Getting Started – Solutions to help those with Limited Mobility (v2.9)

By Bill Weis

Technology solutions can be beneficial to a person with limited mobility as well as their caregiver(s). The intent of this document is to provide a high-level overview of how to get started. Home automation and voice activation are very achievable today. Access to the internet and a Wi-Fi router are required for nearly all solutions. (Only some custom development solutions offer the ability to do voice activation without internet access). One thing you will have to get used to is creating and managing several accounts. Every device that becomes part of your overall voice activated solution will require its own account and password. (Ensure your Wi-Fi router has a password and is secure). *<I should also make it clear that I am simply a volunteer and have no ties to any products or manufacturers. All information here is based on my experience>.*

Gather Requirements – Don't assume that the Amazon Echo and the Google Home are each capable of performing the exact same tasks. When I first started looking at how to help Robbie, the ability for him to make phone calls was among the things on their wish list. At that time, only the Amazon Echo provided this ability. (Albeit the implementation is a bit limited regarding who Robbie could call. It required each person have an app installed on their phone, and since the app did not support Windows Phones, Robbie could not call me). Google has since released the ability to place phone calls and with less restrictions than the Echo. You can dial any phone number plus if the person is in your Gmail contact list, you can dial them by name.

Another requirement on the wish list was for Robbie to be able to watch his NCIS on Netflix program. The Amazon Echo did not provide an easy solution for this short of developing with Amazon Web Services. Google Home with a Chromecast Ultra did allow Robbie to use voice commands to watch his NCIS on Netflix and other Netflix programs. One minor issue was getting the Google solution synced up to "NCIS Season 10 episode 20", which is where Robbie wanted to start. No way to instruct Google to start there, so Robbie had to start at Season 1 Episode 1, and issue the voice command "Hey Google, Next Episode" 150 times. Once he did that, getting to the next episode was painless each week.

In time, I would expect Amazon Echo and Google Home to be in parity regarding the functionality they have, but keep in mind they are still maturing and one or the other may be better at meeting your immediate needs.

Voice Activation for TV and Entertainment – Either an Amazon Echo or a Google Home can be at the heart of a voice activation solution to control a TV. That said, neither the Amazon Echo or the Google Home can turn on the TV, change channels, switch HDMI ports, or adjust the volume on its own. Performing these tasks requires sending RF signals to the receiver on the TV, this is something the Echo and Google Home cannot do today. Fortunately, there is a device that works great with both the Echo and the Google Home that can perform all those tasks (turn on the TV, change channels, switch HDMI ports, or adjust the volume). The Logitech Harmony Hub is a device that sends those RF signals to your TV or other devices on behalf of the Amazon Echo or Google Home. So, in effect, when you give a command like "Alexa, turn on the TV" or "Hey Google, turn on the TV", behind the scenes it is the Harmony Hub that is doing the work. Here is the [model](#) I have used with great success.

Logitech Harmony Hub – First off, I found Logitech's support people to be very helpful, so getting the Harmony Hub's initial configuration completed should not be a problem. From a sequence perspective, you will install and configure the Harmony Hub first, then you will link that Hub to either the Amazon Echo or the Google Home later. Here are a few tips:

1. Gather the exact model numbers for the devices you wish to control with the Harmony Hub. For TVs, that would be the model number on the sticker on back of the TV. Why is this important?? The RF Codes that the Harmony Hub sends to the device is very device specific. Since the Harmony Hub can conceivably control hundreds of different TV models, just know that the code to turn on a Visio TV as an example is different than a Samsung. (And models within a manufacturer may differ as well).

2. Be prepared to install the Harmony Hub app on a tablet or smart phone. This app is needed to configure the Harmony Hub. Inside the app, you will ***configure devices*** (TVs, Blue Ray players, X-Box, Surround sound, etc). Also Inside the app you will ***[create activities](#)***. An example of an activity could be "Turn On TV" which could involve several devices. Maybe you have a cable set top box on HDMI3 that needs to be powered on as well as a surround sound for the audio. All these ports and settings need to be defined. There is a menu to step you through the process.

3. Here is an article on setting up [favorite channels](#) in the Harmony Hub so your Google Home or Amazon Echo device can use them.

4. Once you have your devices and activities created, ***run the activities*** using the app on your smart phone or tablet to test they work correctly **before** linking the Harmony Hub to the Amazon Echo or Google Home.

5. YouTube is a great reference for informational videos. Simply go to Youtube.com and perform a search (ie: Logitech Harmony Hub)

6. Useful Links to [Logitech knowledge Base article](#)s

Voice Automation for the Bed – Today, this is a custom solution that requires development effort. Don't expect a voice activated bed from any manufacturer until late 2018, at least that is what I am being told. Keep in mind that what enables a bed to move is the controller/linear actuator/and hand held remote. Most bed manufacturers do not make their own controllers, but rather they use the controller/linear actuator/remote from one of these companies:

Linak

Okin

Leggett and Platt

TiMOTION

(The list above is not complete, but represents what I am told are the larger providers).

What this means in many cases is the bed manufacturer is dependent on one of the companies above to invest in the technology to create voice activated beds. I have been in contact with all of them and they are in various stages of design and test.

In the meantime, enabling a bed to be voice activated requires development work which leaves all of us on our own. The obvious approach might be to capture the codes for the different bed functions and hand them off to Logitech to be included in their Harmony Hub. After all, there are many similarities between asking the Echo or Google Home to have Harmony raise the volume on a TV to raising the head of a bed. Both the bed and the TV can have wireless remotes that send signals to their respective device to perform a task. Unfortunately, it is not that easy, at least not with current implementations of the bed controllers. In the future they seem to be headed towards using Blue Tooth Low Energy as their protocol, but for now many of them are using proprietary forms of radio frequency which would be very difficult to emulate through a third-party device. For Robbie's bed, my initial approach was to try to capture the codes from the remote, but quickly looked to a 'Plan B'. The quickest approach was to leverage the bed remote in a way in which I did not have to deal with trying to capture codes for each of the buttons on the remote. Rather I configured a micro controller to drive some relays that are wired to the buttons on the remote. Not pretty, not scalable, but it was the quickest solution I could come up with. Here is a link to the initial testing of that [device](#).

One important consideration pertains to how many remotes the bed will support at any one time. I would prefer that the solution I created for Robbie would be the _**alternate**_ way to control the bed, and not the sole way to control the bed. Some remotes/beds support many more functions than simply moving the head and feet up and down. Some have

massage settings on the remote, some have the ability to customize positions for things like Zero Gravity using a set button. These advanced settings are beyond what my current solution can accommodate, therefore it is preferred that the bed support 2 remotes at a given time, that way you retain all the capabilities using one remote and have the added voice activation with my solution. (Depending on how future beds are redesigned for voice, support for 2 remotes may no longer be necessary). Some beds have a direct cable from the hand-held controller. The same solution that was developed for Robbie's bed works fine with the direct cabled bed. The only caveat is only one device can be attached to the bed at any given time, and swapping between the standard cabled remote and the voice activated box means reaching under the bed to swap cables. For my current project we are going to add an extension cable to the bed, so swapping between the standard controller and the voice-controlled solution does not require reaching under the bed each time this might be necessary. (This would be necessary in times of internet outages or if the voice activated bed controller fail).

One of my current volunteer projects is with a disabled Navy Vet who currently must use his tongue to depress buttons on his OKIN remote that is placed on his chest at night. The unmet need of a voice activated solution for beds has to change. This unmet need impacts our friends with DMD, wounded warriors, accident victims, and those suffering with other diseases.

Voice Activation to control Fans or other electrical devices – Robbie had a tower fan in his room which he wanted to be able to turn on and off. We installed a Wemo Wi-Fi Smart Plug which worked great. Here is a link to their support site. Here is the link on Smile.Amazon.com. You can control it using voice commands through the Amazon Echo or Google Home, plus you can set up a schedule for turning on and off.

Resources
Amazon Echo
Alexa Support (Contact Support via the Amazon Alexa app - have them call your number)
Google Home getting started
Google Home Help Forum
Google Home Support   Phone number for Google Home hardware support = 855-971-9121 (24/7 days a week)
Logitech Harmony Knowledge Base
Logitech Harmony Support Phone # for Support = 866-601-5644 (M-F 8am to 6pm PST)
Lifx
Wemo Support Phone number for Support = 1-844-745-wemo (9366)