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## Value-Added Evaluation for the iPod Digital Media Player

In 2001, the company Apple revolutionized the digital media player world by introducing the iPod. This paper focuses on analyzing this gadget using theories and concepts from R.S. Taylor, including a description and an evaluation of this digital media player system. The description of this information system includes intended users, user situations, organization of information in the system, storage, search, retrieval capabilities, applications, functions and features. Subsequently, an evaluation of the iPod explains how the gadget meets the values-added definition of an information system. The analysis and critique include evaluation of the system in terms of user value criteria, values added, and related system processes. Finally, some recommendations for improvement based on Taylor's analysis are explained.

When Apple released the first iPod on October 23, 2001 only those with a high acquisitive power had the opportunity to own this digital media player. According to the author of "iPod History - The Complete History of the iPod," the high price of these devices, around \$400 each, made them only available to certain types of people.<sup>1</sup> However, currently, several models of iPods with different features and prices exist from which customers can choose. For example, according to the online Mac store, one model sell for only \$49.<sup>2</sup> This reasonable price allows people such as students to own one of these digital media players. While the intended users of this system include music lovers of all ages, young people represent the best customers for this product because the younger generation understands browsing and downloading music from the internet.

iPods' use situations include settings where users realize solitary activities. For instance, people traveling alone, runners or bus commuters find this information system very useful for entertainment. Spotting people carrying iPods in airplanes, buses or trains occurs daily. The required use of headsets to listen to the device prevents the user from bothering others. However, the inconspicuous nature of the headsets also allows for inappropriate use of the device. For instance, people wear iPods in classrooms, work places, or during activities where all your five senses have to be alert such as driving vehicles. These examples demonstrate bad use situations of this digital media player.

The organization of information in this system consists of sound files, videos and images that can be organized as the user desires. For instance, while the user listens to a song, this device allows the possibility of rating the song or artist, which creates a list of favorites songs for later selection.

Another characteristic of this digital media player relates to its very effective way of storing, searching and retrieving the information. The small hard drive inside the digital player stores the sounds, images and movies. According to the article "How iPods Work" from the website "How Stuff Works," the hard drives contains between 1 and 120 Gigabytes of storage

capacity.<sup>3</sup> Also, as discussed in the website “How Your Electronic Works,” the iPod uses a compression system to reduce the size of the files to store the maximum amount of data.<sup>4</sup> However, while storage represents a very efficient characteristic of the iPod, the ease of accessing and searching for the information makes this device very appealing to the user. The mechanism used by the iPod for retrieving information consists of a touch sensitive “click wheel” with the functions of directions and selecting buttons. Five main buttons compose this “Click Wheel.” These include the menu, back, forward, play/pause and the button in the middle that has the function of selection. The user searches for the desired song by sliding the thumb in a clockwise manner around the click wheel, while the counterclockwise direction takes the user backwards along the list of songs. Once located, the user clicks the middle button to select the song.

iPod digital media players store more than just music files. Notes, videos, games and contacts exemplify the other types of information these digital media players save. iPods include applications such as a calendar, a contact book and games. Thus, iPods function like a pocket address book, note reminder or mini game console in addition to music playing device.

The next discussion focuses on two “information behavior” scenarios describing the typical use of this digital media player. Table 1 describes the six behavior variables applied to an information behavior scenario. The six important variables define the user’s behavior, and motivation to satisfy some goal, in this case the goal of finding a song. Table 1, “Find the song Where The Streets Have Not Name by U2,” describes the first scenario where the user tries to find a certain song in her/his iPod.

Table 1. Scenario 1. Find the song “Where The Streets Have Not Name” by U2.

Seeker	iPod user (Me)
Situation	To find the song “Where The Streets Have Not Name” by U2
Main Motivation	Desire to listen to the song
Source of Information	iPod favorite list folder
Time Pressure	Now
Degree of Thoroughness	Search by author for the song

The next scenario represented in Table 2, “Find Lauren’s cell phone number in contacts” describes a situation where the user’s main purpose involves searching for and retrieving some personal information from the contact list.

Table 2. Scenario 2. Find Lauren’s cell phone number in contacts

Seeker	iPod user (Me)
Situation	I need to call Lauren and I do not remember her cell phone number.
Main Motivation	Call as soon as possible to cancel our date
Source of Information	List of contacts
Time Pressure	Now
Degree of Thoroughness	Search by last name in my contact list

R.S. Taylor's Value-Added Model offers a useful tool for evaluating and making recommendations for improvement of this information system model. According to Taylor's definition, the purpose of an information system is to meet the needs of the user by adding value to the information itself.<sup>5</sup> Following Taylor's definition, iPod digital media players meet the value-added meaning of an information system through the ordering of information through alphabetizing and indexing, by having an accurate method of retrieving the exact data queried, by having an adaptable interface, through enabling security measures and most importantly by having a pleasing aesthetic and the potential to entertain for hours.

Next, following Eisenberg/Dirks Modified Taylor's value-Added Model we analyze our system. This analysis includes a critique of the system's effectiveness and efficiency for the user in terms of the User Value Criteria, Values Added, and System Processes, as outlined in Table 3. Ease of use represents the first user criteria in the table. Important values added for the ease of use criteria include browsing, ordering, and accessibility. These values satisfy the ease of use criteria for the user of the iPod. As mentioned before, information storage and retrieval comprise some of the most important aspects of the iPod digital media player, and the iPod's system of browsing, ordering and accessing data allows users easy access to their files. iPod users can browse or sort files by artist, year, and album. Alphabetizing is the system process that helps ease of browsing and also provides the iPod data with order. For instance, if the user chooses "albums," an alphabetized list of record albums appears in the next window. In addition, a search option tool exists as another method of browsing information, which also relies on an alphabetic index. The user can access a specific song by inserting the first letters of the title words. In summary, all the browsing methods depend on the alphabetizing system process by default. Alphabetizing also provides the order for the information structure of the iPod.

Noise reduction also represents an important user criterion. This part of the model consists of reducing the overwhelming nature of the massive amount of information by organizing it into smaller data. In the iPod's information system, classification and order are the values added that help to organize the vast number of music files stored in the device. As mentioned before, information can be classified or ordered with the help of the system processes such as indexing, which speeds the process of informational retrieval. For example, the search index allows users to search for songs by artist or title. The same song is classified in several different ways. For example, the song "Even Better than the Real Thing," by U2 can be accessed by artist, album, song, or genre. Classification aids noise reduction in this case by breaking up a potentially very long list of songs into smaller, more accessible lists. Noise reduction shares similar values added as the ease of use criteria, as ordering and classification in the case of the iPod closely relate to the act of browsing and accessing files. The key processes involve alphabetizing and indexing the data.

Next, values of accuracy and currency add to the quality of the product. These values describe some characteristics that are presented in the iPod digital media player. This information system correctly retrieves the query asked for such as a specific song or video. For example, the user selects the song, "Lucy in the Sky with Diamonds" by the Beatles by clicking on the song title. The system accurately plays the selected song, and never makes a mistake. The iPod maintains currency by allowing the user to choose and download new songs and update their playlists. Selection represents the important system process here. Lastly, the ability to

continuously update the system with new applications and new features helps the product meet this expectation of quality.

Flexibility represents the most important value added for the user criterion of adaptability. For example, the obvious ability to turn up or down the volume in iPods adds to the adaptability of the product. The user has the chance of adapting the volume of the iPod digital media player according to the noise circumstances surrounded her/him. The system processes for adaptability include data manipulation capabilities, sorting, customizing, choices, and user profiling. Examples of these processes consist of the ability to change settings such as backlight, time display, or the simple feature of creating a user profile for the owner of the iPod.

The next user criterion, performance, helps the iPod's information system satisfy the user's need to save time. The "click wheel" offers the most important time saving aspect of this digital media player. This feature searches thousand of files in milliseconds with just using the clockwise motion for forward and counterclockwise for backward. Thus, without this "click wheel" tool to search files, the task of finding a file could take a serious amount of time for the user, resulting in a very frustrating task. The processor speed represents the most important system process in aiding performance. The processor assists the time saving value. According to "How iPods Works" the iPod's Microprocessor - PortalPlayer PP5021C with dual ARM7TDMI cores - consists of the perfect piece of hardware to process fast information when browsing files due to its small size and rapid speed.<sup>3</sup> Other system processes such as parallel processing and multi-tasking facilitate the time saving value. For example, users can listen to some tunes or watch files while performing another action such as playing games. By not interrupting one task to engage in another, the iPod information system further saves time for the multi-tasking user.

The next criterion, pleasing, represents the core of what makes this information system a very successful product. The addition of values such as aesthetics, entertainment, rewarding, or engaging to iPods digital media players add to the appeal of this product for user. For example, the iPod digital media player contains a very innovative design, a value highly searched for when purchasing any product. The light-weight nature of the product represents one of the most important aspects of the design of this gadget. According to the website, "How Your Electronic Works," the iPod now weighs 4.9 ounces, which makes this digital media player very portable.<sup>4</sup> The "click wheel" and color screen represent other aesthetic characteristics. This touch sensitive ring, as mentioned before, works as the perfect tool for browsing thousands of files. With the color screen, the user can watch movies, view pictures or play games in this little portable digital media player. The ability to use this device as both a media player and mini game console add to its entertainment value and therefore satisfy the user criterion "pleasing." Other values added in this information system include the self-explanatory features such as rewarding, engaging and stimulating which underlie the reasons why people choose this digital media player over other models. The primary purpose of the iPod rests in its ability to entertain, which then becomes self reinforcing. Table 3 outlines the user criteria, values added and system processes discussed in the preceding paragraphs, which analyze this digital media player.

Table 3. iPod Evaluation Using Eisenberg/Dirks Modified Taylor’s Value-Added Model

<b>User Criteria</b>	<b>Values Added</b>	<b>System Processes</b>
Easy of Use	Browsing Ordering Accessibility	Alphabetizing
Noise Reduction	Classification Order	Indexing Selection
Quality	Accuracy Currency	Quality Control Updating
Adaptability	Flexibility	Data manipulation capabilities Sorting Customizing User Profiling Choice
Performance	Time saving	Parallel processing Multi-tasking Password Protection
Pleasing	Aesthetics Entertaining Rewarding Engaging Stimulating	Design Gaming Reinforcing

The next section focuses on making some recommendations for improvement of this information system based on the previous analysis. Table 4 outlines the recommendations for improvement and their corresponding values added. The first recommendation to improve the pleasing aspect of this digital media player relates to the aesthetics of the device. Many users find the need to immediately purchase a protective case very annoying. The material used in the case of the player is very susceptible to scratching. After almost two days of use the screen and back of the device show visible damage marks, which consequently ruins the aesthetics of the digital media device. Adding a layer of plastic covering to protect the screen represents an important potential improvement. Enhancing the menu structure design also offers an area for improvement. For example, in the setting section of the iPod, once the user clicks on it, a series of choices display in the window. The problem occurs when there is no symbol to indicate that the menu continues below. As result, the user misses some settings the first time, resulting in frustration. For example, in order to change the language used by the device, one must first go to settings. However, the initial setting screen does not display the language option. Therefore, the user leaves this screen and looks for the language option in another menu. This situation proves that a simplicity value should be added into the adaptability user criteria. For example, a simple down arrow on the settings display page would alert the user that the list continues below. The last recommendation relates to making the adaptability of the device more flexible in terms of connectivity. For instance, every time that the user wants to synchronize the iPod media player

with the computer, a required cable connects both devices. Sometimes this cable temporarily disappears and without the help of this tool updating this information system becomes impossible. My suggestion includes incorporating new technologies such as Bluetooth to synchronize the iPod with the computer in a wireless way, thus eliminating the sometimes frustrating situation of not synchronizing the device because of the missing cable.

Table 4. Improving Existing Aspects of The Information System

Value-Added: <b>“Pleasing”</b>	<b>Potential Service Enhancement</b>
Aesthetics	Make case more scratching proof. After a couple days of use, the case of the iPod gets scratched. Cover the case and screen with a plastic layer.
Value-Added: <b>“Adaptability”</b>	<b>Potential Service Enhancement</b>
Simplicity	Menus sometimes do not show all the choices.
Flexibility	Use of technologies such as Bluetooth to connect the device to the computer without the necessity of a cable.

With the iPod, Apple changed the way that people listen to music. Despite the high price of the first models, this cool device quickly seduced users all over the world. The sleek design and ease of music storage and retrieval make this gadget so popular. The “click wheel” design feature helps make this an effective tool. The wheel offers an innovative way to select music and facilitates the search of thousands of files in a short amount of time. Also, as mentioned previously, this digital media player not only focuses on delivering music, but also includes access to videos, pictures, or games. Evidence of iPod’s popularity exists on every bus, airport and train station, which speaks to the success of its design and usability.

Using Taylor’s Value-Added Model for describing and evaluating the iPod digital media player helped me understand and discover new aspects of this device. As a user, an iPod represents nothing more than a sophisticated tool for listening to music. However, now as an informatics student, the description and analysis of this information system with the support of Taylor’s model helped me to look deeper into the values added and system processes that make the product successful. Thinking in terms of user criteria and associated values and processes allows one to systematically analyze the product from multiple angles. The iPod satisfies the ease of use criteria through adding values such as browsing, ordering and accessibility, assisted always by the alphabetizing process that proves instrumental to the organization of the data. The iPod reduces noise, another important criteria for the user, again by classifying data into smaller chunks, thus reducing lists of thousands of songs into indexes by title, author, and album. The iPod maintains quality through accurately selecting the data requested, as well as allowing currency by user-selected updates. The device further proves adaptable and flexible, as users choose profiles and customize settings. The gadget saves users time by allowing rapid browsing of thousands of files, made possible by rapid processing speed. Finally, the sleek and small design provide obvious appeal, and by nature the machine offers hours of pleasing entertainment. In summary, the iPod satisfies the user criteria put forth in Taylor’s value added model, and the

model provides an efficient way to think about and analyze the system's characteristics. The model also helps evaluate ways to improve a system as well.

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