
Project Plan

Group: Dec14-05

TV Remote Scheduling App. For Android™

Brianna Tegeler (Leader), Cimone Wright (Key-Idea), Dallas Thola (Communicator), and
Josh Carritt (Web Master)

Version	Date	Author	Change
1.0	02/07/14	CLW	Initial Document
1.1	02/19/14	CLW	Compiling all individual contributions
2.0	04/02/14	BCT	Updating information and fixed format
2.1	04/06/14	CLW	Update formatting

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1 Introduction

1.1 PROBLEM STATEMENT

Television remotes typically have between 30 – 50 buttons. Setting a television with these remotes is impossible to do for many elderly people. Television programming schedules are often difficult to read or comprehend by many elderly individuals even if they have the mental and physical capability to select channels with a TV remote.

There are some very simple TV remotes that are marketed to support the geriatric population but many elderly people even have difficulty using these and they lack the programmability required to set up a pre-determined program schedule throughout the day or the week. Many people in nursing homes spend much of their day watching television yet they have a difficult time selecting television programming that meets their interests.

1.2 SOLUTION

To create a television controller and interface that allows for weekly television programming selection. This controller will autonomously change the channel based on the information programmed. This device will be geared toward elderly, physically and/or mentally impaired individuals.

1.3 SCOPE

Create a prototype android application. This prototype should be able to change channels incrementally, turn the television on and off, as well as mute the television. The user will be able to add in their location(country and zip code), the television brand and type, as well as their cable provider and type of cable (digital or basic). After retrieving all the users information the user will be able to schedule a list of programs that they would like to watch. After a program has been scheduled the application will change the television 30 seconds prior to the program starting.

1.4 DEFINITIONS, ACRONYMS, ABBREVIATIONS

Term	Description
STB	Set Top Box
USB	Universal Serial Bus

1.5 REFERENCES

Irdroid user manual:

http://www.irdroid.com/wpcontent/uploads/2011/10/Irdroid_Users_Manual_1.0.pdf

Nexus 7 user manual:

<http://nexusmanual.com/>

2 System Overview

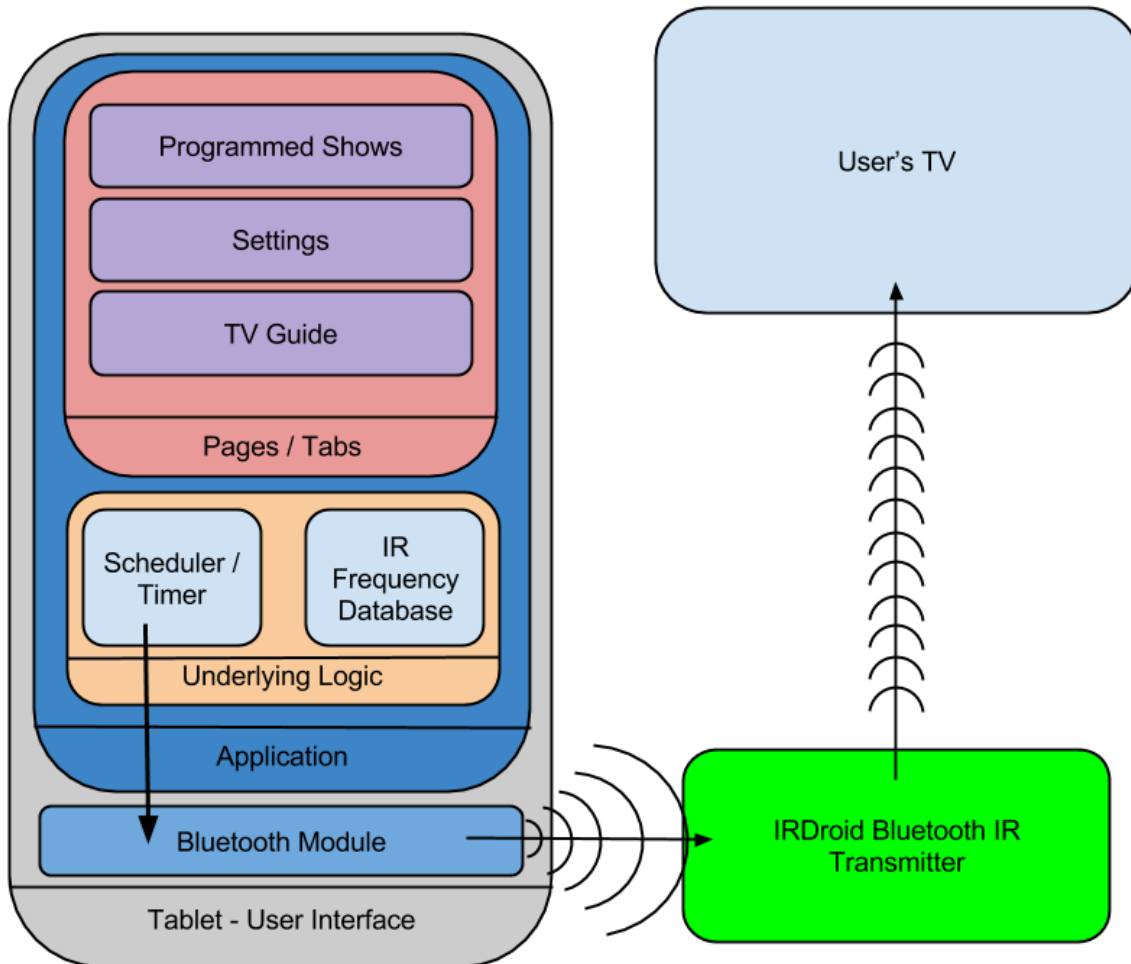


Figure 1: System Block Diagram

2.1 SYSTEM DESCRIPTION

Our system is built around android development, and the open source device known as the IRDroid v2.0 Bluetooth IR transmitter. Our application will be run on an android device and contain two main components as shown in Figure 1. The graphical user interface composed of pages or tabs, and the underlying logic.

The Graphical user interface is split into three main pages, the Main page, which shows the user a basic remote to use on the TV, the Schedule page, which allows the user to see a list of the already scheduled programs, and the Settings page, which allows the user to setup their TV with the app, and sets up the service provider information.

The underlying logic portion is comprised of two main pieces, the scheduler, and the IR Frequency database. The scheduler is in charge of reading the users programmed shows and sending the correct signals to the Bluetooth device at the right time to change to channel. The frequency database contains all the controls signals for different brands of televisions.

2.1.1 User Interface

2.1.1.1 App User Interface

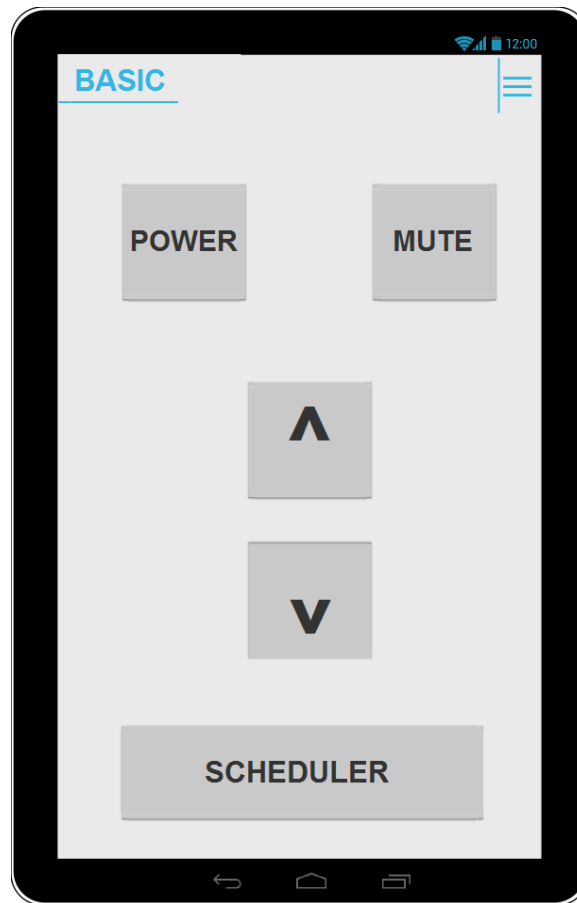


Figure 2: Main Page

Main Page (Figure 2): This is the first page the user will see when opening the android application. Power button allows the user to turn the television on and off. Mute button allows the user to turn the sound on and off with the button of a button. Channel Up allows the user to increases the channel number by increments of 1. Channel down allows the user to decrease the channel number by increments of 1. Scheduler button takes the user to the scheduler page (Figure 3). Settings button takes the user to the settings page.

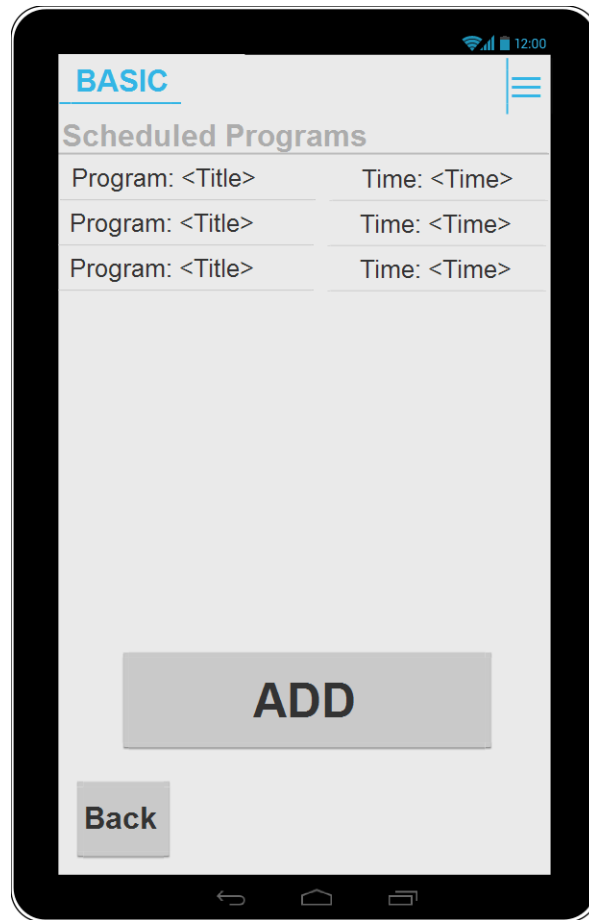


Figure 3: Schedule Page

Schedule Page (Figure 3): This page will display the program titles and times of what will be showing for the day selected. Eventually, this screen will look similar to Table 1. The user will be able to click on the program and push the add button to add the program to their personal schedule. The personal schedule is a list of programs chosen by the user, the device will automatically change the channel when something on the list of personal programs is ready to start. The back button will take direct the user back to the main page.

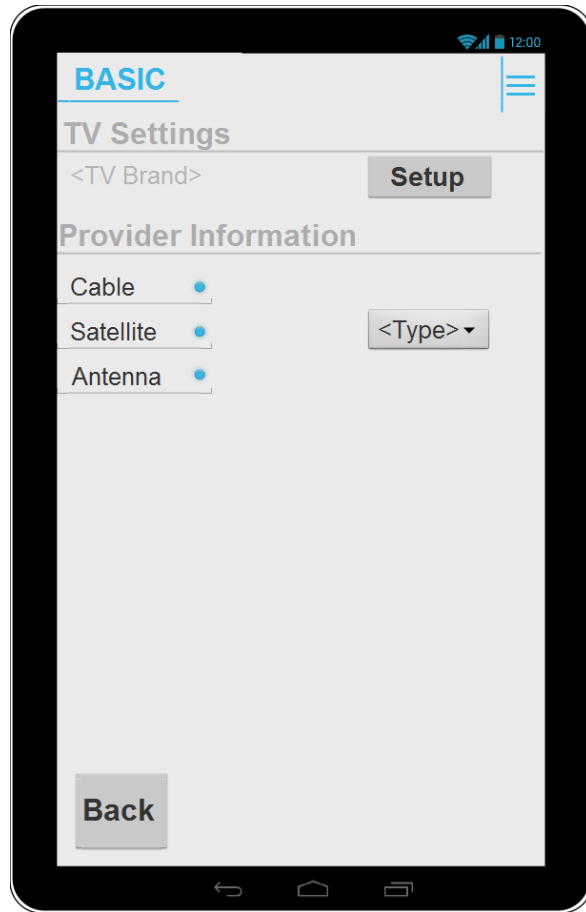


Figure 4: Settings Page

Settings Page (Figure 4): This page is used to setup and/or change the television information or cable information. When the setup button is pushed a dialog box will pop up allowing the user to select the brand and type of television that the device will be connected to. The type dropdown will populate a list of possible cable providers and the type of cable (basic, digital, or satellite, etc...) for the user to select.

2.1.1.2 Website User Interface

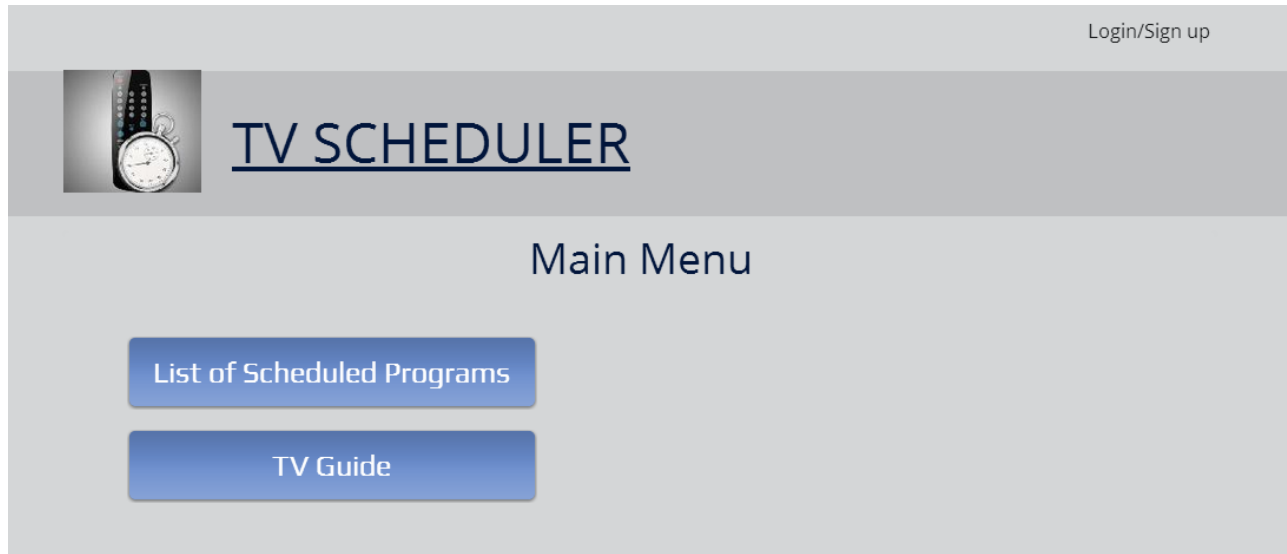


Figure 5: Web Main Page

Website Main Page (Figure 5): This page allows the user to navigate between the programs already scheduled and a TV guide.



Figure 6: Web List of Scheduled Programs Page

Web List of Scheduled Programs Page (Figure 6): This page allows the user to see a list of all programs already scheduled.

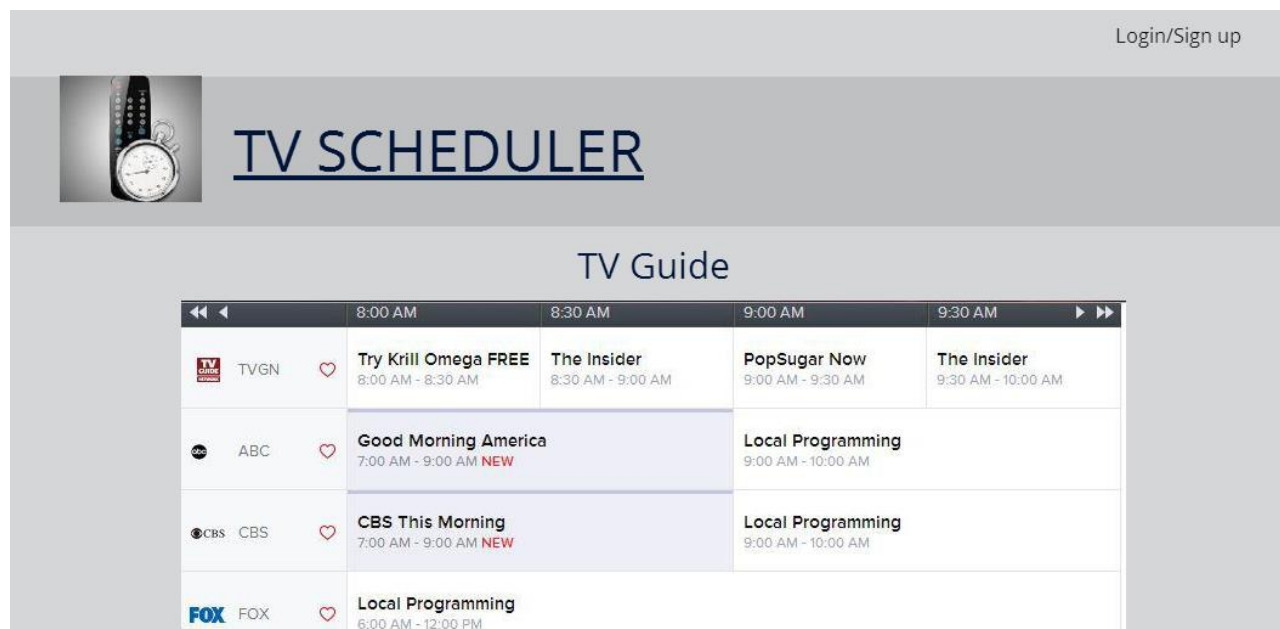


Figure 7: Web TV Guide Page

Web TV Guide Page (Figure 7): This page allows the user to see a TV guide in order to assist with scheduling.

2.1.2 Functional Requirements

- Wireless Internet access
- TV guide or cable data must be able to parse through in order for the user to be able to selection a program to watch.
- Storage of user input must stay on the device until the user deletes it.
- Autonomously change channel
- Data must be available before channel programming can occur
- Limit access to authorized users

2.1.2.1 Non Function Requirements

- The hardware/software should change the channel fast.
- The buttons/text should be large for ease of use.
- The software should auto connect to hardware with Bluetooth.

- The hardware/software should be able to run 24/7
- The app should be able to automatically find the right TV code for the TV set up.
- The software should pull up the correct TV guide based on area.

2.1.3 Hardware Interfaces

- Irdroid: A device that sends information through infrared and Bluetooth.
- Table: A compact computer with multiple sensors, a display, and single battery unit.

2.1.4 Software Interfaces

There will be an android application that to control the television and channel the channel when the scheduled program is within 30 seconds of starting. A website will complement application to allow remote assistance in configuring which shows will be watched when.

2.1.5 Memory Constraints

The amount of memory will vary from tablet to tablet. The main tablet being used to construct our nexus 7 tablet is 1 GB. We do not plan to get anywhere near this memory constraint.

2.2 USER CHARACTERISTICS

The typical user will be an elderly, disabled, and/or mentally impaired individual.

Occasionally, this person will have assistance from a more skilled individual in order to program which programs they would like to watch throughout the week.

2.3 CONSTRAINTS

Internet: This software requires the user to have internet capability on a regular basis.

Tablet Memory: The maximum amount of memory for the specific tablet we are using is 1 GB.

2.4 OPERATING ENVIORNMENTS

This product will be operating in a nursing homes lobbies and patient's personal rooms.

The tablet will be mounted on the wall and the android will be inserted in the television USB port.

2.5 DEVLIBERABLES

Android application (Spring 2014)

- Design user interface
- That has the basic functionality of changing the channel.
- Parsing through TV guide
- Storing user selection from TV guide
- Organizing user input
- Changing the channel autonomously

Internet Site (Fall 2014)

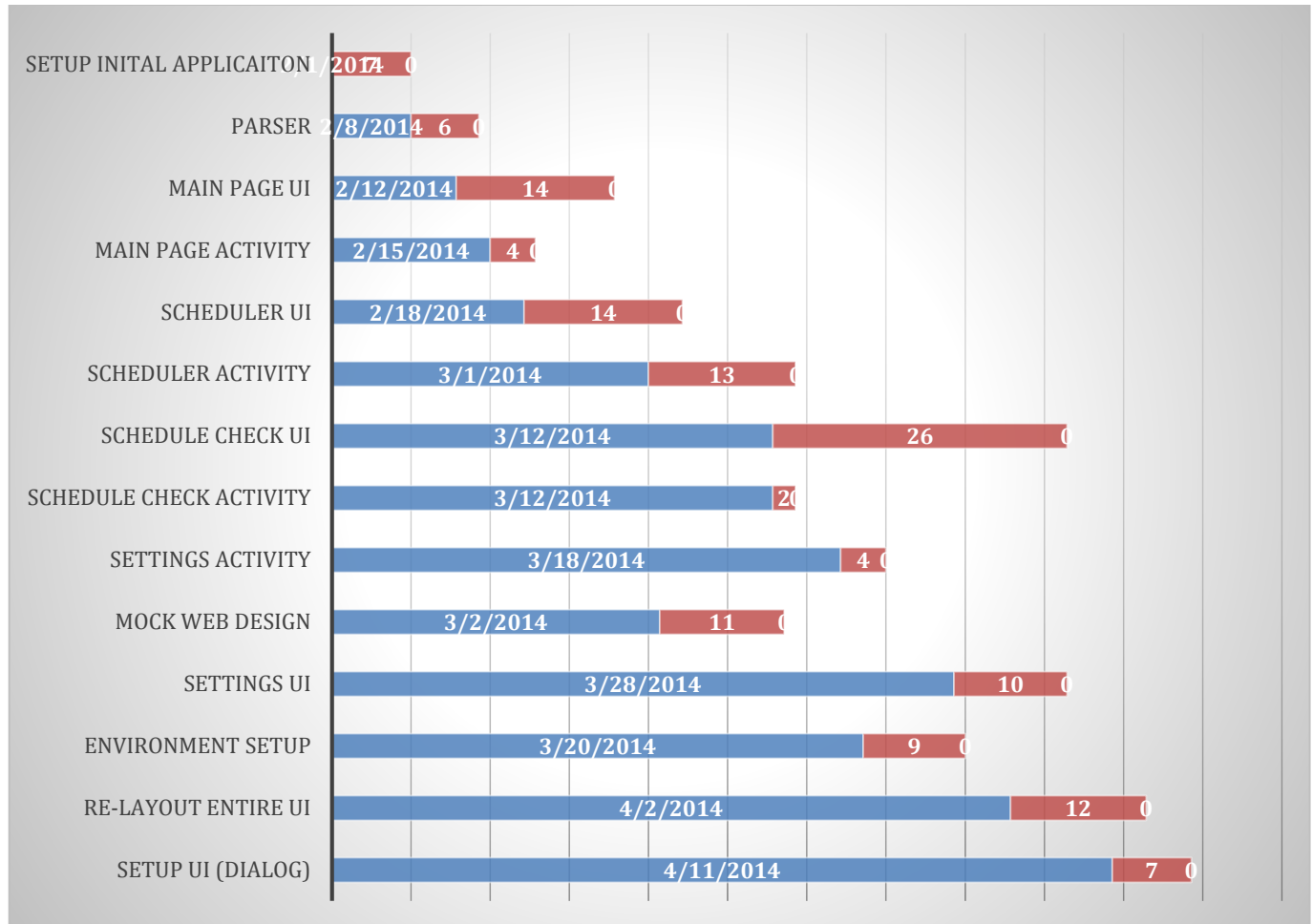
- Design user interface
- Login authentication
- Parsed TV guide information
- Storing user input
- Sending information to android application

2.6 WORK PLAN

Resource requirements:

- Tablet
- Wireless internet
- Irdroid
- Television

Project Schedule (Spring 2014 ONLY)



Risks

Not being able to have wireless internet access on a regular basis. This is needed for the application retrieve the most recent television guide. Being able to get the TV guide for various cable companies and/or being able to identify the cable box. This would prevent our entire project from working.

3 Conclusion

Our project will assist the elder, physically and/or mentally impaired individuals with being able to have the luxury of watching the television shows of their choice little to no assistance. The tablet will have our android application loaded on it. Someone assisting the elder, physically and/or mentally impaired individual will help them schedule their week worth of programs. This can be done using the device or using the website remotely. The application will then change the channel when a scheduled program is within 30 seconds of starting.