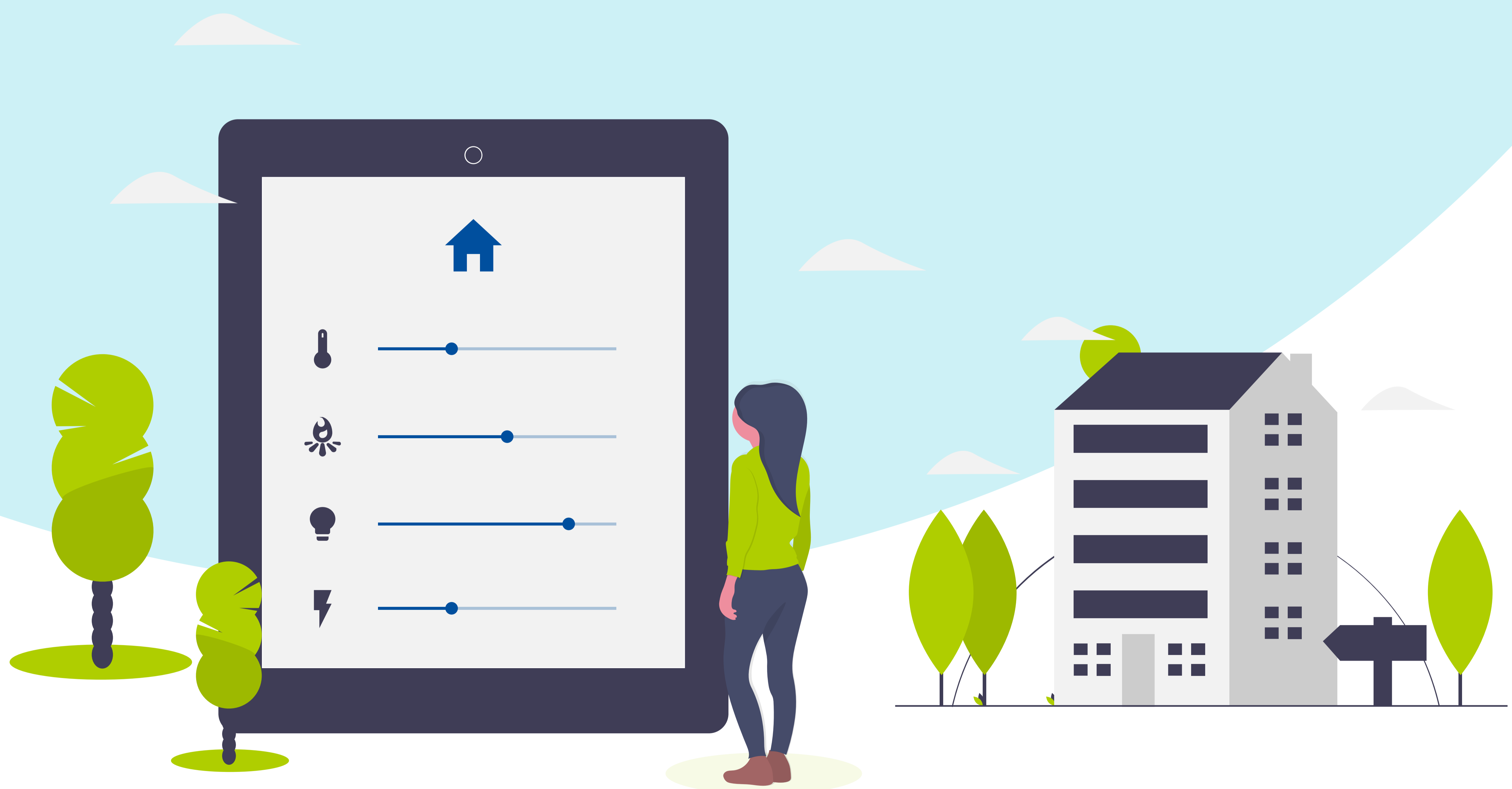


# Smart Home Technologies for Independent Living

Smart home technology helps people interact with their homes more conveniently. With smart home devices, persons with disabilities and their caregivers can customise their home surroundings to suit their unique needs and preferences.



# What is a Smart Home Ecosystem?

A smart home ecosystem is a network of interconnected smart home devices.







Smart home devices are devices or home appliances that come with built-in connectivity. They can "talk" to each other, follow specific rules (for example: "turn off at 5:00 PM"), and be remotely controlled through voice commands, physical gestures and movements, and mobile phone apps.

*Note: Features of smart devices may vary by brand and model.*

## Smart Home Systems Enhance Independence and Accessibility

Renovating your home to enhance accessibility can be costly and time-consuming. Instead, a smart home ecosystem might be an easier alternative to achieve similar results.

With a smart home ecosystem, you can perform these tasks from anywhere at home:

 Adjust temperature of air conditioner	 Monitor home security	 Communicate with guests at the door through a video/audio call
 Control or change lighting ambience	 Play music or turn on the television	 Track energy usage to reduce utility bills

## Starting Your Smart Home Journey

You don't have to make all of your smart home device purchases at once. Instead, start with a few basic devices – a virtual assistant, a smart light, and/or a smart plug. Get used to them before adding more smart devices.

 **Tip:** Build your smart home ecosystem gradually instead of all at once. Consider starting with the devices categorised as **BASIC** !

Although there are many different smart home devices, there are a few which may be more useful for persons with disabilities. These devices work towards making your home more accessible and giving you greater control over devices and home appliances. Here are some smart home technologies you may find useful.



## 01 – Virtual Assistant 🛡️ BASIC

Best  
for



Persons with physical disabilities, visual and/or hearing impairments, Caregivers

### What is it?

A virtual assistant is a type of software that listens to your voice or app commands to follow your instructions or reply your questions. Virtual assistants can be found in devices such as smart speakers or smart displays.

For voice commands, most virtual assistants require you to first call out a trigger word or phrase (e.g. "hey Google" or "OK Google" for Google Assistant) before stating your command (e.g. "set a timer for five minutes").

### What can it do?

Virtual assistants can answer your questions, play music, and even manage your schedule. In addition, most virtual assistants can connect with other compatible smart home devices from many different brands to serve as a unified control centre. This allows you to control your entire smart home ecosystem with your voice or through a single app. Furthermore, you can create routines to control multiple smart devices at once – more on this later!

💡 **Tip:** Before purchasing any smart home device, ensure that it is compatible with your preferred or existing virtual assistant.



## Virtual Assistant with Speaker (Smart Speaker)

Best for



Persons with physical disabilities and/or visual impairment, Caregivers

### What is it?

Smart speakers allow virtual assistants to hear your voice and reply to you audibly. This makes smart speakers especially useful for persons with physical or visual disabilities. They can conveniently manage schedules, retrieve information, and more!

### What can it do?

A smart speaker can:

- Provide information (e.g. "tell me more about Mount Everest")
- Control other smart home devices. (e.g. "turn on the living room lights")
- Set alarms and manage your schedule (e.g. "set an alarm for 7am tomorrow")



## Virtual Assistant with Screen (Smart Display)

Best for



Persons with physical disabilities and/or hearing impairment, Caregivers

### What is it?

A smart display combines the 24/7 availability of a smart speaker with a touch-enabled digital screen. The home screen of a smart display is customisable – you can choose what you want to view and control on-screen. Some smart displays may also come with a camera.

### What can it do?

A smart display can:

- Give you an overview of the other smart devices in your home and allow for control via touch
- Display live feeds from security cameras
- Facilitate video calls (for smart displays with camera)
- Display search results (e.g. general information, image results, cooking recipes)

 **Tip:** Maximise your smart display by placing it within reach of where you spend the most time at home.



## 02 – Smart Plug

 BASIC

Best  
for



Persons with physical disabilities,  
visual and/or hearing  
impairment, Caregivers

### What is it?

A smart plug can be plugged into your existing power sockets at home to control your "non-smart" devices. You can turn on or off the devices via a mobile app or voice command. Now, you can control any "non-smart" devices remotely!

### What can it do?

A smart plug is a convenient device to help you control existing "non-smart" devices. It is also useful for controlling devices that are located inaccessibly or plugged into power sockets in hard-to-reach places.

A smart plug can also:

- Turn your “non-smart” appliances on or off using your phone or with your voice
- Turn devices on or off at scheduled time to optimise time and energy
- View the energy usage for individual appliances



## 03 – Smart Light

✓ BASIC

Best  
for



Persons with physical disabilities, visual and/or hearing impairment, Caregivers

### What is it?


A smart light is an energy-efficient bulb, light strip, or built-in lighting solution that can be controlled by voice command, hand claps, or mobile apps.

### What can it do?

If you are already in bed, but have forgotten to turn off the kitchen lights, simply tell your smart speaker or display “turn the kitchen lights off”, and the lights will go off automatically. Smart lights can also be scheduled around your daily activities.

A smart light can also:

- Be switched on remotely before you arrive home to avoid moving around in the dark
- Be dimmed automatically right before bedtime
- Be switched on automatically using a motion sensor

 **Tip:** Use smart lights with adjustable colors. Color codes can become a convenient way of communicating information with household members who are deaf or hard-of-hearing. For example, turning a smart light blue could be used to tell the whole family that dinner is ready, whereas red lights could indicate an emergency!





## 04 – Smart Camera

Best  
for



Persons with physical disabilities, visual and/or hearing impairment, Caregivers

### What is it?

A smart camera, sometimes known as an Internet Protocol (IP) camera, is a digital wireless camera that can be installed anywhere inside or outside your home to monitor it 24/7.

### What can it do?

Smart cameras offer clearer videos compared to traditional CCTV cameras, and can be accessed from a phone or through a smart display. Some Artificial Intelligence (AI)-assisted cameras even come with facial recognition, letting you know who is at home. They may also come with built-in microphones and speakers.

With a smart camera, you can also:

- Check who's at home and broadcast voice messages to them
- Get real-time alerts or turn on lights when a sensor detects sound or movement
- Allow caregivers to monitor family members anytime and anywhere



## 05 – Smart Doorbell

Best  
for



Persons with physical disabilities, visual and/or hearing impairment, Caregivers

### What is it?

A smart doorbell is installed in the place of a “regular” doorbell, and it usually comes with a built-in camera.

### What can it do?

With smart doorbells, you can receive phone notifications when someone rings your doorbell – great for people with hearing impairment or those who live in noisy environments. If you are expecting a delivery, smart doorbells remove the need for you to go to the door. Simply speak to the deliveryman through your phone!

With a smart camera, you can also:

- Discover who is at the door with facial recognition
- Get notifications on your smartphone when someone is at the door



## 06 – Smart Lock

Best  
for



Persons with physical disabilities  
and/or visual impairment, Caregivers

### What is it?

Depending on the brand or model, a smart lock can be accessed with a key card, a numerical touchpad, fingerprints, or an app. It takes the place of regular keyhole locks and offers greater control over access to your home.

### What can it do?

A smart lock reduces the need to use keys by offering alternative ways to secure your home. If you tend to have difficulty finding your keys or inserting them into a keyhole, you will find it very useful.

With a smart lock, you can also:

- Automatically lock your home based on your phone's GPS data
- Allow trusted people access to your home at certain times of the day
- Set a schedule to ensure all locks are engaged at the end of the day







## 07 – Infrared (IR) Blaster

Best  
for



Persons with physical disabilities  
and/or visual impairment, Caregivers

### What is it?

An infrared (IR) blaster is commonly used to control devices that otherwise could only be controlled by remote controls, for example air conditioner and television. By using IR blasters, your phone becomes a wireless, multi-device remote!

### What can it do?

An IR blaster essentially allows you to replace physical remote controls with your phone or voice, if connected to a virtual assistant.

In addition, multiple remote controls for different devices can be integrated into a single platform via an IR blaster. It is useful if you tend to have difficulty locating or accessing your remote controls.

With an IR blaster, you can also:

- Control IR devices like sound systems, TVs, fans, and projectors with your smart phone or voice
- Consolidate all remote controls into your phone
- Remotely control your devices (no need to be within range of your device any longer!)

# The Power of Routines

A smart home feature, commonly known as routines, links multiple actions together so that they can be triggered with a single command.

For example, a caregiver may create a routine that dims the lights and turns off any music playing in the room when it's bedtime.



For persons with visual or physical disabilities, you might want to create a routine that saves you the trouble of checking every room, lock, and light before you leave home for the day.

You could set up a routine command – “hey Google, I’m leaving!” – to automatically:



**Tip:** Get creative! Review your daily routine and identify tasks you typically perform together. Create a routine for those tasks to reduce hassle!

# Installing Smart Home Devices

Before starting your smart home journey, you would need:

- A strong Wi-Fi network that reaches every corner of your home
- A smartphone that can download each smart home device's corresponding app
- An account with your selected virtual assistant (e.g. a Google account for Google Assistant)

The steps to installing a smart home device are simple. For example, if you want to install a new smart plug and link it to your existing virtual assistant (e.g. Google Assistant):

**Step 1**

Download the mobile app for the smart plug.



**Step 2**

Create an account on that app and follow the instructions to find and link the smart plug with the app.

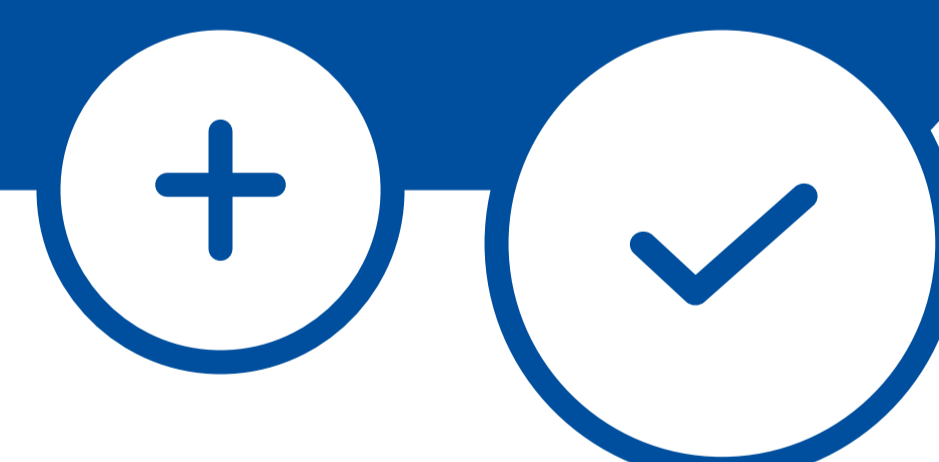
**Step 3**

Open your Google Home app.



**Step 4**

Follow the in-app instructions to add a new device. If the smart plug is compatible with Google, you can simply select the manufacturer of the device from the list provided.



**Step 5**

Follow the in-app steps to complete the set-up. Your device is now linked to your virtual assistant!



**Step 6**

Give your smart plug a nickname. Nicknames are ways for you to reference smart devices when you give your voice commands.

Nickname \_\_\_\_\_

**Tip:** Give your devices names that are easy to remember! For example, "dining room light" or "Jane's TV". If your smart plug is connected to a fan in the living room, name it "living room fan".

## Prefer a more hands-on experience with smart home devices?

Tech Able aims to increase awareness and promote the adoption and benefits of assistive technologies in enabling persons with disabilities. You may contact Tech Able via e-mail at [techable@sgenable.sg](mailto:techable@sgenable.sg) for enquiries.

For more information, visit the Tech Able Web app at <https://techable.enablingvillage.sg> or scan the following QR code:

