Business proposal

The Search and Rescue Assistant (SRA) is designed to be a system designed specifically with search and rescue operations in mind that will would greatly improve operations by reducing the frequency of errors and decreasing the time it takes to locate lost individuals. Search and rescue teams can respond to a missing person situation faster than local law enforcement and can field more trained and experienced personal. Because the service is comprised of volunteers, many search and rescue teams do not receive federal or state money. Members must fund their own equipment training and travel costs. Since volunteers tend to be middle class individuals they do not have a lot to spend on complex systems, meaning few if any systems have been designed for search and rescue Teams have to use a mix of different devices, including GPS receivers, personal laptops of varying degree along with mapping and tracking software. This leads to a huge difference in the effectiveness of different volunteer groups and even different search teams. Mapping software can be very expensive and the skills needed to use them are nonexistent in some of the older volunteers.

The SRA is going to fill the role of mapping and tracking software combined with small low power devices creating a system where all devices talk to each other and are easy to use even by the technologically illiterate. The system would consist of two separate parts, the GPS transmitting device handed out to SAR teams, and a receiver that talks to the mapping software used to track searched areas and team locations. The field device would consist of a GPS receiver, a radio antenna, a microprocessor, and an LCD screen. These devices would be given to search teams consisting of five to ten individuals, depending on the situation. As rescuers comb an area, they would periodically activate the field device and it would acquire the teams GPS location and send that information back to a computer stationed at the base camp. The computer would be hooked up to the receiver through a USB port and would display topographical information along with markers that indicate where teams have checked in and their path. There would be a message log on the side that gives general information about teams, such as who is currently in them, and when they last checked in. The mapping program will also display areas that rescuers can and cannot enter. Search and rescue volunteers are technically not law enforcement, so they do not have the jurisdiction to enter private property or houses. It can be hard to tell though if a house has been abandoned for decades and can be searched, or if it's simply rarely used by the owner of the land. The program would track and warn the commander at base when a team is nearing or appears to be heading toward a restricted area.

The field devices would be designed to use as little energy as possible allowing them to operate in excess of 10 hours in the field. This is achieved by having the microcontroller manage the power consumption of the different components and smartly adapt to its usage. If the volunteers are checking in a lot or are getting their GPS coordinates often the device will compensate by reducing non critical

functions and managing the power it supplies to different devices. This will require complex algorithms to not only properly control the devices functions but also to analyze and process power consumption rates and change for any given situation. Should the user find they are out of power, they can set the device to save its current settings about the search on internal memory then switch out the AA batteries. The device will then pick up where it left off and the volunteer can continue with the search operations unimpeded.

While the main customers this system is market too tend to not be incredibly wealthy it fills a role that no other system does. Search and rescue groups run into a lot of trouble when they have to deal with vital individuals, such as those who have excellent GPS devices or complex software, leaving the group and so their departure could result in a significant decrease in the group's effectiveness. If a search is too large and requires two groups, then teams have to set up and coordinate their technical setups so that everyone is on the same page. This situation is only compounded when law enforcement needs to be involved. A lot of time is wasted in this preparation phase, and it can greatly reduce the effectiveness of the operation if set up is rushed or poorly planned. These problems would all be avoided with a common system used by a large number of groups. Because of its ease of use no one person becomes vital to the operation so the group's ability will no longer suffer due to the changing of the guard. Working with other's who use the system would be a breeze and law enforcement could be easily trained on the spot to use the field devices. With set up reduced dramatically the rescuers can focus on finding the lost person and not fiddling around with computers and GPS receivers. These advantages make it very appealing for teams to switch from their existing setup to a new one. Law enforcement can also be targeted with this system, offering them a way to quickly work with search and rescue teams, or to have a low cost solution for keeping track of officer movements. Fire fighters can use this as a cheap and affective means of keeping track of individuals over a large area. The market this caters to is nationwide. Every state has at least one search and rescue group, and some groups can have hundreds of volunteers.

The system will be sold as a package, and as its individual parts. The package will consist of a licensed copy of the program, one receiver, and 4 GPS devices. Should the devices fail or the receiver break, new ones can be purchased via an online store. Offering bulk deals will entice groups to buy a large number of them to use as backup devices. If they want to install the software on multiple computers than they will have to buy a license for each computer. Offering bulk deals here too will entice them to buy multiple copies for backup computers. Little money needs to be spent on educating users so most can go to marketing and production. Getting word out about these devices can be done through online forums or by having a representative contact a search and rescue group and meet with them to discuss the product. Over time the devices can be improved to be more rugged or have more sensors and features. Newer devices will have to have legacy functionality, as most likely the groups will not be able to

purchase new systems every few years. New devices though would be cheaper and more appealing to buy especially if large orders get a discount.

Similar systems tend to focus on keeping track of fleets of emergency or private vehicles. These systems are installed on the cars and periodically update location. They increase their update frequency when the responder has their emergency lights on. All this information is sent back to a company control center or saved on the device to be downloaded later. This is an expensive system designed to be integrated into a vehicle, not lugged around in the woods. It is not designed for portability and so is essentially useless to anyone not using a car. The SRA field devices though will weigh only a pound and be able to fit in the palm of one's hand. The receiver that hooks up to the computer will also be a single pound and the program will be able to run on any laptop, even low end ones. If this system hits the market and shows success though, other companies who sell similar systems will try to repurpose them. The advantage that this system will have though is that it will be on the market first and so will grab a large portion of it from the start. That portion also does not have the means to change systems every few years meaning they will continue to purchase replacement field devices. The devices unique power saving algorithms will give the system a competitive edge. Using AA batteries is also a bonus since most of the equipment that rescuers have use these batteries. No extra wires, or chargers or special batteries to carry. It makes the device a simple and easy addition to any setup.

The risks involved here stem from the devices reliability, and the willingness of search and rescue teams to change. While there won't be many problems with power consumption, there could be problems with GPS acquisition and communication. Most search and rescue operations happen in dense wooded areas which can significantly interfere with GPs and radio communication. Since this system is for the national market it is possible to determine which areas could have problems based on existing data about forest density and tree types so it will not be a surprise where it will underperform. The biggest issue that will be faced is convincing rescue teams to change their ways. While teams use a variety of different setups for the most part they get the job done, investing in a new system that is not proven could be a big turn off to groups. The system is probably better than their current setup but the search and rescue groups know how their setup inside and out and they have proven it works. People in general also tend to be resistant to change even if that change is for the better. Convincing them in the reliability and effectiveness in the system would be a vital part of the business and is going to make or break the venture. Targeting law enforcement or other emergency services will give needed credibility and convince search groups to switch. Targeting large search and rescue groups, who have a larger pool of capital, will help show the systems strength and since many of these large groups are trend setters in the search and rescue field just purchasing the system may be enough to convince other teams to switch. Credibility is going to be a key component of success in this business, so it is vital that the system establishes that early on.

Search and rescue is a vital but not often realized part of many rural communities. Individuals can go missing for a variety of reasons: hikers and campers can get lost traveling in rough terrain, kayakers can be swept away by rough currents, the elderly suffering from illness can wonder off. Anytime a person is reported missing in these communities the local search and rescue group is contacted. The group then contacts members and collects those able and begins to figure out where the person has gone and where they could be headed. Without these volunteer groups many of these missing people would never be found. Local law enforcement doesn't have the training or the manpower to try and effectively find lost individuals. Search groups tend to be no smaller than 20 people and their backgrounds range from ex-military to ex-paramedics. Receiving no pay they go out on a mission to find the lost and bring them back to their loved ones. In any emergency situation, every minute matters. Time spent setting up and fixing mistakes can be deadly, so reducing set up time and the occurrence of mistakes is vital for any search and rescue operation. The system proposed in this document does both of these things and so improves the chances of individuals being found quickly and in one piece.

Opening the product to the global market would be a huge challenge but could improve the lives of hundreds of thousands. While it won't revolutionize search and rescue operations across the globe, it will be an important stepping stone in creating systems tailored to those operations. Getting the ideas and the foundation out there for specialized systems will allow this company and others to improve the basic ideas and create a more refined and robust system. Advances in technology will help to mitigate costs over time and allow for more features to be added. It cheap price would also allow those in less developed countries to purchase the system giving them access to a tool they could have only dreamed of.

It is important to be warry of who is using the system. It can be altered to update automatically and combine this with its small size it could potentially be used as a cheap way to track certain individuals. While it is very unlikely that the system would be used in such a way in the US, if it were on the global market there would be a number of countries interested for all the wrong reasons in devices like these. While this scenario is highly unlikely it is important to take these things into account when considering making a product like this.

The Search and Rescue Assistant is something that could not only benefit communities but also turn a profit. In the long term there will be opportunities to expand the business and net a significant profit while giving search and rescue volunteers a vital tool that they would never get otherwise. The investment needed is small and part of the payoff can be quantified while others don't need to be. The SRA is something that many people have a need for but no one has stepped up to solve.