PENNSYLVANIA
ASSISTIVE TECHNOLOGY
FOUNDATION

Smart Homes Made Simple

Your Guide to Smart Home Technology

About this Guide

Assistive technology does not need to be specialized or costly to be life-changing for people with disabilities and older adults. In fact, generic, off-the-shelf, smart home devices can make it possible to live with greater independence, autonomy, safety, security, and joy!

This guide has been written by Pennsylvania Assistive Technology Foundation (PATF) to help people with disabilities and older adults who are interested in smart home technology learn to successfully integrate these devices into their homes and lives.

We hope this guide will empower you to explore the most current smart home technology, develop a framework to choose your technology, and build a team who can support you in achieving your goals.

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Learn more at SmartHomesMadeSimple.org

SMART HOMES
MADE SIMPLE

Smart Homes Made Simple is a project of Pennsylvania Assistive Technology Foundation to raise awareness about how people with disabilities and older adults can gain control over their environment and live safely and more independently in their own homes using generic smart home technology.

Foreword

by DJ Stemmler, Disability Advocate

This publication is a must read for any person with a disability or older adult. Control and independence are fundamental to survival for anyone, but especially for those of us with a disability.

Technology has been central to increasing personal independence and autonomy for people with disabilities for decades. Now, smart home technology is positioned to be the new great equalizer, making it possible for users to stay in their own homes, get emergency assistance, and perform everyday activities with a simple command or switch. Smart home technology makes control of your environment simple and affordable.

I was first introduced to smart technology on my job as a skills trainer beginning in 1990. My position involved identifying devices that could help clients who were moving from nursing homes into their own places in the community. This supported housing program proved it was possible to give people with disabilities control over their environment and provide them with services, while still saving money compared to nursing home care. Using what was then called "environmental controls" (a more expensive, specialized version of today's generic smart home technology), our clients were able to control lights, phones, and communication devices. But it was difficult and expensive to integrate devices into a system where they could "talk" to each other, and funding was a significant barrier. Only as smart home technology has become mainstream have things become more affordable and accessible to everyone. Gradually people are realizing the profound role this technology can play in the lives of people with disabilities.

For me, control over my environment isn't only a means to greater independence, it is essential to good mental health, risk reduction, and productivity. Now that I know what's possible, I can't—and wouldn't want to—live and work without it.

DJ uses her Amazon Echo Dot to control her lights and television, and to listen to music and set reminders, among other things.

When I was working as an Occupational Therapy Assistant and later as a skills trainer and consultant, I strictly thought of this futuristic technology as a solution for others. I never imagined how important it would become to me personally. I just didn't think it was needed or that I could afford the technology that would make a difference. Now, I can't imagine my life without it.

As I laid in bed one morning recently, without even moving I asked Alexa to tell me the time, temperature, and my day's schedule. This earned me an extra 15 minutes without even moving! Previously I would have had to transfer into my chair even to look at my phone. This morning while lying in bed I managed to schedule an appointment I had forgotten about until that moment. When I finally did get up, I called my car pooler to let her know I would be there at the regular time. I did all this without using my hands for any of it.

I would truly be miserable without the ability to control everything in my apartment with my voice or the wave of a hand. I use my smart home technology to control my lights, phone, and television; to listen to music and set reminders; to see who's at the door; and to check on my son in another room and, now, even in another house. For me, control over my environment isn't only a means to greater independence, it is essential to good mental health, risk reduction, and productivity. Now that I know what's possible, I can't—and wouldn't want to—live and work without it. There are some folks I know who would prefer to go back to the "Little House on the Prairie," but not me; I look forward to moving ahead.

I have a lifetime of using assistive technology, including smart home technology, to improve the quality of my life. The intersection between what is needed and how to get and integrate it into your life, however, is one of the most difficult processes to overcome. This publication makes this process easy and understandable, and it provides a vision of what is possible when you incorporate the right technology for you.

Are you intrigued? You should be. Read this publication like it matters, because it does. All of us can benefit from technology, and the newest generation of technology is really fun and cool!

About Pennsylvania Assistive Technology Foundation

PATF is a statewide, non-profit organization with a mission to provide financing opportunities, education, and advocacy for people with disabilities and older Pennsylvanians, helping them acquire assistive technology devices and services that improve the quality of their lives. Originally funded by the federal Assistive Technology Act as Pennsylvania's Alternative Financing Program (AFP), PATF has also become a Community Development Financial Institution (CDFI).

PATF Programs

Information and Assistance

PATF staff provides information at no cost about assistive technology funding sources, tips on how to access public and/or private resources, and referrals to recommended vendor companies.

Financial Loan Programs

PATF has two loan programs that are designed to help individuals with disabilities, including older Pennsylvanians, and their families purchase the assistive technology (AT) they want, including smart home technology devices and services.

1. **Mini-Loans:** The Mini-Loan is a credit-building loan for amounts that range from $100 to $7,000 at 0% interest with no fees. The repayment terms are as low as $20/month. Repayments are conveyed to the three credit reporting bureaus so that borrowers have an opportunity to improve their creditworthiness.
2. **Low-Interest Loans:** For devices that cost a little more, Low-Interest Loans can range from $7,001 to $60,000 with a fixed interest rate of 3.75% (as of 2021) with no fees. The repayment terms are based on the useful life of the AT device. If an applicant's overall credit does not meet conventional lending standards, PATF may guarantee a Low-Interest Loan up to $35,000.

PATF helps Pennsylvanians of all:

- AGES
- INCOME LEVELS
- DISABILITIES
- HEALTH CONDITIONS
- CULTURAL BACKGROUNDS

Financial Education

PATF staff provides financial education coaching and counseling to applicants and borrowers in an effort to increase their understanding of money matters as well as improve their overall creditworthiness. PATF also provides financial education opportunities to the disability community through trainings and access to the first-of-its kind, comprehensive financial education book, *Cents and Sensibility: A Guide to Money Management*. This book is available online and in print in both English and Spanish. PATF has also created an educator's companion guide and an accessible website, **StudyMoney.us**.

Learn more about PATF at www.patf.us

PATF makes every effort to ensure that materials are accessible, including for non-English speakers.

CHAPTER 1

What is Smart Home Technology and How Can It Help?

The term "smart home technology" is used a lot these days, but what does it actually mean? In this guide, we're using **smart home technology** to mean one or more internet-connected devices that can help someone control their environment and navigate everyday life activities by voice, movement, apps, or switches. Many of these devices can be automated and remotely controlled.

Almost any device can be "smart." Some examples include:

Speakers that can help you get organized

Light Bulbs you can control with your voice

Thermostats you can set remotely

Plugs to control appliances through an app

TVs that stream from the internet

Home Appliances like microwaves that can be programmed for specific foods

Doorbells that send an alert to your phone so you can speak with visitors

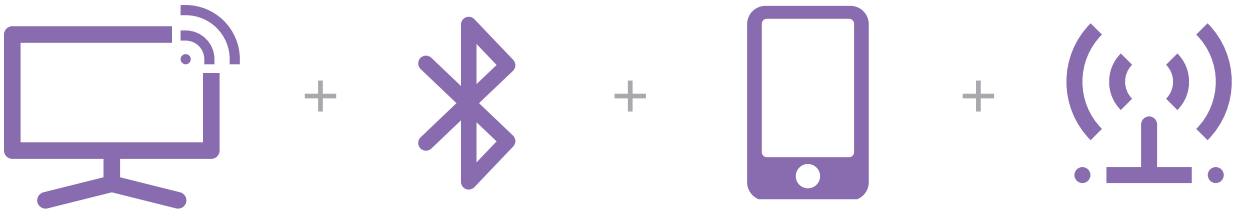
Door Locks you can program with personalized codes

Security Systems you can manage remotely

Health Monitoring Systems that track your vitals

Most of these devices are generic, mainstream devices available to everyone. They can be purchased off-the-shelf in stores or online.

How Does It Work?



Smart Device(s)
(such as those listed on the previous page)

Wireless Communication Protocol
(such as Wi-Fi, Zigbee, Z-Wave, or Bluetooth)

Mobile Device
(such as a smartphone or tablet)

Internet
(for connecting to cloud-based services and apps)

Smart home devices communicate using wireless communication protocols. Examples of these protocols are Wi-Fi, Bluetooth, Zigbee, and Z-Wave. **Learn more about the difference between Wi-Fi, Zigbee, Z-Wave, and Bluetooth.**

A device called a router provides Wi-Fi for your home and connects all of your devices to the internet. This is the most important device in your smart home. If you have internet in your home, you are likely already using a router to connect to the internet.

Most smart home devices also need a mobile internet-connected device, such as a smartphone or tablet, that uses Android or Apple iOS. You will use this device to download the application (app) that controls the connections, updates, operation, and settings of your smart home devices.

While a tablet can work, a smartphone is strongly preferred. You may sacrifice some device capabilities with a tablet, and security is stronger with a smartphone. For example, if you set up a smart speaker using your smartphone, you can download your contacts/address book directly into the smart speaker's app. This makes it easier to call your family and friends as well as emergency services without adding each phone number individually.

Smart Home Technology is Assistive Technology!

The federal definition of assistive technology under the Assistive Technology Act is "any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities."

In simpler terms, assistive technology is any device that helps a person with a disability do the things they want to do. This includes smart home technology that helps you live in your own home with greater independence, autonomy, and safety.

Assistive technology services include evaluation, assessment, maintenance, training, and repair.

Feeling overwhelmed by all these technology terms?

Don't worry! You don't have to understand how it all works to use smart home technology. In the following pages we'll help you begin to figure out your goals and which smart home devices might be able to help. Once you know what you need, it will be easier to see if you have the necessary components in place in your home.

For more smart home terms and their definitions, visit our **Smart Home Dictionary**.

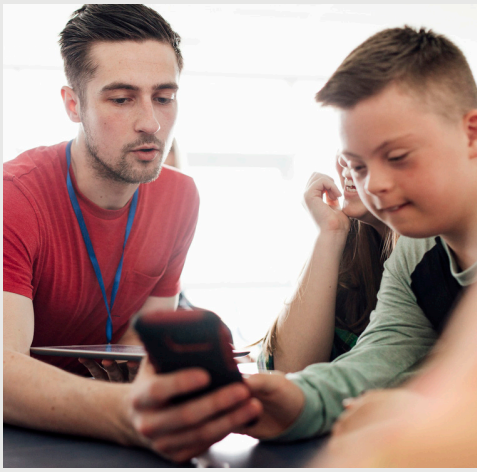
Communicating with Smart Home Technology Without Speaking

"As a mom always looking for ways to help her son maximize his independence, I thought anything that requires voice activation would only cause him frustration. What I am discovering is with a little creativity, it's not only possible, but also empowering," says Kyle's mom.

Kyle communicates in a variety of ways, and primarily uses the Proloquo2go picture-based communication app on his iPhone. When Kyle's mom set up their new Amazon Echo Show, she wasn't sure whether Kyle would be able to use it.

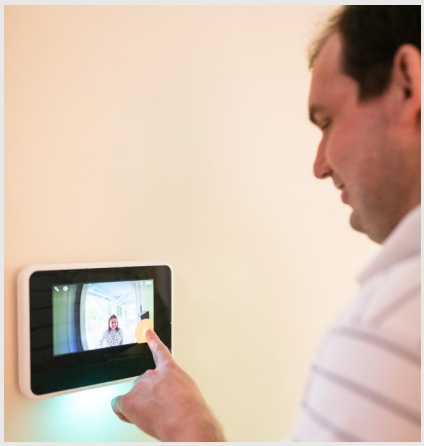
With guidance from his assistive technology team at school, they set up a simple grid in the app with some of Kyle's favorite things. Now Kyle uses his phone and Echo to play music, get the weather, and find out if the Phillies or Sixers won their games last night. Kyle also has reminders set up, like what time to leave for school and when to brush his teeth.

Read more about Kyle's experience learning to use smart home technology.



You may be able to work with your team at school to learn some of the skills needed use smart home technology.

Smart Home Technology for Independence and Safety



Josh speaks to a visitor outside his front door using his smart security system.

"These devices have helped me to maintain my independence and reduce stress," says Josh.

He uses smart home technology to help him live independently and safely in his own home. For example, Josh uses a Vivint security system to see and talk with visitors at the front door. The doorbell's camera and audio connect to a screen installed on his dining room wall.

He can also connect using an app on his smartphone. Josh feels more comfortable being able to see who's at the door before opening it. Josh's dad has the app installed on his phone too. This offers peace of mind knowing Josh is safe living on his own.

Read more about Josh's smart home.

How Can Smart Home Technology Help Someone with a Disability or an Older Adult?

For a person with a disability or someone who is aging, smart home technology can be life-changing. It can increase independence and autonomy, productivity, connection, safety and security, and joy!

Whether you balance a budget online or turn your lights on and off with your voice – the variety of ways to use smart home technology is almost endless. In the table below is a list of some of the most common uses for smart home technology, and some common devices for each use.

Common Uses of Smart Home Tech	Common Types of Devices Used
Communication	• Smart speakers • Smart displays (a smart speaker with a camera and a screen) • Smart doorbells • Smartphones and tablets
Controlling the Environment	• Smart speakers and displays • Smart light bulbs • Smart thermostats • Smart blinds/window shades • Smart TVs and streaming devices • Smart plugs – to control traditional technology like fans, lamps, coffee makers, etc. • Smart door locks • Automatic door openers
Entertainment	• Smart speakers and displays (for podcasts, music, audiobooks, radio, and streaming TV and movies) • Smart TVs and streaming devices • Gaming systems
Personal Assistant/ Organization/Productivity	• Smart speakers and displays • Smartphones, tablets, computers with apps or smart assistant enabled
Remote Supports from a Caregiver	• Smart speakers and displays • Smart cameras and security systems • Smart thermostats • Sensors (for example, door, window, or stove sensors)
Safety/Security	• Smart speakers and displays • Smart doorbells • Smart cameras • Smart door locks • Security systems, sensors, and alarms, including smoke and carbon monoxide detectors
Telehealth/Health Monitoring	• Smart speakers and displays • Smartphones and tablets (phone and video calls, and apps for monitoring health) • Smart watches and other health monitoring technology (for example, medication dispensers and devices that can track compliance, blood glucose level, body temperature, weight, blood pressure, and heart rate)

Read more about what smart devices can do.

Integrating Multiple Smart Devices to Achieve Your Goals

Suria's downtown Philly home shows how you can integrate numerous smart home devices to create a functional living space. Nearly all the devices she uses are recognizable, common devices. Amazon Fire TV, for instance, makes it possible for Suria to control her TV by voice. Amazon Echo responds to her voice helping her to turn on music, control the lights, get the weather, or add items to her shopping list (which syncs with the app on her husband's phone so he can check the list while out and about). The Amazon Echo also allows them to speak to each other from different floors of the house.

Suria shares how Echo saved the day in an emergency situation.

In addition, both of their smartphones and tablets connect to their Google Nest cameras and thermostats which helps them to check in on each other, control the temperature, and more. Suria can also use her iPhone or the Amazon Show to see who's at the door using their Ring doorbell, to open and close the front door with their automatic door opener, and to speak to the visitor. Finally, Suria can set up temporary "keys" (multi-digit codes) for the smart door lock for each caregiver. If the caregiver changes, she can delete the old "key" and create a new one.

See Suria and more of her smart home in action.

How Do I Get Smart Home Technology?

There are many ways to get smart home technology. Everyone's process will be slightly different. If you don't know where to begin, here are some basic steps to consider.

1. Determine Your Goals: What am I trying to do? What do I want and need?
   Complete the Self-Assessment
2. Build a Team for Support
3. Research and Choose Your Smart Home Technology
4. Create Your Funding Strategy
5. Get your Smart Home Technology
6. Plan For and Set Up Your Technology
7. Troubleshoot and Maintain Your Technology
8. Make Adjustments and Consider New Devices

A Word of Caution: Smart Appliances

Refrigerators, washing machines, stoves… nowadays just about any home appliance can be "smart." Yet, many of these smart appliances are still in the early stages of development. After only a few years, their software is becoming outdated, and manufacturers are not always providing updates. Smart appliances can cost hundreds, even thousands, of dollars more than conventional ones. When deciding whether or not to purchase smart appliances, do your research to assess reliability and the value versus cost of smart appliance features.

CHAPTER 2

Determining Your Goals and Preparing for a Smart Home

It's important to do a little planning before purchasing smart home technology. A crucial first step in adding new technology to your home is to start with identifying your goals by answering the question, **"What am I trying to do?"**

This section includes a self-assessment to help you think about: your goals, strengths, and challenges; your home environment; and what supports you already have in place. It also includes some tips for building a team of people to support you on your smart home journey.

Smart Home Technology for Function – and Fun!

David and Chrissy live in their own apartment within walking distance from each of their jobs. They both have the goal of greater independence at home and wanted help getting organized for work and cooking healthy meals. Recently they integrated two Amazon Echoes into their home—a Dot in the bedroom and a Show in the kitchen. Now, the Amazon smart assistant, Alexa, wakes them up with an alarm in the morning and reminds them when it's time to leave for work.

Alexa also organizes their shopping list and suggests new recipes for them to try. She displays the ingredient list to make shopping and meal-prep easy, and she provides step-by-step instructions out loud and on the screen. She even includes how-to videos to follow along.

Chrissy and David love trying out new recipes every week. They blast their favorite pop music on the Show while they're cooking and break out dance moves as they go.

"It has changed my life," said Chrissy. "The Echo device reminds me to leave for work on time. And now I am trying new recipes for dinner. The Echo Show makes it easy to look up new recipes." David adds, "The Echo devices are amazing and cool. I wish I had them years ago."

Read more about David and Chrissy's smart home.

David and Chrissy love to play music on their Amazon Echo Show and dance while they cook.

Self-Assessment Tool

This is all about **you!** Answering the following questions is a good first step as you consider what kind of smart home technology you would like. Use your answers as a guide when consulting with support team members and professionals to help steer the planning of your smart home.
Download the Self-Assessment Tool on its own.

1. Daily or Routine Activities at Home

Select the activities below where you need or want support. Use the blank spaces to add activities that aren't already listed. This is meant to be a starting point for discussion with your team and to direct your research on what smart home technology might work for you. Keep in mind, there are a variety of ways to accomplish many of the items listed below, including using your voice, a motion sensor, using an app on a phone (locally and also remotely), or setting up automations where the action is triggered by another event.

Communication

- ☐ Make calls (voice and/or video)
- ☐ Send messages (voice and/or text)
- ☐ Intercom between rooms
- ☐ Make announcements throughout home
- ☐ Send and receive email
- ☐ _____

Control of the Environment

- ☐ Turn on/off lights
- ☐ Turn on/off fan
- ☐ Make coffee
- ☐ Adjust thermostat
- ☐ Open/close exterior/interior doors
- ☐ Open/close blinds
- ☐ _____

Entertainment

- ☐ Listen to podcasts, music, and/or audiobooks
- ☐ Get the news
- ☐ Hear jokes
- ☐ Watch cable TV
- ☐ Stream TV/movies/video content
- ☐ Play video games
- ☐ _____

Telehealth and Health Monitoring

- ☐ Make video/phone calls with your doctor
- ☐ Organize your medication
- ☐ Set reminders to take medication
- ☐ Monitor your vitals (weight, blood pressure, blood glucose level, etc.)
- ☐ _____

Personal Assistant / Organization / Productivity

- ☐ Find and follow recipes
- ☐ Make shopping lists
- ☐ Make to-do lists
- ☐ Order house supplies and/or groceries
- ☐ Create reminders
- ☐ Set alarms
- ☐ Manage your calendar
- ☐ Search the internet
- ☐ Manage your bank account
- ☐ Check the date/time
- ☐ Check the weather
- ☐ Check public transportation schedule
- ☐ _____

Remote Supports from a Caregiver

- ☐ Remote check-ins from family, friends, or caregivers
- ☐ Remote view of inside and outside the property
- ☐ Remote control of thermostat
- ☐ Remote control of door lock and creation of virtual "keys"
- ☐ Remote communication with visitors outside the door
- ☐ Remote monitoring of health vitals
- ☐ Remote alerts of intruders or hazards in the home (such as smoke, fire, carbon monoxide, water leaks, or stove left on)
- ☐ Remote alerts when medication is taken
- ☐ Remote alerts when you leave the property
- ☐ _____

Safety and Security

- ☐ Operate locks on doors
- ☐ See who's at the door
- ☐ View outside or inside the property remotely
- ☐ Detect hazards (smoke, fire, carbon monoxide)
- ☐ Detect intruders
- ☐ Call or message emergency contacts (family, friends, caregivers)
- ☐ Call police, fire, or other emergency service by 911
- ☐ Monitor appliances (leaving the stove on, water leaks, etc.)

Remote Supports from a Caregiver

Remote supports can make it possible for caregivers, family, or friends to check in on you and support you when they aren't nearby—and for you to check in with them. Remember, it is your choice what technology you use and how it is configured to meet your goals. Remote support technology should be initiated by you, and should not violate your privacy. If you are not comfortable with a solution, tell your team! There are many different ways to achieve the same goal.

2. Your Disability and Technology

Now that you've figured out your goals, think about how you might want to accomplish them and what features you need with your smart home technology (such as voice activation, visual or tactile alerts, etc.). Consider your strengths as well as how your disability might impact how you use a device. Also keep in mind any accessibility needs you have. Describe these things below:

3. Your Housing Status

Select the option below that best describes where you live:

- ☐ House
- ☐ Apartment
- ☐ Temporary Living Facility
- ☐ Long-Term Living Facility
- ☐ Other: _____

Does your home have reliable internet service? ☐ Yes ☐ No

Do you have access to the router, its ID, and its password? ☐ Yes ☐ No

(ID and password are typically located on the back or bottom of the router.)

4. Areas of Your Home

Select the areas in your home below where you would like support as well as any areas where you already spend a lot of time. Indicate whether you have access to Wi-Fi in each of the areas you select. A strong Wi-Fi signal is crucial for success with smart home devices. For areas that are outside, be sure to test the Wi-Fi with windows and doors closed. (*Read more about checking your Wi-Fi signal on page 23.*)

	Access to full Wi-Fi signal?		
	Yes	No	Don't know
☐ Entryway	☐	☐	☐
☐ Kitchen	☐	☐	☐
☐ Living room	☐	☐	☐
☐ Family room	☐	☐	☐
☐ Dining room	☐	☐	☐
☐ Bedroom	☐	☐	☐
☐ Bathroom	☐	☐	☐
☐ Office	☐	☐	☐
☐ Basement	☐	☐	☐
☐ Garage	☐	☐	☐
☐ Outside	☐	☐	☐
☐ _____	☐	☐	☐

5. Team for Support

Who is already on your team for support? List below any family members, friends, caregivers, assistive technology (AT) or information technology (IT) professionals, therapists, or other people in your life who can help you with your smart home technology:

6. Technology Brand Preference

Do you prefer Apple products? Do you already own Amazon devices? Do you only use Android phones and tablets? List any of your technology brand preferences below:

7. Technology Currently in Use

List below any devices you are already using and fill in the information you have for each device. Use the blank lines at the bottom to list any additional appliances or devices you currently use that you would like to connect to smart home technology.

	Make	Model (Company/Brand)	Date of Purchase	Store or Website Where Purchased
Computer				
Smartphone				
Tablet				
Smart speaker or display				
Smart TV				
Streaming device				
Smart hub				
Smart door lock				
Smart light bulb				
Smart plug				
Smart switch				
Smart doorbell				
Smart appliances				
Smart thermostat				
Smart window treatment				
Smart camera				
Smart smoke/CO2 detector				

Other specialized or adaptive equipment:

Use your answers to this self-assessment with your team to help you determine your goals and identify specific smart devices and systems that can help you achieve those goals.

Building Your Team for Support

A support team can help you:

- Think about your goals,
- Identify potential devices that may help,
- Set up your technology,
- Help you learn how to use it,
- Troubleshoot when things aren't working,
- Adjust your system and settings, and
- Add new devices as needed.

Think about who is already in your life that can support you throughout the process of acquiring your smart home technology, and then consider how you can fill any gaps where you might need more help.

Members to Consider for Your Support Team

The Most Critical Member, YOU!

When you actively participate in making decisions about the technology you plan to use, the process is more effective. The technology is more likely to promote your independence and help you do the things you want to do.

People Who Know You Best

People who know you well and are familiar with your day-to-day activities may be able to offer insight to help you determine your goals. They are also most likely to be the ones you'll lean on for help with maintenance of your technology.

Ella's granddaughter helps her configure the settings for her smart speaker in the device's app on her tablet.

People Who are Comfortable with Technology

Ask around to see who you already know who is knowledgeable about and comfortable with technology. These individuals may be able to help with identifying smart devices that can meet your needs. They may also be able to help with setting up or even fixing technology when something goes wrong.

People Who are Good Researchers and Problem-Solvers

Smart home technology is developing at a rapid pace and new devices are coming on the market all the time. It's helpful if you or someone on your team is comfortable researching online, reading reviews, and thinking outside the box when something isn't working. Team members can also include people who are good at building or creating things, and people who like to tinker with things. A person who looks at issues differently can provide a valuable perspective.

A brief discussion with the people in your life, including your caregivers and support team, will help you uncover any concerns or discomfort with technology before progressing with smart home plans. It will also help you identify team members who regularly use technology and are comfortable helping you with yours.

Tamara works with Madeline to learn how to use her smart home technology.

Knowledge, Skills, and Comfort with Technology

For the greatest success setting up your smart home, here are some basic qualities and skills you or someone on your support team should have:

1. **Understand and be comfortable using your smartphone or tablet. This includes:**
    - Connecting to different wireless networks (such as Wi-Fi and Bluetooth),
    - Creating and managing multiple secure passwords (see Chapter 7 for more details),
    - Using Two-Factor Authentication (read more on page 32).
    - Accessing your email, text messages, and authentication apps like Microsoft Authenticator and Google Authenticator for two-factor authentication or to verify your email for a new device account,
    - Adjusting settings on your mobile device, router, and in various apps,
    - Accessing the app store,
    - Using and managing cloud accounts, and
    - Switching between apps on your mobile device.

2. **Be able to physically complete tasks such as:**
    - Unboxing, placing, and plugging in devices;
    - Switching between one app and another on your smartphone or tablet;
    - Jumping between Wi-Fi and Bluetooth settings on your smartphone or tablet while you are activating a device; and
    - Seeing and handling small plugs and pins to reset devices, as well as performing other functions requiring finger dexterity or ability to see small print or objects.

3. **Have patience to figure out device instructions. This includes:**
    - Understanding the basic concepts of how these devices and setups work, and being able to follow instructions provided by the manufacturer.
    - Understanding Wi-Fi, Bluetooth, Z-Wave, and ZigBee.
    - Hanging in there and seeking help when needed. Sometimes manufacturer instructions aren't easy to follow. If you get stuck, call or chat with customer support. You can also try Googling or searching YouTube for what you're trying to do. Chances are other people have had the same question and someone has provided an answer!
    - Willingness to call a professional to perform part or all of the installation, such as wiring smart switches.

The Role of the Caregiver with Smart Home Technology

It is important to include your caregivers and support team in the assessment process. It is also important to include them in the training process with your new device.

Not everyone is comfortable with technology, and many direct care staff may be instructed not to meddle beyond powering technology off and back on again. The most important thing is that your caregiver does not fiddle with your technology unless you have asked them to. And if you learn that a caregiver is uncomfortable with the technology, you may need to find someone else to help you with yours.

Choosing Technology with Your Team in Mind

When Kelvin's housemates started using smart speakers, he was intrigued. He has low vision and a physical disability, and as he has gotten older he has become concerned about falling. He thought a smart speaker might be the perfect solution so he could call for help in an emergency.

He received a smart speaker as a gift, but soon after it was installed the device stopped working. It was a different brand than the ones his housemates were using, and neither Kelvin nor his housemates or attendants could fix the problem. Exasperated, Kelvin threw it away. He decided to get one of the speakers his housemates use instead. He figured that if something went wrong, his attendants and housemates would be able to help him fix it.

Now Kelvin uses his speaker every day, and it has broadened his world. He makes phone calls to his friends and family. He has discovered podcasts and listens to a wider variety of audiobooks than he had access to through the library. And, his speaker can hear him easily which gives Kelvin a greater feeling of security in case of a fall.

Read more about Kelvin's smart home.

Kelvin loves that his smart speaker recommends new podcasts he might like based on what he is listening to.

Where to Look for People Who Can Help

- **Family members, friends, caregivers, and other acquaintances who are interested in technology.** People who are already part of your support team may have skills to assist you in making selections and setting up your technology. Also, think outside your immediate circle. A tech-savvy teenage niece or a neighbor who works at the Apple store may be the perfect person to ask for help with setup or troubleshooting any issues.
- **Other people with similar disabilities and similar goals as you.** Connect with support groups and peer mentors to see if anyone else is using smart home technology. You can learn a lot from other people's experiences and recommendations!
- **Teachers.** If you are still in school, your teacher or one of your therapists may be able to help you learn some of the skills needed to use your new technology.
- **Salespeople at technology stores such as Best Buy.** These folks can be very knowledgeable! Just be aware that they may be motivated to make a sale. It's best do your own research about recommended devices to make sure you're confident they will actually do what you need them to do.
- **Assistive Technology Professionals (ATPs) and Rehabilitation Engineering Technologists (RETs).** ATPs and RETs can help you learn about assistive technology devices. They can provide assessments and evaluations. And, they can come up with creative solutions that tailor technology to you. ATPs are also able to identify proper positioning for your technology to ensure it accommodates your physical needs. **Search for a certified ATP or RET in your area**.
- **Occupational, Physical, and Speech-Language Therapists.** If you're already working with a therapist, they may be able to help you figure out how smart home technology can help you and teach you how to use it. You can also contact local disability organizations such as Easterseals, Centers for Independent Living, MS Society, ALS Association, or United Cerebral Palsy offices, to name a few. Ask if they have specialists who can work with you. Specialists from therapy centers have the advantage of understanding the nature of different disabilities.
- **Contractors, consultants, companies, and organizations that specialize in smart home technology.** As smart home technology gains popularity, individuals and companies are beginning to specialize in helping consumers set up smart homes. Some specifically help people with disabilities and/or older adults, while others have a broader focus. Search online to see if there is someone local who can help you.
- **Local high school and college tech science student organizations.** Some organizations have a public service mission. Contact local schools to make inquiries.
- **ATMakers.org.** Join and ask the group for ideas or help.
- **Electricians or Low Voltage Contractors.** These individuals can help install devices that need to be hardwired into your home's electrical system, such as smart switches.

When you find the right people to help, be sure to communicate your vision, goals, and questions. Allow your wants and needs to drive the process to find the best options available for you.

CHAPTER 3:

Choosing Your Smart Home Technology

Now that you have an idea of what your goals are and you have started to build your team for support, below are a few things to keep in mind when choosing smart home technology.

Remember: Focus on the Function

You aren't buying a device; you're solving a problem. Look at your goals first and work backwards from there: "What am I trying to do?" and then, "What technology or device would best support me in reaching this goal?" It's easy to be tempted by flashy technology, but by focusing on the task you are trying to accomplish first—the functional skill—you are more likely to find the device that works for you.

Do Your Research

Read about smart home technology online. Talk to people with similar goals and challenges who are using smart home technology and find out what they're using and why. Read reviews to learn if a device will work with the systems you already have in place at your home, if it will be accessible to you, and how well it will help you accomplish your goals. Start with devices that have been around for at least two to three years, get ratings of four or five out of five stars, and show up on recent "best of" lists.

Start Small and Build

If you're new to smart home technology, get acquainted with it first. For example, you can start with just a smart speaker or display such as Amazon Echo or Google Nest. Get comfortable using the device with your voice, explore the device's app, and try out different commands, skills, and actions. After you have used the speaker for a while, try adding a second device such as a smart light bulb. Pair the two so you can control the lights with your voice using the speaker. Gradually you can add on from there, choosing devices based on your goals. Pretty soon you'll be a smart home technology pro with an entire smart ecosystem in your home!

Read the Reviews

Searching online is a great way to learn more about smart home technology. You can search by entering in what you're trying to do, such as "What smart home technology can help me turn on my lights at a specific time of day?" Once you've figured out the type of device you need, then you can try searching things like "Best smart light bulbs" and read a variety of reviews.

A few useful online resources for reviews include:

CNET

Consumer Reports (You have to pay to access their reviews, but ask around— you may have a friend or family member who has a subscription.)

Gizmodo

PCMag

The Strategist

WireCutter

Consider Accessibility

Everyone's needs are different. If you have low vision and use VoiceOver with an iPhone, for example, it's important to check that a smart device's app is accessible with VoiceOver. If you are hard-of-hearing, you might consider whether a device's notifications have a visual or tactile component or if they are only auditory. If your speech is affected by your disability, it may be important to test out which device successfully picks up on your enunciation of the word or phrase that activates the device, known as the "wake word."

Explore Automations and Routines

Most smart home technology offers the ability to automate processes to make your life easier. For example, let's say every morning you listen to the news, adjust the thermostat, and make coffee. With a smart speaker, smart thermostat, smart plug, and conventional coffee maker, you can automate this morning routine. For example, you might configure your devices so that with one voice command the news starts to play through the smart speaker, and the smart speaker triggers the change in the thermostat and powers on the coffee maker using the smart plug. **Watch a short video describing another example of home automation at work**.

Keep Device Compatibility in Mind

It's always good to check whether the devices you plan to use together are compatible. Some devices integrate seamlessly while others do not. If you already have some smart home technology, or you have a particular (non-smart) device you want to control using smart home technology, be sure to research ahead of time whether the devices you plan to connect are compatible.

Read the Specifications

Part of choosing your technology involves understanding the complexity of its setup. Look up "Technical Details" or "Specifications" for your desired device to get an idea of its dimensions, weight, materials, system requirements, and other technical details (Wi-Fi capability, necessary accessories that aren't included, etc.). This will give you an idea of what to expect upon setting things up.

Amazon Alexa Helps Tamara Catch the Bus for Work

Tamara wanted to increase her independence and improve her reading skills. She uses the bus to get to work and to visit family and friends. Before she had her Amazon Echo Show, she memorized the bus schedule as best she could. But if she missed the bus or the schedule changed, she was stuck waiting around not knowing when the next one would show up.

Now with her Echo, she just asks Alexa! Alexa reads the upcoming schedule out loud, and also displays it on the screen so Tamara can practice reading along.

Read more about Tamara's smart home.

Tamara listens and reads along as Alexa announces the bus schedule.

Here are some details to look for:

- **Do you need to purchase additional devices or accessories?** For example, a mounting system may be required to place your device where you want it.
- **How is the device powered: electrical outlet (plug in), hardwired, battery powered, or solar?** If hardwired, you will need assistance from an electrician or someone capable of performing electrical work. If you plan to install a smart switch, be sure there is a neutral line, and that your wiring is up to code so it doesn't experience electrical surges. If instead the device plugs into an electrical socket, make sure there is an outlet located where you want to install it.
- **Is it a one-time purchase or is there a monthly/annual subscription associated with the product?** Some companies require a subscription at a monthly fee to "unlock" all features available and cover the cost for software updates and ongoing support.

Look up the Lifespan of the Device

Different devices have different lifespans. When investing in smart home technology, it's worth doing a little research to see how long each product will last. Also check to see if there is a warranty, what it covers, and for how long.

Check Your Internet Speed and Wi-Fi Reach

Determine what your current internet capability is in your home. Then compare your findings with the requirements of the device you plan to use. Start with running a speed test using a tool such as **Speedtest.net**. Results may vary; internet speeds can fluctuate depending on how many devices you have connected, how many programs you have open, and how far you are from the router.

Choosing the Right Devices for You

Michael wanted to answer his phone and call his friends by himself. He also wanted to control the lights, fan, and TV in his room. His sister has an iPhone and uses Siri for hands-free calls. Thinking this might be the perfect solution, Michael tried out a few smart phones with voice-control capability. He discovered, however, that Android's Google Assistant (activated with the wake word "OK Google") understood his voice better. He also found that he could easily activate an Amazon Echo with the wake word "Amazon."

Now Michael uses his Android to independently make and receive calls with friends and family and his Echo to control the TV, lighting, and fan in his room. He also listens to music and can look up information quickly and easily using his voice.

See Michael's smart home technology in action.

Michael listens to music using the Echo Show in his bedroom.

Using his smartphone, Josh checks the Wi-Fi outside his front door where he plans to set up a smart doorbell.

Contact your Internet Service Provider to check that the speed you're getting in the test results actually matches what you're paying for. If not, you may be due for an update to your equipment such as a newer router or modem.

You should also test the reach of your Wi-Fi in each area inside and outside your home where you plan to install smart home devices. An easy way to do this is to take a smartphone or tablet to the area, connect to the internet, and run a speed test.

Only Buy What You Need

Frequently, new and exciting smart home technology can be purchased in bundles: a group of products combined to lower the overall cost for the consumer. Unless a better part of the bundled products being offered help you to achieve your goals, avoid spending the extra money on items that may seem appealing if you are unsure if they're useful for you.

What if Your Wi-Fi Doesn't Reach?

If your Wi-Fi does not reach the areas of your home where you want to set up smart home devices, consider either a Wi-Fi extender or a mesh network. A Wi-Fi extender is generally used when you have one small dead zone in your home. A mesh network is better for whole-house coverage. **Learn more about the difference between Wi-Fi extenders and mesh networks**.

CHAPTER 4:

Developing a Funding Strategy

With the growth of smart home technology, equipment that can be automated and specialized to your individual needs is now widely available and increasingly more affordable. Let's look at some of the costs that may be associated with setting up a smart home.

Possible Smart Home Costs

The Device(s)

The cost of smart home devices can range from $20 for a smart plug to thousands of dollars for a smart refrigerator, with every price point in between. If you're looking for a deal, monitor websites and stores for sales.

You can also buy refurbished devices at a discount. Every manufacturer and store's guidelines for refurbishing devices are different, so read the fine print to know what you're getting and whether or not there is a warranty.

Installation and Setup

If you are a do-it-yourselfer, the cost to install your technology will be free (minus your time and energy)! For a system that involves hardwiring, installation of mounting systems, or other set up that requires hiring a professional, it may be more costly. While doing it yourself can certainly save you money, there are times when it may be in your best interest to seek help, particularly if installation involves electrical work or if you and your support team have little experience with smart home technology. Learn more about setting up your smart home technology in Chapter 5.

Maintenance and Repair

Maintenance for smart home technology is typically minimal as long as you keep the device clean and protected, and its software up-to-date. If you do run into an issue, you and your team can often find solutions with a little research - try an online search about the issue you're having, chat with your tech-savvy team members, or contact the manufacturer using their helpline or live chat on their website. Also check if the device is under warranty. If you're still struggling with an issue, you may have to pay a fee to have someone come and fix it.

If you're concerned about running into issues and not having someone on your team who can help, consider working with a company that offers a support plan. In exchange for a monthly fee you have access to customer support at any point. Be sure to check which devices and issues are covered to make sure the plan will provide the support you need.

Learn more about smart home technology maintenance and repair in Chapter 6.

Beware Used Devices

Facebook marketplace and other yard sale-type apps are a great way to find deals on all kinds of items. But, installing used smart home technology can be tricky if it is purchase directly from the previous user (as opposed to a refurbished device from the manufacturer). To prevent theft, many of these devices need to be reset and released from the previous owner before they can be set up with a new account owner. This is not always easy to do, and if the previous owner has not fully disconnected their account from the device, it may be impossible to set it up and use it.

Subscription Services and Other Ongoing Costs

Beyond paying for internet, other ongoing costs may include subscription services for special software features or cloud storage. For example, for a monthly fee some smart cameras can record and store a set amount of video for a length of time. Ongoing monitoring fees may also be associated with wearable technology like watches and pendants.

Funding for Smart Home Technology

Public Funding in Pennsylvania

Home and Community-Based Services (HCBS) Waiver Programs

If you are enrolled in one of Pennsylvania's HCBS waiver programs, smart home technology is a covered service within the category of Assistive Technology (sometimes called Electronic Devices or Systems, or Remote Supports). Talk to your service or supports coordinator to learn more.

Learn more about Office of Developmental Programs waivers.

Learn more about Office of Long-Term Living waivers.

Office of Vocational Rehabilitation (OVR)

If you are an OVR customer, OVR may provide smart home technology through your individual employment plan. Talk to your OVR counselor who may be able to help you include it in your plan. **Learn more about OVR programs**.

Low- and No-Interest, No-Fee Loans

If you're unsure of your funding options, if you learn you're not eligible for any government funding, or if you want to pay for the device(s) yourself, see if your state has an **Alternative Financing Program (AFP)**.

Pennsylvania's AFP, Pennsylvania Assistive Technology Foundation (PATF), is a statewide, non-profit organization that provides no-interest and low-interest loans to buy assistive technology. PATF staff also provides information about other possible funding resources so that your loan is as small as possible. Many PATF borrowers would not qualify for loans from traditional banks or credit unions. PATF serves Pennsylvanians of all ages, all income levels, all disabilities and health conditions, and all cultural backgrounds.

PATF has two loan programs:

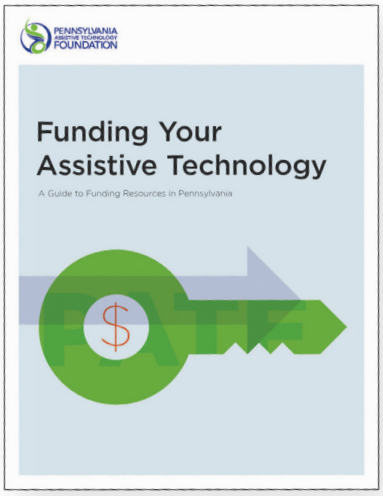
- A Mini-Loan program for loans from $100 to $7,000 at 0% interest ($20/month minimum repayment).
- A Low-Interest Loan program for loans between $7,001 to $60,000 at 3.75% interest (as of 2021) with extended repayment terms. If you have poor credit, but are able to repay a loan, PATF may be able to guarantee your loan for up to $35,000.

PATF loans can be used for assistive technology devices, including smart home technology. PATF loans can also be used for services which include evaluation, assessment, training, installation, maintenance, and repair.

There is no other program like PATF in Pennsylvania! For more information, call 888 744-1938; or go to the website, **www.patf.us**.

Private Grant Funding

There may be grant funding for smart home technology offered by private foundations and other organizations. PATF's book, *Funding Your Assistive Technology: A Guide to Funding Resources in Pennsylvania*, provides a listing of funding resources for a wide range of assistive technology as well as more information about developing a funding strategy.



Download or request a copy of PATF's assistive technology funding guide.

CHAPTER 5:

Setting Up Your Smart Home Technology

To successfully install, connect, and setup your devices, you will need:

- ☐ **A mobile device (a smartphone is preferred, but a tablet will also work) with the latest version of Android or iOS (Apple's operating system).**
- ☐ **Dependable Wi-Fi internet service at the locations where the devices will be installed.**
- ☐ **Ability to access the router, its ID, and password.**
- ☐ **A system for creating and managing multiple secure passwords. Learn more about password creation and management in Chapter 7.**
- ☐ **A person who has the comfort and ability to install and support the devices. This may include rebooting the router, plugging devices into it, and understanding how devices connect to Wi-Fi and the internet.**
- ☐ **An understanding of the limitations of your home construction (and how to install devices that will work with your home).**
- ☐ **Professional support where necessary (such as an electrician for devices that need to be hardwired, like smart switches).**

Power Sources

Let's start with the basics. Most smart home technology first requires a power source. The most common power sources are:

- **Plug-in/Electrical Outlet**—Most devices will come with a cord that you can plug directly into a power outlet in your home.
- **Solar/Passive Energy**—Typically used for motion-activated lights or other outdoor lighting.
- **Battery-Powered**—Often a powerful lithium/ion battery that lasts several months (typically used for devices such as doorbells, cameras, and rechargeable devices).
- **Hard-Wired**—These are typically the most difficult devices to install, and can include thermostats, lighting, and security/multi-camera systems. You may want to work with an electrician to install any item that requires a direct electrical connection.

Configuring Device Settings in the App

Once the device has power, you can configure the settings for the device using the device's app on your smartphone or tablet.

Be sure you are connected to the internet, then download the app. Follow the instructions provided with the device to adjust your device's settings.

Every app is unique. Get comfortable with each app including how to log in, where to find settings, how to install updates if necessary, and how to edit or view different features. For example, some apps control a specific device (like an app for a smart camera that lets you check your camera views), while others control a larger configuration (like an app where you pair multiple devices to communicate with one another).

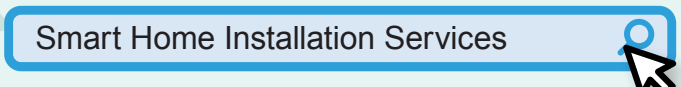
When to Seek More Help

While most smart home technology is relatively simple for you and your support team to set up and use, there are times when it can be helpful to seek professional support. Unless you or your support team has experience in these fields, consider getting help when:

- **Your device installation requires electrical work**. This includes smart switches, thermostats, and other devices that need to be hardwired into your home's electrical system.
- **Your device installation requires construction skills**. Installation of some devices may require basic construction skills, for example replacing the lock on a door with a smart lock. Others may require more specialized skills and tools, such as mounting a camera on a hard exterior surface like stone or metal. If you and your team do not have the skills, knowledge, or tools for these jobs, it's best to find someone who does.
- **Your device configuration requires greater familiarity with technology (internet, Wi-Fi, apps, etc.)**. While the physical setup of a device may be straightforward, the configuration of the settings can be more complex depending on what you're trying to do. A lot of information can be found online to learn how to configure your device. Tech-savvy team members can help, too. However, if you and your team are feeling overwhelmed, search for a local smart home setup company who can assist you in configuring and learning to use your device.
- **You would like additional training to learn the skills necessary for using smart home technology**. Using smart home technology can feel very awkward at first. If you find it difficult to remember or perform the steps to use your device, work with someone who can help you learn the skills you need to feel confident. Assistive Technology Professionals (ATPs) are a great resource for this, as well as some occupational, physical, and speech-language therapists.

Call or Chat the Help Desk

If you run into trouble while setting up your new device, try calling the manufacturer's help line or live chatting with them on their website. These companies want their products to work for you and will often walk you through set up over the phone or through chat.



You can also search online for "Smart Home Installation Services" to find companies that can help you set up your smart home.

CHAPTER 6:

Maintaining and Troubleshooting Your Smart Home Technology

By establishing a few simple habits, you can prolong the life of your equipment:

- **Keep Your Technology Clean and Dry**—Avoid placing equipment in dirty or cluttered areas. This includes routinely checking for dust buildup which can impact the device's performance and air circulation. Also keeping equipment in a dry area will decrease the chance for shortage or electrical shock.
- **Keep Your Technology Updated**—Most devices that are connected to the internet run firmware, which is software installed permanently on the device by the manufacturer. Some firmware updates happen automatically; others must be completed by you. Not all devices have auto-updates, so check to see if this will need to be performed manually—usually you can find available updates in the device's app.

Common Issues and Solutions

Eventually you are bound to run into an issue with your smart home technology. Open your device's app first and look for a section called information, support, or troubleshooting. In addition, on the next page is a list of common problems and a few quick possible ways to repair the breakdown.

What To Do if it Still Isn't Working

If you are still having trouble, here are a few other things to try:

- **Contact the manufacturer.** Beyond helping with set up, the company may be able to help you troubleshoot if you are encountering a problem.
- **Perform an online search** that specifically states your issue, as well as the make and model of the device, and the version of the firmware being run in the app. If other people have had the same issue, it may be as simple as a quick search to uncover the answer.
- **Search online forums** for threads on the issue you're having. Relevant forum threads will often pop up in search engine results.
- **Check YouTube** for videos on how to fix an issue with your smart home technology as well as how to set it up and use it.
- **Read the device manufacturer's help section or FAQ's on their website.** Some device websites have a comprehensive help section or frequently asked questions that may provide solutions.
- **Check the manufacturer's repair/replacement policy or the warranty**. Many devices may be repaired or replaced if they stop working. Keep the date of purchase and your registration handy to complete a repair request.
- **Search for smart home repair companies** online that you can hire to help with your technology. Some of these companies provide help virtually, while others will make house visits to install or repair your system.
- **Contact your internet service provider** if you think you're having issues with your internet connection that are not solved by rebooting the router.

Common Issues and Solutions

Identify Problem(s)	Assess the Following	Steps to Repair
Network Connectivity Issues	**Internet is not connected** **Notification(s) such as:** Network Error Internal Server Error Limited or No Connectivity	1. Power off/on the device. If this doesn't fix the issue, go to the next step. 2. Check your internet router for lights. Any red lights or blinking lights can indicate an outage. 3. If your router lights are out, check the power cord to ensure it is connected firmly. 4. If there are still no lights, hit the router's reset button or unplug the power cable from your router for five minutes and then plug it back in. Be sure to check the connection to a power outlet and that it has not come unplugged accidentally. 5. If your router is still not working, contact your internet service provider (ISP) to rule out any issues on their end.
No Power Supply	Lights are turned off Screens are blank No response when pressing buttons Device or connected appliances are unresponsive	1. Ensure that your device is plugged into a "live" outlet. 2. If it's firmly plugged in and there's still no power, try plugging another device into the same outlet to check for a current. 3. If the new device also will not power on, check your breaker box for a blown fuse/circuit or contact your electrician. If, however, the new item does power on, the issue may be with your smart device's power cord or the connection between the power cord and the device itself. (Note: If the device is plugged into a power strip with multiple outlets, be certain that the strip's power button is still in the "on" position. The power buttons on power strips can easily be turned off with the slightest contact from a foot, furniture, or poor positioning under a desk.)
Devices are Not Working Together	**Messages such as:** Cannot connect to device Device is unresponsive Unable to connect with device	1. Ensure all devices have power and are connected to the wireless network. 2. Ensure that there are no physical obstructions that may be blocking the signal, such as a new appliance with a large metal surface, a new lampshade with metal in it, or even a person sitting in a new spot. 3. Ensure all devices that require subscriptions are paid, up-to-date, and have an active and current card on file for monthly charges. If a device subscription runs out, this will immediately impact whether your smart home system is working correctly. 4. If your devices are not recognizing one another, attempt to "reset" the device in question. This is often done by triggering a small reset button somewhere on the device, accessible with a manufacturer tool or paper clip. Please refer to your device's manual for step-by-step instructions on how to perform a proper device reset. 5. Lastly, ensure that all apps being used have been updated and are running current versions. As new versions or updates are distributed, the performance of your devices can be impacted in many ways if the devices and their apps are not up-to-date.

CHAPTER 7:

Security and Privacy

Your security and privacy is something to be mindful of with online accounts and interactions. Below, you'll find tips to ensure that you are taking a proactive approach to keeping your information and personal data safe and secure.

Tips for Account Security

1. **Create Unique Passwords**
   Use a different password for each account login. If a password is compromised, your account details (address, name, and credit card information, for example) will also be compromised. If your passwords are the same for multiple accounts, all of those accounts are at risk.
2. **Create Complex Passwords**
   Ideally, passwords should be at least eight characters in length and use a combination of upper- and lower-case letters, numbers, and special characters (such as !@#$%).

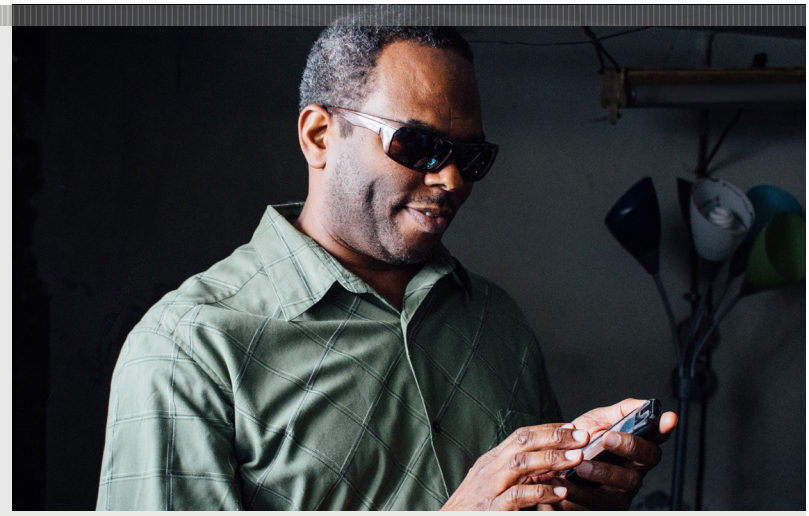
   Do not use information like your name, birthday, address, or pet names in your passwords – these details are too easy to guess. This is one of the most common reasons passwords are compromised.
3. **Password Management**
   When you have unique and complex passwords for multiple accounts, it's important to be sure you can keep track of all of them. Consider keeping your passwords written down in a notebook or on a piece of paper that is kept in a safe space.

Passwords: Pick a Phrase Meaningful to You

Passwords do not need to be gibberish to be effective. Choose a phrase such as a favorite book title, food, movie, or vacation and then incorporate different combinations of numbers or special characters for each account. For example, if you love the Eagles football team, you might make your passwords *EaglesBeatGiants1!*, *EaglesBeatCowboys2?*, and so forth.

Find a System that Works For You

Tom keeps his passwords in a file stored on an external USB thumb-drive. "I thought about writing passwords and account numbers down in braille but often you are required to change your password, or you might forget your password and need to create a new one. For me, it is easier to keep up with these changes digitally," he explains.



Tom uses text-to-speech on his phone to navigate apps for his smart home technology.

Remember

DO change your passwords if you receive a notification about potential unauthorized account activity.

DO keep your passwords in a safe place (written down or digitally).

DO NOT share your passwords with others, especially strangers.

DO NOT re-use the same password for multiple accounts.

DO NOT use common or personal names of family members/pets, or your birthday.

You can also use a password manager app such as 1Password or Dashlane that stores your passwords in one place with one master password to access them—this way you only have to remember one password to access all the rest.
Learn more about password management.

4. **Two-Factor Authentication**
   Two-factor authentication provides an added level of security which confirms that you are the account owner and are actively trying to access your account. Usually this involves receiving a numerical code through text or email and entering it when you log in.
5. **Secure Network**
   The security of your wireless internet network is just as important as the individual accounts for each device or service. Be sure to assign a complex password to your home wireless network. As mentioned above, this password should be more than eight characters, including at least one number, one special character, and one uppercase letter.

If you have caregivers, friends, or family members using your network, consider setting up a guest network. Most guest networks and primary networks have separate passwords. Keeping all of your technology and devices on your primary network and only giving others access to your guest network can prevent a vulnerability in your system.

Other Quick Tips for Smart Speakers and Displays

People often worry about privacy and security with smart devices that have a microphone or a camera. Typically, unless you use the wake word with a smart speaker, or unless you have a camera set to record when it detects motion, these devices are not listening or watching. If you're concerned you might activate the device when you don't mean to, you can always:

- Turn on the mute button for the microphone,
- Switch the toggle button to close the shutter on the camera, or
- Unplug the device.

Learn more about security with smart speakers.

Acknowledgments

Many people and organizations have made contributions critical to the success of this guide, and we are profoundly grateful for their time, input, guidance, expertise, and feedback.

I first want to recognize the funding we received from the Pennsylvania Developmental Disabilities Council. The Council recognized the immense potential of generic smart home technology for people with disabilities years ago, and it is with their funding that we have been able to expand our project to include this guide.

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Finally, I recognize and thank the hardworking and dedicated staff at PATF who joined me in the writing and editing of this guide.

Susan

Susan Tachau
Chief Executive Officer
Pennsylvania Assistive Technology Foundation

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