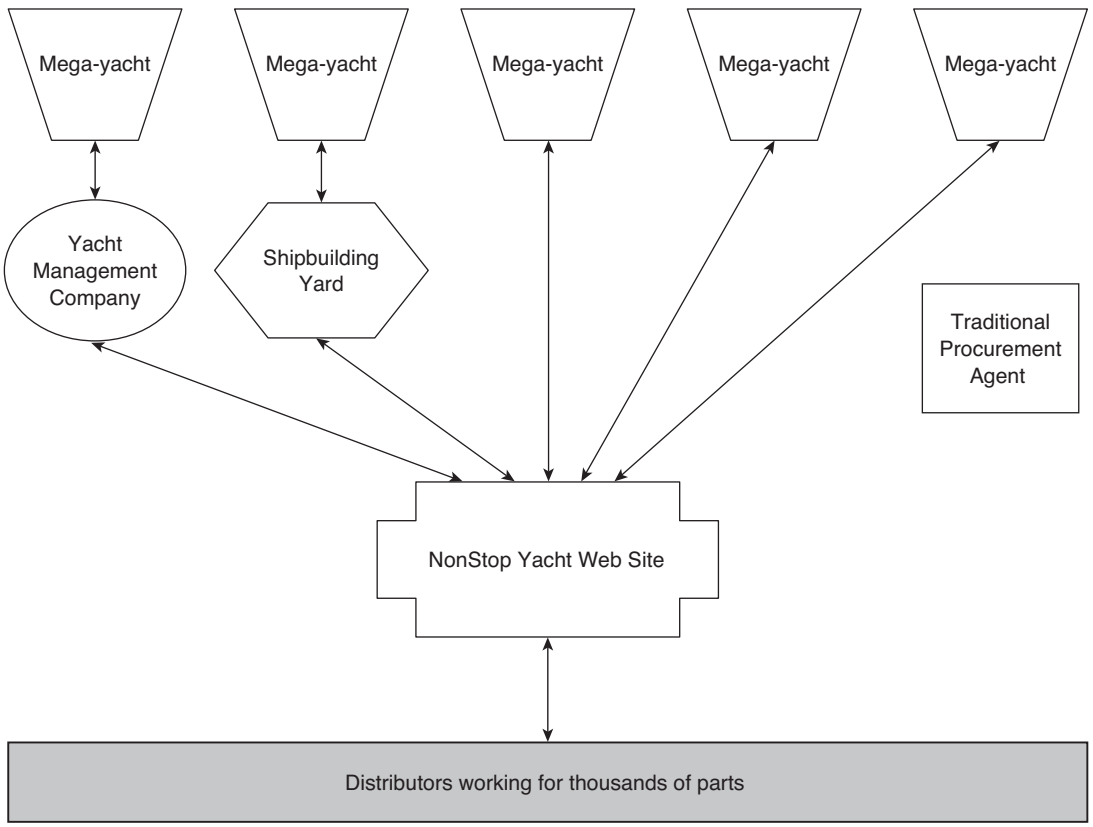


Exhibit 3 NonStop Yacht Facilitates Parts Procurement

Metcalf believed that NSY's competitive advantage would be its database and network of suppliers, the ability to ship anywhere in the world from Barcelona, the flexibility of its cost structure and the transparency of billing. Taken together, the benefits provided a compelling value proposition to the crew of super-yachts and mega-yachts, which included:

1. Up-to-date catalogue on CD, allowing the crew to browse and shop off-line then upload the order by fax, e-mail or through the Internet (the hard-copy catalogue of National Marine had some parts not available for the past six years);
2. Automatic accounting for the captain or yacht management company;
3. Password-protected expenditure levels for captain, mate or engineer;
4. Automatic receipt copies, invoice copies and VAT[20] receipts;
5. Links into maintenance scheduling software if used on the yacht;
6. Easy reordering of parts or groups of parts;
7. Intelligent add-on sales with instant access to view the available options;
8. Product pictures and part diagrams; and
9. No time zone issues.

With the NonStopYacht.com Web site, Metcalf aimed to become the Web-based purchasing agent of choice to crew members and yacht management companies. NSY's continually updated Web site could be instantly accessed by customers, with orders placed online or by telephone.

NSY's Business Model

Initially, Metcalf had envisioned building NSY as a virtual corporation. The Web site would be NSY's only interface with the customer. Supplies would be procured from a growing network of vendors that agreed to post their merchandise with NSY and then have NSY arrange the shipping directly to the customer.

NSY's revenues were generated from dealer margins that were earned when merchandise was sold through the Web site. Suppliers were not required to pay listing fees. The business model worked as follows: NSY would utilize the supplier's country-specific distributor to ship product to customers. In the process, it would earn dealer margins on the wholesale prices of these products. NSY aimed to charge end-customers prices similar to those offered by local dealers. In the rare case that the supplier did not have a distributor, NSY would arrange for the part to be shipped directly to the customer. In these situations, NSY would earn both distributor margins and dealer margins.

Metcalf and his team worked feverishly for months, making over 900 supplier contacts around the world with a combined product offering that included over 20,000 branded items. The process of getting all of the suppliers and their products had been an arduous task. Metcalf recalled:

> We basically rang up all the suppliers, told them about the idea and many of them said "great." The biggest challenge was convincing them of our main objective, which was *not* selling *against* their distributors. Once we convinced them that the customer would order from us, then we would go through their designated distributor in that country.

At the same time as agreements were being signed with a critical mass of suppliers, the Web site was developed. Then, attention turned to building traffic on the site:

> When we finished the basic structure of the Web site, we sent out passwords to various mega-yachts and got their feedback on what they liked and didn't like about the site. The site was ugly because I designed it initially. We had three people working on the back end, and before its final release, I hired someone who improved the look and consistency of the appearance.
>
> We opened the Web site to resounding silence in June 2001. We had visitors but not many purchasers. We got the phone calls: "My boss was on your site and he would like to order this." The Web site did not work the way I wanted it to as an e-commerce site. However, it did provide parts information to crews.

Since initial sales had been much slower than Metcalf had anticipated, he decided to move from a hidden office to a publicly accessible area. As soon as he had created a face for NSY to deal directly with customers, sales started to pick up. The business model quickly evolved from an Internet-based venture to a hybrid "bricks and mortar" enterprise:

> What we were finding was that customers were looking on the Web site to find the information; then we'd get a call saying, "Yes, we saw this boat part on your Web site and would like to order it." The decision to move from a strictly e-commerce company to dealing directly with the customer was quite simple, really. We were located upstairs in a non-public area and were trying to operate it as a strictly e-commerce business. But we kept on getting calls. We decided to move downstairs, and put in a free Internet access terminal for the crew to use. That helped out immensely. Once we saw that the e-commerce solution alone wouldn't work, we developed a face to the crews of the mega-yachts. Crews are able to come in, use our Internet, ask us about products and do the order either over the phone, by fax or in person. The site is updated, but it's in hibernation, since most of our sales are generated through the office.

Metcalf and the investors decided to open up the second NSY office in Palma Mallorca, Spain, in October 2002. Metcalf believed Palma to be a vital hub of activity for superyachts and mega-yachts and was confident that the new office was a natural extension of the Barcelona location.

The accessibility to information within the mega-yacht industry made it possible for Metcalf to obtain the names and lengths of the yachts, the major equipment being installed, the yard where the yacht was built and the present captain's name. The only information that was not available was details relating to the owner. NSY advertised in three publications that were frequently referenced and read by captains and crews: Professional Yachtman's Association News, The Yacht Report, and Showboats. Another important advertising method was the attendance of Metcalf and his team at the major boat shows in Europe and the United States.

The NSY Team

In February 2003, the NSY management team was composed of Metcalf as chief executive officer (CEO) and president, Stephanie McKay as commercial manager and Sam Jones as marketing and sales specialist. Contract employees such as Robert Franks performed computing or administrative tasks. Each individual brought a unique and complementary set of skills and experience to NSY.

Metcalf had spent six years in computer sales in his native United Kingdom before pursuing a career in the sailing world in 1993. He worked first as a sailing instructor in Greece, and then went to work on a variety of small- and medium-sized yachts, ranging in size from 12 metres to 52 metres. During this time, Metcalf's travels took him throughout the Caribbean, North America and the Mediterranean. The experience gave Metcalf a wide base of yachting knowledge including electrical, plumbing, engine rooms and general maintenance. It also gave him valuable contacts with owners, captains and engineers within the industry. Metcalf was 30 years old when he began writing the NSY business plan in October 1999. He received his initial seed capital from Riva y Garcia on June 16, 2000 (see Exhibit 4).

In 2003, McKay had worked at NSY for two years. She was responsible for the establishment of many of the relationships with suppliers due to her savvy negotiation skills and ability to speak three languages. Her prior experience had been based in emergency assistance with a leading insurance company, working in both the United Kingdom and France. Being with NSY from the beginning, McKay wrote an entire manual of procedures and established strong ties with yacht refit yards in the Mediterranean.

Jones had worked for NSY for nine months. During this time, he had managed to increase the walk-in traffic and the direct-to-yacht business through his personable selling approach to

By February 2003, there had been three rounds of investment in NonStop Yacht:

Round	Investor	Date	Amount (US$)
1	Riva y Garcia + Barcelona EMPREN	06/16/2000	180,000
2	Riva y Garcia + Barcelona EMPREN	12/16/2000	180,000
3*	Riva y Garcia + Barcelona EMPREN	04/01/2001	51,085
TOTAL			**411,085**

*The third joint small round of financing was in the form of a loan with the plan that the investment would be returned in cash or equity, with valuation based on performance against target.

Riva y Garcia

Riva y Garcia was an investment banking boutique with offices in Barcelona and Madrid. Its primary focus was on corporate finance for Catalonian and Spanish companies as well as the operation of three institutional investment funds, one of which was WebCapital, the fund that invested in NonStop Yacht.

Sebastian Waldburg, director private equity from Riva y Garcia, commented on why he gave Metcalf the funding:

> He [Metcalf] had worked in the sector and had detected a serious need. He wanted to use the Internet as a tool to fill a gap. We thought it was a good approach and an interesting sector. It's a small sector worth a lot of money. You don't have to talk to a million customers.
>
> VC firms invest in the person. Paul has the experience and knowledge in the industry. He has a strong capacity in being flexible in terms of where the business will take him.

On his expectations of NonStop Yacht's financial commitment, Walburg said:

> The financial model we had built showed us a 34 per cent return. This year I want to see them break even. That would be sales of 70,000 Euros a month. And I don't mean an average of 70,000 a month. Every month, at least 70, which would cover their fixed costs. By next year, I want to see a 50 per cent to 80 per cent growth rate in sales.

Barcelona EMPREN

Barcelona Empren was an organization focused on providing start-up and seed capital to companies in telecommunications, biotech, engineering and software companies. Its shareholders included pre-eminent leaders in Spain from the following sectors: public institutions (27.5 per cent), telecom (22.5 per cent), banks (35 per cent), industrial sector (10 per cent) and public utilities (five per cent).

Emilio Gómez I. Janer, analyst with Barcelona Empren, commented on giving funding to NSY:

> He's an innovator in the yachting industry, he has an excellent niche in the marketplace and Paul and his team are experts in the sector. He knows what the problem in the industry is and he has the knowledge and experience to make it successful.

On his expectations of financial results, Gómez commented:

> Originally, we had planned a 30 per cent IRR.[1] I wanted to see $500,000 in sales in 2002 and $1 million in 2003.

Exhibit 4 Financing of NonStop Yacht

1. Internal Rate of Return.

the 30 to 40 mega-yachts sailing into Barcelona each year. In October 2002, he was placed in charge of the new Palma office. The team used the services of Robert Franks, an experienced U.K. computer programmer based in Barcelona, for any issues with the Web site and for the integration and set-up of any new technologies relevant to NSY.

Competitor Reaction

Metcalf believed that NSY's key competitors would be the major traditional procurement agents, yacht builders or parts-related Web sites, but none of these parties took visible action following the launch of NonStopYacht.com in June 2001.

Very little information was publicly available about the companies that acted as purchasing agents in the mega-yacht industry. Many of these firms were private companies or one-person operations with closely guarded lists of clientele. Worldwide, Metcalf believed there were three major traditional procurement agents:

- *National Marine*, Florida, United States—This competitor was the largest purchasing agent in the world with annual sales of approximately $10 million, employing 35 people. Its focus was almost entirely U.S.-based and was not well known in Europe. National Marine published a 1,000-page catalogue annually and sold parts to mega-yachts and superyachts throughout the world.
- *Alex Spares*, United Kingdom—The operation began in 1972 and was comprised of one principal and one assistant. Annual sales were estimated at approximately $1 million. Spare's competitive advantage was his experience of over 30 years in the industry and his extensive personal network of contacts, including many mega-yacht captains and crews.
- *Versillias Supplies,* Viareggio, Italy—The operation relied mostly on dealings with Mediterranean mega-yachts and suppliers. Their sales were approximately $1 million.

In addition to these "majors," there were approximately another 200 small local yacht agents located around the world that did not specialize in locating and sourcing local parts and services for yachts in their locale. Rather, they acted as the "person on the ground" to arrange everything from getting fresh flowers to renting a limousine for the boat's owner. According to Metcalf, none of these small enterprises had the clout or worldwide name recognition of National Marine, Alex Spares or Versillias.

By February 2003, there was some industry speculation about the possibility of strategic alliances between NSY and its major competitors, specifically National Marine, Alex Spares and Palmer Johnson.

Emerging Competitors: Vertically Integrated Yacht Builders?

Two major yacht builders had started to incorporate a completely vertical operation including building, selling, chartering, servicing, refitting and ordering parts for the mega-yachts. Frequently, these parts were required for the building projects in which the yard was involved.

Palmer Johnson Inc.

Started in 1918, this was one of the world's preeminent builders, involved in yacht repair and support services of sailboats, superyachts and mega-yachts. With over $300 million in sales, Palmer Johnson usually built 40 yachts per year. Their subsidiaries included companies that built production, semi-custom and custom luxury yachts; operated brokerage yacht sales across the United States, United Kingdom, France and Singapore; refitted, repaired and painted mega-yachts; and operated a global logistical support unit serving mega-yachts worldwide. Being one of the biggest yacht builders, refit yards and brokerages in the world, Metcalf believed Palmer Johnson had a good reputation and significant clout with suppliers. In 2002, Palmer Johnson was expected to seek growth through expanding the service side of their enterprise.

Lurssen

Located in Bremen, Germany, Lurssen had a long history in ship building dating back to 1875, with many of the world's firsts in yachting, including the invention of the first motor boat in 1886. Lurssen was another of the world's major yacht builders with sales of approximately $150 million. A highly diversified company, they were involved in the production, servicing and logistical support of mega-yachts as well as Naval vessels. They typically built 30 mega-yachts per year. Their competitive advantage was similar to Palmer Johnson's in their worldwide reputation, history and clout with suppliers.

The Failed Alliance Between Palmer Johnson and Lurssen

Palmer Johnson and Lurssen had tried to form a strategic alliance in the mid-1990s, but it had failed due to differences in business objectives. Both companies were yacht builders, which meant they were competing for the same superyacht and mega-yacht contracts. As well, their repair and refit yards were not complementary and both companies found it challenging to agree upon an efficient way to procure and sell boat parts. Last, management from both companies was unable to reconcile the U.S. German management styles.

METCALF'S OPTIONS

In 2003, Metcalf was experiencing substantial pressure to raise NSY's performance to meet investor expectations. Moreover, he was also personally motivated to see a payoff for the exhausting schedule he had been keeping since launching the venture two and half years earlier. So far, the results had been disappointing. Metcalf's original plan for growth called for sales of $10 million and profits of $1.97 million by the end of the 2003 fiscal year (see Exhibit 5). In the first full year of operation, NSY generated sales of $200,000, which was consistent with Metcalf's business plan. However, in 2002, the sales were $300,000, or 11 per cent of the original business plan. NSY was just cash flow positive.

Metcalf was now wondering whether he should revisit the NSY business model. He believed there were three alternative business models that had the potential to improve the company's performance. Metcalf's quandary was deciding how to choose from among these options.

	Year 1	Year 2	Year 3	Year 4	Year 5
Sales	214,720	2,654,484	10,698,465	13,908,004	18,080,406
Sales Growth %		1136%	303%	30%	30%
Profit	(414,188)	317,189	1,973,416	2,648,157	3,537,727
Profit Growth %		–176.6%	522.2%	34.2%	33.6%
# of Yachts	1,600	1,712	1,832	1,960	2,097
"Total Mega-yacht Market Size (millions)"	160.0	171.2	183.2	196.0	209.7
Growth %	7%	7%	7%	7%	7%
NSY Market Share	0.13%	1.55%	5.84%	7.10%	8.62%

Exhibit 5 Original Financial Projections for NonStop Yacht

Option #1: Signing an Agreement With Palmer Johnson or National Marine

Metcalf felt there were trade-offs associated with entering into a strategic alliance with Palmer Johnson or National Marine:

> The problem is, if we sign an agreement with National or Palmer Johnson to become their European arm, we become a third party. We have to stop dealing direct with the crew of the mega-yachts.
>
> Signing the agreement with National or Palmer would give us high volume and low margin. We would charge them a fixed cost of 5,000 to 6,000 Euros a month and add an additional five per cent margin. The advantage of the mixture of dealing with agents and direct to the mega-yachts is higher margin . . . an average of about 25 per cent versus the current 15 per cent. The problem is slow growth.

The decision was not based purely on sales or gross margin dollars as Metcalf was confident that, by signing the agreement, his sales would reach $3 million immediately, with potential for 50 per cent growth in the second year, 30 per cent in the third, tapering down to 10 per cent growth per year in subsequent years.

To accommodate the increased volume, Metcalf would have to contract two extra administrative people at $20,000 a year plus 25 per cent in employee tax. In the second year, he would likely add another person. Metcalf could gain savings of approximately $10,000 per year on his rent by moving into an office without public access. New computers and additional office furniture, which were treated as expenses, would require an additional outlay of $2,000 per terminal, including telephone and Internet hook-up. With this option, NSY would likely experience a five per cent increase in expenses each year. The main investment would be the increased accounts receivables, estimated to represent approximately 20 days. NSY typically paid its bills in 15 days and did not carry any inventory.

Option #2: Growth Through Repair and Refit Yards and Dealing Direct to Yachts—a "Hybrid" Option

Metcalf felt there was a great opportunity to service the yacht refit yards, local yacht agents and yacht management services, while trying to deal directly with the mega-yachts at the same time. But there were two potential problems with this approach. First, if NSY contracted with a refit yard, the company might have to cease dealing directly with the yachts in order to avoid conflict of interest. Second, NSY could lose its name recognition with the end consumer if it relied upon yacht refit yards, agents or management services to generate sales. Metcalf expected a margin of five per cent to 15 per cent when dealing with a third party and a margin of 25 per cent when dealing directly with the yachts, making a blended margin of approximately 20 per cent.

With this growth option, Metcalf believed he could generate sales of more than $2 million in three years, with a growth rate of 15 per cent for each subsequent year. NSY could accommodate this type of growth with its current team in Barcelona, although Metcalf expected that each additional bricks-and-mortar office would require another two employees at $20,000 per person. It was probable that, in addition to the Palma office, two more offices would be required in Antibes, France, and Monaco.

The start-up for each new office was estimated to be $10,000, plus $2,000 per employee for the computer and office equipment. The yearly amount of telephone, consumables and miscellaneous expense was estimated at $20,000 per office. Metcalf expected that NSY would require an average increase in travel expense of $5,000 per office. The rent and related expenses for a small office per year in major ports in the Mediterranean was estimated to be about $2,000 per month. Since NSY expensed its computers and office equipment, the only working capital requirement would be an increase in accounts receivable.

Option #3: Organic Growth Through Opening Multiple Locations

Metcalf felt that the recently opened Palma office would generate more walk-in traffic and would continue to present a company "face" to the crew of the mega-yachts. Metcalf further believed that yacht crews would be more apt to deal with NSY if they constantly saw a shop in each major destination. Thus, an alternative business model was to expand by continuing to open locations in key ports around the world. Sebastian Waldburg, from Riva y Garcia, commented on the viability of expanding with a bricks-and-mortar approach:

> Yes, NSY is a relatively low-budget operation. If they replicate the small offices, say in Antibes or Monaco, and before they open up their office, if they can arrange to be the back-office for yacht refit yards and yacht management services, they could cover their fixed costs of running it. They could likely charge the yacht management services or the refit yard a fixed monthly fee with variable charges for purchases.
>
> It's important to have the local touch and the local being-in-touch. With a little office, they can give constant and consistent quality and service.

Emilio Gómez I. Janer from Barcelona Empren commented:

> I'm the biggest proponent of this approach. Yes, I believe it's necessary to have brick-and-mortar presence in each port. You need to have close proximity to where the sales happen.

Without actively pursuing the yacht refit yards and yacht management services, Metcalf felt that he could achieve sales of $500,000 with the Barcelona and Palma office. With two additional offices (each costing $15,000 to set up and $75,000 to run per annum), he felt that he could reach $1.5 million in annual sales five years from now.

NOTES

1. Defined as yachts over 45 metres in length.
2. All dollar amounts in U.S. dollars unless otherwise stated.
3. Christopher Dinsmore, "Yard Gets Off To Quick Start," *The Virginian-Pilot*, February 6, 2002.
4. Superyachts were defined as being between 25 to 45 metres in length and costing in the million-dollar range.
5. Michael Field, "Booming Super-Yacht Industry Getting Even More Extravagant," *Agence France-Presse*, June 28, 2002.
6. A ramp.
7. "United Kingdom Report Says Superyacht Boom is 'Only The Beginning'," *Advanced Materials and Composite News*, September 7, 2002. (Note: The report uses the words "superyacht" and "mega-yacht" interchangeably.)
8. Joseph Mann, "Sturgeon Bay, Wis.-Based Marine Firm Focuses on Mega-yachts," *Fort Lauderdale Sun-Sentinel*, June 4, 2002.
9. Joseph Mann, "Fort Lauderdale, Fla.-Area Summit Seeks to Buoy Recreational Marine Industry," *Fort Lauderdale Sun-Sentinel*, October 18, 2002.
10. Ibid.
11. Linda Rawls, "Buoyant Nautical Market Welcomes Lauderdale Show," *The Palm Beach Post*, November 1, 2002.
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15. Joseph Mann, "Fort Lauderdale, Fla.-Shipyard Gets Upgrades," *Fort Lauderdale Sun-Sentinel,* November 2, 2002.
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17. Dirk Wittenborn, "Chartered Waters," *Independent On Sunday,* June 2, 2002.
18. Joseph Mann, "Fort Lauderdale, Fla.-based Yacht Services Company Sold," *Fort Lauderdale Sun-Sentinel*, July 4, 2002.
19. "United Kingdom Report Says Superyacht Boom is 'Only The Beginning'," *Advanced Materials and Composite News*, September 7, 2002. (Note: The report uses the words "superyacht" and "mega-yacht" interchangeably.)
20. Value Added Tax (European).

STRATEGIC DIRECTION AT QUACK.COM (A)

Prepared by Benji Shomair under the supervision of Professors Kenneth G. Hardy and Amy Hillman

 Version: (A) 2002-02-27

> Quack.com is out to break the mold of Internet access and make it simple for consumers to find information they need, whenever and wherever they are, in the most intuitive manner possible—by speaking.
>
> Alex Quilici, president and co-founder of Quack.com

It was June 2000, and Quack.com (Quack) was in dire straits. An early entrant in the public voice portal market, Quack was quickly running out of money. Quack's management team had just returned from a road show to obtain a second round of venture financing but had been unsuccessful. To aggravate this issue, over the past month Quack's two major competitors each had received $50 million[1] in funding. At the current burn rate (expenses per month), Quack could survive for only three more months on its existing bridge financing. Alex Quilici, president and co-founder of Quack.com, sat in Quack's Silicon Valley offices scribbling doodles on a piece of paper as he weighed his options.

THE COMPANY

Quack was founded in 1998 on the premise of "providing customers quick and ubiquitous access to the benefits of the Web" and the vehicle for this access was the telephone. With constant access to telephones anywhere in North America, Quilici thought that the phone presented the perfect entry point for the Web.

> Telephone penetration in this country is 99.9 per cent. The computer rate isn't anywhere near that.
>
> Joe Racanelli of Bid.com, an early investor in Quack.com

What Quack envisioned was an application of voice recognition technology that would allow customers to use the Web simply by speaking. A user would call a phone number and be connected to Quack's computer. Then the user would make a request such as, "What is the weather in San Francisco?" Quack's computers would then use voice recognition technology to understand the question, input the question into a search engine (using the entire Web or an internal database) and find the answer. Voice software applications would then read the answer back to the user. The goal for Quack was to support any type of activity supported by the Internet such as information retrieval, e-commerce, communication and personal information management, and use the telephone as the interface (Exhibit 1).

The original business plan intended for revenues to be derived from multiple sources. Advertising and sponsorship of the public voice portal, commissions from sales purchased through the voice portals, development fees for creating third-party voice portals and a licensing fee for the Quack software suite were all planned as revenue streams. Advertising, sponsorship and commissions were the major projected revenue streams for Quack.

Quack was founded by Alex Quilici, former professor of electrical engineering at the University of Hawaii, and by Steve Woods and Jeromy Carriere, former members of the Carnegie Mellon University's Software Engineering Institute. Quack's management team had extensive background in world-class artificial intelligence research, software research, prototyping and product development.

After beginning product development, Quack's software architects had realized that

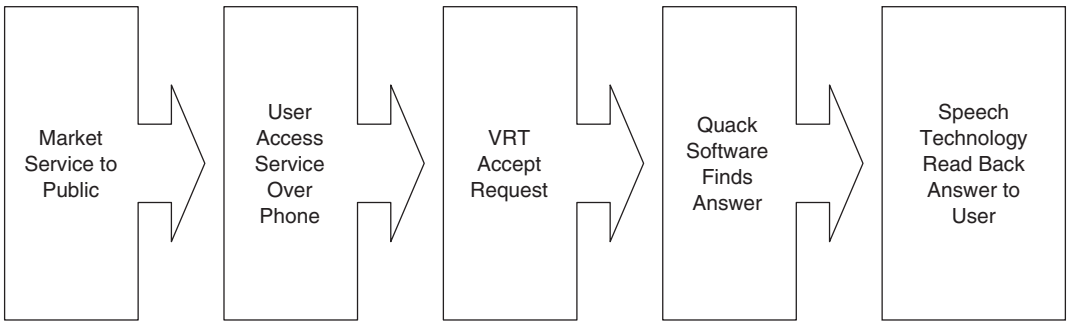

Exhibit 1 Quack Value Chain

VRT= Voice Recognition Technology

coding software for each individual site and service would be too time-consuming. Instead, the Quack development team designed and built a comprehensive tools-based architecture that was built on SpeechWorks voice recognition technology. It would automatically generate voice applications from existing Web sites.

The Quack Voice Architecture comprised three main components (tools). *QuackCollect* generated Web agents that automatically collected information from existing Web sites and brought it into the Quack system for delivery to a user through a voice application. *QuackFusion* aligned different data formats such as html, xml and wav into a single voice application. *QuackContext* provided an interface with SpeechWorks technology to manage call sessions and other aspects such as caller profiles, personalization and targeted advertising.

The architecture would support services in three major applications: public voice portals for consumers, private voice portals for telecom companies and voice-enabled enterprise applications for businesses.

VOICE PORTALS

Why do we have a dial tone?

The dial tone originally served as an indicator of being connected to the telephone network. In reality, the dial tone was an internal technology. The earliest phones connected customers to a live operator who was eventually replaced by automatic switching and the dial tone. This switch to automation was driven by cost issues. In 2000, many felt the next evolution of the dial tone would be back to its "live operator" roots through voice portals.

The vision was to have users greeted by a computer instead of a dial tone. Voice activated dialing could be used rather than tone dialing. Selected cell phones already offered this ability, but this feature was built into the cell phone hardware rather than into the telecommunication hardware. With a voice portal, voice activated dialing could be delivered to any phone in the world.

The possibilities for this technology were impressive. For example, voice portals could become the "gatekeepers" to customers. If a person wanted to order a taxi, the user could simply say "taxi" into the phone and be connected with the "preferred" taxi partner of the voice portal.

The estimates of the future size of the market suggested a large opportunity. The Kelsey Group predicted that by 2005, speech portals would gross more than $5 billion. Infrastructure expenditures in this area were expected to reach $6 billion by 2005. These sales would be driven by the estimated 128 million people worldwide

	2000	2001	2002	2003	2004	2005
Total Speech Users	16	22	32	48	96	128
Speech Portal Users	2	5	11	18	28	45
Speech Portal Shoppers	0	1	3	8	12	18

Source: The Kelsey Group 2000

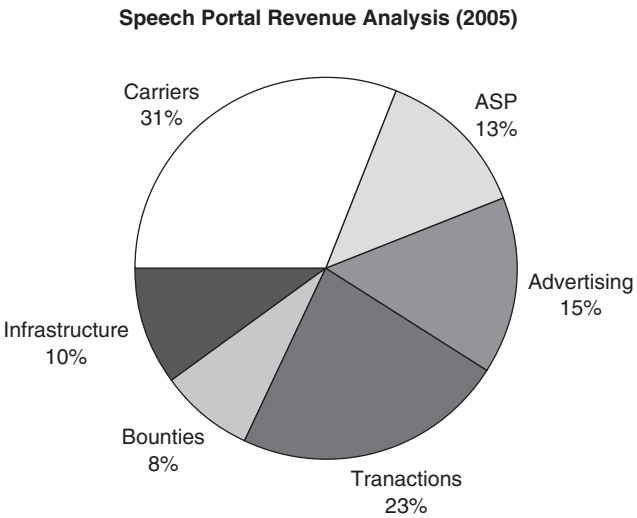

Exhibit 2 Market Predictions, Speech Portals: North America Usage Forecast (in millions)

Source: The Kelsey Group 2000

(45 million Americans) who would be registered to get information through voice portals (see Exhibit 2).

There were three main types of voice portals: public voice portals for consumers, private voice portals for telecom companies and voice enabled enterprise applications for businesses. *Public voice portals* mimicked their online siblings by offering a variety of services to the general public. Audio e-mail, weather reports, sports scores, traffic reports and restaurant guides were all offered through voice access. Ads were placed intermittently through the service. Some voice portals charged subscription fees for access, while others were supported by sales of advertising.

Private voice portals were targeted for sale to telecommunications companies. Both cell phone or landline carriers were very interested in voice portals. Because they both currently "owned" the dial tone, these companies were assumed to be very interested in extracting more revenue from their asset (the dial tone). When picking up a phone, rather than having to dial a phone number, users could be greeted by a voice portal that would house voice mail, address books and

would offer all the services of a public voice portal. For wireless carriers, a voice portal was especially attractive because wireless carriers charged by the amount of time used and a voice portal could increase the number of minutes used.

Enterprise applications of voice portals could provide customer service, reduce costs and generate new revenue streams for many businesses. The Goldman Sachs 2000 Mobile Internet report indicated that there would be significant opportunity as corporations looked to support increasingly mobile workforces and leverage the mobile Internet as a new sales channel. Many large volume and repetitive transactions (e.g., stock trading) had already been automated through touchtone dialing on the Internet, yielding huge cost savings.

Voice interfaces could be the next step to allow for the automation of even more services. For example, Ford and GM had identified that consumers make a large portion of their cell phone calls from their vehicles and consumers want to be connected to services such as driving directions. By June 2000, GM had launched OnStar, a button on the dashboard of GM cars that connected drivers to audio driving services. As of 2000, live agents answered OnStar calls, but automated voice solutions could reduce car makers' call centre costs and allow for location-specific services. In the travel industry, 24-hour access to flight information, ticket purchase or traffic updates could all meet customer needs. Voice automated services would make these services available without the high cost of call centres. Furthermore, pure Internet companies could use voice interfaces to extend their brand and services into the offline world. For example, Yahoo by Phone would allow non-Web users access to Yahoo's services.

QUACK'S POSITION

Quack was founded to focus on the public voice portal markets. Quilici and the management group envisioned bringing the utility and convenience of voice portals to customers everywhere. On March 31, 2000, Quack's services were first offered to the public. Launched in the Minneapolis/St. Paul twin city area, Quack was the first public voice portal in the world. Quack operated a toll-free number (1 800 73 QUACK) for its customers and used the service as a testing ground for its technology. With the success of the pilot project, on April 10, 2000, Quack quickly followed by offering the first nationwide (U.S.) voice portal, thus beating its competitors by mere hours.

As of April 10, 2000, Quack's voice portal offered nationwide weather, news, traffic, sports, stock and movie information. Quack also allowed users to personalize the voice portal. A user could visit the Quack Web site and create a free "account" with their own preferences. The user could then access the Quack voice portal and use their account name to automatically receive predetermined stocks, weather or other information.

Quack's major competitor, Tellme Networks, launched its nationwide voice portal on April 10, 2000, the same day. Tellme's voice portal offered nationwide personalized restaurant, movie, airline, stock, news, sports, weather and traffic information. Tellme offered one added service named "phone booth." After calling the toll-free Tellme access number, users were allowed free two-minute calls to anywhere in the United States. In an early trial of the Tellme service, users had to first sign up for the service on the Internet. Quack's portal did not have this sign-up restriction, making its service accessible to the entire offline population of the United States.

Financial Position

Like many of its peers, by June 2000, Quack had yet to turn a profit. Moreover, it had produced no revenue (see Exhibit 3). The company was burning funds at a rate of $600,000 per month. Voice portals had four types of costs: customer acquisition, infrastructure, telephony and development costs, of which customer acquisition costs were by far the largest. Customer acquisition costs were predominantly sales and

BALANCE SHEET (1999)	
Assets	
Current assets	
Cash and cash equivalents	$12,538
Short term investments in marketable securities	—
Accounts receivable	815,000
Prepaid expenses	—
Total current assets	827,538
Property and equipment	
Computer and equipment	2,500,000
Furniture and fixtures	50,000
Leasehold improvements	60,000
	2,610,000
less: accumulated depreciation	390,000
Net property and equipment	2,220,000
Total	3,047,538
Liabilities and Shareholder's Equity	
Current liabilities	
Accounts payable	20,000
Accrued expenses and other current liabilities	137,000
Deferred revenue	—
Total current liabilities	157,000
Shareholders Equity	
Convertible Preferred stock, $0.001 par value; none and 7,750,072 shares authorized; none and 7,738,072 issued and outstanding	8,000
Additional paid in capital	9,076,000
Accumulated deficit	(6,193,462)
Total shareholders equity and liabilities	$3,047,538
Net revenues	$—
Cost of revenues	—
Gross profit	—
Operating expenses:	
Sales and marketing (Customer acquisition)	3,156,000
Telephony expenses	1,656,000
Product development	1,272,000
General and administration	708,000
Amortization of computing infrastructure	390,000
Total operating expenses	7,182,000
Income (loss) from operations	(7,182,000)
Investment income	—
Income before tax	(7,182,000)
Provision for taxes	—
Net income (loss)	(7,182,000)
Net loss per share	(0.32)
Shares used in computing net loss per share	$22,541,000

Exhibit 3 Income Statement (1999)

marketing expenses. This involved business development and publicizing the public voice portal. Quack employed two sales people selling advertising and two business development people selling partnerships. The company defined an acquired customer as a customer who registered with Quack for personalized voice portal services. This service was free to customers but allowed Quack to charge a premium to sponsors for more targeted advertising.

As of June 2000, 20,000 visitors had come to the voice portal during the first two months and 200 of them had registered for personalized voice portal services.

In June 2000, Quack was in need of further funding to continue operations. The founders of the firm went on a road show to promote their company to all the major venture capitalists in Silicon Valley. Leading venture capitalists such as Sequoia Capital, Media Technology Ventures, Softbank, Atlas Ventures and Draper Fisher Jurvetson were all unreceptive to the deal. This was worrisome for Quack for two reasons: first, the company was running out of money with only three month's of cash reserves left; and second, two of Quack's major competitors had just closed funding deals for over $50 million dollars each.

With a user population parallel to that of its biggest competitor (Tellme Networks) Quack was currently tied for the market leadership in voice portals. However, after the first few months of running the Quack voice portal, the business-to-consumer (B2C) model for voice portals seemed to be showing signs of weakness. Quack's management believed that the failure of its road show could be related to its B2C focus.

The stock market already had reflected disappointment in Internet business models. On June 1, 2000, Nasdaq index shares closed at $87.375 per share, down from a high of $221.625 per share on March 17, 2000. Leading Internet bulls, such as Goldman Sach's Chief Investment Strategist Abby Joseph Cohen, were tempering their earlier optimism about Internet stocks. Government agencies were even beginning to scrutinize the new economy companies—most notably, an antitrust ruling against Microsoft's monopolistic activities. The B2C sector was being hit hardest; online retail pioneers such as Cdnow.com and Peapod admitted they would have to fold if they couldn't raise more funding.

It was also becoming apparent that, based on existing revenue models, the cost structure for voice portals was too steep to be profitable. Falling advertising rates lowered Quack's estimated revenue per customers. This increased the numbers of customers needed for Quack to break even. The new projected number of customers required for Quack to break even was considered unrealistic by management (it required a highly optimistic 90 per cent+ penetration of target market in the United States). Moreover, it was predicted that advertising rates would continue to fall. Quack had to lower its costs (beginning with the largest cost, customer acquisition) or find new revenue streams.

Quack's executives examined new revenue models for voice portals such as subscription fees, but Quack's competition was already offering voice portal services free of charge. Another suggestion was to find a company with an existing subscription-based revenue stream that might want to add to its product offering by including Quack's voice portal for an additional fee. In this scenario, Quack could sell or lease its portal technology to businesses, so that businesses could differentiate their product or service in the marketplace.

Quack began to look more closely at a business-to-business strategy. Discussions began with various businesses and enterprises interested in voice applications. On May 22, 2000, the first major business deal was struck between Quack and Lycos. Lycos, a Web media company and Internet portal, licensed Quack's technology to offer its Web content over the phone. It was the first of the major Internet portals to move into the voice portal market.

But Quack's management was still unsure about which strategic direction was most appropriate. Both B2B and B2C strategies were under way. The company was founded with the goal of delivering a voice portal to the masses.

The technology and development teams were motivated and driven to produce a *consumer* portal. Although it might be the path to profitability, B2B was not nearly as appealing as a consumer business to Quack's staff. Quack's technology development team, in particular, was motivated to develop a public portal. A strategy shift to emphasize the B2B market might be interpreted by the technology development team as "selling out." The technology developers were the key asset of the company and would be almost impossible to replace in the short term. The fiercely competitive environment had made development engineers for voice portals highly in demand.

Market Conditions

The marketplace for voice portals in mid-2000 appeared turbulent and unstructured. Because the market was still in its infancy, the industry's boundaries were still undefined. Many players from very different industries were clashing for dominance in the voice portal space. Major players included the pure voice portals, Internet portal/new economy media companies, telecom carriers and the speech recognition companies.

Voice Portals

Tellme Networks

Tellme Networks (Tellme) offered services similar to Quack's at 1800 555 TELL. First to market alongside Quack, as of June 2000, Tellme's service required online registration. By July 2000, this was expected to change after Tellme completed its systems testing. In June 2000, Tellme was tied with Quack for dominance of the public voice portal market.

Tellme had impressive financial backing; Benchmark Capital, Kleiner Perkins Caufield & Byers and The Barksdale Group were all early investors in the firm. These were leading and well-known venture capital firms in the United States. The company had been started by expatriates of Microsoft and Netscape. Parts of both the Internet Explorer and Netscape Navigator design teams came together in the creation of Tellme. The high-profile management team and financiers of the company gave Tellme a prominent position in the media. Moreover, Tellme undertook an aggressive branding campaign, making it the best-known brand in voice portals as of 2000.

Tellme was also the best funded of the voice portals. With $188 million in venture funding, Tellme's "war chest" scared many competitors in the industry. In May 2000, for example, Tellme raised another $50 million (at an estimated valuation of $600 million) from AT&T. The investment was in the form of telephone access and minutes, essentially erasing Tellme's telephony costs for the next 10 years. Although still focused on its public voice portal, this funding deal indicated Tellme's receptiveness to working with telecom companies. It also gave credibility to the voice portal business.

BeVocal Inc.

BeVocal Inc. offered products and services for the voice application market. It ran a free consumer voice portal (1800 4B VOCAL), offered private label work for telecom companies and enabled existing Web sites with voice features. Although trailing Quack in the consumer voice portal area, BeVocal had more experience in selling voice technology to businesses. In May 2000, BeVocal also raised $45 million from Mayfield fund, U.S. Venture Partners, Technology Crossover Ventures and Trans Cosmos USA. For descriptions of other voice portals see Exhibit 4.

Internet Portal/ New Economy Media Companies

Lycos

Founded in 1995, Lycos was a leading Web media company and owner of the Lycos Network, one of the most-visited hubs on the Internet, reaching nearly one out of every two U.S. Web users. The Lycos Network was composed of Lycos.com, Tripod, WhoWhere, Angelfire, MailCity, HotBot, HotWired, Wired

Company	Service	Fees	Customers
Audiopoint Fairfax, Va. www.myaudiopoint.com	Launched a consumer voice portal in April. Also offers voice-access technology and hosting services to telecom, Internet and media companies.	The consumer service is free. Audiopoint charges setup and monthly fees; shares transaction revenue.	Won't disclose the number of customers for consumer voice portal or for private-label and hosting.
BeVocal Santa Clara, Calif. www.bevocal.com	Launched a consumer voice portal in June. Also offers voice-access hosting to Web sites and other companies.	Consumer service is free. Charges setup fees for hosting, monthly fees for server capacity and transaction fees.	In pilot tests with unnamed wireless carriers, retailers, financial services and travel companies.
HeyAnita Los Angeles www.heyanita.com	Expects to launch a consumer voice portal this fall. Offers an ASP option, hosting and licensing voice technology to telecoms and others.	Voice hosting includes one-time setup fee and 7 to 12 cents per minute; licensing includes fees per line or port.	Has partnerships with Korea Telecom and SK Telecom to create consumer voice portals in Korea.
InternetSpeech San Jose, Calif. www.internetspeech .com	Its NetEcho consumer voice portal lets callers hear info, listen to any Web site or check Web-based e-mail. Recently launched technology for dot-coms to voice-enable their Web sites.	Plans to charge consumers $29.95 a month for approximately six hours of use; software licenses include an undisclosed one-time fee and royalties.	It's testing its consumer voice portal with 200 customers; also negotiating with several unnamed Fortune 500 companies.
Talk2.com Salt Lake City www.talk2.com	Built technology slated to launch in the fall for companies to provide phone-based voice access to info on a corporate intranet, including e-mail and other data behind a firewall. Is developing private-label voice portals for wireless carriers.	Prices not yet determined.	Talk2 is testing its enterprise services with several unnamed corporate customers and three wireless carriers.
Tellme Networks Mountain View, Calif. www.tellme.com	Launched a consumer voice portal in late July with news, sports, restaurant lists and more, from content providers such as CNN, ESPN and InfoUSA. Also offers open-source based voice-access development services.	The consumer service is free. Tellme charges business customers per-minute or per-line usage fees, and will eventually collect transaction fees.	Handled more than 1.5 million calls to its consumer voice portal since starting tests in April. First business customer is Zagat.
TelSurf Networks Westlake Village, Calif. www.888telsurf.com	Expected to launch a consumer voice portal. Will also private-label the portal to wireless carriers, ISPs, portals and others.	The company's consumer voice portal will be free with ads, or 6 cents a minute without; prices for TelSurf's private-label voice portal haven't been set.	TelSurf is testing its private-label voice portal with undisclosed customers in the U.S. and Latin America.

Exhibit 4 Competition

Source: www.thestandard.com

News, Webmonkey, Suck.com, Sonique, Quote, Gamesville and Lycos Zone. Lycos, Inc. was a global Internet leader with a major presence throughout the United States, Europe, Asia and Latin America.

On May 22, 2000, through an agreement with Quack, Lycos became the first Internet portal to offer voice services. The agreement gave much-needed exposure to Quack and its services, but was rumored to be financially unattractive. It was believed that Quack had accepted a "standard Internet deal." Quack received a percentage of advertising revenue and a fee based on the usage of the voice portal. In this scenario, Quack assumed all the cost risk.

Yahoo

Yahoo was a global Internet media company that offered a branded network of comprehensive information, communication and shopping services to millions of users daily. The first online navigational guide to the Web, www.yahoo.com was a leading guide in terms of traffic, advertising, household and business user reach, and was one of the most recognized brands associated with the Internet.

Yahoo did not offer any voice or phone access services. However, Yahoo's strong brand, large user base and skill at packaging and running a consumer portal might be leveraged for profit in the voice portal market. Moreover, with a market capitalization of $70.95 billion in June 2000, Yahoo had the financial resources to enter new markets.

AOL

AOL America Online was a world leader in interactive services, Web brands, Internet technologies and electronic commerce services. The company operated two worldwide Internet services (America Online and Compuserve) several leading Internet brands including ICQ, AOL Instant Messenger and Digital City, the Netscape Netcenter and AOL.com portals, and Netscape Communicator and Navigator browsers. After merging with the Time Warner media company in June 2000, extensive content and cable properties were added to its portfolio.

In the voice portal space, AOL ran AOL MoviePhone, the nation's largest movie listing guide and ticketing service. MoviePhone was operated through touch pad entries but was rumoured to be investigating voice technologies to reduce costs and increase functionality. Moreover, as the largest subscription fee-based Internet service providers, AOL presented an attractive and valuable user base for the voice portal market. AOL was also financially powerful. With a share price of $53.75 per share and market capitalization of $238.7 billion, AOL also had the financial resources to enter new markets.

Speech Recognition Technology Companies

Speechworks International, Inc.

Speechworks International, Inc. was a leading provider of over-the-telephone automated speech recognition solutions (products and services). Speechworks provided the voice recognition "back-end" software for the Quack technology.

Speechworks' focused on businesses that were aiming to harness the value of voice recognition technology. Speechworks built custom solutions for businesses that were generally focused on one application. This was different from Quack's voice solution which was a multi-application platform that dealt with the higher complexity of tasks at the same time. Quack did not compete with Speechworks or its competitors.

Speechworks had built the voice applications for E*trade, Amtrak, Apple Computer, MapQuest .com, United Airlines, MCI WorldCom and Nortel Networks.

Nuance Communications Inc.

Nuance Communications Inc. developed, marketed and supported a voice interface software platform that made the information and services of enterprises, telecommunications networks and the Internet accessible from any telephone.

The software platform consisted of software servers that ran on industry-standard hardware and performed speech recognition, natural language understanding and voice authentication. Nuance was Speechworks' major competitor and provided the back-end technology to both BeVocal and Tellme.

Nuance also focused on selling to businesses. Its technology enabled the voice applications of Charles Schwab & Co., Fidelity Investments, American Airlines, Sears and telecommunications carriers such as British Telecommunications.

Both speech recognition companies had strong core competencies in voice recognition technology. In the B2B voice portal industry, they were dominant players but neither was expected to enter the consumer voice portal industry. Although Nuance and Speechworks offered a different product and service from Quack, these companies' long list of blue chip clients might make entrance to the B2B voice portal market more difficult.

Telecommunication Carriers

AT&T Corporation

AT&T Corporation provided voice, data and video communications services to large and small businesses, consumers and government entities. AT&T and its subsidiaries provided domestic and international long distance, regional, local and wireless communications services, cable television and Internet communications services. AT&T also provided billing, directory and calling card services to support its communications business. AT&T's primary lines of business were business services, consumer services, broadband services and wireless services.

AT&T had already showed an interest in voice portals when it invested $50 million in Tellme Networks. The investment was made in the form of an undisclosed amount of telecom access and minutes. It was also rumored that AT&T would give Tellme control of directory assistance on its networks. This would give unparalleled exposure to Tellme's voice portal. Every caller looking for directory assistance would reach the Tellme portal.

Verizon Communications

Verizon Communications, the newly created name for the June 30, 2000, merger between Bell Atlantic and GTE, was one of the world's leading providers of communications services. With 95 million access lines and 25 million wireless customers, Verizon companies were the largest providers of wireline and wireless communications in the United States. Verizon's global presence extended to 40 countries in the Americas, Europe, Asia and the Pacific.

Among the largest telecom carriers, Verizon did not offer voice portal services. However, with 120 million customers in the United States, Verizon was an attractive potential customer who could greatly leverage voice portal technology across its user base.

Over all, analysts were unsure who would dominate this emerging marketplace. Although Quack had been first to market, Tellme had such strong media and financial backing that no clear market leader existed. Moreover, the existing Internet portals had such strong brands and large user bases that their entrance into the market could destroy the fledgling voice portals. Aggravating this confusion were the telecom carriers, who could lock out both the Internet and pure voice portals from the market if they chose to switch the dial tone of all phones to their own private voice portals. And finally, many people believed that there did not necessarily need to be one winner in the voice portal market. Mergers, acquisitions or alliances could take place changing the competitive landscape and further complicate a prediction of market leadership.

JUNE 2000

In June 2000, Quack executives faced many major decisions that could reshape the company

and dictate the future of the firm. Without another round of financing, Quack's current burn rate would allow the company to survive just three more months.

The company was still grappling with the issue of a B2C or B2B focus. A new revenue model would need to be found for the consumer portal . . . and selling voice portals to businesses would be a difficult shift. Quack had limited experience selling to businesses. The company had been founded to deliver voice portals to consumers, but Quack executives now wondered whether or not public voice portals could ever be profitable.

Tied to this strategic issue was the issue of financing. As soon as a strategic direction was chosen, additional funding would be needed to keep Quack alive. Concerned after Quack's unsuccessful search for second round financing, the original Canadian investors in Quack had found an alternative offer in Canada. Led by Caisse de Depot, the largest labor-sponsored fund in Canada, a group of Canadian investors had offered a second round of financing to Quack at a low valuation with a high dilution of shares.

News of Quack's financial worries spread across Silicon Valley. Tellme approached Quack executives to gauge the company's receptiveness to being acquired. Although not a formal offer, Tellme was theorizing that there would be a similar acquisition situation as the WebMD merger with Healtheon. They believed that there was not room for two players in the public voice portal market, but perhaps there was room for one well-funded company. Quack's management now had another financing option. However, Tellme was still focused on the consumer portal market and Quack's management could not foresee this business being profitable. Thus, Quack executives thought that merging with Tellme would not create a new revenue model to make the concept more sustainable.

The proposed merger would be paid for mostly with Tellme stock issued to Quack's current management and investors. Tellme's shares were not publicly traded, and a lock-up period would exist during which Quack's management and investors would not be able to sell their stock. Quack's investors would have to wait to sell their shares in Tellme. For this reason, the sustained profitability of a merged Tellme/Quack was a concern for Quack management.

Alex Quilici slumped into his chair as he considered his decisions. Perhaps he had other options. Alliances or mergers with other companies that could lower Quack's costs or create new revenue streams might be more attractive than the Tellme offer. There was also the option of continuing operations without funding. Whether operating in the B2B space, B2C space or both, if one venture deal was being offered, new offers would be available in the future. This assumed that Quack continued its leadership and innovation in its market. These funding offers would also presumably be at a higher valuation and lower dilution than the Caisse de Depot deal.

In the interim, there were alternative financing options to extend the life of the company. One example was a phenomenon developed in California called "Silicon Valley Financing." Although computer companies scrutinized small personal computer purchases, multimillion-dollar purchases would be given to companies on credit. This credit allowed companies three months to pay. After running out of funding, Quack could continue to purchase all of its needed hardware without paying for three months. Many "cash strapped" technology companies used this tactic. Although a short-term solution, an extra three months of operations could be financed this way. However, would an extra three months really solve Quack's problems?

NOTE

1. All funds are in U.S. currency.

PHARMA TECHNOLOGIES INC.

Prepared by John Herbert under the supervision of Professors Charlene Nicholls-Nixon and Rod White

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In February 1999, the corporate offices of Pharma Technologies Inc. (PTI) were housed in the biosciences complex at a major medical research University in Canada. In spite of the cramped conditions, the excitement at the fledgling company was palpable. PTI had recently obtained a patent for a revolutionary approach to the treatment of sexual dysfunction. This technology would form the basis for a new oral therapy to treat male erectile dysfunction (MED). Drs. Mitchell Abram, Justin Hall and Jeffrey Blair, the University scientists responsible for the discovery, believed their approach would equal or surpass Pfizer's widely acclaimed Viagra™ as the preferred treatment for this condition.

Blair Glickman, who had joined the company in June 1998 as president, shared their conviction and saw great potential to leverage their proprietary technology into other new businesses:

> We are consumed right now by short-term milestones, but when I think of what PTI will be in the future, I don't want us to be defined narrowly as a company focused on the sexual dysfunction market. I hope that PTI will be in a position to apply its knowledge of peripheral vascular disorders to other areas, like congestive heart failure, renal failure, and even male pattern baldness. I envision PTI as establishing a series of comprehensive partnering agreements around our platform technologies.

Although everyone in the company was enthused about the future potential, they were also fully aware of the pressures for day-to-day results. The $2 million representing the first tranche of PTI's financing would run out in about nine months. In order to access the second tranche of $3 million, Glickman and his team had to ensure that the company achieved the rigorous technical and business milestones set out by its investors.

The path of progress was both slow and winding. While PTI had obtained a "method of use" patent giving it exclusive rights to use Factor X for the treatment of sexual dysfunction, it did not actually own any of these compounds. Therefore, a critical technical milestone for PTI was to complete the technologically sophisticated and time-consuming studies associated with screening various compounds for use in PTI's oral therapy. On the business side, this also meant negotiating an agreement with the owner of the compound for subsequent co-development of the product. The PTI management team felt that there would be considerable interest in their technology. The combination of PTI's method of use patent with the right compound could result in a drug capable of generating sales in the billions of dollars.

Glickman faced a short window of opportunity: competing technologies were already in existence and new alternatives were under development, most by major pharmaceutical firms. PTI needed to make substantive progress while the sexual dysfunction market was still attractive and before all of their existing capital was depleted. In addition, the company had a variety of other exciting technologies that were in various stages of the patent application process. The question facing Glickman was how to proceed and which issues should receive highest priority.

THE CONDITION OF SEXUAL DYSFUNCTION

Sexual dysfunction is the inability or unwillingness to engage in sexual intercourse. In men, this condition is easily diagnosed as male

erectile dysfunction (MED), the clinical inability to obtain and hold an erection sufficient for intercourse.

In addition to being strongly related to age, sexual dysfunction in men was also associated with the patient's physiological/organic, neurogenic and psychogenic condition. Physiological or organic conditions such as hypertension, diabetes and excess cigarette/alcohol consumption were the most common causes of MED. Neurogenic conditions such as multiple sclerosis and spinal cord injuries were also related to MED. Finally, the cause could be psychogenic in nature due to stress, anxiety or conflict.

In October 1998, it was estimated by Cowen & Company, a privately held research firm, that there were approximately 10 million to 20 million MED suffers in the United States. Female sexual disorders (FSD) were more complex and more difficult to diagnose. However, the FSD market was believed to be equal in size.

In February 1999, the Journal of the American Medical Association published a report on "Sexual Dysfunction in the United States." The report cited studies' indicating that sexual dysfunction was highly prevalent, ranging from 10 per cent to 52 per cent of men and 25 per cent to 63 per cent of women. The report also cited prior studies, which had showed that 34.8 per cent of men aged 40 to 70 years suffered from moderate to complete erectile dysfunction. The National Institutes of Health Consensus Panel described erectile dysfunction as an important public health problem.

The Market for Treatment of Sexual Dysfunction

The market for treatment of sexual dysfunction was believed to hold considerable potential. Cowen and Company's 1998 report on the outlook for therapeutic categories suggested that the worldwide MED market was valued in excess of $1 billion in 1998, with approximately five per cent to eight per cent of the roughly 55 million sufferers undergoing treatment. This market was forecast to grow to almost $8 billion by 2002. It was believed that this growth in the MED market would occur as the number of sufferers grew to 80 million and as the percentage seeking treatment increased to over 20 per cent due to more efficacious and convenient treatments as well as social acceptance.

The MED market was traditionally dominated by injectable and topical therapies. This changed in 1998 with the entry of Pfizer's Viagra™, the first breakthrough medication in the oral market. At $10 per pill, and prescriptions ranging from 10 to 50 pills, Viagra™ captured 36,000 prescriptions in the first week it was on the market.

According to Cowen and Company, oral therapies would grow to represent an estimated 90 per cent of the MED market. This method of therapy, useful in mild to moderate cases of MED, was usually administered first regardless of the severity of the MED due to its ease of use. It was expected that oral therapies would continue to dominate in the future with an estimated market share of 93 per cent by 2002.

The report also observed that more invasive treatments for MED, such as injectable and topical therapies, had lost market share to oral therapy and represented only nine per cent of the MED market in 1998. These therapies were projected to continue being used only in the more severe cases of sexual dysfunction and were expected to retain approximately six per cent of the MED market in 2002.

Finally, the market for implants and surgery was estimated at only one per cent and was not expected to change, since this form of therapy was reserved for patients with no other treatment options.

Competition in the Market for Oral Therapies

Cowen & Company's report, "Therapeutic Categories Outlook," predicted an increasingly competitive market for oral therapies. In 1998, Pfizer's Viagra™ was the sole player in the oral MED market capturing sales of $850 million.

Viagra™, a drug initially developed to treat hypertension, was projected to continue to dominate even as new competitors entered the oral market. It was expected to capture at least 75 per cent of a much larger oral MED market in 2002, producing sales of over $5 billion.

It was anticipated that Schering-Plough/Zonagen would enter the oral market in 1999 with a product called Vasomax™, which was administered sublingually. This product worked differently than Viagra™ using a compound called phentolamine to enhance blood flow in the penis. Vasomax™ was in the late stages of phase III clinical testing. Although it appeared to be less effective than Viagra™, Vasomax™ had fewer side effects. As a result, it was predicted that Vasomax™ could capture approximately 15 per cent of the oral market by 2002.

Takeda Abbott Pharmaceuticals' (TAP) also had a product in Phase III of clinical testing. TAP's product, based on a compound called apomorphine$_{SL}$, was expected to enter the market in 2000. This method of treatment worked in the central nervous system, but had not yet been proven to be as effective as Viagra™. TAP's apomorphine$_{SL}$-based product was predicted to capture approximately 11 per cent of the oral market by 2002.

The Cowen report observed that several other companies, such as Merck and Bristol Myers Squibb, also had oral products with compositions similar to Viagra™ in Phases I and II of clinical testing. These competitors were expected to enter the MED market within three to four years.

The Regulatory Approval Process

Prior to marketing a drug for the treatment of disease, such as MED, companies were required to obtain approval from each of the countries in which they planned to release the drug. In the United States, approval was granted by the Food and Drug Administration (FDA). In Canada, the process was governed by the Health Protection Branch of the Department of Health. Because of the difference in market size, approval in the United States was critical to the commercial success of PTI's oral therapy for MED.

The first step in receiving regulatory approval in the United States involved pre-clinical testing of the drug's compounds first *in vitro* (in cell cultures) and then *in vivo* (in live animals hosts) to assess the toxicological and pharmacokinetic properties of the compound. Once this stage of testing was completed, the company would file with the FDA for Investigational New Drug (IND) status. This approval would give the company clearance to proceed with clinical testing on humans; a three-phase process, which can take several years and cost in excess of a $100 million to complete. After a drug completes all three phases of clinical trials, it is granted New Drug Approval (NDA) by the FDA. At this point, the company can begin manufacturing and marketing the drug.

Generally speaking, it can take as many as 10 years and cost as much as US$500 million for a compound to move through the development process from patenting to NDA approval. Only five in 5,000 compounds that enter preclinical testing are approved for human testing. Of those, only one in five is approved for sale. Because of the long time frame for regulatory approval, patents (which are usually granted at the beginning of the development process and have a 20-year life span) often have only a few years of protection remaining by the time the drug is actually made commercially available.

The long lead times for drug development, coupled with the comparatively short life span of patent protection following FDA approval, places considerable pressures on firms engaged in drug development to expedite the development process.

Company Background

In February of 1999, PTI occupied approximately 1,200 square feet of space, comprised of a single administrative office, a research lab and an office/lab combined space. PTI employed a

total of four people: Terri Vaughn, executive assistant; Blair Glickman, president; Dr. Jeffrey Blair, vice-president operations/business development; Jake Randall (manager—research programs). PTI also paid, on a contract basis, for the services provided by John Ross, the company's part-time chief executive officer (CEO), and Drs. Hall and Abram, the principal scientists and founders of PTI. Hall served as the company's vice-president of clinical affairs, while Abram acted as vice-president of research and development (R&D).

Drs. Hall and Abram had been involved in a creative research partnership long before they formed Pharma Technologies Inc. Both men held faculty appointments. In his role as Professor of Urology and member of the Human Sexuality Group at a major Canadian hospital, Dr. Hall was involved in more than 20 Phase II, III and IV clinical trials involving disease states related to sexual dysfunction and reproduction. Dr. Abram held a full professorship in cardiovascular pharmacology. Both Abram and Hall had published over 70 peer-reviewed papers or book chapters each. They had also been recipients of numerous research grants and career merit awards.

Hall and Abram, who had worked together in other research and development projects for the treatment of MED, had an idea for a product based on a very novel technology. They took their concept to a major pharmaceutical firm, but it did not go forward. So they kept their concept "secret" and continued developing the technology independently. The thesis work of Dr. Jeffrey Blair, a PhD student of Mike Abram, provided the basis for the initial technology platform around which Pharma Technologies Inc. was formed. Blair received his PhD in 1997 in cardiovascular pharmacology and had received research traineeship awards from organizations such as: the Heart and Stroke Foundation of Canada, the Canadian Hypertension Society and Pfizer/Medical Research Council of Canada.

In early 1996, Drs. Blair, Hall and Abram began working with the University's incubator facility to obtain patent protection for their technology. It was through this facility that they met Glickman. Glickman, who was working as vice-president of commercial development, had been involved in the formation, financing and growth of a number of technology-based start-up ventures. His expertise included business development, patenting and licensing.

Blair, Hall and Abram were anxious to proceed with the development of their oral therapy for MED, but they needed a business infrastructure. With the help of Glickman and others at the incubator, PTI was formed in March 1997. Hall commented that, although the three founders were reluctant to accept venture capital financing, they were anxious to proceed. So in exchange for an option on future equity, they obtained $250,000 in seed capital from a venture fund specializing in medical research.

During the period between early 1996 and late 1997, the incubator filed a total of six patent applications, based on PTI's technology, with the U.S. Patent and Trademark Office (USPTO) of the U.S. Department of Commerce. The University, the registered assignee of these patents, subsequently granted PTI an exclusive worldwide license to use the technologies.

In November 1998, PTI obtained seed capital to proceed with technology development from two well-known Canadian venture capital (VC) funds. Together, they provided funding of $5 million in two tranches: $2 million at the time of signing; $3 million upon satisfactory completion of technical milestones and the signing of a partnership agreement with a pharmaceutical company for co-development of the technology.

Credibility with the financial and business community was an issue for PTI. At age 36, Glickman had considerable experience in the high-technology arena, but lacked the "gray hairs" expected by prospective commercial partners and investors. For this reason, the board appointed John Ross as part time CEO in November 1998. Ross was a well-known and well-respected figure in the Canadian biotechnology industry. He had served as CEO of a major Canadian biotechnology company and prior to that, held an executive position at a multi-national pharmaceutical firm.

Prior to the second tranche of financing described above, approximately two-thirds of PTI's common shares were held by the four principals, Abram, Hall, Blair and Glickman. The University incubator, the PTI Trust and the initial outside investor held the remaining one-third common shares. The subsequent two VC investors held convertible preferred shares in equal proportions.

The board of directors was composed of five members: Ross; Glickman; Dr. Hall and one representative each from company's major investors. John Malcom, the president of the incubator, Hall and Blair also attended the company's board meetings. Blair kept the minutes.

Plans for Technology Development

PTI's product development programs were based upon a significant portfolio of intellectual property. In the area of sexual dysfunction PTI had established two strategic product development programs, PTI Oral Therapy and PTI Local Therapy, each targeting a distinct segment of the MED market. In addition, the company had a number of interesting research initiatives at earlier stages of technical development.

PTI Oral Therapy

While PTI was actively pursuing a variety of initiatives, oral therapy represented the company's most promising technology and was clearly the immediate focus of attention. As described below, the PTI technology differed from Pfizer's Viagra™ product in several important ways, which the PTI management team believed would provide the basis for a competitive advantage.

The Underlying Technology

Male Erectile Dysfunction (MED), the clinical inability to obtain and hold an erection sufficient for intercourse, occurs when blood vessels to the penis become constricted, thereby preventing the level of blood flow required to achieve an erection. Scientists had believed for years that these blood vessels became constricted in men, over time, due to reduced levels of nitric oxide, a molecule that is released by the blood vessels and causes them to remain open.

Pfizer's Viagra™ was the first therapy to attempt to solve this problem and had been very well accepted in the marketplace. Viagra™ worked through the use of a phosphodiesterase (PDE) inhibitor, which prevented the breakdown of nitric oxide, thereby keeping the required blood vessels open. Research by scientists at PTI had revealed that the breakdown of nitric oxide in these patients was only the symptom and not the real problem causing MED.

Nitric oxide is expressed by endothelial cells into the smooth muscle cells of the blood vessels in the penis. PTI scientists discovered an inverse relationship between levels of nitric oxide and the amount of Factor X, a small protein released from the lining of the blood vessels. As the amount of Factor X is increased, levels of nitric oxide decrease, causing the smooth muscle cells to contract, thereby constricting the vasculature and substantially blocking blood flow to the penis. PTI scientists believed that the solution to the underlying problem of MED would be to reduce the levels of Factor X expressed into the smooth muscle, as opposed to increasing the local levels of nitric oxide. This approach would offer three distinct advantages over the market leader Viagra™.

First, while Viagra™ increased the level of nitric oxide throughout the body, the PTI method decreased the levels of Factor X only where it was over expressed in the penis, thereby reducing the likelihood of side effects (known or unknown) in patients. Second, because Viagra™ operated by manipulating the levels of nitric oxide in the body, it could not be taken by patients using nitrate therapy to manage cardiovascular disease. In contrast, because the PTI method did not affect nitric oxide levels, it would provide a safe alternative for these patients. Finally, because the PTI method addressed the underlying physiology of MED, it had the potential to prevent the progression of sexual dysfunction rather than just temporarily treating the symptoms.

Although the oral therapy was being developed initially as an acute treatment, PTI scientists believed that ongoing research would demonstrate its use as a chronic treatment which, when administered in at-risk patient populations, could prevent the onset or progression of sexual dysfunction and effectively reverse the disease process.

In April 1998, the University received U.S. patent approval for the use of Factor X in applications related to the treatment of sexual dysfunction. In turn, the University gave PTI the exclusive worldwide license for the technology. The company was still waiting for approval of a worldwide Patent Cooperation Treaty. This was the first step in the process for patent approval in approximately 90 other countries. Companies typically narrowed this field to a smaller subset of countries (approximately 18) in which they then pursued the lengthy and expensive process of obtaining full patent protection.

Development Milestones for the Oral Therapy

The development of a product using the PTI method of treatment required the identification of a compound to antagonize the action of Factor X. A research scientist at a Europen pharmaceutical company first discovered the scientific potential of 'Factor X' for this purpose in 1983. Researchers at the company produced the first usable compound as a result of their search for alternative therapies for cardiovascular disease. By 1999, at least 10 major pharmaceutical firms were pursuing clinical testing of Factor X for treatment of a variety of illnesses, such as congestive heart failure, hypertension and acute renal failure. While PTI's method of use patent gave the company exclusive rights to pursue the development of a treatment for sexual dysfunction by manipulating Factor X levels, PTI did not possess a Factor X compound.

The management team at PTI believed that they could greatly shorten the development timeline for their oral therapy and reduce the associated costs by partnering with a firm that possessed a Factor X compound. Firms with Factor X had taken these compounds through various stages of pre-clinical testing, to assess their toxicological and pharmacokinetic properties. This testing provided valuable information about how long the compound would remain in the body after it was administered, the efficacy of the compound at different dosage levels, etc. PTI scientists believed that they would face less of a hurdle in taking their product through the regulatory approval process if they could access a compound that had already successfully passed the first one or two stages of clinical testing in the treatment of a different disease.

Therefore, rather than developing an Factor X compound internally, PTI's strategy was to approach these firms to determine if their molecules had potential for use in the treatment of sexual dysfunction. Subsequently, the company formed non-binding materials transfer agreements with five of these firms, involving a total of 16 different compounds. There was no financial consideration associated with the signing of these agreements.

Following the signing of the agreements, PTI initiated a rigorous three-step screening process, involving the use of laboratory rats, to assess the efficacy of the various Factor X in the treatment of sexual dysfunction. The screening process served as a "funnel" for evaluating the compounds: All of the compounds would be evaluated at Step 1, but their performance in that stage of screening would determine whether or not they proceeded to Step 2. Similarly, only a subset of the compounds that passed the hurdles in Step 2 would move on to Step 3. PTI planned to rank the compounds based on the results of the first two steps. The third step would be conducted after a partnership agreement had been signed with the owner of one of the top-ranked compounds.

Solid scientific results were critical, since PTI would rely upon the data from these experiments to prove to any prospective partners that its method of treatment would be effective.

Development Timeline

PTI's investors required the completion of five milestone activities as a condition to releasing the second tranche of financing: 1. Completion of

pre-clinical efficacy studies on a target list of compounds. 2. Identification of two potential lead development candidate compounds. 3. Communicate results of pre-clinical studies to compound owners. 4. Finalize the selection of a lead development candidate compound. 5. Negotiate a collaborative agreement for the development of the lead compound candidate. PTI had allocated $360,000 of its operating budget to the achievement of these business milestones.

The PTI management team expected to make progress across several of the milestones simultaneously. For example, the company's projections called for the completion of the screening process and the ranking of the compounds by April 1999. During this time, the PTI management team would also be assessing the attractiveness of each of the potential partners from a business perspective and seeking to identify a champion for the project within each firm. Over the next four months, they would conduct initial meetings with the proposed partners to disclose the screening results and to discuss collaboration. An additional four months would be needed to negotiate an agreement, with finalization of the partnership agreement targeted for November 1999. Once the partnership was formed, the PTI management team believed that an oral product could be on the market within two to three years.

While the oral therapy was the primary focus of PTI's business development efforts, the company was also pursuing a program for local therapy and developing a novel delivery device. Both of these initiatives were also believed to have significant potential.

PTI Local Therapy

The local therapy involved the development of an injectable and/or topical product that enabled the administration of two compounds that had already been approved and were available on the market. The injectables currently available on the market used a high level of a drug called Factor Y, which caused pain and discomfort in patients. PTI's local therapy program represented advancement over the current products by combining Factor Y with a second therapeutic agent that reduced pain and improved efficacy.

PTI had the following milestones in the local therapy program over the next 11 months:

- Select a supplier of components.
- Fix components of the final product.
- Obtain IND approval to conduct clinical trials.
- Find a manufacturing partner for assembly, packaging and sterilization as well as a distribution partner.

PTI had reserved $215,000 of its operating budget for the completion of these milestones during the next year. Subsequently, Glickman planned to form a collaborative agreement with a partner in order to complete a one-year Phase II study. He expected that PTI would be required to contribute approximately $1 million toward the cost of this study.

In early 1999, PTI received notice that the examiner for the patent pertaining to the local therapy had raised several broad concerns/objections that would need to be addressed before the company could proceed with product development. Glickman was confident that the issues raised by the examiner could be resolved fairly quickly.

Delivery Device

Creams and suppositories had been poorly received in the MED market due to low efficacy and lack of comfort. PTI was working to develop a drug delivery device that did not involve a cream or suppository. This device could eventually be licensed for therapies beyond sexual dysfunction.

PTI had the following milestones for the project over the next 14 months:

- Identify formulation to be used.
- Contract out development of a prototype.

Of the PTI operating budget, $472,000 had been allocated for the completion of these milestones. This would be followed by five months of manufacturing trials and IND approval for clinical studies in collaboration with a partner. PTI expected to be required to contribute an additional $50,000.

Other Research Initiatives

In addition to PTI's oral and local therapy programs, the company was also pursuing a number of other research initiatives. PTI scientists had discovered a method of identifying a vascular condition that would help aid in the diagnosis of MED and FSD. A provisional patent had been filed with the U.S. FDA in May 1998. PTI was also investigating other novel methods for the diagnosis and treatment of MED and FSD. The company intended to file a provisional patent application for this technology with the FDA in the summer of 1998. Finally, PTI had been experimenting with a technology that could be used in the treatment of vascular conditions, such as premature aging of the skin.

Present Situation at PTI

Although PTI had sufficient capital for the next few months, Glickman knew that the company's cash requirements were accelerating and that there was significant pressure to achieve results in order to access the next tranche of financing from their investors.

Glickman projected that the first tranche of $2 million would be exhausted by November 1999. At present, PTI's burn rate for its baseline operation was around $50,000 per month. This covered payroll, consulting fees, administration and overhead expenses. Over the next few months though, the company needed additional cash to pay for contract research associated with the continued development of the oral therapy product. Specifically, PTI was committed to expenditures in the neighborhood of $360,000 over the next six months to advance the milestones on this project. There was an additional liability of $200,000 for research being performed off-site to advance specified milestones contained in their most recent financing agreement.

In order to access the second payment of $3 million, Glickman needed to have a commitment from a corporate partner. PTI's main challenge was to complete its screening process so that it would be possible to identify a suitable partnership candidate. Timing was critical. A partnership agreement had to be reached and results obtained before competing therapies entered the market, before the company's money ran out, and before PTI's patent was challenged.

Achieving Key Scientific Milestones

In late January 1999, Jake Randall, a PhD candidate in pharmacology, had been hired as the manager of research programs. By February, Randall had completed Step 1 of the screening process on 12 of the 16 compounds. Two compounds had failed to make it through Step 1 and 10 compounds had been advanced to Step 2. While it was taking longer than anticipated to test the molecules, Randall's mandate was clear: he had to finish the screening of the Factor X compounds by April so that the company would be in a position to complete negotiations for co-development of the product by the November deadline.

Forming a Partnership Agreement for Co-development of the Oral Therapy

One of the key issues surrounding partner selection was whether PTI should proceed with technology development vis-à-vis out-licensing or in-licensing. Integrated pharmcos would be more likely to push PTI to out-license its technology, while smaller firms would be more willing to allow PTI to in-license their technology.

Under an out-licensing agreement, the target firm would obtain a license for PTI's oral therapy technology. The responsibility for the clinical research program would reside with the partner firm, with the possibility that a portion of it would be contracted back to PTI. From Glickman's perspective, this was less appealing because it meant that PTI would be giving up control and revenue-generating potential. However, partnering with an established and integrated pharmaceutical company offered the potential for PTI to leverage its chance of future success by obtaining support to launch all of its research initiatives, rather than being restricted to only two or three.

Under an in-licensing agreement, the target firm would grant PTI a license to use its Factor X compound as the basis for developing an oral therapy. PTI's scientists would perform the research required to take the product through completion of Phase II clinical trials. The final stages of clinical testing, production, distribution and marketing would then be licensed to a third party. All three partners would then share in the proceeds from the sale of the end-product.

There was also the possibility of a collaborative agreement between PTI and a small pharmco to jointly take the product through Phase II clinical testing. The advantage to this approach was that PTI could retain some control over the development process, although to a lesser extent than would be possible with an in-licensing agreement. The final stages of clinical testing and commercialization would either be turned back to the partner or licensed to a third party for completion.

The resources and capabilities to be offered by a partner varied considerably across the firms being considered by PTI, depending on their size and commitment to the sexual dysfunction market. To the extent that the target firm did not have an established position in the market, Glickman and his colleagues would have to work harder to persuade the firm of the huge market potential for their oral therapy. Moreover, they would have to be able to demonstrate the benefit of partnering with PTI, in terms of the reduced costs of product development (PTI had already done the pre-clinical research) and the shorter time frame for regulatory approval associated with using a proven Factor X compound.

The size and resource position of potential partners would also affect the ability of the end-product to achieve market penetration. Hall noted:

> It is more than the compound that matters. It's all about timing. We are concerned about our oral therapy being the only drug in its class; the only treatment operating on the principle of Factor X reduction. In contrast, there will be three drugs in the same class as Viagra™. I am concerned that if our product is the only one in its class, it will not get noticed. A single drug could also be outmarketed by Viagra™. We need a top 20 company in order to make sure that our product can compete effectively. Alternatively, there is space for more than one Factor X drug to compete. Another thing we could do is arrange non-exclusive licenses to avoid being the only one in our class.

Blair saw the decision differently. He was concerned that the search for a large, established player would lengthen the time frame for product development:

> In a large company, it takes a long time to figure out whom you have to talk to; find the right people with decision-making authority. You need to be assured of proper diligence and movement, or your deal will get lost. It might make sense to look at an intermediate company to co-develop the technology, rather than going right away to a multinational company.

ALPES S.A.: A JOINT VENTURE PROPOSAL (A)

Prepared by David T.A. Wesley under the supervision of Professors Henry W. Lane and Dennis Shaughnessy

As Dennis Shaughnessy, senior vice-president (VP) for Corporate Development and general counsel for Charles River Laboratories (CRL), prepared his presentation to the company's board of directors,[1] he wondered how the board would react to his request to invest up to $2 million in a

Mexican joint venture (JV) to create a state-of-the-art specific pathogen-free (SPF) egg farm.

Shaughnessy believed that the production and pre-incubation of SPF eggs for international agricultural vaccine companies in Mexico represented a long-term growth opportunity for CRL. The proposed joint venture with ALPES, a family-owned company that provided animal health products and services, would allow both companies to more aggressively exploit this opportunity and offered attractive financial returns for both partners.

Shaughnessy knew that to win over the board, he would also need to win over the support of company chief executive officer (CEO) Jim Foster. Without it, the JV would never come to fruition. But Foster viewed the proposed joint venture as a potential distraction for Specific Antigen-Free Avian Services (SPAFAS) as it continued to expand rapidly in the United States. He also worried about the risks of investing in a country like Mexico, with an unstable currency and an uncertain market. He was especially concerned about the plan to partner with a small, family-owned company that was not making a new investment of their own, but rather relying solely on CRL's capital to fund the project. Finally, after nearly 50 years in business, CRL had never successfully conducted business in Mexico.

Charles River Laboratories

Founded in 1947 by Henry Foster, Charles River Laboratories was the global market leader in the commercial production and supply of laboratory animal models for use in discovery research and the development and testing of new pharmaceuticals. Foster took his company public in 1968, raising $3 million. In 1981, Foster sold the company to Bausch and Lomb (B&L) for $110 million.

Henry Foster continued as CEO under B&L until his son Jim succeeded him in 1992. Jim Foster was eager to expand the company but, at the time, B&L had been experiencing its own challenges, and was reluctant to invest the needed capital. Nevertheless, Charles River Laboratories remained one of B&L's most profitable divisions, at times contributing more than 10 per cent of B&L's corporate net income.

The company's strategic growth objective was to grow its existing businesses by between 12 per cent and 15 per cent annually and its entire business by 20 per cent. This plan left a "strategic growth gap" of five per cent to eight per cent each year. Charles River Laboratories then pursued technology platform acquisitions, joint ventures, technology licensing and strategic partnerships to fill the gap.

Charles River Laboratories served customers in more than 15 countries worldwide. These were primarily large pharmaceutical companies that, together with biotechnology firms, accounted more than 75 per cent of Charles River Laboratories' sales. The remaining customers included animal health, medical device and diagnostic companies, as well as hospitals, academic institutions and government agencies. As a result of its leadership position in the industry, CRL had not lost any of its 20 largest customers in more than 10 years. The company's largest customer accounted for less than three per cent of total revenues.

Specific Antigen-Free Eggs and Avian Services

CRL's entry into avian services traced its beginning to Shaughnessy's visit to Merck's New Jersey headquarters to discuss the pharmaceutical company's use of CRL animal models. Over lunch, one Merck executive offhandedly remarked that they had to do something about "that old chicken farm."

Shaughnessy was puzzled. "Why on earth does Merck own a chicken farm?" he asked.

"Well, we have been developing poultry species to help us better understand genetics," replied the Merck executive.

> Now, of course, we're doing our genetic work in mice, but we still have these chicken farms. Currently, we're using the farms to produce SPF eggs that we use to make those few human

> vaccines left that haven't converted over to newer technology for their production, and what remains of our agricultural vaccine operations.

Contaminated poultry posed a serious risk to human health. The U.S. Department of Agriculture estimated that such bacteria caused more than four million illnesses and up to 3,000 deaths each year.[2] For that reason, poultry had to be vaccinated against pathogens that were harmful to humans, including salmonella and campylobacter.

Material for vaccines used to inoculate poultry was produced when a target virus was injected into fertilized eggs. As the eggs matured, they became natural bioreactors in which isolated pathogens expanded geometrically. Specific pathogen-free eggs were raised in controlled environments that were free from common bacteria, viruses and other contaminants. These "biosecure" environments[3] were important for the production of poultry vaccines, since contaminated chicken eggs often contained antibodies that killed the target virus. Contaminated eggs also posed the risk of introducing unwanted pathogens into the vaccine.

Shaughnessy was intrigued. He wondered aloud, "Well, we raise lots of mice as you know. Maybe we would be good at raising chickens." "Then why don't you buy it?" replied one Merck executive, who had for some time been seeking a buyer for SPAFAS. Shaughnessy agreed to meet with the head of SPAFAS to further discuss the matter.

Charles River Laboratories eventually agreed to acquire SPAFAS from Merck for $6 million in cash, an amount roughly equal to the business's annual revenues. During the due diligence process, Shaughnessy learned that some human vaccines were still produced in eggs.

Companies that produced influenza vaccines alone consumed more than 100 million eggs annually, although nearly all of these were not SPF eggs, but rather standard farm-grade eggs.[4] Shaughnessy recalled:

> When we bought SPAFAS, our grand scheme was the conversion of production of inactivated human vaccines like flu vaccine, from commercial eggs to SPF eggs. That will dramatically increase demand for SPF eggs, and the business will grow dynamically.

Convincing human vaccine producers to switch to SPF eggs proved to be a Herculean task. At a cost of pennies per egg, farm-grade eggs were significantly cheaper than SPF eggs, which could cost as much as a dollar per egg. Shaughnessy quickly realized that convincing CRL's traditional vaccine customers would be more difficult and time consuming than first imagined. In the meantime, opportunities for growth were limited to agricultural applications, principally avian vaccines sold to the integrated poultry companies. As a consequence, potential marketing synergies between SPAFAS and Charles River Laboratories were less than anticipated. With projected annual poultry industry growth set at a lethargic three per cent, Shaughnessy wondered if SPAFAS could hope to achieve CRL's aggressive growth objectives.

One consolation was that demand for SPF eggs had exceeded available supply by between five per cent and 10 per cent worldwide. Accordingly, in fewer than four years following the acquisition, SPAFAS more than doubled its annual revenues while improving its operating margin to nearly 20 per cent. In order to support this growth, CRL continuously invested capital in expanding domestic SPF egg production capacity. Recently, the board of directors had approved a significant capital investment in SPAFAS for increased production in the United States. Meanwhile, the company's two main competitors failed to respond to rising demand by adding new capacity of their own, allowing SPAFAS to continue to increase its market share.

Based on recent projections, SPAFAS was expected to attain revenues of $25 million within the next two to three years. However, projections of this kind were based on growth within the existing business, and did not account for opportunities to expand internationally. In Shaughnessy's estimation, accessing international markets could further improve revenues to as much as $50 million within four to five years.

SPAFAS International

The pharmaceutical industry, currently serviced by CRL, conducted approximately 80 per cent of worldwide research and development in the United States and Europe; Japan accounted for most of the remainder. In contrast, poultry vaccines were developed globally, and included large facilities located in low-cost areas, such as India, China and Brazil.

When CRL acquired SPAFAS, the company had franchise operations in Mexico, India and Brazil. Franchisees produced SPF eggs from breed stock provided by Merck's SPAFAS operation at a cost of as much as $10 per egg.[5] This arrangement allowed them to use the SPAFAS brand name, resulting in confusion among some customers who were sometimes unaware of lower standards of cleanliness outside of the United States. Although a customer may have believed the product to be equal to the U.S. standard, "the facilities were seen as unacceptable to those accustomed to U.S. facilities," observed Shaughnessy. And while the cost per egg was high, relatively few were needed to stock a facility. As such, international franchise fees did not contribute significantly to SPAFAS revenue or growth.

Growth Objectives

Unable to convince human vaccine producers to use SPF eggs, Shaughnessy hoped to grow the company through the purchase of SPAFAS franchises in Brazil, Mexico and India from their current owners. Once purchased, SPAFAS could integrate its worldwide operations and consolidate the revenues.

Since franchisees were typically large poultry integrators,[6] the value of the SPF egg business was relatively small (typically less than five per cent of revenues). Furthermore, agricultural companies appeared less suited to manage a biotech operation and rarely devoted the funds needed to make SPF operations internationally competitive. In their current state, Shaughnessy thought the owners of these companies would be eager to sell the franchises in order to concentrate on their core poultry businesses—provided they were offered a fair price.

Shaughnessy was surprised by the Brazilian franchisee's reaction, which was one of distrust. Instead of selling the franchise, the Brazilian franchisee eventually decided to sever ties with SPAFAS and continue the operation independently. The Indian reaction was far less acrimonious, but still failed to result in an agreement, although India remained a SPAFAS franchisee.

ALPES

Finally, Shaughnessy turned his attention to the Mexican franchisee, ALPES S.A.[7] Founded in 1974 as a member of the IDISA group of companies, ALPES was the sole producer of SPF eggs in Mexico. The company was owned by the Romero family, which also owned a large poultry operation known as Grupo Romero.

In the early 1950s, Socorro Romero[8] established a medium-sized poultry farm in the high desert of Tehuacán, east of Mexico City. Shortly afterward, she was joined by one of her two brothers. Together they created the venture that would eventually be known as Grupo Romero.

Grupo Romero was officially founded in 1963 by Socorro Romero to produce boiler chickens for the Mexican market. In the early 1970s, Socorro asked her brother Miguel,[9] who had recently completed a Ph.D. in chemistry at Harvard University and had begun working for a U.S.-owned company in Mexico City, to help improve the company's feed formulation. The idea was to reduce the company's dependence on third-party suppliers. Nutrition was the most expensive variable cost item in poultry farming, and by vertically integrating feed production, Grupo Romero could both reduce costs and increase reliability.

Realizing that a wider need existed for animal health services, Miguel Romero decided to start his own company, which later became known as Grupo IDISA. IDISA soon began offering services throughout Mexico and Latin America.

Although by this time poultry vaccines could be purchased from various international animal health firms, no one provided vaccines that were specifically suited to Latin American farmers. In 1972, Miguel Romero contacted poultry vaccine researchers at Cornell University in Ithaca, New York, who agreed to coordinate a vaccine development project with the Universidad Nacional Autónoma de México (UNAM). After several contaminations at the Mexico City research site, however, both parties agreed to abandon the project.

Refusing to admit defeat, Miguel Romero decided to continue the research on his own. In 1974, he founded ALPES as the SPF egg subsidiary of IDISA (see Exhibit 1). He turned to SPAFAS, which at the time was a relatively small family business in Connecticut, for technical assistance. SPAFAS sold ALPES breeding stock and provided technical advice on creating a biosecure environment within which SPF chickens could be raised. All knowledge transfer and technical support was provided informally through a "handshake" agreement between the two family-owned companies.

Alejandro Romero described the early business affiliation between ALPES and SPAFAS as an "open relationship" in which both parties benefited from the honest exchange and sharing of information and product innovations.[10] Finally, ALPES became the exclusive Mexican distributor for imported SPAFAS eggs and embryos.

By 1978, ALPES had its own well-established production facilities. As a result of the readily available supply of SPF eggs and embryos, international vaccine manufacturers began to establish operations in Mexico.

All forms of cooperation between ALPES and SPAFAS were conducted through informal "handshake" agreements between the original owners. Although Merck maintained this arrangement when it acquired SPAFAS in 1986, the Romero family was wary of the new management, with whom it had no relationship. The Romeros sought to formalize a deal, eventually establishing ALPES as a franchise of SPAFAS, with exclusivity within Mexico and Central America.

Alejandro Romero joined Grupo IDISA in 1989 after completing his master's degree in chemical engineering at the University of British Columbia in Canada.[11] Knowing that IDISA could not depend on his father's leadership forever, he pushed for structural changes such as a professional management staff and the use of

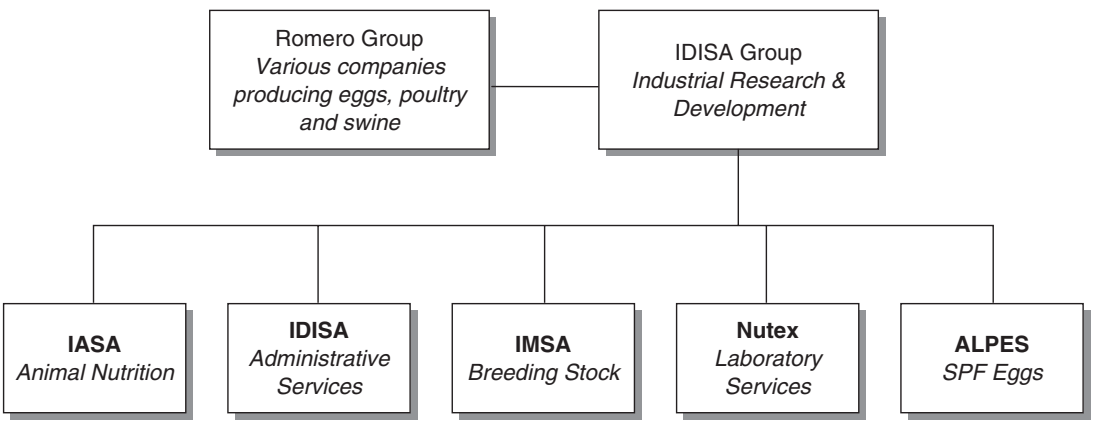

Exhibit 1 IDISA Group of Companies

Source: Company files.

external auditors and consultants. When Miguel Romero passed away in 1997, Alejandro became CEO and chairman of Grupo IDISA.

IDISA had annual revenues of approximately $2.9 million compared to Grupo Romero revenues of approximately $200 million. The board of directors included Alejandro Romero's mother, aunt and sister, a veterinarian with a master's degree from Cornell University. To comply with Mexican law, the company held formal board meetings once a year (ALPES Mission and Organizational Vision Statements are provided in Exhibit 2).

Market Conditions

In 1994, the North American Free Trade Agreement (NAFTA) came into effect, facilitating

DEFINITION and MISSION

IDISA, which stands for Vital Research and Development and Animal Health,[1] is a world-class group of companies dedicated to providing optimal solutions to the needs of the health, farming and industrial sectors, through differentiated products and services, based on research and development.

AIM

To unite material, financial and technological resources and, through human intervention, to transform them into goods and services that generate wealth, in a wider sense, as a combined set of economic and social benefits for workers and investors.

VISION

We envision IDISA as a group of companies:

1. with a high level of synergy derived through integration;
2. that leads the domestic market in each of its specialized functions, while increasing its international market presence;
3. offering vital solutions that meet the needs of its clients, while providing products and services that optimize the relationship between costs and benefits;
4. generating leading edge, innovative and differentiated technologies, products and services;
5. committed to the continuous improvement and quality of its products and services;
6. that consolidates existing business and develops new lines of business;
7. committed to satisfying its shareholders with an optimal return on investment, to suppliers with fair treatment and to the communities in which it operates through the generation of employment and environmental responsibility;
8. that motivates and rewards employee achievements and performance, permits and encourages their personal development, and offers opportunities for growth and advancement consistent with their capacity and career path; and
9. with an institutional structure that is flexible and facilitates decision making in an adaptable, efficient and effective manner.

Exhibit 2 Organization of Group IDISA

Source: Company files.

1. As translated from the Spanish acronym for Investigación y Desarrollo Integral y Salud Animal.

the free flow of goods and services, which resulted in a number of changes that had a direct impact on ALPES. Fearing increased competition from imports, Alejandro Romero sought to mitigate the effect by establishing exclusivity contracts with suppliers, customers and potential competitors.

While some business left Mexico as feared, the overall effect of NAFTA proved positive. Vaccine producers increased production in Mexico, from which they supplied the United States and Canada, while competition from imports failed to materialize. ALPES hastily doubled its production to meet rising demand.

ALPES was the major supplier of SPF eggs to Mexico's two largest animal vaccine producers, InterVet and Anchor. Netherlands-based InterVet was one of the world's largest poultry vaccine manufacturers with more than $1 billion in revenues and operations in 55 countries. InterVet purchased approximately 80 per cent of the SPF eggs produced by ALPES. Anchor, the Mexican subsidiary of Boehringer Ingelheim of Germany, accounted for most of ALPES' remaining sales. Both companies had recently invested several million dollars in new plants near Mexico City to meet growing demand for animal vaccines in Europe and Asia.[12] InterVet projected a doubling of its need for SPF eggs to four million units within one year. Eventually, changes in European and Asian vaccine regulations could result in a further increase in overall demand for SPF eggs in Mexico to more than 10 million units per year. To meet this growing demand, both InterVet and Anchor had begun importing SPF eggs from the United States, primarily from SPAFAS.

European countries had very strict quality standards that had to be met before vaccines could be imported. For ALPES, meeting those standards proved particularly challenging.[13] Not only did the company need to improve its facilities to meet international standards, but rising levels of poultry production in the surrounding area had significantly increased the likelihood of contamination. One ALPES customer produced a large lot of vaccine before contaminants were discovered. When the entire lot had to be recalled, the customer's reputation suffered.

Capital Investment Needs

On his first visit to Charles River Laboratories, Alejandro Romero met Jim Foster, Dennis Shaughnessy and several other senior managers for the first time. His task was to present the ALPES business case and discuss opportunities in Mexico under NAFTA. Specifically, the head of InterVet in Mexico, who was both a long-time friend and customer of the Romeros, had been pressing Alejandro Romero to expand production in order to meet InterVet's growing demand for SPF eggs. Both agreed that any new facility would need to have considerably greater production capacity as well as superior sanitary standards, including sealed and quarantined animal housing, a laboratory and service buildings, where eggs could be pre-incubated prior to being shipped to customers. IDISA was unwilling to invest these funds itself because of "high borrowing costs in Mexico" and the "relatively small contribution to the total returns of Grupo Romero." Romero hoped that Foster would agree to either loan ALPES the money needed to expand its facilities, or make a minority equity investment that would still leave control of the business in the hands of the Romeros.

Loaning ALPES the funds was dismissed outright. As a growth-oriented firm, Charles River Laboratories was simply not in the business of lending money. The idea of becoming a minority shareholder was also looked upon unfavorably as it would limit participation in the business and prevent CRL from fully consolidating the company's revenues in its income statement.

Shaughnessy explained that CRL was primarily interested in acquisitions. If the Romeros would be willing to sell ALPES outright, CRL would certainly be interested. He also expressed concern about the real rates of return for the existing business under its current management, which had been between negative 25 per cent and negative 28 per cent for each of the last three years.

Romero explained that the poor rates of return had been a consequence of unforeseen contaminations, which had both reduced revenues and increased costs.[14] A new facility would greatly

reduce the risk of contamination. Shaughnessy and Foster appeared skeptical that new facilities alone would reduce the contamination risk, given that strict compliance with biosecurity principles had not been part of the ALPES work environment.

Ultimately, ALPES was not for sale, explained Romero. "We want to continue this business," he added. "Especially now, we see great opportunities that we want to take part in." His bottom line position was that if CRL were unwilling to invest in ALPES, IDISA would seek other investors.

The company had already entertained the option of partnering with SPAFAS's primary competitor, Lohmann-Tierzucht International of Germany. Lohmann-Tierzucht was the SPF eggs subsidiary of the PHW Group, a large international animal health company with more than 30 subsidiaries worldwide, including SPAFAS's primary competitor in the United States. Shortly after CRL acquired SPAFAS, the Romeros began discussions with Lohmann-Tierzucht in order to ensure an uninterrupted supply of breed stock. More recently, ALPES began using Lohmann genetic lines in its SPF egg production.

As a compromise between the two positions, Alejandro Romero suggested that both parties consider a joint venture. If Charles River Laboratories contributed the funds needed for a new facility, IDISA would contribute buildings, land and other assets currently owned by ALPES (see Exhibit 3). Both parties agreed to consider the matter.

CURRENT ASSETS	
Cash And Cash Equivalents	56,703
Accounts Receivable	282,628
Inventory	92,613
Birds	390,674
TOTAL CURRENT ASSETS	**822,618**
PROPERTY PLANT AND EQUIPMENT	112,003
OTHER ASSETS	16,249
TOTAL ASSETS	**950,870**
LIABILITIES AND STOCKHOLDERS' EQUITY	
CURRENT LIABILITIES	
Trade Accounts Payable	92,397
TOTAL CURRENT LIABILITIES	**92,397**
LIABILITIES	
Income Taxes Payable	8,346
Accrued Liabilities	88,912
TOTAL ACCRUED LIABILITIES	**97,258**
SHAREHOLDERS' EQUITY	
Capital Stock	541,681
Retained Earnings	1,040,207
Revaluation Deficit	(1,025,286)
Accumulated Income	204,613
TOTAL STOCKHOLDERS' EQUITY	**761,215**
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	**950,870**

Exhibit 3 Aves Libres de Patógenos Específicos, SA Balance Sheet (in US$)

Source: Company files.

Alejandro Romero returned to Mexico to discuss the joint venture opportunity with family members. The one concern that was raised was the effect a joint venture would have on the decision-making process of the company, from a family-oriented process to one that was more institutional. Even so, everyone recognized that the change was necessary if ALPES and IDISA, and even Grupo Romero, were to continue to mature into world-class international companies. Alejandro Romero called Shaughnessy to express his family's willingness to enter into formal negotiations.

First Encounters With Mexico

Shaughnessy made three visits to Mexico, each time accompanied by one or two senior managers from SPAFAS, before presenting his findings to CRL's management and board of directors. The first was an official meeting with members of the Romero family, which, outside of Alejandro Romero's visit to the United States earlier in the year, was the first of its kind between the Romeros and anyone from Charles River Laboratories.

Several weeks later, Shaughnessy made a second trip that included a tour of ALPES's facilities in Tehuacán. As he left Mexico City, he was unprepared for the isolation and poverty that he would encounter in the Mexican countryside, both of which left a strong and lasting impression upon him. And while Grupo IDISA's headquarters was a modern facility in the center of Tehuacán, a maquiladora[15] city with more than 300,000 inhabitants, the company's poultry farms appeared to him to be below standards.

On his third visit, Shaughnessy had dinner at the Romero estate in Tehuacán. He recalled:

> We had a six-hour Mexican dinner with the entire Romero family, and we talked about books, education, philosophy and all the things that people think about when they reflect on their lives, family and society. Out of that came the stories of who they are. For example, before that visit, I didn't know that they had already been in negotiations with Merck for a long time to do some sort of joint venture. And I didn't know that Alejandro's father had been a federal deputy in Mexico and had been instrumental in several campaigns to clean up government corruption.
>
> The Romeros seemed to be very high-quality people, as did their siblings and other family members. We discussed what it is like to be a prominent and successful Mexican. That carried over to their views on business. These were clearly business people with great personal integrity and commitment, the type of people that could be the foundation for a strong business partnership.

Those views seemed a stark contrast to what Shaughnessy was accustomed to in the United States, where quarterly earnings targets often appeared to drive company strategy. Alejandro Romero explained:

> For us as a company, success comes from three factors. One is hard work, another is people, and the other is honesty or trust. You have to have those factors in hand and then profit comes as a consequence. Profit is really not a final objective. It is a consequence of doing things right and doing the right things.

After these visits, Shaughnessy became less concerned about the potential impact of the rural poverty surrounding the ALPES operations. He also became convinced of the integrity and competence of his Mexican counterparts.

Before returning to the United States, Shaughnessy notified the Romeros that he would recommend the joint venture to the Charles River Laboratories board of directors. He warned them however that neither the board of directors nor the CEO had the same level of knowledge of the Romeros family and its businesses. Without that first-hand knowledge, their support might not be easily won.

The Joint Venture Proposal

Shaughnessy presented the following terms of the joint venture to the Charles River Laboratories board of directors:

SPAFAS would invest $2 million in cash into a new joint venture company to be located near Mexico City, in exchange for 50 per cent of its equity. Our partner, ALPES, would contribute its existing SPF and commercial egg (for vaccines) assets to the joint venture company for its 50 per cent equity interest. Profits would be shared equally.

The $2 million cash investment would be used to increase the SPF egg production capacity of the joint venture ($1.5 million), establish a pre-incubation facility ($250,000), and compensate ALPES for associated goodwill and management services ($250,000).

The existing ALPES business, which would be contributed to the joint venture, represents nearly $2 million in sales and an estimated 15 per cent operating margin. The $2 million in-kind contribution value assessed to this business, when considered in the acquisition context, reflects favorable purchase price multiples in the range of 1 × Revenues and 6 × EBIT.

As shown below in the Financial Summary, the joint venture will produce $3 million in sales next year, more than doubling by year four, with operating margins forecast to be in excess of 30 per cent (see Exhibit 4).

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Sales	2,941,028	4,916,477	5,837,466	6,686,183	7,562,987	27,944,141
Cost	2,097,306	2,951,721	3,347,327	3,712,698	4,093,262	16,202,314
Cost germ egg	288,830	617,171	781,550	932,897	1,088,253	3,708,701
Gross margin	554,892	1,347,585	1,708,589	2,040,588	2,381,472	8,033,126
Packaging, Shipping, Delivery	243,475	292,622	307,253	322,616	338,747	1,504,713
Distribution margin	311,417	1,054,963	1,401,336	1,717,972	2,042,725	6,528,413
G&A	225,455	271,805	285,395	299,665	314,646	1,396,966
Total Cost before tax and finance	2,855,066	4,133,319	4,721,525	5,267,876	5,834,908	22,812,694
Finance Cost	709	745	782	821	962	4,019
Operating Income	85,253	782,413	1,115,159	1,417,486	1,727,117	5,127,428
Tax	4,175	5,495	5,770	6,058	6,361	27,859
Total Cost	2,859,950	4,139,559	4,728,077	5,274,755	5,842,231	22,844,572
Operating Net Income	81,078	776,918	1,109,389	1,411,428	1,720,756	5,099,569
Assumptions						
Unit price/egg ALPES I[1]	$0.54	$0.57	$0.60	$0.63	$0.66	
Unit price/embryo ALPES I	$0.68	$0.71	$0.75	$0.79	$0.83	
Unit price/egg ALPES II[2]	$0.11	$0.12	$0.12	$0.13	$0.13	
Unit price/embryo ALPES II	$0.16	$0.17	$0.18	$0.19	$0.19	
Inflation	5.00%	5.00%	5.00%	5.00%	5.00%	
Exchange Rate	$7.50	$7.50	$7.50	$7.50	$7.50	

Exhibit 4 Pro Forma Income Statement (Proposed Joint Venture) (in US$) *(Continued)*

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Cost germ egg ALPES I	$0.10	$0.10	$0.11	$0.11	$0.12	
Prod Cost/Egg ALPES I (OLD FARM)	$0.38	$0.40	$0.42	$0.44	$0.46	
Prod Cost/Embryo ALPES I (NEW FARM)	$0.49	$0.45	$0.47	$0.49	$0.52	
Prod Cost/Egg ALPES II	$0.09	$0.10	$0.10	$0.11	$0.11	
Prod Cost/Embryo ALPES II	$0.16	$0.16	$0.17	$0.18	$0.19	
# Egg sold (ALPES I)	1,732,398	1,732,398	1,732,398	1,732,398	1,732,398	
# Embryo sold (NEW FARM)	1,038,465	3,632,946	4,683,974	5,525,636	6,301,817	
# Egg ALPES II sold	2,952,630	2,952,630	2,952,630	2,962,630	2,952,630	
# Embryo ALPES II sold	6,091,089	5,947,948	5,308,544	4,737,875	4,228,554	
# Total house	5	10	11	12	12	
# Years depreciation building	20	20	20	20	20	
# Years depreciation equipment	7	7	7	7	7	
# Years depreciation vehicles	5	5	5	5	5	

Exhibit 4 (Continued)

Source: Company files.

1. ALPES I eggs were SPF eggs used primarily in the production of live vaccines (flocks tested negative for 28 avian pathogens).
2. ALPES II eggs were clean, commercial fertile eggs used for the production of inactivated vaccines (flocks tested negative for eight pathogens).

Market opportunities notwithstanding, several board members raised objections. First, some were concerned by the complex organizational structure of Grupo IDISA, which consisted of five legally independent companies that were all owned by the same family. Others were equally concerned with the large number of inter-company transactions between ALPES, IDISA and other Romero companies. And finally, some of the directors were concerned about the lack of transparency of a company that only held board meetings once a year and did not appear to have strategic plans, operating budgets, meeting minutes or other formal corporate documents that are routine for U.S. public companies. Some members of the board wondered if they could make an informed decision about a business that they knew so little about.

Some members of the board were especially concerned about media reports that often portrayed Mexico as a country plagued with endemic corruption and economic instability. The directors from Bausch and Lomb recalled an earlier "unpleasant experience" with a Mexican

optics distributor who had defrauded the company. Both the CEO and the board of directors wanted assurances that the Romeros could be trusted and that the joint venture would serve the strategic interests of Charles River Laboratories, not just those of ALPES and Grupo IDISA.

NOTES

1. Charles River was a wholly owned subsidiary of Bausch & Lomb (B&L). As a result, its board was largely controlled by senior management of B&L.

2. Caroline Smith DeWaal, "Playing Chicken: The Human Cost of Inadequate Regulation of the Poultry Industry," Center for Science in the Public Interest, Washington, D.C., March 1996.

3. Biosecurity involved unique animal housing with pressure-filtered air. The integrity of these facilities was maintained through decontamination and control procedures for both animals and humans to prevent the entry of unwanted pathogens.

4. "Dirty" eggs contained pathogens that could be harmful to other poultry. Many experts believed that human beings were immune to poultry diseases. However, in 1997, Hong Kong experienced the first known cases of avian flu in human beings. Since then, avian flu outbreaks in humans have been reported in Europe, the United States and Asia. More recently, scientists have linked the Spanish Flu of 1918 that claimed up to 50 million lives to avian flu, "1918 Killer Flu Secrets Revealed," BBC News UK Edition, February 5, 2004.

5. Breed stock eggs were used to restock hatcheries with hens that had specific genetic profiles. While the eggs were more expensive, the number needed to restock hatcheries was relatively small.

6. A poultry integrator carries out different aspects of poultry production through its various farms and related businesses. These include growing, breeding, care, transport, processing and marketing of eggs, boiler chickens and other end-use poultry products.

7. ALPES (Aves libres de patógenos específicos) was a Spanish acronym equivalent to SPAFAS.

8. Aunt of Alejandro Romero, CEO of ALPES.

9. Alejandro Romero's father.

10. For example, some innovations in building design and construction, such as the use of cement rather than wood, were later adopted by SPAFAS as more effective in the prevention and elimination of potentially harmful contaminants.

11. Alejandro Romero also held degrees in engineering and business administration (MBA) from Mexican universities.

12. More than two-thirds of Mexico's vaccine production was exported.

13. Poultry vaccines made from "dirty" eggs were permitted in Mexico and Central America, but they were strictly prohibited in the United States, Europe and Japan.

14. ALPES had to decontaminate the farm and restock its facilities several times in the past three years.

15. Known officially as the in-bond industry, maquiladoras were export-oriented factories that operated under special trade rules established by the Mexican government. International companies often established maquiladora factories in order to produce lower cost goods destined for the U.S. market. Under NAFTA, most products manufactured in Mexico could enter the U.S. free of duties.