PERSCON

An Integrative Case Study

Integrative Core
Kelley School of Business

Summer 2014

Case and activities developed by Michael Lavender, Rex Cutshall, Dan Greiner, Carolyn Goerner, & Greg Kitzmiller.

Background Information

Introduction

"Houston, we have a problem"… So began a telephone conversation between Art Smith, Founder, Chairman and primary shareholder of PERSCON, Inc. and his company CEO, Tom Carter. Smith feared that his Houston, TX based PERSCON, Inc. was in the early stages of technological obsolescence and declining revenues.

While discussing various options to reverse the company's status to its former growth success, Smith asked Carter to come up with a definitive plan to update the company's primary product to meet client needs and to seek out new markets where the product or a redesigned product could be sold. Smith wants to develop a technologically superior product that would enable his PERS (Personal Emergency Response System) device to pinpoint a person's location in their home, apartment or anywhere on the planet where there is access to a cell/data signal. He envisions a device not limited to the home receiver but one activated by a small transmitter worn as a wristband or pendant and an App for a Bluetooth-connected smart phone used as the base station. He also envisions a GPS device enabled to connect to the PERSCON Emergency Response Team for use by anyone using satellite or Wi-Fi connection (avoiding the need for a user to be in cell range).

Carter immediately set a plan in motion to confer with his top managers and form a development team to research and create a presentation that could be presented to Art Smith for approval and action that would ensure the success of the existing (or redesigned) product, and new markets and devices for use by a wider populace than their existing demographics.

Case Setting

In 1995, Art Smith was an engineer and the owner of a small technology company working on Global Positioning System technology for the United States Department of Defense. At that time, GPS was restricted to military use by the U.S. Government. In 2000, restrictions were lifted to allow GPS technology to be used by the private sector. Within months, Smith's small engineering firm became a major player in the development and manufacturing of fixed-base GPS tracking systems for commercial vehicles. His clients ranged from United Parcel Service to the U.S. Post Office. Using technology and products developed by Smith's firm, companies could now track the location of every vehicle in their fleets. In 2003, Smith sold the manufacturing portion of this commercial GPS unit firm and licensed the technology for that item to a large Silicon Valley based investment firm. He retained the engineering firm in Chicago, IL. During this transition period for Smith, he had noticed his aging parents were having mobility and health issues that could have resulted in moving them to an extended care facility to ensure their safety. However, his parents wanted no part of such a plan. They intended to live in the house where they had resided for 35 years and raised their family. Smith then started to research options available to him, which led to a major study of the technology available to monitor the activities and ensure the safety of his parents when a caregiver was not with them. Not satisfied with any of the technology available, within a year, entrepreneur Smith purchased an established company involved in the development, marketing and manufacturing of Personal Emergency Response System (PERS) devices for use by senior citizens who had health or mobility issues. The resulting firm was PERSCON, Inc.

The target market was/is senior citizens, ages 65–85, with health issues who were worried about getting help if no one was immediately available to help them. A PERS device basically consisted of three components: A small transmitter pendant worn by the patient that can also allow him or her to speak to a medically trained Emergency Response operator; a receiver connected to the telephone line; and an Emergency Response Center that monitored alerts and calls. Upon activation, the Emergency Response operator followed basic protocol and 1) called the client to determine the nature of the emergency and action; 2) notified family members and first responders depending upon the emergency; 3) stayed on the phone with the subscriber until help arrived. There were a total of 19,000 alert activations at PERSCON in 2013.

The product initially manufactured by PERSCON was a small push-button transmitter worn as a pendant and a two-way voice base station with a 500-foot range. Incorporating GPS technology into the system, the new PERSCON PERS device was recognized as an effective addition to the market. The Emergency Response Center was also located at the Houston plant site and was in operation 24/7/365 to service clients. The product and service has remained relatively unchanged over the years with occasional cosmetic updates and extension of the range to 750 feet from the base station.

PERSCON made an initial splash in a highly fragmented market. In a market that was dominated by two companies, PERSCON's aggressive marketing, attractive styling, favorable pricing structure and ease of use allowed PERSCON, Inc. to grow from a client base of 50,000 users in 2005 to 500,000 users in 2013. However, growth from 2012 and 2013 has slowed or remained stagnant.

Over time, the Houston plant has expanded capacity to manufacture up to 50,000 new devices annually and recondition/repair existing devices. The current PERSCON device is easy to manufacture using industry standard and readily available parts from a multitude of suppliers. All manufacturing and product sourcing are in the U.S. with the exception of a small lithium battery manufactured in Germany. The battery in the existing transmitter must be replaced annually. PERSCON ships a new battery to the customer upon request at a nominal charge of $10.00. This is a zero profit item for PERSCON and is done as a customer service. The plant adopts a zero defect quality assurance and if a customer has a defective device, it is replaced overnight by PERSCON with the customer returning the faulty device back to PERSCON. This is a policy unique to PERSCON.

Revenue is generated through a monthly lease to a customer at $49.95 per month which gives the client the PERS device and a subscription to the monitoring service. There is no billing for the service in that each month's subscription is automatically charged to a customer charge card or withdrawn from a bank account. There is a one-time $50.00 set-up charge for the device, paid to PERSCON. None of the fees associated with PERS devices are routinely covered by insurance although the Center for Medicare and Medicaid Services may study if a PERS device would be covered by Medicare when prescribed by a physician.

The expected life span for the PERSCON device itself is 5 years. The average length of time that a subscriber uses the service is 3 years. The average age of a PERSCON subscriber is 79; 60% are female and 40% are male. (Note: the average age of an in-home PERS subscriber nationally is 81.) Attrition (churn) rate has been approximately 22%. It is high due to the age/health demographics of the customer base.

One of Smith's own suggestions is that he and his engineering team become more active in the development of new products using his experience and knowledge of GPS systems.

Introduction

Two weeks ago, after the two-hour telephone conversation with Company Chairman and founder, Art Smith, Company CEO Tom Carter gathered his PERSCON management team and decided that something new had to be done to respond to the slow market growth in the industry. After going over various proposals, it was determined that the company would examine the prospects of launching the P911 ERD, an expanded use Emergency Response Device (ERD), in order to expand existing markets and penetrate new ones. Management set up cross-functional teams, and you and your teammates were called on to develop a report about this new product and the potential of further penetrating this expanding product field in the Personal Emergency Response System (PERS) industry.

Case Setting

Twenty years ago, a small company called PERSCON began producing PERS devices out of a factory in Houston, TX. Ten years ago, PERSCON was purchased and financed entirely by founder Art Smith who felt that the company had a product that would compete successfully in the fiercely competitive PERS industry. Over the years, PERSCON proved their initial strategy correct. They quickly carved out a slice of the lucrative PERS market and then further added an extended range device to their product line. In a market dominated by three large firms, they have thrived by focusing on high quality and extensive customer service and product support.

Initially, the PERS market grew at an incredible rate. In the first three years of operations, the market grew at nearly 50% per year. It was at this time that PERSCON made several key decisions. Realizing that it could no longer keep up with customer demand from their one small factory, a decision was made to expand the Houston factory and build a new, state of the art facility attached to their headquarters in Houston. This allowed the firm to meet increased customer demand, while improving their manufacturing quality to customers who were located primarily in the Midwestern region of the U.S. To finance these projects, the firm was forced to issue equity on the public markets. While Art Smith still owned a large portion of the firm's equity, for the first time the firm had to be responsive to other outside shareholders, particularly several large financial institutions that held the firm's stock in their portfolio.

For the next few years that wasn't a serious problem. Even though the PERS market had slowed considerably in recent times, it was still growing at more than 12% per year. And with the addition of the Expanded Range ERD (ER-ERD) to their product line in 2010, PERSCON also added three other products that were growing on average at a rate of 7% a year over the past five years. Though PERSCON did not overtake any of the dominant firms, they still managed to maintain a significant market share in their product markets. So by effectively managing their assets, shareholders have enjoyed years of consistently high return on their investment.

Consumer demand has begun to change in the last six years. Since 2007, the PERS market has only grown at an average of 7% per year. Though PERSCON has been able to retain its market share, prices have declined over this period putting tremendous pressure on the company's bottom line. Responding to the slow growth in the industry, PERSCON launched "PERSCON-One," an Extended Range Emergency Response Device (ER-ERD), in 2010. ER-ERDs are somewhat different from what PERSCON used to offer. While both ERDS and ER-ERDS are worn as a pendant on the body, the ER-ERD expands the range to 1000 feet. It is simple to use, in that the operator only needs to activate the device by manual activation or with the ER-ERD also by voice command

and wait to be connected to an Emergency Response Operator who will assess the emergency and dispatch appropriate help. After the Operator has analyzed the emergency, they make notifications per the customer's pre-programmed instructions. As the system protocol does most of the work, all the patient really needs to do is to activate the device.

The development and launch of the PERSCON-One was an important accomplishment for PERSCON, a firm committed to innovation. However due to the timing and pricing of the equipment, the PERSCON-One reached limited market penetration in price-sensitive sectors. The U.S. economic crisis of 2008 – 2009 hit many industries hard. While the PERS market performed according to the forecasted sales, and the ER-ERD had good market acceptance, it did not achieve the great exponential growth for which PERSCON had hoped. Since the ERD is used before the emergency service arrives, it is not mandated to have any specific features by any law or regulation (other than those of the FCC because it is a transmitting device).

While most analysts expect the growth rates mentioned before to continue for several years, they are well below the high rates of growth enjoyed earlier and PERSCON's management is very concerned that they could slow even more, just as the PERS market had done. Adding to management's concern is the fact that the three dominant firms have responded to slowing market growth by building market share through takeovers and mergers. Over the last five years, several smaller firms have been bought out by the larger firms, and management is worried about their position. PERSCON has accumulated a great deal of cash over the previous ten years of high growth, and financially the firm is in great shape. The company currently has a high stock-price to earnings ratio relative to its industry peers. Management understands that their PE ratio puts them in the market spotlight, and they believe that their firm's large pool of cash and cash-like instruments makes it an inviting target for a takeover. The venture capitalists and institutional shareholders that hold the majority of PERSCON's stock would certainly entertain an offer for their shares if they felt that current management was not maximizing the firm's potential value.

To keep their stock price high, management knows that the market must believe that PERSCON can continue to grow at a high rate in the future. Management feels that they simply must invest their cash in a new project that will allow them to continue the high rate of growth that they once enjoyed. Bearing this in mind, they have been aggressively pursuing major market-analyses of several proposed projects. The firm has set up cross-functional teams to examine potential product markets that could be tapped. You and your teammates are members of a team investigating a differentiated product allowing even more penetration in the industry: an Expanded Use ERD bracelet with unlimited range, either through Satellite or Cell connection (using GPS technology) that can be manually activated, voice activated or fall activated. It can either be used as a Blue-tooth connected App on a smart phone or as a GPS beacon when there is no cell phone range.

PERSCON has developed a prototype of the expanded use ERD model which they have called the P911 ERD. Currently, this market is still in its growth stages and the projected growth and profitability of the market is very appealing. While many senior citizens have a PERS device, even more do not yet have such a device. Though seemingly a winner, introducing a new design ERD product is not without its risks. One big unknown is how quickly this market will grow outside of the senior citizen sector. While PERS are traditionally marketed to similar customers, the P911 ERD will be marketed to entirely new customers who do not yet own a PERS or ERD. Further, PERSCON isn't completely certain how quickly competitors could catch up, what kind of market share to expect with this innovation, and what kind of profit margins they will be able to maintain given lower price.

Another matter that has management worried is how well they will be able to adjust to any changes in their current business model. In the past, PERSCON had always had products in markets where there was little incentive to deviate from the current industry norms in manufacturing, marketing or distributing their products. All their competitors played by the same rules, and there was never any need for a formal management or analysis of their strengths and weakness. Management realizes that though they have been successful in the past, each new direction they take must be carefully vetted. Management is also concerned about potential liabilities that might arise from improper use of their product. PERSCON has built safeguards into the P911 ERD unit, such as an analysis of the revised standards relating to what should be considered an emergency, but management knows that any failure to function properly could lead to a potentially devastating lawsuit for the firm.

Your team has been asked to analyze the data that management has collected about this expanding market and products, and to build an integrated report that evaluates the merits of having PERSCON make this move. Management has outlined several tasks for your team to address related to certain issues in management, marketing, operations and finance. Your team's work, analysis and opinions are to be compiled into an extensive written report. Top management will then study your report along with other data as they move toward the important step of choosing and defining PERSCON's next major move.

The PERS Industry

Currently, there are two main products offered in this industry, PERS (Personal Emergency Response System) and Expanded Use Devices (ERDS). Both products are worn by the customer as a pendant or bracelet. PERS are primarily used by senior citizens to alert an Emergency Operator when there is a medical or other emergency. The PERS device, when activated, will connect directly to the Emergency Operator by phone. While the PERSs typically last for long periods of time, it is necessary for the customer to charge the battery in the device or change batteries when needed. Thus, typical customer service provided by the manufacturers of these instruments consists of analyzing the use of the PERS and recommending any maintenance or adjustments.

The US PERS industry was approximately valued at $600 million in 2013. NAP Corp is the largest firm in the market, claiming 51% of the U.S. market in 2013. This is followed by AMCON, which had 25% of the market and LERT Inc., which claimed 18%. To date in 2013, PERSCON holds a 5% share of the PERS market. Exhibit 1 shows the growth in overall market size over the previous five years, as well as the market share controlled by the three major firms in the industry as well as PERSCON.

Exhibit 1
Market Shares in the PERS Industry

		Market Share			
YEAR	MARKET SIZE ($)	PERSCON	LERT	NAP	AMCON
2009	455,000,750	4%	11%	55%	18%
2010	590,425,000	5%	13%	54%	21%
2011	525,500,000	5%	14%	52%	23%
2012	560,000,000	6%	17%	49%	24%
2013	600,000,000	5%	18%	51%	25%

Courtesy of Indiana University

While the three firms dominate the PERS market, the Expanded Use PERS device market is less concentrated, with several small players active in the market with specialty devices for concentrated markets. But this has slowly changed over the last three years as LERT and AMCON have actively sought takeover targets to quickly increase their market share. But the more diverse product market has allowed greater opportunity for PERSCON to capture a larger chunk of the overall market, in comparison to their share of the PERS market.

Typically, both PERSs and new devices are manufactured using materials that are very standard in the consumer electronics industry. There are very few specialized parts, and in general the parts come to the factory ready to be assembled. Because of this, manufacturing capacity is not a significant barrier to entry into the market. And given the nature of the product, firms exercise extensive quality control on the product that leaves the factory. After leaving the factory, the completed units are then either delivered directly to the consumer or to an independent reseller of the product.

While PERSs are put into place to handle conditions that happen somewhat frequently, the ER-ERDs are manufactured by PERSCON and others to deal with situations where the customer may be a long distance from the base station.

In emergency medicine, the first hour following an emergency request from a PERS subscriber with an injury or other immediate medical need is called "the golden hour," when every minute counts in the battle to save a life. Specifically, sudden cardiac arrest kills over 500,000 Americans every year, almost one every minute. The American Red Cross estimates that access and training on how to use a PERS device could save at least 50,000 lives a year. Sudden cardiac arrest can strike anytime, anywhere, regardless of age, gender, race, or physical condition. The "golden hour" here is the golden seven minutes. A host of other medical conditions are also relevant to this "golden hour" for senior citizens. Strokes, falls, medication errors, memory loss, and social isolation are all instances of use for the PERS.

The estimated PERS market in the U.S. produced annual sales of 1,000,000 units during 2013. The average price was $49.00 per month per subscriber lease. These numbers reflect US sales alone and overall market is expected to reach nearly $900 million by 2017.

According to the latest PERS Monitoring Report released in February 2013, the sales of PERS were relatively flat during 2011-2 in the US; however, the ERD's are expected to grow due to increasing numbers of senior citizens and a push from the home health industry to encourage their use. While the largest firms might market directly to some foreign markets, it is more typical that they choose to partner with a firm to distribute their product in that country. Occasionally, this is because of government regulations but usually it is easier to take advantage of existing relationships between foreign firms and foreign customers rather than bearing the expense of developing these relationships. PERSCON currently does not market their products internationally, so their market share comes entirely from the U.S. market.

By far, the most significant barrier to entry into the PERS/ERD industry is the high cost of marketing these products. PERS products firms devote significant resources toward developing and maintaining relationships within the home health care profession. This approach is extremely expensive as it relies on a well-trained Emergency Response team. In addition to the Emergency Response Operators, the in-house customer support personnel must also be able to perform simple maintenance and calibrations on the products they sell. The bulk of the firm's advertising budget is directed towards using consumer print, television and home health journals to reach their target market. A growing push is being made to establish partnerships with organizations such as AARP and the National Alzheimer Association for their promotion of the products. Social media has not been used to date.

The Expanded ERD Market

The redesigned PERSCON P911 ERD is a device which will consist of the core functions of the existing product and the addition of the suggested new technology. According to the paper on PERS Expanded Use as compiled by industry watchdogs and endorsed by the AARP, National Home Health Alliance, and the Institute of Medical Technology, the expanded ERD process ensures the safety of anyone involved in an emergency medical or personal safety situation. It also addresses the issue of affordability and reliability.

Although the P911 ERD means substantially new component parts and higher labor costs for PERSCON, it will allow an expanded market entry at a competitive price. These changes will lead to opening accounts that had previously not considered the value of a PERS device.

During the past few years, many U.S. health-conscious companies have struggled in keeping up with market changes, as will as balancing their budget constraints with providing a safe environment for clients and employees. PERSCON's management firmly believes that if they follow the trend of maintaining costs while keeping the quality of the product, the P911 ERD has great potential. In addition, to the benefits of having an affordably priced product, developing an expanded use device is a way of increasing brand awareness beyond just the senior citizen market. If the new technologies developed during the process are ensured to increase consumer confidence in the technology and the cost is reasonable, developing new markets can be achieved.

While expanded use ERDs differ from traditional PERS in usage, they differ even more significantly in their potential market. Whereas the latter were marketed directly to senior citizens, each expansion with ERDs means an exposure to a much larger consumer market. While this means the ability to expand to more customers with a lower priced unit, it also means understanding new types of customers.

There are concerns, of course. One of the biggest challenges PERSCON may face is in the promotion of the quality of the new P911ERD unit, combating a common misperception that they are used only by senior citizens and that some PERS devices are unreliable. The typical assumption that highly technical medical equipment is difficult to use must be overcome by simplified activation methods and elimination of "false alarms." But these problems were overcome by those affected firms and never included PERSCON because they built more quality into all aspects of their devices. It is believed that prospects are bright.

The Current Situation for PERSCON

For twenty years now, PERSCON has been a very successful company by sticking to a formula: a high quality product, high quality service and a focus on cost management. Their success is evident as the firm that once consisted of a small factory now has 318 employees and a state of the art manufacturing facility in Houston. They have enjoyed tremendous stability, with low employee turnover and essentially the same management team they started with. Twice they have been able to carve out small market niches by developing close relationships with their customers, niches which they defended scrupulously against threats from their larger rivals. And by managing their assets well, they have been able to achieve large returns despite being a small company.

Recently, management has begun to sense a change in their major shareholders' attitudes. Where once they were unquestioned and their decisions were accepted easily, it seems shareholders have become much more critical. Several have claimed that the slowing growth might be due to PERSCON's management and employees being content with their current market position, and they have made it very clear that they still expected substantial growth in earnings. PERSCON's management has concluded that it would be impossible to achieve the expected level of growth by merely competing for market share, and they have decided that something more dramatic needs to be done to convince their shareholders that they are neither complacent, nor too old to learn new tricks. After several meetings, they have decided to focus on three main alternatives:

1. **Expanding Globally:** In the past, PERSCON has focused on the domestic market for several reasons. First, they are currently producing at nearly total capacity with their current market share, and they were unwilling to expand for a risky venture into foreign markets. Second, they knew there were stiff regulatory hurdles they would have to go through, and they were concerned that it would be an expensive learning process, until they truly understood how to best market their product in each foreign market. Now that emerging markets have greater purchasing power and the domestic market is nearing maturity, the timing may be right to go abroad.
2. **Development of the P911ERD for Expanded Markets:** It is believed most PERSCON competitors are also looking for ways to expand the use of PERS/ERD devices to new, untapped markets. In the past, PERSCON's management believed that they would not be able to achieve the cost efficiencies that the three larger firms had, and that concentrating on cost efficiency took away from their focus on expanded use devices. However, the sheer size of the potential market makes it very attractive, and it may be worth the potential risk.
3. **Expanded Use Design and Marketing to Existing Target Market:** This is a market that is expected to grow quickly over the next ten years. The U.S. Census Bureau expects that 10,000 "baby boomers" will turn 65 years old every day through 2020. While expanded use ERDs seem to be a good complement to PERSCON's current PERS product line, management is aware of the need to approach the right customers and not suddenly cannibalize all sales of new ERD units. They are also concerned by competition.

Your Team's Focus

Your team has been assigned to focus on the second concept to study. A substantial amount of data and information has already been collected. This information has all been passed along to your team. There are several activities that your team must complete (see Exhibit 2). The pages that follow provide some specific information and detail that your team must consider when pursuing the listed in Exhibit 2. You and your teammates now have your task laid out before you. You know you will need to hand in a full feasibility report in ten days! That's not much time!

Exhibit 2
Tasks for Your Team to Address

AREA	ACTIVITY
Management	Z1 Mission/vision/goals
	Z2 Staffing forecast
	Z3 Compensation
	Z4 Performance Management
	Z5 Recruitment
	Z6 Organizational Design
Marketing	M1 Market Share and Competition M2 Segmentation and Targeting M3 Positioning
	M4 Evaluating Distribution Channels
	M5 Promotion Decisions
	M6 Pricing P911 ERD
	M7 Global Marketing Strategy
Operations	P1 Capacity Management
	P2 Order Policy
	P3 Project Management
	P4 Quality Management
	P5 Supplier Selection
	P6 Operations as a Value Added Function
Finance	F1 Effective Costs of Fixed Assets
	F2 Project β
	F3 Cost of Capital Value Created by this Project
	F4 Project Incremental Cash Flows & NPV
	F5 Financial Summary Report
	F6 Possible Additional Requests

Courtesy of Indiana University

Descriptions of Tasks

Management

Historically, PERSCON's strategy was strongly influenced by the unique markets in which it competes. In its initial offerings of PERS and ER-ERDs, PERSCON (like all of its competitors) created products that followed industry norms in manufacturing, marketing, and distribution. There were many synergies between these products: in fact, the marketing team often created print and video ads for customers and health care providers that covered both of them. Because of the similarities in the products, PERSCON offers a single customer support number to service both products. The customers (primarily Senior Citizens and Home Health Care Providers) were similar for both PERSs and ERDS. PERSCON even uses similar suppliers for the semiconductor circuitry to create the PERS and ERDS, and markets both products under the PERSCON brand name.

When PERSCON was started, they benefitted by hiring nurses and industry experienced Emergency Response Operators to staff their customer service line. Ever since, PERSCON has offered continuous training and support for these workers, who have tremendous loyalty to the company. While other competitors also used information technology in new ways to give customers feedback on their PERS, PERSCON was the only company to allow customers and designated parties (primarily their children or care givers) to view a personal profile from their PERSCON online account including total activations, false alarms and actions taken. In addition, customers felt that the feedback was easy to understand and it was clear what options they could choose from.

Naturally, in 2010 when they decided to enter the ERD market, they transferred the same core competencies. Perhaps because of their experience in providing Emergency Response instructions directly to customers, PERSCON found that their employees – in particular the customer service staff – did an excellent job of translating complex medical information into explanations that their non-medical-specialist customers could understand. Most employees agreed that the ER-ERD was a "natural fit" for the company.

The Expanding ERD Market

The expanding ERD market demand can substantially increase market penetration and broaden the customer base for ERDs (particularly the new PERSCON P911ERD). The primary purpose may be to open market segments that previously thought the ERD too expensive, unreliable or difficult to use. To capture that growth, the PP911ERD needs to enter the market and accelerate quickly. The P911ERD market is new for PERSCON, with new and different customers. In terms of customers, while the existing ERDS and PERSs are leased primarily directly to the consumer, the P911ERD device will be sold directly to the consumer. The P911ERD customer will pay a small monthly charge for the monitoring, and a one-time activation charge and a per use charge for emergencies. Typical target customers include women 18-35, hikers, bicyclists, fitness centers, sporting arenas, community centers, and churches (for example). Most customers for the P911ERD are not senior citizens or typical PERS users, but are relatively sophisticated about safety. As expanded use ERDs are still a differentiated product, the buyer in an expanded market would require more education about the need for the product and also more extensive training on how to use and maintain them.

There are already several expanded use ERD products on the market. The main competitors in this market are the same competitors in the PERS market (NAP, LERT and AMCON) and each has taken a different approach to competition. LERT was the first to the expanded use ERD market. They use sophisticated information technology and technical service to distinguish themselves in the market; however, many feel that their product is difficult to use and not intuitive. AMCON was known for lower-priced expanded use ERDs, but at times AMCON's quality had suffered. NAP decided to concentrate on replacing existing ERDs with expanded use ERDs for customers in the institutional market (those using At Home Assisted Living or Visiting Nurse Programs, for example). All competitors have a five year warranty, but the length of the battery life in expanded use ERDs differed from 1 year with NAP to 2 year with LERT and 3 years for AMCON.

Currently, the laws in most U.S. states hold that an individual who uses an ERD for the purposes of saving a life is exempt from legal liability. Still, all states highly encourage training for customers who use them. Moreover, were there to be a case where a PERSCON employee gave grossly wrong or inappropriate information to a customer over the phone resulting in their death, the negative publicity for the company could be substantial, resulting in a drop in sales.

As with the launch of the ER-ERD, PERSCON can leverage many of their existing resources and competencies should they decide to pursue the expanded use ERD market. However, there are some places where the firm will need to improve. First, they will need to develop and maintain stronger relationships with end customers. The firm might need to work closely with individuals they have never targeted before, leveraging existing relationships and building new ones. Staff will need to develop expertise in expanded use devices - in manufacturing, operations, marketing and maybe even finance and accounting due to the new structure of the business. As you know, PERSCON has had the same personnel in place for many years with very low turnover rates, and while they are performing well now, the new product line presents challenges. Either they will need to be cross-trained to handle all potential customers, or PERSCON could hire new staff specialized in a particular kind of customer or call. It does seem as if the current staff has grown a bit complacent, and this could be one reason why current business areas have become relatively stagnant in terms of market share. Employees are currently compensated with base salaries that are above average in the industry, but PERSCON does not have other bonus or compensation plans in place.

The expanded use P911ERD is a new and dynamic business. Current employees are more accustomed to the slower-paced businesses of PERSs and regular ERDs. PERSCON will have to shake things up. Should they incorporate the P911ERD business into existing operations, or establish a new business in a separate part of the company to enable it to grow more quickly and/or develop a new company culture?

The Current Emergency Response Center

The Emergency Response Center is organized into two groups: Responders, who handle emergency calls, and Customer Representatives, who handle calls about administrative matters such as billing questions, technical difficulties, and other customer inquiries. Responders are available 24 hours per day, 365 days a year. Customer Representatives are available from 7AM to 7PM, Monday-Saturday; administrative calls received outside of this time window are sent to voice mail and the customer is called back the next business day.

Four Emergency Response Center Managers handle all scheduling and are also responsible for training and evaluating their employees. To date, this has been an informal process. Workers who are judged to be the most

competent are typically assigned to the shifts where call traffic is the highest. Emergency calls are most common from 4PM to 11PM in the evening, while administrative calls are heaviest from 9AM to 2PM each business day. Generally, scheduling is such that at least one Manager is working at all times. However, over time this practice has gotten lax. Managers have come to rely on long-term employees to be informal supervisors if a Manager is not present, and these employees are asked to handle any questionable issues as best they can and write a report for the Managers to review when they are back in the office.

The Emergency Response Center tracks a variety of performance metrics for each employee, including the average time on hold, the average time a customer is on the phone with a PERSCON representative, and whether customers register compliments or complaints about the worker in a post-call survey. Near the end of 2012 there were significant customer complaints about the amount of time they were on hold waiting for Customer Representatives. Due to the nature of the calls taken by Responders, every effort is made for there to be little to no time a customer spends on hold, and continued success in this area is a source of pride for the Responders.

There is some animosity between the Customer Representatives and Responders. Generally, Customer Representatives are on the phone almost constantly dealing with clients' questions and complaints. On the other hand, Responders spend a great deal of time simply waiting around between calls – since they have to be available immediately, they take on few other duties during their work hours. Many read, surf the web, or listen to music through headphones while on their shift if they are not making calls.

PERSCON began operations with a 70+ page manual with suggested "scripts" for Emergency Response Center representatives to follow. Since most employees have been with the company for so long, this book is largely ignored. In fact, it is generally agreed that customers are happier and outcomes more positive when Responders and Representatives have leeway to handle each customer personally. On the other hand, this does make it difficult to train these employees when new policies or procedures (or products) are introduced. Training tends to be informal and one-on-one, with each employee taking the information presented and incorporating it – or ignoring it – as they see fit.

Differentiation: PERSCON vs. the competition

PERSCON's Vice-President of Marketing, William Howard, thought about where the firm was within the product development process. He knew the team was focused on the expanded market. He recalled the initial consumer work to determine what else consumers might use. His group had worked with R&D to consider many ideas; they had talked with current customers that sell their current units and added new features. Now that they are putting a business analysis together he feels they may need to revisit their concept to see just what it is consumers will love about this new product. William also wants to think of competitive reaction to a new product. The market leader, NAP, is a world leader in electronic engineering and their claim was that every five seconds, somewhere in the world, a person uses a product designed, developed and sold by NAP.

The firm's product categories include: PERS devices in North America, TENS devices for chronic pain, mobile stabilization devices (i.e.: walkers), cardiac monitors, diabetes monitors, and many hospital and clinic products. He wonders if giant NAP even focuses on this market even though they lead it, given all of the distractions with healthcare today. One key to success would be to differentiate the P911 ERD from the NAP products. For

example, NAP-PERS has no GPS technology. However, that may be because as a leader in medical technology they assessed this market to be too small for innovations.

NAP does claim that their highly trained Emergency Response Operators and the advanced two-way communications capabilities of their PERS devices help them optimize customer care and improve operational effectiveness. LERT has been more agile as a firm. LERT has updated products regularly and used television and magazine ads toward the elderly to get those people to update to the latest equipment.

William had not even calculated their relative market share since he always thought of PERSCON as a rather small player in the field. But he knew PERSCON must stand out and differentiate as they moved into new products!

Who Are our Customers? The Target Segments

William's staff had identified potentially fruitful target segments for the firm to pursue. Various methods were used to determine whether they were in fact viable targets for the new ERD or whether new segments should be developed.

The obvious first target could be new elderly customers similar to the existing customer base who want increased security, location monitoring by GPS, elimination of a base station, and faster connection to the Emergency Response Operator. Should the new product be marketed directly to the elderly or to their adult children who might be afraid mom or dad might be alone and fall?

The primary competition in this area is PERS industry leader NAP. Even though NAP has extensive engineering capability, it does not have the GPS technology or Blue Tooth/APP systems being developed by PERSCON.

Another target could be the personal protection market. There are women who do not use a smart phone with GPS who might value an emergency alert system. It could also be promoted to parents who want to ensure the safety of their children in unknown or unsafe environments. What about other people who live alone, individuals with disabilities who do not fall into the senior citizen market?

It was also conceivable the new product could be used for sports activities (hikers, bikers, camper, explorers, etc.).

There was another segment that raised some interest. This segment was Assisted Care facilities that have a large number of patients and emphasize care and safety. While most Assisted Care facilities have their own system for contacting personnel, it would represent a cost savings to centralize the contact if the assisted care facility could outsource the contact and screening of emergencies using the P911 unit. PERSCON could screen the emergency and determine whether to call an ambulance or simply have the health care staff of the care facility respond. William thought the more progressive and larger Assisted Living operators might strongly consider the new product when the benefits were presented to them, which would help stimulate adoption of the device by other operators in the future. The segment was also attractive because businesses would buy units in large volume rather than one at a time.

William and the team have concerns about the number of potential segments. First, PERSCON must target the most attractive segments. William also knew most decision makers would likely compare competing expanded use ERDs on product features and price before selecting a product that is rarely used and invisible until needed. William was awaiting some background reports to pass along to your team.

Sales and Distribution and Integrated Marketing Communications

PERSCON is considering a number of distribution approaches. PERSCON has been very successful over the years with its traditional PERS and the ER-ERD devices by selling directly to the consumer using a variety of marketing approaches. The elderly read magazines and PERSCON had placed magazine ads relying on an outsourced call center (RESPONSIVE MARKETING) to respond, handle inquiries, and actually make the sale. PERSCON paid RESPONSIVE 10% of all revenue generated by a new customer during the first year. However, they also paid them $1 for each incoming call handled. That center handled 50,000 calls per year and had a conversion to sale rate of 5%. Other magazine ads contained an order form which could be filled out and sent directly to a PERSCON handling center which processed a customer credit card and shipped a product to that customer. This internal center received an average of 225 orders per month to which a handling fee of $3.50 was attached as a direct cost to PERSCON rather than to the customer. PERSCON had hired an outbound call center (RESULTS, LLC.) to conduct telemarketing for its current products. PERSCON paid the outbound center only for sales made at $5 per sale. RESULTS was moving 2,000 units per month at this time. The remainder of PERSCON sales came from late-night TV ads where PERSCON paid typical media rates.

William realized PERSCON should get into the internet age. The founders had thought the elderly would be concerned about buying online so had avoided this market. Yet, marketing the new product through a website is another distribution approach to consider. William is considering breaking new ground by allowing any customer to order directly from a website, which then means PERSCON would need to promote its site. This approach is simple and might lower PERSCON's costs, and also might decrease delivery times. William does not believe the web will ever eliminate the need to have call centers. Whether and how the web approach is employed will be the subject of much scrutiny in the coming months.

According to a major report issued by marketing research firm *Frost and Sullivan*, low public awareness and unfamiliarity with the operation of PERS and ERDs can hamper their sales. If market participants wish to make ERDs commonly purchased products, they have to go all out to help people realize the urgency and necessity of using ERDs. Consider the case of the Blue Moon Company. "Over time, as more people learn how to use and depend on PERS and ERDs, the expansion of the customer base can help offset some of the lost profits resulting from price erosion," notes an analyst with *Frost and Sullivan*. "With the growing awareness of PERS/ERDs and their life-saving benefits along with supportive recommendations by trusted organizations, the ERD segment's growth is guaranteed to remain solid."

PERSCON also considered a broad array of media to reach customers. Consumer magazines target specific segments of product users like those sold by PERSCON. The firm tends to employ full-page ads that contain, according to William, both product and company information but also the persuasion based on potential for lives saved. Since the emphasis on advertising in magazines has worked very well with other PERSCON products, William is hopeful this approach will work for the new P911 ERD. William feels a crucial ingredient in launching a successful new product is creating an effective promotion plan, or determining where and how to spread the word about this product.

Pricing

PERSCON has used several pricing approaches for existing products. After all, the continuation of the monitoring service with a monthly fee is the primary profit generator for the firm. PERSCON, through its various sales methods, usually gets customers to lease equipment adding the 'lease' payment to the monitoring fee so the customer pays continually until the individual no longer needs the service. The average lease is $49.95/month – higher than some, but PERSCON has an outstanding record and solid success with signing up customers.

Going Global

William thinks the concept of "expanded markets" for the new product can actually include going outside the U.S. Thus, an alternative to be considered for PERSCON is global expansion. William had talked with other senior management executives about not missing out while competition gets entrenched in other countries. NAP is a multinational firm. If PERSCON waits to expand globally they will likely find far fewer attractive opportunities. As the Asian countries head towards clearer regulations especially for health products, opportunity in Asia seems very attractive. But with the fragmented availability of a regulated P911 emergency system in some countries, the opportunities there seem more limited.

William is the child of an American father and a Thai mother. William travels to Thailand frequently and has attended trade shows in Asia. Several firms in Singapore and Bangkok have talked with him about some contractual agreement by which they might market PERSCON's products. William is unsure whether forming a contractual alliance is a better decision than exporting to Asian import firms. He even considered approaching the senior management team about building his own marketing office abroad. (William loves Thai food.)

Project Management

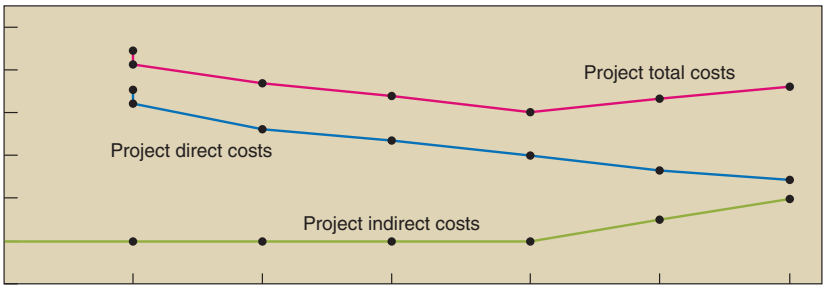
Effective project management involves clearly identifying project responsibilities, a simple yet thorough reporting system and good people-management skills. Your recon team is charged with ensuring the commercial launch of this new product in a professional manner. While test marketing has already taken place with prototypes built in non-production mode, many tasks and duties assigned to various units within the organization need to be coordinated.

In practice, project managers are as much concerned with the cost to complete a project as with the time to complete the project. For this reason, time-cost models have been devised. These models attempt to develop a minimum-cost schedule for an entire project and to control expenditures during the project. Projects fail for a number of reasons. The most important reason is insufficient effort in the planning phase. Your recon team is dedicated to ensuring this does not happen. If PERSCON is to meet a potential 27 week launch for the expanded use ERD sales, the project must be evaluated to ensure its timely completion. If the date is missed, a significant amount of sales could be lost.

Staff time devoted to completion of the project in normal time is estimated to be $100,000. Reduction in time to complete a task is realized through the addition of direct activity costs. These costs are estimated through various means. These include:

- Interviews of department heads to estimate the overtime cost of additional personnel
- Expediting costs associated with acquiring raw materials provided by purchasing dept.
- Additional overhead incurred in reallocating resources

Exhibit 3
(Example of how crash costs relate to the entire project)



Courtesy of Indiana University

Effective project management involves much more than simply setting up a project management schedule; it also requires clearly identified project responsibilities, a simple and timely progress reporting system, and good people-management skills. These aspects will need to be incorporated by the recon team. The project schedule is summarized in Exhibit 4 below:

Exhibit 4
Project Schedule Information

	ACTIVITY	DEPT	IMMEDIATE PRECEDENT
A	Set-up cost and financial accounts	Acct.	
B	Develop budgetary controls	Fin	A
C	Design advertising media plan	Mrkt	
D	Design packaging	Eng	
E	Develop trade distribution for items	Mrkt	D
F	Organize introduction of product to sales force	Sales	E
G	Acquire production equipment	Mfg	
H	Install equipment and train personnel	Eng	G
I	Acquire raw materials	Purch	G
J	Develop advertising copy	Mrkt	C
K	Manufacture prototype items	Mfg	H,I
L	Develop packaging literature	Mrkt	C,D
M	Sales force training	Sales	L,F
N	Distribute samples to distributors	Dist	K,L
O	Produce initial stock for warehouse	Mfg	L
P	Coordinate invoicing system with warehouses	Fin	B,O
Q	Distribute items to warehouse	Dist	O
R	Open initial advertising program	Mrkt	J,N
S	Perform final interfunctional coordination	All	M,P,Q,R

Courtesy of Indiana University

Exhibit 4 continued
CPM with 3 time estimates

	TIME	ESTIMATES			CRASH
Task	a	m	b	**MINIMUM**	**COST/WEEK**
A	2	3	4	2	250
B	4	4.5	8	2	550
C	11	14	17	11	900
D	1	2	3	1	850
E	2	2	2	2	
F	1	1	1	1	
G	3	7	17	3	800
H	1	2	3	1	1400
I	3	4	5	3	750
J	9.5	9.5	12.5	9	500
K	14	15	16	12	1700
L	2	2	2	2	
M	4	5	6	3	1800
N	1	1	1	1	
O	2	3	4	2	6000
P	2	2	2	2	750
Q	1	1	1	1	
R	4	5	12	3	825
S	1	1	1	1	

Courtesy of Indiana University

Order Policy

An inventory system provides the organizational structure and the operating policies for maintaining and controlling goods to be stocked. The system is responsible for ordering and receipt of goods: timing the order placement and keeping track of what has been ordered, how much, and from whom. The system must also follow up to answer such questions as: Has the supplier received the order? Has it been shipped? Are the dates correct? Are the procedures established for reordering or returning undesirable merchandise?

Your recon team realizes that the potential entry of a new supplier could have great financial and market impacts on the launch of the expanded use ERD. An assessment of the suppliers is vital.

The current producer of the miniature communication cards that PERSCON uses is ABC Manufacturing (ABC). A new potential supplier, Perfect Products (P2), has contacted PERSCON and is interested in supplying the boards utilized in the expanded use P911 ERD. ABC will charge $75.00 for one of the cards. The administrative ordering charges are $500 per order. ABC will ship the order all at once. P2 charges $70 per card. Ordering charges are $90 per order.

In either case, the inventory cost will be 18% of the value of the inventory to store a board for one year. The lead time for P2 is 10 days and the lead time for ABC is 15 days. PERSCON strives for a 95% cycle service level. Standard Deviation is estimated to be 0.50 units per day for both suppliers. PERSCON operates only 5 days per week, 52 weeks per year.

Quality

Total Quality Management is an enhancement to the traditional way of doing business. It is a proven technique to guarantee survival in world-class competition. Only by changing the actions of management will the culture and actions of an entire organization be transformed.

PERSCON has long been committed to providing high-quality PERS and ERD products.

Failure of a device in the field is not acceptable. Lives are at risk. Exhibit 5 summarizes some of the historical practices that PERSCON has implemented to ensure the highest possible quality to its customers.

Exhibit 5

INTERNAL QUALITY PROCESSES
• SPC charts maintained at individual work stations to measure critical processes
• Pareto charts maintained and posted of the most common defect causes
• Ongoing training of all personnel in tools and techniques to assure quality
• 100% inspection of finished goods prior to shipment
• Recently achieved ISO 9000 certification

Exhibit 5 continued

EXTERNAL QUALITY PROCESSES
• Requires SPC charts from suppliers on all shipments
• Requires all suppliers maintain ISO 9000 certification
• Conduct unannounced audits of suppliers
• Conduct acceptance sampling in accordance to MIL-STD 105-D

Courtesy of Indiana University

The assembly of the expanded use ERD requires the replacement of the communications card that seats into the redesigned communications module either in a pendant or bracelet. This communications card is critical to the operation of the unit. Historically, problems have arisen from improperly loosely seated circuit boards in the module. Engineering and quality assurance has determined that the previous problems can be eliminated if the circuit board is closely monitored to ensure that it is 1 millimeter in thickness. If the circuit board is too thin, the metal contacts may not seat properly causing unit failure. If the circuit boards are too thick, they stress the spring clips that secure the board, which could cause the clips to fail. Measurement data was requested from each supplier.

Exhibit 6
M2 Quality Data

ABC Data in millimeters-thickness of connection interface												
Test Sample 1												
	Observation #											
Sample	OBS 1	OBS 2	OBS 3	OBS 4	OBS 5	OBS 6	OBS 7	OBS 8	OBS 9	OBS 10	OBS 11	OBS 12
1	1.0861	1.1774	1.0252	1.1571	1.1267	1.2688	1.1571	1.0049	1.0353	1.0861	1.0861	1.0759
2	1.0962	1.1064	0.8932	1.0556	1.0252	1.0455	1.1774	1.0455	1.0150	1.1470	1.2586	1.0658
3	1.2891	1.0861	1.0150	1.1571	1.0252	1.0353	0.9338	1.0252	1.0658	1.1571	1.1571	1.0049
4	0.9034	1.0861	1.0252	1.0658	1.1368	0.9744	1.1673	1.0861	1.0759	1.1165	1.1876	0.8729
5	1.0049	1.0150	0.9947	0.9846	0.8425	1.1165	0.9237	0.9947	1.0861	0.9440	0.9846	1.0658
6	1.0252	1.0658	0.9947	1.0252	1.0962	0.9541	1.1368	1.0252	1.0759	1.1470	0.9338	1.1064
7	1.1673	1.0353	1.0759	0.9338	1.0150	0.9744	1.0455	1.0455	0.9541	1.0759	1.0252	0.9846
8	1.1876	1.1064	0.9338	1.0353	0.9541	1.1977	0.9135	1.1977	0.9744	1.1064	1.1165	0.8729
9	1.1977	1.1876	1.0759	0.9541	1.1368	0.8628	1.0861	1.0759	1.0658	1.0556	1.0353	0.9846
10	1.0455	1.0556	1.0252	1.0861	1.2485	1.3094	1.5150	1.0556	1.1876	0.9744	1.0049	1.0455
11	1.1267	0.9643	1.1673	1.0861	1.2180	1.1876	1.0252	0.8831	0.9643	0.9440	1.0150	0.9643
12	1.0658	0.9440	1.0455	1.1064	0.9744	1.0759	1.0556	0.9744	1.0252	1.0455	1.1673	1.0759
13	1.1876	1.1267	1.0962	1.0861	0.9338	0.9744	1.1165	1.0861	1.0658	1.0759	1.1267	0.9440
14	1.1064	0.9947	0.9846	1.0252	0.9237	1.1267	1.0962	1.0556	1.0962	1.1368	1.1267	1.0556
15	1.0759	1.1673	0.9846	1.0252	0.9237	1.2789	1.0861	1.0962	1.3195	1.0861	1.1267	1.1064
16	1.1064	1.0556	1.0455	1.1571	1.1064	0.9237	1.2079	1.1774	0.9237	1.1571	1.1165	1.0049
17	1.0556	1.0759	1.1876	1.1470	1.0252	1.0556	1.1267	0.8831	0.9846	1.0150	0.9541	0.9237

TEST SAMPLE 2												
	OBSERVATION #											
SAMPLE	OBS 1	OBS 2	OBS 3	OBS 4	OBS 5	OBS 6	OBS 7	OBS 8	OBS 9	OBS 10	OBS 11	OBS 12
1	1.1140	1.0307	1.0203	1.1140	0.9579	0.9579	1.0307	0.9683	1.0516	1.0516	1.1765	0.8954
2	1.1349	1.1140	1.0307	1.0411	1.1661	1.1557	1.0307	1.1349	1.1244	1.1140	1.1349	1.1973
3	1.2077	1.1869	1.0724	0.9683	0.9995	1.1453	0.9891	0.9579	1.0932	1.0099	0.9787	1.1036
4	1.0307	1.1661	1.0724	1.0411	1.2910	0.9891	1.1661	1.0828	1.1140	0.9891	1.0932	1.0932
5	0.9787	1.1453	1.0620	1.0411	1.0307	0.8121	1.1140	1.1140	1.1036	0.9370	1.0411	1.2181
6	1.0099	0.9579	1.0411	1.1349	1.0411	1.0516	1.1036	1.2077	1.0307	1.1140	1.0411	1.0932
7	0.9891	0.9995	1.0203	0.9579	1.0516	1.0516	0.9474	1.1244	0.9370	1.0620	0.9162	1.1557
8	1.0932	1.2494	0.9162	1.0203	1.0828	1.2181	1.0828	1.0516	1.2077	1.1244	1.1557	1.1349
9	1.1140	1.1765	0.9995	0.8746	1.0516	1.0828	0.9787	1.0099	1.0828	1.0724	0.9058	0.9266
10	0.9995	0.9370	1.2181	1.0099	1.1557	1.1036	0.9266	1.2286	1.1349	1.1973	1.0620	1.0932
11	1.0724	0.9891	1.1036	0.9266	1.1869	1.0203	0.9266	1.1140	1.0203	0.9891	0.9683	1.1140
12	1.2181	1.0516	1.1349	0.9579	1.1349	1.0932	1.2494	1.0203	0.9787	1.1453	1.0307	1.2181
13	0.7913	1.1036	1.0203	1.0411	1.0099	1.0203	0.9891	1.0411	1.2286	1.0099	1.1140	1.0099
14	1.0932	0.9891	1.0724	1.1244	1.1140	1.3014	1.0724	1.1036	1.0620	1.0516	1.1869	1.1036
15	1.1244	1.1661	1.1244	1.0932	0.9370	1.0932	0.9891	1.1453	1.2390	0.9891	1.0307	0.8850
16	1.2494	1.1661	0.9266	0.9891	1.1765	1.1036	1.1661	1.1140	1.0203	1.0203	1.2390	1.1869
17	1.0099	1.0411	1.0516	1.1765	1.0307	1.0099	1.0307	1.1349	1.0724	0.9683	1.1244	1.0307
18	1.2390	1.0620	1.0307	1.0724	1.0932	1.0099	1.0620	1.2181	1.0203	1.2806	1.0203	1.0411
19	0.8746	1.0724	1.1661	1.1453	1.1453	1.0828	1.1349	1.0099	1.0203	1.0099	1.1557	0.9579
20	0.9683	1.0932	1.0203	1.1036	1.1140	1.1869	1.1036	0.9787	1.0203	1.0828	1.1557	1.2181
21	1.1869	0.9579	1.0411	1.0724	1.0411	1.0411	1.0932	0.9787	0.9787	0.9162	0.9474	1.1765

Courtesy of Indiana University

Exhibit 7
P3 Quality Data

P2 Data in millimeters-thickness of connection interface										
Test Sample 1										
	Observation #									
Sample	OBS 1	OBS 2	OBS 3	OBS 4	OBS 5	OBS 6	OBS 7	OBS 8	OBS 9	OBS 10
1	1.08819	1.017	1.017	1.03734	1.017	1.04751	1.05768	1.04751	1.05768	1.03734
2	1.07802	1.03734	1.06785	1.04751	1.3221	0.97632	1.06785	1.00683	0.99666	1.05768
3	1.07802	1.05768	1.1187	1.03734	1.09836	1.07802	1.10853	1.02717	1.04751	1.06785
4	1.08819	1.08819	1.06785	0.96615	1.02717	1.02717	1.02717	1.07802	1.1187	1.04751
5	0.99666	0.99666	1.05768	1.06785	1.03734	1.04751	1.00683	0.99666	1.07802	1.07802
6	1.02717	1.05768	1.03734	1.03734	1.07802	1.10853	1.05768	0.96615	1.05768	1.04751

Exhibit 7 continued

P2 Data in millimeters-thickness of connection interface										
Test Sample 1										
	Observation #									
Sample	OBS 1	OBS 2	OBS 3	OBS 4	OBS 5	OBS 6	OBS 7	OBS 8	OBS 9	OBS 10
7	1.04751	1.03734	1.07802	1.04751	0.95598	1.04751	1.05768	0.99666	1.06785	1.13904
8	1.08819	1.05768	1.05768	0.98649	1.00683	1.1187	1.07802	1.02717	1.017	1.07802
9	1.04751	1.09836	1.10853	1.02717	1.017	1.07802	1.03734	1.06785	1.017	1.05768
10	1.00683	1.05768	0.96615	1.1187	1.05768	1.03734	1.04751	1.02717	1.00683	1.02717
11	1.017	1.08819	1.04751	1.03734	1.04751	1.03734	1.12887	1.05768	1.07802	1.09836
12	1.08819	1.10853	1.05768	0.97632	1.09836	0.99666	1.017	1.03734	1.04751	1.02717
13	1.06785	1.017	1.02717	1.05768	1.10853	1.05768	1.03734	1.07802	1.00683	1.1187
14	1.04751	1.08819	1.05768	1.1187	1.05768	1.07802	1.07802	1.1187	1.05768	0.98649
15	1.1187	1.06785	1.06785	1.09836	1.02717	1.05768	1.10853	1.06785	1.017	1.06785
16	1.07802	1.03734	1.1187	1.08819	1.04751	1.04751	1.07802	1.10853	1.05768	1.07802
17	1.12887	1.06785	1.04751	1.00683	1.08819	1.05768	1.08819	1.03734	1.08819	1.05768
18	1.05768	1.04751	1.07802	1.06785	1.04751	1.03734	1.08819	1.14921	1.00683	1.02717
19	1.1187	1.06785	1.05768	1.08819	1.017	1.03734	1.05768	1.07802	1.06785	1.10853
20	1.09836	1.09836	1.09836	1.03734	1.08819	1.10853	1.08819	1.07802	1.04751	1.04751
Test Sample 2										
Sample	OBS 1	OBS 2	OBS 3	OBS 4	OBS 5	OBS 6	OBS 7	OBS 8	OBS 9	OBS 10
1	1.05872	0.95692	0.98746	1.07908	1.05872	1.03836	1.00782	1.02818	1.05872	1.04854
2	1.03836	1.04854	1.018	1.07908	1.05872	0.97728	1.08926	1.018	1.00782	1.09944
3	1.04854	1.0689	1.08926	1.02818	0.98746	0.98746	1.07908	1.02818	1.05872	1.02818
4	1.07908	1.05872	1.09944	1.018	1.07908	1.05872	1.04854	1.02818	1.03836	1.1198
5	1.0689	1.018	1.04854	1.00782	1.07908	0.97728	1.03836	1.0689	1.05872	1.05872
6	1.09944	1.05872	1.05872	1.05872	1.08926	1.05872	1.08926	0.99764	1.02818	1.04854
7	1.09944	1.04854	1.04854	0.98746	1.018	1.07908	1.09944	1.05872	1.018	1.04854
8	1.110985	1.060022	0.978482	1.100792	1.019252	0.978482	1.070215	1.060022	1.080407	1.039637
9	1.019252	1.070215	1.04983	1.070215	1.151755	1.019252	1.060022	1.070215	1.060022	1.070215
10	1.04983	1.04983	0.96829	1.0906	1.039637	1.121177	0.988675	1.121177	0.96829	1.121177
11	1.182332	1.121177	1.121177	1.121177	0.988675	1.060022	1.029445	1.13137	1.070215	1.04983
12	1.019252	1.161947	1.019252	1.04983	1.100792	1.834654	0.96829	1.060022	1.080407	1.029445
13	1.151755	0.998867	0.978482	1.110985	1.029445	1.04983	1.00906	0.896942	1.080407	1.070215
14	1.039637	1.029445	1.00906	0.937712	1.039637	0.998867	0.998867	1.151755	1.039637	1.060022
15	0.978482	0.978482	0.917327	1.070215	1.13137	1.029445	1.141562	1.0906	1.17214	1.039637

Courtesy of Indiana University

Project Valuation

Some of your team's finance activities relate to various aspects of valuing this project. Setup work has already been put in motion at PERSCON, and a good deal of preliminary data is now available to your team. You'll need to further process this data and determine the values of certain financial measures.

Project β

Personnel at PERSCON are currently gathering monthly return data for PERSCON stock and the S&P 500 Index for the past five years. The entire data set is provided in the Excel template accompanying this case. This data can be processed with regression techniques to calculate a levered beta β_L for PERSCON stock. Data in Exhibit 8 relate to the firm's tax rate and debt-to-equity ratio over this same period and can be used to create an unlevered beta β_U for PERSCON's stock. As for this individual project, company analysts have tracked monthly sales revenues for five existing projects. An excerpt of historical data for monthly sales revenues for these projects is listed in Exhibit 9 (complete info is contained in the spreadsheet template). Some of the veteran analysts who have a strong understanding of past company projects have been asked to offer an opinion on which of these past projects are most similar to the new P911ERD concept in terms of financial risk as driven by items such as target consumers, raw material inputs and other factors. They will be getting back to you with their views shortly.

Exhibit 8
Tax Rate and d/e Ratio Time Trends for PERSCON

CORPORATE TAX RATE (T)			
Value	.318	.355	.404
Time Period	Jan Yr 1 – Oct Yr 2	Nov Yr 2 – Feb Yr 4	Mar Yr 4 – Dec Yr 5
DEBT TO EQUITY RATIO (D/E)			
Value	.192	.257	.219
Time Period	Jan Yr 1 – Mar Yr 2	Apr Yr 2 – Sep Yr 3	Oct Yr 3 – Dec Yr 5

Courtesy of Indiana University

Exhibit 9
Historical Monthly Sales Revenues for Five Existing Projects (excerpt)

YEAR	MONTH	PROJECT P	PROJECT Q	PROJECT R	PROJECT S	PROJECT T
Year One	Jan	$714,458	$568,479	$968,026	$386,310	$270,296
	Feb	$879,240	$706,838	$1,140,590	$539,347	$403,955
	Mar	$855,569	$664,568	$1,124,714	$547,565	$377,244
	Apr	$847,515	$582,073	$1,031,000	$417,670	$293,625
	May	$934,494	$877,625	$1,299,960	$663,248	$519,899
	Jun	$832,361	$628,268	$1,052,149	$486,900	$365,718
	Jul	$850,474	$606,010	$1,081,000	$444,194	$337,797
	Aug	$697,721	$507,611	$944,218	$338,494	$273,251
	Sep	$799,463	$602,025	$1,018,983	$450,320	$343,440
	Oct	$802,700	$632,315	$1,057,999	$495,009	$330,572
	Nov	$900,010	$775,964	$1,289,867	$575,454	$532,221
	Dec	$902,400	$754,337	$1,133,977	$496,809	$454,794

Courtesy of Indiana University

Project Cost of Capital

To apply the CAPM model, your team needs estimates of the current required return for a risk free asset and for some representation of the market portfolio. PERSCON traditionally uses a market *equity premium* of 5.5% in its project valuation work. As far as the risk free rate goes, there is some disagreement in the literature as to what treasury security to use to estimate a project's risk free rate. Some people believe that PERSCON should use the traditional T-bill to estimate the risk free rate for a project. Others point out that a capital investment project most always has a longer length (several years) than the typical one-year horizon used in a CAPM analysis for stocks. They claim that PERSCON should use the yield to maturity of a treasury security whose remaining term is more consistent with the length of the project. Your team has not yet made up your mind on which approach to use and has collected some data on different treasury securities. This data is given in Exhibit 10. You are reviewing the yields on a one-year T-Bill that has 73 days remaining until maturity, a newly issued 5-year Treasury Note, and a newly issued 10-year Treasury. Lastly, there is also some disagreement about whether to apply a liquidity risk premium to the project's cost of capital. The idea is that a project is a much less liquid investment than a mutual fund – thus its cost of capital should include an extra risk premium above and beyond the required return for shares of a mutual fund with the same beta. Trading (liquidating) shares of a mutual fund can be done quickly and with no costs. But liquidating a project can take time and the search for a buyer of the project's remaining assets can create costs. A group of PERSCON's financial staff feel strongly that an extra 1.2% liquidity premium should be added to the project's cost of capital. Others on the staff feel just as strongly that no liquidity premium at all should be added.

Exhibit 10
Data for Treasury Securities

MATURITY	CURRENT PRICE	COUPON RATE	FACE VALUE
73 days	$994.06	0%	$1,000
5 years	$1,022.31	5.2%	$1,000
10 years	$962.16	5.4%	$1,000

Courtesy of Indiana University

Project Incremental Cash Flow

Data related to cash flows of this project can be divided into three groups based on when the flows occur. The categories are: 1) previous spending, 2) new spending needed to implement the project, and 3) spending and revenue realized during the operating years of the project.

Previous Spending. $1,200,000 was spent on research and development activities. The recoverable value of these R&D activities is currently estimated at $745,000 and is available whether the new expanded use ERD project is pursued or not. A separate $455,000 was spent on production equipment. This equipment would be needed as part of the new project, but would be salvaged for NSV=$310,000 if the project were rejected. Another $545,000 was spent on preliminary advertising efforts and on test marketing of a prototype product. The results of this work have no current value to parties.

New Spending Needed to Implement the Project. $1,840,000 would be needed for all nondepreciable items and services. Several depreciable assets would need to be purchased and fall into four categories based on the differing lengths of their recovery periods. The data on these assets is given in Exhibit 12 immediately below. Any PV calculations for these assets should use a discount rate of 4.5% and tax rate of 39.6%.

Exhibit 11
Data Related to Depreciable Assets to be Purchased

DEPRECIABLE ASSET CLASS	EXPENDITURE REQUIRED (ED)	RECOVERY PERIOD	MARKET SALVAGE VALUE IN 5 YEARS
A	$224,000	4 Years	$82,000
B	$770,000	5 Years	$170,000
C	$595,000	6 Years	$103,000
D	$396,000	7 Years	$156,000

Courtesy of Indiana University

The Operating Years: Sales Revenue, Expenses and other Data. Management is unsure of total demand for the P911ERD's at this time (work is being conducted on this by another team) and desires that your team simply evaluate a stand-alone corporate unit that would produce, promote and distribute a hypothetical block of 7,500 units. Don't worry about what total demand will ultimately be at this time, just focus on the block of 7,500 units of demand and work with that number. Your team will determine a unit price in a marketing activity (*but in finance we will all use the same number of $68 in our spreadsheets just so that we can communicate more effectively in consulting hours*). The year-one sales revenue would be expected to grow at a rate of 30% for year two, 20% for year three, 15% for year four and 10% for year five. In terms of fixed expenses, there are; 1) depreciation expenses generated by fixed assets, 2) fixed operating expenses of $xM per year and finally, 3) (as a result of funding activities for the project) a fixed loan and bond interest expense of $290,000 per year. In terms of variable expenses (based on operations and marketing estimates), these should be reported to you shortly.

There are also project side effects to consider. The marketing personnel at PERSCON have conducted some consumer research and they feel that each 100 units of the new expanded use P911ERD that are sold will impact sales of other products as specified in Exhibit 12. Possible opportunity costs in the operating years also merit some attention. Your team has identified two possible costs thus far. First, a couple of members of the finance staff have proposed that the investment monies that the firm could earn from an ICF investment in a mutual fund should be counted as an opportunity cost against the project. Second, this new project will require PERSCON to expand its R&D department. The costs of this expansion have already been factored in to the project's fixed and variable operating expenses. However, this might not be enough. A firm's R&D area can be viewed as a value-creating asset that generates positive returns. If this new project is pursued, it has been argued that the firm's most experienced researchers will be switched to it. This then means that new-hires will take over some responsibility for existing operations and while they climb the learning curve at PERSCON, the returns from innovations to existing products will decline. The value of this decline has been put at $500,000 (after taxes), but this will apply only for the first and second year of the project.

Exhibit 12
Impact of New Sales on Existing Products

EXISTING PRODUCT	UNIT IMPACT PER 100 UNITS OF THE NEW ERD	AFTER-TAX CONTRIBUTION MARGIN PER UNIT
A	-22	$15
B	30	$61
C	1	$2,075
D	-12	$32
E	-2	$330

Courtesy of Indiana University

Case Activities

Management Case Assignment

ACTIVITY Z1
Mission/Vision/Goals

A. Write mission and/or vision statement for PERSCON that encompasses both its current business and potential expansion.

B. Assume the company wants to adopt a Balanced Scorecard to measure its success in the next year for the P911ERD. Set appropriate goals in each area of the Balanced Scorecard.

ACTIVITY Z2
Staffing Forecast

A. Complete a staffing forecast for the Emergency Response Center (without the P911ERD), assuming current production of 166,000 units/year and sales growth of 5% of existing units for the upcoming calendar year. Show your work and be explicit about your assumptions.

B. Complete a second forecast showing the Emergency Response Center should the existing staff be used to incorporate the P911ERD. Expand this Show your work and be explicit about your assumptions.

C. Complete a third staffing forecast for a standalone P911ERD unit. Use the scenario planning technique. Show your work and be explicit about your assumptions.

ACTIVITY Z3
Compensation

A. Propose a Gainsharing program for manufacturing/line workers that is cost neutral. (Be sure to incorporate data from the Operations section when setting quality goals.) Use at least two motivation theories to explain how this program will guide worker behavior.

B. Propose a bonus system for Emergency Response Center personnel. Use at least two motivation theories to explain how this program will guide worker behavior. Provide a clear evaluation of potential Return on Investment for this program.

ACTIVITY Z4
Performance Management

A. Design a developmental performance management system for Emergency Response Center Customer Representatives. In this process, provide a job description including the list of KSAOs required to perform the position. Indicate the methods you will use to prepare the job description, explaining the pros and cons of each method you select.

B. Design a performance measurement instrument that supervisors can use to evaluate Emergency Response Center Customer Representatives. Be sure to clearly identify what approach (or combination of approaches) you are using and why.

ACTIVITY Z5
Recruitment

Design a program for recruiting and selecting additional Emergency Response Center Responders. Explain how you would evaluate the success of each program, taking into account such things as yield rates, validity, reliability, and cost/benefit analyses.

ACTIVITY Z6
Organizational Design

Based on your analysis of the human resources in PERSCON, how should the Emergency Response Center be organized for the P911ERD? Should employees be cross-trained to handle all of PERSCON's devices through a single call center unit, or should there be a standalone group for the P911ERD? Additionally, should the Responders and Customer Representatives continue to be in the same unit? Be sure to examine the pros and cons of each option.

Marketing Case Assignment

ACTIVITY M1
Evaluating PERSCON vs. Competition

A. Using numbers found in the case, compute the relative market share of PERSCON in the current business.

B. Explain the competitive situation for the firm's assumptions for ERD including relative market share comparisons.

ACTIVITY M2
Segmentation

A. Consider factors used to segment and target. Which segmentation factors seem most appropriate for P911 ERD?

B. Considering what makes a good segment and the information provided to William Howard through reports, recommend a priority of segments for P911 ERD.

ACTIVITY M3
Positioning

A. Determine a positioning statement for PERSCON expanded use P911 ERD.

B. Provide a comparison of the consumer perceived value for P911 ERD vs. the current ERD products

ACTIVITY M4
Evaluating Distribution Channels

A. Calculate and report on acquisition costs for current distribution methods as far as possible using the information provided.

B. Critically evaluate those distribution approaches being used currently and recommend distribution for P911 ERD (offer strengths and weaknesses). Should PERSCON sell P911 ERD using a web site? Support your decisions.

C. Since PERSCON currently has the Emergency Response Center, what recommendations can be made regarding establishing a CRM system?

ACTIVITY M5
Promotion Decisions

A. Consider all promotion opportunities. Explain if or how you might use each promotion option.

B. Using a tool like Power Point (or some other tool) lay out a web page to promote P911 ERD. The firm can use your "framework" to provide a graphic design company with the information it needs to develop the website for the product and correctly emphasize the important aspects of the messaging strategy.

ACTIVITY M6
Pricing P911 ERD

A. Suggest a pricing strategy for P911 ERD. Explain your approach. How much should P911 charge for a lease?

B. Explain the Value Proposition for P911 ERD.

ACTIVITY M7
Global Marketing Strategy

A. What approach should PERSCON take in expansion to Asia? Which market entry strategy seems best given the current state of the company? Is the firm ready for a market-development strategy?

B. What key factors should the firm consider if they expand to Asia? How would this move affect their marketing?

C. William has considered opening a marketing arm of PERSCON in Thailand. Use the GlobeSmart website to determine the internal management challenges PERSCON might face should they pursue this option.

Note: www.globesmart.indiana.edu

Operations Case Assignment

ACTIVITY P1
Capacity Management

To complete this activity, assess which type of production process will be needed to implement the new product. Capacity and all relevant costs should be included.

- You are to assume the 1st year capacity has an average of 7500 units and a standard deviation of 100 units.
- Your analysis should include the evaluation of the worker-paced vs. machine-paced assembly processes.
- Examine initial cash flows, labor cash flows and any others that you think are relevant. Analyze these costs under the following sets of assumptions:

  Assume that capacity is added in the year that demand exceeds capacity.

  What system do you recommend? Why?

ACTIVITY P2
Order Policy

Determine the ordering policies for each of the proposed suppliers (ABC vs. P2). From a purely economic perspective, which of the suppliers would you recommend PERSCON use?

- How much does lead time contribute to cost?
- What is the total annual cost of this choice?

ACTIVITY P3
Project Management

Develop a Project Schedule that represents the time needed to ramp up for full scale production.

- Determine the expected (normal) number of days necessary to prepare for the trade show. Present a Gantt chart showing completion times and slack.
- Draw a CPM diagram to verify your answer above and calculate the duration of the project and the critical path.

- If the normal duration is greater than 27 weeks (for a 27 week launch), crash the project so everything will be ready for the trade show. Assume operations are done on a 5 day work week.
- Develop a table showing the early start, early finish, late start, late finish and slack time for each activity.

ACTIVITY P4
Quality Management

Assess the quality of the sample data provided by the circuit board suppliers utilizing SPC techniques. Which supplier has the better quality? Why?

Discuss the firm's quest for quality. This is a conceptual discussion that includes various quality management topics including six sigma.

ACTIVITY P5
Supplier Selection

Based on both the quality and ordering policies of each chip supplier, which do you recommend? Defend your answer.

ACTIVITY P6
Operations as a Value Added Function

Describe how the operations function of this organization contributes to the value proposition of PERSCON. This comprehensive essay should present a convincing discussion of how the operations function is a vital strategic weapon.

Finance Case Assignment

A copy of your finance spreadsheet should be submitted through Oncourse when you hand in all your case materials.

ACTIVITY F1
Effective Costs for Fixed Assets

There are four different classes of depreciable assets and you must calculate an effective cost for each class as part of calculating your project's ICF.

ACTIVITY F2
Project β_U

Using data in the case, estimate the company's levered and unlevered beta. Then use internal information to estimate a β_U for this particular new project.

ACTIVITY F3

Project Cost of Capital

Next, use the current risk-free rate, an estimate of the required risk premium of the market portfolio, and your beta estimate to calculate this project's cost of capital.

ACTIVITY F4

Project Incremental Cash Flow & NPV

Based on the case text, calculate project incremental cash flows for the next five years and combine this information with your project cost of capital estimate to determine project NPV and IRR.

ACTIVITY F5

Final Financial Report

Write a financial summary report that details your results and conclusions. More information about the nature and structure of this report will be released during the first week of the case.

ACTIVITY F6

Possible Additional Requests for Analysis

Senior management at PERSCON has the reputation for asking for last-minute analysis of new areas, areas not previously contemplated. Stay prepared, as these requests may happen sometime during the case.

General Instructions

General Instructions Concerning the Integrative Case

The overall purpose of the Integrative Case is two-fold. First, it provides you with an opportunity to solve a set of business problems by integrating the functional areas of Marketing, Finance, Management, and Operations. Second, it puts you in a situation in which you have to work within a group, NOT of your own choosing, where individual "rewards" (i.e., your case grade) are dictated by the grade of the group (peer evaluations can, however, influence the grade for the case as well – see below). Of these two purposes, the second can be as educational as the first. By this we mean that for those of you whose work experience has been limited, you will be getting an opportunity to work in a situation very similar to that which you would find on your first job in a professional/managerial position. For those of you whose work experience is more extensive, you will have an opportunity to hone your interpersonal skills in a group effort. Specifically, you will:

- be working with people over whose selection you have no control.
- be working with new information and new ideas.
- be working with very little outside direction.
- not have as much time as you would like and/or feel that you really need.
- have your individual performance determined by the output of the group.

Group Organization

There is no "magic formula" regarding how to organize your group. Some groups have divided the responsibilities along lines such as financial analysis, marketing planning, etc. Other groups have all members participate in all phases of all activities. Some groups have selected a group leader to coordinate activities within the group, other groups have not. There have been numerous other approaches used. One result is clear: the groups who have gotten along well during the case generally receive higher grades. In general, it should also be said **that lower grades are more common for teams that fragment into a collection of individuals who each work in just one area of the case.**

The recommendation that we would make at this time is that your group should CONSCIOUSLY decide upon how to organize itself, and then each team member should complete in a timely and quality manner the duties assigned. All team members should edit the final report before it is submitted to check and verify your cohorts' work.

Timing

Avoid a last minute rush to get your report done. You have 10 days to complete the case, so you do NOT have any time to waste.

Peer Evaluations

The peer evaluation process serves as a way to protect the group from an individual student who may try to get by on the work of others. Generally, this type of situation is the exception rather than the norm. For example, in past semesters, less than one group in ten had a non-performing member. However, if you find that your group is saddled with an individual who is not contributing fully, you can reflect your opinion (indeed, you are required to complete the online peer evaluation process). How you are evaluated by your peers may result in receiving a reduced grade for the case. Remember the case is worth 20% of the final grade in each of the four areas.

We expect you to be fair in assessing the contributions of the other group members. Be realistic in your expectations of others. Play to individual's strengths. Having said all of this, it is certainly acceptable to expect that all group members attend all or most meetings (barring class work and unusual circumstances) and participate fully in all discussions, decisions, and text and spreadsheet editing. If it is necessary for you to miss even the "minutest" aspect of this exercise, please be sure to communicate to other members of the team, "I cannot meet because of _____. This is how I plan to make up for my absence: _____. Is this acceptable to other members of the group? If not, what do I need to do to make it up?" The best thing, of course, is not to be absent from the group. But if you must, please make other arrangements and show respect for the other members of your group. All case participants should plan to make significant contributions even across the weekend spanned by the case period.

Documenting Your Contribution to the Group

Working in a group can be rewarding and stressful. Because an individual member's case grade may be affected by poor evaluations from teammates, the following activities are recommended of all I-Core case groups.

- A log of meeting content and attendance should be kept. Include a summary of which member agreed to perform what task and whether they completed the particular task. The group together can complete the log or a single individual can keep the log. The log is not turned in with the case but should be avail- able to the I-Core case coordinator in case an individual protests their peer evaluation.

Please note that your comments about a poor team member may be reviewed by the I-Core faculty and other faculty should a team member contest your evaluation. Your comments (without attributions to you specifically) may be used to support that student's lower case grade.

Peer Scoring System

For a team of six students, each student must evaluate the other five members of the team. Students do not assign a score to themselves. **Students must give each member one of the following eight scores.**

100 + Bonus Points	**Above-and-Beyond Effort…**the member made a very strong contribution to the team and in several respects went the extra mile to try and improve the final case analyses and write-up. They were concerned with the overall case, involved in all areas of the case, displayed effective leadership and tried to bring the team together. The team would have fared much worse without the efforts of this individual.
100	**Standard Effort…**this member functioned effectively in the team and did not hinder its progress. The member carried a roughly equal share of the team's duties and acted in a responsible manner toward the team. **This member did not just work in their own assigned activities, but actively sought to learn about and add to other member's activities.** They may not have taken a leadership role, but they were very attentive to the mission and needs of the team.
85, 90 or 95	**Sub Par (but Reasonable) Effort…**this member did make a significant contribution to the team, but was unable or unwilling to make an equitable contribution. They may have been unavailable during some of the case period and did not arrange to compensate for this fact. They may have been unwilling to make a serious effort in certain areas of the case. They may have insisted in working in only one area of the case and refused to participate in other areas. In the areas that they did work in, they may have been late in returning work or remiss in attending team meetings. They really did not do anything that would help to bring the case to an above-average level of quality. Other teammates had to make up for the work being performed by this member. In addition, this member may also have been a disruptive influence on the team and they may have been highly confrontational and insulting to other team members.
50, 70 or 80	**Unacceptable Effort…**member did just the minimum (or less) to contribute to the team. They may have been exceptionally late in reporting on assigned activities. Even then, their work had to be redone by other members of the team. They may not have attended or did not seriously contribute to team meetings. They may have been highly confrontational and insulting to other members of the team. They may have been absent and unresponsive during several days of the case period. They may have made no effort or little effort to help with the difficult summary activities during the last few days of the case.

Important Notes

When assigning scores to teammates, students must be sure that their pattern of scores complies with the following set of requirements:

- Total points must be between 400 and 506
- Can *split* up to 6 total bonus points over a maximum of two individuals (a maximum of 2 teammates can receive a score over 100).
- Must have at least 2 members at or above 100%.
- Can assign only two members below 80%.
- Whenever a score of less than 100 is given to a teammate, member **must supply** written statement which indicates the ways in which that teammate's performance was unsuitable.
- Only the two team members who earn the most bonus points for a team will actually be rewarded those bonus points.
- All peer evaluations should be filled out independently of other teammates. **Specifically, teams may not collude and set points so as to enhance the scores of all teammates.**

Determining the Case Grade Multiplier for each Student

Each student receives five peer scores, one from each of their teammates. The lowest score will be thrown out and an average will be taken of the remaining four. The lowest is eliminated because of the possibilities that two personalities may clash and one or both parties may be tempted to give a severe markdown when it is not warranted.

A Hypothetical Case. Suppose that Peggy a makes a mild case effort and the team has to cover for her a bit -- she really doesn't do (or try to do) anything to make the case exceptional in any way. Now suppose that Peggy receives peer scores of 103, 100, 95, 90, 85. Peggy's good friend is on her team and gives her the 103 even though she did not deserve it. Peggy received the third highest amount of bonus points on the team and thus her 3 leadership-based bonus points do not count toward her final score.

Peggy's case multiplier will then be: (100 + 100 + 95 + 90)/4 = 96.25

If her case team earns an 80 on their case, then Peggy's case score will be: .9625 * 80 = 77.0%

Now suppose that Gwen has been a great worker and a very positive force on this same team. Gwen's teammates score her as 106 106 103 100 100 and she ended up accumulating the highest number of bonus points for her team.

Gwen's case multiplier will be: (106 + 106 + 103 + 100) / 4 = 103.75

Gwen's final case score will be: 1.0375 * 80 = 83.0%

I-Core Policy with Respect to Cross-Team Collaboration During the Case

During the case period, students can't help but to run into students from other teams. Frequently these students desire to talk with them about their case and team experiences. Roommates, housemates, club members, and close friends may be taking the case at the same time and will want to talk about it with each other. The following information will help you to understand what types of communications are, and are not, allowed during the case period.

1. **Helping.** This refers to the case when someone from one team has a much better understanding of an issue than someone from a different team, and proceeds to explain to them the steps needed to make a certain calculation or the issues involved in arriving at certain qualitative conclusions and recommendations. **Under no circumstances is cross-team helping allowed during the case.**
2. **Collaborating**. This refers to the case where two members from different teams have roughly the same understanding of a subject or issue and are working together on a case activity. Some collaboration can be very beneficial to students overall and is encouraged during the case. Other forms of collaboration go against the intended purpose of the case and are prohibited.
    a. **When Collaboration is Allowed**. If both students have a weak understanding of an activity, or if they have not yet proceeded very far with a specific case activity, they may discuss together the general nature of the task or the broad steps they'll need to complete the task. It would be much more beneficial (in terms of peer evaluations) if students worked within their own team, but if you happen upon someone (say at lunch), then general exploration of broad case issues is allowed. Certainly, the I-Core faculty expects that this form of communication will be the exception rather than the rule. As a rule, you should work within your team for a majority of the time.
    b. **When Collaboration is Not Allowed.** If both students have a strong understanding of an activity, or if they both have progressed far along on a specific case activity, then they **may not "compare answers" under any circumstances.** They may not explain specific details of their team's answers to members of other teams. As a rule, once your team has sized up an activity and then taken direct steps to work toward an envisioned answer, you are strictly on your own.
3. **Old Case Materials and Former Students.** Under no circumstances can any member of a current case team receive help from a person that: a) already has taken I-Core and completed the case, or b) has an advanced level of professional expertise on a given subject in the case. You may seek help for technical problems (file storage and spreadsheet mechanics) and for assessments of your writing style.

    You should not be using an old I-Core case or file for ANY purpose during the case …even to check for elements of professionalism. If other students offer you an old case, you should remind them that you cannot use such a case and your grade depends on your honesty. You should never read an old case in search of information that will improve your current case solutions. Under no circumstances may spreadsheet files from a previous case be used to complete your current case.

    Please also be aware that some teams have come forward (during the actual case period) to report a teammate who showed blatant disrespect for the team by using old case materials. Team members have a lot at stake in this case exercise and they will not cover for a member who is in clear violation of the case requirements.

4. **Penalties.** If any specific individual violations of the above rules are observed, the relevant students will be given an individual score of zero for the I-Core case.

   Also, please be very much aware that during the grading process it sometimes becomes evident that a mistake made or answer given was the result of one team using information from unapproved sources. In such cases it is usually impossible to prove which member of a team violated the rules of the case. However, if (during the grading process), it becomes clear that two teams collaborated, or that a single team used information from old cases or unapproved outside sources, then the relevant cases will be deemed unfit to be graded. In such cases, **all members of affected teams will receive a grade of incomplete for all I-Core classes and they will need to complete the case during a later semester.**

   If you are tempted to copy another person's work, remember that your grade and those of each team member will be affected. Do you really want to substantially lower your teammates' grades because you did not do your own work?

Case Content

1. Title Page (include your team number)
2. Table of Contents
3. Executive Summary
4. Management Section
5. Marketing Section
6. Operations Section
7. Finance Section

Note: Please place all exhibits and appendices either 1) within the text, or 2) at the end of the section for which they are relevant. In other words, exhibits related to marketing would go either within, or at the end, of the marketing section. Please use double spacing throughout the case text areas.

Note: For grading purposes please turn in one color copy of the entire case. You will turn in an additional copy which may be either color OR black and white FOR EACH subject area. This will be made clear in case instructions. Each cover page should have your team number on it. The content of the four subsections will be discussed during the case period.

Writing Up Your Work

General Guidelines. The case, when finished, is basically a project feasibility study and as such, it should provide an overall clear, concise and insightful discussion of the new product project. All sections are to be written from your team (you can come up with an acronym or code word for your team) to top management at the firm. You will be instructed on writing during the case. When writing, try hard to avoid making your report a simple list of steps that you took as students. Remember that you are role-playing – you are teammates on a corporate team and you have met with management and defined the tasks and questions to be addressed in this project. Management does not need you to review all this for them in fine or even moderate detail. Instead, they strongly desire to know your answers, results, solutions and recommendations and to have them presented in a clear and fluid overview of the project. You can certainly walk management through the tasks and major steps, approaches or methods that you used, but this framing and detail should be brief and only be background information. Within this framework, the results, analyses, and recommendations should stand out very clearly.

Area-Specific Sections. Provide all written work that is requested for each area in its own written section. Make sure to use page and paragraph headers to effectively orient and guide the reader and to make clear references to any tables, graphs or appendices that you'd like the reader to view. In these write-ups, you really do need to give some brief detail as to the steps taken or the methods used, but too much detail can bore the reader and detract from overall insight that you are trying to provide to management.

Executive Summary (4-6 pages). This is the most important and difficult part of the case to write. This is the first thing that management will read and they will likely read it in its entirety and then put the report aside for the day. You can assume that they will return to the report the next day and will reread the summary and then start to venture into the specific areas to gain more understanding of issues that interest them. For their first read, you have 4-6 pages and 20 minutes of their time in which to create a solid understanding of the project for them. You don't need to list out every single result that you obtained while doing your work. Just focus on the most important information.

Try to focus, foremost, on the project and not on your work. What can you tell management about this idea? What are some critical issues involved and what did you learn in regards to these issues? What potential benefits are available? What risks are out there and how might this project fail or backfire? How might the issues in one area impact another area? Integrate whenever possible and logical. How might this project depend on results found by one of the other teams working on other projects? What remains to be worked out and where should the firm go next with this new product idea?

One way to write a very dull executive summary is to simply piece together (one after the other) a listing of results for each of the four areas. Deal with the project as a whole and move back and forth across the areas as you discuss the project. Finally, please note that the first page and especially the first paragraph of the executive summary must be HIGHLY effective. If an executive manager reads only this one paragraph or page, then what will they know? If little is conveyed in this section of writing, then the manager starts to view the remainder of the report with skepticism.

Point Distribution for I-Core Case:

Management Component	18 points
Marketing Component	18 points
Operations Component	18 points
Finance Component	18 points
Executive Summary	16 points
Professionalism of the Case (grammar, flow, quality of exhibits, etc.)	12 points

IMPORTANT CASE NOTES:

1. Case submission will be held on July 31, 2014. The time and place will be announced.
2. You will be given specific instructions regarding style during the orientation. Plan to double space.
3. Peer evaluations must be completed ONLINE before Case submission.