

Senior Seeker
Project Proposal

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Introduction

An estimated 26.2% of the U.S. population ages 18 and older have a documented mental health disorder. 45% of that group suffers from 2 or more mental disorders.¹ In 2005, 13% of the U.S. population was composed of senior citizens (ages 65 and older). This percentage is expected to increase at a faster rate than total population in the next 40+ years.² Long-term care costs in 2006 ranged from \$35,600 to \$75,000 per year for assisted living and nursing homes.³

In 2004, 73.3% of all nursing home residents had some kind of mental disorder documented.⁴ Mental disorders can be divided into three different subgroups: organic brain disorders, mood/anxiety disorders, and other mental disorders. Organic brain disorders include "dementias, deliriums, organic brain damage caused by alcohol or drugs, Alzheimer's disease, or senility."⁴ Mood/anxiety disorders are composed of "depression, manic depression, phobias, obsessive compulsive disorder, and other mood or anxiety disorders."⁴ "Schizophrenia, substance abuse or dependence, personality disorders, adjustment disorders, mental retardation and other mental disorders" are classified under the other mental disorder group.⁴

Needs Analysis

With the rising senior citizen age group in the U.S. population, large number of cases of mental health disorders, and rising long-term care costs, clearly this area of healthcare is in need of attention. Nursing homes are becoming more populated, while the quality of care is diminishing.⁵ Relatives decide to place elderly family members in a nursing home for a variety of reasons. Sometimes, they make this decision because they do not have the time, experience, or resources necessary to care for the family member on their own. The 1999 Supreme Court case *Olmstead vs. L.C and E.W.* clearly shows that many patients in a nursing home do not belong there.⁶ But because these elderly individuals suffer from one or more mental and/or physical disabilities, family members sometimes resort to nursing home or assisted living care because they do not know what else to do. Making one visit to an average nursing home facility would lead one to see that if someone is not required to be there for full-time nursing care, they would choose to live elsewhere for the freedom and comfort.

Mental disorders can be progressive and can begin decades prior to death. If an elderly individual suffers from a mental disorder, but is not in need of full-time nursing care, family members have another option: The Senior Seeker.

Proposed System and Technology

The Senior Seeker is an advanced GPS locating device that aids family members and medical professionals oversee the safety of elderly people who suffer from mental disorders, while still allowing the patient to experience a level of independence that they would otherwise lose in a nursing home or assisted living facility. The device is placed on the patient by a medical professional in the form of a bracelet. This bracelet can only

be removed by Senior Seeker equipment at a medical professional's office, similar to how a clothing security device can only be removed by a special apparatus in a retail store. When activated, the Senior Seeker can be programmed by a medical professional and/or family member, who has a unique password to access the administrative settings, to include a list of approved locations and travel routes. New locations and routes may be added or deleted at any time by logging into the administrative setting on the internet. If for example, the patient has a doctor's appointment on a Tuesday at 9:00, the medical office (or family member) can automatically program this event into the Senior Seeker as an approved location. When an elderly patient deviates from an approved location or route, the device notifies the user and then the appropriate family member is contacted immediately by their method of choice (email, cellular phone, etc.) with the patient's location information. The family member receiving the distress notice has the option of contacting the police, ambulance, and/or medical professional to assist in locating the patient.

There are additional safety features that can be turned on and off on the Senior Seeker device. For instance, the "Traffic Warning" feature can be activated to alert the elderly patient that they are about to cross traffic by sounding a warning alarm. If the patient was about to step dangerously into traffic, the alarm is aimed to alert the individual to the danger. A "panic button" feature is also available in case the patient falls and is unable to reach a phone or other help. This feature would automatically contact the medical professional and family member to come to their aid. For patients who suffer memory loss, the Senior Seeker can also be programmed with important identification and emergency contact information, in case they need to provide this information, but cannot remember it themselves. To assist with medication administration, the Senior Seeker can also be programmed to remind the patient to take certain medications at different times throughout the day. And finally, the Senior Seeker is tamper-proof and water-proof to ensure a quality product lifetime.

Technology Specifications

The ability of the device to locate the user's position is accomplished through Global Positioning System (GPS) technology. A similar predecessor system is the ankle tracking devices placed on house arrest persons. In order for the device to be tamper-proof and water-proof, the wristband and display device must be made of a durable water-resistant material, such as hardened plastics and rubbers. Because the user may suffer from forgetfulness and senility, it is important that the device cannot be removed by the user. A special removal device is the only contraption that can safely remove the product. This technology is similar to a department store's device used to remove ink tags from clothing. The product is powered with a battery that has the ability to be recharged by plugging it into a charger. The estimated life cycle of this product based on the technological and power specifications is 3-5 years.

As far as the alert and contact subsystems, it is important that the service provider be able to contact the user to check on them and that the user can contact the service provider in case of an emergency. Similar to the predecessor systems "OnStar" and