

A BUSINESS PLAN FOR PORTABLE RF TRACKING DEVICES

By

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B.A. Biology and Philosophy
University of Western Ontario, 1991

LL.B. Bachelor of Laws
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Submitted to the Sloan School of Management
in Partial Fulfillment of the Requirements for the Degree of

Master of Business Administration

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Noël K. Brown

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May 11, 2000

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Associate Professor of Entrepreneurship

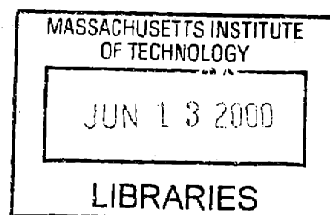
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ABSTRACT

This business plan is an examination of an opportunity to use portable radio frequency tracking devices for locating individuals throughout North America. Until now, many manufacturers of wireless tracking systems have focused their efforts on the tracking of vehicles and assets in shipment. The miniaturization of the electronics comprising these tracking systems is opening new opportunities for manufacturers to redirect the focus on the idea of tracking individuals.

Thesis Supervisor: Simon Johnson
Title: Associate Professor of Entrepreneurship

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Rad Foxtechnologies

A BUSINESS PLAN FOR PORTABLE RF TRACKING DEVICES

I. EXECUTIVE SUMMARY

➤ *The Concept*

On the technological front, RadFox technologies (“RadFox” or the “Company”) is following a new direction. Up until now many manufacturers of wireless tracking systems have focused their efforts on the tracking of vehicles and assets in shipment. RadFox has taken advantage of the current trend of miniaturization to redirect the focus on the idea of tracking individuals. Knowing the whereabouts of loved ones provides security and peace of mind. RadFox is in business to develop and market a wireless mobile personal tracking system for use in locating individuals with a high level of accuracy.

In our highly mobile society the value of location data affords many benefits when made available to those who care. Once only available as costly navigational equipment, modern semiconductor technology and innovative communications systems design techniques have combined forces at RadFox to provide a miniature low cost and accurate solution to personal or asset tracking and location. Our wireless location technology and services cater to the mobile individual. This system stands to be one of the biggest innovations of our era.

The RadFox System™ will enable a user to log onto the Internet and locate a loved one either by the signal of their cellular handset or by a micro-transmitter developed by

RadFox. Upon entering the necessary parameters of the search, the RadFox System computes a latitude and longitude and communicates this information via the Internet to the end-user, usually within three seconds. The output of the search is represented by a red dot on an electronic map viewed via the Internet.

Although expensive, satellite-based location systems are already used by large and small transportation companies. The RadFox System™ – based on cellular and RF technology – ushers in location technology that is both ubiquitous and cheap.

➤ *The Team*

RadFox has an excellent founding team comprising a broad, complimentary skill set supported by solid teamwork. The founding members include:

- Noël K. Brown, B.A., LL.B., M.B.A. – CEO/Co-Founder
- John Tobia, B.A.Sc., M.A.Sc., LL.B. – COO/General Counsel/Co-Founder
- Nick Tobia, B.A.Sc., M.Eng. – CTO/Co-Founder

Noël is a M.B.A. candidate at the MIT Sloan School of Management, Class of 2000, specializing in Financial Management. Noël received his Bachelor of Arts in Biology and Philosophy from the University of Western Ontario, Canada. Subsequently, he attended law school at the University of Ottawa, Canada, where he received his Bachelor of Laws, specializing in Taxation. Upon graduation from law school, Noël practiced corporate and securities law for four years, most recently with Blake, Cassels & Graydon, LLP, one of Canada's leading law firms. Noël has recently joined the Investment Banking Division of

Morgan Stanley Dean Witter. Between practicing corporate law and working in investment banking, Noël has considerable experience in managing corporate finance transactions. Noël's judgment has been relied upon by several CEOs and CFOs regarding the direction of such corporate clients.

While working at Blakes, Noël spent three years working with John. John obtained his Bachelor of Applied Science in Engineering Science (Electrical Engineering) and Masters of Applied Science in Electrical Engineering, both from the University of Toronto. Subsequently, he obtained his Bachelor of Laws from Osgoode Hall Law School, Toronto, specializing in business and intellectual property law. He has been practicing in Toronto as a corporate and securities lawyer with the firm of Blake, Cassels & Graydon LLP for over 5 years, where he has focused on technology financings, with particular emphasis on emerging growth companies. John brings a very unique and important perspective to RadFox. Not only does John have very solid experience in advising emerging growth and start-up companies, but he also has a very solid grasp of technology from his graduate work in wireless technologies and telecommunications.

Nick, John's brother, obtained his Bachelor of Applied Science in Engineering Science (Electrical Engineering) and Masters of Engineering in Electrical Engineering, both from the University of Toronto. He has over 19 years of research and development experience in the wireless technology sector, with particular emphasis in RF technology and classified wireless applications. He has held various positions with General Electric Canada, ComDev Corporation and Lockheed Martin Canada ranging from RF engineer to

RF Technology Manager. Nick has co-authored three patents for use in RF telecommunications. He has been specializing in portable remote devices.

The founders appreciate that as the business develops, RadFox will need to expand its management team. The founders are completely prepared and committed to recruiting high-quality people. Equity ownership among the founders will not exceed 30% in order to preserve a highly attractive equity pool for recruitment purposes.

The team is both highly adaptable and responsive to adversity. As lawyers, John and Noël's experiences have trained them to prepare for worse case scenarios. Nick is a widely respected and skilled engineer. He has always been able to modify his designs and developments to meet changes in demand with creativity and efficacy. In addition, among the members of the founding team there is a solid knowledge of the key suppliers, the customers, and the competitors to RadFox's business.

The founders are committed to growing the business and are completely prepared to make the difficult choices. The founders appreciate that gaps in the management team will need to be filled as the Company grows. A search for an experienced CEO will begin after the first round financing and the founders are prepared to relinquish lead roles if it is in the best interests of the business.

II. MARKET RESEARCH AND ANALYSIS

➤ *Trends*

The Federal Communications Commission (“FCC”) in the last decade implemented a wireless “e-9-1-1” mandate, which requires cellular carriers to be able to locate their subscribers within 100 meters of accuracy 67% of the time by October 2001, hoping to solve concerns about emergency response to mobile phone callers. Though several network operators may not make that deadline, the implications are clear: wireless devices may get a lot more personal, a lot more quickly.

RadFox believes that this ruling will create a market for its system. RadFox also anticipates that Industry Canada, the FCC’s Canadian counterpart, will initiate a similar ruling for Canadian carriers in the near future. RadFox’s marketing efforts will initially focus on the North American marketplace and, eventually, will broaden to encompass the global marketplace.

To evaluate the level of commercial and consumer interest (market potential) for wireless location services, a study was done by The Strategis Group in 1997. The following presents some of the key applications for which the RadFox System™ is a viable solution.

➤ *Subscriber/End-User Interest*

The Strategis Group measured consumer and business interest in location-based services for personal tracking, emergency location services, location-based information and

navigation services through a portable device, child location services through a portable device, and vehicular tracking. The result of the survey was that a strong percentage of both wireless users and non-users expressed an interest in subscribing to the various location-based services. Furthermore, their willingness to pay for the various services was determined to be anywhere from \$0 to \$60 per month, with an average of about \$13.20 per month.

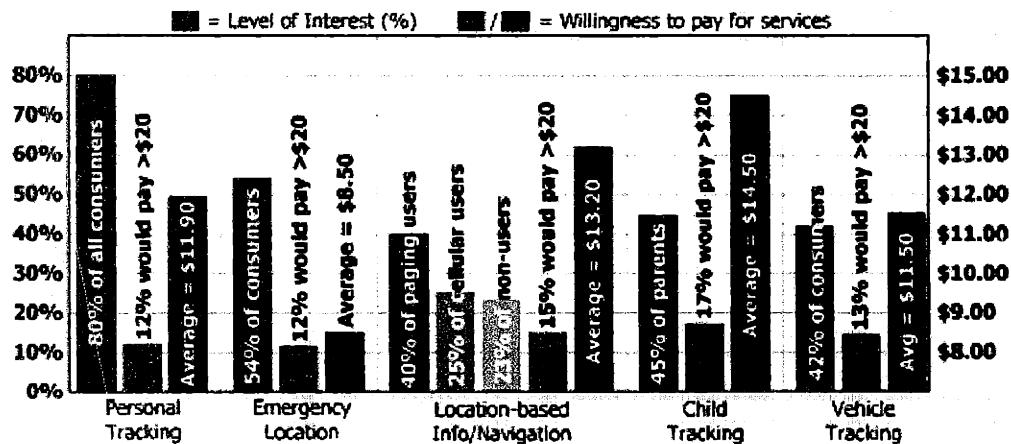


Figure 1: Levels of Interest and Willingness to Pay for Wireless Location Services
 (Source: *Wireless Location Services: 1997, The Strategis Group*)

➤ *Revenue Potential for Carrier/Service Provider*

The Strategis Report on *Wireless Location Services: 1997* determined that the distribution of potential location-based service revenues by application is as follows: 2% asset tracking, 16% vehicle location, 24% vehicle tracking, 6% child location, 8% emergency-only, 5% information only, and 39% both information and emergency services. These percentages translate into phenomenal revenue potential. Accordingly, The Strategis Group found that the total annual revenue potential for all location based services to be \$8.4 billion.

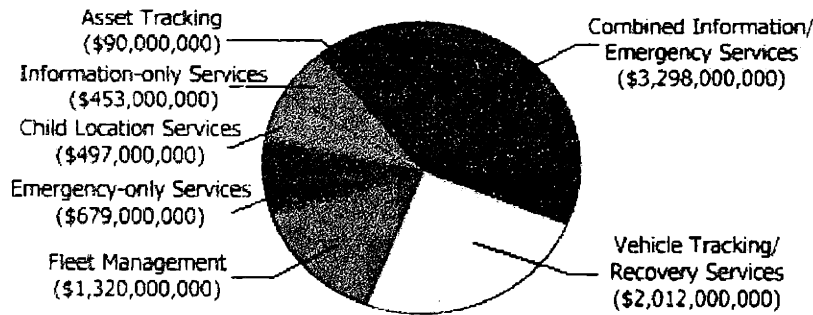


Figure 2: Annual Revenue Potential for Wireless Location Services in the U.S.
 (Source: *Wireless Location Services: 1997*, The Strategis Group)

➤ *Market Potential for Location Equipment and Service*

The wireless location infrastructure is comprised of two components: cellular and personal communications service (“PCS”). At the end of 1996, the cellular system consisted of approximately 27,000 cell sites were in operation which allowed carriers to serve 97% of the entire U.S. population, and 52% of the U.S. geography. It is projected by The Strategis Group that networks will add a few thousand more cell sites over the years in order to increase capacity and meet expected demand. PCS coverage is currently less far-reaching than cellular coverage at about 85%. However, The Strategis Group, in conjunction with Moffet, Larson, and Johnson (“MLJ”) believes that “after consolidation of licenses, four or five PCS carriers will construct networks within most licensed areas.” (The Strategis Group, p. 163)

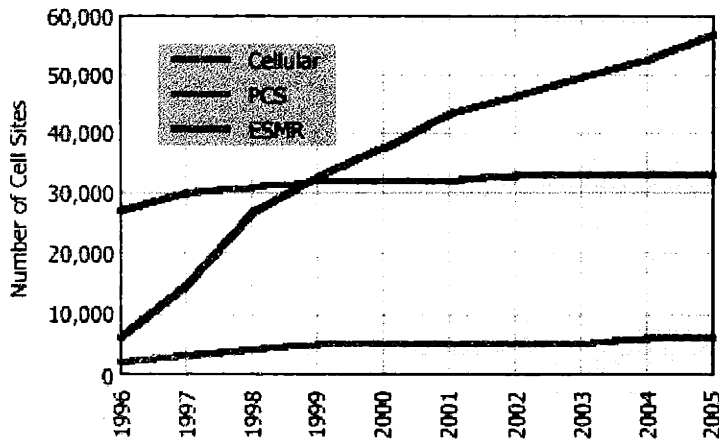


Figure 3: Projected Number of Cell Sites in Use from 1996 to 2005 in the U.S.
 (Source: *Wireless Location Services: 1997, The Strategis Group*)

The Strategis Group determined that the projected annual revenues from the sale of location equipment would peak in the years 2000 and 2001. Also, cumulative annual revenue by the year 2005 of \$2.6 billion is estimated.

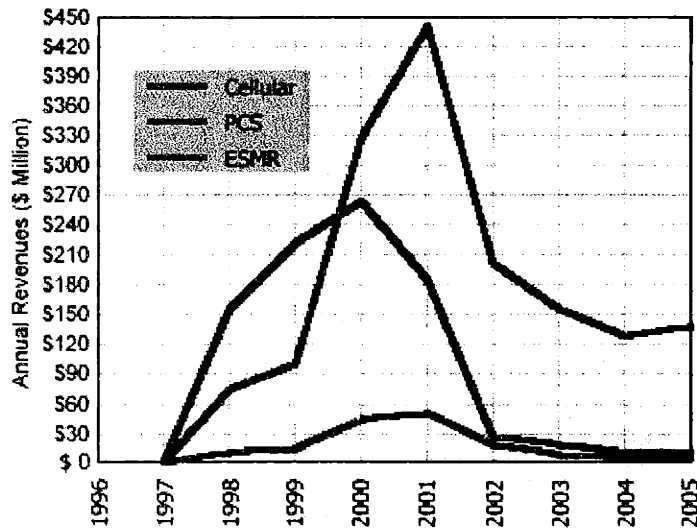


Figure 4: Projected Equipment Revenues from Wireless Location Technologies from 1996 to 2005 in the U.S.
 (Source: *Wireless Location Services: 1997, The Strategis Group*)

➤ *Projected Number of Wireless Users Over the Next Decade*

The Strategis Group estimates from previously published market research documents that wireless subscribers will rise to 193 million by the year 2005. “PCS and cellular carriers are projected to lead all wireless service offerings – each with approximately 63 million subscribers by the year 2005.” (The Strategis Group, p. 177)

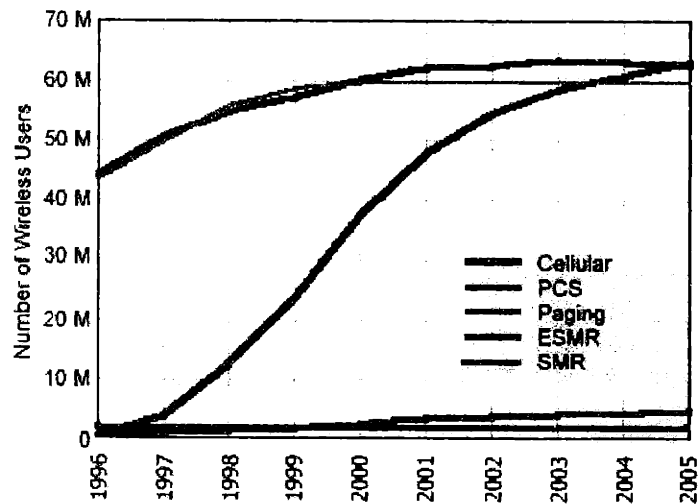


Figure 5: Projected Number of Wireless Users from 1996 to 2005 in the U.S.
(Source: *Wireless Location Services: 1997*, The Strategis Group)

III. THE PRODUCT

➤ *Critical Product Issues*

In order to be successful in bringing our product to market, RadFox has to address certain key requirements for its product line:

- Size – for sufficient transmitter power and antenna size for tracking over a wide area, the wearable devices developed by our competitors must be bigger and heavier than most people desire. RadFox has designed a transmitter roughly the size of a Canadian dollar coin (not much larger than a quarter).
- Battery Life – the longer the battery must last, the bigger and heavier the transmitter on the child must be. RadFox's miniature transmitter is a passive unit that has battery longevity equal to that of high quality dry cell batteries (perhaps several months).
- Antenna – how do you put an effective antenna next to a child's body without detuning it? Our effective design has overcome such transmission issues. RadFox believes that this technology may be patentable. Further examination of this patent issue is currently underway.
- RF Radiation – is it safe to have a transmitting antenna next to a child's body? RadFox transmitters are shielded to reduce RF radiation exposure. Moreover, the unit is passive and as such, is not emitting a regular signal. Receivers can track the unit without the requirement of constant emission.

➤ *The RadFox System™*

The RadFox System™ is comprised of a miniature body-worn, easily installed tracking device that provides users with personal safety, security and optimized service delivery operations all at a very affordable price. Operation centers continuously process the location of all issued tracking units and translate that data into relevant information for our user base. Up to now, location data has been a relatively unexploited parameter within our current information age. RadFox's ability to effectively provide this data is a valuable addition to ensuring peace of mind and happy customers.

The RadFox System™ key differentiating features as follows:

- Because the RadFox System™ is a stand-alone wireless location system, RadFox is not dependent on wireless providers.
- The RadFox System™ is scalable which means that as network demand increases, additional operational capacity can be provided by simply adding a module to the electronic component to be attached to transmission towers (the chassis).
- Because the RadFox System™ is a network-based on Time Difference of Arrival ("TDOA") wireless location solution, no changes are required to handsets. Therefore, the 100 million handsets in use today are locatable using the RadFox System™.
- The RadFox System™ is accurate to within 10 meters.
- There is no additional expense to the subscriber.
- Because TDOA is robust against multipath and urban canyons, there are no blind spots on signal reception.

- TDOA is easy to deploy which translates into low installation cost.
- TDOA does not have a large latency time which means location can occur within three seconds.
- Network based TDOA does not require changes to the cellular antenna infrastructure.

Its ability to work in places where GPS will not, such as urban canyons and inside buildings, opens up a world of applications from ensuring the safety of loved ones to emergency locator services for health care situations.

➤ *How Does the System Work*

This is a phone-triggered system whereby the individual seeking the wearer of the device dials one number, enters the appropriate PIN code and receives the location. The unit is small enough to be worn around a child's neck or wrist, concealed under or in the lining of clothing. It conveniently fits in a pocket or purse and includes a readily accessible alarm button. In addition to constant location data, the alarm feature provides an immediate indication to the service provider who in turn notifies those that need to know of the emergency.

The exact steps that the RadFox System™ will follow include:

- The user logs onto the Internet to locate the wearer of the wireless device.
- Next the user logs onto the account that they have set up with RadFox by entering their confidential user name and password.

- The user enters parameters for the search: what cellular or wireless device to locate and how often to update the location.
- The RadFox System computes a latitude and longitude and communicates this information via the Internet to the end-user, usually within three seconds.
- The user is shown the fee for the service. The fee is based on the type of location performed and how long tracking is required.

➤ *Applications*

Although still in the early developmental stage, we believe the RadFox System™ could have an array of beneficial potential applications beyond the primary use of tracking individuals:

- Monitor the medical conditions of at-risk patients.
- Track and locate military, diplomatic and other essential government personnel.
- Determine the location or the authenticity of valuable property.
- Track the whereabouts of wilderness sports enthusiasts (mountain climbers, hikers, skiers, etc.).
- Theme park, traffic management and security.

IV. THE STRATEGY AND MARKETING

➤ *The Strategy*

RadFox is not focusing on the e911 mandate. We believe that this is an artificial market and it is not an easy market. The e911 mandate requires dealing with bureaucrats who are not very conversant with high tech. Moreover, this is a mandate forced upon such bureaucrats by the government. The Company believes that the real opportunity is in specialized tracking services. According to the FBI, more than 350,000 children are abducted each year, mostly by family members. David Shapiro of the National Center for Missing and Exploited Children says that the figure includes only about 300 abductions by strangers.

Eventually, RadFox wants to monitor the movement of vehicle fleets, stolen cars, criminals, — in short, just about anything to which you can attach a wristwatch-sized transmitter. The Strategis Group estimates that within 10 years, this market in the US alone could exceed \$12 billion.

RadFox intends to initiate the strategy by offering wireless carriers such as AT&T Corp. and Sprint Corp. a deal: RadFox will locate their 911 calls for free, enabling them to satisfy regulators at no cost; in return, RadFox wants access to their transmission towers so it can install the equipment that detects wireless signals. RadFox hopes that the decision to provide 911 locations for free will undermine its direct competitors, most of which were hoping to profit from selling the information to carriers. RadFox wants to sign up the major wireless carriers as its partners, but AT&T, Bell Mobility and the

others could decide to enter into the tracking business themselves and acquire technology from one of RadFox's competitors. We could possibly venture out on our own, but this might result in fighting against some of the biggest brands in wireless. Beyond the 911-location service, the Company plans to penetrate the personal locating market further by distributing its miniature transmitters for free. Either through schools in conjunction with local police departments, or through some other point of purchase arrangement, RadFox will, for an initial adoption period of perhaps one year, provide customers with a free transmitter for their children, but will charge the monthly service fee that all users will be charged in order to access the service. In addition to the monthly access fee, the Company will also charge a search fee of \$0.85 per search.

➤ *Roll-out*

The first region RadFox will target is the province of Alberta, Canada, with an installation of 400 units possibly in partnership with one or more wireless carriers operating in the province. A proposal will be submitted to a 911 trial in Washington, DC, wherein RadFox will install its chassis on cellular transmission towers (a trial would likely involve an installation on 470 towers at a cost of more than \$10 million). The trial is being conducted by a consortium of wireless carriers to determine which location technologies will satisfy the accuracy requirements laid out by the FCC with respect to 911 calls. The FCC wants 67% of emergency calls located within 100 meters. The carriers have to declare by October 1, 2001 which technology they plan to use. Total deployment across North America will cost \$1 billion, but the cost could go even higher if RadFox is unable to swap 911 tracking for tower space.

➤ *Competitive Edge*

RadFox System™ can pinpoint the location of a cell phone or other transmitter within 10 meters in digital networks. The electronic components are encased in a small aluminum box connected to a carrier's transmission tower. When a cell phone is turned on, it normally communicates with the nearest tower, but the signals are picked up by other towers, or base stations. The RadFox System™ figures out where the caller is by calculating the time it takes for the signal to get to three different stations. Generally, the competition uses the GPS system. RadFox's method is considered more accurate than GPS, and unlike the satellite-based system, it doesn't require modification of existing cell phones or special antennas to work. The RadFox System™ can also work with a small transmitter that is easy to hide, whereas the satellite system requires the installation of a more costly and bulky GPS receiver.

➤ *Marketing Strategy*

RadFox's initial marketing strategy will focus exclusively on the cellular RF markets, capitalizing on new regulations, passed or in progress, that will require cellular carriers to provide cellular location and tracking capabilities for 911 service. Marketing efforts will focus on establishing systems within Alberta. RadFox will use those systems to showcase the product to the cellular industry across Canada. RadFox will also use this opportunity to introduce the wearable devices. RadFox will then direct its marketing efforts to the larger North American market (United States and Mexico) and to other markets in Australia, Europe, Asia and the Middle East.

Initially, RadFox believes its system will have a competitive advantage due to the accuracy and cost effectiveness of its current technology. RadFox will pursue a long-term strategy of ongoing investment in research and development to maintain a technological advantage as other players enter the marketplace with more competitive options.

V. THE COMPETITION

➤ *Applied Digital Solutions*

Applied Digital Solutions (“ADS”) has recently acquired the patent rights to a new technology that it will use for e-business security, emergency location and medical monitoring. ADS has named this technology Digital Angel™. The Digital Angel™ transceiver can be implanted just under the skin or hidden inconspicuously on or within valuable personal belongings and priceless works of art. Once implanted within the human body, the transceiver is powered electromechanically through movement of muscles. It can be activated either by the wearer or by remote monitoring facility. The company also claims that the device can monitor certain biological functions of the human body – such as heart rate – and send a distress signal to a monitoring facility, which detects and medical emergency. ADS claims to have overcome limitations with respect to unwieldy size, maintenance requirements, insufficient or inconvenient power supply and activation difficulties.

The device contains a miniature GPS receiver to calculate its position on Earth. The device can broadcast this information to a local receiver. It gets its power from piezoelectric device that converts energy from a person's normal movements into electricity stored in a small battery.

The device, which will be the size of a small coin, would be implanted just under the skin. Most of the time it would be inactive. But a mechanical switch – or a timed series of muscular contractions – could trigger it. The company also claims that the device can be remotely triggered using a coded radio signal. This application may prove useful in the case of a lost child or kidnap victim.

Because this is a subcutaneous unit, it does provide a tamperproof means of locating and identifying individuals including children, who may be lost or may have been abducted. ADS claims that it can monitor the medical conditions of at-risk patients; track and locate military, diplomatic and or other essential government personnel; determine the location or the authenticity of valuable property; and track the whereabouts of wilderness sports enthusiasts (mountain climbers, hikers, skiers, etc.).

➤ *Grandparents Inc.*

This system consists of a 1½-pound device, about the size of a cellular phone, that can be hidden in a backpack or concealed in a stuffed animal. Its GPS locator, when activated, takes readings from a network of satellites to pinpoint its location within a tenth of a block and sends the information back to a 24-hour-a-day tracking center.

Currently, the device holds a charge for about a day. The second generation, due late next year, will be about the size of an eraser. San Diego County, Calif., is testing two of the devices on children at high risk for abduction, where a non-custodial parent in a divorce has made threats. Thus far Grandparents Inc. has used all its own funds to design and build the prototypes (the two founders independently wealthy from previous ventures in calling cards). Now it is hoping for corporate sponsors to underwrite the costs of mass-production and distributing the devices.

Rogers Communications of Canada, a large media and technology conglomerate with more than 300 video stores across Canada, which Grandparents hope to use as distribution points, has already taken an interest. When the device is turned on, a child with the unit can be tracked anywhere in North America within 30 seconds, via satellite signal. Grandparents Inc. does not plan to sell the devices for a profit. Instead it is planning on corporate sponsors to buy the units and distribute them for free.

Grandparents is working to get the cost of each unit down to about \$200, with a \$5 monthly fee. The firm is also talking to nonprofit groups and prosecutors in child custody departments nationwide about ways to distribute the devices. Clearly, the disadvantage to this system is size and weight. A 1½-pound wearable device is too bulky. Moreover, the GPS system has its shortcomings like inability to transmit from within buildings.

➤ *Harris Corporation - MICRO-TRAX™ Locator Units*

The Harris MICRO-TRAX™ Locator Units enable the MICRO-TRAX™ System to provide location, emergency notification, and data communication to a variety of users and applications. The MICRO-TRAX™ System was designed specifically to minimize complexity within the tracking tag to achieve small, low cost units and then to compensate with sophisticated signal processing in the receiver infrastructure. Harris claims that unlike traditional TDOA approaches its system is able to calculate a position with as little as two receiver towers located approximately 10 miles away. The Location Unit transmits a waveform at field programmable intervals between once per minute and once per day. The infrastructure stores the last location and provides immediate response to location queries. The tracking history is also stored and made available to users. Location information is provided in two convenient formats: voice and data. In the voice format the location is provided by telephone in terms of area, and street intersection. In the data format, a map display with variable zoom provides additional data.

Harris' Locator Unit comes in two sizes. The ultra-miniature locator is for applications where size is important such as child monitoring or pet tracking applications. Harris' standard model locator is about half the size of a pager and more appropriate for applications requiring extended battery life. Both units include an alarm button that provides an immediate location and programmed emergency notification to the appropriate authority. Other than size, the MICRO-TRAX™ system bears some strong similarities to the RadFox System™. MICRO-TRAX™ is hindered by its size, as it

cannot be embedded in clothing etc. Harris' unit would be easily located under a body frisk and thus, creates a security risk in the event of abduction.

➤ *SiGEM*

SiGEM Inc. is a two-year-old company based in Kanata, Ontario, Canada – one of Canada's major high-tech centers. SiGEM has developed ePING, a device the size of a small pager that fits into a leather pouch and can be worn by a child or someone with Alzheimer's disease to monitor their movements. In the event that the individual wearing the device gets lost or wanders off, ePING, upon request, transmits the location of the wearer to a receiver.

The firm recently obtained \$400,000 from the \$6 million Wireless Telecommunications R&D Investment Program (discussed in more detail herein under *Funding*). This company was among the nine “innovative emerging Canadian companies” that received \$2.4 million worth of contracts under the initial phase of the program.

ePing's tracking capability is based on GPS, wireless and Internet technologies. This device contains a tiny GPS receiver that transmits the data signal of the exact location of a person or object over the same cell phone network used for voice traffic to an Internet service provider (“ISP”). Using special software, also developed by SiGEM, the ISP transfers the information onto an electronic map that identifies the precise position with a red dot. SiGEM also claims that the system is capable of establishing an “electronic fence”, whereby a young child who strays too far from home will activate the “ping”

aspect of the device and notify parent by telephone via the ISP. This device will not be commercially available until 2001 at which time it will to be powered by a battery designed to last three months. SiGEM expects that the units will not exceed \$300. For now, however, ePING is still at the R&D stage.

VI. THE CUSTOMERS

RadFox estimates that there are currently over 25,000 existing cellular base stations in North America, with over 2,500 base stations being added annually. Our analysis of existing cellular infrastructure indicates that, on average, cellular location equipment will be needed in 1 out of every 4 base stations. This represents an existing market of 6,250 base stations, growing by approximately 625 base stations annually. In order to meet FCC regulation, and assuming that Industry Canada adopts a similar rule, by the year 2001 almost 40,000 base stations in North America must be capable of tracking 911 call locations. This means that potentially 10,000 base stations will require cellular location equipment by the year 2001. RadFox estimates that there are currently 75,000 base stations throughout the world. Over the next six years, RadFox believes another 340,000 to 400,000 base stations will be created.

The Canadian marketplace consists of two major cellular carriers; the regional carrier in Alberta represented by TELUS Mobility and the national carrier represented by Rogers Cantel Inc. Together, these carriers have over 2,200 base stations. A city the size of Calgary, Alberta, has approximately 80 base stations.

In addition to enhanced 911 emergency cellular tracking applications, there are a number of other potential markets for this technology. These include: tracking of stolen phones, tracking stolen vehicles, fleet management for the courier and transportation industries, location finding of cellular and PCS telephones, the pursuit of criminals and the tracking of people such as children and patients.

VII. THE ECONOMICS

➤ *Funding*

Next year, Bell Wireless Alliance (which includes Bell Mobility Inc.) and TELUS Mobility plan to allocate the remaining \$2.6 million of the \$6 million initiative launched last year and named the Telecommunications R&D Investment Program. Managed by Ottawa based CANARIE Inc., which has developed a high-speed national optical research and development Internet, the wireless telecom R&D investment program is intended to support innovative projects by startups to provide cutting-edge products and services to wireless marketplace. The funding also reflects the Canadian federal government's requirement that roughly 2 percent of gross revenues from wireless companies go toward R&D as part of the conditions for obtaining a spectrum license from Industry Canada (the Canadian analog of the FCC).

➤ *Pricing*

Determining the pricing schema for this product and service has proven to be very challenging. Part of this difficulty is due to the fact that the RadFox System™ depends upon the convergence of two very exciting technological sectors: Internet and wireless communications. Research estimates place the number of cellular phone users in the world at approximately 300 million while Internet connectivity is in the range of 5% of the world's populations. The annual growth rates of wireless and Internet users continues to outstrip research projections. Moreover, with the recent introduction of Personal Digital Assistants (PDAs) and Wireless-Access-Protocol (WAP) enabled phones, the industry continues to evolve rapidly.