

# Beam Me Inside, Scotty!

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**I**t is early in the morning for the associates and residents of Silverado Senior Living Aspen Park in Salt Lake City. While most residents have finished breakfast and are on their way back to their rooms for last-minute grooming “touch ups,” several of the residents remain in the dining area, savoring a second cup of coffee and enjoying light conversations with friends around the table. Don, a resident who likes to sleep in a little later in the morning has just arrived for a late breakfast, and a caregiver is assisting him into a chair and retrieving his breakfast order from the kitchen.

The rising sun has triggered a spontaneous burst of life and activity throughout this Utah assisted living (AL) community. Hundreds of birds chirp loudly throughout the community, and the numerous dogs and cats are up and moving from resident to resident, nuzzling hands and giving the not-so-subtle message of the need to be fed and walked. Even Elliot, Aspen Park’s resident kangaroo, has slipped out of his canvas “pouch” and is hopping the halls looking for playmates. The associate’s children, who have accompanied their parent to work at the community today, have gathered their games and books and headed down to the living room for news and story time with the residents.

The licensed nurses have completed their morning medication pass and are just finishing up their various medical treatments. They are moving with increased energy and awareness today because they are getting ready for a visit and consultation from Silverado’s Vice President of Health Services Anne Ellett, all the way from the corpo-



A Silverado resident gets a kick out of her first encounter with the robot.

rate office in California. The nurses like Anne, but they know she is very observant and particular so, as always, they want to make a good impression on her with their nursing skills and resident care.

A licensed nurse is meeting in one of the country kitchen areas with the day shift caregivers for

their morning report when she senses movement in the back of the group. The nurse notices that Anne has entered the area and is listening as each caregiver reports on the residents’ activities and conditions. The nurse welcomes Anne to Aspen Park and asks Anne if she would like to address the group. Anne

moves to the front of the room and takes the opportunity to compliment the caregivers on their observations and reports that she has just witnessed. She then uses this time to review a new nursing procedure with the group. On completion of the spontaneous inservice, Anne asks the group if they have any questions about the new procedures. She notices a few hands go up among the caregivers and asks each in turn for their questions. After clarifying the procedure so that the caregivers feel their questions have been resolved, Anne thanks the group and states that she would like to have a tour around the community. While she is there she would also like to assess a particular resident who has been exhibiting a change in gait that may be the result of a recent change in the resident's medication.

Anne moves around the community with the charge nurse, stops in to say hello to the various department supervisors, and pops her head in the door of the community administrator's office to say hello. She then goes to the room of a resident whom she has come to evaluate, observes the resident's gait as he walks down the hall, and reviews his recent medication history. After making several recommendations to the charge nurse, Anne moves to the front of the community, backs into her docking area to recharge, and instantaneously is transported back to her office in San Juan Capistrano! Although Anne has traveled hundreds of miles from home to visit Silverado Aspen Park in Salt Lake City, she has never left her office. Instead she has used the latest in robot technology to beam through space and visit the community without leaving home!

Since 2003, Silverado Senior Living has been using robot "companions" from InTouch Health to provide remote onsite presence for its executives and company consultants. The robots have been strategi-



**Figure 1.** Corporate staff can move a robot companion throughout a remote facility using a joystick.

cally placed to provide maximum value—that is, in facilities that otherwise require extensive travel time and expense to reach. From centralized locations at several corporate offices, Silverado corporate staff can log onto robots in communities in Texas, California, and Utah.

### Talking Heads on Wheels

How do the robot companions work in Silverado Senior Living communities? First of all, the robots themselves stand about 5 feet tall and are composed of a metal body that is able to move in any direction on a roller-wheel base. On top of the body rests a flat computer screen (head) that can move in any direction. On top of the head is a camera and microphone. The robot operator sits at a desk located in the remote corporate office on top of which is a normal looking computer with attached joystick and a camera. The operator sits at the desk, logs onto whichever robot is in the desired location, and suddenly the robot's camera projects its image onto the operator's computer screen. Thus, the operator is "seeing" what the robot is seeing. Likewise, the

operator's face is simultaneously being projected onto the robot's face in the AL facility where residents and caregivers see the operator's image as the head on the robot! The voice of the operator is transmitted over the Internet connection and produced from a speaker on the robot. Just the same, the microphone on the robot companion transmits sound to the remote operator. Thus, the robot can talk to people in its surroundings and can engage in conversation.

The operator controls the robot companion's movement via the attached joy stick, which can be pushed in any direction, causing the robot to move in the desired direction. The joy stick's sensitivity allows the operator to maneuver the robot in exact movements, even through very tight locations. Thumb controls on the joy stick enable the head of the robot to roll left or right, up or down. The camera "eye" can zoom in or out and automatically focus on even very small print or detail. This zooming and auto focus allow a consultant to read a document remotely or enable a nurse to observe a small red-

dened area on a resident's skin. The robot companions are able to move freely both inside and out of AL communities (even a large one such as Silverado) because transmitters are strategically located in the ceiling around the community.

### **Virtual Meetings and Caregiving**

Our robot companions are used by corporate executives to make instantaneous visits to our more remote locations. Prior to having our robot companions, a corporate marketing exec who wanted to visit Silverado's Senior Living community in Cypresswood, Texas, for example, would drive to the airport, fly to Houston, rent a car, get a hotel room, and waste 2 days traveling just to attend a marketing meeting or interview a marketing candidate. Instead, the marketing exec can now log onto the robot companion (Figure 1), instantaneously take a tour of the community, attend a marketing meeting, interview a candidate, and debrief with the administrator all in about 1 hour's time! No trip to the airport, no airport security hassles, no plane trip, no rental car, no hotel, and no wasted days spent traveling!

Likewise, our vice president of health services or a corporate nurse consultant can log on at any time to attend a change-of-shift meeting, meet with the community director of health services, or attend a nursing meeting or inservice. The nurse can also consult on a particular resident case remotely or even attend a care plan meeting with the family. The nurse is able to go to the resident's room, observe a physical ailment or behavior, assess a resident's actions or response to a medication change, and make recommendations to be relayed to the resident's physician. The nurse can also go to the dining room and assess residents' self-feeding abilities and swallowing skills. The corporate chief of culture can tour the community and assess programming, or coach associates in a

specific behavioral or activity of daily living skill "on the spot" without the need for extensive travel. Unannounced visits can also be initiated to assess frequency and quality of programs and services.

It is even possible for Silverado physicians and medical directors to make use of the technology. The medical director of our Calabasas community has a remote care station in his home and routinely activates the robot, performing rounds to visit his patients in the community.

### **A Teaching Companion**

One of the most important and valuable uses of our remote companions is in the area of training and education. From offices in California, various corporate professionals can use the robots for on-the-spot training of associates at all

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levels within our AL communities. New skills or new policies and procedures can be taught immediately and directly to these associates. Our corporate director of education uses the robot to train "mentors" via a fairly simple process. Prior to the training session, the director of education faxes needed written materials to mentors at the community who have been selected from the staff for their knowledge, experience, and ability to teach others. The nurse educator teaches the new skill, and the mentors then practice the new skill in front of the robot's camera. After the skills have been demonstrated to be proficient, the mentors are assigned to

go to their corresponding associate staff members and teach them the new skill. The mentor then requires the associate to demonstrate their proficiency with the new skill. In 1 to 2 weeks the director of education again meets with mentors via the robot companion to get feedback on the status of the training.

### **Gleeful Reaction from Residents**

How do residents with dementia respond to the robot companions? Our initial fear was that residents who are already confused might have a hard time with the robot technology. We wondered how residents would react to a robot strolling down the hallways and stopping to converse with them. We were very pleasantly surprised by the general reactions of our residents. Most got an obvious kick out of the robots, and just the sight of one would elicit laughs and smiles. Residents would stop and look into the robot face and seemed to have no trouble carrying on a conversation with the robot operator. We never noticed a resident who seemed fearful or agitated by the robot's presence. In fact, the comment most often heard by associates observing residents' reactions to the robot companions were that there seemed to be no difference in their reactions to the robot companions than to actual persons. In short, if a resident interacted with associates routinely, then he or she interacted normally with the robots. If a resident's normal behavior was to ignore associates, then he or she would also ignore the robot companion.

### **An Added Level of Comfort for Families**

How do families react to the companion robots? Most family members seem to like the additional contact and access to corporate staff that robot companions provide. Family members, community associates, and corporate consultants can simultaneously observe the resident, providing everyone the same per-

spective on problems, care needs, or behavioral needs. The robot presence at a care plan meeting gives families direct and immediate access to corporate leaders who can then effect any changes that are needed. The increased frequency of visitation of corporate staff to the community is reassuring to families who have more confidence that community needs are being assessed and met at the highest levels.

### **Another Silverado Associate**

Initially we were concerned that community associates might feel the robots were “big brother” efforts to spy on their behavior. Once the associates were able to observe the robots in action, however, they quickly learned the robot presence simply added access to consultant support and did not lend itself to surreptitious oversight. When the robot companions are activated, the screens light up and a flashing light is activated on the robot’s head. There is no way that associates can be unaware that someone is “listening in” on the robot camera. In fact, the robot companions just become another associate, often named by the community staff and dressed as Silverado associates.

### **Safety in the Corridors**

During development of the robot technology, safety was our biggest concern. A moving robot companion was going to be of little use if it endangered residents, associates, family members, children, or even our numerous pets. InTouch Health was ingenious in its design of the robot companions for safety. Around the base of every robot companion are sensors that enable the operator to see any object that comes within a few feet of the robot itself. As the sensors “pick up” an object, person, or pet, the operator screen immediately receives readings of a possible obstruction. If the object gets too close, the robot automatically stops all movement, thereby ensuring no collision occurs. Once the person or

object is removed, the robot resumes normal operation. In 4 years of operation, there has not been a single safety issue with our robot companions.

### **Nuts and Bolts of Robot Companions**

Very little training is necessary for associates using the robot companions. Even associates who are not computer savvy quickly learn to operate and maneuver the robot safely and effortlessly. With practice anyone can learn to operate the robot professionally, although some associates seem to have a knack.

Although there is a monthly lease fee for each robot companion that

**Robot companions are often named by staff and dressed as Silverado associates.**

can initially seem costly, the savings in time and travel expenses quickly make up for these costs and over the long run add up to substantial savings. Although robot companions can never replace the human contact of “real” visits by corporate or healthcare staff, their use offers the opportunity for many fewer trips and for frequent short visits to perform an assessment or provide specific training to staff. Add up flights, hotels, meals, and rental cars and the costs of the companions themselves are quickly surpassed. And such cost analysis does not even begin to account for the increases in productivity of key staff and job satisfaction that result from less time away from home and family.

### **Effects on Resident Outcomes**

The benefits of robot companions on resident outcomes are difficult to assess separately from numerous

other factors that can affect outcomes. Since 2003 resident outcomes in all areas across the company have improved substantially, but Silverado has also instituted numerous additional training and support programs that have impacted outcomes. Empirically it is obvious that the increased oversight and availability of corporate consultant staff have had a positive benefit on outcomes.

### **Too Much Technology?**

One possible drawback of our robot companions may be that they somehow distract from the residential “feel” of Silverado Senior Living communities. We think our homelike environments that feature gardens, country kitchens, and beautiful areas both inside and outside, plus our pet community, more than overcompensate for the technical feel the robots may generate. Moreover, the robot’s “human face” and the interaction of its conductor likely counteract technological “distraction.”

Although a community of any size could benefit from robot companion use, Silverado has selected larger communities of 90+ beds for placement of companions. We also select communities that would cause more difficult travel times and expense for corporate staff. Groups of communities can use a robot in a central community location. That way, management meetings for all can be conducted in the community with the robot, enabling corporate staff to attend remotely.

Since 2003, robot technology has been used extensively in a variety of settings, including acute care and surgery. Its use in AL can promote the well-being of residents, complement the caregiving of staff, facilitate family involvement in a resident’s care, improve education and training of staff, and enhance facility administration. ALC

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