

Innovative AT Practices

ISSUE NO. 3 • JUNE 2020

New Frontier in Technology: Smart Homes

BACKGROUND

Assistive Technology for Alaska (ATLA) is Alaska's nonprofit assistive technology resource center that focuses on promoting full independence and quality of life in work, school, and at home for people with disabilities. ATLA staff pride themselves on taking their time to assess the needs of their clients, and thinking out of the box to meet those needs in creative ways.

For the past five years, ATLA has focused on adopting new and emerging technology to add to their "toolbox" to effectively serve individuals with disabilities. Specifically, the center has adopted a range of technologies to develop "smart homes." These homes are equipped with devices that allow for tasks, typically performed by humans, to be automated by voice, touch, and sensors. These smart technologies include in-ear headphones such as AirPods, virtual assistants such as Amazon Alexa, door sensors, voice-activated temperature control, and more.

ATLA has updated about 15 homes with smart home technology, and provides countless other clients with various smart technology equipment that allows them to be more independent.



This smart lock device allows individuals to control the locks on their door.

INNOVATIVE PRACTICE

ATLA's philosophy is that it is impossible not to consider how both low- and high-tech devices might help somebody with a disability. When smart technology started being mass produced, ATLA's executive director, Mystie Rail, decided to focus on it as an avenue for delivering assistive technology. As such, ATLA is always looking at new ways to use AT, and tracks emerging new technology as it comes out.

For use in smart homes, technologies can come in many forms. For example, window sensors can inform family members if an individual with Alzheimer's leaves their house, keyholes can be unlocked by phone, and motion sensor strips can let someone with visual impairments know when they are nearing an obstacle such as a staircase. Cooking equipment can be controlled by an Alexa device, a smartphone can give timed reminders to take medicine—the possibilities are endless.

Such technology adds to the plethora of options and creative solutions to help ATLA clients be more independent. When new technology is developed and released, ATLA may buy the product and test it to figure out whether it will be appropriate for its clients.

ATLA staffers note that while smart home technology allows them to think creatively about helping their clients, the device must be appropriate for the individual in a variety of ways. "Smart home technology is another tool in the toolbox. It's a complement to other AT," stated Rail.

IMPLEMENTATION

In working with smart home technology over the last few years, ATLA staff have developed some best practices and streamlined how they assess and implement smart home tech. For example,

many new and emerging technologies are linked to smartphones and personal email or service accounts, such as Google Home, which only interfaces with specific devices. A number of technologies require an internet connection, and almost all of them require electricity at all times. Moreover, as technology advances, many devices become antiquated and require updating.

As such, providing smart home technology requires knowledge about how each piece of technology interacts with another, and what they require to be functional. For instance, if a client may benefit from having an Amazon Echo device for buying groceries online, they will need to set up an Amazon account with a smartphone or computer. They will also need a working internet connection and a valid credit card number.

If any of those elements are lacking, ATLA staffers must decide how to proceed. For example, if the electricity or the internet goes out, who will support the client? Prior to going to a client's home to do any installations, staffers ensure that their clients have all the devices and accounts necessary to make it all work.

ATLA has a number of methods the center uses to tackle these potential obstacles. The center has a database of all the smart home technology (popular commercial products and subscription costs) they consider in their assessments, which they call "the matrix." The matrix is a constantly updated list of smart home technology devices and software that indicates what is required for the device to work (e.g., Amazon account, Android phone), as well as what other devices or household items they interface with (e.g., lights, temperature control) and how an individual can interact with them (e.g., voice, touch, switch). The matrix allows ATLA staffers doing assessments to determine what technologies will best suit their clients and how much training is required.

ATLA's first fully functioning smart home was developed in 2016 when they partnered with Alaska's Developmental Disabilities Association. ATLA outfitted the home of a client, Jerry¹, who

¹Name changed to protect client's privacy.

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—Mystie Rail
Executive Director, ATLA

has cerebral palsy and uses a wheelchair. The center added wheelchair controls to Jerry's front and back doors, mounted iPads into the walls to control lighting and thermostat, added a body dryer in the bathroom, and purchased an Alexa device that is connected to an auto-feeder for Jerry's service dog. Making these upgrades reduced Jerry's need for personal care assistants (PCAs) by half, which demonstrated to ATLA and its clients the possibilities of smart home technology. This home now functions as a demonstration site for ATLA's clients so they can get a glimpse into smart home technology in action.

To further advance its work in this arena, ATLA received a \$400,000 grant from the Independent Living Council and Department of Health for a pilot project. Through the pilot, ATLA staffers are conducting assessments in about 40 homes for accessibility, medical management, tele-health, and assistive smart home technology, as well as performing installations. The hope is that data from the pilot project will support such practices being added to Medicaid waivers, and provide evidence that smart home technology will reduce the cost of PCAs. The project will allow ATLA to write best practices for providing smart home technology to clients, including what technologies are most appropriate for whom, and how to manage data privacy issues around smart home tech.

IMPACT

Smart home technology has shown a lot of promise to increase quality of life and independence for individuals with disabilities. Adding smart home technology into their repertoire of services allows ATLA staffers to be creative when it comes to assessing each individual's needs. They have provided smart home technology for people of

varying needs, ages, and disabilities including deafness, blindness, mobility impairments, and cognitive impairments.

Individuals who have PCAs are impacted by the use of this technology as it allows for them to be more independent in their home. One individual who required 24-hour care from multiple PCAs was able to cut down costs on these expenses by receiving smart home technology and a keypad that would alert her to who was entering the home and when. However, reducing PCA time is not ATLA's main intention. The center's goal is to put independence into clients' hands, empower them to perform tasks on their own if they choose to, and help them to gain better control over their environment.

HUMAN AND FISCAL RESOURCES

ATLA requires that its staff (about 15–18 employees) be trained on both low-tech and high-tech devices. Professional development is highly encouraged and emphasized. This entails Rail and her staff keeping themselves up to date on current and emerging technologies, reading new articles about emerging tech, attending state conferences, and understanding privacy and data protection. ATLA's office is also outfitted with up-to-date smart home technology so that staff understands how a fully functioning smart home works.

Rail notes that it is essential to have somebody on the team who fully understands how to incorporate smart home technology in the process of assessing clients' needs, including how to purchase, install, and maintain the equipment. As such, many of the staff focus on acquisition research, for which a full-time grant writing staffer writes grants for clients who need equipment. Then, staff make lists of new technologies, go out and buy them, and test them to understand how emerging technology fits into the landscape of smart home AT.

REPLICATION RECOMMENDATIONS

Incorporating smart home technology into ATLA's services started with the center's executive director, Mystie Rail, who had an interest in smart technology



Amazon Alexa, a voice-controlled virtual assistant, can be used to control lighting, cooking equipment, temperature, and more.

and worked to get buy-in from staff. For other programs to begin adopting this, they may also have to begin with organizational leadership. Another consideration is how to bring staffers on board. Will current employees be trained on smart home technology, or would new staff need to be hired to work in this arena?

Organizational structure may impact implementation and service delivery of smart home tech. ATLA is a private nonprofit, which has allowed it the flexibility to buy new devices and apps for testing and training. This freedom to buy and test has allowed ATLA to select the right technology, add it to their inventory, and incorporate new equipment into the array of possible items to provide to their clients. Other AT Act programs may experience more spending restrictions.

As programs start to work with smart home tech, they should be aware that this technology can become antiquated fairly quickly and devices may require periodic updates and upgrades. ATLA

“The center’s goal is to put independence into clients’ hands, empower them to perform tasks on their own if they choose to, and help them to gain better control over their environment”

has taken some steps to address this by letting clients know they may need to have someone in their personal network serve as technical support to keep devices updated and functioning when issues arise. ATLA currently does not have the ability to address these issues on a consistent basis with clients.

Many smart home technologies also require user accounts such as iCloud or Amazon Prime. Find out what the requirements are for such devices before going into a home to do an assessment. Consider whether the client should set up accounts ahead of time, or if staff will need to spend time training them on the process. Additionally, devices such as iPads require passwords. Consider your client's comfort with these features, and make sure any data they use with these devices is private.

Finally, staff should ask themselves whether a certain type of technology is appropriate for a client in the first place. While this is the same consideration one would give to any client for any AT, ATLA staffers note that it is particularly important when considering smart home technology. While it may seem that this technology can help everyone, sometimes low-tech solutions are more appropriate. By using a combination of both low-tech and high-tech solutions, including smart home technologies, state AT agencies can support all clients to live more independently.

Smart home technology has shown a lot of promise to increase quality of life and independence for individuals with disabilities. Adding smart home technology into their repertoire of services allows ATLA staffers to be creative when it comes to assessing each individual's needs.



INNOVATIVE AT PRACTICE SERIES | ISSUE NO 3, 2020

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QUESTIONS?

Mystie Rail (Executive Director, ATLA)
mystie@atlaak.org

John Shepard (Institute for Community Inclusion)
John.Shepard@umb.edu

ACKNOWLEDGMENTS

This publication is the third in a series of Innovative AT Practices, and has been supported by the Center for Assistive Technology Act Data Assistance (CATADA). CATADA is supported by Grant Number 90ATTA0002-01-00 from the Administration for Community Living. Any opinions reflected herein are solely the responsibility of the authors and do not necessarily represent the official views of the Administration for Community Living.

The authors would like to thank the Alaska AT program (ATLA) for contributing to this brief and AT3 Center staff for their guidance.



The Innovative AT Practices Series are topical case studies that describe innovative or high-impact activities conducted by state AT programs that result in increased access to and acquisition of AT.

Prepared by:

John Shepard & Daria Domin
Institute for Community Inclusion (ICI)
University of Massachusetts Boston

