Cases in Strategic-Systems Auditing

Virtual Control Corporation

Auditor/Client Negotiations

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Introduction

Virtual Control Corporation (VCC)[1], a family owned company, manufactures and sells joysticks primarily for sophisticated computer game players, known in the industry as "gamers." VCC also produces and sells precision joysticks and related analog devices[2] including video post-production equipment (used, for example, to control dinosaur movements in the movie *Jurassic Park*), medical instrumentation, and wheelchair applications for the original equipment manufacturer (OEM) market.[3]

Steve White, company president and founder, believes the company's future is in its joysticks, which have long been the benchmark for gaming excellence. As a former jet fighter pilot in the Vietnam War, White boasts that the feel of the company's Stealth Fighter joystick is "just like being in the cockpit during a combat mission." In the past, the company's research and design operations created cutting-edge products that it sold predominately to a limited number of high-end computer retail outlets. Penetrating this market fortified the synergy between high-end computing power, gamers, and the company's intended image as the ultimate joystick designer and manufacturer of which the Stealth Fighter joysticks were a prime example. The Stealth Fighter joystick was White's last special touch before leaving the R&D department in 1995 to become president. Members of the White family are part of management as well, Tom White is VP of manufacturing and Tessie White is VP of inventory management. White is proud of the close family atmosphere he has carefully fostered in the company. He believes in cooperative management, favoring group discussion over a more formal goal-setting process.

As president, White is contemplating taking the company public to infuse needed capital in order to compete with much larger joystick makers such as Logitech and Thrustmaster, not to mention Microsoft. Privately, he has expressed concern with VCC's deteriorating financial performance demonstrated by net sales decreasing from $18.2 million in 1997 to $13.2 million in 1999, and a corresponding decline in net income from $3.1 million in 1997 to $411 thousand in 1999. Over the

[1] Although a real company, the company name is fictitious. In addition, all of the company management and product names are fictitious.

[2] Analog signals are fluctuating, evolving, or continually changing signals. Analog signals usually are represented as a series of sine waves. Devices that use analog signals are referred to as analog devices, e.g. conventional telephones transmit voice signals as analog signals.

[3] There are three types of customers for industrial goods: final users, original-equipment manufacturers (OEM), and resellers. Final users employ the goods they purchase in their own businesses and personal lives. For example, VCC purchases equipment for use in its assembly processes and "gamers" purchase VCC joysticks to use with their computer games. OEMs incorporate purchased goods into their final products, which they then sell to either resellers or final users. VCC, for example, manufactures control components sold to wheelchair manufacturers who incorporate VCC's controls into their wheelchairs. Resellers are middlemen, both wholesalers and retailers, who distribute manufactured goods to final users, to OEMs, and to other middlemen.

past five years, the company significantly decreased its R&D efforts and its 60 percent share of the high-end joystick market eroded to 28 percent.

In response to these financial pressures, VCC is in the process of shifting its marketing strategy to include the growing mass market for gaming devices, a lucrative market but one where joystick pricing is very competitive. To keep production costs low and pricing competitive, VCC is planning to manufacture these products using an offshore company.

The Joystick Industry

In the past, small, privately held and relatively unknown companies, such as VCC, had the same opportunity to bring new products to market as industry giants like Microsoft, Logitech, and Thrustmaster. In 1999, joystick sales (always subject to rapid change) accounted for approximately $200 million of the much larger $600 billion electronics market. Consistent with the rest of the technology-driven electronics industry, the joystick industry is characterized by frequent introduction of new products, short product-life cycles, competitive selling prices, and evolving industry standards.

In 1997, Microsoft, a relative newcomer to the joystick market, entered the industry as part of its Internet initiative. At that time, observers expected that future growth in computer gaming would accelerate because in 1996, less than 5 percent of the world's population had a computer – much less a gaming product. International markets represented the greatest opportunity for computer growth and markets with extremely low levels of computer usage (e.g., India, Indonesia, and China) offered huge long-term potential for joystick sales. Further, the computer industry expected one-third of computer owners would upgrade their systems to state-of-the art capabilities long before those systems were obsolete. In addition, the industry expected many customers would then purchase joysticks.

Table 1
VCC Market Share

Year	High-end Joysticks (%)	Devices to OEMs (%)
1999	28	59
1998	37	58
1997	46	56
1996	54	55
1995	60	54

VCC's Strategy

VCC's mission states that it strives to "produce high quality, innovative designs with great ergonomics and functionality at the best price." The company's primary strategy has been to produce quality products for the "gamer" market. Toward this end, the primary objective of VCC's R&D, manufacturing and marketing efforts is to create a reputation for quality and innovative design. When computer games were restricted to true gamer enthusiasts, VCC enjoyed a dominant market position, estimated at as

high as 60 percent of the joystick market. But, as computer costs declined, VCC's joystick market share also declined (see Table 1).

Table 2
Comparison of Financial Performance Measures

	VCC			Thrustmaster[a]			Logitech[a]		
	1999	1998	1997	1999	1998	1997	1999	1998	1997
Profitability									
Gross Margin	0.35	0.43	0.44	0.38	0.36	0.52	0.30	0.27	0.39
ROE	0.04	0.18	0.22	0.22	0.15	0.27	0.23	0.11	0.11
ROE Decomposition:									
ROA	0.03	0.16	0.18	0.15	0.12	0.23	0.11	0.05	0.09
Financial leverage	1.13	1.10	1.22	1.45	1.34	1.16	1.94	2.54	1.13
Working Capital Mgmt									
Current asset turnover	1.17	1.29	1.57	1.90	1.80	1.61	2.48	2.36	1.38
A/R turnover	4.03	4.01	4.35	5.21	4.85	4.39	6.16	5.67	6.70
Inventory turnover	1.67	1.65	2.1	6.42	6.44	2.14	5.00	4.93	4.63
Liquidity Risk									
Current ratio	8.03	9.58	6.37	2.82	3.77	6.37	1.81	1.43	8.04
Quick ratio	4.33	5.13	3.55	2.05	3.04	3.55	1.09	0.87	6.30
Cash flow ratio[b]	1.14	1.76	1.82	1.56	-.18	2.81	0.27	0.08	0.03

[a]This performance analysis compares VCC with Thrustmaster and Logitech, two competitors most similar to VCC in terms of product line and size.
[b]Cash flow from operations/current liabilities.

In response to erosion of its joystick market share, (see Table 2 for a comparison of recent financial performance measures) VCC has decided to shift its competitive strategy to become a "one-stop shop" for gaming control devices. Specifically, the company seeks not only to serve the gamer market but also to compete in the mass market with lower-cost products. To implement this strategy, VCC entered into an agreement in 1998 with a manufacturer in Taiwan. The Taiwanese company will produce joysticks, at considerably lower cost, to be marketed under a different brand name. These joysticks will have a one-year warranty as compared to the three-year warranty provided on the higher-line products made at VCC's U.S. manufacturing facility. VCC also is considering obtaining a license from Sony to use the PlayStation name to market its low-cost joystick.

Recently, VCC began offering joystick products over the Internet selling at retail. However, bricks and mortar retail stores frequently offer discounts and undercut Internet sales. As has been standard practice for the industry, the company has not placed significant focus on Internet sales for gaming devices because of the power of retailers and distributors. Industry manufacturers, however, continue to make broader use of the Internet and direct marketing. VCC maintains a strong market position with respect to precision joysticks sold to OEMs. Precision joystick are not subject to commodity pricing unlike the gaming devices, therefore, VCC plans to focus its marketing efforts on OEM products over the Internet in the near future.

VCC Operations

Core Business Processes

White has identified four business processes that are fundamental to the operation of VCC's business:

- research and design
- manufacturing
- inventory procurement and management
- sales and distribution.

The core processes may be further broken down into sub-processes. For example, inventory management (i.e., the process for optimizing inventories) is the result of sales forecasting and procurement as well as certain inventory procedures. Sales and distribution also consists of retail store contract negotiations, cooperative advertising, and product pricing. Three resource management processes provide support for the core processes: human resources, treasury, and information management.

With regard to information management, VCC is in the process of converting its information system to the most current version of DataSys. This system allows VCC to capture labor and overhead costs as well as product costs continuously, rather than expensing conversion costs during the year and then at year-end allocating them between inventory and cost of goods sold. Under the current system warehouse personnel allocate raw material to manufacturing (a holding account) on a real-time basis, but the accounting system does not deduct raw material inventory until the manufacturing process is complete and personnel have entered the finished good into stock. This system is referred to as

"backflushing"[4] and although simple to operate, it results in raw material balances that are overstated and reports no information on the level of work-in-process during the production process. The new system will be able to account continuously for raw materials and work-in-process.

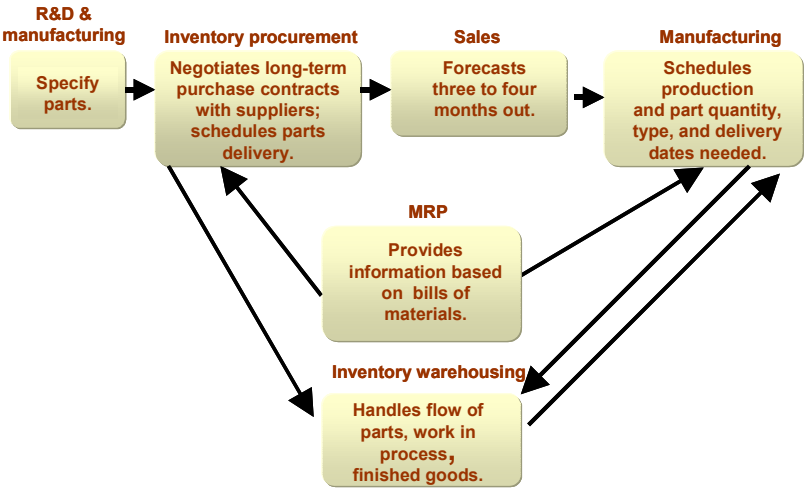
Critical Success Factors

There are a number of critical success factors for companies in the computer gaming control business. As common in most industries, strong leadership and management are essential. The factors are critical to the establishment of viable business models, clearly defined strategies, and maintenance of strong corporate governance. More specifically, research and development and alliances are vital due to the rapid changes in technology for joysticks and related devices.

Forecasting Sales and Inventory Procurement

Accurate sales forecasting is essential to ensure sufficient products are available without excessive investment in inventories (raw materials and finished goods). Forecasting sales is a difficult task, requiring assumptions about consumer demands for new and continuing products in many geographic areas. Further, large retail customers expect delivery within ever shortening time frames. Seasonality also is a major factor with a significant proportion of sales during the holiday season. VCC must forecast for the holiday season almost nine months in advance so that raw materials will be available when needed for production. Forecasting accuracy, in turn, affects the levels of inventory maintained. Interestingly, many PC manufacturers such as Dell have worked to minimize work-in-process inventories to almost just-in-time (JIT) levels by building products as they are ordered. Outsourcing product manufacturing to lower cost countries such as Taiwan has allowed companies like VCC to avoid plant investments while providing increased production capacity.

Figure 1
Process to Estimate Raw Materials Requirements



Based on long-range sales forecasts and a material requirements planning (MRP) system, VCC estimates its raw materials needs up to one year in advance. (See Figure 1.) Using parts

[4] Backflush costing is a system that omits recording some or all of the journal entries relating to the manufacturing cycle. The system works backward from output to assign manufacturing costs to work-in-process using standard or normal costs. See any recent cost accounting text for further description of backflush costing.

specifications established by R&D and manufacturing, inventory procurement identifies parts suppliers and negotiates long-term purchase contracts with selected suppliers. Then, manufacturing schedules production based on shorter-range sales forecasts (three-four months out), and uses the MRP system based on product bills of material to determine the amount, types, and delivery dates of the parts needed to produce the specified quantities of the given products. Inventory procurement uses the MRP reports to schedule parts deliveries under the various supplier purchase contracts. Inventory warehousing receives and stores parts deliveries, and based on daily production schedules, handles the flow of all raw materials, work-in-process, and finished goods in the factory.

Sales and Distribution

VCC has a price protection program for its retail store customers by offering a refund for any product whose price decreases after the initial sale. It also gives a five percent purchase discount to retailers in exchange for promoting its products in their advertisements. Such advertising arrangements are standard industry practice.

Developing good relationships with retailers is essential to ensure adequate promotion and shelf-space. Additionally, retailers consider bundling products with games to be a strong promotional device. When choosing products, retailers know that their educated consumers demand quality and service. In that regard, they look for companies who provide telephone technical support and good warranties, which now are common in the industry. In the past, VCC was able to charge a price premium for its high quality and excellent customer support but no longer can do so as competitors have developed strong customer support services as well.

Table 3
Comparison of Key Performance Indicators
For 1999

	VCC	Industry Average
R&D expenditures (% of sales)	4	11
Patents filed (#)	0	4
Patents approved (#)	0	3
On-time delivery[a]	89	96
Plant capacity utilization[b]	70	95
Defect rate[c]	5	4
Bundling agreements (#)	2	6
Inventory turnover (times per year)	1.67	5.98

[a]Percentage of shipments that meet or exceed customer requested delivery date.
[b]Number of machine hours used/practical maximum hours.
[c]Percentage of units ready for shipment that fail to pass final inspection.

Key Performance Indicators

In running the business, VCC management gathers financial and nonfinancial information – key performance indicators (KPIs) – to manage operations, including assessing the extent to which they are meeting

business process objectives.

Table 3 provides selected KPIs for the core business processes at VCC. In looking at R&D performance, for example, White would like to see more money allocated to new joystick development. Although the company spent $536,000 on R&D in 1999, this amount was only 4 percent of net sales, down from 5.5 percent in 1998. White has worked on bringing this figure to a minimum of 10 percent of net sales in 2000, which reflects the industry-wide commitment to R&D. Furthermore, the company plans to increase the number of patents it files significantly. In 2000, VCC did not file any patent requests, despite the industry norm of four new patent requests per year.

Table 4
Computer Game Control Device Products

Product	Control Device Revenues 1999	1998	1997
Joysticks	Percentage of Total Revenues		
Jet Pilot	3%	30%	35%
Ultimate Combatstick #	6	20	30
Pilotstick	10	5	N/A
Pilotstick Pro *	11	4	N/A
Stealth Pilotstick	7	2	N/A
Stealth Combatstick	8	1	N/A
Stealth Fighterstick *	8	1	N/A
Top Speed	5	1	N/A
Ace Ace Gamestick	3	N/A	N/A
Ace Ace Gamestick 2.0	1	N/A	N/A
Ace Pilotstick *	1	N/A	N/A
Racing Products			
Daytona Racing Wheel #	9	12	13
Daytona Racing System #	4	N/A	N/A
Ruder Peddles			
Ace Peddles *	4	8	7
Daytona Peddles *	4	N/A	N/A
Throttle Line			
Ace Throttle *	2	2	3
Daytona Throttle	2	1	N/A
Accessories			
Joystick Automatic (adjusts joystick to PC speed)	4	N/A	N/A
Switchbox Adapter (4 port adapter)	2	2	N/A
X-Cable (extension cord)	1	6	7
Y-Cable (turns 1 port into 2)	2	N/A	N/A
Flight Yokes			
Pilot Ace	1	5	5
Pilot Ace 2.0	2	N/A	N/A

Bundled with gaming software title.
* Available for the Macintosh.
N/A indicates this is a newer product, and, therefore, there are no prior sales.

Markets and Core Products

Of VCC's current revenues, 85 percent come from computer game control devices (joysticks and related accessories) with the remaining 15 percent derived from sales to the industrial electronics industry OEM market, such as controls for wheelchairs.

Table 4 provides historical data on the relative sales for each of VCC's game control products (primarily designed for the personal computer (PC) during the past three years). Computer industry observers expect the joystick market to grow significantly with increases in the number of PC and Internet users and with advances in technology making games more realistic and enjoyable.[5] New product development drives the computer game industry and usually customers replacing their hardware or software would be targets for joystick sales. But White recognizes that the competition is not focusing on developing peripherals. Should financing be available, he believes VCC will fill this niche.

To create more income, VCC began custom molding plastic parts for external customers when there was excess capacity. Contract manufacturing of its injection molding operations produced $100,000 in revenues for 1998 and $400,000 in 1999. Injection molding is a manufacturing process that forces a material (usually thermoplastic) into a mold cavity under pressure. VCC uses injection molding to produce its joystick housings. Other companies use plastic injection moldings for applications as diverse as automobile dashboards and electronics cabinets. Exhibits 3 and 4 provide financial statements for VCC from 1997 through 1999.

External Forces

Competition

The market for computer gaming devices is highly competitive with at least ten direct competitors, including Microsoft, Logitech, Thrustmaster, Advanced Gravis, and ACT Labs. In addition to product features such as ease of use and realism, price is a significant factor to customers. Thrustmaster most closely resembles VCC in terms of size ($30 million in revenue), products, and susceptibility to larger competitors such as Microsoft. Thrustmaster has bundling arrangements with gaming software companies, conducts extensive store demonstrations in cooperation with software companies, and also arranges bundling licenses with computer manufacturers such as Compaq. Although larger in size than VCC, Logitech does not sell complementary products and does not have the financial viability to engage in an extended price war with competitors. Both Microsoft and Logitech reduce costs by using overseas manufacturing facilities and well-established distribution channels.

[5] For example, *Computer Retail Week* reported that in 1995 only 15 percent of PC consumers used joysticks.

Technology

VCC's products are in markets with short life cycles due to rapid changes in technology. For example, 70 percent of the computer gaming control device industry's revenues come from products that did not exist two years ago. VCC estimates that 50 percent of a new product's revenues come in the first six months after introduction. Again, past evidence indicates that product innovations are as likely to come from small companies as they are from large and publicly traded companies. Given the importance of technology, investment in R&D and retaining capable, skilled designers and engineers are essential to the success of VCC.

The joystick industry has begun to use digital technology, which offers extremely fast and accurate responses as well as the convenience in programmability without using a keyboard port.[6] Logitech and Microsoft have introduced digital joysticks, while VCC produces only analog joysticks.

Joystick industry observers expected the *plug-and-play* feature of Windows 95 to increase joystick sales significantly because joystick installation merely requires a selection from a control panel. However, VCC found little effect on its 1997 sales because installation of non-Microsoft products remained difficult in Windows 95 and did not improve much in Windows 98. In response, in 2000, VCC offered a universal serial bus (USB) switch box that allowed fast and easy installation of VCC's products.[7]

Another technological development in the computer gaming industry is real-time feedback. Real-time feedback in a joystick uses small motors that resonate and move to simulate the action on screen. In late 1998, VCC was the first company to introduce a real-time feedback joystick (Jet Pilot) at a price of $250. VCC licenses use of this technology from Game Products Corporation. Thrustmaster and Microsoft introduced this technology in their products in 1999 with suggested prices of $150. VCC responded by lowering its price but eventually discontinued this product, conceding that competitors could produce it at a lower cost. Additionally, higher production costs due to over-estimating sales resulted in excessive inventories.

Currently, VCC is testing wireless joysticks that use radio frequency and infrared technologies. These products were introduced in mid-2000 and are priced under $100. During 1999 the company introduced eight new products (all priced below $100) with sales of 104,000 units.

[6] A digital signal is one transmitted as binary code as opposed to analog signals that are continuously varying. Data transmitted or stored with digital technology is expressed as a string of 0's (off) and 1's (on).

[7] Universal serial bus (USB) is a "plug-and-play" interface between a computer and add-on devices (such as audio players, joysticks, keyboards, telephones, scanners, and printers). With USB, one can add a new device to a computer without having to add an adapter card or even having to turn the computer off.

Customers (Gaming)

VCC sells joysticks and accessories to retailers and distributors for whom the end consumers primarily are 18-to-35 year old males. Sales are predominately to large retailers such as Wal-Mart, Circuit City, Comp USA, and K-Mart. These large retailers typically have strict demands on delivery and expect receipt within two or three days of an order. Further, while VCC provides a suggested retail price in its marketing catalogues, larger retailers negotiate prices based on purchasing volume to ensure competitive position with other stores in their market niche. End consumers are of two types: "gamers" who are sophisticated and want high levels of game realism; and "newbies" who are less demanding and are very price conscious.

VCC relies on retailers to demonstrate the quality of its products, especially to consumers driven by price. Effective but costly in-store demos ($4,000-$5,000 per store) have not been an option for VCC, so, unlike some of its competitors, VCC relies on two trade shows each year. Independent sales agents, to whom VCC pays a five percent commission, sell VCC's gaming products to large computer stores, superstores and mass merchants, and specialty stores. VCC uses wholesale distributors to reach smaller stores and markets outside North America.

Customers (Industrial Electronics)

VCC sells its OEM products directly through its sales and marketing department to large companies such as McDonnell Douglas (now merged with Boeing), Sun Microsystems, and IBM for use in wheelchairs, medical instruments, and computers. Although cost is an important consideration, products that meet quality and performance specifications are of greatest concern to industrial customers. As such, VCC will work with industrial customers to identify their particular needs and then design or adapt a product accordingly. Despite the heavy focus on computer game control devices, VCC has had good success with its OEM products. Sales in this arena have grown in double digits for the past three years with a healthy gross margin (81.5% in 1998 and 78.9% in 1999). White recognizes the profitability of these products but feels that he founded the company and built its reputation in the joystick market. In that regard, he projects the growth rate and size of the joystick market to be larger than VCC's OEM product market segments.

Consumer Sophistication and Computer/Internet Use

Historically, VCC has relied on its recognized quality and the capabilities of its gaming products. Sales of its products depended on sufficiently knowledgeable consumers who appreciated the relative capabilities of various joysticks and accessories on the market. The degree of consumer sophistication

also has had an impact on the frequency of systems upgrades, which promote sales of gaming related products. Also, the expanding use of PCs and the Internet may significantly affect the demand by novice users for joystick products but forecasting sales in the computer gaming industry has been haphazard. When VCC had an estimated 60 percent market share, the need for accurate sales forecasting was not as critical. But in today's market, where the price of computer hardware and software has dropped significantly, forecasting sales is quite important. Unlike VCC, Microsoft and Logitech have sophisticated sales forecasting and tracking systems that identify sales in three categories: new products, new "targeted" customers, and geographic location. This information allows VCC's competitors to determine customer retention rates and the impact of advertising. Detailed sales information also allows competitors to react promptly in discontinuing older products and to plan material usage more accurately.

Demographic Trends

Because, as noted earlier, the primary consumers for game devices are in the 18-to-35 age group, changes in population demographics can have a major impact on product sales. Specifically, in the United States the population is shifting gradually toward greater proportions of older people. This shift may negatively impact sales.

Suppliers

VCC's products include electronic components (such as microprocessors), mold-injected plastic, and metal parts. Consistent with competitors and to maintain lower costs, VCC purchases a significant amount of these raw materials from suppliers overseas (in China and Taiwan). As a result, purchasing requires significant lead times because unexpected delays in production and shipment may occur. Further, VCC must be continually vigilant that it maintains the quality of purchased materials at an acceptable level. The company also periodically asks various suppliers for bids to try to get the most competitive price possible and negotiates for volume discounts or allowances.

Complementary Products

Competitors such as Microsoft and Logitech offer a broad array of products and, thus, are able to command more shelf space than VCC. Additionally, a common practice in the industry is to offer joysticks bundled with software games, providing the consumer with a perceived added "bonus" for purchasing the product. The software manufacturer benefits by creating a potential demand for its other current and future game titles; usually for games that have been on the market for some time. Although VCC relies on bundling for its Daytona Racing Wheel, Daytona Racing System, and

Ultimate Combatstick products, the company has relatively fewer established alliances with software manufacturers than its competitors. The company believes that bundled software usually represents older products and that its traditional focus on product quality and capabilities is a preferable marketing strategy.

Economy

Because gaming product purchases are discretionary for consumers, the general state of the economy also can have a significant affect on VCC's joystick sales. Further, most of the company's end consumers are in the middle or lower income levels, those affected the most when an economic downturn results in loss of jobs. The economy also affects computer and system upgrade sales, which, in turn, impact computer gaming control device revenues.

The 1999 Financial Statement Audit

It is March 2000 and the team has just finished fieldwork for its audit of VCC's December 31, 1999 financial statements. The audit has progressed well, which was no surprise, because the client always has been easy to work with and appreciative of the audit team's knowledge and ability. Last year, VCC's accounting group accepted all of the audit adjustments, incorporating them into the financial statements without complaint. However, the current year's situation is starting to look quite different. The audit team has suggested talking about an audit adjustment to writedown inventory due to obsolescence and excess.

Inventory Management

In response to concerns about VCC's inventory level at the end of 1999, the audit team obtained the inventory-related information from management (as supplemented and modified by the audit team's research and verification) presented in Table 5.

Several factors influence inventory management. As discussed previously, to meet the short order lead times demanded by its customers, VCC must be able to deliver finished goods within periods as short as two days. A significant level of raw materials must be on hand because of the time delay in receiving purchased components and parts – especially from foreign suppliers. Thus, the company finds it very difficult to practice JIT inventory management.

Table 5
Inventory Management
Key Performance Indicators

Publicly Available Information	VCC			Thrustmaster			Logitech		
	1999	1998	1997	1999	1998	1997	1999	1998	1997
Inventory turnover	1.7	1.7	2.1	6.4	6.4	2.1	5.0	4.9	4.6
Number of days in inventory	215	215	174	57	57	174	73	74	79
Conversion period[a]	307	253	245	123	125	128	132	128	123
Sales to inventories	2.5	2.8	3.5	10.1	12.2	13.1	7.1	6.4	6.0
Sales growth	-12%	-17%	2%	60%	35%	30%	20%	28%	22%
RM inventory growth	1.9%	2.1%	3.2%	40%	42%	38%	20%	25%	25%

Non-Publicly Available Information	VCC			Estimated Industry Average		
	1999	1998	1997	1999	1998	1997
On-time delivery percentage[b]	89%	85%	83%	96%	96%	95%
Plant capacity use[c]	70%	73%	74%	95%	92%	93%
Defect rate[d]	5%	6%	5%	4%	4%	4%
Sales forecast error[e]	25%	15%	16%	5%	4%	5%
Order lead time on materials[f]	73	70	69	58	56	56
Production cycle time[g]	3.5	4.0	3.8	3.2	3.8	3.8
Customer return rate[h]	3.7	4.0	4.1	3.5	3.5	4.0

[a]Number of days from purchase of raw materials to collection of accounts receivable.
[b]Percentage of shipments that meet or exceed customer requested delivery date.
[c]Number of machine hours used/practical maximum hours.
[d]Percentage of units ready for shipment that fail to pass final inspection.
[e]Absolute difference between sales forecast and actual sales as a percent of actual sales.
[f]Number of days from order of raw materials to delivery at production facilities.
[g]Average number of days from initiation of production to finished product.
[h]Customer returns as a percentage of gross sales.

Another inventory-related problem is the difficulty of forecasting sales demand. Tessie White, the Vice President (VP) of inventory management, is responsible for preparing sales forecasts and communicates with the VP of sales for input. She has discovered that because of the constant technological change impacting computers and the trendy nature of computer games, manufacturers of gaming joysticks and related gaming devices cannot optimize inventory levels. This is certainly true at VCC; the company has great difficulty estimating its future sales.

Inventory Valuation

As indicated earlier, the company uses backflushing as its inventory accounting method, but is in the process of changing methods. Tessie White states:

> I became aware in 1998 that the auditors viewed backflushing as an inadequate method. This is why in 1999 we initiated policies to mitigate concerns about the backflushing system that involve changing order quantities based on company experience and trying to understand how much product may be work-in-process at any given time. Furthermore, top management now is aware of the auditors' concerns about a backflushing system, even though it is an accepted accounting method, and the company currently is incurring considerable cost to replace the backflushing system. As a result, I believe the auditors should find inventory acceptable during 1999, eliminating the need for me and the other members of top management to explain why the 12/31/99 inventory as recorded by the company is correct.

Warehouse personnel, who work for Ms. White, generate an Excess Inventory Report that the controller regularly reviews. The controller discusses excess parts with the engineers in R&D to determine if there are alternative uses for the inventory (e.g., to determine if the engineers are developing a new product that might require a particular part that currently is classified as excess). The controller also considers if other existing products can use the excess part. If there appears to be no alternative use for the part and it is determined to be obsolete (a joint agreement between inventory management, production, R&D, and the controller), the item is scrapped and written-off.

VCC does not maintain a reserve for slow moving or obsolete inventory. Ms. White explained there are two reasons for this practice. First, excess parts (raw materials) inventory normally is used in the production of new products. Second, any inventory that is determined to be unusable is immediately scrapped and written-off. This write-off provides a tax break for the company.

Several weeks ago, the audit manager, Lee Smith, broached the subject of a possible write-down of parts inventory with Pat Summer, VCC's controller. In that initial conversation, Smith said, "Pat, I need to sit down and talk with you about the inventory situation. A lot of your parts inventory is quite old, turnover is continuing to slow, and we're worried that the inventory is significantly overvalued on your books." The conversation didn't go any further than that, and neither Lee nor Pat have yet to mention numbers, but the issue now is on the table for discussion.

Exhibit 1
Virtual Control Corporation
Balance Sheet
($000's)

	Unaudited	Audited	Audited
Assets	1999	1998	1997
Cash and cash equivalents	$2,530	$3,053	$2,154
Accounts receivable (net)	3,214	3,351	4,145
Inventories	4,879	5,502	4,951
Prepaid expenses and other current assets	45	62	57
Total current assets	$10,668	$11,968	$11,307
Property and equipment, net	1,103	1,347	1,922
Intangible assets, net	2	3	4
Total assets	$11,773	$13,318	$13,233
Liabilities			
Accounts payable	$787	$736	$1,013
Accrued expenses and other current liabilities	541	513	763
Total current liabilities	$1,328	$1,249	$1,776
Stockholders' Equity			
Common stock, no par value, 100,000 shares			
Issued and outstanding	$684	$682	$682
Retained earnings	9,761	11,387	10,775
Total stockholders' equity	$10,445	$12,069	$11,457
Total liabilities and stockholders' equity	$11,773	$13,318	$13,233

Exhibit 2
Virtual Control Corporation
Income Statement
($000's)

	Unaudited	Audited	Audited
	1999	1998	1997
Net sales	$13,236	$15,045	$18,179
Cost of goods sold	8,661	8,636	10,596
Gross profit	$4,575	$6,409	$7,583
Selling, general & administrative expenses	3,628	3,941	3,825
Research and development	536	831	710
Income from operations	$411	$1,637	$3,048
Interest income, net	0	101	100
Gain on sale of fixed assets	0	405	0
Income before income taxes	$411	$2,143	$3,148
Income taxes	0	32	47
Net income	$411	$2,111	$3,101