

COMP 482 – Human Computer Interaction

# Assignment 1

October 2015  
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# Section 1: Tasks and Requirements

## *Introduction*

### ➤ Background

The Awesome Game Machine from Amazing Inc., is a video gaming console designed to be used in the home and connected to a standard television. The console is known for featuring the latest and greatest games from first-party, third-party, and independent game publishers. It also incorporates media connectivity, such as organizing television content and internet media content through services such as Netflix, Hulu, and YouTube. The user of the game console can purchase games in a physical media format (Blu-Ray discs) or digitally through an online store. A similar system is used for media such as movies and television shows. Users can play games or other media by inserting a disc or selecting from a list of available games/media. The game console runs the game/media allowing the user to play/interact. At any time, the user may choose to exit their current application to come back to the main interface. All interface interaction takes place via the game controller included with the console. This controller consists of joysticks, a directional pad, and several buttons, which is connected wirelessly to the main console.

The creators of the Awesome Game Machine have asked that we develop the console user interface for people to be able to access all the functions of the console in a clear and easily understood manner that will allow users to fully enjoy the rich experience that the Awesome Game Machine provides.

### ➤ Expected User Types

The main users of the system are expected to be males between the ages of 18-34, with abundant experience playing video games, and who are familiar with home video gaming consoles. However, the Awesome Game Machine is targeted as being the center of the living room experience for

people around the world, regardless of their familiarity with gaming. To this end, expected users that must be included will range in age from child to adult. Seniors should be included if possible, as the gaming audience has expanded in recent years to include all ages. Of course, children under the age of 5 will can be excluded, as they are not likely to use the system on their own or without supervision.

Expected users will also commonly have experience with other television centered media devices such as a cable box, Tivo, or already existing game console. Nevertheless, since the console is targeted toward an international audience, users that are less familiar with these devices also should be included.

A final expectation of the target user group is that they will have high-speed internet access (broadband speeds or greater). This is required to use many of the media services available, and also to be able to digitally purchase media and games. Additionally, online components are a component of almost all modern games and will remain inaccessible to those without the required access. Again, since this is an internationally aimed product, many of the users may not have access to reliable, high-bandwidth internet so these users should be included as well if possible.

We can expect to exclude any users with severe disabilities that prevent them from manipulating the main control device as they will not be able to properly manipulate the interface. Users with severe visual impairments may also be excluded as the majority of media and gaming is done through the visual channel.

#### ➤ Work Context

The main setting for use of the Awesome Game Machine will be in the living room of the user household. The typical living room is expected to be centered around the TV, and the console will need to be in a location relatively close to this to be able to connect to the TV's audio-visual inputs. As such, the console is expected to be an integral part of the home entertainment set up for this location. The wireless controller interface means that a user will typically be required to be in the same room as the

device to be able to control its operation and be able to properly view the main user interface for the device.

Yet there are many situations where the television is not located in the main living room of a household. Bedrooms and recreational areas are also common places for televisions to appear and it is expected that there will be room for the console to be in place within these areas as well.

#### ➤ System Use

As outlined above, this system will be used to access various media functionalities through the standard television set. The core focus is on video games, but there is also a strong concentration on other media capabilities such as cable television control, and both physical and digital multimedia.

Users will be able to purchase physical or digital games for play on the console. Likewise, physical and digital media can be purchased for use as well. This includes movies, music, and television shows. The device will also be able to access online services for viewing media, such as Netflix, Hulu, and similar types of services.

#### ➤ System Constraints

The main system constraint is that it requires attachment to a visual display device. This is typically expected to be a standard television, but can also include devices such as computer monitors. The device is only capable of output over HDMI, so it is limited to connectivity with compatible devices. Any connection to other devices would require use of third party devices not officially supported by the makers of the Awesome Gaming Console.

Another limitation of the console is that many of its features are only accessible to users with access to high speed internet. These features include the online store and online third party media providers. Users will also be limited by the speeds of their connections, and this may have an effect on the use of all types of online access. However, the device is capable of offline play of physical games

and media. For games, this is limited to proprietary Blu-Ray formatted discs and for physical media, the device is capable of playing CDs, DVDs, and Blu-Ray discs.

Finally, the console will be limited by the specific hardware available. For input, the only available means is via the game controller mentioned earlier. The exact hardware specifications for CPU, GPU, RAM and HDD have not been provided by the company at this time. However, the user interface should be designed such that it does not tax these resources and still be able to act in a timely and reliable fashion.

### *Concrete Task Examples*

#### ➤ Task 1 – Playing a game on physical media

Ken Jones is an avid video game player of many years. He wants to play the game "Dead or Alive 6" which he has purchased on disc from a local video game shop. He turns on the console and presses the eject button to open the tray. He puts the disc in the tray and presses the button again to close it. He then launches the game from the on screen interface and begins playing. Ken is a single male, 34 years old, in a long term relationship. He has a basic cable configuration, connected through a 45 inch LCD HDTV, which he uses to play games. This is located in the living room of his house and functions as the center of his home entertainment set up.

This is common with many of the expected users of this console. Many will have experience playing games, and the majority of games are bought on physical media. The task is also very common and important, as the main function of the console is to play video games. Being familiar with the process, Ken can easily handle the task.

#### ➤ Task 2 – Purchasing a game digitally

Meghan Park is a young 14 year old girl who recently received her Amazing Game Console for Christmas. The console is hooked up to her computer monitor, located in her bedroom, which also doubles as the main monitor for her PC. She has heard about the new game "Mass Effect 4" from one

of her friends. She wants to see if the game is available in the online store, and will purchase it if it is available and no more expensive than the same game available on disc from her local game shop. She turns on the console and enters the online store from the interface. She searches for the game by title and the console displays a list of matches. She selects "Mass Effect 4" and sees the price. She compares the price to the one she has checked from the website for her local shop. She sees that the game is \$5 less than the in-store counterpart and purchases the game. Having purchased games previously, her billing information is already stored on the device. The game begins downloading. The game consists of a 2GB file so will require time to download and install. Meghan leaves the console on to wait for the download to finish before she can play.

Many teenagers like Meghan are enthusiastic gamers. Most children this age have much of their experience with gaming through a mobile device. As such, they are familiar with digital storefronts and the process of downloading and installing a game for play, as well as with having to wait for a download. However, most mobile games require small downloads and therefore, can play can often begin within minutes of the decision to purchase. Many young users are also budget conscious with their games, and will often compare prices, selecting the cheapest option to obtain a game, even if it is previously used. Mobile games are often cheaper purchases than full console games, therefore the price is an even more important consideration when purchasing a console game.

➤ Task 3 – Watching a movie through a 3rd party provider

Rachel Connely is a 39 year old mother of 3, who has purchased the Amazing Game Console for her children to play video games in the home. They are the main users of the device and often use it to play games, watch movies and other tasks. The console is part of the main entertainment set up in the family living room. One night, Rachel is home alone while her husband has taken the kids to visit relatives. She wants to watch the movie "Magic Mike XXXXL" on her Netflix account on the TV. Most of the time this is a family affair and the children handle the set up. Rachel now has to handle the task on her own. She turns the console on. From the main interface she searches for the Netflix

application on the device. Next, she launches the application and searches for the title of the movie. She finds the movie and begins playing it, sitting down to relax and enjoy her evening.

Rachel's situation may not be typical, yet it is not uncommon among many users of the Amazing Game Console. Parents often purchase the device for their children and may not be familiar with all the features and controls of the system. Accordingly, they are often slower at navigating the interface and can have trouble finding what they want. They often know what they want the device to do, as they have seen it done before, but lack the familiarity of doing it on their own. Often, these types of users want to use the console for features other than gaming, such as watching movies or accessing other media. However, most users will be familiar with the services and features offered through other devices they have previously owned, such as a DVD player, or familiar with third-party services and features such as Netflix because they are available on devices other than the Amazing Game Console.

➤ Task 4 – Playing a previously purchased digital game

Craig McIvor is a 20 year old male, sharing a house with his college roommates. Craig is the main owner of the Amazing Game Console, but many other people in the house use the device, usually when Craig is home, but are free to use it when he is not. The console is located in the living room of the shared residence, hooked up to the only TV. Craig's favourite game as of late is "Titanfall 2" an online shooter that he plays with his roommates. He has purchased this game digitally over a month ago through the console online store. He and his friend are going to play it for several hours before going to bed. Craig turns on the console and hands his friend the controller while grabbing his own. He uses the main interface and searches through a list of games that have are available to play on the console through previous purchases. He sees the listing for his game and launches it. The two friends play the game well into the night.

Craig's home setup is not the norm, but aspects of it are common among use cases for the console. The console is often used by many different users, but this is usually in a family situation. Sharing with friends is not common. However, playing games with multiple people at once is a

common use case. Most games have a multiplayer component, but this is usually online with users on their own consoles in another geographic location. However, there are still many games that offer multiplayer games sharing the same device and screen, usually with only one user initiating the game session.

➤ Task 5 – Viewing physical media content

Sanjay Shah is a 40 year old single male who uses his all the main features of his Amazing Game Console. He watches movies online and through physical media, plays digital and physical based games, both multiplayer and single player and often purchases content through the digital storefront. He is an IT professional who enjoys relaxing at home after a hard work day to enjoy these many features available on his console. Tonight he is tired from another long work day and wants to watch a the movie "Human Centipede 3" on a Blu-Ray disc that a co-worker has lent to him. He powers on the console, and opens the disc tray. He places the movie in the tray and closes it. He chooses to launch the movie and enjoys his evening.

This task, while not as common as playing games, is still a frequent activity of many owners of the Amazing Game Console. Many people use the console as their main Blu-Ray player in addition to playing games. Blu-Ray players are seen as an expensive purchase, so many people do not own more than one. This functionality of the console allows users to get more value for their money. Sanjay, being an IT professional, is intimately familiar with electronic and computerized devices, and very familiar with the online capabilities they provide. This is not the norm among many users of the console, as many people do not realize all of the great features and options that the device provides. Most people purchase the console with gaming in mind as the main feature. Nevertheless, the task itself is usually familiar to many users because of previous experience with devices such as DVD and Blu-Ray players.



➤ Absolutely must include

- Open/Close the disc tray
- Play games on physical media
- Play games purchased digitally
- Purchase games digitally
- Play supported physical media
- Play media purchased digitally
- Purchase media digitally
- Connect to supported online 3<sup>rd</sup> party media services
- Search for previously purchased digital content

These requirements are absolutely necessary because they represent the main features of the system. Many users purchase the Amazing Game Console expecting these features to be available and easy to access. They are frequent tasks and not including them would mean that the product does not work as advertised.

➤ Should include

- Create/modify/delete user profiles for different console users
- Access profiles with secure passwords
- Store payment and billing information securely
- Restrict content and features for children with parental controls

These requirements should be included if possible because they support requirements in the must include category. The system is often used by many people in the same household so allowing for different user profiles ensures a more individualized experience. Storing payment information would allow each profile to purchase and have access to individual content, which would then need to be protected with passwords for unauthorized use. Parents should also be able to control what their children can have access to because console use may be unsupervised.

➤ Could include

- Power off/on
- Recommend games/media for purchase
- Advertise other games/media
- Provide a list of frequent or recent activities for user to select
- Allow users to configure interface to their tastes (e.g., rearranging placement of menus or order of menu items)
- Allow access to user profiles from external sources (e.g., websites and mobile apps)

The requirements for the could include list are here because they would be excellent features to include in the system, but may require significant effort to develop. For example, recommendations for games and media requires development of an algorithm to accurately track user preferences.

Additionally, some of the requirements, such as interface reconfiguration, would have a significant effect on interface design and implementation.

➤ Exclude

- Allow users to perform more than one core function at once (e.g., watching a movie and playing a game at the same time)
- Allow users to share digital media and games

The requirements on this list can be considered unimportant. Many people cannot multitask very well, so playing games and watching media would not improve the console experience, but likely be a distraction and lessen the overall experience. While users sometimes share the physical version of games and media, the sharing of digital content is much more difficult to track and opens up the door to piracy concerns so should be avoided.

### *Concluding Recommendation*

The development of the interface for the Amazing Game Console will be no easy feat. There

are several challenges to be overcome, and tasks will need to be carefully planned for so that users can easily understand what is required of them to achieve their goals. The major roadblocks in place include the design of the search functions available, as well as proper organization of content. We should look to existing interface solutions that users are familiar with so that there will be consistency and familiarity. We will also need to ensure close co-operation from Amazing Inc. to ensure that the hardware components that are reflected in the interface match in terms of both design and function. This especially applies to the input device, as it is a proprietary game controller included in the console package. We will need to insure that inputs can be easily mapped to the device and that it is clear from the interface which inputs will produce the desired effects.

Proceeding from this prototype into further development will need to account for these issues and should plan for consistency across screens. We need to focus on ease of use as there is a wide variation among user types. However, most owners of the console are expected to have familiarity with electronic devices, so the interface can be designed with this in mind. Also, since the expected display device attached to the console is a full-HD product, we need to ensure that the interface takes advantage of high resolution text and images to ensure that the look and feel of the interface is presented well.

# Section 2: First Prototype and Walkthrough

## Prototype

Figure 1.1 – Main Interface at Start Up

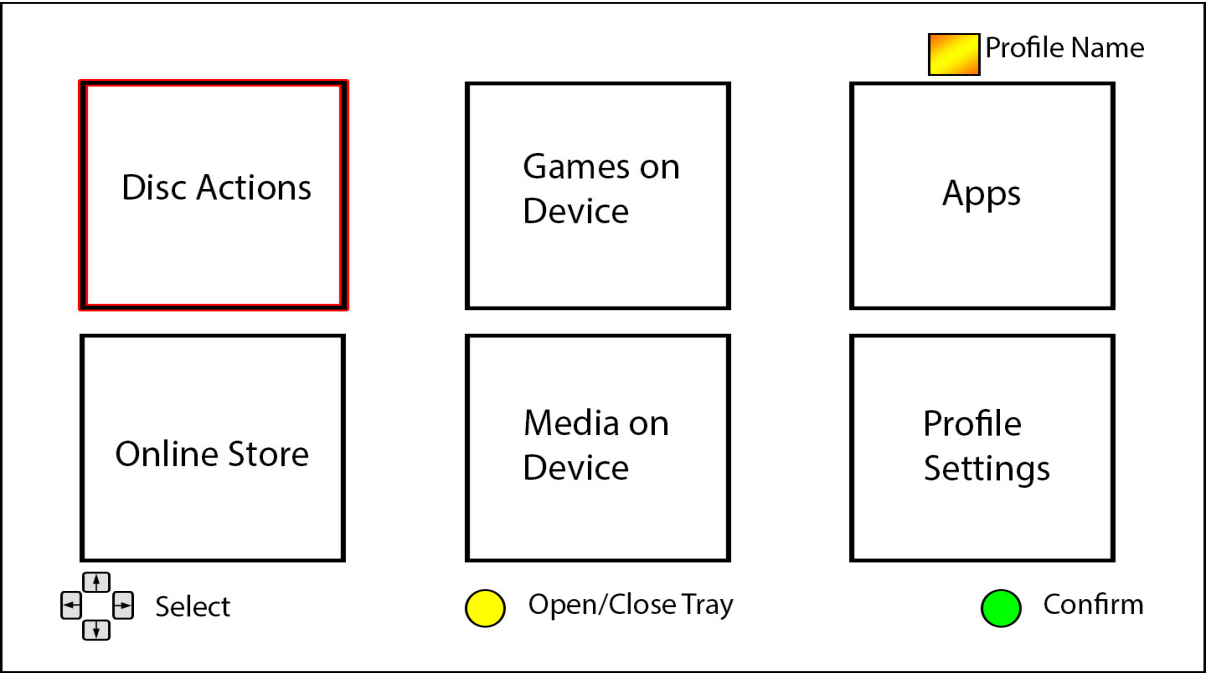


Figure 1.2 – Interface for Media/Games on Console, Apps, and Purchasing from Store

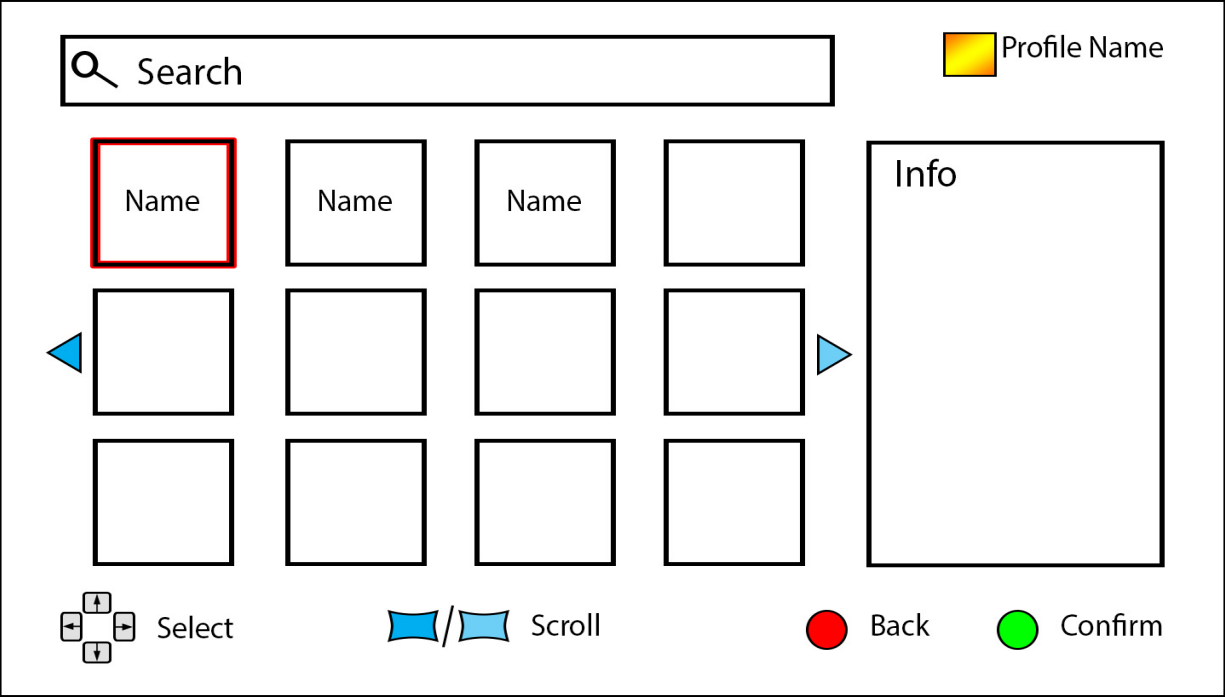


Figure 1.3 – Interface to Access Content Stored on Device

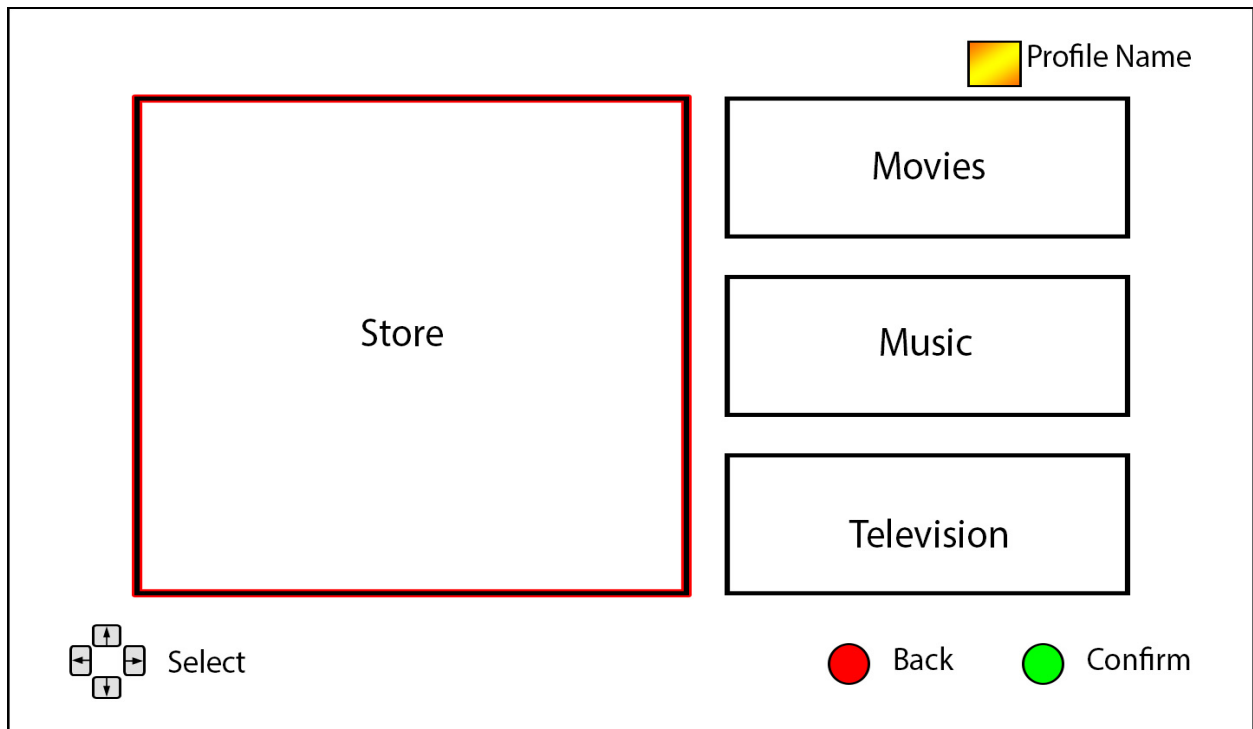


Figure 1.4 – Media Player Interface

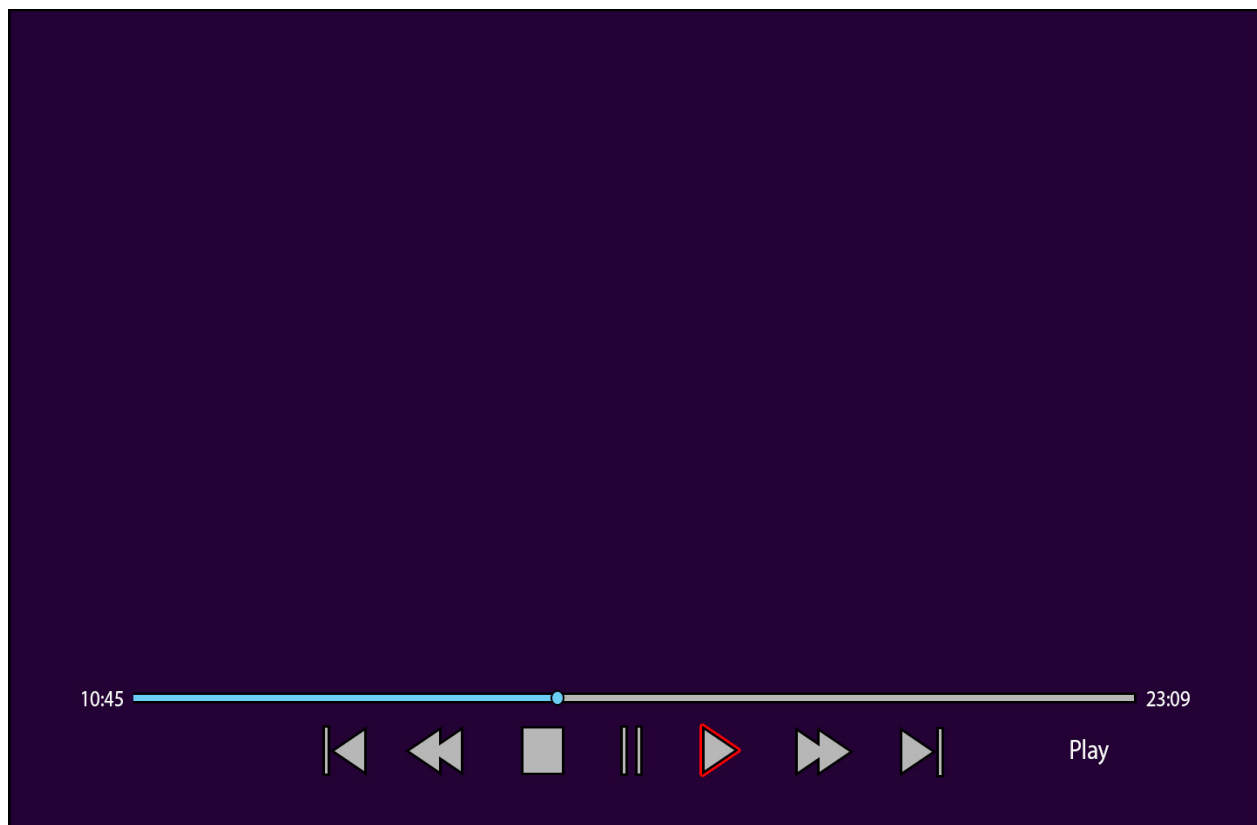


Figure 1.5 – Details for Purchasing Digital Content

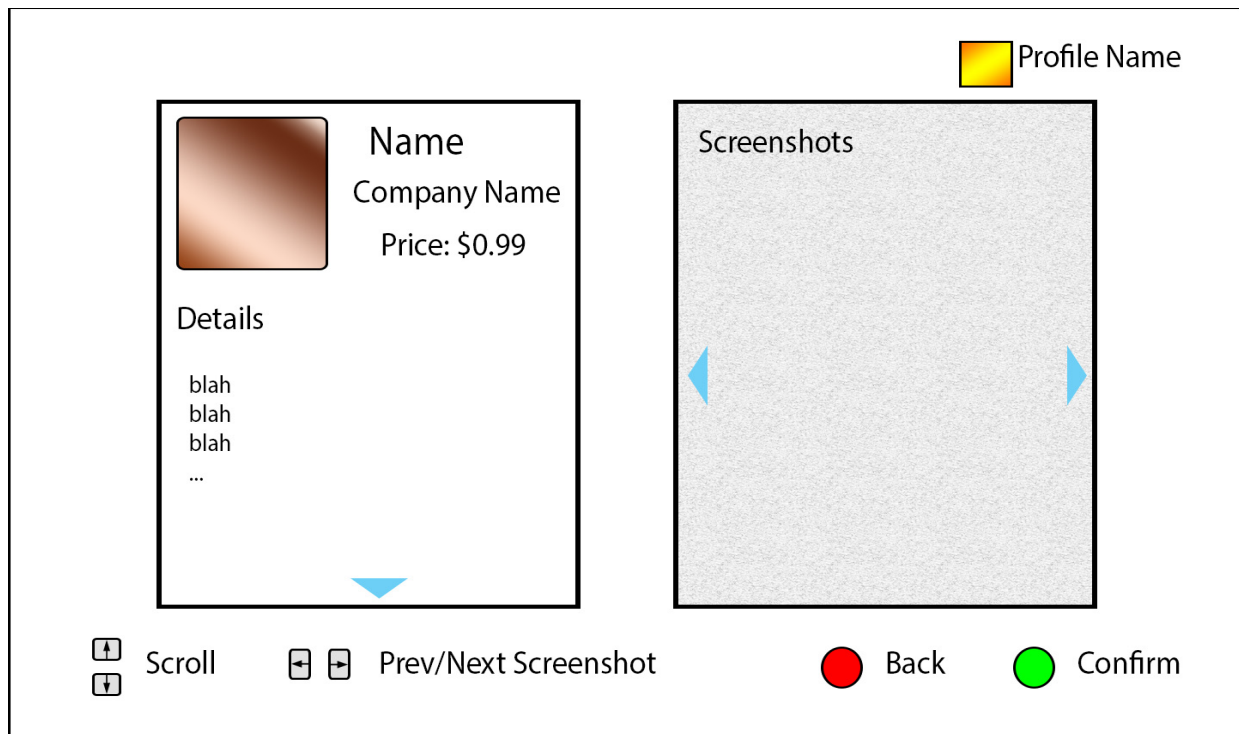
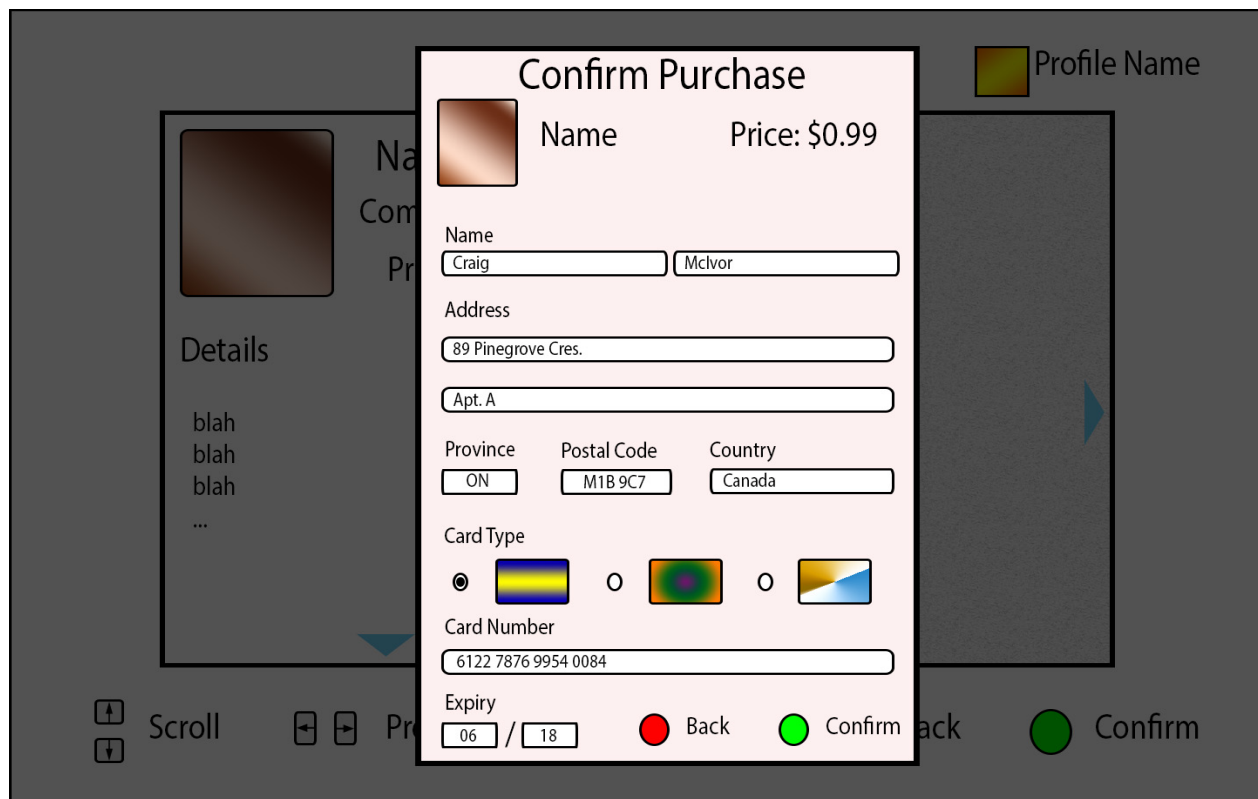


Figure 1.6 – Purchasing from the Digital Storefront



## Walkthrough

Table 1.1  
Playing a game on physical media

Task Step	Knowledgeable? Believable? Motivated?	Comments/Solutions
a. Turn on console	Okay	Power button located on console, not part of software interface.  <i>Note:</i> There could be also an option on the controller to turn on the device from the controller. Either way, a hardware input is required to start the device.
b. Open disc tray	Okay	Again the button is located on the actual hardware.  <i>Note:</i> Once the console is powered on, a menu option could be added to allow the open/close functions of the tray to be controlled via the interface. Will need to contact the Amazing Inc. to confirm if this will be required.
c. Insert disc	Okay	The tray holds standard sized discs and is familiar to most users.
d. Close tray	Okay	As mentioned, there is a button on the console for this purpose.  <i>Note:</i> As mentioned, there may be a need for a software solution for this step. See note in step b.
e. Select option to play game	Okay	Because Ken is an avid game player he is familiar with being able to quickly start his game.  <i>Note:</i> The interface defaults to the first position which is for the disc options. Simply pressing the correct button will launch the game without any other input.  <i>Note:</i> An option may be added to for the user to choose if the game starts automatically when placed in the tray.

Table 1.2  
Purchasing a digital game

Task Step	Knowledgeable? Believable? Motivated?	Comments/Solutions
a. Turn on console	Okay	Same as Table 1.1 step a.
b. Select option for online store	Okay	The online store option is prominently displayed and is a familiar concept to users of mobile devices
c. Search for game	My not know proper name of game or where it is in list	There are many options to choose from, making finding the game difficult. A search option is provided but the user needs to know the name of the game.  <i>Solution:</i> Can divide the list of games into categories based on criteria such as most popular or similar to games already purchased, etc. <i>Solution:</i> The search can respond to partial matches or match according to other criteria such as the name of the publisher.
d. Select game for purchase	May not know how much space is available on device for game	The hard drive on the console is limited in storage space. There may be details about how large the game is, but there is no information about how much room is available.  <i>Solution:</i> Display the amount of space left and give a warning if there is a limited amount.
e. Enter purchase details	Knowledge lacking a. order of name entry b. input own name or name on card d. possible parents credit info Concerns over security of entering credit info	The purchasing details have common fields that users should be used to when purchasing other online content, but some of the details may be unclear.  <i>Solution:</i> Provide more clarification on formatting such as first vs. last name, whose name, etc. <i>Solution:</i> If credit card has been entered previously, can prompt to save info. Then can auto populate on successive purchases if saved.
f. Wait for game to download	She does not know how long it takes to download game She is not motivated to wait long because she wants to play the game immediately	Currently, there is no information about download speeds/times and large games may be several gigabytes in size.  <i>Solution:</i> Prominently indicate size of file, and warn that large files may take time to download. Also include a progress bar and estimate time remaining.



Table 1.3  
Watching a movie through a 3<sup>rd</sup> party provider

Task Step	Knowledgeable? Believable? Motivated?	Comments/Solutions
a. Turn on console	Okay	Same as Table 1.1 step a.
b. Select option for 3 <sup>rd</sup> party apps	She may not know the meaning of 3 <sup>rd</sup> party apps May think the option for media on device is the correct option	Playing movies on the device can be done with content on the device or through 3 <sup>rd</sup> party apps, user may not be clear on how to play the movies the way they want. The name 3 <sup>rd</sup> party apps does not convey much meaning regarding the capabilities available.  <i>Solution:</i> Perhaps change the name of the selection for 3 <sup>rd</sup> party apps to better convey information, can also display icon with examples such as the Netflix/Hulu logos.
c. Choose Netflix option	With many apps installed it may not be known where app resides in the list	Similar to problem for searching for games in Table 1.2 step c.
d. Use Netflix interface to watch movie	Okay	<i>Note:</i> This interface is configured by the app creators.

Table 1.4  
Playing a previously purchased digital game

Task Step	Knowledgeable? Believable? Motivated?	Comments/Solutions
a. Turn on console	Okay	Same as Table 1.1 step a.
b. Select option for games on device	May not know which input device to use	With various controllers in use, the one used to control the device may not be clear or both may be able to control at once.  <i>Solution:</i> Have an indicator in the interface that shows the current input device attached to the profile in use.  <i>Note:</i> Will need to work with Amazing Inc. to match indicator on input device with on-screen input.
c. Select game from available options	May not know where game is in list	Similar to problem for searching for games in Table 1.2 step c.
d. Begin playing game	Okay	<i>Note:</i> The game interface is separate from the standard console interface.

Table 1.5  
Viewing physical media content

Task Step	Knowledgeable? Believable? Motivated?	Comments/Solutions
a. Turn on console	Okay	Same as Table 1.1 step a.
b. Open disc tray	Okay	Same as Table 1.1 step b.
c. Insert disc	Okay	Same as Table 1.1 step c.
d. Close tray	Okay	Same as Table 1.1 step d.
e. Select option to play movie	Okay	Same as Table 1.1 step e, but applies to Blu-Ray disc as opposed to game disc.
f. Use player controls to move through content	Okay	Controls are similar to many familiar media players, with options to play, pause, advance, rewind, etc.

*Note:* The controls should fade after a short time to allow full view of media content. They can reappear with any input from the input device.

Based on the tasks outlined in the above tables, there are both deficiencies and strengths with the currently proposed interface. Current problems with the interface center around finding and search. This needs to be designed in a way to make it as easy as possible to find the content wanted. The arrangement of content needs to be categorized. Additionally, the search function needs to be implemented to be able to find matches that are close but not exact, as well as matching other helpful parameters. The menu option to select 3<sup>rd</sup> party applications could also be cleared up to help indicate the exact nature of the options available under that category. The information regarding purchases also needs to make sure that information is clear and secure. Work also needs to be coordinated with Amazing Inc. to ensure that hardware functions can be implemented in the interface properly.

Nevertheless, the interface performs well in most areas. Many options are clear from the main interface with clear indications of button prompts and options available. Many interface functions are adapted from currently existing applications. This allows for user familiarity from using other devices so that the interface is fairly consistent with user expectations.